BUILDING AUTOMATION
CONTROL TECHNOLOGY
SENSOR TECHNOLOGY

alre

PRODUCT CATALOGUE 2021

Smart solutions
for smart buildings.

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Management Service

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH

certifies that

ALRE-IT Regeltechnik GmbH
Richard-Tauber-Damm 10
12277 Berlin
Germany

has established and applies
a Quality Management System for

Design, production and sales of electromechanical and electric controls for heating, cooling and air conditioning technology.

An audit was performed, Report No. **707075483**.

Proof has been furnished that the requirements according to

ISO 9001:2015

are fulfilled.

The certificate is valid from **2018-07-05** until **2021-07-03**.

Certificate Registration No.: **12 100 55966 TMS**.

Product Compliance Management
Munich, 2018-06-13

ALRE-IT Regeltechnik GmbH

Your reliable partner.

We have been in the business of producing high-quality control technology for over 50 years. We are very proud of this as it shows that we know how to fulfil both your expectations as well as our own. We are a German owner-operated business based in Berlin – which is also where we also manufacture our quality products.

We are quick to recognise new trends and respond with innovative products, combining state-of-the-art technology with decades of expertise. We develop and produce components and systems for operating, controlling and automating heating and air conditioning systems and industrial equipment.

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 2021 product catalogue provides you with information about our wide range of products.

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, hotel 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 The construction project comprises a city quarter with 1,300 apartments.

©Dörnberg Viertel Projekt GmbH & Co. KG

Residential complex Fontanehöfe, Berlin

©ALRE-IT Regeltechnik GmbH

©St. George's School Köln

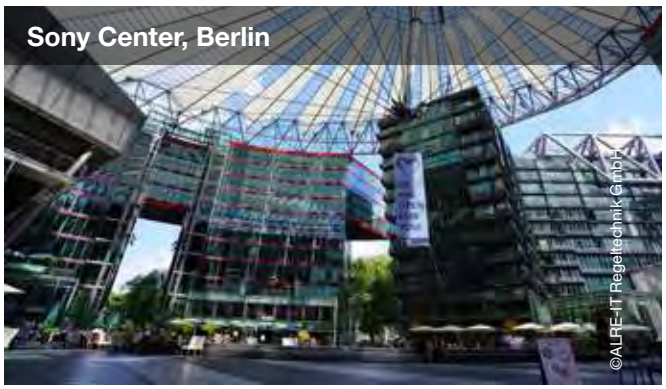
St. George's The British International School, Cologne, Germany

©DATEV eG

DATEV Location I Paumgartnerstrasse, Nuremberg, Germany

Hotel Park Inn by Radisson, Alexanderplatz, Berlin, Germany

©Radisson Hotel Group

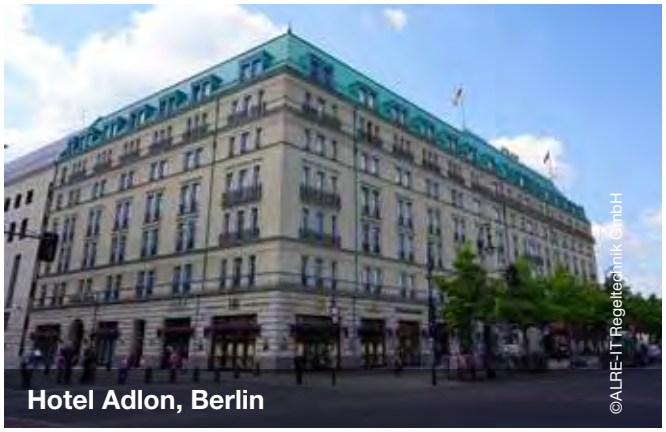


Sony Center, Berlin

©ALRE-IT Regeltechnik GmbH

Residential complex Witzlebenstraße, Berlin

©ALRE-IT Regeltechnik GmbH



Hotel Adlon, Berlin

©ALRE-IT Regeltechnik GmbH

FRIENDS Towers, Munich, Germany The modern sky-scrapers offer space for 130 apartments

©LBBW Immobilien

DATEV Standort III Sigmundstrasse, Nuremberg, Germany

©DATEV eG

Discover our new products

NEW

SMARTHOME / WIRELESS

Our wireless systems for a simple controlling and programming of your heating and cooling offer a maximum on convenience.

See page 9 for more information

BUILDING AUTOMATION

Control buildings sustainably and efficiently with the new BACnet individual room controller from alre. The controller covers a wide range of applications for building automation.

See page 30 onwards for more information

HEATING TECHNOLOGY

From the classic bimetal thermostat in various designs to electronic climate controllers with timer up to wireless systems – find the right solution for every application.

See page 57 onwards for more information

HEATING TECHNOLOGY

The optimised terminal strip allows you to wire actuators clearly and conveniently. Screwless spring terminals, labelling fields or integrated strain relief simplify installation enormously.

See page 107 onwards for more information

PLANT ENGINEERING

Our new thermostats for plant engineering are now available in a modern design. They are suitable for optimum temperature control in various fields such as greenhouses, warehouses and industrial halls.

See page 145 onwards for more information

Smarthome / Wireless

Building automation

Heating technology

Air conditioning technology

Plant engineering

Sensor technology

Accessories/miscellaneous/sauna controllers

WIRELESS SYSTEMS

For an optimal room ambience

WIRELESS SYSTEMS

Intelligent solutions for your room temperature control.

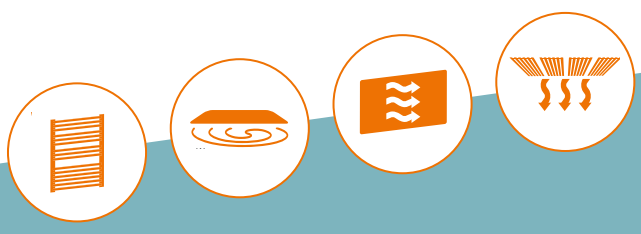
Rooms with a comfortable climate need perfect control technology. Whether it's an flat, an office building or a hotel room, with b@home, alre offers the solution for controlling heating and cooling intelligently. b@home can be retrofitted into existing wireless systems from alre, and can be used for all types of heating.

Your b@home system is simple to install, and you can control it on the move, via the Internet or locally via your home network. It's simple to use, monitoring and program, providing maximum comfort and optimal energy consumption. And with the sensors and actuators, individual room control can also be implemented if required.

b@home - Intelligent solutions for intelligent buildings.

Application examples:

- Hot water underfloor heating
- Hot water radiators
- Infrared heaters (e.g. natural stone heaters)



WIRELESS SYSTEMS overview:

System information

Individual components

At a glance

Wireless Systems overview of components

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	HTFRL-214.140	HTFRL-316.125	KTFRL-213.140	KTFRL-315.125	MGCBB-064.360 (nur für b@home-System)	FTRCUd 210.021#xx (nur für b@home-System)
Page		22	22	23	23	23	23/24	28	28	29	29	34	34	20	20/21
Control-function	Heating	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Cooling	x	x	x	x	x	x					x	x	x	x
Application	Radiator	x	x	x	x	x	x	x						x	x
	Hot water floor heating	x	x	x	x	x	x		x	x	x	x	x	x	x
	Electric underfloor heating	x	x	x	x	x	x		x					x	x
	Infrared heaters	x	x	x	x	x	x		x					x	x
	Cooling ceiling	x	x	x	x	x	x					x	x	x	x
Sensor	NTC, internal	x	x	x	x	x	x								x
	External NTC (optional)						x								x
	External NTC for floor control and/or floor monitoring (optional)														
	Flow sensor (optional)														x
	Dew point sensor (optional)											x	x		x
Features	“ECO” input											x	x		x
	“Changeover - heating/cooling” input											x	x		x
	“Off with frost protection monitoring” input											x	x		x
	Central control	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
	Plug-in (Schuko)														
	M30x1.5 (adapter for Danfoss RA, RAV, RAVL included)							x							
Connectivity of individual components	FTRFB-280.101								x	x	x	x	x	x	
	FTRFB-280.119							x	x	x	x	x	x	x	
	FTRFB-280.120							x	x	x	x	x	x	x	
	FTRFBu-180.117/V2							x	x	x	x	x	x		
	FTRFBu-180.121/V2							x	x	x	x	x	x		
	FTRFUd 210.123#xx							x	x	x	x	x	x		
	FTRCUd 210.021#xx													x	

Control with b@home
Intelligent remote control for heating and cooling systems

With the b@home system from alre, you can control and monitor your heating and cooling system. Rooms can be accessed individually or centrally using the intuitive and simple interface. And you can easily control the b@home system remotely, using your home network. Being able to operate the system in a way that suits you not only offers the highest gain in comfort, but also optimises energy consumption.

The b@home gate (MGCBB-064.360) is the central component of the b@home system and the interface between the alre wireless system and the WLAN/LAN router. It can also be retrofitted into existing wireless systems from alre. The optional b@home control panel (FTRCUd 210.021) provides central access to the settings for all channels or heating/cooling zones. It can be used as a central control unit or as a room control unit, and can be integrated into all common switch ranges.

Thanks to our attention to detail the b@home system is quick and easy to install and set up.

Smart control at home without the Internet

Gate b@home by alre

Control and monitoring of heating/cooling in the home network via LAN/WLAN (no Internet connection required)

The b@home system can be conveniently operated and programmed in the home network via a suitable end device even without an Internet connection. The data and configuration parameters are only stored locally in the b@home gate. The system can also be controlled with the optional b@home control panel.

Smart control via the Internet

Control and monitoring of heating/cooling via the Internet

After registration on the b@home portal, the b@home system can be operated and programmed via the Internet. And even if the Internet connection is interrupted, the control function will still work. This means you can still control the home network. Of course, data and configuration parameters are neither processed nor passed on to third parties.

Suitable for all heating systems

System configurator for a remote control system via browser

1 Selection of central components

A minimal system consists of the central b@home gate component and at least one sensor and one actuator. With a b@home gate, up to 32 rooms or heating/cooling zones can be monitored and controlled. Further b@home gates can be operated in the same network if required.

b@home gate
MGCBB-064.360

Optional

Using the optional central control panel, the settings of the individual rooms can be displayed and, in some cases, changed independently of the app or browser. The control unit has a contact/sensor input for central control (all rooms) of the b@home gate. A maximum of 1 central control unit can be taught to work with a b@home gate.

FTRCUd 210.021#xx
(various variants for optimum integration in almost all switch ranges)

2 Selection of sensors

One sensor per room is required to measure the room temperature. Depending on the selected sensor, further functions may be available.

Sensor to detect room temperature

(The room temperature is set via browser).

FTRFB-280.101

Room controller to detect and set room temperature

(Room temperature can also be changed via browser). You can use the room control panel to display and, in some cases, change settings for other rooms, including independently of the browser. A contact/sensor input for influencing the assigned room is available. Room control panels can be assigned for up to 16 rooms using a b@home gate.

FTRCUd 210.021#xx
(various variants for optimum integration in almost all switch ranges)

Sensor to detect and set room temperature

(It is possible to enable setting the room temperature using a browser instead of using the setpoint adjuster).

FTRFB-280.119

Optional

Up to 7 additional sensors per room to detect the room temperature (for finding averages, e.g. in large rooms).

FTRFB-280.101

3 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

e.g.
HTFRL-214.140
(4-Kanal)
HTFRL-316.125
(8-Kanal)

Hot water radiators

e.g.
HTFMA-180.161

Infra-red heaters

e.g.
HTFRB 010.101

Cooling ceiling

e.g.
KTFRL-213.140
(4-Kanal)
KTRFL-315.125
(8-Kanal)

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).

System configuration for a non-remote 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.

FTRFB-280.119

or

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.

FTRFBu-180.1xx

or

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

FTRFBu-180.1xx

or

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

Sensor to detect and set room temperature

FTRFB-280.119

or

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


FTRFB-280.119

or


FTRFB-280.120

or


FTRFBu-180.1xx

or


FTRFUd 210.123#xx

Sensor to detect room temperature


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.


FTRFB-280.101

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 underfloor heating

e.g.
HTFRL-214.140
(4-Kanal)
HTFRL-316.125
(8-Kanal)

Hot water radiators

e.g.
HTFMA-180.161

Infra-red heaters

e.g.
HTFRB 010.101

Cooling ceiling

e.g.
KTFRL-213.140
(4-Kanal)
KTRFL-315.125
(8-Kanal)

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 – CENTRAL COMPONENTS

Technical data

Ambient temperature:	0 … 40 °C
Storage temperature:	–20 … +70 °C
Permissible atmospheric humidity:	max. 95% relative humidity, non-condensing
Protection rating:	IP 30
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

Application

alre wireless systems can be monitored and controlled over the Internet or WLAN/LAN using the new b@home gate MGCBB-064.360. After completing the free registration process at the b@home portal, users can operate the b@home system simply and intuitively via a laptop/PC. This allows users to control, monitor and reprogram the temperature controls, either for each individual room or centrally for all rooms. It is also possible to access the system without an Internet connection using the local WLAN/LAN network.

The b@home control unit FTRCUd 210.021 in conjunction with the b@home gate MGCBB-064.360 provides central access to the settings for further channels and can be used as a central control unit or room control unit. Changes made are shown in the graphic display.

It can be retrofitted to existing alre wireless installations (except wireless room temperature sensors with FTRFBu and FTRFUd clock).

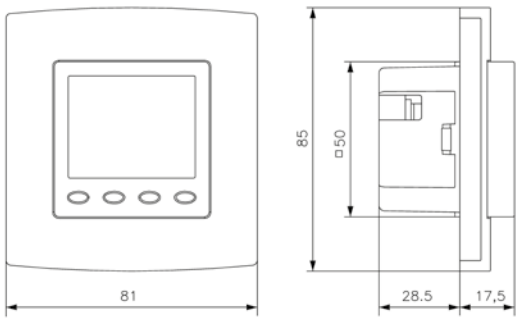
Type/image	Item no.	Features	PG
MGCBB-064.360 	BA210101	Wireless room temperature management system, controlled remotely via the Internet **Design:** Berlin 2000 **Surface finish:** matt **Housing colour:** pure white, like RAL 9010 **Housing material:** ABS plastic **Operating voltage:** +5 VDC **Mounting/attachment:** Direct surface/wall-mounting by means of screws **Protection class:** III **Operating elements:** confirmation button **Scope of delivery:** b@home gate, network cable (CAT5)/cable length 3 m, MicroUSB power supply plug/cable length 1.8 m	I
FTRCUd 210.021#21 	UA070000	Wireless room temperature sensor to detect and set the room temperature, control unit for additional active channels, sensor/contact input for central control of the b@home gate **General features:** Time/temperature display; automatic/comfort/ECO operating mode display; external input for ECO contact or OFF contact or external room sensor or flow sensor for H/C changeover or H/C changeover contact or dew point sensor; automatic adjustment to summer/winter time; power reserve (approx. 3 days); backlight; measured value correction; child lock; operation using direct-dial buttons. **Design:** Berlin UP **Surface finish:** glossy **Housing colour:** pure white, similar to RAL 9010 **Housing material:** Plastic ABS, PC, PMMA **Operating voltage:** 230 V AC, 50 Hz **Electrical connection:** pluggable screw terminals **Mounting/attachment:** in flush-mounted socket (deep flush-mounted socket recommended); can be adapted to fit virtually any surface switch range, see adaptation list on page 27 **Protection class:** II, if properly mounted **Average power consumption:** <1 W **Sensors:** Internal NTC, optional external (“Sensor 2”) **Control range:** 5 … 30 °C **Transmission interval: Approx. 3 min and after setpoint change** **Display type:** backlit graphic display **Display:** set/actual temperature, date, time; set/actual temperature or date, time **Scope of delivery:** wireless sensor, cover **50 x 50 mm pure white** (similar to RAL 9010), **glossy,** alre frame “Berlin”	I

only compatible with b@home system

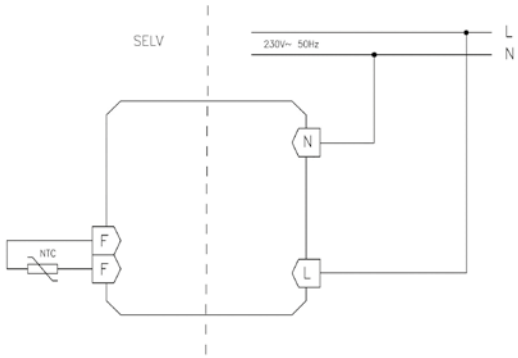
Wireless Systems – CENTRAL COMPONENTS

Type/image	Item no.	Features	PG
FTRCUd 210.021#07 	UA070001	like FTRCUd 210.021#21 but scope of delivery as follows: Wireless room temperature sensor, cover **50 x 50** mm **pure white** (similar to RAL 9010), **glossy,** without frame	I
FTRCUd 210.021#09 	UA070002	like FTRCUd 210.021#21 but scope of delivery as follows: Wireless room temperature sensor, cover **50 x 50** mm **pearl white** (similar to RAL 1013), **glossy,** without frame	I
FTRCUd 210.021#27 	UA070003	like FTRCUd 210.021#21 but scope of delivery as follows: Wireless room temperature sensor, cover **50 x 50** mm **traffic white** (similar to RAL 9016), **glossy,** without frame	I
FTRCUd 210.021#28 	UA070006	like FTRCUd 210.021#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	I
FTRCUd 210.021#55 	UA070004	like FTRCUd 210.021#21 but scope of delivery as follows: Wireless room temperature sensor, cover **55 x 55 mm pure white** (similar to RAL 9010), **glossy,** without frame	I
FTRCUd 210.021#56 	UA070008	like FTRCUd 210.021#21 but scope of delivery as follows: Wireless room temperature sensor, cover **55 x 55** mm **pure white** (similar to RAL 9010), **matt,** without frame	I
FTRCUd 210.021#57 	UA070005	like FTRCUd 210.021#21 but scope of delivery as follows: Wireless room temperature sensor, cover **55 x 55** mm **pearl white** (similar to RAL 1013), **glossy,** without frame	I
FTRCUd 210.021#59 	UA070007	like FTRCUd 210.021#21 but scope of delivery as follows: Wireless room temperature sensor, cover **55 x 55** mm **traffic white** (similar to RAL 9016), **glossy,** without frame	I

FTRCUd with alre frame “Berlin”



FTRCUd circuit diagram



Components suitable for the b@home system

Technical data	
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Protection rating:	IP 30
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 and the b@home gate. Primarily used for renovations or for heating system extensions.

The sensors can also be connected to the actuators directly without the b@home gate to implement single-room control.

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	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, like RAL 9010 **Housing material:** ABS plastic **Operating voltage:** 2x micro AAA batteries, 1.5 V **Ambient temperature:** –10…+50 °C **Storage temperature:** –10…+50 °C **Mounting/attachment:** Direct surface/wall mounting by means of screws or adhesive pads **Protection class:** III **Sensor:** Internal NTC **Scope of delivery:** device, batteries, adhesive pads **Operating elements:** Learn button	I
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, like RAL 9010 **Housing material:** ABS plastic **Operating voltage:** 2x micro AAA batteries, 1.5 V **Ambient temperature:** –10…+50 °C **Storage temperature:** –10…+50 °C **Mounting/attachment:** Direct surface/wall mounting by means of screws or adhesive pads **Protection class:** III **Sensor:** NTC, internal **Setting range:** 5…30 °C **Scope of delivery:** device, batteries, adhesive pads **Operating elements:** Learn button	I

Components suitable for the b@home system

Wireless Systems – SENSORS / REPEATERS

Type/image	Item no.	Features	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, like RAL 9010 **Housing material:** ABS plastic **Operating voltage:** 2x micro AAA batteries, 1.5 V, 1,100 mAh **Ambient temperature:** –10 … +50 °C **Storage temperature:** –10 … +50 °C **Mounting/attachment:** Direct surface/wall mounting by means of screws or adhesive pads **Protection class:** III **Sensor:** NTC, internal **Setting range:** 5 … 30 °C **Scope of delivery:** device, batteries, adhesive pads **Operating elements:** “Comfort/ECO” switch, learn button	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, like RAL 9010 **Housing material:** ABS plastic **Operating voltage:** 2x micro AAA batteries, 1.5 V, 1,100 mAh **Ambient temperature:** –10 … 50 °C **Storage temperature:** –10 … +50 °C **Mounting/attachment:** Direct surface/wall mounting by means of screws or adhesive pads **Protection class:** III **Sensor:** NTC, internal **Setting range:** 5 … 30 °C **Display type:** symbol display **Scope of delivery:** device, batteries, adhesive pads **Accessories:** optional adapter snap-on plate JZ-18	I
FTRFBu-180.121/V2 	BA010201	like FTRFBu-180.117, but with backlighting **Operating voltage:** 3x micro AAA batteries, 1.5 V (third battery for backlighting)	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 UP **Surface finish:** Glossy **Housing colour:** Pure white, similar to RAL 9010 **Housing material:** Plastic ABS, PC, PMMA **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0 … 40 °C **Storage temperature:** –20 … +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, see adaptation list on page 27 **Protection class:** II, 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 … 30 °C **Display type:** Backlit graphic display **Scope of delivery:** Controller, cover **50 x 50** mm, **pure white** (similar to RAL 9010), **glossy,** alre frame “Berlin”	I

Wireless Systems – SENSORS / REPEATERS

Type/image	Item no.	Features	PG
FTRFUd 210.123#07 	UA080001	Like FTRFUd 210.123#21 but scope of delivery as follows: Wireless room temperature sensor, cover **50 x 50** mm **pure white** (similar to RAL 9010), **glossy,** without frame	I
FTRFUd 210.123#09 	UA080002	Like FTRFUd 210.123#21 but scope of delivery as follows: Wireless room temperature sensor, cover **50 x 50** mm **pearl white** (similar to RAL 1013), **glossy,** without frame	I
FTRFUd 210.123#27 	UA080003	Like FTRFUd 210.123#21 but scope of delivery as follows: Wireless room temperature sensor, cover **50 x 50** mm **traffic white** (similar to RAL 9016), **glossy,** without frame	I
FTRFUd 210.123#28 	UA080006	Like 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	I
FTRFUd 210.123#55 	UA080004	Like FTRFUd 210.123#21 but scope of delivery as follows: Wireless room temperature sensor, cover **55 x 55** mm **pure white** (similar to RAL 9010), **glossy,** without frame	I
FTRFUd 210.123#56 	UA080008	Like FTRFUd 210.123#21 but scope of delivery as follows: Wireless room temperature sensor, cover **55 x 55** mm **pure white** (similar to RAL 9010), **matt,** without frame	I
FTRFUd 210.123#57 	UA080005	Like FTRFUd 210.123#21 but scope of delivery as follows: Wireless room temperature sensor, cover **55 x 55** mm **pearl white** (similar to RAL 1013), **glossy,** without frame	I
FTRFUd 210.123#59 	UA080007	Like FTRFUd 210.123#21 but scope of delivery as follows: Wireless room temperature sensor, cover **55 x 55** mm **traffic white** (similar to RAL 9016), **glossy,** without frame	I

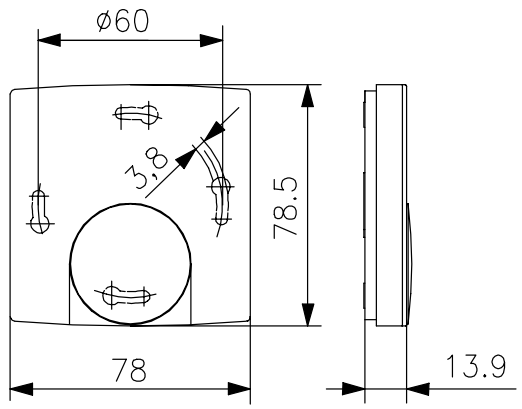
Wireless Systems – SENSORS / REPEATERS

Type/image	Item no.	Features	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, like RAL 9010 **Housing material:** ABS plastic	II
JZ-21 	MN990006	Adapter frame for mounting wireless sensors of the Berlin 1000 series in flush-mounted sockets up to **80 x 80** mm	I
JZ-090.900 	VV000025	**General features:** alre frame “Berlin” (neutral) for all flush-mounted room temperature sensors with cover 50 x 50 mm **Surface finish:** glossy **Housing colour:** pure white, similar to RAL 9010 **Housing material:** PC plastic	I
JZ-090.910 	VV000010	**General features:** alre frame “Berlin” (neutral) for all flush-mounted room temperature sensors with cover 50 x 50 mm **Surface finish:** glossy **Housing colour:** pearl white, like RAL 1013 **Housing material:** PC plastic	I
ET-01 	MA990000	**General features:** Adjusting knob for B1000 series devices, Scale: Degrees Celsius, pure white glossy	I

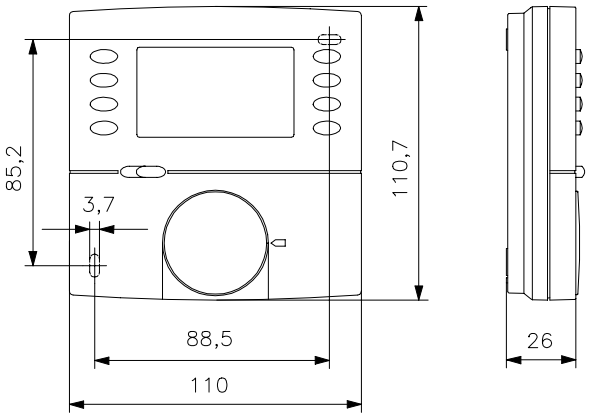
Components suitable for the b@home system

Wireless Systems – SENSORS / REPEATERS

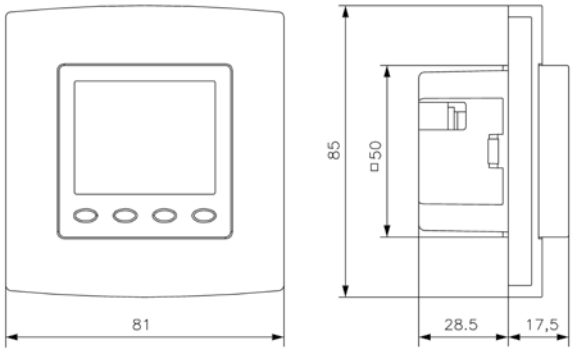
“Berlin 1000”



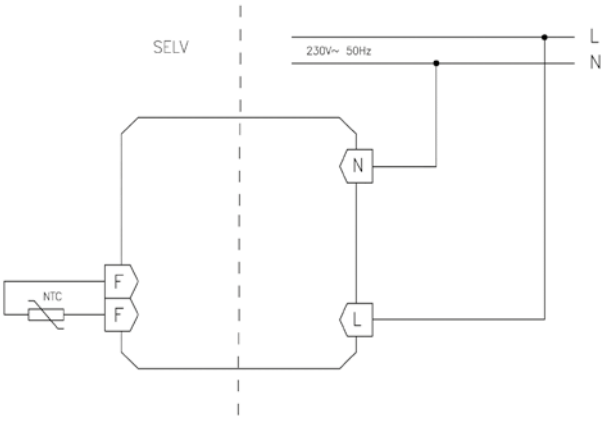
“Berlin 3000”



FTRFUd with alre frame “Berlin”



FTRFUd circuit diagram



Adaptation of alre flush-mounted FTRxUd-210.021

Manufacturer	Range	Colour RAL 9010 (surface finish)	Adaptation in switch range "55 x 55" possible using …	"50 x 50" adaptation possible with … (insert frame from 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 (Basis System)	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 "55 x 55" possible using…	"50 x 50" adaptation possible with … (insert frame from 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 (like 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

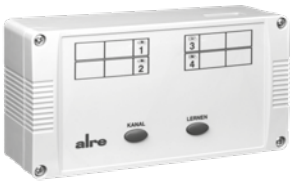
NOTE: Most light switches are designed in the colour "like RAL 9010", although different switch manufacturers use different designations for this colour. Coloured, glass and aluminium frames are also combined with white jacks or plugs so that controllers with white covers can also be integrated into 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.

"50 x 50 controller": The housing covers of the 50 x 50 controllers are 50 x 50 mm in size. Using a 50 x 50-mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50 x 50-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 "50 x 50" FTRxUd".

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

All information regarding switch manufacturers" product lines and item numbers was last updated in 12/2019 | No liability is assumed for the information provided. | Technical specifications subject to change.
An adaptation list for RAL 1013 switch ranges is available from our website at www.alre.de.

Wireless Systems – Heating ACTUATORS



Technical data

Surface finish:	matt
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

Application

Wireless actuators (wireless heating controllers) which, in conjunction with alre wireless room temperature sensors and the b@home gate, implement individual room temperature control. Primarily used in renovations or for heating system extensions.

The actuators can also be connected to the sensors directly without the b@home gate to implement single-room control.

Type/image	Item no.	Features	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:** 2 x Mignon AA, 1.5 V. Do not use rechargeable batteries or lithium batteries! **Ambient temperature:** 0…50 °C **Storage temperature:** –20…+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…28 °C **Display:** ready to mount/mechanical adjustment/mechanical adjustment error/loss of connection/learning mode **Operating elements:** learn button, installation button	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, like RAL 9010 **Housing material:** ABS plastic **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0…40 °C **Storage temperature:** –20…+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:** IP 30 **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…30 °C **Display:** installation mode/function check/connection loss/learning mode **Operating elements:** Learn button	I

Components suitable for the b@home system

Wireless Systems – Heating ACTUATORS

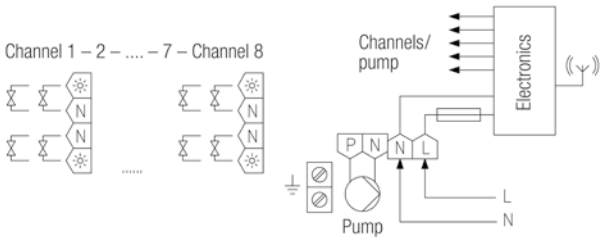
Type/image	Item no.	Features	PG
HTFRL-214.140 	BA121000	**General features:** 4-channel wireless temperature actuator for mounting in the heating manifold, max. 4 actuators/channels can be directly connected, including pump module, one time zone possible per channel, master-slave operation, average value calculation with up to 8 measurement points. The upper part can be removed to teach the wireless sensors in the individual rooms. This requires the use of an optional commercial 9 V battery. The rooms (b@home) or sensors can be configured easily using the channel selection button and a learn button. Emergency mode; 4 fastening screws for wall mounting (see page 34 for implementation of central control using KTFRx) **Housing colour:** Light grey, similar RAL 7035 **Housing material:** ABS plastic **Operating voltage:** 230 V AC, 50 Hz **Ambient temperature:** –10 … +50 °C **Storage temperature:** –20 … +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 … 30 °C **Display:** Installation mode, connection and status check, connection loss, learning mode are indicated per channel **Operating elements:** Channel selection button, learning button	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 in the individual rooms. The precondition is the use of an optional commercial 9 V battery. The rooms (b@home) or sensors can be configured easily using the channel selection button and a learn button. (See page 34 for implementation of central control using KTFRx) **Housing colour:** Light grey, similar to RAL 7035 **Housing material:** ABS plastic **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** –10 … +50 °C **Storage temperature:** –20 … +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, 180 W of this for pump output **Switching element:** 9 relays **Switching contact:** 9 NO contacts **Control range:** 5 … 30 °C **Operating elements:** channel selection button, learn button	I

Wireless Systems – Heating ACTUATORS

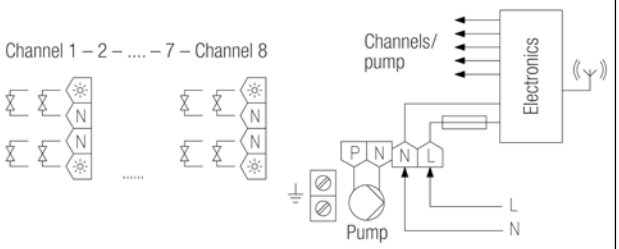
Type/image	Item no.	Features	PG
WP-01	G9990180	**General features:** heat conduction paste 2 ml; R > 1 TΩ/cm, silicone-free **Ambient temperature:** –40 … +150 °C **Heat conductivity:** > 0.7 W/mK	II
JZ-24 	BN990002	**General features:** magnetic fastening set for simple and safe fastening of the multi-channel actuators on a metallic substrate (for example, heating manifold)	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, like RAL 9010 **Housing material:** ABS plastic **Storage temperature:** –20 … +70 °C **Admissible humidity:** max. 95 % rel. humidity, non-condensing **Protection rating:** IP 30	II
JZ-26 	BN990004	**General features:** Antenna cable for connecting the external antenna (JZ-25) with multi-channel actuators **Connecting cable:** 1 m	II
THF 	C1809515	**General features:** heat conduction paste 2 ml; R > 1 TΩ/cm, silicone-free	II

Compatible with valve actuators ZBOOA-010.100 Page 106

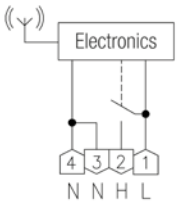
HTFRL-214.140 (4-channel)



HTFRL-316.125 (8-channel)



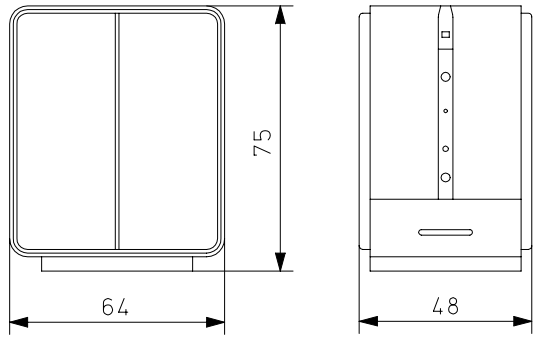
HTFRB-010.101



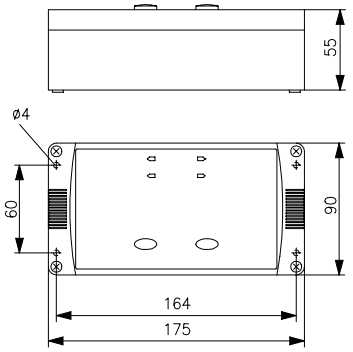
Components suitable for the b@home system

Wireless Systems – Heating ACTUATORS

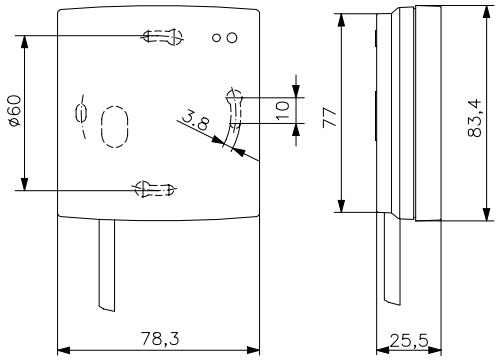
HTFMA-180.161



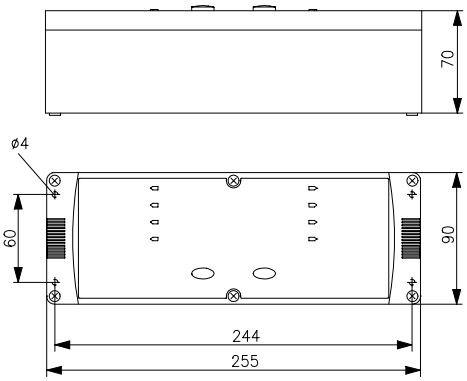
HTFRL-214.140



HTFRB-010.101



HTFRL-316.125



Notes

Notes

Technical data

Surface finish:	matt
Housing colour:	light grey, like RAL 7035
Housing material:	ABS plastic
Operating voltage:	230 VAC, 50 Hz
Ambient temperature:	–10 … +50 °C
Storage temperature:	–20 … +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 VAC, 50 Hz
Min. switching voltage:	230 VAC, 50 Hz
Control function:	heating or cooling
Control range:	5 … 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: ZBOOA-010.100 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. The actuators can also be connected to the sensors directly without the b@home gate to implement single-room control.

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 cooling 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	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	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	I

* Pump module included in scope of delivery

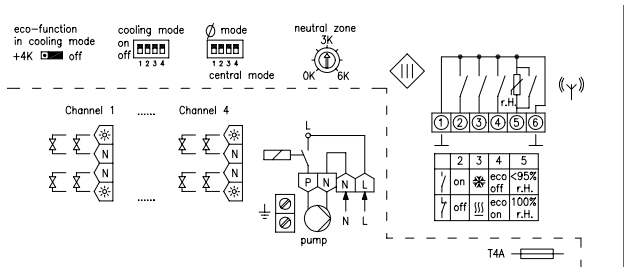
Components suitable for the b@home system

Wireless Systems – Heating/cooling ACTUATORS

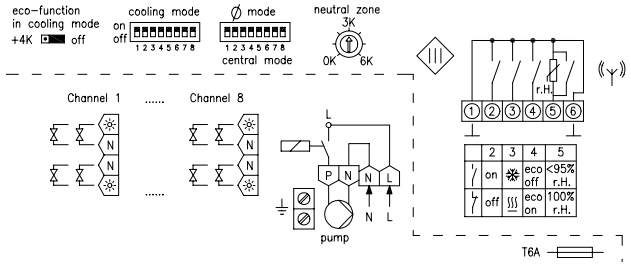
Type/image	Item no.	Features	PG
JZ-24 	BN990002	**General features:** Magnetic fastening set for simple and safe fastening of the multi-channel actuators on a metallic substrate (for example heating manifold)	II
JZ-25 	BN990003	**General features:** External antenna for reception enhancement of the multi-channel 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, like RAL 9010 **Housing material:** ABS plastic **Storage temperature:** –20 … +70 °C **Admissible humidity:** max. 95% rel. humidity, non-condensing **Protection rating:** IP 30	II
JZ-26 	BN990004	**General features:** Antenna cable for connecting the external antenna (JZ-25) with multi-channel actuators **Connecting cable:** 1 m	II

Compatible with valve actuators ZBOOA-010.100 Page 106

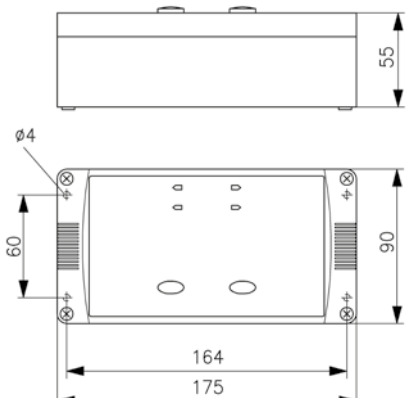
KTFRL-213.140 (4-channel)



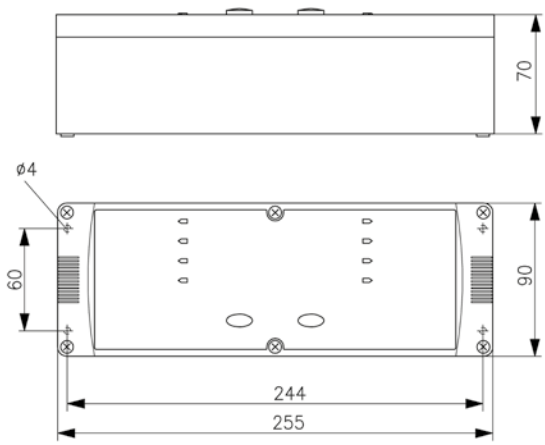
KTFRL-315.125 (8-channel)



KTFRL-213.140



KTFRL-315.125

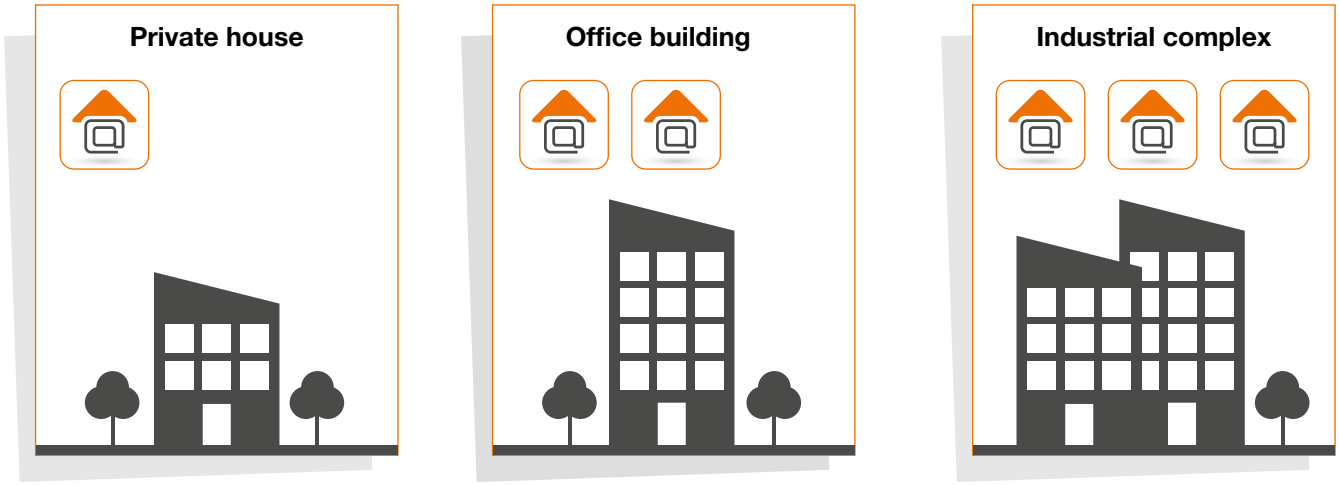


All advantages and possibilities of b@home at a glance

- Safe and secure control, monitoring and programming of heating/ cooling controls from any location
- Up to 32 rooms or heating/cooling zones
- Quick and easy commissioning
- Intuitive operation
- Individual room control
- Suitable for all heating systems
- No Internet connection required for the control function
- Can be retrofitted in existing alre wireless systems*

* Except clock sensors FTRFBu 180.1xx and FTRFUd 210.123, since corresponding functions are implemented in the gate/web portal

Scalable from private houses to industrial complexes



One advantage of the alre modular solution is its excellent scalability. This system allows you to automate a single home or commercial premises – from a small office building to an entire industrial complex.

b@home

b@home website

b@home product film

b@home installation film

alre website

BUILDING AUTOMATION

Ahead of the future.

BUILDING AUTOMATION

Intelligent, flexible and sustainable

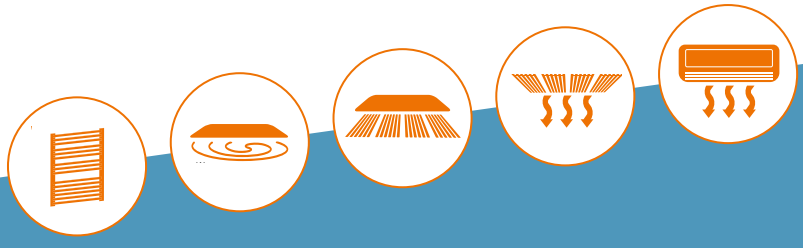
Building automation means the automatic control, regulation, monitoring and optimisation of various building functions such as heating, cooling or ventilation. As an essential component of technical facility management, building automation is intended to improve user comfort as well as reduce energy and operating costs.

For this purpose, all sensors, actuators, operating elements and other technical components in the building are networked. This networking runs in configurations that ensure that all components interact intelligently.

With its applications, the new alre BACnet climate controller covers most fields of application in automated individual room control.

Application examples:

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



BUILDING AUTOMATION overview:

System information

Individual components

Product innovation

NEW

Control buildings sustainably and efficiently with the new BACnet individual room controller from alre. The controller covers a wide range of applications for building automation.

See page 42 onwards for more information

alre

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.

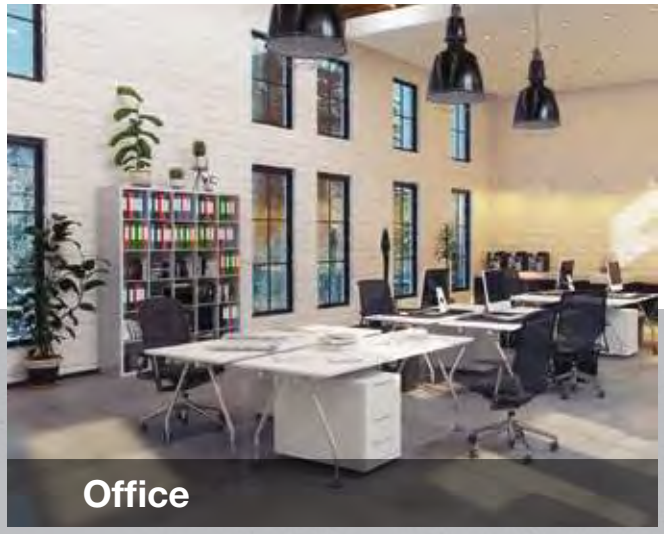
The BACnet room controller was awarded the BTL certificate for compliance with the BACnet standard ISO 16484-5, which was proven by means of a BTL conformity test.

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

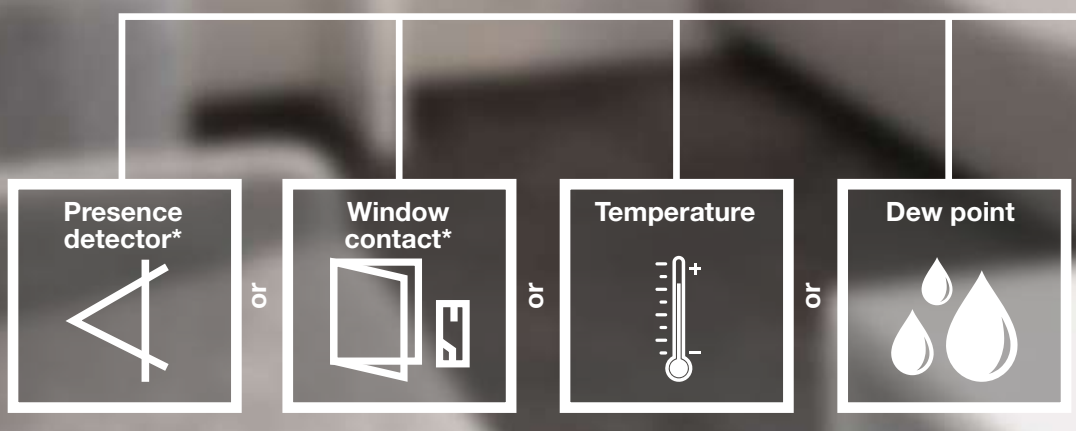
The alre BACnet room controller with graphic display is suitable for time-dependent heating and cooling operation in 2 or 4-pipe systems.

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 temperature sensor
- Connectible external dew point sensor
- MS/TP interface
- 0-10 V EC fan coil
- I/O mix integrated in device



* depending on existing application


BMS
BACnet IP
BACnet MS/TP
alre
COMFORT
20.0°C
23.0°C
Mode
Menù
Fn
Valve
Valve
EC 0…10 V

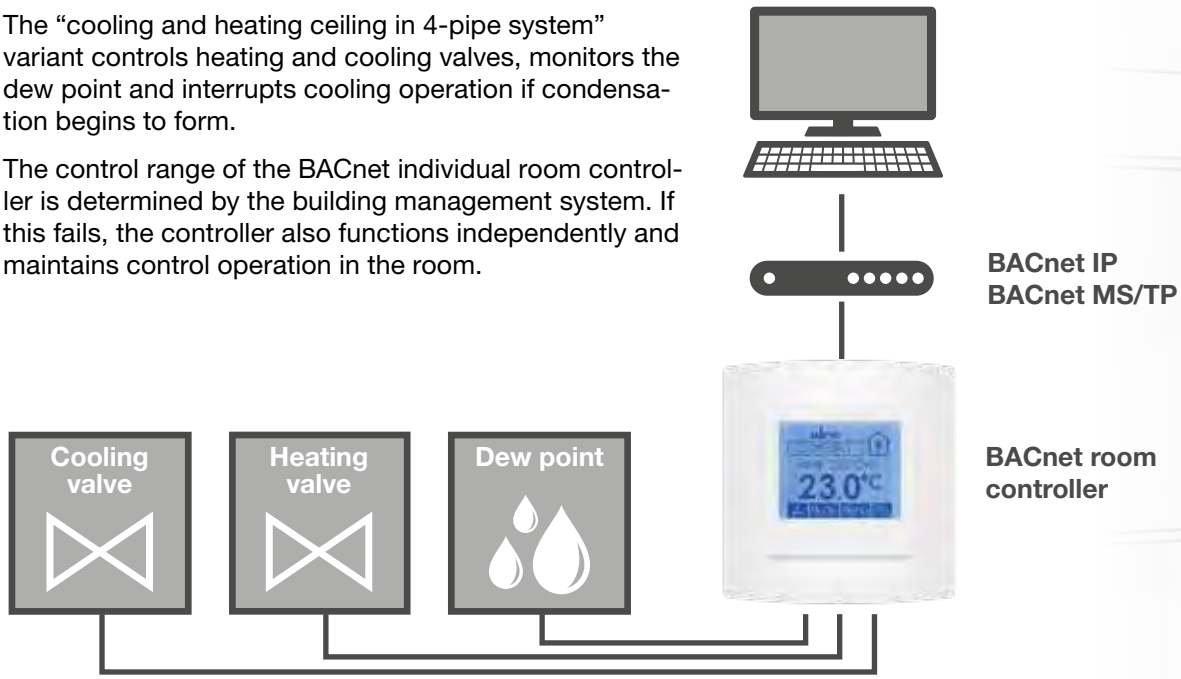
alre BACnet individual room controller/ heating and cooling ceiling application example

Planners prefer heating and cooling ceilings for comfortable air conditioning in buildings because it prevents draughts or disturbing noises.

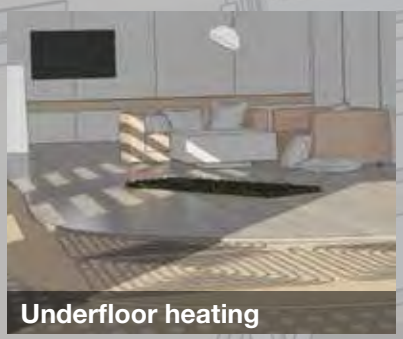
With its pre-configured system diagrams, the alre BACnet individual room controller (KTRBUu 217.456) supports the most common air conditioning applications.

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.

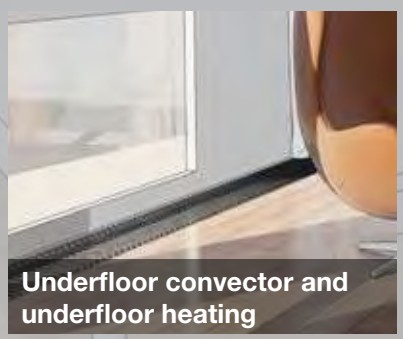
The control range of the BACnet individual room controller is determined by the building management system. If this fails, the controller also functions independently and maintains control operation in the room.



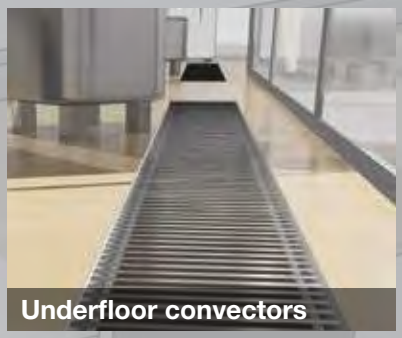
Wide range of applications


Underfloor heating


Duct devices


Underfloor convector and underfloor heating

Ceiling cassettes



Underfloor convectors

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 50 x 50 mm, 55 x 55 mm and 60 x 60 mm from surface switch ranges of well-known manufacturers such as Berker, Busch-Jaeger, Gira, Jung, Merten, Peha, Hager or Feller (CH).

Adaptation examples

KTRBUu 217.456 in
BERKER S.1

KTRBUu 217.456 in
BUSCH-JAEGER balance SI

KTRBUu 217.456 in
GIRA Standard 55

Check out the product video now!

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 of different manufacturers.

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

BACnet room controller application overview

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

		Systems								Ext. sensors					Actuators					
Type	**Application**	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 (flush-mounted)
Housing material:	PC, PMMA, ABS plastic
Operating voltage:	230 VAC, 50 Hz
Ambient temperature:	0 … 40 °C
Storage temperature:	–20 … +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 55
Protection rating:	IP 30
Protection class:	II
Safety and EMC:	according to DIN EN 60730
Max. switching voltage:	230 VAC, 50 Hz
Min. switching voltage:	230 VAC, 50 Hz
Switching power:	690 W
Max. power consumption:	approx. 1 W (2.2 VA)
Max. switching current:	all 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 … 40 °C
Setting range:	Standard setting range for heating (5 … 30 °C), second setting range for cooling (18 … 40 °C)
Hysteresis:	< 1 K
Display type:	illuminated graphical display
Pipe system compatibility:	2-pipe and 4-pipe

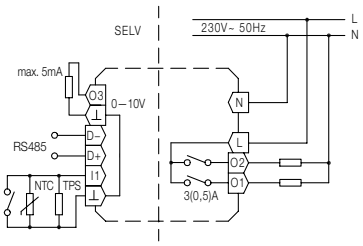
Application

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 are available for projects as well as the colors anthracite and aluminum on request.

Type/image	Item no.	Features	Circuit diagram	PG
KTRBUu217.456#21 	UA230000	**Surface finish:** Glossy **Housing colour:** pure white, similar to RAL 9010 **Scope of delivery:** controller, cover 50 x 50 mm, pure white (similar to RAL 9010), glossy, alre frame “Berlin”		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	PG
KTRBUu217.456#07 	UA230002	Like KTRBUu217.456#21 but scope of delivery as follows: Controller, cover **50 x 50** mm **pure white** (similar to RAL 9010), **glossy,** without frame		IV
KTRBUu217.456#09 	UA230003	like KTRRUu217.456#21 but with delivery scope: controller, cover 50 x 50 mm **pearl white** (similar to RAL 1013), **glossy,** without frame		IV
KTRBUu217.456#27 	UA230004	Like KTRBUu217.456#21 but scope of delivery as follows: Controller, cover **50 x 50** mm **traffic/ studio white** (similar to RAL 9016), **glossy,** without frame		IV
KTRBUu217.456#28 	UA230007	Like KTRBUu217.456 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		IV
KTRBUu217.456#55 	UA230005	Like KTRBUu217.456#21 but scope of delivery as follows: Controller, cover **55 x 55** mm **pure white** (similar to RAL 9010), **glossy,** without frame		IV
KTRBUu217.456#56 	UA230009	Like KTRBUu217.456#21 but scope of delivery as follows: Controller, cover **55 x 55** mm **pure white** (similar to RAL 9010), **matt** without frame		IV
KTRBUu217.456#57 	UA230006	Like KTRBUu217.456#21 but scope of delivery as follows: Controller, cover **55 x 55** mm **pearl white** (similar to RAL 1013), **glossy,** without frame		IV
KTRBUu217.456#59 	UA230008	Like KTRBUu217.456#21 but scope of delivery as follows: Controller, cover **55 x 55** mm **traffic/ studio white** (similar to RAL 9016), **glossy,** without frame		IV

BACnet room controller KTRBUu

Flush-mounted installation – Design Berlin UP

Accessories	Item no.	Features	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 cover 50 x 50 mm	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 cover 50 x 50 mm	I
TPS 1 	G8000299	Dew point sensor to detect and report the dew point (see also Air Conditioning Technology chapter, page 136) **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 2 x 0.5 mm² **Scope of delivery:** sensor, 2 clips for cooling pad	I
TPS 2 	G8000300	Dew point sensor to detect and report the dew point (see also Air Conditioning Technology chapter, page 136) **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 2 x 0.5 mm² **Scope of delivery:** Sensor, 2 clips for cooling pad, 2 cable ties	I
TPS 3 	SN120000	Dew point sensor to detect and report the dew point (see also Air Conditioning Technology chapter, page 136) **Mounting/attachment:** Attach to pipe by means of cable ties **Use:** piped cold-water systems **Sensor wire extendible up to:** 50 m with 2 x 0.5 mm² **Scope of delivery:** Sensor, 2 cable ties	I
BTF2-C47-0000	SA140014	Surface-mounted “ultra-thin” room temperature sensor for temperature measurement in residential and business premises (see also Sensors chapter, page 200) **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 … +50 °C **Admissible humidity:** Max. 95% rel. humidity, non-condensing **Protection rating:** IP 30 **Protection class:** III **Electrical connection:** screw-type terminals 0.33 mm² to 1.5 mm²	III
FUFC 47-0000 	SN090198	Flush-mounted room temperature sensor for temperature measurement in residential and business premises (see also Sensors chapter, page 201) **Mounting/attachment:** In flush-mounted socket, can be adapted to fit virtually any 50 x 50 mm surface switch range **Housing colour:** Pure white, similar to RAL 9010, glossy **Housing material:** PC plastic **Ambient temperature:** –10 … +50 °C **Admissible humidity:** Max. 95% rel. humidity, non-condensing **Protection rating:** IP 30 **Protection class:** III **Electrical connection:** screw-type terminals 0.5 mm² to 1.5 mm²	III
AF-2 	G9040380	Temperature sensor for temperature measurement outdoors and in humid areas, special protection against dust and humidity (see also Sensors chapter, page 203) **Mounting/attachment:** surface/wall mounting **Housing colour:** Pure white, similar to RAL 9010 **Housing material:** PA plastic (30% GF reinforced) **Ambient temperature:** –30 … +70 °C **Admissible humidity:** Max. 95% rel. humidity, non-condensing **Protection rating:** IP 65 **Protection class:** III **Electrical connection:** screw-type terminals 0.14 mm² to 2.5 mm²	III

BACnet room controller KTRBUu

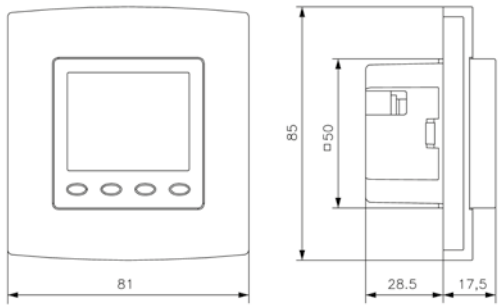
Flush-mounted installation – Design Berlin UP

Accessories	Item no.	Features	PG
KF-2 	G9031446	Cable temperature sensor for floor or supply air temperature measurement/limiting (see also Sensors chapter, page 206) **Mounting/attachment:** In immersion sleeve, protection coil, on pipe, etc. **Pipe material/length:** PE, 1.5 m **Sensor sleeve material:** V4A (1.4571) **Ambient temperature:** –35…+100 °C **Admissible humidity:** Max. 95% rel. humidity, non-condensing **Protection rating:** IP 67 **Protection class:** III **Electrical connection:** Safety extra low voltage only max. 30 V AC/42 V DC	III
ZBOOA-010.100 	H9100010	Electro-thermal valve actuator (see also Heating/Air Conditioning Technology chapter) **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…50 °C **Storage temperature:** –20…+70 °C **Admissible humidity:** Max. 95% rel. humidity, non-condensing **Protection rating:** IP 42 **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/2 x 0.5 mm²	I

KTRBUu with alre frame “Berlin”

Pluggable screw-type terminals

KTRBUu with alre frame “Berlin”



alre BACnet KTRBUu217.456 individual room controller adaptation

Flush-mounted

Manufacturer	Range	Colour RAL 9010 (surface finish)	Adaptation in switch range “55 x 55” possible using…	“50 x 50” 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 “55 x 55” possible using …	To adapt KTRBUu size 50 x 50, 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.

“50 x 50 controller”: The housing covers of the 50 x 50 controllers are 50 x 50 mm in size. Using a 50 x 50-mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50 x 50-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 ‘50 x 50’ KTRBUu”.

“55 x 55 controller”: The housing covers of the 55 x 55 controllers are 55 x 55 mm in size. Many light switch ranges have inner dimensions of 55 x 55 mm. Therefore, the 55 x 55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column “Adaptation in switch range (55 x 55)” to determine whether the 55 x 55 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 12/2019 | No liability is assumed for the information provided. | Technical specifications subject to change.
An adaptation list for RAL 1013 switch ranges is available from our website at www.alre.de.

Notes

HEATING TECHNOLOGY

Cozy heating just like magic.

HEATING TECHNOLOGY
Warmth and well-being.

From temperature controllers and terminal strips to valve actuators, we offer a complete product range in a timelessly elegant design.

The right solution for everyone based on individual needs.

Application examples:

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

Room/floor temperature controllers

Terminal strips for heating manifolds/valve actuators

Product innovation

The optimised terminal strip allows you to wire actuators clearly and conveniently. Screwless spring terminals, labelling fields or integrated strain relief simplify installation enormously.

See page 107 onwards for more information

Overview of heating controllers

	Type	RTBSB-001.000	RTBSB-001.002	RTBSB-001.010	RTBSB-001.026	RTBSB-001.045	RTBSB-001.048	RTBSB-001.062	RTBSB-001.065	RTBSB-001.086	RTBSB-001.096	RTBSB-001.110	RTBSB-001.202	RTBSB-001.500	RTBSB-001.910	RTBSB-001.910/2	RTBSB-001.948/1	RTBSB-201.000	RTBSB-201.002	RTBSB-201.010	RTBSB-201.034	RTBSB-201.062	RTBSB-201.065	RTBSB-201.202	RTBSB-201.500	RTBSB-001.401	RTBSB-001.411	HTRRBu-110.117/21	FTR 101.000	FTR 101.002	FTR 101.010	FTR 101.034	FTR 101.052	FTR 101.062	FTR 101.063	FTR 101.065	FTR 101.075	FTR 101.086	FTR 101.202	FTR 101.210	FTR 101.262	FTR 101.265#00	FTR 101.902	HTRRUu 210.021	HTRRB-011.010	HTRRB-011.410	HTRRBu-110.021	FETR 101.700	FETR 101.715	FETR 101.716
	Page	61	61	62	62	62	63	63	63	64	64	64	65	65	65	65	66	67	67	68	68	68	68	68	69	70	71	72	76	77	77	77	78	78	78	78	79	79	79	80	80	80	80	81	94	98	98	100	102	102	103
Design	Berlin 1000																	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																												x	x				
	Berlin 3000																											x																			x			
	Berlin flush-mounted																												x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				x	x	x
	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		x	x		x	x	x			x	x		x		x						
	Bimetal (toggler)			x	x	x	x		x			x			x	x	x			x			x								x				x	x			x		x						
	NTC, internal																											x																	x					
	NTC, external																																												x	x	x	x	x	x	x
	NTC for floor monitoring																																											x						
Controller 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	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								x				x	x			x		x						
	Cooling function with fan output				x																																													
	Model with clock																											x																	x						
Pipe system	Air conditioning controller in 2-pipe system			x	x	x	x		x			x			x	x	x			x			x								x				x	x			x		x						
Application	Natural stone heating									x	x																	x									x							x					
	Tiled stove heating																																													x				
	Electric direct heating systems									x	x															x	x	x									x							x					
	Electric floor heating																											x																	x	x		x	x	x	x
	Night storage heater																																x																		
	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	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								x				x	x			x		x						
Features	Output “temperature reduction”																											x																			x			
	Input “temperature reduction”		x					x					x		x	x			x			x		x						x	x		x			x		x		x		x				x	x	x
	Switch “On/Off”				x			x														x						x						x							x				x	x			x	x
	Switch “Heating/Cooling”								x														x													x						x								
	Switch “Heating/Off/Cooling”																																	x																	
	Switch “Reduction/Comfort/Automatic”																											x									x							x					
	Switch “Auxiliary heating”																																x																	
	Display																											x																						
	Display with back-lighting																																												x			x			
	Indicator lamp “Heating”							x			x										x	x										x		x							x			x	x	x		x	x	x
	Indicator lamp “Reduction”																																				x													x	x	x
	Indicator lamp “Auxiliary heating”																																x																	
Technology	Control range –20 … +30 °C					x																																													
	Control range 5 … 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	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
	Control range 10 … 42 °C																																											x			x			x
	Control range 10 … 50 °C																																															x	x	
	Control range 10 … 60 °C						x										x																													x				
	Control range 20 … 80 °C																																														x			
	3000 W switching power									x	x															x	x										x												
	Internal setting														x	x	x																															x			
	2-wire connection													x											x																										
	24 V~												x			x								x																			x	x	x	x				
	230 V~	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	x					x	x	x	x	x	x	x
	24 V~ or 230 V~											x					x																																	

x * Heating controllers using normally open valve actuators

Mechanical room temperature controller, RTBSB

Surface-mounted installation – Design Berlin 2000

Technical data

Design:	Berlin 2000
Surface finish:	matt
Housing colour:	pure white, like RAL 9010
Housing material:	ABS plastic
Storage temperature:	–20 … +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals 0.12 mm² to 2.5 mm²
Mounting/attachment:	Surface/wall mounting (4-hole assembly on flush-mounted socket)
Protection rating:	IP 30
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

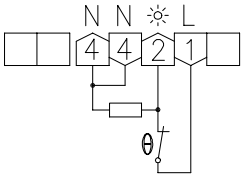
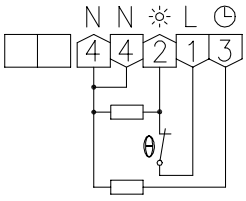
Control or monitoring of temperatures in closed spaces. Suitable for all heating systems.

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).

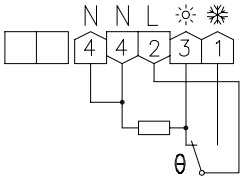
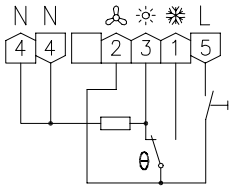
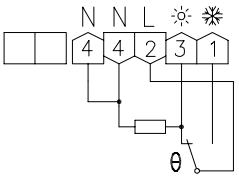
Installation note: Owing to the existing wiring space in the controller itself, installation on a flush-mounted socket is recommended, but it can also be performed on a plane, non-conducting substrate.

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	PG
RTBSB-001.000 	MA010000	**General features:** Mechanical range limitation; scale: Degrees Celsius; external setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0 … 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 … 30 °C **Hysteresis:** Approx. 0.5 K at a temperature change of max. 4 K/h		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 … 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 … 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)		I

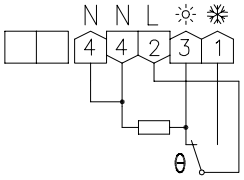
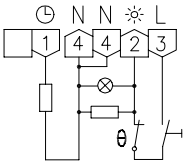
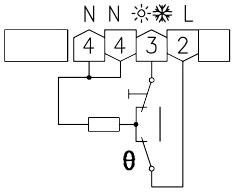
Mechanical room temperature controller, RTBSB

Surface-mounted installation – Design Berlin 2000

Type/image	Item no.	Features	Circuit diagram	PG
RTBSB-001.010 	MA010200	**General features:** Mechanical range limitation; scale: Degrees Celsius; external setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0…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…30 °C **Hysteresis:** Approx. 0.5 K at a temperature change of max. 4 K/h		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…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…30 °C **Hysteresis:** Approx. 0.5 K at a temperature change of max. 4 K/h		I
RTBSB-001.045 	MA011200	**General features:** Mechanical range limitation; scale: Degrees Celsius; external setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** –20…+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…+30 °C **Hysteresis:** Approx. 1.5 K at a temperature change of max. 4 K/h		I

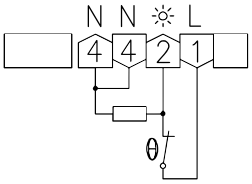
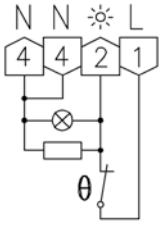
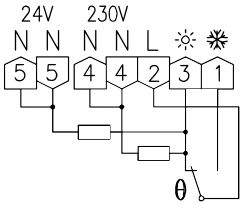
Mechanical room temperature controller, RTBSB

Surface-mounted installation – Design Berlin 2000

Type/image	Item no.	Features	Circuit diagram	PG
RTBSB-001.048 	MA011300	**General features:** Mechanical range limitation; scale: Degrees Celsius; external setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature: 10…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…60 °C **Hysteresis:** Approx. 1.5 K at a temperature change of max. 4 K/h		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…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…30 °C **Hysteresis:** Approx. 0.5 K at a temperature change of max. 4 K/h		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…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…30 °C **Hysteresis:** Approx. 0.5 K at a temperature change of max. 4 K/h		I

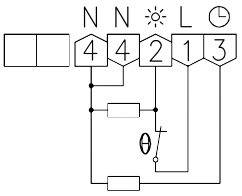
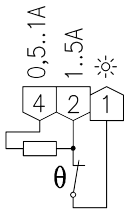
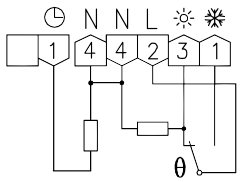
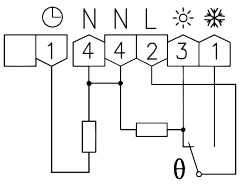
Mechanical room temperature controller, RTBSB

Surface-mounted installation – Design Berlin 2000

Type/image	Item no.	Features	Circuit diagram	PG
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 … 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 … 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 see page 70		I
RTBSB-001.096 	MA012500	like RTBSB-001.086, but with “heating” display (LED red)		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 … 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 … 30 °C **Hysteresis:** Approx. 0.5 K at a temperature change of max. 4 K/h		I

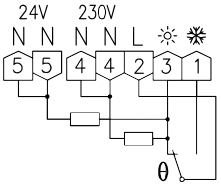
Mechanical room temperature controller, RTBSB

Surface-mounted installation – Design Berlin 2000

Type/image	Item no.	Features	Circuit diagram	PG
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…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…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)		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…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…30 °C **Hysteresis:** Approx. 1 K at a temperature change of max. 4 K/h (load-dependent)		I
RTBSB-001.910 	MA012000	**General features:** ECO function; scale: Degrees Celsius; internal setting **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0…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…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)		I
RTBSB-001.910/2 	MA012100	**General features:** ECO function; scale: Degrees Celsius; internal setting **Operating voltage:** 24 VAC, 50 Hz **Ambient temperature:** 0…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…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)		I

Mechanical room temperature controller, RTBSB

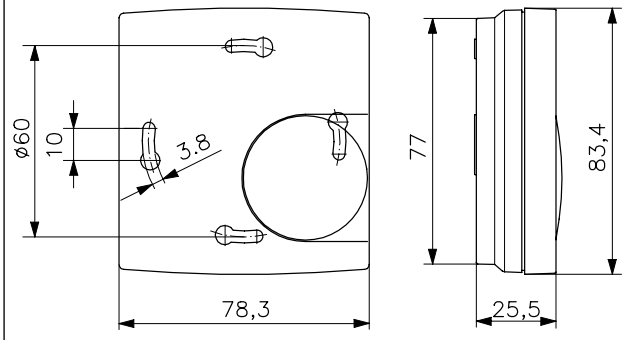
Surface-mounted installation – Design Berlin 2000

Type/image	Item no.	Features	Circuit diagram	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…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…60 °C **Hysteresis:** Approx. 1.5 K at a temperature change of max. 4 K/h		I

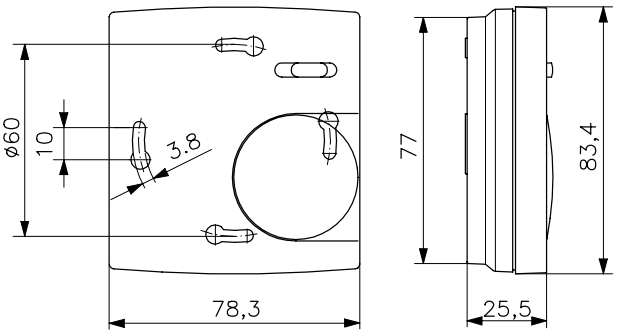
Accessories: terminal strips VOOxx, suitable valve actuators ZBOOA

You can find other/similar controllers with outputs for heating/cooling and noiseless controllers in the “Air Conditioning Technology” chapter onwards page 141.

RTBSB



RTBSB with switch



Mechanical room temperature controller, RTBSB

Surface-mounted “ultra-thin” installation – Design Berlin 1000

Technical data

Design:	Berlin 1000
Surface finish:	glossy
Housing colour:	pure white, like RAL 9010
Housing material:	ABS plastic
Ambient temperature:	0…30 °C
Storage temperature:	–20…+70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals 0.33 mm² to 1.5 mm²
Mounting/attachment:	Surface/wall mounting (4-hole assembly on flush-mounted socket)
Protection rating:	IP 30
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…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

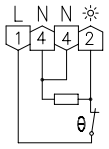
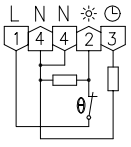
Control or monitoring of temperatures in closed spaces.

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).

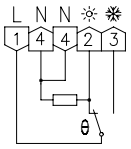
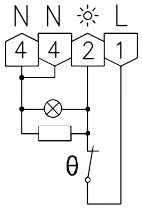
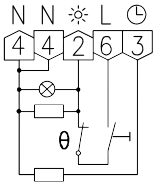
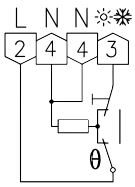
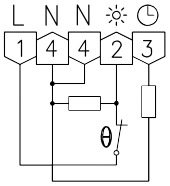
Installation note: Owing to the existing wiring space in the controller itself, installation on a flush-mounted socket is recommended, but it can also be performed on a plane, non-conducting substrate.

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	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		I
RTBSB-201.000/08 	MA300008	Like RTBSB-201.000 but with multi-digit display 1…6		I
RTBSB-201.000-20 	MA300800	Like RTBSB-201.000 but with housing colour: Traffic/ studio white, like RAL 9016		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)		I

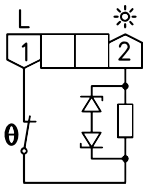
Mechanical room temperature controller, RTBSB

Surface-mounted “ultra-thin” installation – Design Berlin 1000

Type/image	Item no.	Features	Circuit diagram	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		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		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)		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		I
RTBSB-201.065/02 	MA300502	Like RTBSB-201.065 but with multi-digit display 1…6		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)		I

Mechanical room temperature controller, RTBSB

Surface-mounted “ultra-thin” installation – Design Berlin 1000

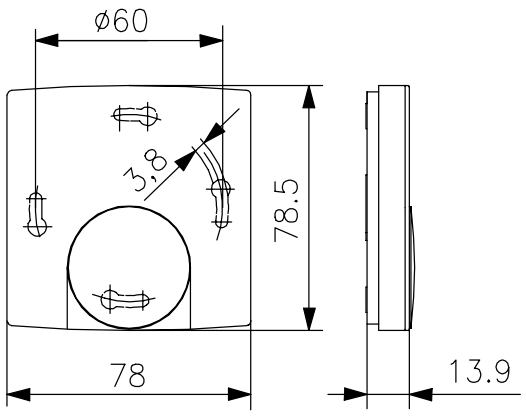
Type/image	Item no.	Features	Circuit diagram	PG
RTBSB-201.500 	MA304000	**General features: 2-wire room temperature controller;** multi-digit display *…6 **Operating voltage:** 230 VAC, 50 Hz **Ambient temperature:** 0…30 °C **Protection class:** II, if properly mounted **Max. switching current:** 20 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…30 °C **Hysteresis:** Approx. 0.5 K at a temperature change of max. 4 K/h (load-dependent)		I

Accessories: Terminal strips VOOxx, suitable valve actuators ZBOOA

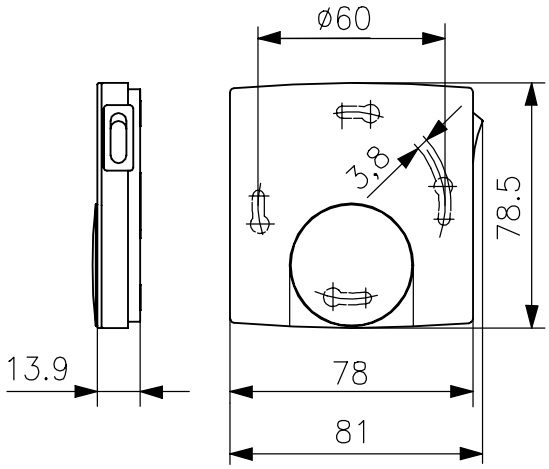
You can find other/similar controllers with outputs for heating/cooling and noiseless controllers in the “Air Conditioning Technology” chapter onwards page 141.

Accessories	Item no.	Features	PG
JZ-21	MN990006	Adapter frame for mounting room temperature controllers of the Berlin 1000 series in flush-mounted sockets up to **80 x 80 mm**	I
ET-01 	MA990000	Adjusting knob for B1000 series devices, scale: Degrees Celsius, pure white glossy	I
ET-02 	MA990001	Adjusting knob for B1000 series devices, multi-digit display 1…6, pure white glossy	I

RTBSB-201.xxx / KTRTB



RTBSB-201.xxx with “ON/OFF” switch at the side



Mechanical room temperature controller, RTBSB

Surface-mounted or plug-in installation – Design Berlin

Technical data

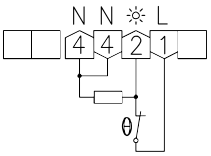
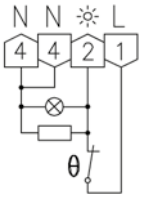
Design:	Berlin 2000
Surface finish:	matt
Housing colour:	pure white, like RAL 9010
Housing material:	ABS plastic
Operating voltage:	230 VAC, 50 Hz
Ambient temperature:	0…30 °C
Storage temperature:	–20…+70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Protection rating:	IP 30
Protection class:	II for loads of protection classes I and II
Safety and EMC:	according to DIN EN 60730
Max. switching voltage:	230 VAC, 50 Hz
Min. switching voltage:	230 VAC, 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…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).

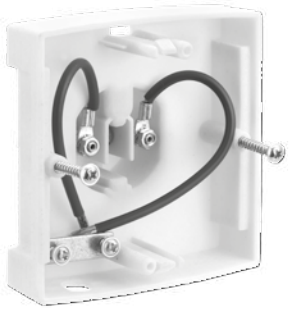
Type/image	Item no.	Features	Circuit diagram	PG
JZ-19 	MN990003	**General features:** plug-in socket (as with RTBSB-001.411/RTBSB-001.474) completely pre-wired **Mounting/attachment:**can be fitted with room thermostats RTBSB-001.xxx **Protection rating:** depends on the pre-fitted room thermostat **Protection class:** depends on the pre-fitted room thermostat **Max. switching current:** depends on the pre-fitted room thermostat **Switching power:** 3000 W		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 to 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		I
RTBSB-001.096 	MA012500	like RTBSB-001.086, but with “heating” display (LED red)		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		I

Mechanical room temperature controller, RTBSB

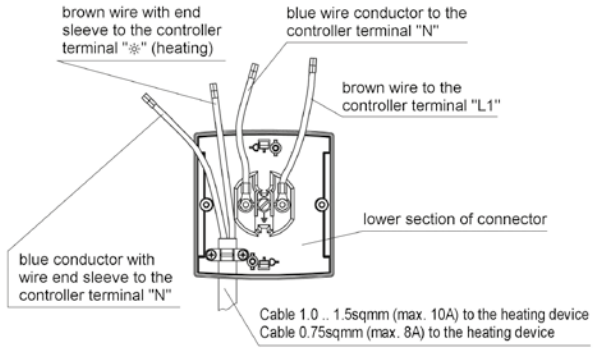
Surface-mounted or plug-in installation – Design Berlin

Type/image	Item no.	Features	Circuit diagram	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		I

Plug-in socket

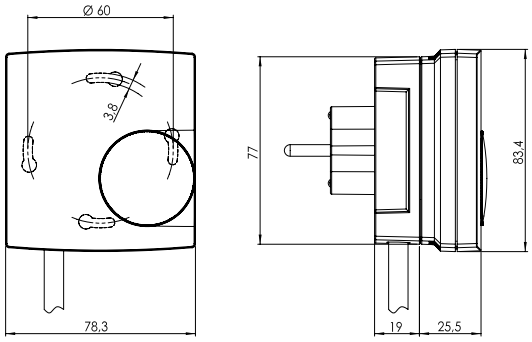


Plug-in socket



RTBSB-001.411

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



RTBSB-001.401

Electronic room temperature controller with clock, HTRRBu

Surface-mounted installation – Berlin 3000

Technical data

Design:	Berlin 3000
Surface finish:	matt
Housing colour:	pure white, like RAL 9010
Housing material:	ABS plastic
Operating voltage:	230 VAC, 50 Hz
Ambient temperature:	0…30 °C
Storage temperature:	–20…+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:	IP 30
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 VAC, 50 Hz
Min. switching voltage:	230 VAC, 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…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

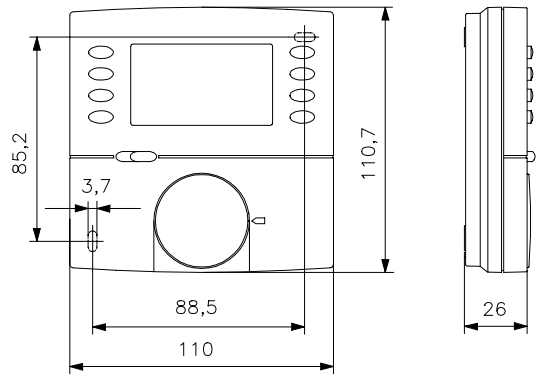
Type/image	Item no.	Features	PG
HTRRBu 110.117/21 	MA600003		I

Accessories	Item no.	Features	PG
JZ-17 	MN990001	**Surface finish:** Matt **Colour:** pure white, like 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)	II

Electronic room temperature controller with clock, HTRRBu

Surface-mounted installation – Berlin 3000

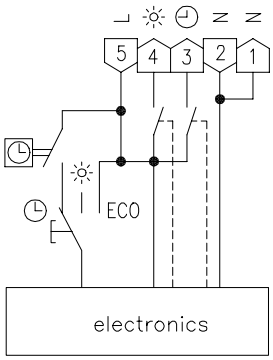
HTRRBu 110.XXX



Factory setting:

- Setback temperature 17 °C
- Continuous time display
- Programme display using switching segments enabled
- Child-safe features disabled
- Automatic adjustment to standard/daylight savings 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



alre

Adaptation examples
BERKER (S.1)

Adaptation examples
JUNG (AS 500)

Adaptation examples
BUSCH-JAEGER
(Reflex SI linear)

Controllers for all switch ranges

Integration examples in switch ranges with or without insert frame

Adaptation examples BERKER B.3 alu

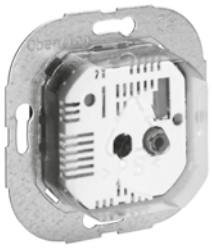
Adaptation examples GIRA (Flächenschalter)

Adaptation examples BERKER (K.1)

See page 96 for further 55 x 55 mm adaptation examples

Mechanical room temperature controller, FTR

Flush-mounted installation – Design Berlin UP



Technical data

Design:	Berlin UP (flush-mounted)
Housing material:	PA6 plastic
Ambient temperature:	0…30 °C
Storage temperature:	–20…+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 cover set 50 x 50 mm or 55 x 55 mm, can be used with almost all switch ranges (deep flush-mounted socket recommended)
Protection rating:	IP 30
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…30 °C
Setting range:	5…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.

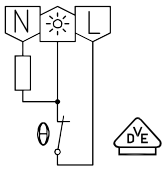
Valve actuator: normally closed. If normally open heating valves are available, they should be connected to the cooling output of the changeover switch (toggler), e.g., FTR 101.010

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

The basic controllers in combination with a 55 x 55 mm cover set fit visually perfectly in many switch ranges without the use of an insert frame.

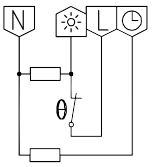
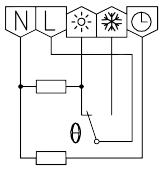
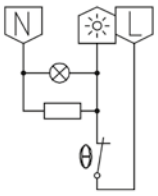
The basic controllers in combination with a 50 x 50 mm cover set fit in nearly all switch ranges with the use of an insert frame.

More complete solutions (types #21) with alre-frame “Berlin“ (neutral) and cover 50 x50 mm (pure white similar to RAL 9010, glossy) on request.

Type/image	Item no.	Features	Circuit diagram	PG
FTR 101.000#00 	UA010017	**General features:** Mechanical range limitation; external setting; protective cap; Contact protection cover; 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, e.g.:** cover set 50 x 50 mm, pure white, glossy: JZ-001.000 cover set 55 x 55 mm, 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		I
FTR 101.000#21 	UN010009	like FTR 101.000#00 but scope of delivery as follows: Controller, alre frame “Berlin” (neutral), cover 50 x 50 mm, pure white (like RAL 9010), glossy		I

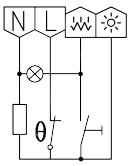
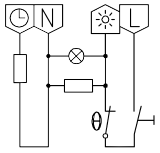
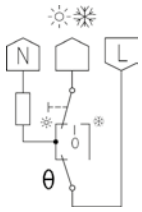
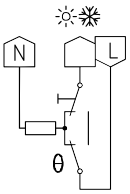
Mechanical room temperature controller, FTR

Flush-mounted installation – Design Berlin UP

Type/image	Item no.	Features	Circuit diagram	PG
FTR 101.002#00 	UA010134	**General features:** ECO function; mechanical range limitation; external setting; protective cap; Contact protection cover; 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 82/83) e.g.:** cover set 50 x 50 mm, pure white, glossy: JZ-001.000 cover set 55 x 55 mm, 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		I
FTR 101.010#00 	UA010222	**General features:** ECO function; mechanical range limitation; external setting; protective cap; Contact protection cover; 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, (see page 82/83) e.g.:** cover set 50 x 50 mm, pure white, glossy: JZ-001.000 cover set 55 x 55 mm, 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		I
FTR 101.034#07 	UA012404	**General features: "Heating" display;** mechanical range limitation; external 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 **Scope of delivery:** Controller, cover 50 x50 mm, pure white (similar to RAL 9010), glossy		I
FTR 101.034#55 	UA012405	like FTR 101.034 # 07 but cover 55 x 55 mm		

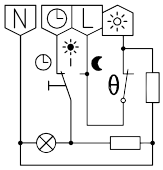
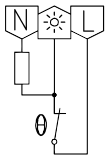
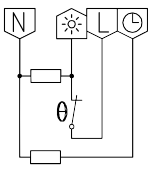
Mechanical room temperature controller, FTR

Flush-mounted installation – Design Berlin UP

Type/image	Item no.	Features	Circuit diagram	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), cover 50 x 50 mm, pure white (like RAL 9010), glossy		I
FTR 101.062#00 	UA010811	**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-002.xxx, (see page 82/83) e.g.:** cover set 50 x 50 mm, pure white, glossy: JZ-002.000 cover set 55 x 55 mm, pure white, glossy: JZ-002.100 **BUSCH-JAEGER cover set** Reflex SI/SI Linear, pure white, glossy: JZ-002.200/BJ		I
FTR 101.063#00 	UA011000	**General features:** Climate controller for 2-pipe systems, mechanical range limitation; **“heating/off/cooling” switch;** external adjustment; 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 (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, (see page 82/83) e.g.:** cover set 50 x 50 mm, pure white, glossy: JZ-012.000 cover set 55 x 55 mm, pure white, glossy: JZ-012.100 **BUSCH-JAEGER cover set** Reflex SI/SI Linear, pure white, glossy: JZ-002.200/BJ		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 **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, (see page 82/83) e.g.:** cover set 50 x 50 mm, pure white, glossy: JZ-004.000 cover set 55 x 55 mm, pure white, glossy: JZ-004.100 **BUSCH-JAEGER cover set** Reflex SI/SI Linear, pure white, glossy: JZ-002.200/BJ		I

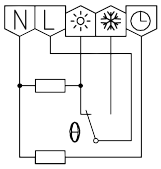
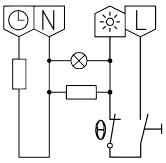
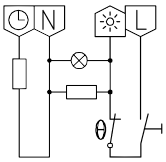
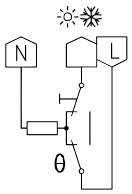
Mechanical room temperature controller, FTR

Flush-mounted installation – Design Berlin UP

Type/image	Item no.	Features	Circuit diagram	PG
FTR 101.075#00 	UA010415	**General features:** ECO function; **“reduction” display;** mechanical range limitation; **“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-003.xxx, (see page 82/83) e.g.:** cover set 50 x 50 mm, pure white, glossy: JZ-003.000 cover set 55 x 55 mm, pure white, glossy: JZ-003.100 **BUSCH-JAEGER cover set** Reflex SI/SI Linear, pure white, glossy: JZ-001.200/BJ		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 **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 82/83) e.g.:** cover set 50 x 50 mm, pure white, glossy: JZ-001.000 cover set 55 x 55 mm, 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		I
FTR 101.086#21 	UN010607	like FTR 101.086#00 but scope of delivery as follows: Controller, alre frame “Berlin” (neutral), cover 50 x 50 mm, pure white (like RAL 9010), glossy		I
FTR 101.202#00 	UA012008	**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 82/83) e.g.:** cover set 50 x 50 mm, pure white, glossy: JZ-001.000 cover set 55 x 55 mm, 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		I
FTR 101.202#21 	UN102009	like FTR 101.202#00 but scope of delivery as follows: Controller, alre frame “Berlin” (neutral), cover 50 x 50 mm, pure white (like RAL 9010), glossy		

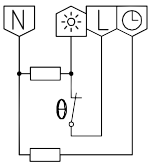
Mechanical room temperature controller, FTR

Flush-mounted installation – Design Berlin UP

Type/image	Item no.	Features	Circuit diagram	PG
FTR 101.210#00 	UA012301	**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:** 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, (see page 82/83) e.g.:** cover set 50 x 50 mm, pure white, glossy: JZ-001.000 cover set 55 x 55 mm, 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		I
FTR 101.262#00 	UA012500	**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-002.xxx, (see page 82/83) e.g.:** cover set 50 x 50 mm, pure white, glossy: JZ-002.000 cover set 55 x 55 mm, pure white, glossy: JZ-002.100 **BUSCH-JAEGER cover set** Reflex SI/SI Linear, pure white, glossy: JZ-002.200/BJ		I
FTR 101.262#21 	UA012501	like FTR 101.262#00 but scope of delivery as follows: Controller, alre frame "Berlin" (neutral), cover 50 x 50 mm, pure white (like RAL 9010), glossy		
FTR 101.265#00 	UA012600	**General features:** Climate controller for 2-pipe systems, especially heat pumps; mechanical range restriction; **"Heating/cooling" switch**; external setting; protection 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-004.xxx, (see page 82/83) e.g.:** cover set 50 x 50 mm, pure white, glossy: JZ-004.000 cover set 55 x 55 mm, pure white, glossy: JZ-004.100 **BUSCH-JAEGER cover set** Reflex SI/SI Linear, pure white, glossy: JZ-002.200/BJ		I

Mechanical room temperature controller, FTR

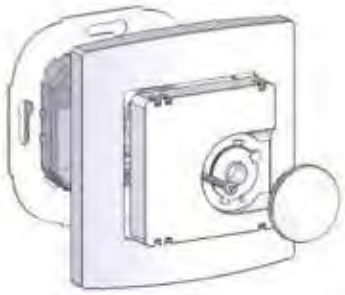
Flush-mounted installation – Design Berlin UP

Type/image	Item no.	Features	Circuit diagram	PG
FTR 101.902#07 	UA013000	**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, cover 50 x 50 mm, pure white (like RAL 9010), glossy		I

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

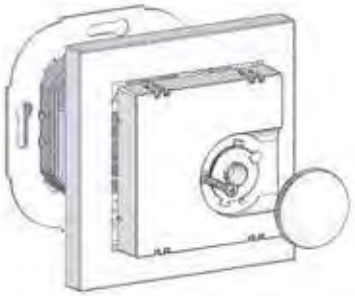
Type/image	Item no.	Features	PG
JZ-090.900 	VV000025	**General features:** alre frame "Berlin" (neutral) for all flush-mounted controllers with cover 50 x 50 mm **Design:** Berlin **Surface finish:** Glossy **Colour:** Pure white, like RAL 9010 **Material:** PC plastic	I
JZ-090.910	VV000010	as for JZ-090.900, but colour like RAL 1013	I

alre-Frame "Berlin" (#21 Typen)

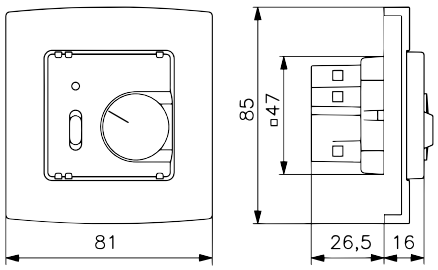


with 50 x 50 insert frame

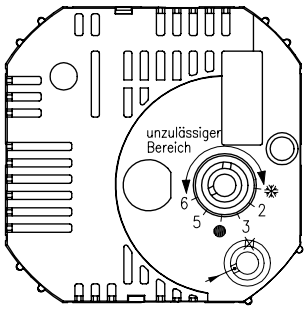
without 55 x 55 insert frame



FTR with alre-Frame "Berlin" (FTR 101.xxx#21 Types)



FTR 101.902#07 Contact hazard protection cap with setting range with internal setting



alre flush-mounted range (cover sets 50 x 50 mm)

all basic types and suitable cover sets **50 x 50 mm**

Basic type	Cover set 50 x 50 mm **pure white (RAL 9010) glossy** (JZ-xxx.000)		Cover set 50 x 50 mm **pure white (RAL 9010) matt** (JZ-xxx.001)		Cover set 50 x 50 mm **pearl white (RAL 1013) glossy** (JZ-xxx.010)		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	I
FTR 101.002#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	I
FTR 101.010#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	I
FTR 101.062#00	JZ-002.000	UN990036	JZ-002.001	UN990041	JZ-002.010	UN990046	I
FTR 101.063#00	JZ-012.000	UN990107	JZ-012.001	UN990132	JZ-012.010	UN990133	I
FTR 101.065#00	JZ-004.000	UN990037	JZ-004.001	UN990042	JZ-004.010	UN990047	I
FTR 101.075#00	JZ-003.000	UN990038	JZ-003.001	UN990043	JZ-003.010	UN990048	I
FTR 101.086#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	I
FTR 101.202#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	I
FTR 101.210#00	JZ-001.000	UN990035	JZ-001.001	UN990040	JZ-001.010	UN990045	I
FTR 101.262#00	JZ-002.000	UN990036	JZ-002.001	UN990041	JZ-002.010	UN990046	I
FTR 101.265#00	JZ-004.000	UN990037	JZ-004.001	UN990042	JZ-004.010	UN990047	I

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

Basic type	Cover set 50 x 50 mm **traffic/studio white (RAL 9016) glossy** (JZ-xxx.020)		Cover set 50 x 50 mm **traffic/studio white (RAL 9016) matt** (JZ-xxx.021)		PG
	Cover set	Item no.	Cover set	Item no.	
FTR 101.000#00	JZ-001.020	UN990071	JZ-001.021	UN990100	I
FTR 101.002#00	JZ-001.020	UN990071	JZ-001.021	UN990100	I
FTR 101.010#00	JZ-001.020	UN990071	JZ-001.021	UN990100	I
FTR 101.062#00	JZ-002.020	UN990072	JZ-002.021	UN990101	I
FTR 101.063#00	JZ-012.020	UN990134	JZ-012.021	UN990135	I
FTR 101.065#00	JZ-004.020	UN990073	JZ-004.021	UN990103	I
FTR 101.075#00	JZ-003.020	UN990074	JZ-003.021	UN990102	I
FTR 101.086#00	JZ-001.020	UN990071	JZ-001.021	UN990100	I
FTR 101.202#00	JZ-001.020	UN990071	JZ-001.021	UN990100	I
FTR 101.210#00	JZ-001.020	UN990071	JZ-001.021	UN990100	I
FTR 101.262#00	JZ-002.020	UN990072	JZ-002.021	UN990101	I
FTR 101.265#00	JZ-004.020	UN990073	JZ-004.021	UN990103	I

See the product finder on pages 87 – 93 for all cover solutions and special colours

Cover set (example), individually foil-wrapped

alre flush-mounted range (cover sets 55 x 55 mm)

all basic types and suitable cover sets **55 x 55 mm**

Basic type	Cover set 55x55 mm **pure white (RAL 9010) glossy** (JZ-xxx.100)		Cover set 55x55 mm **pure white (RAL 9010) matt** (JZ-xxx.101)		Design 55 x 55 mm **pearl white (RAL1013) glossy** (JZ-xxx.110)		PG	Cover set 55x55 mm **traffic/studio white (RAL 9016) glossy** (JZ-xxx.120)		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	I	JZ-001.120	UN990086	I
FTR 101.002#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	I	JZ-001.120	UN990086	I
FTR 101.010#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	I	JZ-001.120	UN990086	I
FTR 101.062#00	JZ-002.100	UN990051	JZ-002.101	UN990056	JZ-002.110	UN990061	I	JZ-002.120	UN990088	I
FTR 101.063#00	JZ-012.100	UN990123	JZ-012.101	UN990136	JZ-012.110	UN990137	I	JZ-012.120	UN990138	I
FTR 101.065#00	JZ-004.100	UN990052	JZ-004.101	UN990057	JZ-004.110	UN990062	I	JZ-004.120	UN990089	I
FTR 101.075#00	JZ-003.100	UN990053	JZ-003.101	UN990058	JZ-003.110	UN990063	I	JZ-003.120	UN990090	I
FTR 101.086#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	I	JZ-001.120	UN990086	I
FTR 101.202#00	JZ-001.100	UN990050	JZ-001.101	UN990055	JZ-001.110	UN990060	I	JZ-001.120	UN990086	I
FTR 101.262#00	JZ-002.100	UN990051	JZ-002.101	UN990056	JZ-002.110	UN990061	I	JZ-002.120	UN990088	I
FTR 101.265#00	JZ-004.100	UN990052	JZ-004.101	UN990057	JZ-004.110	UN990062	I	JZ-004.120	UN990089	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 86).

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

NEW

Basic type	Cover set BUSCH-JAEGER **Reflex SI/SI Linear pure white (RAL 9010) glossy** (JZ-xxx.200/BJ)		Cover set BUSCH-JAEGER **Busch-Duro 2000 SI/SI Linear pearl white (RAL 1013) glossy** (JZ-001.210/BJ)		PG	Cover set BUSCH-JAEGER **future linear/solo/axcent/carat traffic/studio white (RAL 9016) glossy** (JZ-001.320/BJ)		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	I	JZ-001.320/BJ	G9990493	I
FTR 101.002#00	JZ-001.200/BJ	G9990490	JZ-001.210/BJ	G9990491	I	JZ-001.320/BJ	G9990493	I
FTR 101.010#00	JZ-001.200/BJ	G9990490	JZ-001.210/BJ	G9990491	I	JZ-001.320/BJ	G9990493	I
FTR 101.062#00	JZ-002.200/BJ	G9990492	-	-	I	-	-	
FTR 101.086#00	JZ-001.200/BJ	G9990490	JZ-001.210/BJ	G9990491	I	JZ-001.320/BJ	G9990493	I
FTR 101.202#00	JZ-001.200/BJ	G9990490	JZ-001.210/BJ	G9990491	I	JZ-001.320/BJ	G9990493	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	50 x 50 mm insert frame*	alre cover set: Type	(Item no.)	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)	I
		anthracite/matt	not required	JZ-001.141/BE	(UN990115)	I
	BUSCH-JAEGER future linear	**aluminium silver**/ glossy	1746/10-83	JZ-001.030/BJ	(UN990108)	I
		anthracite/glossy	1746/10-81	JZ-001.040/BJ	(UN990109)	I
	GIRA System 55	**aluminium**/matt	not required	JZ-001.131/GI	(UN990110)	I
		anthracite/matt	not required	JZ-001.141/GI	(UN990111)	I
	JUNG Series A	**aluminium**/glossy	not required	JZ-001.130/JU	(UN990112)	I
		anthracite/matt	not required	JZ-001.141/JU	(UN990113)	I
	MERTEN System M	**aluminium**/matt	not required	JZ-001.131/ME	(UN990116)	I
		anthracite/matt	not required	JZ-001.141/ME	(UN990117)	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.

alre

Adaptation examples BERKER

Adaptation examples BUSCH-JAEGER

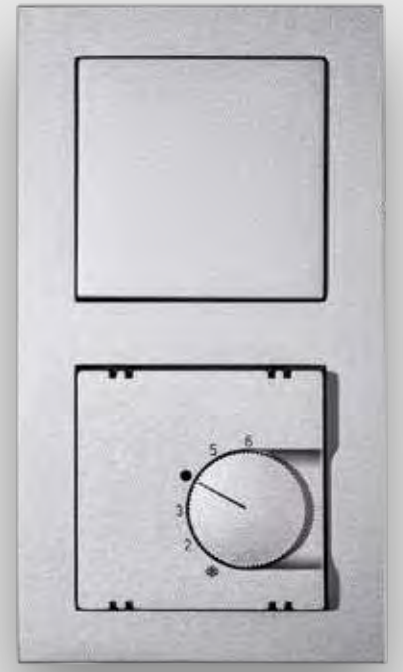
Controllers for all switch ranges

Integration examples in switch ranges with or without insert frame

Adaptation examples GIRA

Adaptation examples JUNG

Adaptation examples MERTEN



See page 96 for further 55 x 55 mm adaptation examples

Adaptation of alre flush-mounted controllers

Manufacturer	Range	Colour RAL 9010 (surface finish)	Adaptation using “55 x 55” or “BJ” cover sets possible (without insert frame)	Only adaptation with “50 x 50” cover set requires an insert frame from the manufacturer
BERKER	S.1	polar white (matt)	✓	1109 19 19
BERKER	S.1	polar white (glossy)	✓	1109 90 89
BERKER	Arsys	polar white (glossy)		1108 01 69
BERKER	B.3	aluminium/polar white (matt)	✓	1109 19 19
BERKER	B.3	aluminium/polar white (glossy)	✓	1109 90 89
BERKER	B.7	glass/polar white (matt)	✓	1109 19 19
BERKER	B.7	glass/polar white (glossy)	✓	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)	✓	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)	✓	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)	✓	0282 27
GIRA (System 55)	Standard/E2/E3	pure white (glossy)	✓	0282 03
GIRA (System 55)	E22	pure white (glossy)	✓	0282 03
GIRA (System 55)	Event	pure white (semi-gloss) + opaque…	✓	0282 27
GIRA (System 55)	Event	pure white (glossy) + opaque…	✓	0282 03
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium…	✓	0282 27
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium…	✓	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)	✓	A 590 Z WW
JUNG	A 550/A flow	schneeweiß matt	✓	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)	✓	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)	✓	5181 19
MERTEN (System M)	M-Smart, M-Plan, M-Creativ, M-Pure	polar white (glossy)	✓	5185 19
MERTEN (Basis System)	1-M/Atelier-M	polar white (glossy)	✓	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 using 55 x 55 or BJ cover sets possible (without insert frame)	Only adaptation with “50 x 50” cover set requires an insert frame from the manufacturer
BUSCH-JAEGER	solo/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)	✓	5185 25
MERTEN	1-M/Atelier-M	active white (RAL 9016, glossy)	✓	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 like RAL 9010, 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.

“50 x 50 controller”: The housing covers of the 50 x 50 controllers are 50 x 50 mm in size. Using a 50 x 50-mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50 x 50-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 “50 x 50” cover set”.

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

All information regarding switch manufacturers” product lines and item numbers was last updated in 12/2019 | No liability is assumed for the information provided. | Technical specifications subject to change.
An adaptation list for RAL 1013 switch ranges is available from our website at www.alre.de and all information on integration is available in the product finder.

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.	PG	Insert frame 50 x 50 *
FTR 101.000#00 FTR 101.002#00 FTR 101.010#00 FTR 101.086#00 FTR 101.202#00 FTR 101.210#00	**S.1/B.3/B.7**	polar white (RAL 9010) glossy	JZ-001.100 (55 x 55, glossy)	UN990050	I	not required
	S.1/B.3/B.7	polar white (RAL 9010) matt	JZ-001.101 (55 x 55, matt)	UN990055	I	not required
	Arsys	polar white (RAL 9010) glossy	JZ-001.000 (50 x 50, glossy)	UN990035	I	1108 01 69
	Q.1/Q.3	polar white (RAL 9010) velvet	JZ-001.001 (50 x 50, matt)	UN990040	I	1109 60 79
	K.1	polar white (RAL 9010) glossy	JZ-001.000 (50 x 50, glossy)	UN990035	I	1108 71 09
 Standard (without switch)	**S.1**	white (RAL 1013) glossy	JZ-001.110 (55 x 55, glossy)	UN990060	I	not required
	Arsys	white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	I	1108 01 02
	S.1/B.3/B.7	aluminium / matt	JZ-001.131/BE (55x55)	UN990114	I	not required
	S.1/B.3/B.7	anthracite / matt	JZ-001.141/BE (55x55)	UN990115	I	not required

Type alre	Berker range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.062#00 FTR 101.262#00	**S.1/B.3/B.7**	polar white (RAL 9010) glossy	JZ-002.100 (55 x 55, glossy)	UN990051	I	not required
	S.1/B.3/B.7	polar white (RAL 9010) matt	JZ-002.101 (55 x 55, matt)	UN990056	I	not required
	Arsys	polar white (RAL 9010) glossy	JZ-002.000 (50 x 50, glossy)	UN990036	I	1108 01 69
	Q.1/Q.3	polar white (RAL 9010) velvet	JZ-002.001 (50 x 50, matt)	UN990041	I	1109 60 79
	K.1	polar white (RAL 9010) glossy	JZ-002.000 (50 x 50, glossy)	UN990036	I	1108 71 09
 (ON/OFF switch, LED)	**S.1**	white (RAL 1013) glossy	JZ-002.110 (55 x 55, glossy)	UN990061	I	not required
	Arsys	white (RAL 1013) glossy	JZ-002.010 (50 x 50, glossy)	UN990046	I	1108 01 02

Type alre	Berker range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.063#00	**S.1/B.3/B.7**	polar white (RAL 9010) glossy	JZ-012.100 (55x55 glossy)	UN990123	I	not required
	S.1/B.3/B.7	polar white (RAL 9010) matt	JZ-012.101 (55x55 matt)	UN990136	I	not required
	Arsys	polar white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	I	1108 01 69
	Q.1/Q.3	polar white (RAL 9010) velvet	JZ-012.001 (50x50 matt)	UN990132	I	1109 60 79
	K.1	polar white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	I	1108 71 09
 (Switch H/OFF/C)	**S.1**	white (RAL 1013) glossy	JZ-012.110 (55x55 glossy)	UN990137	I	not required
	Arsys	white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	I	1108 01 02

Type alre	Berker range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.065#00 FTR 101.265#00	**S.1/B.3/B.7**	polar white (RAL 9010) glossy	JZ-004.100 (55 x 55, glossy)	UN990052	I	not required
	S.1/B.3/B.7	polar white (RAL 9010) matt	JZ-004.101 (55 x 55, matt)	UN990057	I	not required
	Arsys	polar white (RAL 9010) glossy	JZ-004.000 (50 x 50, glossy)	UN990037	I	1108 01 69
	Q.1/Q.3	polar white (RAL 9010) velvet	JZ-004.001 (50 x 50, matt)	UN990042	I	1109 60 79
	K.1	polar white (RAL 9010) glossy	JZ-004.000 (50 x 50, glossy)	UN990037	I	1108 71 09
 (H/C switch)	**S.1**	white (RAL 1013) glossy	JZ-004.110 (55 x 55, glossy)	UN990062	I	not required
	Arsys	white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	I	1108 01 02

Type alre	Berker range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.075#00	**S.1/B.3/B.7**	polar white (RAL 9010) glossy	JZ-003.100 (55 x 55, glossy)	UN990053	I	not required
	S.1/B.3/B.7	polar white (RAL 9010) matt	JZ-003.101 (55 x 55, matt)	UN990058	I	not required
	Arsys	polar white (RAL 9010) glossy	JZ-003.000 (50 x 50, glossy)	UN990038	I	1108 01 69
	Q.1/Q.3	polar white (RAL 9010) velvet	JZ-003.001 (50 x 50, matt)	UN990043	I	1109 60 79
	K.1	polar white (RAL 9010) glossy	JZ-003.000 (50 x 50, glossy)	UN990038	I	1108 71 09
 (3-way switch, LED)	**S.1**	white (RAL 1013) glossy	JZ-003.110 (55 x 55, glossy)	UN990063	I	not required
	Arsys	white (RAL 1013) glossy	JZ-003.010 (50 x 50, glossy)	UN990048	I	1108 01 02

*) 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	Busch-Jaeger range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50*
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** NEW	alpine white (RAL 9010) glossy	JZ-001.200 / BJ	G9990490	I	not required
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-001.100 (55 x 55, glossy)	UN990050	I	not required
	impuls	alpine white (RAL 9010) glossy	JZ-001.000 (50 x 50, glossy)	UN990035	I	1746/10-74
	future linear / solo / axcent / carat NEW	studio white (RAL 9016) glossy	JZ-001.320 / BJ	G9990493	I	not required
	future linear	studio white (RAL 9016) matt	JZ-001.021 (50 x 50, matt)	UN990100	I	1746/10-884
	alpha nea	studio white (RAL 9016) glossy	JZ-001.020 (50 x 50, glossy)	UN990071	I	1746/10-24G
	alpha nea	studio white (RAL 9016) matt	JZ-001.021 (50 x 50, matt)	UN990100	I	1746/10-24
	Duro 2000 SI / SI Linear NEW	white (RAL 1013) glossy	JZ-001.210 / BJ	G9990491	I	not required
	future linear / solo / carat	ivory white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	I	1746/10-82
	alpha nea	ivory white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	I	1746/10-22G
	impuls	ivory white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	I	1746/10-72
	future linear	aluminium silver / glossy	JZ-001.030 / BJ (50x50)	UN990108	I	1746/10-83
	future linear	anthracite / glossy	JZ-001.040 / BJ (50x50)	UN990109	I	1746/10-81

Standard (without switch)

Type alre	Busch-Jaeger range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50*
FTR 101.062#00 FTR 101.262#00	**Reflex SI / SI Linear** NEW	alpine white (RAL 9010) glossy	JZ-002.200 / BJ	G9990492	I	not required
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-002.100 (55 x 55, glossy)	UN990051	I	not required
	impuls	alpine white (RAL 9010) glossy	JZ-002.000 (50 x 50, glossy)	UN990036	I	1746/10-74
	future linear/solo/axcent/carat	studio white (RAL 9016) glossy	JZ-002.020 (50 x 50, glossy)	UN990072	I	1746/10-84
	future linear	studio white (RAL 9016) matt	JZ-002.021 (50 x 50, matt)	UN990101	I	1746/10-884
	alpha nea	studio white (RAL 9016) glossy	JZ-002.020 (50 x 50, glossy)	UN990072	I	1746/10-24G
	alpha nea	studio white (RAL 9016) matt	JZ-002.021 (50 x 50, matt)	UN990101	I	1746/10-24
	Duro 2000 SI / SI Linear	white (RAL 1013) glossy	JZ-002.010 (50 x 50, glossy)	UN990046	I	1746-212-101
	future linear / solo / carat	ivory white (RAL 1013) glossy	JZ-002.010 (50 x 50, glossy)	UN990046	I	1746/10-82
	alpha nea	ivory white (RAL 1013) glossy	JZ-002.010 (50 x 50, glossy)	UN990046	I	1746/10-22G
	impuls	ivory white (RAL 1013) glossy	JZ-002.010 (50 x 50, glossy)	UN990046	I	1746/10-72

(ON/OFF switch, LED)

Type alre	Busch-Jaeger range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50*
FTR 101.063#00	**Reflex SI / SI Linear**	alpine white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	I	1746-214-101
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-012.100 (55x55 glossy)	UN990123	I	not required
	impuls	alpine white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	I	1746/10-74
	future linear / solo / axcent / carat	studio white (RAL 9016) glossy	JZ-012.020 (50x50 glossy)	UN990134	I	1746/10-84
	future linear	studio white (RAL 9016) matt	JZ-012.021 (50x50 matt)	UN990135	I	1746/10-884
	alpha nea	studio white (RAL 9016) glossy	JZ-012.020 (50x50 glossy)	UN990134	I	1746/10-24G
	alpha nea	studio white (RAL 9016) matt	JZ-012.021 (50x50 matt)	UN990135	I	1746/10-24
	Duro 2000 SI / SI Linear	white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	I	1746-212-101
	future linear/solo/carat	ivory white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	I	1746/10-82
	alpha nea	ivory white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	I	1746/10-22G
	impuls	ivory white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	I	1746/10-72

(Switch H/OFF/C)

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.	PG	Insert frame 50 x 50 *
FTR 101.065#00 FTR 101.265#00	**Reflex SI / SI Linear**	alpine white (RAL 9010) glossy	JZ-004.000 (50 x 50, glossy)	UN990037	I	1746-214-101
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-004.100 (55 x 55, glossy)	UN990052	I	not required
	impuls	alpine white (RAL 9010) glossy	JZ-004.000 (50 x 50, glossy)	UN990037	I	1746/10-74
	future linear / solo / axcent / carat	studio white (RAL 9016) glossy	JZ-004.020 (50 x 50, glossy)	UN990073	I	1746/10-84
	future linear	studio white (RAL 9016) matt	JZ-004.021 (50 x 50, matt)	UN990103	I	1746/10-884
	alpha nea	studio white (RAL 9016) glossy	JZ-004.020 (50 x 50, glossy)	UN990073	I	1746/10-24G
	alpha nea	studio white (RAL 9016) matt	JZ-004.021 (50 x 50, matt)	UN990103	I	1746/10-24
	Duro 2000 SI / SI Linear	white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	I	1746-212-101
	future linear / solo / carat	ivory white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	I	1746/10-82
	alpha nea	ivory white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	I	1746/10-22G
	impuls	ivory white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	I	1746/10-72

(H/C switch)

Type alre	Busch-Jaeger range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.075#00	**Reflex SI / SI Linear**	alpine white (RAL 9010) glossy	JZ-003.000 (50 x 50, glossy)	UN990038	I	1746-214-101
	Busch-balance SI	alpine white (RAL 9010) glossy	JZ-003.100 (55 x 55, glossy)	UN990053	I	not required
	impuls	alpine white (RAL 9010) glossy	JZ-003.000 (50 x 50, glossy)	UN990038	I	1746/10-74
	future linear/solo/axcent/carat	studio white (RAL 9016) glossy	JZ-003.020 (50 x 50, glossy)	UN990074	I	1746/10-84
	future linear	studio white (RAL 9016) matt	JZ-003.021 (50 x 50, matt)	UN990102	I	1746/10-884
	alpha nea	studio white (RAL 9016) glossy	JZ-003.020 (50 x 50, glossy)	UN990074	I	1746/10-24G
	alpha nea	studio white (RAL 9016) matt	JZ-003.021 (50 x 50, matt)	UN990102	I	1746/10-24
	Duro 2000 SI / SI Linear	white (RAL 1013) glossy	JZ-003.010 (50 x 50, glossy)	UN990048	I	1746-212-101
	future linear / solo / carat	ivory white (RAL 1013) glossy	JZ-003.010 (50 x 50, glossy)	UN990048	I	1746/10-82
	alpha nea	ivory white (RAL 1013) glossy	JZ-003.010 (50 x 50, glossy)	UN990048	I	1746/10-22G
	impuls	ivory white (RAL 1013) glossy	JZ-003.010 (50 x 50, glossy)	UN990048	I	1746/10-72

(3-way switch, LED)

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

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.	PG	Insert frame 50 x 50 *
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 (55 x 55, glossy)	UN990050	I	not required
	Joy	pearl white (RAL 1013) glossy	JZ-001.110 (55 x 55, glossy)	UN990060	I	not required
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-001.000 (50 x 50, glossy)	UN990035	I	203084
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	I	203080

Standard (without switch)

Type alre	Elso range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.062#00 FTR 101.262#00	**Joy**	pure white (RAL 9010) glossy	JZ-002.100 (55 x 55, glossy)	UN990051	I	not required
	Joy	pearl white (RAL 1013) glossy	JZ-002.110 (55 x 55, glossy)	UN990061	I	not required
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-002.000 (50 x 50, glossy)	UN990036	I	203084
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-002.010 (50 x 50, glossy)	UN990046	I	203080

(ON/OFF switch, LED)

Type alre	Elso range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.063#00	**Joy**	pure white (RAL 9010) glossy	JZ-012.100 (55x55 glossy)	UN990123	I	not required
	Joy	pearl white (RAL 1013) glossy	JZ-012.110 (55x55 glossy)	UN990137	I	not required
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	I	203084
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	I	203080

(Switch H/OFF/C)

Type alre	Elso range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.065#00 FTR 101.265#00	**Joy**	pure white (RAL 9010) glossy	JZ-004.100 (55 x 55, glossy)	UN990052	I	not required
	Joy	pearl white (RAL 1013) glossy	JZ-004.110 (55 x 55, glossy)	UN990062	I	not required
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-004.000 (50 x 50, glossy)	UN990037	I	203084
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	I	203080

(H/C switch)

Type alre	Elso range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.075#00	**Joy**	pure white (RAL 9010) glossy	JZ-003.100 (55 x 55, glossy)	UN990053	I	not required
	Joy	pearl white (RAL 1013) glossy	JZ-003.110 (55 x 55, glossy)	UN990063	I	not required
	Fashion / Riva / Scala	pure white (RAL 9010) glossy	JZ-003.000 (50 x 50, glossy)	UN990038	I	203084
	Fashion / Riva / Scala	pearl white (RAL 1013) glossy	JZ-003.010 (50 x 50, glossy)	UN990048	I	203080

(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 E2

FTR – in Event

FTR – in surface switch

FTR – in E22

Type alre	Gira range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
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/E2/E3/E22/Event/Esprit**	pure white (RAL 9010) glossy	JZ-001.100 (55 x 55, glossy)	UN990050	I	not required
	Standard 55/E2/E22/ Event/Esprit	pure white (RAL 9010) matt	JZ-001.101 (55 x 55, matt)	UN990055	I	not required
	Surface switch	pure white (RAL 9010) glossy	JZ-001.000 (50 x 50, glossy)	UN990035	I	0282 112
	Standard 55/Event/Esprit/ClassiX	cream white (RAL 1013) glossy	JZ-001.110 (55 x 55, glossy)	UN990060	I	not required
	System 55	aluminium/matt	JZ-001.131/GI (55x55)	UN990110	I	not required
	System 55	anthracite/matt	JZ-001.141/GI (55x55)	UN990111	I	not required

Standard (without switch)

Type alre	Gira range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.062#00 FTR 101.262#00	**Standard 55/E2/E3/E22/Event/Esprit**	pure white (RAL 9010) glossy	JZ-002.100 (55 x 55, glossy)	UN990051	I	not required
	Standard 55/E2/E22/ Event/Esprit	pure white (RAL 9010) matt	JZ-002.101 (55 x 55, matt)	UN990056	I	not required
	Surface switch	pure white (RAL 9010) glossy	JZ-002.000 (50 x 50, glossy)	UN990036	I	0282 112
	Standard 55/Event/Esprit/ClassiX	cream white (RAL 1013) glossy	JZ-002.110 (55 x 55, glossy)	UN990061	I	not required
	Standard 55/Event/Esprit/ClassiX	cream white (RAL 1013) glossy	JZ-002.141 (55x55 glanz)	UN990121	I	not required
	System 55 NEU	anthracite/matt	JZ/-002.141/GI	UN990121	I	not required

(ON/OFF switch, LED)

Type alre	Gira range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.063#00	**Standard 55/E2/E3/E22/Event/Esprit**	pure white (RAL 9010) glossy	JZ-012.100 (55x55 glossy)	UN990123	I	not required
	Standard 55/E2/E22/ Event/Esprit	pure white (RAL 9010) matt	JZ-012.101 (55x55 matt)	UN990136	I	not required
	Surface switch	pure white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	I	0282 112
	Standard 55/Event/Esprit/ClassiX	cream white (RAL 1013) glossy	JZ-012.110 (55x55 glossy)	UN990137	I	not required

(Switch H/OFF/C)

Type alre	Gira range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.065#00 FTR 101.265#00	**Standard 55/E2/E3/E22/Event/Esprit**	pure white (RAL 9010) glossy	JZ-004.100 (55 x 55, glossy)	UN990052	I	not required
	Standard 55/E2/E22/ Event/Esprit	pure white (RAL 9010) matt	JZ-004.101 (55 x 55, matt)	UN990057	I	not required
	Surface switch	pure white (RAL 9010) glossy	JZ-004.000 (50 x 50, glossy)	UN990037	I	0282 112
	Standard 55/Event/Esprit/ClassiX	cream white (RAL 1013) glossy	JZ-004.110 (55 x 55, glossy)	UN990062	I	not required

(H/C switch)

Type alre	Gira range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.075#00	**Standard 55/E2/E3/E22/Event/Esprit**	pure white (RAL 9010) glossy	JZ-003.100 (55 x 55, glossy)	UN990053	I	not required
	Standard 55/E2/E22/ Event/Esprit	pure white (RAL 9010) matt	JZ-003.101 (55 x 55, matt)	UN990058	I	not required
	Surface switch	pure white (RAL 9010) glossy	JZ-003.000 (50 x 50, glossy)	UN990038	I	0282 112
	Standard 55/Event/Esprit/ClassiX	cream white (RAL 1013) glossy	JZ-003.110 (55 x 55, glossy)	UN990063	I	not required

(3-way switch, LED)

*) must be ordered from switch manufacturer or electronics wholesaler
**) for GIRA surface switches, there are also 55 x 55 insert frames (for the use of alre 55 x 55 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.	PG	Insert frame 50 x 50*
FTR 101.000#00 FTR 101.002#00 FTR 101.010#00 FTR 101.086#00 FTR 101.202#00 FTR 101.210#00	**AS 500/A 500/A550/A creation/A plus/A flow**	alpine white (RAL 9010) glossy	JZ-001.100 (55 x 55, glossy)	UN990050	I	not required
	CD 500/CD plus	alpine white (RAL 9010) glossy	JZ-001.000 (50 x 50, glossy)	UN990035	I	CD 590 Z WW
	LS 990/LS design/LS plus	alpine white (RAL 9010) glossy	JZ-001.000 (50 x 50, glossy)	UN990035	I	LS 961 Z WW**
	AS 500	white (RAL 1013) glossy	JZ-001.110 (55 x 55, glossy)	UN990060	I	not required
	CD 500/CD plus	white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	I	590 Z
	LS 990/LS design/LS plus	white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	I	LS 961 Z**
	A 550/A flow	snow white matt	JZ-001.101 (55x55 matt)	UN990055	I	not required
	Series A	aluminium/glossy	JZ-001.130/JU (55x55)	UN990112	I	not required
	Series A	anthracite/matt	JZ-001.141/JU (55x55)	UN990113	I	not required

Standard (without switch)

Type alre	Jung range	Colour (RAL)/surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50*
FTR 101.062#00 FTR 101.262#00	**AS 500/A 500/A550/A creation/A plus/A flow**	alpine white (RAL 9010) glossy	JZ-002.100 (55 x 55, glossy)	UN990051	I	not required
	CD 500/CD plus	alpine white (RAL 9010) glossy	JZ-002.000 (50 x 50, glossy)	UN990036	I	CD 590 Z WW
	LS 990/LS design/LS plus	alpine white (RAL 9010) glossy	JZ-002.000 (50 x 50, glossy)	UN990036	I	LS 961 Z WW**
	AS 500	white (RAL 1013) glossy	JZ-002.110 (55 x 55, glossy)	UN990061	I	not required
	CD 500/CD plus	white (RAL 1013) glossy	JZ-002.010 (50 x 50, glossy)	UN990046	I	590 Z
	LS 990/LS design/LS plus	white (RAL 1013) glossy	JZ-002.010 (50 x 50, glossy)	UN990046	I	LS 961 Z**
	A 550/A flow	snow white matt	JZ-002.101 (55x55 matt)	UN990056	I	not required

(ON/OFF switch, LED)

Type alre	Jung range	Colour (RAL)/surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50*
FTR 101.063#00	**AS 500/A 500/A550/A creation/A plus/A flow**	alpine white (RAL 9010) glossy	JZ-012.100 (55x55 glossy)	UN990123	I	not required
	CD 500/CD plus	alpine white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	I	CD 590 Z WW
	LS 990/LS design/LS plus	alpine white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	I	LS 961 Z WW**
	AS 500	white (RAL 1013) glossy	JZ-012.110 (55x55 glossy)	UN990137	I	not required
	CD 500/CD plus	white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	I	590 Z
	LS 990/LS design/LS plus	white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	I	LS 961 Z**
	A 550/A flow	snow white matt	JZ-012.101 (55x55 matt)	UN990136	I	not required

(Switch H/OFF/C)

Type alre	Jung range	Colour (RAL)/surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50*
FTR 101.065#00 FTR 101.265#00	**AS 500/A 500/A550/A creation/A plus/A flow**	alpine white (RAL 9010) glossy	JZ-004.100 (55 x 55, glossy)	UN990052	I	not required
	CD 500/CD plus	alpine white (RAL 9010) glossy	JZ-004.000 (50 x 50, glossy)	UN990037	I	CD 590 Z WW
	LS 990/LS design/LS plus	alpine white (RAL 9010) glossy	JZ-004.000 (50 x 50, glossy)	UN990037	I	LS 961 Z WW**
	AS 500	white (RAL 1013) glossy	JZ-004.110 (55 x 55, glossy)	UN990062	I	not required
	CD 500/CD plus	white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	I	590 Z
	LS 990/LS design/LS plus	white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	I	LS 961 Z**
	A 550/A flow	snow white matt	JZ-004.101 (55x55 matt)	UN990057	I	not required

(H/C switch)

Type alre	Jung range	Colour (RAL)/surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50*
FTR 101.075#00	**AS 500/A 500/A550/A creation/A plus/A flow**	alpine white (RAL 9010) glossy	JZ-003.100 (55 x 55, glossy)	UN990053	I	not required
	CD 500/CD plus	alpine white (RAL 9010) glossy	JZ-003.000 (50 x 50, glossy)	UN990038	I	CD 590 Z WW
	LS 990/LS design/LS plus	alpine white (RAL 9010) glossy	JZ-003.000 (50 x 50, glossy)	UN990038	I	LS 961 Z WW**
	AS 500	white (RAL 1013) glossy	JZ-003.110 (55 x 55, glossy)	UN990063	I	not required
	CD 500/CD plus	white (RAL 1013) glossy	JZ-003.010 (50 x 50, glossy)	UN990048	I	590 Z
	LS 990/LS design/LS plus	white (RAL 1013) glossy	JZ-003.010 (50 x 50, glossy)	UN990048	I	LS 961 Z**
	A 550/A flow	snow white matt	JZ-003.101 (55x55 matt)	UN990058	I	not required

(3-way switch, LED)

*) must be ordered from switch manufacturer or electronics wholesaler
**) for the Jung LS series, there are also 55 x 55 insert frames (for the use of alre 55 x 55 cover set) – JUNG item no. LS 961 Z5 WW (alpine white) and LS 961 Z5 (white)

*** The manufacturer JUNG may change the color from 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.	PG	Insert frame 50 x 50 *
FTR 101.000#00 FTR 101.002#00 FTR 101.010#00 FTR 101.086#00 FTR 101.202#00 FTR 101.210#00	**1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ**	polar white (RAL 9010) glossy	JZ-001.100 (55 x 55, glossy)	UN990050	I	not required
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-001.101 (55 x 55, matt)	UN990055	I	not required
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-001.120 (55 x 55, glossy)	UN990086	I	not required
	D-Life	lotus white (RAL 9016) glossy	JZ-001.020 (50 x 50, glossy)	UN990071	I	MEG4500-6035
	System Design: Artec, Antik	polar white (RAL 9010) glossy	JZ-001.000 (50 x 50, glossy)	UN990035	I	5160 99
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-001.110 (55 x 55, glossy)	UN990060	I	not required
	System Design: Artec, Antik	white (RAL 1013) glossy	JZ-001.010 (50 x 50, glossy)	UN990045	I	5160 94
	System M	aluminium/matt	JZ-001.131/ME (55x55)	UN990116	I	not required
	System M	anthracite/matt	JZ-001.141/ME (55x55)	UN990117	I	not required

Standard (without switch)

Type alre	Merten range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.062#00 FTR 101.262#00	**1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ**	polar white (RAL 9010) glossy	JZ-002.100 (55 x 55, glossy)	UN990051	I	not required
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-002.101 (55 x 55, matt)	UN990056	I	not required
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-002.120 (55 x 55, glossy)	UN990088	I	not required
	D-Life	lotus white (RAL 9016) glossy	JZ-002.020 (50 x 50, glossy)	UN990072	I	MEG4500-6035
	System Design: Artec, Antik	polar white (RAL 9010) glossy	JZ-002.000 (50 x 50, glossy)	UN990036	I	5160 99
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-002.110 (55 x 55, glossy)	UN990061	I	not required
	System Design: Artec, Antik	white (RAL 1013) glossy	JZ-002.010 (50 x 50, glossy)	UN990046	I	5160 94

(ON/OFF switch, LED)

Type alre	Merten range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.063#00	**1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ**	polar white (RAL 9010) glossy	JZ-012.100 (55x55 glossy)	UN990123	I	not required
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-012.101 (55x55 matt)	UN990136	I	not required
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-012.120 (55x55 glossy)	UN990138	I	not required
	D-Life	lotus white (RAL 9016) glossy	JZ-012.020 (50x50 glossy)	UN990134	I	MEG4500-6035
	System Design: Artec, Antik	polar white (RAL 9010) glossy	JZ-012.000 (50x50 glossy)	UN990107	I	5160 99
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-012.110 (55x55 glossy)	UN990137	I	not required
	System Design: Artec, Antik	white (RAL 1013) glossy	JZ-012.010 (50x50 glossy)	UN990133	I	5160 94

(Switch H/OFF/C)

Type alre	Merten range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.065#00 FTR 101.265#00	**1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ**	polar white (RAL 9010) glossy	JZ-004.100 (55 x 55, glossy)	UN990052	I	not required
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-004.101 (55 x 55, matt)	UN990057	I	not required
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-004.120 (55 x 55, glossy)	UN990089	I	not required
	D-Life	lotus white (RAL 9016) glossy	JZ-004.020 (50 x 50, glossy)	UN990073	I	MEG4500-6035
	System Design: Artec, Antik	polar white (RAL 9010) glossy	JZ-004.000 (50 x 50, glossy)	UN990037	I	5160 99
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-004.110 (55 x 55, glossy)	UN990062	I	not required
	System Design: Artec, Antik	white (RAL 1013) glossy	JZ-004.010 (50x50, glossy)	UN990047	I	5160 94

(H/C switch)

Type alre	Merten range	Colour (RAL) / surface finish	alre cover set	Cover set Item no.	PG	Insert frame 50 x 50 *
FTR 101.075#00	**1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ**	polar white (RAL 9010) glossy	JZ-003.100 (55 x 55, glossy)	UN990053	I	not required
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	polar white (RAL 9010) matt	JZ-003.101 (55 x 55, matt)	UN990058	I	not required
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	active white (RAL 9016) glossy	JZ-003.120 (55 x 55, glossy)	UN990090	I	not required
	D-Life	lotus white (RAL 9016) glossy	JZ-003.020 (50 x 50, glossy)	UN990074	I	MEG4500-6035
	System Design: Artec, Antik	polar white (RAL 9010) glossy	JZ-003.000 (50 x 50, glossy)	UN990038	I	5160 99
	1-M, Atelier-M/M-Smart, M-Pure, M-Plan, M-Creativ	white (RAL 1013) glossy	JZ-003.110 (55 x 55, glossy)	UN990063	I	not required
	System Design: Artec, Antik	white (RAL 1013) glossy	JZ-003.010 (50 x 50, glossy)	UN990048	I	5160 94

(3-way switch, LED)

*) must be ordered from switch manufacturer or electronics wholesaler

Electronic room or floor temperature controller with clock HTRRUu

Flush-mounted installation – Design Berlin UP

Technical data

Design:	Berlin UP (flush-mounted)
Housing material:	PC, PMMA, ABS plastic
Operating voltage:	230 VAC, 50 Hz
Storage temperature:	–20 … +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 97
Protection rating:	IP 30
Protection class:	II, if properly mounted
Safety and EMC:	according to DIN EN 60730
Max. switching current:	10 (2) A
Max. switching voltage:	230 VAC, 50 Hz
Min. switching voltage:	230 VAC, 50 Hz
Switching power:	2300 W
Switching element:	relay
Switching contact:	NO contact
Output signal:	230 VAC, 50 Hz
Sensor:	NTC internal, optional external floor sensor see accessories, optional external room sensor see Sensors “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 … 30 °C (room) / 10 … 42 °C (floor)
Setting range:	The setting range varies, depending on the use of the controller as a room temperature controller (5 … 30 °C) or floor temperature controller (10 … 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-010.100

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)

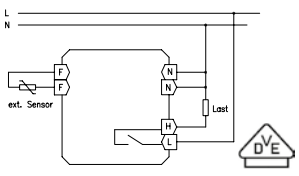
This clock thermostat has a weekly timer with individually adjustable programs (factory setting: “normal” daily sequences).

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 are available for projects on request as well as anthracite and aluminium.

Type/image	Item no.	Features	Circuit diagram	PG
HTRRUu 210.021#21 	UA060000	Scope of delivery: controller, cover **50 x 50** mm **pure white** (like RAL 9010), **glossy, alre frame** “Berlin”		I
HTRRUu 210.021#21 / 7 	UN060011	like HTRRUu 210.021#21 but scope of delivery as follows: controller, cover **50 x 50** mm **pure white** (like RAL 9010), **glossy, alre frame** “Berlin”, **external floor sensor** (HF-8 / 4-K2)		I
HTRRUu 210.021#07 	UA060001	like HTRRUu 210.021#21 but scope of delivery as follows: controller, cover **50 x 50** mm **pure white** (like RAL 9010), **glossy,** without frame		I

Electronic room or floor temperature controller with clock HTRRUu

Flush-mounted installation – Design Berlin UP

Type/image	Item no.	Features	Circuit diagram	PG
HTRRUu 210.021#09 	UA060002	like HTRRUu 210.021#21 but scope of delivery as follows: controller, cover **50 x 50** mm **pearl white** (like RAL 1013), **glossy,** without frame		I
HTRRUu 210.021#27 	UA060003	like HTRRUu 210.021#21 but scope of delivery as follows: Controller, cover **50 x 50** mm **traffic/ studio white** (like RAL 9016), **glossy,** without frame		I
HTRRUu 210.021#28 	UA060006	like HTRRUu 210.021#21 but scope of delivery as follows: controller, cover **suitable for BUSCH JAEGER Reflex SI/SI Linear pure white** (like RAL 9010), **glossy,** without frame		I
HTRRUu 210.021#55 	UA060004	like HTRRUu 210.021#21 but scope of delivery as follows: controller, cover **55 x 55** mm **pure white** (like RAL 9010), **glossy,** without frame		I
HTRRUu 210.021#56 	UA060020	like HTRRUu 210.021#21 but scope of delivery as follows: controller, cover **55 x 55** mm **pure white** (like RAL 9010), **matt,** without frame		I
HTRRUu 210.021#57 	UA060005	like HTRRUu 210.021#21 but scope of delivery as follows: controller, cover **55 x 55** mm **pearl white** (like RAL 1013), **glossy,** without frame		I
HTRRUu 210.021#59 	UA060014	like HTRRUu 210.021#21 but scope of delivery as follows: Controller, cover **55 x 55** mm **traffic/ studio white** (like RAL 9016), **glossy,** without frame		I

Accessories	Item no.	Features	PG
HF-8/4-K2 	G8000370	**General features:** optional, external floor sensor **Ambient temperature:** –5…+70 °C **Protection rating:** IP65 **Sensor:** NTC **Connecting cable:** 4 m, PVC	II
HF-8/6-K2 	G8000368	**General features:** optional, external floor sensor **Ambient temperature:** –5…+70 °C **Protection rating:** IP65 **Sensor:** NTC **Connecting cable:** 6 m, PVC	II
WP-01 	G9990180	**General features:** heat conduction paste 2 ml; R > 1 TΩ/cm, silicone-free **Ambient temperature:** –40…+150 °C **Heat conductivity:** > 0.7 W/mK	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	II
JZ-090.900 	VV000025	**General features:** alre frame “Berlin” (neutral) for all flush-mounted controllers with cover 50 x 50 mm **Design:** Berlin **Surface finish:** Glossy **Colour:** Pure white, like RAL 9010 **Material:** PC plastic	I

Electronic room or floor temperature controller with clock HTRRUu

Flush-mounted installation – Design Berlin UP

Accessories	Item no.	Features	PG
JZ-090.910	VV000010	**General features:** alre frame “Berlin” (neutral) for all flush-mounted controllers with cover 50 x 50 mm **Design:** Berlin **Surface finish:** Glossy **Colour:** Pearl white, like RAL 1013 **Material:** PC plastic	I

HTRRUu with alre frame “Berlin”

pluggable screw-type terminals

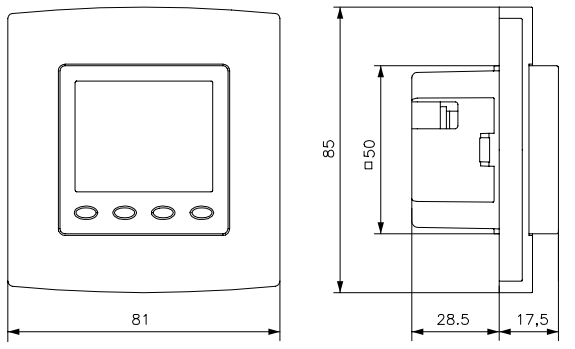
Other benefits:

- Pluggable screw-type terminals facilitate quick and easy assembly
- Illuminated, graphics-capable display
- Choice of 4 different external floor sensors (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
- Learning function
- Correction of measurement values
- Configurable display content during installation, choice of various languages including German, English, French, Dutch, Polish, Spanish, Czech, Russian
- 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 operation” display (orange LED)
- Load setting for improved control

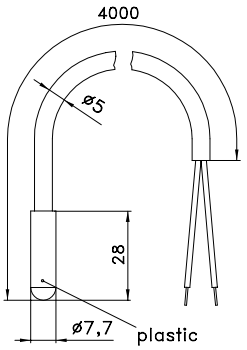
Factory setting:

- 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 deactivated
- Automatic adjustment to standard/daylight savings 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)

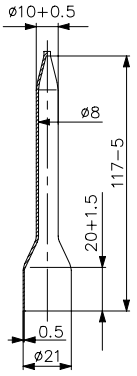
HTRRUu with alre frame “Berlin”



HF-8/4-K2



THF



Examples of integration in switch ranges with or without insert frames

Adaptation of alre flush-mounted controllers HTRRUu 210.021

Manufacturer	Range	Colour RAL 9010 (surface finish)	Adaptation in switch range ("55 x 55") possible using …	"50 x 50" adaptation possible with … (insert frame from 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	A 550/A flow	snowwhite 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 (Basis System)	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 "55 x 55" possible using …	"50 x 50" adaptation possible with … (insert frame from 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
*** The manufacturer JUNG may change the color from alpine white from RAL 9010 to RAL 9016

NOTE: Most light switch ranges are designed in a colour like 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.

"50 x 50 controller": The housing covers of the 50 x 50 controllers are 50 x 50 mm in size. Using a 50 x 50-mm insert frame, they can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50 x 50-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 "50 x 50" HTRRUu".

"55 x 55 controller": The housing covers of the 55 x 55 controllers are 55 x 55 mm in size. Many light switch ranges have inner dimensions of 55 x 55 mm. Therefore, the 55 x 55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column "Adaptation in switch range (55 x 55)" to determine whether the 55 x 55 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 12/2019 | No liability is assumed for the information provided. | Technical specifications subject to change.
An adaptation list for RAL 1013 switch ranges is available from our website at www.alre.de.

Electronic floor or surface temperature controller with remote sensor (for floor heating / wall and ceiling heating / tiled stove) HTRRB

Surface-mounted installation – Design Berlin 2000

Technical data

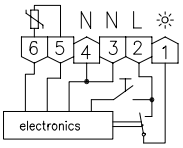
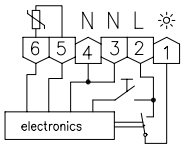
Design:	Berlin 2000
Surface finish:	matt
Housing colour:	pure white, like RAL 9010
Housing material:	ABS plastic
Operating voltage:	230 VAC, 50 Hz
Ambient temperature:	0…30 °C
Storage temperature:	–20…+70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Mounting/attachment:	Surface/wall mounting (4-hole assembly on flush-mounted socket)
Protection rating:	IP 30
Protection class:	II, if properly mounted
Safety and EMC:	according to DIN EN 60730
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
Output signal:	230 VAC, 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)

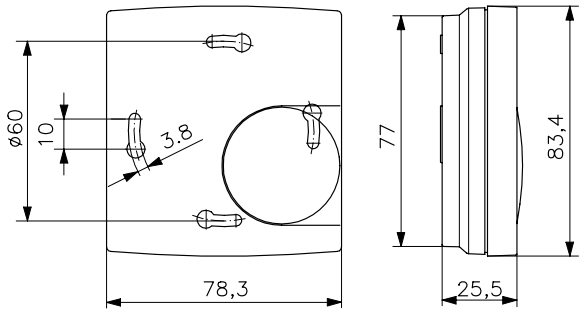
Type/image	Item no.	Features	Circuit diagram	PG
HTRRB-011.010 	DA400000	**General features:** Floor temperature controller with remote sensor HF-8/4-K2 4 m, multi-digit display 1…6 **Control range:** 10…60 °C **Note:** The setting range can be adjusted to 10…40 °C (for example) using the mechanical range limitation as a replacement for the type **HTRRB-010.310**.		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		I

Electronic floor or surface temperature controller with remote sensor (for floor heating / wall and ceiling heating / tiled stove) HTRRB

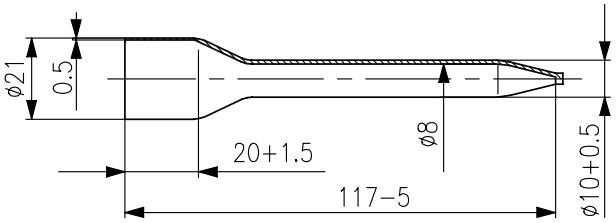
Surface-mounted installation – Design Berlin 2000

Accessories	Item no.	Features	PG
HF-8/4-K2 	G8000370	**General features:** Spare sensor for HTRRB-011.010 **Ambient temperature:** –5…+70 °C **Protection rating:** IP 65 **Sensor:** NTC **Connecting cable:** 4 m, PVC	II
HF-8/6-K2 	G8000368	**General features:** Spare sensor for HTRRB-011.010 **Ambient temperature:** –5…+70 °C **Protection rating:** IP 65 **Sensor:** NTC **Connecting cable:** 6 m, PVC	II
HF-5/4-K3 	G9031456	**General features:** Spare sensor for HTRRB-011.410 **Ambient temperature:** –50…+150 °C **Protection rating:** IP 65 **Sensor:** NTC **Connecting cable:** 4 m, silicone, H05SS-F <VDE> 2 x 0.75 mm²	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…+150 °C	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	II

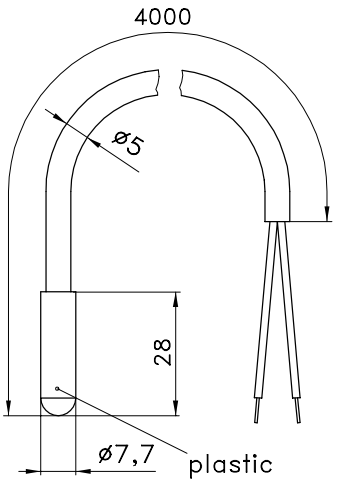
HTRRB



THF



HF-8/4-K2



Electronic floor 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, like RAL 9010
Housing material:	ABS plastic
Operating voltage:	230 VAC, 50 Hz
Ambient temperature:	0…30 °C
Storage temperature:	–20…+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:	IP 30
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 VAC, 50 Hz
Min. switching voltage:	230 VAC, 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…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	PG
HTRRBu-110.021	MA600400	With backlighting		I

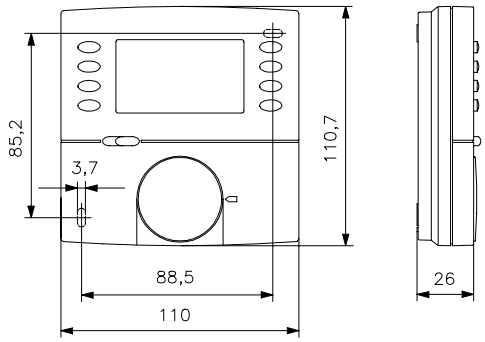
Accessories: terminal strips: VOOPL compatible valve actuators: ZBOOA-010.100

Electronic floor temperature controller with clock and remote sensor (for floor heating/wall and ceiling heating) HTRRBu

Surface-mounted installation – Berlin 3000

Accessories	Item no.	Features	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, like RAL 9010 **Material:**ABS plastic	II
HF-8/4-K2 	G8000370	**General features:** Spare sensor for HTRRBu-110.021 **Ambient temperature:** –5…+70 °C **Protection rating:** IP 65 **Sensor:** NTC **Connecting cable:** 4 m, PVC	II
HF-8/6-K2 	G8000368	**General features:** Spare sensor for HTRRBu-110.021 **Ambient temperature:** –5…+70 °C **Protection rating:** IP 65 **Sensor:** NTC **Connecting cable:** 6 m, PVC	II
WP-01	G9990180	**General features:** Heat conduction paste 2 ml; R > 1 TΩ/cm, silicone-free **Ambient temperature:** –40…+150 °C	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	II

HTRRBu-110.XXX

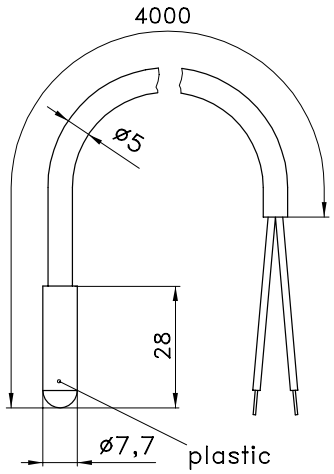


JZ-17

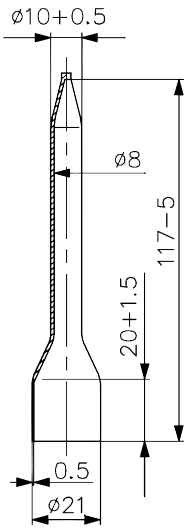
Factory setting:

- Setback temperature 1.7 °C
- 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 safeguarding:
  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

Flush-mounted installation – Design Berlin UP

Technical data

Design:	Berlin UP (flush-mounted)
Housing material:	PC plastic
Operating voltage:	230 VAC, 50 Hz
Storage temperature:	–20…+70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Mounting/attachment:	In flush-mounted socket (deep flush-mounted socket recommended), can be adapted with 50 x 50 mm or 55 x 55 mm cover set to fit virtually any switch range
Protection rating:	IP 30
Protection class:	II, if properly mounted
Safety and EMC:	according to DIN EN 60730
Max. switching voltage:	230 VAC, 50 Hz
Min. switching voltage:	230 VAC, 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 extendable up to:	50 m with min. 0.5 mm² double-insulated
Control function:	heating
Hysteresis:	< 1 K
General features:	ECO function; “reduction” display; “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.

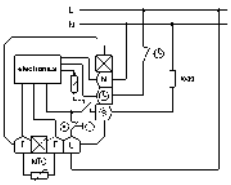
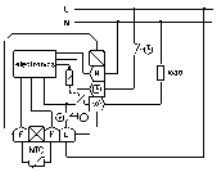
Reduction: With these flush-mounted controllers, the temperature can be reduced by 5 K. For this purpose, potential is applied to the clock input terminal by an external pilot controller or an external timer L1.

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

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

Using an insert frame, the 50 x 50-mm variants fit in almost all switch ranges.

See page 86 for an overview of currently possible combinations and insert frames.

Type/image	Item no.	Features	Circuit diagram	PG
FETR 101.700#07 	UN030000	**General features:** Floor temperature controllers; internal setting; multi-digit display 1…6 **Ambient temperature:** 0…40 °C **Max. switching current:**16 (2) A **Switching power:** 3680 W **Control range:** 10…60 °C **Scope of delivery:** controller, remote sensor 4 m, cover 50 x 50 mm, pure white (like RAL 9010), glossy		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…40 °C **Max. switching current:**16 (2) A **Switching power:** 3680 W **Control range:** 10…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:** cover set 50 x 50 mm, pure white, glossy: JZ-005.000 cover set 55 x 55 mm, pure white, glossy: JZ-005.100		I

Electronic floor temperature controller with remote sensor (for floor heating/wall and ceiling heating) FETR

Flush-mounted installation – Design Berlin UP

Type/image	Item no.	Features	Circuit diagram	PG
FETR 101.715#21 	UN030109	like FETR 101.715#00, but with scope of delivery: controller, remote sensor 4 m, alre frame “Berlin” (neutral), cover 50 x 50 mm, pure white (like RAL 9010), glossy		I
FETR 101.716#00 	UA030502	like FETR 101.715#00, but with control range 10 … 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.:** cover set 50 x 50 mm, pure white, glossy: JZ-009.000 cover set 55 x 55 mm, pure white, glossy: JZ-009.100 Complete device with alre frame “Berlin” (neutral), cover 50 x 50 mm (pure white, like RAL 9010, glossy) on request.		I

Accessories	Item no.	Features	PG
HF-8/4-K2 	G8000370	**General features:** Spare sensor for FETR 101.7xx **Ambient temperature:** –5 … +70 °C **Protection rating:** IP 65 **Sensor:** NTC **Connecting cable:** 4 m, PVC	II
HF-8/6-K2 	G8000368	**General features:** Spare sensor for FETR 101.7xx **Ambient temperature:** –5 … +70 °C **Protection rating:** IP 65 **Sensor:** NTC **Connecting cable:** 6 m, PVC	II
WP-01 	G9990180	**General features:** Heat conduction paste 2 ml; R > 1 TΩ/cm, silicone-free **Ambient temperature:** –40 … +150 °C	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	II

Electronic floor temperature controller with remote sensor (for floor heating/wall and ceiling heating) FETR

Flush-mounted installation – Design Berlin UP

Accessories	Item no.	Features	PG
JZ-090.900 	VV000025	**General features:** alre frame “Berlin” (neutral) for all flush-mounted controllers with cover 50 x 50 mm **Design:** Berlin **Surface finish:** Glossy **Colour:** Pure white, like RAL 9010 **Material:** PC plastic	I
JZ-090.910 	VV000010	**General features:** alre frame “Berlin” (neutral) for all flush-mounted controllers with cover 50 x 50 mm **Design:** Berlin **Surface finish:** Glossy **Colour:** Pearl white, like RAL 1013 **Material:** PC plastic	I

alre flush-mounted range (cover sets)

all basic types and suitable cover sets **50 x 50 mm**

Basic type	Cover set 50 x 50 mm **pure white (RAL 9010) glossy** (JZ-xxx.000)		Cover set 50 x 50 mm **pure white (RAL 9010) matt** (JZ-xxx.001)		Cover set 50 x 50 mm **pearl white (RAL 1013) glossy** (JZ-xxx.010)		Cover set 50 x 50 mm **traffic/studio white (RAL 9016) glossy** (JZ-xxx.020)		PG
	Cover set	Item no.	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	JZ-005.020	UN990075	I
FETR 101.716#00	JZ-009.000	UN990004	JZ-009.001	UN990007	JZ-009.010	UN990010	JZ-009.020	UN990076	I

Basic type	Cover set 50 x 50 mm **traffic white (RAL 9016) matt** (JZ-xxx.021)		PG
	Cover set	Item no.	
FETR 101.715#00	JZ-005.021	UN990104	I
FETR 101.716#00	JZ-009.021	UN990106	I

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

all basic types and suitable cover sets **55 x 55 mm**

Basic type	Cover set 55 x 55 mm **pure white (RAL 9010) glossy** (JZ-xxx.100)		Cover set 55 x 55 mm **pure white (RAL 9010) matt** (JZ-xxx.101)		Cover set 55 x 55 mm **pearl white (RAL 1013) glossy** (JZ-xxx.110)		Cover set 55 x 55 mm **traffic/studio white (RAL 9016) glossy** (JZ-xxx.120)		PG
	Cover set	Item no.	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	JZ-005.120	UN990091	I
FETR 101.716#00	JZ-009.100	UN990013	JZ-009.101	UN990016	JZ-009.110	UN990019	JZ-009.120	UN990092	I

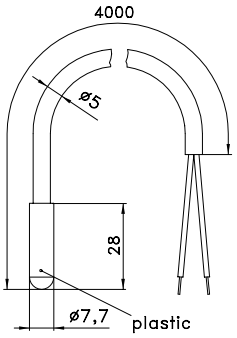
Basic type	Cover set 55x55 mm **anthrazit, matt for GIRA** (JZ-xxx.141)		PG
	Cover set	Item no.	
FETR 101.715#00			
FETR 101.716#00	JZ-009.141/GI	UN990122	I

Special colours are available for projects on request as well as anthracite and aluminium

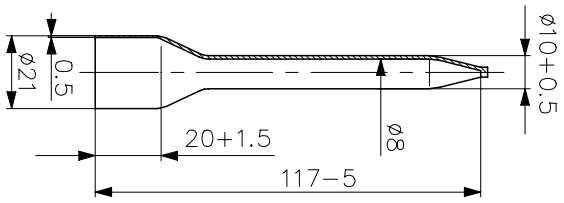
Electronic floor temperature controller with remote sensor (for floor heating/wall and ceiling heating) FETR

Flush-mounted installation – Design Berlin UP

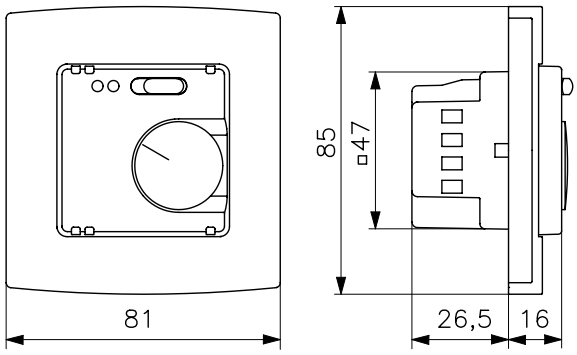
HF-8/4-K2



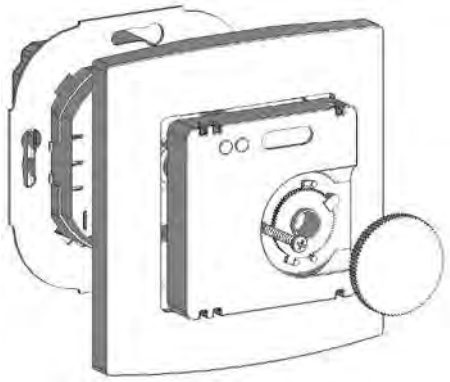
THF



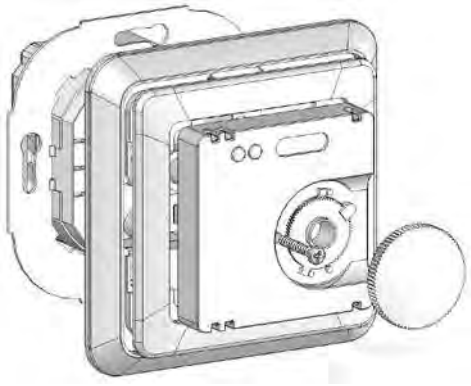
FETR with alre frame “Berlin” (#21 types)



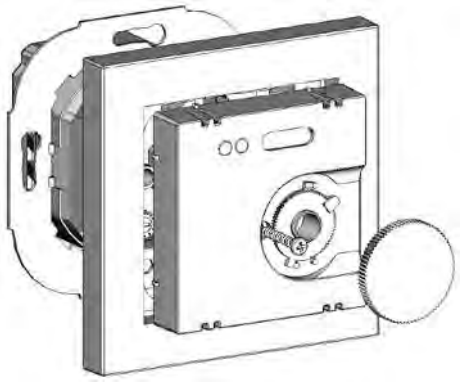
alre frame “Berlin” (#21 types)



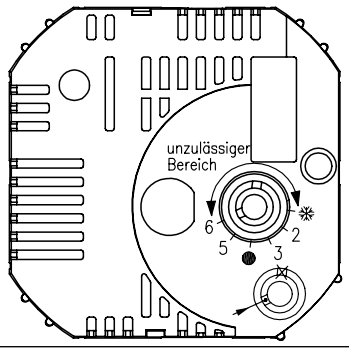
with 50 x 50 mm insert frame



without 55 x 55 mm insert frame



Contact hazard protection cap with setting range (for FETR 101.700 with internal setting – similar to illustration)



Electrothermal valve actuators

for heating, ventilation and air conditioning technology

Technical data

Housing colour:	pure white, like RAL 9010
Housing material:	PC plastic, GF (20%)
Ambient temperature:	0…50 °C
Storage temperature:	–20…+70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Mounting/attachment:	M 30 x 1.5
Protection rating:	IP 42
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 / 2 x 0.5 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.

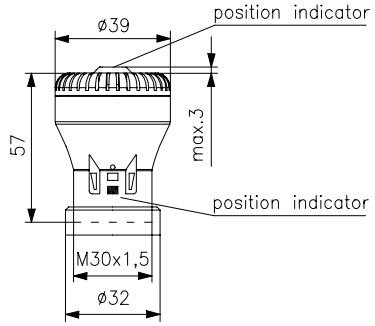
Type/image	Item no.	Features	PG
ZBOOA-010.100 	H9100010	**Operating voltage:** 230 V~, 50 Hz **Max. power consumption:** 70 W **Max. starting current:** approx. 0.3 A	I
ZBOOA-040.100 	H9100000	**Operating voltage:** 24 VDC or 24 VAC **Max. power consumption:** 12 W **Max. starting current:** approx. 0.5 A	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 careful design.

The double 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.

Valve actuator



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, like RAL 7016
Housing material:	PC plastic
Operating voltage:	230 VAC/50 Hz
Ambient temperature:	–10 … +50 °C
Storage temperature:	–20 … +70 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Electrical connection:	Spring terminals 0.75 mm² to 1.5 mm² for rigid cables 0.5 mm² to 1 mm² for flexible cables
Protection rating:	IP 20
Mounting/attachment:	Convenient and easy installation in the heating circuit distributor using top hat rails (standard rail or support rail (EN 60715) or magnetic feet. 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	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), T3,15 A/250 V device fuse, installation dimensions Ø 5 x 20 mm (also secures the circuits of the connected controllers and valve gears)	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), T3,15 A/250 V device fuse, installation dimensions Ø 5 x 20 mm (also secures the circuits of the connected controllers and valve gears)	I

other/similar items: VOORL terminal strip for heating and cooling can be found in chapter climate technology starting on page 141

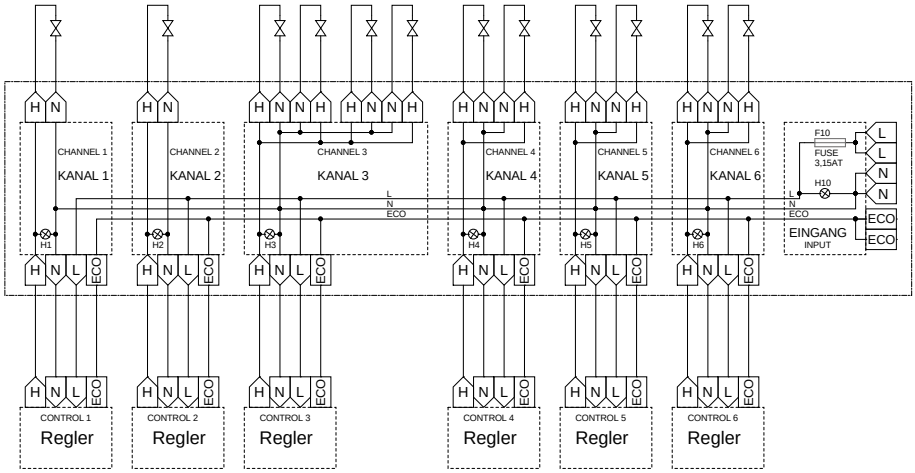
Accessories: suitable valve actuators ZBOOA

Accessories	Item no.	Features	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)	II

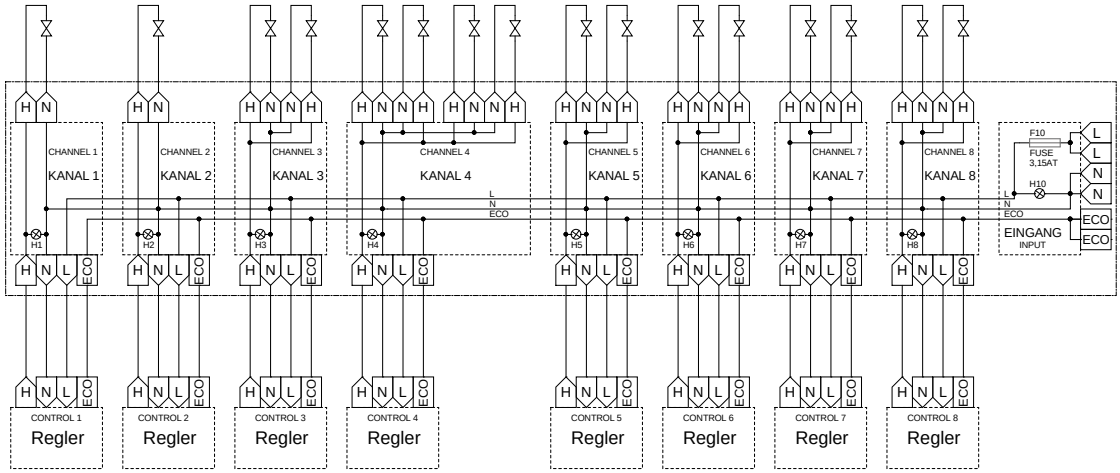
Terminal strip for heating manifold

for 6 or 8 room thermostats

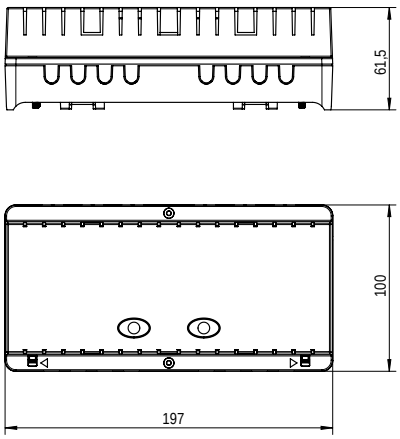
VOOPL-216.176



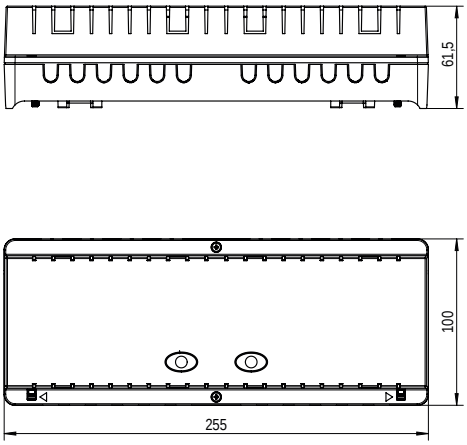
VOOPL-318.178



VOOPL-216.176



VOOPL-318.178

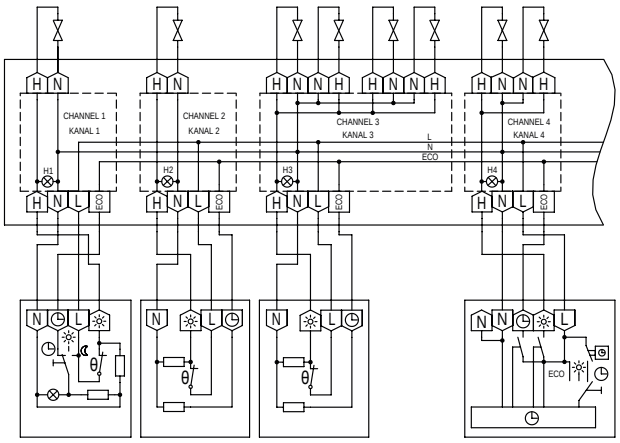


Notes and examples of wiring for VOOPL terminal strips

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 can be found in the controller matrix on page 60. The information listed in this matrix applies for normally closed valve actuators.

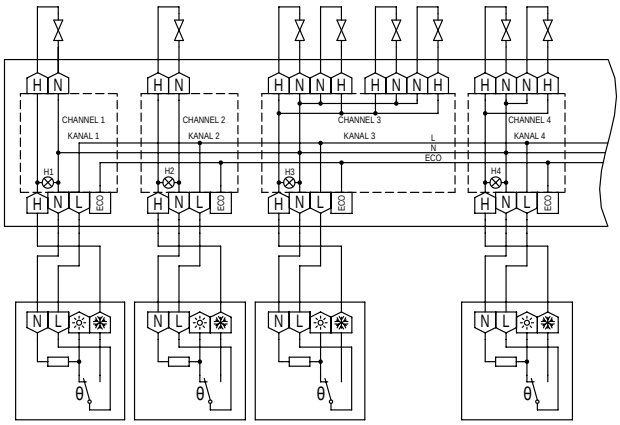


Study	Children's room	Living room	Bedroom
RTBSB-201.075/ RTBSU-401.075 (slave)	RTBSB-201.002/ RTBSU-401.002 (slave)	RTBSB-201.002/ RTBSU-401.002 (slave)	HTRRBu 110.117 (master time zone 2 slave)

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 can be found in the controller matrix on page 60. The information listed in this matrix applies for normally closed valve actuators.

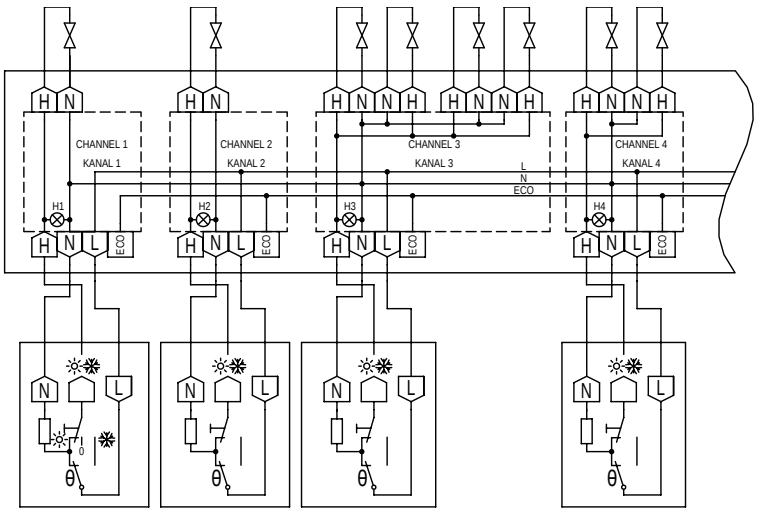


Study	Children's room	Living room	Bedroom
RTBSB-201.010/ RTBSU-401.010	RTBSB-201.010/ RTBSU-401.010	RTBSB-201.010/ RTBSU-401.010	RTBSB-201.010/ RTBSU-401.010

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 can be found in the controller matrix on page 60. 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	Living room	Bedroom
	RTBSB-201.065/ RTBSU-401.065	RTBSB-201.065/ RTBSU-401.065	RTBSB-201.065/ RTBSU-401.065

alre

Notes

AIR CONDITIONING TECHNOLOGY

When it gets too hot,
you can rely on our help.

AIR CONDITIONING TECHNOLOGY

The perfect climate for your comfort.

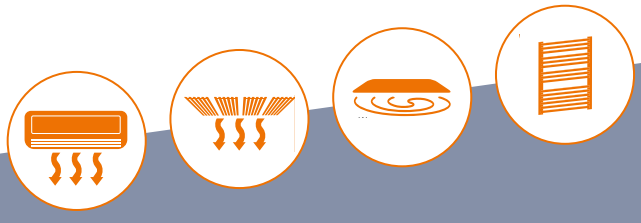
Office buildings, hotel rooms and living rooms require efficient control technology for the perfect climate. The key parameters in this context are temperature and humidity. The optimum combination of these provides an ambient temperature tailored to individual needs.

Safe and comfortable operation is what sets our controllers apart. Our devices offer numerous additional functions to continue to control the temperature in an economical and environmentally friendly manner – including in the evening and at night. This means that any energy not required is saved, which reduces the impact on the environment and your wallet.

Comfort thanks an ideal indoor climate.

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



AIR CONDITIONING TECHNOLOGY overview:

Climate controllers

Dew point monitoring

Hygrostats/Hygro-thermostats

Terminal strips for heating/cooling manifolds/valve actuators

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	KTRRU-052.245	KTRRUu 217.456	KTRRUu 257.456	KTRVB-048.100	KTRVB-048.200	KTRVB-052.244	KTRVB-052.245
	Page	115	115	116	116	116	118	118	118	120	121	123	127	129	133	133	134	134
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				
	Pikolo																	
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 controllers	x	x															
	Climate controller (0 ... 10 V)								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 as a 2-pipe system	x	x				x	x	x	x	x	x	x	x			x	x
	Air conditioning controller as a 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	Input “ECO”	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
	Input “off with frost protection monitoring”						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”																	x
	Switch “heating/ventilation/cooling”				x													
	Switch “ECO/comfort/off with frost protection monitoring”										x	x						x
	Switch “ventilator”			x	x	x	x		x									
	Indicator lamp “ON/OFF”				x													
	Indicator lamp “heating mode”				x													
	Indicator lamp “heating”	x	x							x	x	x	x	x			x	x
	Indicator lamp “cooling”	x	x							x	x	x	x	x			x	x
	Indicator lamp “heating/cooling”				x													
	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

Electronic climate controller with triac output (noiseless)

Surface-mounted “ultra-thin” installation – Design Berlin 1000

Technical data

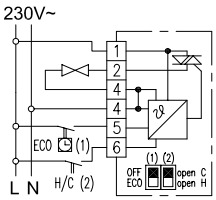
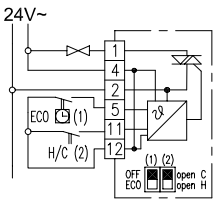
Design:	Berlin 1000
Surface finish:	glossy
Housing colour:	pure white, like RAL 9010
Housing material:	ABS plastic
Ambient temperature:	0…40 °C
Storage temperature:	–20…+70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals 0.5 mm² to 1.5 mm²
Mounting/attachment:	Surface-/wall-mounting (4-hole assembly on flush-mounted socket)
Protection rating:	IP 30
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…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	PG
KTRTB-211.108 	MA700300	**Operating voltage:** 230 VAC, 50 Hz **Protection class:** II, 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		I
KTRTB-251.108 	MA700400	**Operating voltage:** 24 VAC, 50 Hz **Protection class:** III, 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		I

Accessories: suitable valve actuators ZBOOA

Accessories	Item no.	Features	PG
JZ-21	MN990006	Adapter frame for mounting room temperature controllers of the Berlin 1000 series in flush-mounted sockets up to **80 x 80 mm**	I
ET-01 	MA990000	**General features:** Adjusting knob for B1000 series devices, scale: Degrees Celsius, pure white glossy	I
ET-02 	MA990001	**General features:** Adjusting knob for B1000 series devices, multi-digit display 1…6, pure white glossy	I

See page 69 for dimension diagram

Mechanical climate controllers KTBSB

Surface-mounted installation – Berlin 3000

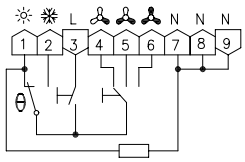
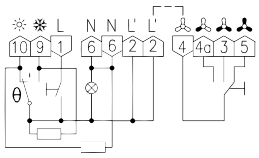
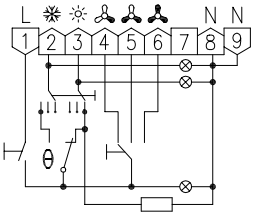
Technical data

Design:	Berlin 3000
Surface finish:	matt
Housing colour:	pure white, like RAL 9010
Housing material:	ABS plastic
Operating voltage:	230 VAC, 50 Hz
Ambient temperature:	0…30 °C
Storage temperature:	–20…+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:	IP 30
Protection class:	II, if properly mounted
Safety and EMC:	according to DIN EN 60730
Max. switching current:	6 (3) A
Max. switching voltage:	230 VAC, 50 Hz
Min. switching voltage:	230 VAC, 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…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	PG
KTBSB-112.000 	MA200100	**General features:** 3-stage fan output; **3-stage fan switch; "on/off" switch** **Hysteresis:** Approx. 0.5 K at a temperature change of max. 4 K/h		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		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		I

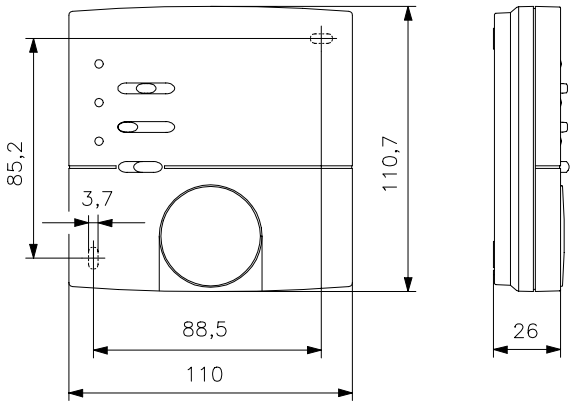
Accessories: Terminal strips VOOPL, compatible valve actuators for ZBOOA-010.100, adapter plates to mount in flush-mounted socket JZ-17
You can find other controllers with outputs for heating/cooling in the "Heating technology" section (RTBSB/RTBSU).

Mechanical climate controllers KTBSB

Surface-mounted installation – Berlin 3000

Accessories	Item no.	Features	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, like RAL 9010 **Housing material:**ABS plastic	II

KTBSB



JZ-17

Electronic climate controller, KTRRB

Surface-mounted installation – Design Berlin 3000

Technical data

Design:	Berlin 3000
Surface finish:	matt
Housing colour:	pure white, like RAL 9010
Housing material:	ABS plastic
Operating voltage:	230 VAC, 50 Hz
Ambient temperature:	0…40 °C
Storage temperature:	–20…+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:	IP 30
Protection class:	II, if properly mounted
Safety and EMC:	according to DIN EN 60730
Max. switching voltage:	230 VAC, 50 Hz
Min. switching voltage:	230 VAC, 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…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 automatically switching 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 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.

Type/image	Item no.	Features	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	I
KTRRB-117.163 	MA601400	like KTRRB-117.128 but without 3-stage fan output and 3-stage fan switch	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	I

Accessories: Adaptor plate for mounting on flush-mounted socket JZ-17, terminal strips VOOxx (see page 107/141), compatible valve actuators ZBOOA (see page 144), compatible 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).

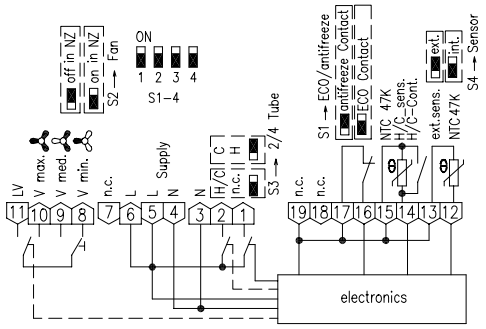
*With ECO operation, the neutral zone (2 K) is extended by the ECO zone (+/- 3 K). ECO operation is a savings mode that should be controlled, for example, via a window contact and/or a timer.

Electronic climate controller, KTRRB

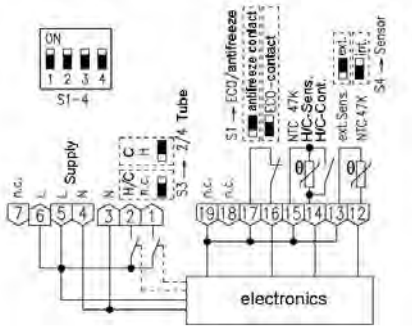
Surface-mounted installation – Design Berlin 3000

Accessories	Item no.	Features	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 like RAL 9010 **Housing material:**ABS plastic	II

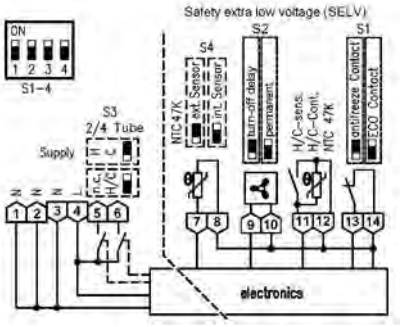
Circuit diagram KTRRB-117.128



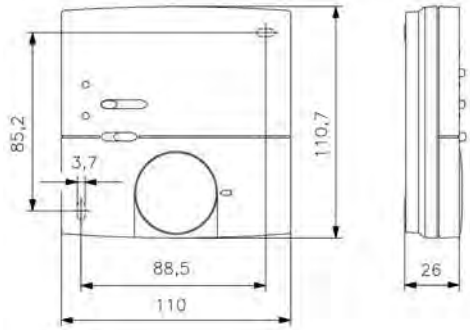
Circuit diagram KTRRB-117.163



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, like RAL 9010
Housing material:	ABS plastic
Ambient temperature:	0…40 °C
Operating voltage:	24 VAC/50 Hz, 24 VDC
Storage temperature:	–20…+70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Mounting/attachment:	Surface-/wall-mounting
Protection rating:	IP 30
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 hotels, offices and private homes. 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	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…29 °C **Setting range:** –8…+8 °C **Neutral zone:** Approx. 2 K **Pipe system compatibility:**2-pipe and 4-pipe	see page 122	I

Electronic climate controller for cooling ceilings, KTRRB

Surface-mounted installation – Design Berlin 2000

Type/image	Item no.	Features	Circuit diagram	PG
KTRRB-052.245 	DA420700	**General features:** ECO function; **"heating/cooling/ cooling interruption due to condensation/off" display; "sensor rupture, sensor short-circuit, frost protection" display;** "off with frost protection monitoring" operating mode; relative scale; **"off/ comfort/ECO" switch** **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 range:** 13 … 29 °C **Setting range:** –8 … +8 °C **Neutral zone:** Approx. 2 K **Pipe system compatibility:** 2-pipe and 4-pipe Replacement for KTRRB-040.213	see page 122	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.

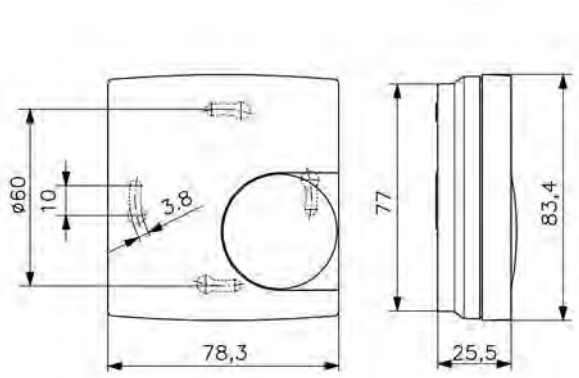
Accessories: suitable valve actuators ZBOOA-040.100 (see page 144), suitable external sensors ("Sensor 2"); see "Sensor Technology").

Accessories	Item no.	Features	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 2 x 0.5 mm² **Box contents:** sensor, 2 clips for cooling pad	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 2 x 0.5 mm² **Box contents:** sensor, 2 clips for cooling pad, 2 cable ties	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 2 x 0.5 mm² **Box contents:** sensor, 2 cable ties	I

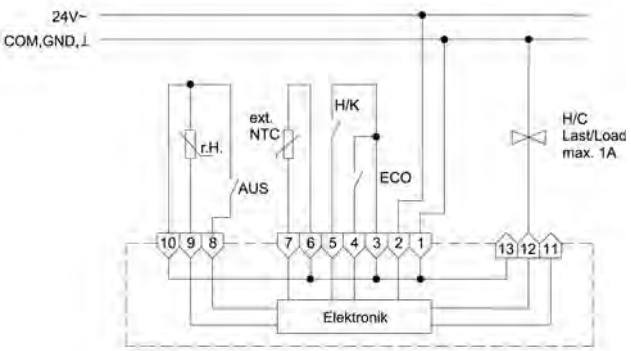
Electronic climate controller for cooling ceilings, KTRRB

Surface-mounted installation – Design Berlin 2000

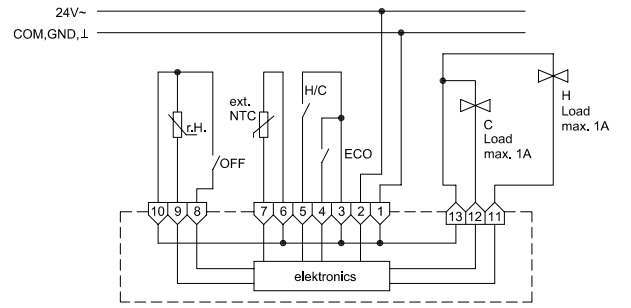
KTRRB



KTRRB-052.24x connection in a 2-pipe system



KTRRB-052.24x connection in a 4-pipe system

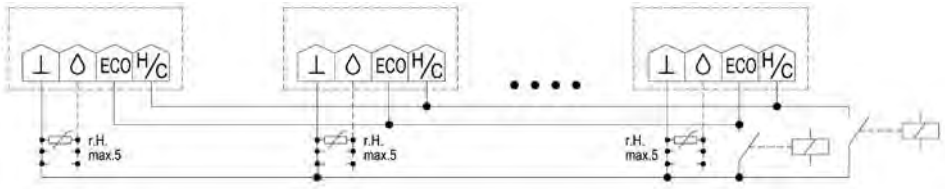


Important note:

The inflow ducts of TPS-1 and TPS-2 are closed before shipping to avoid them becoming dirty 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:

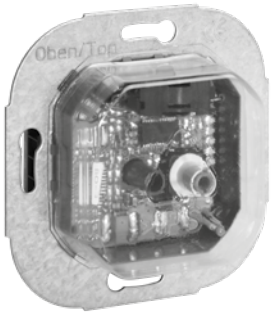
Laying parallel to conductors carrying a mains voltage can result in faults. The use of shielded conductors reduces sensitivity to electro-magnetic fields.



Parallel wiring for heating/cooling changeover and/or ECO for several controllers (max. 20 controllers)

Electronic climate controller for cooling ceilings, KTRRU

– with internal and external (optional) temperature sensor – flush-mounted installation – Design Berlin UP



Technical data

Design:	Berlin UP (flush-mounted)
Housing material:	PC plastic
Operating voltage:	24 VAC/50 Hz, 24 VDC
Ambient temperature:	0…40 °C
Storage temperature:	–20…+70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Protection rating:	IP 30
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 ... 29 °C
Setting range:	–8 ... +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 (changeover 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	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 cover set 50 x 50 mm or 55 x 55 mm in almost all surface switch ranges (deep flush-mounted socket recommended) **Accessories:** Cover sets are offered in several design variants (see “Overview”, page 125) and are not included in the delivery scope. **Matching set no.:** JZ-007.xxx, e.g.: cover set 50 x 50 mm, pure white, glossy: JZ-007.000 cover set 55 x 55 mm, 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).	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.

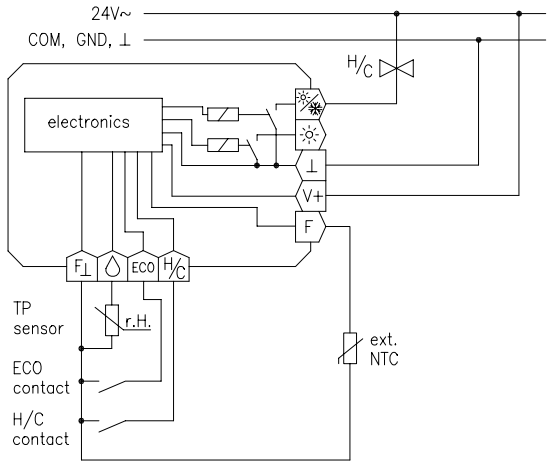
Accessories: suitable valve actuators ZBOOA-040.100 (see page 144), dew point sensor TPS 1/TPS 2/TPS 3 (see page 136), suitable external sensors (“Sensor 2”); see “Sensor Technology”).

Electronic climate controller for cooling ceilings, KTRRU

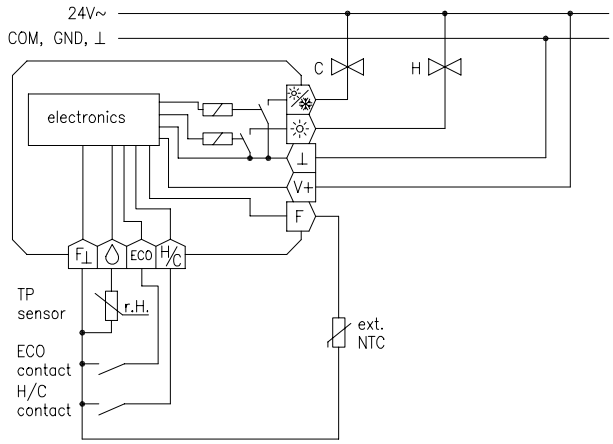
– with internal and external temperature sensor – flush-mounted installation – Design Berlin UP

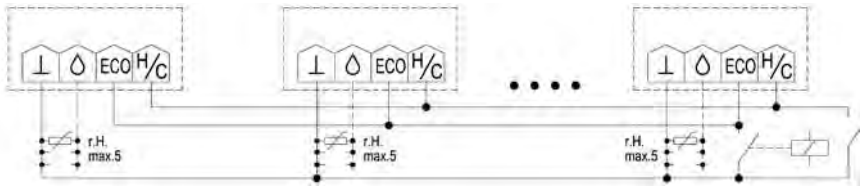
Accessories	Item no.	Features	PG
JZ-090.900 	VV000025	**General features:** alre frame “Berlin” (neutral) for all flush-mounted controllers with cover 50 x 50 mm **Design:** Berlin **Surface finish:** glossy **Housing colour:** pure white like RAL 9010 **Housing material:** PC plastic	I
JZ-090.910 	VV000010	**General features:** alre frame “Berlin” (neutral) for all flush-mounted controllers with cover 50 x 50 mm **Design:** Berlin **Surface finish:** glossy **Housing colour:** pearl white like RAL 1013 **Housing material:** PC plastic	I

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 cover sets **50 x 50 mm**

Basic type	Cover set 50 x 50 mm pure white (RAL 9010) glossy (JZ-xxx.000)		Cover set 50 x 50 mm pure white (RAL 9010) matt (JZ-xxx.001)		Cover set 50 x 50 mm pearl white (RAL 1013) glossy (JZ-xxx.010)		Cover set 50 x 50 mm traffic/studio white (RAL 9016) glossy (JZ-xxx.020)		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	I
Cover sets for function without switch	JZ-008.000	UN990021	JZ-008.001	UN990023	JZ-008.010	UN990025	JZ-008.020	UN990079	I
FHY 101.060#00	JZ-021.000	UN990039	JZ-021.001	UN990044	JZ-021.010	UN990049	JZ-021.020	UN990081	I
Frames									
alre frame	JZ-090.900	VV000025			JZ-090.910	VV000010			I

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

alre frame “Berlin” (JZ-090.900)

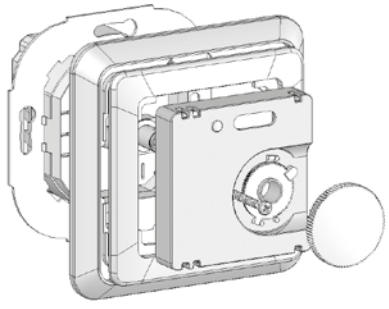
Cover set (example), individually foil-wrapped

all basic types and suitable cover sets **55 x 55 mm**

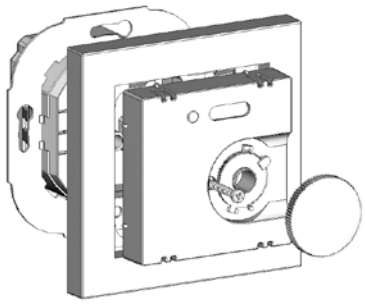
Basic type	Cover set 55 x 55 mm pure white (RAL 9010) glossy (JZ-xxx.100)		Cover set 55 x 55 mm pure white (RAL 9010) matt (JZ-xxx.101)		Cover set 55 x 55 mm pearl white (RAL 1013) glossy (JZ-xxx.110)		Cover set 55x55 mm traffic/studio white (RAL 9016) glossy (JZ-xxx.120)		PG
	Cover set	Item no.	Cover 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	I
Cover sets for function without switch	JZ-008.100	UN990027	JZ-008.101	UN990029	JZ-008.110	UN990031	JZ-008.120	UN990094	I
FHY 101.060#00	JZ-021.100	UN990054	JZ-021.101	UN990059	JZ-021.110	UN990064	JZ-021.120	UN990096	I

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 page 126).

KTRRU with 50 x 50 insert frame



KTRRU without 55 x 55 insert frame



Adaptation of alre flush-mounted controllers

Manufacturer	Range	Colour RAL 9010 (surface finish)	Adaptation possible using “55 x 55” cover set (without insert frame)	Only adaptation with “50 x 50” cover set requires an insert frame from the manufacturer
BERKER	S.1	polar white (matt)	✓	1109 19 19
BERKER	S.1	polar white (glossy)	✓	1109 90 89
BERKER	Arsys	polar white (glossy)		1108 01 69
BERKER	B.3	aluminium/polar white (matt)	✓	1109 19 19
BERKER	B.3	aluminium/polar white (glossy)	✓	1109 90 89
BERKER	B.7	glass/polar white (matt)	✓	1109 19 19
BERKER	B.7	glass/polar white (glossy)	✓	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)	✓	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)	✓	3630 84
ELSO	Fashion/Riva/Scala	pure white (glossy)		2030 84
GIRA	rocker switch	pure white (glossy)		0282 112
GIRA (System 55)	Standard/E 2	pure white (semi-gloss)	✓	0282 27
GIRA (System 55)	Standard/E2/E3	pure white (glossy)	✓	0282 03
GIRA (System 55)	E 22	pure white (glossy)	✓	0282 03
GIRA (System 55)	Event	pure white (semi-gloss) + opaque...	✓	0282 27
GIRA (System 55)	Event	pure white (glossy) + opaque...	✓	0282 03
GIRA (System 55)	Esprit	pure white (semi-gloss) + glass, aluminium...	✓	0282 27
GIRA (System 55)	Esprit	pure white (glossy) + glass, aluminium...	✓	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)	✓	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)	✓	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)	✓	5181 19
MERTEN (System M)	M-Smart, M-Plan, M-Pure	polar white (glossy)	✓	5185 19
MERTEN (System Basis)	1-M/Atelier-M	polar white (glossy)	✓	5185 19
MERTEN (System Design)	Artec/Antik	polar white (glossy)		5160 99
MERTEN	1-M/M-Smart/M-Plan/M-Pure/D-Life	active white – see RAL 9016 below		
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 “55 x 55” cover set (without insert frame)	Only adaptation with “50 x 50” 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)		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)	✓	5185 25
MERTEN	1-M/Atelier-M	active white (RAL 9016, glossy)	✓	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 four plastic tabs located at the rear of the frame

NOTE: Most light switches are designed in the colour “like 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.

“50 x 50 controller”: The housing covers of the 50 x 50 controllers are 50 x 50 mm in size. Using a 50 x 50-mm insert frame, the 50 x 50 controllers can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50 x 50-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 50 x 50 cover set.

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

All information regarding switch manufacturers” product lines and item numbers was last updated in 12/2019 | No liability is assumed for the information provided. | Technical specifications subject to change.
An adaptation list for RAL 1013 switch ranges is available from our website at www.alre.de.

Electronic climate controller with timer KTRRUu – 230 VAC

Flush-mounted installation – Design Berlin UP

Technical data

Design:	Berlin UP (flush-mounted)
Housing material:	PC, PMMA, ABS plastic
Ambient temperature:	0 … 40 °C
Storage temperature:	–20 … +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Protection rating:	IP 30
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 … 10 V max. 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 … 40 °C
Setting range:	Standard setting range for heating (5 … 30 °C), second setting range for cooling (18 … 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.

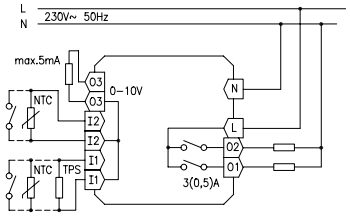
The unit can control up to 5 valve actuators (normally open or normally closed) per output. In 2-pipe operation, the operating mode can be changed via an external contact (changeover) or a temperature sensor. The clock can serve as a master for other controllers for switching to ECO mode.

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 rocker 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 are available for projects as well as the colors anthracite and aluminum on request.

Type/image	Item no.	Features	Circuit diagram	PG
KTRRUu 217.456#21 (230 VAC) 	UA220000	**Surface finish:** glossy **Housing colour:** pure white like 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 cover 50 x 50 mm in almost all rocker 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, cover 50 x 50 mm, pure white (like RAL 9010), glossy, alre frame “Berlin”		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.

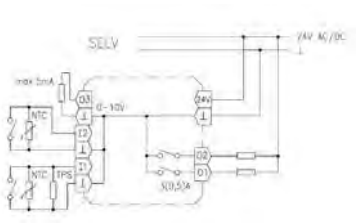
Electronic climate controller with timer KTRRUu – 230 VAC

Flush-mounted installation – Design Berlin UP

Type/image	Item no.	Features	Circuit diagram	PG
KTRRUu 217.456#07 (230 VAC) 	UA220002	like KTRRUu 217.456#21 but scope of delivery as follows: Controller, cover **50 x 50** mm **pure white** (like RAL 9010), **glossy,** without frame		I
KTRRUu 217.456#09 (230 VAC) 	UA220003	Like KTRRUu 217.456#21 but scope of delivery as follows: controller, cover 50 x 50 mm, **pearl white** (like RAL 1013), **glossy,** without frame		I
KTRRUu 217.456#27 (230 VAC) 	UA220004	like KTRRUu 217.456#21 but scope of delivery as follows: Controller, cover **50 x 50** mm **traffic/ studio white** (like RAL 9016), **glossy,** without frame		I
KTRRUu 217.456#28 (230 VAC) 	UA220007	like KTRRUu 217.456 but scope of delivery as follows: Controller, cover **for use with BUSCH-JAEGER Reflex SI/SI Linear pure white** (like RAL 9010), **glossy,** without frame		I
KTRRUu 217.456#55 (230 VAC) 	UA220005	like KTRRUu 217.456#21 but scope of delivery as follows: Controller, cover **55 x 55** mm **pure white** (like RAL 9010), **glossy,** without frame		I
KTRRUu 217.456#56 (230 VAC) 	UA220009	like KTRRUu 217.456#21 but scope of delivery as follows: Controller, cover **55 x 55** mm **pure white** (like RAL 9010), **matt** without frame		I
KTRRUu 217.456#57 (230 VAC) 	UA220006	like KTRRUu 217.456#21 but scope of delivery as follows: Controller, cover **55 x 55** mm **pearl white** (like RAL 1013), **glossy,** without frame		I
KTRRUu 217.456#59 (230 VAC) 	UA220008	like KTRRUu 217.456#21 but scope of delivery as follows: Controller, cover **55 x 55** mm **traffic/ studio white** (like RAL 9016), **glossy,** without frame		I

Electronic climate controller with timer KTRRUu – 24 VAC/VDC

Flush-mounted installation – Design Berlin UP

Type/image	Item no.	Features	Circuit diagram	PG
KTRRUu 257.456#21 (24 VAC/VDC) 	UA220100	like KTRRUu 217.456#21 but with: **Operating voltage:** 24 VAC/50 Hz, 24 VDC **Protection class:** III **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) for controlling an rpm-controlled fan		I
KTRRUu 257.456#07 (24 VAC/VDC) 	UA220103	like KTRRUu 257.456#21 but scope of delivery as follows: Controller, cover **50 x 50** mm **pure white** (like RAL 9010), **glossy,** without frame		I
KTRRUu 257.456#09 (24 VAC/VDC) 	UA220104	like KTRRUu 257.456#21 but scope of delivery as follows: Controller, cover **50 x 50** mm **pearl white** (like RAL 1013), **glossy,** without frame		I
KTRRUu 257.456#27 (24 VAC/VDC) 	UA220105	like KTRRUu 257.456#21 but scope of delivery as follows: Controller, cover **50 x 50** mm **traffic/ studio white** (like RAL 9016), **glossy,** without frame		I
KTRRUu 257.456#28 (24 VAC) 	UA220108	like KTRRUu 257.456#21 but scope of delivery as follows: Controller, cover **for use with BUSCH-JAEGER Reflex SI/SI Linear pure white** (like RAL 9010), **glossy,** without frame		I
KTRRUu 257.456#55 (24 VAC/VDC) 	UA220106	like KTRRUu 257.456#21 but scope of delivery as follows: Controller, cover **55 x 55** mm **pure white** (like RAL 9010), **glossy,** without frame		I
KTRRUu 257.456#56 (24 VAC/VDC) 	UA220110	like KTRRUu 257.456#21 but scope of delivery as follows: controller, cover 55 x 55 mm, **pure white** (like RAL 9010), **matt,** without frame		I
KTRRUu 257.456#57 (24 VAC/VDC) 	UA220107	like KTRRUu 257.456#21 but scope of delivery as follows: Controller, cover **55 x 55** mm **pearl white** (like RAL 1013), **glossy,** without frame		I
KTRRUu 257.456#59 (24 VAC/VDC) 	UA220109	like KTRRUu 257.456#21 but scope of delivery as follows: Controller, cover **55 x 55** mm **traffic/ studio white** (like RAL 9016), **glossy,** without frame		I

Accessories: suitable valve actuators ZBOOA-040.100 (see page 144), dew point sensor TPS 1/TPS 2/TPS 3 (see page 136), suitable external sensors (“Sensor 2”); see “Sensor Technology”).

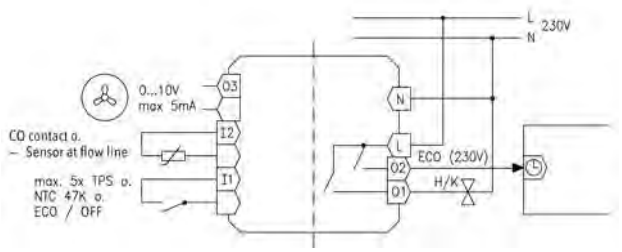
Electronic climate controller with timer KTRRUu

Flush-mounted installation – Design Berlin UP

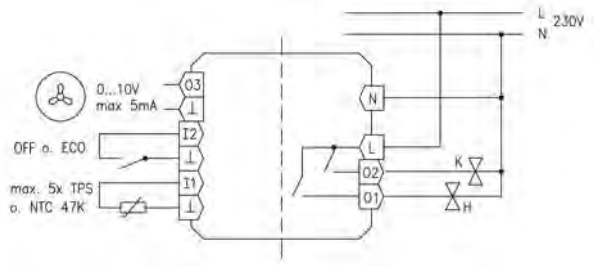
Accessories	Item no.	Features	PG
JZ-090.900 	VV000025	**Design:** Berlin **Surface finish:** glossy **Housing colour:** pure white like RAL 9010 **Housing material:** PC plastic **General features:** alre frame “Berlin” (neutral) for all flush-mounted controllers with cover 50 x 50 mm	I
JZ-090.910 	VV000010	**Design:** Berlin **Surface finish:** glossy **Housing colour:** pearl white like RAL 1013 **Housing material:** PC plastic **General features:** alre frame “Berlin” (neutral) for all flush-mounted controllers with cover 50 x 50 mm	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.

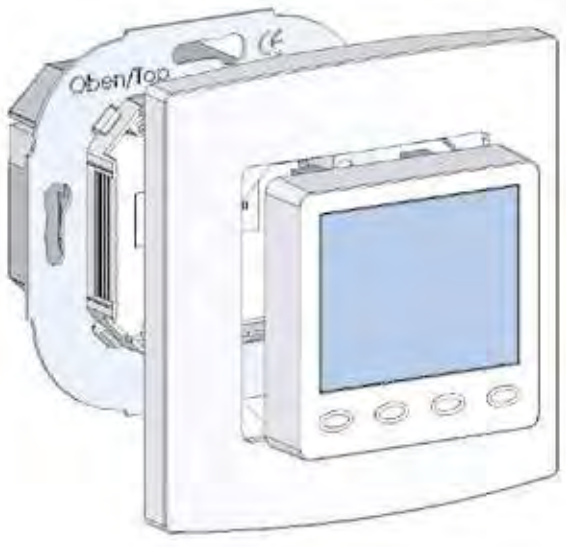
KTRRUu application example – 2-pipe system (230-V version)



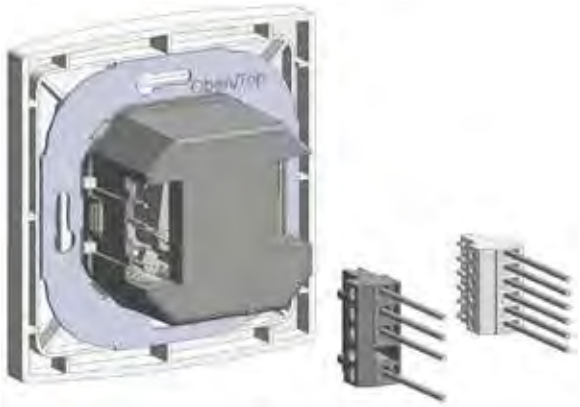
KTRRUu application example – 4-pipe system (230-V version)



KTRRUu with alre frame “Berlin”



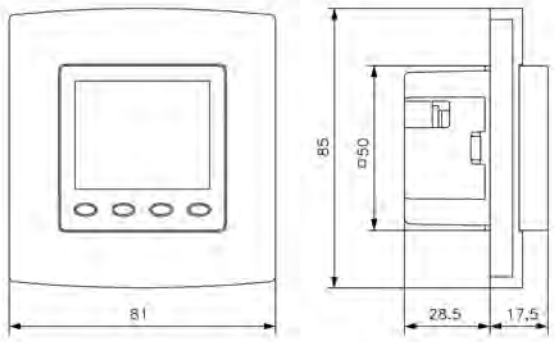
pluggable screw-type terminals



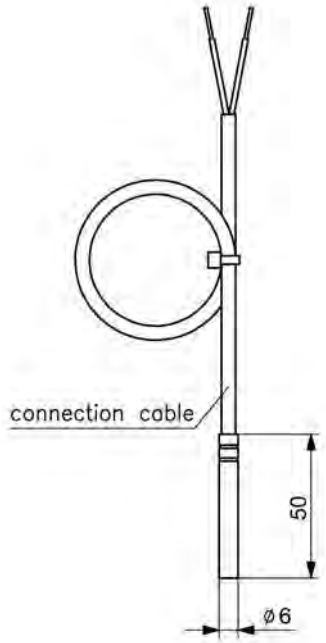
Electronic climate controller with timer KTRRUu

Flush-mounted installation – Design Berlin UP

KTRRUu with alre frame “Berlin”



KF-2



Other benefits:

- Pluggable screw-type terminals facilitate quick and easy assembly
- Illuminated, graphics-capable display
- Automatic adjustment to standard/daylight savings time
- Learning 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 operation” indication (LED orange)
- “Cooling operation” indication (LED blue)

Adaptation of alre flush-mounted controllers KTRRUu 2x7.456

Manufacturer	Range	Colour RAL 9010 (surface finish)	Adaptation in switch range “55 x 55” possible using ...	“50 x 50” 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	rocker switch	pure white (glossy)		KTRRUu 2x7.456#07 + 0282 112
GIRA (System 55)	Standard/E 2	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)	E 22	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 (System Design)	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 “55 x 55” possible using...	To adapt KTRRUu in size “50 x 50”, 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 four plastic tabs located at the rear of the frame.

NOTE: Most light switch ranges are designed in a colour like 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.

“50 x 50 controller”: The housing covers of the 50 x 50 controllers are 50 x 50 mm in size. Using a 50 x 50-mm insert frame, the 50 x 50 controllers can be integrated into nearly all light switch ranges in accordance with DIN 49075. The 50 x 50-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 “50 x 50””.

“55 x 55 controller”: The housing covers of the 55 x 55 controllers are 55 x 55 mm in size. Many light switch ranges have inner dimensions of 55 x 55 mm. Therefore, the 55 x 55 controllers can be installed directly in the light switch frame without the use of an insert frame. See the column “Adaptation in switch range (55 x 55)” to determine whether the 55 x 55 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 12/2019 | No liability is assumed for the information provided. | Technical specifications subject to change.
An adaptation list for RAL 1013 switch ranges is available from our website at www.alre.de.

Continuous electronic climate controller, KTRVB

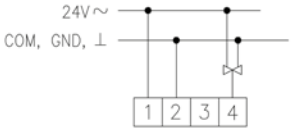
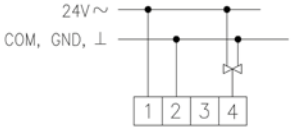
Surface-mounted installation – Design Berlin 2000

Technical data

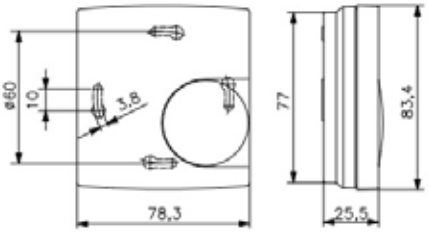
Design:	Berlin 2000
Surface finish:	matt
Housing colour:	pure white, like RAL 9010
Housing material:	ABS plastic
Storage temperature:	–20…+70 °C
Operating voltage:	24 VDC, 24 VAC, 50 Hz
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Mounting/attachment:	Surface-/wall-mounting
Protection rating:	IP 30
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.

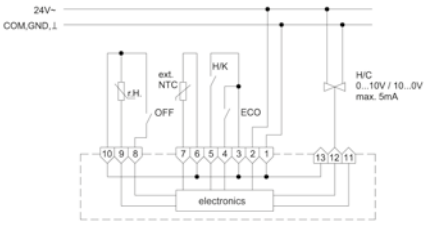
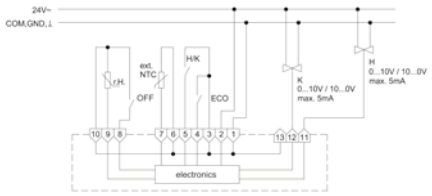
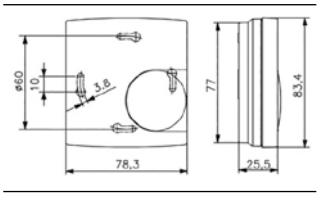
Type/image	Item no.	Features	Circuit diagram	PG
KTRVB-048.100 	DA450000	**General features:** scale: degrees Celsius **Ambient temperature:** 0…50 °C **Output signal:** consistently 0…10 V or 10…0 V (can be switched using a jumper), max. 5 mA **Sensor:** NTC internal **Control function:**Heating or cooling with adjustable p-band, aligned to 5 V at setpoint temperature **Control range:** 5…30 °C **Hysteresis:** 0 K, since control is always via the p-band in the range from +0.5 K…3 K (adjustable) **Pipe system compatibility:** 2-pipe		I
KTRVB-048.200 	DA450100	**General features:** Relative scale **Ambient temperature:** 0…50 °C **Output signal:** consistently 0…10 V or +10…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:** 13…29 °C **Setting range:** –3…+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…3 K (adjustable) **Pipe system compatibility:** 2-pipe		I

KTRVB



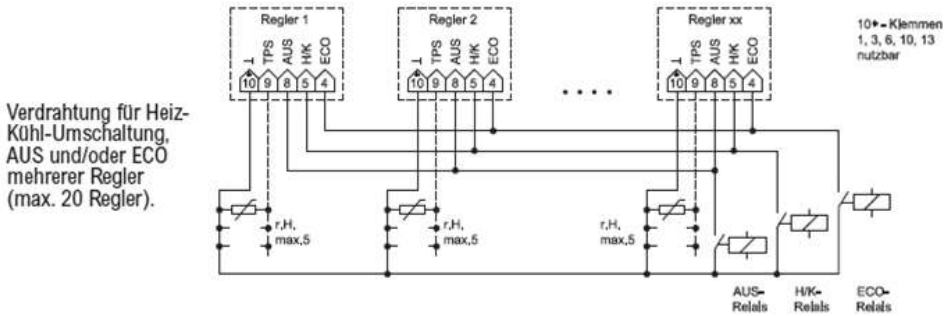
Continuous electronic climate controller, KTRVB

Surface-mounted installation – Design Berlin 2000

Type/image	Item no.	Features	Circuit diagram	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…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 “Sensors”)* **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…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	 	I
KTRVB-052.245 	DA451600	like KTRRB-052.244 but with **“off/comfort/cooling” switch**		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.*

KTRVB



Electronic dew point monitor, WFRRN

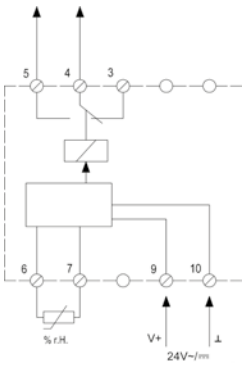
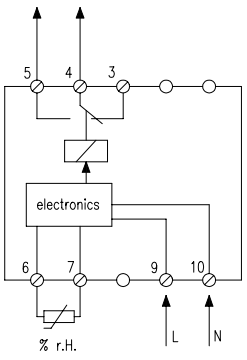
Standard rail mounting

Technical data

Surface finish:	matt
Housing colour:	light grey, like RAL 7035
Housing material:	PC plastic
Ambient temperature:	0…55 °C
Storage temperature:	–20…+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:	IP 20
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
Break point fixed:	approx. 98% relative humidity
General features:	“dew point triggering” display
Accessories:	dew point sensors (TPS)

Application

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

Type/image	Item no.	Features	Circuit diagram	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		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		I

Dew point sensor, TPS

Technical data		Application
Storage temperature:	–20…+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 extendable 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	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 extendable up to:** 50 m with 2 x 0.5 mm² **Box contents:** sensor, 2 clips for cooling pad	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 extendable up to:** 50 m with 2 x 0.5 mm² **Box contents:** sensor, 2 clips for cooling pad, 2 cable ties	I
TPS 3 	SN120000	**Mounting/Attachment:** attach to pipe by means of cable ties **Use:** Pipe systems transporting cold water **Sensor wire extendable up to:** 50 m with 2 x 0.5 mm² **Box contents:** sensor, 2 cable ties	I

TPS 3

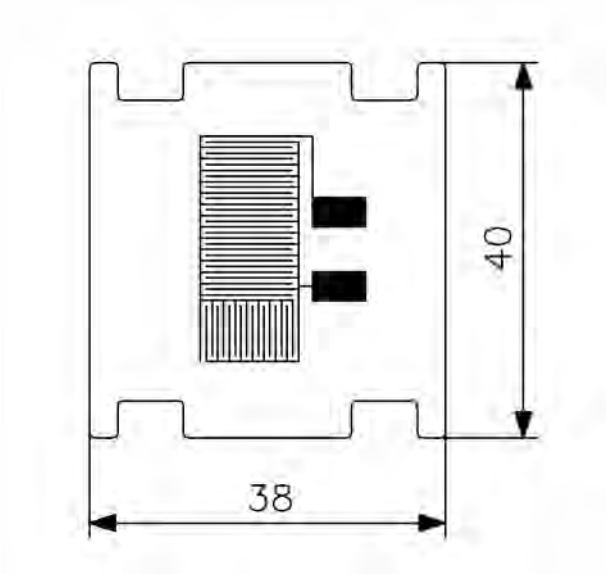
Important note: The inflow ducts of TPS-1 and TPS-2 are closed before shipping to avoid dirtying during assembly. After assembly, they must be shortened with a knife until they are flush with the wall or ceiling to ensure air circulation. The air ducts should be arranged such that soiling during operation 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.

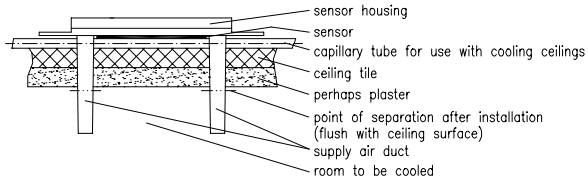
Dew point sensor method of operation:
If the surface temperature of the dew point sensor is equivalent to the dew point, a microscopic film of moisture forms on its surface. This film changes the resistance value of the dew point sensor to such an extent that the connected controller or monitor detects 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 most 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

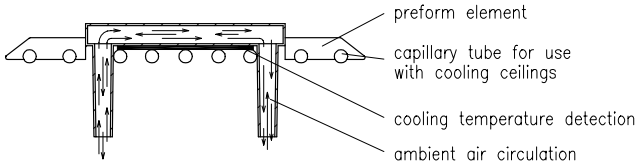
TPS 3



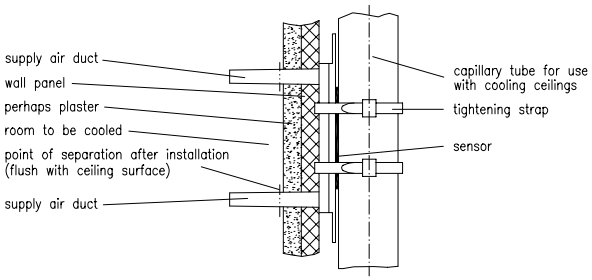
TPS 1



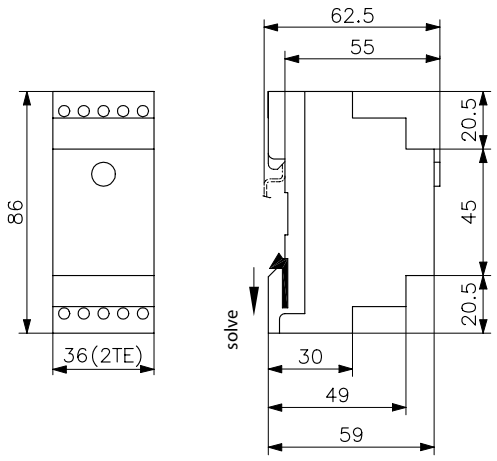
TPS 1



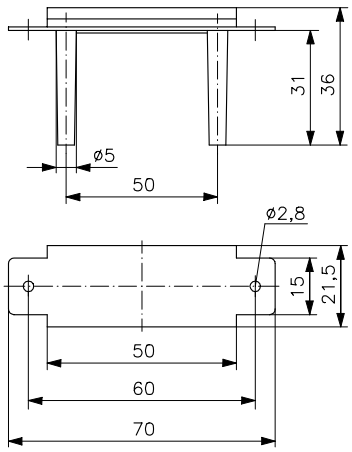
TPS 2



WFRRN



TPS 1/2



Mechanical room hygrostats / hygro-thermostats, RFSB, FHY, RKKDSB

Surface-mounted installation – Design Berlin 2000 / 3000 / UP

Technical data

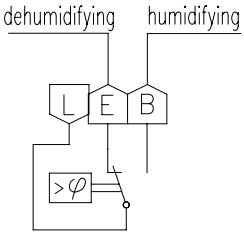
Storage temperature:	–20 … +60 °C (RFHSB-060.xxx –20 … +70 °C)
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals
Protection rating:	IP 30
Protection class:	II, if properly mounted
Safety and EMC:	according to DIN EN 60730
Min. switching current:	100 mA
Max. switching voltage:	230 VAC, 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” chapter

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.

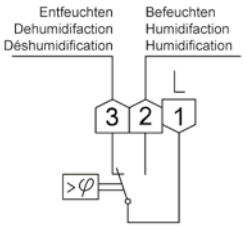
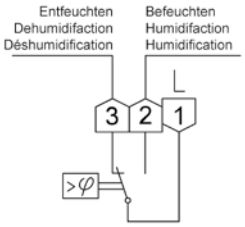
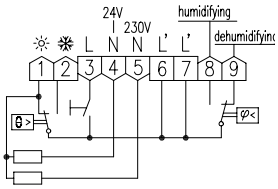
Hygro-thermostat: Monitoring and control of the relative humidity and the temperature in one device.

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

Type/image	Item no.	Features	Circuit diagram	PG
FHY 101.060#00 	UA020004	**General features:** external setting; protective cap; contact hazard protection cover plate **Design:** Berlin UP **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 … 50 °C **Mounting/Attachment:** in flush-mounted socket – adaptable with cover set 50 x 50 mm or 55 x 55 mm in almost all rocker 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 … 85% rel. humidity **Hysteresis:** Approx. 5% rel. humidity **Accessories:** Cover sets are offered in various designs (see the separate overview on page 125) and are not included in the delivery. **Suitable set no:** JZ-021.xxx, e.g.: cover set 50 x 50 mm, pure white, glossy: JZ-021.000 cover set 55 x 55 mm, pure white, glossy: JZ-021.100 **Scope of delivery:** controller, protective cap		I

Mechanical room hygrostats / hygro-thermostats, RFSB, FHY, RKKDSB

Surface-mounted installation – Design Berlin 2000 / 3000 / UP

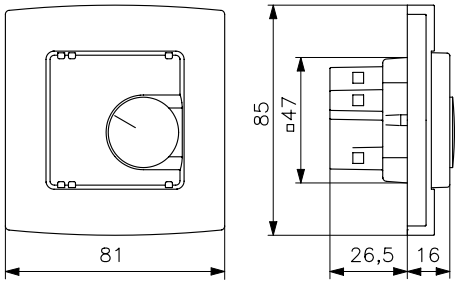
Type/image	Item no.	Features	Circuit diagram	PG
FHY 101.060#21 	UA020003	like FHY 101.060#21 but scope of delivery as follows: controller, alre frame “Berlin”, cover 50 x 50 mm, pure white (like RAL 9010), glossy		I
RFHSB-060.010 	MA020202	**General features:** External setting **Design:** Berlin 2000 **Surface finish:** matt **Housing colour:** pure white like RAL 9010 **Housing material:** ABS plastic **Operating voltage:** no auxiliary energy necessary **Ambient temperature:** 0 … 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		I
RFHSB-060.011 	MA020203	like RFHSB-060.010, but with internal setting		I
RKDSB-171.000 	MA220000	**General features:** “on/off” switch; external setting **Design:** Berlin 3000 **Surface finish:** matt **Housing colour:** pure white like RAL 9010 **Housing material:** ABS plastic **Operating voltage:** 24 VAC or 230 VAC selectable **Ambient temperature:** 0 ... 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 … 35 °C, Humidity 30 … 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		I

Mechanical room hygrostats / hygro-thermostats, RFSB, FHY, RKKDSB

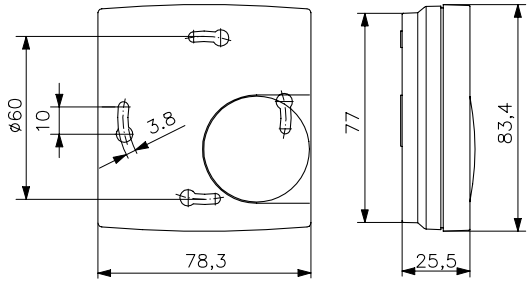
Surface-mounted installation – Design Berlin 2000 / 3000 / UP

Accessories	Item no.	Features	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 like RAL 9010 **Housing material:** ABS plastic	II

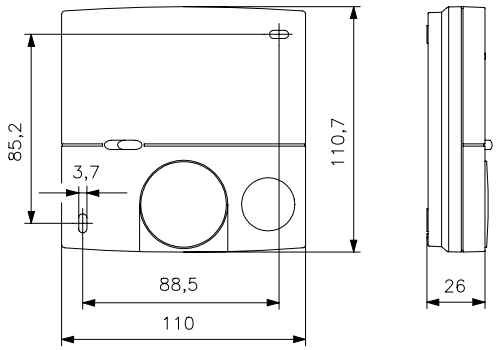
FHY



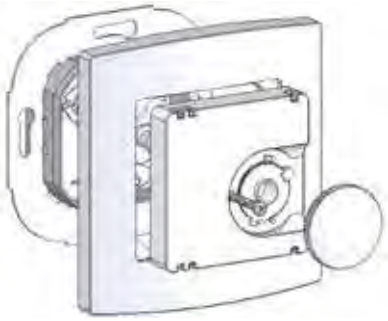
RFHSB



RKDSB

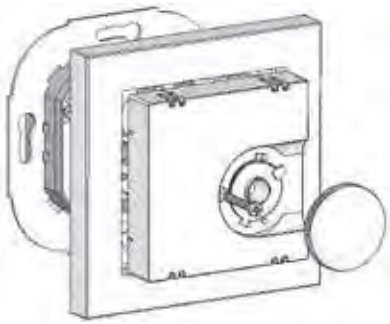


FHY with alre frame “Berlin” (#21 type)



FHY with insert frame

FHY without 55 x 55 insert frame



Terminal strip for heating / cooling manifold VOORL

for 5 or 8 room thermostats

Technical data

Surface finish:	matt
Housing colour:	light grey, like RAL 7035
Housing material:	ABS plastic
Operating voltage:	230 VAC, 50 Hz
Ambient temperature:	–10 … +50 °C
Storage temperature:	–20 … +70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	spring-cage terminals 0.2 mm² to 1.5 mm²; if end sleeves are used, 0.25 mm² to 0.75 mm²
Mounting/attachment:	Surface-/wall-mounting
Protection rating:	IP 20
Protection class:	II, if properly mounted
Max. switching voltage:	230 VAC, 50 Hz
Min. switching voltage:	230 VAC, 50 Hz
Accessories:	suitable valve actuators: ZBOOA-010.100 optional magnetic fastening set for simple installation in heating manifold: JZ-24

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.

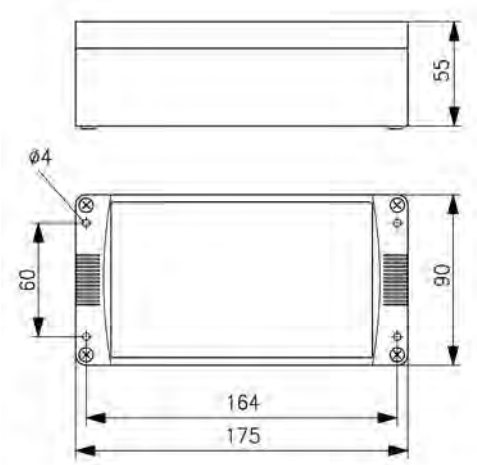
Type/image	Item no.	Features	PG
VOORL-215.008 	DA490100	**General features:** Terminal strip in housing for wiring up to 5 room thermostats and up to 20 actuators; up to 4 actuators per channel can be connected **Max. switching current:** output 1–5: 3 (1) A **Total of all the outputs (5 channels):** 3 (1) A **Switching power:** total of 920 W **ECO contact:** if clock regulators are used, up to 2 master-slave time zones can be defined; time zone 2 can be switched to ECO function via an external switching contact on terminal U **Control function:** Heating or cooling	I
VOORL-215.052 	DA490300	As for VOORL-215.008, but including pump module (max. 0.75 A)	I
VOORL-318.008 	DA490000	**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, up to 3 master-slave time zones can be defined; time zone 3 can be switched to ECO function via an external switching contact on terminal U **Control function:** Heating or cooling	I
VOORL-318.052 	DA490200	As for VOORL-318.008, but including pump module (max. 0.75 A)	I

Accessories	Item no.	Features	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)	II

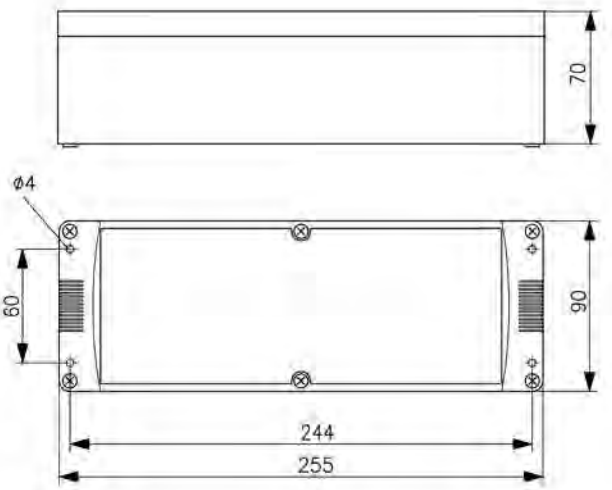
Terminal strip for heating / cooling manifold VOORL

for 5 or 8 room thermostats

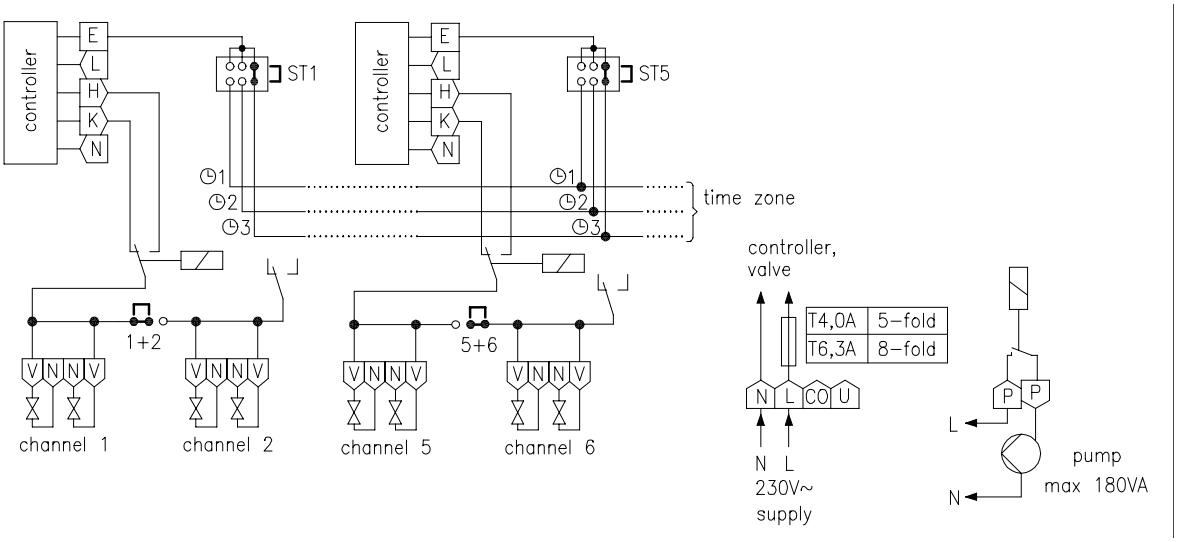
VOORL-215.xxx



VOORL-318.xxx



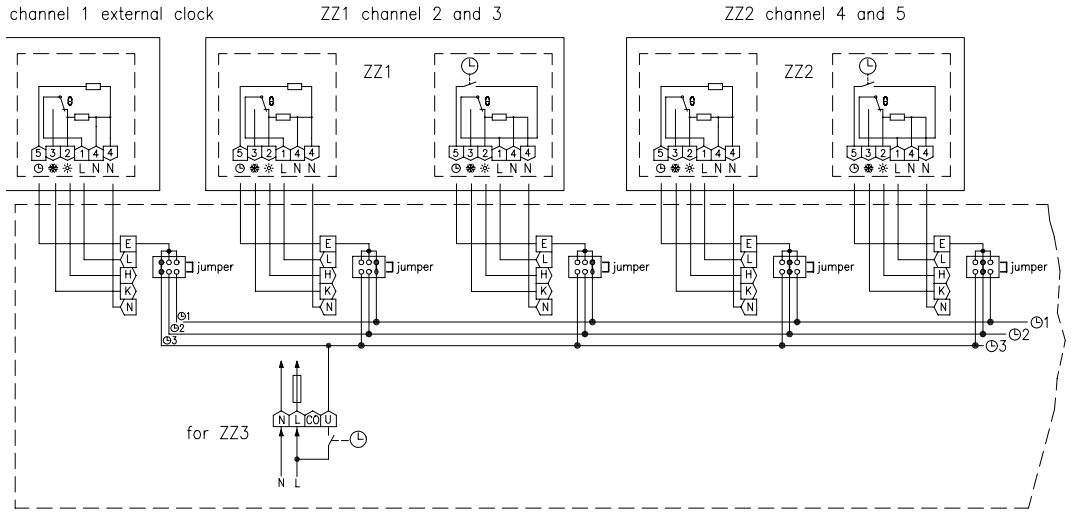
VOORL-318.xxx



Internal view VOORL-318.xxx

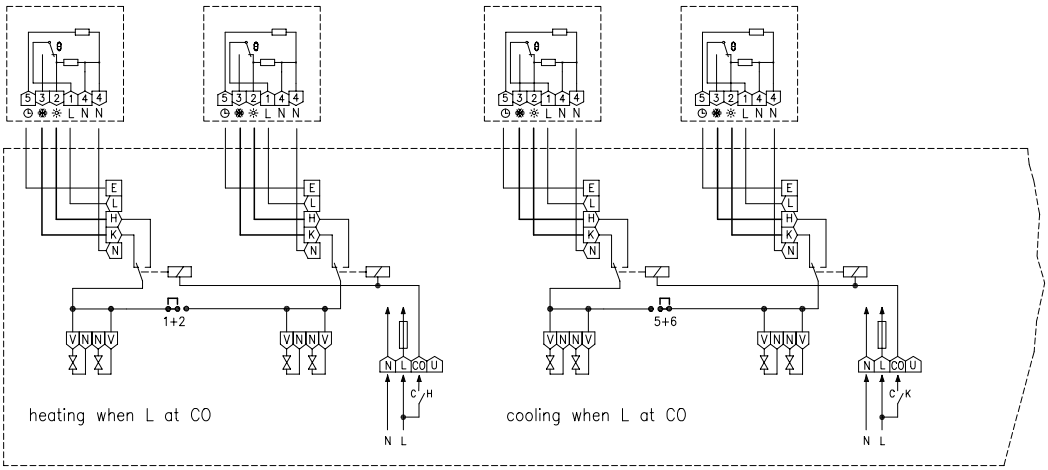
Notes and examples of wiring for VOORL terminal strips

Setting up time zones

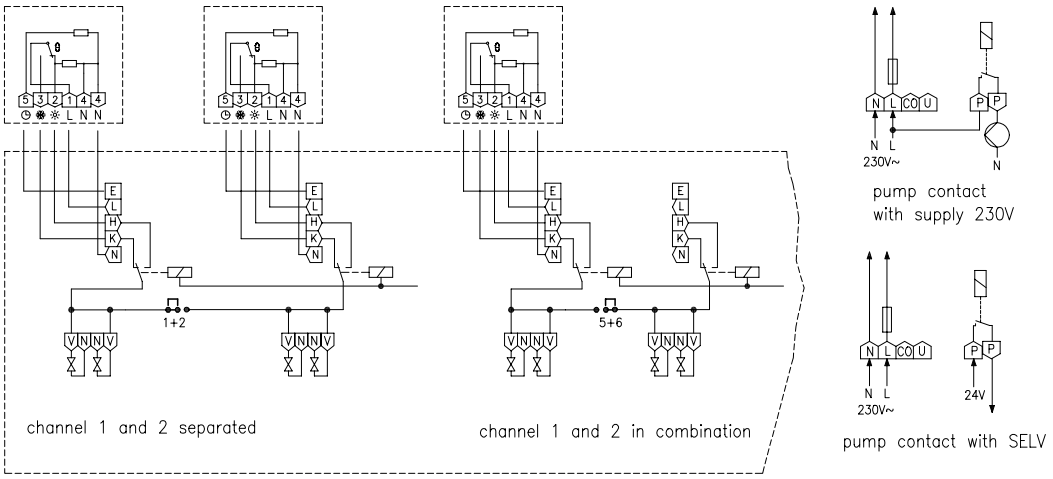


TZ = time zone

Inversion of the CO contact



Standard wiring and combination of channel 1/2



Electrothermal valve actuators

for heating, ventilation and air conditioning technology

Technical data

Housing colour:	pure white, like RAL 9010
Housing material:	PC plastic, GF (20%)
Ambient temperature:	0…50 °C
Storage temperature:	–20…+70 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Mounting/attachment:	M 30 x 1.5
Protection rating:	IP 42
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/2 x 0.5 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.

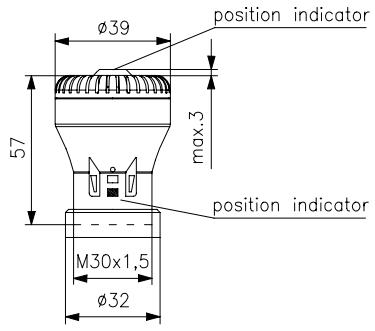
Type/image	Item no.	Features	PG
ZBOOA-010.100 	H9100010	**Operating voltage:** 230 V~, 50 Hz **Max. power consumption:** 70 W **Max. starting current:** approx. 0.3 A	I
ZBOOA-040.100 	H9100000	**Operating voltage:** 24 VDC or 24 VAC **Max. power consumption:** 12 W **Max. starting current:** approx. 0.5 A	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 careful design.

The double 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.

Valve actuator



Valve actuator with extended push rod

PLANT ENGINEERING

Technology for professionals,
versatile and robust.

PLANT ENGINEERING

Cutting edge, reliable technology for your systems.

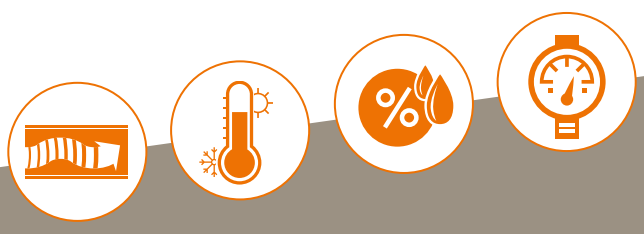
Plant engineering has to be robust and fail-safe, as modern heating, ventilation and industrial plants place high demands on components, including tough environments and increasingly intensive use.

Our product portfolio includes devices for monitoring humidity, flow and pressure in order to equip supply air systems, green houses, wind tunnels, etc.

Ultra safe technology 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 of 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, 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, limit controllers



PLANT ENGINEERING overview:

Capillary, wet room and frost protection thermostats, control cabinet controllers

Temperature controllers, electronic

Humidity, flow, pressure monitoring

Product innovation

Our new thermostats for plant engineering are now available in a modern design. They are suitable for optimum temperature control in various fields such as greenhouses, warehouses and industrial halls.

See page 154 onwards for more information

Plant engineering overview 1:

Plant room thermostats, wet room thermostats, capillary thermostats

Plant, capillary, wet room and double thermostats for indoor and outdoor use		RTKSA-100.010	RTKSA-101.010	RTKSA-100.110	RTKSA-101.110	JET-110 R	JET-110 RF	JET-120 R	JET-120 RF	RTKSA-114.110	RTKSA-114.010	PTR 40.000	JET-110 X	JET-110 XF	JET-120 XF	JET-120 X	JET-120 XG	JET-130 X	JET-130 XF	JET-130 XG	JET-133 X	JET-133 XF	JET-140 X	JET-140 XF	JET-143 XF	JET-150	JET-150 F	JET-153	JET-153 F	JMT-206 X
	Page	156	156	156	156	167	167	167	167	158	158	159	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	170
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 … +30 °C					x	x						x	x																
	–20 … +30 °C											x																		
	–10 … +40 °C	x	x								x																			
	0 … 50 °C			x	x					x																				
	0 … 60 °C							x	x						x	x	x													
	20 ... 80 °C																													x
	40 ... 100 °C																	x	x	x	x	x								
	70 ... 130 °C																						x	x	x					
	100 ... 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	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	IP 54	x	x	x	x					x	x																			
	IP 65					x	x	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		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			
	Temperature limiter																				x	x			x			x	x	

Plant engineering overview 2:

Universal capillary thermostats/capillary double thermostats

Universal capillary thermostats, function without supply voltage		RTKSA-000.100	RTKSA-000.200	RTKSA-000.300	RTKSA-001.100	RTKSA-001.200	RTKSA-001.300	RTKSA-001.301	RTKSA-002.310	RTKSA-002.410	RTKSA-003.310	RTKSA-004.310	RTKSA-010.200	RTKSA-013.210	RTKSA-014.210
	Page	160	160	160	160	160	160	160	160	160	160	160	164	164	164
Control range	0 … 50 °C	x			x										
	0 … 120 °C		x			x							x	x	2
	20 … 150 °C			x			x	x	x		x	x		x	
	30 … 110 °C									x					
	70 ... 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	IP 40	x	x	x	x	x	x	x					x	x	x
	IP 54								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	x	2	2

Plant engineering overview 3:
Air heater thermostats

Duct rod sensors with capillary system, function without supply voltage		JTL-2	JTL-8	JTL-11	JTL-8 NR	JTL-17 NR	JTU-50	JTU-1	JTU-3	JTU-20	JTU-5	JTU-6
	Page	178	178	178	178	178	180	180	180	180	180	180
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 ... 65 °C						x					
	20 ... 70 °C	x	x	x	x	x						
	20 ... 100 °C							x	x	x		
	60 ... 140 °C										x	x
	70 ... 95 °C				x	x						
	70 ... 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
Protection rating	IP 40	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

	Contact and frost protection thermostats	ATR 83.000	ATR 83.100	ATR 83.001	ATR 83.101	JTF-1	JTF-1/12	JTF-1 W	JTF-2	JTF-2 W	JTF-3	JTF-3 W	JTF-4	JTF-5	JTF-21	JTF-21/12	JTF-21 W	JTF-22	JTF-22/12	JTF-25	RTKSA-203.000	RTKSA-203.100	RTKSA-203.120	RTKSA-203.200	RTKSA-203.220	RTKSA-203.300	RTKSA-204.000	RTKSA-204.020	RTKSA-204.100	RTKSA-204.200	RTKSA-204.220	RTKSA-204.300
	Page	171	171	171	171	175	175	175	175	175	175	175	175	175	176	176	176	176	176	176	173	173	173	173	173	173	173	173	173	173	173
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
Capillary length	Capillary 1,800 mm										x	x	x								x						x	x			
	Capillary 3,000 mm													x						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
Control range	–10 … +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
	0 … 60 °C			x	x																										
	30 ... 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
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
Degree of protection	IP 20	x	x	x	x																										
	IP 40					x	x		x		x		x	x	x	x		x	x	x	x	x		x		x	x		x	x		x
	IP 65							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	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	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	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

Plant engineering overview 5:
Temperature controllers, electronic

	Electronic temperature controllers, digital controllers/ displays	ITR 79.402	ITR 79.404	ITR 79.405	ITR 79.408	ITR 79.503	ITR 79.504	ITR 79.508	ITR 79.600	ITR 79.804	ETR 77.008-5	ETR 77.009-5
	Page	184	184	184	184	184	184	184	184	184	186	186
Devices	Standard or top-hat rail controllers	x	x	x	x	x	x	x	x	x		
	Universal controllers										x	x
Control range	–50 … +50 °C										x	
	–35 … +15 °C	x										
	–10 … +40 °C				x			x				
	0 … 11 °C					x						
	0 … 60 °C		x				x			x		
	0 … 100 °C											x
	5 … 30 °C								2			
	35 ... 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	IP 20	x	x	x	x	x	x	x	x	x		
	IP 65										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		JSL-1E	JDW-3/JDW-3Z	JDW-5/JDW-5Z	JDW-10	JDL-111	JDL-112	JDL-115	JDL-116	JDL-116A	JSF-3E	JSF-4E	JSF-1E	JSF-1RE	JSF-2E	JSF-2RE	JSW-1/2	JSW-3/4	JSW-1	JPS-1	JPS-3	JPS-3 B	JPS-4	JPS-13
	Page	190	191	191	191	191	191	191	191	191	193	193	193	193	193	193	196	196	196	197	197	197	197	197
Devices	Wind indicator relays	x																						
	Differential pressure switches		x	x	x	x	x	x	x	x														
	Flow monitors										x	x	x	x	x	x	x	x	x					
	pressure switch																			x	x	x	x	x
Sensor element	Wind indicator	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
Switching range	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								
	1,5 (0,4) A, 12–250 V~		x	x	x																			
	1 (0,2) A, 12–24 V~ / ⎓		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
Degree of protection	IP 10																			x	x	x	x	x
	IP 54		x	x	x	x	x	x	x	x														
	IP 65	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

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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**.

Modern design and versatile applications

Universal controllers

Universal dual controllers

Plant room controllers

Frost protection controllers

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.

See page 160 onwards for more information on universal thermostats

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:	IP 54 (optionally IP 65)
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	PG
RTKSA-100.010	KA010000	–10…+40 °C	1.3 K	TR, external setting	II
RTKSA-101.010	KA010100	–10…+40 °C	1.3 K	TW, internal setting	II
RTKSA-100.110	KA010001	0…+50 °C	1.3 K	TR, external setting	II
RTKSA-101.110	KA010101	0…+50 °C	1.3 K	TW, internal setting	II

TR = temperature controller, TW = temperature monitor

Type comparison (old/new type)

Old alre types	Control range	Hysteresis	New alre types	Control range	Hysteresis
JET-40	0…+35 °C	1 K	**RTKSA-100.010**	–10…+40 °C	1.3 K
JET-40F	0…+35 °C	1 K	**RTKSA-101.010**	–10…+40 °C	1.3 K
JET-41	0…+70 °C	2 K	**RTKSA-100.110**	0…+50 °C	1.3 K
JET-41F	0…+70 °C	2 K	**RTKSA-101.110**	0…+50 °C	1.3 K

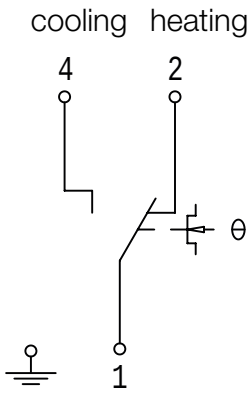
TR = temperature controller, TW = temperature monitor

Plant room thermostat RTKSA

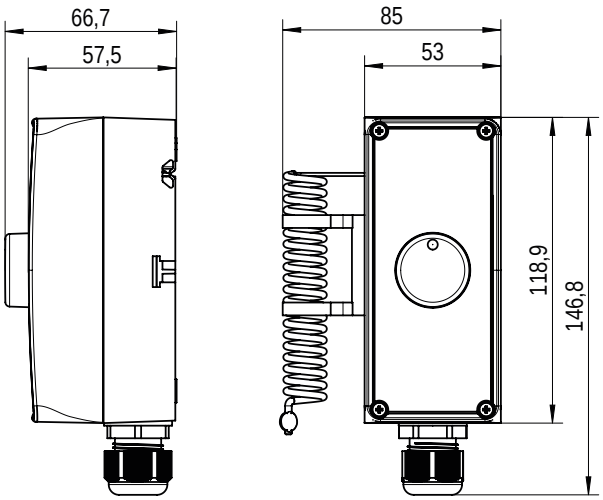
Capillary system – external sensors

RTKSA with internal setting

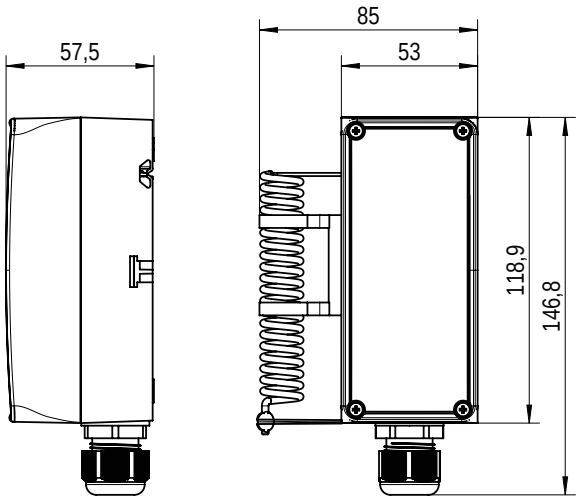
RTKSA



RTKSA-100.010/RTKSA-100.110



RTKSA-101.010/RTKSA-101.110



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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:	IP 54 (optionally IP 65)
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.	1st Control range	2nd Control range	Features	PG
RTKSA-114.110	KA011100	0…+50 °C (TW, internal)	0…+50 °C (TW, internal)	2 x internal setting	II
RTKSA-114.010	KA011101	–10…+40 °C (TW, internal)	–10…+40 °C (TW, internal)	2 x internal setting	II

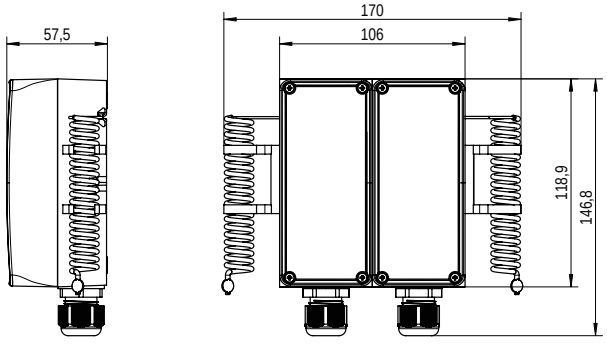
TW = temperature monitor

Type comparison (old/new type)

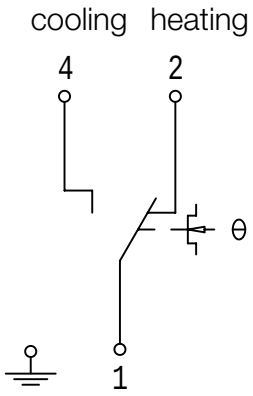
Old alre types	Control range	Hysteresis	New alre types	Control range	Hysteresis
JET-30	10…45 °C (external) TR 0 ...35 °C (internal) TW	approx. 1 K	**RTKSA-114.110**	0…+50 °C (internal) TW 0…+50 °C (internal) TW	1.3 K
JET-31	10…+45 °C (internal) TW 0…+35 °C (internal) TW	approx. 1 K			

TR = temperature controller, TW = temperature monitor

RTKSA



RTKSA (2x)



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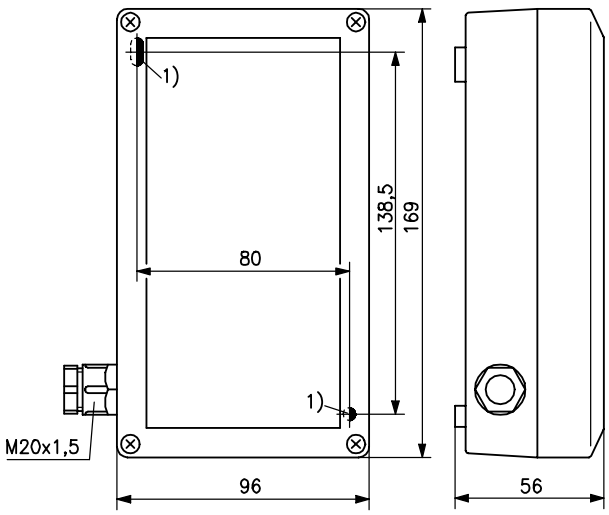
Wet room thermostat PTR 40

Bimetal

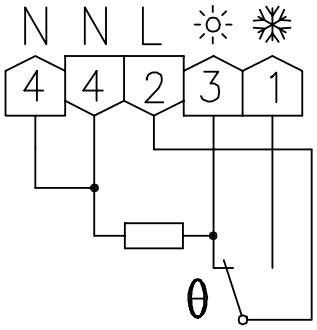
Technical data		Application
Housing colour:	grey (lower part like RAL 7016, upper part like RAL 7035)	Control and monitoring of temperatures of certain open spaces, for example, driveways or damp rooms (greenhouses, sheds, warehouses and basements, garages, etc.).
Ambient temperature:	–20 … +60 °C	
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing	
Operating voltage:	230 VAC, 50 Hz	
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 element:	bimetallic contact	
Control range:	–20 … +30 °C	
Hysteresis:	approx. 2 K at a temperature change of max. 4 K/h	
Electrical connection:	screw-type terminals 0.12 mm² to 2.5 mm²	
Mounting/attachment:	wall mounting	
Protection rating:	IP 65	
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	

Type	Item no.	Features	PG
PTR 40.000	A201410	switching contact changeover switch (toggler), control function heating or cooling, viewing window	II

PTR 40



PTR 40 …



Plant engineering

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 IP 40, RTKSA-xxx.x1x IP 54, optional IP 65
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.

Type testing by TÜV in accordance with DIN EN 14597

Type	Item no.	Control range	Hysteresis	Sensor Ø x L	Features	PG
RTKSA-000.100	KA000000	0…50 °C	1.3 K	6 x 175 mm	TR, external setting	II
RTKSA-000.200	KA000001	0…120 °C	3 K	6 x 87 mm	TR, external setting	II
RTKSA-000.300	KA000002	20…150 °C	9.1 K	6 x 56 mm	TR, external setting	II
RTKSA-001.100	KA000100	0…50 °C	1.3 K	6 x 175 mm	TW, internal setting	II
RTKSA-001.200	KA000101	0…120 °C	3 K	6 x 87 mm	TW, internal setting	II
RTKSA-001.300	KA000102	20…150 °C	9.1 K	6 x 56 mm	TW, internal setting	II
RTKSA-001.301	KA000103	20…150 °C	3.3 K	6 x 82 mm	TW, internal setting	II
RTKSA-002.310	KA000201	20…150 °C	-10… -15 K*	6 x 55 mm	TB, internal setting, external reset	II
RTKSA-002.410	KA000200	30…110 °C	-10…-15 K*	6 x 72 mm	TB, internal setting, external reset	II
RTKSA-003.310	KA000300	20…150 °C	-10…-15 K*	6 x 55 mm	STB, internal setting, external reset	II
RTKSA-004.310	KA000400	20…150 °C	–10 K	6 x 55 mm	STW, internal setting	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	PG
THK-2-100	KA969901	100 mm	nickel-plated brass	7.5 x 10 mm	Immersion sleeve	II
THK-2-120	KA969902	120 mm	nickel-plated brass	7.5 x 10 mm	Immersion sleeve	II
THK-2-200	KA969903	200 mm	nickel-plated brass	7.5 x 10 mm	Immersion sleeve	II
THK-2-280	KA969904	280 mm	nickel-plated brass	7.5 x 10 mm	Immersion sleeve	II
THK-2-600	KA969905	600 mm	nickel-plated brass	7.5 x 10 mm	Immersion sleeve	II
NTHK-2-100	KA969906	100 mm	V4A (1.4571)	7.5 x 10 mm	Immersion sleeve	II
NTHK-2-120	KA969907	120 mm	V4A (1.4571)	7.5 x 10 mm	Immersion sleeve	II
NTHK-2-200	KA969908	200 mm	V4A (1.4571)	7.5 x 10 mm	Immersion sleeve	II
NTHK-2-280	KA969909	280 mm	V4A (1.4571)	7.5 x 10 mm	Immersion sleeve	II
SWK-2-100	KA989901	100 mm	steel, nickel-plated	10.5 x 17 mm	Protection coil with flange plate	II
SWK-2-120	KA989902	120 mm	steel, nickel-plated	10,5 x 17 mm	Protection coil with flange plate	II
SWK-2-200	KA989903	200 mm	steel, nickel-plated	10.5 x 17 mm	Protection coil with flange plate	II

** I = minimum inner diameter / A = nominal outer diameter

See page 218–219 for pictures and dimension diagrams for immersion sleeves/protection coils

Accessories	Item no.	Features	PG
JZ-29	KA999901	Mounting set RTKSA for THK/NTHK/SWK individual controllers	II
JZ-31	KA999903	Mounting set RTKSA for pipe mounting contact controller (worm screw clamp)	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	**RTKSA-003.310**	20…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…65 °C	–8 K	**RTKSA-002.410**	30…110 °C	–10 K	THK-2-100 + JZ-29
KR 80.206 IP 54	30…65 °C	–8 K				THK-2-100 + JZ-29
KR 80.207	60…95 °C	–8 K				THK-2-100 + JZ-29
LR 80.207	60…95 °C	–8 K				SWK-2-100 + JZ-29
KR 80.208	85…120 °C	–8 K	**RTKSA-002.310**	20…150 °C	–10 K	THK-2-100 + JZ-29
KR 80.202	95…130 °C	–8 K				THK-2-100 + JZ-29
KR 80.203	95…130 °C	–8 K				THK-2-200 + JZ-29
LR 80.203	95…130 °C	–8 K				SWK-2-200 + JZ-29
KR 80.203 IP 54	95…130 °C	–8 K				THK-2-200 + JZ-29
WR 81.029-1	0…35 °C	0.5…1 K	**RTKSA-000.100**	0…50 °C	1.3 K	-
KR 80.003-1	0…35 °C	1 K				THK-2-200 + JZ-29
LR 80.003-1	0…35 °C	1 K				SWK-2-200
WR 81.009-2	0…70 °C	1 … 2 K	**RTKSA-000.200**	0…120 °C	3 K	-
KR 80.035-2	0…70 °C	2 K				THK-2-100 + JZ-29
KR 80.027-5	0…70 °C	5 K				THK-2-100 + JZ-29
LR 80.027-5	0…70 °C	5 K				SWK-2-100 + JZ-29
LR 80.035-2	0…70 °C	2 K				SWK-2-100 + JZ-29
KR 80.028-2	0…70 °C	2 K				THK-2-200 + JZ-29
LR 80.028-2	0…70 °C	2 K				SWK-2-200 + JZ-29
KR 80.029-2	0…70 °C	2 K				THK-2-280 + JZ-29
KR 80.029-2 V4A	0…70 °C	3 K				NTHK-2-280 + JZ-29
LR 80.029-2	0…70 °C	2 K				SWK-2-280 + JZ-29
KR 80.011-1 V4A	10…45 °C	1 K				NTHK-2-120 + JZ-29
KR 80.009-1 V4A	10…45 °C	1 K				NTHK-2-200 + JZ-29
KR 80.000-5	35…95 °C	5 K				THK-2-100 + JZ-29
KR 80.001-5	35…95 °C	5 K				THK-2-200 + JZ-29
KR 80.001-5 V4A	35…95 °C	5 K				NTHK-2-200 + JZ-29
KR 80.008-8	40…110 °C	8 K				THK-2-100 + JZ-29

Universal capillary thermostat RTKSA

Capillary system – **TÜV-tested**

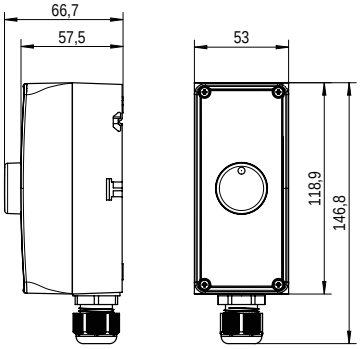
Type comparison (old/new type)

Old alre types	Control range	Hysteresis	New alre types	Control range	Hysteresis	Accessories
KR 80.006-8	50…130 °C	8 K	**RTKSA-000.300**	20…150 °C	9.1 K	THK-2-100 + JZ-29
WR 81.101-1	0…35 °C	0.5…1 K	**RTKSA-001.100**	0…50 °C	1.3 K	-
WR 81.129-1	0…35 °C	0.5…1 K				-
KR 80.108-1	0…35 °C	1 K				-
LR 80.108-1	0…35 °C	1 K				-
KR 80.109-1	0…35 °C	1 K				THK-2-200 + JZ-29
LR 80.109-1	0…35 °C	1 K				SWK-2-200 + JZ-29
WR 81.115-5	0…70 °C	4 K	**RTKSA-001.200**	0…120 °C	3 K	JZ-31
WR 81.109-2	0…70 °C	1…2 K				-
KR 80.116-2	0…70 °C	2 K				THK-2-100 + JZ-29
LR 80.116-2	0…70 °C	2 K				SWK-2-100 + JZ-29
KR 80.111-3	0…80 °C	1 K				THK-2-100 + JZ-29
KR 80.120-1	10…45 °C	1 K				THK-2-200 + JZ-29
LR 80.120-1	10…45 °C	1 K				SWK-2-200 + JZ-29
KR 80.100-5	35…95 °C	5 K	**RTKSA-001.301**	20…150 °C	3.3 K	THK-2-100 + JZ-29
KR 80.100-5 IP 54	35…95 °C	5 K				NTHK-2-100 + JZ-29
KR 80.101-5	35…95 °C	5 K				THK-2-200 + JZ-29
LR 80.101-5	35…95 °C	5 K				SWK-2-200 + JZ-29
KR 80.124-5	35…95 °C	5 K				THK-2-280 + JZ-29
KR 80.112-5	35…95 °C	8 K	**RTKSA-001.300**	20…150 °C	9.1 K	THK-2-600 + JZ-29
KR 80.102-8	40…110 °C	8 K				THK-2-100 + JZ-29
KR 80.103-8	40…110 °C	8 K				THK-2-200 + JZ-29
WR 81.117-5	50…130 °C	4 K				JZ-31
KR 80.106-8	50…130 °C	8 K				THK-2-100 + JZ-29

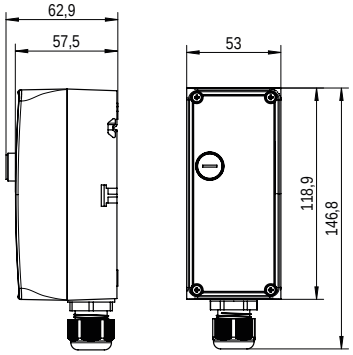
RTKSA with internal setting

RTKSA with internal setting and external reset

RTKSA TR



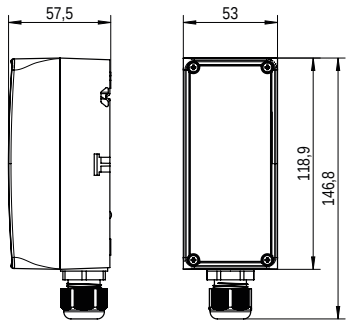
RTKSA TB/STB



Universal capillary thermostat RTKSA

Capillary system – **TÜV-tested**

RTKSA TW/STW



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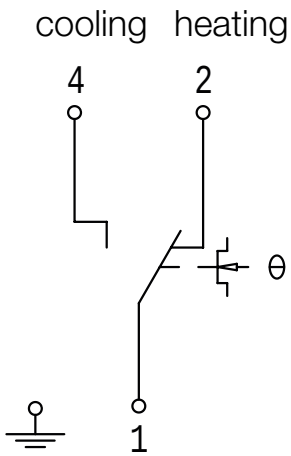
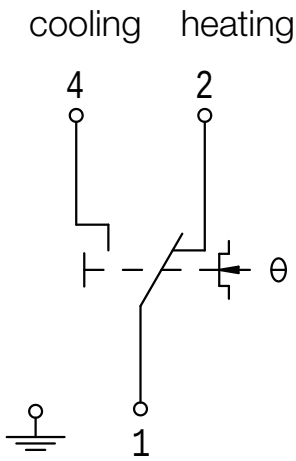
RTKSA-000.xxx/RTKSA-001.xxx/RTKSA-004.xxx



RTKSA-002.xxx/RTKSA-003.xxx



JZ-29

JZ-31

Universal capillary double thermostat RTKSA

Capillary system – **TÜV-tested**

Technical data

Colour:	Anthracite grey (similar to RAL7016), 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 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 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 Ø x L	Features	PG
RTKSA-010.200	KA001000	TR: 0…120 °C STB: 70…130 °C	TR: 3 K STB: -10…-15 K*	6 x 87 mm 6 x 66 mm	TR (external setting), STB (internal setting/external reset)	II
RTKSA-013.210	KA001200	TW: 0…120 °C TB: 20…150 °C	TW: 3 K TB: -10…-15 K*	6 x 87 mm 6 x 55 mm	TW (internal setting) TB (internal setting/external reset)	II
RTKSA-014.210	KA001100	TW: 0…120 °C TW: 0…120 °C	TW: 3 K TW: 3 K	6 x 87 mm 6 x 87 mm	2x TW (internal setting)	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	PG
THK-2-100x17	KA979901	100 mm	nickel-plated brass	14.8 x 17 mm	Immersion sleeve	II
THK-2-200x17	KA979902	200 mm	nickel-plated brass	14.8 x 17 mm	Immersion sleeve	II
NTHK-2-100x17	KA979903	100 mm	V4A (1.4571)	14.8 x 17 mm	Immersion sleeve	II
NTHK-2-200x17	KA979904	200 mm	V4A (1.4571)	14.8 x 17 mm	Immersion sleeve	II
SWK-2-100	KA989901	100 mm	steel, nickel-plated	10.5 x 17 mm	Protection coil with flange plate	II
SWK-2-200	KA989903	200 mm	steel, nickel-plated	10.5 x 17 mm	Protection coil with flange plate	II

** I = minimum inner diameter / A = nominal outer diameter
See page 218–219 for pictures and dimension diagrams for immersion sleeves/protection coils

Universal capillary double thermostat RTKSA

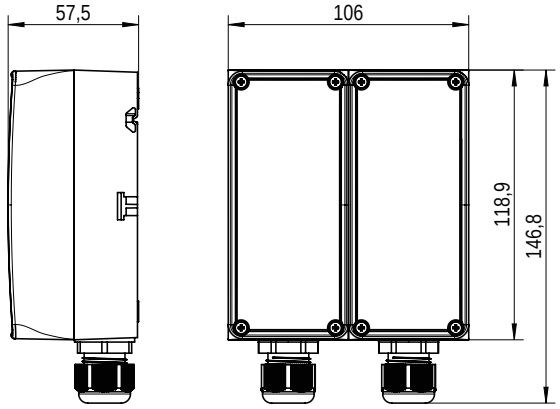
Capillary system – **TÜV-tested**

Accessories	Item no.	Features	PG
JZ-30	KA999902	Mounting set RTKSA for THK/NTHK/SWK double controllers	II

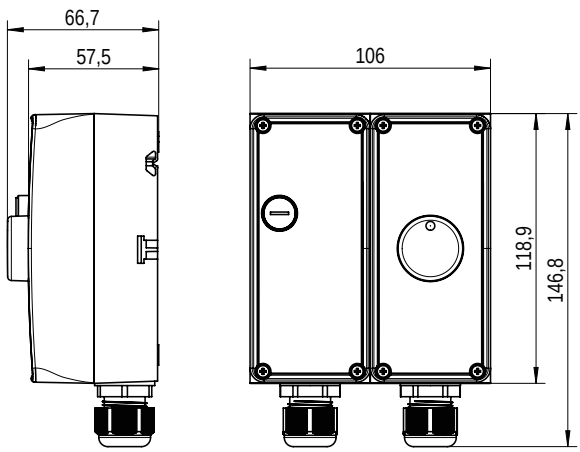
Type comparison (old/new type)

Old alre types	Control range	Hysteresis	New alre types	Control range	Hysteresis	Accessories
KR 85.100-5	TR 35…95 °C TW 35…95 °C	5 K 5 K				THK-2-100x17 + JZ-30
KR 85.406-2	TW 0…70 °C TW 0…70 °C	2 K 2 K				THK-2-100x17 + JZ-30
KR 85.101-5	TR 35…95 °C TW 35…95 °C	5 K 5 K				THK-2-200x17 + JZ-30
KR 85.102-5	TR 35…95 °C TW 50…130 °C	5 K 8 K	**RTKSA-014.210**	TW: 0…120 °C TW: 0…120 °C	3 K 3 K	THK-2-100x17 + JZ-30
KR 85.109-2	TR 0…70 °C TW 0…70 °C	2 K 2 K				THK-2-100x17 + JZ-30
KR 85.400-5	TW 35…95 °C TW 35…95 °C	5 K 5 K				THK-2-100x17 + JZ-30
KR 85.401-5	TW 35…95 °C TW 35…95 °C	5 K 5 K				THK-2-200x17 + JZ-30
KR 85.315-5	TR 35…95 °C STB fixed at 100 °C	5 K –20 K				THK-2-200x17 + JZ-30
KR 85.311-2	TR 0…70 °C STB fixed at 75 °C	2 K –20 K				THK-2-100x17 + JZ-30
KR 85.312-2	TR 0…70 °C STB fixed at 75 °C	2 K –20 K	**RTKSA-010.200**	TR: 0…120 °C STB: 7…130 °C	3 K -10…-15 K	THK-2-200x17 + JZ-30
KR 85.314-5	TR 35…95 °C STB fixed at 100 °C	5 K –20 K				THK-2-100x17 + JZ-30
LR 85.315-5	TR 35…95 °C STB fixed at 100 °C	5 K –20 K				SWK-2-200
LR 85.312-2	TR 0…70 °C STB fixed at 75 °C	2 K –20 K				SWK-2-200
KR 85.204-8	TR 50…130 °C TB 95…130 °C	8 K –8 K				THK-2-100x17 + JZ-30
KR 85.230-5	TR 35…95 °C TB 95…110 °C	5 K 5 K	**RTKSA-013.210**	TW: 0…120 °C TB: 20…150 °C	3 K -10…-15 K	THK-2-100x17 + JZ-30
KR 85.207-5	TR 35…95 °C TB 85…120 °C	5 K –8 K				THK-2-200x17 + JZ-30

RTKSA-014.210



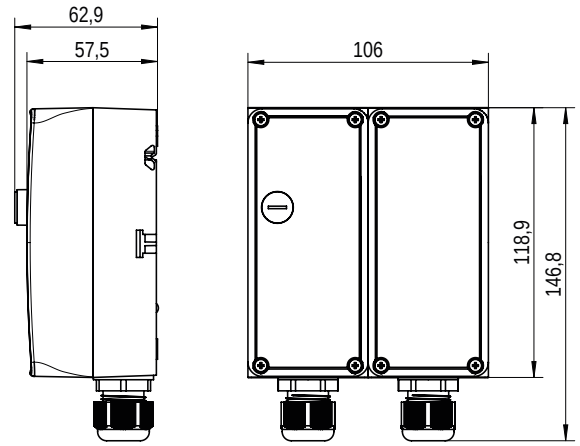
RTKSA-010.200



Universal capillary double thermostat RTKSA

Capillary system – **TÜV-tested**

RTKSA-013.210



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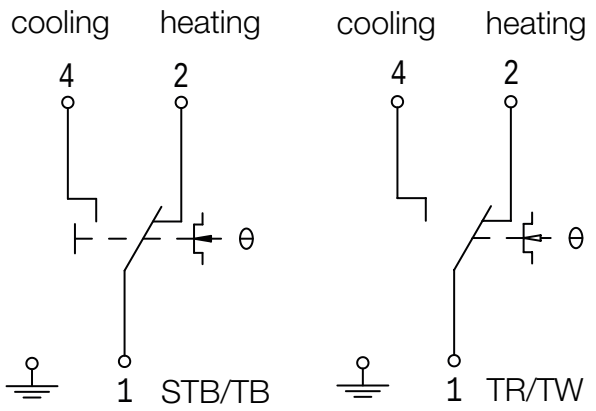
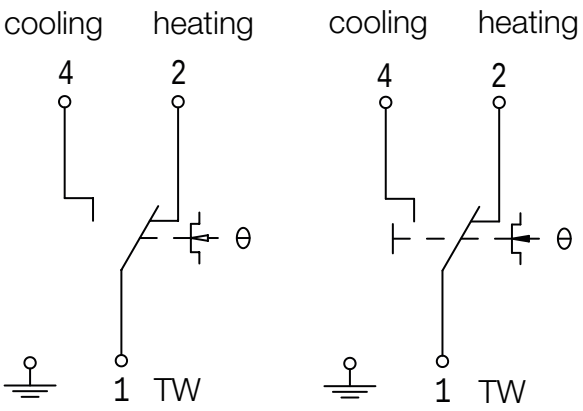
RTKSA-010.200 / RTKSA-013.210



RTKSA-014.210



JZ-30

Single-stage plant room thermostats JET-110/-120

Capillary system – External sensors – Configurable hysteresis

Technical data

Colour:	grey (lower part like RAL 7016, upper part like 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 VAC, 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:	IP 65
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.

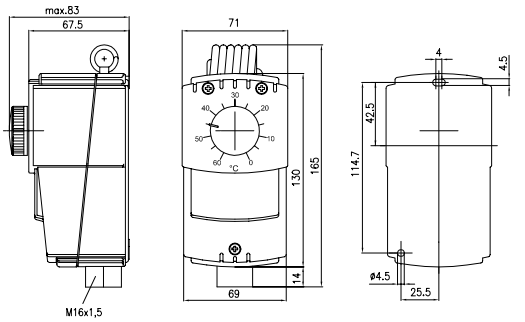
For successor types for JET-4x and JET-4x F see page 156 (plant room thermostat RTKSA)

Type	Item no.	Control range	Max. sensor temperature	Hysteresis (approx.)	Ambient temperature	Features	PG
JET-110 R	JA045100	–35…+30 °C	35 °C	2…20 K adjustable	–35…+35 °C	External setting with range restriction, TR	II
JET-110 RF	JA045200	–35…+30 °C	35 °C	2…20 K adjustable	–35…+35 °C	Internal setting with viewing window, TW	II
JET-120 R	JA046100	0…60 °C	70 °C	2…20 K adjustable	–35…+70 °C	External setting with range restriction, TR	II
JET-120 RF	JA046200	0…60 °C	70 °C	2…20 K adjustable	–35…+70 °C	Internal setting with viewing window, TW	II

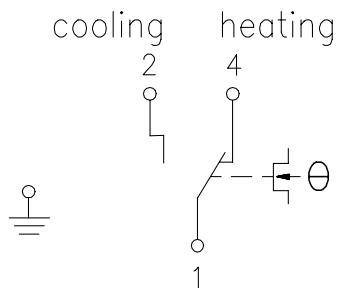
TR = temperature controller, TW = temperature monitor

JET-1x0 RF

JET-1.



JET-1.



Single-stage capillary thermostats JET-1

Technical data

Housing colour:	grey (lower part like RAL 7016, upper part like 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 … +55 °C
Max. sensor temperature	top scale value +15%
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 VAC, 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:	IP 65
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” chapter).

Type	Item no.	Control range	Hysteresis adjustable (approx.):	Sensor a x l	Features	PG
JET-110X	JA040100	–35 … +30 °C	2 … 20 K	9.6 x 122 mm	external setting/TR*	II
JET-110XF	JA040200	–35 … +30 °C	2 … 20 K	9.6 x 122 mm	internal setting/TW*	II
JET-120X	JA041100	0 … 60 °C	2 … 20 K	9.6 x 122 mm	external setting/TR*	II
JET-120XG	JA041101	0 … 60 °C	2 … 20 K	9.6 x 122 mm	external setting/TR*	II
JET-120XF	JA041200	0 … 60 °C	2 … 20 K	9.6 x 122 mm	internal setting/TW*	II
JET-130X	JA042100	40 … 100 °C	2 … 20 K	9.6 x 122 mm	external setting/TR*	II
JET-130XG	JA042101	40 … 100 °C	2 … 20 K	9.6 x 122 mm	external setting/TR*	II
JET-130XF	JA042200	40 … 100 °C	2 … 20 K	9.6 x 122 mm	internal setting/TW*	II
JET-133X	JA042300	40 … 100 °C		9.6 x 122 mm	external setting/TB**	II
JET-133XF	JA042400	40 … 100 °C		9.6 x 122 mm	internal setting/TB**	II
JET-140X	JA043100	70 … 130 °C	2 … 20 K	9.6 x 122 mm	external setting/TR*	II
JET-140XF	JA043200	70 … 130 °C	2 … 20 K	9.6 x 122 mm	internal setting/TW*	II
JET-143XF	JA043400	70 … 130 °C		9.6 x 122 mm	internal setting/TB**	II
JET-150	JA044100	100 … 280 °C	8 … 50 K	6 x 80 mm	external setting/TR*	II
JET-150F	JA044200	100 … 280 °C	8 … 50 K	6 x 80 mm	internal setting/TW*	II
JET-153	JA044300	100 … 280 °C		6 x 80 mm	external setting/TB**	II
JET-153F	JA044400	100 … 280 °C		6 x 80 mm	internal setting/TB**	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

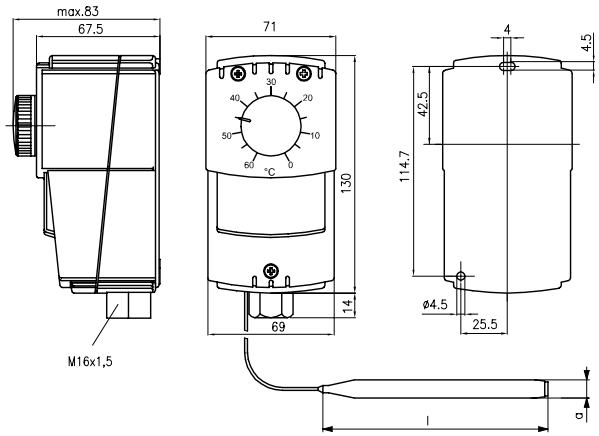
Immersion sleeves for types with “X” in the type specification: TH/NTH-140 see page 220
Immersion sleeves for types without “X” in the type specification: TH/NTH-100/200/280 see page 220
Protection coil for all types: SW-200-12 see page 218–219

Single-stage capillary thermostats JET-1

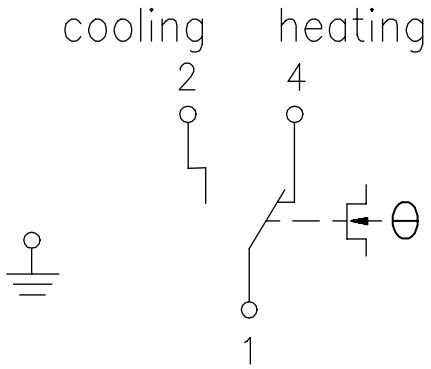
Temperature monitor (TW)

Temperature limiter (TB)

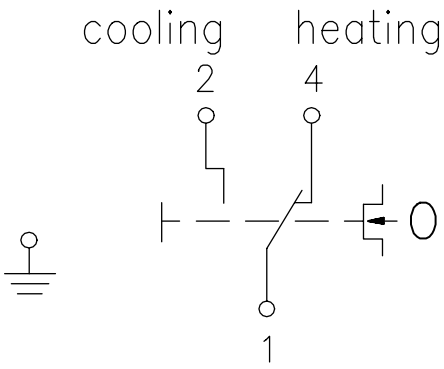
Temperature controller (TR)



TR / TW



TB



Multi-stage capillary thermostat JMT-206 X

2 stages

Technical data

Housing colour:	grey (lower part like RAL 7016, upper part like RAL 7035)
Sensor material:	Cu
Capillary length:	1.5 m
Ambient temperature:	–15 … +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 VAC, 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:	IP 65
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” chapter).

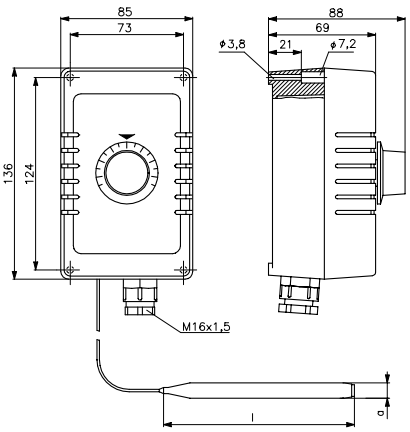
Type	Item no.	Control range	Hysteresis in the stage (approx.):	Sensor a x l (mm)	Features	PG
JMT-206 X	E6060340	20 … 80 °C	1 K	9.6 x 122 mm	External setting, TR	II

TR = Temperature controller

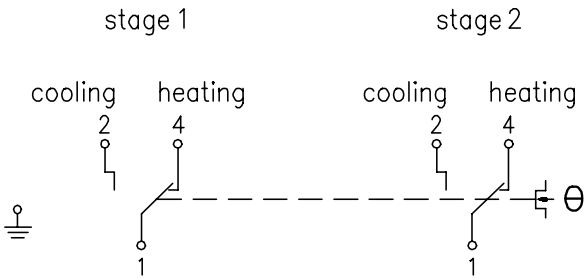
Accessories

Immersion sleeves TH-140/NTH-140 (see page 220), protection coil SW-200-12 (see page 218-219)

JMT-2..



JMT-2..



Contact thermostats ATR 83

Capillary system

Technical data

Housing colour:	grey (lower part like RAL 7016, upper part like RAL 7035)
Sensor material:	Cu
Ambient temperature:	0…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 VAC, 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 (450 x 8.9 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

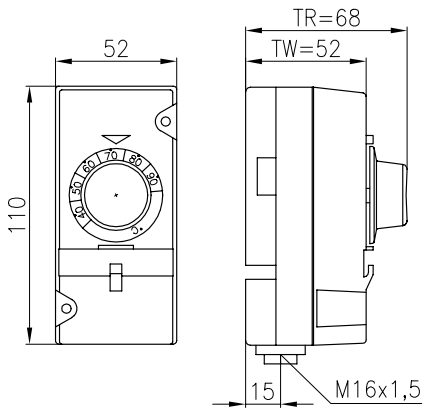
Control or monitoring of temperatures at heat registers, pipelines or tanks, for example, temperature-dependent pump control or control of motor valves.

Type	Item no.	Control range	Max. sensor temperature	Features	PG
ATR 83.000	C1810492	30…90 °C	100 °C	external setting, TR, IP 20	II
ATR 83.100	C1810493	30…90 °C	100 °C	internal setting, TW, IP 20	II
ATR 83.001	C1810494	0…60 °C	80 °C	external setting, TR, IP 20	II
ATR 83.101	C1810495	0…60 °C	80 °C	internal setting, TW, IP 20	II

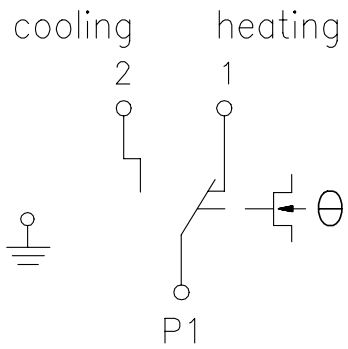
TR = temperature controller, TW = temperature monitor

Accessories	Item no.	Features	PG
ATRS-1	C1809518	Temperature determination set for ATR with external setting (ATR 83.000, ATR 83.001)	II
WP-01	G9990180	heat conduction paste 2 ml	II

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 … +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 THK-2-xxx immersion sleeves for temperature measurement in non-aggressive fluids and in conjunction with the NTHK-2-xxx 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 protection	Hysteresis	Features	PG
RTKSA-203.000	KA020300	1.8 m	IP 40	+3 K*	STB, internal setting, external reset, sensor dimensions: 9.5 x 98 mm, also for use in water-exposed applications	II
RTKSA-203.100	KA020301	3 m	IP 40	+3 K*	STB, internal setting, external reset	II
RTKSA-203.120	KA020302	3 m	IP 65	+3 K*	STB, internal setting, external reset	II
RTKSA-203.200	KA020304	6 m	IP 40	+3 K*	STB, internal setting, external reset	II
RTKSA-203.220	KA020303	6 m	IP 65	+3 K*	STB, internal setting, external reset	II
RTKSA-203.300	KA020305	12 m	IP 40	+3 K*	STB, internal setting, external reset	II
RTKSA-204.000	KA020400	1.8 m	IP 40	1.5 K	STW, internal setting, sensor dimensions: 9.5 x 98 mm, also for use in water-exposed applications	II
RTKSA-204.020	KA020401	1.8 m	IP 65	1.5 K	STW, internal setting, sensor dimensions: 9.5 x 98 mm, also for use in water-exposed applications	II
RTKSA-204.100	KA020402	3 m	IP 40	1.5 K	STW, internal setting	II
RTKSA-204.200	KA020403	6 m	IP 40	1.5 K	STW, internal setting	II
RTKSA-204.220	KA020404	6 m	IP 65	1.5 K	STW, internal setting	II
RTKSA-204.300	KA020405	12 m	IP 40	1.5 K	STW, internal setting	II

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

Accessories	Item no.	Features	PG
JZ-05/6 K	C1809536	1 set of mounting brackets for frost protection thermostat RTKSA/JTF (6 pieces) made of plastic (max. 145 °C)	II
JZ-05/6 M	C1809474	1 set of mounting brackets for frost protection thermostat RTKSA/JTF (6 pieces) made of metal	II
JZ-05/1 M	C1809462	single mounting bracket for frost protection thermostat RTKSA/JTF made of metal	II
JZ-29	KA999901	Mounting set for RTKSA THK/NTHK/SWK for single controller	II
JZ-30	KA999902	Mounting set for RTKSA THK/NTHK/SWK for double thermostate	II

Accessories	Item no.	Length	Material	Durchmesser IxA**	Features	PG
THK-2-100x17	KA979901	100 mm	Ms nickel-plated brass	14,8 x 17 mm	Immersion sleeve	II
THK-2-200x17	KA979902	200 mm	Ms nickel-plated brass	14,8 x 17 mm	Immersion sleeve	II
NTHK-2-100x17	KA979903	100 mm	V4A (1.4571)	14,8 x 17 mm	Immersion sleeve	II
NTHK-2-200x17	KA979904	200 mm	V4A (1.4571)	14,8 x 17 mm	Immersion sleeve	II
SWK-2-100	KA989901	100 mm	nickel-plated steel	10,5 x 17 mm	Protective coil with flange plate	II
SWK-2-200	KA989903	200 mm	nickel-plated steel	10,5 x 17 mm	Protective coil with flange plate	II

**I = minimum inside diameter/A = nominal outside diameter
For pictures and drawings of immersion sleeves/protective coils, see pages 218–219

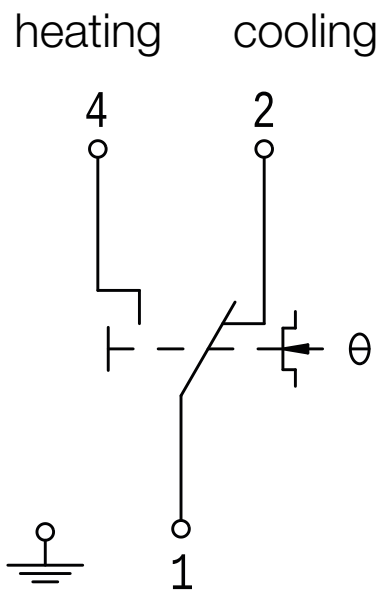
Type comparison (old/new type)

Old alre types	Capillary length	General features	New alre types	Capillary length	General features
JTF-101	6 m	Degree of protection: IP 54 Hysteresis: approx. 1 K Control range: –8…+8 °C Tmax sensor: 150 °C	**RTKSA-204.200**	6 m	Degree of protection: IP 40 Hysteresis: Approx. 1.5 K Control range: –10…+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	

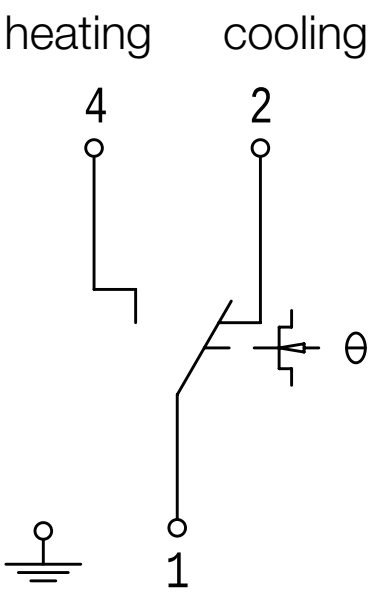
Frost protection thermostat RTKSA

Capillary system

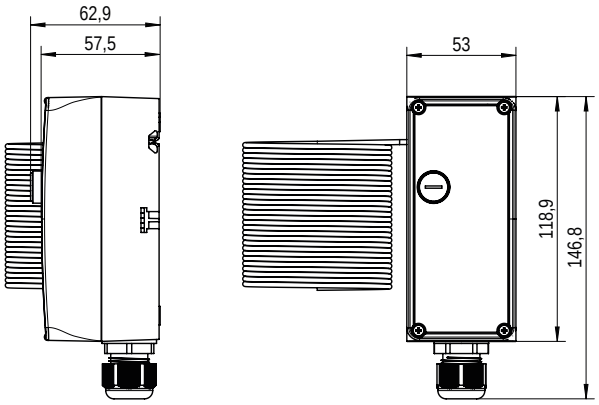
RTKSA-203.xxx



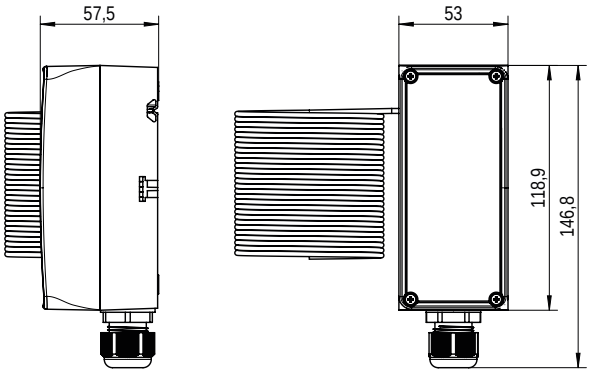
RTKSA-204.xxx



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…+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 VAC, 50 Hz
Min. switching voltage:	24 VAC, 50 Hz
Switching element:	microswitch
Switching contact:	toggler, potential-free
Control range:	–10…+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.

Application

Securing hot water registers against freezing. The frost protection thermostats JTF-21 to JTF-25 have two 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 testing by TÜV in accordance with DIN EN 14597

Type	Item no.	Capillary length	Features	PG
1-stage				
JTF-1 *	E6090301	6 m	external setting, TR, IP 40, hysteresis approx. 1 K	II
JTF-1/12 *	E6090328	12 m	external setting, TR, IP 40, hysteresis approx. 1 K	II
JTF-1 W *	E6090014	6 m	internal setting, TW, IP 65, hysteresis approx. 1 K	II
JTF-2 **	E6090308	6 m	external setting, external reset, TB, IP 40, hysteresis: manual reset after temperature rise of approx. 4 K	II
JTF-2 W**	E6090287	6 m	internal setting, internal reset, TB, IP 65, hysteresis: manual reset after temperature rise of approx. 4 K	II
JTF-3*	E6090309	1.8 m	external setting, TR, IP 40, hysteresis approx. 1 K, sensor dimensions: 9.5 x 76 mm, also for use in applications exposed to water	II
JTF-3 W*	E6090065	1.8 m	internal setting, TW, IP 65, hysteresis approx. 1 K, sensor dimensions: 9.5 x 76 mm, also for use in applications exposed to water	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: 9.5 x 76 mm, also for use in applications exposed to water	II
JTF-5*	E6090311	3 m	external setting, TR, IP 40, hysteresis approx. 1 K	II

Frost protection thermostat JTF-1 … -25

Capillary system – 1 or 2 stages – **TÜV-tested** – switching

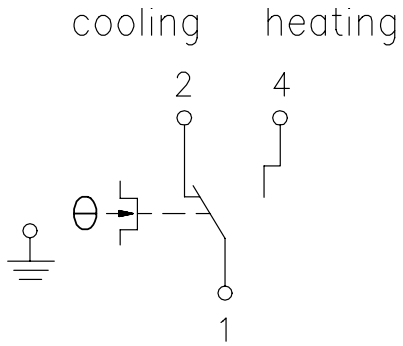
Type	Item no.	Capillary length	Features	PG
2-stage: 1st stage emits a signal 5 K before the switch-off point				
JTF-21* **	E6090320	6 m	external setting, TR, IP 40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	II
JTF-21/12* **	E6090330	12 m	external setting, TR, IP 40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	II
JTF-21 W* **	E6090283	6 m	internal setting, TW, IP 65, hysteresis in the stage approx. 1K,hysteresis between the stages approx. 5 K	II
JTF-22** **	E6090322	6 m	external setting, external reset, TB, IP 40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	II
JTF-22/12** **	E6090331	12 m	external setting, external reset, TB, IP 40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	II
JTF-25* **	E6090324	3 m	external setting, TR, IP 40, hysteresis in the stage approx. 1 K, hysteresis between the stages approx. 5 K	II

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

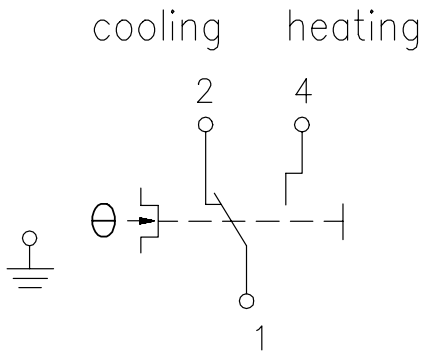
* Control function heating or cooling
** Control function heating or cooling, locked when the temperature is dropping
*** Control function heating or cooling, 1st stage emits a signal 5 K before the switch-off signal
**** Control function heating or cooling, 1st stage emits a signal 5 K before the switch-off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

Accessories	Item no.	Features	PG
JZ-04	E6160133	capillary tube leadthrough for air ducts with 30-cm protective hose	II
JZ-05/6 K	C1809536	1 set of mounting brackets (6 pieces) for frost protection thermostat JTF, made of plastic (max. 145 °C)	II
JZ-05/6 M	C1809474	1 set of mounting brackets (6 pieces) for frost protection thermostat JTF, made of metal	II
JZ-05/1 M	C1809462	single mounting bracket for frost protection thermostat JTF, made of metal	II
JZ-07	E6160145	mounting bracket for frost protection thermostat JTF	II
TH-140	C1809409	immersion sleeve for JTF-3, JTF-4; material nickel-plated brass	II
NTH-140	C1809435	immersion sleeve for JTF-3, JTF-4; material V4A (1.4571)	II
SW-200-12	C1809220	protecting coil for JTF-3, JTF-4 to attach capillary in the air duct; made of nickel-plated steel	II

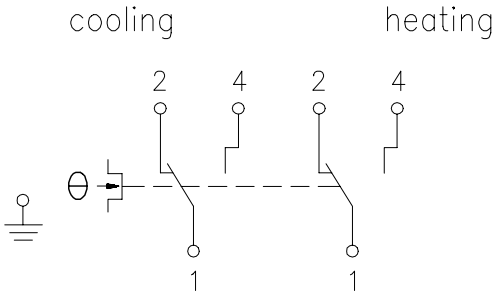
JTF-1 / -3 / -5



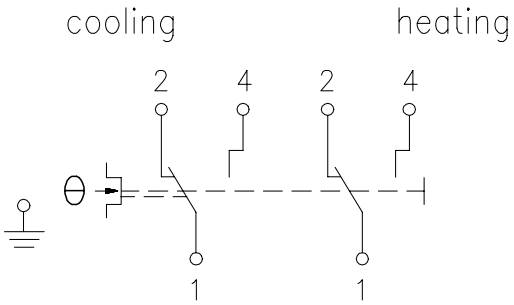
JTF-2/-4



JTF-21 / -25

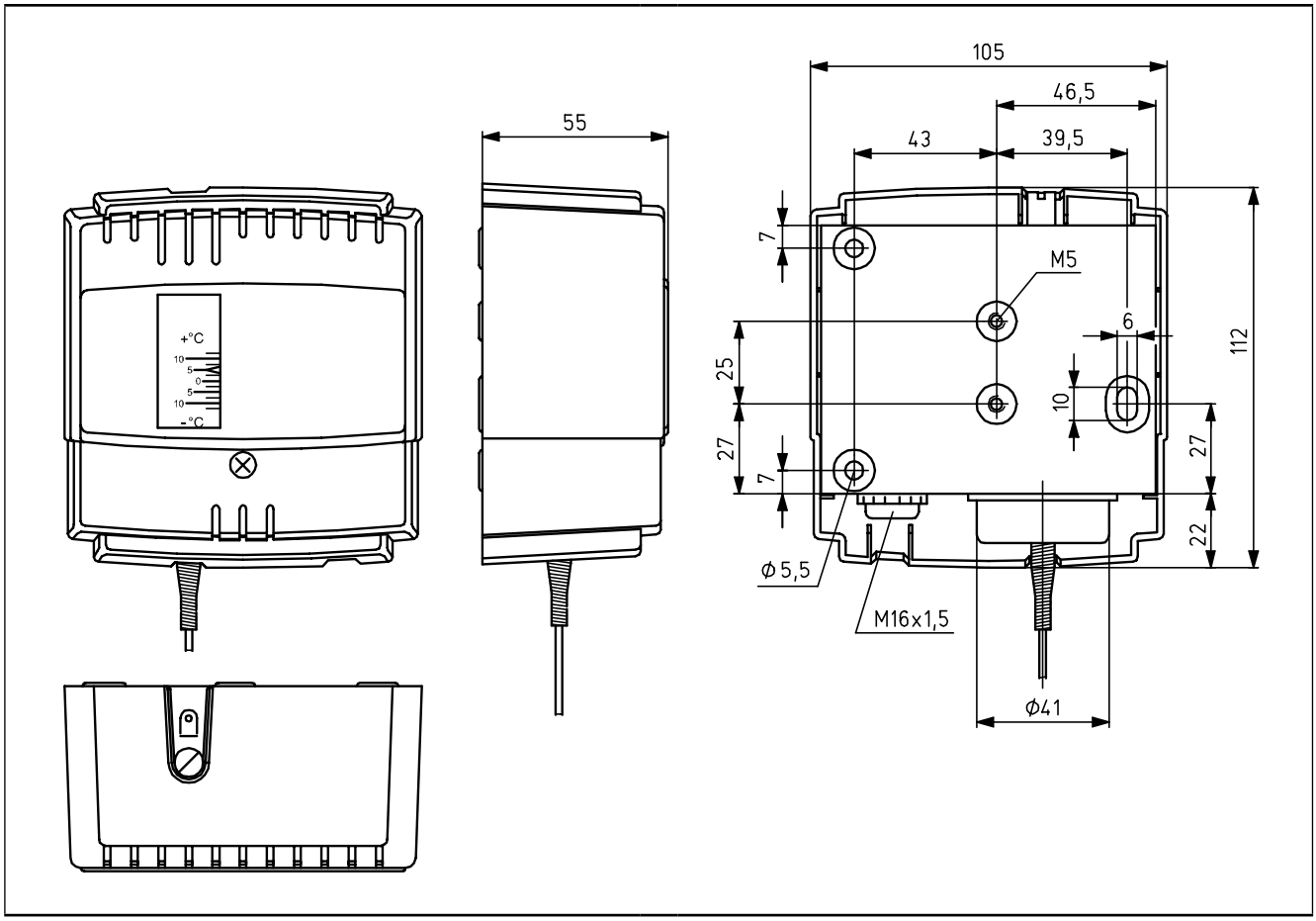


JTF-22

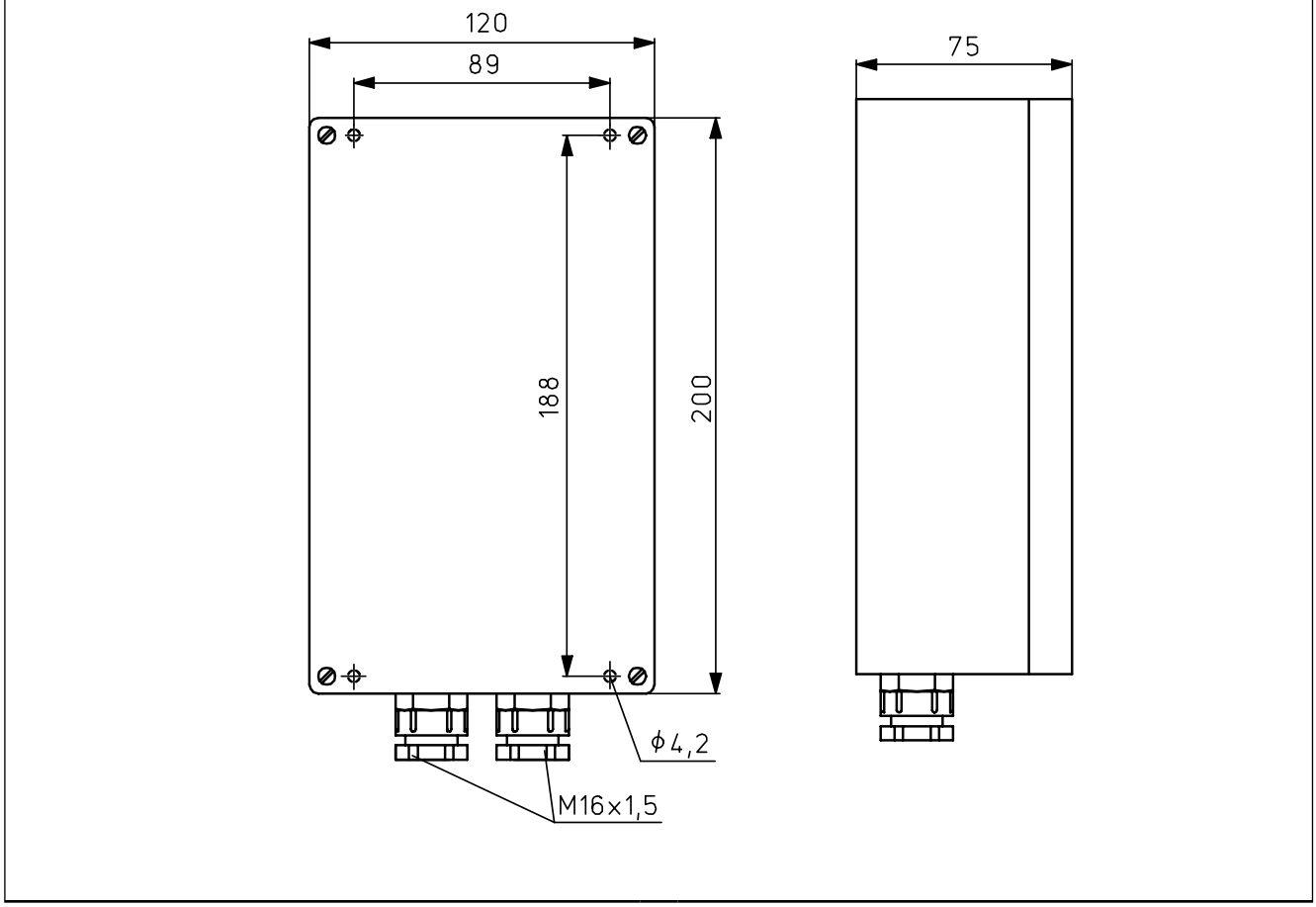


Frost protection thermostat JTF-1 … -25

Capillary system – 1 or 2 stages – **TÜV-tested** – switching



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 … +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 VAC, 50 Hz
Min. switching voltage:	24 VAC, 50 Hz
Switching element:	microswitch, toggler, potential-free
Control function:	heating or cooling
Control range ventilator:	20 … 70 °C
Hysteresis of fan:	adjustable approx. 8 … 30 K
Electrical connection:	screw-type terminals
Mounting / attachment:	mounting on air duct
Protection rating:	IP 20
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 “MAN – AUTO” switch 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*	PG
JTL-2	E6110013	70 … 100 °C	8 K	350 mm	TW	II
JTL-8	E6110049	70 … 100 °C	external reset	350 mm	STB, locked when the temperature is rising, overheating protection	II
JTL-11	E6110064	70 … 100 °C	8 K	1250 mm	TW	II
JTL-8 NR	E6120038	70 … 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	II
JTL-17 NR	E6120077	70 … 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	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.

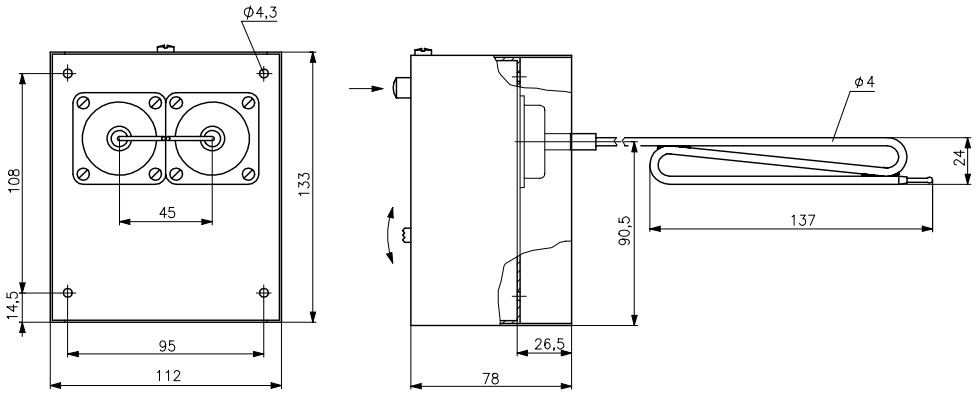
Air heater thermostat JTL-2 … -11 / JTL-8 NR … -17 NR

Capillary system – 2 functions or 3 functions – **TÜV-tested**

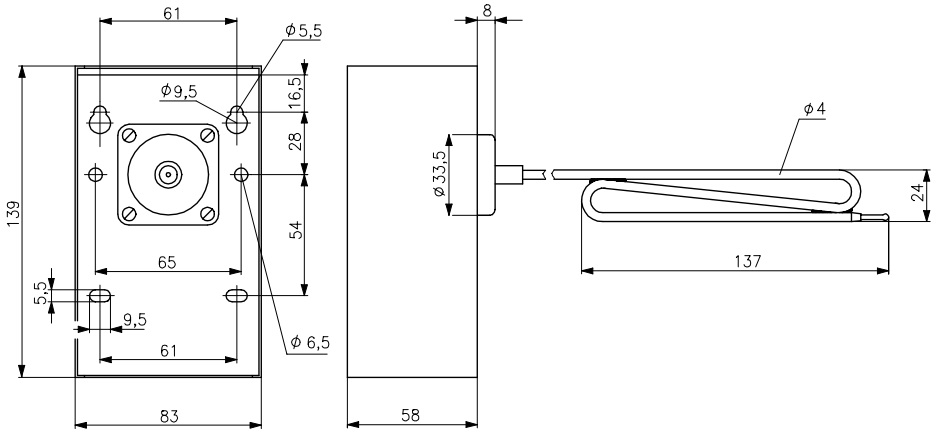
JTL-17 NR

JTL-2

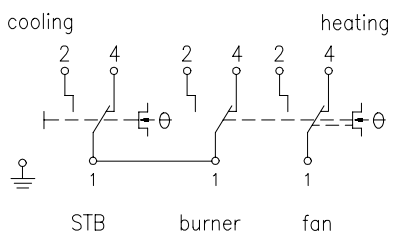
JTL-..NR



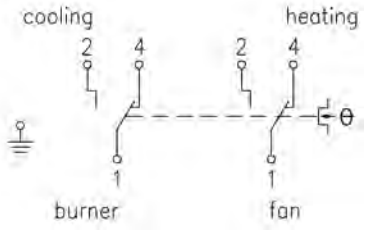
JTL-..



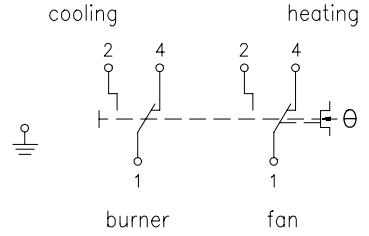
JTL-..NR



JTL..(TW)



JTL-.(STB)



Duct thermostat JTU-1 … -50

Capillary system – **TÜV-tested**

Technical data

Housing colour:	grey
Sensor material:	Cu
Ambient temperature:	–15 … +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 VAC, 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:	IP 40
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	PG
JTU-50	E6100000	–25 … +65 °C	1.5 K	350 mm	Control function: heating or cooling, TW	II
JTU-1	E6100012	20 … 100 °C	8 … 30 K adjustable	350 mm	Control function: heating or cooling, TW, intrinsic safety, protection against cold	II
JTU-3	E6100036	20 … 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	II
JTU-20	E6100075	20 … 100 °C	external reset	1250 mm	Control function: heating or cooling, locked when the temperature is rising, STB, intrinsic safety, protection against cold	II
JTU-5	E6100048	60 … 140 °C	8 … 30 K adjustable	350 mm	Control function: heating or cooling, TW	II
JTU-6	E6100051	60 … 140 °C	external reset	350 mm	Control function: heating or cooling, locked when the temperature is rising, TB	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.

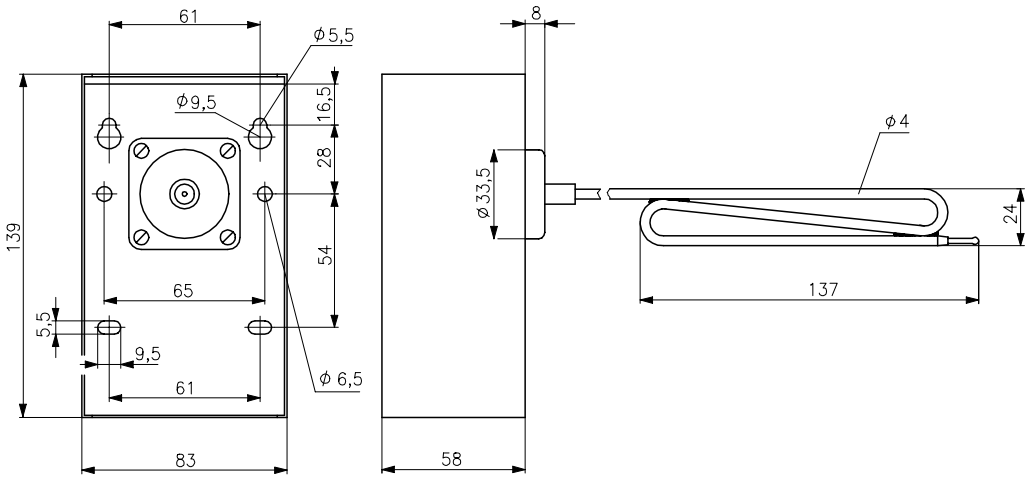
Duct thermostat JTU-1 … -50

Capillary system – **TÜV-tested**

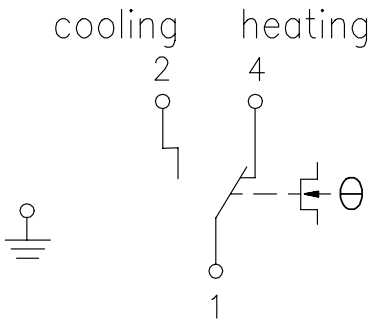
JTU-20

JTU-3/-6

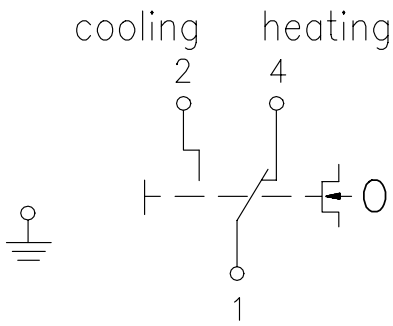
JTU



JTU-1, -5, -50



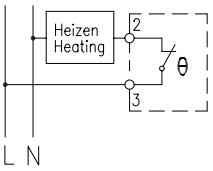
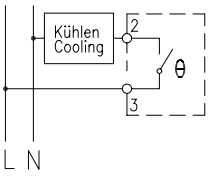
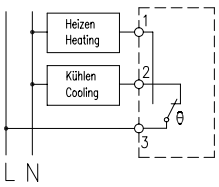
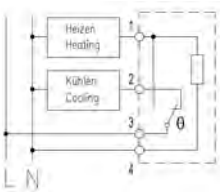
JTU-3/-6/-20



Control cabinet thermostats

mechanical, bimetal

Technical data		Application
Housing colour:	grey, like RAL 7035	Application scenarios include temperature monitoring in control cabinets, machines and housings.
Ambient temperature:	0 ... 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 ... 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 up to 2.5 mm²	
Mounting/attachment:	on supporting rails (35 mm) according to EN 60715	
Protection rating:	IP 30	
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	

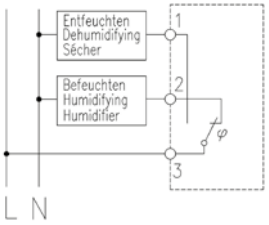
Type/image	Item no.	Features	Circuit diagram	PG
RTBSS-110.250/04 	ZN111524	Max. switching current: 10 (2) A / VAC, max. 30 W / VDC Switching contact: NC contact Control function: heating Control range: 0 ... 60 °C scale red		II
RTBSS-111.250/05 	ZN112525	Max. switching current: 10 (2) A / VAC, max. 30 W / VDC Switching contact: NO contact Control function: cooling Control range: 0 ... 60 °C scale blue		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 ... 60 °C scale grey		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 ... 60 °C Scale grey, thermal feedback		II

Accessories	Item no.	Features	PG
JZ-13	ZA990001	standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)	II

Control cabinet hygrostats

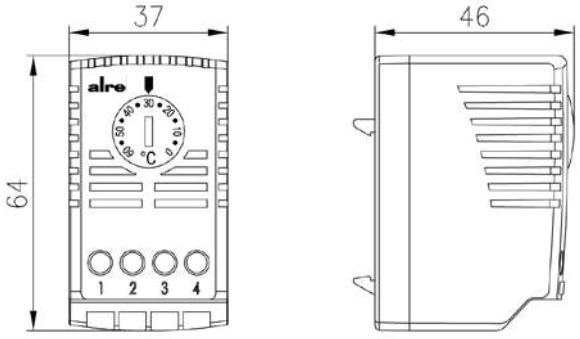
with changeover contact

Technical data		Application
Housing colour:	grey, like RAL 7035	Hygrostat for monitoring and controlling humidity in control cabinets and machines
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 VAC, 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:	IP 30	
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	

Type/image	Item no.	Features	Circuit diagram	PG
RFHSS-114.110/01 	ZN275001	Ambient temperature: 0…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 to 2.5 mm² Test mark/approbation: UL for 230 VAC snap-in turning knob		II

Accessories	Item no.	Features	PG
JZ-13	ZA990001	standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)	II

RFHSS/RTBSS



Plant engineering

Controller for distributor assembly (hat rail) ITR 79

remote sensor, electronic

Technical data

Housing colour:	grey, like RAL 7035
Ambient temperature:	–10…+40 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Operating voltage:	230 VAC, 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 VAC, 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:	IP 20
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’ chapter.

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.

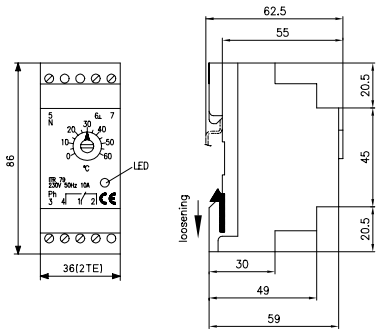
Type	Item no.	Control range	Features	PG
ITR 79.402	D4780167	–35…+15 °C	Control function: heating, hysteresis adjustable: approx. 0.5…5 K, sensor: NTC 1 K (sensor 1), scale: Degrees Celsius, display “heating” red	II
ITR 79.404	D4780155	0…60 °C	Control function: heating, hysteresis adjustable: approx. 0.5…5 K, sensor: NTC 10 K (sensor 4), scale: degrees Celsius, display “heating” red	II
ITR 79.405	D4780181	35 ... 95 °C	Control function: heating, hysteresis adjustable: approx. 0.5…5 K, sensor: NTC 50 K (sensor 5), scale: Degrees Celsius, display “heating” red	II
ITR 79.408	D4780179	–10…+40 °C	Control function: heating, hysteresis adjustable: approx. 0.5…5 K, sensor: NTC 8 K (sensor 3), scale: Degrees Celsius, display “heating” red	II
ITR 79.503	D4780524	0…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	II
ITR 79.504	D4780371	0…60 °C	Control function: cooling, hysteresis adjustable: approx. 0.5…5 K, sensor: NTC 10 K (sensor 4), scale: Degrees Celsius, display “cooling” green	II
ITR 79.508	D4780369	–10…+40 °C	Control function: cooling, hysteresis adjustable: approx. 0.5…5 K, sensor: NTC 8 K (sensor 3), scale: degrees Celsius, display “cooling” green	II
Two setpoint adjusters (e.g. day/night temperature via external clock)				**PG**
ITR 79.600	D4780508	2 x 5…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	II
Complete device including remote sensor HF-8/4-K2 (4-m cable)				**PG**
ITR 79.804	D4780545	0…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	II

Accessories	Item no.	Features	PG
JZ-13	ZA990001	standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)	II

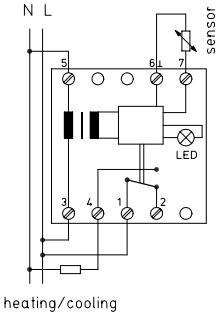
Controller for distributor assembly (hat rail) ITR 79

remote sensor, electronic

ITR 79.4.../.5.../.8...

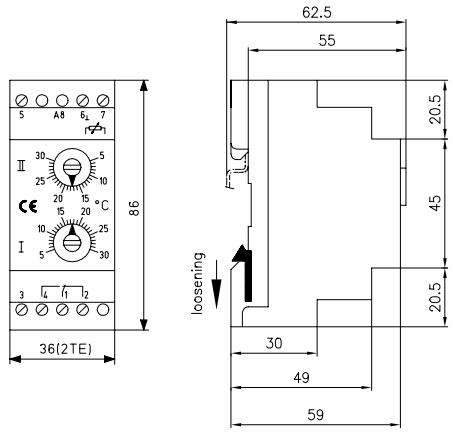


ITR 79.4.../.5.../.8...



ITR 79.804

ITR 79.6



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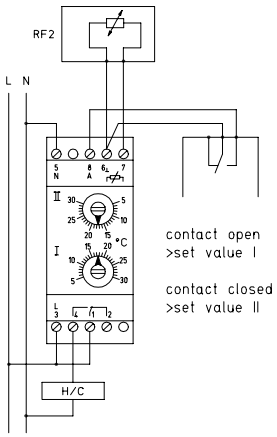
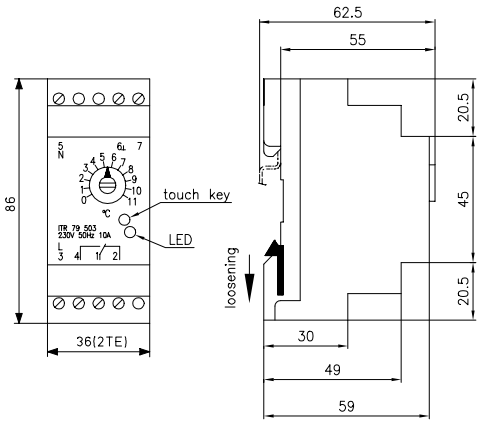
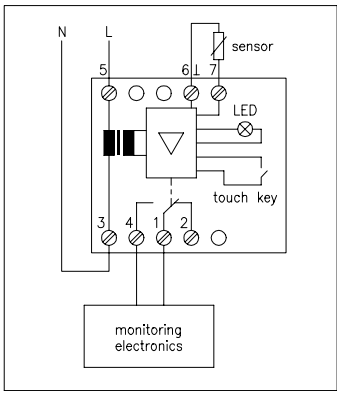


ITR 79.503



ITR 79.503



Universal controller ETR 77

remote sensor, electronic

Technical data

Housing colour:	grey (lower part like RAL 7016, upper part like RAL 7035)
Ambient temperature:	–20 … +50 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Operating voltage:	230 VAC, 50 Hz
Max. switching current:	NO contact: 10 (3) A (heating), NC contact: 5 (1.5) A (cooling)
Max. switching voltage:	230 VAC, 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 “Sensors” section.

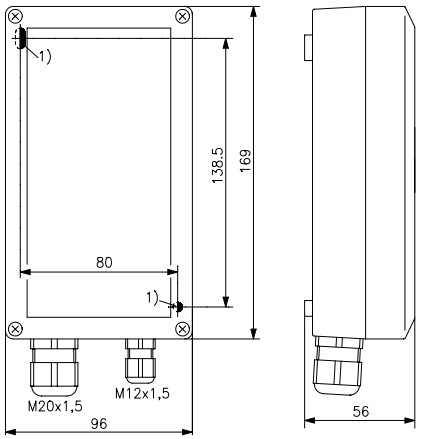
Note: The sensor line is to be routed in a protective duct. Parallel routing together with lines that carry AC voltage is not permissible.

Safety and EMC: according to DIN EN 60730

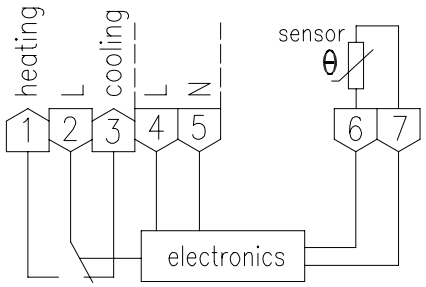
Type	Item no.	Control range	Features	Hysteresis adjustable	PG
ETR 77.008-5	D4770014	–50 … +50 °C	IP 65, TW, internal setting, scale: degrees Celsius	0.5 … 5 K	II
ETR 77.009-5	D4770026	0 … 100 °C	IP 65, TW, internal setting, scale: degrees Celsius	0.5 … 5 K	II

TW = Temperature monitor

ETR 77



ETR 77

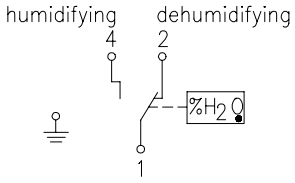
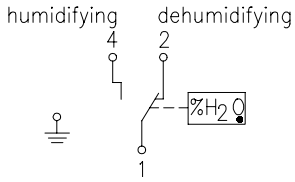
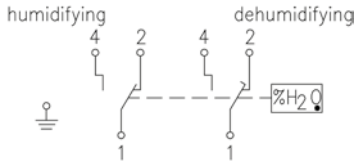


Accessories	Item no.	Features	PG
AF-51	G9040420	external temperature sensor	III
ALF-51	G9050210	contact temperature sensor	III
BTF2-Y81/121-0000	SA140017	room temperature sensor, surface-mounted	III
FUFY-81/121-0000	SN090201	room temperature controller, flush-mounted	III
KF-51	G9031452	Cable temperature sensor with 1.5 m silicone cable	III
KF-51/6	G9031453	Cable temperature sensor with 6 m silicone cable	III
STF-51	SN080500	radiation temperature sensor	III

Mechanical hygrostats

Duct assembly

Technical data		Application
Housing colour:	grey (lower part like RAL 7016, upper part like RAL 7035)	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.
Ambient temperature:	0 … 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:	IP 65 front-side	
Protection class:	II	
Safety and EMC:	according to DIN EN 60730	
Sensor:	plastic fibres	

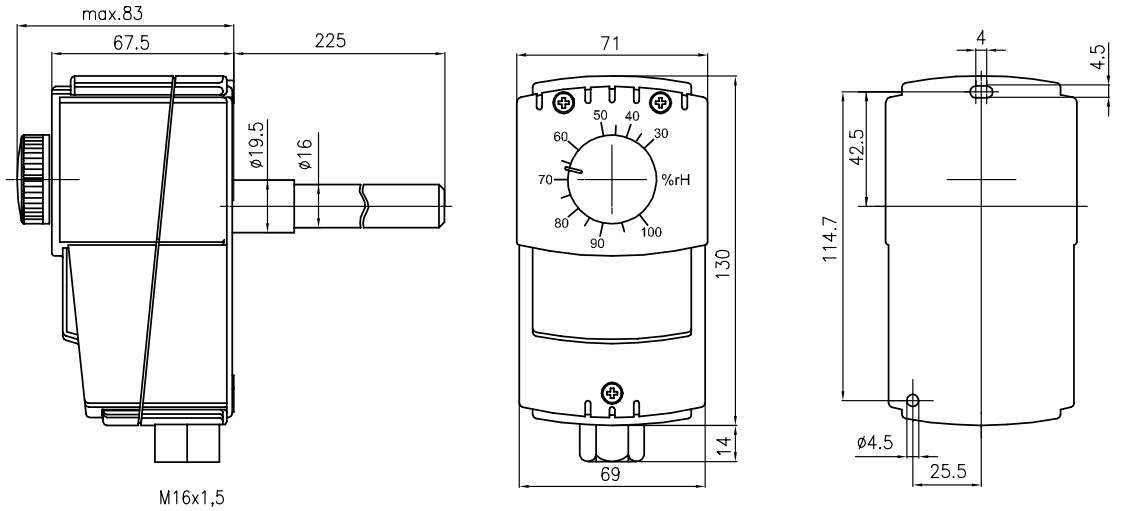
Type/image	Item no.	Features	Circuit diagram	PG
HI-1 	JA010100	Control function: humidifying or de-humidifying Function type: controller external setting, mechanical range setting		II
HI-1F 	JA010200	Control function: humidifying or de-humidifying Function type: monitor Internal setting		II
HI-2 	JA010300	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		II

Mechanical hygrostats

Duct assembly

Accessories/options	Item no.	Features	PG
JZ-20-1 	E6130144	Wall bracket for HI	II
FS-HI 	H530975	Sensor protection for HI: finely woven mesh wire, for use at high air speeds of over 8 m/s	II
FS2-HI 	H531011	PTFE filter for HI: fine sensor protection against dust and contamination	II

HI-.



Wind indicator relay JSL-1E

mechanical

Technical data

Housing colour:	grey (lower part like RAL 7016, upper part like RAL 7035)
Ambient temperature:	–40 … +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 VAC, 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:	IP 65 housing side, IP 20 medium side
Protection class:	I
Safety and EMC:	according to DIN EN 60730
Sensor:	wind indicator
Material of lug:	V2A (1.4301)
Material of lever:	brass
Function type:	monitor
General features:	Internal setting

Application

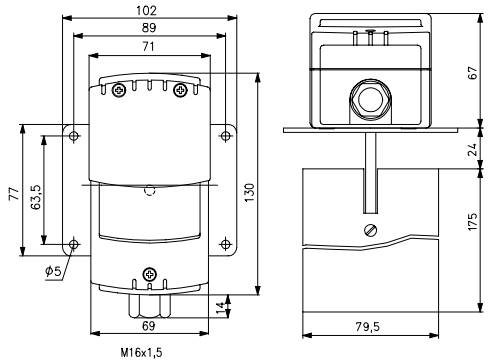
Monitoring of air flows in ducts, in air supply and air exhausting devices of fans or electrical heat registers.

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.

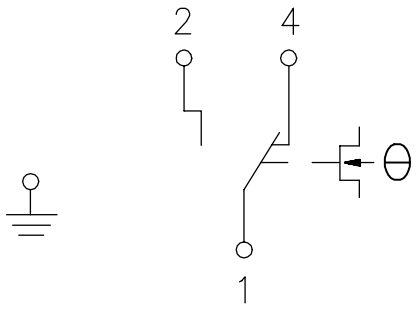
Type	Item no.	Min. switch-on value	Min. switch-off value	Max. switch-on value	Max. switch-off value	PG
JSL-1E	JA070100	2 m/s	1 m/s	9.2 m/s	8 m/s	II

Type	Item no.	Features	PG
JZ-08	E6150031	spare vane for JSL-1E	II

JSL-1E



JSL-1E



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 switches JDW-3 to 10 / JDL-111 … 116

JDW-3

JDL-111

JDL-112

Technical data

Housing colour:	black
Ambient temperature:	–15 … +80 °C
Permissible atmospheric humidity:	Max. 95% rel. humidity, non-condensing
Max. sensor temperature	80 °C
Permissible medium temperature:	–15 … +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:	II
Protection rating:	IP 54
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

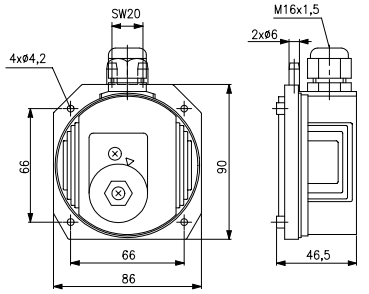
	Pa	kPa	bar	mbar	mmWs
1 Pa =	1	0.001	0.00001	0.01	0.101971
1 kPa =	1,000	1	0.01	10	101.971
1 bar =	100,000	100	1	1,000	10197.1
1 mbar =	100	0.1	0.001	1	10.1971
1 mmWs =	9.80665	0.00980665	0.0000980665	0.0980665	1

Type	Item no.	Control range	Max. pressure	Hysteresis (dependent on setting range)	Features	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	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	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	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	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	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, silicon-free	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, silicon-free	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, silicon-free	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, silicon-free	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, silicon-free	II

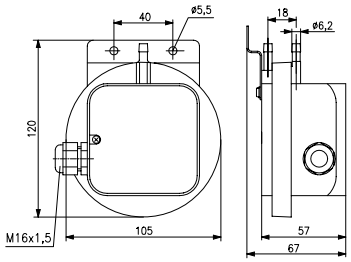
Differential pressure switches JDW-3 to 10 / JDL-111 ... 116

	Item no.	Features	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)	II
JZ-10	H5309237	Mounting bracket with screws for JDW-3 / -5 / -10 (Z shape)	II
JZ-28	H531012	IP 65 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	II
JZ-DA	H5309230	Covering cap with external setting and seal for JDL-111, -112, -115, -116, -117, spare cap for JDL-11x A types	II

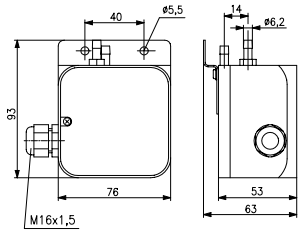
JDW-3 / -5 / -10



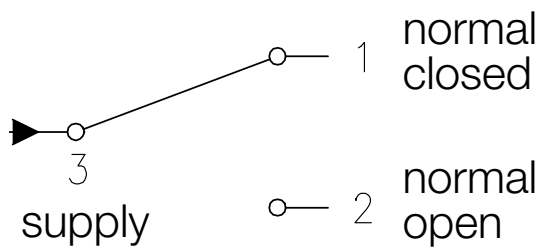
JDL-111



JDL-112 / 115 ... -16



JDW- ... / JDL- ...



JZ-06 / 1

JZ-10

JDL-116 A

JZ-DA

JZ-28

Flow monitor JSF-1E … 4E

mechanical – **TÜV-tested**

Technical data	
Housing colour:	grey (lower part like RAL 7016, upper part like RAL 7035)
Ambient temperature:	–40 … +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 VAC, 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:	IP 65
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

Type-tested by the TÜV according to the "Flow 100" VdTÜV circular

Application

Flow monitoring of liquid media in pipes from ½" to 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	Item no.	Pipe	Medium	Features	PG
JSF-3 E	JA060500	½"	normal	material of carrier: brass max. pressure: 5 bar attached T-piece, grey iron	II
JSF-4 E	JA060600	¾"	normal	material of carrier: brass max. pressure: 5 bar attached T-piece, grey iron	II
JSF-1 E	JA060100	1"…8"	normal	material of carrier: brass max. pressure: 8 bar	II
JSF-1 RE	JA060200	1"…8"	normal	material of carrier: brass max. pressure: 5 bar reduced switching values**	II
JSF-2 E	JA060300	1"…8"	aggressive***	material of carrier: V4A max. pressure: 13 bar	II
JSF-2 RE	JA060400	1"…8"	aggressive***	material of carrier: V4A max. pressure: 5 bar reduced switching values**	II

Flow monitor JSF-1E … 4E

mechanical – **TÜV-tested**

Accesso-ries	Item no.	Features	PG
JZ-09	E6140170	Spare paddles (each 4 units) from 1" … 8"	II

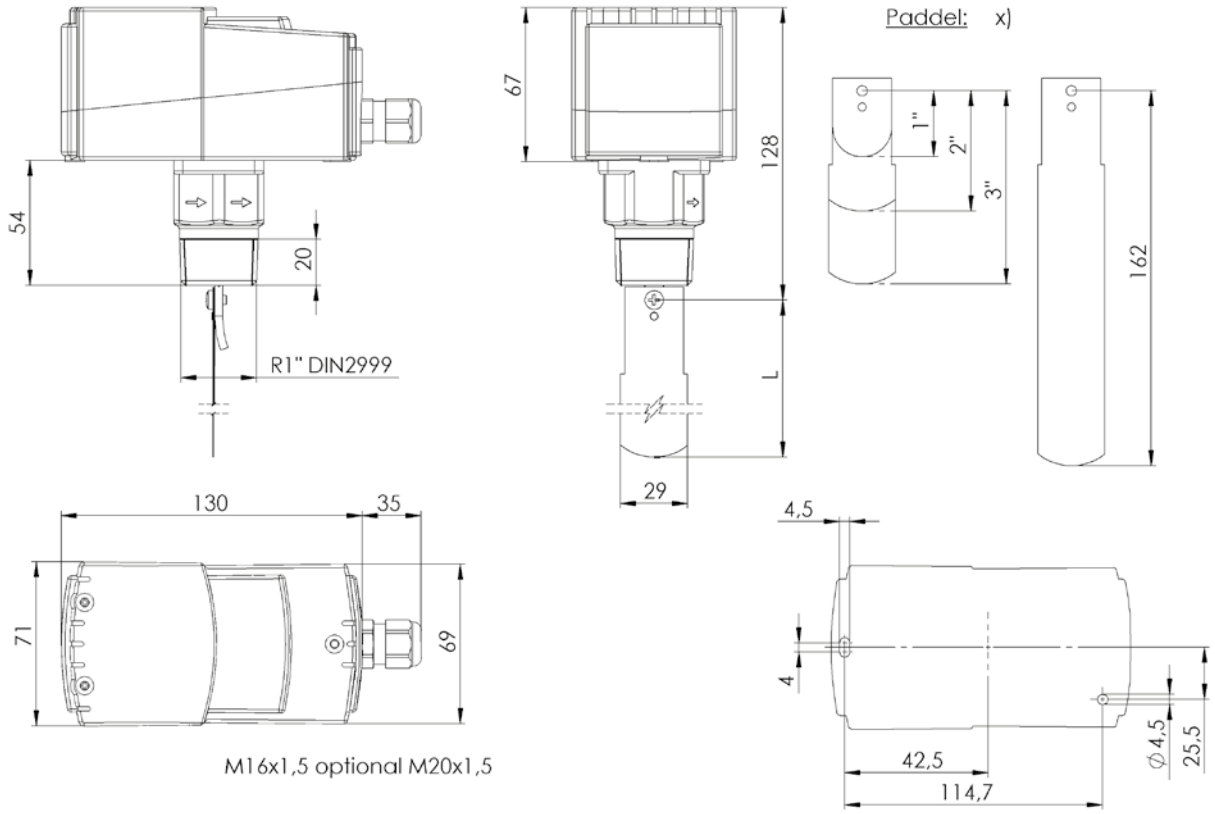
* for 1" = Paddle 1
for 2" = Paddle 1 and 2;
for 3" to 8" = Paddle 1, 2 and 3;

If reduced flow values (marked in the table under the "Pipe" column with added letter Z) are to be reached, Paddle 4 should be used as follows:
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)

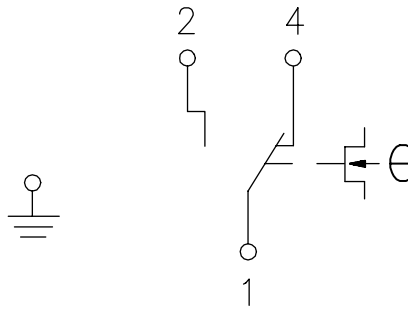
** device types for low flow volume (see switching value table) "RE"

*** medium aggressive: All parts of the current monitor touching the medium are made of V4A.

JSF-.E / RE



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-1E … 4E

mechanical – **TÜV-tested**

Switching value table in m^3/h for JSF-1E / 2E / 1RE / 2RE

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	1¼"	0.82	1.30	2.80	3.00
RE	1¼"	0.24	0.90	1.40	1.60
E	1½"	1.10	1.70	4.00	4.20
RE	1½"	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	2½"	2.80	4.30	9.80	10.50
RE	2½"	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-3E / -4E

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 … +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 VAC, 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:	IP 65
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.)

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.

Application

Monitoring small and medium, non-aggressive quantities of liquid in pipes with small diameters 1/2" 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.

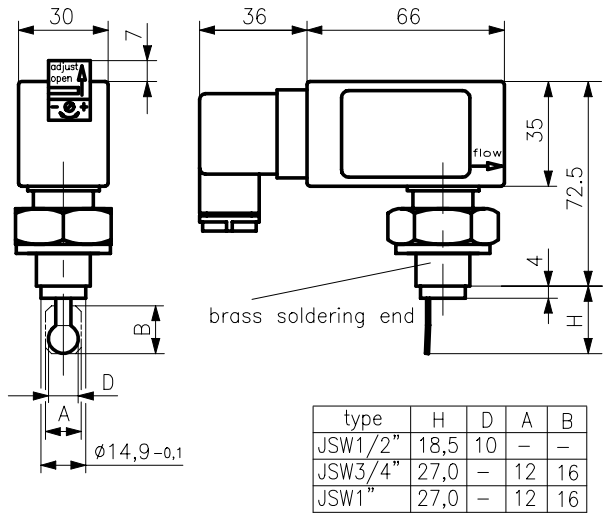
Type	Item no.	Pipe	DN	Max.	Switching point dropping*	Switching point rising	ΔI/min	PG
JSW-1/2	H530944	1/2"	15	20 l/min	5 … 6.5 l/min	5.5 … 7 l/min	0.5	III
JSW-3/4	H530945	3/4"	20	40 l/min	7 … 9.5 l/min	9 … 11 l/min	2	III
JSW-1	H530946	1"	25	60 l/min	13.5 … 16.5 l/min	17 … 20.5 l/min	3.5	III

T-piece (nickel-plated brass):		
T-piece 1/2"	H530957	III
T-piece 3/4"	H530951	III
T piece 1"	H530953	III

Flow monitor JSW

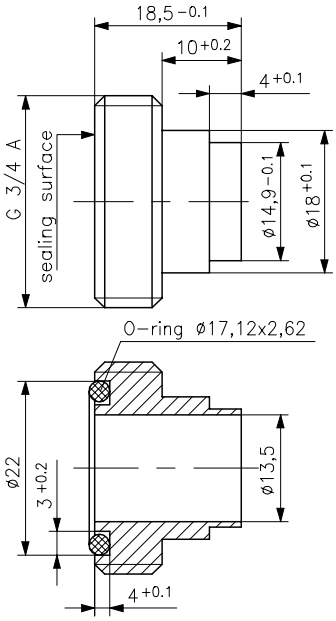
with device plug

JSW

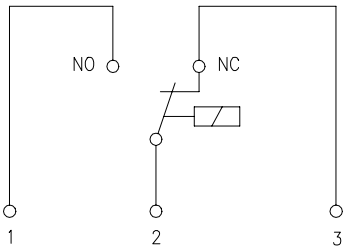


type	H	D	A	B
JSW1/2"	18,5	10	–	–
JSW3/4"	27,0	–	12	16
JSW1"	27,0	–	12	16

JSW



JSW



The device works according to the principle of a spring-loaded paddle with magnetic control of a microswitch. 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 value at the factory, but can be adapted to an existing system. 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 7 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 7 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 material & colour:	made from sheet steel, grey powder-coated bottom part made from electrogalvanised sheet steel, blue
Membrane:	Polyester fabric, coated on both sides
Ambient temperature:	max. 55°C
Medium temperature:	–30 … +80°C
Shut-off point:	0.6–2.5 bar
Type of protection:	IP 10 acc. to DIN 40050
Switching capability:	2A (2) 230V – acc. to DIN EN 61058-1
Contact:	Changeover switch
Pressure ranges (setting ranges) and differentials:	**(a) in normal range** Switching range 1: can be set to between 1.0 and 4.0 kp/cm² Differential can be set to between 0.7 and 1.5 kp/cm² Switching range 2: can be set to between min. 0.3 and max.1.0 kp/cm² below the 1st range Differential fixed at 0.3 kp/cm² **(b) with increased pressure range**: Switching range 1: can be set to between 1.3 and 6.0 kp/cm² Differential can be set to between 0.7 and 1.5 kp/cm² Switching range 2: can be set to between min. 0.3 and max.1.0 kp/cm² below the 1st range Differential fixed at 1.3 kp/cm²

Application

The JPS is a universal pressure switch with 2 switching ranges, suitable for oil, water and air.

It can also be used as a controller for domestic oil supply systems, pressure boosters, oil feed pumps etc.

All devices have changeover contacts.

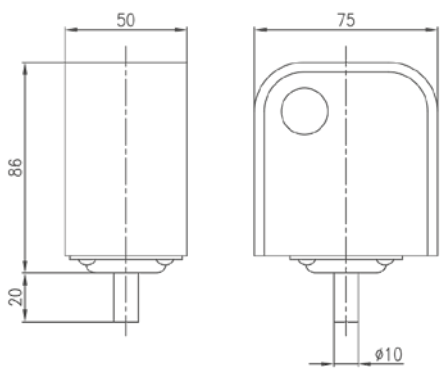
The starter knob works in such a way that the second switching range is bridged (if it is functioning as a safety margin).
The red telltale remains lit up until the pressure required for the 1st switching range has been built up

Type	Item no.	Measurement ranges	Equipment	WG
JPS-1	E6160006	2 switching ranges, with starter knob and telltale	Fitting for 10 mm cutting ring screw connection	II
JPS-3	E6160020	2 switching ranges, with starter knob and telltale, other switch-on point	Hexagonal fitting (WAF17) with 1/4" internal thread	II
JPS-3 B	E6160044	2 switching ranges, with starter knob and telltale, other switch-on point	Fitting for 10 mm cutting ring screw connection	II
JPS-4	E6160057	2 switching ranges, with starter knob and telltale, for the higher pressure range	Fitting for 10 mm cutting ring screw connection	II
JPS-13	E6160119	2 switching ranges, with starter knob and telltale	Hexagonal fitting (WAF17) with 1/4" internal thread	II

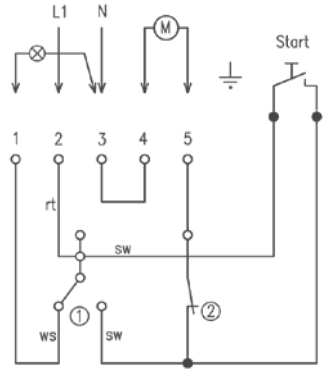
Switching points (set in the factory)

JPS-Typ	1	3	3 B	4	13
Lower shut-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
Shut-off point (tolerance / +- 0.02 bar)	2,5	2,5	2,9	2,5	2,5

JPS



JSW



alre

Notes

SENSOR TECHNOLOGY

Perfect control requires excellent sensors.

SENSOR TECHNOLOGY

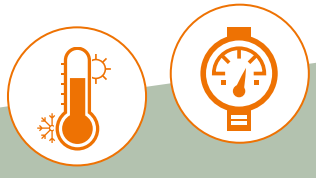
Sense correctly to act intelligently.

Sensor technology is becoming more and more important. It makes life safer and more comfortable through the processing of multifarious data. Physical parameters (temperature or pressure) are captured and made available to the intelligent control technology.

Sensor technology as 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



SENSOR TECHNOLOGY overview:

Temperature

Differential pressure

Sensor characteristic curves
(see the technical annex in section “Accessories / miscellaneous”)

Room temperature sensors – 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, like RAL 9010
Housing material:	ABS plastic
Ambient temperature:	–10 … +50 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals 0.33 mm² to 1.5 mm² only to safety extra low voltage max. 30 VAC / 42 VDC
Max. measurement current:	< 1 mA
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 (4-hole assembly on flush-mounted socket)
Protection rating:	IP 30
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.

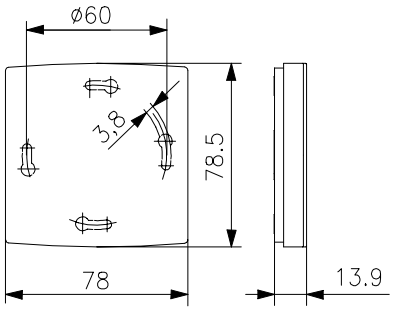
Assembly and wiring of the lower part can take place separately, surface-mounted or on a switch socket Ø 60 mm by means of socket screws.

Please follow the EMC directives. Avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

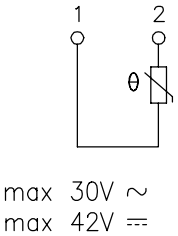
Sensor	Type	Item no.	PG
PT-100	BTF2-P100-0000	SA140000	III
PT-1000	BTF2-P1000-0000	SA140001	III
NTC 2K25 “Sensor 0”	BTF2-C225-0000	SA140013	III
NTC 47K “Sensor 2”	BTF2-C47-0000	SA140014	III
NTC 8K “Sensor 3”	BTF2-C08-0000	SA140015	III
NTC 10K “Sensor 4”	BTF2-C10-0000	SA140006	III
NTC 2K “Sensor 8”	BTF2-C02-0000	SA140016	III
KTY 81-121 “Sensor 51”	BTF2-Y81/121-0000	SA140017	III
KTY 11-7 “Sensor 57”	BTF2-Y11/7-0000	SA140018	III

Accessories	Item no.	Features	PG
JZ-21	MN990006	Adapter frame for mounting room temperature sensors of the Berlin 1000 series in flush-mounted sockets up to **80 x 80 mm**	I

Dimension drawing Berlin 1000



Circuit diagram



Room temperature sensors – flush-mounted FUF

for measuring the temperature in dry rooms

Technical data

Design:	Berlin UP (flush-mounted)
Housing colour:	pure white, like RAL 9010
Housing material:	PC plastic
Ambient temperature:	–10 … +50 °C
Permissible atmospheric humidity:	max. 95% rel. humidity, non-condensing
Electrical connection:	screw-type terminals 0.5 mm² to 1.5 mm² only to safety extra low voltage max. 30 VAC/42 VDC
Max. measurement current:	< 1 mA
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:	in flush-mounted socket, can be adapted to fit virtually any 50 x 50 mm surface switch ranges
Protection rating:	IP 30
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 50 x 50-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.

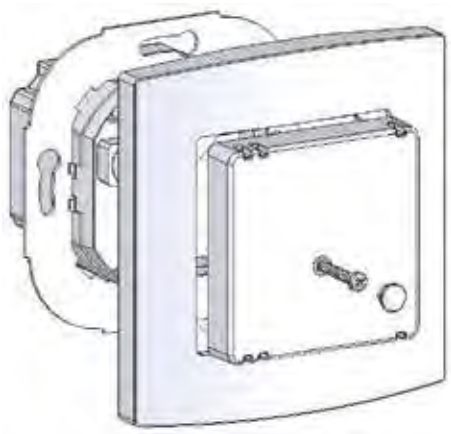
Sensor	Type	Item no.	Surface finish	PG
PT-100	FUFP 100-0000	SN090000	glossy	III
PT-1000	FUFP 1000-0000	SN090001	glossy	III
NTC 2K25 “Sensor 0”	FUFC 225-0000	SN090197	glossy	III
NTC 47K “Sensor 2”	FUFC 47-0000	SN090198	glossy	III
NTC 8K “Sensor 3”	FUFC 08-0000	SN090199	glossy	III
NTC 10K “Sensor 4”	FUFC 10-0000	SN090005	glossy	III
NTC 2K “Sensor 8”	FUFC 02-0000	SN090200	glossy	III
KTY 81-121 “Sensor 51”	FUFY 81/121-0000	SN090201	glossy	III
KTY 11-7 “Sensor 57”	FUFY 11/7-0000	SN090202	glossy	III

Accessories	Item no.	Features	PG
JZ-090.900	VV000025	alre frame “Berlin” for all flush-mounted controllers and sensors with 50 x 50-mm pure white cover, glossy, like RAL 9010	I

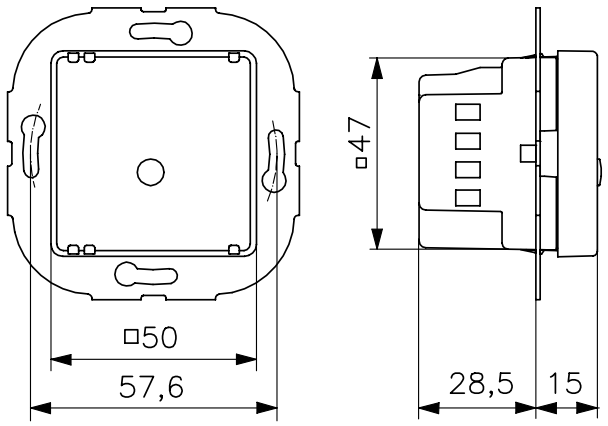
Room temperature sensors – flush-mounted FUF

for measuring the temperature in dry rooms

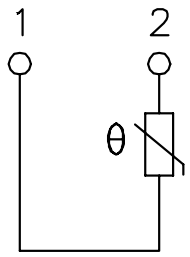
FUF with alre frame “Berlin”



Dimension drawing RUF



Circuit diagram FUFxx-0000



Outdoor temperature sensors AF with passive output

AF … outdoor temperature sensor with inside sensor

AF

Technical data

Housing colour:	pure white, like RAL 9010
Housing material:	PA plastic (30% GF reinforced)
Ambient temperature:	–30 … +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
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:	IP 65
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

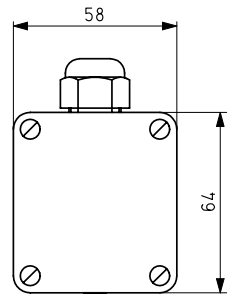
The AF outdoor temperature sensors are used for temperature measurement in the outdoors, in damp environments, in cold storage rooms and greenhouses as well as in industrial applications and are specially protected against dust and moisture. If there is direct incident sunlight on the sensor housing, 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.

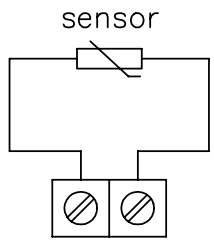
Sensor	Type	Item no.	PG
PT 100	**AFP 100**	G9040010	III
PT 1000	**AFP 1000**	G9040020	III
NTC 2K25 “Sensor 0”	**AF-0**	G9040360	III
NTC 1K “Sensor 1”	**AF-1**	G9040370	III
NTC 47K “Sensor 2”	**AF-2**	G9040380	III
NTC 8K “Sensor 3”	**AF-3**	G9040390	III
NTC 10K “Sensor 4”	**AF-4**	G9040400	III
NTC 50K “Sensor 5”	**AF-5**	G9040561	III
NTC 2K “Sensor 8”	**AF-8**	G9040410	III
KTY 81-121 “Sensor 51”	**AF-51**	G9040420	III
KTY 11-7 “Sensor 57”	**AF-57**	G9040681	III

Accessories	Item no.	Features	PG
S protection 01	G9990170	Ball impact guard, sun and rain protection; 150 x 90 x 47 mm; stainless steel V4A 1.4571	III

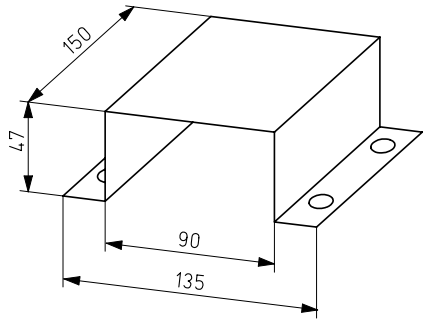
Dimension drawing



Sensor circuit diagram



S protection 01



Outdoor temperature sensors AFH with passive output

AFH … outdoor temperature sensor with sleeve lead-out

Technical data

Housing colour:	pure white, like RAL 9010
Housing material:	PA plastic (30% GF reinforced)
Operating voltage (active):	24 VDC
Ambient temperature:	–30 … +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 to 2.5 mm² only to safety extra low voltage, max. passive output: 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:	IP 65
Protection class:	III
Safety and EMC:	according to DIN EN 60730

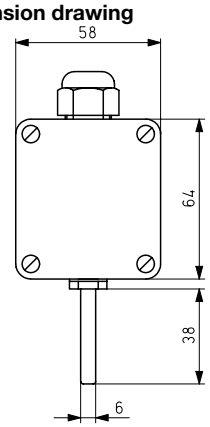
Application

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 (passive)	Item no.	PG
PT 100	**AFHP 100**	G9040160	III
PT 1000	**AFHP 1000**	G9040170	III
NTC 10 K “Sensor 4”	**AFHC 10**	G9040220	III

Dimension drawing



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 mm x 45 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, 2 x 0.5 mm² (HFP 100/S/6 m: 6 m, 2 x 0.5 mm²)
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:	in immersion sleeve, protection coil, on pipe etc.
Protection rating:	IP 65, 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.

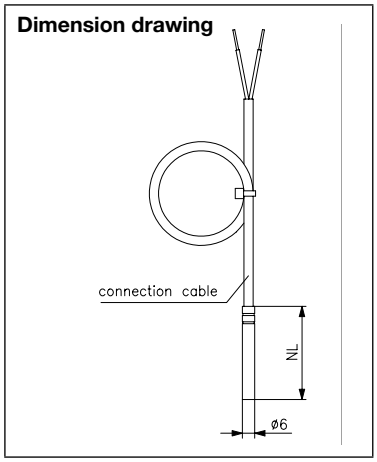
If used in liquid media, integration in an immersion sleeve is necessary.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

Sensor	Type	Item no.	Features	PG
PT 100	**HFP 100/P**	G9030010	Sensor wire PVC, –35 ... +105 °C	III
PT 1000	**HFP 1000/P**	G9030020	Sensor wire PVC, –35 ... +105 °C	III
NTC 10 K	**HFC 10/P**	G9030070	Sensor wire PVC, –35 ... +105 °C	III

Sensor	Type	Item no.	Features	PG
PT 100	**HFP 100/S**	G9030140	Sensor wire, silicone, –50 ... +150 °C	III
PT 100	**HFP 100/S/6 m**	G9030411	Sensor wire, silicone, –50 ... +150 °C	III
PT 1000	**HFP 1000/S**	G9030150	Sensor wire, silicone, –50 ... +150 °C	III
Ni 1000	**HFN 1000/S**	G9030160	Sensor wire, silicone, –50 ... +150 °C	III
NTC 10 K	**HFC 10/S**	G9030200	Sensor wire, silicone, –50 ... +150 °C	III

Dimension drawing



Cable temperature sensor KF

(Remote sensor for alre standard devices, for example, ITR79 …)

Technical data	
Sensor dimensions:	see dimension schematic
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 extendable 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

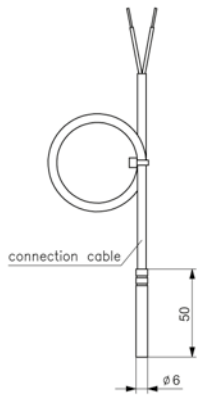
Application

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	PG
“Sensor 0” (NTC 2 K 25)	**KF-0**	G9031441	Wire PE, 1.5 m, –35…+100 °C	III
“Sensor 1” (NTC 1K)	**KF-1**	G9031442	Wire PE, 1.5 m, –35…+100 °C	III
“Sensor 2” (NTC 47K)	**KF-2**	G9031446	Wire PE, 1.5 m, –35…+100 °C	III
“Sensor 3” (NTC 8 K)	**KF-3**	G9031447	Wire PE, 1.5 m, –35…+100 °C	III
“Sensor 4” (NTC 10 K)	**KF-4**	G9031449	Wire PE, 1.5 m, –35…+100 °C	III
“Sensor 4” (NTC 10 K)	**KF-4/6**	G9031450	Wire PE, 6 m, –35…+100 °C	III
“Sensor 5” (NTC 50 K)	**KF-5**	G9031451	Wire PE, 1.5 m, –35…+100 °C	III
“Sensor 6” (NTC 100 K)	**KF-6**	G9031455	Wire PE, 1.5 m, –35…+100 °C	III
“Sensor 51” (KTY 81-121)	**KF-51**	G9031452	Wire silicone, 1.5 m, –50…+150 °C	III
“Sensor 51” (KTY 81-121)	**KF-51/6**	G9031453	Wire silicone, 6 m, –50…+150 °C	III
“Sensor 57” (KTY 11-7)	**KF-57**	G9031454	Wire PE, 1.5 m, –35…+100 °C	III
PT-100	**KF-100-4**	G9031443	Wire silicone, 1.5 m, –50…+180 °C	III
PT-100	**KF-100/6-4**	G9031444	Wire silicone, 6 m, –50…+180 °C	III
PT-1000	**KF-1000**	G9031445	Wire silicone, 1.5 m, –50…+180 °C	III

Dimension drawing KF



Contact temperature sensor ALF

Technical data

Housing colour:	pure white, like RAL 9010
Housing material:	PA plastic (30% GF reinforced)
Ambient temperature:	–30 … +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 to 2.5 mm² only to safety extra low voltage passive max. 30 V AC/42 VDC
Mounting/attachment:	on pipe by means of cable tie
Tolerances:	PT100/PT1000
Protection rating:	IP 65
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.

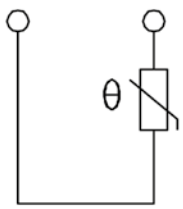
For better temperature transmission between the pipe and the contact sensor, the use of a heat conducting paste is recommended.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

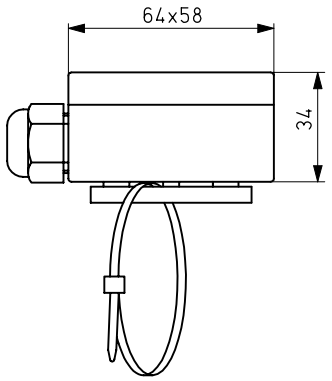
Sensor	Type	Item no.	PG
PT 100	**ALFP 100**	G9050010	III
PT 1000	**ALFP 1000**	G9050020	III
“Sensor 0” (NTC 2K25)	**ALF-0**	G9050270	III
“Sensor 2” (NTC 47K)	**ALF-2**	G9050160	III
“Sensor 3” (NTC 8K)	**ALF-3**	G9050180	III
“Sensor 4” (NTC 10K)	**ALF-4**	G9050190	III
“Sensor 5” (NTC 50K)	**ALF-5**	G9050200	III
“Sensor 51” (KTY 81-121)	**ALF-51**	G9050210	III

Accessories	Item no.	Features	PG
WP-01	G9990180	heat conduction paste 2 ml	II

Circuit diagram



Dimension drawing



Pendulum temperature sensor PF

Technical data

Sensor material:	Al black, PVC wire
Sensor dimensions:	Ø 60 mm
Ambient temperature:	–30 … +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
Sensor wire extendable:	depending on the cross-section of the conductor and the sensor unit type
Connecting cable:	2 x 0.5 mm²
Mounting/attachment:	suspended
Tolerances:	PT100/PT1000 DIN EN 60751 B NI1000 DIN EN 43760 B
Protection rating:	IP 65
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

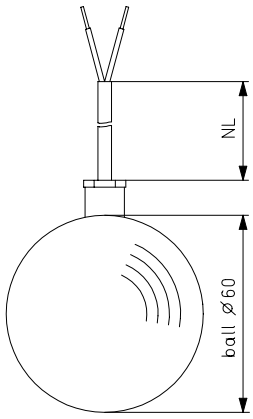
Application

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	PG
PT 100	**PFP 100**	G9130010	Wire length: 1 m	III
PT 1000	**PFP 1000**	G9130020	Wire length: 1 m	III
“Sensor 4” NTC 10 K	**PFC 10**	G9130070	Wire length: 1 m	III
“Sensor 2” NTC 47 K	**PFC 47/6 (6 m)**	G9130180	Wire length: 6 m	III

PF dimension drawing



Radiation temperature sensor STF

Technical data

Design:	Berlin 2000
Housing colour:	pure white, like 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
Sensor wire extendable:	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:	IP 30
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

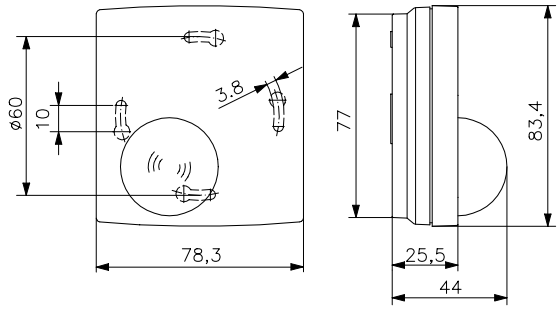
Application

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.

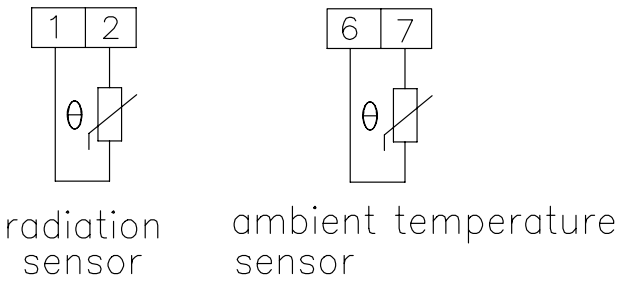
Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

Sensor	Type	Item no.	PG
“Sensor 0” 2x NTC 2 K 25	**STF-0**	SN080100	III
“Sensor 2” 2x NTC 47 K	**STF-2**	SN080200	III
“Sensor 4” 2x NTC 10 K	**STF-4**	SN080400	III
“Sensor 51” 2x KTY-81-121	**STF-51**	SN080500	III

STF dimension drawing



STF connection diagram



Assembly-type duct sensor EKF

with passive output

Technical data

Housing colour:	pure white, like 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:	IP 65
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

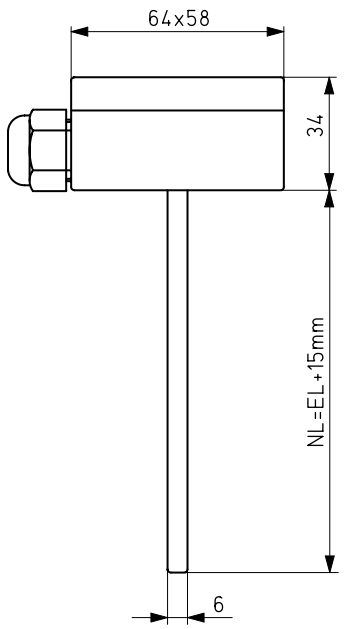
Sensor wire extendable: depending on the cross-section of the conductor and the sensor unit type

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

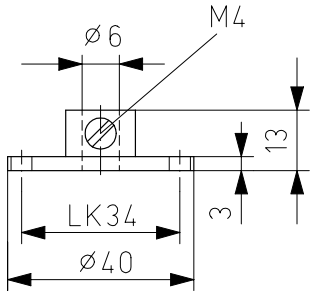
Sensor	Fitting length 65 mm (for 50 mm immersion sleeves)	Fitting length 115 mm (for 100 mm immersion sleeves)	Fitting length 165 mm (for 150 mm immersion sleeves)	PG
PT 100	**EKFP 100 / 50** Item no.: G9140010	**EKFP 100 / 100** Item no.: G9140140	**EKFP 100 / 150** Item no.: G9140270	III
PT 1000	**EKFP 1000 / 50** Item no.: G9140020	**EKFP 1000 / 100** Item no.: G9140150	**EKFP 1000 / 150** Item no.: G9140280	III

Accessories	Item no.	Features	PG
MF	G9990160	mounting flange for integrated duct sensor	III

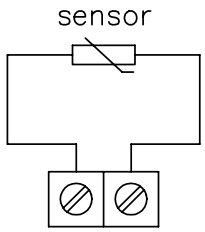
Dimension schematic, assembly-type duct sensor



Dimension schematic, mounting flange MF



Circuit diagram, 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 … +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:	IP 43
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.

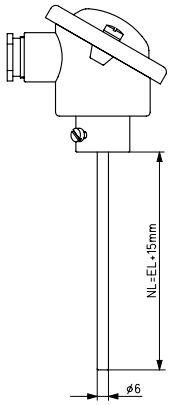
Sensor wire extendable:
Depending on the cross-section of the conductor and the sensor unit type

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

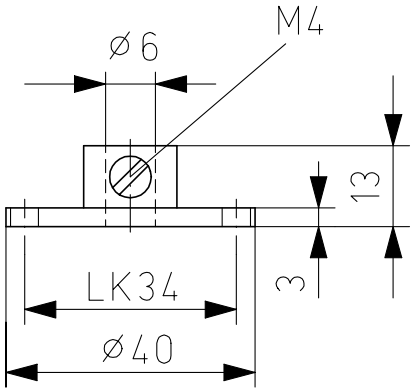
Sensor	Fitting length (EL) 65 mm (for 50 mm immersion sleeves)	Fitting length (EL) 115 mm (for 100 mm immersion sleeves)	Fitting length (EL) 165 mm (for 150 mm immersion sleeves)	PG
PT 1000	**IKF1P 1000/50** Item no.: G9150020	**IKF1P 1000/100** Item no.: G9150150	**IKF1P 1000/150** Item no.: G9150280	III

Accessories	Item no.	Features	PG
MF	G9990160	mounting flange for integrated duct sensor	III

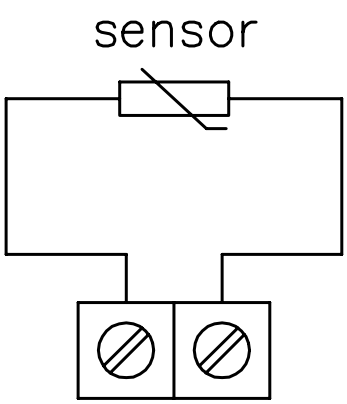
Dimension schematic, industrial assembly-type duct sensor



Dimension schematic, mounting flange MF



Connection diagram 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…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:	IP 54
Protection class:	III
Safety and EMC:	according to DIN EN 60730
Sensor:	piezo-resistive pressure sensor
Pressure connection:	d x L: 6.6 x 10 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, under-pressure 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.

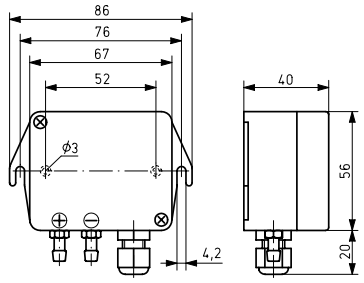
The types MDEKD replace the types DF.

Please follow the EMC directives, avoid parallel routing with mains voltage-bearing wires, or use shielded wires.

Type	Item no.	Measurement ranges	PG
MDEKD-940.000	G9270010	1000 Pa, 750 Pa; 500 Pa; 250 Pa relative pressure	III
MDEKD-940.100	G9270020	10000 Pa; 7500 Pa; 5000 Pa; 2500 Pa relative pressure	III

Accessories	Item no.	Features	PG
JZ-27	G9990450	cover with 3.5-digit LC display for MDEKD, easy assembly	III
JZ-01 L	H5309226	Single duct connection made of plastic (grey) Ø 6 mm external for differential pressure switch JDW, JDL, pressure transducer	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 differential pressure switch JDW, JDL, pressure transducer	II

Dimension drawing



MDEKD with JZ-27

ACCESSORIES AND MISCELLANEOUS

Personalisation off the rack.

ACCESSORIES AND MISCELLANEOUS

Supplements to our range of services.

Perfect control technology becomes even more perfect with our accessories – and there is a broad range of items to choose from. Precise assembly made easy thanks to our technical explanations, assembly instructions and hints on correct use.

This section provides you with the entire range of accessories as well as with valuable tips for experts.

Helping you make things better.

Application examples:

- Controllers for dry and wet saunas
- Process connections for liquid and gaseous media
- Various accessories

ACCESSORIES / MISCELLANEOUS overview

Sauna controllers

Accessories

Technical annex

Index

General information / Contact / Addresses

Sauna controllers SAUNATHERM VU / HYGROTHERM VU

For dry and wet saunas

Technical data	
Colour:	cream white, like RAL 9001
Housing material:	ABS
Mains voltage:	400 VAC, 3 / N 50 Hz
Features:	sensor rupture / short-circuit safe-guarding, “light” switch, “ON / OFF” switch, “light / fan / electronics” micro-fuse,“ON / OFF” contact input
Trigger temperature of safe-ty 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:	IP 44
Protection class:	II, if properly mounted
Safeguarding:	T1, 25 A (5 x 20)
Scope of delivery:	control unit, sensor / STB, fastening screws
Mounting:	wall mounting
Ambient temperature:	–15 … +25 °C
Electrical connection:	screw-type terminals
Permissible atmospheric humidity:	max. 95% rel. humidity, non-con-densing

Application

Sauna controllers for dry or dry / wet saunas.

Load expansion possible with LG 9 / 18 (18 kW) or LG 9 / 30 (30 kW).

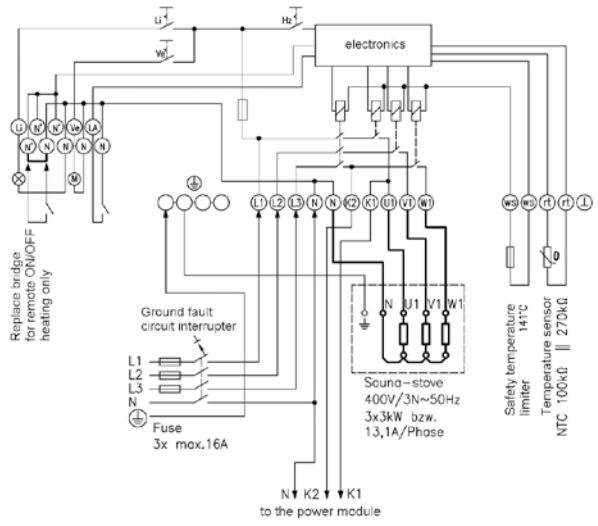
Type / image	Item no.	Features	PG
Saunatherm VU 	D4700653	Sauna controller for dry saunas (Finnish) Control range: 30 … 120 °C Switch: “Fan On / Off” Indicators: “HEATING”, “ON / OFF”, “Pre-selection timer”	III
Hygrotherm VU 	D4700736	Sauna controller for dry saunas (Finnish) or wet saunas Control range, dry sauna: 80 … 110 °C Control range, wet sauna: 40 … 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 … 80 °C Post-operation drying limitation: approx. 3.5 h Fan post-operation time: approx. 15 minutes	III

Accessories, sauna controllers SAUNATHERM VU / HYGROTHERM VU

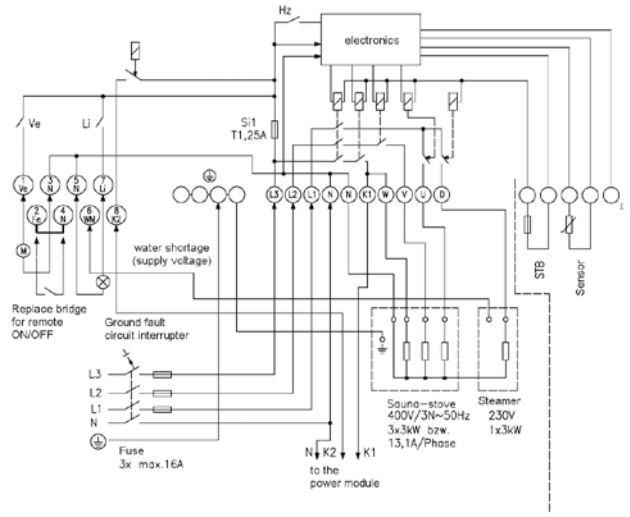
For dry and wet saunas

Type / image	Item no.	Features	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).	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).	III
Sensor / STB 	D4700662	Spare sensor / STB for Saunatherm VU and Hygrotherm VU	III

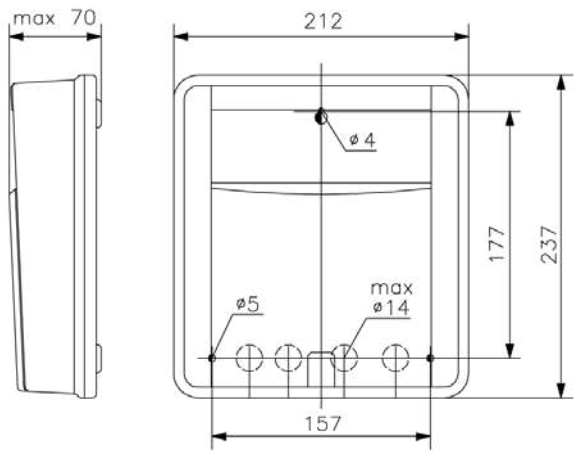
Circuit diagram, Saunatherm VU



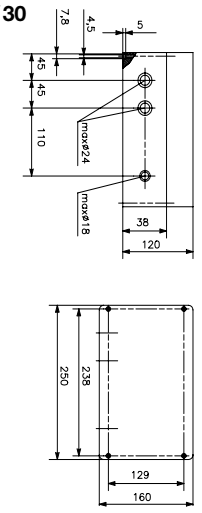
Circuit diagram, Hygrotherm VU



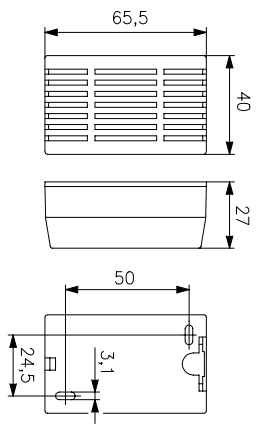
Sauna controllers, LG 9 / 18



LG 9 / 30



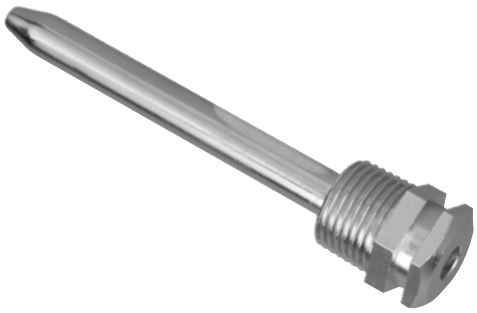
Sensor / STB



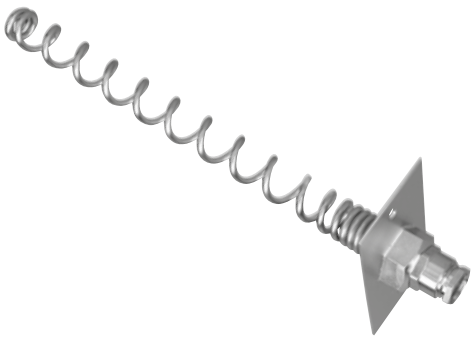
Immersion sleeves / protection coils for RTKSA and for sleeve and cable sensors

For industrial applications and heating technology

THK / NTHK



SW-200 / SW-200-12



Type	Item no.	Length of L	Diameter I x A*	Material	Max. pressure (P / bar)	PG
Immersion sleeves for RTKSA						
THK-2-100	KA969901	100 mm	7.5 x 10 mm	nickel-plated brass	20	II
THK-2-120	KA969902	120 mm	7.5 x 10 mm	nickel-plated brass	20	II
THK-2-200	KA969903	200 mm	7.5 x 10 mm	nickel-plated brass	20	II
THK-2-280	KA969904	280 mm	7.5 x 10 mm	nickel-plated brass	20	II
THK-2-600	KA969905	600 mm	7.5 x 10 mm	nickel-plated brass	20	II
NTHK-2-100	KA969906	100 mm	7.5 x 10 mm	V4 A (1.4571)	40	II
NTHK-2-120	KA969907	120 mm	7.5 x 10 mm	V4 A (1.4571)	40	II
NTHK-2-200	KA969908	200 mm	7.5 x 10 mm	V4 A (1.4571)	40	II
NTHK-2-280	KA969909	280 mm	7.5 x 10 mm	V4 A (1.4571)	40	II
THK-2-100 x 17	KA979901	100 mm	14.8 x 17 mm	nickel-plated brass	20	II
THK-2-200 x 17	KA979902	200 mm	14.8 x 17 mm	nickel-plated brass	20	II
NTHK-2-100 x 17	KA979903	100 mm	14.8 x 17 mm	V4 A (1.4571)	40	II
NTHK-2-200 x 17	KA979904	200 mm	14.8 x 17 mm	V4 A (1.4571)	40	II

Type	Item no.	Length of L	Diameter I x A*	Material	PG
Protection coil for RTKSA					
SWK-2-100	KA989901	100 mm	10.5 x 17 mm	steel, nickel-plated	II
SWK-2-120	KA989902	120 mm	10.5 x 17 mm	steel, nickel-plated	II
SWK-2-200	KA989903	200 mm	10.5 x 17 mm	steel, nickel-plated	II
SWK-2-280	KA989904	280 mm	10.5 x 17 mm	steel, nickel-plated	II

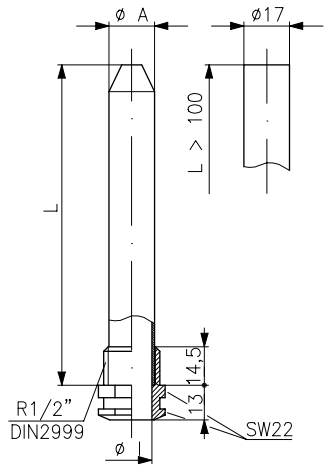
Type	Item no.	Length of L	Cable gland	Diameter I x A*	Material	PG
Protection coil for capillary fastening in the air duct (JET / JMT / JTF) and all sleeve sensors HF and cable sensors						
SW-200	C1809219	200 mm	7.8 mm	11 x 17 mm	steel, nickel-plated	II
SW-200-12	C1809220	200 mm	11.8 mm	11 x 17 mm	steel, nickel-plated	II

* I = minimum inner diameter
A = nominal outer diameter

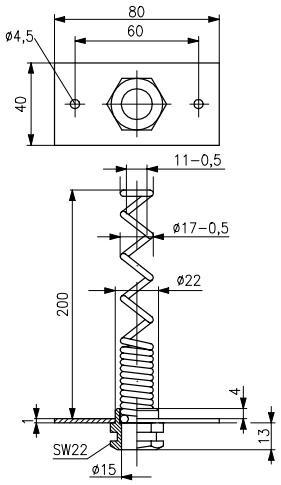
Immersion sleeves / protection coils for RTKSA and for sleeve and cable sensors

For industrial applications and heating technology

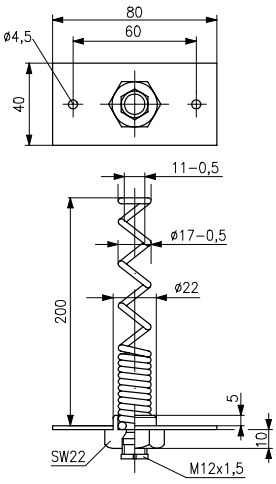
THK / NTHK



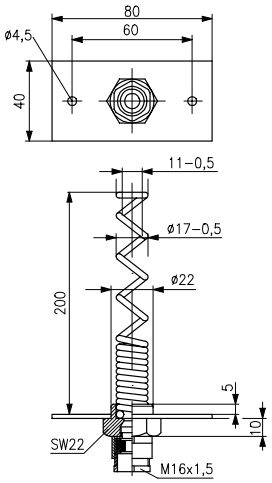
SWK



SW-200



SW-200-12



Immersion sleeves for capillary/frost protection thermostats/HF/screed mounting

For industrial applications and heating technology

TH/NTH

THF

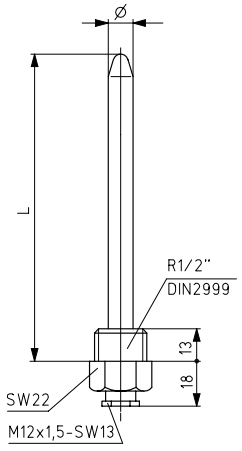
Type	Item no.	Length of L	Diameter l x A**	Material	Max. pressure (P/bar)	PG
For sensors HF Ø 7,7 mm, capillary and frost protection thermostats JET/JMT/WR 81 and JTF (for JTF, only type TH/NTH-140)						
TH-55	C1809296	55 mm	8 x 10 mm	nickel-plated brass	20	II
TH-100	C1809310	100 mm	8 x 10 mm	nickel-plated brass	20	II
TH-140*	C1809409	140 mm	10 x 12 mm	nickel-plated brass	20	II
TH-200	C1809438	200 mm	8 x 10 mm	nickel-plated brass	20	II
TH-280	C1809440	280 mm	8 x 10 mm	nickel-plated brass	20	II
NTH-55	C1809284	55 mm	8 x 10 mm	V4 A (1.4571)	40	II
NTH-100	C1809308	100 mm	8 x 10 mm	V4 A (1.4571)	40	II
NTH-140*	C1809435	140 mm	10 x 12 mm	V4 A (1.4571)	40	II
NTH-200	C1809439	200 mm	8 x 10 mm	V4 A (1.4571)	40	II
NTH-280	C1809441	280 mm	8 x 10 mm	V4 A (1.4571)	40	II

* Suitable for all types with an X in the designation, for example JET-1… X or JMT 206 X
** l = minimum inner diameter
A = nominal outer diameter

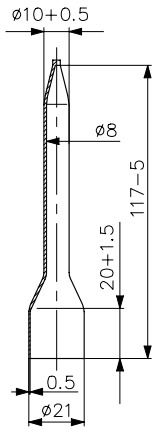
Cu protective sleeve for sleeve sensor HF/cable sensor KF for screed mounting

THF	C1809515	II

TH/NTH



THF

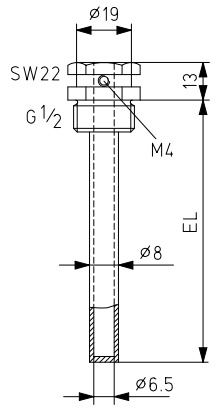


Immersion sleeves / mounting flange for HF, KF, EKF and IKF

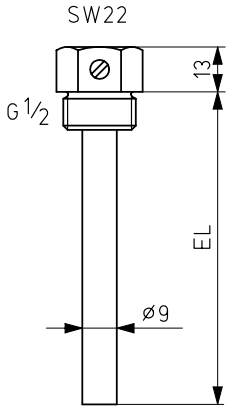
for sleeve sensors / cable sensors Ø 6 mm PVC and silicone, assembly-type and industrial duct sensors

For sensor technology

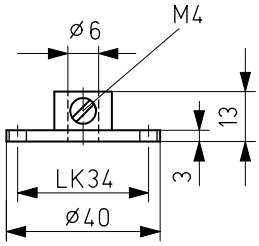
THMs



THV



MF



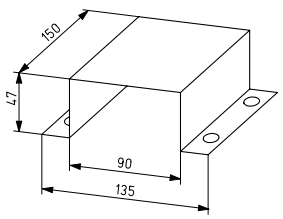
Type	Item no.	Fitting length EL	Diameter I x A*	Max. pressure (P / bar)	PG
Immersion sleeves, nickel-plated, with recess					
THMs / 50	G9990010	50 mm	6.5 x 8 mm	20	II
THMs / 100	G9990020	100 mm	6.5 x 8 mm	20	II
THMs / 150	G9990030	150 mm	6.5 x 8 mm	20	II
THMs / 200	G9990040	200 mm	6.5 x 8 mm	20	II
THMs / 250	G9990050	250 mm	6.5 x 8 mm	20	II
THMs / 300	G9990370	300 mm	6.5 x 8 mm	20	II
Immersion sleeves, stainless steel V4 A 1.4571					
THV / 50	G9990060	50 mm	6.3 x 9 mm	40	II
THV / 100	G9990070	100 mm	6.3 x 9 mm	40	II
THV / 150	G9990080	150 mm	6.3 x 9 mm	40	II
THV / 200	G9990090	200 mm	6.3 x 9 mm	40	II
THV / 250	G9990100	250 mm	6.3 x 9 mm	40	II
THV / 300	G9990200	300 mm	6.3 x 9 mm	40	II
THV / 400	G9990210	400 mm	6.3 x 9 mm	40	II
THV / 450	G9990470	450 mm	6.3 x 9 mm	40	II
THV / 500	G9990220	500 mm	6.3 x 9 mm	40	II
THV / 600	G9990400	600 mm	6.3 x 9 mm	40	II
Mounting flange, aluminium					
MF	G9990160		6 x 40 mm		II

* I = minimum inner diameter
A = nominal outer diameter

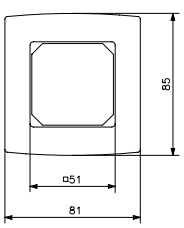
Accessories for heating technology / air conditioning technology / plant engineering and sensors

Type	Item no.	Description	PG
ATRS-1	C1809518	Temperature determination set for ATR 83.0…	II
ET-01	MA990000	Adjusting knob for B1000 series devices, scale: Degrees Celsius, pure white glossy	I
ET-02	MA990001	Adjusting knob for B1000 series devices, multi-digit display 1 … 6, pure white glossy	I
FS-HI	H530975	Sensor protection (protective wire braiding) for duct hygrostat HI	II
FS2-HI	H531011	PTFE filter fine protection for duct hygrostat HI	II
JZ-04	E6160133	capillary tube leadthrough for air ducts with 30 cm protective hose (JTF frost protection thermostats, JMT capillary controllers, WR, JET)	II
JZ-05/6 K	C1809536	1 set of assembly brackets (6 pieces) for JTF frost protection thermostats made of plastic (max. 145 °C)	II
JZ-05/6 M	C1809474	1 set of mounting brackets (6 pieces) for frost protection thermostat JTF, made of metal	II
JZ-05/1 M	C1809462	single mounting bracket for frost protection thermostat JTF, made of metal	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 differential pressure switch, JDW, JDL, pressure transducer DF	II
JZ-07	E6160145	Mounting bracket for frost protection thermostats JTF	II
JZ-08	E6150031	Spare vane for wind indication relay JSL	II
JZ-09	E6140170	Spare paddles (4 pieces), from 1"… 8" for flow monitor JSF	II
JZ-10	H5309237	Mounting bracket for JDL 109/-113 and JDW-3/-5/-10 with 6 screws	II
JZ-13	ZA990001	standard rail with drilled holes for fastening control cabinet controllers (length 40 mm)	II
JZ-17	MN990001	Adapter plate for Berlin 3000 housing (hard-wired)	II
JZ-18	MN990002	Adapter snap-on plate (controller is detachable) for Berlin 3000 housing (wireless)	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	I
JZ-20-1	E6130144	Wall holder including fastening material for duct hygrostat (HI)	II
JZ-21	MN990006	Adapter frame for mounting devices of the Berlin 1000 series in flush-mounted sockets up to 80 x 80 mm	I
JZ-24	BN990002	Magnetic fastening set for simple and safe fastening of multi-channel receivers or wiring strips VOORL	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 31 for product photo)	II
JZ-26	BN990004	Antenna cable 1 m for connecting the external antenna JZ-25 with multi-channel receivers	II
JZ-27	G9990450	LC-display 3½ digit, for MDEKD	III
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	II
JZ-29	KA999901	Mounting set RTKSA for THK/NTHK/SWK single thermostat	II
JZ-30	KA999902	Mounting set RTKSA for THK/NTHK/SWK double thermostat	II
JZ-31	KA999903	Mounting set RTKSA for pipe mounting as contact thermostat	II
JZ-32	BN990005	Magnetic fastening set for simple and safe fastening	II
JZ-090.900	VV000025	alre frame “Berlin” for all flush-mounted controllers with cover 50 x 50 pure white, glossy, like RAL 9010. Fastening of the terminal strip VOOPL on a metallic surface (e.g. heating circuit distributor)	I
JZ-090.910	VV000010	alre frame “Berlin” for all flush-mounted controllers with cover 50 x 50 pearl white, glossy, like RAL 1013	I
S protection 01	G9990170	Ball impact guard, sun and rain protection; 150 x 90 x 47 mm; stainless steel V4A 1.4571	III
WP-01	G9990180	heat conduction paste 2 ml	II

S protection 01



alre frame “Berlin”



Accessories for heating technology / air conditioning technology / plant engineering and sensors

ET-01

ET-02

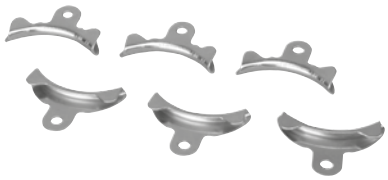
FS-HI

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

JZ-21

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, IP 20
DA480200	VOOPD-215.000	5-channel, IP65	DA480510	VOOPL-216.176	6-channel, IP 20
DA480400	VOOPL-318.000	8-channel, IP20	DA480520	VOOPL-318.178	8-channel, IP 20
DA480300	VOOPD-318.000	8-channel, IP65	DA480520	VOOPL-318.178	8-channel, IP 20

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 … +35 °C	1 K	**RTKSA-100.010**	–10 … +40 °C	1.3 K
JET-40F	0 … +35 °C	1 K	**RTKSA-101.010**	–10 … +40 °C	1.3 K
JET-41	0 … +70 °C	2 K	**RTKSA-100.110**	0 … +50 °C	1.3 K
JET-41F	0 … +70 °C	2 K	**RTKSA-101.110**	0 … +50 °C	1.3 K
JET-30	10 … 45 °C (external) TR 0 … 35 °C (internal) TW	approx. 1 K	**RTKSA-114.110**	0 … +50 °C (internal) TW 0 … +50 °C (internal) TW	1.3 K
JET-31	10 … +45 °C (internal) TW 0 … +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 … 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 … 65 °C	–8 K	**RTKSA-002.410**	30 … 110 °C	–10 K	THK-2-100 + JZ-29
KR 80.206 IP54	30 … 65 °C	–8 K				THK-2-100 + JZ-29
KR 80.207	60 … 95 °C	–8 K				THK-2-100 + JZ-29
LR 80.207	60 … 95 °C	–8 K				SWK-2-100 + JZ-29
KR 80.208	85 … 120 °C	–8 K	**RTKSA-002.310**	20 … 150 °C	–10 K	THK-2-100 + JZ-29
KR 80.202	95 … 130 °C	–8 K				THK-2-100 + JZ-29
KR 80.203	95 … 130 °C	–8 K				THK-2-200 + JZ-29
LR 80.203	95 … 130 °C	–8 K				SWK-2-200 + JZ-29
KR 80.203 IP54	95 … 130 °C	–8 K				THK-2-200 + JZ-29
WR 81.029-1	0 … 35 °C	0.5 … 1 K	**RTKSA-000.100**	0 … 50 °C	1.3 K	-
KR 80.003-1	0 … 35 °C	1 K				THK-2-120 + JZ-29
LR 80.003-1	0 … 35 °C	1 K				SWK-2-120 + JZ-29
WR 81.009-2	0 … 70 °C	1 … 2 K	**RTKSA-000.200**	0 … 120 °C	3 K	-
KR 80.035-2	0 … 70 °C	2 K				THK-2-100 + JZ-29
KR 80.027-5	0 … 70 °C	5 K				THK-2-100 + JZ-29
LR 80.027-5	0 … 70 °C	5 K				SWK-2-100 + JZ-29
LR 80.035-2	0 … 70 °C	2 K				SWK-2-100 + JZ-29
KR 80.028-2	0 … 70 °C	2 K				THK-2-200 + JZ-29
LR 80.028-2	0 … 70 °C	2 K				SWK-2-200 + JZ-29
KR 80.029-2	0 … 70 °C	2 K				THK-2-280 + JZ-29
KR 80.029-2 V4A	0 … 70 °C	3 K				NTHK-2-280 + JZ-29
LR 80.029-2	0 … 70 °C	2 K				SWK-2-280 + JZ-29
KR 80.011-1 V4A	10 … 45 °C	1 K				NTHK-2-120 + JZ-29
KR 80.009-1 V4A	10 … 45 °C	1 K				NTHK-2-200 + JZ-29
KR 80.000-5	35 … 95 °C	5 K				THK-2-100 + JZ-29
KR 80.001-5	35 … 95 °C	5 K				THK-2-200 + JZ-29
KR 80.001-5 V4A	35 … 95 °C	5 K				NTHK-2-200 + JZ-29
KR 80.008-8	40 … 110 °C	8 K				THK-2-100 + JZ-29
KR 80.006-8	50 … 130 °C	8 K	**RTKSA-000.300**	20 … 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 … 35 °C	0.5 … 1 K	**RTKSA-001.100**	0 … 50 °C	1.3 K	-
WR 81.129-1	0 … 35 °C	0.5 … 1 K				-
KR 80.108-1	0 … 35 °C	1 K				-
LR 80.108-1	0 … 35 °C	1 K				-
KR 80.109-1	0 … 35 °C	1 K				THK-2-200 + JZ-29
LR 80.109-1	0 … 35 °C	1 K				SWK-2-200 + JZ-29
WR 81.115-5	0 … 70 °C	4 K	**RTKSA-001.200**	0 … 120 °C	3 K	JZ-31
WR 81.109-2	0 … 70 °C	1 … 2 K				-
KR 80.116-2	0 … 70 °C	2 K				THK-2-100 + JZ-29
LR 80.116-2	0 … 70 °C	2 K				SWK-2-100 + JZ-29
KR 80.111-3	0 … 80 °C	1 K				THK-2-100 + JZ-29
KR 80.120-1	10 … 45 °C	1 K				THK-2-200 + JZ-29
LR 80.120-1	10 … 45 °C	1 K				SWK-2-200 + JZ-29
KR 80.100-5	35 … 95 °C	5 K	**RTKSA-001.301**	20 … 150 °C	3.3 K	THK-2-100 + JZ-29
KR 80.100-5 IP54	35 … 95 °C	5 K				NTHK-2-100 + JZ-29
KR 80.101-5	35 … 95 °C	5 K				THK-2-200 + JZ-29
LR 80.101-5	35 … 95 °C	5 K				SWK-2-200 + JZ-29
KR 80.124-5	35 … 95 °C	5 K				THK-2-280 + JZ-29
KR 80.112-5	35 … 95 °C	8 K	**RTKSA-001.300**	20 … 150 °C IP40	9.1 K	THK-2-600 + JZ-29
KR 80.102-8	40 … 110 °C	8 K				THK-2-100 + JZ-29
KR 80.103-8	40 … 110 °C	8 K				THK-2-200 + JZ-29
WR 81.117-5	50 … 130 °C	4 K				JZ-31
KR 80.106-8	50 … 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	Degree of protection: IP 54 Hysteresis: approx. 1 K Control range: –8 … +8 °C Tmax sensor: 150 °C	**RTKSA-204.200**	6 m	Degree of protection: IP 40 Hysteresis: approx. 1.5 K Control range: –10 … +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	

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.

Other notes:

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). Therefore, 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.

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.

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

Note for 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;
- 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	Underfloor
HTRRUu 210.021 see page 94–97 	✓	✓	✓
HTRRBu 110.1xx / 21 see page 72 	✓	✓	✓
Wireless system without weekly programme **Actuators: HTFRB, HTFRE** **Sensors: FTRFB** see Wireless systems chapter 	✓		
Wireless system with weekly programme* **Actuators: HTFRB, HTFRE** **Sensors: FTRFB, FTRFBu, FTRFUd** see Wireless systems chapter 	✓	✓	✓
b@home system see Wireless systems chapter 	✓	✓	✓
FTR-101.xxx **RTBSB-001.xxx** **RTBSB-001.4xx** see Heating Technology chapter 	✓		
FTR-101.xxx or RTBSB-001.xxx (variants with clock input) in conjunction with clock thermostat** see Heating Technology chapter 	✓	✓	✓
FETR-101.7xx **HTRRB-01x.xxx** see Heating Technology chapter 	✓		
FETR-101.7xx or HTRRB-01x.xxx in conjunction with clock thermostat** see Heating Technology chapter 	✓	✓	✓

* 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 subsidy of 30 percent 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.

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 30 percent by the state:

1st Replacement of heating circulation pumps and hot water circulation pumps by more efficient pumps
2nd Hydraulic balancing (heating system must be at least two years old)

For heating optimisation by **hydraulic adjustment**, you can also have our energy-saving **alre controllers (from RTBSU-401 to the b@home system)** installed by a specialist technician. The acquisition and installation costs are also subsidized at 30 percent.

Heating optimisation with the BAFA subsidy

What is subsidised?

Replacing the pumps

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

e.g. **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.

Step 1
Register on the BAFA website

Step 2
Contract a specialist technician and optimise the heating system

Step 3
Submit of the subsidy application and invoice copy

Further information on the BAFA subsidy programme can be found at **www.bafa.de**

Sensor characteristic curves – table of sensor values

Temperature	PT 100	PT 1000	NI 1000
°C	Ω	Ω	Ω
–50	80.30	803.00	742.55
–45	82.30	823.00	766.76
–40	84.30	843.00	791.31
–35	86.20	862.00	816.21
–30	88.20	882.00	841.46
–25	90.20	902.00	867.04
–20	92.20	922.00	892.96
–15	94.10	941.00	919.22
–10	96.10	961.00	945.82
–5	98.00	980.00	972.74
0	100.00	1000.00	1000.00
5	102.00	1020.00	1027.59
10	103.90	1039.00	1055.52
15	105.80	1058.00	1083.77
20	107.80	1078.00	1112.36
25	109.70	1097.00	1141.29
30	111.70	1117.00	1170.56
35	113.60	1136.00	1200.16
40	115.50	1155.00	1230.11
45	117.50	1175.00	1260.41
50	119.40	1194.00	1291.05
55	121.30	1213.00	1322.05
60	123.20	1232.00	1353.40
65	125.50	1252.00	1385.12
70	127.10	1271.00	1417.21
75	129.00	1290.00	1449.67
80	130.90	1309.00	1482.50
85	132.80	1328.00	1515.73
90	134.70	1347.00	1549.34
95	136.60	1366.00	1583.36
100	138.50	1385.00	1617.79
105	140.40	1404.00	1652.62
110	142.30	1423.00	1687.89
115	144.20	1442.00	1723.58
120	146.10	1461.00	1759.72
125	148.00	1480.00	1796.30
130	149.80	1498.00	1833.35
140	153.60	1536.00	1908.87
150	157.30	1573.00	1986.35

Sensor characteristic curves – table of sensor values

Temperature	Sensor 0 NTC 2K25	Sensor 1 NTC 1KO	Sensor 2 NTC 47K	Sensor 3 NTC 8K	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	Ω	Ω	Ω	Ω
–50	151398	32540	3152409	537827	672283	2820844	8276704	77977	510	1051
–45	106557	24432	2230085	378534	473168	2027885	5751387	57655	535	1103
–40	75923	18515	1595524	269709	337137	1473182	4044707	43039	562	1156
–35	54731	14156	1153886	194427	243033	1080969	2877133	32427	589	1212
–30	39895	10916	843120	141724	177155	800794	2069021	24651	617	1269
–25	29390	8486	622133	104107	130508	598684	1503450	18902	647	1328
–20	21871	6648	463401	77696	97120	451517	1103398	14615	677	1390
–15	16434	5248	348285	58379	72973	343390	817535	11391	708	1453
–10	12462	4172	264028	44269	55337	263262	611269	8947	740	1518
–5	9533	3340	201812	33866	42333	203390	461045	7079	773	1586
0	7355	2691	155480	26126	32658	158300	350656	5642	807	1655
5	5719	2182	120696	20318	25397	124082	268840	4527	842	1726
10	4482	1780	94377	15923	19903	97925	207702	3657	877	1799
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Technical terms

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.

Break 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.

Technical terms

Switching difference (hysteresis):

The 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 design 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.

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 1100hrs and 1200hrs 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.

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Index by product designations

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ALRE-IT Terms and Conditions of Sale and Supply (Updated 2019)

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 2018 (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 written confirmation 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 they are agreed expressly in writing.

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. Deviating from Art. IV (4) and Art. XI (1), and in addition to Art. VIII (10) 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. For payment within 14 days we grant a discount of 2%.

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. We are entitled to make a delivery in whole or in part only against advance payment or cash on delivery. We will declare corresponding reservations at the latest with the order confirmation.

7.4. If it becomes apparent after conclusion of the contract (e.g. by filing for insolvency proceedings) 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 (4) of the GL, remain unaffected.

8. Material defects

8.1. 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 7th 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.

8.2. 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.

8.3. 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 suitability 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.

8.4. Subsequent performance does not include the removal of the defective item or its re-installation if we were not originally obliged to install it.

8.5. Deviating from Art. VIII 8 and 9 of GL, we shall bear or reimburse the expenses necessary for the purpose of inspection and subsequent performance, in particular transport, travel, labour and material costs as well as, if applicable, dismantling and installation costs in accordance with the statutory provisions, if a defect actually exists. Otherwise, we may demand compensation from the buyer for the costs (in particular testing and transport costs) incurred as a result of the unjustified request to remedy the defect, unless the buyer was unable to recognise the lack of defectiveness. No. 8.1 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.

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 the 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.

The place of jurisdiction is Berlin.

This price list is valid from 01/01/2021. This price list supersedes all previous price lists and renders them invalid.

We reserve the right to make changes.

General notes

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 Annex XVII of Regulation (EC) No. 1907/2006 ('REACH') and Regulation (EU) No. 1272/2013.

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.

Notes

Notes

Company headquarters
ALRE-IT Regeltechnik GmbH
Richard-Tauber-Damm 10
12277 Berlin, Germany
Tel.: +49 (0) 30 399 84-0
Fax: +49 (0) 30 391 7005
E-mail: mail@alre.de
Internet: www.alre.de

Sales management
Klaus Lorenz
E-mail: Lorenz.Klaus@alre.de
Office
Tel.: +49 (0) 30 399 84-160
Fax: +49 (0) 30 399 84-129
E-mail: vertrieb@alre.de

Northern Region
German postal code zones
02, 03, 1, 2, 30, 31, 38, 39
Internal contact
Tel.: +49 (0) 30 399 84-123
Fax: +49 (0) 30 391 7005
E-mail: vertrieb@alre.de

Western Region
German postal code zones
32-35, 360 -363, 365-37, 4,
50-53, 57-61, 657-659
Internal contact
Tel.: +49 (0) 30 399 84-122
Fax: +49 (0) 30 391 7005
E-mail: vertrieb@alre.de

Southwestern region
German postal code zones
54-56, 63, 64, 650-656, 66-69, 7
Internal contact
Tel.: +49 (0) 30 399 84-121
Fax: +49 (0) 30 391 7005
E-mail: vertrieb@alre.de

Southern region
German postal code zones
8
Internal contact
Tel.: +49 (0) 30 399 84-121
Fax: +49 (0) 30 391 7005
E-mail: vertrieb@alre.de

Southeastern region
German postal code zones
01, 04-09, 364, 9
Internal contact
Tel.: +49 (0) 30 399 84-123
Fax: +49 (0) 30 391 7005
E-mail: vertrieb@alre.de

Export
Internal contact
Tel.: +49 (0) 30 399 84-213
Fax: +49 (0) 30 391 7005
E-mail: vertrieb@alre.de

Sales partner in Russia
2A-Avtomatizaciya Ltd.
Volgogradskiy pr-kt 45, Office 607
109316 Moscow
Tel.: +7 (0) 495 98 89 25 7
E-mail: info@2ae.ru
Internet: www.2ae.ru

Thermo Trade Engineering
Bumaznaya str. 4
190020 St. Petersburg
Tel.: +7 (0) 812 33 25 44 7
E-mail: info@tt-ing.ru
Internet: www.tt-ing.ru

Sales partner in Estonia, Latvia, Lithuania, Russia
OLIL Ltd.
Khimki, Engelsa Street 7/15, Room 10
141402 Moscow
Tel.: +7 (0) 495 54 38 85 4
E-mail: ilja@olil.ru
Internet: www.olil.ru

Sales partner in Poland, Romania, Ukraine, Belarus
DACPOL Sp. z o.o.
ul. Pulawska 34
05-500 Piaseczno
Tel.: +48 (0) 227 03 51 00
Fax: +48 (0) 227 03 51 01
E-mail: dacpol@dacpol.eu
Internet: www.dacpol.eu

Sales partner in the Netherlands
Betec Controls BV
Radeweg 25a
8171 MD Vaassen
Tel.: +31 (0) 578 57 71 79
Fax: +31 (0) 578 57 79 82
E-mail: info@beteccontrols.nl
Internet: www.beteccontrols.nl

Sales partner in France
DISIMPEX SA
14, rue Joseph Graff
67810 Holtzheim
Tel.: +33 (0) 390 20 74 20
Fax: +33 (0) 388 76 90 83
E-mail: info@disimpex.fr
Internet: www.disimpex.com

Sales partner in Austria
eh-technik
Reinbacher Ges.m.b.H. & Co KG
Gniglerstrasse 54
5020 Salzburg
Tel.: +43 (0) 662 87 00 53
Fax: +43 (0) 662 87 00 53 20
E-mail: office@eh-technik.at
Internet: www.eh-technik.at

Sales partner in Sweden
BONAB AB
Aröds Industriväg 76
42243 Hisings Backa
Tel.: +46 (0) 317 24 24 24
E-mail: alre@bonab.se
Internet: www.bonab.se

Sales partner in Switzerland
sensortec AG
Bahnhofstrasse 87
3232 Ins
Tel.: +41 (0) 32 312 70 00
Fax: +41 (0) 32 312 70 09
E-mail: info@sensortec.ch
Internet: www.sensortec.ch

Sales partner in the United Arab Emirates
Kenyard Distributors LLC
Controller Division
PO BOX 231400
Dubai
Tel.: +971 50 684 9976
E-mail: faisal@kenyardgroup.ae
Internet: www.kenyardgroup.ae

Sales partner in Iceland
Loft og Raftæki ehf.
Hjallabrekka 1
200 Kópavogur
Iceland
Tel.: +354 564-3000
E-mail: loft@loft.is
Internet: www.loft.is

Sales partner in China
Hefei Heating-Cooling
Equipment Control Technology Ltd
Level-7, Block-D, Building-3#,
Hefei Xinglu Industrial Park
Luyang District
230001 Hefei
Tel.: +86 (0) 551 656 33 19 0
Fax: +86 (0) 551 656 33 19 7
E-mail: 443231605@qq.com
Contact person: Panpan Li

DBK-Technology Ltd.
Room 10, 3/F, Po Hong Centre
2 Wang Tung Street
Kowloon Bay
Hong Kong
Tel.: +852 (0) 2401 1011
Fax: +852 (0) 2401 7202
E-mail: info@dbk-tech.com
Internet: www.dbk-group.com
Internet: www.dbk-cn.com

DBK Industrial Equipment
(Chongqing) Co. Ltd.
Room 5-4, Unit 1, Block 16
No. 18 Qixia Road
Northern New District
Chongqing
P.R. China 401122
Tel.: +86 (0) 23-6342 2511
E-mail: info-cn@dbk-group.com
Internet: www.dbk-cn.com

Sales partner in Lithuania
AUREGIS UAB
Savanoriu pr. 271
50131 Kaunas
Lithuania
Tel.: +370 37 313 426
Internet: www.auregis.lt

alre

ALRE-IT Regeltechnik GmbH
Richard-Tauber-Damm 10
12277 Berlin, Germany

Phone: +49 (0) 30 399 84 0
Fax: +49 (0) 30 391 70 05
Internet: www.alre.de
E-mail: mail@alre.de