BUILDING AUTOMATION
CONTROL TECHNOLOGY
SENSOR TECHNOLOGY

alre

**alre –
simply
control.**

PRODUCT
CATALOGUE
2023

SINCE **1994**

TÜV SÜD
Management Service

ZERTIFIKAT

**Die Zertifizierungsstelle
der TÜV SÜD Management Service GmbH**

bescheinigt, dass das Unternehmen

alre

ALRE-IT Regeltechnik GmbH
**Richard-Tauber-Damm 10
12277 Berlin
Deutschland**

für den Geltungsbereich

**Entwicklung, Herstellung und Vertrieb von
elektromechanischen und elektronischen Regelgeräten
für Heizungs-, Lüftungs-, Kälte- und Klimatechnik**

ein Qualitätsmanagementsystem
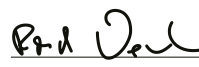eingeführt hat und anwendet.

Durch ein Audit, Auftrags-Nr. **707075483**,
wurde der Nachweis erbracht, dass die Forderungen der

ISO 9001:2015

erfüllt sind.

Dieses Zertifikat ist gültig vom **04.07.2021** bis **03.07.2024**.

Zertifikat-Registrier-Nr.: **12 100 55966 TMS**.

Leiter der Zertifizierungsstelle
München, 01.07.2021

IAF **DAkkS**
Deutsche
Akkreditierungsstelle
D-ZM-14161-01-00

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TÜV®

ALRE-IT REGELTECHNIK GMBH
YOUR RELIABLE PARTNER.

For over 50 years, we have been developing and producing high-quality components and systems for operating, controlling and automating heating and air conditioning systems and industrial equipment. As a German owner-operated business based in Berlin, we take pride in meeting both your and our requirements as well as in developing high-quality products for control engineering.

We are quick to recognise new trends and respond with innovative products, combining state-of-the-art technology with decades of expertise. Flawless customer service and top-of-the-line quality are key to our business, and we have held ISO 9001 certification since 1994 to prove it.

This 2023 product catalogue provides you with information about our wide range of products, from heating and cooling technology to plant engineering and sensor technology, all the way to building automation.

We are looking forward to continuing our successful business partnership.

OUR SATISFIED CUSTOMERS

HIGH-QUALITY SOLUTIONS FOR EVERY AREA

ALRE-IT Regeltechnik GmbH products offer numerous solutions for many applications. Whether it's a residential property, a hotel, office buildings or public facilities – alre controllers provide you with optimal climate control for any room. For over 50 years we have met the requirements of our customers and manufactured professional and high-quality control technology in Berlin. Our expertise and high quality standards are also reflected in the many projects we have successfully completed in the past.
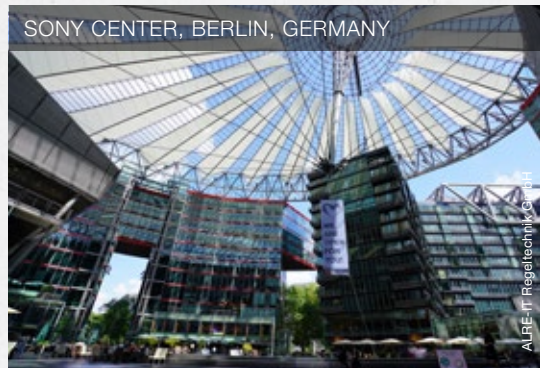

GEORGENHOF, DÖRNBERG QUARTER, REGENSBURG, GERMANY

WOHNANLAGE FONTANEHÖFE, BERLIN, GERMANY

ST. GEORGE'S THE BRITISH INTERNATIONAL SCHOOL, COLOGNE, GERMANY

DATEV LOCATION I, PAUMGARTNERSTRASSE, NUREMBERG, GERMANY

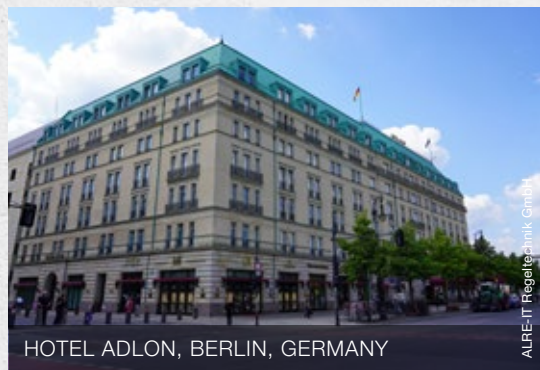SONY CENTER, BERLIN, GERMANY

ALRE-IT Regeltechnik GmbH

WOHNANLAGE WITZLEBENSTRASSE,
BERLIN, GERMANY

ALRE-IT Regeltechnik GmbH

HOTEL PARK INN BY RADISSON,
ALEXANDERPLATZ, BERLIN, GERMANY

©Radisson Hotel Group

HOTEL ADLON, BERLIN, GERMANY

ALRE-IT Regeltechnik GmbH

FRIENDS TOWERS,
MUNICH, GERMANY

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DATEV STANDORT III SIGMUNDSTRASSE, NUREMBERG, GERMANY

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NEWADDITIONS
2023

HEATING TECHNOLOGY
'STELLA' ACTUATOR

'Stella' – the intelligent autonomous 230 VAC NC electrothermal actuator for automatic adaptive hydraulic balancing of heating manifolds' heating circuits in surface heating and surface cooling systems.

ADDITIONAL INFORMATION

HEATING TECHNOLOGY
ROOM TEMPERATURE CONTROLLER MECHANICAL RTBSU

Electromechanical flush-mounted room temperature controller for controlling or monitoring temperatures in offices, homes and hotels.

ADDITIONAL INFORMATION

HEATING TECHNOLOGY
ELECTRONIC FLOOR TEMPERATURE CONTROLLER WITH REMOTE SENSOR RTERU

This electronic 2-point controller was developed specifically for controlling electric or hot water heating / auxiliary heating systems for floors and other surface temperature control systems.
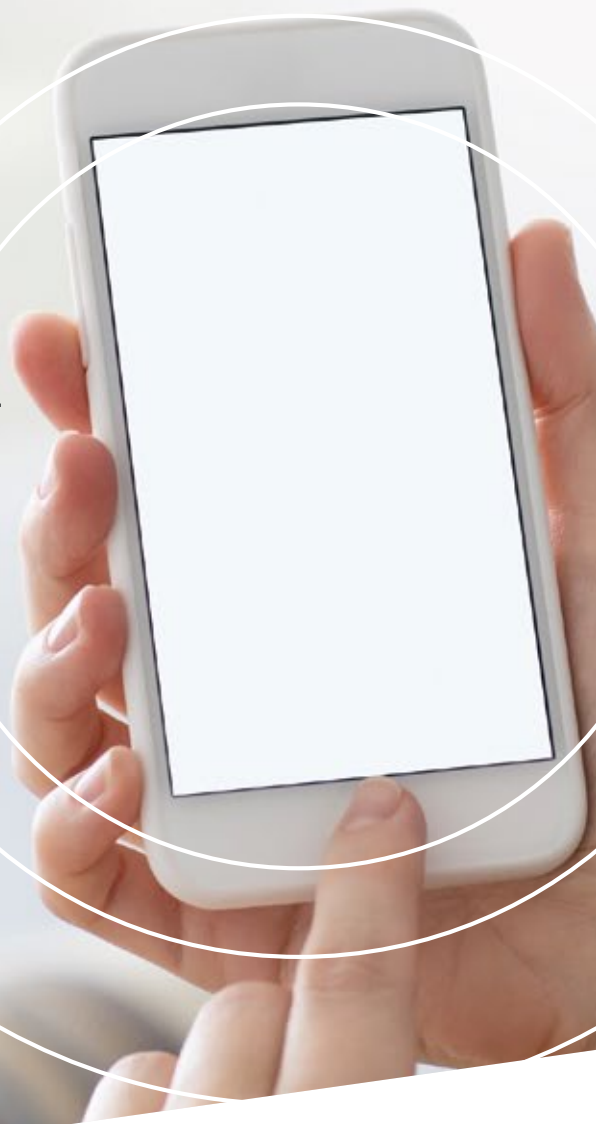
ADDITIONAL INFORMATION

WIRELESS SYSTEMS

FLEXIBLE AND EFFICIENT

ALRE WIRELESS TECHNOLOGY.
WIRELESS
FOR THE PERFECT TEMPERATURE.

Whether it's a home, an office or a hotel room, you can use our wireless systems to control your heating and cooling remotely via your home network or the Internet. Thanks to intuitive, convenient programming and monitoring, you can enjoy the highest level of comfort and optimal energy consumption. Our wide range of sensors, controllers and wire-less strips, as well as flush-mounted and surface-mounted solutions, guarantee flexible combination options and the perfect individual solution – for wireless retrofitting endeavours, too. Our highly communicative controllers fit perfectly into any environment, guarantee efficient indoor climate control and are easy on both your wallet and the environment.

alre wireless–intelligent solutions for intelligent buildings.

APPLICATION
EXAMPLES:

+ Hot water underfloor heating
+ Hot water radiators
+ Infrared heaters
   (e.g., natural stone heaters)
+ Cooling ceilings
+ Electric floor heating

OVERVIEW 10

SYSTEM INFORMATION

INDIVIDUAL COMPONENTS

WIRELESS ROOM TEMPERATURE SENSORS WITH CLOCK, FLUSH-MOUNTED, ALRE FRAME
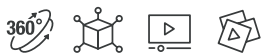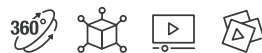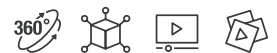
WIRELESS ROOM TEMPERATURE CONTROLLER, SURFACE-MOUNTED, ULTRA-SLIM
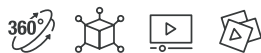
WIRELESS ROOM TEMPERATURE CONTROLLER WITH CLOCK, SURFACE-MOUNTED

WIRELESS HEATING ACTUATOR FOR INSTALLATION IN HEATING MANIFOLDS

WIRELESS SYSTEMS COMPONENTS OVERVIEW

TYPE	FTRFB- 280,101	FTRFB- 280,119	FTRFB- 280,120	FTRFBu- 180.117/V2	FTRFBu- 180.121/V2	FTRFUd 210.123#xx	HTFMA- 180,161	HTFRB- 010.101	HTFRU- 110.124	HTFRL- 214,140	HTFRL- 316,125	CTFRB- 010.101	KTFRL- 213,140	KTFRL- 315,125
PAGE	16	16	17	17	17	17	22	22	23	23	23	26	28	28
CONTROL FUNCTION														
Heating	x	x	x	x	x	x	x	x	x	x	x		x	x
Cooling	x	x	x	x	x	x						x	x	x
APPLICATION														
Radiator	x	x	x	x	x	x	x							
Hot water floor heating	x	x	x	x	x	x		x	x	x	x		x	x
Electric underfloor heating	x	x	x	x	x	x		x	x					
Infrared heaters	x	x	x	x	x	x		x						
Cooling ceiling	x	x	x	x	x	x						x	x	x
SENSOR														
NTC, internal	x	x	x	x	x	x								
External NTC (optional)						x								
External NTC for floor control and / or floor monitoring (optional)									x					
Dew point sensor (optional)													x	x
FEATURES														
'ECO' input													x	x
'Changeover – heating / cooling' input													x	x
'Off with frost protection monitoring' input													x	x
Central control	x	x	x	x	x	x		x	x			x	x	x
External antenna can be connected										x	x		x	x
MOUNTING / ATTACHMENT														
Surface / wall-mounted	x	x	x	x	x			x		x	x	x	x	x
Flush-mounted						x			x					
M30x1.5 (adapter for Danfoss RA, RAV, RAVL included)							x							
CONNECTIVITY OF INDIVIDUAL COMPONENTS														
FTRFB-280.101								x	x	x	x	x	x	x
FTRFB-280.119							x	x	x	x	x	x	x	x
FTRFB-280.120							x	x	x	x	x	x	x	x
FTRFBu-180.117 / V2							x	x	x	x	x	x	x	x
FTRFBu-180.121 / V2							x	x	x	x	x	x	x	x
FTRFUd 210.123#xx							x	x	x	x	x	x	x	x

INTELLIGENT CONTROL FOR **HEATING AND COOLING SYSTEMS**

SYSTEM CONFIGURATION
FOR A WIRELESS CONTROL SYSTEM

① SELECTION OF SENSORS

A minimal system consists of at least one sensor and one actuator. These are directly connected to each other without a central component. Different control functions can be implemented by combining the different sensor types. It is possible to teach any number of actuators to work with the sensors.

INDIVIDUAL ROOM CONTROL

In each room, there is a sensor to detect and set the room temperature. Depending on the selected sensor, further functions may be available.

or

FTRFB-280.119

FTRFB-280.120
(ECO switch for manual energy-saving operation)

INDIVIDUAL ROOM CONTROL WITH INDIVIDUAL CLOCK PROGRAM

In each room, there is a sensor with a clock to detect and set the room temperature. An individual clock programme can therefore be set up for each room.

or

FTRFBu-180.1xx

FTRFUd 210.123#xx
(various variants for optimum integration in almost all switch ranges)

INDIVIDUAL ROOM CONTROL WITH CENTRAL CLOCK PROGRAM (MASTER-SLAVE)

In one room, there is a sensor with a clock to detect and set the room temperature, as well as to set up the central clock program. In the other rooms (any number), there is a sensor to detect and set the room temperature. The clock program set centrally affects all rooms (any number, depending on the wireless range).

Sensor with clock to detect and set the room temperature and set up the central clock programme

or

FTRFBu-180.1xx

FTRFUd 210.123#xx
(various variants for optimum integration in almost all switch ranges)

➕

Sensor to detect and set room temperature

or

FTRFB-280.119

FTRFB-280.120
(ECO switch for manual energy-saving operation)

CENTRAL CONTROL INDIVIDUAL ROOM CONTROL WITH CENTRAL TEMPERATURE SETTING

One FTRFB-280.101 sensor is required per room (any number) to detect the room temperature. Furthermore, a sensor is required to set the room temperature centrally. The room temperature set centrally applies to all rooms.

Sensor for centrally setting room temperature

Sensor to detect room temperature

or

or

or

+

FTRFB-280.119

FTRFB-280.120
(ECO switch for manual energy-saving operation)

FTRFBu-180.1xx

FTRFUd 210.123#xx
(various variants for optimum integration in almost all switch ranges)

FTRFB-280.101

FTRFB-280.101

FINDING AVERAGES

Up to 7 additional FTRFB-280.101 sensors can be used per room for finding averages (for example in large rooms). This is possible with all listed control functions.

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② **SELECTION** OF ACTUATORS

Depending on the type of heating used, a corresponding actuator is required for each room or heating / cooling zone. Any number of actuators / channels can be assigned to a room.

Hot water under-floor heating	**Hot water radiators**	**Electric under-floor heating**	**Infrared heaters**	**Cooling ceiling**
For example: **HTFRL-214.140** (4-channel) **HTFRL-316.125** (8-channel)	For example: **HTFMA-180.161**	For example: **HTFRU-110.124** (optional external floor sensor available)	For example: **HTFRB 010.101**	For example: **KTFRL-213.140** (4-channel) **KTRFL-315.125** (8-channel)

OPTIONAL

If required, an external antenna (JZ-25) can be connected to the multi-channel actuators intended for installation in heating manifolds via a 1m antenna cable (JZ-26).

WIRELESS SYSTEMS – SENSORS / REPEATERS

TECHNICAL DATA

Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Protection rating:	IP30
Safety and EMC:	according to DIN EN 60730 and DIN EN 300220
Radio frequency:	868.3 MHz
Range:	150 m line-of-sight or up to 30 m in buildings, depending on the construction
Transmission interval:	approx. 3 min and after setpoint change

APPLICATION

Wireless room temperature sensor for measuring temperature in home, office and hotel rooms with normal levels of cleanliness. Single-room temperature control can be implemented with alre wireless actuators. Primarily targets use in renovation applications or for heating system extensions.

Battery change: The sensor indicates if a battery change is required soon.

The wireless connection is restored automatically after a voltage interruption at the sensor or actuator.

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
FTRFB-280.101 only 13.9 mm deep	BA010400	**General features:** Wireless room temperature sensor to detect the room temperature for calculating the average value or for centralised control; 'learning mode / battery discharge state' display **Design:** Berlin 1000 **Surface finish:** glossy **Housing colour:** pure white, similar to RAL 9010 **Housing material:** ABS plastic **Operating voltage:** 2x micro AAA batteries, 1.5 V **Ambient temperature:** −10 to +50 °C **Storage temperature:** −10 to +50 °C **Mounting / attachment:** direct surface / wall mounting by means of screws or adhesive pads **Protection class:** lll **Sensor:** internal NTC **Scope of delivery:** device, batteries, adhesive pads **Operating elements:** Learn button	109.10 / l
FTRFB-280.119 only 13.9 mm deep	BA010409	**General features:** wireless room temperature sensor to detect and set room temperature; 'learning mode / battery discharge state' display; mechanical range restriction; scale: degrees Celsius; external setting **Design:** Berlin 1000 **Surface finish:** glossy **Housing colour:** pure white, similar to RAL 9010 **Housing material:** ABS plastic **Operating voltage:** 2x micro AAA batteries, 1.5 V **Ambient temperature:** −10 to +50 °C **Storage temperature:** −10 to +50 °C **Mounting / attachment:** direct surface / wall mounting by means of screws or adhesive pads **Protection class:** lll **Sensor:** NTC, internal **Setting range:** 5 to 30 °C **Scope of delivery:** device, batteries, adhesive pads **Operating elements:** Learn button	113.00 / l

WIRELESS SYSTEMS – SENSORS / REPEATERS

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
FTRFB-280.120 only 13.9 mm deep	BA010401	**General features:** wireless room temperature sensor to detect and set room temperature; reduction 4 K fixed; ECO function; 'learning mode / battery discharge state' display; mechanical range restriction; scale: degrees Celsius; external setting **Design:** Berlin 1000 **Surface finish:** glossy **Housing colour:** pure white, similar to RAL 9010 **Housing material:** ABS plastic **Operating voltage:** 2x micro AAA batteries, 1.5 V, 1,100 mAh **Ambient temperature:** −10 to +50 °C **Storage temperature:** −10 to +50 °C **Mounting / attachment:** direct surface / wall mounting by means of screws or adhesive pads **Protection class:** lll **Sensor:** NTC, internal **Setting range:** 5 to 30 °C **Scope of delivery:** device, batteries, adhesive pads **Operating elements:** 'Comfort / ECO' switch, learn button	123.20 / I
FTRFBu-180.117 / V2	BA010200	**General features:** wireless room temperature sensor to detect and set the room temperature with clock pilot function; ECO function, ECO value adjustable; 'ECO' display; 'on / off' display; 'learning mode / battery discharged state' display; digital actual value display; child-safe features; actual value correction / measured value correction; learning function; valve protection; holiday setting; party setting; automatic adjustment to summer / winter time; mechanical range setting; scale: degrees Celsius; reduction / comfort / automatic button; external setting; operation using direct-dial buttons; on / off button; information button; party function button; holiday setting button; master-slave operation; 'heating', 'cooling' or 'heating and cooling' mode **Design:** Berlin 3000 **Surface finish:** matt **Housing colour:** pure white, similar to RAL 9010 **Housing material:** ABS plastic **Operating voltage:** 2x micro AAA batteries, 1.5 V, 1,100 mAh **Ambient temperature:** −10 to 50 °C **Storage temperature:** −10 to +50 °C **Mounting / attachment:** direct surface / wall mounting by means of screws or adhesive pads **Protection class:** lll **Sensor:** NTC, internal **Setting range:** 5 to 30 °C **Display type:** symbol display **Scope of delivery:** device, batteries, adhesive pads **Accessories:** optional adapter snap-on plate JZ-18	200.30 / I
FTRFBu-180.121 / V2	BA010201	Similar to FTRFBu-180.117, but with backlighting **Operating voltage:** 3x micro AAA batteries, 1.5 V (third battery for backlighting)	230.60 / I
FTRFUd 210.123#21	UA080000	**General features:** Flush-mounted wireless room temperature sensor to detect and set the room temperature with clock, holiday setting, party setting, different clock programs can be set for heating and cooling, usable as the master for master-slave operation (pilot controller); pilot function; ECO function; ECO value adjustable; 'ECO' display; 'on / off' display; digital actual value display; backlighting; child-safe features; power reserve (3 days); actual value correction / measured value correction; learning function; valve protection; holiday setting; party setting; automatic adjustment to summer / winter time; external setting; operation using direct-dial buttons **Design:** Berlin flush-mounted **Surface finish:** glossy **Housing colour:** pure white, similar to RAL 9010 **Housing material:** ABS, PC, PMMA plastic **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0 to 40 °C **Storage temperature:** −20 to +70 °C **Electrical connection:** pluggable screw terminals **Mounting:** in flush-mounted socket (deep flush-mounted socket recommended); can be adapted to fit virtually any surface switch range, Adaptation of flush-mounted FTRxUd see Page 21 **Protection class:** ll, if properly mounted **Average power consumption:** <1 W **Sensor:** NTC internal, optional external (selection option from 7 different sensors, e.g., 'Sensor 2' / 'Sensor 8') **Control range:** 5 to 30 °C **Display type:** illuminated graphic display **Scope of delivery:** controller, **50x50** mm cover **pure white** (similar to RAL 9010), **glossy,** alre frame 'Berlin'	281.60 / I

WIRELESS SYSTEMS – SENSORS / REPEATERS

| TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
FTRFUd 210.123#07	UA080001	Similar to FTRFUd 210.123#21 but scope of delivery as follows: wireless room temperature sensor, **50x50** mm cover **pure white** (similar to RAL 9010), **glossy,** without frame	277.60 / I
FTRFUd 210.123#09	UA080002	Similar to FTRFUd 210.123#21 but scope of delivery as follows: wireless room temperature sensor, **50x50** mm cover **pearl white** (similar to RAL 1013), **glossy,** without frame	277.60 / I
FTRFUd 210.123#27	UA080003	Similar to FTRFUd 210.123#21 but scope of delivery as follows: wireless room temperature sensor, **50x50** mm cover **traffic white** (similar to RAL 9016), **glossy,** without frame	277.60 / I
FTRFUd 210.123#28	UA080006	Similar to FTRFUd 210.123#21 but scope of delivery as follows: wireless room temperature sensor, cover suitable for **BUSCH-JAEGER Reflex SI / SI Linear pure white** (similar to RAL 9010), **glossy,** without frame	279.50 / I
FTRFUd 210.123#55	UA080004	Similar to FTRFUd 210.123#21 but scope of delivery as follows: Wireless room temperature sensor, **55x55** mm cover **pure white** (similar to RAL 9010), **glossy,** without frame	279.50 / I
FTRFUd 210.123#56	UA080008	Similar to FTRFUd 210.123#21 but scope of delivery as follows: wireless room temperature sensor, **55x55** mm cover **pure white** (similar to RAL 9010), **matt,** without frame	279.50 / I
FTRFUd 210.123#57	UA080005	Similar to FTRFUd 210.123#21 but scope of delivery as follows: wireless room temperature sensor, **55x55** mm cover **pearl white** (similar to RAL 1013), **glossy,** without frame	279.50 / I
FTRFUd 210.123#59	UA080007	Similar to FTRFUd 210.123#21 but scope of delivery as follows: wireless room temperature sensor, **55x55** mm cover **traffic white** (similar to RAL 9016), **glossy,** without frame	279.50 / I

WIRELESS SYSTEMS – SENSORS / REPEATERS

| TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
JZ-18	MN990002	**General features:** Optional adapter snap-action plate for wireless room temperature sensor FTRFBu with universal perforation pattern for mounting. The use of the adapter is recommended since the device becomes detachable as a result, which facilitates simpler battery replacement. **Surface finish:** matt **Housing colour:** pure white, similar to RAL 9010 **Housing material:** ABS plastic	7.40 / II
JZ-21	MN990006	**Adapter frame for mounting wireless sensors of the Berlin 1000 series in flush-mounted sockets up to 80x80 mm**	5.00 / I
JZ-090.900	VV000025	**General features:** alre frame 'Berlin' (neutral) for all flush-mounted room temperature sensors with a 50x50 mm cover **Surface finish:** glossy **Housing colour:** pure white, similar to RAL 9010 **Housing material:** PC plastic	4.20 / I
JZ-090.100	VV000048	**Features:** similar to JZ-090.900 but for all flush-mounted controllers in combination with 55x55 mm cover	4.20 / I
JZ-090.910	VV000010	**General features:** alre frame 'Berlin' (neutral) for all flush-mounted room temperature sensors with a 50x50 mm cover **Surface finish:** glossy **Housing colour:** pearl white, similar to RAL 1013 **Housing material:** PC plastic	4.20 / I
ET-01	MA990000	**General features:** Adjusting knob for B1000 series devices, Scale: degrees Celsius, pure white glossy	3.20 / I

WIRELESS SYSTEMS – SENSORS / REPEATERS
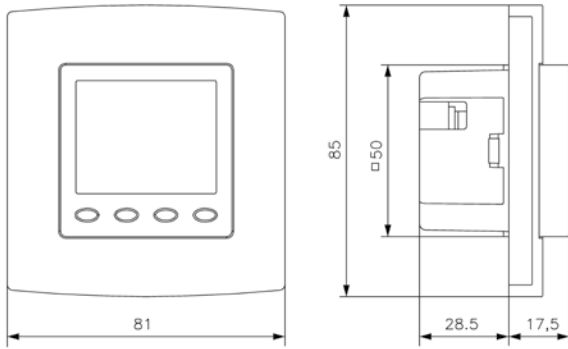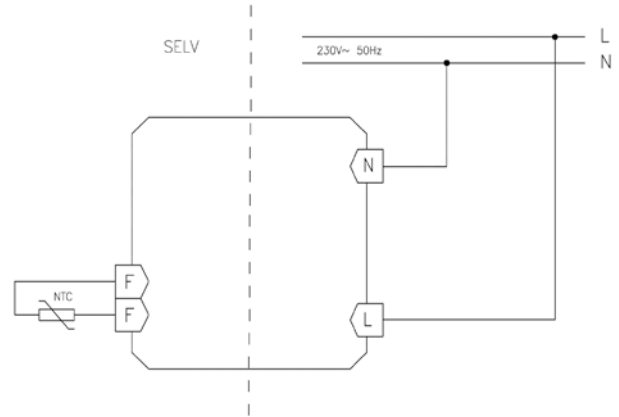
ILLUSTRATIONS

'Berlin 1000'
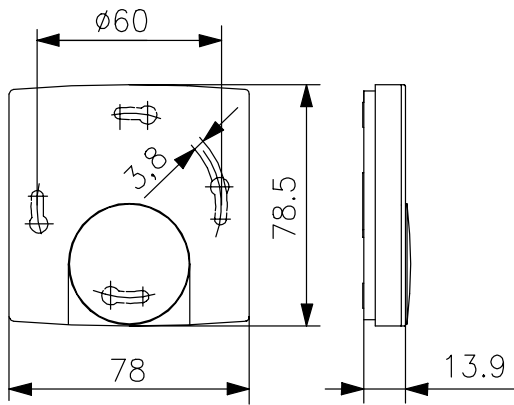
'Berlin 3000'
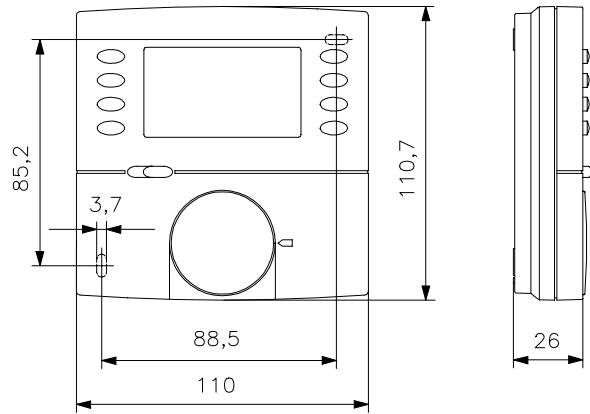
FTRFUd with alre frame 'Berlin'

FTRFUd

ADAPTATION OF ALRE FLUSH-MOUNTED FTRXUD-210.XXX

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION in switch range (55x55) possible with…	'50x50' adaptation possible with… (insert frame from switch manufacturer required)
BERKER	S.1	polar white (matt)	FTRxUd-210.xxx#56	not required
BERKER	S.1	polar white (glossy)	FTRxUd-210.xxx#55	not required
BERKER	Arsys	polar white (glossy)		FTRxUd-210.xxx#07 + (1108 01 69)
BERKER	B.3	aluminium / polar white (matt)	FTRxUd-210.xxx#56	not required
BERKER	B.3	aluminium / polar white (glossy)	FTRxUd-210.xxx#55	not required
BERKER	B.7	glass / polar white (matt)	FTRxUd-210.xxx#56	not required
BERKER	B.7	glass / polar white (glossy)	FTRxUd-210.xxx#55	not required
BERKER	K.1	polar white (glossy)		FTRxUd-210.xxx#07 + (1108 71 09)
BUSCH-JAEGER	Reflex SI / SI Linear	alpine white (glossy)	FTRxUd-210.xxx#28	not required
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)	FTRxUd-210.xxx#55	not required
BUSCH-JAEGER	impuls	alpine white (glossy)		FTRxUd-210.xxx#07 + (1746 / 10-74)
BUSCH-JAEGER	solo / future / axcent etc.	studio white – see RAL 9016 below		
Elso	Joy	pure white (glossy)	FTRxUd-210.xxx#55	not required
Elso	Fashion / Riva / Scala	pure white (glossy)		FTRxUd-210.xxx#07 + 203084
GIRA	surface switch	pure white (glossy)		FTRxUd-210.xxx#07 + (0282 112)
GIRA (System 55)	Standard / E2	pure white (semi-gloss)	FTRxUd-210.xxx#56	not required
GIRA (System 55)	Standard / E2 / E3	pure white (glossy)	FTRxUd-210.xxx#55	not required
GIRA (System 55)	E22	pure white (glossy)	FTRxUd-210.xxx#55	not required
GIRA (System 55)	Event	pure white (semi-gloss) + opaque…	FTRxUd-210.xxx#56	not required
GIRA (System 55)	Event	pure white (glossy) + opaque…	FTRxUd-210.xxx#55	not required
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium…	FTRxUd-210.xxx#56	not required
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium…	FTRxUd-210.xxx#55	not required
GIRA	S-Color	pure white (high-gloss)		FTRxUd-210.xxx#07 + (0282 40)
JUNG	CD 500 / CD plus	alpine white (glossy)		FTRxUd-210.xxx#07 + (CD 590 Z WW)
JUNG	A 500 / A 550 / AS 500 / A plus / A flow	alpine white (glossy)	FTRxUd-210.xxx#55	not required
JUNG	LS 990	alpine white (glossy)		FTRxUd-210.xxx#07 + (LS 961 Z WW)
JUNG	LS plus	alpine white (glass)		FTRxUd-210.xxx#07 + (LS 961 Z WW)
JUNG	A creation	alpine white (glossy)	FTRxUd-210.xxx#55	not required
JUNG	LS Design	alpine white (glossy)		FTRxUd-210.xxx#07 + (LS 961 Z WW)
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	FTRxUd-210.xxx#56	not required
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)	FTRxUd-210.xxx#55	not required
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)	FTRxUd-210.xxx#55	not required
MERTEN (Surface System)	Artec / Antik	polar white (glossy)		FTRxUd-210.xxx#07 + (5160 99)
MERTEN	1-M / M-Smart / M-Plan / M-Pure / D-Life etc.	active white – see RAL 9016 below		
PEHA	Standard	pure white (glossy)		FTRxUd-210.xxx#07 + (80.670.02 ZV)
PEHA	Dialog	pure white (glossy)		FTRxUd-210.xxx#07 + (95.670.02 ZV)
PEHA	Aura	pure white (matt) / glass		FTRxUd-210.xxx#07 + (20.670.02 ZV)
PEHA	Badora	pure white (glossy)		FTRxUd-210.xxx#07 + (11.670.02 ZV)

MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION in switch range (55x55) possible with…	'50x50' adaptation possible with… (insert frame from switch manufacturer required)
BUSCH-JAEGER	solo / future / future linear	studio white (RAL 9016, glossy)		FTRxUd-210.xxx#27 + (1746 / 10-84)
BUSCH-JAEGER	axcent	studio white (RAL 9016, glossy)		FTRxUd-210.xxx#27 + (1746 / 10-84)
BUSCH-JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016, glossy)		FTRxUd-210.xxx#27 + (1746 / 10-84)
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016, glossy)		FTRxUd-210.xxx#27 + (1746 / 10-24G)
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	FTRxUd-210.xxx#59	not required
MERTEN	1-M / Atelier-M	active white (RAL 9016, glossy)	FTRxUd-210.xxx#59	not required
MERTEN	D-Life	lotus white (similar to RAL 9016)		FTRxUd-210.xxx#27 + (MEG4500-6035)
PEHA	Standard	arctic		FTRxUd-210.xxx#27 + (D 80.670 ZV AW)

*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame

NOTE: Most light switches are designed in the colour 'similar to RAL 9010', although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt / glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

'50x50 controller': The housing covers of the 50x50 controllers are 50x50 mm in size. Using a 50x50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50x50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch in question can be found in the column 'For adaptation of "50x50" FTRxUd'.

'55x55 controller': The housing covers of the 55x55 controllers are 55x55 mm in size. Many light switch ranges have inner dimensions of 55x55 mm. Therefore, the 55x55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column 'Adaptation in switch range (55x55)' to determine whether the 55x55 controller fits in the given light switch (FTRxUd-210.xxx#xx).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12 / 2022 | No liability is assumed for the information provided. | Technical specifications subject to change.
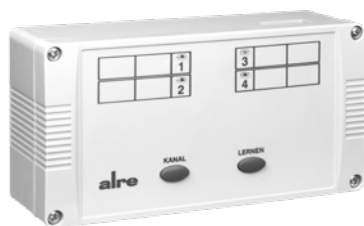
WIRELESS SYSTEMS – ACTUATORS (HEATING)

TECHNICAL DATA		APPLICATION
Surface finish:	matt	Wireless actuators (wireless heating controllers) which, in conjunction with alre wireless room temperature sensors, implement individual room temperature control. Primarily targets use in renovation applications or for heating system extensions.
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing	
Control function:	heating	
Hysteresis:	approx. 0.5 K	
Radio frequency:	868.3 MHz	
Safety and EMC:	according to DIN EN 60950-1, DIN EN 300220	

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
HTFMA-180.161	G8000422	**General features:** 1-channel wireless temperature actuator for radiator valves; 'learning mode / battery discharged state' display; emergency mode; adapter for Danfoss RA, RAV, RAVL **Housing colour:** pure white, similar to RAL 9010 **Housing material:** plastic **Operating voltage:** 2x Mignon AA, 1.5 V. Do not use rechargeable batteries or lithium batteries! **Ambient temperature:** 0 to 50 °C **Storage temperature:** −20 to +50 °C **Mounting / attachment:** M30 x 1.5, included adapter for Danfoss RA, RAV, RAVL **Protection rating:** IP20 **Protection class:** III **Sensor:** NTC internal (for emergency operation control) **Nominal stroke:** approx. 5 mm **Nominal closing force:** approx. 100 N **Control range:** 8 to 28 °C **Display:** ready to mount / mechanical adjustment / mechanical adjustment error / loss of connection / learning mode **Operating elements:** learn button, installation button	135.80 / I
HTFRB-010.101	BA110500	**General features:** 1-channel wireless temperature actuator; central control; emergency mode; 3000 W switching power for electrical direct heating systems, natural stone heating **Design:** Berlin 2000 **Housing colour:** pure white, similar to RAL 9010 **Housing material:** ABS plastic **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0 to 40 °C **Storage temperature:** −20 to +70 °C **Electrical connection:** screw-type terminals 0.5 – 2.5 mm² **Mounting / attachment:** surface / wall mounting (4-hole assembly on flush-mounted socket) **Protection rating:** IP30 **Protection class:** II for loads of protection classes I and II **Max. switching current:** 13 (2) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 3000 W **Switching element:** relay **Switching contact:** NO contact **Control range:** 5 to 30 °C **Display:** installation mode / function check / connection loss / learning mode **Operating elements:** Learn button	134.20 / I

WIRELESS SYSTEMS – ACTUATORS (HEATING)

| TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
HTFRU-110.124	BA110201	**General features:** 1-channel wireless temperature actuator; for activating an (electrical) floor heating system, the controller has a sensor input to which an optionally available remote sensor can be connected, which is then embedded in the floor. The following operating modes can be used in conjunction with such a sensor: floor temperature control function or room temperature control function with floor monitoring and direct or central setpoint temperature setting (central control); if the sensor is dispensed with, the HTFRU-110.124 works as a room temperature controller with direct or central setpoint temperature setting (central control); central control; emergency operation **Housing colour:** pure white, similar to RAL 9010 **Housing material:** PC plastic **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** −20 to +50 °C **Storage temperature:** −20 to +70 °C **Electrical connection:** screw-type terminals 0.5 – 1.5 mm² **Mounting / attachment:** in flush-mounted socket (deep flush-mounted socket recommended) **Protection rating:** IP20 **Protection class:** II for loads of protection classes I and II **Safety and EMC:** according to DIN EN 60950-1, DIN EN 300220 **Max. switching current:** 10 A to 30 °C ambient temperature **Max. switching voltage:** 230 VAC, 50 Hz; **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W up to 30 °C ambient temperature **Switching element:** relay **Switching contact:** NO contact **Control range:** 5 to 30 °C **Display:** installation mode / function check / connection loss / learning mode **Operating elements:** Learn button	183.20 / I
HTFRL-214.140	BA121000	**General features:** 4-channel wireless temperature actuator for mounting in the heating manifold, max. 4 actuators / channels can be directly connected, including pump module, one time zone possible per channel, master-slave operation, average value calculation with up to 8 measurement points. The upper part can be removed to teach the wireless sensors (via channel selection and the learn button) in the individual rooms. Emergency mode; 4 fastening screws for wall mounting (see Page 28 for implementation of central control using KTFRx) **Housing colour:** light grey, similar to RAL 7035 **Housing material:** ABS plastic **Operating voltage:** 230 V AC, 50 Hz **Ambient temperature:** −10 to +50 °C **Storage temperature:** −20 to +70 °C **Electrical connection:** spring-cage terminals 0.5 – 1.5 mm² **Mounting / attachment:** surface / wall-mounting **Protection rating:** IP20 **Protection class:** II for loads of protection classes I and II **Max. switching current:** 3 (1) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** total 1150 W, of which 180 W for pump output **Switching element:** 5 relays **Switching contact:** 5 NO contacts **Control range:** 5 to 30 °C **Display:** installation mode, connection and status check, connection loss, learning mode are indicated per channel **Operating elements:** channel selection button, learning button	294.50 / I
HTFRL-316.125	BA120800	**General features:** 8-channel wireless temperature actuator for mounting in the heating manifold, max. 4 actuators / channel can be directly connected, including pump module, one time zone possible per channel, master-slave operation, average value calculation with up to 8 measurement points; 4 fastening screws for wall mounting; installation mode; connection and status check, connection loss, learning mode are indicated per channel. The upper part can be removed to teach the wireless sensors (via channel selection and the learn button) in the individual rooms. Central control using KTFRx (see Page 28) **Housing colour:** light grey similar to RAL 7035 **Housing material:** ABS plastic **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** −10 to +50 °C **Storage temperature:** −20 to +70 °C **Electrical connection:** spring-cage terminals 0.5 – 1.5 mm² **Mounting / attachment:** surface / wall-mounting **Protection rating:** IP20 **Protection class:** II for loads of protection classes I and II **Max. switching current:** 3 (1) A **Max. switching voltage:** 230 VAC, 50 Hz; **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** total 1150 W, of which 180 W for pump output **Switching element:** 9 relays **Switching contact:** 9 NO contacts **Control range:** 5 to 30 °C **Operating elements:** channel selection button, learn button	349.20 / I

WIRELESS SYSTEMS – ACTUATORS (HEATING)

| TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
HF-8 / 4-K2	G8000370	**General features:** optional external floor sensor for HTFRU-110.124 **Ambient temperature:** −5 to +70 °C **Protection rating:** IP65 **Sensor:** NTC **Connecting cable:** 4 m, PVC	24.00 / II
HF-8 / 6-K2	G8000368	**General features:** optional external floor sensor for HTFRU-110.124 **Ambient temperature:** −5 to +70 °C **Protection rating:** IP65 **Sensor:** NTC **Connecting cable:** 6 m, PVC	26.70 / II
WP-01	G9990180	**General features:** heat conduction paste 2 ml; R > 1 TΩ / cm, silicone-free **Ambient temperature:** −40 to +150 °C **Heat conductivity:** > 0.7 W / mK	6.60 / II
JZ-24	BN990002	**General features:** magnetic fastening set for simple and safe fastening of the multi-channel actuators on a metallic substrate (for example, heating manifold)	23.30 / II
JZ-25	BN990003	**General features:** external antenna for reception enhancement of the multi-channel actuators under difficult reception conditions (antenna cable JZ-26 is not a part of the delivery scope) **Design:** Berlin 1000 **Surface finish:** glossy **Housing colour:** pure white, similar to RAL 9010 **Housing material:** ABS plastic **Storage temperature:** −20 to +70 °C **Admissible humidity:** max. 95% rel. humidity, non-condensing **Protection rating:** IP30	66.10 / II
JZ-26	BN990004	**General features:** Antenna cable for connecting the external antenna (JZ-25) with multi-channel actuators **Connecting cable:** 1 m	39.70 / II
THF	C1809515	**General features:** heat conduction paste 2 ml; R > 1 TΩ / cm, silicone-free	40.90 / II

Suitable valve actuators, see ZBOOA-010.1xx beginning on page 128

ILLUSTRATIONS

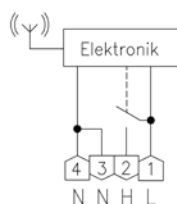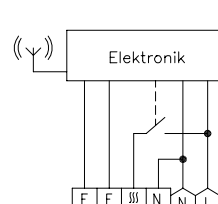**HTFRL-214.140 (4-channel)**
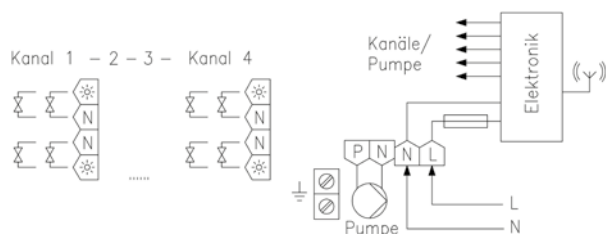
HTFRL-316.125 (8-channel)
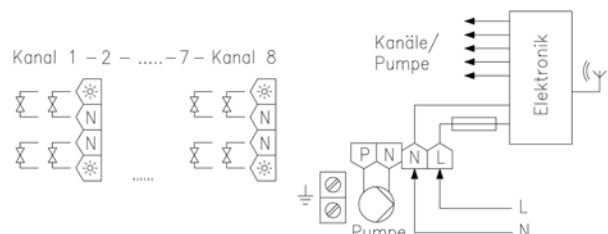
HTFRB-010.101

HTFRU-110.124

WIRELESS SYSTEMS – ACTUATORS (HEATING)

ILLUSTRATIONS

HTFMA-180.161
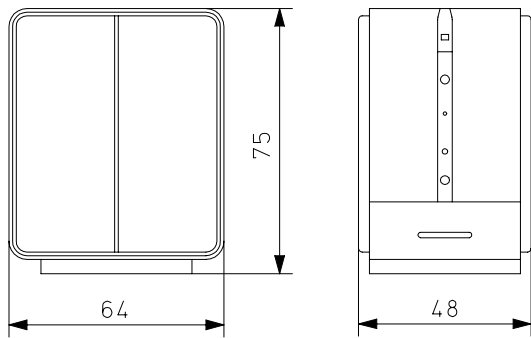
HTFRU-110.124
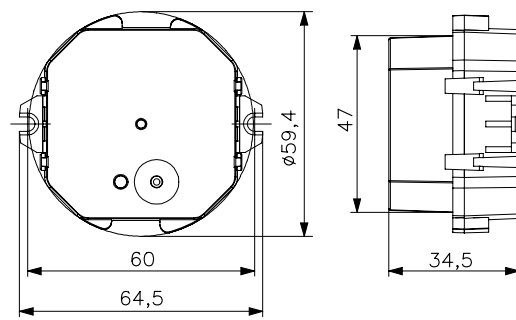
HTFRL-214.140
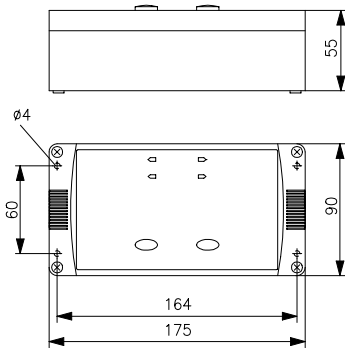
HTFRB-010.101
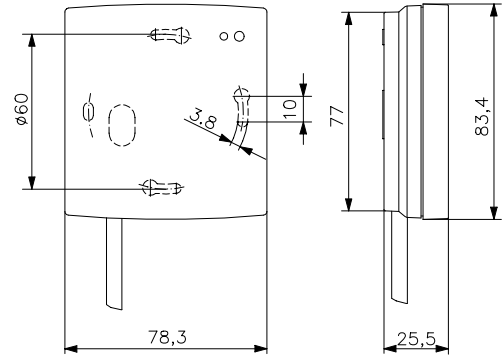
HTFRL-316.125
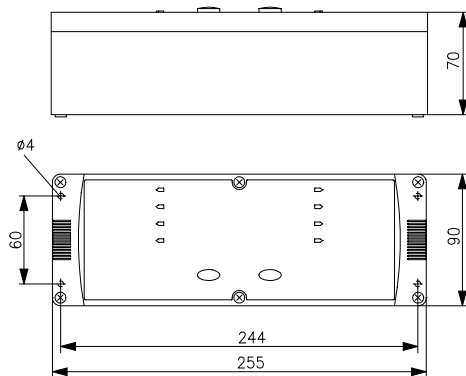
WIRELESS SYSTEMS – ACTUATORS (COOLING)

TECHNICAL DATA

Design:	'Berlin 2000'
Surface finish:	matt
Housing colour:	pure white, similar to RAL 9010
Housing material:	ABS plastic
Operating voltage:	230 V AC, 50 Hz
Ambient temperature:	−20 to +45 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals 0.5 − 2.5 mm²
Mounting / attachment:	surface- / wall-mounting (4-hole assembly on flush-mounted socket)
Protection rating:	IP30
Protection class:	II for loads of protection classes I and II
Safety and EMC:	according to DIN EN 60950-1, DIN EN 300220
Average power consumption:	approx. 1.5 W
Max. switching current:	10 (2) A
Max. / min. switching voltage:	230 V AC, 50 Hz
Switching power:	2300 W
Switching element:	relay
Switching contact:	NO contact
Output signal:	switching, 230 VAC, 50 Hz
Control range:	18 to 40 °C
Hysteresis:	approx. 0.5 K
Neutral zone:	approx. 3 K
Radio frequency:	868.3 MHz
General features:	Central control
Pipe system compatibility:	2-pipe
operating elements:	Learn button

APPLICATION

The CTFRB was specifically designed to control electrothermal valve actuators (normally closed) and works together with alre wireless room temperature sensors to establish single-room temperature control.

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
CTFRB-010.101	BA110600	**Control function:** switches on the cooling if the setpoint temperature + neutral zone are exceeded, central control, 'installation mode / function check / connection loss / learning mode' display	134.30 / I

Suitable valve actuators, see ZBOOA-010.1xx beginning on page 128

ILLUSTRATIONS
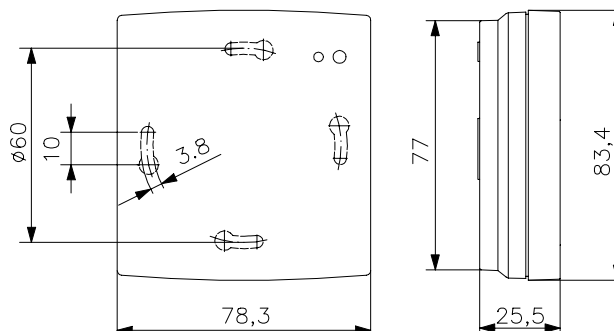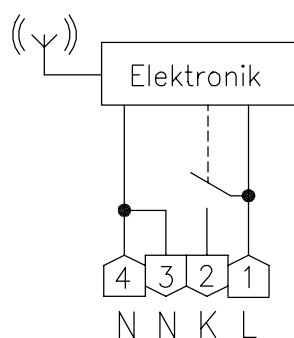
WIRELESS SYSTEMS – ACTUATORS (COOLING)

CTFRB for cooling operation, HTFRB for heating operation in a 4-pipe system

Averaging: (each actuator calculates the average value based on data from max. seven actual value sensors and a sensor with a setpoint adjuster)

Room to be controlled
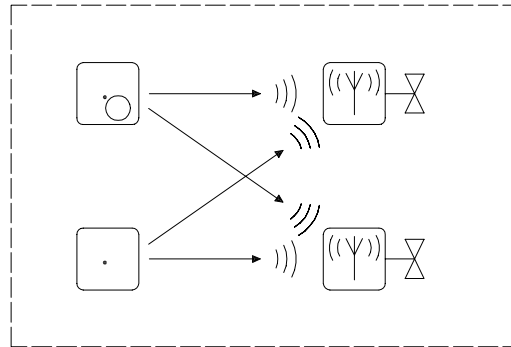
CTFRB for cooling operation, HTFRB for heating operation in a 4-pipe system

Master-slave operation: (comfort temperature through room sensor, scheduled ECO control, ON / OFF, holiday and party function in combination with a configured clock sensor)

Room to be controlled
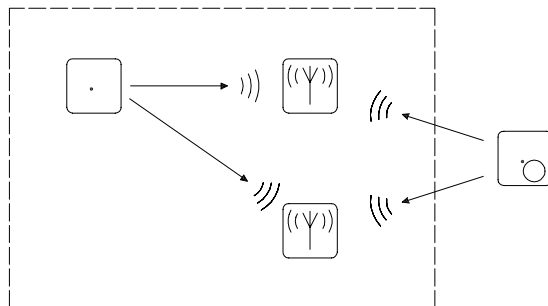
CTFRB for cooling operation, HTFRB for heating operation in a 4-pipe system

Centralised control: (one or optionally up to seven sensors without setpoint adjuster with any number of actuators; the target temperature is provided by an external sensor with setpoint adjuster)

Application: nurseries, guest accommodations, public offices and spaces

Room to be controlled
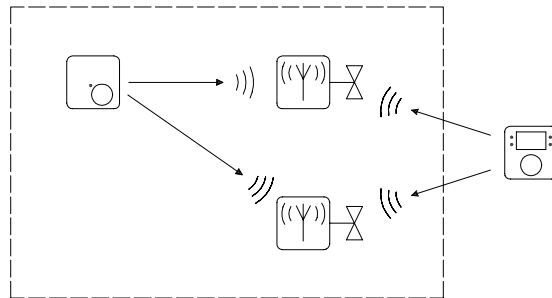
CTFRB for cooling operation, HTFRB for heating operation in a 4-pipe system

Application example: CTFRB controls the ceiling cooling system, HTFRB controls the underfloor heating system

Room to be controlled

WIRELESS SYSTEMS – ACTUATORS (HEATING / COOLING)

TECHNICAL DATA

Surface finish:	matt
Housing colour:	light grey, similar to RAL 7035
Housing material:	ABS plastic
Operating voltage:	230 V AC, 50 Hz
Ambient temperature:	−10 to +50 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	spring-cage terminals 0.5 – 1.5 mm²
Mounting / attachment:	surface / wall mounting
Protection class:	II for loads of protection classes I and II
Safety and EMC:	according to DIN EN 60950-1, DIN EN 300220
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	230 V AC, 50 Hz
Control function:	heating or cooling
Control range:	5 to 30 °C
Hysteresis:	approx. 0.5 K
Neutral zone:	adjustable 0 – 6 K
Radio frequency:	868.3 MHz
General features:	external dew point sensor; ECO function; operating mode "off with frost protection monitoring"; central control; emergency operation mode
Factory setting:	neutral zone 0 K
Operating elements:	channel selection button, learn button
Accessories:	suitable valve actuators: ZB00A-010.1xx optional magnetic fastening set for simple installation in heating manifold: JZ-24 external antenna: JZ-25 antenna cable 1 m: JZ-26
display	Installation mode, connection and status check, temperature below dew point, connection loss, learning mode are indicated per channel

APPLICATION

Wireless temperature controllers (actuators) used to implement a single-room climate control in conjunction with alre wireless room temperature sensors.

Functions: heating, cooling with adjustable neutral zone; H / C changeover on site or via an external contact; on / off switching by contact with frost protection function; individual channels can be excluded from cooli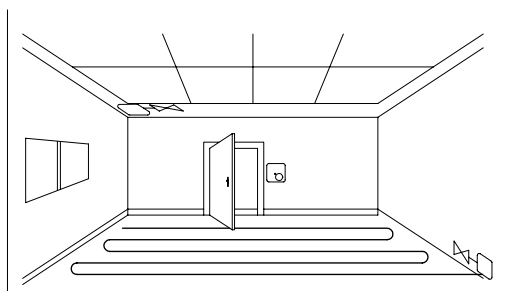ng operation; cooling interruption if condensation occurs, via dew point sensor or contact; cooling limit 18 °C; energy-saving function centrally via external timer or centrally or locally in master-slave operation, (max. 4 / 8 time zones possible, i.e., up to 4 / 8 sensors can be connected to clock); status display of the wireless connection for each channel, automatic emergency mode if connection lost;

The upper part can be removed for configuring the wireless sensors / channels in the individual rooms. The power supply is ensured during this time with a standard commercial 9-V block battery. The sensors can be configured easily using the channel selection button and a learn button. Attachment: There are 4 screws for wall attachment that are part of the standard kit; as an option, a magnetic attachment set JZ-24 for simple attachment in the heating manifold distribution cabinet can also be supplied.

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
KTFRL-213.140	BA121100	**Protection rating:** IP 20 **Max. switching current:** output 1-4: 3 (1) A **Pump output:** 0.75 A* **Total of all the outputs (4 channels + pump output):** 3 (1) A **Switching power:** total 920 W, of which 180 W is pump output **Switching element:** 5 relays **Switching contact:** 5 NO contacts	345.90 / I
KTFRL-315.125	BA120900	**Protection rating:** IP 20 **Max. switching current:** output 1-8: 3 (1) A **Pump output:** 0.75 A* **Total of all the outputs (8 channels + pump output):** 3 (1) A **Switching power:** total 1380 W, of which 180 W is pump output **Switching element:** 9 relays **Switching contact:** 9 NO contacts	409.30 / I

* Pump module included in scope of delivery

WIRELESS SYSTEMS – ACTUATORS (HEATING / COOLING)

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
JZ-24	BN990002	**General features:** Magnetic fastening set for simple and safe fastening of the multi-channel actuators on a metallic substrate (for example heating manifold)	23.30 / II
JZ-25	BN990003	**General features:** external antenna for reception enhancement of the multi-channel actuators under difficult reception conditions (antenna cable JZ-26 is not a part of the delivery scope) **Design:** Berlin 1000 **Surface finish:** glossy **Housing colour:** pure white, similar to RAL 9010 **Housing material:** ABS plastic **Storage temperature:** −20 to +70 °C **Admissible humidity:** max. 95% rel. humidity, non-condensing **Protection rating:** IP30	66.10 / II
JZ-26	BN990004	**General features:** antenna cable for connecting the external antenna (JZ-25) with multi-channel actuators **Connecting cable:** 1 m	39.70 / II

Suitable valve actuators, see ZB00A-010.1xx beginning on page 128

ILLUSTRATIONS

KTFRL-213.140 (4-channel)
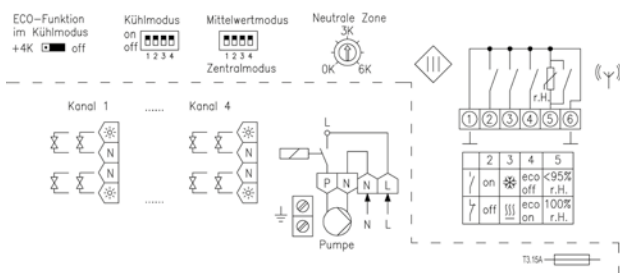
KTFRL-315.125 (8-channel)
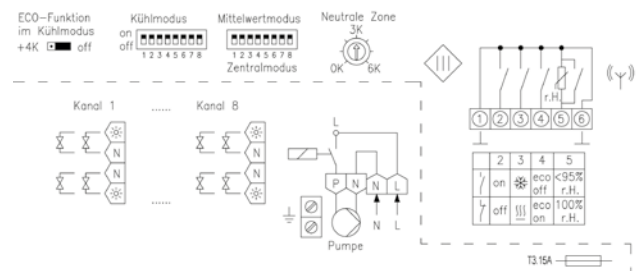
KTFRL-213.140
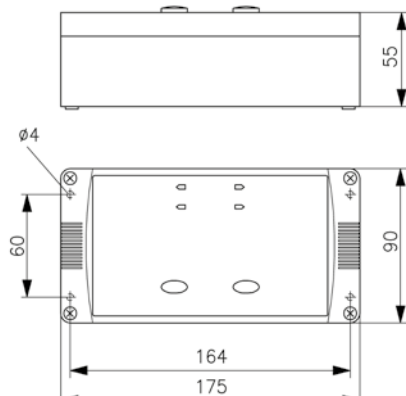
KTFRL-315.125
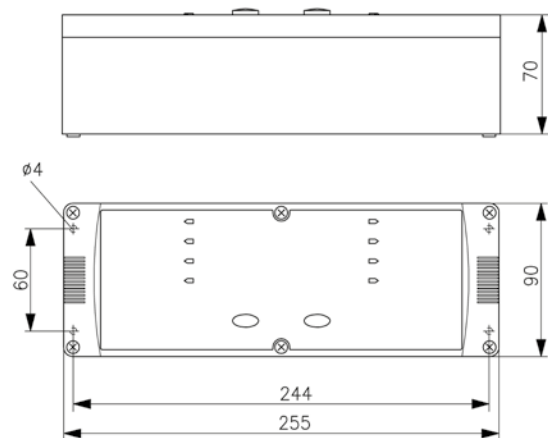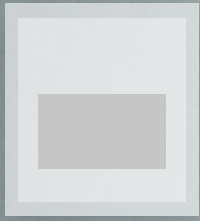
BUILDING AUTOMATION

INTELLIGENT AND FUTURE-PROOF
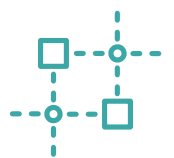
ALRE BUILDING AUTOMATION.
ALWAYS **PERFECT INDOOR CLIMATE.**

With our BACnet room controller – the only BACnet flush-mounted controller on the market – you control, regulate, monitor and optimise all central building functions such as heating, cooling or ventilation. The comfort in the building increases, the energy and operating costs decrease. According to predefined scenarios, all sensors, actuators, operating elements and other technical components in the building are networked with each other. This ensures that all components work together intelligently.

**alre building automation:
BACnet controller for efficient
building management systems.**

APPLICATION **EXAMPLES:**

+ Hot water underfloor heating
+ Electric floor heating
+ Ceiling cassettes
+ Underfloor convectors
+ Heating and cooling ceilings
+ Duct devices

OVERVIEW 32

SYSTEM INFORMATION

INDIVIDUAL COMPONENTS

BACNET ROOM CONTROLLER, FLUSH-MOUNTED KTRBUU217.456#21

BACNET ROOM CONTROLLER, FLUSH-MOUNTED KTRBUU217.456#07

BACNET ROOM CONTROLLER, FLUSH-MOUNTED KTRBUU217.456#56

BACNET ROOM CONTROLLER, FLUSH-MOUNTED KTRBUU217.456#28
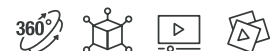
MANAGING THE FUTURE SAFELY –
SUSTAINABLY AND EFFICIENTLY

Industry 4.0, cloud computing, blockchain, smart living –
digitalisation is THE topic of today. Building automation is
also developing at a rapid pace. The latest technologies,
networked systems and constantly increasing requirements
call for intelligent, flexible and convenient solutions.

In addition to convenience and high levels of functionality,
smart systems also have a positive impact on operating costs.
Modern building automation increases the value of properties and
is therefore becoming increasingly important for rentals and sales.

With the new alre BACnet climate controller, we have developed an
innovative device especially for the requirements of individual room
control in building automation.

COMMUNICATION VIA
BACNET MS / TP

In order to use the networked functions, all building automation systems must be interconnected and open. Communication takes place via an open interface such as BACnet, for example.

The alre BACnet room controller (KTRBUu 217.456) communicates via BACnet according to DIN EN ISO 16484-5 with the BACnet MS/TP network protocol. This makes it compatible with all common building automation systems. It corresponds to the BACnet profile 'B-AAC' (BACnet Advanced Application Controller) and is therefore much more than a simple setpoint generator.

In contrast to other fieldbus interfaces such as LON or KNX, the BACnet interface does not require an additional gateway for implementation and communication with the management level. This saves costs because service technicians with different qualifications are not required to commission the system. A further cost saving compared to distributed solutions is achieved by combining the room control unit and individual room controller in one device.

The BACnet individual room controller is therefore extremely versatile – in residential, office and business premises, in hotels, schools, hospitals and more.

The BACnet room controller has been awarded the BTL certificate for compliance with the BACnet standard ISO 16484-5, which has been proven by means of a BTL compliance test.

YOUR ADVANTAGES FOR ALL FIELDS OF APPLICATION:

+ Individual room controller with controller function (B-AAC)
+ Flush-mounted – integration in all common switch ranges (50 mm / 55 mm / 60 mm)
+ Selectable application for various user applications
+ Cost benefit for investment and commissioning
+ No additional gateways required (BACnet MS / TP)
+ Reduction of installation and operating costs

RESIDENTIAL

HOTEL

OFFICE

SCHOOLS

HOSPITAL

INDUSTRY

ALRE BACNET INDIVIDUAL ROOM CONTROLLER
CONNECTION OPTIONS

The alre BACnet room controller with graphic display is suitable for time-dependent heating and cooling operation in 2 or 4-pipe systems.

The device has two inputs and three outputs. Two of the outputs switch relays, each of which can address up to 5 actuators. The third output is analogue (0-10 V) and can be used, for example, for EC fan control.

One of the two inputs is used for BACnet communication. The other can be configured to connect sensors, for example for temperature or dew point. Windows or presence contacts can be connected via BACnet.

TECHNICAL HIGHLIGHTS AND FEATURES

+ Internal temperature sensor
+ Connectible external dew point sensor
+ Connectible external dew point sensor
+ MS / TP interface
+ 0 – 10 V EC fan coil
+ I / O mix integrated in device
+ 6-way valve

* depending on existing application

BMS

BACnet MS / TP   Presence detector*   Window contact*   Temperature   Dew point

or

or

Room 1

Room 03, Room 04, ...

Room 2

COMFORT
20.0°C
23.0°C
Mode Menü Fn

Heating valve   Cooling valve   EC 0 – 10 V   6-way valve
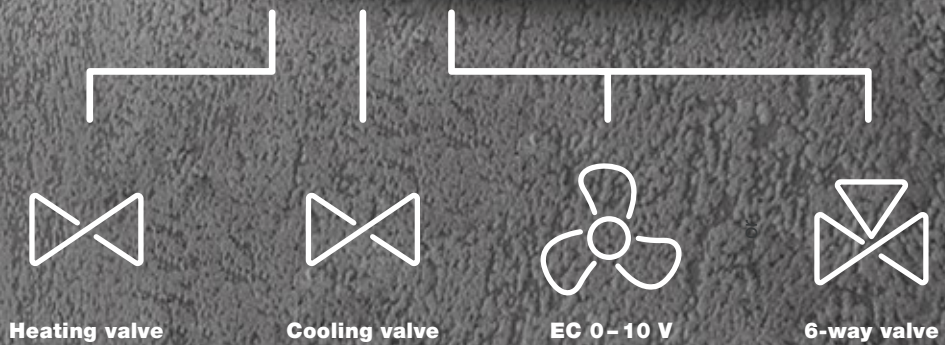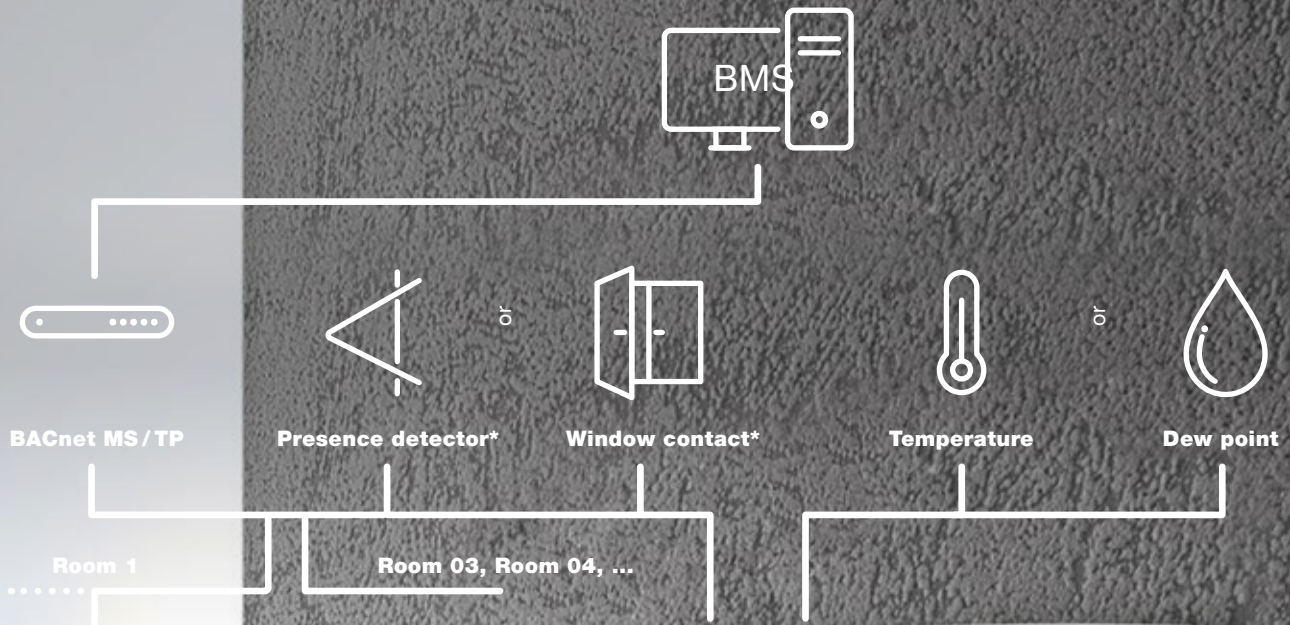
ALRE BACNET INDIVIDUAL ROOM CONTROLLER/
HEATING AND COOLING CEILING APPLICATION EXAMPLE

Planners prefer heating and cooling ceilings for comfortable air conditioning in buildings because it prevents draughts or disturbing noises. With its pre-configured system diagrams, the alre BACnet individual room controller (KTRBUu 217.456) supports the most common air conditioning applications.

The 'cooling and heating ceiling in 4-pipe system' variant controls heating and cooling valves, monitors the dew point and interrupts cooling operation if condensation begins to form.

The control range of the BACnet individual room controller is determined by the building management system. If this fails, the controller also functions independently and maintains control operation in the room.

BMS

BACnet IP

BACnet MS/TP

Dew point

BACnet room controller

23.0°C

Cooling valve   Heating valve   6-way valve

WIDE RANGE OF APPLICATIONS

FLOOR HEATING SYSTEMS

DUCT DEVICES
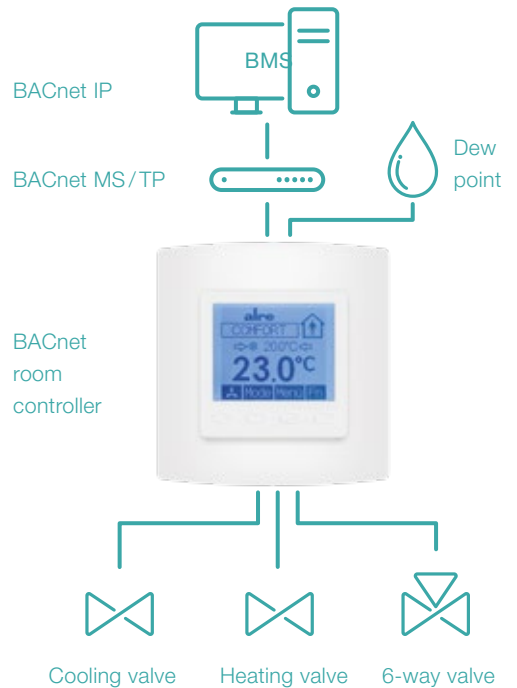
UNDERFLOOR CONVECTOR AND UNDERFLOOR HEATING
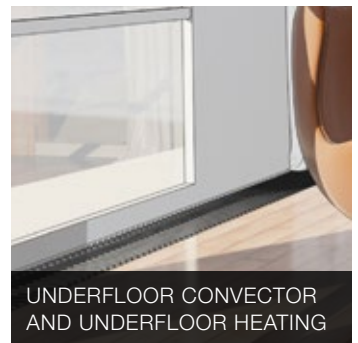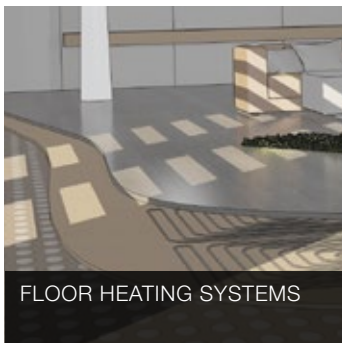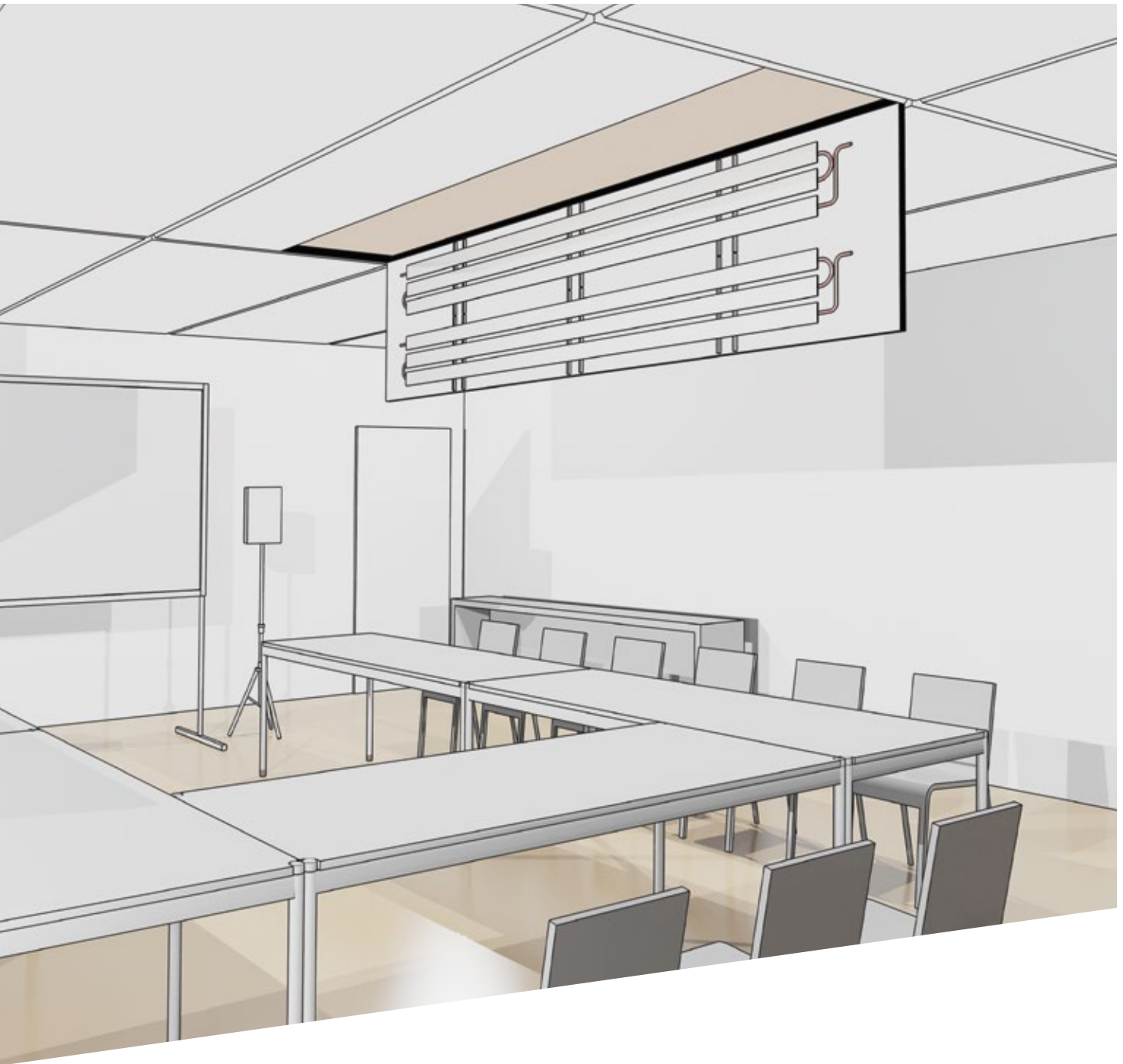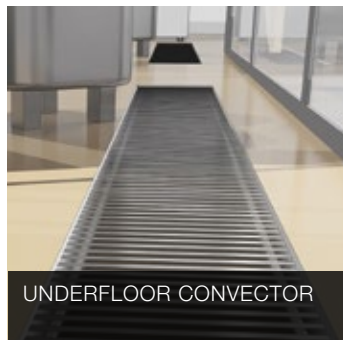
| CEILING CASSETTES | UNDERFLOOR CONVECTOR | UNDERFLOOR HEATING AND CEILING CASSETTES |

SUITABLE FOR ALL
CURRENT SWITCH RANGES

The alre BACnet individual room controller is mounted in a flush-mounted socket. The housing fits exactly into design frames of sizes 50x50 mm, 55x55 mm and 60x60 mm from surface switch ranges of well-known manufacturers such as Berker, Busch-Jaeger, Gira, Jung, Merten, Peha, Hager or Feller (CH).

Check out the product video now!

KTRBUu 217.456 in
BERKER S.1

KTRBUu 217.456 in
BUSCH-JAEGER balance SI

KTRBUu 217.456 in
GIRA standard 55

KTRBUu 217.456 in
JUNG AS 500

KTRBUu 217.456 in
MERTEN 1-M

INTEGRATION
EXAMPLES

of the BACnet individual room controller in switch ranges from various manufacturers.

All variants also fit in multiple frames from all well-known manufacturers. Also available in special colours anthracite and aluminium on request.

OVERVIEW BACNET ROOM CONTROLLER APPLICATION

2 = 2-pipe system
4 = 4-pipe system
RA = Radiator
FB = Floor temperature control
KD = Ceiling temperature control
UK = Underfloor convector
HR = Heating coil
KR = Cooling coil

TYPE	APPLICATION	SYSTEMS								EXT. SENSORS					ACTUATORS					
		2-pipe system	4-pipe system	Radiator	Floor temperature control	Ceiling temperature control	Underfloor convector	Heating coil	Cooling coil	TP Dew point sensor	TB Temperature limiter	Supply air temperature	Room air temperature	Floor screed temperature	Fan 0–10 V	VAV 0–10 V	Heating valve	Cooling valve	Heating / cooling valve	6-way ball valve 0–10 V
2-pipe system underfloor heating with screed temperature sensor	2FB001	•			•									•			•			
2-pipe system underfloor heating with limiter	2FB002	•			•						•						•			
2-pipe system cooling / heating ceiling with dew point monitor	2KD001	•				•				•									•	
2-pipe system heating / cooling coil with fan and supply air temperature	2HRKR001	•						•	•			•			•				•	
2-pipe system with radiator with external room temperature sensor	2RA001	•		•									•				•			
4-pipe system radiator (heating), cooling ceiling with dew point monitor	4RAKD001		•	•		•				•							•	•		
4-pipe system radiator, cooling coil with fan and supply air temperature limitation*	4RAKR001		•	•					•		•				•		•	•		
2-pipe system underfloor convector with room temperature sensor and fan	2UK001	•					•						•		•				•	
4-pipe system floor temperature control with temperature limiter	4FB001		•		•						•						•	•		
4-pipe system cooling / heating ceiling with dew point monitor and 6-way ball valve	4KD001		•			•				•										•
4-pipe system cooling / heating ceiling with dew point monitor and VAV	4KD002		•			•				•						•	•	•		
4-pipe system cooling / heating ceiling with dew point monitor	4KD003		•			•				•							•	•		
4-pipe system heating and cooling coil with fan and supply air temperature	4HRKR001		•					•	•			•			•		•	•		
4-pipe system underfloor convector with dew point monitor and fan	4UK001		•				•			•					•		•	•		

BACNET ROOM CONTROLLER KTRBUU
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TECHNICAL DATA

Design:	Berlin UP
Housing material:	PC, PMMA, ABS plastic
Operating voltage:	230 V AC, 50 Hz
Ambient temperature:	0 to 40 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	pluggable screw terminals, mains voltage side 0.75 – 2.5 mm²; low voltage side 0.08 - 1.5 mm²
Mounting / attachment:	In flush-mounted socket – can be adapted to fit virtually any switch range (deep flush-mounted socket recommended) see adaptation list on Page 50
Protection rating:	IP30
Protection class:	II
Safety and EMC:	according to DIN EN 60730
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	230 V AC, 50 Hz
Switching power:	690 W
Max. power consumption:	approx. 1 W (2.2 VA)
Max. switching current:	per 3 (0.5) A (max. 5 valve actuators per output)
Switching element:	2 relays
Switching contact:	2 NO contacts
Output signal:	Switching heating, cooling, heating / cooling, analogue 0 – 10 V (5 mA) to control a speed-controlled fan
Sensor:	internal NTC, optional external 'Sensor 2' * (NTC 47k), dew point sensor
Control range:	5 to 40 °C
Setting range:	standard setting range for heating (5 to 30 °C), second setting range for cooling (18 to 40 °C)
Hysteresis:	< 1 K
Display type:	illuminated graphical display
Pipe system compatibility:	2-pipe and 4-pipe
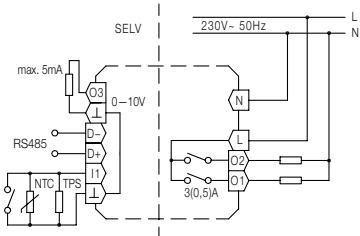
APPLICATION

The alre BACnet individual room controller with graphic display was specially developed for time-dependent heating and cooling operation in 2 or 4-pipe systems. The controller can be used in a wide range of applications, such as hotels, residential, office and business premises as well as hospitals and schools.

The communication takes place via BACnet according to DIN EN ISO 16484-5 with the BACnet MS/TP network protocol. The room controller is therefore compatible with all common building automation systems. The controller corresponds to the BACnet profile 'B-AAC' (BACnet Advanced Application Controller).

The predefined applications cover a wide range of applications for room temperature control in room automation.

Special colours as well as the colours anthracite and aluminium are available for projects upon request.

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
KTRBUu217.456#21	UA230000	**Surface finish:** glossy **Housing colour:** pure white, similar to RAL 9010 **Scope of delivery:** controller, 50x50 mm cover, pure white (similar to RAL 9010), glossy, alre frame 'Berlin'		437.40 / IV

* Depending on the selected system scheme, a menu setting can be used to select whether control should be based on the internal or external sensor. In the intermediate positions, if both sensors are used, a weighting is applied to the internal room sensor and the external temperature sensor. The weighting allows for compensation of different structural conditions such as large window areas or cardinal directions. For very slow controlled systems, it is recommended to assign a higher weighting to the temperature sensor than to the internal room sensor.

BACNET ROOM CONTROLLER KTRBUU
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
KTRBUu217.456#07	UA230002	Similar to KTRBUu217.456#21 but scope of delivery as follows: controller, **50x50** mm cover **pure white** (similar to RAL 9010), **glossy,** without frame		433.60 / IV
KTRBUu217.456#09	UA230003	Similar to KTRRUu217.456#21 but with delivery scope: controller, 50x50 mm cover **pearl white** (similar to RAL 1013), **glossy,** without frame		433.60 / IV
KTRBUu217.456#27	UA230004	Similar to KTRBUu217.456#21 but scope of delivery as follows: controller, **50x50** mm cover **traffic / studio white** (similar to RAL 9016), **glossy,**without frame		433.60 / IV
KTRBUu217.456#28	UA230007	Similar to KTRBUu217.456 but scope of delivery as follows: controller, cover **suitable for BUS-CH-JAEGER Reflex SI / SI Linear pure white** (similar to RAL 9010), **glossy,** without frame		435.30 / IV
KTRBUu217.456#55	UA230005	Similar to KTRBUu217.456#21 but scope of delivery as follows: controller, **55x55** mm cover **pure white** (similar to RAL 9010), **glossy,** without frame		435.30 / IV
KTRBUu217.456#56	UA230009	Similar to KTRBUu217.456#21 but scope of delivery as follows: controller, **55x55** mm cover **pure white** (similar to RAL 9010), **matt** without frame		435.30 / IV
KTRBUu217.456#57	UA230006	Similar to KTRBUu217.456#21 but scope of delivery as follows: controller, **55x55** mm cover **pearl white** (similar to RAL 1013), **glossy,** without frame		435.30 / IV
KTRBUu217.456#59	UA230008	Similar to KTRBUu217.456#21 but scope of delivery as follows: controller, **55x55** mm cover **traffic / studio white** (similar to RAL 9016), **glossy,** without frame		435.30 / IV

BACNET ROOM CONTROLLER KTRBUU
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-090.900	VV000025	**Design:** Berlin **Surface finish:** glossy **Housing colour:** pure white, similar to RAL 9010 **Housing material:** PC plastic **General features:** alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50x50 mm cover	4.20 / I
JZ-090.100	VV000048	**Features:** similar to JZ-090.900, but for all flush-mounted controllers with 55x55 mm cover	4.20 / I
JZ-090.910	VV000010	**Design:** Berlin **Surface finish:** glossy **Housing colour:** pearl white, similar to RAL 1013 **Housing material:** PC plastic **General features:** alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50x50 mm cover	4.20 / I
TPS 1	G8000299	Dew point sensor to detect and report the dew point (Page 158) **Mounting / attachment:** using clips on cooling ceiling capillary pipe **Use:** drywall cooling ceiling (plasterboard) with hung up capillary tube mat, metal cooling ceiling with integrated capillary pipe system **Sensor wire extendible up to:** 50 m with 2x0.5 mm² **Scope of delivery:** sensor, 2 clips for cooling pad	63.30 / I
TPS 2	G8000300	Dew point sensor to detect and report the dew point (see also 'Air conditioning technology' section, page 158) **Mounting / attachment:** using clips on cooling ceiling capillary pipe or cable ties on the pipe **Use:** Pipe systems transporting cold water, plaster cooling ceiling with capillary tube system **Sensor wire extendible up to:** 50 m with 2x0.5 mm² **Scope of delivery:** Sensor, 2 clips for cooling pad, 2 cable ties	63.30 / I
TPS 3	SN120000	Dew point sensor to detect and report the dew point (see also 'Air conditioning technology' section, page 158) **Mounting / attachment:** attach to pipe by means of cable ties **Use:** piped cold-water systems **Sensor wire extendible up to:** 50 m with 2x0.5 mm² **Scope of delivery:** Sensor, 2 cable ties	56.60 / I
BTF2-C47-0000	SA140014	Surface-mounted 'ultra-thin' room temperature sensor for temperature measurement in residential and business premises (see also 'Sensor technology' section, page 228) **Mounting / attachment:** surface / wall mounting (4-hole assembly on flush-mounted socket) **Housing colour:** pure white, similar to RAL 9010, glossy **Housing material:** ABS plastic **Ambient temperature:** −10 to +50 °C **Admissible humidity:** max. 95% rel. humidity, non-condensing **Protection rating:** IP30 **Protection class:** III **Electrical connection:** screw-type terminals 0.33 mm² – 1.5 mm²	27.20 / III
FUFC 47-0000	SN090198	Flush-mounted room temperature sensor for temperature measurement in residential and business premises (see also 'Sensor technology' section, page 229) **Mounting / attachment:** in flush-mounted socket, can be adapted to fit virtually any 50x50 mm surface switch range **Housing colour:** pure white, similar to RAL 9010, glossy **Housing material:** PC plastic **Ambient temperature:** −10 to +50 °C **Admissible humidity:** max. 95% rel. humidity, non-condensing **Protection rating:** IP30 **Protection class:** III **Electrical connection:** screw-type terminals 0.5 mm² – 1.5 mm²	34.50 / III

BACNET ROOM CONTROLLER KTRBUU
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

| ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
AF-2	G9040380	Temperature sensor for temperature measurement outdoors and in humid areas, special protection against dust and humidity (see also 'Sensor technology' section, page 231) **Mounting / attachment:** surface / wall mounting **Housing colour:** pure white, similar to RAL 9010 **Housing material:** PA plastic (30% GF reinforced) **Ambient temperature:** −30 to +70 °C **Admissible humidity:** max. 95% rel. humidity, non-condensing **Protection rating:** IP65 **Protection class:** III **Electrical connection:** screw-type terminals 0.14 mm² – 2.5 mm²	24.50 / III
KF-2	G9031446	Cable temperature sensor for temperature measurement / temperature limiting of the floor or supply air (see also 'Sensor technology' section, page 233) **Mounting / attachment:** in immersion sleeve, protection coil, on pipe, etc. **Cable material / length:** PE, 1.5 m **Sensor sleeve material:** V4A (1.4571) **Ambient temperature:** −35 to +100 °C **Admissible humidity:** max. 95% rel. humidity, non-condensing **Protection rating:** IP 67 **Protection class:** III **Electrical connection:** only to safety extra low voltage max. 30 VAC / 42 VDC	28.40 / III
ZB00A-010.100	H9100010	Electro-thermal valve actuator (see also Heating / Air conditioning technology section) **Mounting / attachment:** M 30 x 1.5 **Housing colour:** pure white, similar to RAL 9010 **Housing material:** PC plastic, GF (20%) **Operating voltage:** 230 V~, 50 Hz **Max. power consumption:** 70 W **Max. starting current:** approx. 0.3 A **Ambient temperature:** 0 to 50 °C **Storage temperature:** −20 to +70 °C **Admissible humidity:** max. 95% rel. humidity, non-condensing **Protection rating:** IP42 **Protection class:** II **Average power consumption:** approx. 3 W **Opening / closing time:** approx. 4 min **Nominal stroke:** 3 mm **Function type:** normally closed **Nominal closing force:** 90 N **Connecting cable:** 0.8 m / 2x0.5 mm²	30.60 / I
ZB00A-010.185	G8990010	Electrothermal valve actuator for fully automatic hydraulic balancing **Mounting / attachment:** M 30 x 1.5 **Housing colour:** grey-orange **Housing material:** PA6 plastic **Operating voltage:** 230 V~, 50 Hz **Max. power consumption:** 30 W **Max. starting current:** approx. 0.13 A **Ambient temperature:** 0 to 50 °C **Storage temperature:** −20 to +60 °C **Admissible humidity:** max. 95% rel. humidity, non-condensing **Protection rating:** IP42 **Protection class:** II **Average power consumption:** 1.7 W **Opening / closing time:** approx. 3 min **Nominal stroke:** 3.5 mm **Function type:** normally closed **Nominal closing force:** 110 N **Connecting cable:** 1 m / 2x0.34 mm²	78.40 / I

BACNET ROOM CONTROLLER KTRBUU
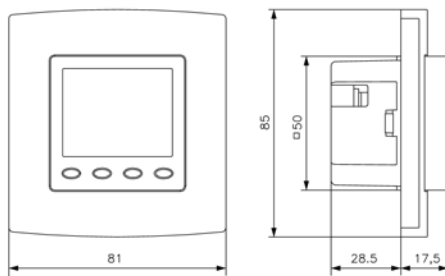## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

ILLUSTRATIONS

KTRBUu with alre frame 'Berlin'

Pluggable screw-type terminals
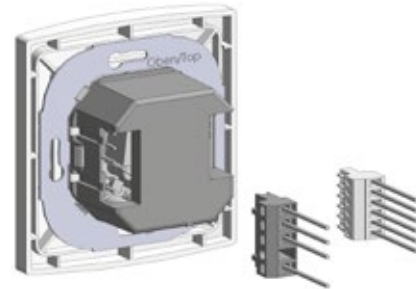
KTRBUu with alre frame 'Berlin'

ALRE BACNET INDIVIDUAL ROOM CONTROLLER ADAPTATION
KTRBUU217.456 – FLUSH-MOUNTED

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION in switch range (55x55) possible with…	'50X50' adaptation possible with … (insert frame from manufacturer required)
BERKER	S.1	polar white (matt)	KTRBUu217.456#56	not required
BERKER	S.1	polar white (glossy)	KTRBUu217.456#55	not required
BERKER	Arsys	polar white (glossy)		KTRBUu217.456#07 + 1108 01 69
BERKER	B.3	aluminium / polar white (matt)	KTRBUu217.456#56	not required
BERKER	B.3	aluminium / polar white (glossy)	KTRBUu217.456#55	not required
BERKER	B.7	glass / polar white (matt)	KTRBUu217.456#56	not required
BERKER	B.7	glass / polar white (glossy)	KTRBUu217.456#55	not required
BERKER	K.1	polar white (glossy)		KTRBUu217.456#07 + 1108 71 09
BUSCH-JAEGER	Reflex SI / SI Linear	alpine white (glossy)	KTRBUu217.456#28	not required
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)	KTRBUu217.456#55	not required
BUSCH-JAEGER	impuls	alpine white (glossy)		KTRBUu217.456#07 + 1746 / 10-74
BUSCH-JAEGER	solo / future / axcent etc.	studio white – see RAL 9016 below		
Elso	Joy	pure white (glossy)	KTRBUu217.456#55	not required
Elso	Fashion / Riva / Scala	pure white (glossy)		KTRBUu217.456#07 + (203084)
GIRA	surface switch	pure white (glossy)		KTRBUu217.456#07 + 0282 112
GIRA (System 55)	Standard / E2	pure white (semi-gloss)	KTRBUu217.456#56	not required
GIRA (System 55)	Standard / E2 / E3	pure white (glossy)	KTRBUu217.456#55	not required
GIRA (System 55)	E22	pure white (glossy)	KTRBUu217.456#55	not required
GIRA (System 55)	Event	pure white (semi-gloss) + opaque…	KTRBUu217.456#56	not required
GIRA (System 55)	Event	pure white (glossy) + opaque…	KTRBUu217.456#55	not required
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium…	KTRBUu217.456#56	not required
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium…	KTRBUu217.456#55	not required
GIRA	S-Color	pure white (high-gloss)		KTRBUu217.456#07 + 0282 40
JUNG	CD 500 / CD plus	alpine white (glossy)		KTRBUu217.456#07 + CD 590 Z WW
JUNG	A 500 / A 550 / AS 500 / A plus / A flow	alpine white (glossy)	KTRBUu217.456#55	not required
JUNG	LS 990	alpine white (glossy)		KTRBUu217.456#07 + LS 961 Z WW
JUNG	LS plus	alpine white (glass)		KTRBUu217.456#07 + LS 961 Z WW
JUNG	A creation	alpine white (glossy)	KTRBUu217.456#55	not required
JUNG	LS Design	alpine white (glossy)		KTRBUu217.456#07 + LS 961 Z WW
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	KTRBUu217.456#56	not required
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)	KTRBUu217.456#55	not required
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)	KTRBUu217.456#55	not required
MERTEN (Surface System)	Artec / Antik	polar white (glossy)		KTRBUu217.456#07 + 5160 99
MERTEN	1-M / M-Smart / M-Plan / M-Pure / D-Life	active white – see RAL 9016 below		
PEHA	Standard	pure white (glossy)		KTRBUu217.456#07 + 80.670.02 ZV
PEHA	Dialog	pure white (glossy)		KTRBUu217.456#07 + 95.670.02 ZV
PEHA	Aura	pure white (matt) / glass		KTRBUu217.456#07 + 20.670.02 ZV
PEHA	Badora	pure white (glossy)		KTRBUu217.456#07 + 11.670.02 ZV

MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION in switch range (55x55) possible with…	To ADAPT KTRBUu size 50x50, an insert frame from the manufacturer is required
BUSCH-JAEGER	solo / future / future linear	studio white (RAL 9016, glossy)		KTRBUu217.456#27 + 1746 / 10-84
BUSCH-JAEGER	axcent	studio white (RAL 9016, glossy)		KTRBUu217.456#27 + 1746 / 10-84
BUSCH-JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016)		KTRBUu217.456#27 + 1746 / 10-84
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016, glossy)		KTRBUu217.456#27 + 1746 / 10-24G
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	KTRBUu217.456#59	not required
MERTEN	1-M / Atelier-M	active white (RAL 9016, glossy)	KTRBUu217.456#59	not required
Merten	D-Life	lotus white (RAL 9016)		KTRBUu217.456#27 + MEG4500-6035
PEHA	Standard	arctic		KTRBUu217.456#27 + D 80.670 ZV AW

*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame.

NOTE: Most light switches are designed in the colour 'similar to RAL 9010', although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt / glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

'50x50 controller': The housing covers of the 50x50 controllers are 50x50 mm in size. Using a 50x50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50x50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch range in question can be found in the column 'For adaptation of "50x50" KTRBUu'.

'55x55 controller': The housing covers of the 55x55 controllers are 55x55 mm in size. Many light switch ranges have inner dimensions of 55x55 mm. Therefore, the 55x55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column 'Adaptation in switch range (55x55)' to determine whether the 55x55 controller fits in the given light switch range (KTRBUu217.456#xx).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12 / 2022 | No liability is assumed for the information provided. | Technical specifications subject to change.

HEATING TECHNOLOGY

ENERGY-EFFICIENT AND TIMELESS

ALRE HEATING TECHNOLOGY.
COMFORTABLE TEMPERATURE
IN EVERY ROOM.

In our range of heating technology products, you can find the perfect thermostat for any requirement. Configurable daily programs with display controllers ensure energy-efficient heating. Our surface-mounted thermostats are among the slimmest in the world and are hallmarked by timeless design, quality and long service life. They control and monitor the temperature in offices, homes, hotels and hospitals. Our assortment of variants meet any requirement. Our flush-mounted thermostats fit all switch ranges and are available in various RAL colours for optimal colour matching.

alre thermostats:
designed and made in Germany
for energy-efficient heating.

APPLICATION
EXAMPLES:

+ Hot water underfloor heating
+ Electric underfloor heating systems
+ Natural stone heating systems
+ Night storage heating systems
+ Tiled stove heating systems
+ Partial air conditioners
+ Mobile radiators
+ Accessories such as terminal strips and actuators

OVERVIEW 54

ROOM / FLOOR TEMPERATURE CONTROLLERS

TERMINAL STRIPS FOR HEATING MANIFOLDS / VALVE ACTUATORS

ROOM TEMPERATURE SENSOR, SURFACE-MOUNTED ULTRA-SLIM, RTBSB

ROOM TEMPERATURE CONTROLLER, MECHANICAL, FTR
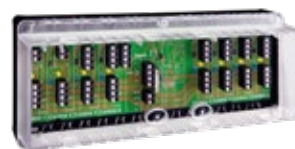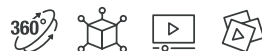
TERMINAL STRIP FOR HEATING MANIFOLD
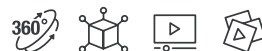
ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSU

HEATING CONTROLLER OVERVIEW

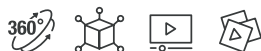| TYPE	RTBSB- 001.000	001.002	001.010	001.026	001.045	001.048	001.062	001.065	001.086	001.096	001.110	001.202	001.500	001.910	001.910/2	001.948/1	201.000	201.002	201.010	201.034	201.062	201.065	201.202	201.500	001.401	001.411
PAGE	58	58	59	59	59	60	60	60	60	61	61	61	61	62	62	63	64	64	65	65	65	65	65	66	68	69
HOUSING DESIGN																										
Berlin 1000																	x	x	x	x	x	x	x	x		
Berlin 2000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x										
Berlin 3000																										
Berlin flush-mounted																										
Berlin 2000 with plug																									x	x
SENSOR																										
Bimetal (NC contact)	x	x					x		x	x		x	x				x	x		x	x		x	x	x	x
Bimetal (toggler)			x	x	x	x		x			x			x	x	x			x			x				
NTC, internal																										
NTC, external																										
NTC for floor monitoring																										
CONTROL TYPE																										
Heating controller	x	x	x*	x*	x*	x*	x	x*	x	x	x*	x	x	x*	x*	x*	x	x	x*	x	x	x*	x	x	x	x
Cooling function		x		x	x				x		x			x	x	x			x			x				
Cooling function with fan output				x																						
Model with clock																										
PIPE SYSTEM																										
Air conditioning controller in 2-pipe system			x	x	x	x			x		x			x	x	x			x			x				
Air conditioning controller in 4-pipe system																										
APPLICATION																										
Natural stone heating								x	x																	
Tiled stove heating																										
Electric direct heating systems								x	x																x	x
Electric floor heating																										
Night storage heater																										
Hot water floor heating	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Partial air conditioner			x	x	x	x			x		x			x	x	x			x			x				
FEATURES																										
Output 'temperature reduction'																										
Input 'temperature reduction'		x					x					x		x	x			x			x		x			
Switch 'On/Off'					x		x														x					
Switch 'Heating/Cooling'								x														x				
Switch 'Heating/Off/Cooling'																										
Switch 'Reduction/Comfort/Automatic'																										
Switch 'auxiliary heating'																										
Display																										
Display with backlighting																										
Indicator lamp 'heating'							x			x										x	x					
Indicator lamp 'reduction'																										
Indicator lamp 'auxiliary heating'																										
TECHNOLOGY																										
Control range −20 to +30 °C					x																					
Control range 5 to 30 °C	x	x	x	x			x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x
Control range 10 to 42 °C																										
Control range 10 to 50 °C																										
Control range 10 to 60 °C						x										x										
Control range 20 to 80 °C																										
3000 W switching power								x	x																x	x
internal setting														x	x	x										
2-wire connection													x											x		
24 V~												x			x								x			
230 V~	x	x	x	x	x	x	x	x	x	x				x			x	x	x	x	x	x			x	x
24 V~ or 230 V~											x					x										

x* Heating controllers using normally open valve actuators

HEATING CONTROLLER OVERVIEW

TYPE	RTBSU-														
	401.000	401.002	401.010	401.034	401.052	401.062	401.063	401.065	401.075	401.086	401.202	401.210	401.262	401.265	401.902
PAGE	74	75	75	75	76	76	76	76	77	77	77	78	78	78	79
HOUSING DESIGN															
Berlin 1000															
Berlin 2000															
Berlin 3000															
Berlin flush-mounted	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Berlin 2000 with plug															
SENSOR															
Bimetal (NC contact)	x	x		x	x	x			x	x	x		x		x
Bimetal (toggler)			x				x	x				x		x	
NTC, internal															
NTC, external															
NTC for floor monitoring															
CONTROL TYPE															
Heating controller	x	x	x*	x	x	x	x	x*	x	x	x*	x	x*		x
Cooling function			x				x	x				x		x	
Cooling function with fan output															
Model with clock															
PIPE SYSTEM															
Air conditioning controller in 2-pipe system			x				x	x				x		x	
Air conditioning controller in 4-pipe system															
APPLICATION															
Natural stone heating										x					
Tiled stove heating															
Electric direct heating systems										x					
Electric floor heating															
Night storage heater				x											
Hot water floor heating	x	x	x	x		x	x	x	x		x	x	x	x	x
Partial air conditioner			x				x	x				x		x	
FEATURES															
Output 'temperature reduction'															
Input 'temperature reduction'		x		x		x			x		x		x		x
Switch 'On / Off'						x							x		
Switch 'Heating / Cooling'								x						x	
Switch 'Heating / Off / Cooling'							x								
Switch 'Reduction / Comfort / Automatic'									x						
Switch 'auxiliary heating'				x											
Display															
Display with backlighting															
Indicator lamp 'heating'			x			x						x			
Indicator lamp 'reduction'									x						
Indicator lamp 'auxiliary heating'				x											
TECHNOLOGY															
Control range −20 to +30 °C															
Control range 5 to 30 °C	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Control range 10 to 42 °C															
Control range 10 to 50 °C															
Control range 10 to 60 °C				x											x
Control range 20 to 80 °C															
3000 W switching power										x					
internal setting															x
2-wire connection															
24 V~											x	x	x	x	
230 V~	x	x	x	x	x	x	x	x	x	x					x
24 V~ or 230 V~															

HEATING CONTROLLER OVERVIEW

TYPE	FTR														
	101.000	101.002	101.010	101.034	101.052	101.062	101.063	101.065	101.075	101.086	101.202	101.210	101.262	101.265	101.902
PAGE	94	95	95	95	96	96	96	96	97	97	97	98	98	98	99
HOUSING DESIGN															
Berlin 1000															
Berlin 2000															
Berlin 3000															
Berlin flush-mounted	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Berlin 2000 with plug															
SENSOR															
Bimetal (NC contact)	x	x		x	x	x			x	x	x		x		x
Bimetal (toggler)			x				x	x				x		x	
NTC, internal															
NTC, external															
NTC for floor monitoring															
CONTROL TYPE															
Heating controller	x	x	x*	x	x	x	x	x*	x	x	x	x*	x	x*	x
Cooling function			x				x	x				x		x	
Cooling function with fan output															
Model with clock															
PIPE SYSTEM															
Air conditioning controller in 2-pipe system			x				x	x				x		x	
Air conditioning controller in 4-pipe system															
APPLICATION															
Natural stone heating										x					
Tiled stove heating															
Electric direct heating systems										x					
Electric floor heating															
Night storage heater					x										
Hot water floor heating	x	x	x	x			x	x	x	x	x	x	x	x	x
Partial air conditioner			x				x	x				x		x	
FEATURES															
Output 'temperature reduction'															
Input 'temperature reduction'	x						x				x		x	x	
Switch 'On/Off'			x				x								
Switch 'Heating/Cooling'								x							
Switch 'Heating/Off/Cooling'							x								
Switch 'Reduction/Comfort/Automatic'															
Switch 'auxiliary heating'															
Display															
Display with backlighting															
Indicator lamp 'heating'							x		x						
Indicator lamp 'reduction'															
Indicator lamp 'auxiliary heating'															
TECHNOLOGY															
Control range −20 to +30 °C				x											
Control range 5 to 30 °C	x	x	x			x	x	x	x	x	x	x	x	x	
Control range 10 to 42 °C															
Control range 10 to 50 °C															
Control range 10 to 60 °C					x										x
Control range 20 to 80 °C															
3000 W switching power								x	x						
internal setting													x	x	x
2-wire connection												x			
24 V~											x			x	
230 V~	x	x	x	x	x	x	x	x	x			x	x		
24 V~ or 230 V~										x					x

HEATING CONTROLLER OVERVIEW

TYPE	HTRRUu	HTRRB-		HTRRBu-		RTERU-		FETR		
	210.021	011.010	011.410	110.021	110.117/21	010.715#21	010.715#00	101.700	101.715	101.716
PAGE	113	116	116	118	70	120	120	121	121	121
HOUSING DESIGN										
Berlin 1000										
Berlin 2000		x	x							
Berlin 3000				x	x					
Berlin flush-mounted	x					x	x	x	x	x
Berlin 2000 with plug										
SENSOR										
Bimetal (NC contact)										
Bimetal (toggler)										
NTC, internal	x				x					
NTC, external	x	x	x	x		x	x	x	x	x
NTC for floor monitoring	x									
CONTROL TYPE										
Heating controller	x	x	x	x	x	x	x	x	x	x
Cooling function										
Cooling function with fan output										
Model with clock	x			x	x					
PIPE SYSTEM										
Air conditioning controller in 2-pipe system										
Air conditioning controller in 4-pipe system										
APPLICATION										
Natural stone heating	x				x					
Tiled stove heating			x							
Electric direct heating systems	x				x					
Electric floor heating	x	x		x		x	x	x	x	x
Night storage heater										
Hot water floor heating	x			x	x	x	x	x	x	x
Partial air conditioner										
FEATURES										
Output 'temperature reduction'				x	x					
Input 'temperature reduction'		x				x	x	x	x	x
Switch 'On/Off'					x	x	x		x	x
Switch 'Heating/Cooling'									x	
Switch 'Heating/Off/Cooling'										
Switch 'Reduction/Comfort/Automatic'				x	x					
Switch 'auxiliary heating'										
Display					x					
Display with backlighting				x						
Indicator lamp 'heating'						x	x	x	x	x
Indicator lamp 'reduction'								x	x	x
Indicator lamp 'auxiliary heating'										
TECHNOLOGY										
Control range −20 to +30 °C										
Control range 5 to 30 °C	x	x	x		x					
Control range 10 to 42 °C				x						x
Control range 10 to 50 °C						x	x		x	
Control range 10 to 60 °C								x		
Control range 20 to 80 °C										
3000 W switching power										
internal setting								x		
2-wire connection										
24 V~										
230 V~	x	x	x	x	x	x	x	x	x	x
24 V~ or 230 V~										

ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB
SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

TECHNICAL DATA

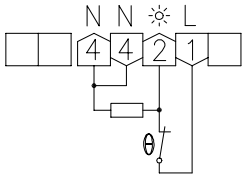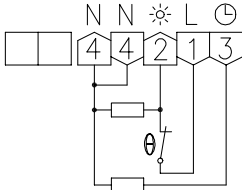|	
Design:	Berlin 2000
Surface finish:	matt
Housing colour:	pure white, similar to RAL 9010
Housing material:	ABS plastic
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals 0.12 mm² – 2.5 mm²
Mounting / attachment:	Surface / wall mounting (4-hole assembly on flush-mounted socket)
Protection rating:	IP30
Safety and EMC:	according to DIN EN 60730
Average power consumption:	< 0.5 W
Switching element:	bimetallic contact
Sensor:	bimetal
General features:	thermal feedback

APPLICATION

Control or monitoring of temperatures in closed spaces. Suitable for all heating systems.

Valve actuator: normally closed. If normally open heating valves are available, they should be connected with the cooling output of the changeover switch (toggler).

Up to a maximum of 10 actuators for valves can be connected (normally closed, NC); with a toggler, on the NO contact, up to 5 units (in this context, please check the switching capacity listed in the technical specifications).

Installation note: Owing to the existing wiring space in the controller itself, installation on a flush-mounted socket is recommended, but it can also be performed on a plane, non-conducting substrate.
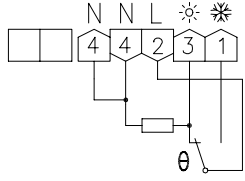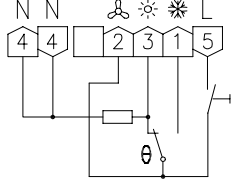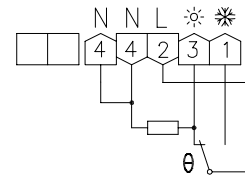
Explanations of technical terms can be found in the annex to the product catalogue or at www.alre.de.

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
RTBSB-001.000	MA010000	**General features:** Mechanical range limitation; scale: degrees Celsius ; external setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0 to 30 °C **Protection class:** II, if properly mounted **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating **Control range:** 5 to 30 °C **Hysteresis:** approx. 0.5 K at a temperature change of max. 4 K / h	N N ☼ L 4 4 2 1	36.50 / I
RTBSB-001.002	MA010100	**General features:** ECO function; mechanical range limitation; scale: degrees Celsius; external setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0 to 30 °C **Protection class:** II, if properly mounted **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating **Control range:** 5 to 30 °C **Hysteresis:** approx. 0.5 K at a temperature change of max. 4 K / h **Input 'temperature reduction':** approx. 4 K (230 VAC, 50 Hz)	N N ☼ L ⏲ 4 4 2 1 3	38.80 / I

ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB
SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

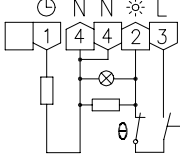| TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
RTBSB-001.010	MA010200	**General features:** Mechanical range limitation; scale: degrees Celsius; external setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0 to 30 °C **Protection class:** II, if properly mounted **Max. switching current:** heating (terminal 3) 10 (4) A, cooling (terminal 1) 5 (2) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** Terminal 3: 2300 W, terminal 1: 1150 W **Switching contact:** changeover switch (toggler, max. 10 actuators output terminal 3, max. 5 actuators output terminal 1) **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating or cooling **Control range:** 5 to 30 °C **Hysteresis:** approx. 0.5 K at a temperature change of max. 4 K/h		46.30/I
RTBSB-001.026	MA010900	**General features:** mechanical range limitation; scale: degrees Celsius ; **on/off switch**; external setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0 to 30 °C **Protection class:** II, if properly mounted **Max. switching current:** heating (terminal 3) 10 (4) A, cooling (terminal 1) 5 (2) A, fan (terminal 2) 5 (2) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** terminal 3: 2300 W, terminal 1: 1150 W, terminal 2: 1150 W **Switching contact:** changeover switch (toggler, max. 10 actuators output terminal 3, max. 5 actuators output terminal 1) **Output signal:** switching (230 VAC, 50 Hz); fan permanently operating (230 VAC, 50 Hz) if device has been switched on **Control function:** heating or cooling **Control range:** 5 to 30 °C **Hysteresis:** approx. 0.5 K at a temperature change of max. 4 K/h		56.30/I
RTBSB-001.045	MA011200	**General features:** mechanical range limitation; scale: degrees Celsius ; external setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** −20 to +30 °C **Protection class:** II, if properly mounted **Max. switching current:** heating (terminal 3) 10 (4) A, cooling (terminal 1) 5 (2) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** terminal 3: 2300 W, terminal 1: 1150 W **Switching contact:** changeover switch (toggler, max. 10 actuators output terminal 3, max. 5 actuators output terminal 1) **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating or cooling **Control range:** −20 to +30 °C **Hysteresis:** approx. 1.5 K at a temperature change of max. 4 K/h		49.20/I

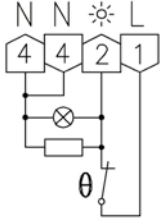# ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB
SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

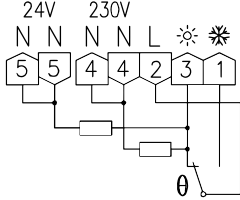| TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
RTBSB-001.048	MA011300	**General features:** Mechanical range limitation; scale: degrees Celsius; external setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature: 10 to 60 °C** **Protection class:** II, if properly mounted Max. switching current: heating (terminal 3) 10 (4) A, cooling (terminal 1) 5 (2) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** terminal 3: 2300 W, terminal 1: 1150 W **Switching contact:** changeover switch (toggler, max. 10 actuators output terminal 3, max. 5 actuators output terminal 1) **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating or cooling **Control range:** 10 to 60 °C **Hysteresis:** approx. 1.5 K at a temperature change of max. 4 K/h		49.20/I
RTBSB-001.062	MA012400	**General features: ECO function; 'heating' display;** mechanical range limitation; scale: degrees Celsius; **on/off switch;** external setting **Input "temperature reduction":** approx. 4 K (230 VAC, 50 Hz) **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0 to 30 °C **Protection class:** II, if properly mounted **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Output signal:** heating, switching (230 VAC, 50 Hz) **Control function:** heating **Control range:** 5 to 30 °C **Hysteresis:** approx. 0.5 K at a temperature change of max. 4 K/h		49.20/I
RTBSB-001.065	MA010600	**General features:** mechanical range limitation; scale: degrees Celsius; **'heating/cooling' switch;** external setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0 to 30 °C **Protection class:** II, if properly mounted **Max. switching current:** 5 (2) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 1150 W **Switching contact:** changeover switch (toggler, max. 5 actuators) **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating or cooling **Control range:** 5 to 30 °C **Hysteresis:** approx. 0.5 K at a temperature change of max. 4 K/h		52.20/I
RTBSB-001.086	MA010800	**General features:** mechanical range limitation; 3000 W switching power, for electric direct heating systems, natural stone heating; multi-digit display 1–6; external setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0 to 30 °C **Protection class:** II, if properly mounted **Max. switching current:** 13 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 3000 W **Switching contact:** NC contact **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating **Control range:** 5 to 30 °C **Hysteresis:** approx. 1 K at a temperature change of max. 4 K/h **Accessories:** can be combined with plug-in socket JZ-19		40.90/I

ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB
SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000
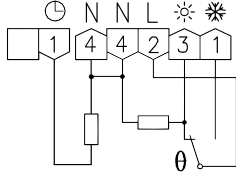
TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
RTBSB-001.096	MA012500	Similar to RTBSB-001.086, but with 'heating' display (LED red)		47.20/I
RTBSB-001.110	MA012701	**General features:** Mechanical range limitation; scale: degrees Celsius; external setting **Operating voltage:** 230 VAC, 50 Hz or 24 VAC, 50 Hz **Ambient temperature:** 0 to 30 °C **Protection class:** II, if properly mounted; with 24 V, protection class III **Max. switching current:** heating (terminal 3) 230 VAC 10 (4) A or 24 VAC 2 (2) A, cooling (terminal 1) 5 (2) A or 24 VAC 2 (2) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 24 VAC, 50 Hz **Switching power:** Terminal 3: 2300 W at 230 VAC, 48 W at 24 VAC, terminal 1: 1150 W at 230 VAC, 48 W at 24 VAC **Switching contact:** changeover switch (toggler, max. 5 actuators) **Output signal:** switching (230 VAC, 50 Hz or 24 VAC, 50 Hz) **Output signal:** cooling, switching (230 VAC, 50 Hz or 24 VAC, 50 Hz) **Control function:** heating or cooling **Control range:** 5 to 30 °C **Hysteresis:** approx. 0.5 K at a temperature change of max. 4 K/h		52.20/I
RTBSB-001.202	MA011700	**General features:** ECO function; mechanical range limitation; scale: degrees Celsius; external setting **Operating voltage:** 24 VAC, 50 Hz **Ambient temperature:** 0 to 30 °C **Protection class:** III **Max. switching current:** 1 (1) A **Max. switching voltage:** 24 VAC, 50 Hz **Min. switching voltage:** 24 VAC, 50 Hz **Switching power:** 24 W **Switching contact:** NC contact (max. 5 actuators) **Output signal:** switching (24 VAC, 50 Hz) **Control function:** heating **Control range:** 5 to 30 °C **Hysteresis:** approx. 0.5 K at a temperature change of max. 4 K/h **Input 'temperature reduction':** approx. 4 K (24 VAC, 50 Hz)		46.00/I
RTBSB-001.500	MA013401	**General features:** 2-wire room temperature controller; mechanical range limitation; multi-digit display * – 6; external setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0 to 30 °C **Protection class:** II, if properly mounted **Max. switching current:** 1 A or 5 A (see circuit diagram) **Min. switching current:** 0.5 A or 1 A (see circuit diagram) **Min. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 230 W or 1150 W (see circuit diagram) **Switching contact:** NC contact **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating **Control range:** 5 to 30 °C **Hysteresis:** approx. 1 K at a temperature change of max. 4 K/h (load-dependent)		40.40/I

ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB
SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

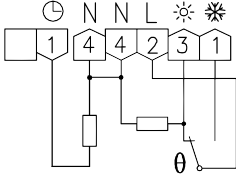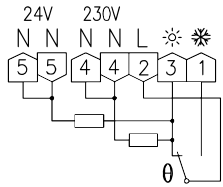| TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
RTBSB-001.910	MA012000	**General features:** ECO function; scale: degrees Celsius; internal setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0 to 30 °C **Protection class:** II, if properly mounted **Max. switching current:** heating (terminal 3) 10 (4) A, cooling (terminal 1) 5 (2) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** Terminal 3: 2300 W, terminal 1: 1150 W **Switching contact:** changeover switch (toggler, max. 10 actuators output terminal 3, max. 5 actuators output terminal 1) **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating or cooling **Control range:** 5 to 30 °C **Hysteresis:** approx. 0.5 K at a temperature change of max. 4 K/h **Input 'temperature reduction':** approx. 4 K (230 VAC, 50 Hz)		51.20/I
RTBSB-001.910/2	MA012100	**General features:** ECO function; scale: degrees Celsius; internal setting **Operating voltage:** 24 VAC, 50 Hz **Ambient temperature:** 0 to 30 °C **Protection class:** III **Max. switching current:** 1 (1) A **Max. switching voltage:** 24 VAC, 50 Hz **Min. switching voltage:** 24 VAC, 50 Hz **Switching power:** 24 W **Switching contact:** changeover switch (toggler, max. 3 actuators) **Output signal:** switching (24 VAC, 50 Hz) **Control function:** heating or cooling **Control range:** 5 to 30 °C **Hysteresis:** approx. 0.5 K at a temperature change of max. 4 K/h **Input 'temperature reduction':** approx. 4 K (24 VAC, 50 Hz)		55.20/I

ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB
SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
RTBSB-001.948/1	MA012600	**General features:** Scale: degrees Celsius; internal setting **Operating voltage:** 230 VAC, 50 Hz or 24 VAC, 50 Hz **Ambient temperature: 10 to 60 °C** **Protection class:** II, if properly mounted; with 24 V, protection class III **Max. switching current:** heating (terminal 3) 230 VAC 10 (4) A or 24 VAC 2 (2) A, cooling (terminal 1) 5 (2) A or 24 VAC 2 (2) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 24 VAC, 50 Hz **Switching power:** terminal 3: 2300 W at 230 VAC, 48 W at 24 VAC, terminal 1: 1150 W at 230 VAC, 48 W at 24 VAC **Switching contact:** changeover switch (toggler, max. 10 actuators output terminal 3, max. 5 actuators output terminal 1) **Output signal:** switching (230 VAC, 50 Hz or 24 VAC, 50 Hz) **Control function:** heating or cooling **Control range:** 10 to 60 °C **Hysteresis:** approx. 1.5 K at a temperature change of max. 4 K/h		58.40/I

Accessories: terminal strips VOOxx, suitable valve actuators ZBOOA

You can find other/similar controllers with outputs for heating/cooling and noiseless controllers in the 'Air conditioning technology' section (note: applies to KTRTB, for example).

ILLUSTRATIONS

RTBSB
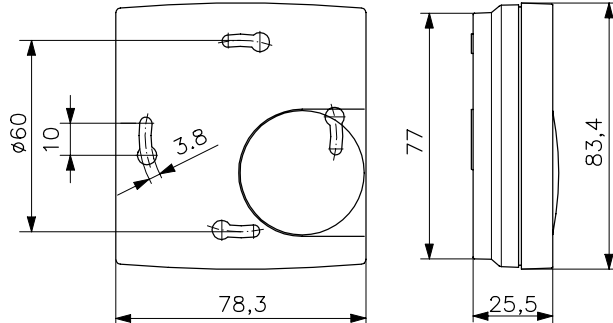
RTBSB with switch

ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB
SURFACE-MOUNTED 'SUPER-THIN' – DESIGN BERLIN 1000

TECHNICAL DATA

Design:	Berlin 1000
Surface finish:	glossy
Housing colour:	pure white, similar to RAL 9010
Housing material:	ABS plastic
Ambient temperature:	0 to 30 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals 0.33 mm² – 1.5 mm²
Mounting / attachment:	Surface / wall mounting (4-hole assembly on flush-mounted socket)
Protection rating:	IP30
Safety and EMC:	according to DIN EN 60730
Average power consumption:	< 0.25 W
Max. switching current:	2 (1) A
Switching element:	bimetallic contact
Sensor:	bimetal
Control range:	5 to 30 °C
Hysteresis:	approx. 0.5 K at a temperature change of max. 4 K / h
General features:	mechanical range limitation; thermal feedback; external setting

APPLICATION
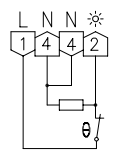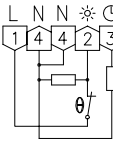
Control or monitoring of temperatures in closed spaces.

Valve actuator: normally closed. If normally open heating valves are available, they should be connected with the cooling output of the changeover switch (toggler).

Up to a maximum of 10 actuators for valves can be connected (normally closed, NC); with a toggler, on the NO contact, up to 5 units (in this context, please check the switching capacity listed in the technical specifications).

Installation note: Owing to the existing wiring space in the controller itself, installation on a flush-mounted socket is recommended, but it can also be performed on a plane, non-conducting substrate.

Explanations of technical terms can be found in the annex to the product catalogue or at www.alre.de.

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
RTBSB-201.000	MA300000	**General features:** scale: degrees Celsius **Operating voltage:** 230 VAC, 50 Hz **Protection class:** II, if properly mounted **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 460 W **Switching contact:** NC contact (max. 10 actuators) **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating		39.50 / I
RTBSB-201.000 / 08	MA300008	Similar to RTBSB-201.000 but with multi-digit display 1 – 6		40.40 / I
RTBSB-201.000-20	MA300800	Similar to RTBSB-201.000 but with housing colour: traffic / studio white, similar to RAL 9016		39.50 / I
RTBSB-201.002	MA300100	**General features:** ECO function; scale: degrees Celsius **Operating voltage:** 230 VAC, 50 Hz **Protection class:** II, if properly mounted **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 460 W **Switching contact:** NC contact (max. 10 actuators) **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating **Input 'temperature reduction':** approx. 3 K (230 VAC, 50 Hz)		41.90 / I
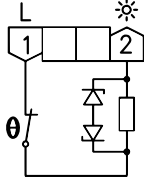
ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB
SURFACE-MOUNTED 'SUPER-THIN' – DESIGN BERLIN 1000

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
RTBSB-201.010	MA300200	**General features:** scale: degrees Celsius **Operating voltage:** 230 VAC, 50 Hz **Protection class:** II, if properly mounted **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 460 W **Switching contact:** changeover switch (toggler, max. 10 actuators (NC contact), max. 5 actuators (NO contact)) **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating or cooling		49.20 / I
RTBSB-201.034	MA301400	**General features:** 'heating' display; scale: degrees Celsius **Operating voltage:** 230 VAC, 50 Hz **Protection class:** II, if properly mounted **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 460 W **Switching contact:** NC contact (max. 10 actuators) **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating		43.40 / I
RTBSB-201.062	MA300400	**General features:** ECO function; **'heating' display;** scale: degrees Celsius; **'on / off' switch** **Operating voltage:** 230 VAC, 50 Hz **Protection class:** II, if properly mounted **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 460 W **Switching contact:** NC contact (max. 10 actuators) **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating **Input 'temperature reduction':** approx. 3 K (230 VAC, 50 Hz)		51.80 / I
RTBSB-201.065	MA300500	**General features:** Climate controller for 2-pipe systems, especially heat pumps; scale: degrees Celsius; 'heating / cooling' switch **Operating voltage:** 230 VAC, 50 Hz **Protection class:** II, if properly mounted **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 460 W **Switching contact:** changeover switch (toggler, max. 5 actuators) **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating or cooling		55.50 / I
RTBSB-201.065 / 02	MA300502	Similar to RTBSB-201.065 but with multi-digit display 1 – 6		56.30 / I
RTBSB-201.202	MA302100	**General features:** ECO function; scale: degrees Celsius **Operating voltage:** 24 VAC, 50 Hz **Protection class:** III **Max. switching voltage:** 24 VAC, 50 Hz **Min. switching voltage:** 24 VAC, 50 Hz **Switching power:** 48 W **Switching contact:** NC contact (max. 5 actuators) **Output signal:** switching (24 VAC, 50 Hz) **Control function:** heating **Input 'temperature reduction':** approx. 3 K (24 VAC, 50 Hz)		48.90 / I

ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB
SURFACE-MOUNTED 'SUPER-THIN' – DESIGN BERLIN 1000

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
RTBSB-201.500	MA304000	**General features:** 2-wire room temperature controller; multi-digit display * – 6 **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0 to 30 °C **Protection class:** II, if properly mounted **Max. switching current:** 20 mA **Min. switching current:** 5 mA **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 4.6 W (max. 2 actuators) **Switching contact:** NC contact **Output signal:** switching (230 VAC, 50 Hz) **Control function:** heating **Control range:** 5 to 30 °C **Hysteresis:** approx. 0.5 K at a temperature change of max. 4 K / h (load-dependent)		43.80 / I

Accessories: terminal strips VOOxx, suitable valve actuators ZBOOA

You can find other / similar controllers with outputs for heating / cooling and noiseless controllers in the 'Air conditioning technology' section (note: applies to KTRTB, for example).

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-21	MN990006	Adapter frame for mounting room temperature controllers of the Berlin 1000 series in flush-mounted sockets up to 80x80 mm	5.00 / I
ET-01	MA990000	Adjusting knob for B1000 series devices, scale: degrees Celsius, pure white glossy	3.20 / I
ET-02	MA990001	Adjusting knob for B1000 series devices, multi-digit display 1 to 6, pure white glossy	3.20 / I

ILLUSTRATIONS

RTBSB-201.xxx / KTRTB
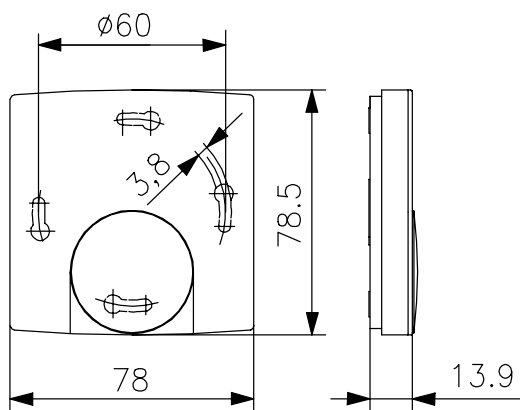
RTBSB-201.xxx with 'ON / OFF' switch at the side
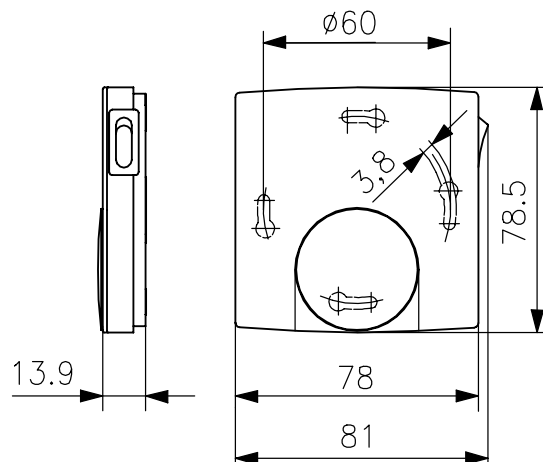
ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB
SURFACE-MOUNTED OR PLUG-IN INSTALLATION – DESIGN BERLIN

TECHNICAL DATA

Design:	Berlin 2000
Surface finish:	matt
Housing colour:	pure white, similar to RAL 9010
Housing material:	ABS plastic
Operating voltage:	230 V AC, 50 Hz
Ambient temperature:	0 to 30 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Protection rating:	IP30
Protection class:	II for loads of protection classes I and II
Safety and EMC:	according to DIN EN 60730
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	230 V AC, 50 Hz
Switching element:	bimetallic contact
Switching contact:	NC contact
Output signal:	switching (230 VAC, 50 Hz)
Sensor:	bimetal
Control function:	heating
Control range:	5 to 30 °C
Hysteresis:	approx. 1 K at a temperature change of max. 4 K / h

APPLICATION

For controlling the room temperature for radiators, heating chimneys, direct electric heating systems, marble heating systems etc.

Attention! For loads > 2,300 W, the wall socket must be designed for 16 A (danger of fire).

The plugs are designed in such a way that they can also be used in sockets with a central pin (for example, as used in France).

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
JZ-19	MN990003	**General features:** plug-in socket (as with RTBSB-001.411 / RTBSB-001.474) completely pre-wired **Mounting / attachment:** can be fitted with room thermostats RTBSB-001.xxx **Protection rating:** depends on the pre-fitted room thermostat **Protection class:** depends on the pre-fitted room thermostat **Max. switching current:** depends on the pre-fitted room thermostat **Switching power:** 3000 W		39.90 / I
RTBSB-001.086	MA010800	**General features:** mechanical range setting; 3000 W switching power for electric direct heating systems, natural stone heating; thermal feedback; multi-digit display 1 – 6; external setting **Electrical connection:** screw-type terminals 0.12 mm² – 2.5 mm² **Average power consumption:** < 0.5 W **Max. switching current:** 13 (4) A **Switching power:** 3000 W **Accessories:** can be combined with plug-in socket JZ-19		40.90 / I
RTBSB-001.096	MA012500	Similar to RTBSB-001.086, but with 'heating' display (LED red)		47.20 / I
RTBSB-001.401	MA013100	**General features:** mechanical range limitation; 3000 W switching power for electric direct heating systems, natural stone heating; multi-digit display 1 – 6; external setting **Electrical connection:** Schuko adapters **Mounting / attachment:** optionally surface / wall mounting (4-hole assembly on flush-mounted socket) or with adapter plate (2-hole assembly) for wall hanging **Average power consumption:** < 0.1 W **Max. switching current:** 13 (4) A **Switching power:** 3000 W **Connecting cable:** 1.5 m		62.50 / I

ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSB
SURFACE-MOUNTED OR PLUG-IN INSTALLATION – DESIGN BERLIN

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
RTBSB-001.411	MA013200	**General features:** mechanical range limitation; 3000 W switching power for electric direct heating systems, natural stone heating; multi-digit display 1 – 6; external setting **Electrical connection:** pre-fitted Schuko plug-in socket JZ-19 at the controller, 1.5-m cable with Schuko coupling **Mounting / attachment:** ready-to-plug **Average power consumption:** < 0.1 W **Max. switching current:** 13 (4) A **Switching power:** 3000 W **Hysteresis:** approx. 1 K at a temperature change of max. 4 K / h		81.80 / I

ILLUSTRATIONS

Plug-in socket
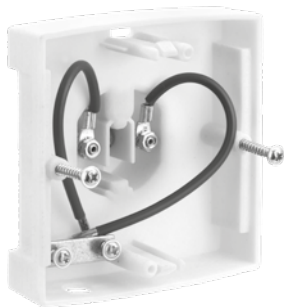
Plug-in socket
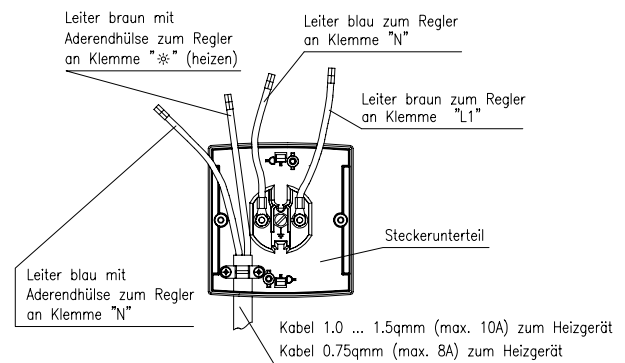
RTBSB-001.411

RTBSB-001.411
(Different from dimensions of RTBSB-001.401)
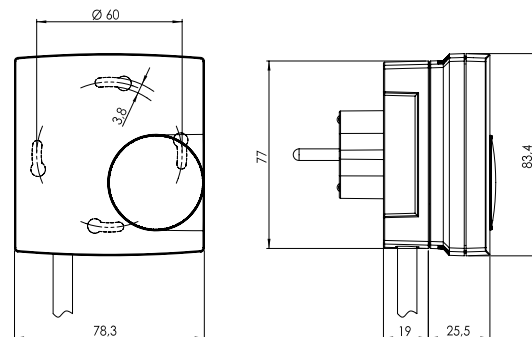
RTBSB-001.401

ROOM TEMPERATURE CONTROLLER WITH CLOCK, ELECTRONIC, HTRRBU

SURFACE-MOUNTED INSTALLATION – BERLIN 3000

TECHNICAL DATA

Design:	Berlin 3000
Surface finish:	matt
Housing colour:	pure white, similar to RAL 9010
Housing material:	ABS plastic
Operating voltage:	230 V AC, 50 Hz
Ambient temperature:	0 to 30 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Mounting / attachment:	surface / wall mounting or by means of an adapter plate on a flush-mounted socket
Protection rating:	IP30
Protection class:	II, if properly mounted
Safety and EMC:	according to DIN EN 60730
Max. switching current:	heating (terminal 4) 8 (2) A, cooling (terminal 3) 100 mA
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	230 V AC, 50 Hz
Switching power:	terminal 4: 1840 W, terminal 3: 23 W
Switching element:	relay
Switching contact:	NO contact
Output signal:	heating, switching (230 VAC, 50 Hz)
Sensor:	NTC
Control function:	heating
Control range:	5 to 30 °C
Hysteresis:	< 1 K
Display type:	symbol display
Output 'temperature reduction':	switching (230 VAC, 50 Hz) (for pilot function)

APPLICATION

For time-dependent control of temperatures in closed spaces. Suitable for all heating systems.

Valve actuator: normally closed.

It can be used as a master (pilot regulator) for the temperature reduction of other controllers. Controllers of series FETR, RTBSU and RTBSB are suitable as slaves (satellite controllers).

Programming procedures for every day, familiar from mechanical timers, by means of 'electronic tabs'. Shortest switching time 15 min.

Load setting: The control accuracy is influenced by the different levels of intrinsic heating of the controller depending on the magnitude of the heating load. By inputting the heating load, this influence is compensated and the control accuracy is retained.

General features:
pilot function; ECO function, ECO value adjustable; 'ECO' display; 'on / off' display; 'heating' display; digital actual value display; child-safe features; power reserve (approx. 4 – 7 days); load setting; actual value correction / measured value correction; learning function; valve protection; holiday setting; party setting; automatic adjustment to standard / daylight savings time; mechanical range limitation; scale: degrees Celsius; reduction / comfort / automatic button; external setting; operation using direct-dial buttons; on / off button; information button; party function button; holiday setting button

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
HTRRBu 110.117 / 21	MA600003		181.40 / I

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-17	MN990001	**Surface finish:** matt **Colour:** pure white, similar to RAL 9010 **Material:** ABS plastic **General features:** adapter plate for mounting devices on flush-mounted sockets (including fastening screws for mounting the controller on the adapter plate)	7.40 / II

ROOM TEMPERATURE CONTROLLER WITH CLOCK, ELECTRONIC, HTRRBU

SURFACE-MOUNTED INSTALLATION – BERLIN 3000

ILLUSTRATIONS

HTRRBu 110.XXX
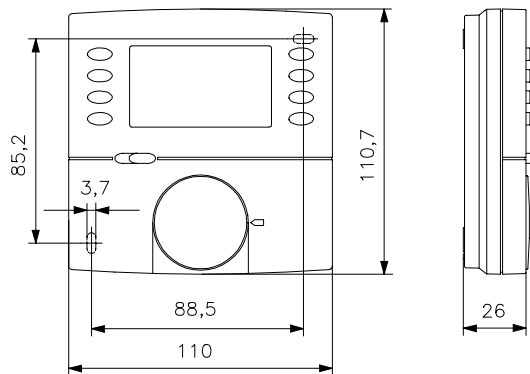
Factory setting:
- Setback temperature 17 °C
- Continuous time display
- Programme display using switching segments enabled
- Child-safe features disabled
- Automatic adjustment to summer / winter time enabled
- °C display, valve and pump protection disabled
- Learning function disabled
- Heating load 0.0 kW
- Comfort times:
  Mon – Fri 5 am – 9 am / 4 pm – 10 pm,
  Sat / Sun 6 am – 10 pm

HTRRBu 110.XXX circuit diagram
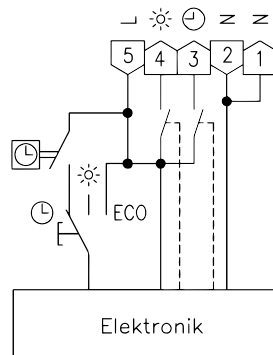
YOUR **BENEFITS** AT A GLANCE

+ Simple electrical connection without screws
+ New terminals for quick and easy installation
+ Simplified wiring through colour-coded terminals
+ Time-saving modular design: Practical installation sequence for controller, frame and cover
+ Low installation volume for convenient and quick installation in flush-mounted sockets
+ Temperature can be controlled even without a cover
+ Closed design
+ Suitable for all conventional switch ranges
+ Up to 20 per cent subsidy with BAFA funding

NEW AT ALRE –
THE NEXT GENERATION BIMETAL CONTROLLER

The new and optimised room controller offers you a number of advantages that make mounting and attachment considerably easier. This can save you time, and above all, costs.

OVERVIEW TYPE COMPARISON – FTR UND RTBSU:

ITEM NO.	TYPE	ITEM NO.	TYPE	REMARKS
UA010017	FTR 101.000#00	UA090000	RTBSU-401.000#00	
UN010009	FTR 101.000#21	UA090014	RTBSU-401.000#21	
UA010134	FTR 101.002#00	UA090001	RTBSU-401.002#00	
UA010222	FTR 101.010#00	UA090002	RTBSU-401.010#00	
UA012404	FTR 101.034#07	UA090004	RTBSU-401.034#00	+ JZ-016.000
UA012405	FTR 101.034#55	UA090004	RTBSU-401.034#00	+ JZ-016.100
UA010702	FTR 101.052#21	UA090015	RTBSU-401.052#21	
UA010811	FTR 101.062#00	UA090003	RTBSU-401.062#00	
UA011000	FTR 101.063#00	UA090006	RTBSU-401.063#00	
UA010910	FTR 101.065#00	UA090007	RTBSU-401.065#00	
UA010415	FTR 101.075#00	UA090008	RTBSU-401.075#00	
UA010615	FTR 101.086#00	UA090009	RTBSU-401.086#00	
UN010607	FTR 101.086#21	UA090016	RTBSU-401.086#21	
UA012008	FTR 101.202#00	UA090010	RTBSU-401.202#00	
UN102009	FTR 101.202#21	UA090010	RTBSU-401.202#00	+ JZ-001.000 + JZ-090.900
UA012301	FTR 101.210#00	UA090011	RTBSU-401.210#00	
UA012500	FTR 101.262#00	UA090012	RTBSU-401.262#00	
UA012501	FTR 101.262#21	UA090012	RTBSU-401.262#00	+ JZ-035.000 + JZ-090.900
UA012600	FTR 101.265#00	UA090017	RTBSU-401.265#00	
UA013000	FTR 101.902#07	UA090013	RTBSU-401.902#07	

NEW

ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSU
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TECHNICAL DATA

Design:	Berlin UP
Housing material:	PA6 plastic
Ambient temperature:	0 to 30 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	Spring-loaded terminals (lever actuation type)
Mounting / attachment:	In flush-mounted socket – with suitable cover set, can be adapted to fit virtually any switch range (deep flush-mounted socket recommended)
Protection rating:	IP30
Protection class:	II, if properly mounted; with 24 VAC, protection class III
Safety and EMC:	according to DIN EN 60730
Max. power consumption:	< 0.5 W
Switching element:	bimetallic contact
Output signal:	switching
Sensor:	bimetal
Control range:	5 to 30 °C
Setting range:	5 to 30 °C
Hysteresis:	approx. 0.5 K at a temperature change of max. 4 K / h
General features:	thermal recirculation; multi-digit display

APPLICATION
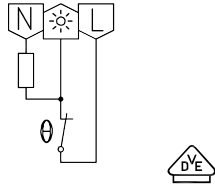
Control or monitoring of temperatures in closed, dry spaces. Suitable for all heating systems.

Valve actuator: normally closed. If normally open heating valves are available, they should be connected to the cooling output of the changeover switch (toggler), e.g., RTBSU-401.010

Up to a maximum of 10 actuators for valves can be connected (normally closed, NC); up to 5 units on the toggler with a NO contact.

In terms of visual aesthetics, the basic controllers (RTBSU-401.xxx#00), in combination with a 55x55 mm / 70x70 mm cover set, fit perfectly in many switch ranges without the use of an insert frame.
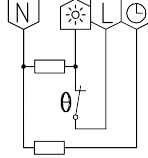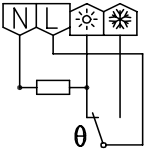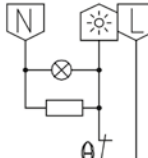
The basic controllers (RTBSU-401. xxx#00) in combination with a 50x50 mm cover set fit in nearly all switch ranges with the use of an insert frame.

| TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
RTBSU-401.000#00 Comparison type: FTR 101.000#00	UA090000	**General features:** mechanical range limitation; external setting; protective cap; VDE-tested **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Control function:** heating Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no.: JZ-001.xxx, (see Page 80, 82) e.g.:** 50x50 mm cover set, pure white, glossy: JZ-001.000 55x55 mm cover set, pure white, glossy: JZ-001.100 **BUSCH-JAEGER cover set** Reflex SI / SI Linear, pure white, glossy: JZ-001.200 / BJ		56.80 / I
RTBSU-401.000#21 Comparison type: FTR 101.000#21	UA090014	Similar to RTBSU-401.000#00 but scope of delivery as follows: controller, alre frame 'Berlin' (neutral), 50x50 mm cover, pure white (similar to RAL 9010), glossy		71.90 / I

ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSU
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
RTBSU-401.002#00 Comparison type: FTR 101.002#00	UA090001	**General features:** ECO function; mechanical range limitation; external setting; protective cap; VDE-tested **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Control function:** heating **Input 'temperature reduction':** approx. 4 K (230 VAC, 50 Hz) Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no.: JZ-001.xxx, (see Page 80, 82) e.g.:** 50x50 mm cover set, pure white, glossy: JZ-001.000 55x55 mm cover set, pure white, glossy: JZ-001.100 **BUSCH-JAEGER cover set** Reflex SI / SI Linear, pure white, glossy: JZ-001.200 / BJ		59.10 / I
RTBSU-401.010#00 Comparison type: FTR 101.010#00	UA090002	**General features:** mechanical range limitation; external setting; protective cap; VDE-tested **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** heating terminal 10 (4) A, cooling terminal 5 (2) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** Heating terminal: 2300 W, **Cooling terminal:** 1150 W **Switching contact:** changeover switch (toggler, max. 10 actuators output heating, max. 5 actuators output cooling) **Control function:** heating or cooling Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no.: JZ-001.xxx, (see Page 80, 82) e.g.:** 50x50 mm cover set, pure white, glossy: JZ-001.000 55x55 mm cover set, pure white, glossy: JZ-001.100 **BUSCH-JAEGER cover set** Reflex SI / SI Linear, pure white, glossy: JZ-001.200 / BJ		72.30 / I
RTBSU-401.034#00 Comparison type: FTR 101.034#07 / FTR 101.034#55	UA090004	**General features:** 'heating' display; mechanical range limitation; external setting; protective cap, **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Control function:** heating Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no: JZ-016.xxx, (see Page 80, 82) e.g.:** 50x50 mm cover set, pure white, glossy: JZ-016.000 55x55 mm cover set, pure white, glossy: JZ-016.100		59.40 / I

NEW

ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSU
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
RTBSU-401.052#21 Comparison type: FTR 101.052#21	UA090015	**General features:** 'auxiliary heating' display; mechanical range limitation; **auxiliary heating switch;** external setting **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** the total current (heating + auxiliary heating) may not exceed 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** the total power output (heating + auxiliary heating) may not exceed 2300 W **Switching contact:** NC contact (max. 10 actuators) **Control function:** heating **Scope of delivery:** controller, alre frame 'Berlin' (neutral), 50x50 mm cover, pure white (similar to RAL 9010), glossy		88.60/I
RTBSU-401.062#00 Comparison type: FTR 101.062#00	UA090003	**General features:** ECO function; **'heating' display;** mechanical range limitation; **'on/off' switch;** external setting; protective cap; VDE-tested **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Control function:** heating **Input 'temperature reduction':** approx. 4 K (230 VAC, 50 Hz) Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no.: JZ-035.xxx, (see Page 80, 82) e.g.:** 50x50 mm cover set, pure white, glossy: JZ-035.000 55x55 mm cover set, pure white, glossy: JZ-035.100 **BUSCH-JAEGER cover set** Reflex SI/SI Linear, pure white, glossy: JZ-035.200/BJ		73.70/I
RTBSU-401.063#00 Comparison type: FTR 101.063#00	UA090006	**General features:** climate controller for 2-pipe systems, mechanical range limitation; **'heating/off/cooling' switch;** external adjustment; protective cap **Operating voltage:** 230 V AC, 50 Hz **Max. switching current:** 5 (2) A **Max. switching voltage:** 230 V AC, 50 Hz **Min. switching voltage:** 230 V AC, 50 Hz **Switching power:** 1150 W **Switching contact:** changeover switch (max. 5 actuators) **Control function:** heating or cooling For cover sets see the separate overview 'alre flush-mounted range (cover sets)', not included in the delivery. **Suitable set no.: JZ-038.xxx, (see Page 80, 82) e.g.:** 50x50 mm cover set, pure white, glossy: JZ-038.000 55x55 mm cover set, pure white, glossy: JZ-038.100		80.60/I
RTBSU-401.065#00 Comparison type: FTR 101.065#00	UA090007	**General features:** climate controller for 2-pipe systems, especially heat pumps; mechanical range limitation; **'heating/cooling' switch;** external setting; protective cap **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 5 (2) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 1150 W **Switching contact:** changeover switch (toggler, max. 5 actuators) **Control function:** heating or cooling Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no.: JZ-037.xxx, (see Page 80, 82) e.g.:** 50x50 mm cover set, pure white, glossy: JZ-037.000 55x55 mm cover set, pure white, glossy: JZ-037.100		79.50/I

ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSU
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
RTBSU-401.075#00 Comparison type: FTR 101.075#00	UA090008	**General features:** ECO function; **'reduction' display;** mechanical range limitation; **switch for reduction / heating / reduction via external timer' switch;** external setting; protective cap; VDE-tested **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Control function:** heating **Input 'temperature reduction':** approx. 4 K (230 VAC, 50 Hz) Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no.: JZ-036.xxx, (see Page 80, 82) e.g.:** 50x50 mm cover set, pure white, glossy: JZ-036.000 55x55 mm cover set, pure white, glossy: JZ-036.100		77.40 / I
RTBSU-401.086#00 Comparison type: FTR 101.086#00	UA090009	**General features:** mechanical range limitation; 3000 W switching power, for electric direct heating systems, natural stone heating; external setting; protective cap **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 13 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 3000 W **Switching contact:** NC contact **Control function:** heating Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no.: JZ-001.xxx, (see Page 80, 82) e.g.:** 50x50 mm cover set, pure white, glossy: JZ-001.000 55x55 mm cover set, pure white, glossy: JZ-001.100 **BUSCH-JAEGER cover set** Reflex SI / SI Linear, pure white, glossy: JZ-001.200 / BJ		63.00 / I
RTBSU-401.086#21 Comparison type: FTR 101.086#21	UA090016	Similar to RTBSU-401.086#00 but scope of delivery as follows: controller, alre frame 'Berlin' (neutral), 50x50 mm cover, pure white (similar to RAL 9010), glossy		78.00 / I
RTBSU-401.202#00 Comparison type: FTR 101.202#00	UA090010	**General features:** ECO function; mechanical range limitation; external setting; protective cap **Operating voltage:** 24 VAC / 50 Hz, 24 VDC **Max. switching current:** 1 (1) A **Max. switching voltage:** 24 VAC / 50 Hz, 24 VDC **Min. switching voltage:** 24 VAC / 50 Hz, 24 VDC **Switching power:** 24 W **Switching contact:** NC contact (max. 5 actuators) **Control function:** heating **Input 'temperature reduction':** approx. 4 K (24 VAC / 50 Hz, 24 VDC) Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no.: JZ-001.xxx, (see Page 80, 82) e.g.:** 50x50 mm cover set, pure white, glossy: JZ-001.000 55x55 mm cover set, pure white, glossy: JZ-001.100 **BUSCH-JAEGER cover set** Reflex SI / SI Linear, pure white, glossy: JZ-001.200 / BJ		69.50 / I

NEW

ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSU
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

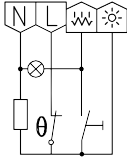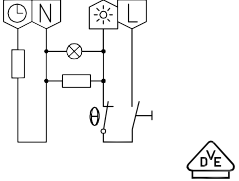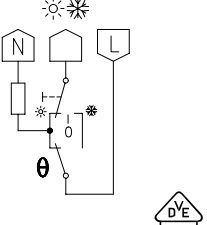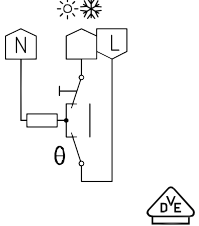| TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
RTBSU-401.210#00 Comparison type: FTR 101.210#00	UA090011	**General features:** mechanical range limitation; external setting; protective cap **Operating voltage:** 24 VAC / 50 Hz, 24 VDC **Max. switching current:** 1 (1) A **Max. switching voltage:** 24 VAC / 50 Hz, 24 VDC **Min. switching voltage:** 24 VAC / 50 Hz, 24 VDC **Switching power:** 24 W **Switching contact:** changeover switch (toggler, max. 5 actuators) **Control function:** heating or cooling Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no.: JZ-001.xxx, (see Page 80, 82) e.g.:** 50x50 mm cover set, pure white, glossy: JZ-001.000 55x55 mm cover set, pure white, glossy: JZ-001.100 **BUSCH-JAEGER cover set** Reflex SI / SI Linear, pure white, glossy: JZ-001.200 / BJ		79.80 / I
RTBSU-401.262#00 Comparison type: FTR 101.262#00	UA090012	**General features:** ECO function; **'heating' display;** mechanical range limitation; **'on / off' switch;** external setting; protective cap **Operating voltage:** 24 VAC / 50 Hz **Max. switching current:** 1 (1) A **Max. switching voltage:** 24 VAC / 50 Hz **Min. switching voltage:** 24 VAC / 50 Hz **Switching power:** 24 W **Switching contact:** NC contact (max. 5 actuators) **Control function:** heating **Input 'temperature reduction':** approx. 4 K (24 VAC / 50 Hz) Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no: JZ-035.xxx, (see Page 80, 82) e.g.:** 50x50 mm cover set, pure white, glossy: JZ-035.000 55x55 mm cover set, pure white, glossy: JZ-035.100 **BUSCH-JAEGER cover set** Reflex SI / SI Linear, pure white, glossy: JZ-035.200 / BJ		81.00 / I
RTBSU-401.265#00 Comparison type: FTR 101.265#00	UA090017	**General features:** climate controller for 2-pipe systems, especially heat pumps; mechanical range limitation; **'heating / cooling' switch;** external setting; protective cap **Operating voltage:** 24 VAC / 50 Hz, 24 VDC **Max. switching current:** 1 (1) A **Max. switching voltage:** 24 VAC / 50 Hz, 24 VDC **Min. switching voltage:** 24 VAC / 50 Hz, 24 VDC **Switching power:** 24 W **Switching contact:** changeover switch (toggler, max. 5 actuators) **Control function:** heating or cooling Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no.: JZ-037.xxx, (see Page 80, 82) e.g.:** 50x50 mm cover set, pure white, glossy: JZ-037.000 55x55 mm cover set, pure white, glossy: JZ-037.100		87.30 / I

ROOM TEMPERATURE CONTROLLER, MECHANICAL, RTBSU
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
RTBSU-401.902#07 Comparison type: FTR 101.902#07	UA090013	**General features:** ECO function; internal setting **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Control function:** heating **Input 'temperature reduction':** approx. 4 K (230 VAC, 50 Hz) **Scope of delivery:** Controller, 50x50 mm cover, pure white (similar to RAL 9010), glossy		75.10 / I

For model RTBSU-401.xxx#21, the protective cap is not included in the delivery.

Accessories terminal strips VOOxx, suitable valve actuators ZBOOA, suitable cover sets: see separate overview 'alre flush-mounting range (cover sets)'

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
JZ-090.900	VV000025	**General features:** alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50x50 mm cover **Design:** Berlin **Surface finish:** glossy **Colour:** Pure white, similar to RAL 9010 **Material:** PC plastic	4.20 / I
JZ-090.100	VV000048	Similar to JZ-090.900, but for all flush-mounted controllers in combination with 55x55 mm cover	4.20 / I
JZ-090.910	VV000010	as for JZ-090.900, but colour similar to RAL 1013	4.20 / I

ILLUSTRATIONS

alre frame 'Berlin' (#21 types)

with 50x50 insert frame

without 55x55 insert frame

ILLUSTRATIONS

RTBSU with alre frame 'Berlin' (RTBSU-401.xxx#21 types)
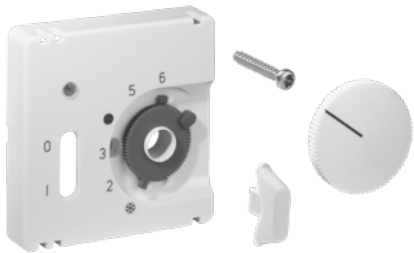
RTBSU scale for temperature adjustment without cover set

ALRE FLUSH-MOUNTED RANGE (50X50 MM COVER SETS)

ALL BASIC TYPES AND SUITABLE COVER SETS **50X50 MM**

BASIC TYPE	50x50 mm cover set **PURE WHITE (RAL 9010) GLOSSY**		50x50 mm cover set **PURE WHITE (RAL 9010) MATT**		50x50 mm cover set **PEARL WHITE (RAL1013) GLOSSY**		EURO/PG
	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	
RTBSU-401.000#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	11.70/I
RTBSU-401.002#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	11.70/I
RTBSU-401.010#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	11.70/I
RTBSU-401.034#00	JZ-016.000	UN990139	–	–	–	–	12.30/I
RTBSU-401.062#00	JZ-035.000	UN990169	JZ-035.001	UN990193	JZ-035.010	UN990177	12.70/I
RTBSU-401.063#00	JZ-038.000	UN990170	JZ-038.001	UN990194	JZ-038.010	UN990178	12.30/I
RTBSU-401.065#00	JZ-037.000	UN990171	JZ-037.001	UN990195	JZ-037.010	UN990179	12.30/I
RTBSU-401.075#00	JZ-036.000	UN990172	JZ-036.001	UN990196	JZ-036.010	UN990180	12.70/I
RTBSU-401.086#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	11.70/I
RTBSU-401.202#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	11.70/I
RTBSU-401.210#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	11.70/I
RTBSU-401.262#00	JZ-035.000	UN990169	JZ-035.001	UN990193	JZ-035.010	UN990177	12.70/I
RTBSU-401.265#00	JZ-037.000	UN990171	JZ-037.001	UN990195	JZ-037.010	UN990179	12.30/I

In flush-mounted socket, it can be adapted to fit virtually any switch range.

BASIC TYPE	50x50 mm cover set **TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY** (JZ-xxx.020)		50x50 mm cover set **TRAFFIC/STUDIO WHITE (RAL 9016) MATT** (JZ-xxx.021)		EURO/ PG
	Cover set	Item no.	Cover set	Item no.	
RTBSU-401.000#00	JZ-001.020	UN990071	JZ-001.021	UN990100	13.60/I
RTBSU-401.002#00	JZ-001.020	UN990071	JZ-001.021	UN990100	13.60/I
RTBSU-401.010#00	JZ-001.020	UN990071	JZ-001.021	UN990100	13.60/I
RTBSU-401.062#00	JZ-035.020	UN990185	JZ-035.021	UN990201	14.80/I
RTBSU-401.063#00	JZ-038.020	UN990186	JZ-038.021	UN990202	14.20/I
RTBSU-401.065#00	JZ-037.020	UN990187	JZ-037.021	UN990203	14.20/I
RTBSU-401.075#00	JZ-036.020	UN990188	JZ-036.021	UN990204	14.80/I
RTBSU-401.086#00	JZ-001.020	UN990071	JZ-001.021	UN990100	13.60/I
RTBSU-401.202#00	JZ-001.020	UN990071	JZ-001.021	UN990100	13.60/I
RTBSU-401.210#00	JZ-001.020	UN990071	JZ-001.021	UN990100	13.60/I
RTBSU-401.262#00	JZ-035.020	UN990185	JZ-035.021	UN990201	14.80/I
RTBSU-401.265#00	JZ-037.020	UN990187	JZ-037.021	UN990203	14.20/I

Cover set (example), individually foil-wrapped

SEE THE PRODUCT FINDER ON PAGE 84– 90 FOR ALL COVER SOLUTIONS AND SPECIAL COLOURS

ALRE FLUSH-MOUNTED RANGE (55X55 MM COVER SETS)

ALL BASIC TYPES AND SUITABLE COVER SETS **55X55 MM**

BASIC TYPE	55x55 mm cover set **PURE WHITE (RAL 9010) GLOSSY** (JZ-xxx.100)		55x55 mm cover set **PURE WHITE (RAL 9010) MATT** (JZ-xxx.101)		55x55 mm cover set **PEARL WHITE (RAL1013) GLOSSY** (JZ-xxx.110)		EURO/ PG	55x55 mm cover set **TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY** (JZ-xxx.120)		EURO/ PG
	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.		Cover set	Item no.	
RTBSU-401.000#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	14.40/I	JZ-001.120	UN990086	16.40/I
RTBSU-401.002#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	14.40/I	JZ-001.120	UN990086	16.40/I
RTBSU-401.010#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	14.40/I	JZ-001.120	UN990086	16.40/I
RTBSU-401.034#00	JZ-016.100	UN990140	–	–	–	–	15.50/I	–	–	
RTBSU-401.062#00	JZ-035.100	UN990173	JZ-035.101	UN990197	JZ-035.110	UN990181	15.90/I	JZ-035.120	UN990189	17.90/I
RTBSU-401.063#00	JZ-038.100	UN990174	JZ-038.101	UN990198	JZ-038.110	UN990182	15.50/I	JZ-038.120	UN990190	17.40/I
RTBSU-401.065#00	JZ-037.100	UN990175	JZ-037.101	UN990199	JZ-037.110	UN990183	15.50/I	JZ-037.120	UN990191	17.40/I
RTBSU-401.075#00	JZ-036.100	UN990176	JZ-036.101	UN990200	JZ-036.110	UN990184	15.90/I	JZ-036.120	UN990192	17.90/I
RTBSU-401.086#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	14.40/I	JZ-001.120	UN990086	16.40/I
RTBSU-401.202#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	14.40/I	JZ-001.120	UN990086	16.40/I
RTBSU-401.210#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	14.40/I	JZ-001.120	UN990086	16.40/I
RTBSU-401.262#00	JZ-035.100	UN990173	JZ-035.101	UN990197	JZ-035.110	UN990181	15.90/I	JZ-035.120	UN990189	17.90/I
RTBSU-401.265#00	JZ-037.100	UN990175	JZ-037.101	UN990199	JZ-037.110	UN990183	15.50/I	JZ-037.120	UN990191	17.40/I

Can be adapted to fit many switch ranges in flush-mounted sockets (for a current overview of the suitable frames and insert frames, see Page 83).

ALRE FLUSH-MOUNTED RANGE (70X70 MM COVER SETS)

ALL BASIC TYPES AND SUITABLE COVER SETS **70X70 MM**

BASIC TYPE	70x70 mm cover set **PURE WHITE (RAL 9010) GLOSSY** (JZ-xxx.400)		70x70 mm cover set **PEARL WHITE (RAL1013) GLOSSY** (JZ-xxx.410)		EURO/ PG	70x70 mm cover set **TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY** (JZ-xxx.420)		EURO/ PG
	Cover set	Item no.	Cover set	Item no.		Cover set	Item no.	
RTBSU-401.000#00	JZ-001.400	UN990141	JZ-001.410	UN990145	14.40/I	JZ-001.420	UN990149	16.40/I
RTBSU-401.002#00	JZ-001.400	UN990141	JZ-001.410	UN990145	14.40/I	JZ-001.420	UN990149	16.40/I
RTBSU-401.010#00	JZ-001.400	UN990141	JZ-001.410	UN990145	14.40/I	JZ-001.420	UN990149	16.40/I
RTBSU-401.034#00	JZ-016.400	UN990142	JZ-016.410	UN990146	15.50/I	JZ-016.420	UN990150	17.50/I
RTBSU-401.062#00	JZ-035.400	UN990143	JZ-035.410	UN990147	15.90/I	JZ-035.420	UN990151	17.90/I
RTBSU-401.065#00	JZ-037.400	UN990144	JZ-037.410	UN990148	15.50/I	JZ-037.420	UN990150	17.50/I
RTBSU-401.086#00	JZ-001.400	UN990141	JZ-001.410	UN990145	14.40/I	JZ-001.420	UN990149	16.40/I
RTBSU-401.202#00	JZ-001.400	UN990141	JZ-001.410	UN990145	14.40/I	JZ-001.420	UN990149	16.40/I
RTBSU-401.210#00	JZ-001.400	UN990141	JZ-001.410	UN990145	14.40/I	JZ-001.420	UN990149	16.40/I
RTBSU-401.262#00	JZ-035.400	UN990143	JZ-035.410	UN990147	15.90/I	JZ-035.420	UN990151	17.90/I
RTBSU-401.265#00	JZ-037.400	UN990144	JZ-037.410	UN990148	15.50/I	JZ-037.420	UN990150	17.50/I

Can be adapted to fit many switch ranges in flush-mounted sockets (for a current overview of the suitable frames and insert frames, see Page 83).

ALL BASIC TYPES AND SUITABLE COVER SETS FOR **BUSCH-JAEGER REFLEX SI / SI LINEAR / BUSCH-DURO 2000 SI / FUTURE / SOLO / AXCENT / CARAT** WITHOUT INSERT FRAME

BASIC TYPE	BUSCH-JAEGER cover set **REFLEX SI/SI LINEAR PURE WHITE (RAL 9010) GLOSSY (JZ-xxx.200/BJ)**		BUSCH-JAEGER cover set **BUSCH-DURO 2000 SI/SI LINEAR PEARL WHITE (RAL 1013) GLOSSY (JZ-001.210/BJ)**		EURO/ PG	BUSCH-JAEGER cover set **FUTURE LINEAR/SOLO/ AXCENT/CARAT TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY (JZ-001.320/BJ)**		EURO/ PG
	Cover set	Item no.	Cover set	Item no.		Cover set	Item no.	
RTBSU-401.000#00	JZ-001.200/BJ	G9990490	JZ-001.210/BJ	G9990491	11.70/I	JZ-001.320/BJ	G9990493	15.90/I
RTBSU-401.002#00	JZ-001.200/BJ	G9990490	JZ-001.210/BJ	G9990491	11.70/I	JZ-001.320/BJ	G9990493	15.90/I
RTBSU-401.010#00	JZ-001.200/BJ	G9990490	JZ-001.210/BJ	G9990491	11.70/I	JZ-001.320/BJ	G9990493	15.90/I
RTBSU-401.062#00	JZ-035.200/BJ	G9990499	-	-	12.70/I	-	-	
RTBSU-401.086#00	JZ-001.200/BJ	G9990490	JZ-001.210/BJ	G9990491	11.70/I	JZ-001.320/BJ	G9990493	15.90/I
RTBSU-401.202#00	JZ-001.200/BJ	G9990490	JZ-001.210/BJ	G9990491	11.70/I	JZ-001.320/BJ	G9990493	15.90/I

Can be adapted to fit the corresponding BUSCH-JAEGER switch ranges In flush-mounted sockets.

SPECIAL COLOURS **ALUMINIUM / ANTHRACITE**

ALRE CONTROLLER TYPES	MANUFACTURER SWITCH RANGE	COLOUR/ SURFACE FINISH	50X50 MM INSERT FRAME*	ALRE COVER SET: TYPE	(ITEM NO.)	EURO/ PG
RTBSU-401.000#00 RTBSU-401.002#00 RTBSU-401.010#00 RTBSU-401.086#00 RTBSU-401.202#00 RTBSU-401.210#00	BERKER S.1/B.3/B.7	aluminium/matt	not required	JZ-001.131/BE	(UN990114)	20.60/I
		anthracite/matt	not required	JZ-001.141/BE	(UN990115)	18.80/I
	BUSCH-JAEGER future linear	aluminium silver/glossy	1746/10-83	JZ-001.030/BJ	(UN990108)	20.60/I
		anthracite/glossy	1746/10-81	JZ-001.040/BJ	(UN990109)	18.80/I
	GIRA System 55	aluminium/matt	not required	JZ-001.131/GI	(UN990110)	20.60/I
		anthracite/matt	not required	JZ-001.141/GI	(UN990111)	18.80/I
	JUNG Series A	aluminium/glossy	not required	JZ-001.130/JU	(UN990112)	20.60/I
		anthracite/matt	not required	JZ-001.141/JU	(UN990113)	18.80/I
	MERTEN System M	aluminium/matt	not required	JZ-001.131/ME	(UN990116)	20.60/I
		anthracite/matt	not required	JZ-001.141/ME	(UN990117)	18.80/I

*) must be ordered from switch manufacturer or electronics wholesaler

Further details and information on available cover sets can be found online at www.alre.de or in the catalogue.

ADAPTATION OF ALRE FLUSH-MOUNTED CONTROLLERS

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION possible using '55x55', '70x70' or 'BJ' cover sets (without insert frame)	Only ADAPTATION with '50x50' cover set requires an insert frame from the manufacturer
BERKER	S.1	polar white (matt)	x	1109 19 19
BERKER	S.1	polar white (glossy)	x	1109 90 89
BERKER	Arsys	polar white (glossy)		1108 01 69
BERKER	B.3	aluminium / polar white (matt)	x	1109 19 19
BERKER	B.3	aluminium / polar white (glossy)	x	1109 90 89
BERKER	B.7	glass / polar white (matt)	x	1109 19 19
BERKER	B.7	glass / polar white (glossy)	x	1109 90 89
BERKER	Q.1 / Q.3	polar white (velvet)		1109 60 79
BERKER	K.1	polar white (glossy)		1108 71 09
BUSCH-JAEGER	Reflex SI / SI Linear	alpine white (glossy)	x	1746-214-101
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)	x	1746-914-101
BUSCH-JAEGER	impuls	alpine white (glossy)		1746 / 10-74
BUSCH-JAEGER	solo / future linear / axcent / etc.	studio white – see RAL 9016 below		
Elso	Joy	pure white (glossy)	x	363084
Elso	Fashion / Riva / Scala	pure white (glossy)		203084
GIRA	surface switch	pure white (glossy)	x	0282 112
GIRA (System 55)	Standard / E2	pure white (semi-gloss)	x	0282 27
GIRA (System 55)	Standard / E2 / E3	pure white (glossy)	x	0282 03
GIRA (System 55)	E22	pure white (glossy)	x	0282 03
GIRA (System 55)	Event	pure white (semi-gloss) + opaque…	x	0282 27
GIRA (System 55)	Event	pure white (glossy) + opaque…	x	0282 03
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium…	x	0282 27
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium…	x	0282 03
GIRA	S-Color	pure white (high-gloss)		0282 40
JUNG	CD 500 / CD plus	alpine white (glossy)		CD 590 Z WW
JUNG	A 500 / A 550 / AS 500 / A plus / A flow	alpine white (glossy)	x	A 590 Z WW
JUNG	LS 990	alpine white (glossy)	x	LS 961 Z WW
JUNG	LS plus	alpine white (glass)	x	LS 961 Z WW
JUNG	A creation	alpine white (glossy)	x	A 590 Z WW
JUNG	LS Design	alpine white (glossy)	x	LS 961 Z WW
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	x	5181 19
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)	x	5185 19
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)	x	5185 19
MERTEN (Surface System)	Artec / Antik	polar white (glossy)		5160 99
MERTEN	1-M / M-Smart / M-Plan / M-Pure / D-Life	active white – see RAL 9016 below or product finder		
PEHA	Standard	pure white (glossy)		80.670.02 ZV
PEHA	Dialog	pure white (glossy)		95.670.02 ZV
PEHA	Aura	pure white (matt) / glass		20.670.02 ZV
PEHA	Badora	pure white (glossy)		11.670.02 ZV

MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION possible using '55x55', '70x70' or 'BJ' cover sets (without insert frame)	Only ADAPTATION with '50x50' cover set requires an insert frame from the manufacturer
BUSCH-JAEGER	solo / future linear	studio white (RAL 9016, glossy)	x	1746 / 10-84
BUSCH-JAEGER	future linear	studio white (RAL 9016 matt)		1746 / 10-884
BUSCH-JAEGER	impuls	studio white (RAL 9016 matt)		1746 / 10-774
BUSCH-JAEGER	axcent	studio white (RAL 9016, glossy)	x	1746 / 10-84
BUSCH-JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016, glossy)	x	1746 / 10-84
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016, glossy)		1746 / 10-24G
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016 matt)		1746 / 10-24
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	x	5185 25
MERTEN	1-M / Atelier-M	active white (RAL 9016, glossy)	x	5185 25
MERTEN	D-Life	lotus white (RAL 9016)	x	MEG4500-6035
PEHA	Standard	arctic		D 80.670 ZV AW

*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame

NOTE: Most switch ranges are designed in a colour similar to RAL 1013, 9016 or 1013, although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt/glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

'50x50 controller': The housing covers of the 50x50 controllers are 50x50 mm in size. Using a 50x50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50x50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch range in question can be found in the column 'Only for adaptation with "50x50" cover set'.

'55x55 / 70x70 controller': The housing covers of the 55x55 / 70x70 controllers are 55x55 / 70x70 mm in size. Many light switch ranges have inner dimensions of 55x55 mm / 70x70 mm. Therefore, the 55x55 / 70x70 controllers can be installed directly in these light switch frames without the use of an insert frame. See the column 'Adaptation with "55x55 / 70x70" cover set' to determine whether the 55x55 / 70x70 controller fits in the given light switch model (x).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12 / 2022 | No liability is assumed for the information provided. | Technical specifications subject to change.

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM BERKER

INTEGRATION EXAMPLES

| RTBSU – in S. 1 | RTBSU – in B. 3 | RTBSU – in B. 7 | RTBSU – in K. 1 | RTBSU – in Arsys |
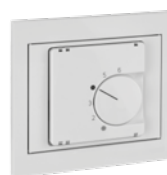
TYPE ALRE	BERKER RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50 X 50*	EURO / PG
RTBSU-401.000#00 RTBSU-401.002#00 RTBSU-401.010#00 RTBSU-401.086#00 RTBSU-401.202#00 RTBSU-401.210#00 Standard (without switch)	S. 1 / B. 3 / B. 7	polar white (RAL 9010) glossy	JZ-001.100 (55x55, glossy)	UN990050	not required	14.40 / I
	S. 1 / B. 3 / B. 7	polar white (RAL 9010) matt	JZ-001.101 (55x55, matt)	UN990055	not required	14.40 / I
	Arsys	polar white (RAL 9010) glossy	JZ-001.000 (50x50, glossy)	UN990035	1108 01 69	11.70 / I
	Q. 1 / Q. 3	polar white (RAL 9010) velvet	JZ-001.001 (50x50, matt)	UN990040	1109 60 79	11.70 / I
	K. 1	polar white (RAL 9010) glossy	JZ-001.000 (50x50, glossy)	UN990035	1108 71 09	11.70 / I
	S. 1	white (RAL 1013) glossy	JZ-001.110 (55x55, glossy)	UN990060	not required	14.40 / I
	Arsys	white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	1108 01 02	11.70 / I
	S. 1 / B. 3 / B. 7	aluminium / matt	JZ-001.131 / BE	UN990114	not required	20.60 / I
	S. 1 / B. 3 / B. 7	anthracite / matt	JZ-001.141 / BE	UN990115	not required	18.80 / I
RTBSU-401.034#00 (LED)	S. 1 / B. 3 / B. 7	polar white (RAL 9010) glossy	JZ-016.100 (50x55 glossy)	UN990140	not required	15.50 / I
	Arsys	polar white (RAL 9010) glossy	JZ-016.000 (50x50 glossy)	UN990139	1108 01 69	12.30 / I
	K.	polar white (RAL 9010) glossy	JZ-016.000 (50x50 glossy)	UN990139	1108 71 09	12.30 / I
RTBSU-401.062#00 RTBSU-401.262#00 (ON / OFF switch, LED)	S. 1 / B. 3 / B. 7	polar white (RAL 9010) glossy	JZ-035.100 (55x55, glossy)	UN990173	not required	15.90 / I
	S. 1 / B. 3 / B. 7	polar white (RAL 9010) matt	JZ-035.101 (55x55, matt)	UN990197	not required	15.90 / I
	Arsys	polar white (RAL 9010) glossy	JZ-035.000 (50x50, glossy)	UN990169	1108 01 69	12.70 / I
	Q. 1 / Q. 3	polar white (RAL 9010) velvet	JZ-035.001 (50x50, matt)	UN990193	1109 60 79	12.70 / I
	K. 1	polar white (RAL 9010) glossy	JZ-035.000 (50x50, glossy)	UN990169	1108 71 09	12.70 / I
	S. 1	white (RAL 1013) glossy	JZ-035.110 (55x55, glossy)	UN990181	not required	15.90 / I
	Arsys	white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	1108 01 02	12.70 / I
RTBSU-401.063#00 (Switch H / OFF / C)	S. 1 / B. 3 / B. 7	polar white (RAL 9010) glossy	JZ-038.100 (55x55, glossy)	UN990174	not required	15.50 / I
	S. 1 / B. 3 / B. 7	polar white (RAL 9010) matt	JZ-038.101 (55x55, matt)	UN990198	not required	15.50 / I
	Arsys	polar white (RAL 9010) glossy	JZ-038.000 (50x50, glossy)	UN990170	1108 01 69	12.30 / I
	Q. 1 / Q. 3	polar white (RAL 9010) velvet	JZ-038.001 (50x50, matt)	UN990194	1109 60 79	12.30 / I
	K. 1	polar white (RAL 9010) glossy	JZ-038.000 (50x50, glossy)	UN990170	1108 71 09	12.30 / I
	S. 1	white (RAL 1013) glossy	JZ-038.110 (55x55, glossy)	UN990182	not required	15.50 / I
	Arsys	white (RAL 1013) glossy	JZ-038.010 (50x50, glossy)	UN990178	1108 01 02	12.30 / I
RTBSU-401.065#00 RTBSU-401.265#00 (H / C switch)	S. 1 / B. 3 / B. 7	polar white (RAL 9010) glossy	JZ-037.100 (55x55, glossy)	UN990175	not required	15.50 / I
	S. 1 / B. 3 / B. 7	polar white (RAL 9010) matt	JZ-037.101 (55x55, matt)	UN990199	not required	15.50 / I
	Arsys	polar white (RAL 9010) glossy	JZ-037.000 (50x50, glossy)	UN990171	1108 01 69	12.30 / I
	Q. 1 / Q. 3	polar white (RAL 9010) velvet	JZ-037.001 (50x50, matt)	UN990195	1109 60 79	12.30 / I
	K. 1	polar white (RAL 9010) glossy	JZ-037.000 (50x50, glossy)	UN990171	1108 71 09	12.30 / I
	S. 1	white (RAL 1013) glossy	JZ-037.110 (55x55, glossy)	UN990183	not required	15.50 / I
	Arsys	white (RAL 1013) glossy	JZ-037.010 (50x50, glossy)	UN990179	1108 01 02	12.30 / I
RTBSU-401.075#00 (3-way switch, LED)	S. 1 / B. 3 / B. 7	polar white (RAL 9010) glossy	JZ-036.100 (55x55, glossy)	UN990176	not required	15.90 / I
	S. 1 / B. 3 / B. 7	polar white (RAL 9010) matt	JZ-036.101 (55x55, matt)	UN990200	not required	15.90 / I
	Arsys	polar white (RAL 9010) glossy	JZ-036.000 (50x50, glossy)	UN990172	1108 01 69	12.70 / I
	Q. 1 / Q. 3	polar white (RAL 9010) velvet	JZ-036.001 (50x50, matt)	UN990196	1109 60 79	12.70 / I
	K. 1	polar white (RAL 9010) glossy	JZ-036.000 (50x50, glossy)	UN990172	1108 71 09	12.70 / I
	S. 1	white (RAL 1013) glossy	JZ-036.110 (55x55, glossy)	UN990184	not required	15.90 / I
	Arsys	white (RAL 1013) glossy	JZ-036.010 (50x50, glossy)	UN990180	1108 01 02	12.70 / I

*) must be ordered from switch manufacturer or electronics wholesaler

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM BUSCH-JAEGER

INTEGRATION EXAMPLES

RTBSU – in Reflex SI	RTBSU – in Busch-balance SI	RTBSU – in future linear	RTBSU – in solo	RTBSU – in alpha nea

TYPE ALRE	BERKER RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO / PG
RTBSU-401.000#00 RTBSU-401.002#00 RTBSU-401.010#00 RTBSU-401.086#00 RTBSU-401.202#00 RTBSU-401.210#00	Reflex SI / SI Linear	alpine white (RAL 9010) glossy	JZ-001.200 / BJ	G9990490	not required	11.70 / I
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-001.100 (55x55, glossy)	UN990050	not required	14.40 / I
	impuls	alpine white (RAL 9010) glossy	JZ-001.000 (50x50, glossy)	UN990035	1746 / 10-74	11.70 / I
	future linear / solo / axcent / carat	studio white (RAL 9016) glossy	JZ-001.320 / BJ	G9990493	not required	15.90 / I
	future linear	studio white (RAL 9016) matt	JZ-001.021 (50x50, matt)	UN990100	1746 / 10-884	13.60 / I
	alpha nea	studio white (RAL 9016) glossy	JZ-001.020 (50x50, glossy)	UN990071	1746 / 10-24G	13.60 / I
	alpha nea	studio white (RAL 9016) matt	JZ-001.021 (50x50, matt)	UN990100	1746 / 10-24	13.60 / I
Standard (without switch)	Duro 2000 SI / SI Linear	white (RAL 1013) glossy	JZ-001.210 / BJ	G9990491	not required	11.70 / I
	future linear / solo / carat	ivory white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	1746 / 10-82	11.70 / I
	alpha nea	ivory white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	1746 / 10-22G	11.70 / I
	impuls	ivory white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	1746 / 10-72	11.70 / I
	future linear	aluminium silver / glossy	JZ-001.030 / BJ	UN990108	1746 / 10-83	20.60 / I
	future linear	anthracite / glossy	JZ-001.040 / BJ	UN990109	1746 / 10-81	18.80 / I
RTBSU-401.034#00	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-016.100 (50x55 glossy)	UN990140	not required	15.50 / I
	impuls	alpine white (RAL 9010) glossy	JZ-016.000 (50x50 glossy)	UN990139	1746 / 10-74	12.30 / I
(LED)						
RTBSU-401.062#00 RTBSU-401.262#00	Reflex SI / SI Linear	alpine white (RAL 9010) glossy	JZ-035.200 / BJ	G9990492	not required	12.70 / I
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-035.100 (55x55, glossy)	UN990173	not required	15.90 / I
	impuls	alpine white (RAL 9010) glossy	JZ-035.000 (50x50, glossy)	UN990169	1746 / 10-74	12.70 / I
	future linear / solo / axcent / carat	studio white (RAL 9016) glossy	JZ-035.020 (50x50, glossy)	UN990185	1746 / 10-84	14.80 / I
	future linear	studio white (RAL 9016) matt	JZ-035.021 (50x50, matt)	UN990201	1746 / 10-884	14.80 / I
(ON / OFF switch, LED)	alpha nea	studio white (RAL 9016) glossy	JZ-035.020 (50x50, glossy)	UN990185	1746 / 10-24G	14.80 / I
	alpha nea	studio white (RAL 9016) matt	JZ-035.021 (50x50, matt)	UN990201	1746 / 10-24	14.80 / I
	Duro 2000 SI / SI Linear	white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	1746-212-101	12.70 / I
	future linear / solo / carat	ivory white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	1746 / 10-82	12.70 / I
	alpha nea	ivory white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	1746 / 10-22G	12.70 / I
	impuls	ivory white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	1746 / 10-72	12.70 / I
RTBSU-401.063#00	Reflex SI / SI Linear	alpine white (RAL 9010) glossy	JZ-038.000 (50x50, glossy)	UN990170	1746-214-101	12.30 / I
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-038.100 (55x55, glossy)	UN990174	not required	15.50 / I
	impuls	alpine white (RAL 9010) glossy	JZ-038.000 (50x50, glossy)	UN990170	1746 / 10-74	12.30 / I
	future linear / solo / axcent / carat	studio white (RAL 9016) glossy	JZ-038.020 (50x50, glossy)	UN990186	1746 / 10-84	14.20 / I
	future linear	studio white (RAL 9016) matt	JZ-038.021 (50x50, matt)	UN990202	1746 / 10-884	14.20 / I
(Switch H / OFF / C)	alpha nea	studio white (RAL 9016) glossy	JZ-038.020 (50x50, glossy)	UN990186	1746 / 10-24G	14.20 / I
	alpha nea	studio white (RAL 9016) matt	JZ-038.021 (50x50, matt)	UN990202	1746 / 10-24	14.20 / I
	Duro 2000 SI / SI Linear	white (RAL 1013) glossy	JZ-038.010 (50x50, glossy)	UN990178	1746-212-101	12.30 / I
	future linear / solo / carat	ivory white (RAL 1013) glossy	JZ-038.010 (50x50, glossy)	UN990178	1746 / 10-82	12.30 / I
	alpha nea	ivory white (RAL 1013) glossy	JZ-038.010 (50x50, glossy)	UN990178	1746 / 10-22G	12.30 / I
	impuls	ivory white (RAL 1013) glossy	JZ-038.010 (50x50, glossy)	UN990178	1746 / 10-72	12.30 / I

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM BUSCH-JAEGER

INTEGRATION EXAMPLES

RTBSU – in Reflex SI	RTBSU – in Busch-balance SI	RTBSU – in future linear	RTBSU – in solo	RTBSU – in alpha nea

TYPE ALRE	BUSCH-JAEGER RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50 X 50*	EURO/ PG
RTBSU-401.065#00 RTBSU-401.265#00 (H/C switch)	Reflex SI / SI Linear	alpine white (RAL 9010) glossy	JZ-037.000 (50x50, glossy)	UN990171	1746-214-101	12.30 / I
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-037.100 (55x55, glossy)	UN990175	not required	15.50 / I
	impuls	alpine white (RAL 9010) glossy	JZ-037.000 (50x50, glossy)	UN990171	1746/10-74	12.30 / I
	future linear / solo / axcent / carat	studio white (RAL 9016) glossy	JZ-037.020 (50x50, glossy)	UN990187	1746/10-84	14.20 / I
	future linear	studio white (RAL 9016) matt	JZ-037.021 (50x50, matt)	UN990203	1746/10-884	14.20 / I
	alpha nea	studio white (RAL 9016) glossy	JZ-037.020 (50x50, glossy)	UN990187	1746/10-24G	14.20 / I
	alpha nea	studio white (RAL 9016) matt	JZ-037.021 (50x50, matt)	UN990203	1746/10-24	14.20 / I
	Duro 2000 SI / SI Linear	white (RAL 1013) glossy	JZ-037.010 (50x50, glossy)	UN990179	1746-212-101	12.30 / I
	future linear / solo / carat	ivory white (RAL 1013) glossy	JZ-037.010 (50x50, glossy)	UN990179	1746/10-82	12.30 / I
	alpha nea	ivory white (RAL 1013) glossy	JZ-037.010 (50x50, glossy)	UN990179	1746/10-22G	12.30 / I
	impuls	ivory white (RAL 1013) glossy	JZ-037.010 (50x50, glossy)	UN990179	1746/10-72	12.30 / I
RTBSU-401.075#00 (3-way switch, LED)	Reflex SI / SI Linear	alpine white (RAL 9010) glossy	JZ-036.000 (50x50, glossy)	UN990172	1746-214-101	12.70 / I
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-036.100 (55x55, glossy)	UN990176	not required	15.90 / I
	impuls	alpine white (RAL 9010) glossy	JZ-036.000 (50x50, glossy)	UN990172	1746/10-74	12.70 / I
	future linear / solo / axcent / carat	studio white (RAL 9016) glossy	JZ-036.020 (50x50, glossy)	UN990188	1746/10-84	14.80 / I
	future linear	studio white (RAL 9016) matt	JZ-036.021 (50x50, matt)	UN990204	1746/10-884	14.80 / I
	alpha nea	studio white (RAL 9016) glossy	JZ-036.020 (50x50, glossy)	UN990188	1746/10-24G	14.80 / I
	alpha nea	studio white (RAL 9016) matt	JZ-036.021 (50x50, matt)	UN990204	1746/10-24	14.80 / I
	Duro 2000 SI / SI Linear	white (RAL 1013) glossy	JZ-036.010 (50x50, glossy)	UN990180	1746-212-101	12.70 / I
	future linear / solo / carat	ivory white (RAL 1013) glossy	JZ-036.010 (50x50, glossy)	UN990180	1746/10-82	12.70 / I
	alpha nea	ivory white (RAL 1013) glossy	JZ-036.010 (50x50, glossy)	UN990180	1746/10-22G	12.70 / I
	impuls	ivory white (RAL 1013) glossy	JZ-036.010 (50x50, glossy)	UN990180	1746/10-72	12.70 / I

*) must be ordered from switch manufacturer or electronics wholesaler
For BJ future / solo there are also 55x55 insert frames (for use with alre 55x55 cover set) – BJ item no. 1747-84 (studio white) and 1784-82 (ivory white)

Note: Busch-Jaeger central disc cannot be used with alre RTBSU.

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM ELSO

INTEGRATION EXAMPLES

RTBSU – in Joy   RTBSU – in Fashion   RTBSU – in Riva   RTBSU – in Scala

TYPE ALRE	ELSO RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO / PG
RTBSU-401.000#00 RTBSU-401.002#00 RTBSU-401.010#00 RTBSU-401.086#00 RTBSU-401.202#00 RTBSU-401.210#00	Joy	pure white (RAL 9010) glossy	JZ-001.100 (55x55, glossy)	UN990050	not required	14.40 / I
	Joy	pearl white (RAL 1013) glossy	JZ-001.110 (55x55, glossy)	UN990060	not required	14.40 / I
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-001.000 (50x50, glossy)	UN990035	203084	11.70 / I
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	203080	11.70 / I
Standard (without switch)						
RTBSU-401.034#00	Joy	pure white (RAL 9010) glossy	JZ-016.100 (50x55 glossy)	UN990140	not required	15.50 / I
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-016.000 (50x50 glossy)	UN990139	203084	12.30 / I
(LED)						
RTBSU-401.062#00 RTBSU-401.262#00	Joy	pure white (RAL 9010) glossy	JZ-035.100 (55x55, glossy)	UN990173	not required	15.90 / I
	Joy	pearl white (RAL 1013) glossy	JZ-035.110 (55x55, glossy)	UN990181	not required	15.90 / I
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-035.000 (50x50, glossy)	UN990169	203084	12.70 / I
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	203080	12.70 / I
(ON / OFF switch, LED)						
RTBSU-401.063#00	Joy	pure white (RAL 9010) glossy	JZ-038.100 (55x55, glossy)	UN990174	not required	15.50 / I
	Joy	pearl white (RAL 1013) glossy	JZ-038.110 (55x55, glossy)	UN990182	not required	15.50 / I
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-038.000 (50x50, glossy)	UN990170	203084	12.30 / I
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-038.010 (50x50, glossy)	UN990178	203080	12.30 / I
(Switch H / OFF / C)						
RTBSU-401.065#00 RTBSU-401.265#00	Joy	pure white (RAL 9010) glossy	JZ-037.100 (55x55, glossy)	UN990175	not required	15.50 / I
	Joy	pearl white (RAL 1013) glossy	JZ-037.110 (55x55, glossy)	UN990183	not required	15.50 / I
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-037.000 (50x50, glossy)	UN990171	203084	12.30 / I
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-037.010 (50x50, glossy)	UN990179	203080	12.30 / I
(H / C switch)						
RTBSU-401.075#00	Joy	pure white (RAL 9010) glossy	JZ-036.100 (55x55, glossy)	UN990176	not required	15.90 / I
	Joy	pearl white (RAL 1013) glossy	JZ-036.110 (55x55, glossy)	UN990184	not required	15.90 / I
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-036.000 (50x50, glossy)	UN990172	203084	12.70 / I
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-036.010 (50x50, glossy)	UN990180	203080	12.70 / I
(3-way switch, LED)						

*) must be ordered from switch manufacturer or electronics wholesaler

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM GIRA

INTEGRATION EXAMPLES

RTBSU – in Standard 55
RTBSU – in E2
RTBSU – in Event
RTBSU – in surface switch
RTBSU – in E22

TYPE ALRE	GIRA RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50 X 50*	EURO / PG
RTBSU-401.000#00 RTBSU-401.002#00 RTBSU-401.010#00 RTBSU-401.086#00 RTBSU-401.202#00 RTBSU-401.210#00	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-001.100 (55x55, glossy)	UN990050	not required	14.40 / I
	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) matt	JZ-001.101 (55x55, matt)	UN990055	not required	14.40 / I
	Surface switch **NEW**	pure white (RAL 9010) glossy	JZ-001.400 (70x70, glossy)	UN990141	not required	14.40 / I
	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-001.110 (55x55, glossy)	UN990060	not required	14.40 / I
	System 55	aluminium / matt	JZ-001.131 / GI	UN990110	not required	20.60 / I
Standard (without switch)	System 55	anthracite / matt	JZ-001.141 / GI	UN990111	not required	18.80 / I
RTBSU-401.034#00	Standard 55 / E 2 / E 3 / E 22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-016.100 (50x55 glossy)	UN990140	not required	15.50 / I
(LED)	Surface switch **NEW**	pure white (RAL 9010) glossy	JZ-016.400 (70x70, glossy)	UN990142	not required	15.50 / I
RTBSU-401.062#00 RTBSU-401.262#00	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-035.100 (55x55, glossy)	UN990173	not required	15.90 / I
	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) matt	JZ-035.101 (55x55, matt)	UN990197	not required	15.90 / I
	Surface switch **NEW**	pure white (RAL 9010) glossy	JZ-035.400 (70x70, glossy)	UN990143	not required	15.90 / I
	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-035.110 (55x55, glossy)	UN990181	not required	15.90 / I
(ON / OFF switch, LED)	System 55	anthracite / matt	JZ / -035.141 / GI	UN990205	not required	20.10 / I
RTBSU-401.063#00	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-038.100 (55x55, glossy)	UN990174	not required	15.50 / I
	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) matt	JZ-038.101 (55x55, matt)	UN990198	not required	15.50 / I
	surface switch	pure white (RAL 9010) glossy	JZ-038.000 (50x50, glossy)	UN990170	0282 112	12.30 / I
(Switch H / OFF / C)	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-038.110 (55x55, glossy)	UN990182	not required	15.50 / I
RTBSU-401.065#00 RTBSU-401.265#00	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-037.100 (55x55, glossy)	UN990175	not required	15.50 / I
	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) matt	JZ-037.101 (55x55, matt)	UN990199	not required	15.50 / I
	Surface switch **NEW**	pure white (RAL 9010) glossy	JZ-037.400 (70x70, glossy)	UN990144	not required	15.50 / I
(H / C switch)	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-037.110 (55x55, glossy)	UN990183	not required	15.50 / I
RTBSU-401.075#00	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-036.100 (55x55, glossy)	UN990176	not required	15.90 / I
	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) matt	JZ-036.101 (55x55, matt)	UN990200	not required	15.90 / I
	surface switch	pure white (RAL 9010) glossy	JZ-036.000 (50x50, glossy)	UN990172	0282 40	12.70 / I
(3-way switch, LED)	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-036.110 (55x55, glossy)	UN990184	not required	15.90 / I

*) must be ordered from switch manufacturer or electronics wholesaler
**) for GIRA surface switches, there are also 55x55 insert frames (for the use of alre 55x55 cover set) –
GIRA item no. 0289 112 (pure white) and 0289 111 (cream white)

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM JUNG

INTEGRATION EXAMPLES

RTBSU – in AS 500	RTBSU – in A 500	RTBSU – in A plus	RTBSU – in A creation	RTBSU – in LS-design

TYPE ALRE	JUNG RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50 X 50*	EURO / PG
RTBSU-401.000#00 RTBSU-401.002#00 RTBSU-401.010#00 RTBSU-401.086#00 RTBSU-401.202#00 RTBSU-401.210#00 Standard (without switch)	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-001.100 (55x55, glossy)	UN990050	not required	14.40 / I
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-001.000 (50x50, glossy)	UN990035	CD 590 Z WW	11.70 / I
	LS 990 / LS design / LS plus NEW	alpine white (RAL 9010) glossy	JZ-001.400 (70x70, glossy)	UN990141	not required	14.40 / I
	AS 500	white (RAL 1013) glossy	JZ-001.110 (55x55, glossy)	UN990060	not required	14.40 / I
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	590 Z	11.70 / I
	LS 990 / LS design / LS plus NEW	white (RAL 1013) glossy	JZ-001.410 (70x70, glossy)	UN990145	not required	14.40 / I
	AS 550 / A flow	snow white matt	JZ-001.101 (55x55, matt)	UN990055	not required	14.40 / I
	Series A	aluminium / glossy	JZ-001.130 / JU	UN990112	not required	20.60 / I
	Series A	anthracite / matt	JZ-001.141 / JU	UN990113	not required	18.80 / I
RTBSU-401.034#00 (LED)	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-016.100 (55x55, glossy)	UN990140	not required	15.50 / I
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-016.000 (50x50 glossy)	UN990139	CD 590 Z WW	12.30 / I
	LS 990 / LS design / LS plus NEW	alpine white (RAL 9010) glossy	JZ-016.400 (70x70, glossy)	UN990142	not required	15.50 / I
RTBSU-401.062#00 RTBSU-401.262#00 (ON / OFF switch, LED)	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-035.100 (55x55, glossy)	UN990173	not required	15.90 / I
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-035.000 (50x50, glossy)	UN990169	CD 590 Z WW	12.70 / I
	LS 990 / LS design / LS plus NEW	alpine white (RAL 9010) glossy	JZ-035.400 (70x70, glossy)	UN990143	not required	15.90 / I
	AS 500	white (RAL 1013) glossy	JZ-035.110 (55x55, glossy)	UN990181	not required	15.90 / I
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	590 Z	12.70 / I
	LS 990 / LS design / LS plus NEW	white (RAL 1013) glossy	JZ-035.410 (70x70, glossy)	UN990147	not required	15.90 / I
	AS 550 / A flow	snow white matt	JZ-035.101 (55x55, matt)	UN990197	not required	15.90 / I
RTBSU-401.063#00 (Switch H / OFF / C)	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-038.100 (55x55, glossy)	UN990174	not required	15.50 / I
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-038.000 (50x50, glossy)	UN990170	CD 590 Z WW	12.30 / I
	LS 990 / LS design / LS plus	alpine white (RAL 9010) glossy	JZ-038.000 (50x50, glossy)	UN990170	LS 961 Z WW **	12.30 / I
	AS 500	white (RAL 1013) glossy	JZ-038.110 (55x55, glossy)	UN990182	not required	15.50 / I
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-038.010 (50x50, glossy)	UN990178	590 Z	12.30 / I
	LS 990 / LS design / LS plus	white (RAL 1013) glossy	JZ-038.010 (50x50, glossy)	UN990178	LS 961 Z **	12.30 / I
	AS 550 / A flow	snow white matt	JZ-038.101 (55x55, matt)	UN990198	not required	15.50 / I
RTBSU-401.065#00 RTBSU-401.265#00 (H / C switch)	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-037.100 (55x55, glossy)	UN990175	not required	15.50 / I
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-037.000 (50x50, glossy)	UN990171	CD 590 Z WW	12.30 / I
	LS 990 / LS design / LS plus NEW	alpine white (RAL 9010) glossy	JZ-037.400 (70x70, glossy)	UN990144	not required	15.50 / I
	AS 500	white (RAL 1013) glossy	JZ-037.110 (55x55, glossy)	UN990183	not required	15.50 / I
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-037.010 (50x50, glossy)	UN990179	590 Z	12.30 / I
	LS 990 / LS design / LS plus NEW	white (RAL 1013) glossy	JZ-037.410 (70x70, glossy)	UN990148	not required	15.50 / I
	AS 550 / A flow	snow white matt	JZ-037.101 (55x55, matt)	UN990199	not required	15.50 / I
RTBSU-401.075#00 (3-way switch, LED)	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-036.100 (55x55, glossy)	UN990176	not required	15.90 / I
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-036.000 (50x50, glossy)	UN990172	CD 590 Z WW	12.70 / I
	LS 990 / LS design / LS plus	alpine white (RAL 9010) glossy	JZ-036.000 (50x50, glossy)	UN990172	LS 961 Z WW **	12.70 / I
	AS 500	white (RAL 1013) glossy	JZ-036.110 (55x55, glossy)	UN990184	not required	15.90 / I
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-036.010 (50x50, glossy)	UN990180	590 Z	12.70 / I
	LS 990 / LS design / LS plus	white (RAL 1013) glossy	JZ-036.010 (50x50, glossy)	UN990180	LS 961 Z **	12.70 / I
	AS 550 / A flow	snow white matt	JZ-036.101 (55x55, matt)	UN990200	not required	15.90 / I

*) must be ordered from switch manufacturer or electronics wholesaler
*** if necessary, the manufacturer JUNG will change the colour of alpine white from RAL 9010 to RAL 9016

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM MERTEN

INTEGRATION EXAMPLES

| RTBSU – in 1-M | RTBSU – in M-Smart | RTBSU – in M-Plan | RTBSU – in Artec | RTBSU – in Antik |

TYPE ALRE	MERTEN RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG
RTBSU-401.000#00 RTBSU-401.002#00 RTBSU-401.010#00 RTBSU-401.086#00 RTBSU-401.202#00 RTBSU-401.210#00	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-001.100 (55x55, glossy)	UN990050	not required	14.40 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-001.101 (55x55, matt)	UN990055	not required	14.40 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-001.120 (55x55, glossy)	UN990086	not required	16.40 / I
	D-Life **NEW**	lotus white (RAL 9016) glossy	JZ-001.420 (70x70, glossy)	UN990149	not required	16.40 / I
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-001.000 (50x50, glossy)	UN990035	5160 99	11.70 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-001.110 (55x55, glossy)	UN990060	not required	14.40 / I
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	5160 94	11.70 / I
Standard (without switch)	System M	aluminium / matt	JZ-001.131 / ME	UN990116	not required	20.60 / I
	System M	anthracite / matt	JZ-001.141 / ME	UN990117	not required	18.80 / I
RTBSU-401.034#00	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-016.100 (55x55, glossy)	UN990140	not required	15.50 / I
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-016.000 (50x50, glossy)	UN990139	5160 99	12.30 / I
(LED)	D-Life **NEW**	lotus white (RAL 9016) glossy	JZ-016.420 (70x70, glossy)	UN990150	not required	17.50 / I
RTBSU-401.062#00 RTBSU-401.262#00	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-035.100 (55x55, glossy)	UN990173	not required	15.90 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-035.101 (55x55, matt)	UN990197	not required	15.90 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-035.120 (55x55, glossy)	UN990189	not required	17.90 / I
	D-Life **NEW**	lotus white (RAL 9016) glossy	JZ-035.420 (70x70, glossy)	UN990151	not required	17.90 / I
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-035.000 (50x50, glossy)	UN990169	5160 99	12.70 / I
(ON / OFF switch, LED)	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-035.110 (55x55, glossy)	UN990181	not required	15.90 / I
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	5160 94	12.70 / I
RTBSU-401.063#00	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-038.100 (55x55, glossy)	UN990174	not required	15.50 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-038.101 (55x55, matt)	UN990198	not required	15.50 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-038.120 (55x55, glossy)	UN990190	not required	17.40 / I
	D-Life	lotus white (RAL 9016) glossy	JZ-038.020 (50x50, glossy)	UN990186	MEG4500-6035	14.20 / I
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-038.000 (50x50, glossy)	UN990170	5160 99	12.30 / I
(Switch H / OFF / C)	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-038.110 (55x55, glossy)	UN990182	not required	15.50 / I
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-038.010 (50x50, glossy)	UN990178	5160 94	12.30 / I
RTBSU-401.065#00 RTBSU-401.265#00	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-037.100 (55x55, glossy)	UN990175	not required	15.50 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-037.101 (55x55, matt)	UN990199	not required	15.50 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-037.120 (55x55, glossy)	UN990191	not required	17.40 / I
	D-Life **NEW**	lotus white (RAL 9016) glossy	JZ-037.420 (70x70, glossy)	UN990150	not required	17.50 / I
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-037.000 (50x50, glossy)	UN990171	5160 99	12.30 / I
(H / C switch)	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-037.110 (55x55, glossy)	UN990183	not required	15.50 / I
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-037.010 (50x50, glossy)	UN990179	5160 94	12.30 / I
RTBSU-401.075#00	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-036.100 (55x55, glossy)	UN990176	not required	15.90 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-036.101 (55x55, matt)	UN990200	not required	15.90 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-036.120 (55x55, glossy)	UN990192	not required	17.90 / I
	D-Life	lotus white (RAL 9016) glossy	JZ-036.020 (50x50, glossy)	UN990188	MEG4500-6035	14.80 / I
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-036.000 (50x50, glossy)	UN990172	5160 99	12.70 / I
(3-way switch, LED)	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-036.110 (55x55, glossy)	UN990184	not required	15.90 / I
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-036.010 (50x50, glossy)	UN990180	5160 94	12.70 / I

*) must be ordered from switch manufacturer or electronics wholesaler
Note: Merten central plates cannot be used with alre FTR.

CONTROLLERS FOR ALL
SWITCH RANGES

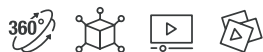**Integration examples in switch ranges with or without insert frame**

**ADAPTATION EXAMPLE
BERKER (S.1)**

**ADAPTATION EXAMPLE
JUNG (AS 500)**

**ADAPTATION EXAMPLE
BUSCH-JAEGER
(REFLEX SI LINEAR)**

ADAPTATION EXAMPLE BERKER B.3 ALUMINIUM

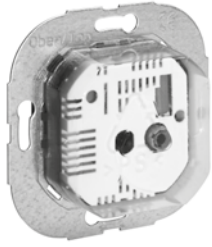**ADAPTATION EXAMPLE GIRA (SURFACE SWITCH)**

ADAPTATION EXAMPLE BERKER (K.1)

ROOM TEMPERATURE CONTROLLER, MECHANICAL, FTR
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TECHNICAL DATA

Design:	Berlin UP
Housing material:	PC plastic
Ambient temperature:	0 to 30 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Mounting / attachment:	in flush-mounted socket – with cover set 50x50 mm or 55x55 mm, can be used with almost all switch ranges (deep flush-mounted socket recommended)
Protection rating:	IP30
Protection class:	II, if properly mounted; with 24 VAC, protection class III
Safety and EMC:	according to DIN EN 60730
Max. power consumption:	< 0.5 W
Switching element:	bimetallic contact
Output signal:	switching
Sensor:	bimetal
Control range:	5 to 30 °C
Setting range:	5 to 30 °C
Hysteresis:	approx. 0.5 K at a temperature change of max. 4 K / h
General features:	thermal feedback; multi-digit display * … 6

APPLICATION

Control or monitoring of temperatures in closed, dry spaces. Suitable for all heating systems.
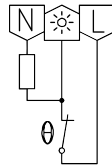
Valve actuator: normally closed. If normally open heating valves are available, they should be connected to the cooling output of the changeover switch (toggler), e.g., FTR 101.010.

Up to a maximum of ten actuators for valves can be connected (normally closed, NC); with a toggler, on the NO contact, up to five units.

In terms of visual aesthetics, the basic controllers, in combination with a 55x55 mm cover set, fit perfectly in many switch ranges without an insert frame.

The basic controllers, in combination with a 50x50 mm cover set, fit in nearly all switch ranges with the use of an insert frame.
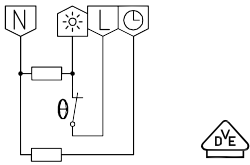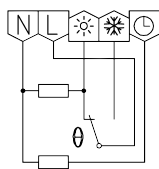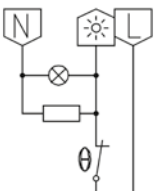
Other complete devices (#21 types) with alre frame 'Berlin' (neutral), 50x50 mm cover (pure white, similar to RAL 9010, glossy) upon request.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
FTR 101.000#00	UA010017	**General features:** mechanical range limitation; external setting; protective cap; contact hazard protection cover plate; VDE-tested **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Control function:** heating Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no:** JZ-001.xxx, for example: 50x50 mm cover set, pure white, glossy: JZ-001.000 55x55 mm cover set, pure white, glossy: JZ-001.100 **BUSCH-JAEGER cover set** Reflex SI / SI Linear, pure white, glossy: JZ-001.200 / BJ future linear, solo, axcent, carat, studio white (RAL 9016), glossy; JZ-001.320 / BJ		56.80 / I
FTR 101.000#21	UN010009	Similar to FTR 101.000#00, but with scope of delivery: controller, alre frame 'Berlin' (neutral), 50x50 mm cover, pure white (similar to RAL 9010), glossy		71.90 / I

ROOM TEMPERATURE CONTROLLER, MECHANICAL, FTR
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP
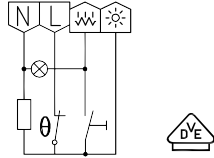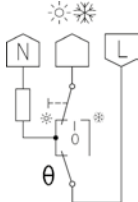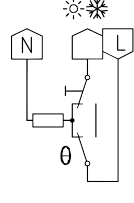
TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
FTR 101.002#00	UA010134	**General features:** ECO function; mechanical range limitation; external setting; protective cap; contact hazard protection cover plate; VDE-tested **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Control function:** heating **Input 'temperature reduction':** approx. 4 K (230 VAC, 50 Hz) Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no: JZ-001.xxx, for example:** 50x50 mm cover set, pure white, glossy: JZ-001.000 55x55 mm cover set, pure white, glossy: JZ-001.100 **BUSCH-JAEGER cover set** Reflex SI/SI Linear, pure white, glossy: JZ-001.200/BJ future linear, solo, axcent, carat, studio white (RAL 9016), glossy; JZ-001.320/BJ		59.10/I
FTR 101.010#00	UA010222	**General features:** ECO function; mechanical range limitation; external setting; protective cap; contact hazard protection cover plate; VDE-tested **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** heating terminal 10 (4) A, cooling terminal 5 (2) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** heating terminal: 2300 W, **Cooling terminal:** 1150 W **Switching contact:** changeover switch (toggler, max. 10 actuators output heating, max. 5 actuators output cooling) **Control function:** heating or cooling **Input 'temperature reduction':** approx. 4 K (230 VAC, 50 Hz) Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no: JZ-001.xxx, for example:** 50x50 mm cover set, pure white, glossy: JZ-001.000 55x55 mm cover set, pure white, glossy: JZ-001.100 **BUSCH-JAEGER cover set** Reflex SI/SI Linear, pure white, glossy: JZ-001.200/BJ future linear, solo, axcent, carat, studio white (RAL 9016), glossy; JZ-001.320/BJ		72.30/I
FTR 101.034#07	UA012404	**General features:** 'heating' display; mechanical range limitation; external setting; contact hazard protection cover plate **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Control function:** heating **Scope of delivery:** controller, 50x50 mm cover, pure white (similar to RAL 9010), glossy		72.40/I
FTR 101.034#55	UA012405	Similar to FTR 101.034#07 but with 55x55 mm cover		73.60/I

ROOM TEMPERATURE CONTROLLER, MECHANICAL, FTR
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

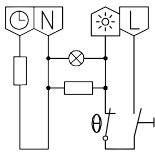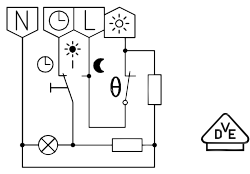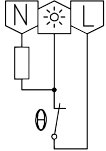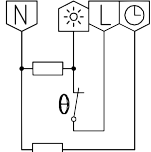| TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
FTR 101.052#21	UA010702	**General features:** 'auxiliary heating' display; mechanical range limitation; **auxiliary heating switch;** external setting **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** the total current (heating + auxiliary heating) may not exceed 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** the total power output (heating + auxiliary heating) may not exceed 2300 W **Switching contact:** NC contact (max. 10 actuators) **Control function:** heating **Scope of delivery:** controller, alre frame 'Berlin' (neutral), 50x50 mm cover, pure white (similar to RAL 9010), glossy		88.60/I
FTR 101.062#00	UA010811	**General features:** ECO function; **'heating' display;** mechanical range limitation; **on/off switch;** external setting; protective cap; contact hazard protection cover plate; VDE-tested **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Control function:** heating **Input 'temperature reduction':** approx. 4 K (230 VAC, 50 Hz) Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no:** JZ-002.xxx, e.g.: 50x50 mm cover set, pure white, glossy: JZ-002.000 55x55 mm cover set, pure white, glossy: JZ-002.100 **BUSCH-JAEGER cover set** Reflex SI/SI Linear, pure white, glossy: JZ-002.200/BJ (only for FTR)		73.70/I
FTR 101.063#00	UA011000	**General features:** climate controller for 2-pipe systems, mechanical range limitation; **'heating/off/cooling' switch;** external setting; protective cap; contact hazard protection cover plate **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 5 (2) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 1150 W **Switching contact:** changeover switch (max. 5 actuators) **Control function:** heating or cooling For cover sets see the separate overview 'alre flush-mounted range (cover sets)', not included in the delivery. **Suitable set no:** JZ-012.xxx, for example: 50x50 mm cover set, pure white, glossy: JZ-012.000 55x55 mm cover set, pure white, glossy: JZ-012.100		80.60/I
FTR 101.065#00	UA010910	**General features:** climate controller for 2-pipe systems, especially heat pumps; mechanical range limitation; **heating/cooling switch;** external setting; protective cap; contact hazard protection cover plate **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 5 (2) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 1150 W **Switching contact:** changeover switch (toggler, max. 5 actuators) **Control function:** heating or cooling Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no:** JZ-004.xxx, e.g.: 50x50 mm cover set, pure white, glossy: JZ-004.000 55x55 mm cover set, pure white, glossy: JZ-004.100		79.50/I

ROOM TEMPERATURE CONTROLLER, MECHANICAL, FTR
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
FTR 101.075#00	UA010415	**General features:** ECO function; **'reduction' display;** mechanical range limitation; **switch for reduction / heating / reduction via external timer;** external setting; protective cap; contact hazard protection cover plate; VDE-tested **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Control function:** heating **Input 'temperature reduction':** approx. 4 K (230 VAC, 50 Hz) Cover sets are offered in various designs (see the separate over-view, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no: JZ-003.xxx, e.g.:** 50x50 mm cover set, pure white, glossy: JZ-003.000 55x55 mm cover set, pure white, glossy: JZ-003.100		77.40 / I
FTR 101.086#00	UA010615	**General features:** mechanical range limitation; 3000 W switching power, for electric direct heating systems, natural stone heating; external setting; protective cap; contact hazard protection cover plate **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 13 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 3000 W **Switching contact:** NC contact **Control function:** heating Cover sets are offered in various designs (see the separate over-view, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no: JZ-001.xxx, for example:** 50x50 mm cover set, pure white, glossy: JZ-001.000 55x55 mm cover set, pure white, glossy: JZ-001.100 **BUSCH-JAEGER cover set** Reflex SI / SI Linear, pure white, glossy: JZ-001.200 / BJ future linear, solo, axcent, carat, studio white (RAL 9016), glossy; JZ-001.320 / BJ		63.00 / I
FTR 101.086#21	UN010607	Similar to FTR 101.086#00, but with scope of delivery: controller, alre frame 'Berlin' (neutral), 50x50 mm cover, pure white (similar to RAL 9010), glossy		78.00 / I
FTR 101.202#00	UA012008	**General features:** ECO function; mechanical range limitation; ex-ternal setting; protective cap; contact hazard protection cover plate **Operating voltage:** 24 VAC / 50 Hz, 24 VDC **Max. switching current:** 1 (1) A **Max. switching voltage:** 24 VAC / 50 Hz, 24 VDC **Max. switching voltage:** 24 VAC / 50 Hz, 24 VDC **Switching power:** 24 W **Switching contact:** NC contact (max. 5 actuators) **Control function:** heating **Input 'temperature reduction':** approx. 4 K (24 VAC / 50 Hz, 24 VDC) Cover sets are offered in various designs (see the sepa-rate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no: JZ-001.xxx, for example:** 50x50 mm cover set, pure white, glossy: JZ-001.000 55x55 mm cover set, pure white, glossy: JZ-001.100 **BUSCH-JAEGER cover set** Reflex SI / SI Linear, pure white, glossy: JZ-001.200 / BJ future linear, solo, axcent, carat, studio white (RAL 9016), glossy; JZ-001.320 / BJ		69.50 / I
FTR 101.202#21	UN102009	Similar to FTR 101.202#00, but with scope of delivery: controller, alre frame 'Berlin' (neutral), 50x50 mm cover, pure white (similar to RAL 9010), glossy		84.80 / I
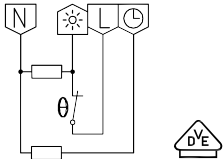
ROOM TEMPERATURE CONTROLLER, MECHANICAL, FTR
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
FTR 101.210#00	UA012301	**General features:** ECO function; mechanical range limitation; external setting; protective cap; contact hazard protection cover plate **Operating voltage:** 24 VAC / 50 Hz, 24 VDC **Max. switching current:** 1 (1) A **Max. switching voltage:** 24 VAC / 50 Hz, 24 VDC **Min. switching voltage:** 24 VAC / 50 Hz, 24 VDC **Switching power:** 24 W **Switching contact:** changeover switch (toggler, max. 5 actuators) **Control function:** heating or cooling **Input 'temperature reduction':** approx. 4 K (24 VAC / 50 Hz, 24 VDC) Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no: JZ-001.xxx, for example:** 50x50 mm cover set, pure white, glossy: JZ-001.000 55x55 mm cover set, pure white, glossy: JZ-001.100 **BUSCH-JAEGER cover set** Reflex SI / SI Linear, pure white, glossy: JZ-001.200 / BJ future linear, solo, axcent, carat, studio white (RAL 9016), glossy; JZ-001.320 / BJ		79.80 / I
FTR 101.262#00	UA012500	**General features:** ECO function; **'heating' display;** mechanical range limitation; **on / off switch;** external setting; protective cap; contact hazard protection cover plate **Operating voltage:** 24 VAC / 50 Hz **Max. switching current:** 1 (1) A **Max. switching voltage:** 24 VAC / 50 Hz **Min. switching voltage:** 24 VAC / 50 Hz **Switching power:** 24 W **Switching contact:** NC contact (max. 5 actuators) **Control function:** heating **Input 'temperature reduction':** approx. 4 K (24 VAC / 50 Hz) Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no: JZ-002.xxx, e.g.:** 50x50 mm cover set, pure white, glossy: JZ-002.000 55x55 mm cover set, pure white, glossy: JZ-002.100 **BUSCH-JAEGER cover set** Reflex SI / SI Linear, pure white, glossy: JZ-002.200 / BJ (only for FTR)		81.00 / I
FTR 101.262#21	UA012501	Similar to FTR 101.262#00, but with scope of delivery: controller, alre frame 'Berlin' (neutral), 50x50 mm cover, pure white (similar to RAL 9010), glossy		99.60 / I
FTR 101.265#00	UA012600	**General features:** climate controller for 2-pipe systems, especially heat pumps; mechanical range limitation; **'heating / cooling' switch**; external setting; protection cap; contact hazard protection cover plate **Operating voltage:** 24 VAC / 50 Hz, 24 VDC **Max. switching current:** 1 (1) A **Max. switching voltage:** 24 VAC / 50 Hz, 24 VDC **Max. switching voltage:** 24 VAC / 50 Hz, 24 VDC **Switching power:** 24 W **Switching contact:** changeover switch (toggler, max. 5 actuators) **Control function:** heating or cooling Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no: JZ-004.xxx, e.g.:** 50x50 mm cover set, pure white, glossy: JZ-004.000 55x55 mm cover set, pure white, glossy: JZ-004.100		87.30 / I

ROOM TEMPERATURE CONTROLLER, MECHANICAL, FTR
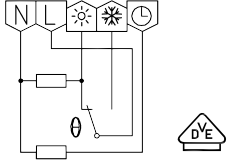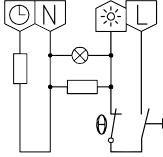## FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
FTR 101.902#07	UA013000	**General features:** ECO function; internal setting; contact hazard protection cover plate **Operating voltage:** 230 VAC, 50 Hz **Max. switching current:** 10 (4) A **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 2300 W **Switching contact:** NC contact (max. 10 actuators) **Control function:** heating **Input 'temperature reduction':** approx. 4 K (230 VAC, 50 Hz) **Scope of delivery:** Controller, 50x50 mm cover, pure white (similar to RAL 9010), glossy		€75.10

Accessories: terminal strips VOOxx, suitable valve actuators ZBOOA, suitable cover sets: see separate overview 'alre flush-mounting range (cover sets)'

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
JZ-090.900	VV000025	**General features:** alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50x50 mm cover **Design:** Berlin **Surface finish:** glossy **Colour:** Pure white, similar to RAL 9010 **Material:** PC plastic	4.20 / I
JZ-090.100	VV000048	**Features:** similar to JZ-090.900, but for all flush-mounted controllers with 55x55 mm cover	4.20 / I
JZ-090.910	VV000010	as for JZ-090.900, but colour similar to RAL 1013	4.20 / I

ILLUSTRATIONS

alre frame 'Berlin' (#21 types)

with 50x50 insert frame

without 55x55 insert frame

ILLUSTRATIONS

FTR with alre frame 'Berlin' (FTR 101.xxx#21 types)
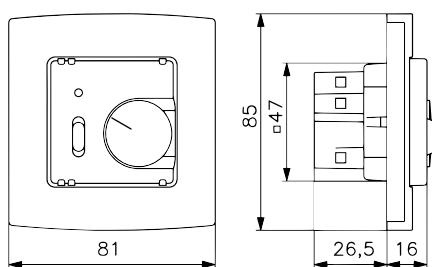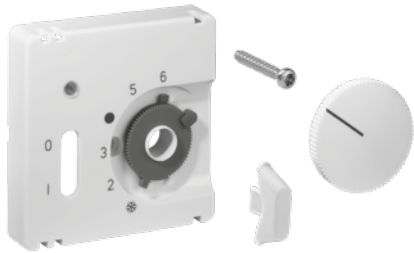
FTR 101.902#07 contact hazard protection cap with setting range (internal setting)

ALRE FLUSH-MOUNTED RANGE (50X50 MM COVER SETS)

ALL BASIC TYPES AND SUITABLE COVER SETS **50X50 MM**

BASIC TYPE	50x50 mm cover set **PURE WHITE (RAL 9010) GLOSSY**		50x50 mm cover set **PURE WHITE (RAL 9010) MATT**		50x50 mm cover set **PEARL WHITE (RAL1013) GLOSSY**		EURO/ PG
	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	
FTR 101.000#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	11.70 / I
FTR 101.002#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	11.70 / I
FTR 101.010#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	11.70 / I
FTR 101.062#00	JZ-002.000	UN990036	JZ-002.001	UN990041	JZ-002.010	UN990046	12.70 / I
FTR 101.063#00	JZ-012.000	UN990107	JZ-012.001	UN990132	JZ-012.010	UN990133	12.30 / I
FTR 101.065#00	JZ-004.000	UN990037	JZ-004.001	UN990042	JZ-004.010	UN990047	12.30 / I
FTR 101.075#00	JZ-003.000	UN990038	JZ-003.001	UN990043	JZ-003.010	UN990048	12.70 / I
FTR 101.086#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	11.70 / I
FTR 101.202#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	11.70 / I
FTR 101.210#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	11.70 / I
FTR 101.262#00	JZ-002.000	UN990036	JZ-002.001	UN990041	JZ-002.010	UN990046	12.70 / I
FTR 101.265#00	JZ-004.000	UN990037	JZ-004.001	UN990042	JZ-004.010	UN990047	12.30 / I

In flush-mounted socket, it can be adapted to fit virtually any switch range.

BASIC TYPE	50x50 mm cover set **TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY** (JZ-xxx.020)		50x50 mm cover set **TRAFFIC/STUDIO WHITE (RAL 9016) MATT** (JZ-xxx.021)		EURO/ PG
	Cover set	Item no.	Cover set	Item no.	
FTR 101.000#00	JZ-001.020	UN990071	JZ-001.021	UN990100	13.60 / I
FTR 101.002#00	JZ-001.020	UN990071	JZ-001.021	UN990100	13.60 / I
FTR 101.010#00	JZ-001.020	UN990071	JZ-001.021	UN990100	13.60 / I
FTR 101.062#00	JZ-002.020	UN990072	JZ-002.021	UN990101	14.80 / I
FTR 101.063#00	JZ-012.020	UN990134	JZ-012.021	UN990135	14.20 / I
FTR 101.065#00	JZ-004.020	UN990073	JZ-004.021	UN990103	14.20 / I
FTR 101.075#00	JZ-003.020	UN990074	JZ-003.021	UN990102	14.80 / I
FTR 101.086#00	JZ-001.020	UN990071	JZ-001.021	UN990100	13.60 / I
FTR 101.202#00	JZ-001.020	UN990071	JZ-001.021	UN990100	13.60 / I
FTR 101.210#00	JZ-001.020	UN990071	JZ-001.021	UN990100	13.60 / I
FTR 101.262#00	JZ-002.020	UN990072	JZ-002.021	UN990101	14.80 / I
FTR 101.265#00	JZ-004.020	UN990073	JZ-004.021	UN990103	14.20 / I

Cover set (example), individually foil-wrapped

SEE THE PRODUCT FINDER ON PAGE 105– 111 FOR ALL COVER SOLUTIONS AND SPECIAL COLOURS

ALRE FLUSH-MOUNTED RANGE (55X55 MM COVER SETS)

ALL BASIC TYPES AND SUITABLE COVER SETS 55X55 MM

BASIC TYPE	55x55 mm cover set **PURE WHITE (RAL 9010) GLOSSY** (JZ-xxx.100)		55x55 mm cover set **PURE WHITE (RAL 9010) MATT** (JZ-xxx.101)		Design 55x55 mm **PEARL WHITE (RAL1013) GLOSSY** (JZ-xxx.110)		**EURO/ PG**	55x55 mm cover set **TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY** (JZ-xxx.120)		**EURO/ PG**
	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.		Cover set	Item no.	
FTR 101.000#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	14.40/I	JZ-001.120	UN990086	16.40/I
FTR 101.002#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	14.40/I	JZ-001.120	UN990086	16.40/I
FTR 101.010#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	14.40/I	JZ-001.120	UN990086	16.40/I
FTR 101.062#00	JZ-002.100	UN990051	JZ-002.101	UN990056	JZ-002.110	UN990061	15.90/I	JZ-002.120	UN990088	17.90/I
FTR 101.063#00	JZ-012.100	UN990123	JZ-012.101	UN990136	JZ-012.110	UN990137	15.50/I	JZ-012.120	UN990138	17.40/I
FTR 101.065#00	JZ-004.100	UN990052	JZ-004.101	UN990057	JZ-004.110	UN990062	15.50/I	JZ-004.120	UN990089	17.40/I
FTR 101.075#00	JZ-003.100	UN990053	JZ-003.101	UN990058	JZ-003.110	UN990063	15.90/I	JZ-003.120	UN990090	17.90/I
FTR 101.086#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	14.40/I	JZ-001.120	UN990086	16.40/I
FTR 101.202#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	14.40/I	JZ-001.120	UN990086	16.40/I
FTR 101.262#00	JZ-002.100	UN990051	JZ-002.101	UN990056	JZ-002.110	UN990061	15.90/I	JZ-002.120	UN990088	17.90/I
FTR 101.265#00	JZ-004.100	UN990052	JZ-004.101	UN990057	JZ-004.110	UN990062	15.50/I	JZ-004.120	UN990089	17.40/I

Can be adapted to fit many switch ranges in flush-mounted sockets (for a current overview of the suitable frames and insert frames, see Page 104).

ALL BASIC TYPES AND SUITABLE COVER SETS FOR BUSCH-JAEGER REFLEX SI/SI LINEAR/BUSCH-DURO 2000 SI/FUTURE/SOLO/AXCENT/CARAT WITHOUT INSERT FRAME

BASIC TYPE	BUSCH-JAEGER cover set **REFLEX SI/SI LINEAR PURE WHITE (RAL 9010) GLOSSY** (JZ-xxx.200/BJ)		BUSCH-JAEGER cover set **BUSCH-DURO 2000 SI/SI LINEAR PEARL WHITE (RAL 1013) GLOSSY** (JZ-001.210/BJ)		**EURO/ PG**	BUSCH-JAEGER cover set **FUTURE LINEAR/SOLO/ AXCENT/CARAT TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY** (JZ-001.320/BJ)		**EURO/ PG**
	Cover set	Item no.	Cover set	Item no.		Cover set	Item no.	
FTR 101.000#00	JZ-001.200/BJ	G9990490	JZ-001.210/BJ	G9990491	11.70/I	JZ-001.320/BJ	G9990493	15.90/I
FTR 101.002#00	JZ-001.200/BJ	G9990490	JZ-001.210/BJ	G9990491	11.70/I	JZ-001.320/BJ	G9990493	15.90/I
FTR 101.010#00	JZ-001.200/BJ	G9990490	JZ-001.210/BJ	G9990491	11.70/I	JZ-001.320/BJ	G9990493	15.90/I
FTR 101.062#00	JZ-002.200/BJ	G9990492	-	-	12.70/I	-	-	
FTR 101.086#00	JZ-001.200/BJ	G9990490	JZ-001.210/BJ	G9990491	11.70/I	JZ-001.320/BJ	G9990493	15.90/I
FTR 101.202#00	JZ-001.200/BJ	G9990490	JZ-001.210/BJ	G9990491	11.70/I	JZ-001.320/BJ	G9990493	15.90/I

Can be adapted to fit the corresponding BUSCH-JAEGER switch ranges In flush-mounted sockets.

SPECIAL COLOURS ALUMINIUM/ANTHRACITE

ALRE CON-TROLLER TYPES	MANUFACTURER SWITCH RANGE	COLOUR/ SURFACE FINISH	50X50 MM INSERT FRAME*	ALRE COVER SET: TYPE	(ITEM NO.)	EURO / PG
FTR 101.000#00 FTR 101.002#00 FTR 101.010#00 FTR 101.086#00 FTR 101.202#00 FTR 101.210#00	BERKER S.1/B.3/B.7	aluminium/matt	not required	JZ-001.131/BE	(UN990114)	20.60/I
		anthracite/matt	not required	JZ-001.141/BE	(UN990115)	18.80/I
	BUSCH-JAEGER future linear	aluminium silver/glossy	1746/10-83	JZ-001.030/BJ	(UN990108)	20.60/I
		anthracite/glossy	1746/10-81	JZ-001.040/BJ	(UN990109)	18.80/I
	GIRA System 55	aluminium/matt	not required	JZ-001.131/GI	(UN990110)	20.60/I
		anthracite/matt	not required	JZ-001.141/GI	(UN990111)	18.80/I
	JUNG Series A	aluminium/glossy	not required	JZ-001.130/JU	(UN990112)	20.60/I
		anthracite/matt	not required	JZ-001.141/JU	(UN990113)	18.80/I
	MERTEN System M	aluminium/matt	not required	JZ-001.131/ME	(UN990116)	20.60/I
		anthracite/matt	not required	JZ-001.141/ME	(UN990117)	18.80/I

*) must be ordered from switch manufacturer or electronics wholesaler
Further details and information on available cover sets can be found online at www.alre.de or in the catalogue.
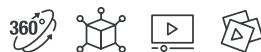
CONTROLLERS FOR ALL
SWITCH RANGES

Integration examples in switch ranges with or without insert frame

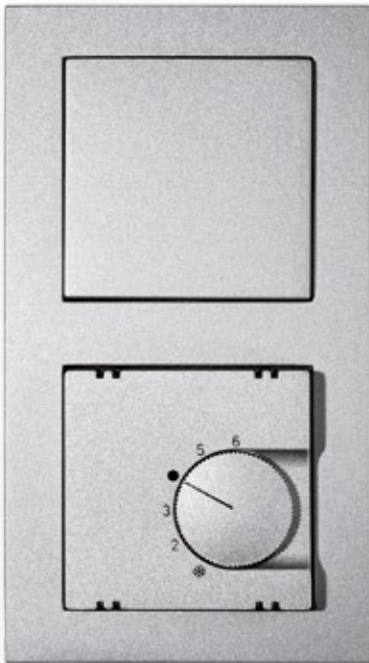**ADAPTATION EXAMPLES BERKER**

ADAPTATION EXAMPLES BUSCH-JAEGER

ADAPTATION EXAMPLES GIRA

ADAPTATION EXAMPLES JUNG

ADAPTATION EXAMPLES MERTEN

ADAPTATION OF ALRE FLUSH-MOUNTED CONTROLLERS

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION possible with '55x55' or 'BJ' cover sets (without insert frame)	Only ADAPTATION with '50x50' cover set requires an insert frame from the manufacturer
BERKER	S.1	polar white (matt)	x	1109 19 19
BERKER	S.1	polar white (glossy)	x	1109 90 89
BERKER	Arsys	polar white (glossy)		1108 01 69
BERKER	B.3	aluminium / polar white (matt)	x	1109 19 19
BERKER	B.3	aluminium / polar white (glossy)	x	1109 90 89
BERKER	B.7	glass / polar white (matt)	x	1109 19 19
BERKER	B.7	glass / polar white (glossy)	x	1109 90 89
BERKER	Q.1 / Q.3	polar white (velvet)		1109 60 79
BERKER	K.1	polar white (glossy)		1108 71 09
BUSCH–JAEGER	Reflex SI / SI Linear	alpine white (glossy)	x	1746-214-101
BUSCH–JAEGER	Busch-balance SI	alpine white (glossy)	x	1746-914-101
BUSCH–JAEGER	impuls	alpine white (glossy)		1746 / 10-74
BUSCH–JAEGER	solo / future linear / axcent / etc.	studio white – see RAL 9016 below		
Elso	Joy	pure white (glossy)	x	363084
Elso	Fashion / Riva / Scala	pure white (glossy)		203084
GIRA	surface switch	pure white (glossy)		0282 112
GIRA (System 55)	Standard / E2	pure white (semi-gloss)	x	0282 27
GIRA (System 55)	Standard / E2 / E3	pure white (glossy)	x	0282 03
GIRA (System 55)	E22	pure white (glossy)	x	0282 03
GIRA (System 55)	Event	pure white (semi-gloss) + opaque…	x	0282 27
GIRA (System 55)	Event	pure white (glossy) + opaque…	x	0282 03
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium…	x	0282 27
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium…	x	0282 03
GIRA	S-Color	pure white (high-gloss)		0282 40
JUNG	CD 500 / CD plus	alpine white (glossy)		CD 590 Z WW
JUNG	A 500 / A 550 / AS 500 / A plus / A flow	alpine white (glossy)	x	A 590 Z WW
JUNG	AS 550 / A flow	snow white matt	x	A 590 Z WWM
JUNG	LS 990	alpine white (glossy)		LS 961 Z WW
JUNG	LS plus	alpine white (glass)		LS 961 Z WW
JUNG	A creation	alpine white (glossy)	x	A 590 Z WW
JUNG	LS Design	alpine white (glossy)		LS 961 Z WW
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	x	5181 19
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)	x	5185 19
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)	x	5185 19
MERTEN (Surface System)	Artec / Antik	polar white (glossy)		5160 99
MERTEN	1-M / M-Smart / M-Plan / M-Pure / D-Life	active white – see RAL 9016 below or product finder		
PEHA	Standard	pure white (glossy)		80.670.02 ZV
PEHA	Dialog	pure white (glossy)		95.670.02 ZV
PEHA	Aura	pure white (matt) / glass		20.670.02 ZV
PEHA	Badora	pure white (glossy)		11.670.02 ZV

MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION possible with '55x55' or 'BJ' cover sets (without insert frame)	Only ADAPTATION with '50x50' cover set requires an insert frame from the manufacturer
BUSCH–JAEGER	solo / future linear	studio white (RAL 9016, glossy)	x	1746 / 10-84
BUSCH–JAEGER	future linear	studio white (RAL 9016 matt)		1746 / 10-884
BUSCH–JAEGER	impuls	studio white (RAL 9016 matt)		1746 / 10-774
BUSCH–JAEGER	axcent	studio white (RAL 9016, glossy)	x	1746 / 10-84
BUSCH–JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016, glossy)	x	1746 / 10-84
BUSCH–JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016, glossy)		1746 / 10-24G
BUSCH–JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016 matt)		1746 / 10-24
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	x	5185 25
MERTEN	1-M / Atelier-M	active white (RAL 9016, glossy)	x	5185 25
MERTEN	D-Life	lotus white (RAL 9016)		MEG4500-6035
PEHA	Standard	arctic		D 80.670 ZV AW

*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame

NOTE: Most switch ranges are designed in a colour similar to RAL 1013, 9016 or 1013, although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt / glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

'50x50 controller': The housing covers of the 50x50 controllers are 50x50 mm in size. Using a 50x50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50x50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch range in question can be found in the column 'Only for adaptation with "50x50" cover set'.

'55x55 controller': The housing covers of the 55x55 controllers are 55x55 mm in size. Many light switch ranges have inner dimensions of 55x55 mm. Therefore, the 55x55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column 'Adaptation with "55x55" cover' set to determine whether the 55x55 controller fits in the given light switch model (x).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12 / 2022 | No liability is assumed for the information provided. | Technical specifications subject to change.

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM BERKER

INTEGRATION EXAMPLES

FTR – in S. 1	FTR – in B. 3	FTR – in B. 7	FTR – in K. 1	FTR – in Arsys

TYPE ALRE	BERKER RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50 X 50 *	EURO / PG
FTR 101.000#00 FTR 101.002#00 FTR 101.010#00 FTR 101.086#00 FTR 101.202#00 FTR 101.210#00 Standard (without switch)	S. 1 / B. 3 / B. 7	polar white (RAL 9010) glossy	JZ-001.100 (55x55, glossy)	UN990050	not required	14.40 / I
	S. 1 / B. 3 / B. 7	polar white (RAL 9010) matt	JZ-001.101 (55x55, matt)	UN990055	not required	14.40 / I
	Arsys	polar white (RAL 9010) glossy	JZ-001.000 (50x50, glossy)	UN990035	1108 01 69	11.70 / I
	Q. 1 / Q. 3	polar white (RAL 9010) velvet	JZ-001.001 (50x50, matt)	UN990040	1109 60 79	11.70 / I
	K. 1	polar white (RAL 9010) glossy	JZ-001.000 (50x50, glossy)	UN990035	1108 71 09	11.70 / I
	S. 1	white (RAL 1013) glossy	JZ-001.110 (55x55, glossy)	UN990060	not required	14.40 / I
	Arsys	white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	1108 01 02	11.70 / I
	S. 1 / B. 3 / B. 7	aluminium / matt	JZ-001.131 / BE	UN990114	not required	20.60 / I
	S. 1 / B. 3 / B. 7	anthracite / matt	JZ-001.141 / BE	UN990115	not required	18.80 / I
FTR 101.062#00 FTR 101.262#00 (ON / OFF switch, LED)	S. 1 / B. 3 / B. 7	polar white (RAL 9010) glossy	JZ-002.100 (55x55, glossy)	UN990051	not required	15.90 / I
	S. 1 / B. 3 / B. 7	polar white (RAL 9010) matt	JZ-002.101 (55x55, matt)	UN990056	not required	15.90 / I
	Arsys	polar white (RAL 9010) glossy	JZ-002.000 (50x50, glossy)	UN990036	1108 01 69	12.70 / I
	Q. 1 / Q. 3	polar white (RAL 9010) velvet	JZ-002.001 (50x50, matt)	UN990041	1109 60 79	12.70 / I
	K. 1	polar white (RAL 9010) glossy	JZ-002.000 (50x50, glossy)	UN990036	1108 71 09	12.70 / I
	S. 1	white (RAL 1013) glossy	JZ-002.110 (55x55, glossy)	UN990061	not required	15.90 / I
	Arsys	white (RAL 1013) glossy	JZ-002.010 (50x50, glossy)	UN990046	1108 01 02	12.70 / I
FTR 101.063#00 (Switch H / OFF / C)	S. 1 / B. 3 / B. 7	polar white (RAL 9010) glossy	JZ-012.100 (50x55 glossy)	UN990123	not required	15.50 / I
	S. 1 / B. 3 / B. 7	polar white (RAL 9010) matt	JZ-012.101 (50x55 matt)	UN990136	not required	15.50 / I
	Arsys	polar white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	1108 01 69	12.30 / I
	Q. 1 / Q. 3	polar white (RAL 9010) velvet	JZ-012.001 (50x50 matt)	UN990132	1109 60 79	12.30 / I
	K. 1	polar white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	1108 71 09	12.30 / I
	S. 1	white (RAL 1013) glossy	JZ-012.110 (50x55 glossy)	UN990137	not required	15.50 / I
	Arsys	white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	1108 01 02	12.30 / I
FTR 101.065#00 FTR 101.265#00 (H / C switch)	S. 1 / B. 3 / B. 7	polar white (RAL 9010) glossy	JZ-004.100 (55x55, glossy)	UN990052	not required	15.50 / I
	S. 1 / B. 3 / B. 7	polar white (RAL 9010) matt	JZ-004.101 (55x55, matt)	UN990057	not required	15.50 / I
	Arsys	polar white (RAL 9010) glossy	JZ-004.000 (50x50, glossy)	UN990037	1108 01 69	12.30 / I
	Q. 1 / Q. 3	polar white (RAL 9010) velvet	JZ-004.001 (50x50, matt)	UN990042	1109 60 79	12.30 / I
	K. 1	polar white (RAL 9010) glossy	JZ-004.000 (50x50, glossy)	UN990037	1108 71 09	12.30 / I
	S. 1	white (RAL 1013) glossy	JZ-004.110 (55x55, glossy)	UN990062	not required	15.50 / I
	Arsys	white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	1108 01 02	12.30 / I
FTR 101.075#00 (3-way switch, LED)	S. 1 / B. 3 / B. 7	polar white (RAL 9010) glossy	JZ-003.100 (55x55, glossy)	UN990053	not required	15.90 / I
	S. 1 / B. 3 / B. 7	polar white (RAL 9010) matt	JZ-003.101 (55x55, matt)	UN990058	not required	15.90 / I
	Arsys	polar white (RAL 9010) glossy	JZ-003.000 (50x50, glossy)	UN990038	1108 01 69	12.70 / I
	Q. 1 / Q. 3	polar white (RAL 9010) velvet	JZ-003.001 (50x50, matt)	UN990043	1109 60 79	12.70 / I
	K. 1	polar white (RAL 9010) glossy	JZ-003.000 (50x50, glossy)	UN990038	1108 71 09	12.70 / I
	S. 1	white (RAL 1013) glossy	JZ-003.110 (55x55, glossy)	UN990063	not required	15.90 / I
	Arsys	white (RAL 1013) glossy	JZ-003.010 (50x50, glossy)	UN990048	1108 01 02	12.70 / I

*) must be ordered from switch manufacturer or electronics wholesaler

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM BUSCH-JAEGER

INTEGRATION EXAMPLES

FTR – in Reflex SI | FTR – in Busch-balance SI | FTR – in future linear | FTR – in solo | FTR – in alpha nea

TYPE ALRE	BERKER RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50 X 50*	EURO/ PG
FTR 101.000#00 FTR 101.002#00 FTR 101.010#00 FTR 101.086#00 FTR 101.202#00 FTR 101.210#00	Reflex SI / SI Linear	alpine white (RAL 9010) glossy	JZ-001.200 / BJ	G9990490	not required	11.70 / I
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-001.100 (55x55, glossy)	UN990050	not required	14.40 / I
	impuls	alpine white (RAL 9010) glossy	JZ-001.000 (50x50, glossy)	UN990035	1746 / 10-74	11.70 / I
	future linear / solo / axcent / carat	studio white (RAL 9016) glossy	JZ-001.320 / BJ	G9990493	not required	15.90 / I
	future linear	studio white (RAL 9016) matt	JZ-001.021 (50x50, matt)	UN990100	1746 / 10-884	13.60 / I
	alpha nea	studio white (RAL 9016) glossy	JZ-001.020 (50x50, glossy)	UN990071	1746 / 10-24G	13.60 / I
Standard (without switch)	alpha nea	studio white (RAL 9016) matt	JZ-001.021 (50x50, matt)	UN990100	1746 / 10-24	13.60 / I
	Duro 2000 SI / SI Linear	white (RAL 1013) glossy	JZ-001.210 / BJ	G9990491	not required	11.70 / I
	future linear / solo / carat	ivory white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	1746 / 10-82	11.70 / I
	alpha nea	ivory white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	1746 / 10-22G	11.70 / I
	impuls	ivory white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	1746 / 10-72	11.70 / I
	future linear	aluminium silver / glossy	JZ-001.030 / BJ	UN990108	1746 / 10-83	20.60 / I
	future linear	anthracite / glossy	JZ-001.040 / BJ	UN990109	1746 / 10-81	18.80 / I
FTR 101.062#00 FTR 101.262#00	Reflex SI / SI Linear	alpine white (RAL 9010) glossy	JZ-002.200 / BJ	G990492	not required	12.70 / I
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-002.100 (55x55, glossy)	UN990051	not required	15.90 / I
	impuls	alpine white (RAL 9010) glossy	JZ-002.000 (50x50, glossy)	UN990036	1746 / 10-74	12.70 / I
	future linear / solo / axcent / carat	studio white (RAL 9016) glossy	JZ-002.020 (50x50, glossy)	UN990072	1746 / 10-84	14.80 / I
	future linear	studio white (RAL 9016) matt	JZ-002.021 (50x50, matt)	UN990101	1746 / 10-884	14.80 / I
(ON / OFF switch, LED)	alpha nea	studio white (RAL 9016) glossy	JZ-002.020 (50x50, glossy)	UN990072	1746 / 10-24G	14.80 / I
	alpha nea	studio white (RAL 9016) matt	JZ-002.021 (50x50, matt)	UN990101	1746 / 10-24	14.80 / I
	Duro 2000 SI / SI Linear	white (RAL 1013) glossy	JZ-002.010 (50x50, glossy)	UN990046	1746-212-101	12.70 / I
	future linear / solo / carat	ivory white (RAL 1013) glossy	JZ-002.010 (50x50, glossy)	UN990046	1746 / 10-82	12.70 / I
	alpha nea	ivory white (RAL 1013) glossy	JZ-002.010 (50x50, glossy)	UN990046	1746 / 10-22G	12.70 / I
	impuls	ivory white (RAL 1013) glossy	JZ-002.010 (50x50, glossy)	UN990046	1746 / 10-72	12.70 / I
FTR 101.063#00	Reflex SI / SI Linear	alpine white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	1746-214-101	12.30 / I
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-012.100 (50x55 glossy)	UN990123	not required	15.50 / I
	impuls	alpine white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	1746 / 10-74	12.30 / I
	future linear / solo / axcent / carat	studio white (RAL 9016) glossy	JZ-012.020 (50x50 glossy)	UN990134	1746 / 10-84	14.20 / I
	future linear	studio white (RAL 9016) matt	JZ-012.021 (50x50 matt)	UN990135	1746 / 10-884	14.20 / I
(Switch H / OFF / C)	alpha nea	studio white (RAL 9016) glossy	JZ-012.020 (50x50 glossy)	UN990134	1746 / 10-24G	14.20 / I
	alpha nea	studio white (RAL 9016) matt	JZ-012.021 (50x50 matt)	UN990135	1746 / 10-24	14.20 / I
	Duro 2000 SI / SI Linear	white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	1746-212-101	12.30 / I
	future linear / solo / carat	ivory white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	1746 / 10-82	12.30 / I
	alpha nea	ivory white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	1746 / 10-22G	12.30 / I
	impuls	ivory white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	1746 / 10-72	12.30 / I

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM BUSCH-JAEGER

INTEGRATION EXAMPLES

FTR – in Reflex SI | FTR – in Busch-balance SI | FTR – in future linear | FTR – in solo | FTR – in alpha nea

TYPE ALRE	BUSCH-JAEGER RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50×50*	EURO/ PG
FTR 101.065#00 **FTR 101.265#00** (H/C switch)	Reflex SI/SI Linear	alpine white (RAL 9010) glossy	JZ-004.000 (50x50, glossy)	UN990037	1746-214-101	12.30/I
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-004.100 (55x55, glossy)	UN990052	not required	15.50/I
	impuls	alpine white (RAL 9010) glossy	JZ-004.000 (50x50, glossy)	UN990037	1746/10-74	12.30/I
	future linear/solo/axcent/carat	studio white (RAL 9016) glossy	JZ-004.020 (50x50, glossy)	UN990073	1746/10-84	14.20/I
	future linear	studio white (RAL 9016) matt	JZ-004.021 (50x50, matt)	UN990103	1746/10-884	14.20/I
	alpha nea	studio white (RAL 9016) glossy	JZ-004.020 (50x50, glossy)	UN990073	1746/10-24G	14.20/I
	alpha nea	studio white (RAL 9016) matt	JZ-004.021 (50x50, matt)	UN990103	1746/10-24	14.20/I
	Duro 2000 SI/SI Linear	white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	1746-212-101	12.30/I
	future linear/solo/carat	ivory white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	1746/10-82	12.30/I
	alpha nea	ivory white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	1746/10-22G	12.30/I
	impuls	ivory white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	1746/10-72	12.30/I
FTR 101.075#00 (3-way switch, LED)	Reflex SI/SI Linear	alpine white (RAL 9010) glossy	JZ-003.000 (50x50, glossy)	UN990038	1746-214-101	12.70/I
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-003.100 (55x55, glossy)	UN990053	not required	15.90/I
	impuls	alpine white (RAL 9010) glossy	JZ-003.000 (50x50, glossy)	UN990038	1746/10-74	12.70/I
	future linear/solo/axcent/carat	studio white (RAL 9016) glossy	JZ-003.020 (50x50, glossy)	UN990074	1746/10-84	14.80/I
	future linear	studio white (RAL 9016) matt	JZ-003.021 (50x50, matt)	UN990102	1746/10-884	14.80/I
	alpha nea	studio white (RAL 9016) glossy	JZ-003.020 (50x50, glossy)	UN990074	1746/10-24G	14.80/I
	alpha nea	studio white (RAL 9016) matt	JZ-003.021 (50x50, matt)	UN990102	1746/10-24	14.80/I
	Duro 2000 SI/SI Linear	white (RAL 1013) glossy	JZ-003.010 (50x50, glossy)	UN990048	1746-212-101	12.70/I
	future linear/solo/carat	ivory white (RAL 1013) glossy	JZ-003.010 (50x50, glossy)	UN990048	1746/10-82	12.70/I
	alpha nea	ivory white (RAL 1013) glossy	JZ-003.010 (50x50, glossy)	UN990048	1746/10-22G	12.70/I
	impuls	ivory white (RAL 1013) glossy	JZ-003.010 (50x50, glossy)	UN990048	1746/10-72	12.70/I

*) must be ordered from switch manufacturer or electronics wholesaler
For BJ future/solo there are also 55x55 insert frames (for use with alre 55x55 cover set) – BJ item no. 1747-84 (studio white) and 1784-82 (ivory white)

Note: Busch-Jaeger central disc cannot be used with alre FTR.

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM ELSO

INTEGRATION EXAMPLES

FTR – in Joy   FTR – in Fashion   FTR – in Riva   FTR – in Scala

TYPE ALRE	ELSO RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50 X 50*	EURO/ PG
FTR 101.000#00 FTR 101.002#00 FTR 101.010#00 FTR 101.086#00 FTR 101.202#00 FTR 101.210#00	Joy	pure white (RAL 9010) glossy	JZ-001.100 (55x55, glossy)	UN990050	not required	14.40 / I
	Joy	pearl white (RAL 1013) glossy	JZ-001.110 (55x55, glossy)	UN990060	not required	14.40 / I
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-001.000 (50x50, glossy)	UN990035	203084	11.70 / I
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	203080	11.70 / I

Standard (without switch)

FTR 101.062#00 FTR 101.262#00	Joy	pure white (RAL 9010) glossy	JZ-002.100 (55x55, glossy)	UN990051	not required	15.90 / I
	Joy	pearl white (RAL 1013) glossy	JZ-002.110 (55x55, glossy)	UN990061	not required	15.90 / I
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-002.000 (50x50, glossy)	UN990036	203084	12.70 / I
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-002.010 (50x50, glossy)	UN990046	203080	12.70 / I

(ON / OFF switch, LED)

FTR 101.063#00	Joy	pure white (RAL 9010) glossy	JZ-012.100 (50x55 glossy)	UN990123	not required	15.50 / I
	Joy	pearl white (RAL 1013) glossy	JZ-012.110 (50x55 glossy)	UN990137	not required	15.50 / I
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	203084	12.30 / I
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	203080	12.30 / I

(Switch H / OFF / C)

FTR 101.065#00 FTR 101.265#00	Joy	pure white (RAL 9010) glossy	JZ-004.100 (55x55, glossy)	UN990052	not required	15.50 / I
	Joy	pearl white (RAL 1013) glossy	JZ-004.110 (55x55, glossy)	UN990062	not required	15.50 / I
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-004.000 (50x50, glossy)	UN990037	203084	12.30 / I
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	203080	12.30 / I

(H / C switch)

FTR 101.075#00	Joy	pure white (RAL 9010) glossy	JZ-003.100 (55x55, glossy)	UN990053	not required	15.90 / I
	Joy	pearl white (RAL 1013) glossy	JZ-003.110 (55x55, glossy)	UN990063	not required	15.90 / I
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-003.000 (50x50, glossy)	UN990038	203084	12.70 / I
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-003.010 (50x50, glossy)	UN990048	203080	12.70 / I

(3-way switch, LED)

*) must be ordered from switch manufacturer or electronics wholesaler

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM GIRA

INTEGRATION EXAMPLES

FTR – in Standard 55   FTR – in E 2   FTR – in Event   FTR – in E 22

FTR – in surface switch

TYPE ALRE	GIRA RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50 X 50*	EURO / PG
FTR 101.000#00 FTR 101.002#00 FTR 101.010#00 FTR 101.086#00 FTR 101.202#00 FTR 101.210#00	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-001.100 (55x55, glossy)	UN990050	not required	14.40 / I
	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) matt	JZ-001.101 (55x55, matt)	UN990055	not required	14.40 / I
	surface switch	pure white (RAL 9010) glossy	JZ-001.000 (50x50, glossy)	UN990035	0282 112	11.70 / I
	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-001.110 (55x55, glossy)	UN990060	not required	14.40 / I
	System 55	aluminium / matt	JZ-001.131 / GI	UN990110	not required	20.60 / I
Standard (without switch)	System 55	anthracite / matt	JZ-001.141 / GI	UN990111	not required	18.80 / I
FTR 101.062#00 FTR 101.262#00	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-002.100 (55x55, glossy)	UN990051	not required	15.90 / I
	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) matt	JZ-002.101 (55x55, matt)	UN990056	not required	15.90 / I
	surface switch	pure white (RAL 9010) glossy	JZ-002.000 (50x50, glossy)	UN990036	0282 112	12.70 / I
	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-002.110 (55x55, glossy)	UN990061	not required	15.90 / I
(ON / OFF switch, LED)	System 55	anthracite / matt	JZ / -002.141 / GI	UN990121	not required	20.10 / I
FTR 101.063#00	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-012.100 (50x55 glossy)	UN990123	not required	15.50 / I
	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) matt	JZ-012.101 (50x55 matt)	UN990136	not required	15.50 / I
	surface switch	pure white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	0282 112	12.30 / I
(Switch H / OFF / C)	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-012.110 (50x55 glossy)	UN990137	not required	15.50 / I
FTR 101.065#00 FTR 101.265#00	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-004.100 (55x55, glossy)	UN990052	not required	15.50 / I
	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) matt	JZ-004.101 (55x55, matt)	UN990057	not required	15.50 / I
	surface switch	pure white (RAL 9010) glossy	JZ-004.000 (50x50, glossy)	UN990037	0282 112	12.30 / I
(H / C switch)	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-004.110 (55x55, glossy)	UN990062	not required	15.50 / I
FTR 101.075#00	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-003.100 (55x55, glossy)	UN990053	not required	15.90 / I
	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) matt	JZ-003.101 (55x55, matt)	UN990058	not required	15.90 / I
	surface switch	pure white (RAL 9010) glossy	JZ-003.000 (50x50, glossy)	UN990038	0282 40	12.70 / I
(3-way switch, LED)	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-003.110 (55x55, glossy)	UN990063	not required	15.90 / I

*) must be ordered from switch manufacturer or electronics wholesaler
**) for GIRA surface switches, there are also 55x55 insert frames (for the use of alre 55x55 cover set) –
   GIRA item no. 0289 112 (pure white) and 0289 111 (cream white)

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM JUNG

INTEGRATION EXAMPLES

FTR – in AS 500	FTR – in A 500	FTR – in A plus	FTR – in A creation	FTR – in LS-design

TYPE ALRE	JUNG RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50 X 50 *	EURO / PG
FTR 101.000#00 FTR 101.002#00 FTR 101.010#00 FTR 101.086#00 FTR 101.202#00 FTR 101.210#00 Standard (without switch)	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-001.100 (55x55, glossy)	UN990050	not required	14.40 / I
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-001.000 (50x50, glossy)	UN990035	CD 590 Z WW	11.70 / I
	LS 990 / LS design / LS plus	alpine white (RAL 9010) glossy	JZ-001.000 (50x50, glossy)	UN990035	LS 961 Z WW **	11.70 / I
	AS 500	white (RAL 1013) glossy	JZ-001.110 (55x55, glossy)	UN990060	not required	14.40 / I
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	590 Z	11.70 / I
	LS 990 / LS design / LS plus	white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	LS 961 Z **	11.70 / I
	AS 550 / A flow	snow white matt	JZ-001.101 (55x55, matt)	UN990055	not required	14.40 / I
	Series A	aluminium / glossy	JZ-001.130 / JU	UN990112	not required	20.60 / I
	Series A	anthracite / matt	JZ-001.141 / JU	UN990113	not required	18.80 / I
FTR 101.062#00 FTR 101.262#00 (ON / OFF switch, LED)	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-002.100 (55x55, glossy)	UN990051	not required	15.90 / I
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-002.000 (50x50, glossy)	UN990036	CD 590 Z WW	12.70 / I
	LS 990 / LS design / LS plus	alpine white (RAL 9010) glossy	JZ-002.000 (50x50, glossy)	UN990036	LS 961 Z WW **	12.70 / I
	AS 500	white (RAL 1013) glossy	JZ-002.110 (55x55, glossy)	UN990061	not required	15.90 / I
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-002.010 (50x50, glossy)	UN990046	590 Z	12.70 / I
	LS 990 / LS design / LS plus	white (RAL 1013) glossy	JZ-002.010 (50x50, glossy)	UN990046	LS 961 Z **	12.70 / I
	AS 550 / A flow	snow white matt	JZ-002.101 (55x55, matt)	UN990056	not required	15.90 / I
FTR 101.063#00 (Switch H / OFF / C)	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-012.100 (50x55 glossy)	UN990123	not required	15.50 / I
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	CD 590 Z WW	12.30 / I
	LS 990 / LS design / LS plus	alpine white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	LS 961 Z WW **	12.30 / I
	AS 500	white (RAL 1013) glossy	JZ-012.110 (50x55 glossy)	UN990137	not required	15.50 / I
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	590 Z	12.30 / I
	LS 990 / LS design / LS plus	white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	LS 961 Z **	12.30 / I
	AS 550 / A flow	snow white matt	JZ-012.101 (50x55 matt)	UN990136	not required	15.50 / I
FTR 101.065#00 FTR 101.265#00 (H / C switch)	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-004.100 (55x55, glossy)	UN990052	not required	15.50 / I
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-004.000 (50x50, glossy)	UN990037	CD 590 Z WW	12.30 / I
	LS 990 / LS design / LS plus	alpine white (RAL 9010) glossy	JZ-004.000 (50x50, glossy)	UN990037	LS 961 Z WW **	12.30 / I
	AS 500	white (RAL 1013) glossy	JZ-004.110 (55x55, glossy)	UN990062	not required	15.50 / I
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	590 Z	12.30 / I
	LS 990 / LS design / LS plus	white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	LS 961 Z **	12.30 / I
	AS 550 / A flow	snow white matt	JZ-004.101 (55x55, matt)	UN990057	not required	15.50 / I
FTR 101.075#00 (3-way switch, LED)	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-003.100 (55x55, glossy)	UN990053	not required	15.90 / I
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-003.000 (50x50, glossy)	UN990038	CD 590 Z WW	12.70 / I
	LS 990 / LS design / LS plus	alpine white (RAL 9010) glossy	JZ-003.000 (50x50, glossy)	UN990038	LS 961 Z WW **	12.70 / I
	AS 500	white (RAL 1013) glossy	JZ-003.110 (55x55, glossy)	UN990063	not required	15.90 / I
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-003.010 (50x50, glossy)	UN990048	590 Z	12.70 / I
	LS 990 / LS design / LS plus	white (RAL 1013) glossy	JZ-003.010 (50x50, glossy)	UN990048	LS 961 Z **	12.70 / I
	AS 550 / A flow	snow white matt	JZ-003.101 (55x55, matt)	UN990058	not required	15.90 / I

*) must be ordered from switch manufacturer or electronics wholesaler
**) for the Jung LS series, there are also 55x55 insert frames (for the use of alre 55x55 cover set) – JUNG item no. LS 961 Z5 WW (alpine white) and LS 961 Z5 (white)
***) if necessary, the manufacturer JUNG will change the colour of alpine white from RAL 9010 to RAL 9016

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM MERTEN

INTEGRATION EXAMPLES

FTR–in 1-M	FTR–in M-Smart	FTR–in M-Plan	FTR–in Artec	FTR–in Antik

TYPE ALRE	MERTEN RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO / PG
FTR 101.000#00 FTR 101.002#00 FTR 101.010#00 FTR 101.086#00 FTR 101.202#00 FTR 101.210#00 **Standard (without switch)**	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-001.100 (55x55, glossy)	UN990050	not required	14.40 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-001.101 (55x55, matt)	UN990055	not required	14.40 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-001.120 (55x55, glossy)	UN990086	not required	16.40 / I
	D-Life	lotus white (RAL 9016) glossy	JZ-001.020 (50x50, glossy)	UN990071	MEG4500-6035	13.60 / I
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-001.000 (50x50, glossy)	UN990035	5160 99	11.70 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-001.110 (55x55, glossy)	UN990060	not required	14.40 / I
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-001.010 (50x50, glossy)	UN990045	5160 94	11.70 / I
	System M	aluminium / matt	JZ-001.131 / ME	UN990116	not required	20.60 / I
	System M	anthracite / matt	JZ-001.141 / ME	UN990117	not required	18.80 / I
FTR 101.062#00 FTR 101.262#00 **(ON / OFF switch, LED)**	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-002.100 (55x55, glossy)	UN990051	not required	15.90 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-002.101 (55x55, matt)	UN990056	not required	15.90 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-002.120 (55x55, glossy)	UN990088	not required	17.90 / I
	D-Life	lotus white (RAL 9016) glossy	JZ-002.020 (50x50, glossy)	UN990072	MEG4500-6035	14.80 / I
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-002.000 (50x50, glossy)	UN990036	5160 99	12.70 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-002.110 (55x55, glossy)	UN990061	not required	15.90 / I
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-002.010 (50x50, glossy)	UN990046	5160 94	12.70 / I
FTR 101.063#00 **(Switch H / OFF / C)**	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-012.100 (50x55 glossy)	UN990123	not required	15.50 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-012.101 (50x55 matt)	UN990136	not required	15.50 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-012.120 (50x55 glossy)	UN990138	not required	17.40 / I
	D-Life	lotus white (RAL 9016) glossy	JZ-012.020 (50x50 glossy)	UN990134	MEG4500-6035	14.20 / I
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	5160 99	12.30 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-012.110 (50x55 glossy)	UN990137	not required	15.50 / I
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	5160 94	12.30 / I
FTR 101.065#00 FTR 101.265#00 **(H / C switch)**	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-004.100 (55x55, glossy)	UN990052	not required	15.50 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-004.101 (55x55, matt)	UN990057	not required	15.50 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-004.120 (55x55, glossy)	UN990089	not required	17.40 / I
	D-Life	lotus white (RAL 9016) glossy	JZ-004.020 (50x50, glossy)	UN990073	MEG4500-6035	14.20 / I
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-004.000 (50x50, glossy)	UN990037	5160 99	12.30 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-004.110 (55x55, glossy)	UN990062	not required	15.50 / I
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	5160 94	12.30 / I
FTR 101.075#00 **(3-way switch, LED)**	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-003.100 (55x55, glossy)	UN990053	not required	15.90 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-003.101 (55x55, matt)	UN990058	not required	15.90 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-003.120 (55x55, glossy)	UN990090	not required	17.90 / I
	D-Life	lotus white (RAL 9016) glossy	JZ-003.020 (50x50, glossy)	UN990074	MEG4500-6035	14.80 / I
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-003.000 (50x50, glossy)	UN990038	5160 99	12.70 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-003.110 (55x55, glossy)	UN990063	not required	15.90 / I
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-003.010 (50x50, glossy)	UN990048	5160 94	12.70 / I

*) must be ordered from switch manufacturer or electronics wholesaler
Note: Merten central plates cannot be used with alre FTR.

ROOM TEMPERATURE OR FLOOR TEMPERATURE CONTROLLER, ELECTRONIC, WITH CLOCK HTRRUU
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TECHNICAL DATA

Design:	Berlin UP
Housing material:	PC, PMMA, ABS plastic
Operating voltage:	230 V AC, 50 Hz
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	pluggable screw terminals
Mounting / attachment:	In flush-mounted socket, can be adapted to fit virtually any switch range (deep flush-mounted socket recommended) see adaptation list on Page 115
Protection rating:	IP30
Protection class:	II, if properly mounted
Safety and EMC:	according to DIN EN 60730
Max. switching current:	10 (2) A
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	230 V AC, 50 Hz
Switching power:	2300 W
Switching element:	relay
Switching contact:	NO contact
Output signal:	230 V AC, 50 Hz
Sensor:	NTC internal, optional external floor sensor see 'Accessories', optional external room sensor see 'Sensor technology' 'Sensor 2'
Sensor rupture and short-circuit protection:	If the internal or external sensor is faulty or the external sensor is not connected to the functions room temperature controller with floor monitoring, floor temperature controller or room temperature controller with ext. sensor, emergency operation is triggered.
Control function:	heating
Control range:	5 to 30 °C (room) / 10 to 42 °C (floor)
Setting range:	The setting range varies, depending on the use of the controller as a room temperature controller (5 to 30 °C) or floor temperature controller (10 to 42 °C)
Hysteresis:	for room control < 1 K, for floor control < 2 K
Display type:	illuminated graphical display
Display:	setpoint, actual temperature / date, time; setpoint, actual temperature or date, time
Accessories:	terminal strips: VOOPL suitable valve actuators: ZBOOA-010.1xx

APPLICATION

Flush-mounted controller for time-dependent single room or floor temperature control for electrical and hot water heating systems (normally closed actuators). The device can be used as a room temperature controller with internal sensor or (in combination with an optional remote sensor) as a room temperature controller with floor monitoring or floor temperature controller. (Remote sensor is not a part of the scope of delivery)
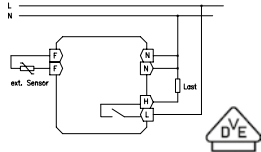
This clock thermostat has a weekly timer with individually adjustable programs (factory setting: 'normal' daily sequences).

Self-learning function: Automatic adjustment of the controller to the start of the heating period. The goal is to achieve the comfort temperature at the time that has been set. The learning function is disabled upon delivery, but it can be enabled.

Standby function: This function disables the control; frost protection is still ensured.

General features:
ECO function, adjustable ECO value; 'ECO' display; 'on / off' display; 'heating' display; digital actual value display; backlighting; standby mode with frost protection monitoring; child-safe features; load setting; power reserve (approx. 5 days); Actual value correction / measured value correction; learning function; valve protection; holiday setting; party setting; external setting; comfortable operation using touch-sensitive buttons; VDE-tested

Special colours as well as the colours anthracite and aluminium are available for projects upon request.

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
HTRRUu 210.021#21	UA060000	Scope of delivery: controller, **50x50** mm cover, **pure white** (similar to RAL 9010), **glossy, alre frame** 'Berlin'		214.00 / I
HTRRUu 210.021#21 / 7	UN060011	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, **50x50** mm cover, **pure white** (similar to RAL 9010), **glossy, alre frame** 'Berlin', **external floor sensor** (HF-8 / 4-K2)		237.40 / I
HTRRUu 210.021#07	UA060001	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, **50x50** mm cover **pure white** (similar to RAL 9010), **glossy,** without frame		210.00 / I

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
HTRRUu 210.021#09	UA060002	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, **50x50** mm cover **pearl white** (similar to RAL 1013), **glossy,** without frame		210.00/I
HTRRUu 210.021#27	UA060003	Similar to HTRRUu 210.021#21 but scope of delivery as follows: Controller, **50x50** mm cover **traffic / studio white** (similar to RAL 9016), **glossy,** without frame		210.00/I
HTRRUu 210.021#28	UA060006	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, cover **suitable for BUSCH JAEGER Reflex SI / SI Linear pure white** (similar to RAL 9010), **glossy,** without frame		211.60/I
HTRRUu 210.021#55	UA060004	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, **55x55** mm cover **pure white** (similar to RAL 9010), **glossy,** without frame		211.60/I
HTRRUu 210.021#56	UA060020	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, **55x55** mm cover, **pure white** (similar to RAL 9010), **matt,** without a frame		211.60/I
HTRRUu 210.021#57	UA060005	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, **55x55** mm cover **pearl white** (similar to RAL 1013), **glossy,** without frame		211.60/I
HTRRUu 210.021#59	UA060014	Similar to HTRRUu 210.021#21 but scope of delivery as follows: controller, **55x55** mm cover **traffic / studio white** (similar to RAL 9016), **glossy,** without frame		211.60/I

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
HF-8 / 4-K2	G8000370	**General features:** optional, external floor sensor **Ambient temperature:** −5 to +70 °C **Protection rating:** IP65 **Sensor:** NTC **Connecting cable:** 4 m, PVC	24.00 / II
HF-8 / 6-K2	G8000368	**General features:** optional, external floor sensor **Ambient temperature:** −5 to +70 °C **Protection rating:** IP65 **Sensor:** NTC **Connecting cable:** 6 m, PVC	26.70 / II
WP-01	G9990180	**General features:** heat conduction paste 2 ml; R > 1 TΩ / cm, silicone-free **Ambient temperature:** −40 to +150 °C **Heat conductivity:** > 0.7 W / mK	6.60 / II
THF	C1809515	**General features:** protective sleeve for screed mounting (for sleeve sensor HF Ø 7.7, for example, HF-8 / 4-K2 or HF-8 / 6-K2), copper	40.90 / II
JZ-090.900	VV000025	**General features:** alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50x50 mm cover **Design:** Berlin **Surface finish:** glossy **Colour:** Pure white, similar to RAL 9010 **Material:** PC plastic	4.20 / I

ROOM TEMPERATURE OR FLOOR TEMPERATURE CONTROLLER, ELECTRONIC, WITH CLOCK HTRRUU
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-090.100	VV000048	**Features:** similar to JZ-090.900 but for all flush-mounted controllers in combination with 55x55 mm cover Surface finish: **glossy** **Colour:** pure white, similar to RAL 9010 **Material:** PC plastic	4.20/I
JZ-090.910	VV000010	**General features:** alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50x50 mm cover **Design:** Berlin **Surface finish:** glossy **Colour:** pearl white, similar to RAL 1013 **Material:** PC plastic	4.20/I
BTF2-C47-0000	SA140014	Surface-mounted 'ultra-thin' room temperature sensor for temperature measurement in residential and business premises (see also 'Sensor technology' section Page 228)	27.20/III
FUFC 47-0000	SN090198	Flush-mounted room temperature sensor for temperature measurement in residential and business premises (see also 'Sensor technology' section Page 229)	34.50/III

ILLUSTRATIONS

HTRRUu with alre frame 'Berlin'
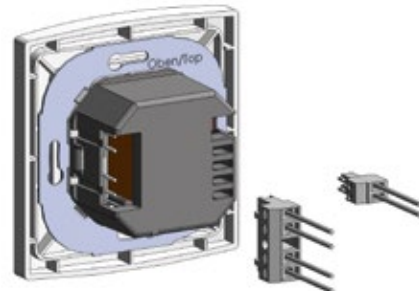
Pluggable screw-type terminals

additional benefits:
- Pluggable screw-type terminals facilitate quick and easy assembly
- Illuminated, graphics-capable display
- Choice of 8 different external floor sensors (e.g., 2 kOhm – alre, 12 kOhm – OJ/AEG, 15 kOhm – DEVI, 33 kOhm – Eberle), meaning they are also ideal for retrofitting
- VDE mark
- Automatic adjustment to standard/daylight savings time
- Learn function
- Correction of measurement values
- Open window detection
- Configurable display content during installation, choice of various languages including German, English, French, Dutch, Polish, Spanish, Czech, Russian, Italian and Hungarian
- Limit setting for floor temperature
- Standby with frost protection
- Key lock
- Valve protection function
- Configurable control method (PI-PWM or 2-point control)
- Holiday and party function
- Power reserve
- 'Heating mode' indication (orange LED)
- Load setting for improved control

Factory setting:
- Holiday temperature 17 °C
- Setback temperature 17 °C
- Comfort temperature 20 °C
- Comfort times: Mon – Fri 5 am – 9 am / 4 pm – 10 pm, Sat/Sun 6 am – 10 pm
- Key lock disabled
- Automatic adjustment to summer/winter time enabled
- Valve and pump protection disabled
- Learning function disabled
- Display lighting (10 s)
- Heating load 0.1 kW
- 2-point control method
- External sensor
- 2 kOhm and max. floor temperature 42 °C (if configured as floor temperature controller)

HTRRUu with alre frame 'Berlin'
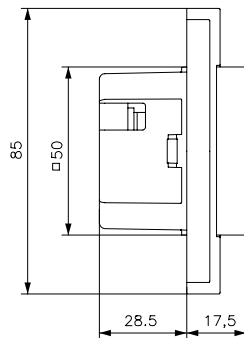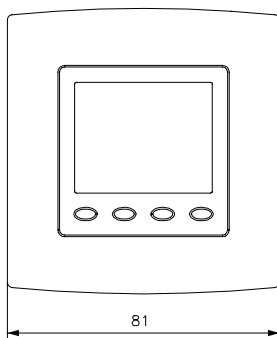
HF-8/4-K2
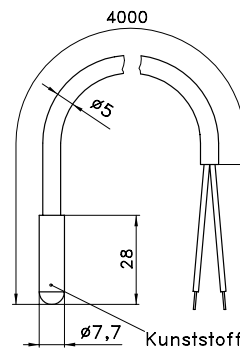
THF

ADAPTATION OF
ALRE FLUSH-MOUNTED CONTROLLERS – HTRRUU 210.021

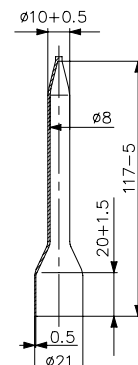| MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION in switch range (55x55) possible with…	'50x50' adaptation possible with… (insert frame from switch manufacturer required)
BERKER	S.1	polar white (matt)	HTRRUu 210.021#56	not required
BERKER	S.1	polar white (glossy)	HTRRUu 210.021#55	not required
BERKER	Arsys	polar white (glossy)		HTRRUu 210.021#07 + (1108 01 69)
BERKER	B.3	aluminium / polar white (matt)	HTRRUu 210.021#56	not required
BERKER	B.3	aluminium / polar white (glossy)	HTRRUu 210.021#55	not required
BERKER	B.7	glass / polar white (matt)	HTRRUu 210.021#56	not required
BERKER	B.7	glass / polar white (glossy)	HTRRUu 210.021#55	not required
BERKER	K.1	polar white (glossy)		HTRRUu 210.021#07 + (1108 71 09)
BUSCH-JAEGER	Reflex SI / SI Linear	alpine white (glossy)	HTRRUu 210.021#28	not required
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)	HTRRUu 210.021#55	not required
BUSCH-JAEGER	impuls	alpine white (glossy)		HTRRUu 210.021#07 + (1746 / 10-74)
BUSCH-JAEGER	solo / future / axcent etc.	studio white – see RAL 9016 below		
Elso	Joy	pure white (glossy)	HTRRUu 210.021#55	not required
Elso	Fashion / Riva / Scala	pure white (glossy)		HTRRUu 210.021#07 + 203084
GIRA	surface switch	pure white (glossy)		HTRRUu 210.021#07 + (0282 112)
GIRA (System 55)	Standard / E2	pure white (semi-gloss)	HTRRUu 210.021#56	not required
GIRA (System 55)	Standard / E2 / E3	pure white (glossy)	HTRRUu 210.021#55	not required
GIRA (System 55)	E22	pure white (glossy)	HTRRUu 210.021#55	not required
GIRA (System 55)	Event	pure white (semi-gloss) + opaque…	HTRRUu 210.021#56	not required
GIRA (System 55)	Event	pure white (glossy) + opaque…	HTRRUu 210.021#55	not required
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium…	HTRRUu 210.021#56	not required
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium…	HTRRUu 210.021#55	not required
GIRA	S-Color	pure white (high-gloss)		HTRRUu 210.021#07 + (0282 40)
JUNG	CD 500 / CD plus	alpine white (glossy) **		HTRRUu 210.021#07 + (CD 590 Z WW)
JUNG	A 500 / AS 500 / A plus	alpine white (glossy) **	HTRRUu 210.021#55	not required
JUNG	LS 990	alpine white (glossy) **		HTRRUu 210.021#07 + (LS 961 Z WW)
JUNG	LS plus	alpine white (glass) **		HTRRUu 210.021#07 + (LS 961 Z WW)
JUNG	A creation	alpine white (glossy)	HTRRUu 210.021#55	not required
JUNG	LS Design	alpine white (glossy)		HTRRUu 210.021#07 + (LS 961 Z WW)
JUNG	AS 550 / A flow	snow white matt	HTRRUu-210.021#56	not required
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	HTRRUu 210.021#56	not required
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)	HTRRUu 210.021#55	not required
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)	HTRRUu 210.021#55	not required
MERTEN (Surface System)	Artec / Antik	polar white (glossy)		HTRRUu 210.021#07 + (5160 99)
MERTEN	1-M / M-Smart / M-Plan / M-Pure / D-Life	active white – see RAL 9016 below		
PEHA	Standard	pure white (glossy)		HTRRUu 210.021#07 + (80.670.02 ZV)
PEHA	Dialog	pure white (glossy)		HTRRUu 210.021#07 + (95.670.02 ZV)
PEHA	Aura	pure white (matt) / glass		HTRRUu 210.021#07 + (20.670.02 ZV)
PEHA	Badora	pure white (glossy)		HTRRUu 210.021#07 + (11.670.02 ZV)

MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION in switch range (55x55) possible with…	'50x50' adaptation possible with… (insert frame from switch manufacturer required)
BUSCH-JAEGER	solo / future / future linear	studio white (RAL 9016, glossy)		HTRRUu 210.021#27 + (1746 / 10-84)
BUSCH-JAEGER	axcent	studio white (RAL 9016, glossy)		HTRRUu 210.021#27 + (1746 / 10-84)
BUSCH-JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016, glossy)		HTRRUu 210.021#27 + (1746 / 10-84)
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016, glossy)		HTRRUu 210.021#27 + (1746 / 10-24G)
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	HTRRUu 210.021#59	not required
MERTEN	1-M / Atelier-M	active white (RAL 9016, glossy)	HTRRUu 210.021#59	not required
MERTEN	D-Life	lotus white (RAL 9016)		HTRRUu 210.021#27 + MEG4500-6035
PEHA	Standard	arctic		HTRRUu 210.021#27 + (D 80.670 ZV AW)

*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame ** if necessary, the manufacturer JUNG will change the colour from RAL 9010 to RAL 9016

NOTE: Most light switches are designed in the colour 'similar to RAL 9010', although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt / glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

'50x50 controller': The housing covers of the 50x50 controllers are 50x50 mm in size. Using a 50x50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50x50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch range in question can be found in the column 'For adaptation of size "50x50" HTRRUu'.

'55x55 controller': The housing covers of the 55x55 controllers are 55x55 mm in size. Many light switch ranges have inner dimensions of 55x55 mm. Therefore, the 55x55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column 'Adaptation in switch range (55x55)' to determine whether the 55x55 controller fits in the given light switch range (HTRRUu 210.021#xx).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12 / 2022 | No liability is assumed for the information provided. | Technical specifications subject to change.

FLOOR OR SURFACE TEMPERATURE CONTROLLER, ELECTRONIC, WITH REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING / TILED STOVE) HTRRB

SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

TECHNICAL DATA

Design:	Berlin 2000
Surface finish:	matt
Housing colour:	pure white, similar to RAL 9010
Housing material:	ABS plastic
Operating voltage:	230 V AC, 50 Hz
Ambient temperature:	0 to 30 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Mounting / attachment:	Surface / wall mounting (4-hole assembly on flush-mounted socket)
Protection rating:	IP30
Protection class:	II, if properly mounted
Safety and EMC:	according to DIN EN 60730
Max. switching current:	13 (2) A
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	230 V AC, 50 Hz
Switching power:	3000 W
Switching element:	relay
Switching contact:	NO contact
Output signal:	230 V AC, 50 Hz
Sensor:	external, NTC
Sensor rupture and short-circuit protection:	heating is switched off
Control function:	heating
Hysteresis:	approx. 1 K
General features:	'heating' display: mechanical range limitation; 3000 W switching power for electric direct heating systems, natural stone heating; 'on / off' switch; external setting

APPLICATION

Temperature control (e.g., of electrical heating systems) for floor, fringe zone, bathroom, ceiling, tiled stove, marble and wall heating systems or tempering systems.

Note: The sensor line must be routed in a protective duct. Parallel routing together with lines that carry alternating currents is not admissible.

Floor temperature controller with clock: HTRRBu-110.021
Floor temperature controller for distributor assembly:
ITR 79 Series (plant engineering)

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
HTRRB-011.010	DA400000	**General features:** Floor temperature controller with remote sensor HF-8 / 4-K2 4 m, multi-digit display 1 – 6 **Control range:** 10 to 60 °C **Note:** The setting range can be adjusted to 10 to 40 °C (for example) using the mechanical range limitation as a replacement for the type **HTRRB-010.310**.		129.60 / I
HTRRB-011.410	DA400100	**General features:** Tiled stove surface temperature controller with remote sensor HF-5 / 4-K3 4 m; scale: degrees Celsius; threshold arrow **Control range:** 20 – 80 °C		184.00 / I

FLOOR OR SURFACE TEMPERATURE CONTROLLER, ELECTRONIC, WITH REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING / TILED STOVE) HTRRB
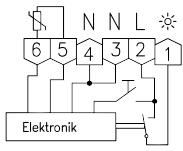
SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
HF-8/4-K2	G8000370	**General features:** Spare sensor for HTRRB-011.010 **Ambient temperature:** −5 to +70 °C **Protection rating:** IP65 **Sensor:** NTC **Connecting cable:** 4 m, PVC	24.00 / II
HF-8/6-K2	G8000368	**General features:** Spare sensor for HTRRB-011.010 **Ambient temperature:** −5 to +70 °C **Protection rating:** IP65 **Sensor:** NTC **Connecting cable:** 6 m, PVC	26.70 / II
HF-5/4-K3	G9031456	**General features:** Spare sensor for HTRRB-011.410 **Ambient temperature:** −50 to +150 °C **Protection rating:** IP65 **Sensor:** NTC **Connecting cable:** 4 m, silicone, H05SS-F <VDE> 2x0.75 mm²	51.30 / III
WP-01	G9990180	**General features:** heat conduction paste 2 ml; R > 1 TΩ / cm, silicone-free **Heat conductivity:** > 0.7 W / mK **Ambient temperature:** −40 to +150 °C	6.60 / II
THF	C1809515	**General features:** Protective sleeve for screed mounting (for sleeve sensor HF Ø 7.7, for example, HF-8/4-K2 or HF-8/6-K2), copper	40.90 / II

ILLUSTRATIONS

HTRRB

THF
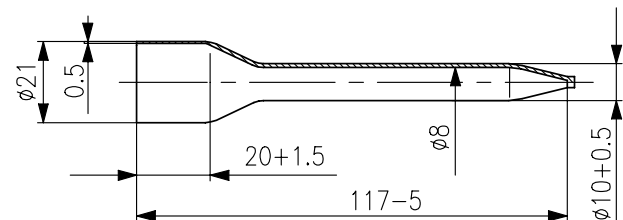
HF-8/4-K2

ELECTRONIC FLOOR OR SURFACE TEMPERATURE CONTROLLER WITH CLOCK AND REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING) HTRRBU

SURFACE-MOUNTED INSTALLATION – BERLIN 3000

TECHNICAL DATA
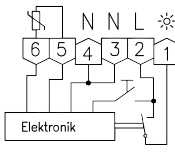
Design:	Berlin 3000
Surface finish:	matt
Housing colour:	pure white, similar to RAL 9010
Housing material:	ABS plastic
Operating voltage:	230 V AC, 50 Hz
Ambient temperature:	0 to 30 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals 0.5 – 1.5 mm²
Mounting / attachment:	surface / wall mounting or by means of an adapter plate on a flush-mounted socket
Protection rating:	IP30
Protection class:	II, if properly mounted
Safety and EMC:	according to DIN EN 60730
Max. switching current:	heating (terminal 4) 13 (2) A, clock output (terminal 3) 100 mA
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	230 V AC, 50 Hz
Switching power:	terminal 4: 3000 W, terminal 3: 23 W
Switching element:	relay
Switching contact:	NO contact
Output signal:	switching (230 VAC, 50 Hz)
Sensor:	external, NTC
Control function:	heating
Control range:	10 to 42 °C
Hysteresis:	approx. 1 K
Display type:	symbol display
Output 'temperature reduction':	switching (230 VAC, 50 Hz), for pilot function

APPLICATION

Time-dependent temperature control (for example, of electrical heating systems) for floor, fringe zone, bathroom, ceiling, tiled stove, marble and wall heating systems or tempering systems.

It can be used as a master (pilot regulator) for the temperature reduction of other controllers. Controllers of the series FETR, RTBSU and RTBSB are suitable for use as slaves (satellite controllers).

Note: The sensor line must be routed in a protective duct. Parallel routing together with lines that carry AC voltage is not permissible.

Programming procedures for every day, familiar from mechanical timers, by means of 'electronic tabs'. Shortest switching time 15 min.

General features:

Pilot function; ECO function; ECO value adjustable; display 'ECO'; display 'On / Off'; display 'heating'; child-safe features; power reserve (approx. 4 – 7 days); learning function; valve protection; holiday setting; party setting; automatic adjustment to standard / daylight savings time; mechanical range limitation; reduction / comfort / automatic button; external setting; operation using direct-dial buttons; on / off button; information button; party function button; holiday setting button

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
HTRRBu-110.021	MA600400	With backlighting		275.50 / I

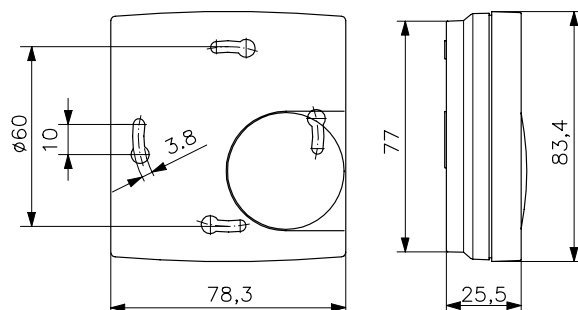Accessories: terminal strips: VOOPL compatible valve actuators: ZBOOA-010.1xx

ELECTRONIC FLOOR OR SURFACE TEMPERATURE CONTROLLER WITH CLOCK AND REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING) HTRRBU

SURFACE-MOUNTED INSTALLATION – BERLIN 3000

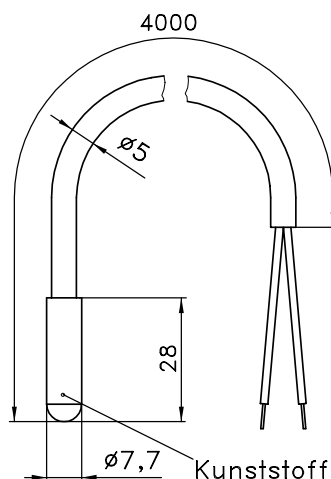| ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-17	MN990001	**General features:** adapter plate for mounting devices on flush-mounted sockets (including fastening screws for mounting the controller on the adapter plate) **Surface finish:** matt **Colour:** pure white, similar to RAL 9010 **Material:** ABS plastic	7.40 / II
HF-8 / 4-K2	G8000370	**General features:** Spare sensor for HTRRBu-110.021 **Ambient temperature:** −5 to +70 °C **Protection rating:** IP65 **Sensor:** NTC **Connecting cable:** 4 m, PVC	24.00 / II
HF-8 / 6-K2	G8000368	**General features:** Spare sensor for HTRRBu-110.021 **Ambient temperature:** −5 to +70 °C **Protection rating:** IP65 **Sensor:** NTC **Connecting cable:** 6 m, PVC	26.70 / II
WP-01	G9990180	**General features:** Heat conduction paste 2 ml; R > 1 TΩ / cm, silicone-free **Ambient temperature:** −40 to +150 °C	6.60 / II
THF	C1809515	**General features:** protective sleeve for screed mounting (for sleeve sensor HF Ø 7.7, for example, HF-8 / 4-K2 or HF-8 / 6-K2), copper	40.90 / II

ILLUSTRATIONS

HTRRBu-110.XXX

JZ-17

Factory setting:
- Setback temperature 1.7
- Continuous time display
- Programme display using switching segments enabled
- Child-safe features disabled
- Automatic adjustment to summer / winter time enabled
- Valve and pump protection disabled
- Learning function disabled
- Comfort times:
  Mon – Fri 5 am – 9 am / 4 pm – 10 pm,
  Sat / Sun 6 am – 10 pm
- Sensor rupture and short-circuit protection: In case of a sensor rupture or sensor short-circuit, the heating is activated with a power-on time of 30% to prevent cooling or frost damage in the room. Temperatures below −20 °C are also interpreted as sensor rupture, and the emergency function is triggered.

HF-8 / 4-K2

THF

ELECTRONIC FLOOR TEMPERATURE CONTROLLER WITH REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING) FETR / RTERU

FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TECHNICAL DATA

Design:	Berlin UP
Housing material:	PC plastic (FETR) PA6 plastic (RTERU)
Operating voltage:	230 V AC, 50 Hz
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals (FETR) pluggable screw terminals
Mounting / attachment:	In flush-mounted socket – with suitable cover set, can be adapted to fit virtually any switch range (deep flush-mounted socket recommended)
Protection rating:	IP30
Protection class:	II, if properly mounted
Safety and EMC:	according to DIN EN 60730
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	230 V AC, 50 Hz
Switching element:	relay
Switching contact:	NO contact
Output signal:	switching (230 VAC, 50 Hz)
Sensor:	external or internal / external (monitors)
Sensor type (external):	HF-8 / 4-K2
Sensor rupture and short-circuit protection:	heating is switched off
Sensor wire extendible up to:	50 m with min. 0.5 mm² double-insulated
Control function:	heating
Hysteresis:	< 1 K (FETR) 1.5 K (RTERU)
General features:	ECO function; 'reduction' display (FETR); 'heating' display
Input 'temperature reduction':	approx. 5 K (230 VAC, 50 Hz)

APPLICATION

Temperature control (e.g., of electrical heating systems) for floor, fringe zone, bathroom, ceiling, tiled stove, marble and wall heating systems or tempering systems, direct floor heating systems.
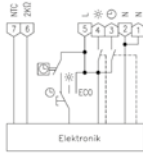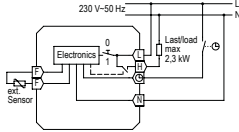
Reduction: With these flush-mounted controllers, the temperature can be reduced by 5 K. For this purpose, potential is applied to the clock input terminal by an external pilot controller or an external timer L1.

Note: The sensor line must be routed in a protective duct. Parallel routing together with lines that carry alternating currents is not admissible.

The 55x55 mm variants visually fit perfectly without an insert frame in many switch ranges of 55x55 mm.

Using an insert frame, the 50x50 mm variants fit in almost all switch ranges.
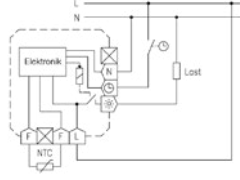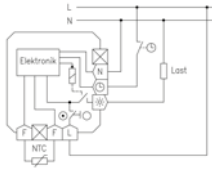
See Page 123 for an overview of currently possible combinations and insert frames.

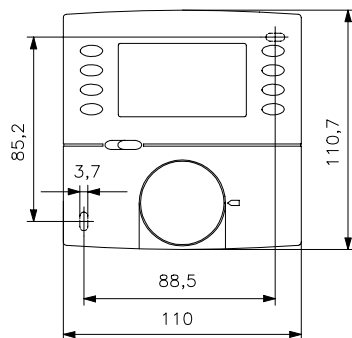| TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
RTERU-010.715#00	UN110100	**General features:** floor temperature controller; mechanical range limitation; on / off switch; external setting; protective cap; contact hazard protection cover plate; Multi-digit display * – 6 **Ambient temperature:** 0 to 35 °C **Max. switching current:** 10 (1.5) A **Switching power:** 2300 W **Control range:** 10 to 50 °C **Scope of delivery:** controller, remote sensor 4 m Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no:** JZ-035.xxx, for example: 50x50 mm cover set, pure white, glossy: JZ-035.000 55x55 mm cover set, pure white, gloss: JZ-035.100		92.80 / I
RTERU-010.715#21	UN110109	Similar to RTERU-101.715#00 but **scope of delivery as follows:** controller, 4 m remote sensor, alre frame 'Berlin' (neutral), 50x50 mm cover, pure white (similar to RAL 9010), glossy		117.10 / I

ELECTRONIC FLOOR TEMPERATURE CONTROLLER WITH REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING) FETR / RTERU

FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
FETR 101.700#07	UN030000	**General features:** Floor temperature controllers; internal setting; multi-digit display 1 – 6 **Ambient temperature:** 0 to 40 °C **Max. switching current:** 16 (2) A **Switching power:** 3680 W **Control range:** 10 to 60 °C **Scope of delivery:** controller, remote sensor 4 m, cover 50x50 mm, pure white (similar to RAL 9010), glossy		191.70 / I
FETR 101.715#00	UA030119	**General features:** Floor temperature controller; mechanical range limitation; **'on / off' switch;** external setting; protective cap; contact hazard protection cover plate; multi-digit display 1 – 5 **Ambient temperature:** 0 to 40 °C **Max. switching current:** 16 (2) A **Switching power:** 3680 W **Control range:** 10 to 50 °C **Scope of delivery:** controller, remote sensor 4 m Cover sets are offered in various designs (see the separate overview, "alre flush-mounted range (cover sets)") and are not included in the delivery. **Suitable set no: JZ-005.xxx, for example.:** 50x50 mm cover set , pure white, glossy: JZ-005.000 55x55 mm cover set, pure white, glossy: JZ-005.100		169.00 / I
FETR 101.715#21	UN030109	Similar to FETR 101.715#00, but with scope of delivery: controller, remote sensor 4 m, alre frame 'Berlin' (neutral), 50x50 mm cover, pure white (similar to RAL 9010), glossy		188.10 / I
FETR 101.716#00	UA030502	Similar to FETR 101.715#00, but with control range 10 to 42 °C (multi-digit display 1 – 4) Cover sets are offered in various designs (see the separate overview, 'alre flush-mounted range (cover sets)') and are not included in the delivery. **Suitable set no: JZ-009.xxx, e.g.,:** 50x50 mm cover set, pure white, glossy: JZ-009.000 55x55 mm cover set, pure white, glossy: JZ-009.100 Complete device with alre frame 'Berlin' (neutral), 50x50 mm cover (pure white, similar to RAL 9010, glossy) upon request.		169.00 / I

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
HF-8 / 4-K2	G8000370	**General features:** Spare sensor for RTERU / FETR 101.7xx **Ambient temperature:** −5 to +70 °C **Protection rating:** IP65 **Sensor:** NTC **Connecting cable:** 4 m, PVC	24.00 / II
HF-8 / 6-K2	G8000368	**General features:** Spare sensor for RTERU / FETR 101.7xx **Ambient temperature:** −5 to +70 °C **Protection rating:** IP65 **Sensor:** NTC **Connecting cable:** 6 m, PVC	26.70 / II
WP-01	G9990180	**General features:** Heat conduction paste 2 ml; R > 1 TΩ / cm, silicone-free **Ambient temperature:** −40 to +150 °C	6.60 / II
THF	C1809515	**General features:** protective sleeve for screed mounting (for sleeve sensor HF Ø 7.7, for example, HF-8 / 4-K2 or HF-8 / 6-K2), copper	40.90 / II

ELECTRONIC FLOOR TEMPERATURE CONTROLLER WITH REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING) FETR / RTERU

FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-090.900	VV000025	**General features:** alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50x50 mm cover **Design:** Berlin **Surface finish:** glossy **Colour:** Pure white, similar to RAL 9010 **Material:** PC plastic	4.20 / I
JZ-090.910	VV000010	Similar to JZ-090.900 but with pearl white colour similar to RAL 1013	4.20 / I
JZ-090.100	VV000048	Similar to JZ-090.900, but for all flush-mounted controllers in combination with 55x55 mm cover	4.20 / I

ALRE FLUSH-MOUNTED RANGE (COVER SETS)

ALL BASIC TYPES AND SUITABLE **50X50 MM** COVER SETS / B-J REFLEX SI / SI LINEAR

BASIC TYPE	50x50 mm cover set **PURE WHITE (RAL 9010) GLOSSY** (JZ-xxx.000)		50x50 mm cover set **PURE WHITE (RAL 9010) MATT** (JZ-xxx.001)		50x50 mm cover set **PEARL WHITE (RAL 1013) GLOSSY** (JZ-xxx.010)		EURO / PG
	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	
FETR 101.715#00	JZ-005.000	UN990003	JZ-005.001	UN990006	JZ-005.010	UN990009	15.50 / I
FETR 101.716#00	JZ-009.000	UN990004	JZ-009.001	UN990007	JZ-009.010	UN990010	15.50 / I
RTERU 101.715#21	JZ-035.000	UN990169	JZ-035.001	UN990193	JZ-035.010	UN990177	12.70 / I

BASIC TYPE	50x50 mm cover set **TRAFFIC / STUDIO WHITE (RAL 9016) GLOSSY** (JZ-xxx.020)		50x50 mm cover set **TRAFFIC WHITE (RAL 9016) MATT** (JZ-xxx.021)		EURO/ PG	BUSCH-JAEGER cover set **REFLEX SI / SI LINEAR PURE WHITE (RAL 9010) GLOSSY** (JZ-xxx.200 / BJ)		EURO/ PG
	Cover set	Item no.	Cover set	Item no.		Cover set	Item no.	
FETR 101.715#00	JZ-005.020	UN990075	JZ-005.021	UN990104	15.50 / I	–	–	
FETR 101.716#00	JZ-009.020	UN990076	JZ-009.021	UN990106	15.50 / I	–	–	
RTERU 101.715#21	JZ-035.020	UN990185	JZ-035.021	UN990201	14.80 / I	JZ-035.200 / BJ	G9990499	12.70 / I

In flush-mounted socket, it can be adapted to fit virtually any switch range.

ALL BASIC TYPES AND SUITABLE COVER SETS **55X55 MM**

BASIC TYPE	55x55 mm cover set **PURE WHITE (RAL 9010) GLOSSY** (JZ-xxx.100)		55x55 mm cover set **PURE WHITE (RAL 9010) MATT** (JZ-xxx.101)		55x55 mm cover set **PEARL WHITE (RAL 1013) GLOSSY** (JZ-xxx.110)		EURO / PG
	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	
FETR 101.715#00	JZ-005.100	UN990012	JZ-005.101	UN990015	JZ-005.110	UN990018	17.30 / I
FETR 101.716#00	JZ-009.100	UN990013	JZ-009.101	UN990016	JZ-009.110	UN990019	17.30 / I
RTERU 101.715#21	JZ-035.100	UN990173	JZ-035.101	UN990197	JZ-035.110	UN990181	15.90 / I

BASIC TYPE	55x55 mm cover set **TRAFFIC / STUDIO WHITE (RAL 9016) GLOSSY** (JZ-xxx.120)		EURO/ PG	55x55 mm cover set **ANTHRACITE, MATT FOR GIRA** (JZ-xxx.141)		EURO/ PG
	Cover set	Item no.		Cover set	Item no.	
FETR 101.715#00	JZ-005.120	UN990091	17.30 / I			
FETR 101.716#00	JZ-009.120	UN990092	17.30 / I	JZ-009.141 / GI	UN990122	20.70 / I
RTERU 101.715#21	JZ-035.120	UN990189	17.90 / I	JZ-035.141 / GI	UN990205	20.10 / I

SPECIAL COLOURS AS WELL AS THE COLOURS ANTHRACITE AND ALUMINIUM ARE AVAILABLE UPON REQUEST.

ALL BASIC TYPES AND SUITABLE COVER SETS **70X70 MM**

BASIC TYPE	70x70 mm cover set **PURE WHITE (RAL 9010) GLOSSY** (JZ-xxx.400)		70x70 mm cover set **PEARL WHITE (RAL 1013) GLOSSY** (JZ-xxx.410)		EURO/ PG	70x70 mm cover set **TRAFFIC / STUDIO WHITE (RAL 9016) GLOSSY** (JZ-xxx.420)		EURO/ PG
	Cover set	Item no.	Cover set	Item no.		Cover set	Item no.	
RTERU 101.715#21	JZ-035.400	UN990143	JZ-035.401	UN990147	15.90 / I	JZ-035.420	UN990151	17.90 / I

ADAPTATION OF ALRE FLUSH-MOUNTED CONTROLLERS

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION possible with '55x55' or '70x70' cover set (without insert frame)	'50X50' adaptation possible with … (insert frame from manufacturer required)
BERKER	S.1	polar white (matt)	x	1109 19 19
BERKER	S.1	polar white (glossy)	x	1109 90 89
BERKER	Arsys	polar white (glossy)		1108 01 69
BERKER	B.3	aluminium / polar white (matt)	x	1109 19 19
BERKER	B.3	aluminium / polar white (glossy)	x	1109 90 89
BERKER	B.7	glass / polar white (matt)	x	1109 19 19
BERKER	B.7	glass / polar white (glossy)	x	1109 90 89
BERKER	Q.1 / Q.3	polar white (velvet)		1109 60 79
BERKER	K.1	polar white (glossy)		1108 71 09
BUSCH-JAEGER	Reflex SI / SI Linear	alpine white (glossy)		1746-214-101
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)	x	1746-914-101
BUSCH-JAEGER	impuls	alpine white (glossy)		1746 / 10-74
BUSCH-JAEGER	solo / future / axcent etc.	studio white – see RAL 9016 below		
Elso	Joy	pure white (glossy)	x	363084
Elso	Fashion / Riva / Scala	pure white (glossy)		203084
GIRA	surface switch	pure white (glossy)	x	0282 112
GIRA (System 55)	Standard / E2	pure white (semi-gloss)	x	0282 27
GIRA (System 55)	Standard / E2	pure white (glossy)	x	0282 03
GIRA (System 55)	E22	pure white (glossy)	x	0282 03
GIRA (System 55)	Event	pure white (semi-gloss) + opaque…	x	0282 27
GIRA (System 55)	Event	pure white (glossy) + opaque…	x	0282 03
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium…	x	0282 27
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium…	x	0282 03
GIRA	S-Color	pure white (high-gloss)		0282 40
JUNG	CD 500 / CD plus	alpine white (glossy)		CD 590 Z WW
JUNG	A 500 / AS 500 / A plus	alpine white (glossy)	x	A 590 Z WW
JUNG	LS 990	alpine white (glossy)	x	LS 961 Z WW
JUNG	LS plus	alpine white (glass)	x	LS 961 Z WW
JUNG	A creation	alpine white (glossy)	x	A 590 Z WW
JUNG	LS Design	alpine white (glossy)	x	LS 961 Z WW
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	x	5181 19
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)	x	5185 19
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)	x	5185 19
MERTEN (Surface System)	Artec / Antik	polar white (glossy)		5160 99
MERTEN	1-M / M-Smart / M-Plan / M-Pure / D-Life	active white – see RAL 9016 below or product finder		
PEHA	Standard	pure white (glossy)		80.670.02 ZV
PEHA	Dialog	pure white (glossy)		95.670.02 ZV
PEHA	Aura	pure white (matt) / glass		20.670.02 ZV
PEHA	Badora	pure white (glossy)		11.670.02 ZV

MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION in switch range ('55x55' or '70x70') possible with…	'50x50' adaptation possible with… (insert frame from switch manufacturer required)
BUSCH-JAEGER	solo / future / future linear	studio white (RAL 9016, glossy)		1746 / 10-84
BUSCH-JAEGER	future linear	studio white (RAL 9016 matt)		1746 / 10-884
BUSCH-JAEGER	impuls	studio white (RAL 9016 matt)		1746 / 10-774
BUSCH-JAEGER	axcent	studio white (RAL 9016, glossy)		1746 / 10-84
BUSCH-JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016, glossy)		1746 / 10-84
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016, glossy)		1746 / 10-24G
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016 matt)		1746 / 10-24
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	x	5185 25
MERTEN	1-M / Atelier-M	active white (RAL 9016, glossy)	x	5185 25
MERTEN	D-Life	lotus white (RAL 9016)	x	MEG4500-6035
PEHA	Standard	arctic		D 80.670 ZV AW

*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame

NOTE: Most light switches are designed in the colour 'similar to RAL 9010', although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt / glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

'50x50 controller': The housing covers of the 50x50 controllers are 50x50 mm in size. Using a 50x50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50x50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch range in question can be found in the column 'Only for adaptation with "50x50" cover set'.

'55x55 controller': The housing covers of the 55x55 controllers are 55x55 mm in size. Many light switch ranges have inner dimensions of 55x55 mm. Therefore, the 55x55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column 'Adaptation with "55x55" cover set' to determine whether the 55x55 controller fits in the given light switch model (x).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12 / 2022 |
No liability is assumed for the information provided. | Technical specifications subject to change.

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM BERKER

INTEGRATION EXAMPLES

RTERU – in S. 1	RTERU – in B. 3	RTERU – in B. 7	RTERU – in K. 1	RTERU – in Arsys
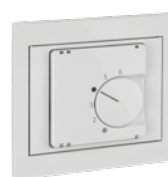
TYPE ALRE	BERKER RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50 X 50*	EURO / PG
RTERU-010.715#00	S. 1 / B. 3 / B. 7	polar white (RAL 9010) glossy	JZ-035.100 (55x55, glossy)	UN990173	not required	15.90 / I
	S. 1 / B. 3 / B. 7	polar white (RAL 9010) matt	JZ-035.101 (55x55, matt)	UN990197	not required	15.90 / I
	Arsys	polar white (RAL 9010) glossy	JZ-035.000 (50x50, glossy)	UN990169	1108 01 69	12.70 / I
	Q. 1 / Q. 3	polar white (RAL 9010) velvet	JZ-035.001 (50x50, matt)	UN990193	1109 60 79	12.70 / I
Standard	K. 1	polar white (RAL 9010) glossy	JZ-035.000 (50x50, glossy)	UN990169	1108 71 09	12.70 / I
	S. 1	white (RAL 1013) glossy	JZ-035.110 (55x55, glossy)	UN990181	not required	15.90 / I
	Arsys	white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	1108 01 02	12.70 / I

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM BUSCH-JAEGER

INTEGRATION EXAMPLES

RTERU – in Reflex SI	RTERU – in Busch-balance SI	RTERU – in future linear	RTERU – in solo	RTERU – in alpha nea

TYPE ALRE	BUSCH-JAEGER RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50 X 50*	EURO / PG
RTERU-010.715#00	Reflex SI / SI Linear	alpine white (RAL 9010) glossy	JZ-035.200 / BJ	UN990169	1746-214-101	12.70 / I
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-035.100 (55x55, glossy)	UN990173	not required	15.90 / I
	impuls	alpine white (RAL 9010) glossy	JZ-035.000 (50x50, glossy)	UN990169	1746 / 10-74	12.70 / I
	future linear / solo / axcent / carat	studio white (RAL 9016) glossy	JZ-035.020 (50x50, glossy)	UN990185	1746 / 10-84	14.80 / I
Standard	future linear	studio white (RAL 9016) matt	JZ-035.021 (50x50, matt)	UN990201	1746 / 10-884	14.80 / I
	alpha nea	studio white (RAL 9016) glossy	JZ-035.020 (50x50, glossy)	UN990185	1746 / 10-24G	14.80 / I
	alpha nea	studio white (RAL 9016) matt	JZ-035.021 (50x50, matt)	UN990201	1746 / 10-24	14.80 / I
	Duro 2000 SI / SI Linear	white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	1746-212-101	12.70 / I
	future linear / solo / carat	ivory white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	1746 / 10-82	12.70 / I
	alpha nea	ivory white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	1746 / 10-22G	12.70 / I
	impuls	ivory white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	1746 / 10-72	12.70 / I

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM ELSO

INTEGRATION EXAMPLES

RTERU – in Joy RTERU – in Fashion RTERU – in Riva RTERU – in Scala

TYPE ALRE	ELSO RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50 X 50 *	EURO / PG
RTERU-010.715#00	Joy	pure white (RAL 9010) glossy	JZ-035.100 (55x55, glossy)	UN990173	not required	15.90 / I
	Joy	pearl white (RAL 1013) glossy	JZ-035.110 (55x55, glossy)	UN990181	not required	15.90 / I
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-035.000 (50x50, glossy)	UN990169	203084	12.70 / I
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	203080	12.70 / I
Standard						

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM GIRA

INTEGRATION EXAMPLES

RTERU – in Standard 55 RTERU – in E 2 RTERU – in Event RTERU – in surface switch **NEW** RTERU – in E 22

TYPE ALRE	GIRA RANGE	COLOUR (RAL) / SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50 X 50 *	EURO / PG
RTERU-010.715#00	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) glossy	JZ-035.100 (55x55, glossy)	UN990173	not required	15.90 / I
	Standard 55 / E 2 / E 22 / Event / Esprit	pure white (RAL 9010) matt	JZ-035.101 (55x55, matt)	UN990197	not required	15.90 / I
	Surface switch **NEW**	pure white (RAL 9010) glossy	JZ-035.400 (70x70, glossy)	UN990143	not required	15.90 / I
	Standard 55 / Event / Esprit / ClassiX	cream white (RAL 1013) glossy	JZ-035.110 (55x55, glossy)	UN990181	not required	15.90 / I
Standard	System 55	anthracite / matt	JZ / -035.141 / GI	UN990205	not required	20.10 / I

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM JUNG

INTEGRATION EXAMPLES

NEW

RTERU – in AS 500 | RTERU – in A 500 | RTERU – in A plus | RTERU – in A creation | RTERU – in LS-design

TYPE ALRE	JUNG RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG
RTERU-010.715#00	AS 500 / A 500 / A 550 / A creation / A plus / A flow	alpine white (RAL 9010) glossy	JZ-035.100 (55x55, glossy)	UN990173	not required	15.90 / I
	CD 500 / CD plus	alpine white (RAL 9010) glossy	JZ-035.000 (50x50, glossy)	UN990169	CD 590 Z WW	12.70 / I
	LS 990 / LS design / LS plus **NEW**	alpine white (RAL 9010) glossy	JZ-035.400 (70x70, glossy)	UN990143	not required	15.90 / I
Standard	AS 500	white (RAL 1013) glossy	JZ-035.110 (55x55, glossy)	UN990181	not required	15.90 / I
	CD 500 / CD plus	white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	590 Z	12.70 / I
	LS 990 / LS design / LS plus **NEW**	white (RAL 1013) glossy	JZ-035.410 (70x70, glossy)	UN990147	not required	15.90 / I

PRODUCT FINDER FOR ALRE COVER SETS
FOR SWITCH RANGES FROM MERTEN

INTEGRATION EXAMPLES

RTERU – in 1-M | RTERU – in M-Smart | RTERU – in M-Plan | RTERU – in Artec | RTERU – in Antik

TYPE ALRE	MERTEN RANGE	COLOUR (RAL)/ SURFACE FINISH	ALRE COVER SET	COVER SET ITEM NO.	INSERT FRAME 50X50*	EURO/ PG
RTERU-010.715#00	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) glossy	JZ-035.100 (55x55, glossy)	UN990173	not required	15.90 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-035.101 (55x55, matt)	UN990197	not required	15.90 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-035.120 (55x55, glossy)	UN990189	not required	17.90 / I
Standard	D-Life **NEW**	lotus white (RAL 9016) glossy	JZ-035.420 (70x70, glossy)	UN990151	not required	17.90 / I
	System design: Artec, Antik	polar white (RAL 9010) glossy	JZ-035.000 (50x50, glossy)	UN990169	5160 99	12.70 / I
	1-M, Atelier-M / M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-035.110 (55x55, glossy)	UN990181	not required	15.90 / I
	System design: Artec, Antik	white (RAL 1013) glossy	JZ-035.010 (50x50, glossy)	UN990177	5160 94	12.70 / I

ELECTRONIC FLOOR TEMPERATURE CONTROLLER WITH REMOTE SENSOR (FOR FLOOR HEATING / WALL AND CEILING HEATING) FETR / RTERU

FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

ILLUSTRATIONS

HF-8 / 4-K2
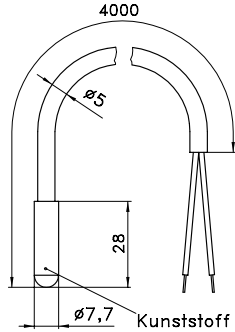
THF
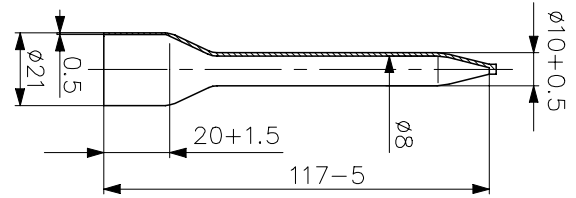
RTERU with alre frame 'Berlin' (#21 types)
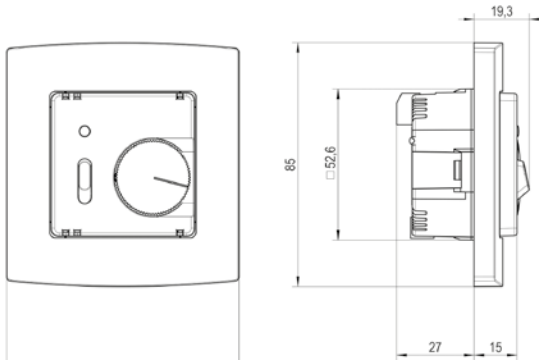
alre frame 'Berlin' (#21 types)
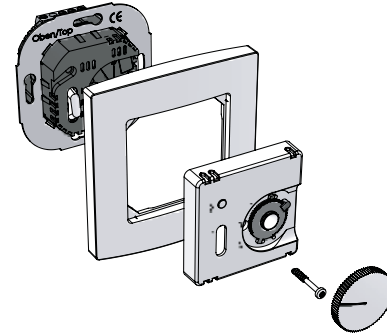
with 50x50 mm insert frame
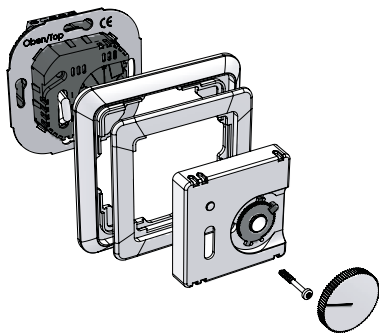
without 55x55 mm insert frame
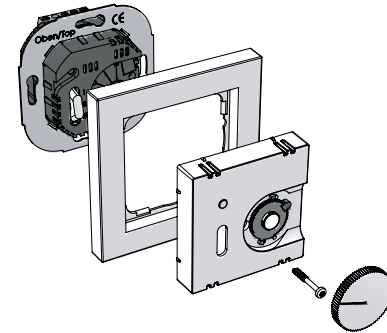
Internal scale RTERU for temperature control without cover
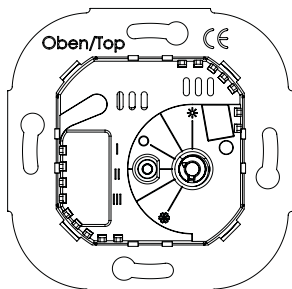
Contact hazard protection cap with scale (for FETR 101.700 with internal setting – similar to illustration)

NEW

ACTUATOR 'STELLA' 230 V NC
FOR AUTOMATIC HYDRAULIC BALANCING

TECHNICAL DATA

Operating voltage:	230 V~, 50 Hz
Max. power consumption:	30 W
Max. starting current:	approx. 0.13 A
Housing colour:	grey-orange
Housing material:	PA6 plastic
Ambient temperature:	0 to 50 °C
Storage temperature:	−25 to +60 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Mounting / attachment:	M 30 x 1.5
Protection rating:	IP54
Protection class:	ll
Safety and EMC:	according to DIN EN 60730
Average power consumption:	approx. 1.7 W
Opening / closing time:	approx. 3 min
Nominal stroke:	3.5 mm
Function type:	normally closed
Nominal closing force:	110 N
Connecting cable:	1 m / 2x0.34 mm²

APPLICATION

'Stella' – the intelligent autonomous 230 VAC NC electrothermal actuator for automatic adaptive hydraulic balancing of heating manifolds' heating circuits in surface heating and surface cooling systems.

Sensors on the supply and return lines measure temperature differences, and an algorithm continuously calculates the necessary temperature spread and the appropriate valve position.

Normally closed and features a folding lever for easily unscrewing the thermostat valve or opening it manually when it is disconnected from the mains. Features integrated inflow temperature limitation.

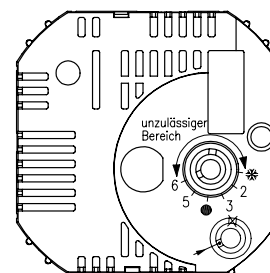| TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
ZB00A-010.185	G8990010	Actuator for automatic hydraulic balancing		78.40 / I
SET 31	VV000046	Set for performing fully automatic hydraulic balancing consisting of 5 surface-mounted room thermostats, 1 terminal strip and 6 actuators.		744.80 / I
SET 32	VV000047	Set for performing fully automatic hydraulic balancing consisting of 5 flush-mounted room thermostats, 1 terminal strip and 6 actuators.		831.40 / I

ILLUSTRATIONS

82,2
53,1
47
74,2
52,7   29,5
23,6   29,5

BRIEF DESCRIPTION

- Combinable with the commercial 2-point room temperature controller (electromechanical, electronic, PWM)
- For heating and cooling systems
- Features a folding lever for easily unscrewing the thermostat valve or opening it manually when it is disconnected from the mains
- Temperature sensors suited for surface heating pipes made of plastic, metal or combinations thereof with an external diameter of 12 to 20 mm
- Measures a heating circuit's outflow temperature
- The range of setpoint temperatures Stella calculates is variable and dependent on user behaviour and the system's environment
- The valve can be adjusted to any desired position between OPEN and CLOSED and set to remain in that position.
- An expansion element and a stroke measuring system are needed to position the valve stroke.

ELECTRO-THERMAL VALVE ACTUATORS
FOR HEATING, VENTILATION AND AIR CONDITIONING TECHNOLOGY

TECHNICAL DATA

Housing colour:	pure white, similar to RAL 9010
Housing material:	PC plastic, GF (20%)
Ambient temperature:	0 to 50 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Mounting / attachment:	M 30 x 1.5
Protection rating:	IP42
Protection class:	II
Safety and EMC:	according to DIN EN 60730
Average power consumption:	approx. 3 W
Opening / closing time:	approx. 4 min
Nominal stroke:	3 mm
Function type:	normally closed
Nominal closing force:	90 N
Connecting cable:	0.8 m / 2x0.5 mm²
Valve position indicator:	2X (at the top and the side)

APPLICATION

Extremely compact design:
can be fitted quickly and comfortably thanks to the slim shape in the area around the fastening nut.

Can be fitted in any position:
lateral drainage holes carry off any leakage water that from the valve plunger into the open, thus avoiding damage to the drive.

Additional valve monitoring:
two additional viewing windows at the side allow users to visually check the respective valve position with ease; this does not work when mounted in a suspended manner.

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
ZB00A-010.100	H9100010	**Operating voltage:** 230 V~, 50 Hz **Max. power consumption:** 70 W **Max. starting current:** approx. 0.3 A	30.60 / I
ZB00A-040.100	H9100000	**Operating voltage:** 24 VDC or 24 VAC **Max. power consumption:** 12 W **Max. starting current:** approx. 0.5 A	30.60 / I

Thanks to their M 30 x 1.5 fastening and their characteristics (normally closed), the actuators are suitable for the following valve and distributor makes: Beulco, Empur, Heimeier, Kamo, Oventrop, Purmo, SBK, SKV, Strawa, Taconova, Watts

BRIEF DESCRIPTION:

The drive features a compact, space-saving design.
The device can be mounted easily thanks to the narrowed shape, especially in the fastening area of the nut.
The fastening cable is not located near the fastening nut. This reduces the probability of contact with equipment carrying hot water.
Since the fastening nut allows continuous screwing onto the thread, by unscrewing the nut by two or three turns, it is possible to open the valve in an electrically de-energised state – something that cannot be done with bayonet couplings and impulse couplings.
Discharged water is dissipated via a draining system. Gaskets are not required thanks to the special design.

THE DUAL POSITION DISPLAY OFFERS THE FOLLOWING ADVANTAGES:

The upper display provides the option of a visual or, in conditions of bad visibility, tactile function test of the drive.
The lower viewing windows allow an additional check to determine whether the valve to be actuated follows the lifting movement of the drive.
At the beginning of the heating period, it can happen off and on that the valve plungers get 'stuck'. Therefore, with the additional display, it is possible to determine whether the cause lies with the actuator or with the valve in the event the valve does not open. However, that is not possible when mounted in a suspended manner.

ILLUSTRATIONS
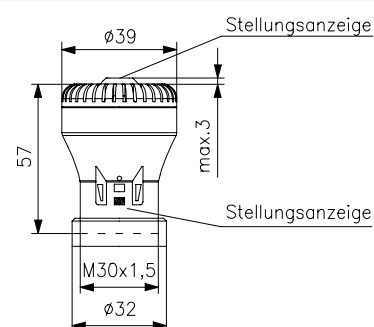
VALVE ACTUATOR WITH EXTENDED PUSH ROD

TERMINAL STRIP FOR HEATING MANIFOLD
FOR 6 OR 8 ROOM THERMOSTATS
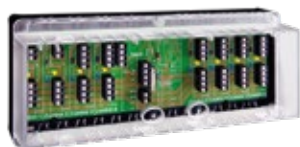
TECHNICAL DATA

Surface finish:	Upper part glossy, lower part matt
Housing colour:	Upper part transparent, lower part anthracite grey, similar to RAL 7016
Housing material:	PC plastic
Operating voltage:	230 VAC / 50 Hz
Ambient temperature:	−10 to +50 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	spring terminals 0.75 mm² – 1.5 mm² for rigid cables 0.5 mm² – 1 mm² for flexible cables
Protection rating:	IP20
Mounting / attachment:	convenient and simple installation in the heating manifold via **hat rails (standard rail or supporting rail EN 60715)** or magnetic bases Surface / wall mounting with 4 fastening screws included in delivery or using optional JZ-32 magnetic fastening set
Protection class:	II, if properly mounted
Control function:	heating or cooling
General features:	Ready for operation display (mains voltage), active channels display, integrated strain relief, labelling fields

APPLICATION

Terminal strip for heating controller with or without ECO function, also for heating / cooling controller with integrated heating / cooling switch. Depending on the controller used, actuators can be connected in the NC (normally closed) or NO (normally open) mode of operation.

Can be set up with master-slave control when using a clock regulator or an external timer.

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
VOOPL-216.176	DA480510	**General features:** Terminal strip in housing for wiring up to 6 room thermostats and up to 12 actuators; (channel 1 – 2: 1 actuator / channel 3: 4 actuators / channel 4 – 6: 2 actuators), device fuse T3 15 A / 250 V, installation dimensions Ø 5x20 mm (also secures the circuits of the connected controllers and valve gears)	78.50 / I
VOOPL-318.178	DA480520	**General features:** Terminal strip in housing for wiring up to 8 room thermostats and up to 16 actuators; (channel 1 – 2: 1 actuator / channel 3, 5 – 8: 2 actuators / channel 4: 4 actuators), device fuse T3 15 A / 250 V, installation dimensions Ø 5x20 mm (also secures the circuits of the connected controllers and valve gears)	106.70 / I

other / similar items: VOORL terminal strip for heating and cooling in the air conditioning technology section beginning on Page 163
Accessories: suitable valve actuators ZBOOA

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-32	BN990005	**General features:** Magnetic fastening set for simple and safe fastening of the VOOPL terminal strip on a metallic substrate (for example, heating manifold)	17.50 / II

TERMINAL STRIP FOR HEATING MANIFOLD
FOR 6 OR 8 ROOM THERMOSTATS

ILLUSTRATIONS
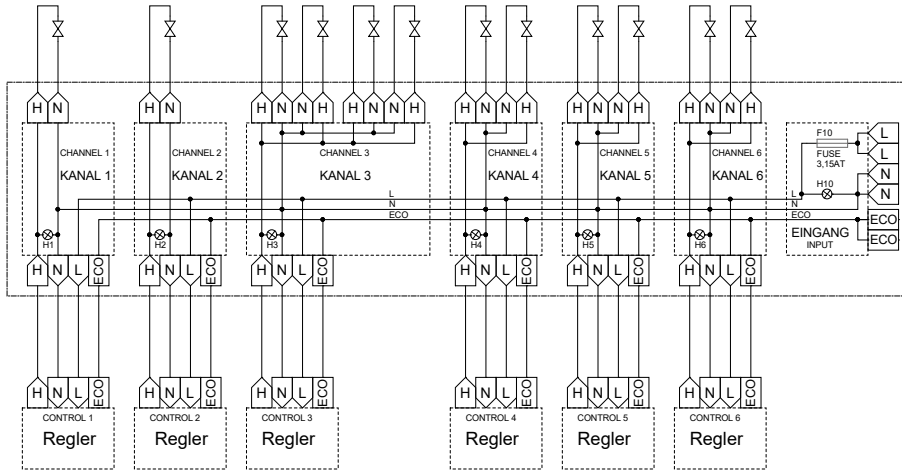
VOOPL-216.176
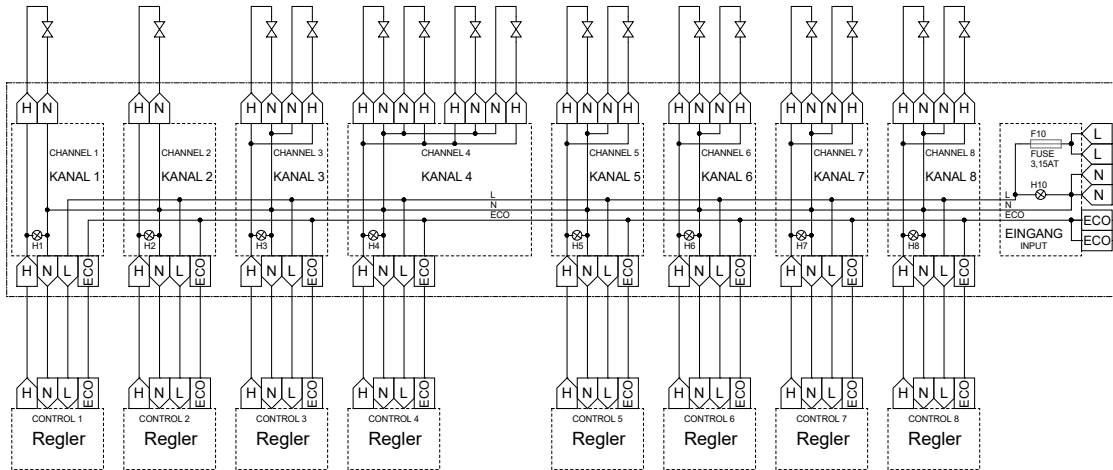
VOOPL-318.178

VOOPL-216.176
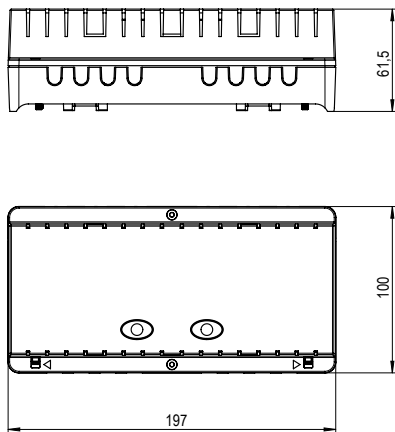
VOOPL-318.178
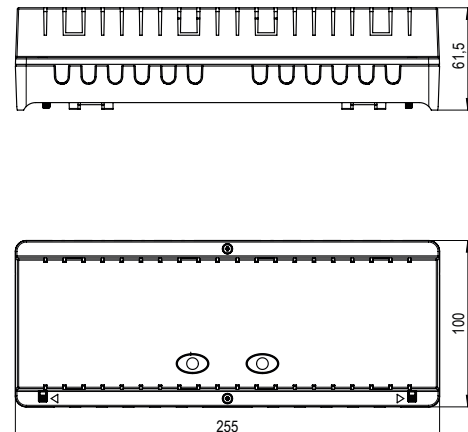
NOTES ON AND EXAMPLES
OF WIRING FOR VOOPL TERMINAL STRIPS

1 HEATING SYSTEM WITH MASTER-SLAVE TIME ZONE

The controllers and valve actuators are supplied with power via the terminal strip.

The equipment and features of the individual controller types Page 54 can be found in the controller matrix. The information listed in this matrix applies for normally closed valve actuators.
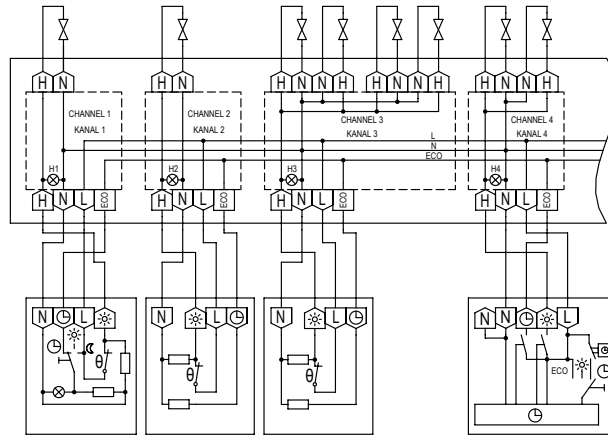
Study
RTBSB-201.075 /
RTBSU-401.075
(slave)

Children's room
RTBSB-201.002 /
RTBSU-401.002
(slave)

Living room
RTBSB-201.002 /
RTBSU-401.002
(slave)

Bedroom
HTRRBu 110.117
(master time zone 2
slave)

2 COOLING SYSTEM

The controllers and valve actuators are supplied with power via the terminal strip.

The equipment and features of the individual controller types Page 54 can be found in the controller matrix. The information listed in this matrix applies for normally closed valve actuators.
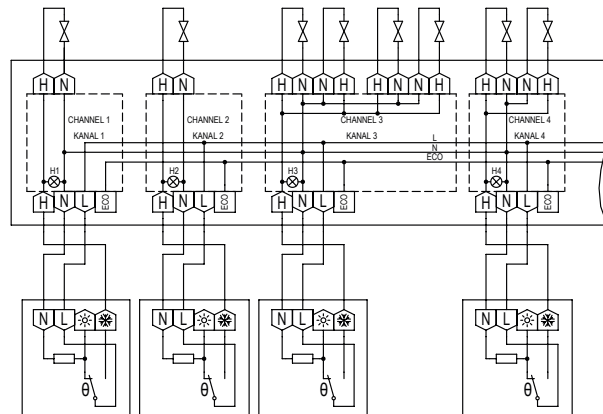
Study
RTBSB-201.010 /
RTBSU-401.010

Children's room
RTBSB-201.010 /
RTBSU-401.010

Living room
RTBSB-201.010 /
RTBSU-401.010

Bedroom
RTBSB-201.010 /
RTBSU-401.010

3 HEATING / COOLING SYSTEMS WITH HEATING / COOLING SWITCHES AT THE CONTROLLERS

The controllers and valve actuators are supplied with power via the terminal strip. The equipment and features of the individual controller types Page 54 can be found in the controller matrix. The printing on the heating / cooling changeover switches on the RTBSU-401.065 and RTBSU-401.063 applies to normally closed valve actuators. The medium status 'hot' or 'cold' must always correspond to the switch settings.
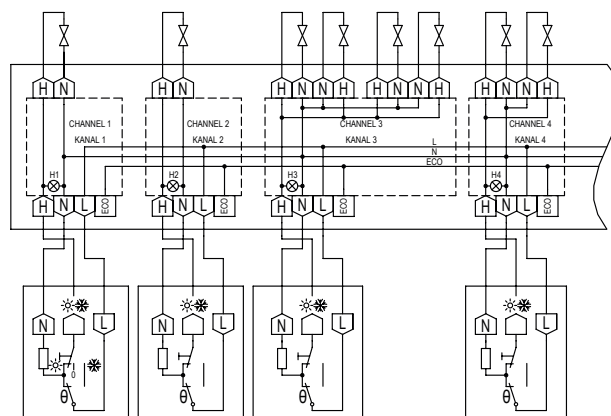
Study RTB-
SU-401.063

Children's room
RTBSB-201.065 /
RTBSU-401.065

Living room
RTBSB-201.065 /
RTBSU-401.065

Bedroom
RTBSB-201.065 /
RTBSU-401.065

AIR CONDITIONING TECHNOLOGY

SUSTAINABLE AND PRECISE

ALRE CLIMATE CONTROLLERS.
FOR **A PERFECT INDOOR CLIMATE.**

Enjoy a perfect indoor climate and the highest degree of comfort! Whether it is about protecting investments, equipment and valuables or feeling comfortable in indoors, our climate controllers keep humidity and temperature in perfect balance. Adjustable daily programs with display controllers ensure sustainability and energy efficiency when heating – a topic that is continuing to become increasingly important in light of impending climate change.

alre climate controller: comfortable indoor climate any time of the year.

APPLICATION **EXAMPLES:**

+ Cooling ceilings
+ Fan coils
+ Hot water underfloor heating
+ Air distribution systems
+ Partial air conditioners
+ Heat pumps
+ AC split units
+ Dew point monitoring
+ Relative humidity control
+ Accessories such as terminal strips and actuators

OVERVIEW 136

ROOM TEMPERATURE CONTROLLER, HEATING / COOLING, SURFACE-MOUNTED, ULTRA-SLIM

ROOM TEMPERATURE CONTROLLER WITH CLOCK, HEATING / COOLING
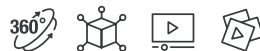
ROOM TEMPERATURE CONTROLLER, HEATING / COOLING, 3-STAGE FAN OUTPUT
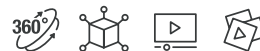
TERMINAL STRIP VOORL-318.053
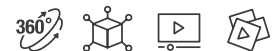
CLIMATE CONTROLLER OVERVIEW

TYPE	KTRTB- 211,108	KTRTB- 251,108	KTBSB- 112,000	KTBSB- 113,500	KTBSB- 112,070	KTRRB- 117,128	KTRRB- 117,163	KTRRB- 117,169	KTRRB- 052,244	KTRRB- 052,245	KTRRB- 052,245	KTRRU- 217,456	KTRRUu 257,456	KTRVB- 048,100	KTRVB- 048,200	KTRVB- 052,244	KTRVB- 052,245
PAGE	137	137	138	138	138	140	140	140	142	143	145	149	151	155	155	156	156
HOUSING DESIGN																	
Berlin 1000	x	x															
Berlin 2000									x	x				x	x	x	x
Berlin 3000			x	x	x	x	x	x									
Berlin flush-mounted kit											x	x	x				
SENSOR																	
Bimetal (toggler)			x	x	x												
NTC, internal	x	x				x	x	x	x	x	x	x	x	x	x	x	x
NTC, external						x	x	x	x	x	x	x	x			x	x
Floor monitor (NTC)																	
Dew point sensor (external)									x	x	x	x	x			x	x
CONTROL TYPE																	
Climate controller	x	x															
Climate controller (0–10 V)								x			x	x	x	x	x	x	x
Climate controller with fan output			x	x								x	x				
Climate controller with neutral zone							x		x	x	x	x	x			x	x
Climate controller with neutral zone and fan output				x		x		x				x	x				
Mixing chamber controller (0–10 V)														x	x		
PIPE SYSTEM																	
Air conditioning controller in 2-pipe system	x	x				x	x	x	x	x	x	x	x			x	x
Air conditioning controller in 4-pipe system			x	x	x	x	x	x	x	x	x	x	x			x	x
APPLICATION EXAMPLES																	
Hot water floor heating									x	x	x	x	x	x	x	x	x
Fan coil			x	x	x	x		x									
Air distribution systems			x		x	x											
Partial air conditioner	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Cooling ceiling	x	x							x	x	x	x	x	x	x	x	x
Heat pump				x													
AC split unit				x													
FEATURES																	
'ECO' input	x	x				x	x	x	x	x	x	x	x			x	x
Input 'changeover–heating/cooling'	x	x							x	x	x	x	x			x	x
'Off with frost protection monitoring' input						x	x	x	x	x		x	x				
Switch 'on/off'			x	x	x												
Switch 'on/off with frost protection monitoring'						x	x	x									
Switch 'heating/cooling'																	
Switch 'heating/ventilation/cooling'				x													
Switch 'ECO/comfort/off with frost protection monitoring'												x	x				x
Switch 'fan'			x	x	x	x		x									
Indicator lamp 'ON/OFF'			x	x													
Indicator lamp 'heating mode'																	
Indicator lamp 'heating'	x	x	x						x	x	x	x	x			x	x
Indicator lamp 'cooling'	x	x	x						x	x	x	x	x			x	x
Indicator lamp 'heating/cooling'																	
Indicator lamp 'cooling interruption due to condensate'									x	x	x					x	x
MISCELLANEOUS																	
230 V~	x		x	x	x	x	x	x				x					
24 V~		x							x	x	x		x	x	x	x	x

CLIMATE CONTROLLER
ELECTRONIC WITH TRIAC OUTPUT (NOISELESS)
SURFACE-MOUNTED 'SUPER-THIN' INSTALLATION – DESIGN BERLIN 1000
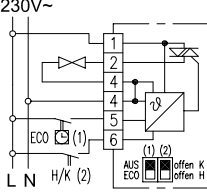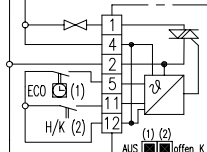
TECHNICAL DATA

Design:	Berlin 1000
Surface finish:	glossy
Housing colour:	pure white, similar to RAL 9010
Housing material:	ABS plastic
Ambient temperature:	0 to 40 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals 0.5 mm² − 1.5 mm²
Mounting / attachment:	surface / wall mounting (4-hole assembly on flush-mounted socket)
Protection rating:	IP30
Safety and EMC:	according to DIN EN 60730
Max. power consumption:	< 0.8 W
Switching power:	15 W
Switching element:	triac
Switching contact:	NC contact
Sensor:	NTC, internal
Control function:	heating or cooling
Control range:	5 to 30 °C
Hysteresis:	0 K since control is practically continuous
Proportional range:	approx. 1 K
General features:	ECO function; 'heating / cooling' display; 'off with frost protection monitoring' operating mode; mechanical range restriction; scale: degrees Celsius; external setting

APPLICATION

This controller was specifically designed for heating / cooling regulation of 2-pipe systems used in hotels, homes and offices and can control up to 5 valve actuators (normally closed).

The KTRTB's internal sensor measures the room temperature and activates heating or cooling depending on the deviation from the configured setpoint temperature. As the switching element used is a triac rather than a relay or bimetal, the system operates without bothersome switching sounds.

ECO function: if this function is selected, the temperature is adjusted down by 3 K in heating mode and up by 3 K in cooling mode.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
KTRTB-211.108	MA700300	**Operating voltage:** 230 VAC, 50 Hz **Protection class:** ll, if properly mounted **Max. switching current:** 65 mA **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Output signal:** switching PWM (230 VAC, 50 Hz) **ECO contact:** 230 VAC, 50 Hz, optionally configurable as ECO or OFF function		71.20 / I
KTRTB-251.108	MA700400	**Operating voltage:** 24 VAC, 50 Hz **Protection class:** lll, protective low voltage **Max. switching current:** 625 mA **Max. switching voltage:** 24 VAC, 50 Hz **Min. switching voltage:** 24 VAC, 50 Hz **Output signal:** switching PWM (24 VAC, 50 Hz) **ECO contact:** optionally configurable as ECO or OFF function		53.40 / I

Accessories: suitable valve actuators ZB00A

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-21	MN990006	**Adapter frame for mounting room temperature controllers of the Berlin 1000 series in flush-mounted sockets up to 80x80 mm**	5.00 / I
ET-01	MA990000	**General features:** Adjusting knob for B1000 series devices, scale: degrees Celsius, pure white glossy	3.20 / I
ET-02	MA990001	**General features:** Adjusting knob for B1000 series devices, multi-digit display 1 to 6, pure white glossy	3.20 / I

Dimension schematic – see Page 66

MECHANICAL CLIMATE CONTROLLERS KTBSB
SURFACE-MOUNTED INSTALLATION – BERLIN 3000

TECHNICAL DATA

Design:	Berlin 3000
Surface finish:	matt
Housing colour:	pure white, similar to RAL 9010
Housing material:	ABS plastic
Operating voltage:	230 V AC, 50 Hz
Ambient temperature:	0 to 30 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Mounting / attachment:	surface / wall mounting or by means of an adapter plate on a flush-mounted socket
Protection rating:	IP30
Protection class:	II, if properly mounted
Safety and EMC:	according to DIN EN 60730
Max. switching current:	6 (3) A
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	230 V AC, 50 Hz
Switching power:	1380 W
Switching element:	bimetallic contact
Switching contact:	changeover
Output signal:	switching (230 VAC, 50 Hz)
Sensor:	bimetal
Control function:	heating or cooling
Control range:	5 to 30 °C
General features:	mechanical range restriction; thermal feedback; scale: degrees Celsius; on / off switch; external setting

APPLICATION

Control and monitoring of temperatures in closed, dry spaces. Remote control of air conditioners, climate chests, fan coil systems in living and office spaces and doctors' practices. Individual room optimisation in central air conditioning systems (hotels, hospitals etc.).

Suitable for all heating systems. (Please note the maximum switching current.)

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
KTBSB-112.000	MA200100	**General features:** 3-stage fan output; **3-stage fan switch;** **Switch "On / Off"** **Hysteresis:** approx. 0.5 K at a temperature change of max. 4 K / h		87.50 / I
KTBSB-112.070	MA200202	**General features:** single-room climate controller with neutral zone for 4-pipe systems; 3-stage fan output; 2x auxiliary output 'on / off'; **'on / off' display, 3-stage fan switch;** **'on / off' switch** **Hysteresis:** heating approx. 1 K, cooling approx. 2 K, at a temperature change of max. 4 K / h **Neutral zone:** approx. 2 K		119.30 / I
KTBSB-113.500	MA200000	**General features:** 'on / off' display; 'heating' display; 'cooling' display; for 4-pipe systems; 3-stage fan output; **heating / ventilation / cooling switch;** **3-stage fan switch; 'on / off' switch Hysteresis:** approx. 0.5 K at a temperature change of max. 4 K / h		115.00 / I

Accessories: Terminal strips VOOPL, compatible valve actuators for ZBOOA-010.1xx, adapter plates to mount in flush-mounted socket JZ-17
You can find other controllers with outputs for heating / cooling in the 'Heating technology' section (RTBSB / RTBSU).

MECHANICAL CLIMATE CONTROLLERS KTBSB
SURFACE-MOUNTED INSTALLATION – BERLIN 3000

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-17	MN990001	**General features:** adapter plate for mounting devices on flush-mounted sockets (including fastening screws for mounting the controller on the adapter plate) **Surface finish:** matt **Housing colour:** pure white, similar to RAL 9010 **Housing material:** ABS plastic	7.40 / II

ILLUSTRATIONS

KTBSB

JZ-17

ELECTRONIC CLIMATE CONTROLLER, KTRRB
SURFACE-MOUNTED INSTALLATION – BERLIN 3000

TECHNICAL DATA

Design:	Berlin 3000
Surface finish:	matt
Housing colour:	pure white, similar to RAL 9010
Housing material:	ABS plastic
Operating voltage:	230 V AC, 50 Hz
Ambient temperature:	0 to 40 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Mounting / attachment:	surface / wall mounting or by means of an adapter plate on a flush-mounted socket
Protection rating:	IP30
Protection class:	II, if properly mounted
Safety and EMC:	according to DIN EN 60730
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	230 V AC, 50 Hz
Switching element:	relay
Switching contact:	NO contact
Output signal:	switching (230 VAC, 50 Hz)
Sensor:	internal NTC, optional external NTC 'Sensor 2'
ECO contact*:	reduction by 3 K; alternatively, this input can be configured as a frost protection contact
Control function:	heating and / or cooling
Control range:	5 to 30 °C
Neutral zone:	approx. 2 K
General features:	operating mode 'off with frost protection monitoring'; mechanical range restriction; scale: degrees Celsius; external setting

APPLICATION

Single-room temperature controller with neutral zone for 2-pipe or 4-pipe air conditioners.

External flow sensor (H / C sensor):
for switching automatically of the controller to heating or cooling mode in 2-pipe operation depending on the inflow temperature; alternatively, this input can be used as an H / C changeover contact.

Sensor rupture and short-circuit fuse:
in case of a sensor rupture or sensor short-circuit, the heating is activated with a power-on time of 30% to prevent cooling or frost damage in the room.

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
KTRRB-117.128	MA601300	**General features:** single-room climate controller, 3-stage fan output, fan operation in neutral zone ON / OFF selectable; **on / off switch; 3-stage fan switch** **Max. switching current:** heating 5 (1) A, cooling 5 (1) A, fan 3 (1) A **Switching power:** heating 1150 W, cooling 1150 W, fan 230 W **Hysteresis:** approx. 1 K	201.40 / I
KTRRB-117.163	MA601400	Similar to KTRRB-117.128 but without 3-stage fan output and 3-stage fan switch	193.10 / I
KTRRB-117.169	MA601500	**General features:** single-room climate controller; **'off / manual fan / automatic fan' switch; 'ventilator 3-stage 0–10 V' switch;** 'parametrisation 3-stage fan output' button; **'heating, cooling,** frost protection, sensor rupture or short circuiting of the external sensor' display; 3-stage fan output 0–10 V with adjustment to individual fan stages or dynamic 0–10 V to activate **EC fans**; ON / OFF: ventilator operation in neutral zone selectable **Max. switching current:** heating 5 (1) A, cooling 5 (1) A **Switching power:** heating 1150 W, cooling 1150 W **Output signal:** Analogue 0–10 V (5 mA) for activating an rpm-controlled fan **Hysteresis:** approx. 0.5 K	210.80 / I

Accessories: Adaptor plate for mounting on flush-mounted socket JZ-17, terminal strips VOOxx (see Page 130 , Page 163), suitable valve actuators ZBOOA-010.1xx (see Page 166 +Page 167, suitable external sensors ('sensor 2'; see 'Sensor technology'))
You can find other / similar controllers with outputs for heating / cooling in the 'Heating technology' section (RTBSB / RTBSU).
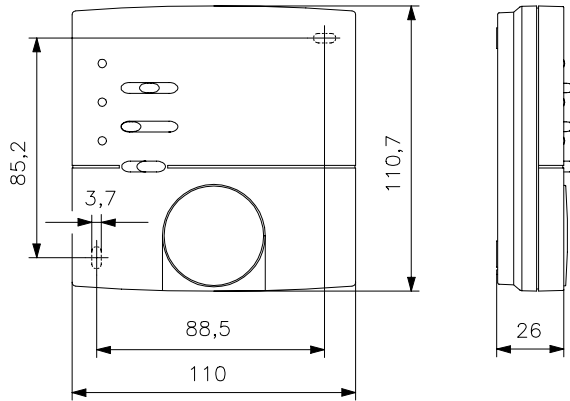
*With ECO operation, the neutral zone (2 K) is extended by the ECO zone (+ / − 3 K). ECO operation is a savings mode that should be controlled, for example, via a window contact and / or a timer.

ELECTRONIC CLIMATE CONTROLLER, KTRRB
SURFACE-MOUNTED INSTALLATION – BERLIN 3000

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-17	MN990001	**General features:** Adapter plate for mounting devices on flush-mounted sockets (including fastening screws for mounting the controller on the adapter plate) **Surface finish:** matt **Housing colour:** pure white, similar to RAL 9010 **Housing material:** ABS plastic	7.40 / II

ILLUSTRATIONS

Circuit diagram KTRRB-117.128

Circuit diagram KTRRB-117.163
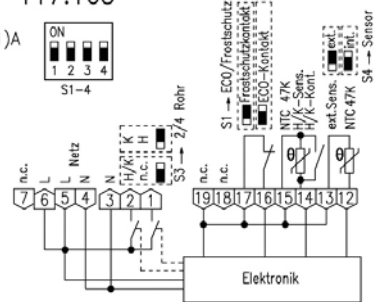
Circuit diagram KTRRB-117.169
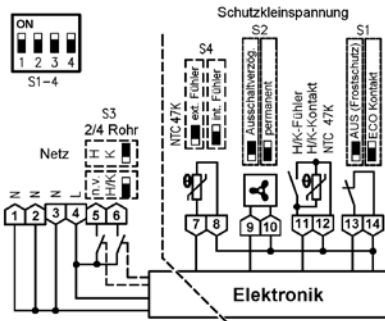
Housing design – 'Berlin 3000'
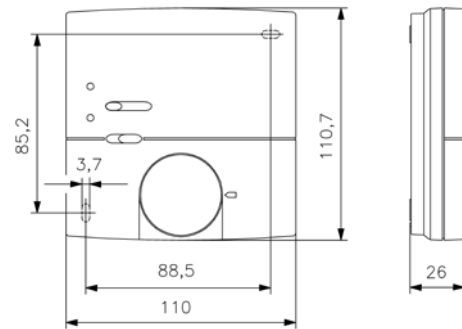
ELECTRONIC CLIMATE CONTROLLER FOR COOLING CEILINGS, KTRRB

SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000 – WITH INTERNAL AND EXTERNAL (OPTIONAL) TEMPERATURE SENSOR

TECHNICAL DATA

Design:	Berlin 2000
Surface finish:	matt
Housing colour:	pure white, similar to RAL 9010
Housing material:	ABS plastic
Ambient temperature:	0 to 40 °C
Operating voltage:	24 VAC / 50 Hz, 24 VDC
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Mounting / attachment:	surface / wall mounting
Protection rating:	IP30
Protection class:	III
Safety and EMC:	according to DIN EN 60730
Max. switching current:	1 A
Max. switching voltage:	24 VAC / 50 Hz, 24 VDC
Min. switching voltage:	24 VAC / 50 Hz, 24 VDC
Switching power:	24 W
Switching element:	relay
Switching contact:	NO contact
Output signal:	Switching, 24 VAC / 50 Hz, 24 VDC
Sensor:	NTC internal, optional external, 'Sensor 2'*
Hysteresis:	approx. 1 K
General features:	External dew point sensor connection; mechanical range limitation; external setting

APPLICATION

Temperature controller for cooling ceilings / walls and all kinds of hot water heaters in 2 and 4-pipe systems for hotel, home and office spaces. As the KTRRB features dew point monitoring, it is highly suited for controlling ceiling cooling systems.

The unit can control up to 5 valve actuators (24 V~ normally closed) per output. The types KTRRB-052.24x can be adapted to normally open actuators (24 V~, max. 5 pieces) with a jumper.

When using 0 – 10 V actuators: KTRVB-052.24x.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
KTRRB-052.244	DA420600	**General features:** ECO function; **'heating / cooling / cooling interruption due to condensation / off' display; 'sensor rupture,** sensor short-circuit, frost protection' display; relative scale **External flow sensor (H / C sensor):** for automatic switching of the controller in heating or cooling mode depending on the inflow temperature ('Sensor 2'). Alternatively, this input can be used as an H / C changeover contact **Eco contact:** upon closing the contact, the ECO function is actuated **Forced switch-off contact:** external switch-off function with frost protection function **Control function:** heating and / or cooling, cooling interruption upon condensation of the dew point sensor, frost protection function in the switched-off condition **Control function:** 13 to 29 °C **Setting range:** −8 to +8 °C **Neutral zone:** approx. 2 K **Pipe system compatibility:** 2-pipe and 4-pipe	See Page 144	193.20 / I

ELECTRONIC CLIMATE CONTROLLER
FOR COOLING CEILINGS, KTRRB
SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
KTRRB-052.245	DA420700	**General features:** ECO function; **'heating / cooling / cooling interruption due to condensation / off' display; 'sensor break, sensor short-circuit, frost protection' display;** operating mode 'off with frost protection monitoring'; relative scale; **off / comfort / ECO switch** **External flow sensor (H / C sensor):** for automatic switching of the controller to heating or cooling mode depending on the inflow temperature ('Sensor 2'); alternatively, this input can be used as an H / C changeover contact **ECO Contact:** upon closing the contact, the ECO function is actuated **Forced switch-off contact:** external switch-off function with frost protection function **Control function:** heating and / or cooling, cooling interruption upon condensation of the dew point sensor, frost protection function in the switched-off condition **Control range:** 13 to 29 °C **Setting range:** −8 to +8 °C **Neutral zone:** approx. 2 K **Pipe system compatibility:** 2-pipe and 4-pipe Replacement for KTRRB-040.213	See Page 144	204.10 / I

* An internal trimming potentiometer can be used to select whether control should be based on the internal (left stop) or external sensor (right stop). In the intermediate positions, if both sensors are used, a weighting is applied to the internal room sensor and the external radiation sensor. The weighting allows for compensation of different structural conditions such as large window areas or cardinal directions. For very slow controlled systems, it is recommended to assign a higher weighting to the radiation sensor than to the internal room sensor.

Accessories: suitable valve actuators ZBOOA-040.100 (see Page 167), suitable external sensors ('Sensor 2'); see 'Sensor technology'.

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
TPS 1	G8000299	**Mounting / attachment:** using clips on cooling ceiling capillary pipe **Use:** drywall cooling ceiling (plasterboard) with hung up capillary pipe mat, metal ceiling cooling ceiling with integrated capillary pipe system **Sensor line extendable up to:** 50 m with 2x0.5 mm² **Scope of delivery:** sensor, 2 clips for cooling pad	63.30 / I
TPS 2	G8000300	**Mounting / attachment:** using clips on cooling ceiling capillary pipe or cable ties on the pipe **Use:** pipe systems transporting cold water, plaster cooling ceiling with capillary tube system **Sensor line extendable up to:** 50 m with 2x0.5 mm² **Scope of delivery:** sensor, 2 clips for cooling pad, 2 cable ties	63.30 / I
TPS 3	SN120000	**Mounting / attachment:** attach to pipe by means of cable ties **Use:** pipe systems transporting cold water **Sensor line extendible up to:** 50 m with 2x0.5 mm² **Scope of delivery:** sensor, 2 cable ties	56.60 / I

ELECTRONIC CLIMATE CONTROLLER FOR COOLING CEILINGS, KTRRB

SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

ILLUSTRATIONS

KTRRB
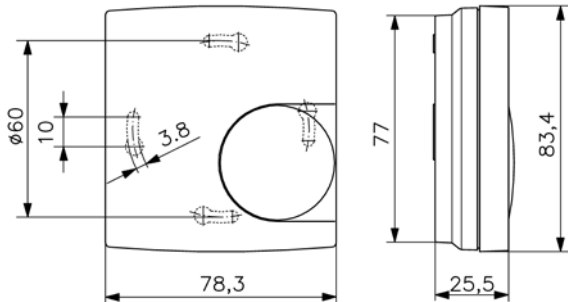
KTRRB-052.24x connection in a 2-pipe system
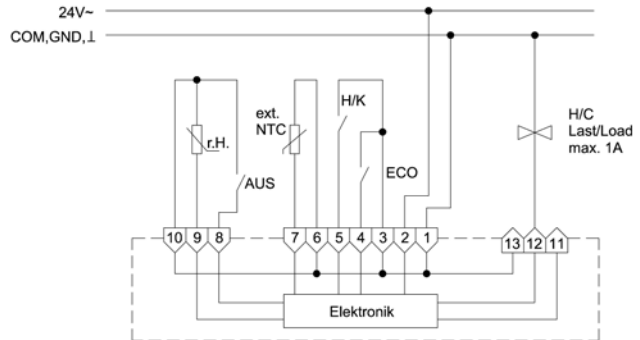
KTRRB-052.24x connection in a 4-pipe system

Important note:
The inflow channels of TPS-1 and TPS-2 are closed at the factory to avoid dirtying during assembly. After assembly, they must be shortened with a knife until they are flush with the wall or ceiling to ensure air circulation. The air ducts should be arranged such that soiling during operation is avoided. It is important that the air surrounding the sensor has the same temperature as the room air to be cooled. If the humidity and temperature of the air to be cooled (ceiling cooling system) is different from that of the air surrounding the sensor, condensation may be detected prematurely or too late. As regards TPS-3, contact with the PCB paths must be avoided to prevent long-term corrosion.

Attention in case of sensor extension:
laying parallel to conductors carrying a mains voltage can result in faults.
The use of shielded conductors reduces sensitivity to electromagnetic fields.
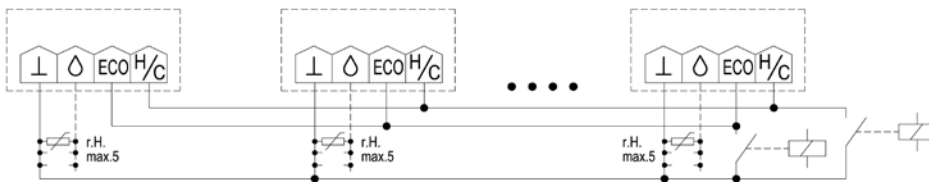
Parallel wiring for heating / cooling changeover and / or ECO for several controllers (max. 20 controllers)

CLIMATE CONTROLLER FOR ELECTRONIC COOLING CEILINGS KTTRU –
WITH INTERNAL AND EXTERNAL (OPTIONAL) TEMPERATURE SENSOR – FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

TECHNICAL DATA

Design:	Berlin UP
Housing material:	PC plastic
Operating voltage:	24 VAC / 50 Hz, 24 VDC
Ambient temperature:	0 to 40 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Protection rating:	IP30
Protection class:	III
Safety and EMC:	according to DIN EN 60730
Average power consumption:	approx. 0.6 W (1 VA)
Max. switching current:	1 A
Max. switching voltage:	24 VAC / 50 Hz, 24 VDC
Min. switching voltage:	24 VAC / 50 Hz, 24 VDC
Switching power:	24 W
Switching element:	relay
Switching contact:	NO contact
Output signal:	switching, 24 VAC / 50 Hz, 24 VDC
Sensor:	NTC internal, optional external 'Sensor 2'*
ECO contact:	when the contact is closed, the ECO function is actuated (+ / - 3 K)
Control function:	heating and / or cooling, cooling interruption upon condensation of the dew point sensor, frost protection function in the switched-off condition
Control range:	13 to 29 °C
Setting range:	−8 to +8 °C
Hysteresis:	approx. 1 K
Neutral zone:	approx. 2 K
General features:	single-room climate controller; optional external dew point sensor; ECO function; 'heating / cooling / cooling interruption due to condensation / off' display; mechanical range restriction; relative scale; external setting
Pipe system compatibility:	2-pipe and 4-pipe

APPLICATION

For heating / cooling control of 2- and 4-pipe systems used in hotels, homes and offices.

The unit can control up to 5 valve actuators (24 V~ normally closed) per output. The controllers are configured for 2-pipe or 4-pipe operation by means of a jumper. In 2-pipe operation, the controller is operated with a common heating / cooling output, whose mode of operation action can be toggled by means of an external contact (change-over contact). Connection of TPS dew point sensors is possible (max. 5 of them in parallel). Condensate formation at the TPS can result in the cooling valve getting closed.

It is possible to actuate the energy saving (ECO) function via an external contact.

In the 'off' switch position, the room frost protection function is activated (when the temperature drops below 5 °C, all valves are forced open).

External flow sensor (H / C sensor): for automatic switching of the controller to heating or cooling mode depending on the inflow temperature ('Sensor 2'); alternatively, this input can be used as an H / C changeover contact.

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
KTRRU-052.245#00	UA210401	**General features:** 'off with frost protection monitoring' operating mode; **'off / comfort / ECO' switch** **Surface finish:** depending on the cover set selected **Housing colour:** depending on the cover set selected **Mounting / attachment:** in flush-mounted socket – adaptable with 50x50 mm or 55x55 mm cover set in almost all surface switch ranges (deep flush-mounted socket recommended) **Accessories:** cover sets are offered in several design variants (see 'Overview', Page 147) and are not included in the scope of delivery. Suitable set no.: JZ-007.xxx, e.g.: 50x50 mm cover set, pure white, glossy: JZ-007.000 55x55 mm cover set, pure white, glossy: JZ-007.100 **Scope of delivery:** controller, protective cap If the functions of the 'off / comfort / eco' switch are not required, JZ-008.xxx cover sets can be used instead (in switch position comfort).	198.00 / I

* An internal trimming potentiometer can be used to select whether control should be based on the internal (left stop) or external sensor (right stop). In the intermediate positions, if both sensors are used, a weighting is applied to the internal room sensor and the external radiation sensor. The weighting allows for compensation of different structural conditions such as large window areas or cardinal directions. For very slow controlled systems, it is recommended to assign a higher weighting to the radiation sensor than to the internal room sensor.

Accessories: suitable valve actuators ZB00A-040.100 (see Page 167), dew point sensor TPS 1 / TPS 2 / TPS 3 (see Page 158), suitable external sensors ('Sensor 2'); see 'Sensor technology'.

CLIMATE CONTROLLER FOR ELECTRONIC COOLING CEILINGS KTTRU –
WITH INTERNAL AND EXTERNAL TEMPERATURE SENSOR – FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN FLUSH-MOUNTED

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
JZ-090.900	VV000025	**General features:** alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50x50 mm cover **Design:** Berlin **Surface finish:** glossy **Housing colour:** pure white, similar to RAL 9010 **Housing material:** PC plastic	4.20/I
JZ-090.100	VV000048	Similar to JZ-090.900, but for all flush-mounted controllers in combination with 55x55 mm cover	4.20/I
JZ-090.910	VV000010	**General features:** alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50x50 mm cover **Design:** Berlin **Surface finish:** glossy **Housing colour:** pearl white, similar to RAL 1013 **Housing material:** PC plastic	4.20/I

ILLUSTRATIONS

Circuit diagram for KTRRU-052.245 in 2-pipe system
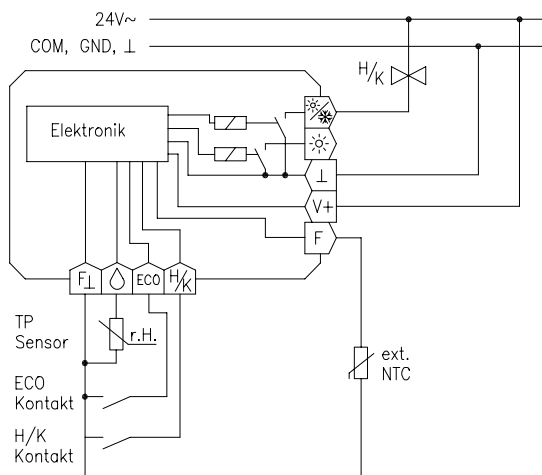
Circuit diagram for KTRRU-052.245 in 4-pipe system
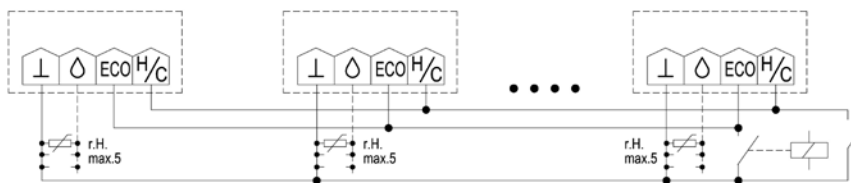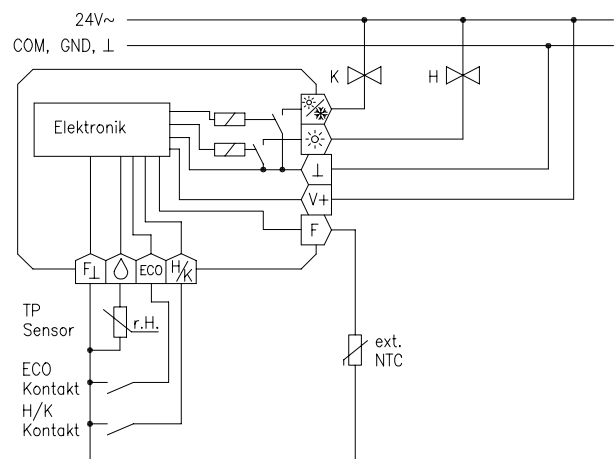
Parallel wiring for heating/cooling changeover and/or ECO for several controllers (max. 20 controllers)

ALRE FLUSH-MOUNTED RANGE (COVER SETS)

ALL BASIC TYPES AND SUITABLE **50X50 MM** COVER SETS

BASIC TYPE	50x50 mm cover set **PURE WHITE (RAL 9010) GLOSSY** (JZ-xxx.000)		50x50 mm cover set **PURE WHITE (RAL 9010) MATT** (JZ-xxx.001)		50x50 mm cover set **PEARL WHITE (RAL 1013) GLOSSY** (JZ-xxx.010)		50x50 mm cover set **TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY** (JZ-xxx.020)		EURO/ PG
	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	
KTRRU-052.245#00	JZ-007.000	UN990022	JZ-007.001	UN990024	JZ-007.010	UN990026	JZ-007.020	UN990080	12.70/l
Cover sets for function without switch	JZ-008.000	UN990021	JZ-008.001	UN990023	JZ-008.010	UN990025	JZ-008.020	UN990079	12.30/l
FHY 101.060#00	JZ-021.000	UN990039	JZ-021.001	UN990044	JZ-021.010	UN990049	JZ-021.020	UN990081	11.70/l
FRAMES									
alre frame	JZ-090.900	VV000025			JZ-090.910	VV000010			4.20/l

In a flush-mounted socket, it can be adapted to fit virtually any surface switch range.

ILLUSTRATIONS

alre frame 'Berlin' (JZ-090.900)

Cover set (example), individually foil-wrapped

ALL BASIC TYPES AND SUITABLE **55X55 MM** COVER SETS

BASIC TYPE	55x55 mm cover set **PURE WHITE (RAL 9010) GLOSSY** (JZ-xxx.000)		55x55 mm cover set **PURE WHITE (RAL 9010) MATT** (JZ-xxx.001)		55x55 mm cover set **PEARL WHITE (RAL 1013) GLOSSY** (JZ-xxx.010)		55x55 mm cover set **TRAFFIC/STUDIO WHITE (RAL 9016) GLOSSY** (JZ-xxx.020)		EURO/ PG
	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	Cover set	Item no.	
KTRRU-052.245#00	JZ-007.100	UN990028	JZ-007.101	UN990030	JZ-007.110	UN990032	JZ-007.120	UN990095	14.40/l
Cover sets for function without switch	JZ-008.100	UN990027	JZ-008.101	UN990029	JZ-008.110	UN990031	JZ-008.120	UN990094	13.90/l
FHY 101.060#00	JZ-021.100	UN990054	JZ-021.101	UN990059	JZ-021.110	UN990064	JZ-021.120	UN990096	12.70/l
FRAMES									
alre frame	JZ-090.100	VV000048							4.20/l

Can be adapted to fit many surface switch ranges in flush-mounted sockets (for a current overview of the suitable frames and insert frames, see pPage 148).

ILLUSTRATIONS

KTRRU with 50x50 insert frame
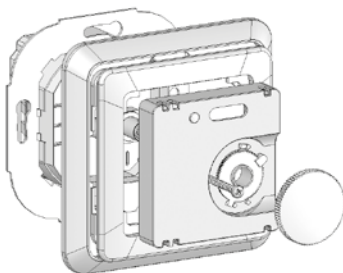
KTRRU without 55x55 insert frame

ADAPTATION OF ALRE FLUSH-MOUNTED CONTROLLERS

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION possible with '55x55' or 'BJ' cover sets (without insert frame)	Only ADAPTATION with '50x50' cover set requires an insert frame from the manufacturer
BERKER	S.1	polar white (matt)	x	1109 19 19
BERKER	S.1	polar white (glossy)	x	1109 90 89
BERKER	Arsys	polar white (glossy)		1108 01 69
BERKER	B.3	aluminium / polar white (matt)	x	1109 19 19
BERKER	B.3	aluminium / polar white (glossy)	x	1109 90 89
BERKER	B.7	glass / polar white (matt)	x	1109 19 19
BERKER	B.7	glass / polar white (glossy)	x	1109 90 89
BERKER	Q.1 / Q.3	polar white (velvet)		1109 60 79
BERKER	K.1	polar white (glossy)		1108 71 09
BUSCH-JAEGER	Reflex SI / SI Linear	alpine white (glossy)		1746-214-101
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)	x	1746-914-101
BUSCH-JAEGER	impuls	alpine white (glossy)		1746 / 10-74
BUSCH-JAEGER	solo / future linear / axcent / etc.	studio white – see RAL 9016 below		
Elso	Joy	pure white (glossy)	x	363084
Elso	Fashion / Riva / Scala	pure white (glossy)		203084
GIRA	surface switch	pure white (glossy)		0282 112
GIRA (System 55)	Standard / E2	pure white (semi-gloss)	x	0282 27
GIRA (System 55)	Standard / E2 / E3	pure white (glossy)	x	0282 03
GIRA (System 55)	E22	pure white (glossy)	x	0282 03
GIRA (System 55)	Event	pure white (semi-gloss) + opaque…	x	0282 27
GIRA (System 55)	Event	pure white (glossy) + opaque…	x	0282 03
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium…	x	0282 27
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium…	x	0282 03
GIRA	S-Color	pure white (high-gloss)		0282 40
JUNG	CD 500 / CD plus	alpine white (glossy)		CD 590 Z WW
JUNG	A 500 / A 550 / AS 500 / A plus / A flow	alpine white (glossy)	x	A 590 Z WW
JUNG	LS 990	alpine white (glossy)		LS 961 Z WW
JUNG	LS plus	alpine white (glass)		LS 961 Z WW
JUNG	A creation	alpine white (glossy)	x	A 590 Z WW
JUNG	LS Design	alpine white (glossy)		LS 961 Z WW
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	x	5181 19
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (glossy)	x	5185 19
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)	x	5185 19
MERTEN (Surface System)	Artec / Antik	polar white (glossy)		5160 99
MERTEN	1-M / M-Smart / M-Plan / M-Pure / D-Life	active white – see RAL 9016 below or product finder		
PEHA	Standard	pure white (glossy)		80.670.02 ZV
PEHA	Dialog	pure white (glossy)		95.670.02 ZV
PEHA	Aura	pure white (matt) / glass		20.670.02 ZV
PEHA	Badora	pure white (glossy)		11.670.02 ZV

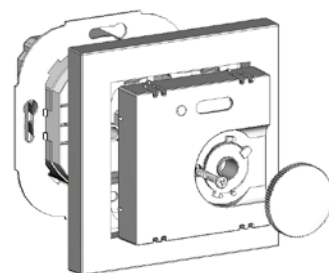| MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION possible with '55x55' or 'BJ' cover sets (without insert frame)	Only ADAPTATION with '50x50' cover set requires an insert frame from the manufacturer
BUSCH-JAEGER	solo / future / future linear	studio white (RAL 9016, glossy)		1746 / 10-84
BUSCH-JAEGER	future linear	studio white (RAL 9016 matt)		1746 / 10-884
BUSCH-JAEGER	impuls	studio white (RAL 9016 matt)		1746 / 10-774
BUSCH-JAEGER	axcent	studio white (RAL 9016, glossy)		1746 / 10-84
BUSCH-JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016, glossy)		1746 / 10-84
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016, glossy)		1746 / 10-24G
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016 matt)		1746 / 10-24
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	x	5185 25
MERTEN	1-M / Atelier-M	active white (RAL 9016, glossy)	x	5185 25
MERTEN	D-Life	lotus white (RAL 9016)		MEG4500-6035
PEHA	Standard	arctic		D 80.670 ZV AW

*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame

NOTE: Most switch ranges are designed in a colour similar to RAL 1013, 9016 or 1013, although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt / glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

'50x50 controller': The housing covers of the 50x50 controllers are 50x50 mm in size. Using a 50x50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50x50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch range in question can be found in the column 'Only for adaptation with "50x50" cover set'.

'55x55 controller': The housing covers of the 55x55 controllers are 55x55 mm in size. Many light switch ranges have inner dimensions of 55x55 mm. Therefore, the 55x55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column 'Adaptation with "55x55" cover set' to determine whether the 55x55 controller fits in the given light switch model (x).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12 / 2022 | No liability is assumed for the information provided. | Technical specifications subject to change.

ELECTRONIC CLIMATE CONTROLLER WITH TIMER KTRRUU–230 VAC
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TECHNICAL DATA

Design:	Berlin UP
Housing material:	PC, PMMA, ABS plastic
Ambient temperature:	0 to 40 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Protection rating:	IP30
Safety and EMC:	according to DIN EN 60730
Max. power consumption:	approx. 1 W (2.2 VA)
Max. switching current:	3 (0.5) A each
Switching element:	2 relays
Switching contact:	2 NO contacts
Output signal:	Switching, analogue 0 to 10 Vmax. 5 mA for activating an rpm-controlled fan
Sensor:	NTC internal, optional external 'Sensor 2'*
External flow sensor (H/C sensor):	For automatic switching of the controller to heating or cooling mode depending on the inflow temperature ('Sensor 2'); alternatively, this input can be used as an H/C changeover contact
ECO contact:	upon closing the contact, the ECO function is actuated
Control range:	5 to 40 °C
Setting range:	standard setting range for heating (5 to 30 °C), second setting range for cooling (18 to 40 °C)
Hysteresis:	approx. 1 K
Neutral zone:	adjustable
Display type:	illuminated graphical display
Pipe system compatibility:	2-pipe and 4-pipe

APPLICATION

Flush-mounted controller with timer function for heating/cooling regulation of 2 and 4-pipe systems used in hotels, homes and offices. The adaptation takes place in a menu.
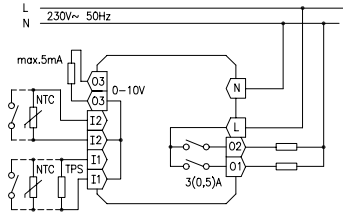
The unit can control up to 5 valve actuators (normally open or normally closed) per output. In 2-pipe operation, the operating mode can be changed via an external contact (changeover) or a temperature sensor. The clock can serve as a master for other controllers for switching to ECO mode.

It is possible to activate the energy saving (ECO) or frost protection (OFF) functions via an external contact. Alternatively, the controller's inputs can be configured to connect with an external temperature sensor or dew point sensor (TPS).

A 0–10 V interface can be used to control the speed of a fan **(EC fan)**.

General:
digital surface switch single-room climate controller with timer; optional external dew point sensor; ECO function, ECO value adjustable; 'ECO' display; 'on/off' display; 'heating' display; 'cooling' display; 'cooling interruption due to condensation'; digital actual value display; backlighting; operating mode 'off with frost protection monitoring'; child-safe features; facilities; power-reserve (3 days); actual value correction/measured value correction; learning function; emergency operating mode; holiday setting; party setting; automatic adjustment to summer/winter time; external setting; comfortable operation using touch-sensitive buttons with dynamic button assignment.

Special colours as well as the colours anthracite and aluminium are available for projects upon request.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
KTRRUu 217.456#21 (230 VAC)	UA220000	**Surface finish:** glossy **Housing colour:** pure white, similar to RAL 9010 **Operating voltage:** 230 VAC, 50 Hz Electrical connection: pluggable screw-type terminals, voltage supply side 0.75–2.5 mm², low-voltage side 0.08–1.5 mm² **Mounting/Attachment:** in flush-mounted socket – adaptable with 50x50 mm cover in almost all surface switch ranges (deep flush-mounted socket recommended) **Protection class:** II **Max. switching voltage:** 230 VAC, 50 Hz **Min. switching voltage:** 230 VAC, 50 Hz **Switching power:** 690 W **Output signal:** switching heating, cooling, heating/cooling, ECO, OFF, 230 VAC, 50 Hz; analogue 0–10 V (5 mA) for activating an rpm-controlled fan **Scope of delivery:** controller, 50x50 mm cover, pure white (similar to RAL 9010), glossy, alre frame 'Berlin'		264.80/I

* A menu setting can be used to select whether control should be based on the internal or external sensor. In the intermediate positions, if both sensors are used, a weighting is applied to the internal room sensor and the external radiation sensor.
The weighting allows for compensation of different structural conditions such as large window areas or cardinal directions. For very slow controlled systems, it is recommended to assign a higher weighting to the radiation sensor than to the internal room sensor.

ELECTRONIC CLIMATE CONTROLLER
WITH TIMER KTRRUU – 230 VAC
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
KTRRUu 217.456#07 (230 VAC)	UA220002	Similar to KTRRUu 217.456#21 but scope of delivery as follows: controller, **50x50** mm cover **pure white** (similar to RAL 9010), **glossy,** without frame		260.90 / I
KTRRUu 217.456#09 (230 VAC)	UA220003	Similar to KTRRUu 217.456#21 but scope of delivery as follows: controller, 50x50 mm cover **pearl white** (similar to RAL 1013), **glossy,** without frame		260.90 / I
KTRRUu 217.456#27 (230 VAC)	UA220004	Similar to KTRRUu 217.456#21 but scope of delivery as follows: controller, **50x50** mm cover **traffic / studio white** (similar to RAL 9016), **glossy,** without frame		260.90 / I
KTRRUu 217.456#28 (230 VAC)	UA220007	Similar to KTRRUu 217.456 but scope of delivery as follows: Controller, cover **for use with BUSCH-JAEGER Reflex SI / SI Linear pure white** (similar to RAL 9010), **glossy,** without frame		262.60 / I
KTRRUu 217.456#55 (230 VAC)	UA220005	Similar to KTRRUu 217.456#21 but scope of delivery as follows: controller, **55x55** mm cover **pure white** (similar to RAL 9010), **glossy,** without frame		262.60 / I
KTRRUu 217.456#56 (230 VAC)	UA220009	Similar to KTRRUu 217.456#21 but scope of delivery as follows: controller, **55x55** mm cover **pure white** (similar to RAL 9010), **matt** without frame		262.60 / I
KTRRUu 217.456#57 (230 VAC)	UA220006	Similar to KTRRUu 217.456#21 but scope of delivery as follows: controller, **55x55** mm cover **pearl white** (similar to RAL 1013), **glossy,** without frame		262.60 / I
KTRRUu 217.456#59 (230 VAC)	UA220008	Similar to KTRRUu 217.456#21 but scope of delivery as follows: controller, **55x55** mm cover **traffic / studio white** (similar to RAL 9016), **glossy,** without frame		262.60 / I

ELECTRONIC CLIMATE CONTROLLER
WITH TIMER KTRRUU – 24 VAC / VDC
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
KTRRUu 257.456#21 (24 VAC / VDC)	UA220100	Similar to KTRRUu 217.456#21 but with: **Operating voltage:** 24 VAC / 50 Hz, 24 VDC **Protection class:** lll **Max. switching voltage:** 24 VAC / 50 Hz, 24 VDC **Min. switching voltage:** 24 VAC / 50 Hz, 24 VDC **Switching power:** 72 W **Output signal:** switching heating, cooling, heating / cooling, ECO, OFF, 24 VAC / 50 Hz, 24 VDC, analogue 0–10 V (5 mA) to control a speed-controlled fan		264.80 / I
KTRRUu 257.456#07 (24 VAC / VDC)	UA220103	Similar to KTRRUu 257.456#21 but scope of delivery as follows: controller, **50x50 mm cover pure white** (similar to RAL 9010), **glossy,** without frame		260.90 / I
KTRRUu 257.456#09 (24 VAC / VDC)	UA220104	Similar to KTRRUu 257.456#21 but scope of delivery as follows: controller, **50x50 mm cover pearl white** (similar to RAL 1013), **glossy,** without frame		260.90 / I
KTRRUu 257.456#27 (24 VAC / VDC)	UA220105	Similar to KTRRUu 257.456#21 but scope of delivery as follows: controller, **50x50 mm cover traffic / studio white** (similar to RAL 9016), **glossy,** without frame		260.90 / I
KTRRUu 257.456#28 (24 VAC)	UA220108	Similar to KTRRUu 257.456#21 but scope of delivery as follows: Controller, cover **for use with BUSCH-JAEGER Reflex SI / SI Linear pure white** (similar to RAL 9010), **glossy,** without frame		262.60 / I
KTRRUu 257.456#55 (24 VAC / VDC)	UA220106	Similar to KTRRUu 257.456#21 but scope of delivery as follows: controller, **55x55 mm cover pure white** (similar to RAL 9010), **glossy,** without frame		262.60 / I
KTRRUu 257.456#56 (24 VAC / VDC)	UA220110	Similar to KTRRUu 257.456#21 but scope of delivery as follows: controller, 55x55 mm cover, **pure white** (similar to RAL 9010), **matt,** without a frame		262.60 / I
KTRRUu 257.456#57 (24 VAC / VDC)	UA220107	Similar to KTRRUu 257.456#21 but scope of delivery as follows: controller, **55x55 mm cover pearl white** (similar to RAL 1013), **glossy,** without frame		262.60 / I
KTRRUu 257.456#59 (24 VAC / VDC)	UA220109	Similar to KTRRUu 257.456#21 but scope of delivery as follows: controller, **55x55 mm cover traffic / studio white** (similar to RAL 9016), **glossy,** without frame		262.60 / I

Accessories: suitable valve actuators ZBOOA-040.100 (see Page 166), dew point sensor TPS 1 / TPS 2 / TPS 3 (see Page 158), suitable external sensors ('Sensor 2'); see 'Sensor technology'.

ELECTRONIC CLIMATE CONTROLLER WITH TIMER KTRRUU
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-090.900	VV000025	**Design:** Berlin **Surface finish:** glossy **Housing colour:** pure white, similar to RAL 9010 **Housing material:** PC plastic **General features:** alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50x50 mm cover	4.20/I
JZ-090.100	VV000048	Similar to JZ-090.900, but for all flush-mounted controllers in combination with 55x55 mm cover	4.20/I
JZ-090.910	VV000010	**Design:** Berlin **Surface finish:** glossy **Housing colour:** pearl white, similar to RAL 1013 **Housing material:** PC plastic **General features:** alre frame 'Berlin' (neutral) for all flush-mounted controllers with 50x50 mm cover	4.20/I

* A menu can be used to select whether control should be based on the internal or external sensor. In the intermediate positions, if both sensors are used, a weighting is applied to the internal room sensor and the external radiation sensor. The weighting allows for compensation of different structural conditions such as large window areas or cardinal directions. For very slow controlled systems, it is recommended to assign a higher weighting to the radiation sensor than to the internal room sensor.
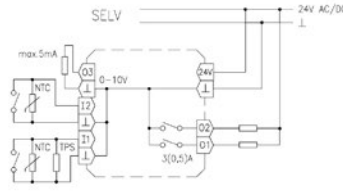
ILLUSTRATIONS

KTRRUu application example – 2-pipe system (230-V version)
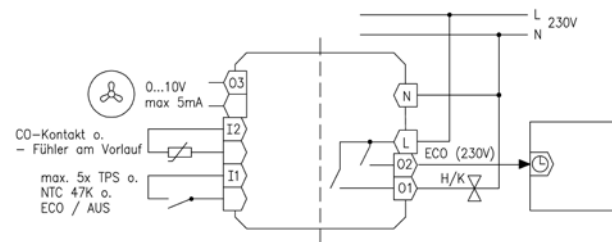
KTRRUu application example – 4-pipe system (230-V version)
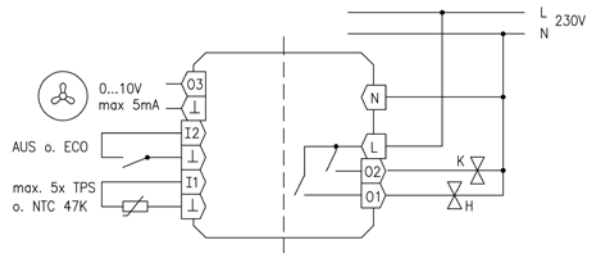
KTRRUu with alre frame 'Berlin'
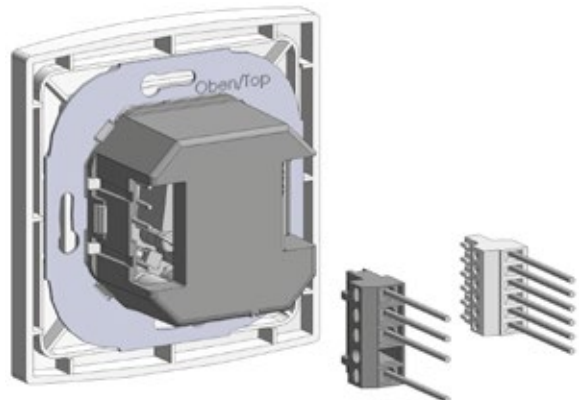
Pluggable screw-type terminals

ELECTRONIC CLIMATE CONTROLLER WITH TIMER KTRRUU
FLUSH-MOUNTED INSTALLATION – DESIGN BERLIN UP

ILLUSTRATIONS

KTRRUu with alre frame 'Berlin'
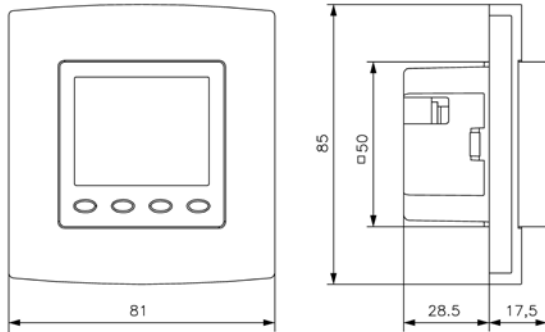
KF-2
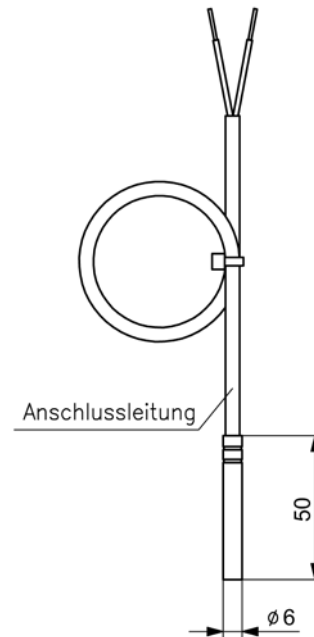
additional benefits:
- Pluggable screw-type terminals facilitate quick and easy assembly
- Illuminated, graphics-capable display
- Automatic adjustment to standard / daylight savings time
- Learn function
- Correction of measurement values
- Configurable display content
- Choice of various languages during installation: German, English, French, Dutch, Polish, Spanish, Czech, Russian
- Configurable inputs and outputs, for example:
  - OFF circuit with frost protection
  - ECO input
  - Dew point sensor input
  - Output: heating / cooling / timer master
- Fan control 0–10 V
- Key lock
- Valve protection function
- Configurable control method (PI-PWM or 2-point control)
- Holiday and party function
- Power reserve
- 'Heating mode' indication (LED orange)
- 'cooling mode' indication (LED blue)

ADAPTATION OF ALRE FLUSH-MOUNTED CONTROLLERS KTRRUU 2X7.456

MANUFACTURER	RANGE	COLOUR RAL 9010 (surface finish)	ADAPTATION in switch range (55x55) possible with…	'50X50' adaptation possible with … (insert frame from manufacturer required)
BERKER	S.1	polar white (matt)	KTRRUu 2x7.456#56	not required
BERKER	S.1	polar white (glossy)	KTRRUu 2x7.456#55	not required
BERKER	Arsys	polar white (glossy)		KTRRUu 2x7.456#07 + 1108 01 69
BERKER	B.3	aluminium / polar white (matt)	KTRRUu 2x7.456#56	not required
BERKER	B.3	aluminium / polar white (glossy)	KTRRUu 2x7.456#55	not required
BERKER	B.7	glass / polar white (matt)	KTRRUu 2x7.456#56	not required
BERKER	B.7	glass / polar white (glossy)	KTRRUu 2x7.456#55	not required
BERKER	K.1	polar white (glossy)		KTRRUu 2x7.456#07 + 1108 71 09
BUSCH-JAEGER	Reflex SI / SI Linear	alpine white (glossy)	KTRRUu 2x7.456#28	not required
BUSCH-JAEGER	Busch-balance SI	alpine white (glossy)	KTRRUu 2x7.456#55	not required
BUSCH-JAEGER	impuls	alpine white (glossy)		KTRRUu 2x7.456#07 + 1746 / 10-74
BUSCH-JAEGER	solo / future / axcent etc.	studio white – see RAL 9016 below		
Elso	Joy	pure white (glossy)	KTRRUu 2x7.456#55	not required
Elso	Fashion / Riva / Scala	pure white (glossy)		KTRRUu 2x7.456#07 + (203084)
GIRA	surface switch	pure white (glossy)		KTRRUu 2x7.456#07 + 0282 112
GIRA (System 55)	Standard / E2	pure white (semi-gloss)	KTRRUu 2x7.456#56	not required
GIRA (System 55)	Standard / E2 / E3	pure white (glossy)	KTRRUu 2x7.456#55	not required
GIRA (System 55)	E22	pure white (glossy)	KTRRUu 2x7.456#55	not required
GIRA (System 55)	Event	pure white (semi-gloss) + opaque…	KTRRUu 2x7.456#56	not required
GIRA (System 55)	Event	pure white (glossy) + opaque…	KTRRUu 2x7.456#55	not required
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium…	KTRRUu 2x7.456#56	not required
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium…	KTRRUu 2x7.456#55	not required
GIRA	S-Color	pure white (high-gloss)		KTRRUu 2x7.456#07 + 0282 40
JUNG	CD 500 / CD plus	alpine white (glossy)		KTRRUu 2x7.456#07 + CD 590 Z WW
JUNG	A 500 / A 550 / AS 500 / A plus / A flow	alpine white (glossy)	KTRRUu 2x7.456#55	not required
JUNG	LS 990	alpine white (glossy)		KTRRUu 2x7.456#07 + LS 961 Z WW
JUNG	LS plus	alpine white (glass)		KTRRUu 2x7.456#07 + LS 961 Z WW
JUNG	A creation	alpine white (glossy)	KTRRUu 2x7.456#55	not required
JUNG	LS Design	alpine white (glossy)		KTRRUu 2x7.456#07 + LS 961 Z WW
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (matt)	KTRRUu 2x7.456#56	not required
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)	KTRRUu 2x7.456#55	not required
MERTEN (System Basis)	1-M / Atelier-M	polar white (glossy)	KTRRUu 2x7.456#55	not required
MERTEN (Surface System)	Artec / Antik	polar white (glossy)		KTRRUu 2x7.456#07 + 5160 99
MERTEN	1-M / M-Smart / M-Plan / M-Pure / D-Life	active white – see RAL 9016 below		
PEHA	Standard	pure white (glossy)		KTRRUu 2x7.456#07 + 80.670.02 ZV
PEHA	Dialog	pure white (glossy)		KTRRUu 2x7.456#07 + 95.670.02 ZV
PEHA	Aura	pure white (matt) / glass		KTRRUu 2x7.456#07 + 20.670.02 ZV
PEHA	Badora	pure white (glossy)		KTRRUu 2x7.456#07 + 11.670.02 ZV

MANUFACTURER	RANGE	COLOUR RAL 9016 (surface finish)	ADAPTATION in switch range (55x55) possible with…	To ADAPT KTRRUu in size '50x50', an insert frame from the manufacturer is required
BUSCH-JAEGER	solo / future / future linear	studio white (RAL 9016, glossy)		KTRRUu 2x7.456#27 + 1746 / 10-84
BUSCH-JAEGER	axcent	studio white (RAL 9016, glossy)		KTRRUu 2x7.456#27 + 1746 / 10-84
BUSCH-JAEGER	carat (glass, bronze, gold)	studio white (RAL 9016)		KTRRUu 2x7.456#27 + 1746 / 10-84
BUSCH-JAEGER	alpha (nea / exclusive *)	studio white (RAL 9016, glossy)		KTRRUu 2x7.456#27 + 1746 / 10-24G
MERTEN	M-Smart, M-Plan, M-Pure	active white (RAL 9016, glossy)	KTRRUu 2x7.456#59	not required
MERTEN	1-M / Atelier-M	active white (RAL 9016, glossy)	KTRRUu 2x7.456#59	not required
MERTEN	D-Life	lotus white (RAL 9016)		KTRRUu 2x7.456#27 + MEG4500-6035
PEHA	Standard	arctic		KTRRUu 2x7.456#27 + D 80.670 ZV AW

*) During assembly, you need to remove 4 plastic tabs located at the rear of the frame.

NOTE: Most light switches are designed in the colour 'similar to RAL 9010', although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into these frames. Check the precise application in each individual case. The frames have different surface qualities (matt / glossy). For design reasons, the cover of the controller should have the same quality as the frame. We accept no liability for slight variations in colour and surface finish or for accuracy of fit. When installing devices into multi frames, always assemble the temperature controllers at the lowermost position.

'50x50 controller': The housing covers of the 50x50 controllers are 50x50 mm in size. Using a 50x50 mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50x50 mm insert frames must be ordered from the light switch manufacturer or from a wholesaler. The order number of the insert frame corresponding to the switch range in question can be found in the column 'For adaptation of KTRRUu into size "50x50"'.

'55x55 controller': The housing covers of the 55x55 controllers are 55x55 mm in size. Many light switch ranges have inner dimensions of 55x55 mm. Therefore, the 55x55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column 'Adaptation in switch range (55x55)' to determine whether the 55x55 controller fits in the given light switch range (KTRRUu 2x7.456#xx).

All information regarding switch manufacturers' product lines and item numbers was last updated in 12 / 2022 | No liability is assumed for the information provided. | Technical specifications subject to change.

CONTINUOUS ELECTRONIC CLIMATE CONTROLLER, KTRVB
SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000
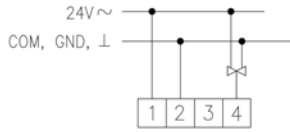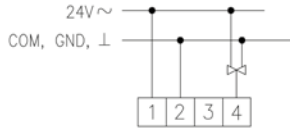
TECHNICAL DATA

Design:	Berlin 2000
Surface finish:	matt
Housing colour:	pure white, similar to RAL 9010
Housing material:	ABS plastic
Storage temperature:	−20 to +70 °C
Operating voltage:	24 VDC, 24 VAC, 50 Hz
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Mounting / attachment:	surface / wall mounting
Protection rating:	IP30
Protection class:	III
Safety and EMC:	according to DIN EN 60730
Switching element:	electronic with analogue output signal
General features:	climate controller for individual room control with proportionally controlled valve; mechanical range restriction; external setting

APPLICATION

Room temperature controller for continuous control of valve actuators. Controller for 2-pipe systems (1-duct), 4-pipe systems (2-duct) and mixing chambers.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
KTRVB-048.100	DA450000	**General features:** scale: degrees Celsius **Ambient temperature:** 0 to 50 °C **Output signal:** consistently 0 to 10 V or 10 to 0 V (can be switched using a jumper), max. 5 mA **Sensor:** NTC internal **Control function:** heating or cooling with adjustable p-band, aligned to 5 V at setpoint temperature **Control range:** 5 to 30 °C **Hysteresis:** 0 K, since control is always via the p-band in the range from +0.5 K to 3 K (adjustable) **Pipe system compatibility:** 2-pipe	24V ∼ COM, GND, ⊥ 1 2 3 4	100.00 / I
KTRVB-048.200	DA450100	**General features:** relative scale **Ambient temperature:** 0 to 50 °C **Output signal:** consistently 0 to 10 V or +10 to 0 V (can be switched using a jumper), max. 5 mA5 **Sensor:** NTC internal **Control function:** heating or cooling with adjustable p-band, aligned to 5 V at setpoint temperature **Control range:** 13 to 29 °C **Setting range:** −3 to +3 K (the pre-set 'zero point' of approx. 21 °C can be adjusted in the machine by + / − 5 K) **Hysteresis:** 0 K, since control is always via the p-band in the range from +0.5 K to 3 K (adjustable) **Pipe system compatibility:** 2-pipe	24V ∼ COM, GND, ⊥ 1 2 3 4	107.40 / I

CONTINUOUS ELECTRONIC CLIMATE CONTROLLER, KTRVB
SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
KTRVB-052.244	DA451500	**General features:** external dew point sensor; ECO function; 'heating / cooling / cooling interruption due to condensation / off' display; 'sensor rupture / sensor short-circuit / frost protection' display; operating mode 'off with frost protection monitoring'; relative scale **Ambient temperature:** 0 to 40 °C **Output signal:** consistently 0–10 V or 10–0 V (can be switched using a jumper), max. 5 mA **Sensor:** NTC internal, optional external 'Sensor 2' (see 'Sensor technology')* **External flow sensor (H/C sensor):** for automatic switching of the controller to heating or cooling mode depending on the inflow temperature; alternatively, this input can be used as a 'Sensor 2' H/C changeover contact **ECO contact:** upon closing the contact, the ECO function is actuated (in heating mode, the temperature is adjusted down by 3 K and in cooling mode it is adjusted up by 3 K) **Forced switch-off contact:** external switch-off function with frost protection monitoring **Control function:** heating and / or cooling with p-band 1 K, cooling interruption upon condensation of the dew point sensor, frost protection function in 'off' state **Control range:** 13 to 29 °C **Setting range:** 21 °C ± 8 K **Hysteresis:** 0 K, since control is always via the p-band in the range from 1 K **Neutral zone:** approx. 2 K **Pipe system compatibility:** 2-pipe and 4-pipe		193.20 / I
KTRVB-052.245	DA451600	Similar to KTRRB-052.244 but with **'off / comfort / ECO' switch**		204.10 / I

* An internal trimming potentiometer can be used to select whether control should be based on the internal (left stop) or external sensor (right stop). In the intermediate positions, if both sensors are used, a weighting is applied to the internal room sensor and the external radiation sensor. The weighting allows for compensation of different structural conditions such as large window areas or cardinal directions. For very slow controlled systems, it is recommended to assign a higher weighting to the radiation sensor than to the internal room sensor.

ILLUSTRATIONS

KTRVB

ELECTRONIC DEW POINT MONITOR WFRRN
STANDARD RAIL MOUNTING
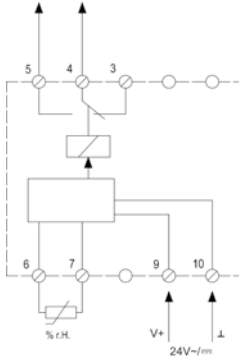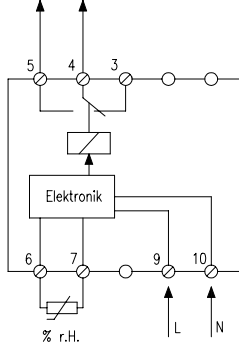
TECHNICAL DATA

Surface finish:	matt
Housing colour:	light grey, similar to RAL 7035
Housing material:	PC plastic
Ambient temperature:	0 to 55 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals up to 2.5 mm²
Mounting / attachment:	standard rail mounting
Protection rating:	IP20
Safety and EMC:	according to DIN EN 60730
Average power consumption:	approx. 1 VA
Min. switching current:	depending on the switching voltage (min. 0.3 W)
Min. switching voltage:	depending on the switching current (min. 0.3 W)
Switching element:	relay
Switching contact:	toggler, potential-free
Output signal:	switching
Control function:	dew point triggering
Hysteresis:	8 MΩ
Fixed break point:	approx. 98% relative humidity
General features:	'dew point triggering' display
Accessories:	dew point sensors (TPS)

APPLICATION

For interrupting the cooling, when the relative atmospheric humidity exceeds approx. 98%.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
WFRRN-240.018	D4780587	**Operating voltage:** 24 VDC, 24 VAC, 50 Hz **Protection class:** III **Max. switching current:** 10 (3) A at 48 VAC, 10 A at 30 VDC, 1 A at 60 VDC **Max. switching voltage:** 48 VAC, 50 Hz / 60 VDC **Switching power:** 500 VA at 48 VAC, 300 W at 30 VDC, 60 W at 60 VDC		166.80 / I
WFRRN-210.018	D4780572	**Operating voltage:** 230 VAC, 50 Hz **Protection class:** II, if properly mounted **Max. switching current:** 10 (3) A at 230 VAC, 10 A at 30 VDC, 1 A at 60 VDC **Max. switching voltage:** 230 VAC, 50 Hz / 60 VDC **Switching power:** 2300 VA at 230 VAC, 300 W at 30 VDC, 60 W at 60 VDC		170.70 / I

DEW POINT SENSOR, TPS

TECHNICAL DATA		APPLICATION
Storage temperature:	−20 to +70 °C	These dew point sensor were developed in conjunction with alre dew point monitors and cooling ceiling controllers for the specific purpose of detecting and signalling the dew point. In this way, they prevent dripping condensation water from reaching the cooling circuit parts, if installed correctly.
Sensor wire extendible up to:	50 m with 2 x 0.5 mm²	
Connecting cable:	10 m	
Accessories:	For use with dew point sensors (e.g., WFRRN) or climate controllers with dew point monitoring (KTRRB, KTRRU, KTRRUu, KTRVB, KTFRL, KTFRD)	

TYPE/IMAGE	ITEM NO.	FEATURES	EURO/PG
TPS 1	G8000299	**Mounting / attachment:** using clips on cooling ceiling capillary pipe **Use:** Drywall cooling ceiling (plasterboard) with hung up capillary pipe mat, metal cooling ceiling with integrated capillary pipe system **Sensor wire extendible up to:** 50 m with 2x0.5 mm² **Scope of delivery:** sensor, 2 clips for cooling pad	63.30 / I
TPS 2	G8000300	**Mounting / attachment:** using clips on cooling ceiling capillary pipe or cable ties on the pipe **Use:** Pipe systems transporting cold water, plaster cooling ceiling with capillary tube system **Sensor wire extendible up to:** 50 m with 2x0.5 mm² **Scope of delivery:** sensor, 2 clips for cooling pad, 2 cable ties	63.30 / I
TPS 3	SN120000	**Mounting / attachment:** attach to pipe by means of cable ties **Use:** Pipe systems transporting cold water **Sensor wire extendible up to:** 50 m with 2x0.5 mm² **Scope of delivery:** sensor, 2 cable ties	56.60 / I

ILLUSTRATIONS

TPS 3

Important note:
The inflow channels of TPS-1 and TPS-2 are closed at the factory to avoid dirtying during assembly. After assembly, they must be shortened with a knife until they are flush with the wall or ceiling to ensure air circulation. The air ducts should be arranged such that soiling during operation is avoided. It is important that the air surrounding the sensor has the same temperature as the room air to be cooled. If the humidity and temperature of the air to be cooled (ceiling cooling system) is different from that of the air surrounding the sensor, condensation may be detected prematurely or too late. As regards TPS-3, contact with the PCB paths must be avoided to prevent long-term corrosion.

Attention in case of sensor extension: Parallel laying to conductors carrying a mains voltage can result in faults. The use of shielded conductors reduces sensitivity to electromagnetic fields.

Mode of operation – dew point sensor:
if the surface temperature of the dew point sensor is equivalent to the dew point, a microscopic film of moisture forms on its surface. This film changes the resistance value of the dew point sensor to such an extent that the connected controller or monitor detects this change and disables the cooling. In this manner, dripping condensate water at maximum cooling, and hence moisture damage to the building, are avoided. When the dew point sensor dries off again, the resistance value increases and cooling is re-enabled. To ensure that a pending undershooting of the dew point is detected in time, the dew point sensor should be assembled at the point where the dew point is most likely to be reached first along the cooling circuit. Generally, these locations are at the inlet coming into the room and / or near windows. If the place where the dew point is likely to occur cannot be unambiguously determined, it is possible to connect up to 5 dew point sensors in parallel to one controller or monitor.

DEW POINT SENSOR, TPS

ILLUSTRATIONS

TPS 3

TPS 1
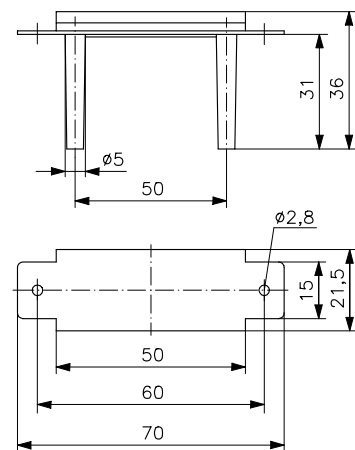
Fühlergehäuse
Sensor
Kühldeckenkapillarrohr
Deckenplatte
evtl. Putz
Trennstelle nach Installation
(bündig mit Deckenabschluß)
Zuluftkanal
zu kühlender Raum

TPS 1

Formteil
Kühldecken–Kapillarrohr
Kühltemperaturerfassung
Zirkulation der Raumluft

TPS 2

Zuluftkanal
Wandplatte
evtl. Putz
zu kühlender Raum
Trennstelle nach Installation
(bündig mit Wandabschluß)
Zuluftkanal
Kühldecken–Kapillarrohr
Spannband
Sensor

WFRRN

TPS 1 / 2

MECHANICAL ROOM HYGROSTATS /
HYGRO-THERMOSTATS, RFSB, FHY, RKKDSB
SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000 / 3000 / UP

TECHNICAL DATA
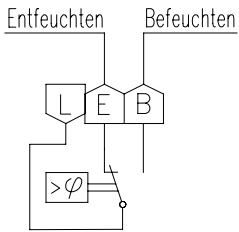
Storage temperature:	−20 to +60 °C (RFHSB-060.xxx −20 to +70 °C)
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Protection rating:	IP30
Protection class:	II, if properly mounted
Safety and EMC:	according to DIN EN 60730
Min. switching current:	100 mA
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	24 VAC, 50 Hz
General features:	mechanical range restriction
Other / similar items:	For duct and control cabinet hygrostats, see 'Plant Engineering' section

APPLICATION

Hygrostat: The room hygrostat is used to monitor and control the relative humidity, e.g., in offices, homes, winter gardens, baths, swimming pools and data centres. The action of the relative humidity on a measuring tape is made to actuate a potential-free changeover contact. The desired value is set by means of the adjusting knob on the front panel. The setting range can be limited.
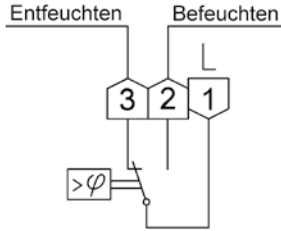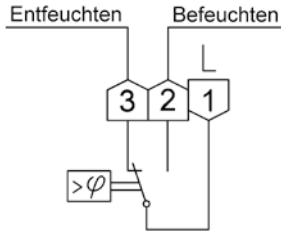
Hygro-thermostat: Monitoring and control of the relative humidity and the temperature in one device.

Note: Observe the wet room distance according to DIN VDE 0100-701!

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
FHY 101.060#00	UA020004	**General features:** external setting; protective cap; contact hazard protection cover plate **Design:** Berlin flush-mounted **Surface finish:** according to selected cover set **Housing colour:** according to selected cover set **Housing material:** PC plastic **Operating voltage:** no auxiliary energy necessary **Ambient temperature:** 0 to 50 °C **Mounting / attachment:** in flush-mounted socket – adaptable with 50x50 mm or 55x55 mm cover set in almost all surface switch ranges (deep flush-mounted socket recommended) **Max. switching current:** dehumidifying (terminal E) 5 (0.2) A, humidifying (terminal B) 2 (0.2) A **Switching power:** terminal E: 1150 W, terminal B: 460 W **Switching element:** microswitch **Switching contact:** changeover switch (toggler) **Output signal:** switching **Sensor:** plastic fibres **Control function:** humidifying or de-humidifying **Control range:** 35 to 85% rel. humidity **Hysteresis:** approx. 5% rel. humidity **Accessories:** cover sets are offered in several design variants (see 'Overview', page Page 147) and are not included in the scope of delivery. **Suitable set no:** JZ-021.xxx, e.g.: 50x50 mm cover set, pure white, glossy: JZ-021.000 55x55 mm cover set, pure white, glossy: JZ-021.100 **Scope of delivery:** controller, protective cap	Entfeuchten Befeuchten L E B >φ	129.60 / I

MECHANICAL ROOM HYGROSTATS /
HYGRO-THERMOSTATS, RFSB, FHY, RKKDSB
SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000 / 3000 / UP

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
FHY 101.060#21	UA020003	Similar to FHY 101.060#21 but scope of delivery as follows: controller, alre frame 'Berlin', 50x50 mm cover, pure white (similar to RAL 9010), glossy		144.00 / I
RFHSB-060.010	MA020202	**General features:** External setting **Design:** Berlin 2000 **Surface finish:** matt **Housing colour:** pure white, similar to RAL 9010 **Housing material:** ABS plastic **Operating voltage:** no auxiliary energy necessary **Ambient temperature:** 0 to 60 °C **Mounting / attachment:** surface / wall mounting (4-hole assembly on flush-mounted socket) **Max. switching current:** dehumidifying (terminal 4) 5 (0.2) A, humidifying (terminal 2) 2 (0.2) A **Switching power:** terminal 4: 1150 W, terminal 2: 460 W **Switching element:** microswitch **Switching contact:** changeover switch (toggler) **Output signal:** switching **Sensor:** plastic fibres **Control function:** humidifying or de-humidifying **Control range:** 35–85% rel. humidity **Hysteresis:** approx. 7% rel. humidity	Entfeuchten Befeuchten L 3 2 1 >φ	85.30 / I
RFHSB-060.011	MA020203	Similar to RFHSB-060.010, but with internal setting	Entfeuchten Befeuchten L 3 2 1 >φ	76.90 / I
RKDSB-171.000	MA220000	**General features:** 'On / off' switch; external setting **Design:** Berlin 3000 **Surface finish:** matt **Housing colour:** pure white, similar to RAL 9010 **Housing material:** ABS plastic **Operating voltage:** 24 VAC or 230 VAC selectable **Ambient temperature:** 0 to 50 °C **Mounting / attachment:** surface / wall-mounting or by means of adapter plate on flush-mounted socket **Max. switching current:** dehumidifying (terminal 9) 5 (0.2) A, humidifying (terminal 8) 3 (0.2) A, heating (terminal 1) 10 (4) A at 230 VAC / 1 (1) A at 24 VAC, cooling (terminal 2) 5 (2) A at 230 VAC / 1 (1) A at 24 VAC **Switching power:** terminal 9: 1150 W, terminal 8: 690 W, terminal 1: 2300 W at 230 VAC / 24 W at 24 VAC, terminal 2: 1150 W at 230 VAC / 230 W at 24 VAC **Switching element:** microswitch (hygrostat) / bimetal (thermostat) **Switching contact:** 2x changeover switch (toggler) **Output signal:** switching **Sensor:** plastic fibres for humidity, bimetal for temperature **Control function:** humidifying or de-humidifying, heating or cooling **Control ranges:** Temperature 10 to 35 °C, Humidity 30 to 100% rel. humidity **Hysteresis:** approx. 4% rel. humidity, approx. 1 K at a temperature change of max. 4 K / h **Accessories:** adapter plate flush-mounted socket mounting: JZ-17		167.50 / I

MECHANICAL ROOM HYGROSTATS /
HYGRO-THERMOSTATS, RFSB, FHY, RKKDSB
SURFACE-MOUNTED INSTALLATION – DESIGN BERLIN 2000 / 3000 / UP

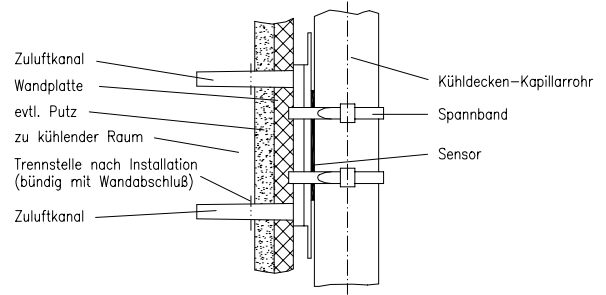| ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-17	MN990001	**General features:** Adapter plate for mounting devices on flush-mounted sockets (including fastening screws for mounting the controller on the adapter plate) **Surface finish:** matt **Housing colour:** pure white, similar to RAL 9010 **Housing material:** ABS plastic	7.40 / II

ILLUSTRATIONS

FHY

RFHSB
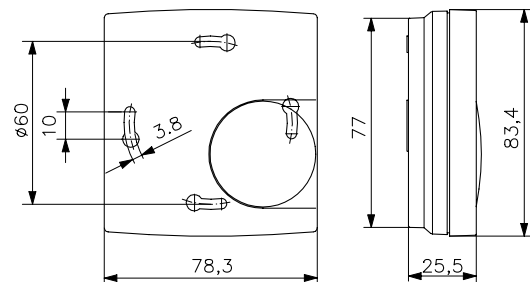
RKDSB
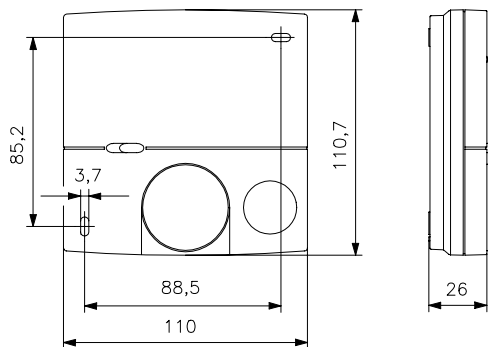
FHY with alre frame 'Berlin' (#21 type)
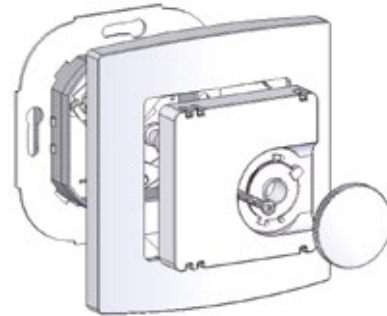
FHY with insert frame
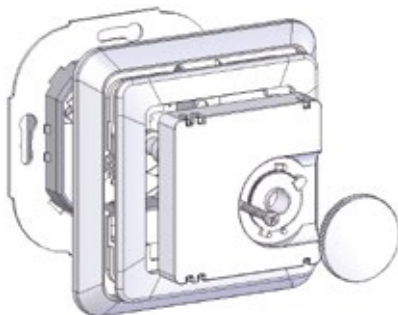
FHY without 55x55 insert frame
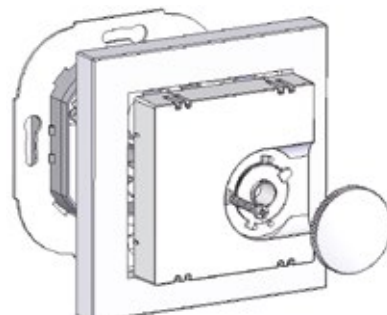
TERMINAL STRIP FOR HEATING / COOLING MANIFOLD VOORL
FOR 5 OR 8 ROOM THERMOSTATS

TECHNICAL DATA

Surface finish:	matt
Housing colour:	light grey, similar to RAL 7035
Housing material:	ABS plastic
Operating voltage:	230 V~
Ambient temperature:	−10 to +50 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	max. 95%, non-condensing
Electrical connection:	screw-type terminals 0.2 mm²–1.5 mm²
Connectable pump power:	max. 180 VA
Device fuse:	T3,15 / 250 V, Ø 5x20 mm
Mounting / attachment:	surface mounting / wall mounting on a wall using screws or magnetic bases on a magnetic substrate
Protection rating:	IP20
Protection class:	II, if properly mounted
Max. number of valve actuators:	number of ducts x 4 for each duct, Duct 1 and 2 as well as 5 and 6 combinable Assignment of ducts to rooms as desired

APPLICATION

This device is specifically designed for fixed wiring of 230 VAC single-room temperature controllers and the associated valve actuators for fixed-location attachment.
Switching between heating / cooling is performed via a central contact.

Heating controllers with changeover contact (e.g., RTBSB-201.010) can be connected as controllers. A master-slave time zone can be formed by using a clock controller. The time zone can also be switched to ECO function via an external switching contact at terminal U.

The VOORx-318.053 and VOORx-215.053 units feature an integrated pump function.

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
VOORL-215.009	DA490110	**General features:** Terminal strip in housing for wiring up to 5 room thermostats and up to 20 actuators; up to 4 actuators per channel can be connected **Max. switching current:** output 1-5: 3 (1) A **Total of all the outputs (5 channels):** 3 (1) A **Switching power:** total of 920 W **ECO contact:** if clock regulators are used, a time zone can be defined that can be switched to ECO function via an external switching contact on terminal U **Control function:** heating or cooling	209.10 / I
VOORL-215.053	DA490310	**As for VOORL-215.009, but including pump module (max. 0.75 A)**	226.60 / I
VOORL-318.009	DA490010	**General features:** Terminal strip in housing for wiring up to 8 room thermostats and up to 32 actuators; up to 4 actuators per channel can be connected **Max. switching current:** output 1-8: 3 (1) A **Total of all the outputs (8 channels):** 3 (1) A **Switching power:** total of 1380 W **ECO contact:** if clock regulators are used, a time zone can be defined that can be switched to ECO function via an external switching contact on terminal U **Control function:** heating or cooling	257.30 / I
VOORL-318.053	DA490210	**As for VOORL-318.009, but including pump module (max. 0.75 A)**	275.90 / I

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-24	BN990002	Magnetic fastening set for simple and safe fastening of the multi-channel receiver and VOORL terminal strips on a metallic substrate (for example, heating manifold)	23.30 / II

TERMINAL STRIP FOR HEATING / COOLING MANIFOLDS VOORL
FOR 5 OR 8 ROOM THERMOSTATS

ILLUSTRATIONS

VOORL-215.xxx
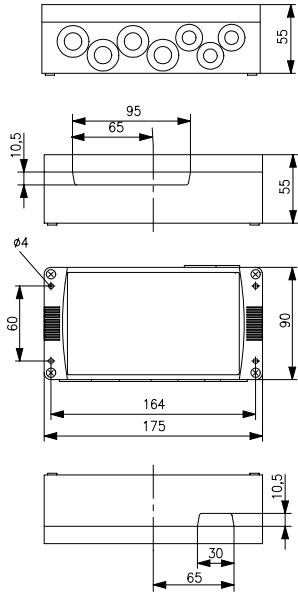
VOORL-318.xxx

VOORL-318.xxx

T3,15A	5-fach
T3,15A	8-fach

8-fach L u. D max.32 Ventile
5-fach L max.20 Ventile
5-fach D max.10 Ventile

Kanal 1   Kanal 2   Kanal 5   Kanal 6   230V~ Versorgung   Pumpe max 180VA
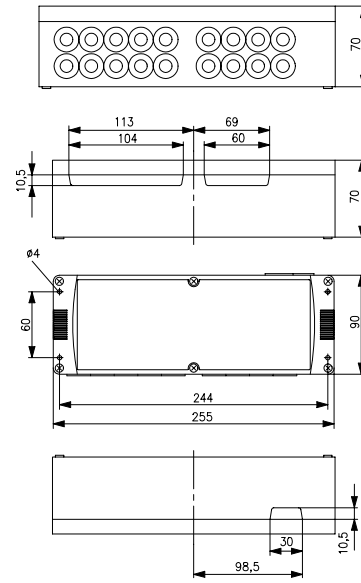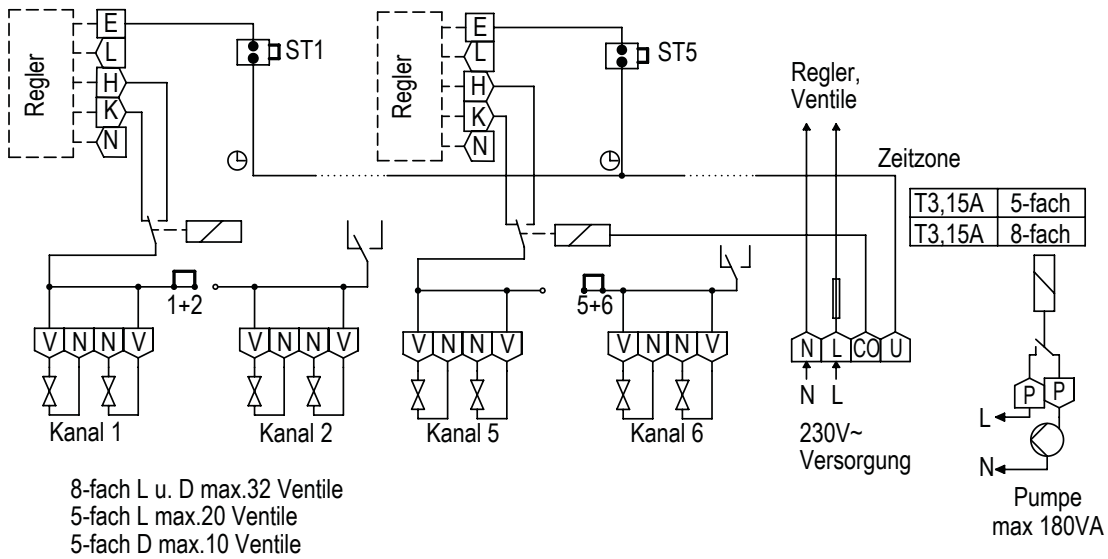
Internal view VOORL-318.xxx
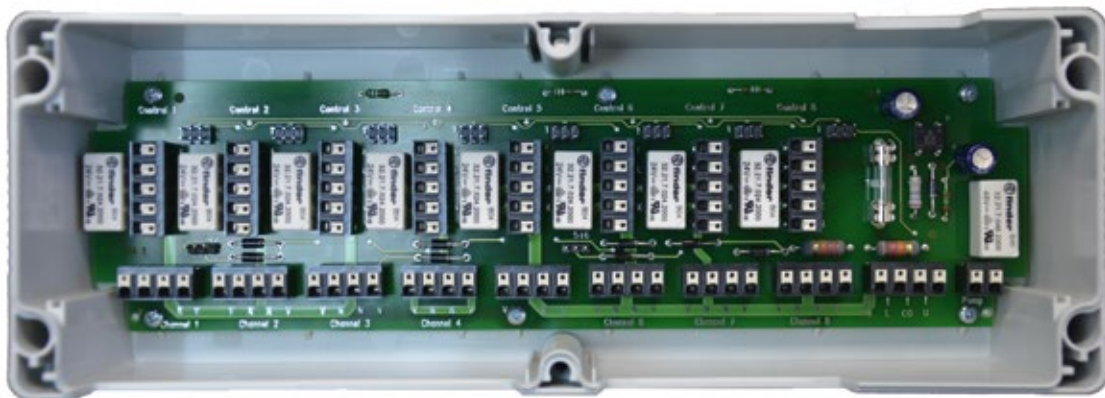
NOTES ON AND EXAMPLES
OF WIRING FOR VOORL TERMINAL STRIPS

SETTING UP TIME ZONES
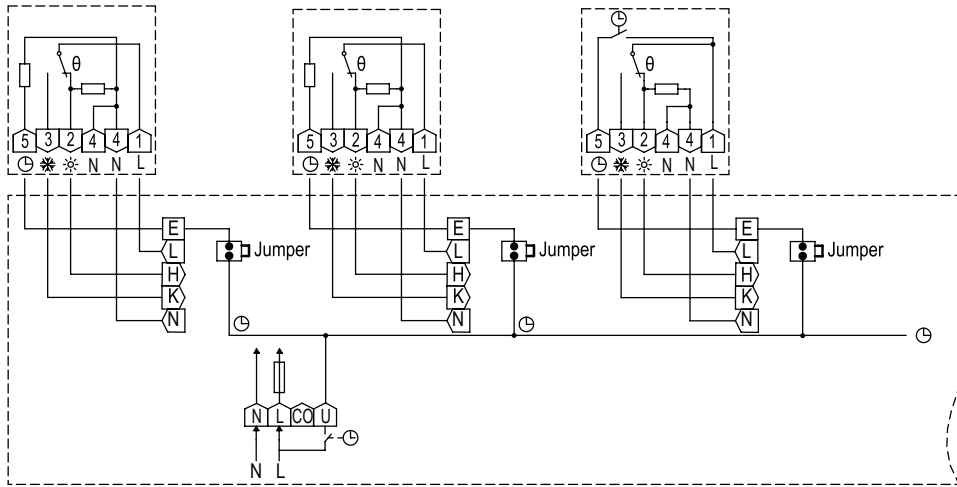
TZ = time zone

INVERSION OF THE CO CONTACT

Heizen wenn L an CO

Kühlen wenn L an CO
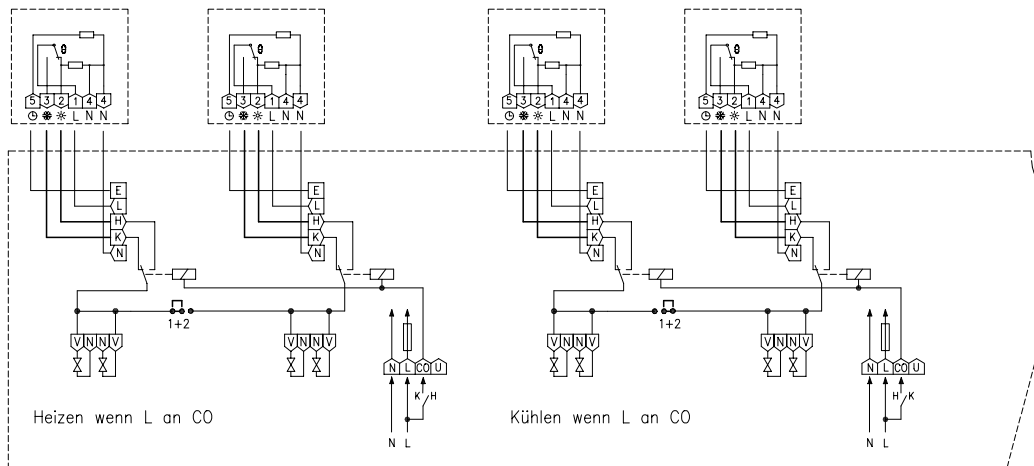
STANDARD WIRING AND COMBINATION OF CHANNEL 1/2

Kanal 1 und 2 separat

Kanal 1 und 2 kombiniert

Pumpenanschluß 230V

Pumpenkontakt mit SELV

ACTUATOR 'STELLA' 230 V NC
FOR AUTOMATIC HYDRAULIC BALANCING

TECHNICAL DATA

Operating voltage:	230 V~, 50 Hz
Max. power consumption:	30 W
Max. starting current:	approx. 0.13 A
Housing colour:	grey-orange
Housing material:	PA6 plastic
Ambient temperature:	0 to 50 °C
Storage temperature:	−25 to +60 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Mounting / attachment:	M 30 x 1.5
Protection rating:	IP54
Protection class:	II
Safety and EMC:	according to DIN EN 60730
Average power consumption:	approx. 1.7 W
Opening / closing time:	approx. 3 min
Nominal stroke:	3.5 mm
Function type:	normally closed
Nominal closing force:	110 N
Connecting cable:	1 m / 2x0.34 mm²

APPLICATION

'Stella' – the intelligent autonomous 230 VAC NC electrothermal actuator for automatic adaptive hydraulic balancing of heating manifolds' heating circuits in surface heating and surface cooling systems.

Sensors on the supply and return lines measure temperature differences, and an algorithm continuously calculates the necessary temperature spread and the appropriate valve position.

Normally closed and features a folding lever for easily unscrewing the thermostat valve or opening it manually when it is disconnected from the mains. Features integrated inflow temperature limitation.

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
ZB00A-010.185	G8990010	Actuator for automatic hydraulic balancing		78.40 / I
SET 31	VV000046	Set for performing fully automatic hydraulic balancing consisting of 5 surface-mounted room thermostats, 1 terminal strip and 6 actuators.		744.80 / I
SET 32	VV000047	Set for performing fully automatic hydraulic balancing consisting of 5 flush-mounted room thermostats, 1 terminal strip and 6 actuators.		831.40 / I

ILLUSTRATIONS

82,2   53,1   47   74,2   52,7   29,5   23,6   29,5

BRIEF DESCRIPTION

- Combinable with the commercial 2-point room temperature controller (electromechanical, electronic, PWM)
- for heating and cooling systems
- Features a folding lever for easily unscrewing the thermostat valve or opening it manually when it is disconnected from the mains
- Temperature sensors suited for surface heating pipes made of plastic, metal or combinations thereof with an external diameter of 12 to 20 mm
- measures a heating circuit's outflow temperature
- The range of setpoint temperatures Stella calculates is variable and dependent on user behaviour and the system's environment
- The valve can be adjusted to any desired position between OPEN and CLOSED and set to remain in that position.
- An expansion element and a stroke measuring system are needed to position the valve stroke.

ELECTROTHERMAL VALVE ACTUATORS
FOR HEATING, VENTILATION AND AIR CONDITIONING TECHNOLOGY

TECHNICAL DATA

Housing colour:	pure white, similar to RAL 9010
Housing material:	PC plastic, GF (20%)
Ambient temperature:	0 to 50 °C
Storage temperature:	−20 to +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Mounting / attachment:	M 30 x 1.5
Protection rating:	IP42
Protection class:	II
Safety and EMC:	according to DIN EN 60730
Average power consumption:	approx. 3 W
Opening / closing time:	approx. 4 min
Nominal stroke:	3 mm
Function type:	normally closed
Nominal closing force:	90 N
Connecting cable:	0.8 m / 2x0.5 mm²
Valve position indicator:	2X (at the top and the side)

APPLICATION

Extremely compact design: Can be fitted quickly and comfortably thanks to the slim shape in the area of the fastening nut.

Can be fitted in any position desired: Lateral drainage holes carry off any leakage water that is present from the valve plunger into the open, thus avoiding damage to the drive.

Additional valve monitoring: Two additional viewing windows at the side allow users to visually check the respective valve position with ease; this does not work when mounted in a hanging position.

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
ZB00A-010.100	H9100010	**Operating voltage:** 230 V~, 50 Hz **Max. power consumption:** 70 W **Max. starting current:** approx. 0.3 A	30.60 / I
ZB00A-040.100	H9100000	**Operating voltage:** 24 VDC or 24 VAC **Max. power consumption:** 12 W **Max. starting current:** approx. 0.5 A	30.60 / I

Thanks to their M 30 x 1.5 fastening and their characteristics (normally closed), the actuators are suitable for the following valve and distributor makes: Beulco, Empur, Heimeier, Kamo, Oventrop, Purmo, SBK, SKV, Strawa, Taconova, Watts

Brief description:
The drive features a compact, space-saving design.
The device can be mounted easily thanks to its narrowed shape, especially in the fastening area of the nut.
The connecting cable is not located near the fastening nut. This reduces the probability of contact with equipment carrying hot water.
Since the fastening nut allows continuous screwing onto the thread, by unscrewing the nut by two or three turns, it is possible to open the valve in an electrically de-energised state – something that cannot be done with bayonet couplings and impulse couplings.
Discharged water is dissipated via a draining system. Gaskets are not required thanks to the special design.

The dual position display has the following advantages:
The upper display provides the option of a visual or, in conditions of bad visibility, tactile function test of the drive.
The lower viewing windows allow an additional check to determine whether the valve to be actuated follows the lifting movement of the drive.
At the beginning of the heating period, it can happen off and on that the valve plungers get "stuck". Therefore, with the additional display, it is possible to determine whether the cause lies with the actuator or with the valve in the event the valve does not open. However, that is not possible when mounted in a suspended manner.

ILLUSTRATIONS

Valve actuator

Valve actuator with extended push rod

NOTES
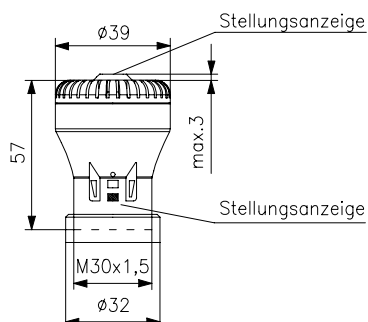
PLANT ENGINEERING

ROBUST AND VERSATILE

ALRE PLANT ENGINEERING.
STABILE SYSTEMS.
ACROSS THE BOARD.

With our devices, you play it safe: they remain fail-safe even in extremely harsh environments and during intensive use and therefore meet the strict requirements of modern industrial plants. Among the various offers in our product range, you can find devices for monitoring humidity, flow and pressure in order to equip things such as supply air systems, green houses or wind tunnels. We developed the new RTKSA universal capillary controller especially for industrial use. Depending on the application, it can be combined with various mounting types and measuring units in order to cover multiple areas. This means more flexibility for technicians and more simplicity for sales in the wholesale sector.

**alre plant engineering:
for perfectly functioning systems.**

APPLICATION
EXAMPLES:

+ Temperature control / safety temperature control, for example, in air ducts, boiler systems, storage tanks, heating coils, burners, pipelines etc.
+ Frost protection for hot water heating coils
+ Temperature and humidity control in control cabinets
+ Humidity control in ventilation and air-conditioning ducts
+ Flow monitoring, for example, in ducts, supply and exhaust air devices of fans, water pipes and oil, cooling and lubrication circuits etc.
+ Pressure monitoring of gaseous media, for example, for filter monitoring, fume hoods, fans, heating coils, low air pressure safety devices and limit controllers

OVERVIEW 172

PLANT ROOM THERMOSTAT

UNIVERSAL CAPILLARY DOUBLE THERMOSTAT

PLANT ENGINEERING OVERVIEW 1

PLANT, CAPILLARY, WET ROOM AND DOUBLE THERMOSTATS FOR INDOOR AND OUTDOOR USE

Groups: **RTKSA-** (100.010, 101,010, 100.110, 101,110) · **JET-** (110 R, 110 RF, 120 R, 120 RF) · **RTKSA-** (114.110, 114.010) · **PTR** (40,000) · **JET-** (110 X … 153 F) · **JMT-** (206 X)

TYPE	100.010	101,010	100.110	101,110	110 R	110 RF	120 R	120 RF	114.110	114.010	40,000	110 X	110 XF	120 XF	120 X	120 XG	130 X	130 XF	130 XG	133 X	133 XF	140 X	140 XF	143 XF	150	150 F	153	153 F	206 X
PAGE	180	180	180	180	191	191	191	191	182	182	183	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	194
DEVICES																													
bimetal											X																		
Plant room thermostat	X	X	X	X	X	X	X	X																					
Capillary thermostat												X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Wet room thermostat											X																		
Double thermostat									X	X																			
CAPILLARY LENGTH																													
Capillary 1.5 m																													X
Capillary 1.8 m												X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	
Capillary 4.5 m																X			X										
CONTROL RANGE																													
−35 to +30 °C					X	X						X	X																
−20 to +30 °C											X																		
−10 to +40 °C	X	X								X																			
0 to 50 °C			X	X					X																				
0 to 60 °C							X	X						X	X	X													
20 to 80 °C																													X
40 to 100 °C																	X	X	X	X	X								
70 to 130 °C																						X	X	X					
100 to 280 °C																									X	X	X	X	
OUTPUT																													
Microswitch (potential-free changeover contact)	1	1	1	1	1	1	1	1	2	2		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
Switching steps	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
SWITCHING POWER																													
NC contact: 16 (2.5) A at 230 V~ / NO contact: 6.3 (2.5) A at 230 V~	X	X	X	X					X	X																			
15 (8) A, 24–250 V~					X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10 (4) A, 250 V~, 50 Hz, heating											X																		
5 (2) A, 250 V~, 50 Hz, cooling											X																		
SUPPLY VOLTAGE																													
none	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
230 V~, 50 Hz											X																		
DEGREE OF PROTECTION																													
IP54	X	X	X	X					X	X																			
IP65					X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MISCELLANEOUS																													
external setting	X		X		X		X					X			X	X	X			X	X	X			X		X		
internal setting		X		X		X		X	2	2	X		X	X				X			X		X	X		X		X	
Temperature controller	X		X		X		X					X					X	X	X		X			X			X		X
Temperature monitor		X		X		X		X	2	2	X			X	X			X		X			X		X		X		
Temperature limiter																				X	X			X		X		X	X

PLANT ENGINEERING OVERVIEW 2

UNIVERSAL CAPILLARY THERMOSTATS / CAPILLARY DOUBLE THERMOSTATS
(FUNCTION WITHOUT SUPPLY VOLTAGE)

TYPE	RTKSA- 000.100	000.200	000.300	001.100	001.200	001.300	001.301	002.310	002.410	003.310	004.310	010.200	013.210	014.210
PAGE	184	184	184	184	184	184	184	184	184	184	184	188	188	188
CONTROL RANGE														
0 to 50 °C	x			x										
0 to 120 °C		x			x							x	x	2
20 to 150 °C			x			x	x	x		x	x		x	
30 to 110 °C									x					
70 to 130 °C												x		
OUTPUT														
Microswitch (potential-free changeover contact)	1	1	1	1	1	1	1	1	1	1	1	2	2	2
SWITCHING POWER														
NC contact: 16 (2.5) A at 230 V~ NO contact TR / TW / STW: 6.3 (2.5) A at 230 V~	x	x	x	x	x	x	x				x	x	x	x
NC contact: 16 (2.5) A at 230 V~ NO contact TB / STB: 2 (0.4) A at 230 V~								x	x	x		x	x	
DEGREE OF PROTECTION														
IP40	x	x	x	x	x	x	x					x	x	x
IP54								x	x	x	x			
MISCELLANEOUS														
Type testing by TÜV in accordance with DIN EN 14597	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Temperature controller	x	x	x									x		
Temperature monitor				x	x	x	x						x	2
Temperature limiter								x	x				x	
Safety temperature limiter										x		x		
Safety temperature monitor											x			
external setting	x	x	x									x		
internal setting				x	x	x	x	x	x	x	x		2	2

PLANT ENGINEERING OVERVIEW 3

AIR HEATER THERMOSTATS
(DUCT ROD SENSORS WITH CAPILLARY SYSTEM, FUNCTION WITHOUT SUPPLY VOLTAGE)

TYPE	JTL-					JTU-					
	2	8	11	8 NR	17 NR	50	1	3	20	5	6
PAGE	202	202	202	202	202	204	204	204	204	204	204
DEVICES											
Duct thermostat						x	x	x	x	x	x
Air heater thermostat	x	x	x	x	x						
CAPILLARY LENGTH											
Capillary 350 mm	x	x		x		x	x	x		x	x
Capillary 1,250 mm			x		x				x		
CONTROL RANGE											
−25 to +65 °C						x					
20 to 70 °C	x	x	x	x	x						
20 to 100 °C							x	x	x		
60 to 140 °C										x	x
70 to 95 °C				x	x						
70 to 100 °C	x	x	x								
100 °C rod fixed				x	x						
OUTPUT											
Microswitch (potential-free changeover contact)	x	x	x	x	x	x	x	x	x	x	x
SWITCHING POWER											
15 (8) A, 24 – 250 V~	x	x	x	x	x	x	x	x	x	x	x
DEGREE OF PROTECTION											
IP40	x	x	x	x	x	x	x	x	x	x	x
MISCELLANEOUS											
Type testing by TÜV in accordance with DIN EN 14597	x	x	x	x	x			x	x		
Temperature monitor	x		x	x	x	x	x			x	
Temperature limiter											x
Safety temperature limiter		x		x	x			x	x		
internal setting	x	x	x	x	x	x	x	x	x	x	x

PLANT ENGINEERING OVERVIEW 4

CONTACT AND FROST PROTECTION THERMOSTATS

Type groups: **ATR** = 83.000, 83.100, 83.001, 83.101 | **JTF-** = 1, 1/12, 1 W, 2, 2 W, 3, 3 W, 4, 5, 21, 21/12, 21 W, 22, 22/12, 25 | **RTKSA-** = 203.000, 203.100, 203.120, 203.200, 203.220, 203.300, 204.000, 204.020, 204.100, 204.200, 204.220, 204.300

TYPE	83.000	83.100	83.001	83.101	1	1/12	1 W	2	2 W	3	3 W	4	5	21	21/12	21 W	22	22/12	25	203.000	203.100	203.120	203.200	203.220	203.300	204.000	204.020	204.100	204.200	204.220	204.300
PAGE	195	195	195	195	199	199	199	199	199	199	199	199	199	200	200	200	200	200	200	197	197	197	197	197	197	197	197	197	197	197	197
DEVICES																															
Contact thermostat	x	x	x	x																											
Frost protection thermostat					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
CAPILLARY LENGTH																															
Capillary 1,800 mm								x	x	x				x									x	x							
Capillary 3,000 mm											x					x	x											x			
Capillary 6,000 mm					x		x					x	x							x	x				x	x	x		x	x	
Capillary 12,000 mm						x									x			x				x									x
OUTPUT																															
Microswitch (potential-free changeover contact)	x	x	x	x	x	x	x	x	x	x	x	x	x	2	2	2	2	2	2	x	x	x	x	x	x	x	x	x	x	x	x
CONTROL RANGE																															
–10 to +12 °C					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x												
–10 to +15 °C																				x	x	x	x	x	x	x	x	x	x	x	x
0 to 60 °C			x	x																											
30 to 90 °C	x	x																													
SWITCHING POWER																															
15 (8) A, 24 – 250 V~					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x												
16 (2) A, 24 – 250 V~	x	x	x	x																											
NC contact: 16 (2.5) A at 230 V~ / NO contact STW: 6.3 (2.5) A at 230 V~ / NO contact STB: 2.0 (0.4) A at 230 V~																				x	x	x	x	x	x	x	x	x	x	x	x
SUPPLY VOLTAGE																															
none	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DEGREE OF PROTECTION																															
IP20	x	x	x	x																											
IP40					x	x		x	x	x		x	x	x	x		x	x	x	x		x	x	x			x	x	x		x
IP65							x				x					x					x					x				x	
MISCELLANEOUS																															
Type testing by TÜV in accordance with DIN EN 14597					x	x	x	x	x	x	x	x	x							x	x	x	x	x	x	x	x	x	x	x	x
Temperature controller	x		x																												
Temperature monitor		x		x	x	x	x			x	x			x	x	x															
Temperature limiter																	x	x													
Safety temperature limiter								x	x			x								x	x	x	x	x	x						
Safety temperature monitor																										x	x	x	x	x	x
external setting	x		x		x		x			x				x		x	x														
internal setting		x		x		x		x	x		x	x	x		x			x	x	x	x	x	x	x	x	x	x	x	x	x	x

PLANT ENGINEERING OVERVIEW 5

ELECTRONIC TEMPERATURE CONTROLLERS, DIGITAL CONTROLLERS / DISPLAYS

TYPE	ITR									ETR	
	79.402	79.404	79.405	79.408	79.503	79.504	79.508	79.600	79.804	77.008-5	77.009-5
PAGE	210	210	210	210	210	210	210	210	210	212	212

DEVICES

Standard or top-hat rail controllers	x	x	x	x	x	x	x	x	x		
Universal controller										x	x

CONTROL RANGE

−50 to +50 °C										x	
−35 to +15 °C	x										
−10 to +40 °C				x			x				
0 to 11 °C					x						
0 to 60 °C		x				x		x			
0 to 100 °C											x
5 to 30 °C								2			
35 to 95 °C			x								

SWITCHING POWER

10 (3) A, 250 V~, make contact	x	x	x	x	x	x	x	x	x		
5 (1.5) A / 250 V~, break contact	x	x	x	x	x	x	x	x	x		
10 (3) A, 250 V~, heating contact										x	x
5 (1) A, 250 V~, cooling contact										x	x

DEGREE OF PROTECTION

IP20	x	x	x	x	x	x	x	x	x		
IP65										x	x

MISCELLANEOUS

Temperature controller	x	x	x	x	x	x	x	x	x		
Temperature monitor										x	x
internal setting										x	x
LED heating (red)	x	x	x	x	x				x	x	x
LED cooling (green)						x	x				
230 V~, 50 Hz	x	x	x	x	x	x	x	x	x	x	x

PLANT ENGINEERING OVERVIEW 6

FLOW MONITORS AND PRESSURE SWITCHES, FLOW AND PRESSURE MONITORING

TYPE	JSL-	JDW-			JDL-					WSERD-		JSF-						JSW-			JPS-				
	1E	3/3Z	5/5Z	10	111	112	115	116	116A	134.446	134.446	3E	4E	1E	1RE	2E	2RE	1/2	3/4	1	1	3	3 B	4	13
PAGE	215	216	216	216	216	216	216	216	216	218	218	219	219	219	219	219	219	222	222	222	224	224	224	224	224
DEVICES																									
Wind indicator relays	X																								
Differential pressure switch		X	X	X	X	X	X	X	X																
Airflow monitors										X	X														
Flow monitors												X	X	X	X	X	X	X	X	X					
Pressure switch switches																					X	X	X	X	X
SENSOR ELEMENT																									
wind indicator	X																								
Sensor rod (hot film anemometer)										X	X														
Pressure sensor (membrane)		X	X	X	X	X	X	X	X												X	X	X	X	X
Paddle												X	X	X	X	X	X	X	X	X					
OUTPUT																									
Microswitch (potential-free changeover contact)	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
Relays (potential-free changeover contact)										X	X														
SWITCHING RANGE																									
0.2 – 10 m / s										X	X														
1 – 8 m / s switch-off value	X																								
Dependent on the tube diameter												X	X	X	X	X	X	X	X	X					
20 – 300 Pa					X																				
20 – 330 Pa		X																							
30 – 500 Pa			X																						
40 – 600 Pa						X																			
100 – 1,000 Pa							X																		
250 – 5,000 Pa								X	X																
400 – 1,600 Pa				X																					
0.3 – 4.0 bar																					X	X	X		X
0.3 – 6.0 bar																								X	
SWITCHING POWER																									
15 (8) A, 24 – 250 V~	X									X	X	X	X	X	X	X	X								
10 (3) A, 24 – 250 V~										X	X														
1.5 (0.4) A, 12 – 250 V~		X	X	X																					
1 (0.2) A, 12 – 24 V AC/DC		X	X	X	X	X	X	X	X																
5 (1) A, 12 – 250 V~					X	X	X	X	X																
5 (1.5) A, 24 – 230 V~																		X	X	X					
2 A (2), 230 V~																					X	X	X	X	X
OPERATING VOLTAGE																									
none	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X
230 V~, 50 Hz										X	X														
24 V~, 50 Hz										X	X														
DEGREE OF PROTECTION																									
IP10																					X	X	X	X	X
IP54		X	X	X	X	X	X	X	X																
IP65	X									X	X	X	X	X	X	X	X	X	X	X					
MISCELLANEOUS																									
Type tested by the TÜV according to the current 100 to 6".												X	X	X	X	X	X								
external setting									X																
internal setting	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

NOW IN A **NEW** DESIGN

THERMOSTATS FOR PLANT ENGINEERING FROM ALRE

alre is proud to present new thermostats for plant engineering (RTKSA) which can be used in a wide range of fields, offering you many application possibilities.

Whether you need a solution for a greenhouse, industrial building or warehouse, the thermostats are suitable for optimum temperature control in many fields.

In combination with various accessories, the **universal controller can operate as a boiler, ventilation or contact thermostat**.

UNIVERSAL CONTROLLER

UNIVERSAL DUAL CONTROLLER

PLANT ROOM CONTROLLER

FROST PROTECTION CONTROLLER

COMBINATIONS WITH ACCESSORIES

+ JZ-29
(MOUNTING SET)

+ IMMERSION SLEEVE
(THK / NTHK)

= **BOILER
THERMOSTAT**

+ JZ-29
(MOUNTING SET)

+ PROTECTION COIL
(SWK)

= **VENTILATION
THERMOSTAT**

+ JZ-31
WORM SCREW
CLAMP

= **CONTACT
THERMOSTAT**

FOR DOUBLE THERMOSTATS, USE THE JZ-30 MOUNTING SET.

PLANT ROOM THERMOSTAT RTKSA
CAPILLARY SYSTEM – EXTERNAL SENSORS

TECHNICAL DATA

Colour:	Anthracite grey (similar to RAL7016), front side transparent
Sensor material:	V4A
Max. sensor temperature:	Top scale value +15%
Max. head temperature:	50 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Operating voltage:	none
Max. switching current:	**NC contact:** 16 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10% **NO contact:** 6.3 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10%
Min. switching current:	Min. 100 mA at 24 V (AC/DC)
Max. switching voltage:	230 VAC 50/60 Hz, 230 VDC
Min. switching voltage:	24 VAC/50 Hz, 24 VDC
Switching element:	microswitch
Switching contact:	toggler, potential-free
Control function:	heating or cooling
Hysteresis:	1.3 K
Electrical connection:	Push-in terminals
Mounting/attachment:	wall mounting
Protection class:	I
Protection rating:	IP54 (optionally IP65)
Safety and EMC:	In accordance with DIN EN 60730 (VDE 0631)
Sensor:	liquid-filled capillary
General features:	scale: degrees Celsius

APPLICATION

RTKSA plant room thermostats were specially developed for use in industrial halls, exhibition halls, air halls and greenhouses. When used as a frost protection controller, the higher tolerances at the end of the scale must be observed.

Type testing by TÜV in accordance with DIN EN 14597

TYPE	ITEM NO.	CONTROL RANGE	HYSTERESIS	FEATURES	EURO/PG
RTKSA-100.010	KA010000	−10 to +40 °C	1.3 K	TR, external setting	97.10/II
RTKSA-101.010	KA010100	−10 to +40 °C	1.3 K	TW, internal setting	97.10/II
RTKSA-100.110	KA010001	0 to +50 °C	1.3 K	TR, external setting	97.50/II
RTKSA-101.110	KA010101	0 to +50 °C	1.3 K	TW, internal setting	97.10/II

TR = temperature controller, TW = temperature monitor

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-33	KA999904	RTKSA seal set, protection rating: IP54	16.70/II

TYPE COMPARISON (OLD/NEW TYPE)

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS
JET-40	0 to +35 °C	1 K	RTKSA-100.010	−10 to +40 °C	1.3 K
JET-40F	0 to +35 °C	1 K	RTKSA-101.010	−10 to +40 °C	1.3 K
JET-41	0 to +70 °C	2 K	RTKSA-100.110	0 to +50 °C	1.3 K
JET-41F	0 to +70 °C	2 K	RTKSA-101.110	0 to +50 °C	1.3 K

TR = temperature controller, TW = temperature monitor

PLANT ROOM THERMOSTAT RTKSA
CAPILLARY SYSTEM – EXTERNAL SENSORS

ILLUSTRATIONS

RTKSA with internal setting

RTKSA

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4   2

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1
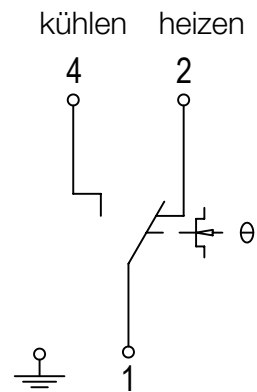
RTKSA-100.010 / RTKSA-100.110

66,7
57,5
85
53
118,9
146,8
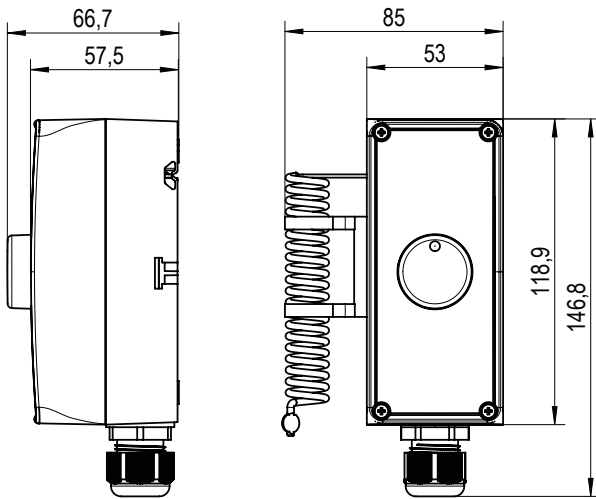
RTKSA-101.010 / RTKSA-101.110
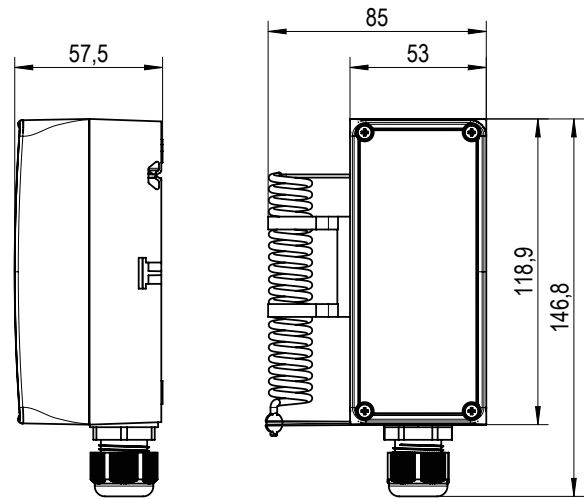
57,5
85
53
118,9
146,8

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PLANT ROOM DOUBLE THERMOSTAT RTKSA
CAPILLARY SYSTEM – EXTERNAL SENSORS – 2 SEPARATE SETTING RANGES

TECHNICAL DATA

Colour:	anthracite grey (similar to RAL 7016), front side transparent
Sensor material:	V4A
Max. sensor temperature:	Top scale value +15%
Max. head temperature:	50 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Operating voltage:	none
Max. switching current:	**NC contact:** 16 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10% **NO contact:** 6.3 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10%
Min. switching current:	Min. 100 mA at 24 V (AC / DC)
Max. switching voltage:	230 VAC 50 / 60 Hz, 230 VDC
Min. switching voltage:	24 VAC / 50 Hz, 24 VDC
Switching element:	microswitch
Switching contact:	2 x togglers, potential-free
Control function:	heating or cooling, heating and cooling
Hysteresis:	1.3 K
Electrical connection:	Push-in terminals
Mounting / attachment:	wall mounting
Protection class:	I
Protection rating:	IP54 (optionally IP65)
Safety and EMC:	In accordance with DIN EN 60730 (VDE 0631)
Sensor:	liquid-filled capillary
General features:	scale: degrees Celsius

APPLICATION

RTKSA plant room thermostats were specially developed for use in industrial halls, exhibition halls, air halls and greenhouses. When used as a frost protection controller, the higher tolerances at the end of the scale must be observed.

2 separate setting ranges, heating and / or cooling.

Type testing by TÜV in accordance with DIN EN 14597

TYPE	ITEM NO.	1. CONTROL RANGE	2. CONTROL RANGE	FEATURES	EURO / PG
RTKSA-114.110	KA011100	0 to +50 °C (TW, internal)	0 to +50 °C (TW, internal)	2 x internal setting	164.50 / II
RTKSA-114.010	KA011101	−10 to +40 °C (TW, internal)	−10 to +40 °C (TW, internal)	2 x internal setting	164.50 / II

TW = Temperature monitor

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-33	KA999904	Seal set RTKSA, 2 units necessary for double thermostats, protection rating: IP54	16.70 / II

TYPE COMPARISON (OLD / NEW TYPE)

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS
JET-30	10 to 45 °C (external) TR 0 to 35 °C (internal) TW	approx. 1 K	RTKSA-114.110	0 to +50 °C (internal) TW 0 to +50 °C (internal) TW	1.3 K
JET-31	10 to +45 °C (internal) TW 0 to +35 °C (internal) TW	approx. 1 K			

TR = temperature controller, TW = temperature monitor

ILLUSTRATIONS

RTKSA
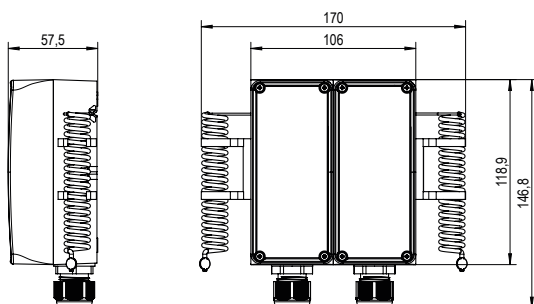
RTKSA (2x)
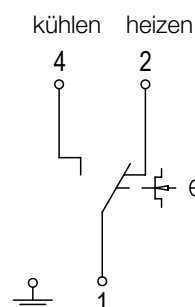
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WET ROOM THERMOSTAT PTR 40
BIMETAL

TECHNICAL DATA

Housing colour:	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
Ambient temperature:	−20 to +60 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Operating voltage:	230 V AC, 50 Hz
Max. switching current:	heating (terminal 3) 10 (4) A, cooling (terminal 1) 5 (2) A
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	230 V AC, 50 Hz
Switching element:	bimetallic contact
Control range:	−20 to +30 °C
Hysteresis:	approx. 2 K at a temperature change of max. 4 K / h
Electrical connection:	screw-type terminals 0.12 mm² – 2.5 mm²
Mounting / attachment:	wall mounting
Protection rating:	IP65
Protection class:	II
Safety and EMC:	according to DIN EN 60730
Sensor:	bimetal
Function type:	TW (temperature monitor)
General features:	thermal feedback, internal setting, scale: degrees Celsius

APPLICATION

Control and monitoring of temperatures of certain open spaces, for example, driveways or damp rooms (greenhouses, sheds, warehouses and basements, garages, etc.).

TYPE	ITEM NO.	FEATURES	EURO/PG
PTR 40.000	A201410	switching contact changeover switch (toggler), control function heating or cooling, viewing window	87.30 / II

ILLUSTRATIONS

PTR 40

PTR 40 …

UNIVERSAL CAPILLARY THERMOSTAT RTKSA
CAPILLARY SYSTEM – **TÜV-TESTED**

TECHNICAL DATA

Colour:	anthracite grey (similar to RAL 7016), front side transparent
Sensor material:	Cu
Sensor length:	2 m
Max. sensor temperature:	Top scale value +15%
Max. head temperature:	80 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Operating voltage:	none
Max. switching current:	**NC contact:** 16 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10% **NO contact TR / TW / STW:** 6.3 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10% **NO contact TB:** 2.0 (0.4) A at 230 VAC +10% 0.25 A at 230 VDC +10%
Min. switching current:	Min. 100 mA at 24 V (AC / DC)
Max. switching voltage:	230 VAC 50 / 60 Hz, 230 VDC
Min. switching voltage:	24 VAC / 50 Hz, 24 VDC
Switching element:	microswitch
Switching contact:	toggler, potential-free
Control range:	heating or cooling
Electrical connection:	Push-in terminals
Mounting / attachment:	Wall mounting or with optional process connection (immersion sleeve, protection coil or mounting set JZ-31 for pipe mounting)
Protection class:	I
Protection rating:	RTKSA-xxx.x0x IP40, RTKSA-xxx.x1x IP54, optional IP65
Safety and EMC:	In accordance with DIN EN 60730 (VDE 0631)
Sensor:	liquid-filled capillary
General features:	scale: degrees Celsius

APPLICATION

This series of devices was specially developed for use in heating technology; in boiler systems or storage tanks; district heating transfer stations and heat transfer systems; in ventilation technology to monitor supply air or as limiters for electrical heating coils, as well as for controlling and monitoring temperatures in pipelines and tanks.

Immersion sleeves, protection coils and mounting sets are not included in the scope of delivery. The JZ-29 mounting set must be used in conjunction with immersion sleeves or protection coils. When used as contact controller (pipe mounting), mounting set JZ-31 must be used, except with models RTKSA-000 100 and RTKSA-001 100.

Type testing by TÜV in accordance with DIN EN 14597

TYPE	ITEM NO.	CONTROL RANGE	HYSTERESIS	SENSOR ØXL	FEATURES	EURO / PG
RTKSA-000.100	KA000000	0 to 50 °C	1.3 K	6x175 mm	TR, external setting	66.20 / II
RTKSA-000.200	KA000001	0 to 120 °C	3 K	6x87 mm	TR, external setting	67.00 / II
RTKSA-000.300	KA000002	20 to 150 °C	9.1 K	6x56 mm	TR, external setting	67.00 / II
RTKSA-001.100	KA000100	0 to 50 °C	1.3 K	6x175 mm	TW, internal setting	69.40 / II
RTKSA-001.200	KA000101	0 to 120 °C	3 K	6x87 mm	TW, internal setting	69.40 / II
RTKSA-001.300	KA000102	20 to 150 °C	9.1 K	6x56 mm	TW, internal setting	69.40 / II
RTKSA-001.301	KA000103	20 to 150 °C	3.3 K	6x82 mm	TW, internal setting	69.40 / II
RTKSA-002.310	KA000201	20 to 150 °C	−10 to −15K*	6x55 mm	TB, internal setting, external reset	81.10 / II
RTKSA-002.410	KA000200	30 to 110 °C	−10 to −15K*	6x72 mm	TB, internal setting, external reset	77.20 / II
RTKSA-003.310	KA000300	20 to 150 °C	−10 to −15K*	6x55 mm	STB, internal setting, external reset	94.40 / II
RTKSA-004.310	KA000400	20 to 150 °C	−10 K	6x55 mm	STW, internal setting	86.50 / II

TR = temperature controller, TW = temperature monitor, TB = temperature limiter, STB = safety temperature limiter, STW = safety temperature monitor
* Manual reset after cooling down by 10 – 15 K (depending on configured setpoint)

UNIVERSAL CAPILLARY THERMOSTAT RTKSA
CAPILLARY SYSTEM – **TÜV-TESTED**

ACCESSORIES	ITEM NO.	LENGTH OF	MATERIAL	DIAMETER IXA**	FEATURES	EURO/PG
THK-2-100	KA969901	100 mm	nickel-plated brass	7.5x10 mm	Immersion sleeve	20.40 / II
THK-2-120	KA969902	120 mm	nickel-plated brass	7.5x10 mm	Immersion sleeve	23.20 / II
THK-2-200	KA969903	200 mm	nickel-plated brass	7.5x10 mm	Immersion sleeve	23.90 / II
THK-2-280	KA969904	280 mm	nickel-plated brass	7.5x10 mm	Immersion sleeve	29.10 / II
THK-2-600	KA969905	600 mm	nickel-plated brass	7.5x10 mm	Immersion sleeve	46.30 / II
NTHK-2-100	KA969906	100 mm	V4A (1.4571)	7.5x10 mm	Immersion sleeve	55.60 / II
NTHK-2-120	KA969907	120 mm	V4A (1.4571)	7.5x10 mm	Immersion sleeve	56.40 / II
NTHK-2-200	KA969908	200 mm	V4A (1.4571)	7.5x10 mm	Immersion sleeve	57.40 / II
NTHK-2-280	KA969909	280 mm	V4A (1.4571)	7.5x10 mm	Immersion sleeve	58.90 / II
THK-2-100 x 17	KA979901	100 mm	nickel-plated brass	14.8x17 mm	Immersion sleeve	29.60 / II
THK-2-200 x 17	KA979902	200 mm	nickel-plated brass	14.8x17 mm	Immersion sleeve	39.70 / II
NTHK-2-100 x 17	KA979903	100 mm	V4 A (1.4571)	14.8x17 mm	Immersion sleeve	57.80 / II
NTHK-2-200 x 17	KA979904	200 mm	V4 A (1.4571)	14.8x17 mm	Immersion sleeve	59.90 / II
SWK-2-100	KA989901	100 mm	steel, nickel-plated	10.5x17 mm	Protection coil with flange plate	18.70 / II
SWK-2-120	KA989902	120 mm	steel, nickel-plated	10.5x17 mm	Protection coil with flange plate	23.20 / II
SWK-2-200	KA989903	200 mm	steel, nickel-plated	10.5x17 mm	Protection coil with flange plate	23.90 / II
SWK-2-280	KA989904	280 mm	steel, nickel-plated	10.5x17 mm	Protection coil with flange plate	29.10 / II

** I = minimum inner diameter / A = nominal outer diameter
IllustrationsSee page 247 for pictures and dimension diagrams for immersion sleeves/protection coils

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-29	KA999901	Mounting set RTKSA for THK/NTHK/SWK individual controllers	3.90 / II
JZ-31	KA999903	Mounting set RTKSA for pipe mounting contact controller (worm screw clamp)	4.90 / II
JZ-33	KA999904	RTKSA seal set, protection rating: IP54	16.70 / II

TYPE COMPARISON (OLD / NEW TYPE)

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS	ACCESSORIES
KR 80.312	fixed at 100 °C	−20 K				THK-2-100 + JZ-29
LR 80.312	fixed at 100 °C	−20 K				SWK-2-100 + JZ-29
KR 80.318	fixed at 100 °C	−20 K				THK-2-200 + JZ-29
LR 80.318	fixed at 100 °C	−20 K	RTKSA-003.310	20 to 150 °C	−10 K	SWK-2-200 + JZ-29
KR 80.309	fixed at 75 °C	−20 K				THK-2-100 + JZ-29
LR 80.309	fixed at 75 °C	−20 K				SWK-2-100 + JZ-29
KR 80.310	fixed at 75 °C	−20 K				THK-2-200 + JZ-29
LR 80.310	fixed at 75 °C	−20 K				SWK-2-200 + JZ-29
KR 80.206	30 to 65 °C	−8 K				THK-2-100 + JZ-29
KR 80.206 IP54	30 to 65 °C	−8 K	RTKSA-002.410	30 to 110 °C	−10 K	THK-2-100 + JZ-29
KR 80.207	60 to 95 °C	−8 K				THK-2-100 + JZ-29
LR 80.207	60 to 95 °C	−8 K				SWK-2-100 + JZ-29
KR 80.208	85 to 120 °C	−8 K				THK-2-100 + JZ-29
KR 80.202	95 to 130 °C	−8 K				THK-2-100 + JZ-29
KR 80.203	95 to 130 °C	−8 K	RTKSA-002.310	20 to 150 °C	−10 K	THK-2-200 + JZ-29
LR 80.203	95 to 130 °C	−8 K				SWK-2-200 + JZ-29
KR 80.203 IP54	95 to 130 °C	−8 K				THK-2-200 + JZ-29

UNIVERSAL CAPILLARY THERMOSTAT RTKSA
CAPILLARY SYSTEM – **TÜV-TESTED**

TYPE COMPARISON (OLD / NEW TYPE)

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS	ACCESSORIES
WR 81.029-1	0 to 35 °C	0.5 – 1 K				-
KR 80.003-1	0 to 35 °C	1 K	RTKSA-000.100	0 to 50 °C	1.3 K	THK-2-200 + JZ-29
LR 80.003-1	0 to 35 °C	1 K				SWK-2-200
WR 81.009-2	0 to 70 °C	1 – 2 K				-
KR 80.035-2	0 to 70 °C	2 K				THK-2-100 + JZ-29
KR 80.027-5	0 to 70 °C	5 K				THK-2-100 + JZ-29
LR 80.027-5	0 to 70 °C	5 K				SWK-2-100 + JZ-29
LR 80.035-2	0 to 70 °C	2 K	RTKSA-000.200	0 to 120 °C	3 K	SWK-2-100 + JZ-29
KR 80.028-2	0 to 70 °C	2 K				THK-2-200 + JZ-29
LR 80.028-2	0 to 70 °C	2 K				SWK-2-200 + JZ-29
KR 80.029-2	0 to 70 °C	2 K				THK-2-280 + JZ-29
KR 80.029-2 V4A	0 to 70 °C	3 K				NTHK-2-280 + JZ-29
LR 80.029-2	0 to 70 °C	2 K				SWK-2-280 + JZ-29
KR 80.011-1 V4A	10 to 45 °C	1 K				NTHK-2-120 + JZ-29
KR 80.009-1 V4A	10 to 45 °C	1 K				NTHK-2-200 + JZ-29
KR 80.000-5	35 to 95 °C	5 K	RTKSA-000.200	0 to 120 °C	3 K	THK-2-100 + JZ-29
KR 80.001-5	35 to 95 °C	5 K				THK-2-200 + JZ-29
KR 80.001-5 V4A	35 to 95 °C	5 K				NTHK-2-200 + JZ-29
KR 80.008-8	40 to 110 °C	8 K				THK-2-100 + JZ-29
KR 80.006-8	50 to 130 °C	8 K	RTKSA-000.300	20 to 150 °C	9.1 K	THK-2-100 + JZ-29
WR 81.101-1	0 to 35 °C	0.5 – 1 K				-
WR 81.129-1	0 to 35 °C	0.5 – 1 K				-
KR 80.108-1	0 to 35 °C	1 K	RTKSA-001.100	0 to 50 °C	1.3 K	-
LR 80.108-1	0 to 35 °C	1 K				-
KR 80.109-1	0 to 35 °C	1 K				THK-2-200 + JZ-29
LR 80.109-1	0 to 35 °C	1 K				SWK-2-200 + JZ-29
WR 81.115-5	0 to 70 °C	4 K				JZ-31
WR 81.109-2	0 to 70 °C	1 – 2 K				-
KR 80.116-2	0 to 70 °C	2 K				THK-2-100 + JZ-29
LR 80.116-2	0 to 70 °C	2 K	RTKSA-001.200	0 to 120 °C	3 K	SWK-2-100 + JZ-29
KR 80.111-3	0 to 80 °C	1 K				THK-2-100 + JZ-29
KR 80.120-1	10 to 45 °C	1 K				THK-2-200 + JZ-29
LR 80.120-1	10 to 45 °C	1 K				SWK-2-200 + JZ-29
KR 80.100-5	35 to 95 °C	5 K				THK-2-100 + JZ-29
KR 80.100-5 IP54	35 to 95 °C	5 K				NTHK-2-100 + JZ-29
KR 80.101-5	35 to 95 °C	5 K	RTKSA-001.301	20 to 150 °C	3.3 K	THK-2-200 + JZ-29
LR 80.101-5	35 to 95 °C	5 K				SWK-2-200 + JZ-29
KR 80.124-5	35 to 95 °C	5 K				THK-2-280 + JZ-29
KR 80.112-5	35 to 95 °C	8 K				THK-2-600 + JZ-29
KR 80.102-8	40 to 110 °C	8 K				THK-2-100 + JZ-29
KR 80.103-8	40 to 110 °C	8 K	RTKSA-001.300	20 to 150 °C	9.1 K	THK-2-200 + JZ-29
WR 81.117-5	50 to 130 °C	4 K				JZ-31
KR 80.106-8	50 to 130 °C	8 K				THK-2-100 + JZ-29

UNIVERSAL CAPILLARY THERMOSTAT RTKSA
CAPILLARY SYSTEM – **TÜV-TESTED**

ILLUSTRATIONS

RTKSA with internal setting

RTKSA with internal setting and external reset

RTKSA TR

RTKSA TB / STB

RTKSA TW / STW

66,7
57,5
53
118,9
146,8

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53
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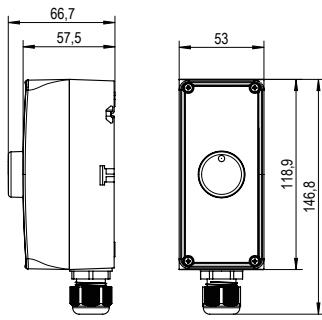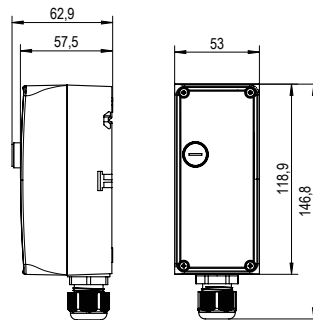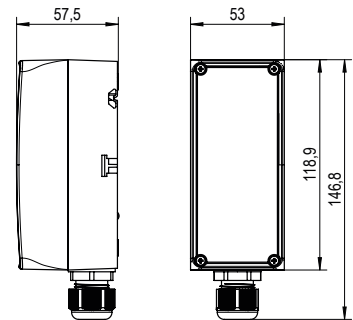
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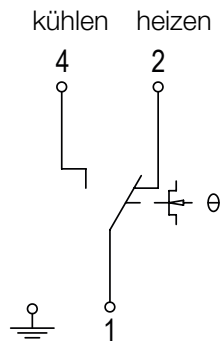
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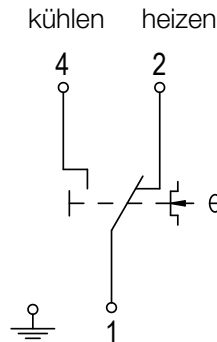
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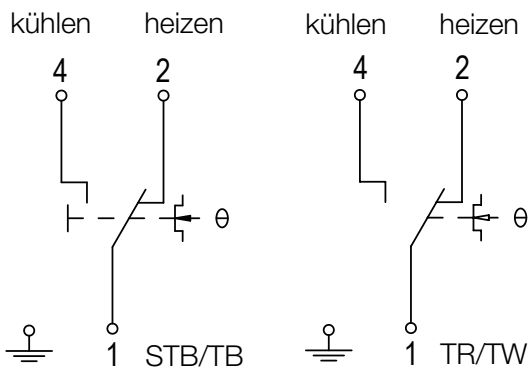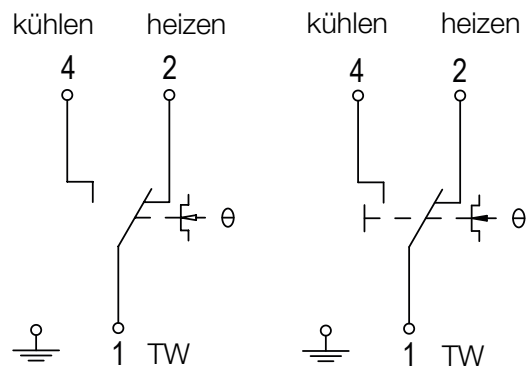
ACCESSORIES

JZ-29

JZ-31

JZ-33

UNIVERSAL CAPILLARY DOUBLE THERMOSTAT RTKSA
CAPILLARY SYSTEM – **TÜV-TESTED**

TECHNICAL DATA

Colour:	**anthracite grey (similar to RAL 7016), front side transparent**
Sensor material:	Cu
Sensor length:	**2 m**
Max. sensor temperature:	**Top scale value +15%**
Max. head temperature:	**80 °C**
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Operating voltage:	**none**
Max. switching current:	**NC contact:**
	16 (2.5) A at 230 VAC +10%
	0.25 A at 230 VDC +10%
	NO contact TR / TW:
	6.3 (2.5) A at 230 VAC +10%
	0.25 A at 230 VDC +10%
	NO contact TB / STB:
	2.0 (0.4) A at 230 VAC +10%
	0.25 A at 230 VDC +10%
Min. switching current:	Min. 100 mA at 24 V (AC / DC)
Max. switching voltage:	230 VAC 50 / 60 Hz, 230 VDC
Min. switching voltage:	24 VAC / 50 Hz, 24 VDC
Switching element:	microswitch
Switching contact:	2 x togglers, potential-free
Control range:	heating or cooling
Electrical connection:	Push-in terminals
Mounting / attachment:	Wall mounting or with optional process connection (immersion sleeve or protection coil)
Protection class:	I
Protection rating:	RTKSA-xxx.x0x IP40
	RTKSA-xxx.x1x IP54
	IP65 (optional)
Safety and EMC:	In accordance with DIN EN 60730 (VDE 0631)
Sensor:	liquid-filled capillary
General features:	scale: degrees Celsius

APPLICATION

This series of devices was specially developed for use in heating technology; in boiler systems or storage tanks; district heating transfer stations and heat transfer systems; in ventilation technology to monitor supply air or as limiters for electrical heating coils, as well as for controlling and monitoring temperatures in pipelines and tanks.

Immersion sleeves, protection coils and mounting set JZ-31 for pipe mounting are not included in the scope of delivery.

Accessory JZ-30 must be used in conjunction with immersion sleeves.

Type testing by TÜV in accordance with DIN EN 14597

TYPE	ITEM NO.	CONTROL RANGE	HYSTERESIS	SENSOR ØXL	FEATURES	EURO/PG
RTKSA-010.200	KA001000	TR: 0 to 120 °C STB: 70 to 130 °C	TR: 3 K STB: -10 to -15 K*	6x87 mm 6x66 mm	TR (external setting), STB (internal setting / external reset)	137.60 / II
RTKSA-013.210	KA001200	TW: 0 to 120 °C TB: 20 to 150 °C	TW: 3 K TB: −10 to −15 K*	6x87 mm 6x55 mm	TW (internal setting) TB (internal setting / external reset)	178.90 / II
RTKSA-014.210	KA001100	TW: 0 to 120 °C TW: 0 to 120 °C	TW: 3 K TW: 3 K	6x87 mm 6x87 mm	2x TW (internal setting)	137.60 / II

TR = temperature controller, TW = temperature monitor, TB = temperature limiter, STB = safety temperature limiter
* Manual reset after cooling down by 10 – 15 K (depending on configured setpoint)

ACCESSORIES	ITEM NO.	LENGTH OF	MATERIAL	DIAMETER IXA**	FEATURES	EURO/PG
THK-2-100x17	KA979901	100 mm	nickel-plated brass	14.8x17 mm	Immersion sleeve	29.60 / II
THK-2-200x17	KA979902	200 mm	nickel-plated brass	14.8x17 mm	Immersion sleeve	39.70 / II
NTHK-2-100x17	KA979903	100 mm	V4A (1.4571)	14.8x17 mm	Immersion sleeve	57.50 / II
NTHK-2-200x17	KA979904	200 mm	V4A (1.4571)	14.8x17 mm	Immersion sleeve	59.90 / II
SWK-2-100	KA989901	100 mm	steel, nickel-plated	10.5x17 mm	Protection coil with flange plate	18.70 / II
SWK-2-200	KA989903	200 mm	steel, nickel-plated	10.5x17 mm	Protection coil with flange plate	23.90 / II

** I = minimum inner diameter / A = nominal outer diameter
See page 247 for pictures and dimension diagrams for immersion sleeves/protection coils

UNIVERSAL CAPILLARY DOUBLE THERMOSTAT RTKSA
CAPILLARY SYSTEM – **TÜV-TESTED**

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-30	KA999902	Mounting set RTKSA for THK / NTHK / SWK double controllers	6.30 / II
JZ-33	KA999904	Seal set RTKSA, 2 units necessary for double thermostats, protection rating: IP54	16.70 / II

TYPE COMPARISON (OLD / NEW TYPE)

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS	ACCESSORIES
KR 85.100-5	TR 35 to 95 °C TW 35 to 95 °C	5 K 5 K				THK-2-100x17 + JZ-30
KR 85.406-2	TW 0 to 70 °C TW 0 to 70 °C	2 K 2 K				THK-2-100x17 + JZ-30
KR 85.101-5	TR 35 to 95 °C TW 35 to 95 °C	5 K 5 K				THK-2-200x17 + JZ-30
KR 85.102-5	TR 35 to 95 °C TW 50 to 130 °C	5 K 8 K	**RTKSA-014.210**	TW: 0 to 120 °C TW: 0 to 120 °C	3 K 3 K	THK-2-100x17 + JZ-30
KR 85.109-2	TR 0 to 70 °C TW 0 to 70 °C	2 K 2 K				THK-2-100x17 + JZ-30
KR 85.400-5	TW 35 to 95 °C TW 35 to 95 °C	5 K 5 K				THK-2-100x17 + JZ-30
KR 85.401-5	TW 35 to 95 °C TW 35 to 95 °C	5 K 5 K				THK-2-200x17 + JZ-30
KR 85.315-5	TR 35 to 95 °C STB fixed at 100 °C	5 K −20 K				THK-2-200x17 + JZ-30
KR 85.311-2	TR 0 to 70 °C STB fixed at 75 °C	2 K −20 K				THK-2-100x17 + JZ-30
KR 85.312-2	TR 0 to 70 °C STB fixed at 75 °C	2 K −20 K	**RTKSA-010.200**	TR: 0 to 120 °C STB: 70 to 130 °C	3 K -10 to -15 K	THK-2-200x17 + JZ-30
KR 85.314-5	TR 35 to 95 °C STB fixed at 100 °C	5 K −20 K				THK-2-100x17 + JZ-30
LR 85.315-5	TR 35 to 95 °C STB fixed at 100 °C	5 K −20 K				SWK-2-200
LR 85.312-2	TR 0 to 70 °C STB fixed at 75 °C	2 K −20 K				SWK-2-200
KR 85.204-8	TR 50 to 130 °C TB 95 to 130 °C	8 K −8 K				THK-2-100x17 + JZ-30
KR 85.230-5	TR 35 to 95 °C TB 95 to 110 °C	5 K 5 K	**RTKSA-013.210**	TW: 0 to 120 °C TB: 20 to 150 °C	3 K -10 to -15 K	THK-2-100x17 + JZ-30
KR 85.207-5	TR 35 to 95 °C TB 85 to 120 °C	5 K −8 K				THK-2-200x17 + JZ-30

UNIVERSAL CAPILLARY DOUBLE THERMOSTAT RTKSA
CAPILLARY SYSTEM – **TÜV-TESTED**

ILLUSTRATIONS

RTKSA-014.210
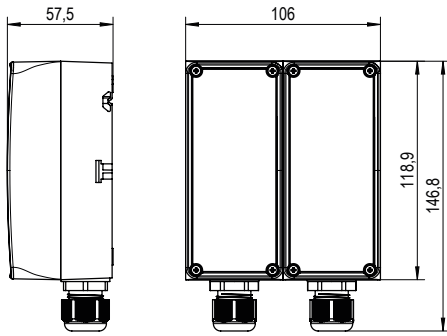
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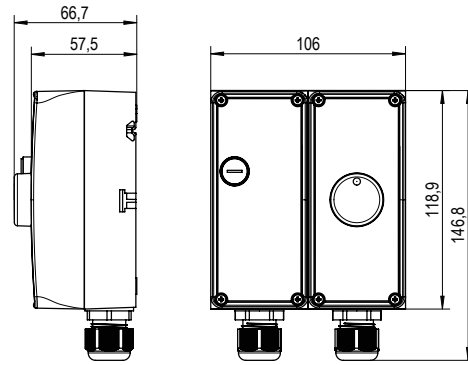
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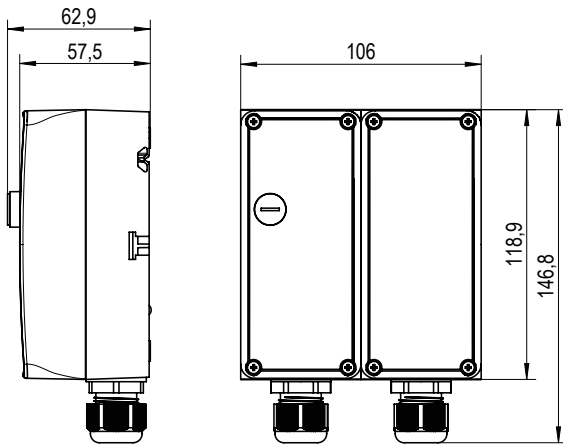
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RTKSA-010.200 / RTKSA-013.210

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4   2   4   2

STB/TB   TR/TW

RTKSA-014.210

kühlen   heizen   kühlen   heizen

4   2   4   2

TW   TW

JZ-30

JZ-33

SINGLE-STAGE PLANT ROOM THERMOSTATS JET-110 / -120
CAPILLARY SYSTEM – EXTERNAL SENSORS – CONFIGURABLE HYSTERESIS

TECHNICAL DATA

Colour:	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Operating voltage:	none
Max. switching current:	10 (4) A
Min. switching current:	150 mA
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	24 VAC, 50 Hz
Switching element:	microswitch
Switching contact:	toggler, potential-free
Control function:	heating or cooling
Electrical connection:	screw-type terminals
Mounting / attachment:	wall mounting
Protection class:	I
Protection rating:	IP65
Safety and EMC:	according to DIN EN 60730
Sensor:	liquid-filled capillary
Sensor material:	Cu
General features:	scale: degrees Celsius

APPLICATION

Control or monitoring of the temperature in the industrial domain in a non-aggressive environment, for example, for controlling heating or cooling systems in greenhouses, industrial and sports halls, air-inflated domes, cold storage and refrigeration rooms.

The JET-110 RF is particularly suitable as an external thermostat.

For successor types for JET-4x and JET-4x F see pageSeite 180 (plant room thermostat RTKSA)

TYPE	ITEM NO.	CONTROL RANGE	MAX. SENSOR TEMPERATURE	HYSTERESIS (APPROX.)	AMBIENT TEMPERATURE	FEATURES	EURO/PG
JET-110 R	JA045100	−35 to +30 °C	35 °C	2 – 20 K adjustable	−35 to +35 °C	External setting with range restriction, TR	156.20 / II
JET-110 RF	JA045200	−35 to +30 °C	35 °C	2 – 20 K adjustable	−35 to +35 °C	Internal setting with viewing window, TW	156.90 / II
JET-120 R	JA046100	0 to 60 °C	70 °C	2 – 20 K adjustable	−35 to +70 °C	External setting with range restriction, TR	156.20 / II
JET-120 RF	JA046200	0 to 60 °C	70 °C	2 – 20 K adjustable	−35 to +70 °C	Internal setting with viewing window, TW	157.00 / II

TR = temperature controller, TW = temperature monitor

ILLUSTRATIONS

JET-1x0 RF

JET-1.
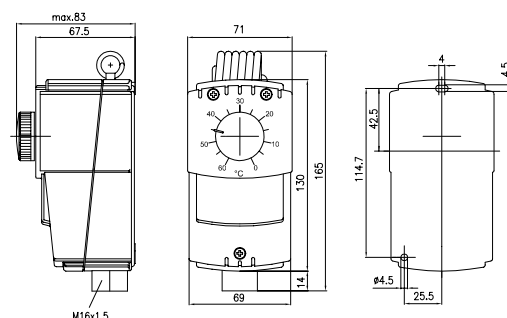
JET-1.
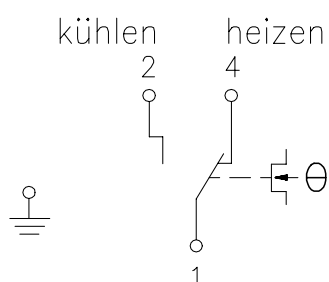
SINGLE-STAGE CAPILLARY THERMOSTATS JET-1

TECHNICAL DATA

Housing colour:	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
Sensor material:	Cu (capillaries made from V2A)
Capillary length:	1.8 m (for types with 'G' in the type specification: 4.5 m)
Ambient temperature:	−20 to +55 °C
Max. sensor temperature:	top scale value +15%
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Operating voltage:	none
Max. switching current:	15 (8) A
Min. switching current:	150 mA
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	24 VAC, 50 Hz
Switching element:	microswitch
Switching contact:	toggler, potential-free
Electrical connection:	screw-type terminals
Mounting / attachment:	wall mounting
Protection rating:	IP65
Protection class:	I
Safety and EMC:	according to DIN EN 60730
Sensor:	liquid-filled capillary
General features:	scale: degrees Celsius, mechanical range restriction when external setting is used

APPLICATION

Monitoring or control of temperatures of non-aggressive, liquid and gaseous media. Particularly suitable for wall mounting. The SW-200-12 protecting coil is to be used for temperature control of non-aggressive gases in ducts; for temperature control in non-aggressive fluids, use the TH immersion sleeve, and in aggressive fluids, the NTH immersion sleeve.

Immersion sleeves or protection coils are not a part of the scope of delivery (see 'Accessories / Miscellaneous' section).

TYPE	ITEM NO.	CONTROL RANGE	HYSTERESIS ADJUSTABLE (APPROX.)	SENSOR AXL	FEATURES	EURO / PG
JET-110X	JA040100	−35 to +30 °C	2 – 20 K	9.6x122 mm	external setting / TR*	154.10 / II
JET-110XF	JA040200	−35 to +30 °C	2 – 20 K	9.6x122 mm	internal setting / TW*	155.20 / II
JET-120X	JA041100	0 to 60 °C	2 – 20 K	9.6x122 mm	external setting / TR*	154.70 / II
JET-120XG	JA041101	0 to 60 °C	2 – 20 K	9.6x122 mm	external setting / TR*	176.20 / II
JET-120XF	JA041200	0 to 60 °C	2 – 20 K	9.6x122 mm	internal setting / TW*	154.70 / II
JET-130X	JA042100	40 to 100 °C	2 – 20 K	9.6x122 mm	external setting / TR*	154.90 / II
JET-130XG	JA042101	40 to 100 °C	2 – 20 K	9.6x122 mm	external setting / TR*	179.20 / II
JET-130XF	JA042200	40 to 100 °C	2 – 20 K	9.6x122 mm	internal setting / TW*	155.50 / II
JET-133X	JA042300	40 to 100 °C		9.6x122 mm	external setting / TB**	160.30 / II
JET-133XF	JA042400	40 to 100 °C		9.6x122 mm	internal setting / TB**	161.30 / II
JET-140X	JA043100	70 to 130 °C	2 – 20 K	9.6x122 mm	external setting / TR*	158.60 / II
JET-140XF	JA043200	70 to 130 °C	2 – 20 K	9.6x122 mm	internal setting / TW*	159.20 / II
JET-143XF	JA043400	70 to 130 °C		9.6x122 mm	internal setting / TB**	165.10 / II
JET-150	JA044100	100 to 280 °C	8 – 50 K	6x80 mm	external setting / TR*	154.60 / II
JET-150F	JA044200	100 to 280 °C	8 – 50 K	6x80 mm	internal setting / TW*	155.20 / II
JET-153	JA044300	100 to 280 °C		6x80 mm	external setting / TB**	160.30 / II
JET-153F	JA044400	100 to 280 °C		6x80 mm	internal setting / TB**	161.40 / II

TR = temperature controller, TW = temperature monitor, TB = temperature limiter

*   Control function heating or cooling
** Control function heating or cooling, locks when temperature rises, manual reset after temperature fall of at least 8 K

ACCESSORIES

Immersion sleeves for types with 'X' in the type specification: TH / NTH-140 see Seite 248
Immersion sleeves for types without 'X' in the type specification: TH / NTH-100 / 200 / 280 see Seite 248
Protection coil for all types: SW-200-12 see Seite 246

SINGLE-STAGE CAPILLARY THERMOSTATS JET-1

ILLUSTRATIONS

Temperature monitor (TW)

Temperature limiter (TB)

Temperature controller (TR)

TR / TW

kühlen   heizen

2   4

1

TB

kühlen   heizen

2   4

1
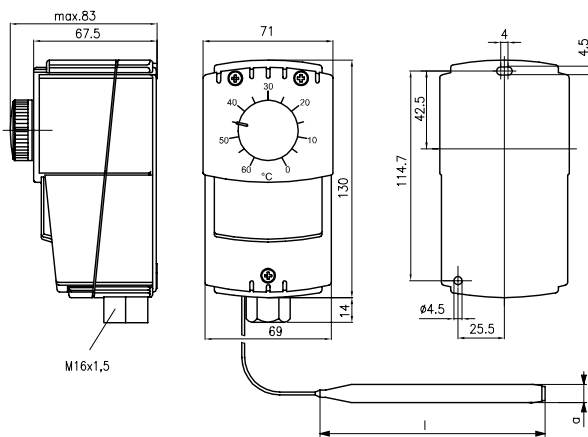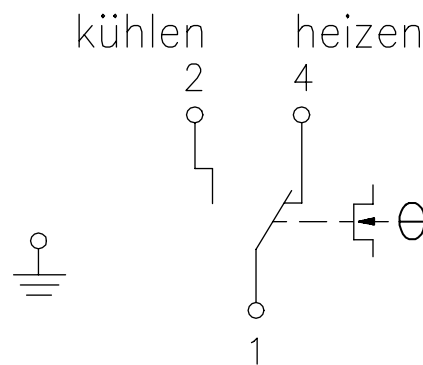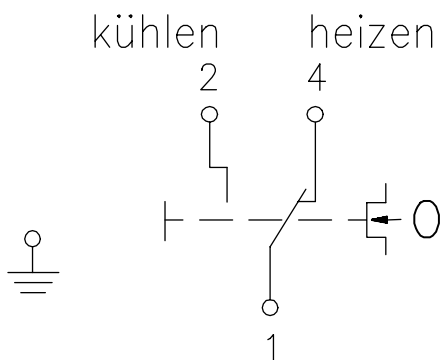
MULTI-STAGE CAPILLARY THERMOSTAT JMT-206 X
2 STAGES

TECHNICAL DATA

Housing colour:	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
Sensor material:	Cu
Capillary length:	1.5 m
Ambient temperature:	−15 to +55 °C
Max. sensor temperature:	top scale value +15%
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Operating voltage:	none
Max. switching current:	15 (8) A
Min. switching current:	150 mA
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	24 VAC, 50 Hz
Switching element:	microswitch
Switching contact:	2 x togglers, potential-free
Control function:	2-stage heating, 2-stage cooling, heating or cooling with neutral zone
Hysteresis between the stages:	approx. 1 – 7 K, adjustable
Electrical connection:	screw-type terminals
Mounting / attachment:	wall mounting
Protection rating:	IP65
Protection class:	I
Safety and EMC:	according to DIN EN 60730
Sensor:	liquid-filled capillary
General features:	scale: degrees Celsius

APPLICATION

Multi-stage control of the temperature of liquid or gaseous media, e.g., for activating two-stage burners or heating registers.

The SW-200-12 protecting coil is to be used for temperature control of non-aggressive gases in ducts; for temperature control in non-aggressive fluids, use the TH immersion sleeve, and in aggressive fluids, the NTH immersion sleeve.

Immersion sleeves or protection coils are not a part of the scope of delivery (see 'Accessories / Miscellaneous' section).

TYPE	ITEM NO.	CONTROL RANGE	HYSTERESIS IN THE STAGE (APPROX.)	SENSOR AXL	FEATURES	EURO / PG
JMT-206 X	E6060340	20 to 80 °C	1 K	9.6x122 mm	External setting, TR	214.90 / II

TR = Temperature controller

ACCESSORIES

Immersion sleeves TH-140 / NTH-140 (see Seite 248), protection coil SW-200-12 (see Seite 246)

ILLUSTRATIONS

JMT-2..
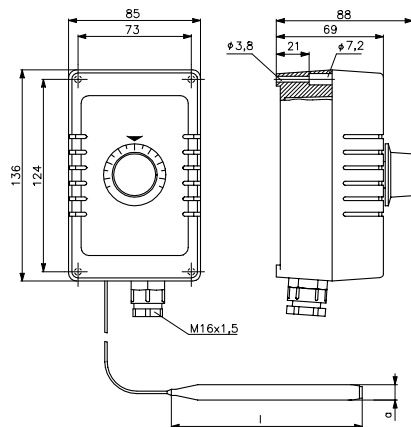
JMT-2..
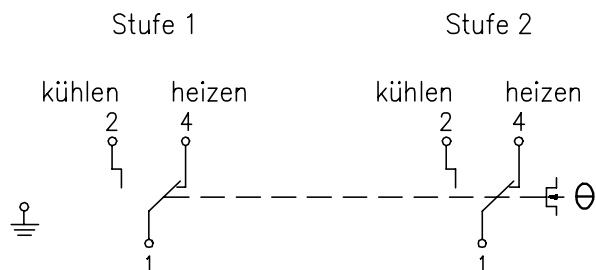
CONTACT THERMOSTATS ATR 83
CAPILLARY SYSTEM

TECHNICAL DATA

Housing colour:	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
Sensor material:	Cu
Ambient temperature:	0 to 80 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Operating voltage:	none
Max. switching current:	16 (2) A
Min. switching current:	150 mA
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	24 VAC, 50 Hz
Switching element:	microswitch
Switching contact:	toggler, potential-free
Control function:	heating or cooling
Hysteresis:	approx. 4 K
Electrical connection:	screw-type terminals
Mounting / attachment:	on pipe by means of a cable tie (450x8.9 mm, easy to remove, heat-resistant up to 105 °C)
Protection class:	I
Safety and EMC:	according to DIN EN 60730
Sensor:	liquid-filled capillary
General features:	scale: degrees Celsius
Scope of delivery:	Controller, cable ties

APPLICATION

Control or monitoring of temperatures at heat registers, pipelines or tanks, for example, temperature-dependent pump control or control of motor valves.

TYPE	ITEM NO.	CONTROL RANGE	MAX. SENSOR TEMPERATURE	FEATURES	EURO / PG
ATR 83.000	C1810492	30 to 90 °C	100 °C	external setting, TR, IP20	45.50 / II
ATR 83.100	C1810493	30 to 90 °C	100 °C	internal setting, TW, IP20	41.70 / II
ATR 83.001	C1810494	0 to 60 °C	80 °C	external setting, TR, IP20	45.50 / II
ATR 83.101	C1810495	0 to 60 °C	80 °C	internal setting, TW, IP20	41.70 / II

TR = temperature controller, TW = temperature monitor

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
ATRS-1	C1809518	Temperature determination set for ATR with external setting (ATR 83.000, ATR 83.001)	2.70 / II
WP-01	G9990180	heat conduction paste 2 ml	6.60 / II

ILLUSTRATIONS

ATR 83. …

ATR 83. …

FROST PROTECTION THERMOSTAT RTKSA
CAPILLARY SYSTEM – **TÜV-TESTED**

TECHNICAL DATA

Colour:	Anthracite grey (similar to RAL 7016), front side transparent
Sensor material:	Cu
Max. sensor temperature:	120 °C
Max. head temperature:	80 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Operating voltage:	none
Max. switching current:	**NC contact:** 16 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10% **NO contact STW:** 6.3 (2.5) A at 230 VAC +10% 0.25 A at 230 VDC +10% **NO contact STB:** 2.0 (0.4) A at 230 VAC +10% 0.25 A at 230 VDC +10%
Min. switching current:	Min. 100 mA at 24 V (AC/DC)
Max. switching voltage:	230 VAC 50/60 Hz, 230 VDC
Min. switching voltage:	24 VAC/50 Hz, 24 VDC
Switching element:	microswitch
Switching contact:	toggler, potential-free
Control range:	−10 to +15 °C
Electrical connection:	Push-in terminals
Mounting/attachment:	Wall mounting; controller housing must be fitted in such a way that the ambient temperature is at least 2 K higher than the setpoint.
Protection class:	I (including switch head and Cu capillary up to 4000 mm)
Safety and EMC:	in accordance with DIN EN 60730 (VDE 0631)
Sensor:	Liquid-filled capillary, active over its entire length (except RTKSA-203.000, RTKSA-204.000, RTKSA-204.020)
General features:	scale: degrees Celsius

APPLICATION

The RTKSA frost protection thermostat was designed especially for ensuring air or water-exposed frost protection for hot-water heating coils and heat exchangers in ventilation, heating or air conditioning systems.
The capillaries, except RTKSA-203.000/RTKSA-204.000/RTKSA-204.020, are active along their entire length. The device actuates when the minimum response length of the capillary (at 3 m: 15 cm, at 6 m: 30 cm, at 12 m: 40 cm) reaches the set scale value.

If a sensor rupture occurs, contact 1 – 2 is permanently opened and contact 1 – 4 is permanently closed in the STB/STW application. Unlocking is no longer possible with STB.

Air-exposed application:
For the frost protection of heating coils (except RTKSA-203.000/RTKSA-204.000/RTKSA-204.020) the capillaries are braced in front of the heating coil to be protected using mounting brackets. Mounting brackets JZ-05/6 M (metal) or JZ-05/6 K (plastic) should be used for this purpose.

The RTKSA-203.000/RTKSA-204.000/RTKSA-204.020 types can be used in conjunction with the SWK-2-xxx protection coils to measure the temperature of non-aggressive gases in the duct.

Water-exposed application:
The RTKSA-203.000/RTKSA-204.000/RTKSA-204.020 types can be used in conjunction with the TH-140 immersion sleeves for temperature measurement in non-aggressive fluids and in conjunction with the NTH-140 immersion sleeves in aggressive fluids.

Note:
Mounting flanges, immersion sleeves and protecting coils are not part of the delivery scope and must be ordered separately as accessories.

Type testing by TÜV in accordance with DIN EN 14597

FROST PROTECTION THERMOSTAT RTKSA
CAPILLARY SYSTEM

TYPE	ITEM NO.	CAPILLARY LENGTH	DEGREE OF PRO-TECTION	HYSTERESIS	FEATURES	EURO/PG
RTKSA-203.000	KA020300	1.8 m	IP40	+3 K*	STB, internal setting, external reset, sensor dimensions: 9.5x98 mm, also for use in water-exposed applications	118.00/II
RTKSA-203.100	KA020301	3 m	IP40	+3 K*	STB, internal setting, external reset	114.50/II
RTKSA-203.120	KA020302	3 m	IP65	+3 K*	STB, internal setting, external reset	169.00/II
RTKSA-203.200	KA020304	6 m	IP40	+3 K*	STB, internal setting, external reset	130.00/II
RTKSA-203.220	KA020303	6 m	IP65	+3 K*	STB, internal setting, external reset	159.30/II
RTKSA-203.300	KA020305	12 m	IP40	+3 K*	STB, internal setting, external reset	182.30/II
RTKSA-204.000	KA020400	1.8 m	IP40	1.5 K	STW, internal setting, Sensor dimensions: 9.5x98 mm, also for use in water-exposed applications	97.50/II
RTKSA-204.020	KA020401	1.8 m	IP65	1.5 K	STW, internal setting, Sensor dimensions: 9.5x98 mm, also for use in water-exposed applications	163.90/II
RTKSA-204.100	KA020402	3 m	IP40	1.5 K	STW, internal setting	101.90/II
RTKSA-204.200	KA020403	6 m	IP40	1.5 K	STW, internal setting	109.60/II
RTKSA-204.220	KA020404	6 m	IP65	1.5 K	STW, internal setting	168.80/II
RTKSA-204.300	KA020405	12 m	IP40	1.5 K	STW, internal setting	137.40/II

STB = safety temperature limiter, STW = safety temperature monitor
*Manual reset after heating by approx. 3 K

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-05/6 K	C1809536	1 set of mounting brackets (6 pieces) for frost protection thermostat RTKSA/JTF, made of plastic (max. 145 °C)	13.00/II
JZ-05/6 M	C1809474	1 set of mounting brackets (6 pieces) for frost protection thermostat RTKSA/JTF, made of metal	13.90/II
JZ-05/1 M	C1809462	Single mounting bracket for frost protection thermostat RTKSA/JTF, made of metal	3.00/II
JZ-29	KA999901	Mounting set for RTKSA THK/NTHK/SWK individual controllers	3.90/II
JZ-30	KA999902	Mounting set for RTKSA THK/NTHK/SWK double thermostat	6.30/II
JZ-33	KA999904	RTKSA seal set, protection rating: IP54	16.70/II

ACCESSORIES	ITEM NO.	LENGTH OF	MATERIAL	DIAMETER IXA**	FEATURES	EURO/PG
TH-140	C1809409	140 mm	nickel-plated brass	10x12 mm	Immersion sleeve	27.10/II
NTH-140	C1809435	140 mm	V4A (1.4571)	10x12 mm	Immersion sleeve	57.40/II
THK-2-100x17	KA979901	100 mm	nickel-plated brass	14.8x17 mm	Immersion sleeve	29.60/II
THK-2-200x17	KA979902	200 mm	nickel-plated brass	14.8x17 mm	Immersion sleeve	39.70/II
NTHK-2-100x17	KA979903	100 mm	V4A (1.4571)	14.8x17 mm	Immersion sleeve	57.80/II
NTHK-2-200x17	KA979904	200 mm	V4A (1.4571)	14.8x17 mm	Immersion sleeve	59.90/II
SWK-2-100	KA989901	100 mm	steel, nickel-plated	10.5x17 mm	Protection coil with flange plate	18.70/II
SWK-2-200	KA989903	200 mm	steel, nickel-plated	10.5x17 mm	Protection coil with flange plate	23.90/II

** I = minimum inner diameter / A = nominal outer diameter
See page 247 for pictures and dimension diagrams for immersion sleeves/protection coils

FROST PROTECTION THERMOSTAT RTKSA
CAPILLARY SYSTEM

TYPE COMPARISON (OLD / NEW TYPE)

OLD ALRE TYPES	CAPILLARY LENGTH	GENERAL FEATURES	NEW ALRE TYPES	CAPILLARY LENGTH	GENERAL FEATURES
JTF-101	6 m	Protection rating: IP54 Hysteresis: approx. 1 K Control range: −8 to +8 °C Tmax sensor: 150 °C	RTKSA-204.200	6 m	Protection rating: IP40 Hysteresis: approx. 1.5 K Control range: −10 to +15 °C Tmax sensor: 120 °C
JTF-103	1.8 m		RTKSA-204.000	1.8 m	
JTF-105	3 m		RTKSA-204.100	3 m	
JTF-112	12 m		RTKSA-204.300	12 m	

ILLUSTRATIONS

RTKSA-203.xxx
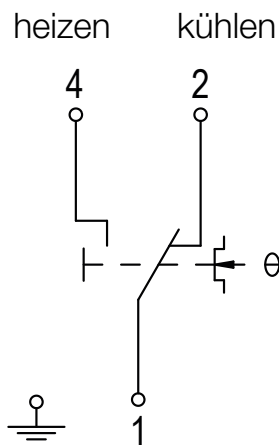
RTKSA-204.xxx
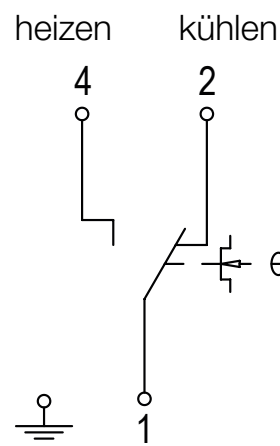
RTKSA-203.xxx
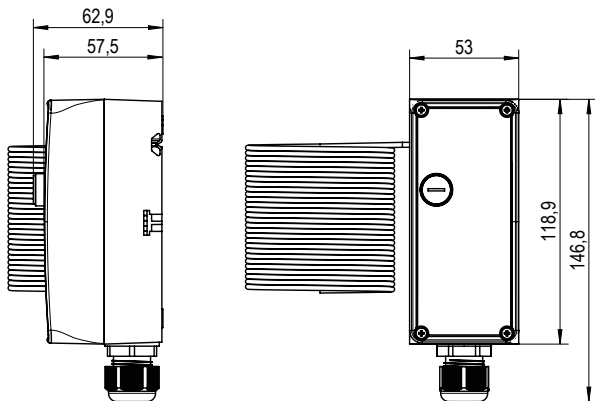
RTKSA-204.xxx
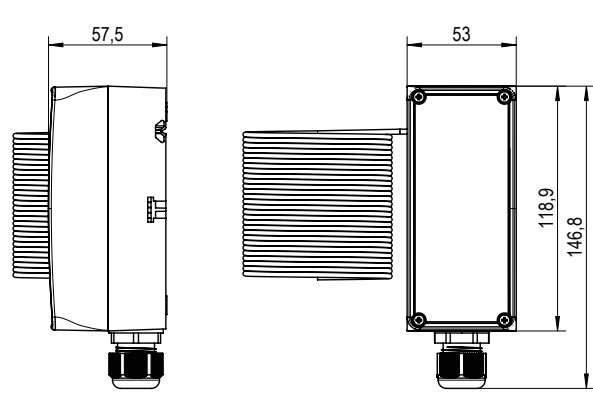
JZ-30

Scan the QR code now and watch the 'New thermostats in plant engineering' product film. More information at a glance.

FROST PROTECTION THERMOSTAT JTF-1 – 25
CAPILLARY SYSTEM – 1 OR 2 STAGES – **TÜV-TESTED** – SWITCHING

JTF

JTF-..W

JTF

TECHNICAL DATA

Housing colour:	grey
Sensor material:	Cu
Ambient temperature	–10 to +55 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Max. sensor temperature:	200 °C
Operating voltage:	none
Max. switching current:	15 (8) A
Min. switching current:	150 mA
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	24 VAC, 50 Hz
Switching element:	microswitch
Switching contact:	toggler, potential-free
Control range:	–10 to +12 °C
Electrical connection:	screw-type terminals
Mounting / attachment:	wall mounting, controller housing must be fitted in such a way that it is not subjected to any temperature that is less than the scale value that has been set
Protection class:	I
Safety and EMC:	according to DIN EN 60730
Sensor:	gas-filled capillary, active over its entire length (except for JTF-3, JTF-3 W und JTF-4)
General features:	intrinsic safety, scale: degrees Celsius

Note:
Mounting flanges, immersion sleeves and protecting coils are not part of the delivery scope and must be ordered separately as accessories.

Type testing by TÜV in accordance with DIN EN 14597

APPLICATION

Securing hot water registers against freezing. The frost protection thermostats JTF-21 to JTF-25 have 2 switch outputs that allow for intervention in the system before the critical point is reached. All the devices are intrinsically safe and offer a sealable setpoint configuration.

The capillaries, with the exception of JTF-3 / -4, are active over the entire length. The device gets actuated when about 30 cm of the capillary (or approx. 60 cm capillary in the case of 12-m variants) reach the defined value.

JTF-1 to -25:
For temperature measurement of non-aggressive gases. The mounting brackets JZ-05 / 6 M (metal) or JZ-05 / 6 K (plastic)should be used for bracing the capillaries against the heat register.

JTF-3 / -4 (additional application):
The SW-200-12 protecting coil is to be used for temperature measurement of non-aggressive gases in the duct; for temperature measurement in non-aggressive fluids, the TH-140 immersion sleeve is to be used, and in aggressive fluids, the NTH-140 immersion sleeve.

TYPE	ITEM NO.	CAPILLARY LENGTH	FEATURES	EURO/PG
1-STAGE				
JTF-1 *	E6090301	6.0 m	external setting, TR, IP40, hysteresis approx. 1 K	118.20 / II
JTF-1 / 12 *	E6090328	12.0 m	external setting, TR, IP40, hysteresis approx. 1 K	202.30 / II
JTF-1 W *	E6090014	6.0 m	internal setting, TW, IP65, hysteresis approx. 1 K	181.00 / II
JTF-2 **	E6090308	6.0 m	external setting, external reset, TB, IP 40, hysteresis: manual reset after temperature rise of approx. 4 K	134.40 / II
JTF-2 W **	E6090287	6.0 m	Internal setting, internal reset, TB, IP65, Hysteresis: manual reset after temperature rise of approx. 4 K	197.40 / II
JTF-3 *	E6090309	1.8 m	external setting, TR, IP 40, hysteresis approx. 1 K, sensor dimensions: 9.5x76 mm, also for use in applications exposed to water	113.60 / II
JTF-3 W *	E6090065	1.8 m	internal setting, TW, IP 65, hysteresis approx. 1 K, sensor dimensions: 9.5x76 mm, also for use in applications exposed to water	176.10 / II
JTF-4 **	E6090310	1.8 m	external setting, external reset, TB, IP 40, hysteresis: manual reset after temperature rise of approx. 4 K, sensor dimensions: 9.5x76 mm, also for use in applications exposed to water	127.80 / II
JTF-5 *	E6090311	3.0 m	external setting, TR, IP40, hysteresis approx. 1 K	114.90 / II

FROST PROTECTION THERMOSTAT JTF-1 – 25
CAPILLARY SYSTEM – 1 OR 2 STAGES – **TÜV-TESTED** – SWITCHING

TYPE	ITEM NO.	CAPILLARY LENGTH	FEATURES	EURO / PG
2-STAGE: 1. STAGE EMITS A SIGNAL 5 K BEFORE THE SWITCH-OFF POINT				
JTF-21 ***	E6090320	6.0 m	external setting, TR, IP40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	162.50 / II
JTF-21 / 12 ***	E6090330	12.0 m	external setting, TR, IP40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	282.00 / II
JTF-21 W ***	E6090283	6.0 m	internal setting, TW, IP65, hysteresis in the stage approx. 1K, hysteresis between the stages approx. 5 K	224.60 / II
JTF-22 ****	E6090322	6.0 m	external setting, external reset, TB, IP40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	172.50 / II
JTF-22 / 12 ****	E6090331	12.0 m	external setting, external reset, TB, IP40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	292.00 / II
JTF-25 ***	E6090324	3.0 m	external setting, TR, IP40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	159.00 / II

TR = temperature controller, TW = temperature monitor, TB = temperature limiter

*	Control function heating or cooling
**	Control function heating or cooling, locked when the temperature is dropping
***	Control function heating or cooling, 1st stage emits a signal 5 K before the switch-off signal
****	Control function heating or cooling, 1st stage emits a signal 5 K before the switch-off signal, locks at dropping temperature (manual reset after temperature rise of approx. 4 K)

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-04	E6160133	Capillary tube leadthrough for air ducts with 30-cm protective hose	13.80 / II
JZ-05 / 6 K	C1809536	1 set of mounting brackets (6 pieces) for frost protection thermostat JTF, made of plastic (max. 145 °C)	13.00 / II
JZ-05 / 6 M	C1809474	1 set of mounting brackets (6 pieces) for frost protection thermostat JTF, made of metal	13.90 / II
JZ-05 / 1 M	C1809462	Single mounting bracket for frost protection thermostat JTF, made of metal	3.00 / II
JZ-07	E6160145	mounting bracket for frost protection thermostat JTF	6.10 / II
TH-140	C1809409	immersion sleeve for JTF-3, JTF-4; material nickel-plated brass	27.10 / II
NTH-140	C1809435	immersion sleeve for JTF-3, JTF-4; material V4A (1.4571)	57.40 / II
SW-200-12	C1809220	protecting coil for JTF-3, JTF-4 to attach capillary in the air duct; made of nickel-plated steel	31.10 / II

ILLUSTRATIONS
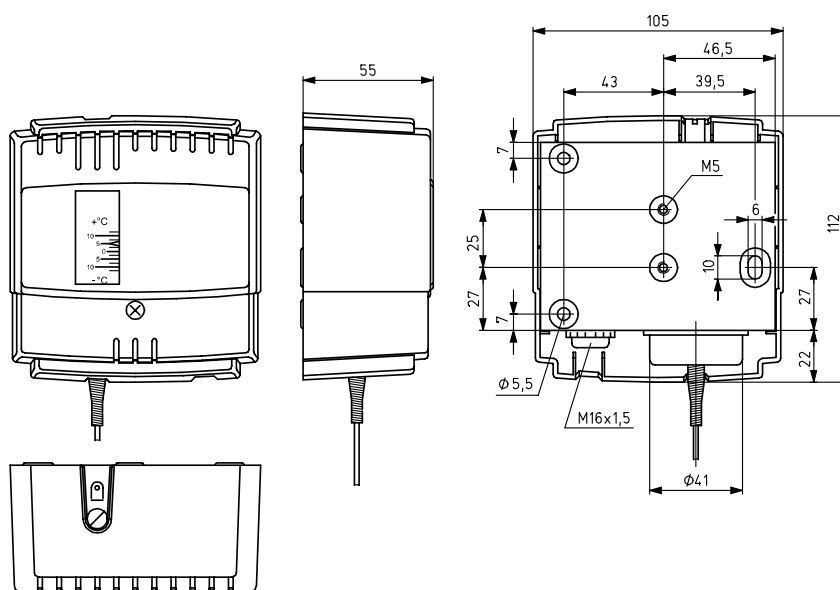
FROST PROTECTION THERMOSTAT JTF-1–25
CAPILLARY SYSTEM – 1 OR 2 STAGES – **TÜV-TESTED** – SWITCHING

ILLUSTRATIONS

JTF-1 / -3 / -5
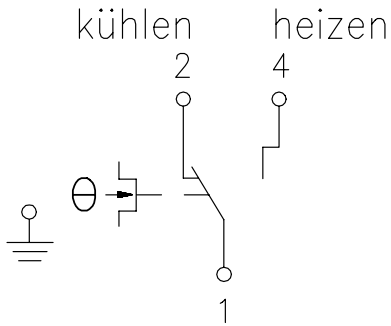
JTF-2 / -4
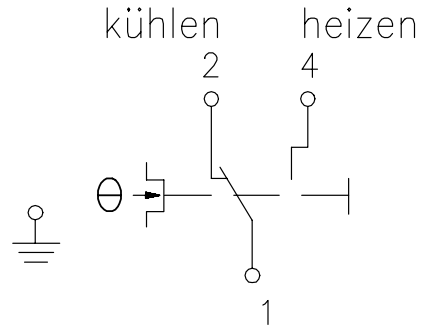
JTF-21 / -25
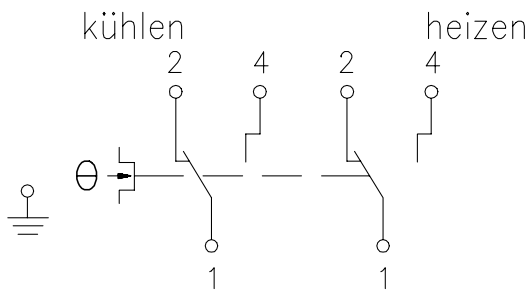
JTF-22
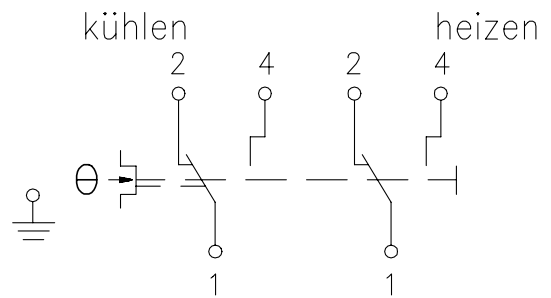
JTF- .. W
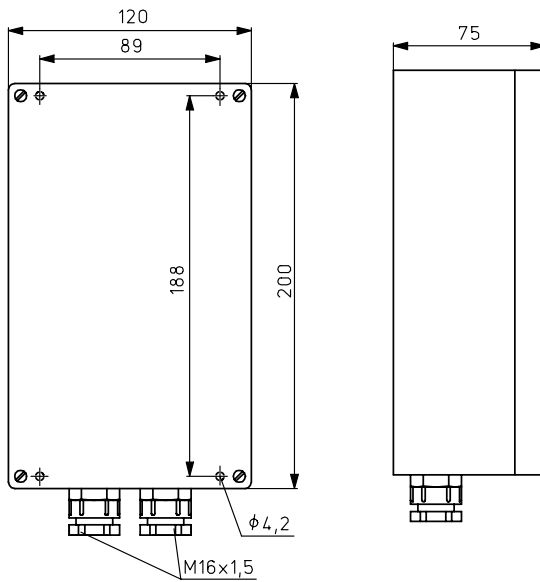
AIR HEATER THERMOSTAT JTL-2 ... -11 / JTL-8 NR ... -17 NR
CAPILLARY SYSTEM – 2 FUNCTIONS OR 3 FUNCTIONS – **TÜV-TESTED**

TECHNICAL DATA

Housing colour:	grey
Sensor material:	Cu
Ambient temperature:	−15 to +80 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Max. sensor temperature:	200 °C
Operating voltage:	none
Max. switching current:	15 (8) A
Min. switching current:	150 mA
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	24 VAC, 50 Hz
Switching element:	microswitch, toggler, potential-free
Control function:	heating or cooling
Control range (fan):	20 to 70 °C
Hysteresis (fan):	adjustable approx. 8 – 30 K
Electrical connection:	screw-type terminals
Mounting / attachment:	mounting on air duct
Protection rating:	IP20
Protection class:	I
Safety and EMC:	according to DIN EN 60730
Sensor:	liquid-filled capillary, active over its entire length
General features:	intrinsic safety, protection against cold, internal setting, scale: degrees Celsius
operating elements:	fan switch

APPLICATION

Minimum or maximum thermostat for inflow air monitoring and fan regulation in ventilation and air conditioning systems. Overheating protection thermostat for electrical heat registers and directly fired air heaters with oil and gas operation.

The switch 'MAN – AUTO' allows the fan to be used for ventilation in summer.

Type ... NR: Temperature-controlled fan regulation, burner monitoring and safety temperature limiter, 3 functions.

Attention: Assemble the device in a vibration-free manner in order to avoid malfunctions and / or sensor rupture.

Type-tested by TÜV according to DIN EN 14597
For hot air heaters in accordance with DIN 4794

TYPE	ITEM NO.	CONTROL RANGE BURNER	HYSTERESIS OF BURNER (APPROX.)	CAPILLARY LENGTH	FEATURES*	EURO / PG
JTL-2	E6110013	70 to 100 °C	8 K	350 mm	TW	223.30 / II
JTL-8	E6110049	70 to 100 °C	external reset	350 mm	STB, locked when the temperature is rising, overheating protection	225.30 / II
JTL-11	E6110064	70 to 100 °C	8 K	1250 mm	TW	242.80 / II
JTL-8 NR	E6120038	70 to 95 °C	8 K	350 mm	locked when the temperature is rising, TW / STB, tolerances: STB +0 / − 10 K, overheating protection, external reset STB, shut-off temperature STB fixed: 100 °C	343.50 / II
JTL-17 NR	E6120077	70 to 95 °C	8 K	1,250 mm	locked when the temperature is rising, TW / STB, tolerances: STB +0 / − 10 K, overheating protection, external reset STB, shut-off temperature STB fixed: 100 °C	363.70 / II

* TW = temperature monitor, STB = safety temperature limiter

JTL-4 is replaced by JTL-8.
JTL-4 NR is replaced by JTL-8 NR.

Intrinsic safety / protection against cold: The devices are intrinsically safe, i.e., upon loss of the sensor medium owing to sensor rupture, for example, the burner is switched off. Since minus temperatures generate the same effect through volume reduction of the sensor medium, the devices are adjusted by means of the 'cold screw' such that they switch off the burner only at temperatures below −15 °C. They can only be switched on again manually at temperatures above approx. −5 °C by means of the manual reset button.

Overheating protection: This device provides protection from uncontrolled overheating caused, for example, by heat building up or by creeping capillary filling losses when there is invisible damage to the sensor or the capillary tube, etc. Upon reaching a temperature of 220 °C, the safety slot in the sensor melts and, in reaction to losing the filling medium, the device switches off the burner towards the safe side. The burner cannot be switched on again. The device is then unusable and serves as evidence of the presence of an over-temperature of at least 220 °C.

Locking: For types JTL-8, JTL-8 NR and JTL-17 NR, a restart after cooling down is only possible by manual reset.

AIR HEATER THERMOSTAT JTL-2 ... -11 / JTL-8 NR ... -17 NR
CAPILLARY SYSTEM – 2 FUNCTIONS OR 3 FUNCTIONS – **TÜV-TESTED**

ILLUSTRATIONS

JTL-17 NR

JTL-2

JTL- .. NR

JTL- ..

ILLUSTRATIONS

JTL- .. NR

kühlen   heizen

STB   Brenner   Ventilator

JTL .. (TW)

kühlen   heizen

Brenner   Ventilator

JTL- . (STB)

kühlen   heizen

Brenner   Ventilator

DUCT THERMOSTAT JTU-1 ... -50
CAPILLARY SYSTEM – **TÜV-TESTED**

TECHNICAL DATA

Housing colour:	grey
Sensor material:	Cu
Ambient temperature:	−15 to +80 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Max. sensor temperature:	200 °C
Operating voltage:	none
Max. switching current:	15 (8) A
Min. switching current:	150 mA
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	24 VAC, 50 Hz
Switching element:	microswitch
Switching contact:	toggler, potential-free
Electrical connection:	screw-type terminals
Mounting / attachment:	mounting on air duct
Protection rating:	IP40
Protection class:	I
Safety and EMC:	according to DIN EN 60730
Sensor:	liquid-filled capillary, active over its entire length
General features:	internal setting, scale: degrees Celsius

APPLICATION

Minimum or maximum thermostat for inflow air monitoring and fan regulation in ventilation and air conditioning systems.

Overheating protection thermostat for electrical heat registers and directly fired air heaters with oil and gas operation.

Attention: Assemble the device in a vibration-free manner in order to avoid malfunctions and / or sensor rupture.

JTU-20, -3:
Type testing by TÜV in accordance with DIN EN 14597,
for hot air heaters in accordance with DIN 4794

TYPE	ITEM NO.	CONTROL RANGE	HYSTERESIS (APPROX.)	CAPILLARY LENGTH	FEATURES	EURO/PG
JTU-50	E6100000	−25 to +65 °C	1.5 K	350 mm	Control function: heating or cooling, TW	164.10 / II
JTU-1	E6100012	20 to 100 °C	8 – 30 K adjustable	350 mm	Control function: heating or cooling, TW, intrinsic safety, protection against cold	193.60 / II
JTU-3	E6100036	20 to 100 °C	external reset	350 mm	Control function: heating or cooling, locked when the temperature is rising, STB, intrinsic safety, protection against cold, overheating protection	166.40 / II
JTU-20	E6100075	20 to 100 °C	external reset	1250 mm	Control function: heating or cooling, locked when the temperature is rising, STB, intrinsic safety, protection against cold	183.70 / II
JTU-5	E6100048	60 to 140 °C	8 – 30 K adjustable	350 mm	Control function: heating or cooling, TW	192.00 / II
JTU-6	E6100051	60 to 140 °C	external reset	350 mm	Control function: heating or cooling, locked when the temperature is rising, TB	164.10 / II

TW = temperature monitor, STB = safety temperature limiter, TB = temperature limiter   JTU-2 is replaced by JTU-3.

Intrinsic safety / protection against cold: The devices are intrinsically safe, i.e., upon loss of the sensor medium owing to sensor rupture, for example, the burner is switched off. Since minus temperatures generate the same effect through volume reduction of the sensor medium, the devices are adjusted by means of the 'cold screw' such that they switch off the burner only at temperatures below −15 °C. They can only be switched on again manually at temperatures above approx. −5 °C by means of the manual reset button.

Overheating protection: This device provides protection from uncontrolled overheating, which is caused, for example, by a heat build-up or by creeping capillary filling losses when there is invisible damage to the sensor or the capillary tube etc. Upon reaching a temperature of 220 °C, the safety slot in the sensor melts and, in reaction to losing the filling medium, the device switches off the burner towards the safe side. The burner cannot be switched on again. The device is then unusable and serves as evidence of the presence of an over-temperature of at least 220 °C.

Locking: For types JTU-3, JTU-6 and JTU-20, a restart after cooling down is only possible by manual reset.

DUCT THERMOSTAT JTU-1 ... -50
CAPILLARY SYSTEM – **TÜV-TESTED**

ILLUSTRATIONS

JTU-20

JTU-3 / -6

JTU
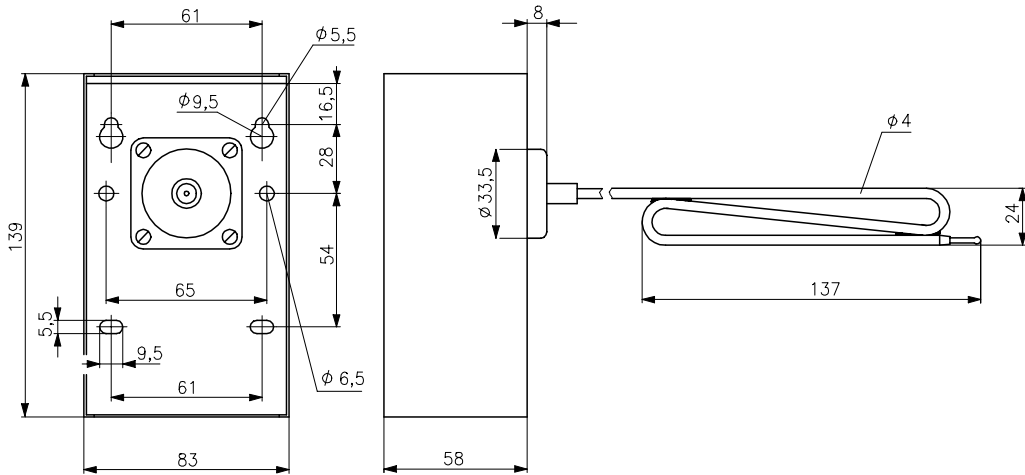
JTU-1, -5, -50
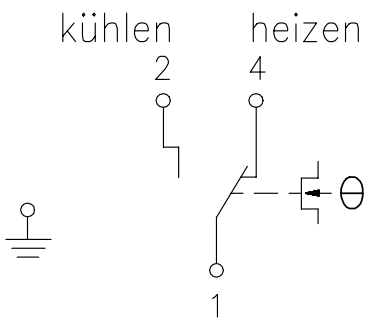
JTU-3 / -6 / -20
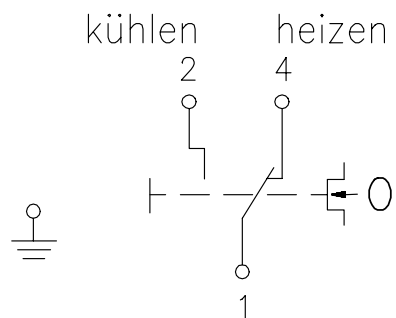
ELECTRONIC CONTROL CABINET THERMOSTATS
FOR PELTIER MODULES – HEATING / COOLING

TECHNICAL DATA

Housing colour:	light grey RAL7035
Housing material:	Polyamide PA 6.6 (UL94 V-0)
Supply voltage:	24 VDC, ±15%
Switching capacity:	max. 16 A
Output:	Relays with voltage-free changeover contact
Power consumption:	0.75 W
Control range:	0 to 60 °C
Switching difference (hysteresis):	approx. 2 – 3 K
Sensor:	internal NTC
Protection class:	III
Protection rating:	IP20
Operating temperature:	-10 to +70 °C
Storage temperature:	− 20 to 70 °C
Permissible humidity:	max. 95% rel. humidity, non-condensing
Electrical connections:	screw-type terminals 0.5 to 2.5 mm^2
Mounting type:	DIN standard rail (35 mm)

APPLICATION

This temperature controller was specially developed for controlling Peltier modules, for heating or cooling control cabinets, ticket machines and cash points and for reporting information on heating and cooling and requirements.

Function:
The CTRRS uses an internal sensor to measure the air temperature in control cabinets and activates heating or cooling when the temperature exceeds or falls below the established setpoint.

Mounting: The controller is installed on a 35-mm DIN standard rail. Mounting set JZ-13 is used when mounting on a sheet metal wall or profile frame.

TYPE	ITEM NO.	CONTROL RANGE	FEATURES	EURO / PG
CTRRS-161.000 / 04	DN600004	0 to 60 °C		51.70 / II

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-13	ZA990001	Standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)	5.30 / II

JZ-13 mounting set consisting of a 38 mm long standard rail, screw and tooth lock washer
Attention: The controller can only be set to one operating mode, either heating or cooling. The changeover contact, when using Peltier elements, is not intended to activate heating or cooling by reversing the current. The CTRRS features an internal sensor. In order to gauge the internal temperature of the control cabinet, it must not be exposed to direct sources of cold or heat, unless doing so concerns the assembly to be protected.

ILLUSTRATIONS

Connection in cooling mode
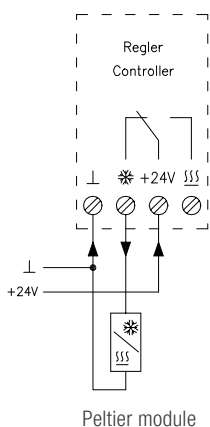
Connection in heating mode
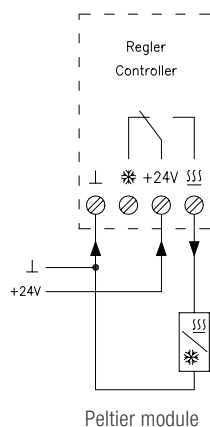
CTRRS-161.000
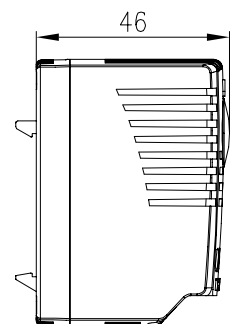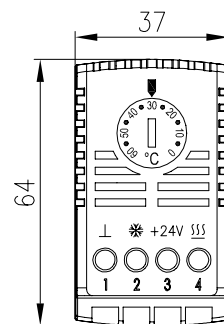
Terminal 1: Supply voltage (mass)
Terminal 2: Output 'cooling'
Terminal 3: Supply and switching voltage (+24 V4)
Terminal 4: Output 'heating'

CONTROL CABINET THERMOSTATS
ELECTRONIC, FOR PELTIER MODULE – HEATING / COOLING

TECHNICAL DATA

Housing colour:	light grey RAL7035
Housing material:	ABS plastic
Supply voltage:	24 V, ±15%
Switching capacity:	max. 16 A
Output (Peltier element):	16 A relay output, Caution! As of 10 A or higher than 30 °C, wiring must not be done using 1.5 mm², but rather must be wired using the next highest cross-section of 2.5 mm²
Output (fan):	2(1)A relay output
Power consumption:	approx. 1 W
Control range (heating):	0 to 20 °C
Control range (cooling):	30 to 50 °C
Switching difference (hysteresis):	approx. 1 K
Sensor:	internal or external NTC 2 K
Sensor tolerance:	approx. 1 K
Protection class:	III
Protection rating:	IP20
Admissible ambient temperature:	−10 to +55 °C, Caution! As of 30 °C or higher than 10 A, consider a 2.5 mm² connection cross-section
Storage temperature:	−20 to 70 °C
Permissible humidity:	max. 95% rel. humidity, non-condensing
Electrical connections:	screw-type terminals 0.5 to 2.5 mm²
Mounting type:	DIN standard rail (35 mm)

APPLICATION

This controller was specially designed for controlling Peltier modules that have fans for the purpose of air conditioning control cabinets.

The KTRRN features two control ranges for heating and cooling. The switching point for heating is selected in the lower setting range, and the switching point for cooling is selected in the upper setting range. The setting ranges are divided into ranges of 10 K. Therefore a neutral zone of at least 10 K is always given, and incorrect switching point settings / switching point overlaps created by the installer are avoided.

The controller is installed on a DIN standard rail. Mounting set JZ-13 is used when mounting on a sheet metal wall or profile frame.

Mounting: The controller is installed on a 35-mm DIN standard rail. Mounting set JZ-13 is used when mounting on a sheet metal wall or profile frame.

TYPE	ITEM NO.	CONTROL RANGE	FEATURES	EURO / PG
KTRRN-267.014	DA460002	0 to 20 °C (heating) / 30 to 50 °C (cooling)		104.90 / II

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-13	ZA990001	Standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)	5.30 / II
HF-8 / 4-K2	G8000370	External sensor NTC 2K as sleeve sensor HF-8 / 4-K2	24.00 / II

ILLUSTRATIONS

KTRRN-267.014
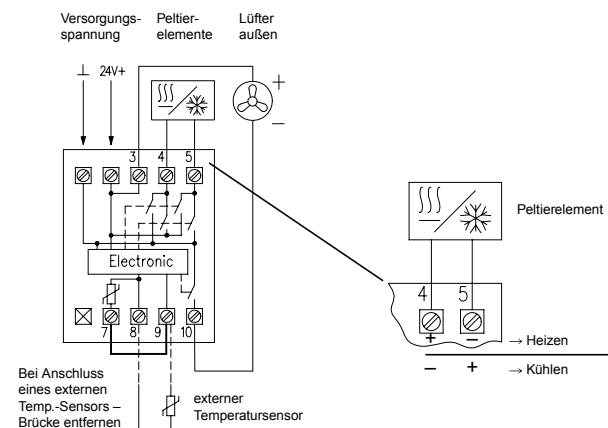
KTRRN-267.014
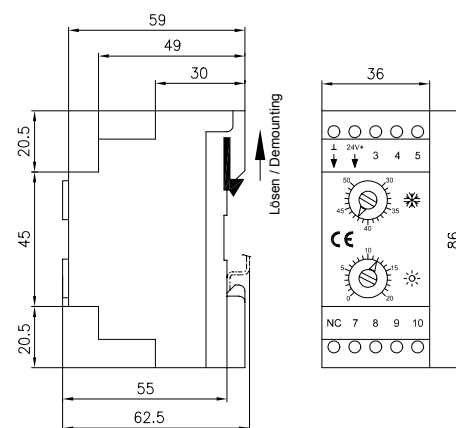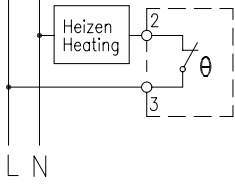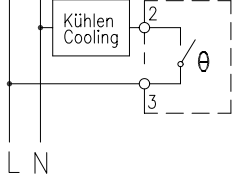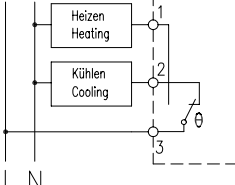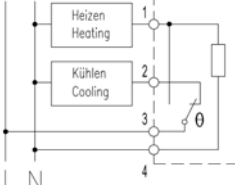
CONTROL CABINET THERMOSTATS
MECHANICAL, BIMETAL

TECHNICAL DATA

Housing colour:	grey, similar to RAL 7035
Ambient temperature:	0 to 60 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Max. switching voltage:	230 VAC / 50 Hz, 48 VDC
Min. switching voltage:	24 VAC / 50 Hz, 24 VDC
Min. switching current:	The resistance of the contact transition results in a voltage drop across the contact. This can have a strong influence on very small switching signals.
Switching element:	bimetallic contact
Hysteresis:	approx. 4 to 7 K (RTBSS-112.211 / 12 approx. 1 K at operating voltage of 230 VAC) at a temperature change of max. 4 K / h
Electrical connection:	screw-type terminals 0.5 mm² to 2.5 mm²
Mounting / attachment:	on supporting rails (35 mm) according to EN 60715
Protection rating:	IP30
Protection class:	0, determined by the assembly location
Safety and EMC:	according to DIN EN 60730
Sensor:	bimetal
Function type:	TR (temperature controller)
General features:	external setting, scale: degrees Celsius, snap-lock control button
Test mark / approbation:	UL, VDE

APPLICATION

Application scenarios include temperature monitoring in control cabinets, machines and housings.

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
RTBSS-110.250 / 04	ZN111524	Max. switching current: 10 (2) A / VAC, max. 30 W / VDC Switching contact: NC contact Control function: heating Control range: 0 to 60 °C scale red		18.40 / II
RTBSS-111.250 / 05	ZN112525	Max. switching current: 10 (2) A / VAC, max. 30 W / VDC Switching contact: NO contact Control function: Cooling Control range: 0 to 60 °C scale blue		18.40 / II
RTBSS-112.250 / 07	ZN113527	Max. switching current: NC contact 10 (2) A / VAC, max. 30 W / VDC NO contact 5 (2) A / VAC, max. 30 W / VDC Switching contact: changeover Control function: heating or cooling Control range: 0 to 60 °C scale grey		24.00 / II
RTBSS-112.211 / 12	ZN113152	Max. switching current: NC contact 10 (2) A / VAC, max. 30 W / VDC NO contact 5 (2) A / VAC, max. 30 W / VDC Switching contact: changeover Control function: heating or cooling Control range: 0 to 60 °C Scale grey, thermal feedback		26.40 / II

ACCESSORIES	ITEM NO.	FEATURES		EURO / PG
JZ-13	ZA990001	Standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)		5.30 / II

See pageSeite 209 for dimension diagram (RFHSS / RTBSS)

CONTROL CABINET HYGROSTATS
WITH CHANGEOVER CONTACT
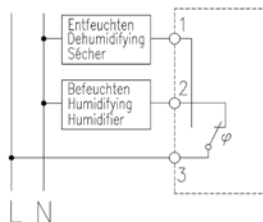
TECHNICAL DATA

Housing colour:	grey, similar to RAL 7035
Operating voltage:	none
Max. switching current:	De-humidifying: 5 (0.2) A, Humidifying: 2 (0.2) A
Min. switching current:	100 mA at 24 VAC
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	24 VAC, 50 Hz
Switching element:	microswitch
Switching contact:	changeover
Control function:	humidifying or de-humidifying
Mounting / attachment:	on supporting rails (35 mm) according to EN 60715
Protection rating:	IP30
Protection class:	0, determined by the assembly location
Safety and EMC:	according to DIN EN 60730
Sensor:	plastic fibres
Function type:	controller
General features:	external setting
Test mark / approbation:	RFHSS-114.110 / 01 UL at 230 VAC

APPLICATION

Hygrostat for monitoring and controlling humidity in control cabinets and machines

TYPE / IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO / PG
RFHSS-114.110 / 01	ZN275001	Ambient temperature: 0 to 60 °C Admissible humidity: max. 95% rel. humidity, non-condensing Control range: 40 – 90 % rel. humidity Hysteresis: approx. 5% rel. humidity Electrical connection: screw-type terminals 0.5 mm² – 2.5 mm² Test mark / approbation: UL for 230 VAC snap-in turning knob		67.90 / II

ACCESSORIES	ITEM NO.	FEATURES		EURO / PG
JZ-13	ZA990001	Standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)		5.30 / II

ILLUSTRATIONS

RFHSS / RTBSS

CONTROLLER FOR DISTRIBUTOR ASSEMBLY (HAT RAIL) ITR 79
REMOTE SENSOR, ELECTRONIC

TECHNICAL DATA

Housing colour:	grey, similar to RAL 7035
Ambient temperature:	−10 to +40 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Operating voltage:	230 V AC, 50 Hz
Max. switching current:	NO contact: 10 (2) A, NC contact: 5 (1.5) A
Min. switching current:	The resistance of the contact transition results in a voltage drop across the contact. This can have a strong influence on very small switching signals.
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	5 VAC, 50 Hz
Switching element:	relay
Switching contact:	toggler, potential-free
Electrical connection:	screw-type terminals up to 2.5 mm²
Mounting / attachment:	on supporting rails (35 mm) according to EN 60715
Protection rating:	IP20
Protection class:	II
Safety and EMC:	according to DIN EN 60730
Function type:	TR (temperature controller)
General features:	external setting

APPLICATION

Control and monitoring of the temperature in large halls, greenhouses and floor heating systems. The devices have sensor rupture and sensor short-circuit protection.

Sensors are not a part of the delivery scope (except for ITR 79.804) For available sensors, see the 'Sensor technology' section.

Use sensors according to the specified sensor number (for example, for sensor number 4: all sensors with this number can be used, e.g., KF-4). Avoid parallel routing of sensor wires together with mains voltage-bearing wires ore use shielded wires.

TYPE	ITEM NO.	CONTROL RANGE	FEATURES	EURO/PG
ITR 79.402	D4780167	−35 to +15 °C	Control function: heating, hysteresis adjustable: approx. 0.5 − 5 K, sensor: NTC 1 K (sensor 1), scale: degrees Celsius, display 'heating' red	102.30 / II
ITR 79.404	D4780155	0 to 60 °C	Control function: heating, hysteresis adjustable: approx. 0.5 − 5 K, sensor: NTC 10 K (sensor 4), scale: degrees Celsius, display 'heating' red	102.30 / II
ITR 79.405	D4780181	35 to 95 °C	Control function: heating, hysteresis adjustable: approx. 0.5 − 5 K, sensor: NTC 50 K (sensor 5), scale: degrees Celsius, display 'heating' red	102.30 / II
ITR 79.408	D4780179	−10 to +40 °C	Control function: heating, hysteresis adjustable: approx. 0.5 − 5 K, sensor: NTC 8 K (sensor 3), scale: degrees Celsius, display 'heating' red	106.90 / II
ITR 79.503	D4780524	0 to 11 °C	Control function: heating, frost protection locked when the temperature is dropping, hysteresis approx. 1.5 K, sensor: NTC 2 K 25 (sensor 0), scale: degrees Celsius, display 'heating' red	116.00 / II
ITR 79.504	D4780371	0 to 60 °C	Control function: cooling, hysteresis adjustable: approx. 0.5 − 5 K, sensor: NTC 10 K (sensor 4), scale: degrees Celsius, display 'cooling' green	106.90 / II
ITR 79.508	D4780369	−10 to +40 °C	Control function: cooling, hysteresis adjustable: approx. 0.5 − 5 K, sensor: NTC 8 K (sensor 3), scale: degrees Celsius, display 'cooling' green	106.90 / II

TWO SETPOINT ADJUSTERS (E.G., DAY/NIGHT TEMPERATURE VIA EXTERNAL CLOCK)				EURO/PG
ITR 79.600	D4780508	2x5 to 30 °C	Control function: heating, hysteresis: approx. 0.5 K, sensor: NTC 47 K (sensor 2), ECO contact: toggling between setpoint value 1 and setpoint value 2, scale: degrees Celsius	119.80 / II

COMPLETE DEVICE INCLUDING REMOTE SENSOR HF-8/4-K2 (4-M CABLE)				EURO/PG
ITR 79.804	D4780545	0 to 60 °C	Control function: heating, hysteresis adjustable: approx. 0.5 − 5 K, sensor: NTC 2 K (sensor 8), multi-digit scale 0 − 6, display 'heating' red	137.00 / II

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-13	ZA990001	Standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)	5.30 / II

CONTROLLER FOR DISTRIBUTOR ASSEMBLY (HAT RAIL) ITR 79
REMOTE SENSOR, ELECTRONIC

ILLUSTRATIONS

ITR 79.4… / .5… / .8…
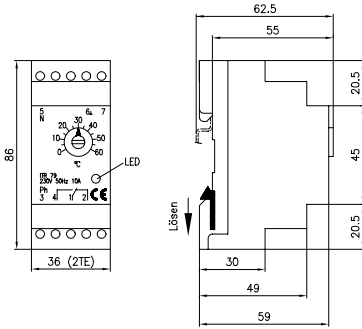
ITR 79.4… / .5… / .8…
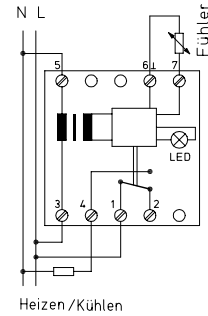
ITR 79.804

ITR 79.6
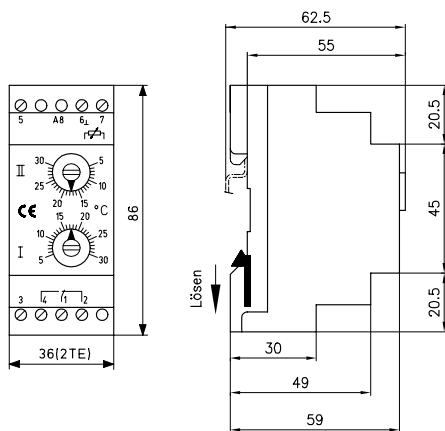
ITR 79.6
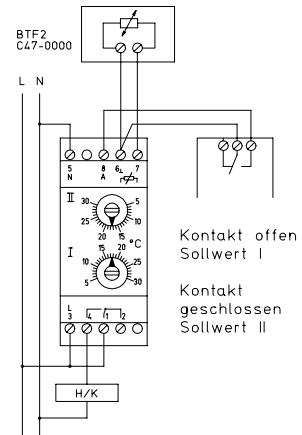
ITR 79.503
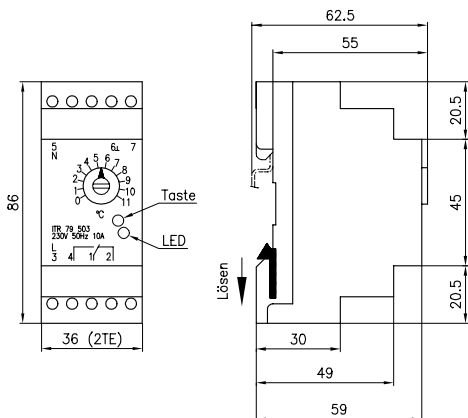
ITR 79.503
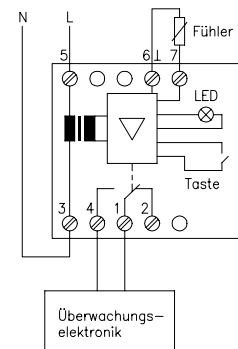
UNIVERSAL CONTROLLER ETR 77
REMOTE SENSOR, ELECTRONIC

TECHNICAL DATA

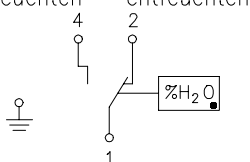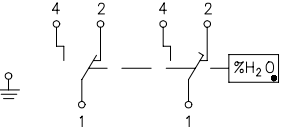|	
Housing colour:	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
Ambient temperature:	−20 to +50 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Operating voltage:	230 V AC, 50 Hz
Max. switching current:	NO contact: 10 (3) A (heating), NC contact: 5 (1.5) A (cooling)
Max. switching voltage:	230 V AC, 50 Hz
Switching element:	relay
Switching contact:	toggler, potential-free
Control function:	heating or cooling
Electrical connection:	screw-type terminals
Mounting / attachment:	wall mounting
Protection class:	II
Sensor:	KTY 81-121 (sensor 51)

APPLICATION

Thanks to various sensor models suitable for universal use in heating, ventilation, air-conditioning and refrigeration technology as well as in mechanical and plant engineering.

Sensors are not a part of the delivery scope.
For available sensors, see below or the 'Sensor technology' section.

Note: The sensor line must be routed in a protective duct. Parallel routing together with lines that carry alternating currents is not admissible.

Safety and EMC: according to DIN EN 60730

TYPE	ITEM NO.	CONTROL RANGE	FEATURES	HYSTERESIS ADJUSTABLE	EURO/PG
ETR 77.008-5	D4770014	−50 to +50 °C	IP65, TW, internal setting, scale: degrees Celsius	0.5 – 5 K	125.60 / II
ETR 77.009-5	D4770026	0 to 100 °C	IP65, TW, internal setting, scale: degrees Celsius	0.5 – 5 K	124.70 / II

TW = Temperature monitor

ILLUSTRATIONS
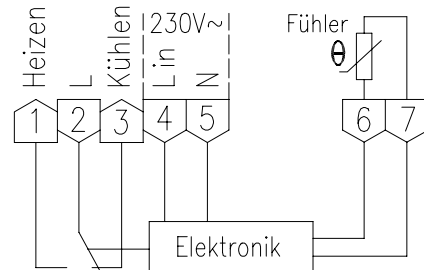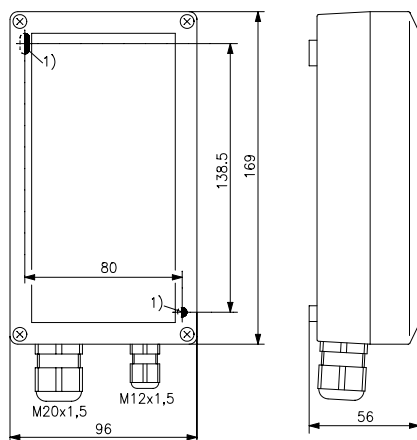
ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
AF-51	G9040420	external temperature sensor	24.50 / III
ALF-51	G9050210	contact temperature sensor	27.40 / III
BTF2-Y81 / 121-0000	SA140017	Room temperature sensor, surface-mounted	27.20 / III
FUFY-81 / 121-0000	SN090201	Room temperature controller, flush-mounted	34.50 / III
KF-51	G9031452	Cable temperature sensor with 1.5 m silicone cable	30.80 / III
KF-51 / 6	G9031453	Cable temperature sensor with 6 m silicone cable	34.60 / III
STF-51	SN080500	Radiation temperature sensor	80.10 / III

MECHANICAL HYGROSTATS
DUCT ASSEMBLY
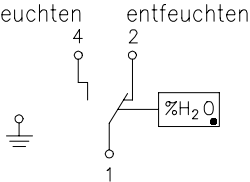
TECHNICAL DATA

Housing colour:	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
Ambient temperature:	0 to 60 °C
Permissible atmospheric humidity:	non-condensing
Operating voltage:	none
Max. switching current:	15 (8) A
Min. switching current:	150 mA at 125 VAC
Max. switching voltage:	230 VAC, 50 Hz (> 24 V only in dry surroundings)
Min. switching voltage:	24 VAC, 50 Hz
Switching element:	microswitch
Switching contact:	toggler, potential-free
Control range:	30 – 100% rel. humidity
Hysteresis:	approx. 5% rel. humidity
Tolerances:	> 50%: + / − 3.5% relative humidity < 50%: + / − 4% relative humidity
Electrical connection:	screw-type terminals
Mounting / attachment:	mounting on air duct or wall mounting using accessory JZ-20-1
Protection rating:	IP65 front-side
Protection class:	II
Safety and EMC:	according to DIN EN 60730
Sensor:	plastic fibres

APPLICATION

Use in ventilation and air-conditioning ducts, climate exposure cabinets and dehumidifiers for controlling and / or monitoring the atmospheric humidity in industrial and agricultural applications. Not suitable for aggressive gases. Max. air speed 8 m / s, with sensor protection FS-HI 15 m / s.

TYPE/IMAGE	ITEM NO.	FEATURES	CIRCUIT DIAGRAM	EURO/PG
HI-1	JA010100	Control function: humidifying or de-humidifying Function type: controller external setting, mechanical range setting	befeuchten / entfeuchten 4 / 2 / %H_2O / 1	227.90 / II
HI-1F	JA010200	Control function: humidifying or de-humidifying Function type: monitor internal setting	befeuchten / entfeuchten 4 / 2 / %H_2O / 1	220.20 / II
HI-2	JA010300	Control function: 2 x humidifying or de-humidifying Hysteresis between the stages: adjustable 3 – 15% rel. humidity Function type: controller external setting, mechanical range setting	befeuchten / entfeuchten 4 / 2 / 4 / 2 / %H_2O 1 / 1	287.90 / II

MECHANICAL HYGROSTATS
DUCT ASSEMBLY

ACCESSORIES/OP-TIONS	ITEM NO.	FEATURES	EURO/PG
JZ-20-1	E6130144	Wall bracket for HI	21.80 / II
FS-HI	H530975	Sensor protection for HI: finely woven mesh wire, for use at high air speeds of over 8 m/s	16.70 / II
FS2-HI	H531011	PTFE filter for HI: fine sensor protection against dust and contamination	71.90 / II

ILLUSTRATIONS

HI-.
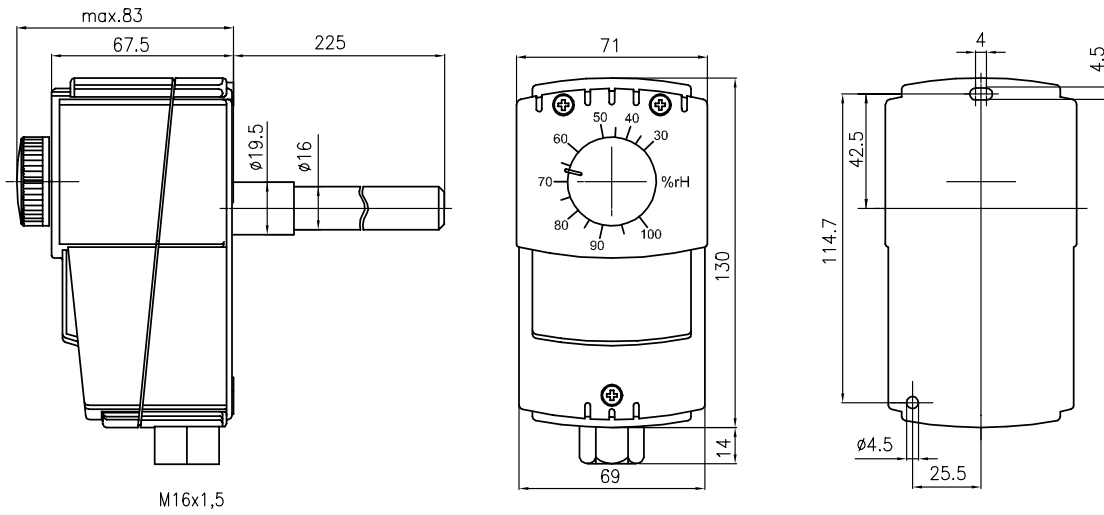
WIND INDICATOR RELAY JSL-1E
MECHANICAL

TECHNICAL DATA

Housing colour:	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
Ambient temperature:	−40 to +80 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Max. medium temperature:	85 °C
Operating voltage:	none
Max. switching current:	15 (8) A
Min. switching current:	150 mA at 24 VAC
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	24 VAC, 50 Hz
Switching element:	microswitch
Switching contact:	toggler, potential-free
Control function:	airflow monitoring
Hysteresis:	approx. 1 m/s
Electrical connection:	screw-type terminals
Mounting/attachment:	mounting on air duct
Protection rating:	IP65 housing side, IP20 medium side
Protection class:	I
Safety and EMC:	according to DIN EN 60730
Sensor:	wind indicator
Material (vane):	V2A (1.4301)
Material (lever):	brass
Function type:	monitor
General features:	internal setting

APPLICATION

Monitoring of air flows in ducts, in air supply and air exhausting devices of fans or electrical heat registers.

The wind indicator relay is set to the minimum switching points at the factory. The switch-on/switch-off values can be increased by turning the inner screw clockwise. Fitting is done in the vertical paddle position from the top in a horizontal pipe/duct.

TYPE	ITEM NO.	MIN. SWITCH-ON VALUE	MIN. SWITCH-OFF VALUE	MAX. SWITCH-ON VALUE	MAX. SWITCH-OFF VALUE	EURO/PG
JSL-1E	JA070100	2 m/s	1 m/s	9.2 m/s	8 m/s	102.90/II

TYPE	ITEM NO.	FEATURES	EURO/PG
JZ-08	E6150031	spare vane for JSL-1E	20.90/II

ILLUSTRATIONS
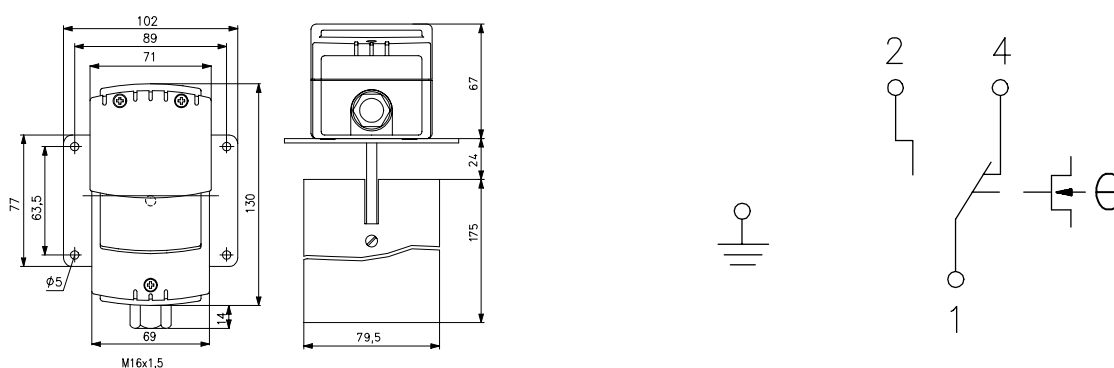
Mounting: The device can be mounted in any alignment, but attention must be paid to the correct direction of flow. When fitting in a vertical duct, the weight of the vane must be balanced at the range screw, which results in changed switching values. Attention: Owing to the changed switching values, at flows near the minimum set value the wind indication relay may not function properly! At air speeds higher than 5 m/s, owing to the danger of breakage, the vane must be cut on the sides where indicated. This increases the minimum switch-off value set at the factory from 1 m/s to 2.5 m/s. A calming path that is 5 times the duct diameter must be provided before and after the assembly location. The scope of delivery includes a seal to be fitted between the duct and the device.
Function: The devices are set to the minimum switch-off value at the factory. A higher value can be selected by turning the range screw to the right. If the flow exceeds the value that has been set, contacts 1−2 close and the corresponding assembly is enabled. If the flow drops below the value that has been set, contacts 1−2 open and contacts 1−4 close.

DIFFERENTIAL PRESSURE SWITCH

JDW-3 … -10 / JDL-111 … -116

JDW-3

JDL-111

JDL-112

TECHNICAL DATA

Housing colour:	black
Ambient temperature:	−15 to +80 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Max. sensor temperature:	80 °C
permissible Medium temperature:	−15 to +80 °C
Operating voltage:	none
Min. switching current:	1 mA
Max. switching voltage:	230 VAC / 50 Hz, 24 VDC
Min. switching voltage:	12 VAC / 50 Hz, 12 VDC
Switching element:	microswitch
Switching contact:	toggler, gold contact, potential-free
Control function:	switches if the pressure is undershot or exceeded
Pressure connection:	6.2 mm
Mounting / attachment:	wall mounting
Electrical connection:	screw-type terminals
Protection class:	ll
Protection rating:	IP54
Safety and EMC:	according to DIN EN 60730
Sensor:	pressure membrane
Function type:	monitor (JDL-116 A controller)

APPLICATION

Monitoring of overpressure, differential or under-pressure of air and incombustible, non-aggressive gases. Exhaust or fan monitoring or flow monitor for securing electrical heat registers, as filter monitoring, air pressure shortage safeguard, limit value controller.

JDW- …: Supplied without mounting bracket; can be screwed on directly (with 2 screws).

JDW-…Z: Supplied with attached mounting bracket JZ-10

JDL …: Supplied with attached mounting bracket JZ-10

Note: Once the differential pressure switch has connected a voltage > 24 V and a current > 0.1 A, the gold layer at the contacts will have burnt away. Thereafter, the differential pressure switch can only be operated at this or a higher power.

Note: The hose set is not a part of the delivery scope and must be ordered separately.

CONVERSION TABLE PRESSURE

		Pa	kPa	bar	mbar	mmWs
1 Pa	=	1	0.001	0.00001	0.01	0.101971
1 kPa	=	1,000	1	0.01	10	101.971
1 bar	=	100,000	100	1	1,000	10197.1
1 mbar	=	100	0.1	0.001	1	10.1971
1 mmWs	=	9.80665	0.00980665	0.0000980665	0.0980665	1

TYPE	ITEM NO.	CONTROL RANGE	MAX. PRESSURE	HYSTERESIS (dependent on setting range)	FEATURES	EURO / PG
JDW-3	H531002	20 – 330 Pa	5,000 Pa	approx. 8 – 20 Pa	Max. switching current: 1.5 (0.4) AAC, 1 (0.2) ADC internal setting	51.70 / II
JDW-3 Z	H531001	20 – 330 Pa	5,000 Pa	approx. 8 – 20 Pa	Max. switching current: 1.5 (0.4) AAC, 1 (0.2) ADC internal setting, fixing bracket	57.30 / II
JDW-5	H530996	30 – 500 Pa	5,000 Pa	approx. 10 – 25 Pa	Max. switching current: 1.5 (0.4) AAC, 1 (0.2) ADC internal setting	51.70 / II
JDW-5 Z	H531000	30 – 500 Pa	5,000 Pa	approx. 10 – 25 Pa	Max. switching current: 1.5 (0.4) AAC, 1 (0.2) ADC internal setting, fixing bracket	57.30 / II
JDW-10	H530997	400 – 1600 Pa	5,000 Pa	approx. 30 – 60 Pa	Max. switching current: 1.5 (0.4) AAC, 1 (0.2) ADC internal setting	51.70 / II
JDL-111	H5309098	20 – 300 Pa	15,000 Pa	approx. 10 – 15 Pa	Max. switching current: 5 (1) AAC, 1 (0.2) ADC internal setting, silicone-free	57.80 / II
JDL-112	H5309100	40 – 600 Pa	30,000 Pa	approx. 22 – 33 Pa	Max. switching current: 5 (1) AAC, 1 (0.2) ADC internal setting, silicone-free	56.60 / II
JDL-115	H5309136	100 – 1,000 Pa	30,000 Pa	approx. 20 – 40 Pa	Max. switching current: 5 (1) AAC, 1 (0.2) ADC internal setting, silicone-free	56.60 / II
JDL-116	H530960	250 – 5,000 Pa	30,000 Pa	approx. 60 – 150 Pa	Max. switching current: 5 (1) AAC, 1 (0.2) ADC internal setting, silicone-free	56.60 / II
JDL-116 A	H530978	250 – 5,000 Pa	30,000 Pa	approx. 60 – 150 Pa	Max. switching current: 5 (1) AAC, 1 (0.2) ADC external setting, silicone-free	64.10 / II

DIFFERENTIAL PRESSURE SWITCH
JDW-3 … -10 / JDL-111 … -116

TYPE	ITEM NO.	FEATURES	EURO / PG
JZ-06 / 1	H5309229	Connection set with duct connections made of silicone-free plastic, 2 x 90° angles, 2 extensions 90 mm, 4 self-tapping screws, 2 m tube (external Ø 6 mm)	10.40 / II
JZ-10	H5309237	Mounting bracket with screws for JDW-3 / -5 / -10 (Z shape)	5.50 / II
JZ-28	H531012	IP65 cover set, consisting of a cover with pressure compensation element, O-ring and 3 screws, suitable for retrofitting types JDL-111, JDL-112, JDL-115 and JDL-116	45.40 / II

ILLUSTRATIONS

JDW-3 / -5 / -10
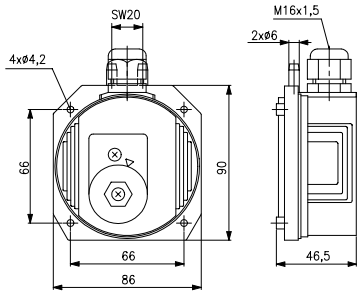
JDL-111
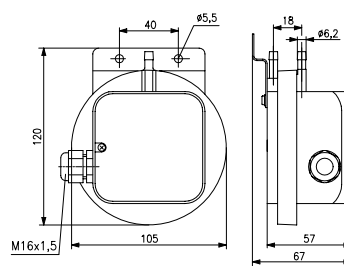
JDL-112 / 115 … -16
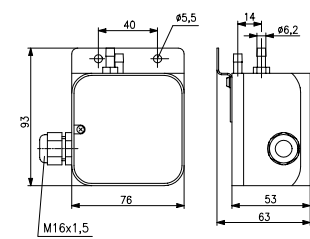
JDW- … / JDL- …
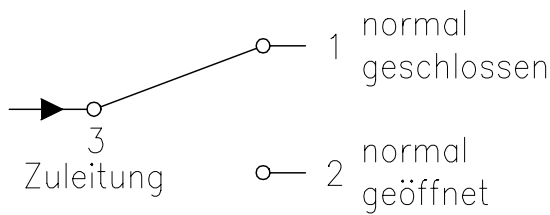
JZ-06 / 1
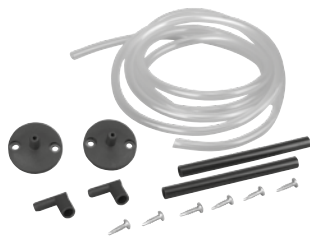
JZ-10

JDL-116 A

JZ-28

AIRFLOW MONITORS, WSERD-XXX.446
ELECTRONIC AIRFLOW MONITORS

TECHNICAL DATA

Rated voltage:	100 – 240 VAC or 24 V ±10% AC / DC
Rated power consumption:	< 3 VA
Contact:	2 x togglers, potential-free
Switching voltage:	max. 250 VAC
Switching current:	max. 8 A
Electrical connection:	2.5 mm² (sensor 1.0 mm²), screw-type terminals
Protection class:	2
Protection rating:	IP65 (housing) / IP54 (sensor), EN 60529
Setting range:	0.2 – 10 m / s
Operational range:	0.8 – 10 m / s flow speed
Start delay:	15 – 120 seconds
Ambient temperature range:	housing (0 to +50 °C) / sensor (−20 to +90 °C)
Transport and storage temperature:	−10 to +75 °C
Permissible atmospheric humidity:	< 95%
Condensation:	permissible (only external)
Overvoltage category (control unit):	2
Rated impulse voltage:	4000 V
Degree of fouling:	2
Material:	housing cover (polycarbonate), bottom part of housing (ABS), sensor (PVC), cable gland (PA6), sensor housing (aluminium with polyamide PA6)

APPLICATION

The WSERD airflow monitors are used for the analysis of airflows and the switching statuses that are generated as a result, for monitoring fans or butterfly valves,
for flow-dependent monitoring of humidifiers and electric heat registers in accordance with DIN 57100, part 420 and are used in conjunction with DDC systems.

The measuring system, consists of the sensor and the control unit. Two different models of the measuring system are offered: one for wall mounting (the sensor is connected using a cable) and the WSERD-534.446 for duct mounting (the sensor is permanently connected to the control unit). Sensors and control units are balanced independently of one another, and the wall-mounted model can be replaced with devices that are similar in design.

This device meets the following requirements:
2014 / 30 / EU EMC directives • 2014 / 35 / EU Low Voltage Directive • EN 61326-1:2013 General EMC Requirements • EN 61326-2-3:2013 Immunity for residential / commercial areas • DIN EN 60947-5-1 Low-voltage switchgear and control gear • EN 50581:2012 Restriction of the use of certain hazardous substances

Mounting: performed according to model using suitable screws (WSERD-134.446; not included in the scope of delivery) on even substrate or on the duct using the mounting flange included in the scope of delivery (WSERD-534.446).

TYPE	ITEM NO.	FEATURES	EURO / PG
WSERD-134.446	G8000428	For wall mounting	388.40 / III
WSERD-534.446	G8000429	For duct mounting	388.40 / III

ILLUSTRATIONS

WSERD-134.446 for wall mounting
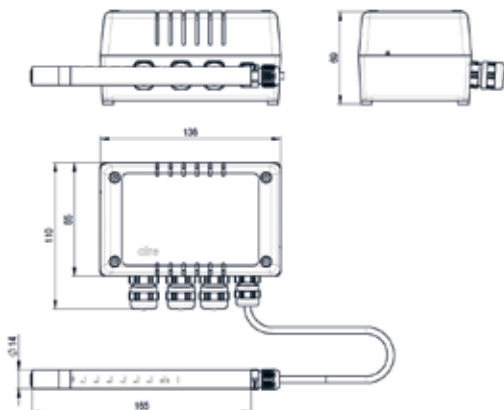
WSERD-534.446 for duct mounting
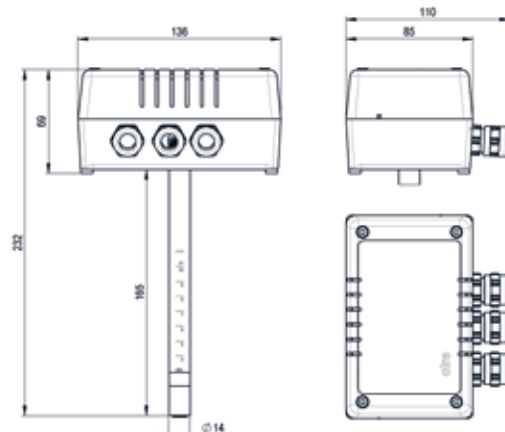
FLOW MONITOR JSF-1 E ... 4 E
MECHANICAL – **TÜV-TESTED**

TECHNICAL DATA

Housing colour:	grey (lower part similar to RAL 7016, upper part similar to RAL 7035)
Ambient temperature:	−40 to +85 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
permissible Medium temperature:	120 °C
Operating voltage:	none
Max. switching current:	15 (8) A
Min. switching current:	150 mA at 24 VAC, 50 Hz
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	24 VAC, 50 Hz
Switching element:	microswitch
Switching contact:	toggler, potential-free
Control function:	switches if the set value is undershot or exceeded
Hysteresis:	depends on the pipe diameter (see the table of switching values)
Electrical connection:	screw-type terminals
Mounting / attachment:	assembly by means of tapered Whitworth pipe thread R1"
Protection rating:	IP65
Protection class:	I
Safety and EMC:	according to DIN EN 60730
Sensor:	flow paddle
Material of paddle:	stainless steel
Function type:	monitor
General features:	internal setting
Accuracy:	+ / − 15% of the set value
Test mark / approbation:	JSF-1E / JSF-2E / JSF-3E / JSF-4E TÜV. SW.016-13 JSF-1RE / JSF-2RE TÜV.SW.017-13

APPLICATION

Flow monitoring of liquid media in pipes from ½" − 8", for example, oil, cooling and lubricant circuits or as a precaution against a shortage of water.

Assembly: The device can be mounted in any position.

Calming path at least 5 times the pipe diameter before and after the paddle.*

The max. flow can be significantly higher than the maximum setting value of the monitor.

Not approved for drinking water applications.

TÜV test up to 6" or for all diameters

Type-tested by the TÜV according to the 'Flow 100' VdTÜV circular

TYPE	ITEM NO.	PIPE	MEDIUM	FEATURES	EURO / PG
JSF-3 E	JA060500	½"	normal	material of carrier: brass max. pressure: 5 bar attached T-piece, grey iron	183.50 / II
JSF-4 E	JA060600	¾"	normal	material of carrier: brass max. pressure: 5 bar attached T-piece, grey iron	191.40 / II
JSF-1 E	JA060100	1" − 8"	normal	material of carrier: brass max. pressure: 8 bar	172.70 / II
JSF-1 RE	JA060200	1" − 8"	normal	material of carrier: brass max. pressure: 5 bar reduced switching values**	172.70 / II
JSF-2 E	JA060300	1" − 8"	aggressive ***	material of carrier: V4A max. pressure: 13 bar	438.10 / II
JSF-2 RE	JA060400	1" − 8"	aggressive ***	material of carrier: V4A max. pressure: 5 bar reduced switching values**	438.10 / II

FLOW MONITOR JSF-1 E ... 4 E
MECHANICAL – **TÜV-TESTED**

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-09	E6140170	Spare paddles (each 4 units) from 1" to 8"	20.90 / II

*	for 1"	= Paddle 1	If reduced flow values (marked in the table under the 'Pipe' column with added letter Z for 2" = Paddle 1 and 2) are to be reached, Paddle 4 should be used as follows:
	for 3" to 8"	= Paddle 1, 2 and 3;	for 4" = Paddle 1, 2, 3, 4 (shorten Paddle 4 to 92 mm)
			for 5" = Paddle 1, 2, 3, 4 (shorten Paddle 4 to 117 mm);
			for 6" = Paddle 1, 2, 3, 4 (shorten Paddle 4 to 143 mm);
			for 7" and 8" = Paddle 1, 2, 3, 4 (Paddle 4 not shortened)

** device types for low flow volume (see switching value table) "RE"
*** medium aggressive: all parts of the current monitor touching the medium are made of V4A

ILLUSTRATIONS

JSF-.E / RE

M16x1,5 optional M20x1,5

Paddel: x)
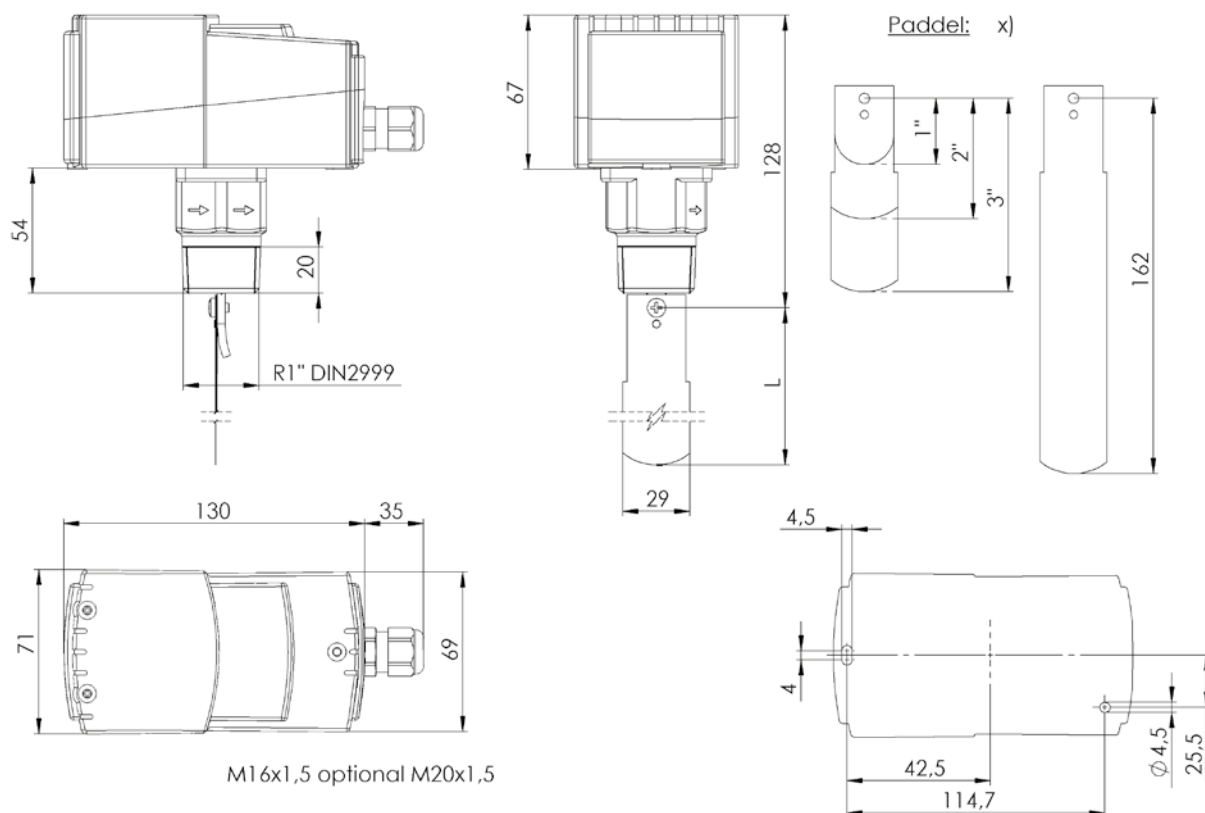
JSF-.E / RE
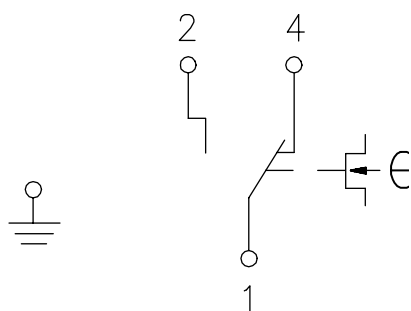
DN nominal width	Pipe thread inches
6	1 / 8"
8	1 / 4"
10	3 / 8"
15	1 / 2"
20	3 / 4"
25	1"
32	1 1 / 4"
40	1 1 / 2"
50	2"
65	2 1 / 2"
80	3"
100	4"
125	5"
150	6"

FLOW MONITOR JSF-1 E ... 4 E
MECHANICAL – **TÜV-TESTED**

SWITCHING VALUE TABLE IN m³/h FOR JSF-1 E / 2 E / 1 RE / 2 RE

TYPE	PIPE DIAMETER	MIN. SETTING (FACTORY SETTING)		MAX. SETTING	
		OFF	ON	OFF	ON
E	1"	0.55	0.86	2.00	2.10
RE	1"	0.19	0.57	1.00	1.10
E	1 ¼"	0.82	1.30	2.80	3.00
RE	1 ¼"	0.24	0.90	1.40	1.60
E	1 ½"	1.10	1.70	4.00	4.20
RE	1 ½"	0.50	1.20	1.90	2.20
E	2"	2.10	3.20	7.30	7.80
RE	2"	0.90	2.30	3.60	4.10
E	2 ½"	2.80	4.30	9.80	10.50
RE	2 ½"	1.20	3.10	4.90	5.50
E	3"	4.00	6.10	13.80	14.70
RE	3"	2.10	4.90	7.40	8.20
E	4"	10.40	15.40	32.00	33.90
RE	4"	4.90	11.30	17.10	19.10
E	4" Z	7.00	10.50	21.70	23.10
RE	4" Z	3.30	7.70	11.60	13.00
E	5"	20.80	30.60	63.50	67.30
RE	5"	9.70	22.40	34.00	37.90
E	5" Z	10.70	15.80	33.30	34.70
RE	5" Z	5.00	11.50	17.50	19.60
E	6"	29.20	43.00	89.10	94.50
RE	6"	13.60	31.50	47.60	53.20
E	6" Z	13.10	19.30	39.90	42.40
RE	6" Z	6.10	14.10	21.40	23.90
E	8"	72.60	85.10	165.70	172.50
RE	8"	25.70	59.60	90.10	100.70
E	8" Z	38.60	46.50	90.80	94.20
RE	8" Z	21.70	36.50	55.30	61.80

When there is a 'Z' (=additional paddle) in the 'Pipe' column, the long paddle 4 included in the delivery must be used in addition to the 3 factory-installed paddles.

SWITCHING VALUE TABLE IN l/h FOR JSF-3 E / -4 E

3 E	½	174	480	846	948
4 E	¾	138	408	768	858

The accuracy of the specified values depends on the actual diameter of the pipe, the actual reduction in the extra paddle and the flow monitor's installation depth.

The devices are set to the minimum switch-off value at the factory. By turning the inner adjusting screw in a clockwise direction, you can set a higher deactivation value. The actual flow quantity must in any case be higher than the one specified in the switch table or the switch-on value, but there is no upper limit. The values specified apply to volume-related mass (density) of water. If the flow drops below the value that has been set, contacts 1 and 2 open and contacts 1 and 4 close.

FLOW MONITOR JSW
WITH DEVICE PLUG

TECHNICAL DATA

Housing colour:	black
Material of paddle:	stainless steel
material of carrier:	nickel-plated brass
Ambient temperature:	−20 to +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
max. pressure:	25 bar
permissible Medium temperature:	110 °C
Operating voltage:	none
Max. switching current:	5 A
Min. switching current:	100 mA at 24 VAC, 50 Hz
Max. switching voltage:	230 V AC, 50 Hz
Min. switching voltage:	24 VAC, 50 Hz
Switching element:	microswitch
Switching contact:	toggler, potential-free
Control function:	switches if the set value is undershot or exceeded
Electrical connection:	4-pin plug according to DIN EN 175301-803 (previously DIN 43650 - A / ISO 4400)
Mounting / attachment:	Union nut G 3/8" on soldering socket (for soldering into a standard copper T-piece with outlet 1/2") or T-piece
Protection rating:	IP65
Protection class:	II
Safety and EMC:	according to DIN EN 60730
Sensor:	flow paddle
Function type:	monitor
General features:	internal setting
Accuracy:	+/− 15% of the set value (switching values are only accurate if the flow monitor has been installed in our T-piece If copper T-pieces are used, the switching values will increase.)

APPLICATION

Monitoring small and medium, non-aggressive quantities of liquid in pipes with small diameters ½" to 1".

Assembly: Vertical in a horizontal pipe. Calming path at least5 times the pipe diameter before and after the paddle.

Not approved for drinking water applications.

Brass union nut G 3/4" with O-ring and brazing spout for brazing in a standard copper T-piece with outlet 1/2" included in the scope of delivery.

TYPE	ITEM NO.	PIPE	DN	MAX.	SWITCHING POINT DROPPING*	SWITCHING POINT RISING	∆L/MIN	EURO/PG
JSW-1 / 2	H530944	½"	15	20 l/min	5.0 − 6.5 l/min	5.5 − 7.0 l/min	0.5	144.40 / III
JSW-3 / 4	H530945	¾"	20	40 l/min	7.0 − 9.5 l/min	9.0 − 11.0 l/min	2.0	144.40 / III
JSW-1	H530946	1"	25	60 l/min	13.5 − 16.5 l/min	17.0 − 20.5 l/min	3.5	144.40 / III

T-PIECE (NICKEL-PLATED BRASS):

T-piece 1 / 2"	H530957	22.40 / III
T-piece 3 / 4"	H530951	25.30 / III
T-piece 1"	H530953	27.30 / III

FLOW MONITOR JSW
WITH DEVICE PLUG

ILLUSTRATIONS

JSW

Typ	H	D	A	B
JSW1/2"	18,5	10	–	–
JSW3/4"	27,0	–	12	16
JSW1"	27,0	–	12	16
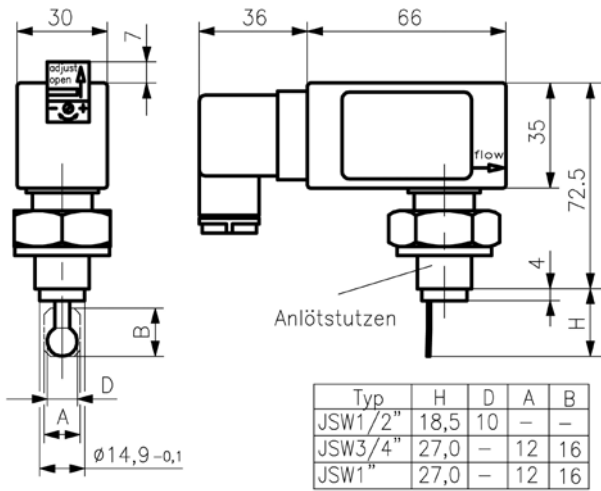
JSW
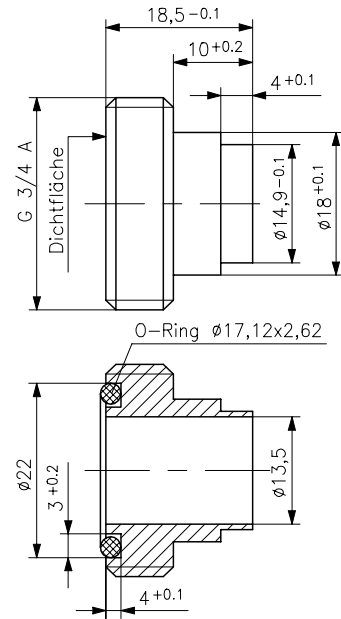
JSW
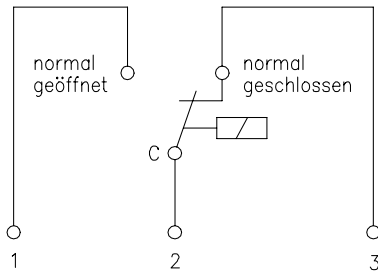
The device works according to the principle of a spring-loaded paddle with magnetic control of a micro-switch. When in rest position or if the switch-off value is undershot (= 'dropping switching point'), contacts 2 and 3 are closed and can be used as signal contacts. Upon reaching the upper switching value (= switch-on value or 'switching point rising'), the contact changes and 2 to 1 are closed. If used as a water shortage safeguard, for example, a pump can be switched on with these contacts. The actual flow quantity must in any case be higher than the switch-on value, but there is no upper limit.

The switching points given in the table apply to flow monitors with an attached T-piece and a water temperature of 20 °C in a horizontal pipe. The devices are set to the minimum switch-off value at the factory, but can be adapted to an existing plant. To that end, the cover of the setting screw on the front side (which is designed so that it cannot be lost) is pushed up in the direction of the arrow and the setting screw is rotated by a maximum of seven revolutions in the plus direction. With a switching value range of, for example, 13–16.5 l/min, a setting range of 3.5 l/min is obtained. With a total of seven permissible screw revolutions, this gives a change of 0.5 l/min per screw revolution.

UNIVERSAL PRESSURE SWITCH JPS
WITH 2 SWITCHING RANGES

TECHNICAL DATA

Housing colour and material:	steel plate, grey powder-coated Lower part = steel plate (galv. Zn bl)
Membrane:	polyester fabric, coated on both sides
Ambient temperature:	max. 55 °C
Medium temperature:	-30 to +80 °C
Switch-off point:	0.6 – 2.5 bar
Protection rating:	IP10 according to DIN 40050
Switching capacity:	2A (2) 230 V – in accordance with DIN EN 61058-1
Contact:	changeover switch

Pressure ranges (setting ranges) and differentials:

(a) in the normal range:
Switching range 1:
can be set from 1.0 to 4.0 kp/cm²
Differential can be set from 0.7 to 1.5 kp/cm²
Switching range 2:
can be set from min. 0.3 to max. 1.0 kp/cm²
beneath the first range
Fixed differential 0.3 kp/cm²

(b) with increased pressure range:
Switching range 1:
can be set from 1.3 to 6.0 kp/cm²
Differential can be set from 0.7 to 1.5 kp/cm²
Switching range 2:
can be set from min. 0.3 to max. 1.0 kp/cm²
beneath the first range
Fixed differential 1.3 kp/cm²

APPLICATION

The JPS is a universal pressure switch with two switching ranges and is suitable für oil, water and air.

It can also be used as a controller for domestic heating oil supply systems, pressure boosting systems, oil pumps and so on.

All devices have changeover contacts

The starter button causes the second switching range to be bridged (if it functions as a safety range). The red indicator light remains illuminated until the accumulated pressure has reached the first switching range

TYPE	ITEM NO.	MEASUREMENT RANGES	FEATURES	EURO/PG
JPS-1	E6160006	2 switching ranges, with starter button and indicator light	Connection adapters for 10-mm immersion sleeve	237.40/II
JPS-3	E6160020	2 switching ranges, with starter button and indicator light, alternate switch-on point	Hexagonal connection-adapters SW17 with 1/4" internal thread	289.00/II
JPS-3 B	E6160044	2 switching ranges, with starter button and indicator light, alternate switch-on point	Connection adapters for 10-mm immersion sleeve	235.60/II
JPS-4	E6160057	2 switching ranges, with starter button and indicator light, for the higher pressure range	Connection adapters for 10-mm immersion sleeve	234.30/II
JPS-13	E6160119	2 switching ranges, with starter button and indicator light	Hexagonal connection-adapters SW17 with 1/4" internal thread	252.80/II

SWITCHING POINTS (FACTORY SETTING)

JPS TYPE	1	3	3 B	4	13
Lower switch-off point	1.25	1.4	1.3	1.25	0.6
Switch-on point (tolerance/+– 0.02 bar)	1.6	1.8	1.8	1.6	1
Switch-off point (tolerance/+– 0.02 bar)	2.5	2.5	2.9	2.5	2.5

ILLUSTRATIONS
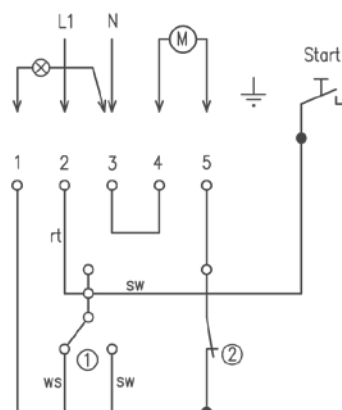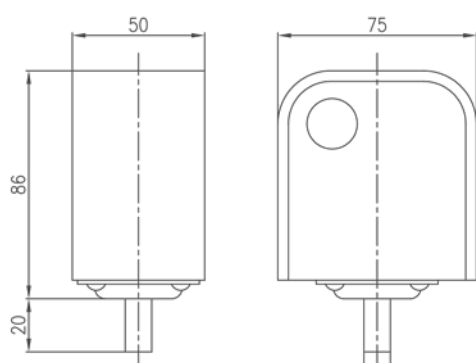
SENSOR TECHNOLOGY

PRECISE AND RELIABLE

ALRE SENSOR TECHNOLOGY.
MEASURE PRECISELY,
CONTROL INTELLIGENTLY.

Our sensor technology products make your life safer and more convenient. Our sensors gather physical data about the environment, such as temperature, humidity or pressure, convert it into electrical signals and make it available to intelligent control technology. They then draw the right conclusions and ensure that everything is perfectly controlled.

alre sensor technology:
the basis of safety and comfort.

APPLICATION
EXAMPLES:

+ Temperature measurement in residential and business spaces, outdoor areas, surface temperatures (contact sensors) in liquid and gaseous media, such as in pipelines and air ducts
+ Pressure measurement in liquid and gaseous media, for example in hydraulics, pneumatics, mechanical and plant engineering, process technology, ventilation or air conditioning applications, clean room technology, fine draft measurement
+ Temperature measurement in rooms or ducts
+ Outdoor temperature measurement, for example in refrigeration, air conditioning and ventilation systems, clean room technology, greenhouses, medical rooms, meteorology

TEMPERATURE

DIFFERENTIAL PRESSURE

**ROOM TEMPERATURE
SENSOR,
FLUSH-MOUNTED FUF**

**RADIATION
TEMPERATURE
SENSOR
STF**
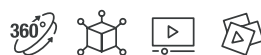
**EXTERNAL
TEMPERATURE
SENSOR**
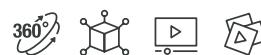
**ROOM TEMPERATURE
SENSOR,
SURFACE-MOUNTED
ULTRA-SLIM**
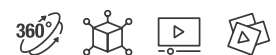
ROOM TEMPERATURE SENSOR – SURFACE-MOUNTED BTF2

SURFACE-MOUNTED 'ULTRA-THIN' – DESIGN BERLIN 1000, FOR MEASURING THE TEMPERATURE IN DRY ROOMS

TECHNICAL DATA

Design:	Berlin 1000
Housing colour:	pure white, similar to RAL 9010
Housing material:	ABS plastic
Ambient temperature:	−10 to +50 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals 0.33 mm² – 1.5 mm² only to safety extra low voltage max. 30 VAC / 42 VDC
Max. measurement current:	< 1 mA
Extendable sensor wire:	depending on the cross-section of the conductor and the sensor unit type
Tolerances:	PT100 / PT1000 DIN EN 60751 B
Mounting / attachment:	surface / wall mounting (4-hole assembly on flush-mounted socket)
Protection rating:	IP30
Protection class:	III
Safety and EMC:	according to DIN EN 60730
Sensor characteristic curves:	the sensor characteristic curves can be found in the 'Miscellaneous' section

APPLICATION

Temperature measurement in living spaces and office spaces.

Assembly and wiring of the lower part can take place separately, surface-mounted or on a switch socket Ø 60 mm by means of socket screws.

Please follow the EMC directives. Avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

| SENSOR	TYPE	ITEM NO.	EURO/PG
PT-100	BTF2-P100-0000	SA140000	27.20 / III
PT-1000	BTF2-P1000-0000	SA140001	27.20 / III
NTC 2K25 'Sensor 0'	BTF2-C225-0000	SA140013	27.20 / III
NTC 47K 'Sensor 2'	BTF2-C47-0000	SA140014	27.20 / III
NTC 8K 'Sensor 3'	BTF2-C08-0000	SA140015	27.20 / III
NTC 10K 'Sensor 4'	BTF2-C10-0000	SA140006	27.20 / III
NTC 2K 'Sensor 8'	BTF2-C02-0000	SA140016	27.20 / III
KTY 81-121 'Sensor 51'	BTF2-Y81 / 121-0000	SA140017	27.20 / III
KTY 11-7 'Sensor 57'	BTF2-Y11 / 7-0000	SA140018	27.20 / III

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
JZ-21	MN990006	Adapter frame for mounting room temperature sensors of the Berlin 1000 series in flush-mounted sockets up to **80x80 mm**	5.00 / I

ILLUSTRATIONS

Berlin 1000
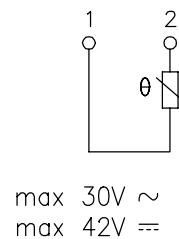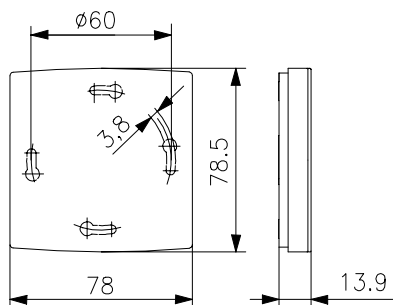
max 30V ~
max 42V ⎓

ROOM TEMPERATURE SENSOR – FLUSH-MOUNTED FUF
FOR MEASURING THE TEMPERATURE IN DRY ROOMS

TECHNICAL DATA

Design:	Berlin UP
Housing colour:	pure white, similar to RAL 9010
Housing material:	PC plastic
Ambient temperature:	−10 to +50 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals 0.5 mm² – 1.5 mm² only to safety extra low voltage max. 30 VAC / 42 VDC
Max. measurement current:	< 1 mA
Extendable sensor wire:	depending on the cross-section of the conductor and the sensor unit type
Tolerances:	PT100 / PT1000 DIN EN 60751 B
Mounting / attachment:	in a flush-mounted socket, can be adapted to fit virtually any surface switch range. 50x50 mm adaptable
Protection rating:	IP30
Protection class:	III
Safety and EMC:	according to DIN EN 60730
Sensor characteristic curves:	the sensor characteristic curves can be found in the 'Miscellaneous' section

APPLICATION

Temperature measurement in living spaces and office spaces.

The room temperature sensor with 50x50 mm cover can be integrated into almost all switch ranges by means of an insert frame.
(Frames are not a part of the delivery scope.) For integration examples, see the 'Heating technology' section.

Please follow the EMC directives. Avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	TYPE	ITEM NO.	SURFACE FINISH	EURO / PG
PT-100	FUFP 100-0000	SN090000	glossy	34.50 / III
PT-1000	FUFP 1000-0000	SN090001	glossy	34.50 / III
NTC 2K25 'Sensor 0'	FUFC 225-0000	SN090197	glossy	34.50 / III
NTC 47K 'Sensor 2'	FUFC 47-0000	SN090198	glossy	34.50 / III
NTC 8K 'Sensor 3'	FUFC 08-0000	SN090199	glossy	34.50 / III
NTC 10K 'Sensor 4'	FUFC 10-0000	SN090005	glossy	34.50 / III
NTC 2K 'Sensor 8'	FUFC 02-0000	SN090200	glossy	34.50 / III
KTY 81-121 'Sensor 51'	FUFY 81 / 121-0000	SN090201	glossy	34.50 / III
KTY 11-7 'Sensor 57'	FUFY 11 / 7-0000	SN090202	glossy	34.50 / III

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-090.900	VV000025	alre frame 'Berlin' for all flush-mounted controllers and sensors with 50x50 mm cover, pure white, glossy, similar to RAL 9010	4.20 / I

ROOM TEMPERATURE SENSOR – FLUSH-MOUNTED FUF
FOR MEASURING THE TEMPERATURE IN DRY ROOMS

ILLUSTRATIONS

FUF with alre frame 'Berlin'
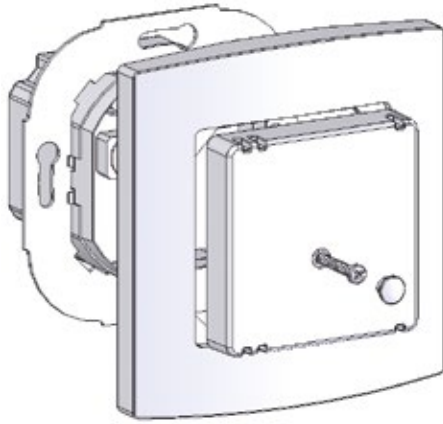
Dimension drawing RUF
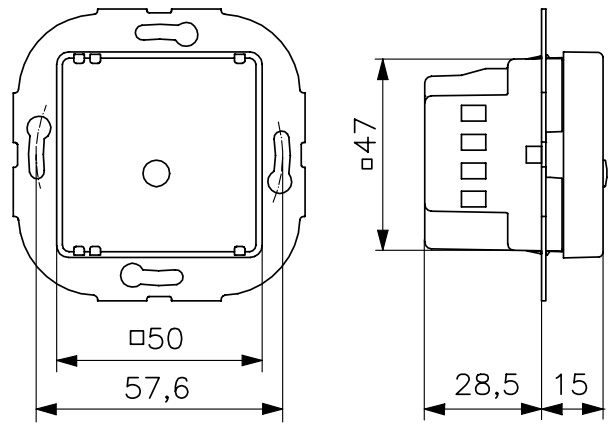
FUFxx-0000
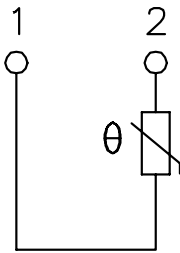
OUTDOOR TEMPERATURE SENSOR AF WITH PASSIVE OUTPUT.
AF – OUTDOOR TEMPERATURE SENSOR WITH INSIDE SENSOR

TECHNICAL DATA

Housing colour:	pure white, similar to RAL 9010
Housing material:	PA plastic (30% GF reinforced)
Ambient temperature:	−30 to +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals 0.14 mm² up to 2.5 mm² only to safety extra low voltage max. 30 VAC / 42 VDC
Max. measurement current:	< 1 mA
Extendable sensor wire:	depending on the cross-section of the conductor and the sensor unit type
Tolerances:	PT100 / PT1000 DIN EN 60751 B
Mounting / attachment:	surface / wall mounting
Protection rating:	IP65
Protection class:	III
Safety and EMC:	according to DIN EN 60730
Sensor characteristic curves:	the sensor characteristic curves can be found in the 'Miscellaneous' section

APPLICATION

The AF outdoor temperature sensors are used for temperature measurement in the outdoors, in damp environments, in cold storage rooms and greenhouses as well as in industrial applications and are specially protected against dust and moisture. If there is direct incident sunlight on the sensor housing, the use of a sun shade is recommended.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	TYPE	ITEM NO.	EURO / PG
PT 100	AFP 100	G9040010	24.50 / III
PT 1000	AFP 1000	G9040020	24.50 / III
NTC 2K25 'Sensor 0'	AF-0	G9040360	24.50 / III
NTC 1K 'Sensor 1'	AF-1	G9040370	24.50 / III
NTC 47K 'Sensor 2'	AF-2	G9040380	24.50 / III
NTC 8K 'Sensor 3'	AF-3	G9040390	24.50 / III
NTC 10K 'Sensor 4'	AF-4	G9040400	24.50 / III
NTC 50K 'Sensor 5'	AF-5	G9040561	24.50 / III
NTC 2K 'Sensor 8'	AF-8	G9040410	24.50 / III
KTY 81-121 'Sensor 51'	AF-51	G9040420	24.50 / III
KTY 11-7 'Sensor 57'	AF-57	G9040681	24.50 / III

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
S protection 01	G9990170	Ball impact guard, sun and rain protection; 150x90x47 mm; stainless steel V4A 1.4571	36.20 / III

ILLUSTRATIONS
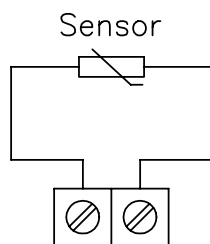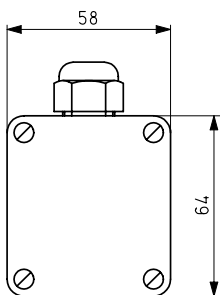
Sensor

S protection 01
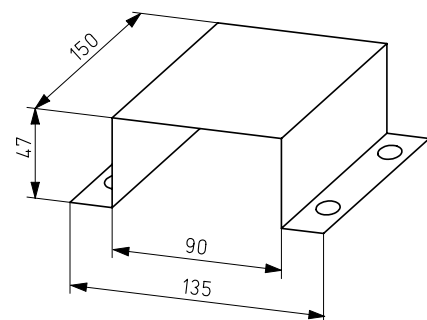
OUTDOOR TEMPERATURE SENSORS AFH WITH PASSIVE OUTPUT
AFH… OUTDOOR TEMPERATURE SENSOR WITH SLEEVE LEAD-OUT

TECHNICAL DATA

Housing colour:	pure white, similar to RAL 9010
Housing material:	PA plastic (30% GF reinforced)
Operating voltage (active):	24 VDC
Ambient temperature:	−30 to +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Max. measurement current (passive):	< 1 mA
Electrical connection:	screw-type terminals 0.14 mm² up to 2.5 mm² only to safety extra low voltage with passive output. max. 30 VAC / 42 VDC
Sensor wire extendable:	depending on the cross-section of the conductor and the sensor unit type
Tolerances:	PT100 / PT1000 DIN EN 60751 B
Mounting / attachment:	surface / wall mounting
Protection rating:	IP65
Protection class:	III
Safety and EMC:	according to DIN EN 60730

APPLICATION

The outdoor temperature sensors are used for temperature measurement in the outdoors, in damp room applications, in cold storage rooms and greenhouses as well as in industrial applications and are specially protected against dust and moisture. Owing to the external sensor sleeve, this outdoor sensor has a very good actuation response to temperature changes.

If there is direct incident sunlight on the sensor, the use of a sun shade is recommended.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	TYPE	ITEM NO.	EURO / PG
PT 100	AFHP 100	G9040160	42.60 / III
PT 1000	AFHP 1000	G9040170	42.60 / III
NTC 10K 'Sensor 4'	AFHC 10	G9040220	42.60 / III

ILLUSTRATIONS
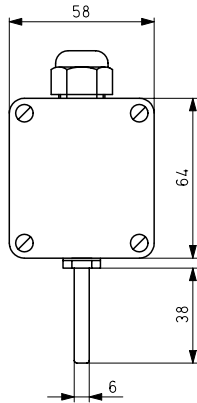
SLEEVE TEMPERATURE SENSORS HF
HF … / P SLEEVE TEMPERATURE SENSOR WITH PVC CABLE
HF … / S SLEEVE TEMPERATURE SENSOR WITH SILICONE CABLE

TECHNICAL DATA (HF... / P AND HF... / S)

|	
Sensor dimensions:	Ø 6 mmx45 mm
Sensor sleeve material:	V2A (1.4301)
Permissible atmospheric humidity:	max. 95% relative humidity, non-condensing
Max. measurement current:	< 1 mA
Electrical connection:	only to safety extra low voltage max. 30 VAC / 42 VDC
Connecting cable:	1 m, 2x0.5 mm² (HFP 100 / S / 6 m: 6 m, 2x0.5 mm²)
Extendable sensor wire:	depending on the cross-section of the conductor and the sensor unit type
Tolerances:	PT100 / PT1000 DIN EN 60751 B
Mounting / attachment:	in immersion sleeve, protection coil, on pipe etc.
Protection rating:	IP65, moisture-impregnable burnishing
Protection class:	III
Safety and EMC:	according to DIN EN 60730
Sensor characteristic curves:	the sensor characteristic curves can be found in the 'Miscellaneous' section
Immersion sleeves:	Immersion sleeves can be found in the 'Miscellaneous' section.

APPLICATION

The HF sleeve sensors are used for temperature measurement in liquid or gaseous media. Thanks to the moisture-impermeable burnishing, the sleeve sensor is particularly protected against moisture and dust.

If used in liquid media, integration in an immersion sleeve is necessary.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	TYPE	ITEM NO.	FEATURES	EURO / PG
PT 100	HFP 100 / P	G9030010	Sensor wire PVC, −35 to +105 °C	17.80 / III
PT 1000	HFP 1000 / P	G9030020	Sensor wire PVC, −35 to +105 °C	17.80 / III
NTC 10K	HFC 10 / P	G9030070	Sensor wire PVC, −35 to +105 °C	17.80 / III

SENSOR	TYPE	ITEM NO.	FEATURES	EURO / PG
PT 100	HFP 100 / S	G9030140	Sensor wire, silicone, −50 to +150 °C	24.60 / III
PT 100	HFP 100 / S / 6 m	G9030411	Sensor wire, silicone, −50 to +150 °C	35.40 / III
PT 1000	HFP 1000 / S	G9030150	Sensor wire, silicone, −50 to +150 °C	24.60 / III
Ni 1000	HFN 1000 / S	G9030160	Sensor wire, silicone, −50 to +150 °C	27.40 / III
NTC 10K	HFC 10 / S	G9030200	Sensor wire, silicone, −50 to +150 °C	24.60 / III

ILLUSTRATIONS

Anschlussleitung
NL
ø6
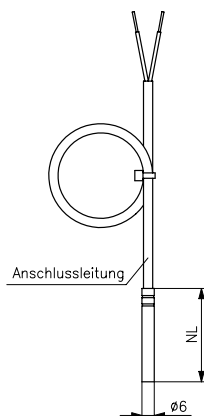
CABLE TEMPERATURE SENSOR KF (REMOTE SENSOR FOR ALRE STANDARD DEVICES, FOR EXAMPLE, ITR79, ETC.)

TECHNICAL DATA (HF.../P AND HF.../S)

Sensor dimensions:	see dimension diagram
Sensor sleeve material:	V4A (1.4571)
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Max. measurement current:	< 1 mA
Electrical connection:	only to safety extra low voltage max. 30 VAC / 42 VDC KF-100-4 and KF-100 / 6-4 4-wire
Sensor wire extendible up to:	depending on the cross-section of the conductor and the sensor unit type
Tolerances:	PT100 / PT1000 Class B
Mounting / attachment:	in immersion sleeve, protection coil, on pipe etc.
Protection rating:	IP 67
Protection class:	III
Sensor characteristic curves:	the sensor characteristic curves can be found in the 'Miscellaneous' section
Accessories:	Immersion sleeves / protection coils can be found under Miscellaneous
Sensor characteristic curves:	the sensor characteristic curves can be found in the 'Miscellaneous' section
Immersion sleeves:	Immersion sleeves can be found in the 'Miscellaneous' section.

APPLICATION

For temperature measurement of liquid media by integrating in immersion sleeves (TH / NTH). For temperature measurement of air and non-aggressive gases in the air duct by integration in a protection coil (SW-200, see the 'Accessories / Miscellaneous' section).

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	TYPE	ITEM NO.	FEATURES	EURO/PG
'Sensor 0' (NTC 2 K 25)	KF-0	G9031441	Wire PE, 1.5 m, −35 to +100 °C	28.40 / III
'Sensor 1' (NTC 1K)	KF-1	G9031442	Wire PE, 1.5 m, −35 to +100 °C	28.40 / III
'Sensor 2' (NTC 47 K)	KF-2	G9031446	Wire PE, 1.5 m, −35 to +100 °C	28.40 / III
'Sensor 3' (NTC 8 K)	KF-3	G9031447	Wire PE, 1.5 m, −35 to +100 °C	28.40 / III
'Sensor 4' (NTC 10 K)	KF-4	G9031449	Wire PE, 1.5 m, −35 to +100 °C	28.40 / III
'Sensor 4' (NTC 10 K)	KF-4 / 6	G9031450	Wire PE, 6 m, −35 to +100 °C	30.20 / III
'Sensor 5' (NTC 50 K)	KF-5	G9031451	Wire PE, 1.5 m, −35 to +100 °C	28.40 / III
'Sensor 6' (NTC 100 K)	KF-6	G9031455	Wire PE, 1.5 m, −35 to +100 °C	30.80 / III
'Sensor 51' (KTY 81-121)	KF-51	G9031452	Wire silicone, 1.5 m, −50 to +150 °C	30.80 / III
'Sensor 51' (KTY 81-121)	KF-51 / 6	G9031453	Wire silicone, 6 m, −50 to +150 °C	34.60 / III
'Sensor 57' (KTY 11-7)	KF-57	G9031454	Wire PE, 1.5 m, −35 to +100 °C	28.40 / III
PT-100	KF-100-4	G9031443	Wire silicone, 1.5 m, −50 to +180 °C	36.10 / III
PT-100	KF-100 / 6-4	G9031444	Wire silicone, 6 m, −50 to +180 °C	41.90 / III
PT-1000	KF-1000	G9031445	Wire silicone, 1.5 m, −50 to +180 °C	29.30 / III

ILLUSTRATIONS

KF

Anschlussleitung
50
ø 6
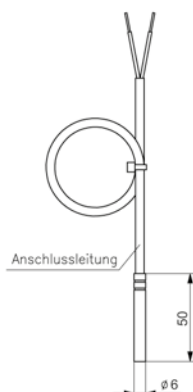
CONTACT TEMPERATURE SENSOR ALF

TECHNICAL DATA

Housing colour:	pure white, similar to RAL 9010
Housing material:	PA plastic (30% GF reinforced)
Ambient temperature:	−30 to +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Max. measurement current (passive):	< 1 mA
Electrical connection:	screw-type terminals 0.14 mm² – 2.5 mm² only to safety extra low voltage passive max. 30 V AC / 42 V DC
Mounting / attachment:	on pipe by means of cable tie-wrap
Tolerances:	PT100 / PT1000
Protection rating:	IP65
Protection class:	III
Safety and EMC:	according to DIN EN 60730
Sensor characteristic curves:	the sensor characteristic curves can be found in the 'Miscellaneous' section

APPLICATION

The ALF contact temperature sensors are used for temperature measurement on pipes, tubes or heat carriers.

For better temperature transmission between the pipe and the contact sensor, the use of a heat conducting paste is recommended.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	TYPE	ITEM NO.	EURO/PG
PT 100	ALFP 100	G9050010	27.40 / III
PT 1000	ALFP 1000	G9050020	27.40 / III
'Sensor 0' (NTC 2K25)	ALF-0	G9050270	27.40 / III
'Sensor 2' (NTC 47K)	ALF-2	G9050160	27.40 / III
'Sensor 3' (NTC 8K)	ALF-3	G9050180	27.40 / III
'Sensor 4' (NTC 10K)	ALF-4	G9050190	27.40 / III
'Sensor 5' (NTC 50K)	ALF-5	G9050200	27.40 / III
'Sensor 51' (KTY 81-121)	ALF-51	G9050210	27.40 / III

ACCESSORIES	ITEM NO.	FEATURES	EURO/PG
WP-01	G9990180	heat conduction paste 2 ml	6.60 / II

ILLUSTRATIONS
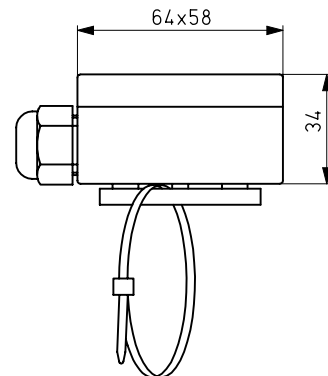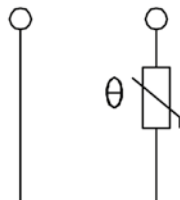
PENDULUM TEMPERATURE SENSOR PF

TECHNICAL DATA

Sensor material:	Al black, PVC wire
Sensor dimensions:	Ø 60 mm
Ambient temperature:	−30 to +80 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Max. measurement current:	< 1 mA
Electrical connection:	only to safety extra low voltage max. 30 VAC / 42 VDC
Extendable sensor wire:	depending on the cross-section of the conductor and the sensor unit type
Connecting cable:	2x0.5 mm²
Mounting / attachment:	suspended
Tolerances:	PT100 / PT1000 DIN EN 60751 B NI1000 DIN EN 43760 B
Protection rating:	IP65
Protection class:	III
Safety and EMC:	according to DIN EN 60730
Sensor characteristic curves:	the sensor characteristic curves can be found in the 'Miscellaneous' section

APPLICATION

The pendulum temperature sensor PF serves to measure the temperatures in larger spaces. Owing to the spherical form, this sensor captures the temperature from all directions of the room, so that when correctly positioned in the room, a representative measurement result can be achieved.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

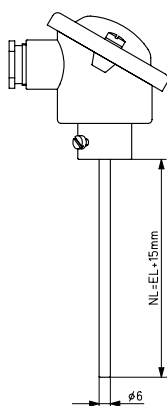| SENSOR	TYPE	ITEM NO.	FEATURES	EURO / PG
PT 100	PFP 100	G9130010	Wire length: 1 m	94.10 / III
PT 1000	PFP 1000	G9130020	Wire length: 1 m	94.10 / III
'Sensor 4' NTC 10 K	PFC 10	G9130070	Wire length: 1 m	94.10 / III
'Sensor 2' NTC 47 K	PFC 47 / 6 (6 m)	G9130180	Wire length: 6 m	99.70 / III

ILLUSTRATIONS

PF
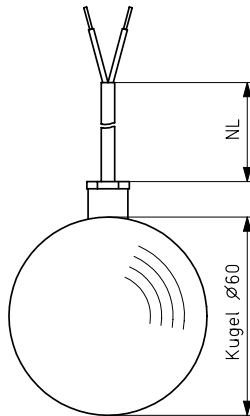
RADIATION TEMPERATURE SENSOR STF

TECHNICAL DATA

Design:	Berlin 2000
Housing colour:	pure white, similar to RAL 9010, ball black
Housing material:	ABS plastic
Ambient temperature:	–20 … +60 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Max. measurement current:	< 1 mA
Electrical connection:	screw-type terminals 0.14 mm² up to 1.5 mm² only to safety extra low voltage max. 30 VAC / 42 VDC
Extendable sensor wire:	depending on the cross-section of the conductor and the sensor unit type
Mounting / attachment:	surface / wall mounting (4-hole assembly on flush-mounted socket)
Protection rating:	IP30
Protection class:	III
Safety and EMC:	according to DIN EN 60730
Sensor characteristic curves:	the sensor characteristic curves can be found in the 'Miscellaneous' section

APPLICATION

The radiation temperature sensor is a dual sensor for the measurement of radiation and room heat. The radiation sensor is located in the black hemisphere; the room sensor is located the plastic housing. Connection with screw-type terminals.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	TYPE	ITEM NO.	EURO/PG
'Sensor 0' 2x NTC 2 K 25	STF-0	SN080100	80.10 / III
'Sensor 2' 2x NTC 47 K	STF-2	SN080200	80.10 / III
'Sensor 4' 2x NTC 10 K	STF-4	SN080400	80.10 / III
'Sensor 51' 2x KTY-81-121	STF-51	SN080500	80.10 / III

ILLUSTRATIONS

STF

STF

Strahlungsfühler

Raumfühler
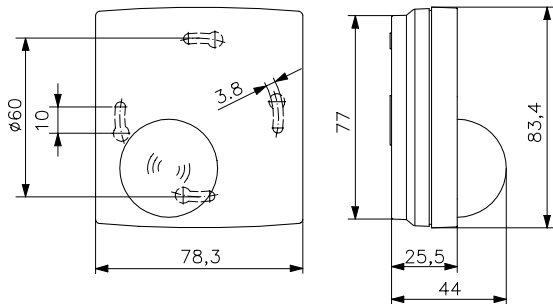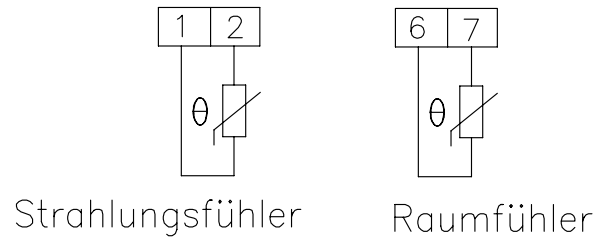
INTEGRATED DUCT SENSOR EKF
WITH PASSIVE OUTPUT

TECHNICAL DATA

Housing colour:	pure white, similar to RAL 9010
Housing material:	PA plastic (30% GF reinforced)
Sensor tube material:	V2A (1.4301)
Ambient temperature:	−30 … +70 °C
Max. sensor temperature:	150 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals 0.14 mm² up to 2.5 mm² only to safety extra low voltage max. 30 VAC / 42 VDC
Tolerances:	PT100 / PT1000 DIN EN 60751 B
Mounting / attachment:	in immersion sleeves (THMs, THV) for fluids or with mounting flange (MF) in air ducts
Protection rating:	IP65
Protection class:	III
Safety and EMC:	according to DIN EN 60730
Sensor characteristic curves:	the sensor characteristic curves can be found in the 'Miscellaneous' section
Immersion sleeves:	From the fitting length (EL), subtract 15 mm to determine the nominal length (NL) of the immersion sleeve, for example, EL = 65 mm corresponds to THV / 50

APPLICATION

The assembly-type duct sensor EKF is used for measuring temperatures in liquids and gases in pipes, air ducts or tanks. A mounting flange (MF) is required for use in air ducts. If used in liquids, immersion sleeves made of brass with nickel plating (THMs) should be used. For aggressive media, immersion sleeves made of stainless steel V4A (THV) are recommended. Immersion sleeves or mounting flanges are not part of the delivery scope and must be **ordered separately** as accessories.

Accessories: mounting flange for installation in air ducts: MF matching immersion sleeves in brass: Immersion sleeves with brass plating can be found in the 'Miscellaneous' section matching immersion sleeves stainless steel (V4A): immersion sleeves made of stainless steel can be found in the 'Miscellaneous' section

**Extendable sensor wire:** depending on the cross-section of the conductor and the sensor unit type

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	FITTING LENGTH 65 MM (FOR 50-MM IMMERSION SLEEVES)	FITTING LENGTH 115 MM (FOR 100-MM IMMERSION SLEEVES)	FITTING LENGTH 165 MM (FOR 150-MM IMMERSION SLEEVES)	PG
PT 100	EKFP 100 / 50 Item no.: G9140010; €39.90	EKFP 100 / 100 Item no.: G9140140; €40.50	EKFP 100 / 150 Item no.: G9140270; €41.70	III
PT 1000	EKFP 1000 / 50 Item no.: G9140020; €39.90	EKFP 1000 / 100 Item no.: G9140150; €40.50	EKFP 1000 / 150 Item no.: G9140280; €41.70	III

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
MF	G9990160	mounting flange for integrated duct sensor	7.40 / III

ILLUSTRATIONS

assembly-type duct sensor
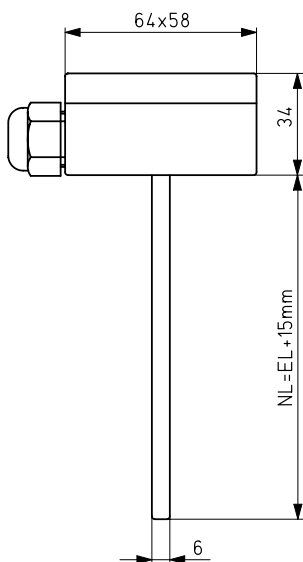
Mounting flange MF
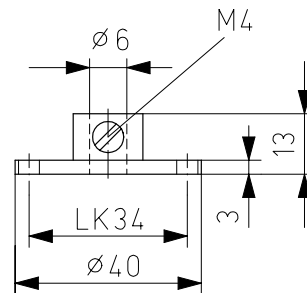
assembly-type duct sensor
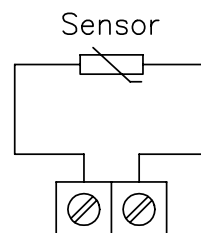
INDUSTRIAL ASSEMBLY-TYPE DUCT SENSOR IKF1 (FORM B)
WITH PASSIVE OUTPUT

TECHNICAL DATA

Housing colour:	silver-grey
Housing material:	aluminium
Sensor tube material:	V2A (1.4301)
Ambient temperature:	−30 to +100 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Max. sensor temperature:	150 °C
Electrical connection:	screw-type terminals 0.14 mm² up to 2.5 mm² only to safety extra low voltage max. 30 VAC / 42 VDC
Tolerances:	PT1000 DIN EN 60751 B
Mounting / attachment:	in immersion sleeves (THMs, THV) for fluids or with mounting flange (MF) in air ducts
Protection rating:	IP43
Protection class:	III
Safety and EMC:	according to DIN EN 60730
Sensor characteristic curves:	the sensor characteristic curves can be found in the 'Miscellaneous' section
Immersion sleeves:	from the fitting length (EL), subtract 15 mm to determine the nominal length (NL) of the immersion sleeve, for example, EL = 65 mm corresponds to THV / 50
Accessories:	mounting flange for installation in air ducts: MF matching immersion sleeves in brass: Immersion sleeves with brass plating can be found in the 'Miscellaneous' section matching immersion sleeves stainless steel (V4A): immersion sleeves made of stainless steel can be found in the 'Miscellaneous' section

APPLICATION

The industrial assembly-type duct sensor IKF1 is used for measuring temperatures of liquids and gases in pipes, air ducts or tanks in the mechanical and plant engineering sector. A mounting flange (MF) is required for use in air ducts. If used in liquids, immersion sleeves made of brass with nickel plating (THMs) should be used. For aggressive media, immersion sleeves made of stainless steel V4A (THV) are recommended. Immersion sleeves or mounting flanges are not part of the delivery scope and must be **ordered separately** as accessories.

Sensor wire extendable: depending on the cross-section of the conductor and the sensor unit type

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

SENSOR	FITTING LENGTH (EL) 65 MM (FOR 50-MM IMMERSION SLEEVES)	FITTING LENGTH (EL) 115 MM (FOR 100-MM IMMERSION SLEEVES)	FITTING LENGTH (EL) 165 MM (FOR 150-MM IMMERSION SLEEVES)	PG
PT 1000	IKF1P 1000 / 50 Item no.: G9150020; €68.50	IKF1P 1000 / 100 Item no.: G9150150; €70.10	IKF1P 1000 / 150 Item no.: G9150280; €71.50	III

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
MF	G9990160	mounting flange for integrated duct sensor	6.50 / III

ILLUSTRATIONS

Industrial assembly-type duct sensor

Mounting flange MF
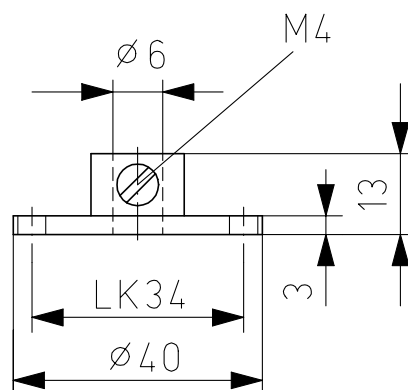
IKF
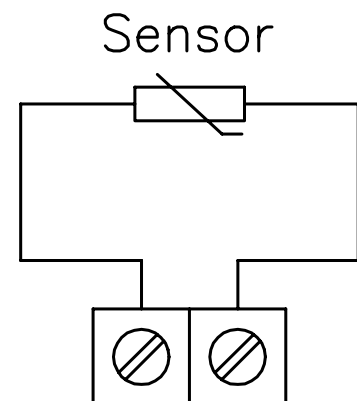
TRANSDUCER 'DIFFERENTIAL PRESSURE – AIR'

TECHNICAL DATA

Housing colour:	grey
Housing material:	plastic
Material of parts coming in contact with the medium:	Ni, PU, Al, Au, Pyrex glass, silicone, Kovar, Duraplast, Ultem Plasic
Operating voltage:	15–30 VDC, 15–30 VAC
Ambient temperature:	10 to 50 °C
Permissible atmospheric humidity:	max. 80% rel. humidity, non-condensing
max. pressure:	5 times the measurement range end value (relative pressure)
Electrical connection:	screw-type terminals up to 1.5 mm²
Mounting / attachment:	wall mounting
Protection rating:	IP54
Protection class:	III
Safety and EMC:	according to DIN EN 60730
Sensor:	piezo-resistive pressure sensor
Pressure connection:	dxL: 6.6x10 mm (for flexible tubes d = 6 mm)
Cable gland:	M 12 x 1.5
Output signal:	continuous, adjustable 0–10 V, 0–20 mA, 4–20 mA
Accuracy:	Linearity: +/−2% FS Influence of supply: <0.05% Influence of position: 0.1% at 3000 Pa, 0.3% at 1500 Pa, 0.9% at 500 Pa, 1.8% at 250 Pa Temperature drift: Offset and range respectively +/−0.12% FS / K Long-term stability: +/−2% FS / year

APPLICATION

The microprocessor-controlled pressure transducers are suitable for detecting overpressure, underpressure or differential pressure of non-aggressive gases.

They are used in heating, ventilation or air conditioning applications as well as in clean room technology or for fine draft measurement.

The pressure measurement is performed using a piezo-resistive pressure sensor.

The types MDEKD replace the types DF.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

TYPE	ITEM NO.	MEASUREMENT RANGES	EURO / PG
MDEKD-940.000	G9270010	1000 Pa, 750 Pa; 500 Pa; 250 Pa relative pressure	166.30 / III
MDEKD-940.100	G9270020	10000 Pa; 7500 Pa; 5000 Pa; 2500 Pa relative pressure	166.30 / III

ACCESSORIES	ITEM NO.	FEATURES	EURO / PG
JZ-27	G9990450	cover with 3.5-digit LC display for MDEKD, easy assembly	77.50 / III
JZ-06 / 1	H5309229	Connection set with duct connections made of plastic, 2 x 90° angles, 2 extensions 90 mm, 4 self-tapping screws, 2 m tube Ø 6 mm outside for differential pressure switch JDW, JDL, pressure transducer	10.40 / II

ILLUSTRATIONS
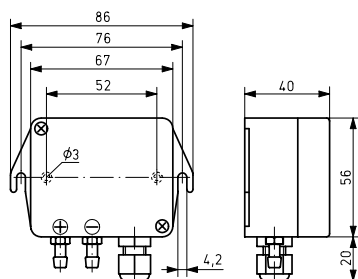
MDEKD with JZ-27

ACCESSORIES

CUSTOMISED AND HIGH-PERFORMANCE

ALRE ACCESSORIES.
MAKING SOPHISTICATED TECHNOLOGY
EVEN MORE POWERFUL.

With the right accessories, you get more out of your alre control technology. That's why we offer you a wide range of customised accessory products. Our technical explanations, assembly instructions and hints on correct use ensure seamless installation and operation. In addition to our range of accessories and replacement parts, in this catalogue, you will also find valuable tips from professionals, for professionals.

alre accessories:
making good even better.

APPLICATION
EXAMPLES:

+ Controllers for dry and wet saunas
+ Process connections for liquid and gaseous media
+ Various accessories

SAUNA CONTROLLERS 244

SAUNA CONTROLLERS

ACCESSORIES 246

ACCESSORIES

ANNEX 252

TECHNICAL ANNEX

INDEX

GENERAL INFORMATION / CONTACT / ADDRESSES

SAUNATHERM VU / HYGROTHERM VU
SAUNA CONTROLLERS FOR DRY AND WET SAUNAS

TECHNICAL DATA		APPLICATION
Colour:	cream white, similar to RAL 9001	Sauna controllers for dry or dry / wet saunas.
Housing material:	ABS	
Mains voltage:	400 VAC, 3 / N 50 Hz	Load expansion possible with LG 9 / 18 (18 kW) or LG 9 / 30 (30 kW).
Equipment:	sensor rupture / short-circuit safeguarding, 'light' switch, 'ON / OFF' switch, 'light / fan / electronics' microfuse, 'ON / OFF' contact input	
Trigger temperature of safety temperature limiter:	approx. 141 °C	
Heating time limit:	6 h / 12 h / none	
Pre-selection timer:	can be set to max. 12 h, 1-h intervals	
Switching power, furnace:	max. 9 kW (max. 3 kW per phase)	
Switching power, light:	max. 100 W, 230 VAC, 50 Hz	
Switching power, fan:	max. 100 W, 230 VAC, 50 Hz	
Switching element:	safety protection, relay 3-stage switching	
Hysteresis:	approx. 1 K	
Display type:	LED	
Protection rating:	IP44	
Protection class:	II, if properly mounted	
Fuse:	T1, 25 A (5 x 20)	
Scope of delivery:	control unit, sensor / STB, fastening screws	
Mounting:	wall mounting	
Ambient temperature:	−15 to +25 °C	
Electrical connection:	screw-type terminals	
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing	

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
Saunatherm VU	D4700653	Sauna controller for dry saunas (Finnish) Control range: 30 to 120 °C Switch: 'Fan On / Off' Indicators: 'HEATING', 'ON / OFF', 'pre-selection timer'	335.70 / III
Hygrotherm VU	D4700736	Sauna controller for dry saunas (Finnish) or wet saunas Control range, dry sauna: 80 to 110 °C Control range, wet sauna: 40 to 60 °C / approx. 40 − 95 % rel. humidity Switching power vaporiser: max. 3 kW Switch: 'Fan, 3-stage' Indicators: 'heating', 'ON / OFF', 'pre-selection timer' Water shortage detection Post-operation drying temperature adjustable: approx. 60 to 80 °C Post-operation drying limitation: approx. 3.5 h Fan post-operation time: approx. 15 minutes	501.40 / III

ACCESSORIES FOR SAUNATHERM VU / HYGROTHERM VU
SAUNA CONTROLLERS FOR DRY AND WET SAUNAS

TYPE / IMAGE	ITEM NO.	FEATURES	EURO / PG
LG 9 / 18	D4710450	Power switching unit 9 kW (max. 3 kW per phase) With this unit, all control units can be enhanced from 9 kW to 18 kW switching power (9 kW via control unit + 9 kW via load switch = 18 kW total power).	194.20 / III
LG 9 / 30	H4690008	Power switching unit 21 kW (max. 7 kW per phase) With this unit, all control units can be enhanced from 9 kW to 30 kW Switching power (9 kW via control unit + 21 kW via load switch = 30 kW total power).	740.30 / III
Sensor / STB	D4700662	Spare sensor / STB for Saunatherm VU and Hygrotherm VU	59.80 / III

ILLUSTRATIONS

Saunatherm VU
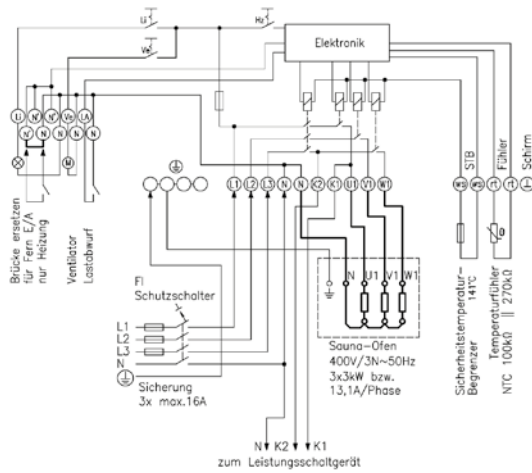
Hygrotherm VU
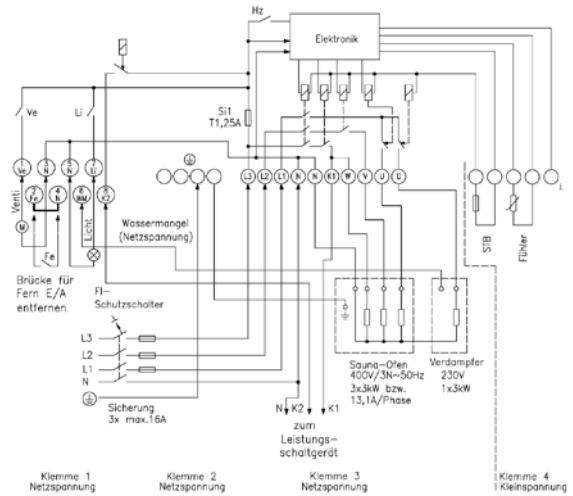
Sauna controllers, LG 9 / 18
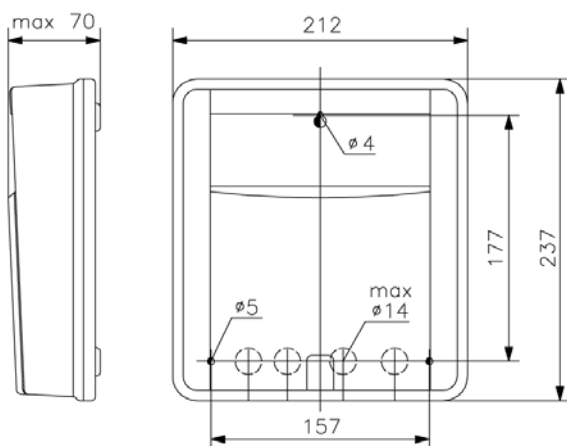
LG 9 / 30
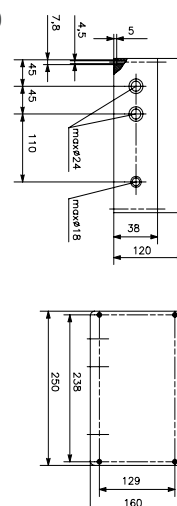
Sensor / STB
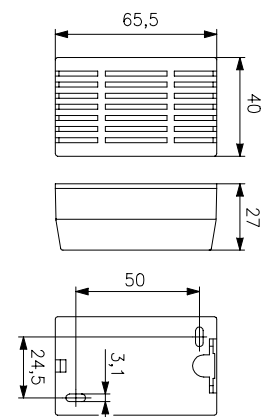
IMMERSION SLEEVES / PROTECTION COILS FOR RTKSA AND FOR SLEEVE AND CABLE SENSORS

FOR INDUSTRIAL APPLICATIONS AND HEATING TECHNOLOGY

ILLUSTRATIONS

THK / NTHK

SW-200 / SW-200-12
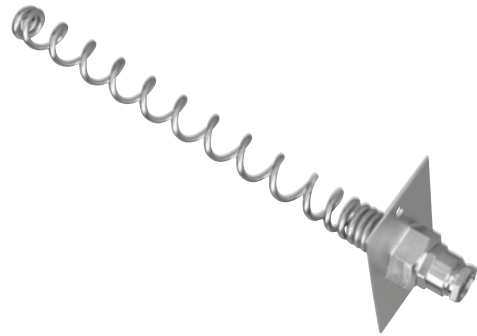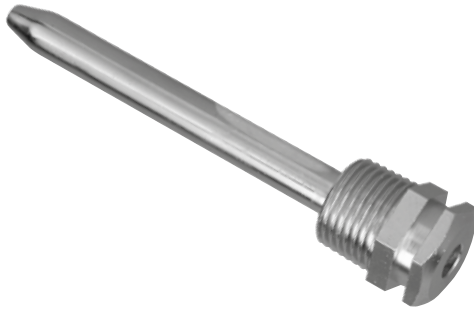
IMMERSION SLEEVES FOR RTKSA

TYPE	ITEM NO.	LENGTH OF L	DIAMETER IXA*	MATERIAL	MAX. PRESSURE (P/BAR)	EURO/PG
THK-2-100	KA969901	100 mm	7.5x10 mm	nickel-plated brass	20	20.40 / II
THK-2-120	KA969902	120 mm	7.5x10 mm	nickel-plated brass	20	23.20 / II
THK-2-200	KA969903	200 mm	7.5x10 mm	nickel-plated brass	20	23.90 / II
THK-2-280	KA969904	280 mm	7.5x10 mm	nickel-plated brass	20	29.10 / II
THK-2-600	KA969905	600 mm	7.5x10 mm	nickel-plated brass	20	46.30 / II
NTHK-2-100	KA969906	100 mm	7.5x10 mm	V4 A (1.4571)	40	55.60 / II
NTHK-2-120	KA969907	120 mm	7.5x10 mm	V4 A (1.4571)	40	56.40 / II
NTHK-2-200	KA969908	200 mm	7.5x10 mm	V4 A (1.4571)	40	57.40 / II
NTHK-2-280	KA969909	280 mm	7.5x10 mm	V4 A (1.4571)	40	58.90 / II
THK-2-100 x 17	KA979901	100 mm	14.8x17 mm	nickel-plated brass	20	29.60 / II
THK-2-200 x 17	KA979902	200 mm	14.8x17 mm	nickel-plated brass	20	39.70 / II
NTHK-2-100 x 17	KA979903	100 mm	14.8x17 mm	V4 A (1.4571)	40	57.80 / II
NTHK-2-200 x 17	KA979904	200 mm	14.8x17 mm	V4 A (1.4571)	40	59.90 / II

PROTECTION COIL FOR RTKSA

TYPE	ITEM NO.	LENGTH OF L	DIAMETER IXA*	MATERIAL	EURO/PG
SWK-2-100	KA989901	100 mm	10.5x17 mm	steel, nickel-plated	18.70 / II
SWK-2-120	KA989902	120 mm	10.5x17 mm	steel, nickel-plated	23.20 / II
SWK-2-200	KA989903	200 mm	10.5x17 mm	steel, nickel-plated	23.90 / II
SWK-2-280	KA989904	280 mm	10.5x17 mm	steel, nickel-plated	29.10 / II

IMMERSION SLEEVES / PROTECTION COILS FOR RTKSA AND FOR SLEEVE AND CABLE SENSORS
FOR INDUSTRIAL APPLICATIONS AND HEATING TECHNOLOGY

PROTECTION COIL FOR CAPILLARY FASTENING IN THE AIR DUCT (JET / JMT / JTF) AND ALL SLEEVE SENSORS HF AND CABLE SENSORS

TYPE	ITEM NO.	LENGTH OF L	CABLE GLAND	DIAMETER IXA*	MATERIAL	EURO/PG
SW-200	C1809219	200 mm	7.8 mm	11x17 mm	steel, nickel-plated	32.30 / II
SW-200-12	C1809220	200 mm	11.8 mm	11x17 mm	steel, nickel-plated	31.10 / II

* I = minimum inner diameter
 A = nominal outer diameter

ILLUSTRATIONS

THK / NTHK
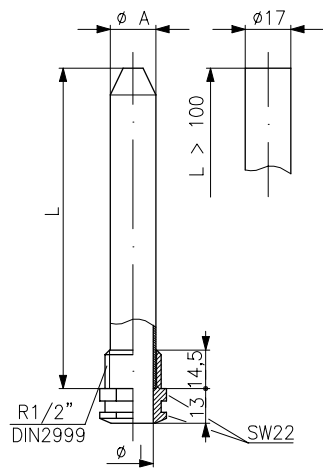
SWK
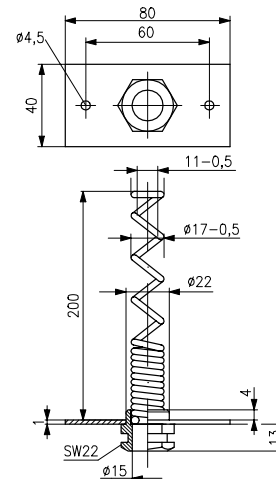
SW-200
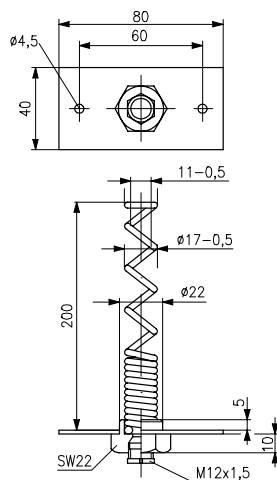
SW-200-12
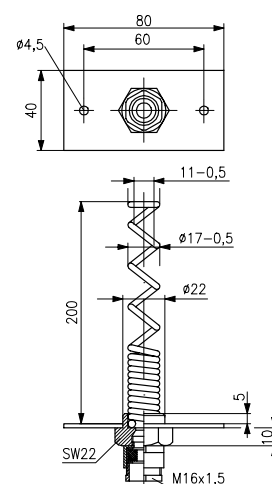
IMMERSION SLEEVES FOR CAPILLARY / FROST PROTECTION THERMOSTATS / HF / SCREED MOUNTING
FOR INDUSTRIAL APPLICATIONS AND HEATING TECHNOLOGY

ILLUSTRATIONS

TH / NTH

THF

FOR SENSORS HF Ø 7.7 MM, CAPILLARY AND FROST PROTECTION THERMOSTATS JET / JMT / WR 81 AND JTF (FOR JTF, ONLY TYPE TH / NTH-140)

TYPE	ITEM NO.	LENGTH OF L	DIAMETER IXA**	MATERIAL	MAX. PRESSURE (P / BAR)	EURO / PG
TH-55	C1809296	55 mm	8x10 mm	nickel-plated brass	20	21.40 / II
TH-100	C1809310	100 mm	8x10 mm	nickel-plated brass	20	23.50 / II
TH-140 *	C1809409	140 mm	10x12 mm	nickel-plated brass	20	27.10 / II
TH-200	C1809438	200 mm	8x10 mm	nickel-plated brass	20	28.00 / II
TH-280	C1809440	280 mm	8x10 mm	nickel-plated brass	20	33.50 / II
NTH-55	C1809284	55 mm	8x10 mm	V4 A (1.4571)	40	53.90 / II
NTH-100	C1809308	100 mm	8x10 mm	V4 A (1.4571)	40	55.60 / II
NTH-140 *	C1809435	140 mm	10x12 mm	V4 A (1.4571)	40	57.40 / II
NTH-200	C1809439	200 mm	8x10 mm	V4 A (1.4571)	40	58.20 / II
NTH-280	C1809441	280 mm	8x10 mm	V4 A (1.4571)	40	58.90 / II

* Suitable for all types with an X in the designation, for example JET-1… X or JMT 206 X

** I = minimum inner diameter
 A = nominal outer diameter

CU PROTECTIVE SLEEVE FOR SLEEVE SENSOR HF / CABLE SENSOR KF FOR SCREED MOUNTING

TYPE	ITEM NO.	EURO / PG
THF	C1809515	40.90 / II

ILLUSTRATIONS

TH / NTH
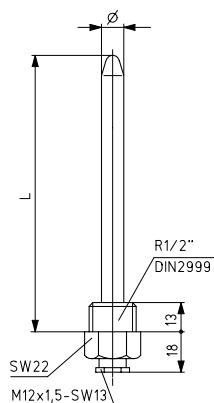
THF
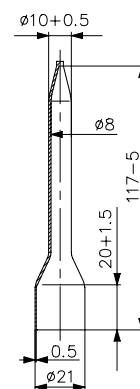
IMMERSION SLEEVE / MOUNTING FLANGE FOR HF, KF, EKF AND IKF FOR SLEEVE SENSORS / CABLE SENSORS Ø 6 MM PVC AND SILICONE, ASSEMBLY-TYPE AND INDUSTRIAL DUCT SENSORS

FOR SENSOR TECHNOLOGY

ILLUSTRATIONS

THMs
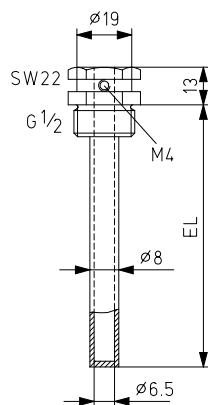
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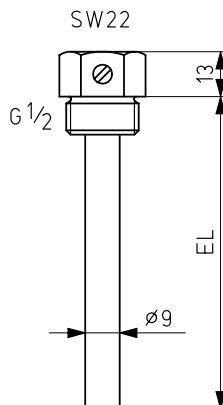
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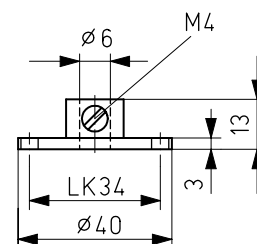
IMMERSION SLEEVES, NICKEL-PLATED, WITH RECESS

TYPE	ITEM NO.	FITTING LENGTH EL	DIAMETER IXA*	MAX. PRESSURE (P/BAR)	EURO/PG
THMs / 50	G9990010	50 mm	6.5x8 mm	20	14.10 / II
THMs / 100	G9990020	100 mm	6.5x8 mm	20	14.70 / II
THMs / 150	G9990030	150 mm	6.5x8 mm	20	15.60 / II
THMs / 200	G9990040	200 mm	6.5x8 mm	20	16.10 / II
THMs / 250	G9990050	250 mm	6.5x8 mm	20	17.10 / II
THMs / 300	G9990370	300 mm	6.5x8 mm	20	17.80 / II

IMMERSION SLEEVES, STAINLESS STEEL V4 A 1.4571

TYPE	ITEM NO.	FITTING LENGTH EL	DIAMETER IXA*	MAX. PRESSURE (P/BAR)	EURO/PG
THV / 50	G9990060	50 mm	6.3x9 mm	40	31.00 / II
THV / 100	G9990070	100 mm	6.3x9 mm	40	32.40 / II
THV / 150	G9990080	150 mm	6.3x9 mm	40	34.00 / II
THV / 200	G9990090	200 mm	6.3x9 mm	40	35.40 / II
THV / 250	G9990100	250 mm	6.3x9 mm	40	36.70 / II
THV / 300	G9990200	300 mm	6.3x9 mm	40	37.80 / II
THV / 400	G9990210	400 mm	6.3x9 mm	40	41.00 / II
THV / 450	G9990470	450 mm	6.3x9 mm	40	41.80 / II
THV / 500	G9990220	500 mm	6.3x9 mm	40	43.80 / II
THV / 600	G9990400	600 mm	6.3x9 mm	40	46.50 / II

MOUNTING FLANGE, ALUMINIUM

TYPE	ITEM NO.	FITTING LENGTH EL	DIAMETER IXA*	MAX. PRESSURE (P/BAR)	EURO/PG
MF	G9990160		6x40 mm		7.40 / III

* I = minimum inner diameter
  A = nominal outer diameter

ACCESSORIES
FOR HEATING TECHNOLOGY / AIR CONDITIONING TECHNOLOGY / PLANT ENGINEERING AND SENSOR TECHNOLOGY

TYPE	ITEM NO.	DESCRIPTION	EURO/PG
ATRS-1	C1809518	Temperature determination set for ATR 83.0…	2.70 / II
ET-01	MA990000	Adjusting knob for B1000 series devices, scale: degrees Celsius, pure white glossy	3.20 / I
ET-02	MA990001	Adjusting knob for B1000 series devices, multi-digit display 1 to 6, pure white glossy	3.20 / I
FS-HI	H530975	Sensor protection (protective wire braiding) for duct hygrostat HI	16.70 / II
FS2-HI	H531011	PTFE filter fine protection for duct hygrostat HI	71.90 / II
JZ-04	E6160133	Capillary tube leadthrough for air ducts with 30-cm protective hose (JTF frost protection thermostats, JMT capillary controllers, WR, JET)	13.80 / II
JZ-05 / 6 K	C1809536	1 set of mounting brackets (6 pieces) for frost protection thermostat JTF, made of plastic (max. 145 °C)	13.00 / II
JZ-05 / 6 M	C1809474	1 set of mounting brackets (6 pieces) for frost protection thermostat JTF, made of metal	13.90 / II
JZ-05 / 1 M	C1809462	Single mounting bracket for frost protection thermostat JTF, made of metal	3.00 / II
JZ-06 / 1	H5309229	Connection set with duct connections made of plastic, 2 x 90° angles, 2 extensions 90 mm, 4 self-tapping screws, 2-m tube Ø 6 mm outside for JDW differential pressure switch, JDL, DF pressure transducer	10.40 / II
JZ-07	E6160145	Mounting bracket for frost protection thermostats JTF	6.10 / II
JZ-08	E6150031	Spare vane for wind indication relay JSL	20.90 / II
JZ-09	E6140170	Spare paddles (4 pieces), from 1" to 8" for flow monitor JSF	20.90 / II
JZ-10	H5309237	Mounting bracket for JDL 109 / -113 and JDW-3 / -5 / -10 with 6 screws	5.50 / II
JZ-13	ZA990001	Standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)	5.30 / II
JZ-17	MN990001	Adapter plate for Berlin 3000 housing (hard-wired)	7.40 / II
JZ-18	MN990002	Adapter snap-on plate (controller is detachable) for Berlin 3000 housing (wireless)	7.40 / II
JZ-19	MN990003	Fully prewired plug-in socket (as for RTBSB-001.411), can be fitted with room thermostats RTBSB-001.086 or RTBSB-001.096	39.90 / I
JZ-20-1	E6130144	Wall holder including fastening material for duct hygrostat (HI)	21.80 / II
JZ-21	MN990006	Adapter frame for mounting devices of the Berlin 1000 series in flush-mounted sockets up to 80x80 mm	5.00 / I
JZ-24	BN990002	Magnetic fastening set for simple and safe fastening of multi-channel receivers or wiring strips VOORL	23.30 / II
JZ-25	BN990003	External antenna for reception enhancement under difficult reception conditions of the multi-channel receiver, antenna cable (JZ-26) is not a part of the delivery scope (see Page 24 for product photo)	66.10 / II
JZ-26	BN990004	Antenna cable 1 m for connecting the external antenna JZ-25 with multi-channel receivers	39.70 / II
JZ-27	G9990450	LC-display 3½ digit, for MDEKD	77.50 / II
JZ-28	H531012	IP65 cover set, consisting of a cover with pressure compensation element, O-ring and 3 screws, suitable for retrofitting of the types JDL-111, JDL-112, JDL-114, JDL-115 and JDL-116	45.40 / II
JZ-29	KA999901	Mounting set RTKSA for THK / NTHK / SWK single thermostat	3.90 / II
JZ-30	KA999902	Mounting set RTKSA for THK / NTHK / SWK double thermostat	6.30 / II
JZ-31	KA999903	Mounting set RTKSA for pipe mounting as contact thermostat	4.90 / II
JZ-32	BN990005	Magnetic fastening set for simple and safe fastening	17.50 / II
JZ-33	KA999904	RTKSA seal set, protection rating: IP54	16.70 / II
JZ-090.900	VV000025	alre frame 'Berlin' for all flush-mounted controllers with 50x50 cover, pure white, glossy, similar to RAL 9010 Fastening of the VOOPL terminal strip on a metallic substrate (for example, heating manifold)	4.20 / I
JZ-090.910	VV000010	alre frame 'Berlin' for all flush-mounted controllers with 50x50 cover, pearl white, glossy, similar to RAL 1013	4.20 / I
JZ-090.100		alre frame 'Berlin' for all flush-mounted controllers with 55x55 cover, pure white, glossy, similar to RAL 9010 Fastening of the VOOPL terminal strip on a metallic substrate (for example, heating manifold)	
S protection 01	G9990170	Ball impact guard, sun and rain protection; 150x90x47 mm; stainless steel V4A 1.4571	36.20 / III
WP-01	G9990180	heat conduction paste 2 ml	6.60 / II

ILLUSTRATIONS

S protection 01
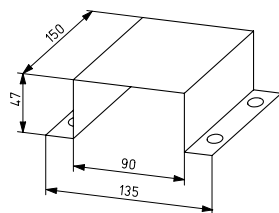
alre frame 'Berlin'
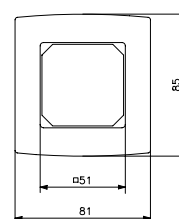
ACCESSORIES

FOR HEATING TECHNOLOGY / AIR CONDITIONING TECHNOLOGY / PLANT ENGINEERING AND SENSOR TECHNOLOGY

ILLUSTRATIONS

ET-01

ET-02

FS-HI

FS2-HI
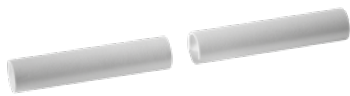
JZ-04

JZ-05 / 6 K

JZ-05 / 6 M
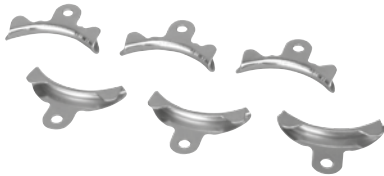
JZ-06 / 1

JZ-07

JZ-08

JZ-09

JZ-10

JZ-17

JZ-18

JZ-20-1
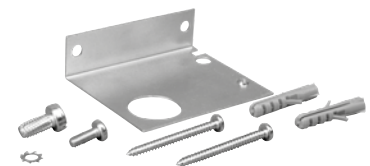
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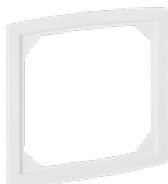
JZ-24

JZ-29

JZ-30

JZ-31

JZ-32

TYPE COMPARISON OVERVIEW

TERMINAL STRIP FOR HEATING MANIFOLD:

OLD ITEM NO.	OLD TYPE	REMARKS	NEW ITEM NO.	NEW TYPE	REMARKS
DA480500	VOOPL-215.000	5-channel, IP20	DA480510	VOOPL-216.176	6-channel, IP20
DA480200	VOOPD-215.000	5-channel, IP65	DA480510	VOOPL-216.176	6-channel, IP20
DA480400	VOOPL-318.000	8-channel, IP20	DA480520	VOOPL-318.178	8-channel, IP20
DA480300	VOOPD-318.000	8-channel, IP65	DA480520	VOOPL-318.178	8-channel, IP20

PLANT ROOM THERMOSTAT OLD (JET-4X / JET-3X) AND NEW (RTKSA):

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS
JET-40	0 to +35 °C	1 K	RTKSA-100.010	−10 to +40 °C	1.3 K
JET-40F	0 to +35 °C	1 K	RTKSA-101.010	−10 to +40 °C	1.3 K
JET-41	0 to +70 °C	2 K	RTKSA-100.110	0 to +50 °C	1.3 K
JET-41F	0 to +70 °C	2 K	RTKSA-101.110	0 to +50 °C	1.3 K
JET-30	10 to 45 °C (external) TR 0 to 35 °C (internal) TW	approx. 1 K	RTKSA-114.110	0 to +50 °C (internal) TW 0 to +50 °C (internal) TW	1.3 K
JET-31	10 to +45 °C (internal) TW 0 to +35 °C (internal) TW	approx. 1 K			

TR = temperature controller, TW = temperature monitor

TYPE COMPARISON OVERVIEW

BOILER / VENTILATION THERMOSTATS (OLD) (KR / LR) AND
UNIVERSAL CAPILLARY THERMOSTAT (NEW) (RTKSA):

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS	ACCESSORIES
KR 80.312	fixed at 100 °C	−20 K	RTKSA-003.310	20 to 150 °C	−10 K	THK-2-100 + JZ-29
LR 80.312	fixed at 100 °C	−20 K				SWK-2-100 + JZ-29
KR 80.318	fixed at 100 °C	−20 K				THK-2-200 + JZ-29
LR 80.318	fixed at 100 °C	−20 K				SWK-2-200 + JZ-29
KR 80.309	fixed at 75 °C	−20 K				THK-2-100 + JZ-29
LR 80.309	fixed at 75 °C	−20 K				SWK-2-100 + JZ-29
KR 80.310	fixed at 75 °C	−20 K				THK-2-200 + JZ-29
LR 80.310	fixed at 75 °C	−20 K				SWK-2-200 + JZ-29
KR 80.206	30 to 65 °C	−8 K	RTKSA-002.410	30 to 110 °C	−10 K	THK-2-100 + JZ-29
KR 80.206 IP54	30 to 65 °C	−8 K				THK-2-100 + JZ-29
KR 80.207	60 to 95 °C	−8 K				THK-2-100 + JZ-29
LR 80.207	60 to 95 °C	−8 K				SWK-2-100 + JZ-29
KR 80.208	85 to 120 °C	−8 K	RTKSA-002.310	20 to 150 °C	−10 K	THK-2-100 + JZ-29
KR 80.202	95 to 130 °C	−8 K				THK-2-100 + JZ-29
KR 80.203	95 to 130 °C	−8 K				THK-2-200 + JZ-29
LR 80.203	95 to 130 °C	−8 K				SWK-2-200 + JZ-29
KR 80.203 IP54	95 to 130 °C	−8 K				THK-2-200 + JZ-29
WR 81.029-1	0 to 35 °C	0.5 − 1 K	RTKSA-000.100	0 to 50 °C	1.3 K	-
KR 80.003-1	0 to 35 °C	1 K				THK-2-200 + JZ-29
LR 80.003-1	0 to 35 °C	1 K				SWK-2-200
WR 81.009-2	0 to 70 °C	1 − 2 K	RTKSA-000.200	0 to 120 °C	3 K	-
KR 80.035-2	0 to 70 °C	2 K				THK-2-100 + JZ-29
KR 80.027-5	0 to 70 °C	5 K				THK-2-100 + JZ-29
LR 80.027-5	0 to 70 °C	5 K				SWK-2-100 + JZ-29
LR 80.035-2	0 to 70 °C	2 K				SWK-2-100 + JZ-29
KR 80.028-2	0 to 70 °C	2 K				THK-2-200 + JZ-29
LR 80.028-2	0 to 70 °C	2 K				SWK-2-200 + JZ-29
KR 80.029-2	0 to 70 °C	2 K				THK-2-280 + JZ-29
KR 80.029-2 V4A	0 to 70 °C	3 K				NTHK-2-280 + JZ-29
LR 80.029-2	0 to 70 °C	2 K				SWK-2-280 + JZ-29
KR 80.011-1 V4A	10 to 45 °C	1 K				NTHK-2-120 + JZ-29
KR 80.009-1 V4A	10 to 45 °C	1 K				NTHK-2-200 + JZ-29
KR 80.000-5	35 to 95 °C	5 K				THK-2-100 + JZ-29
KR 80.001-5	35 to 95 °C	5 K				THK-2-200 + JZ-29
KR 80.001-5 V4A	35 to 95 °C	5 K				NTHK-2-200 + JZ-29
KR 80.008-8	40 to 110 °C	8 K				THK-2-100 + JZ-29
KR 80.006-8	50 to 130 °C	8 K	RTKSA-000.300	20 to 150 °C	9.1 K	THK-2-100 + JZ-29

TYPE COMPARISON OVERVIEW

BOILER / VENTILATION THERMOSTATS (OLD) (KR / LR) AND UNIVERSAL CAPILLARY THERMOSTAT (NEW) (RTKSA):

OLD ALRE TYPES	CONTROL RANGE	HYSTERESIS	NEW ALRE TYPES	CONTROL RANGE	HYSTERESIS	ACCESSORIES
WR 81.101-1	0 to 35 °C	0.5 – 1 K				-
WR 81.129-1	0 to 35 °C	0.5 – 1 K				-
KR 80.108-1	0 to 35 °C	1 K	RTKSA-001.100	0 to 50 °C	1.3 K	-
LR 80.108-1	0 to 35 °C	1 K				-
KR 80.109-1	0 to 35 °C	1 K				THK-2-200 + JZ-29
LR 80.109-1	0 to 35 °C	1 K				SWK-2-200 + JZ-29
WR 81.115-5	0 to 70 °C	4 K				JZ-31
WR 81.109-2	0 to 70 °C	1 – 2 K				-
KR 80.116-2	0 to 70 °C	2 K				THK-2-100 + JZ-29
LR 80.116-2	0 to 70 °C	2 K	RTKSA-001.200	0 to 120 °C	3 K	SWK-2-100 + JZ-29
KR 80.111-3	0 to 80 °C	1 K				THK-2-100 + JZ-29
KR 80.120-1	10 to 45 °C	1 K				THK-2-200 + JZ-29
LR 80.120-1	10 to 45 °C	1 K				SWK-2-200 + JZ-29
KR 80.100-5	35 to 95 °C	5 K				THK-2-100 + JZ-29
KR 80.100-5 IP54	35 to 95 °C	5 K				NTHK-2-100 + JZ-29
KR 80.101-5	35 to 95 °C	5 K	RTKSA-001.301	20 to 150 °C	3.3 K	THK-2-200 + JZ-29
LR 80.101-5	35 to 95 °C	5 K				SWK-2-200 + JZ-29
KR 80.124-5	35 to 95 °C	5 K				THK-2-280 + JZ-29
KR 80.112-5	35 to 95 °C	8 K				THK-2-600 + JZ-29
KR 80.102-8	40 to 110 °C	8 K				THK-2-100 + JZ-29
KR 80.103-8	40 to 110 °C	8 K	RTKSA-001.300	20 to 150 °C	9.1 K	THK-2-200 + JZ-29
WR 81.117-5	50 to 130 °C	4 K				JZ-31
KR 80.106-8	50 to 130 °C	8 K				THK-2-100 + JZ-29

FROST PROTECTION THERMOSTAT OLD (JTF-1XX) AND NEW (RTKSA):

OLD ALRE TYPES	CAPILLARY LENGTH	GENERAL FEATURES	NEW ALRE TYPES	CAPILLARY LENGTH	GENERAL FEATURES
JTF-101	6 m		RTKSA-204.200	6 m	
JTF-103	1.8 m	Protection rating: IP54 Hysteresis: approx. 1 K Control range: −8 to +8 °C Tmax sensor: 150 °C	RTKSA-204.000	1.8 m	Protection rating: IP40 Hysteresis: approx. 1.5 K Control range: −10 to +15 °C Tmax sensor: 120 °C
JTF-105	3 m		RTKSA-204.100	3 m	
JTF-112	12 m		RTKSA-204.300	12 m	

TIPS FOR HEATING INSTALLERS AND ELECTRICIANS

BERLIN 1000 / 2000 / 3000 – **BIMETAL**

PROBLEM	CAUSE
Large temperature variation present in the room (approx. 5 – 8 K).	1.) The neutral conductor N is not connected to terminal 4 of the controller.
	2.) The neutral conductor N is connected to terminal 4 of the controller, but not in the distribution system (distribution box, fuse box).
The setting knob (setpoint transmitter) must be set higher than the desired room temperature.	1.) Incoming and outgoing (switched) phase have been interchanged. As a result, the feedback resistor continuously carries a voltage and acts like a temperature reducer in the room. Moreover, the temperature variation is very high (approx. 5 – 8 K)
	2.) The heating output is dimensioned too low for the room. As a result of this, the power-on time of the controller is too long; the feedback resistor is thus switched on for too long and acts as a temperature reducer in the room.
	3.) External heat sources are influencing the controller (for example, the sun, TV, lamp etc.). These external heat sources cause the controller to register a higher-than-actual temperature and, as a result, the room is not heated sufficiently.
The setting knob (setpoint transmitter) must be set lower than the desired room temperature.	1.) The controller has been installed, for example, behind a curtain or on an outer wall or next to a door. The controller registers a lower-than-actual temperature and, as a result, the room is overheated.
The room does not become warm.	1.) Faulty actuator element, actuator element does not open the valve.
	2.) There may be coarse construction site dirt in the controller. This dirt is preventing the contact from closing.
	3.) The controllers of two rooms have been connected in series. These rooms only become warm when both controller contacts are closed.

TOPIC	NOTE
Reaction times – underfloor heating	1.) Particularly with floor heating, it is important to remember that there are very long reaction times. Therefore, the room heats up very slowly and also cools slowly (incident sunlight, for example, results in overheating). So do not expect that a cold room will reach the desired room temperature within a short time after having set the adjusting knob to a high value.
Room temperature in well-insulated rooms	2.) Also, with well insulated rooms, remember that the room temperature drops very slowly. As a result, it can happen that at night, despite 'Reduced operation' (for example, 4 K lower), the room temperature drops only a little and the heating therefore does not get activated for a prolonged time.
Installation instructions – bimetal controllers	3.) Very often, the function of bimetal controllers is impaired or rendered completely useless by construction site dirt that has penetrated into them. Therefore, the controllers should be installed only after any required spatula, painting or wallpapering work. Avoid drilling dust without fail.

PLANT ENGINEERING

TOPIC	NOTE
Connecting industrial thermostats and controllers to PLC or DDC	For connecting industrial thermostats and controllers to programmable logic controllers (PLC) or direct digital controls (DDC), the use of normal commercial coupling relays with 230 V~ coil voltage and gold-plated switching contacts is recommended.

ECODESIGN
DIRECTIVE

The Ecodesign Directive (EU 2015/1188) lays down requirements for the placing on the market and putting into service of household local space heaters. The Directive entered into force on 10/08/2015 with a transitional period until 01/01/2018. The aim of the Directive is the environmentally compatible design and labelling of local space heaters and the associated reduction of energy consumption.

alre welcomes this development and the demand for energy-saving control technology. The development and production of innovative and products optimised for energy consumption has been our calling for almost 50 years.

The Directive distinguishes between different types of heating, electric local space heaters and local space heaters for gaseous or liquid fuels. The electric local space heaters are additionally subdivided into:

+ **portable local space heaters,**
+ **fixed local space heaters,**
+ **storage local space heaters,**
+ **underfloor local space heaters and**
+ **Radiant local space heaters.**

Central space heaters that distribute heat to different rooms via a liquid medium are not affected by this regulation.

The following table lists the products that comply with the Directive for use in portable local space heaters, fixed local space heaters and underfloor local space heaters. If you have any questions about suitable products for other types of heating, please do not hesitate to contact us.

PRODUCTS / PRODUCT GROUPS	ELECTRIC LOCAL SPACE HEATERS		
	PORTABLE	FIXED	UNDER-FLOOR
HTRRUu 210.021 see Page 112 and onwards	x	x	x
HTRRBu 110.1xx / 21 see Page 70	x	x	x
Wireless system without weekly programme Actuators: HTFRB, HTFRE, HTFRU Sensors: FTRFB see 'Wireless systems' section	x		
Wireless system with weekly programme* Actuators: HTFRB, HTFRE, HTFRU Sensors: FTRFB, FTRFBu, FTRFUd see 'Wireless systems' section	x	x	x
FTR-101.xxx RTBSB-001.xxx RTBSB-001.4xx see 'Heating technology' section	x		
FTR-101.xxx or RTBSB-001.xxx (variants with clock input) in conjunction with clock thermostat** see 'Heating technology' section	x	x	x
FETR-101.7xx HTRRB-01x.xxx see 'Heating technology' section	x		
FETR-101.7xx or HTRRB-01x.xxx in conjunction with clock thermostat** see 'Heating technology' section	x	x	x

* Sensors with clock required in each room or master-slave control with central clock programme (transfer of central sensor functions with clock).

** Transfer of clock thermostat functions via clock output to the corresponding clock input of other thermostats.

FUNDING OPPORTUNITIES WITH THE
BAFA SUBSIDY PROGRAMME

HEAT INTELLIGENTLY – SECURE **A 20 PER CENT SUBSIDY** FOR THE OPTIMISATION OF YOUR HEATING SYSTEM NOW.

Obsolete technology and non-coordinated plant components often lead to excessive energy consumption. However, many homeowners shy away from renovating their heating systems because they fear high costs.

For this reason, the German Federal Office for Economic Affairs and Export Control (BAFA) has launched a subsidy programme for heating optimisation. The aim of the subsidy programme is to motivate homeowners to renew their heating systems with attractive, non-repayable subsidies. Among other things, this is intended to make an important contribution to the environmentally friendly supply of heat in Germany.

In January 2021, the grant funding for individual measures came into effect as part of the German Federal Subsidy Programme for Efficient Buildings (Bundesförderung für effiziente Gebäude – Einzelmaßnahmen, BEG EM), with which applications for subsidising individual measures can now also be submitted to the BAFA. Central space heaters that distribute heat to different rooms via a liquid medium are not affected by this regulation.

WHAT IS SUBSIDISED?

AND DOES THE SUBSIDY ALSO APPLY TO ALRE PRODUCTS?

Within the framework of BAFA subsidies, two measures for heating optimisation are subsidised at 20 per cent by the state:

1. **Climate-friendly heating using renewable energies** (for example, heat pumps, pellet heating systems, hybrid heating systems or solar thermal power plants) – 20 to 45 per cent subsidy
2. **Measures for optimising heating** (for example, hydraulic balancing including the replacement of heating pumps) – 20 per cent subsidy

For heating optimisation via hydraulic balancing, you can also have our energy-saving alre controllers (from FTR-101 to the b@home system) installed by a specialist technician. The acquisition and installation costs are also subsidized at 20 per cent.

HEATING OPTIMISATION WITH THE BAFA SUBSIDY **WHAT IS SUBSIDISED?**

PUMP REPLACEMENT
Replacement of heating circulation pumps and / or hot water circulation pumps

Measures can be combined with each other

HYDRAULIC BALANCING
(for existing heating systems that are at least two years old)

PROMOTION OF THE ACQUISITION AND INSTALLATION OF ENERGY-SAVING TECHNOLOGY
For example, alre individual room temperature controllers (installation must be carried out by a specialist technician)

WHO CAN APPLY FOR THE SUBSIDY?

In principle, private individuals, companies, freelancers, municipalities, regional authorities and special-purpose associations as well as other legal entities under private law (in particular associations, foundations, non-profit organisations or cooperatives) are entitled to support. The German Federal Government, German Federal States and their institutions are excluded from funding.

Further information on the contents, procedures and terms and conditions can be found at www.bafa.de

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1st Step
Register on the BAFA website

2nd Step
Contract a specialist technician and optimise the heating system

3. Step
Submit the subsidy application and invoice copy

SENSOR CHARACTERISTIC CURVES
TABLE OF SENSOR VALUES

TEMPERATURE	PT 100	PT 1000	NI 1000	'SENSOR 0' NTC 2K25	'SENSOR 1' NTC 1KO	'SENSOR 2' NTC 47K	'SENSOR 3' NTC 8K
°C	Ω	Ω	Ω	Ω	Ω	Ω	Ω
−50	80.30	803.00	742.55	151398	32540	3152409	537827
−45	82.30	823.00	766.76	106557	24432	2230085	378534
−40	84.30	843.00	791.31	75923	18515	1595524	269709
−35	86.20	862.00	816.21	54731	14156	1153886	194427
−30	88.20	882.00	841.46	39895	10916	843120	141724
−25	90.20	902.00	867.04	29390	8486	622133	104107
−20	92.20	922.00	892.96	21871	6648	463401	77696
−15	94.10	941.00	919.22	16434	5248	348285	58379
−10	96.10	961.00	945.82	12462	4172	264028	44269
−5	98.00	980.00	972.74	9533	3340	201812	33866
0	100.00	1000.00	1000.00	7355	2691	155480	26126
5	102.00	1020.00	1027.59	5719	2182	120696	20318
10	103.90	1039.00	1055.52	4482	1780	94377	15923
15	105.80	1058.00	1083.77	3539	1460	74314	12570
20	107.80	1078.00	1112.36	2813	1205	58910	9994
25	109.70	1097.00	1141.29	2252	1000	47000	8000
30	111.70	1117.00	1170.56	1814	834	37732	6445
35	113.60	1136.00	1200.16	1471	699	30472	5224
40	115.50	1155.00	1230.11	1199	588	24750	4260
45	117.50	1175.00	1260.41	984	498	20214	3494
50	119.40	1194.00	1291.05	811	423	16597	2882
55	121.30	1213.00	1322.05	673	361	13697	2389
60	123.20	1232.00	1353.40	560	309	11360	1991
65	125.50	1252.00	1385.12	469	266	9466	1667
70	127.10	1271.00	1417.21	395	230	7925	1402
75	129.00	1290.00	1449.67	334	199	6664	1185
80	130.90	1309.00	1482.50	283	173	5627	1006
85	132.80	1328.00	1515.73	241	151	4771	857
90	134.70	1347.00	1549.34	207	133	4062	734
95	136.60	1366.00	1583.36	177	117	3471	631
100	138.50	1385.00	1617.79	153	103	2978	544
105	140.40	1404.00	1652.62	132	91	2563	471
110	142.30	1423.00	1687.89	115	81	2215	409
115	144.20	1442.00	1723.58	100	72	1919	356
120	146.10	1461.00	1759.72	88	64	1669	12
125	148.00	1480.00	1796.30	77	57	1456	273
130	149.80	1498.00	1833.35	68	51	1274	240
140	153.60	1536.00	1908.87	53	41	984	188
150	157.30	1573.00	1986.35	42	34	769	148

SENSOR CHARACTERISTIC CURVES
TABLE OF SENSOR VALUES

TEMPERATURE	'SENSOR 4' NTC 10K	'SENSOR 5' NTC 50K	'SENSOR 6' NTC 100K	'SENSOR 8' NTC 2K	'SENSOR 51' KTY 81-121	'SENSOR 57' KTY 11-7
°C	Ω	Ω	Ω	Ω	Ω	Ω
−50	672283	2820844	8276704	77977	510	1051
−45	473168	2027885	5751387	57655	535	1103
−40	337137	1473182	4044707	43039	562	1156
−35	243033	1080969	2877133	32427	589	1212
−30	177155	800794	2069021	24651	617	1269
−25	130508	598684	1503450	18902	647	1328
−20	97120	451517	1103398	14615	677	1390
−15	72973	343390	817535	11391	708	1453
−10	55337	263262	611269	8947	740	1518
−5	42333	203390	461045	7079	773	1586
0	32658	158300	350656	5642	807	1655
5	25397	124082	268840	4527	842	1726
10	19903	97925	207702	3657	877	1799
15	15713	77789	161654	2973	914	1874
20	12492	62184	126708	2431	951	1951
25	10000	50000	100000	2000	990	2030
30	8056	40455	79428	1654	1029	2111
35	6530	32910	63489	1376	1070	2194
40	5325	26916	51056	1151	1111	2279
45	4368	22129	41297	967	1153	2366
50	3602	18285	33591	816	1196	2456
55	2986	15182	27470	693	1241	2545
60	2488	12664	22582	590	1286	2638
65	2084	10612	18656	505	1331	2733
70	1753	8931	15478	434	1378	2829
75	1481	7547	12917	374	1426	2928
80	1258	6404	10821	324	1475	3029
85	1072	5456	9105	282	1525	3131
90	917	4665	7693	246	1575	3236
95	788	4004	6527	215	1627	3342
100	680	3448	5559	189	1679	3451
105	588	2980	4752	167	1732	3561
110	511	2584	4077	147	1786	3674
115	445	2248	3511	130	1841	3788
120	389	1962	3033	116	1896	3905
125	342	1717	2629	103	1950	4023
130	301	1507	2287	91	2003	4143
140	235	1171	1745	73	2103	4390
150	185	920	1348	60	2189	4644

TECHNICAL TERMS

TECHNICAL TERMS	DEFINITION / EXPLANATION
Range limitation (mechanical):	Below the adjusting knob, there are 'setting flags' (red / blue) for mechanically delimiting the min. / max. temperature range. In this manner, an undesired mis-setting of the setpoint can be prevented, for example, in children's rooms or public buildings.
Bimetal:	Thermo-bimetal is generally constructed of layers of metal or alloys of more or less the same thickness, which are firmly joined to one another and have different coefficients of thermal elongation. As a result, they bend under temperature changes, so that upon heating, the side with the component that has a lower heat elongation becomes hollow. The heat is transferred by conduction, radiation or convection from the surroundings (indirect heating).
Defrosting:	Defrosting is the regular de-icing or heating up of the heat exchanger or cooling unit to maintain efficient operation of the system.
Intrinsic safety (JTU, JTL)	Intrinsic safety / protection against cold: The devices are intrinsically safe, i.e., upon loss of the sensor medium owing to sensor rupture, for example, the burner is switched off. Since minus temperatures generate the same effect through volume reduction of the sensor medium, the devices are adjusted by means of the 'cold screw' such that they switch off the burner only at temperatures below −15 °C. They can only be switched on again manually at temperatures above approx. −5 °C by means of the manual reset button.
Air conditioner, 2-pipe fan convector (fan coil):	The 2-pipe air conditioners are supplied with heating or cooling water for heat exchange, depending on the requirement, through the same pipe system via 2 pipes (inflow and outflow).
Air conditioner, 4-pipe fan convector (fan coil):	The 4-pipe air conditioners are supplied with heating or cooling water for heat exchange, depending on the requirement, through a heating circuit and a cooling circuit (4 pipes).
Cooling ceiling:	The cooling ceiling belongs to the group of panel heaters. Cooling ceilings are used often in office spaces for passive cooling. In such systems, cold water (usually at 16 °C) flows through a network of pipes and cools the room air. Lower inflow temperatures are not possible because of condensation water formation.
Neutral zone:	The control range in which neither heating nor cooling takes place is called the neutral zone.
NC contact (bimetal):	The control contact opens with increasing temperature and closes at dropping temperature (for 'heating').
Proportional band (p-band):	The proportional band is the range around the target temperature within which the controller delivers a steady output signal. This means that the room temperature is kept more or less constant within the proportional band by the controller (if the heating capacity is sufficient).
2-point control (ON / OFF control):	Control algorithm which, for example, switches off the output when the set temperature is exceeded and switches it on again when the current temperature falls short of the setpoint value. The temperature in the room is always subject to certain variations (control deviations). This deviation results from the switching temperature difference of the controller and the properties of the room, such as heating speed, heat loss etc.
3-point control:	In a 3-point control system, the controller can change between the operating modes heating, neutral zone and cooling.
PWM (pulse width modulation):	Process for generating a continuous-like transmission behaviour in a control path. By varying the power-on time at the input, owing to the time constant of the transmission path, a continuous-like (smooth) signal waveform is generated at its output.
Switching difference (hysteresis):	Difference between the switching on and switching off of the heater or the controller. a) There is the switching temperature difference of the controller, which depends on the construction of the device. b) There is the switching temperature difference of the room, which is dependent on the behaviour of the entire control path, i.e. on the floor design, the action of external heat sources, the installation location of the controller and the controller itself. The switching temperature difference always refers to the controller. It does not express the actual switching temperature difference of the control path. The latter changes according to the deployment location and conditions. Any indoor temperature is constantly subject to variations. This deviation results from the switching temperature difference of the controller and the properties of the room, such as heating speed, heat loss etc.
NO contact (bimetal):	NO contact (bimetal): The control contact closes with increasing temperature and opens at dropping temperature (for 'cooling').
Toggler (bimetal):	This is a toggler with an NC contact and an NO contact. It operates as described for NC and NC contacts.
Split unit / multi-split unit:	Split AC units consist of at least two heat exchangers in which one is installed as a vaporiser in the rooms to be cooled and the other serves as a condenser for heat dissipation. Most split units allow reverse operation for heating the rooms if this is required. Multi-split units consist of several vaporisers connected to a condenser (liquefier).
Valve actuator:	Electrical controllable valve for regulating, for example, the hot water flow in heating systems. A distinction is made here between ON / OFF valve actuators and proportional valve actuators. Proportional valves are designed for connecting controllers with a continuous control mode.

TECHNICAL TERMS

TECHNICAL TERMS	DEFINITION/EXPLANATION
Continuous control:	The controller provides an analogue output signal. The value of the output signal changes continuously, i.e., without any steps or jumps, in response to the output signal.
Temperature reduction (TR):	The TR is also implemented via a resistor, as is the case with thermal recirculation. This resistor is activated manually or by a timer. As a result, the bimetal is made to feel a simulated temperature that is about 4 K higher than the actual temperature in the room. Consequently, in a room with a controller setting of, for example, 20 °C, the temperature in the room can drop to a value 4 K lower, to max. 16 °C. If the temperature drops further, the heating system switches on again, and at > 16 °C, it gets switched off. The magnitude of the temperature reduction to be actually achieved depends on the insulation of the building and the reduction period (one night, weekend, holiday).
Thermal recirculation (RF):	By means of an additional integrated heating resistor, the controller is made to switch off at the right time during the heating process. As a result, exceeding the desired room temperature is minimised, and there is a smaller switching difference.
Heat pump:	Rooms can be cooled or heated with heat pumps. Modern systems allow efficient heating and cooling operation since they allow reversible process reversing.
Reversing valve:	A reversing valve (4-way control valve) facilitates a reversing cycle by turning the condenser (liquefier) into an evaporator which causes the cooling unit to heat up or defrost.
Valve protection function	Valve and pump protection serves to prevent the valve seat and/or pumps from corroding during long downtimes. It is recommended to activate valve protection for hot water heating systems. If valve and pump protection is activated, the valve or a heating pump is operated once on Mondays between 1100 hrs and 1200 hrs for 5 minutes. Valve and pump protection only becomes active if no heating has taken place within the last week. This avoids unnecessary additional heating at times of year when heating is in use and does not affect the control system.
Evaporator/liquefier:	A liquefier or condenser is a heat exchanger in a cooling unit that liquefies a gaseous medium through the dissipation of heat. Usually, further cooling of the cooling agent takes place in the liquefier. According to the definition of terms in the European Standard EN 378 Part 1, the condenser in cooling units is called the liquefier in order to easily distinguish it from an electrical condenser. The vaporiser implements the opposite process, evaporating the liquid medium by heating it up.

INDEX BY PRODUCT DESIGNATIONS

INDEX BY PRODUCT DESIGNATIONS

INDEX BY TYPE DESIGNATIONS

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ALRE-IT TERMS AND CONDITIONS
OF SALE AND SUPPLY (UPDATED 2022)

1. GENERAL

In addition to the General Terms and Conditions of Delivery for Products and Services of the Electrical Industry and the Green Terms and Conditions of Delivery as of January 2022 (hereinafter referred to as 'GL'), the following provisions shall apply to all business relations with our customers who are contractors, legal entities under public law or special funds under public law (hereinafter referred to as 'Customer'). These can be viewed and downloaded on our website at www.alre.de. We are the 'Supplier' as defined by the GL.

2. QUOTATIONS

2.1. Our offers are subject to change and without obligation, unless we have expressly designated them as binding.
2.2. Declarations of acceptance and purchase orders need our confirmation (in written and / or electronic form) for them to become legally valid; the same applies to supplements, changes and subsidiary agreements. Drawings, illustrations, dimensions and other performance data are only binding if such terms are expressly agreed upon.

3. PRICES AND PRICE ADJUSTMENT

3.1. In addition to the regulations in Art. II (1) of the GL, freight, insurance and customs costs are not included in the prices.
3.2. Price changes caused by changes to the contract product or by changes to the requirements of the contract product are negotiated and determined on the basis of a joint cost analysis.

4. DEADLINES FOR DELIVERY / DELAY

In addition to the regulations in Art. IV (2) of GL, we will inform the Customer immediately if the service is not available within the extended delivery periods. In this case, we shall be entitled to withdraw from the contract in whole or in part. Any consideration already rendered by the Customer shall be reimbursed by us without delay. The case of non-availability of the service in this sense shall include in particular the failure of our suppliers to deliver to us on time if we have concluded a congruent hedging transaction or if neither we nor our suppliers are at fault.

5. LIABILITY

5.1. In principle, our liability is based on GL, in particular Art. XII.
5.2. In addition to Art. IV (4), Art. VIII (12) and Art. XI (1) of GL, we, our legal representatives, executive employees or agents shall be liable under this contract for minor negligence in the event of a breach of an 'essential' obligation under this contract. 'Essential' obligations are those obligations which are necessary for the performance of the contract and the breach of which would jeopardise the achievement of the purpose of the contract and on the observance of which the Customer may therefore regularly rely. In these cases, liability is limited to typical and foreseeable damages.

6. PACKAGING

The packaging will not be taken back, unless this is required by law.

7. TERMS OF PAYMENT

In addition to Article II of GL, the following provisions shall apply:
7.1. Our invoices are payable within 30 days from the date of invoice.
7.2. The Customer shall be in default upon expiry of the aforementioned payment period. The amount to be paid shall bear interest during the period of default at the applicable statutory default interest rate. We reserve the right to assert further claims for damages caused by default.
7.3. Once an agreement is made, we are entitled to make a delivery in whole or in part only against advance payment or cash on delivery.
7.4. If it becomes apparent after conclusion of the contract that our claim to payment is at risk due to the purchaser's inability to pay, we shall be entitled – if applicable, after setting a deadline

(Section 321 of the German Civil Code (BGB)) – to withdraw from the contract in accordance with the statutory provisions on refusal of performance.

7.5. The Customer shall only be entitled to retention rights to the extent that his claim has been legally established or is undisputed. In the event of defects in the delivery, the Customer's counter rights, in particular the rights under Art. VIII (6) of the GL, remain unaffected.

8. MATERIAL DEFECTS

8.1. In deviation from Art. VIII (1)(1) of the GL, exclusively Section 434 is valid.

8.2. Supplementary to Art. VIII of GL, the purchaser's claims for defects presuppose that it has complied with its statutory obligations to inspect and give notice of defects (Sections 377, 381 of the German Commercial Code – HGB). The Customer must inspect the goods immediately after delivery. Obvious defects must be reported in writing by the Customer immediately, on the seventh day at latest. If a hidden defect only becomes apparent at a later date, the Customer must nevertheless notify us of this in writing immediately after becoming aware of it.

8.3. Supplementary to Art. VIII of GL, there shall be no warranty claims if our operating or assembly instructions are not followed, changes or repair work are carried out on our products or parts are replaced or our products are used contrary to the contractually stipulated suitability. The same applies if the purchaser, in a manner that is not transparent to us, joins, mixes or processes our products, contrary to their normal and / or usual suitability, with his products or products of third parties, or uses our products contrary to the state of science and technology, or in any other manner contrary to their normal and / or usual suitability.

8.4. Technical data on our products in offers, catalogues and other product descriptions has been determined by us in a suitable test environment (we will be happy to provide information on request) and represents the sole basis for agreed quality. Testing for suit-ability for the purpose intended by the Customer or for the use of the part under specific usage conditions is the responsibility of the Customer; we do not provide any kind of guarantee.

8.5. Subsequent performance does not include the removal of the defective item or its re-installation if we were not originally obliged to install it.

8.6. In addition to Art. VIII (10 and 11) of the GL, Section 439 BGB remains unaffected. Section 8.2 remains unaffected.

9. USE OF THE B@HOME SYSTEM

The Terms of Use available on our website at www.alre.de apply for the use of the b@home portal and the b@home app including the updates ('b@home system'), which are made available to the Customer by us. Should the Customer use the b@home system for a company, he accepts the validity of these terms of use in a legally binding manner for this company.

Last updated: December 2022

GENERAL NOTES
FROM ALRE-IT (UPDATED 2022)

SAFETY REGULATIONS

When handling products, the applicable EU Directives and the assembly and installation instructions in the operating manuals must be followed without fail.

NOTES ON TECHNICAL DATA

Technical data has been determined by us in a suitable test environment (we will be happy to provide information on request) and represents the sole basis for agreed quality. All the equipment and components shown in this catalogue may only be used in keeping with their intended purpose. Testing for suitability for the purpose intended by the Customer/client or for the use of the part under specific usage conditions is the responsibility of the Customer/client; we do not provide any kind of guarantee.

We reserve the right to make changes to products and documentation as may be required for technical progress and continuous improvement and therefore, there may be deviations from the information in the catalogue. Printing errors excepted.

Any reproduction of this documentation, even in extract form, is not permitted without the consent of ALRE-IT Regeltechnik GmbH, Berlin. The place of jurisdiction is Berlin.

This price list is valid as of 1 January 2022. This price list supersedes all previous price lists and renders them invalid. A significant increase in the market price of raw materials and electronic components has led to us also having adjusted our prices.

We reserve the right to make changes.

REACH, ROHS, WEEE

REACH: The company ALRE-IT Regeltechnik exclusively sells non-chemical products (articles) from which no substance is released under normal and reasonably foreseeable conditions of use. The products of ALRE-IT Regeltechnik GmbH and their packaging comply with the permissible threshold values for substances on the candidate list according to REACH Regulation 1907/2006 and all the published amendments (provisions) pertaining to it.

RoHs: As of 01/07/2013 the CE marking confirms that the respective products comply with the requirements of the RoHS 2011/65/EU and (EU) 2015/863 Directives.

WEEE: The company ALRE-IT Regeltechnik is registered as a manufacturer according to Section 3 (9) of the ElektroG (German Electricals Act) and under the registration number DE 58457361 at the EAR. All products manufactured by ALRE-IT Regeltechnik that fall within the scope of the ElektroG meet the legal requirements and thus ensure the proper collection, storage, recycling and environmentally friendly disposal of old equipment.

PRODUCT TESTING

For information on our declarations of conformity and various product tests, please visit our website at
www.alre.de.

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Internet: www.2ae.ru

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SALES PARTNER IN ESTONIA, LATVIA, LITHUANIA AND RUSSIA

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