EN

industrie technik®

# Products for HVAC/R

CATALOGUE 2017/2018


“Over 70 countries
around the world
trust our quality
products”

# We are here for you!

Now you're just a page away from getting to know our vast 2017 product range. Before you're getting started we want you to know that we are here for you. Our sales team and customer support are eager to assist and attend to any given challenge.

- This catalogue shows only a part of our assortment. As we produce our products in-house, we can adapt a product to your specific needs or offer additional models. If you have special requirements we are just an e-mail or a phone call away.
- Are you interested in complete solutions? At Industrietechnik we can offer packages that include products that are not part of or ordinary assortment.
- We offer professional support during working hours 8:00 – 17:00.

*Don't hesitate to contact us. Our dedicated sales and support team are looking forward to talking to you.*


**SYSTEM SALES & SYSTEM SUPPORT**
+39 320 4189962
info@industrietechnik.it

**PRODUCT SALES & PRODUCT SUPPORT**
+39 0472 830626
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**WWW.INDUSTRIETECHNIK.IT**


**"EXPERIENCE, EXPERTISE AND CAPACITY OF LISTENING ARE THE FOUNDATIONS FOR A CUSTOMER-ORIENTED CONSULTING"**

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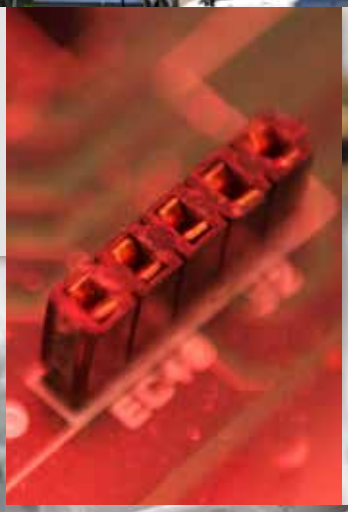
INDUSTRIE TECHNIK







# Industrietechnik – We have been listening for over 30 years

Ever since Industrietechnik was established in 1981, the very foundation of our company has been our ability to listen. In close cooperation with every new customer, we have developed our product range into what it is today – a complete and diverse range of HVAC/R field products for measurement and control in building automation.

Our head office and production site is situated in Brixen, South Tyrol, in the heart of the European Alps at the cultural crossroads of northern and southern Europe. Companies from our region are often known for their quality, long standing experience and extensive know-how. Many businesses in our area are market leaders in their sectors, even in an international context. Our five storey building hosts offices, R&D, sales, support, our testing facilities and a modern production site with state of the art equipment. This gives us full control over the whole production chain from development and design to production and dispatch.

Today, we are a leading provider of one of the widest ranges of field devices including valves and actuators, electronic and electro-mechanical devices that can be found on the global market. Together, we sell products to installers, system integrators, wholesalers and OEM-customers in more than 80 countries and we are constantly expanding – and we continue to listen.

# PRODUCT NEWS 2017

## Our new controllers accelerate Evolution!

We proudly present a series of brand new controllers named Evolution. They come with a wide range of functions for controlling heating, cooling and air-conditioning plants. Based on the application your Evolution controller always has the communication features required. The large backlit display allows the user to easily see temperatures, humidity, parameter settings, time bands and the state of the unit. The unit also features an RS485 line with Modbus slave RTU protocol (and BACnet MS/TP in the TH model) for external communication and can be built-in wall mounted with a 3-module box.

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## Evolution TH

*for fan-coil applications*

Thanks to a large number of I/O:s, Evolution TH is fit for control of 3-speed or EC fans in 2-pipe, 2-pipe + electric heater, 4-pipe, 4-pipe and electric heater systems. The outputs for valves can be on/off or modulating type.

### QUICK FACTS

- Communication via RS485 (Modbus or BACnet MS/TP)
- Quick and secure settings with the Evolution tool
- Easy installation
- On/Off control or 0...10 V
- Keycard input, window contact, $CO_2$ sensor and season change function
- Clock

BACnet Modbus EVOLUTION TOOL

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## Evolution AH

*for air handling unit applications*

Due to a large number of I/O:s, small air handling units and recuperators can be driven. Evolution AH can be used for 2-pipe, 4-pipe systems, for on-off and EC fan control and for dampers. In order to control dehumidification, an internal humidity sensor can be mounted. The unit also has an analogue input for external humidity or $CO_2$ transmitter connection. Antifrost protection is ensured by a remote sensor or contact.

### QUICK FACTS

- Communication via RS485 (Modbus)
- Quick and secure settings with the Evolution tool
- Easy installation
- On/Off control or 0...10 V
- Humidity sensor on board
- Direct power supply from the line
- Clock

Modbus EVOLUTION TOOL

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## New pressure transmitter TPDAxxxx..

Our new pressure transmitter is the result of a major development project, the goal of which was to develop an extremely reliable product in terms of accuracy, reliability and long-time stability. We are proud to present this new range of single or dual port pressure transmitters with two universal inputs and an RS485 port for data exchange.

### *Suitable for all kinds of environments*

The universal inputs are flexible, enabling the connection of up to 4 functions to the same input, all configurable via the RS485 port. MEMS dual chip sensor technology makes the device very accurate, long-time stable and suitable for all kinds of environments; including industries as it has good immunity against environmental factors. It is silicone-free and can be mounted vertically or horizontally, offering plenty of mounting options. Setup is also very easy.

### QUICK FACTS

- Sensor technology that offers very high accuracy and excellent long-term stability
- Small and compact design, easy installation
- Less wiring is required
- Relieves the controller of up to four I/O:s
- Flexible universal inputs
- Can be mounted vertically or horizontally


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158

## New series of flanged 2- and 3-way valves with DIN-dimensions

We have extended our product range with the VFFG series of flanged valves for heating, cooling and ventilation systems.

### QUICK FACTS

- Face-to-face measurements according to DIN
- DN25–DN200
- Kvs 31,5–550
- PN16
- 0 % leakage
- Rangeability 100:1
- Grey cast iron valve with brass seat and inox stem

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142

## Pressure independent control valves DN15–DN25

VFPIP/VFPIM/VFPI are new series of 2-way valves with a built-in differential pressure controller and flow limiter. The valves require no authority calculation and feature three functions in one: control valve, balance and constant flow limiter. The control is flexible and exact, and selecting the desired flow is easy thanks to the control knob. VFPIP/VFPIM/VFPI are intended for control of hot/cold water in facilities with fan-coil units, chilled beams and air handling units and are intended for use with ITK's SE1... actuators.

### QUICK FACTS

- Precise hydronic balance gives an increased comfort and reduces energy consumption
- Accurate flow control, stable flow rate and constant ΔT through the valves result in a steady and enduring system
- Flow adjustable pre-setting offers a remarkable adjustment flexibility
- Easy valve selection – no authority or ratio calculations are needed

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## Relative pressure transmitter TPGL

This compact pressure transmitter for measurement of liquids, gases and refrigerants is suitable for applications across a broad spectrum of industries. The new technology using a ceramic membrane gives a high level of accuracy and stability over a long period.

### QUICK FACTS

- Measuring ranges from 0…100 kPA up to 0…4000 kPa
- Compact construction
- Extremely low temperature dependency
- Durable to most pressure media
- High accuracy
- Excellent long-term stability
- Easy mounting

*Available spring 2017*

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## New series of flanged 2- and 3- way valves

**VFL2 and VFL3 are new series of 2- and 3- way flanged valves, available in DN65-150.**

**VFL valves are intended for heating, cooling and ventilation. 2-way valves have pressure balanced plugs that makes them especially suitable for higher differential pressure.**

### SHORT FACTS

- Dimensioned according to DIN standard
- Stroke - DN65-80: DN100-150 20 mm: 40mm
- DN65 ... DN150
- Kvs 52 ... 300, leakage 0.1%, KVS DN65-DN80, 0.2%, KVS DN100-DN150
- Nominal pressure PN16
- rangeabilty > 100: 1

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## Our valve assortment has been extended

**New valve and actuator series for on/off control in fan-coil installations. The FCV valves come together with FCA actuators.**

### QUICK FACTS

- Designed for temperature control in heating and cooling systems
- 2- and 3-way models
- Energy optimized – 100 % tight when the valve is in closed position
- Closing pressure up to 200 kPa
- Tight closing actuators with supply voltage 230 VAC
- Actuator with manual operation and spring return

industrie technik®

Meet the leading manufacturer

# of measurement and control devices for HVAC/R applications

"WE BELIEVE IN PRODUCTS AND SERVICES THAT OUR CUSTOMERS CAN RELY ON WITH CONFIDENCE"

## COMPANY PRESENTATION

HEATING

COOLING

VENTILATION

$CO_2$

AIR APPLICATIONS

WATER APPLICATIONS

HUMIDITY

PRESSURE

FLOW

# We believe in the combination of smart thinking, competence, reliability and the reduction of complexity.

Coming from a multicultural, hard working and ambitious environment, we know that we need to peform outstandingly to succeed on the international market. Industrie-technik was born out of an entrepre-neur's dream of developing reliable, quality products to satisfy a big market of HVAC/R customers. He received all the input he needed as he was driving around in his car selling products directly to customers. One of our very first products was a frost protection thermostat – a product that we continue to develop and that is still part of our range.

## Close customer relationships

Today, we no longer ring on doorbells – but we know that good products are born from market input. That's why we've developed a company that builds on close customer relation-ships and our passion to provide products customers can truly rely on. In order to provide the best service and the right product range we always go back to our core values, the very foundation on which we perform work and conduct ourselves.

A company from SÜDTIROL

## Smart thinking

We believe in questioning the status quo in our daily work in order to find the smartest and most simple way to reach our customers' goals. This is why flexibility is part of our DNA.

## Competence

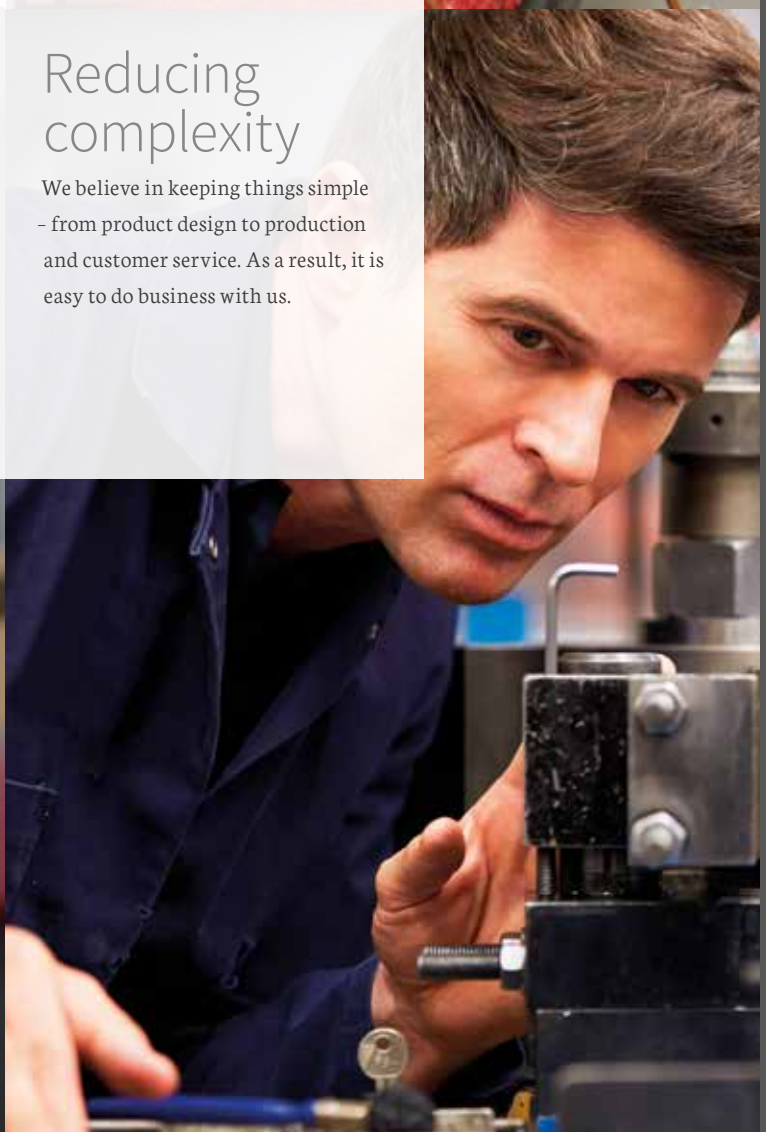
We believe that actively gathering knowledge makes us thinkers with a distinctive and informed point of view.

## Reliability

We believe in the simple rule of doing what we say we are going to do, both as individuals and as an organization. We keep our promises.

## Reducing complexity

We believe in keeping things simple – from product design to production and customer service. As a result, it is easy to do business with us.



# We believe that good products often are born out of frustration with the status quo.

The goal of Industrietechnik is to develop and market a full range of field products necessary for HVAC/R applications. Our comprehensive range includes a complete assortment of valves and actuators as well as electronic and electromechanical devices for reliable measurement and control in building automation.

In the field of liquid flow switches and frost protection thermostats, we are one of Europe's leading companies.

Overall, we cover the complete range of application areas from air-liquid flow and quality, temperature and humidity to pressure.

## Controlling each step in closely knit teams

Our product development is truly customer driven and we control each step of our entire production process, following rigid internal and external standards. In our large-scale testing area every HVAC/R product is repeatedly subjected to extensive tests. We leave nothing to chance and we believe that only in-house tested and retested products are reliable products that our customers can trust.

**Controllers**

**Room controllers & Thermostats**

**Switches**

**Transmitters**

**Temperature sensors**

**Valves & Valve actuators**

**Damper actuators**

**Other products**

Ventilation & heating controllers

Electric heating controllers

Evolution – Room controller

Room controllers & thermostats

Electronic controllers & thermostats


Electromechanical thermostats

Pressure

Humidity

Flow

Air flow

Level

Temperature

$CO_2$

Humidity

Pressure

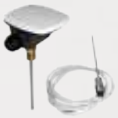
Air velocity

CO & VOC

PT100
PT1000
NTC1.8
NTC2.2
NTC10-01
NTC10-02
NTC10-03
NTC15
NTC20
NI1000-01
NI1000-02

Duct

Average



Immersion

Room

Outdoor

Clamp-on sensors

Cable

Heating, cooling & ventilation system

Pressure independent control valves

Butterfly valves

Actuators

Without spring control

With spring return

For fire dampers

Presence protection

Smoke

Transformers

Frost protection unit

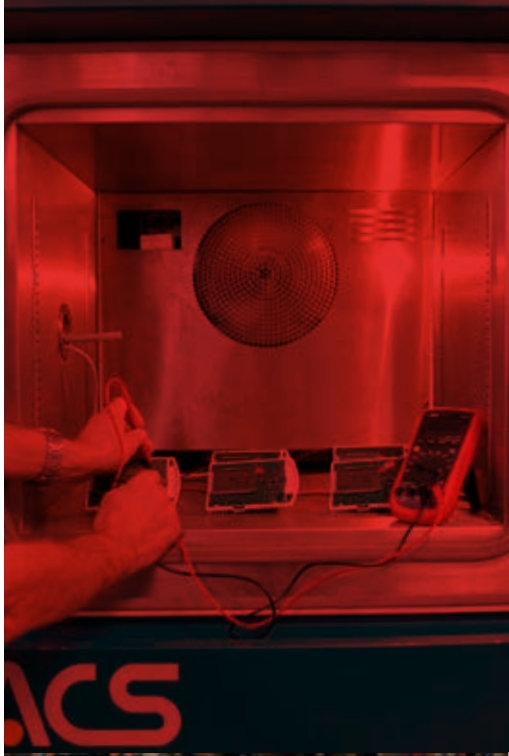
Step controllers

Energy meters

# We believe that a closely knit organization and smart thinking are essential for the fast and flexible execution of OEM projects.

At Industrietechnik Sales, Purchasing, Development, Economy and Production work side by side. This gives us full insight and control of the entire working process from idea to product and after sales, ensuring quality at every step and on every level of the company. By controlling processes we can plan in advance and optimize our delivery times and at the same time protect customer investments.

This structure makes it possible for us to respond to OEM client demands in a fast and flexible manner. Projects are always coordinated in close cooperation with our customers and in direct communication with our R&D department.



# We are listening.

We can handle all kinds of OEM projects, from product branding to in-house programming of software to adapting our products to the need of your specific application. Moreover, the fact that we have very modern production machinery makes it possible for us to provide branded products that are not part of the standard program – and to do so very quickly. We only work with certified suppliers and can handle both small and large volumes.

**EXAMPLES OF APPLICATIONS THAT OUR PRODUCTS CAN BE FOUND IN:**

- Air handling units
- Fan coils
- Chillers
- Heat exchangers
- Ventilation systems
- Air curtains
- Truck refrigerators


YOUR GRAPHICS, IN YOUR COLOR OF CHOICE

# As a leading global provider we understand the needs of many markets.

Our products reach the market through a network of sales teams and distributors in over 80 countries and have been installed in a huge variety of buildings on every continent across the world. This has given us important insights into product development and flexible customer service. Our head office is located in Bressanone and we have a local sales office in Milan dedicated to the Italian market. Our global markets are served by our international sales force and our warehouse in Bressanone ensures safe and fast deliveries.

Large quantities of our products reach the market in the shape of OEM products with the name of renowned quality brands or integrated into their range.

## EXPERIENCED IN DELIVERIES

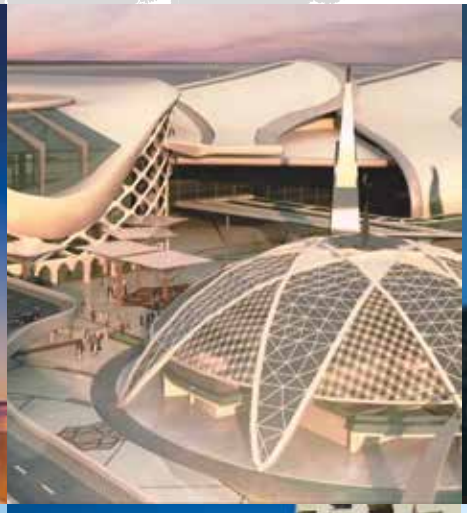
- Short delivery times
- Deliveries in time

**NORFIM OFFICE BUILDING** LISBON, PORTUGAL. **TURCELL GEBZE OPERATION CENTER** GEBZE, TURKEY. **VOYAGER MERIT HOTEL-TRNC** CYPRUS. **PIXEL-34** TBILISI, GEORGIA. **HOSPITAL SAN CAMILLO** LIDO DI VENEZIA, ITALY. **AIRPORT LAMEZIA TERME** ITALY. **HOSPITAL CASCAIS** PORTUGAL. **FORTINA HOTEL** MALTA. **MERIT HOTEL** CYPRUS. **SAPPHIRE MALL AND RESIDENCE PROJECT** TURKEY. **MARMARA HOTEL** TURKEY. **HOSPITAL SAN MARTINO** GENOVA, ITALY. **SKOPJE AIRPORT SKOPJE** MACEDONIA. **BOLU HIGHWAY MALL** TURKEY. **RADISSON HOTEL** ISTANBUL, TURKEY. **PETITE ENFANCE** CAVAILLON, FRANCE. **SISLI KULTUR MERKEZI** SISLI, TURKEY. **RAMADA HOTEL IZMIT** IZMIT, TURKEY. **APHRODITE HOTEL** CYPRUS. **STATE HOSPITAL** TURKEY. **TRM EMERGENCY HOSPITAL** TURKEY. **HAWLER AIRPORT** NORTH IRAQ. **KAF HOSPITAL** TURKMENISTAN. **ENFIDHA AIRPORT** TUNISIA. **SHANGRI-LA'S MACTAN RESORT & SPA** PHILIPPINES. **ERBIL DIVAN HOTEL** IRAQ. **ASHGABAT EYE HOSPITAL** TURKMENISTAN. **AKU HOSPITAL PAKISTAN** PAKISTAN. **GALLERIA MALL** AMMAN, JORDAN. **CENTRAL BANK OF IRAQ** IRAQ. **BROUGHTON HOSPITAL** NORTH CAROLINA, USA.

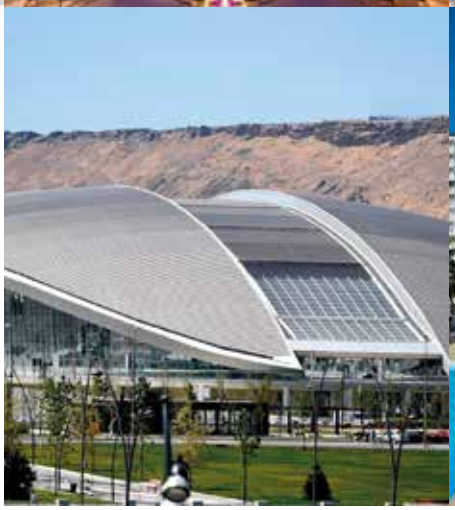
# Some of our reference projects world wide.

**Divan Erbil Hotel**
Erbil, IRAQ

**Medina Airport**
Medina, SAUDI ARABIA



**Central Bank of Iraq**
IRAQ



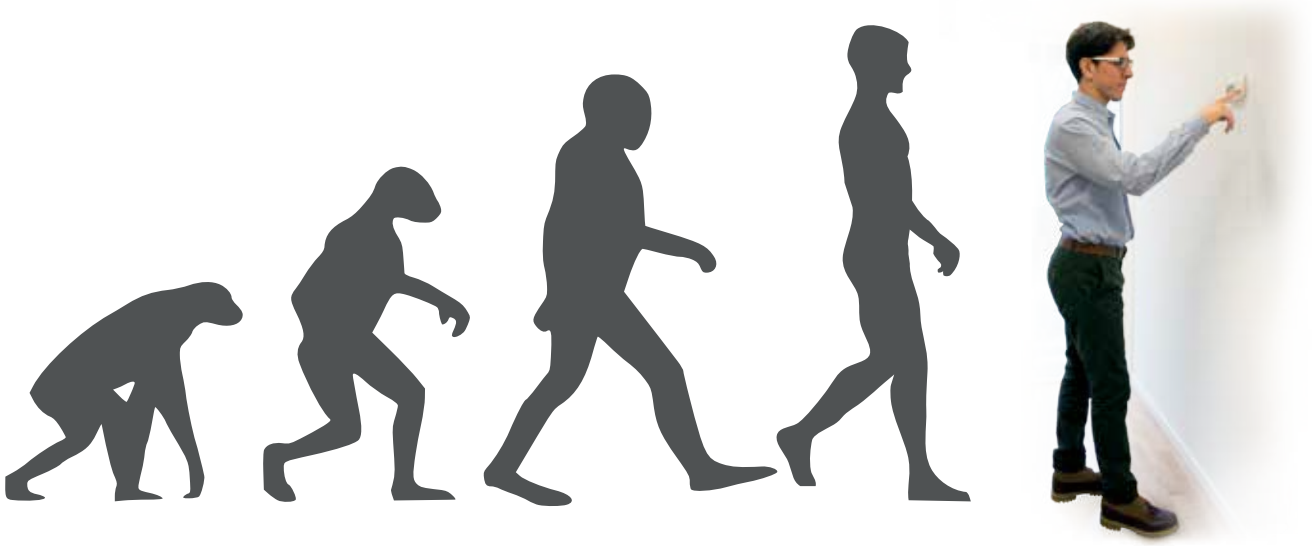
**Baku Aquatic Centre**
ASERBAIDSCHAN

**Hotel Baia Azul**
Madeira, PORTUGAL

**Sapphire Shopping Center & Residence**
Istanbul, TURKEY

# 1 Pre-programmed controllers

# The result of continous development



# Evolution

## Room Controller for fan-coil and air handling unit application

### EVOLUTION TH

FOR FAN-COIL APPLICATIONS

Due to a large number of I/Os, the unit is fit for control of 3-speed or EC fans in 2-pipe, 2-pipe + electric heater, 4-pipe, 4-pipe and electric heater systems.

**QUICK FACTS**

- Communication via RS485 (Modbus or BACnet)
- Quick and secure settings with the Evolution tool
- Easy installation
- On/Off control or 0...10 V
- Keycard input, window contact, CO2 sensor and season change function
- Real-time clock
- Download Evolution tool TH at www. industrietechnik.it

BACnet Modbus EVOLUTION TOOL

### EVOLUTION AH

FOR AIR HANDLING UNIT APPLICATIONS

Due to a large number of I/Os, small air handling units and recuperators can be driven. The unit can be used for 2-pipe, 4-pipe systems, for on-off and EC fan control and for dampers.

**QUICK FACTS**

- Communication via RS485 (Modbus)
- Quick and secure settings with the Evolution tool
- Easy installation
- On/Off control or 0...10 V
- Humidity sensor on board
- Direct power supply from the line
- Real-time clock
- Download Evolution tool AH at www. industrietechnik.it

Modbus EVOLUTION TOOL

# ROOM CONTROLLER FOR FAN-COIL APPLICATION

News!

Controllers of the Evolution series are available in a wide range of functions for controlling heating, cooling and air-conditioning installations. The new room controller Evolution TH is well-suited for temperature control applications.

Thanks to a large number of I/O:s the unit is fit for control of 3-speed or EC fans in 2-pipe, 2-pipe + electric heater, 4-pipe, 4-pipe + electric heater systems. The outputs for valves can be on/off or modulating type. The large backlit display allows user to easily see temperatures, humidity, parameter settings, time bands and the state of the unit. The device is equipped with rapid access keys for the most common functions (fan speed control, season change, on/off etc.). The unit also features an RS485 line with Modbus slave RTU protocol or BACnet MS/TP for external communication and can be built-in wall mounted with a 3-module box. Depending on the model, controllers can have a communication feature, a clock, an on/off or proportional control, humidity sensor and a $CO_2$ sensor input.

TH

| Technical data | |
|---|---|
| Supply voltage | 110…230 V AC ± 10%, 50...60 Hz |
| Inputs | 2 digital contacts free of potential / 2 or 3 NTC10-02 sensors / USB port for parameters setting and software update |
| Outputs | 3 analogue outputs 0…10 V ($R_L$> 10 kOhm) according to model / 5 relays SPST 230 V AC, 3A (AC1) according to model |
| Power consumption | Max. 1.3 W |
| Temperature range | 0…50 °C |
| Storage temperature | -20…+70 °C |
| Display | LCD with backlight |
| Communication | Modbus RTU (slave) or BACnet MS/TP |
| Range of temperature reading | -15...+90 °C |
| Mounting | 3 modules built-in box |
| Casing | PC + ABS - White effect RAL 9003 |
| Weight | Max. 230 g |
| Dimensions | 128 x 80 x 55.5 mm |
| Protection class | IP30 |
| Isolation class | II |
| Certification | EN 60730-1/A16:2007, EN 61000-6-1:2007, EN 61000-6-3:2007 and EN 60730-2-9:2003. RoHS: This Product complies with the EU directive 2011/65/EU of the European Parliament |

## PRODUCT SELECTION

| *TH-* | X | X | X | S | X | 1 |
|---|---|---|---|---|---|---|
| ***Version:*** | | | | | | |
| 1 digital output + 3 analogue outputs+ 3 analogue inputs | 0 | | | | | |
| 2 digital output + 2 analogue outputs + 3 analogue inputs | 1 | | | | | |
| 3 digital output + 1 analogue outputs + 3 analogue inputs | 2 | | | | | |
| 3 digital output + 2 analogue outputs + 2 analogue inputs | 3 | | | | | |
| 5 digital output + 0 analogue outputs + 3 analogue inputs | 4 | | | | | |
| ***Communication:*** | | | | | | |
| Without communication | | S | | | | |
| Modbus | | M | | | | |
| Bacnet | | B | | | | |
| ***Clock:*** | | | | | | |
| Without clock | | | S | | | |
| With clock | | | C | | | |
| ***Internal sensor:*** | | | | | | |
| Temperature | | | | | T | |
| Temperature + humidity | | | | | H | |
| ***Connector:*** | | | | | | |
| Plug-in connectors | | | | | | |

# ROOM CONTROLLER FOR AIR HANDLING APPLICATIONS

News!

The new room controller Evolution AH is well-suited for air handling unit applications. Due to a large number of I/O:s, small air handling units and recuperators can be driven. The unit can be used for 2-pipe, 4-pipe systems, for on-off and EC fans and for dampers. In order to control dehumidification, an internal humidity sensor can be mounted. The unit also has an analogue input for external humidity or $CO_2$ transmitter connection. Antifrost protection is ensured by remote sensor or contact. The large backlit display allows user to easily see temperatures, humidity, parameter settings, time bands and the state of unit. The unit also features a RS485 line with Modbus slave RTU protocol for external communication and can be built-in wall mounted with a 3-module box.

AH

Modbus

| Technical data | |
|---|---|
| Supply voltage | 110…230 V AC ± 10%, 50/60 Hz |
| Inputs | 2 contacts free of potential / 2 or 3 NTC10-02 sensors (or 2 x NTC + 1 x 0…10 V) / USB port for parameters setting and software update |
| Outputs | 3 analogue outputs 0…10 V ($R_L$> 10 kOhm) according to model / 5 relays SPST 230 V AC, 3A (AC1) according to model |
| Power consumption | Max. 1.3 W |
| Temperature range | 0…50 °C |
| Storage temperature | -20…+70 °C |
| Display | LCD with backlight |
| Communication | Modbus RTU (slave) |
| Range of temperature reading | -15...+90 °C |
| Mounting | 3 modules built-in box |
| Casing | PC + ABS |
| Weight | Max. 230 g |
| Dimensions | 128 x 80 x 55.5 mm |
| Protection class | IP30 class II |
| Isolation class | II |

## PRODUCT SELECTION

| *AH-* | X | X | X | S | X | 1 |
|---|---|---|---|---|---|---|
| ***Version:*** | | | | | | |
| 1 digital output + 3 analogue outputs+ 3 analogue inputs | 0 | | | | | |
| 2 digital output + 2 analogue outputs + 3 analogue inputs | 1 | | | | | |
| 3 digital output + 1 analogue outputs + 3 analogue inputs | 2 | | | | | |
| 3 digital output + 2 analogue outputs + 2 analogue inputs | 3 | | | | | |
| 5 digital output + 0 analogue outputs + 3 analogue inputs | 4 | | | | | |
| ***Communication:*** | | | | | | |
| Without communication | | S | | | | |
| Modbus | | M | | | | |
| ***Clock:*** | | | | | | |
| Without clock | | | S | | | |
| With clock | | | C | | | |
| ***Internal sensor:*** | | | | | | |
| Temperature | | | | | T | |
| Temperature + humidity | | | | | H | |
| ***Connector:*** | | | | | | |
| Plug-in connectors | | | | | | |

## ROOM CONTROLLER FOR TEMPERATURE, HUMIDITY AND $CO_2$

Stand-alone room controller for temperature, humidity, $CO_2$ and universal purposes.

PC-H, PC-U

PC-T, PC-TC

| Technical data | |
|---|---|
| Supply voltage | 110…240 V AC, 50…60 Hz |
| Input | 1 analogue input 0…10 V (only for model PC-U) |
| Output | 1 analogue output 0…10 V ($R_L$ > 10 kOhm) |
| Ambient temperature | 0…50 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Working range, temperature | 0…50 °C |
| Working range, humidity | 0…100 % RH |
| Working range, $CO_2$ | 0…2000 ppm |
| Protection class | IP30 class II |
| Dimensions | PC-H, PC-U: 85 x 100 x 30.5 mm PC-T, PC-TC: 88 x 100 x 30.5 mm |

| Article | Description | Power consumption |
|---|---|---|
| PC-H | Room humidity controller | Max. 0.46 W |
| PC-T | Room temperature controller | Max. 0.46 W |
| PC-TC | Room temperature and CO2 controller | Max. 1.25 W |
| PC-U | Universal room controller | Max. 0.46 W |

## ROOM TEMPERATURE CONTROLLER FOR 0...10 V DC OR 3-POINT ACTUATORS

This room controller is primarily intended for control of heating or cooling in zone control systems. It has an input for a presence detector (occupancy control). The controller also has an input for change-over, which makes it possible for the control function to switch between heating and cooling.

CA1

| Technical data | |
|---|---|
| Supply voltage | 24 V AC, ±15 % 50...60 Hz, 2 VA |
| Output | 0...10 V DC, 1 mA or 3-point, 24 V AC, 1 A |
| Inputs | Two digital and one NTC sensor |
| Setpoint | 0...40 °C |
| P-band | 0.5...50 K |
| Dimensions | 102 x 120 x 29 mm |
| Protection class | IP20 |

| Article | Description |
|---|---|
| CA1 | Room temperature controller |

## ELECTRONIC ROOM THERMOSTAT, 1-STAGE

Electronic thermostats intended for heating or cooling with built-in sensor and input for an external sensor.

TAE1 TAE2

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ±10 %, 1 VA |
| Outputs | 16 A, 230 V AC, change-over relay |
| Ambient temperature | 0…50 °C |
| Sensor inputs | NTC sensor |
| Mounting | Wall |
| Dimensions | 86 x 86 x 30 mm |
| Protection class | IP30 |

| Article | Temperature range | Hysteresis |
|---|---|---|
| TAE1 | 0…30 °C | 1 K |
| TAE2 | 20…50 °C | 1…10 K |

## ROOM CONTROLLER WITH ACTIVE FROST PROTECTION FOR 3-POINT ACTUATOR

Controller intended for control of valve actuators in water-heated systems. It has a built-in room sensor and can be used for control of supply air temperature or room temperature, with or without cascade control. The controller has built-in active frost protection with two alarm relays and automatic heat maintaining function during shutdown.

RA-CTA

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ±10 %, 50/60 Hz |
| Power consumption | Max. 5 VA |
| Control signal (output) | 3-point floating control, 24 V AC output (heating) |
| Sensor inputs | Three 0...30°C (the sensor determines the range (NTC sensor)) |
| Setpoint | 0...30 °C |
| Minimum limit | 0...30°C (not active for single sensor control) |
| Cascade factor (CF) | 1...15 (must be set to 1 for single sensor control) |
| Frost alarm setpoint | 5 °C |
| Shutdown mode setpoint | 25°C (setpoint on frost protection sensor) |
| Fan relay | Breaking contact for fan contactor interlock if a frost protection alarm occurs. 230 V AC, 2 A. |
| Alarm relay | Change-over contact for alarm indication if a frost protection alarm occurs. 24 V AC, 2 A. |
| Mounting | Wall |
| Dimensions | 93 x 153 x 40 mm |
| Protection class | IP20 |

| Article | Description |
|---|---|
| RA-CTA | Room controller for HVAC system, with active frost protection |

# DB-TA ROOM CONTROLLERS WITHOUT DISPLAY

| RANGE +5...+30°C DB-TA- | | PIPE | OUTPUTS | | SWITCHES | | | REMOTE S/W | REMOTE SENSOR | POWER SUPPLY |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | RELAY | 0... 10 VCC | ON/OFF | 3-SPEED | S/W | | | |
| 323- | 199 | 2 | • | | • | | | | B | 24/230 Vca |
| | 435 | 2 | • | | s | • | | • | A | |
| | 995 | 2 | • | | | | | • | B | |
| | 998 | 2 | • | | | | • | | B | |
| 335- | 933 | 2/4 | | •/•• | | • | •/zn | | B | 24 Vca |
| | 993 | 2/4 | | •/•• | | | •/zn | | | |
| 343- | 139 | 4 | •• | | • | • | zn | | B | 24/230 Vca |
| | 199 | 4 | •• | | • | | zn | | | |
| | 999 | 4 | •• | | | | zn | | | |
| 345- | 139 | 4 | | •• | • | • | zn | | B | 24 Vca |
| | 199 | 4 | | •• | • | | zn | | | |
| | 999 | 4 | | •• | | | zn | | | |
| 347- | 439 | 4 | 3 point control | | s | • | zn | | A | 24 Vca |
| 363- | 436 | 2 | • | | s | • | auto | | A | 230 Vca |
| 367- | 439 | 2 | 3 point control | | s | • | zn | | A | 24 Vca |
| 383- | 433 | 2/4 | • | | s | • | • | | A | 24/230 Vca |
| 387- | 10A | 2/4 | ••••• | | • | m/a | auto | | A | 230 Vca |
| | 566 | 4 | ••••• | | ⏦ | m/a | zn | | A | |
| | 866 | 2 | ••••• | | ⏦ | m/a | auto | | A | |

**INDEX FOR MODELS DB-TA-3:**

**zn** dead zone

**s** continous fan/thermostatic fan/off switch

**auto** s/w change over with water sensor

⏦ on/off/electric heater switch min speed/automatic speed switch

**m/a** min speed/automatic speed switch

**A** sensor NT0220-NTC10-02

**B** sensor NT0220-NTC100

## ROOM THERMOSTATS FOR 2 PIPE SYSTEM

| Technical data | |
|---|---|
| Supply voltage | 24/230 V AC ± 10 %, 50/60 Hz (selectable by jumper) |
| Load | Max. 6 A |
| Output | 1 SPDT relay 6 A 24/230 V AC |
| Power consumption | 1 W |
| Sensor | Thermoresistor NTC 100K (for DB-TA-323-435 -> NTC 10K) |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C (mechanical limitation of the setpoint adjustment) |
| Hysteresis | 0.5 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 210 g |
| Dimensions | 144 x 82 x 27 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-323-199

DB-TA-323-435

DB-TA-323-995

DB-TA-323-998

| Article | On/off button | 3 speeds | Change-over function, season | Remote sensor |
|---|---|---|---|---|
| DB-TA-323-199 | X | - | - | NT0220-NTC100 optional with 2 m cable, selectable by jumper |
| DB-TA-323-435 | X | X | Remote | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-323-995 | - | - | Remote | NT0220-NTC100 optional with 2 m cable, selectable by jumper |
| DB-TA-323-998 | - | - | Local | NT0220-NTC100 optional with 2 m cable, selectable by jumper |

*For DB-TA-323-435 switch off/fan based on temp./continuous fan.*

## ROOM CONTROLLERS FOR 2 OR 4 PIPE SYSTEM, 0...10 V OUTPUT

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10 %, 50/60 Hz |
| Load | Max. 6 A (speeds) |
| Output | Proportional 0…10 V DC ($R_L$> 10 kOhm) |
| Power consumption | 1 W |
| Sensor | NTC 100K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C (mechanical limitation of the setpoint adjustment) |
| Hysteresis | 0.5 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| P-band | 1…5 K |
| Neutral zone | 1…4 K |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 210 g |
| Dimensions | 144 x 82 x 34 mm mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-335-933

DB-TA-335-993

| Article | 3 speeds | Change-over function, season | Remote sensor |
|---|---|---|---|
| DB-TA-335-933 | X | Local S/W (2-pipe) | NT0220-NTC100 optional with 2 m cable, selectable by jumper |
| DB-TA-335-993 | - | Local S/W (4-pipe) neutral zone | NT0220-NTC100 optional with 2 m cable, selectable by jumper |

## ROOM CONTROLLERS FOR 4 PIPE SYSTEM

| Technical data | |
|---|---|
| Supply voltage | 24/230 V AC ± 10%, 50/60 Hz (selectable by jumper) |
| Load | Max. 6 A (resistivi) |
| Outputs | 2 SPDT relays 6 A 24/230 V AC |
| Power consumption | 1 W |
| Sensor | NTC 100K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | +5…+30 °C mechanical limitation of the setpoint adjustment |
| Hysteresis | 0.5 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Neutral zone | 1...4 K |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 210 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 class II |
| Isolation class | II |

DB-TA-343-139

DB-TA-343-199

DB-TA-343-999

| Article | On/off button | 3 speeds | Change-over function, season | Remote sensor |
|---|---|---|---|---|
| DB-TA-343-139 | X | X | Local S/W (neutral zone) | NT0220-NTC100 optional with 2 m cable, selectable by jumper |
| DB-TA-343-199 | X | - | Local S/W (neutral zone) | NT0220-NTC100 optional with 2 m cable, selectable by jumper |
| DB-TA-343-999 | - | - | Local S/W (neutral zone) | NT0220-NTC100 optional with 2 m cable, selectable by jumper |

## ROOM CONTROLLERS FOR 4 PIPE SYSTEM, 0...10 V OUTPUTS

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Load | Max. 6 A (speed) |
| Outputs | 2 proportional 0…10 V DC ($R_L$ > 10 kOhm) |
| Power consumption | 1 W |
| Sensor | NTC 100K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C mechanical limitation of the setpoint adjustment |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| P-band | 1…5 K |
| Neutral zone | 1…4 K |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 210 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 class II |
| Isolation class | II |

DB-TA-345-139

DB-TA-345-199

DB-TA-345-999

| Article | On/off button | 3 speeds | Change-over function, season | Remote sensor |
|---|---|---|---|---|
| DB-TA-345-139 | X | X | Local S/W (neutral zone) | NT0220-NTC100 optional with 2 m cable, selectable by jumper |
| DB-TA-345-199 | X | - | Local S/W (neutral zone) | NT0220-NTC100 optional with 2 m cable, selectable by jumper |
| DB-TA-345-999 | - | - | Local S/W (neutral zone) | NT0220-NTC100 optional with 2 m cable, selectable by jumper |

## ROOM CONTROLLERS FOR 4 PIPE SYSTEM, 3-POINT OUTPUT

DB-TA-347-439

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Outputs | 5 triac 24 V AC / valves: max 0.5 A, min 0.025 A / speed: max 1 A, min 0.040 A |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | Summer: +24 ± 5 °C / winter: +20 ± 5 °C (mechanical limitation of the setpoint adjustment) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| P-band | 1…10 K |
| Neutral zone | 4 K |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 210 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 class II |
| Isolation class | II |

| Article | Manual selection of thermostatic fan/ continuous fan/Off | 3 speeds | Change-over function, season | Remote sensor |
|---|---|---|---|---|
| DB-TA-347-439 | X | X | Local S/W (neutral zone) | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

*Note: The controllers are supplied with water sensor model NTA020-027P.*

## ROOM THERMOSTATS FOR 2 PIPE SYSTEM WITH AUTOMATIC SEASON CHANGEOVER

DB-TA-363-436

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Load | Max. 6 A (resistivi) |
| Output | 1 relay 6 A 230 V AC |
| Power consumption | 1 W |
| Sensor | NTC 10K air sensor and water sensor |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C (mechanical limitation of the setpoint adjustment) |
| Hysteresis | < 0.5 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 210 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 class II |
| Isolation class | II |

| Article | Manual selection of thermostatic fan/ continuous fan/Off | 3 speeds | Change-over function, season | Sensor element |
|---|---|---|---|---|
| DB-TA-363-436 | X | X | Local S/W auto (season changeover selection, S/W, by water sensor) | |

*Note: The thermostats are supplied with water sensor model NTA020-027P*

## ROOM CONTROLLERS FOR 2 PIPE SYSTEM WITH AUTOMATIC SEASON CHANGEOVER, 3-POINT OUTPUT

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Outputs | 5 triac 24 Vac / valves: max 0.5 A, min 0.025 A / speed: max 1 A, min 0.040 A |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | Summer: +24 ± 5 °C / winter: +20 ± 5 °C (mechanical limitation of the setpoint adjustment) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| P-band | 1…10 K |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 210 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 class II |
| Isolation class | II |

DB-TA-367-439

| Article | Manual selection of thermostatic fan/ continuous fan/Off | 3 speeds | Change-over function, season | Remote sensor |
|---|---|---|---|---|
| DB-TA-367-439 | X | X | Local S/W auto (season changeover selection, S/W, by air sensor) | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

*Note: The controllers are supplied with water sensor model NTA020-027P.*

## ROOM THERMOSTATS FOR 2 OR 4 PIPE SYSTEM

| Technical data | |
|---|---|
| Supply voltage | 24/230 V AC ±10%, 50/60 Hz (selectable by jumper) |
| Load | Max. 6 A |
| Output | 1 relay SPDT 6 A 230 V AC |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C (mechanical limitation of the setpoint adjustment) |
| Hysteresis | 0.5 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 210 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 class II |
| Isolation class | II |

DB-TA-383-433

| Article | Manual selection of thermostatic fan/ continuous fan/Off | 3 speeds | Change-over function, season | Remote sensor |
|---|---|---|---|---|
| DB-TA-383-433 | X | X | Local S/W | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

## ROOM CONTROLLERS FOR 2 OR 4 PIPE SYSTEM WITH AUTOMATIC SPEED AND CHANGEOVER

DB-TA-387-10A

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ±10%, 50/60 Hz |
| Load | Max. 6 A for motor output and valves or electric heater relay |
| Output | 5 relays 8 A 230 V AC |
| Power consumption | 1 W |
| Sensor | NTC 10K air sensor and water sensor |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 12…28 °C mechanical limitation of the setpoint adjustment |
| Hysteresis | 0.4 K (between 1st and 3rd speeds) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 210 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 class II |
| Isolation class | II |

| Article | On/off button | Speed selection button | Change-over function, season | 3 speeds | Remote sensor |
|---|---|---|---|---|---|
| DB-TA-387-10A | X I, II, Automatic | - | Auto working season selection (W/S) by water sensor for 2-pipe systems; by air sensor for 4-pipe systems. | Auto | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

*Note: The controllers are supplied with water sensor model NTA020-027P.*

## ROOM CONTROLLERS FOR 2 OR 4 PIPE SYSTEM WITH AUTOMATIC MOTOR SPEED AND SEASON CHANGEOVER

DB-TA-387-566

DB-TA-387-866

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Load | Max. 6 A for motor output, valves or electric heater relay |
| Outputs | 8 relays 6 A 230 V AC |
| Power consumption | 1 W |
| Sensor | NTC 10K air sensor and water sensor |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | Summer: +24 ± 5 °C / winter: +20 ± 5 °C (mechanical limitation of the setpoint adjustment) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Hysteresis | 0.5 K |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 210 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 class II |
| Isolation class | II |

| Article | On/off/electric heating button | Auto/ silence | Change-over function, season | 3 speeds | Remote sensor |
|---|---|---|---|---|---|
| DB-TA-387-566 | X | X | Neutral zone | Auto | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-387-866 | X | X | W/S (working season, W/S, selection by water sensor) | Auto | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

*Note: The controllers are supplied with water sensor model NTA020-027P.*

## DB-TA ROOM CONTROLLERS WITH DISPLAY

| RANGE +5...+30°C DB-TA- | | PIPE | OUTPUTS | | SWITCHES | | | REMOTE S/W | ECONOMY | REMOTE SENSOR | POWER SUPPLY |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | RELAY | 0...10 VCC | ON/OFF | 3-SPEED | S/W | | | | |
| 31A- | 100 | 2/4 | | q | • | | | | | A | 24 Vca |
| | 110 | 2/4 | | q | • | | • | | | | |
| 33A- | 10A | 2/4 | | q | • | | par | • | v | A | 24 Vca |
| | 13A | 2/4 | | q | • | • | par | • | v | | |
| 393- | 435 | 2/4 | • | | s | • | • | | | A | 230 Vca |
| | 436 | 2 | • | | s | • | | • | | | |
| 3A3- | 000 | 4 | •••• | | | | zn | | | A | 230 Vca |
| | 139 | 4 | •• | | • | • | zn | | v | | |
| | 199 | 4 | •• | | • | | zn | | v | | |
| | 700 | 4 | •••• | | | •Vct | zn | | | | |
| | 939 | 4 | •• | | | • | zn | | v | | |
| | 999 | 4 | •• | | | | zn | | v | | |
| 3A5- | 000 | 4 | | •• | | | zn | | v | - | 24 Vca |
| | 100 | 4 | | •• | • | | zn | | v | | |
| | 130 | 4 | | •• | • | • | zn | | v | | |
| 3A8- | 000 | 4 | • heating | •• | | | zn | | v | - | 24 Vca |
| | 100 | 4 | • heating | •• | • | | zn | | v | | |
| | 130 | 4 | • heating | •• | • | • | zn | | v | | |
| 3A9- | 000 | 4 | • | • | | | zn | | v | - | 24 Vca |
| | 100 | 4 | • | • | • | | zn | | v | | |
| | 130 | 4 | • | • | • | • | zn | | v | | |
| 3B5- | 000 | 2 | | • | | | par | w | v | - | 24 Vca |
| | 100 | 2 | | • | • | | par | w | v | | |
| | 130 | 2 | | • | • | • | par | w | v | | |
| 3B8- | 100 | 2 | • | • | • | | par | w | v | - | 24 Vca |
| | 130 | 2 | • | • | • | • | par | w | v | | |
| 3C3- | 139 | 2 | •• | | • | • | par | | v | A | 230 Vca |
| | 199 | 2 | •• | | • | | par | | v | | |
| | 999 | 2 | •• | | | | par | | v | | |
| 3D3- | 00A | 2 | ••••• | | on/off/res (par) | out/cont1/cont2/ cont3 (par) | par | par | v | A | 230 Vca |
| | | 4 | | | | | auto | | | | |
| 3E3- | 139 | 2 | • (cooling) | | • | • | | | v | A | 230 Vca |
| | 199 | 2 | • (cooling) | | • | | | | v | | |
| 3F3- | 139 | 2 | • | | • | • | | | v | A | 230 Vca |
| | 199 | 2 | • | | • | | | | v | | |
| | 939 | 2 | • | | | • | | | v | | |
| | 999 | 2 | • | | | | | | v | | |
| 3G3- | 700 | 2/4 | 3 point control | | | •Vct | par | | | A | 230 Vca |

**INDEX FOR MODELS DB-TA-3:**

| | |
|---|---|
| **Vct** | continuos fan/thermostatic fan |
| **zn** | dead zone |
| **q** | proportional-integral action |
| **s** | continuos fan/thermostatic fan/ off switch |
| **auto** | s/w change-over wih water sensor |
| **heat** | heating |
| **par** | setting by keys and display |
| **A** | sensor NT0220-NTC10-02 |
| **v** | ECONOMY version: replace last number of code with "A" |
| **w** | only for ECONOMY version |

# ROOM CONTROLLERS FOR AIR HANDLING UNIT

The DB-TA-31A series can control temperature in room applications on heating, cooling, ventilation 2-pipe or 4-pipe systems.

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Inputs | Season changeover / limit sensor (to define when ordering) / remote air sensor (optional) |
| Outputs | 1 or 2 0-10 V outputs ($R_L$ > 10 kOhm) |
| Power consumption | < 1.5 W |
| Sensor | Internal or remote NTC 10K for air sensor / remote NTC 10K for limit sensor (code STC-NTC10-02) |
| Ambient temperature | 6…45 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 6…45 °C |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-31A-100

DB-TA-31A-110

| Article | On/off button | Change-over function, season | Remote sensor |
|---|---|---|---|
| DB-TA-31A-100 | X | Remote contact | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-31A-110 | X | S / W | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

# ROOM CONTROLLERS FOR 2 AND 4 PIPE SYSTEM WITH ECONOMY FUNCTION, WITH 0...10 V OUTPUT(S)

Proportional integral temperature control in heating, ventilation, refrigeration and air conditioning for typically 2- and 4-pipe fan-coil systems with proportional valves.

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Inputs | External contact for economy / external contact or water sensor for remote season changeover function (2-pipe) |
| Outputs | Valves: 1 or 2 0-10 V outputs ($R_L$ > 10 kOhm) / speeds: 6 A 24/230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…45 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 6…45 °C |
| Storage temperature | -20…+60 °C |
| Storage humidity | < 95 % RH |
| Economy | 2 pipes: adjustable range between 6…45 °C (replaced the working setpoint) / 4 pipes: adjustable range between 0…5 °C |
| P-band | 1…30 K |
| I-time | 1…30 minutes |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-33A-10A

DB-TA-33A-13A

| Article | On/off button | 3 speeds | Change-over function, season | Remote sensor |
|---|---|---|---|---|
| DB-TA-33A-10A | X | X | S / W setting by keys and display | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-33A-13A | X | - | S / W setting by keys and display | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

*Note: The controllers are supplied with water sensor model NTA020-027P.*

## ROOM THERMOSTATS FOR 2 OR 4 PIPE SYSTEM

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Load | Max. 6 A |
| Inputs | External contact or water sensor for remote season changeover function (DB-TA-393-436) |
| Outputs | 1 relay SPDT 6 A 230 V AC |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C adjustment by step of 0.5 °C |
| Hysteresis | 0.5 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-393-435

DB-TA-393-436

| Article | Manual selection of thermo-static fan/continuous fan/Off | 3 speeds | Change-over function, season | Remote sensor |
|---|---|---|---|---|
| DB-TA-393-435 | X | X | S / W | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-393-436 | X | X | | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

*Note: The thermostats are supplied with water sensor model NTA020-027P.*

## ROOM THERMOSTATS FOR 4 PIPE SYSTEM WITH 2 STAGES HEATING AND 2 STAGES COOLING

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Outputs | Valves: 4 relays SPST 5 A 230 V AC / speeds: 5 A 230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Step differential | 0.5…4 K |
| Hysteresis | 0.5…4 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-3A3-700

DB-TA-3A3-000

| Article | 3 speeds | Step differential | Hysteresis | Remote sensor |
|---|---|---|---|---|
| DB-TA-3A3-700 | X | 0.5…4 K | 0.5…4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3A3-000 | - | 0.5…4 K | 0.5…4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

## ROOM THERMOSTATS FOR 4 PIPE SYSTEM

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Outputs | Valves: 2 relays SPDT 6 A 230 V AC / speeds: 6 A 230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Hysteresis | 0.5…4 K |
| Neutral zone | 1…4 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

| Article | On/off button | 3 speeds | Change-over function, season | Remote sensor |
|---|---|---|---|---|
| DB-TA-3A3-139 | X | X | W/S (neutral zone) | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3A3-199 | X | - | W/S (neutral zone) | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3A3-939 | - | X | W/S (neutral zone) | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3A3-999 | - | - | W/S (neutral zone) | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |


DB-TA-3A3-139


DB-TA-3A3-199


DB-TA-3A3-939


DB-TA-3A3-999

## ROOM THERMOSTATS FOR 4 PIPE SYSTEM WITH ECONOMY FUNCTION

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Input | External contact for economy function |
| Outputs | Valves: 2 relays SPDT 6 A 230 V AC / speeds: 6 A 230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Hysteresis | 0.5…4 K |
| Neutral zone | 1…4 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Economy | Adjustable range between 0…5 °C |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

| Article | On/off button | 3 speeds | Change-over function, season | Remote sensor |
|---|---|---|---|---|
| DB-TA-3A3-13A | X | X | W/S (neutral zone) | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3A3-19A | X | - | W/S (neutral zone) | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3A3-93A | - | X | W/S (neutral zone) | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3A3-99A | - | - | W/S (neutral zone) | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |


DB-TA-3A3-13A


DB-TA-3A3-19A


DB-TA-3A3-93A


DB-TA-3A3-99A

## ROOM CONTROLLERS FOR 4 PIPE SYSTEM, TWO 0…10 V OUTPUTS

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Outputs | Valves: 2 0-10 V outputs ($R_L$ > 10 kOhm) / speeds: 6 A 24/230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| P-band | 1...5 K |
| Neutral zone | 1…4 K |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

| Article | On/off button | 3 speeds | Change-over function, season |
|---|---|---|---|
| DB-TA-3A5-000 | - | - | Neutral zone |
| DB-TA-3A5-100 | X | - | Neutral zone |
| DB-TA-3A5-130 | X | X | Neutral zone |

DB-TA-3A5-130

DB-TA-3A5-100

DB-TA-3A5-000

## ROOM CONTROLLERS FOR 4 PIPE SYSTEM WITH ECONOMY FUNCTION, TWO 0…10 V OUTPUTS

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Input | External contact for economy function |
| Outputs | Valves: 2 0-10 V outputs ($R_L$ > 10 kOhm) / speeds: 6 A 24/230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Economy | Adjustable range between 0…5 °C |
| P-band | 1...5 K |
| Neutral zone | 1…4 K |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

| Article | On/off button | 3 speeds | Change-over function, season |
|---|---|---|---|
| DB-TA-3A5-00A | - | - | Neutral zone |
| DB-TA-3A5-10A | X | - | Neutral zone |
| DB-TA-3A5-13A | X | X | Neutral zone |

DB-TA-3A5-13A

DB-TA-3A5-10A

DB-TA-3A5-00A

## ROOM CONTROLLERS FOR 4 PIPE SYSTEMS, TWO 0...10 V OUTPUTS, ONE HEATING RELAY OUTPUT

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Outputs | Valves: 2 0-10 V outputs ($R_L$ > 10 kOhm) 1 relay output 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Hysteresis | 0.4 K (relay) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| P-band | 1...5 K |
| Neutral zone | 1…4 K |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-3A8-130

DB-TA-3A8-100

DB-TA-3A8-000

| Article | On/off button | 3 speeds | Change-over function, season |
|---|---|---|---|
| DB-TA-3A8-000 | - | - | Neutral zone |
| DB-TA-3A8-100 | X | - | Neutral zone |
| DB-TA-3A8-130 | X | X | Neutral zone |

## ROOM CONTROLLERS FOR 4 PIPE SYSTEMS WITH ECONOMY FUNCTION, TWO 0…10 V OUTPUTS AND HEATING RELAY OUTPUT

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Input | External contact for economy function |
| Outputs | Valves: 2 0-10 V outputs ($R_L$ > 10 kOhm) 1 relay output 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Hysteresis | 0.4 K (relay) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Economy | Adjustable range between 0…5 °C |
| P-band | 1...5 K |
| Neutral zone | 1…4 K |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-3A8-00A

DB-TA-3A8-10A

DB-TA-3A8-13A

| Article | On/off button | 3 speeds | Change-over function, season |
|---|---|---|---|
| DB-TA-3A8-00A | - | - | Neutral zone |
| DB-TA-3A8-10A | X | - | Neutral zone |
| DB-TA-3A8-13A | X | X | Neutral zone |

## ROOM CONTROLLERS FOR 4 PIPE SYSTEM, TWO OUTPUTS 0...10 V AND ONE HEATING RELAY OUTPUT

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Outputs | Valves: 1 0-10 outputs (RL > 10 kOhm) 1 relay 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Hysteresis | 0.5…2 K (relay) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| P-band | 1...5 K |
| Neutral zone | 1…4 K |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-3A9-000

DB-TA-3A9-100

DB-TA-3A9-130

| Article | On/off button | 3 speeds | Change-over function, season |
|---|---|---|---|
| DB-TA-3A9-000 | - | - | Neutral zone |
| DB-TA-3A9-100 | X | - | Neutral zone |
| DB-TA-3A9-130 | X | X | Neutral zone |

## ROOM CONTROLLERS FOR 4 PIPE SYSTEM WITH ECONOMY FUNCTION, TWO 0...10 V OUTPUT AND ONE RELAY OUTPUT

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50-60 Hz |
| Input | External contact for economy function |
| Outputs | Valves: 1 0-10 outputs (RL > 10 kOhm) 1 relay 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Hysteresis | 0.5…2 K (relay) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Economy | Adjustable range between 0…5 °C |
| P-band | 1...5 K |
| Neutral zone | 1…4 K |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-3A9-00A

DB-TA-3A9-10A

DB-TA-3A9-13A

| Article | On/off button | 3 speeds | Change-over function, season |
|---|---|---|---|
| DB-TA-3A9-00A | - | - | Neutral zone |
| DB-TA-3A9-10A | X | - | Neutral zone |
| DB-TA-3A9-13A | X | X | Neutral zone |

## ROOM CONTROLLERS FOR 2 PIPE SYSTEM, ONE 0…10 V OUTPUT

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Output | Valves: 1 0-10 V output ($R_L$> 10 kOhm) / speeds: 6 A 24/230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| P-band | 1...5 K |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

| Article | On/off button | 3 speeds | Change-over function, season |
|---|---|---|---|
| DB-TA-3B5-000 | - | - | Selector |
| DB-TA-3B5-100 | X | - | Selector |
| DB-TA-3B5-130 | X | X | Selector |

DB-TA-3B5-000

DB-TA-3B5-100

DB-TA-3B5-130

## ROOM CONTROLLERS FOR 2 PIPE SYSTEM WITH ECONOMY FUNCTION AND REMOTE SEASON CHANGEOVER

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Input | External contact for economy and season changeover function |
| Output | Valves: 1 0-10 V outputs ($R_L$> 10 kOhm) / speeds: 6 A 24/230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Economy | Economy setpoint: adjustable range between 5…30°C |
| P-band | 1...5 K |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

| Article | On/off button | 3 speeds | Change-over function, season |
|---|---|---|---|
| DB-TA-3B5-00A | - | - | Remote contact |
| DB-TA-3B5-10A | X | - | Remote contact |
| DB-TA-3B5-13A | X | X | Remote contact |

DB-TA-3B5-00A

DB-TA-3B5-10A

DB-TA-3B5-13A

## ROOM CONTROLLERS FOR 2 PIPE SYSTEM, ONE 0...10 OUTPUT AND ONE RELAY OUTPUT

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Outputs | Valves: 1 0-10 outputs (RL > 10 kOhm) 1 relay output 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz |
| Output | |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Hysteresis | 0.4 K (relay) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| P-band | 1...5 K |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-3B5-100

DB-TA-3B5-130

| Article | On/off button | 3 speeds | Change-over function, season |
|---|---|---|---|
| DB-TA-3B8-130 | X | - | Selector |
| DB-TA-3B8-100 | X | X | Selector |

## ROOM CONTROLLERS FOR 2 PIPE SYSTEM WITH ECONOMY FUNCTION AND REMOTE SEASON CHANGEOVER, ONE 0...10 V OUTPUT AND ONE RELAY OUTPUT

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Inputs | External contacts for economy and season changeover function |
| Outputs | Valves: 1 0-10 outputs (RL > 10 kOhm) 1 relay 6 A 230 V AC/speeds: 6 A 24/230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Hysteresis | 0.4 K (relay) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Economy | Economy setpoint: adjustable range between 5…30 °C |
| P-band | 1...5 K |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-3B8-10A

DB-TA-3B8-13A

| Article | On/off button | 3 speeds | Change-over function, season |
|---|---|---|---|
| DB-TA-3B8-10A | X | - | Remote contact |
| DB-TA-3B8-13A | X | X | Remote contact |

## ROOM THERMOSTATS 2 STAGES

Temperature control in heating, refrigeration and air conditioning for typical fan-coil systems with 2 stages.

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Outputs | Valves: 2 relay SPDT 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Step differential | 0.5…4 K |
| Hysteresis | 0.5…4 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-3C3-139

DB-TA-3C3-199

DB-TA-3C3-999

| Article | On/off button | 3 speeds | Hysteresis | Remote sensor |
|---|---|---|---|---|
| DB-TA-3C3-139 | X | X | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3C3-199 | X | - | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3C3-999 | - | - | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

## ROOM THERMOSTATS 2 STAGES WITH ECONOMY FUNCTION

Temperature control in heating, refrigeration and air conditioning for typical fan-coil systems with 2 stages.

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Input | External contact for economy function |
| Outputs | Valves: 2 relay SPDT 6 A 230 V AC / speeds: 6 A 24/230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Step differential | 0.5…4 K |
| Hysteresis | 0.5…4 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Economy | Adjustable range between 0…5 °C |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 class II |
| Isolation class | II |

DB-TA-3C3-13A

DB-TA-3C3-19A

DB-TA-3C3-99A

| Article | On/off button | 3 speeds | Hysteresis | Remote sensor |
|---|---|---|---|---|
| DB-TA-3C3-13A | X | X | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3C3-19A | X | - | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3C3-99A | - | - | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

## ROOM THERMOSTATS WITH AUTOMATIC SPEED AND ECONOMY FUNCTION

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Outputs | Valves: 2 outputs 0,5 A 230 V AC / speeds: 3 outputs 3 A 230 V AC |
| Power consumption | 1 W |
| Sensor | NTC 10K optional water sensor: NT0220-NTC10-02 |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 7…30 °C |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Economy | 2 pipes: adjustable range between 5…30 °C (replaced the working setpoint) / 4 pipes: adjustable range between 0…5 °C |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-3D3-00A

| Article | On/off button | 3 speeds | Change-over function, season | Remote sensor |
|---|---|---|---|---|
| DB-TA-3D3-00A | - (on/off setting from parameters) | Automatic | 2-pipe system: S/W par (setting by keys and display) 4-pipe system: S/W auto (s/w change-over with water sensor) | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

*Note: The controllers are supplied with water sensor model NT0220-NTC10-02.*

## ROOM THERMOSTATS ONE STAGE FOR 2 PIPE SYSTEM, COOLING ONLY

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Outputs | Valves: 1 relay SPDT 6 A 230 V AC / speeds: 6 A 230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10 K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Hysteresis | 0.5…4 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-3E3-139

DB-TA-3E3-199

| Article | On/off button | 3 speeds | Hysteresis | Remote sensor |
|---|---|---|---|---|
| DB-TA-3E3-139 | X | X | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3E3-199 | X | - | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

## ROOM THERMOSTATS ONE STAGE FOR 2 PIPE SYSTEM WITH ECONOMY FUNCTION

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Input | External contact for economy function |
| Outputs | Valves: 1 relay SPDT 6 A 230 V AC / speeds: 6 A 230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Hysteresis | 0.5…4 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Economy | Adjustable range between 5…30 °C (replaced the working setpoint) |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

| Article | On/off button | 3 speeds | Hysteresis | Remote sensor |
|---|---|---|---|---|
| DB-TA-3E3-13A | X | X | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3E3-19A | X | - | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

DB-TA-3E3-13A

DB-TA-3E3-19A

## ROOM THERMOSTATS ONE STAGE FOR 2 PIPE SYSTEM

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Outputs | valves: 1 relay SPDT 6 A 230 V AC / speeds: 6 A 230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Hysteresis | 0.5…4 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

| Article | On/off button | 3 speeds | Hysteresis | Remote sensor |
|---|---|---|---|---|
| DB-TA-3F3-139 | X | X | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3F3-199 | X | - | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3F3-939 | - | X | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3F3-999 | - | - | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

DB-TA-3F3-139

DB-TA-3F3-199

DB-TA-3F3-939

DB-TA-3F3-999

## ROOM THERMOSTATS ONE STAGE FOR 2 PIPE SYSTEM WITH ECONOMY FUNCTION

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Input | External contact for economy function |
| Outputs | Valves: 1 relay SPDT 6 A 230 V AC / speeds: 6 A 230 V AC, 50/60 Hz |
| Power consumption | 1 W |
| Sensor | NTC 10K |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 5…30 °C |
| Hysteresis | 0.5…4 K |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Economy | Adjustable range between 5…30 °C (replaced the working setpoint) |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-3F3-13A

DB-TA-3F3-19A

DB-TA-3F3-93A

DB-TA-3F3-99A

| Article | On/off button | 3 speeds | Hysteresis | Remote sensor |
|---|---|---|---|---|
| DB-TA-3F3-13A | X | X | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3F3-19A | X | - | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3F3-93A | - | X | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |
| DB-TA-3F3-99A | - | - | 0.5...4 K | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

## ROOM CONTROLLERS FOR 4 PIPE SYSTEM, 3 POINT OUTPUT

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Outputs | Valves: 4 outputs 5 A 230 V AC / speeds: 3 outputs 3 A 230 V AC |
| Power consumption | 1 W |
| Sensor | NTC 10K Optional water sensor: NT0220-NTC10-02 |
| Ambient temperature | 0…40 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 7…30 °C |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Temperature resolution | 0.1 °C |
| Casing | ABS fireproof according to UL94 V-0 color (RAL 9010) |
| Weight | 220 g |
| Dimensions | 144 x 82 x 34 mm |
| Protection class | IP30 |
| Isolation class | II |

DB-TA-3G3-700

| Article | Tubes | 3 speeds | Remote sensor |
|---|---|---|---|
| DB-TA-3G3-700 | 2/4 | X | NT0220-NTC10-02 optional with 2 m cable, selectable by jumper |

# 2 Electronic thermostats










## ELECTRONIC THERMOSTATS, 1 AND 2 STAGES

Temperature control in heating or cooling systems.

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Input | 1 NTC 10K sensor, remote setpoint controller (optional) |
| Output | 1 or 2 relays SPDT 10 A 230 V AC |
| Power consumption | < 1.5 W |
| Accuracy | ± 1 °C |
| Ambient temperature | -20...+50 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Max. temperature sensor | -40…+110 °C |
| Casing | ABS fireproof according to UL94 V-0 |
| Weight | 480 g |
| Dimensions | 132 x 85 x 88 mm |
| Protection class | IP65 |
| Isolation class | II |

DB-I2D/1

| Article | Steps | Temperature range | Hysteresis | Step differential |
|---|---|---|---|---|
| DB-I1D/1 | 1 | -10…+40 °C | 0.5…6 K | - |
| DB-I1D/2 | 1 | 30…80 °C | 0.5…6 K | - |
| DB-I2D/1 | 2 | -10…+40 °C | 0.5…6 K | 0.5…6 K |
| DB-I2D/2 | 2 | 30…80 °C | 0.5…6 K | 0.5…6 K |

*On request: remote setpoint control; code: DB-CDP/N1.*

## DIGITAL CONTROLLERS, 4 STAGES WITH RELAY

Temperature and humidity control in heating, cooling, humidification and dehumidification systems.

| Technical data | |
|---|---|
| Supply voltage | 230 V AC +/- 10%, 50-60 Hz |
| Input | NTC 10K sensor and/or humidity-current transmitter 4…20 mA- remote setpoint controller DB-CDP-N1 (optional) |
| Output | 4 or 8 SPDT relays 10 A 230 V AC |
| Ambient temperature | -10...+50 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Delay | 0…9.5 min |
| Display | 2 lines with 3 digits (7 segments display) |
| Configuration | 4 push/buttons keyboard on the front |
| Casing | Makrolon |
| Weight | 920 g |
| Dimensions | 200 x 120 x 75 mm (DB-I4D/02/004: 2 casings 200 x 120 x 75 mm) |
| Protection class | IP65 |
| Isolation class | II |

DB-I4D/02/001

| Article | Range | Steps | Hysteresis | Input | Power consumption |
|---|---|---|---|---|---|
| DB-I4D/02/001 | -50…+110 °C | 4 | 0…10 K | NTC 10K | < 3 W |
| DB-I4D/02/002 | 0…100 % RH | 4 | 0…100 % RH | 4…20 mA | < 3 W |
| DB-I4D/02/003 | -50…+110 °C / 0…100 % RH | 4 | 0...10 K / 0...10 % RH | NTC 10K / 4…20 mA | < 3 W |
| DB-I4D/02/004 | -50…+110 °C | 8 | 0…10 K | NTC 10K | < 6 W |

## DIFFERENTIAL THERMOSTATS

Temperature control in heating pump systems, solar heating panel systems, for regulation of water circulation pumps and all systems that depend on a differential temperature.

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ± 10%, 50/60 Hz |
| Input | 2 NTC 10K sensor (thermostats are supplied with NT0420 + NTC10-02) |
| Output | 1 SPDT relay 10 A 230 V AC |
| Power consumption | < 1.5 W |
| Accuracy | ± 1 °C |
| Ambient temperature | -20...+50 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Setpoint | 1…20 Delta T °C |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Max. temperature sensor | -40…+110 °C |
| Casing | ABS fireproof according to UL94 V-0 |
| Weight | 580 g |
| Dimensions | 132 x 85 x 88 mm |
| Protection class | IP65 |
| Isolation class | II |

DB-IDD

| Article | Temperature range | Hysteresis |
|---|---|---|
| DB-IDD | -10…+85 °C | 0.5…6 K |

## DIGITAL THERMOSTAT ONE STAGE

Indication and controlling of temperature with NTC sensors in industrial heating and cooling applications.

| Technical data | |
|---|---|
| Supply voltage | 230 V AC, 50/60 Hz |
| Input | 1 NTC sensor |
| Output | 1 SPDT relay 10 A, 230 V AC resistive load |
| Sensor | NTC10-02 |
| Power consumption | 1,8 W / 2,5 VA |
| Setpoint | -40...+105 °C |
| Ambient temperature | 0…55 °C |
| Ambient humidity | 10…90% RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Hysteresis | 0,1…99 K |
| Resolution | 0,1 °C / 1 °C / 0,1 °F |
| Casing | Fire-proof |
| Connection | Screw terminal blocks |
| Installation | Panel mounting, with click brackets |
| Dimensions | 75 x 33 x 65 mm - mounting hole 71 x 29 mm |
| Protection class | IP65 (frontal) |


DTR11N7

| Article | Setpoint | Hysteresis |
|---|---|---|
| DTR11N7 | -40…+105 °C | 0,1…99 K |

# DIGITAL CONTROLLERS WITH RELAYS

Control of 1 or 2 indipendent physical quantities with:

- 2 relay outputs or 2 proportional outputs 0…10 V DC or 1 proportional output 0…10 V DC and 1 relay output;
- 1 output for power supply of active transducer (17 V DC, max. 44 mA);
- 3 digit display;
- red LED, output state indicator;
- push buttons for parameters setting;
- optical alarms;
- password and two access levels.

DB-R/1

| Technical data DB-R/1 | |
|---|---|
| Outputs | 2 SPDT relays 8 A 230 V AC |
| Power consumption | < 3 W |
| Ambient temperature | 0…45 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Connection | Screw terminal block for cables up to 2.5 $mm^2$ |
| Casing | ABS fireproof plastic according to UL94 V-0 |
| Weight | 400 g |
| Dimensions | 96 x 48 x 122 mm - mounting hole: 92 x 45 mm |
| Protection class | IP52 (front) |
| Isolation class | II |

DB-R/1

| **Part number selection** | Input 1 | | | Input 2 | | | | |
|---|---|---|---|---|---|---|---|---|
| DB-R | X | X | XX | X | X | XX | X | 1 |
| **INPUT 1** | | | | | | | | |
| NTC10-02 | 1 | 1 | 07 | (1) | | | | |
| PT1000 | 2 | 1 | 08 | (1) | | | | |
| PTC 2K | 3 | 1 | 09 | (1) | | | | |
| NI1000-02 | 4 | 1 | 10 | (1) | | | | |
| 0...1000 Ohm | 5 | 2 | 06 | (1) | | | | |
| 0...1 Vcc (**) | 6 | | | | | | | |
| 0....10 Vcc (**) | 7 | | | | | | | |
| 0...20 mA (**) (Rin = 100 Ohm) | 8 | | | | | | | |
| 4...20 mA (**) (Rin = 100 Ohm) | 9 | | | | | | | |
| **UNIT 1** | | | | | | | | |
| °C | | 1 | | | | | | |
| % u.r. | | 2 | | | | | | |
| bar | | 3 | | | | | | |
| mbar | | 4 | | | | | | |
| Pa | | 5 | | | | | | |
| **RANGE 1** | | | | | | | | |
| 0...+50°C | | | 01 | | | | | |
| -30...+50°C | | | 02 | | | | | |
| -10...+40°C | | | 03 | | | | | |
| 0...+100°C | | | 04 | | | | | |
| -20...+80°C | | | 05 | | | | | |
| 0...+100% u.r. | | | 06 | | | | | |
| -50...+110°C | | | 07 | | | | | |
| -60...+600°C | | | 08 | | | | | |
| -50...+150°C | | | 09 | | | | | |
| -60...+200°C | | | 10 | | | | | |
| Range on request (*) | | | 99 | | | | | |
| **INPUT 2** | | | | | | | | |
| None | | | | 0 | 0 | 00 | | |
| NTC10-02 | | | | 1 | 1 | 07 | (1) | |
| PT1000 | | | | 2 | 1 | 08 | (1) | |
| PTC 2K | | | | 3 | 1 | 09 | (1) | |
| NI1000-02 | | | | 4 | 1 | 10 | (1) | |
| 0...1000 Ohm | | | | 5 | 2 | 06 | (1) | |
| 0...1 Vcc (**) | | | | 6 | | | | |
| 0...10 Vcc (**) | | | | 7 | | | | |
| 0...20 mA (**) (Rin = 100 Ohm) | | | | 8 | | | | |
| 4...20 mA (**) (Rin = 100 Ohm) | | | | 9 | | | | |
| **UNIT 2** | | | | | | | | |
| None | | | | | 0 | | | |
| °C | | | | | 1 | | | |
| % u.r. | | | | | 2 | | | |
| bar | | | | | 3 | | | |
| mbar | | | | | 4 | | | |
| Pa | | | | | 5 | | | |
| **RANGE 2** | | | | | | | | |
| None | | | | | | 00 | | |
| 0...+50°C | | | | | | 01 | | |
| -30...+50°C | | | | | | 02 | | |
| -10...+40°C | | | | | | 03 | | |
| 0...+100°C | | | | | | 04 | | |
| -20...+80°C | | | | | | 05 | | |
| 0...+100% u.r. | | | | | | 06 | | |
| -50...+110°C | | | | | | 07 | | |
| -60...+600°C | | | | | | 08 | | |
| -50...+150°C | | | | | | 09 | | |
| -60...+200°C | | | | | | 10 | | |
| range on request (*) | | | | | | 99 | | |
| **POWER SUPPLY** | | | | | | | | |
| 230 Vca ±10% 50/60 Hz | | | | | | | 1 | |
| 12 Vca ±10% 50/60 Hz | | | | | | | 2 | |
| **OUTPUT** | | | | | | | | |
| 2 relè SPDT 230Vca 8A | | | | | | | | |

(*) specify on order
(1) compulsory ranges
(**) the choice of the setting range is only permitted for models with voltage inputs (VDC) or current (mA

# DIGITAL CONTROLLERS 2 OUTPUTS 0…10 V

Regulation of 1 or 2 independent physical quantities with:

- 2 proportional outputs 0…10 V DC;
- 1 output for power supply of active transducer ( 17 V DC, Max. 44 mA);
- 3 digit display;
- red led, output state indicator;
- pusg buttons for parameters settong;
- optical alarms;
- password and two acces level.

DB-R/2

| Technical data DB-R/2 | |
|---|---|
| Outputs | 2 0-10 V ($R_L$ > 10 KOhm) |
| Power consumption | < 3 W |
| Ambient temperature | 0…45 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Connection | Screw terminal block for cables up to 2.5 $mm^2$ |
| Casing | ABS fireproof plastic according to UL94 V-0 |
| Weight | 400 g |
| Dimensions | 96 x 48 x 122 mm - mounting hole: 92 x 45 mm |
| Protection class | IP52 (front) |
| Isolation class | II |

DB-R/2

| **Part number selection** DB-R | Input 1 X | Input 1 X | Input 1 XX | Input 2 X | Input 2 X | Input 2 XX | X | 2 |
|---|---|---|---|---|---|---|---|---|
| **INPUT 1** | | | | | | | | |
| NTC10-02 | 1 | 1 | 07 | (1) | | | | |
| 0....10 Vcc (**) | 7 | | | | | | | |
| 4...20 mA (**) (Rin = 100 Ohm) | 9 | | | | | | | |
| **UNIT 1** | | | | | | | | |
| °C | | 1 | | | | | | |
| % u.r. | | 2 | | | | | | |
| bar | | 3 | | | | | | |
| mbar | | 4 | | | | | | |
| Pa | | 5 | | | | | | |
| **RANGE 1** | | | | | | | | |
| 0...+50°C | | | 01 | | | | | |
| -30...+50°C | | | 02 | | | | | |
| -10...+40°C | | | 03 | | | | | |
| 0...+100°C | | | 04 | | | | | |
| -20...+80°C | | | 05 | | | | | |
| 0...+100% u.r. | | | 06 | | | | | |
| -50...+110°C | | | 07 | | | | | |
| -60...+600°C | | | 08 | | | | | |
| -50...+150°C | | | 09 | | | | | |
| -60...+200°C | | | 10 | | | | | |
| range on request (*) | | | 99 | | | | | |
| **INPUT 2** | | | | | | | | |
| None | | | | 0 | 0 | 00 | | |
| NTC10-02 | | | | 1 | 1 | 07 | (1) | |
| 0...10 Vcc (**) (Rin = 100 Ohm) | | | | 7 | | | | |
| 4...20 mA (**) (Rin = 100 Ohm) | | | | 9 | | | | |
| **UNIT 2** | | | | | | | | |
| None | | | | | 0 | | | |
| °C | | | | | 1 | | | |
| % u.r. | | | | | 2 | | | |
| bar | | | | | 3 | | | |
| mbar | | | | | 4 | | | |
| Pa | | | | | 5 | | | |
| **RANGE 2** | | | | | | | | |
| None | | | | | | 00 | | |
| 0...+50°C | | | | | | 01 | | |
| -30...+50°C | | | | | | 02 | | |
| -10...+40°C | | | | | | 03 | | |
| 0...+100°C | | | | | | 04 | | |
| -20...+80°C | | | | | | 05 | | |
| 0...+100% u.r. | | | | | | 06 | | |
| -50...+110°C | | | | | | 07 | | |
| -60...+600°C | | | | | | 08 | | |
| -50...+150°C | | | | | | 09 | | |
| -60...+200°C | | | | | | 10 | | |
| range on request (*) | | | | | | 99 | | |
| **POWER SUPPLY** | | | | | | | | |
| 230 Vca ±10% 50/60 Hz | | | | | | | 1 | |
| 12 Vca ±10% 50/60 Hz | | | | | | | 2 | |
| **OUTPUT** | | | | | | | | |
| 2 0-10 V | | | | | | | | |

(*) specify on order
(1) compulsory ranges
(**) the choice of the setting range is only permitted for models with voltage inputs (VDC) or current (mA

# DIGITAL CONTROLLERS WITH 0…10 V OUTPUT AND RELAY OUTPUT

Regulation of 1 or 2 independent physical quantities with:

- 1 proportional output 0…10 V DC;
- 1 relay output;
- 1 output for power supply of active transducer (17 V DC, Max. 44 mA)
- 3 digit display;
- red led, output state indicator;
- push buttons for parameters setting;
- optical alarms;
- password and two access levels.

DB-R/3

| Technical data DB-R/3 | |
|---|---|
| Outputs | 1 proportional 0…10 V DC ($R_L$ > 10 kOhm) / 1 SPDT relay 8 A 230 V AC |
| Power consumption | < 3 W |
| Ambient temperature | 0…45 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Connection | Screw terminal block for cables up to 2.5 $mm^2$ |
| Casing | ABS fireproof plastic according to UL94 V-0 |
| Weight | 400 g |
| Dimensions | 96 x 48 x 122 mm - mounting hole: 92 x 45 mm |
| Protection class | IP52 (front) |
| Isolation class | II |

DB-R/3

| **Part number selection** | Input 1 | | | Input 2 | | | | |
|---|---|---|---|---|---|---|---|---|
| DB-R | X | X | XX | X | X | XX | X | 1 |
| **INPUT 1** | | | | | | | | |
| NTC10-02 | 1 | 1 | 07 | (1) | | | | |
| 0....10 Vcc (**) | 7 | | | | | | | |
| 4...20 mA (**) (Rin = 100 Ohm) | 9 | | | | | | | |
| **UNIT 1** | | | | | | | | |
| °C | | 1 | | | | | | |
| % u.r. | | 2 | | | | | | |
| bar | | 3 | | | | | | |
| mbar | | 4 | | | | | | |
| Pa | | 5 | | | | | | |
| **RANGE 1** | | | | | | | | |
| 0...+50°C | | | 01 | | | | | |
| -30...+50°C | | | 02 | | | | | |
| -10...+40°C | | | 03 | | | | | |
| 0...+100°C | | | 04 | | | | | |
| -20...+80°C | | | 05 | | | | | |
| 0...+100% u.r. | | | 06 | | | | | |
| -50...+110°C | | | 07 | | | | | |
| -60...+600°C | | | 08 | | | | | |
| -50...+150°C | | | 09 | | | | | |
| -60...+200°C | | | 10 | | | | | |
| range on request (*) | | | 99 | | | | | |
| **INPUT 2** | | | | | | | | |
| None | | | | 0 | 0 | 00 | | |
| NTC10-02 | | | | 1 | 1 | 07 | (1) | |
| PT1000 | | | | 2 | 1 | 08 | (1) | |
| PTC 2K | | | | 3 | 1 | 09 | (1) | |
| NI1000-02 | | | | 4 | 1 | 10 | (1) | |
| 0...1000 Ohm | | | | 5 | 2 | 06 | (1) | |
| 0...1 Vcc (**) | | | | 6 | | | | |
| 0...10 Vcc (**) | | | | 7 | | | | |
| 0...20 mA (**) | | | | 8 | | | | |
| 4...20 mA (**) | | | | 9 | | | | |
| **UNIT 2** | | | | | | | | |
| None | | | | | 0 | | | |
| °C | | | | | 1 | | | |
| % u.r. | | | | | 2 | | | |
| bar | | | | | 3 | | | |
| mbar | | | | | 4 | | | |
| Pa | | | | | 5 | | | |
| **RANGE 2** | | | | | | | | |
| None | | | | | | 00 | | |
| 0...+50°C | | | | | | 01 | | |
| -30...+50°C | | | | | | 02 | | |
| -10...+40°C | | | | | | 03 | | |
| 0...+100°C | | | | | | 04 | | |
| -20...+80°C | | | | | | 05 | | |
| 0...+100% u.r. | | | | | | 06 | | |
| -50...+110°C | | | | | | 07 | | |
| -60...+600°C | | | | | | 08 | | |
| -50...+150°C | | | | | | 09 | | |
| -60...+200°C | | | | | | 10 | | |
| range on request (*) | | | | | | 99 | | |
| **POWER SUPPLY** | | | | | | | | |
| 230 Vca ±10% 50/60 Hz | | | | | | | 1 | |
| 12 Vca ±10% 50/60 Hz | | | | | | | 2 | |
| **OUTPUT** | | | | | | | | |
| 1 0-10 V e 1 relè SPDT 230 Vca 8 A | | | | | | | | |

# 3 Electromechanical thermostats

## ROOM THERMOSTAT

1-stage room thermostat. Models with on/off switch or summer/winter switch.

| Technical data | |
|---|---|
| Sensor element | Gas-filled bellows with membrane |
| Hysteresis | < 1 K |
| Contact | NO/NC 250 V AC 16 (2,5) A |
| Temperature range | 5...30 °C |
| Ambient temperature | Max. 50 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Storage temperature | 0…50 °C |
| Storage humidity | < 95 % RH |
| Mounting | Room |
| Casing | ABS, fireproof according UL94 V-0 color (Euro White) |
| Dimensions | 80 x 80 x 44 mm |
| Weight | 128 g |
| Protection class | IP20 |
| Isolation class | I |

TA33/I

| Article | On/off button | Summer/winter switch |
|---|---|---|
| TA31/I | - | - |
| TA33/I | X | - |
| TA34/I | - | X |

## ROOM THERMOSTATS WITH FIXED HYSTERESIS, IP54

A wide range of room thermostats for wall mounting.

| Technical data | |
|---|---|
| Sensor element | Liquid-filled coiled copper nickel bulb |
| Contacts | Dust-tight microswitches with switching SPDT contacts (heat/cool) |
| Switch capacity | NC 16 (6) A, 250 V AC / NO 6 (4) A, 250 V AC |
| Temperature range | °C |
| Ambient temperature | -10…+65 °C |
| Ambient humidity | 10…90% RH (without condensing) |
| Storage temperature | -20…+65 °C |
| Storage humidity | < 95 % RH |
| Max. bulb temperature | 65 °C |
| Casing | Bayblend® base, ABS cover |
| Weight | 1 stage: 340 g<br>2 stage: 520 g |
| Protection class | IP54 |
| Isolation class | I |
| Dimensions | 108 x 70 x 72 mm (132 x 88 x 70 mm for 2 stage models) |

ET060U

ET06060U

| Article | Temperature range 1 | Temperature range 2 | Hysteresis | Hidden setpoint | |
|---|---|---|---|---|---|
| ET060 | 0…+60 °C | | 1.5±1 K | - | - |
| ET060U | 0…+60 °C | | 1.5±1 K | X | - |
| ET06060 | 0…+60 °C | 0…+60 °C | 1.5±1 K | - | 1.5±1 |
| ET06060U | 0…+60 °C | 0…+60 °C | | X | 1.5±1 |

*Note: range 2 always under the cover*

# WALL THERMOSTAT, IP65

Wall thermostats for use in cooling, heating and ventilation systems.

| Technical data | |
|---|---|
| Sensor element | Liquid-filled coiled copper bulb |
| Contacts | Dust-tight microswitches with SPDT contacts (heat/cool) |
| Switch capacity | 15 (8) A, 24...250 V AC |
| Ambient temperature | -35...+60 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Storage temperature | -40…+65 °C |
| Storage humidity | < 95 % RH |
| Max. bulb temperature | 65 °C |
| Casing | Bayblend® base, ABS cover |
| Dimensions | 108 x 70 x 72 mm |
| Weight | 450 g |
| Protection class | IP65 |
| Isolation class | I |

DBET-26

DBET-26U

| Article | Temperature range | Steps | Hysteresis | Step diff. | Hidden setpoint |
|---|---|---|---|---|---|
| DBET-22 | -30...+30 °C | 1 | 2...15 K | - | - |
| DBET-22U | -30...+30 °C | 1 | 2...15 K | - | X |
| DBET-23 | -30...+30 °C | 1 | 1 K | - | - |
| DBET-22/2 | -30...+30 °C | 2 | 1 K | 2...5 K | - |
| DBET-26 | 0...60 °C | 1 | 2...15 K | - | - |
| DBET-27 | 0...60 °C | 1 | 1 K | - | - |
| DBET-26U | 0...60 °C | 1 | 2…15 K | - | X |
| DBET-26/2 | 0...60 °C | 2 | 1 K | 2...5 K | - |

| Article | Temperature range | Steps | Hysteresis | Step diff. | Hidden setpoint |
|---|---|---|---|---|---|
| DBET-22/2U | -30...+30 °C | 2 | 1 K | 2…5 K | X |
| DBET-23U | -30...+30 °C | 1 | 1 K | - | X |
| DBET-26/2U | 0...60 °C | 2 | 1 K | 2…5 K | X |
| DBET-27U | 0...60 °C | 1 | 1 K | - | X |

# CAPILLARY THERMOSTATS, IP54

A wide range of capillary thermostats.

TC090

| Technical data | |
|---|---|
| Sensor element | Liquid-filled coiled copper bulb with capillary PVC protected |
| Bulb | Ø 6.8 mm |
| Length, capillary tube | 1.5 m |
| Contacts | Dust-tight microswitches with SPDT contacts (heat/cool) |
| Switch capacity | NC 16 (4) A 250 V AC / NO 10 (6) A 250 V AC |
| Ambient temperature | -10…+65 °C |
| Ambient humidity | 10…90% RH (non-condensing) |
| Storage temperature | -40…+70 °C |
| Storage humidity | < 95 % RH |
| Max. bulb temperature | 130 °C |
| Casing | Bayblend® base, ABS cover |
| Weight | 360 g |
| Protection class | IP54 |
| Isolation class | I |
| Dimensions | 108 x 70 x 72 mm |

| Article | Temperature range | Hysteresis |
|---|---|---|
| TC060 | 0…60 °C | 4±1 K |
| TC090 | 0…90 °C | 4±1 K |

## ACCESSORIES

| Article | Description |
|---|---|
| DBZ-30/14 | Brass pocket 120 mm, 8 x 0.5 |
| DBZ-31/14 | Stainless steel AISI 304 pocket 120 mm, 8 x 0.5 |

# CAPILLARY THERMOSTAT, IP65

Capillary thermostats for use in cooling, heating and ventilation systems.

| Technical data | |
|---|---|
| Sensor element | Liquid-filled coiled copper bulb |
| Bulb | Ø 9.5 (Ø 8 for range 50...120°C) |
| Length, capillary tube | 1.5 m |
| Contacts | Dust-tight microswitches with SPDT contacts (heat/cool) |
| Switch capacity | 15 (8) A, 24...250 V AC |
| Ambient temperature | -35...+65 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Storage temperature | -40…+70 °C |
| Storage humidity | < 95 % RH |
| Casing | Bayblend® base, ABS cover |
| Dimensions | 108 x 70 x 72 mm |
| Weight | 400 g |
| Protection class | IP65 |
| Isolation class | I |

DBET-6

DBET-16U

| Article | Temperature range | Steps | Hysteresis | Step diff. | Max. bulb temperature | Hidden setpoint | Immersion well to use |
|---|---|---|---|---|---|---|---|
| DBET-4 | -30…+30 °C | 1 | 2…20 K | - | 60 °C | - | DBZ-01/02 |
| DBET-4U | -30…+30 °C | 1 | 2…20 K | - | 60 °C | X | DBZ-01/02 |
| DBET-4/2 | -30…+30 °C | 2 | 1 K | 2…5 K | 60 °C | - | DBZ-01/02 |
| DBET-5 | -30…+30 °C | 1 | 1 K | - | 60 °C | - | DBZ-01/02 |
| DBET-6 | -30…+30 °C | 1 | Manual minimal reset | - | 60 °C | - | DBZ-01/02 |
| DBET-16 | 20…90 °C | 1 | 2...20 K | - | 100 °C | - | DBZ-01/02 |
| DBET-16U | 20…90 °C | 1 | 2...20 K | - | 100 °C | X | DBZ-01/02 |
| DBET-17 | 20…90 °C | 1 | 1 K | - | 100 °C | - | DBZ-01/02 |
| DBET-18 | 20…90 °C | 1 | Manual maximum reset | - | 100 °C | - | DBZ-01/02 |
| DBET-10 | 50…120 °C | 1 | 2…20 K | - | 150 °C | - | DBZ-16/17 |

| Article | Temperature range | Steps | Hysteresis | Step diff. | Max. bulb temperature | Hidden setpoint | Immersion well to use |
|---|---|---|---|---|---|---|---|
| DBET-5U | -30…+30 °C | 1 | 1 K | - | 60 °C | X | DBZ-01/02 |
| DBET-7 | 0…60 °C | 1 | 2…20K | - | 75 °C | - | DBZ-01/02 |
| DBET-7/2 | 0…60 °C | 2 | 1 K | 2…5 K | 75 °C | - | DBZ-01/02 |
| DBET-8 | 0…60 °C | 1 | 1 K | - | 75 °C | - | DBZ-01/02 |
| DBET-11 | 50…120 °C | 1 | 1 K | - | 150 °C | - | DBZ-16/17 |

## ACCESSORIES

| Article | Description |
|---|---|
| DBZ-01 | Brass pocket 120 mm, 12 x 1 |
| DBZ-02 | Stainless steel AISI 304 pocket 120 mm, 12 x 1 |
| DBZ-16 | Brass pocket 120 mm, 10 x 0.5 |
| DBZ-17 | Stainless steel AISI 304 pocket 120 mm, 10 x 0.5 |

# DUCT THERMOSTAT, IP54

Range of duct thermostats IP54.

| Technical data | |
|---|---|
| Sensor element | Liquid-filled coiled copper bulb with 200 mm protection spring and mounting bracket |
| Contacts | Dust-tight microswitches with SPDT contacts (heat/cool) |
| Switch capacity | TZ090U: NC 16 (6) A, 250 V AC, NO 6 (4) A, 250 V AC / TZR6585: NC 16 (2,5) A, 250 V AC, NO 0,5 A, 250 V AC |
| Ambient temperature | -35…+65 °C |
| Ambient humidity | 10…90% RH (non-condensing) |
| Insertion length | 200 / Ø 21 mm |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Casing | Bayblend® base, ABS cover |
| Weight | 590 g |
| Dimensions | 108 x 70 x 72 mm |
| Protection class | IP54 |
| Isolation class | I |

TZR6585

| Article | Temperature range | Hysteresis | Max. bulb temperature | Function | Hidden setpoint | Switch capacity |
|---|---|---|---|---|---|---|
| TZ090U | 0…90 °C | 4±1 K | 120 °C | With SPDT contact | X | NC 16 (6) A, 250 V AC / NO 6 (4) A, 250 V AC |
| TZR6585 | 65…85 °C | 20±5 K | 125 °C | Manual maximum reset (unit can be reset only if temperature drops below the setpoint minus the hysteresis.) | - | NC 16 (2,5) A, 250 V AC / NO 0,5 A, 250 V AC |

## ACCESSORIES

| Article | Description |
|---|---|
| DBZ-25 | Protection spring and mounting bracket (factory-mounted, supplied with above models) |

*Note: the thermostats are supplied with spiral protection bracket model DBZ-25. The device can only be riarmed if the temperature falls below the setpoint minus the hysteresis value.*

## DUCT THERMOSTAT, IP65

Duct thermostats for use in cooling, heating and ventilation systems.

| Technical data | |
|---|---|
| Sensor element | Liquid-filled coiled copper bulb with 200 mm protection spring and mounting bracket |
| Contacts | Dust-tight microswitches with SPDT contacts (heat/cool) |
| Switch capacity | 15 (8) A, 24...250 V AC |
| Ambient temperature | -35...+65 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Insertion length | 200 / Ø 21 mm |
| Storage temperature | -40…+70 °C |
| Storage humidity | < 95 % RH |
| Casing | Bayblend® base, ABS cover |
| Weight | 690 g |
| Dimensions | 108 x 70 x 72 mm |
| Protection class | IP65 |
| Isolation class | I |

DBTZ-7

DBTZ-12U

| Article | Temperature range | Steps | Hysteresis | Step diff. | Max. bulb temperature | Hidden setpoint |
|---|---|---|---|---|---|---|
| DBTZ-2U | -30...+30 °C | 1 | 1 K | - | 60 °C | X |
| DBTZ-7 | 0...60 °C | 1 | 2...20 K | - | 75 °C | - |
| DBTZ-7/2 | 0...60 °C | 2 | 1 K | 2...5 K | 75 °C | - |
| DBTZ-8 | 0...60 °C | 1 | 1 K | - | 75 °C | - |
| DBTZ-12U | 50...120 °C | 1 | Manual maximum reset | - | 140 °C | X |

### ACCESSORIES

| Article | Description |
|---|---|
| DBZ-25 | Protection spring and mounting bracket (factory-mounted, supplied with above models) |

*Note: the thermostats are supplied with spiral protection bracket model DBZ-25.*

## CLAMP-ON THERMOSTAT, IP20

Electromechanical thermostats for use in cooling, heating and ventilation systems.

| Technical data | |
|---|---|
| Sensor element | Bimetal |
| Contacts | SPDT contacts |
| Switch capacity | NC 16 (2,5) A, 250 V AC / NO 2,5 A, 250 V AC |
| Ambient temperature | max 85 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Storage temperature | -20…+60 °C |
| Storage humidity | < 95 % RH |
| Max. bulb temperature | 90 °C |
| Casing | Zinced steel plate, not sealed ABS cover |
| Weight | 150 g |
| Protection class | IP20 |
| Dimensions | 39 x 55 x 112 mm |
| Isolation class | I |

| Article | Temperature range | Hysteresis | Hidden setpoint |
|---|---|---|---|
| AT2090 | +20…+90 °C | 8±3 K | - |
| AT2090U | +20…+90 °C | 8±3 K | X |

# CLAMP-ON THERMOSTAT, IP65

Thermostats for use in cooling, heating and ventilation systems.

| Technical data | |
|---|---|
| Sensor element | Liquid-filled coiled copper bulb for contact |
| Contacts | Dust-tight microswitches with SPDT contacts (heat/cool) |
| Switch capacity | 15 (8) A, 24...250 V AC |
| Ambient temperature | -35...+65 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Storage temperature | -40…+70 °C |
| Storage humidity | < 95 % RH |
| Hysteresis | 2…20 K |
| Casing | Bayblend® base, ABS cover |
| Weight | 410 g |
| Protection class | IP65 class I |
| Isolation class | I |
| Dimensions | 108 x 70 x 72 mm |

| Article | Temperature range | Max. bulb temperature | Hidden setpoint |
|---|---|---|---|
| DBAT-3 | 0...60 °C | 75 °C | - |
| DBAT-3U | 0...60 °C | 75 °C | X |
| DBAT-5 | 20...90 °C | 90 °C | - |
| DBAT-5U | 20...90 °C | 90 °C | X |

DBAT-5

DBAT-5U

# FROST PROTECTION THERMOSTAT

Frost protection thermostats for use in cooling, heating and ventilation systems.

| Technical data | |
|---|---|
| Sensitive element | |
| Contacts | SPDT microswitch |
| Switch capacity | 15 (8) A, 24…250 V AC |
| Accuracy | ± 1K |
| Ambient temperature | Max. 55 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Storage temperature | -30…+60 °C |
| Storage humidity | < 95 % RH |
| Max. bulb temperature | 150 °C |
| Casing | Base in ABS, cover in transparent Polycarbonate (PC) |
| Weight | 340 g |
| Protection class | IP65 |
| Isolation class | I |
| Dimensions | 140 x 62 x 65 mm (cable gland included) |

| Article | Temperature range | Hysteresis | Reset | Capillary length |
|---|---|---|---|---|
| TF30 | -10…+10 °C or +14…+50 °F | 2 K | Automatic | 3 m |
| TF30R | -10…+10 °C or +14…+50 °F | Manual minimal reset | Manual | 3 m |
| TF60 | -10…+10 °C or +14…+50 °F | 2 K | Automatic | 6 m |
| TF60R | -10…+10 °C or +14…+50 °F | Manual minimal reset | Manual | 6 m |
| TF18 | -10…+10 °C or +14…+50 °F | 2 K | Automatic | 1.8 m |
| TF18R | -10…+10 °C or +14…+50 °F | Manual minimal reset | Manual | 1.8 m |

TF30

TF60R

TF18

DBZ-05

## ACCESSORIES

| Article | Description |
|---|---|
| DBZ-01 | Brass pocket 120 mm, 12 x 1 |
| DBZ-02 | Stainless steel AISI 304 pocket 120 mm, 12 x 1 |
| DBZ-05 | Set of 6 mounting brackets for capillary of antifrost thermostats |

*Note: For additional frost protection products see Chapter 10*

# IMMERSION THERMOSTATS, IP54

Temperature control in pipes for heating, cooling and air conditioning systems, boilers and heaters.
Temperature monitoring and safety protection with manual reset (2 stages).

TV090

TV0909OU

| Technical data | |
|---|---|
| Sensor element | Copper bulb with 120 mm brass pocket (on request with 200 mm length) |
| Contacts | Dust-tight microswitches with SPDT contacts (heat/cool) |
| Switch capacity | With SPDT contact: NC 250 V AC 16 (6) A /NO 250 V AC 6 (4)<br>manual maximum reset: NC 250 V AC 16 (2,5) A / NO 250 V AC 0,5 A |
| Ambient temperature | -35…+65 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Casing | Bayblend® base, ABS cover (2 stage models: sealed ABS) |
| Weight | single stage: 440 g<br>double range: 560 g |
| Dimensions | 108 x 70 x 72 mm (2 stage models: 132 x 88 x 70 mm) |
| Protection class | IP54 |
| Isolation class | I |

| Article | Temperature range 1 | Temperature range 2 | Hysteresis | Step diff. | Max. bulb temperature | Function | Hidden setpoint |
|---|---|---|---|---|---|---|---|
| TV090 | 0...90 °C | | 4±1 K | - | 120 °C | with SPDT contact | - |
| TV090U | 0...90 °C | | 4±1 K | - | 120 °C | with SPDT contact | X |
| TVR6585 | 65…85 °C | | 20±5 K | - | 125 °C | manual maximum reset (unit can be reset only if temperature drops below the setpoint minus the hysteresis) | - |
| TVR90110 | 90…110 °C | | 20±5 K | - | 125 °C | Manual maximum reset (unit can be reset only if temperature drops below the setpoint minus the hysteresis) | - |
| TV09090U | 0…90 °C | 0…90 °C | 4±1 K | 4±1 K | 120 °C | with SPDT contact | X |
| TV090UR85 | 0…90 °C | 65…85 °C | 4±1 K | 20±5 K | 120 °C | manual maximum reset with SPDT contact (unit can be reset only if temperature drops below the setpoint minus the hysteresis) | - |

## ACCESSORIES

| Article | Description |
|---|---|
| DBZ-30/14 | Brass pocket 120 mm, 8 x 0.5 |
| DBZ-40/14 | Brass pocket 120 mm, 16 |
| DBZ-31/14 | Stainless steel AISI 304 pocket 120 mm, 8 x 0.5 |
| DBZ-41/14 | Stainless steel AISI 304 pocket 120 mm, 16 |

*Note: the thermostats are supplied with standard pocket models DBZ-30/14 and DBZ-40/14.*

# IMMERSION THERMOSTATS, IP65

Immersion thermostats for use in cooling, heating and ventilation systems.

| Technical data | |
|---|---|
| Sensor element | Liquid-filled coiled copper bulb |
| Contacts | Dust-tight microswitches with SPDT contacts (heat/cool) |
| Switch capacity | 15 (8) A, 24...250 V AC |
| Ambient temperature | -35...+65 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Storage temperature | -40…+70 °C |
| Storage humidity | < 95 % RH |
| Casing | Bayblend® base, ABS cover |
| Weight | 440 g |
| Dimensions | 108 x 70 x 72 mm |
| Protection class | IP65 |
| Isolation class | I |

DBTV-18U

| Article | Temperature range | Max. bulb temperature |
|---|---|---|
| DBTV-8 | 0…60 °C | 75 °C |
| DBTV-17 | 20…90 °C | 100 °C |
| DBTV-11 | 50…120 °C | 140 °C |

| Article | Temperature range | Hysteresis | Max. bulb temperature | Hidden setpoint |
|---|---|---|---|---|
| DBTV-1 | -30…+30 °C | 2…20 K | 60 °C | - |
| DBTV-2U | -30…+30 °C | 1 K | 60 °C | X |
| DBTV-7 | 0…+60 °C | 2…20 K | 75 °C | - |
| DBTV-7U | 0…+60 °C | 2…20 K | 75 °C | X |
| DBTV-8U | 0...+60 °C | 1 K | 75 °C | X |
| DBTV-16 | +20…+90 °C | 2…20 K | 100 °C | - |
| DBTV-17U | 20…90 °C | 1 K | 100 °C | X |
| DBTV-18 | 20…90 °C | manual maximum reset | 100 °C | - |
| DBTV-18U | 20…90 °C | manual maximum reset | 100 °C | X |

## ACCESSORIES

| Article | Description |
|---|---|
| DBZ-16/14 | Brass pocket 120 mm, 10 x 0.5 |
| DBZ-17/14 | Stainless steel AISI 304 pocket 120 mm, 10 x 0.5 |

*Note: the thermostats are supplied with standard pocket model DBZ-16/14. The device can only be reset if the temperature falls below the setpoint minus the hysteresis.*

# POCKETS FOR THERMOSTATS

Pockets for thermostats in brass or stainless steel.

| Article | Tube length | Total length | Outside diameter tube | Internal diameter tube | Diameter hole | Material | Fixing stopper |
|---|---|---|---|---|---|---|---|
| DBZ-01 | 120 mm | 140 mm | 11 mm | 10 mm | 15 mm | Brass / Cu Ni | X |
| DBZ-02 | 120 mm | 148 mm | 12 mm | 10 mm | 15 mm | Stainless steel AISI 304 | X |
| DBZ-16 | 120 mm | 140 mm | 10 mm | 8.5 mm | 15 mm | Brass / Cu Ni | X |
| DBZ-16/14 | 120 mm | 140 mm | 10 mm | 8.5 mm | 15 mm | Brass / Cu Ni | - |
| DBZ-17 | 120 mm | 148 mm | 10 mm | 8.5 mm | 15 mm | Stainless steel AISI 304 | X |
| DBZ-17/14 | 120 mm | 148 mm | 10 mm | 8.5 mm | 15 mm | Stainless steel AISI 304 | - |
| DBZ-17/14/200 | 200 mm | 228 mm | 10 mm | 8,5 mm | 15 mm | Acciaio inox AISI 304 | X |
| DBZ-18 | 40 mm | 61 mm | 11 mm | 10 mm | 15 mm | Brass / Cu Ni | X |
| DBZ-19 | 40 mm | 68 mm | 10 mm | 8.5 mm | 15 mm | Stainless steel AISI 304 | X |
| DBZ-30/14 | 120 mm | 140 mm | 8 mm | 7 mm | 15 mm | Brass / Cu Ni | - |
| DBZ-31/14 | 120 mm | 148 mm | 9 mm | 7 mm | 15 mm | Stainless steel AISI 304 | - |
| DBZ-40/14 | 100 mm | 128 mm | 16 mm | 15 mm | 15 mm | Brass / Cu Ni | - |
| DBZ-41/14 | 120 mm | 148 mm | 16 mm | 15 mm | 15 mm | Stainless steel AISI 304 | - |

*For additional lengths of stainless steel versions, please contact Industrietechnik*


DBZ-01


DBZ-02


DBZ-16-14


DBZ-17-14


DBZ-18


DBZ-19


DBZ-30-14


DBZ-41-14


DBZ-40-14


DBZ-31-14

# 4 Electric heating controllers


## ELECTRIC HEATHING CONTROLLER WITH AUTOMATIC ADAPTATION TO 230 V AC OR 400 V AC

Controllers intended for control of radiators or electric heating coils. They can be mounted on a wall or in a cabinet. The controllers pulse the whole load on/off and utilise time-proportional triac control. Automatic control function adaptation, P- or PI-control.

| Technical data | |
|---|---|
| Supply voltage | 200...415 V AC, 50...60 Hz, 1- or 2-phase, automatic adaptation |
| Ambient temperature | Max 30 °C (NOTE! Device generates 20 W heating at full load.) |
| P-band | 20 K (rapid temperature changes) 1.5 K (slow temperature changes) |
| I-time | 6 min (rapid temperature changes) |
| Pulse period | 60 s |
| Dimensions | 93 x 153 x 40 mm (DIN-rail models: 115 x 88 x 59 mm) |
| Protection class | IP20 |
| **Inputs/outputs (I/Os)** | |
| Setpoint | 0...30 °C (the sensor determines the temperature range (NTC sensor) |
| Night setback | 0...10 K |
| Output (load) | 16 A (min. 1 A) 1-phase max. 3.6 kW, 2-phase max. 6.4 kW |

| Article | Description | Mounting | Number of modules |
|---|---|---|---|
| CTR | Electric heating controller | Wall | - |
| CTR/D | Electric heating controller | DIN-rail | 6.6 (115 x 88 x 59) |
| CTR-ADD | Add-on unit | Wall | - |
| CTR-X/D | Electric heating controller for external 0...10 V DC control signal | DIN-rail | 6.6 (115 x 88 x 59) |

CTR

CTR-D

CTR-ADD

## ELECTRIC HEATING CONTROLLER, SINGLE PHASE 230 V / DOUBLE PHASE 400 V FOR EXTERNAL CONTROL SIGNAL

Heating controller for controlling electric heating batteries, electric panels etc. The controller operates on a control signal from an external controller.

| Technical data | |
|---|---|
| Supply voltage | 230 V AC, alternatively 400 V AC ±15 %, 50...60 Hz, 1-phase or 2-phase |
| Ambient temperature | 0…30 °C (non-condensing) |
| Pulse period | 6 / 60 / 120 s |
| Dimensions | 93 x 153 x 40 mm |
| Mounting | Wall |
| Protection class | IP20 |

| Article | Description | Supply voltage | Load |
|---|---|---|---|
| CTR230X010 | Electric heating controller for external 0...10 V DC control signal | 230 V AC | Up to 16 A, min. 1 A. Max. output: 3.6 kW. Min. output: 230 W. |
| CTR400X010 | Electric heating controller for external 0...10 V DC control signal | 400 V AC | Up to 16 A, min. 1 A. Max. output: 6.4 kW. Min. output: 400 W. |

CTR230X010

CTR400X010

## ELECTRIC HEATING CONTROLLER FOR WALL MOUNTING, 3-PHASE, 210...415 V

The controller can be used with internal or external setpoint. Automatic control function adaptation, P- or PI-control. The controller can also be set to be controlled by an external 0...10 V DC signal.

CTR2000

| Technical data | |
|---|---|
| Supply voltage | 3-phase, 210...255 / 380...415 V AC, automatic adaptation |
| Setpoint | 0...30 °C (the sensor determines the range) |
| Max. load | Max. 25 A, min. 3 A/phase |
| Sensor inputs | Two, main and min./max. limiting sensors (NTC sensor) |
| Control signal | 0...10 V DC (external signal) |
| Mounting | Wall |
| Protection class | IP30 |
| P-band | Supply air temperature control: 20 K, fixed<br>Room temperature control: 1.5 K, fixed |
| I-time (supply air temperature control) | 6 min, fixed |
| Pulse period | 6...120 s |
| Dimensions | 160 x 207 x 94 mm |

| Article | Description |
|---|---|
| CTR2000 | Electric heating controller |



## SLAVE BOARD FOR ELECTRIC HEATING CONTROLLERS

CTR-S1 is intended for use together with the electric heating controller CTR2000, in order to control extra loads.


CTR-S1

| Article | Description |
|---|---|
| CTR-S1 | Slave board for control of extra loads (+17 kW) |

## ELECTRIC HEATING CONTROLLER FOR DIN-RAIL MOUNTING, 3-PHASE, 210...415 V, 25 A

For control of electric heating coils or radiators. The controllers pulse the whole load on/off and utilise time-proportional triac control. Automatic control function adaptation, P- or PI-control. The controllers can also be set to be controlled by an external 0...10 V DC signal.

CTR25

| Technical data | |
|---|---|
| Supply voltage | 3-phase, 210...255 / 380...415 V AC, automatic adaptation |
| Ambient temperature | 0...40 °C |
| Mounting | DIN-rail |
| Dimensions (WxHxD) | 195 x 200 x 95 mm |
| Protection class | IP20 |
| P-band | Supply air temperature control: 20 K, fixed<br>Room temperature control: 1.5 K, fixed |
| I-time | 6 min, fixed |
| Pulse period | 6...60 s |
| Load | 25 A |
| Output | 25 A, 3 x 400 V AC, 17 kW (3 x 230 V, 10 kW) |
| **Inputs** | |
| Setpoint | 0...30 °C (the sensor determines the range) Note: Does not apply to TTC25X. |
| Sensor inputs | Two, main and max./min. limiting sensors (NTC sensor). |
| Control signal | 0...10 V DC |

| Article | Description | External 0...10 V DC control signal option |
|---|---|---|
| CTR25 | Electric heating controller with temperature control | X |

*To control larger electrical loads, see the step controllers SC4 and SC6.*

## ELECTRIC HEATING CONTROLLER FOR DIN-RAIL MOUNTING, 3-PHASE, 210...415 V, 40 A

For control of electric heating coils or radiators. The controllers pulse the whole load on/off and utilise time-proportional triac control. Automatic control function adaptation, P- or PI-control. The controllers can also be set to be controlled by an external 0...10 V DC signal.

CTR40

| Technical data | |
|---|---|
| Supply voltage | 3-phase, 210...255 / 380...415 V AC, automatic adaptation |
| Ambient temperature | 0...40 °C |
| Mounting | DIN-rail |
| Dimensions (WxHxD) | 195 x 220 x 95 mm |
| Protection class | IP20 |
| P-band | Supply air temperature control: 20 K, fixed<br>Room temperature control: 1.5 K, fixed |
| I-time | 6 min, fixed |
| Pulse period | 6...60 s |
| Load | 40 A |
| Output | 40 A, 3 x 400 V AC, 27 kW (3 x 230 V, 16 kW) |
| **Inputs** | |
| Setpoint | 0...30 °C (the sensor determines the range) |
| Sensor inputs | Two, main and max./min. limiting sensors (NTC sensor). |
| Control signal | 0...10 V DC |

| Article | Description | External 0...10 V DC control signal option |
|---|---|---|
| CTR40 | Electric heating controller with temperature control | X |

*To control larger electrical loads, see the step controllers SC4 and SC6.*

## ELECTRIC HEATING CONTROLLER FOR DIN-RAIL MOUNTING, 3-PHASE, 210...415 V, 63 A

For control of electric heating coils or radiators. The controllers pulse the whole load on/off and utilise time-proportional triac control. Automatic control function adaptation, P- or PI-control. The controllers can also be set to be controlled by an external 0...10 V DC signal.

| Technical data | |
|---|---|
| Supply voltage | 3-phase, 400 V AC ±10% |
| Ambient temperature | 0...40 °C |
| Mounting | DIN-rail |
| Dimensions (WxHxD) | 195 x 220 x 105 mm |
| Protection class | IP20 |
| P-band | Supply air temperature control: 20 K, fixed<br>Room temperature control: 1.5 K, fixed |
| I-time | 6 min, fixed |
| Pulse period | 6...120 s |
| Load | 63 A |
| Output | 63 A, 3 x 400 V AC, 43 kW |
| **Inputs** | |
| Setpoint | 0...30 °C (the sensor determines the range) |
| Sensor inputs | Two, main and max./min. limiting sensors (NTC sensor). |
| Control signal | 0...10 V DC |

| Article | Description | External 0...10 V DC control signal option |
|---|---|---|
| CTR63 | Electric heating controller with temperature control | X |

*To control larger electrical loads, see the step controllers SC4 and SC6.*

## ELECTRIC HEATING CONTROLLER FOR DIN-RAIL MOUNTING, 3-PHASE, 210...415 V, 80 A

For control of electric heating coils or radiators. The controllers pulse the whole load on/off and utilise time-proportional triac control. Automatic control function adaptation, P- or PI-control. The controllers can also be set to be controlled by an external 0...10 V DC signal.

| Technical data | |
|---|---|
| Supply voltage | 3-phase, 400 V AC ±10% |
| Ambient temperature | 0...40 °C |
| Mounting | DIN-rail |
| Dimensions (WxHxD) | 195 x 220 x 105 mm |
| Protection class | IP20 |
| P-band | Supply air temperature control: 20 K, fixed<br>Room temperature control: 1.5 K, fixed |
| I-time | 6 min, fixed |
| Pulse period | 6...120 s |
| Load | 80 A |
| Output | 80 A, 3 x 400 V AC, 55 kW |
| **Inputs** | |
| Setpoint | 0...30 °C (the sensor determines the range) |
| Sensor inputs | Two, main and max./min. limiting sensors (NTC sensor). |
| Control signal | 0...10 V DC |

| Article | Description | External 0...10 V DC control signal option |
|---|---|---|
| CTR80 | Electric heating controller with temperature control | X |

*To control larger electrical loads, see the step controllers SC4 and SC6.*

# 5 Sensors, transmitters and switches

# TEMPERATURE TRANSMITTERS AND SENSORS

## CLAMP-ON SENSOR WITH HOUSING

Clamp-on sensor for surface temperature measurement, including a metal strap for easy fastening and a tube of heat-conductive contact paste.

SC

| Technical data | |
|---|---|
| Temperature range | -20…+120 °C |
| Cable gland | M16 |
| Protection class | IP42 (or IP40, depending on the mounting position) |
| Dimensions | 93 x 70 x 35 mm |

| Article | Sensor element | Nominal resistance | Temperature range | Equivalent |
|---|---|---|---|---|
| SC-PT100 | PT100 | 100 Ω (0°C) | -20...+120 °C | - |
| SC-PT1000 | PT1000 | 1000 Ω (0°C) | -20...+120 °C | - |
| SC-NTC1.8 | NTC 1.8 | 1800 Ω (25°C) | -20...+120 °C | TAC |
| SC-NTC2.2 | NTC 2.2 | 2252 Ω (25°C) | -20...+120 °C | Johnson Controls |
| SC-NTC10-01 | NTC 10 | 10 kΩ (25°C) | -20...+120 °C | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| SC-NTC10-02 | NTC 10 | 10 kΩ (25°C) | -20...+110 °C | Carel - Evco - Eliwell - AB Industrietechnik |
| SC-NTC10-03 | NTC 10 | 10 kΩ (25°C) | -20...+120 °C | Andover - Delta Controls - Siebe - York |
| SC-NTC20 | NTC 20 | 20 kΩ (25°C) | -20...+120 °C | Honeywell |
| SC-NI1000-01 | Ni1000 | 1000 Ω (0°C) | -20...+120 °C | Siemens - Landis & Staefa |
| SC-NI1000-02 | Ni1000 | 1000 Ω (0°C) | -20...+120 °C | Sauter |

## CLAMP-ON SENSOR WITH CABLE

For surface temperature measurement. Including clamp (Ø max 40 mm).

SCC

| Technical data | |
|---|---|
| Material | Nickel-plated copper tube |
| Cable length | 1.5 m |
| Protection class | IP65 |
| Dimensions | 36 x 10.5 x 7.5 / models with PVC sleeve: 23.5 x 6 x 9.5 mm |

| Article | Sensor element | Nominal resistance | Temperature range | Equivalent |
|---|---|---|---|---|
| SCC-PT100 | PT100 | 100 Ω (0°C) | -30...+150 °C | - |
| SCC-PT1000 | PT1000 | 1000 Ω (0°C) | -30...+150 °C | - |
| SCC-NTC1.8 | NTC 1.8 | 1800 Ω (25°C) | -30...+120 °C | TAC |
| SCC-NTC2.2 | NTC 2.2 | 2252 Ω (25°C) | -30...+150 °C | Johnson Controls |
| SCC-NTC10-01 | NTC 10 | 10 kΩ (25°C) | -30...+150 °C | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| SCC-NTC10-02 | NTC 10 | 10 kΩ (25°C) | -30...+110 °C | Carel - Evco - Eliwell - AB Industrietechnik |
| SCC-NTC10-02-BR-J | NTC 10 | 10 kΩ (25°C) | -50...+110 °C | Carel - Evco - Eliwell - AB Industrietechnik |
| SCC-NTC10-03 | NTC 10 | 10 kΩ (25°C) | -30...+150 °C | Andover - Delta Controls - Siebe - York |
| SCC-NTC15-01 | NTC 15 | 15 kΩ (0°C) | 0...30 °C | Regin - AB Industrietechnik |
| SCC-NTC20 | NTC 20 | 20 kΩ (25°C) | -30...+150 °C | Honeywell |
| SCC-NI1000-01 | Ni1000 | 1000 Ω (0°C) | -30...+150 °C | Siemens - Landis & Staefa |
| SCC-NI1000-02 | Ni1000 | 1000 Ω (0°C) | -30...+150 °C | Sauter |

SCC-NTC10-02-BR-J

SCC-NTC15-01

### ACCESSORIES

| Article | Description |
|---|---|
| PASTA-20 | Heat-conductive paste in tube, 20 g |

## DUCT SENSOR WITH HOUSING

Duct sensor for air temperature measurement in ventilation ducts.

| Technical data | |
|---|---|
| Cable gland | M16 |
| Material, well | Stainless steel, SUS304 |
| Diameter | 8 mm |
| Protection class | IP65 |
| Dimensions | 93 x 70 x 260 mm / ...430 model: 93 x 70 x 460 mm |

STC

| Article | Sensor element | Nominal resistance | Insertion length | Temperature range | Equivalent |
|---|---|---|---|---|---|
| STC-PT100 | PT100 | 100 Ω (0°C) | 60...205 mm | -30...+70 °C | - |
| STC-PT1000 | PT1000 | 1000 Ω (0°C) | 60...205 mm | -30...+70 °C | - |
| STC-PT1000/430 | PT1000 | 1000 Ω (0°C) | 60…405 mm | -30...+70 °C | - |
| STC-NTC1.8 | NTC 1.8 | 1800 Ω (25°C) | 60...205 mm | -30...+70 °C | TAC |
| STC-NTC2.2 | NTC 2.2 | 2252 Ω (25°C) | 60…205 mm | -30…+70 °C | Johnson Controls |
| STC-NTC10-01 | NTC 10 | 10 kΩ (25°C) | 60...205 mm | -30...+70 °C | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| STC-NTC10-02 | NTC 10 | 10 kΩ (25°C) | 60...205 mm | -30...+70 °C | Carel - Evco - Eliwell - AB Industrietechnik |
| STC-NTC10-03 | NTC 10 | 10 kΩ (25°C) | 60...205 mm | -30...+70 °C | Andover - Delta Controls - Siebe - York |
| STC-NTC20 | NTC 20 | 20 kΩ (25°C) | 60...205 mm | -30...+70 °C | Honeywell |
| STC-NI1000-01 | Ni1000 | 1000 Ω (0°C) | 60...205 mm | -30...+70 °C | Siemens - Landis & Staefa |
| STC-NI1000-02 | Ni1000 | 1000 Ω (0°C) | 60...205 mm | -30...+70 °C | Sauter |

## DUCT SENSOR WITH CABLE

Duct sensor for air temperature measurement in ventilation ducts. Adjustable insertion length.

| Technical data | |
|---|---|
| Cable length | 1.5 m |
| Insertion length | 15…130 mm adjustable |
| Diameter | 9 mm |
| Protection class | IP65 |

STCC

| Article | Sensor element | Nominal resistance | Temperature range | Equivalent |
|---|---|---|---|---|
| STCC-PT100 | PT100 | 100 Ω (0°C) | -30...+70 °C | - |
| STCC-PT1000 | PT1000 | 1000 Ω (0°C) | -30...+70 °C | - |
| STCC-NTC1.8 | NTC 1.8 | 1800 Ω (25°C) | -30...+70 °C | TAC |
| STCC-NTC2.2 | NTC 2.2 | 2252 Ω (25°C) | -30...+70 °C | Johnson Controls |
| STCC-NTC10-01 | NTC 10 | 10 kΩ (25°C) | -30...+70 °C | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| STCC-NTC10-02 | NTC 10 | 10 kΩ (25°C) | -30...+70 °C | Carel - Evco - Eliwell - AB Industrietechnik |
| STCC-NTC10-03 | NTC 10 | 10 kΩ´(25°C) | -30...+70 °C | Andover - Delta Controls - Siebe - York |
| STCC-NTC15-01 | NTC 15 | 15 kΩ (0°C) | 0…30 °C | Regin - AB Industrietechnik |
| STCC-NTC15-02 | NTC 15 | 15 kΩ (0°C) | 0…60 °C | Regin - AB Industrietechnik |
| STCC-NTC15-03 | NTC 15 | 15 kΩ (20°C) | 20…50 °C | Regin - AB Industrietechnik |
| STCC-NTC15-04 | NTC 15 | 15 kΩ (0°C) | 0…40 °C | Regin - AB Industrietechnik |
| STCC-NTC20 | NTC 20 | 20 kΩ (25°C) | -30...+70 °C | Honeywell |
| STCC-NI1000-01 | Ni1000 | 1000 Ω (0°C) | -30...+70 °C | Siemens - Landis & Staefa |
| STCC-NI1000-02 | Ni1000 | 1000 Ω (0°C) | -30...+70 °C | Sauter |

## AVERAGE TEMPERATURE SENSOR WITH HOUSING

Average temperature sensor for duct mounting. The cable is mounted with clamps and is held in place inside the duct by an end spring.

STM

| Technical data | |
|---|---|
| Cable gland | M16 |
| Cable length | 3 m |
| Insertion length | 0...75 mm |
| Diameter | 8 mm |
| Dimensions | 93 x 70 x 100 mm |
| Protection class | IP65 |

| Article | Sensor element | Nominal resistance | Equivalent |
|---|---|---|---|
| STM-PT100 | PT100 | 100 Ω (0°C) | - |
| STM-PT1000 | PT1000 (DIN class B) | 1000 Ω (0°C) | - |
| STM-NTC1.8 | NTC 1.8 | 1800 Ω (25°C) | TAC |
| STM-NTC2.2 | NTC 2.2 | 2252 Ω (25°C) | Johnson Controls |
| STM-NTC10-01 | NTC 10 | 10 kΩ (25°C) | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| STM-NTC10-02 | NTC 10 | 10 kΩ (25°C) | Carel - Evco - Eliwell - AB Industrietechnik |
| STM-NTC10-03 | NTC 10 | 10 kΩ (25°C) | Andover - Delta Controls - Siebe - York |
| STM-NTC20 | NTC 20 | 20 kΩ (25°C) | Honeywell |
| STM-NI1000-01 | Ni1000 | 1000 Ω (0°C) | Siemens - Landis & Staefa |
| STM-NI1000-02 | Ni1000 | 1000 Ω (0°C) | Sauter |

## IMMERSION SENSOR WITH HOUSING, WITHOUT WELL

Immersion sensor, threaded.

SI

| Technical data | |
|---|---|
| Cable gland | M16 |
| Insertion length | 90 mm |
| Diameter | 5 mm |
| Connection | R1/4” |
| Material, probe | Stainless steel, SUS304 |
| Diameter, probe | 5 mm |
| Pressure rating | PN16 |
| Protection class | IP65 |
| Dimensions | 93 x 70 x 152 mm |

| Article | Sensor element | Nominal resistance | Temperature range | Equivalent |
|---|---|---|---|---|
| SI-PT100 | PT100 | 100 Ω (0°C) | -20...+120 °C | - |
| SI-PT1000 | PT1000 | 1000 Ω (0°C) | -20...+120 °C | - |
| SI-NTC1.8 | NTC 1.8 | 1800 Ω (25°C) | -20...+120 °C | TAC |
| SI-NTC2.2 | NTC 2.2 | 2252 Ω (25°C) | -20...+120 °C | Johnson Controls |
| SI-NTC10-01 | NTC 10 | 10 kΩ (25°C) | -20...+120 °C | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| SI-NTC10-02 | NTC 10 | 10 kΩ (25°C) | -20...+110 °C | Carel - Evco - Eliwell - AB Industrietechnik |
| SI-NTC10-03 | NTC 10 | 10 kΩ (25°C) | -20...+120 °C | Andover - Delta Controls - Siebe - York |
| SI-NTC20 | NTC 20 | 20 kΩ (25°C) | -20...+120 °C | Honeywell |
| SI-NI1000-01 | Ni1000 | 1000 Ω (0°C) | -20...+120 °C | Siemens - Landis & Staefa |
| SI-NI1000-02 | Ni1000 | 1000 Ω (0°C) | -20...+120 °C | Sauter |

## IMMERSION SENSOR WITH HOUSING AND WELL

The sensor part has a clip fastening which makes it easy to mount.

| Technical data | |
|---|---|
| Cable gland | M16 |
| Insertion length | 90 mm |
| Connection, well | R1/2” |
| Material, probe and well | Stainless steel |
| Diameter, well | 8 mm |
| Pressure rating | PN25 |
| Dimensions | 93 x 70 x 150 mm |
| Protection class | IP65 |

STI

| Article | Sensor element | Nominal resistance | Temperature range | Equivalent |
|---|---|---|---|---|
| STI-PT100 | PT100 | 100 Ω (0°C) | -20...+120 °C | - |
| STI-PT1000 | PT1000 | 1000 Ω (0°C) | -20...+120 °C | - |
| STI-NTC1.8 | NTC 1.8 | 1800 Ω (25°C) | -20...+120 °C | TAC |
| STI-NTC2.2 | NTC 2.2 | 2252 Ω (25°C) | -20...+120 °C | Johnson Controls |
| STI-NTC10-01 | NTC 10 | 10 kΩ (25°C) | -20...+120 °C | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| STI-NTC10-02 | NTC 10 | 10 kΩ (25°C) | -20...+110 °C | Carel - Evco - Eliwell - AB Industrietechnik |
| STI-NTC10-03 | NTC 10 | 10 kΩ (25°C) | -20...+120 °C | Andover - Delta Controls - Siebe - York |
| STI-NTC20 | NTC 20 | 20 kΩ (25°C) | -20...+120 °C | Honeywell |
| STI-NI1000-01 | Ni1000 | 1000 Ω (0°C) | -20...+120 °C | Siemens - Landis & Staefa |
| STI-NI1000-02 | Ni1000 | 1000 Ω (0°C) | -20...+120 °C | Sauter |



## IMMERSION SENSOR WITH DIN HEAD

Immersion sensor for industrial applications.

| Technical data | |
|---|---|
| Pressure rating | PN6 |
| Material, well | Stainless steel AISI 304 |
| Diameter, well | 10 mm |
| Insertion length | 200 mm |
| Dimensions | Max. Ø 82 x h 307 mm |
| Protection class | IP54 |
| Precision | Class B |

DPTD

| Article | Sensor element | Nominal resistance | Temperature range |
|---|---|---|---|
| DPTD-PT100 | PT100 | 100 Ω (0°C) | -50…+600 °C |
| DPTD-PT1000 | PT1000 | 1000 Ω (0°C) | -50…+600 °C |

# IMMERSION SENSOR WITH CABLE

Immersion sensor for water temperature measurement with threaded connection R1/4".

| Technical data | |
|---|---|
| Temperature range | -30…+70 °C |
| Cable length | 1.5 m |
| Connection | R1/4" |
| Diameter | 4 mm |
| Material, probe | Stainless steel, SUS304 |
| Pressure rating | PN10 |
| Protection class | IP65 |

STIC

| Article | Sensor element | Nominal resistance | Insertion length | Equivalent |
|---|---|---|---|---|
| STIC-PT100/135 | PT100 | 100 Ω (0°C) | 135 mm | - |
| STIC-PT1000/135 | PT1000 | 1000 Ω (0°C) | 135 mm | - |
| STIC-NTC1.8/135 | NTC 1.8 | 1800 Ω (25°C) | 135 mm | TAC |
| STIC-NTC2.2/135 | NTC 2.2 | 2252 Ω (25°C) | 135 mm | Johnson Controls |
| STIC-NTC10-01/135 | NTC 10 | 10 kΩ (25°C) | 135 mm | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| STIC-NTC10-02/135 | NTC 10 | 10 kΩ (25°C) | 135 mm | Carel - Evco - Eliwell - AB Industrietechnik |
| STIC-NTC10-03/135 | NTC 10 | 10 kΩ (25°C) | 135 mm | Andover - Delta Controls - Siebe - York |
| STIC-NTC20/135 | NTC 20 | 20 kΩ (25°C) | 135 mm | Honeywell |
| STIC-NI1000-01/135 | Ni1000 | 1000 Ω (0°C) | 135 mm | Siemens - Landis & Staefa |
| STIC-NI1000-02/135 | Ni1000 | 1000 Ω (0°C) | 135 mm | Sauter |

| Article | Sensor element | Nominal resistance | Insertion length | Equivalent |
|---|---|---|---|---|
| STIC-PT100/220 | PT100 | 100 Ω (0°C) | 220 mm | - |
| STIC-PT1000/220 | PT1000 | 1000 Ω (0°C) | 220 mm | - |
| STIC-NTC1.8/220 | NTC 1.8 | 1800 Ω (25°C) | 220 mm | TAC |
| STIC-NTC2.2/220 | NTC 2.2 | 2252 Ω (25°C) | 220 mm | Johnson Controls |
| STIC-NTC10-01/220 | NTC 10 | 10kΩ (25°C) | 220 mm | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| STIC-NTC10-02/220 | NTC 10 | 10kΩ (25°C) | 220 mm | Carel - Evco - Eliwell - AB Industrietechnik |
| STIC-NTC10-03/220 | NTC 10 | 10kΩ (25°C) | 220 mm | Andover - Delta Controls - Siebe - York |
| STIC-NTC20/220 | NTC 20 | 20kΩ (25°C) | 220 mm | Honeywell |
| STIC-NI1000-01/220 | Ni1000 | 1000 Ω (0°C) | 220 mm | Siemens - Landis & Staefa |
| STIC-NI1000-02/220 | Ni1000 | 1000 Ω (0°C) | 220 mm | Sauter |

| Article | Sensor element | Nominal resistance | Insertion length | Equivalent |
|---|---|---|---|---|
| STIC-PT100/300 | PT100 | 100 Ω (0°C) | 300 mm | - |
| STIC-PT1000/300 | PT1000 | 1000 Ω (0°C) | 300 mm | - |
| STIC-NTC1.8/300 | NTC 1.8 | 1800 Ω (25°C) | Max. 300 mm | TAC |
| STIC-NTC2.2/300 | NTC 2.2 | 2252 Ω (25°C) | 300 mm | Johnson Controls |
| STIC-NTC10-01/300 | NTC 10 | 10 kΩ (25°C) | 300 mm | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| STIC-NTC10-02/300 | NTC 10 | 10 kΩ (25°C) | 300 mm | Carel - Evco - Eliwell - AB Industrietechnik |
| STIC-NTC10-03/300 | NTC 10 | 10 kΩ (25°C) | 300 mm | Andover - Delta Controls - Siebe - York |
| STIC-NTC20/300 | NTC 20 | 20 kΩ (25°C) | 300 mm | Honeywell |
| STIC-NI1000-01/300 | Ni1000 | 1000 Ω (0°C) | 300 mm | Siemens - Landis & Staefa |
| STIC-NI1000-02/300 | Ni1000 | 1000 Ω (0°C) | 300 mm | Sauter |

## ACCESSORIES

| Article | Description |
|---|---|
| DF | Mounting flange for 135 mm long sensors for mounting in ventilation ducts |

## WELL

Well for immersion sensors.

| Technical data | |
|---|---|
| Connection | R1/2” |
| Pressure rating | PN25 |

| Article | Description | Material | Insertion length |
|---|---|---|---|
| DBZ-90R | Well for probe STIC-…/90 | Acid-proof stainless steel, SUS316 | 90 mm |
| DBZ-90W | Well for probe STIC-…/90 | Acid-proof stainless steel, SUS316 | 90 mm |
| DBZ -135R | Well for probe STIC-…/135 | Acid-proof stainless steel, SUS316 | 135 mm |
| DBZ-220R | Well for probe STIC-…/220 | Acid-proof stainless steel, SUS316 | 220 mm |
| DBZ-300R | Well for probe STIC-…/300 | Acid-proof stainless steel, SUS316 | 300 mm |

DBZ-90W

DBZ-135R

### ACCESSORIES

| Article | Description |
|---|---|
| DBZ-AD1 | Adapter 1/4” to 1/2”. For mounting immersion sensors in 1/2”. |

DBZ-AD1

## ROOM SENSOR

For room temperature measurement.

| Technical data | |
|---|---|
| Temperature range | 0…50 °C |
| Dimensions | 86 x 86 x 30 mm |
| Protection class | IP30 |

| Article | Sensor element | Nominal resistance | Temperature range | Equivalent |
|---|---|---|---|---|
| SA-PT100 | PT100 | 100 Ω (0°C) | 0...50 °C | - |
| SA-PT1000 | PT1000 | 1000 Ω (0°C) | 0...50 °C | - |
| SA-NTC1.8 | NTC 1.8 | 1800 Ω (25°C) | 0...50 °C | TAC |
| SA-NTC2.2 | NTC 2.2 | 2252 Ω (25°C) | 0...50 °C | Johnson Controls |
| SA-NTC10-01 | NTC 10 | 10 kΩ (25°C) | 0...50 °C | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| SA-NTC10-02 | NTC 10 | 10 kΩ (25°C) | 0...50 °C | Carel - Evco - Eliwell - AB Industrietechnik |
| SA-NTC10-03 | NTC 10 | 10 kΩ (25°C) | 0...50 °C | Andover - Delta Controls - Siebe - York |
| SA-NTC15-01 | NTC 15 | 15 kΩ (0°C) | 0...30 °C | Regin - AB Industrietechnik |
| SA-NTC15-03 | NTC 15 | 15 kΩ (20°C) | 20...50 °C | Regin - AB Industrietechnik |
| SA-NTC15-04 | NTC 15 | 15 kΩ (0°C) | 0...40 °C | Regin - AB Industrietechnik |
| SA-NTC20 | NTC 20 | 20 kΩ (25°C) | 0...50 °C | Honeywell |
| SA-NI1000-01 | Ni1000 | 1000 Ω (0°C) | 0...50 °C | Siemens - Landis & Staefa |
| SA-NI1000-02 | Ni1000 | 1000 Ω (0°C) | 0...50 °C | Sauter |

SA

## ROOM SENSOR WITH SETPOINT ADJUSTMENT

For room temperature measurement. Can also be used solely for setpoint adjustment.

| Technical data | |
|---|---|
| Sensor element | PT1000 (DIN class B) |
| Nominal resistance | 1000 Ω/0°C |
| Dimensions | 86 x 86 x 30 mm |
| Protection class | IP30 |

SAP

| Article | Sensor element | Nominal resistance | Potentiometer range | Temperature range | Equivalent |
|---|---|---|---|---|---|
| SAP-PT100-2 | PT100 | 100 Ω (0°C) | 5…30 °C 0…10 kΩ | 0…50 °C | - |
| SAP-PT1000-1 | PT1000 | 1000 Ω (0°C) | 5...31 °C 1020…1120 Ω | 0…50 °C | - |
| SAP-PT1000-2 | PT1000 | 1000 Ω (0°C) | 5...30 °C 0…10 kΩ | 0…50 °C | - |
| SAP-NTC1.8-2 | NTC 1.8 | 1800 Ω (25°C) | 5...30 °C 0…10 kΩ | 0…50 °C | TAC |
| SAP-NTC2.2-2 | NTC 2.2 | 2252 Ω (25°C) | 5...30 °C 0…10 kΩ | 0…50 °C | |
| SAP-NTC10-01-2 | NTC 10 | 10 kΩ (25°C) | 5...30 °C 0…10 kΩ | 0…50 °C | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| SAP-NTC10-02-2 | NTC 10 | 10 kΩ (25°C) | 5...30 °C 0…10 kΩ | 0…50 °C | Carel - Evco - Eliwell - AB Industrietechnik |
| SAP-NTC10-03-2 | NTC 10 | 10 kΩ (25°C) | 5...30 °C 0…10 kΩ | 0…50 °C | Andover - Delta Controls - Siebe - York |
| SAP-NTC15-01-3 | NTC 15 | 15 kΩ (0°C) | 0...30 °C 0…5 kΩ | 0...30 °C | Regin - AB Industrietechnik |
| SAP-NTC20-2 | NTC 20 | 20 kΩ (25°C) | 5...30 °C 0…10 kΩ | 0…50 °C | Honeywell |
| SAP-NI1000-01-2 | Ni1000 | 1000 Ω (0°C) | 5...30 °C 0…10 kΩ | 0…50 °C | Siemens - Landis & Staefa |
| SAP-NI1000-02-2 | Ni1000 | 1000 Ω (0°C) | 5...30 °C 0…10 kΩ | 0…50 °C | Sauter |

## OUTDOOR SENSOR

| Technical data | |
|---|---|
| Cable gland | M16 |
| Dimensions | 93 x 70 x 46 mm |
| Protection class | IP65 |

SE

| Article | Sensor element | Nominal resistance | Temperature range | Equivalent |
|---|---|---|---|---|
| SE-PT100 | PT100 | 100 Ω (0°C) | -30...+70 °C | - |
| SE-PT1000 | PT1000 | 1000 Ω (0°C) | -50...+70 °C | - |
| SE-NTC1.8 | NTC 1.8 | 1800 Ω (25°C) | -30...+70 °C | TAC |
| SE-NTC2.2 | NTC 2.2 | 2252 Ω (25°C) | -30...+70 °C | Johnson Controls |
| SE-NTC10-01 | NTC 10 | 10 kΩ (25°C) | -30...+70 °C | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| SE-NTC10-02 | NTC 10 | 10 kΩ (25°C) | -30...+70 °C | Carel - Evco - Eliwell - AB Industrietechnik |
| SE-NTC10-03 | NTC 10 | 10 kΩ (25°C) | -30...+70 °C | Andover - Delta Controls - Siebe - York |
| SE-NTC20 | NTC 20 | 20 kΩ (25°C) | -30...+70 °C | Honeywell |
| SE-NI1000-01 | Ni1000 | 1000 Ω (0°C) | -30...+70 °C | Siemens - Landis & Staefa |
| SE-NI1000-02 | Ni1000 | 1000 Ω (0°C) | -30...+70 °C | Sauter |

## CABLE TEMPERATURE SENSOR, METAL HOUSING

| Technical data | |
|---|---|
| Material, tube | Stainless steel AISI 304 |
| Material, cable | Thermoplastic rubber |
| Bulb length | 40 mm |
| Cable length | 2 m |
| Diameter | 4 mm |
| Protection class | IP67 |

NT04

| Article | Sensor element | Nominal resistance | Temperature range | Compatible with |
|---|---|---|---|---|
| NT0420-NTC1.8 | NTC 1.8 | 1800 Ω (25°C) | -50…+110 °C | Tac |
| NT0420-NTC2.2 | NTC 2.2 | 2252 Ω (25°C) | -50…+110 °C | Johnson Controls |
| NT0420-NTC10-01 | NTC 10 | 10 kΩ (25°C) | -50…+110 °C | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| NT0420-NTC10-02 | NTC 10 | 10 kΩ (25°C) | -50…+110 °C | Carel - Evco - Eliwell - AB Industrietechnik |
| NT0420-NTC10-03 | NTC 10 | 10 kΩ (25°C) | -50…+110 °C | Andover - Delta Controls - Siebe - York |
| NT0420-NTC20 | NTC 20 | 20 kΩ (25°C) | -50…+110 °C | Honeywell |
| NT0420-NI1000-01 | Ni1000 | 1000 Ω (0°C) | -50…+110 °C | Siemens - Landis & Staefa |
| NT0420-NI1000-02 | Ni1000 | 1000 Ω (0°C) | -50…+110 °C | Sauter |

## CABLE SENSOR, PVC HOUSING

| Technical data | |
|---|---|
| Material, tube | PP |
| Material, cable | PVC |
| Bulb length | 23 mm |
| Cable length | 2 m |
| Diameter | 6 mm |
| Protection class | IP67 |

NT02

| Article | Sensor element | Nominal resistance | Temperature range | Compatible with |
|---|---|---|---|---|
| NT0220-NTC1.8 | NTC 1.8 | 1800 Ω (25°C) | -40…+80 °C | Tac |
| NT0220-NTC2.2 | NTC 2.2 | 2252 Ω (25°C) | -40…+80 °C | Johnson Controls |
| NT0220-NTC10-01 | NTC 10 | 10 kΩ (25°C) | -40…+80 °C | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell |
| NT0220-NTC10-02 | NTC 10 | 10 kΩ (25°C) | -40…+80 °C | Carel - Evco - Eliwell - AB Industrietechnik |
| NT0220-NTC10-03 | NTC 10 | 10 kΩ (25°C) | -40…+80 °C | Andover - Delta Controls - Siebe - York |
| NT0220-NTC20 | NTC 20 | 20 kΩ (25°C) | -40…+80 °C | Honeywell |
| NT0220-NTC100 | NTC 100 | 100 kΩ (25°C) | -40…+80 °C | |
| NT0220-NI1000-01 | Ni1000 | 1000 Ω (0°C) | -40…+80 °C | Siemens - Landis & Staefa |
| NT0220-NI1000-02 | Ni1000 | 1000 Ω (0°C) | -40…+80 °C | Sauter |

## BULB SENSOR, NTC WITH CABLE

| Technical data | |
|---|---|
| Sensor element | NTC, 15...10 kΩ |
| Material, tube | Nickel plated brass |
| Material, cable | Silicone |
| Bulb length | 50 mm |
| Cable length | 1.5 m |
| Diameter | 6 mm |
| Protection class | IP65 |

NT05

| Article | Sensor element | Nominal resistance | Temperature range | Compatible with |
|---|---|---|---|---|
| NT0515-NTC15 | NTC 15 | 15 kΩ (0°C) | 0...30 °C | Regin |

### ACCESSORIES

| Article | Description |
|---|---|
| PASTA-20 | Heat-conductive paste in tube, 20 g |

*This sensor cannot be used together with the CTR series.*

## BULB SENSOR WITH CABLE, PT100/PT1000

Universal sensor.

| Technical data | |
|---|---|
| Material, tube | Stainless steel AISI 304 |
| Material, cable | Thermoplastic rubber |
| Bulb length | 40 mm |
| Cable length | 1.5 m |
| Diameter | 4 mm |
| Protection class | IP67 |
| Accuracy | class B |

PT04

| Article | Sensor element | Nominal resistance | Temperature range | Compatible with |
|---|---|---|---|---|
| PT0415-PT100 | PT100 | 100 Ω (0°C) | -30...+110 °C | Universal |
| PT0415-PT1000 | PT1000 | 1000 Ω (0°C) | -30...+110 °C | Universal |

## CABLE TEMPERATURE SENSOR -50…+200 °C, METAL HOUSING

| Technical data | |
|---|---|
| Material, tube | Stainless steel AISI 304 |
| Material, cable | Silicone |
| Bulb length | 100 mm |
| Cable length | 2 m (3 wires) |
| Diameter | 6 mm |
| Protection class | IP67 |
| Precision | Class B |

PT10

| Article | Sensor element | Nominal resistance | Temperature range | Compatible with |
|---|---|---|---|---|
| PT1020-PT100 | PT100 | 100 Ω (0°C) | -50…+200 °C | Universal |
| PT1020-PT1000 | PT1000 | 1000 Ω (0°C) | -50…+200 °C | Universal |

## CABLE TEMPERATURE SENSOR -50…+350 °C, METAL HOUSING

Special cable sensor for high temperature.

| Technical data | |
|---|---|
| Material, tube | Stainless steel AISI 304 with ceramic insert |
| Material, cable | Fiberglass |
| Bulb length | 100 mm |
| Cable length | 2 m (3 wires) |
| Diameter | 6 mm |
| Protection class | IP44 |
| Precision | Class B |

PT10xxC

| Article | Sensor element | Nominal resistance | Temperature range | Compatible with |
|---|---|---|---|---|
| PT1020C-PT100 | PT100 | 100 Ω (0°C) | -50…+350 °C | Universal |
| PT1020C-PT1000 | PT1000 | 1000 Ω (0°C) | -50…+350 °C | Universal |

## SETPOINT DEVICE FOR PT1000 SENSORS

Setpoint device which gives resistance corresponding to the standard PT1000 table.

| Technical data | |
|---|---|
| Temperature range | °C |
| Mounting | Panel mounting |
| Dimensions | 60 x 60 x 38 mm |
| Protection class | IP20 |


SET-PT1000

| Article | Description |
|---|---|
| SET-PT1000 | Setpoint device |
| SET-30 | Setpoint device for controllers for electrical resistance CTR |

## HEAT-CONDUCTIVE PASTE

| Article | Description |
|---|---|
| PASTA-20 | Heat-conductive paste in tube, 20 g |

PASTA-20

# SENSOR CHARACTERISTICS

| | PT100 | PT1000 | NTC 1,8K | NTC 2,2K | NTC 10K-01 | NTC 10K-02 | NTC 10K-03 | NTC 15K-01 | NTC 15K-02 | NTC 15K-03 | NTC 15K-04 | NTC 20K | NI 1000-01 | NI 1000-02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Equivalent** | | | Tac | Johnsson Controls | Aquatrol - Johnson Controls - Satchwell - Trend - Cylon - Honeywell | Carel - Evco - Eliwell - AB Industrietechnik | Andover - Delta Controls - Siebe - York | Regin - AB Industrietechnik | Regin - AB Industrietechnik | Regin - AB Industrietechnik | Regin - AB Industrietechnik | Honeywell | Siemens - Landis & Staefa | Sauter |
| **Temp. °C** | Ω | Ω | Ω | Ω | Ω | Ω | Ω | Ω | Ω | Ω | Ω | Ω | Ω | Ω |
| 150 | 157,3 | 1573 | | | 186 | | | | | | | | | |
| 140 | 153,6 | 1536 | | | 235 | | | | | | | | 1737 | 1909 |
| 130 | 149,8 | 1498 | | | 301 | | | | | | | | 1675 | 1833 |
| 120 | 146,1 | 1461 | | | 390 | | | | | | | | 1615 | 1760 |
| 110 | 142,3 | 1423 | 138 | 115 | 511 | 758 | 624 | | | | | 818 | 1557 | 1688 |
| 100 | 138,5 | 1385 | 177 | 153 | 679 | 973 | 817 | | | | | 1114 | 1500 | 1618 |
| 90 | 134,7 | 1347 | 230 | 206 | 916 | 1266 | 1084 | | | | | 1541 | 1444 | 1549 |
| 80 | 130,9 | 1309 | 303 | 283 | 1255 | 1668 | 1457 | | | | | 2166 | 1390 | 1483 |
| 70 | 127,1 | 1271 | 404 | 395 | 1752 | 2228 | 1990 | | | | | 3098 | 1337 | 1417 |
| 65 | 125,2 | 1252 | 469 | 469 | 2083 | 2588 | 2338 | | | | | 3732 | 1311 | 1385 |
| 60 | 123,2 | 1232 | 547 | 560 | 2488 | 3020 | 2760 | | 10000 | | | 4518 | 1285 | 1353 |
| 55 | 121,3 | 1213 | 640 | 672 | 2986 | 3536 | 3270 | | | | | 5494 | 1260 | 1322 |
| 50 | 119,4 | 1194 | 753 | 811 | 3602 | 4160 | 3893 | | 10830 | 10000 | | 6718 | 1235 | 1291 |
| 45 | 117,5 | 1175 | 888 | 984 | 4368 | 4911 | 4655 | | | 10830 | | 8260 | 1210 | 1260 |
| 40 | 115,5 | 1155 | 1052 | 1199 | 5324 | 5827 | 5594 | | 11670 | 11670 | 10000 | 10212 | 1186 | 1230 |
| 35 | 113,6 | 1136 | 1252 | 1471 | 6532 | 6940 | 6754 | | | 12500 | 10625 | 12698 | 1162 | 1200 |
| 30 | 111,7 | 1117 | 1498 | 1814 | 8055 | 8313 | 8196 | 10000 | 12500 | 13330 | 11250 | 15886 | 1138 | 1171 |
| 29 | 111,3 | 1113 | 1553 | 1893 | 8406 | 8622 | 8525 | 10170 | | | | 16627 | 1132 | 1165 |
| 28 | 111,0 | 1110 | 1611 | 1977 | 8779 | 8944 | 8869 | 10330 | | | | 17407 | 1128 | 1159 |
| 27 | 110,5 | 1105 | 1671 | 2064 | 9165 | 9281 | 9229 | 10500 | | | | 18227 | 1123 | 1153 |
| 26 | 110,1 | 1101 | 1734 | 2156 | 9574 | 9632 | 9606 | 10670 | | | | 19090 | 1119 | 1147 |
| **25** | 109,7 | 1097 | **1800** | **2252** | **10000** | **10000** | **10000** | 10830 | | 14170 | 11875 | **20000** | 1114 | 1141 |
| 24 | 109,3 | 1093 | 1868 | 2353 | 10448 | 10380 | 10413 | 11000 | | | | 20958 | 1109 | 1136 |
| 23 | 109,0 | 1090 | 1940 | 2460 | 10924 | 10780 | 10845 | 11170 | | | | 21968 | 1105 | 1130 |
| 22 | 108,6 | 1086 | 2015 | 2572 | 11421 | 11200 | 11298 | 11330 | | | | 23033 | 1100 | 1124 |
| 21 | 108,2 | 1082 | 2092 | 2689 | 11940 | 11630 | 11773 | 11500 | | | | 24156 | 1095 | 1118 |
| 20 | 107,8 | 1078 | 2174 | 2813 | 12491 | 12090 | 12270 | 11670 | 13330 | 15000 | 12500 | 25340 | 1091 | 1112 |
| 19 | 107,4 | 1074 | 2258 | 2944 | 13073 | 12560 | 12791 | 11830 | | | | 26491 | 1086 | 1107 |
| 18 | 107,0 | 1070 | 2347 | 3081 | 13681 | 13060 | 13337 | 12000 | | | | 27912 | 1081 | 1101 |
| 17 | 106,6 | 1066 | 2440 | 3226 | 14325 | 13580 | 13910 | 12170 | | | | 29307 | 1077 | 1095 |
| 16 | 106,2 | 1062 | 2537 | 3378 | 15000 | 14120 | 14510 | 12330 | | | | 30782 | 1072 | 1089 |
| 15 | 105,9 | 1059 | 2638 | 3538 | 15710 | 14690 | 15140 | 12500 | | | 13125 | 32340 | 1068 | 1084 |
| 14 | 105,5 | 1055 | 2744 | 3707 | 16461 | 15280 | 15801 | 12370 | | | | 33982 | 1063 | 1078 |
| 13 | 105,1 | 1051 | 2854 | 3886 | 17256 | 15900 | 16494 | 12830 | | | | 35716 | 1058 | 1072 |
| 12 | 104,7 | 1047 | 2972 | 4074 | 18091 | 16560 | 17222 | 13000 | | | | 37550 | 1054 | 1067 |
| 11 | 104,3 | 1043 | 3093 | 4272 | 18970 | 17240 | 17987 | 13170 | | | | 39489 | 1049 | 1061 |
| 10 | 103,9 | 1039 | 3222 | 4482 | 19902 | 17960 | 18790 | 13330 | 14170 | | 13750 | 41540 | 1045 | 1056 |
| 9 | 103,5 | 1035 | 3354 | 4703 | 20884 | 18700 | 19633 | 13500 | | | | 43715 | 1040 | 1050 |
| 8 | 103,1 | 1031 | 3493 | 4936 | 21918 | 19480 | 20519 | 13670 | | | | 46018 | 1036 | 1044 |
| 7 | 102,7 | 1027 | 3639 | 5183 | 23015 | 20300 | 21451 | 13830 | | | | 48457 | 1031 | 1039 |
| 6 | 102,3 | 1023 | 3791 | 5443 | 24170 | 21150 | 22430 | 14000 | | | | 51041 | 1027 | 1033 |
| 5 | 101,9 | 1019 | 3951 | 5718 | 25391 | 22050 | 23460 | 14170 | | | 14375 | 53780 | 1022 | 1028 |
| 4 | 101,6 | 1016 | 4120 | 6009 | 26683 | 23000 | 24545 | 14330 | | | | 56678 | 1018 | 1022 |
| 3 | 101,2 | 1012 | 4296 | 6317 | 28051 | 23990 | 25687 | 14500 | | | | 59751 | 1013 | 1016 |
| 2 | 100,8 | 1008 | 4481 | 6643 | 29498 | 25030 | 26890 | 14670 | | | | 63011 | 1009 | 1011 |
| 1 | 100,4 | 1004 | 4677 | 6988 | 31030 | 26130 | 28156 | 14830 | | | | 66469 | 1004 | 1005 |
| **0** | **100,0** | **1000** | 4882 | 7353 | 32650 | 27280 | 29490 | 15000 | 15000 | | 15000 | 70140 | **1000** | **1000** |
| -5 | 98,0 | 980 | 6059 | 9532 | 42327 | 33900 | 37310 | | | | | 92220 | 978 | 973 |
| -10 | 96,1 | 961 | 7580 | 12460 | 55329 | 42470 | 47540 | | | | | 122260 | 956 | 946 |
| -15 | 94,1 | 941 | 9519 | 16430 | 72957 | 53410 | 61020 | | | | | 163480 | 935 | 919 |
| -20 | 92,2 | 922 | 12061 | 21863 | 97083 | 67770 | 78910 | | | | | 220600 | 914 | 893 |
| -25 | 90,2 | 902 | 15359 | 29371 | 130422 | 86430 | 102900 | | | | | 300400 | 893 | 867 |
| -30 | 88,2 | 882 | 19747 | 39855 | 176976 | 111300 | 135200 | | | | | 413400 | 872 | 842 |
| -35 | 86,3 | 863 | | | | | | | | | | | 851 | 816 |
| -40 | 84,3 | 843 | | | | | | | | | | | 831 | 791 |

## TEMPERATURE TRANSMITTER FOR ROOM MOUNTING, 0…10 V AND MODBUS

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ±10 % / 15...35 V DC |
| Temperature range | 0…50 °C |
| Power consumption | < 1 W |
| Ambient temperature | 0…50 °C (32…122 °F) |
| Ambient humidity | 10…90 % UR (senza condensa) |
| Voltage range | 0…11.5 V DC |
| Transformer power | >=2 VA |
| Mounting | Room |
| Display | 4 digit |
| Dimensions | 100 x 85 x 30.5 mm |
| Protection class | IP30 |
| Isolation class | III |

| Article | Accuracy | Display | Output signal | Temperature range |
|---|---|---|---|---|
| TTA | ± 0.4°C | - | 0…10 V DC | 0…50 °C |
| TTA-D | ± 0.4°C | X | 0...10 V DC | 0…50 °C |
| TTA-M | ± 0.2°C | - | Modbus | 0...50 °C |
| TTA-D-M | ± 0.2°C | X | Modbus | 0...50 °C |

TTA

TTA-D

Modbus

## TEMPERATURE TRANSMITTER FOR ROOM MOUNTING. 4-20 mA

News!

| Technical data | |
|---|---|
| Supply voltage | Max. 28 V DC, Min. 11+(0.02xRL) V DC |
| DC power | Min. 1 W |
| Temperature range | 0…50 °C |
| Ambient humidity | 10…95 % RH |
| Power consumption | 0.6 W |
| Accuracy, temperature | ±0.5°C at 20°C |
| Mounting | Room |
| Dimensions (WxHxD mm) | 100 x 85 x 30.5 |
| Protection class | IP30 |
| Isolation class | III |

| Article | Temperature range | Output signal | Display |
|---|---|---|---|
| TTA-C | 0...50 °C | 4...20mA (2 wires) | - |
| TTA-CD | 0...50 °C | 4...20 mA (2 wires) | X (4 digits) |

TTA-C

TTA-CD

## TEMPERATURE TRANSMITTER FOR WALL MOUNTING, IP65

| Technical data | |
|---|---|
| Power consumption | < 1 W |
| Ambient humidity | 10…95 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Material, casing cover | White polycarbonate |
| Material, casing base | Grey polycarbonate |
| Weight | 170 g |
| Dimensions | 75 x 75 x 36 mm (housing) |
| Protection class | IP65 class III (sensor excluded) |
| Isolation class | III |

TTE011

| Article | Temperature range | Output signal | Accuracy | Supply voltage |
|---|---|---|---|---|
| TTE011 | 0…50 °C | 0…10 V DC | ± 1°C | 18…35 V DC / 18…24 V AC |
| TTE012 | -30…+50 °C | 0…10 V DC | ± 1,5°C | 18…35 V DC / 18…24 V AC |
| TTE013 | 0…100 °C | 0…10 V DC | ± 2°C | 18…35 V DC / 18…24 V AC |
| TTE021 | 0…50 °C | 4…20 mA (2 wires) | ± 1°C | Max 30 V DC, Min 11+(0,02xRL) V DC |
| TTE022 | -30…+50 °C | 4…20 mA (2 wires) | ± 1,5°C | Max 30 V DC, Min 11+(0,02xRL) V DC |
| TTE023 | 0…100 °C | 4…20 mA (2 wires) | ± 2°C | Max 30 V DC, Min 11+(0,02xRL) V DC |

## TEMPERATURE TRANSMITTER FOR DUCT MOUNTING, IP65

| Technical data | |
|---|---|
| Power consumption | < 1 W |
| Temperature range sensor | -20…+80 °C |
| Insertion length | 60…230 mm |
| Ambient humidity | 10…95 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Material, casing cover | White polycarbonate |
| Material, casing base | Grey polycarbonate |
| Weight | 260 g |
| Dimensions | 75 x 75 x 36 mm (housing) |
| Protection class | IP65 (sensor excluded) |
| Isolation class | III |

TTC021

| Article | Temperature range | Output signal | Accuracy | Supply voltage |
|---|---|---|---|---|
| TTC011 | 0…50 °C | 0…10 V DC | ± 1°C | 18…35 V DC / 18…24 V AC |
| TTC012 | -30…+50 °C | 0…10 V DC | ± 1,5°C | 18…35 V DC / 18…24 V AC |
| TTC013 | 0…100 °C | 0…10 V DC | ± 2°C | 18…35 V DC / 18…24 V AC |
| TTC021 | 0…50 °C | 4…20 mA (2 wires) | ± 1°C | Max 30 V DC, Min (11+(0,02xRL)) V DC |
| TTC022 | -30…+50 °C | 4…20 mA (2 wires) | ± 1,5°C | Max 30 V DC, Min (11+(0,02xRL)) V DC |
| TTC023 | 0…100 °C | 4…20 mA (2 wires) | ± 2°C | Max 30 V DC, Min (11+(0,02xRL)) V DC |

| Article | Description |
|---|---|
| DBZ-22 | Mounting bracket for air duct transmitters |

# TEMPERATURE TRANSMITTER FOR IMMERSION MOUNTING, IP65

| Technical data | |
|---|---|
| Power consumption | < 1 W |
| Temperature range sensor | -20…+100 °C |
| Insertion length | 120 mm |
| Ambient humidity | 10…95 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Material, casing cover | White polycarbonate |
| Material, casing base | Grey polycarbonate |
| Weight | 310 g |
| Dimensions | 75 x 75 x 36 mm (housing) |
| Protection class | IP65 (sensor excluded) |
| Isolation class | III |

TTI011

| Article | Temperature range | Output signal | Accuracy | Supply voltage |
|---|---|---|---|---|
| TTI011 | 0…50 °C | 0…10 V DC | ± 1°C | 18…35 V DC / 18…24 V AC |
| TTI012 | -30…+50 °C | 0…10 V DC | ± 1,5°C | 18…35 V DC / 18…24 V AC |
| TTI013 | 0…100 °C | 0…10 V DC | ± 2°C | 18…35 V DC / 18…24 V AC |
| TTI021 | 0…50 °C | 4…20 mA (2 wires) | ± 1°C | Max 30 V DC, Min (11+(0,02xRL)) V DC |
| TTI022 | -30…+50 °C | 4…20 mA (2 wires) | ± 1,5°C | Max 30 V DC, Min (11+(0,02xRL)) V DC |
| TTI023 | 0…100 °C | 4…20 mA (2 wires) | ± 2°C | Max 30 V DC, Min (11+(0,02xRL)) V DC |

# $CO_2$, CO, VOC TRANSMITTERS

## $CO_2$ TRANSMITTER, ROOM MOUNTING

This series with automatic calibration sets new standards in $CO_2$ measurement for HVAC applications. It combines the measurement of the carbon dioxide level, temperature and relative humidity. Models with or without display are available.

TCO2A

TCO2A-D

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ±10 %, 50...60 Hz / 15...35 V DC |
| Working range, $CO_2$ | 0…2000 ppm |
| Working range, temperature | 0…50 °C (32…122 °F) |
| Working range, humidity | 10...90 % RH (non-condensing) |
| Power consumption | < 2.5 W |
| Energy consumption | < 0.5 Wh |
| Transformer power | >=5 VA |
| Accuracy, $CO_2$ | < ± (50 ppm + 2 % of the measured value) (25 °C) |
| Accuracy, humidity | ±3 % RH (20°C) |
| Relay output | Max. 1 A at 50 V AC, min. 1 mA at 5 V DC |
| Mounting | Room |
| Dimensions | 100 x 85 x 30.5 mm |
| Protection class | IP30 |
| **Outputs** | |
| $CO_2$ | 0...10 V DC referring to 0...2000 ppm |
| Temperature | 0...10 V DC referring to 0...50 °C or resistive outputs |
| Humidity | 0...10 V DC referring to 0...100 % RH |

| Article | Description | Display | Output signal | Accuracy, temperature |
|---|---|---|---|---|
| TCO2A | $CO_2$+ °C | - | 0…10 V + 0…10 V | ± 0.4 °C |
| TCO2A-D | $CO_2$+ °C | X | 0…10 V + 0…10 V | ± 0.4 °C |
| TCO2A-PT100 | $CO_2$+ PT100, 100 Ohm (0°C) | - | 0…10 V + ohm | ± 0.3 °C |
| TCO2A-PT1000 | $CO_2$+ PT1000, 1000 Ohm (0°C) | - | 0…10 V + ohm | ± 0.3 °C |
| TCO2A-NTC1.8 | $CO_2$+ NTC 1.8, 1800 Ohm (25°C) | - | 0…10 V + ohm | ± 0.5 °C |
| TCO2A-NTC2.2 | $CO_2$+ NTC 2.2, 2252 Ohm (25°C) | - | 0…10 V + ohm | ± 0.2 °C |
| TCO2A-NTC10-01 | $CO_2$+ NTC 10, 10 kOhm (25°C) | - | 0…10 V + ohm | ± 0.2 °C |
| TCO2A-NTC10-02 | $CO_2$+ NTC 10, 10 kOhm (25°C) | - | 0…10 V + ohm | ± 0.3 °C |
| TCO2A-NTC10-03 | $CO_2$+ NTC 10, 10 kOhm (25°C) | - | 0…10 V + ohm | ± 0.25 °C |
| TCO2A-NTC20 | $CO_2$+ NTC 20, 20 kOhm (25°C) | - | 0…10 V + ohm | ± 0.2 °C |
| TCO2A-NI1000-01 | $CO_2$+ Ni1000, 1000 Ohm (0°C) | - | 0…10 V + ohm | ± 0.5 °C |
| TCO2A-NI1000-02 | $CO_2$+ Ni1000, 1000 Ohm (0°C) | - | 0…10 V + ohm | ± 0.5 °C |
| TCO2A-D-PT100 | $CO_2$+ PT100, 100 Ohm (0°C) | X | 0…10 V + ohm | ± 0.3 °C |
| TCO2A-D-PT1000 | $CO_2$+ PT1000, 1000 Ohm (0°C) | X | 0…10 V + ohm | ± 0.3 °C |
| TCO2A-D-NTC1.8 | $CO_2$+ NTC 1.8, 1800 Ohm (25°C) | X | 0…10 V + ohm | ± 0.5 °C |
| TCO2A-D-NTC2.2 | $CO_2$+ NTC 2.2, 2252 Ohm (25°C) | X | 0…10 V + ohm | ± 0.2 °C |
| TCO2A-D-NTC10-01 | $CO_2$+ NTC 10, 10 kOhm (25°C) | X | 0…10 V + ohm | ± 0.2 °C |
| TCO2A-D-NTC10-02 | $CO_2$+ NTC 10, 10 kOhm (25°C) | X | 0…10 V + ohm | ± 0.3 °C |
| TCO2A-D-NTC10-03 | $CO_2$+ NTC 10, 10 kOhm (25°C) | X | 0…10 V + ohm | ± 0.25 °C |
| TCO2A-D-NTC20 | $CO_2$+ NTC 20, 20 kOhm (25°C) | X | 0…10 V + ohm | ± 0.2 °C |
| TCO2A-D-NI1000-01 | $CO_2$+ Ni1000, 1000 Ohm (0°C) | X | 0…10 V + ohm | ± 0.5 °C |
| TCO2A-D-NI1000-02 | $CO_2$+ Ni1000, 1000 Ohm (0°C) | X | 0…10 V + ohm | ± 0.5 °C |
| TCO2A-M | $CO_2$+ °C | - | Modbus | ± 0.2 °C |
| TCO2A-D-M | $CO_2$+ °C | X | Modbus | ± 0.2 °C |
| TCO2AU | $CO_2$+ °C + RH | - | 0…10 V + 0…10 V + 0…10 V | ± 0.4 °C |
| TCO2AU-PT100 | $CO_2$+ RH + PT100, 100 Ohm (0°C) | - | 0…10 V + 0…10 V + ohm | ± 0.3 °C |
| TCO2AU-PT1000 | $CO_2$+ RH + PT1000, 1000 Ohm (0°C) | - | 0…10 V + 0…10 V + ohm | ± 0.3 °C |
| TCO2AU-NTC1.8 | $CO_2$+ RH + NTC 1.8, 1800 Ohm (25°C) | - | 0…10 V + 0…10 V + ohm | ± 0.5 °C |
| TCO2AU-NTC2.2 | $CO_2$+ RH + NTC 2.2, 2252 Ohm (25°C) | - | 0…10 V + 0…10 V + ohm | ± 0.2 °C |

| Article | Description | Display | Output signal | Accuracy, temperature |
|---|---|---|---|---|
| TCO2AU-NTC10-01 | $CO_2$+ RH + NTC 10, 10 kOhm (25°C) | - | 0…10 V + 0…10 V + ohm | ± 0.2 °C |
| TCO2AU-NTC10-02 | $CO_2$+ RH + NTC 10, 10 kOhm (25°C) | - | 0…10 V + 0…10 V + ohm | ± 0.3 °C |
| TCO2AU-NTC10-03 | $CO_2$+ RH + NTC 10, 10 kOhm (25°C) | - | 0…10 V + 0…10 V + ohm | ± 0.25 °C |
| TCO2AU-NTC20 | $CO_2$+ RH + NTC 20, 20 kOhm (25°C) | - | 0…10 V + 0…10 V + ohm | ± 0.2 °C |
| TCO2AU-NI1000-01 | $CO_2$+ RH + Ni1000, 1000 Ohm (0°C) | - | 0…10 V + 0…10 V + ohm | ± 0.5 °C |
| TCO2AU-NI1000-02 | $CO_2$+ RH + Ni1000, 1000 Ohm (0°C) | - | 0…10 V + 0…10 V + ohm | ± 0.5 °C |
| TCO2AU-D | $CO_2$+ °C + RH | X | 0…10 V + 0…10 V + 0…10 V | ± 0.4 °C |
| TCO2AU-D-PT100 | $CO_2$+ RH + PT100, 100 Ohm (0°C) | X | 0…10 V + 0…10 V + ohm | ± 0.3 °C |
| TCO2AU-D-PT1000 | $CO_2$+ °C + RH | X | 0…10 V + 0…10 V + ohm | ± 0.3 °C |
| TCO2AU-D-NTC1.8 | $CO_2$+ RH + NTC 1.8, 1800 Ohm (25°C) | X | 0…10 V + 0…10 V + ohm | ± 0.5 °C |
| TCO2AU-D-NTC2.2 | $CO_2$+ RH + NTC 2.2, 2252 Ohm (25°C) | X | 0…10 V + 0…10 V + ohm | ± 0.2 °C |
| TCO2AU-D-NTC10-01 | $CO_2$+ RH + NTC 10, 10 kOhm (25°C) | X | 0…10 V + 0…10 V + ohm | ± 0.2 °C |
| TCO2AU-D-NTC10-02 | $CO_2$+ RH + NTC 10, 10 kOhm (25°C) | X | 0…10 V + 0…10 V + ohm | ± 0.3 °C |
| TCO2AU-D-NTC10-03 | $CO_2$+ RH + NTC 10, 10 kOhm (25°C) | X | 0…10 V + 0…10 V + ohm | ± 0.25 °C |
| TCO2AU-D-NTC20 | $CO_2$+ RH + NTC 20, 20 kOhm (25°C) | X | 0…10 V + 0…10 V + ohm | ± 0.2 °C |
| TCO2AU-D-NI1000-01 | $CO_2$+ RH + Ni1000, 1000 Ohm (0°C) | X | 0…10 V + 0…10 V + ohm | ± 0.5 °C |
| TCO2AU-D-NI1000-02 | $CO_2$+ RH + Ni1000, 1000 Ohm (0°C) | X | 0…10 V + 0…10 V + ohm | ± 0.5 °C |
| TCO2AU-M | $CO_2$+ RH + °C | - | Modbus | ± 0.2°C |
| TCO2AU-D-M | $CO_2$+ RH + °C | X | Modbus | ± 0.2°C |

# $CO_2$ TRANSMITTER, DUCT MOUNTING

Measures the concentration of carbon dioxide in ducts. Exempt from periodic calibration. Some models are equipped with a passive temperature sensor.

TCO2C

| Technical data | |
|---|---|
| Supply voltage | 15…35 V DC / 24 V AC ± 10% 50-60 Hz |
| CO2 sensor | NDIR (Non-Dispersive Infrared Technology) |
| Output | 0…10 V DC or 0…5 V DC, RL>10 kOhm |
| Working range, $CO_2$ | 0…2000 ppm |
| Working range, temperature | -5…+50 °C |
| Working range, humidity | 10…90 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Accuracy, $CO_2$ | ±(50 ppm +2% of the measured value) |
| Power consumption | < 2.5 W |
| Energy consumption | < 0.5 Wh |
| Transformer power | >=5 VA |
| Max. air velocity | 10 m/s |
| Mounting | Duct |
| Material, casing cover | White polycarbonate |
| Material, casing base | Grey polycarbonate |
| Insertion length | 60…230 mm |
| Weight | 160 g |
| Dimensions | 75 x 77 x 36 mm (housing) |
| Protection class | IP65 case (sensor excluded) |
| Isolation class | III |
| **Outputs** | |
| $CO_2$ | 0...10 V DC referring to 0...2000 ppm |
| Temperature | passive sensor °C |

| Article | Description | Output signal | Accuracy, temperature |
|---|---|---|---|
| TCO2C | $CO_2$ | 0...10 V | - |
| TCO2C-05 | $CO_2$ | 0...5 V | - |
| TCO2C-PT100 | $CO_2$+ PT100, 100 Ohm (0°C) | 0...10 V + Ohm | ± 0.3 |
| TCO2C-PT1000 | $CO_2$+ PT1000, 1000 Ohm (0°C) | 0...10 V + Ohm | ± 0.3 |
| TCO2C-NTC1.8 | $CO_2$+ NTC 1.8, 1800 Ohm (25°C) | 0...10 V / Ohm | ± 0.5 |
| TCO2C-NTC2.2 | $CO_2$+ NTC 2.2, 2252 Ohm (25°C) | 0...10 V + Ohm | ± 0.2 |
| TCO2C-NTC10-01 | $CO_2$+ NTC 10, 10 kOhm (25°C) | 0...10 V + Ohm | ± 0.2 |
| TCO2C-NTC10-02 | $CO_2$+ NTC 10, 10 kOhm (25°C) | 0...10 V + Ohm | ± 0.3 |
| TCO2C-NTC10-03 | $CO_2$+ NTC 10, 10 kOhm (25°C) | 0...10 V + Ohm | ± 0.25 |
| TCO2C-NTC20 | $CO_2$+ NTC 20, 20 kOhm (25°C) | 0...10 V + Ohm | ± 0.2 |
| TCO2C-NI1000-01 | $CO_2$+ Ni1000, 1000 Ohm (0°C) | 0...10 V + Ohm | ± 0.5 |
| TCO2C-NI1000-02 | $CO_2$+ Ni1000, 1000 Ohm (0°C) | 0...10 V + Ohm | ± 0.5 |

## ACCESSORIES

| Article | Description |
|---|---|
| DBZ-22 | Mounting bracket for air duct transmitters |

DBZ-22

*Note: the transmitters model TCO2C are supplied with mounting bracket model DBZ-22.*

## CARBON MONOXIDE TRANSMITTER

TCO1

This device measures the carbon monoxide concentration using an electrochemical method of measurement characterised by high selectivity even in low concentrations. It is installed for both safety and energy-saving reasons. The output signals are linear representations of the gas concentration.

The transmitter is TÜV-approved in accordance with VDI 2053.

| Technical data | |
|---|---|
| Supply voltage | 12...28 V DC |
| Measuring range | 0...300 ppm |
| Outputs | 4...20 mA, two-wire / 0...10 V DC, three-wire |
| Calibration | Automatic zero adjustment |
| Dimensions | 80 x 82 x 86 mm |
| Protection class | IP56 |

| Article | Description |
|---|---|
| TCO1 | CO transmitter |

## ROOM AIR QUALITY TRANSMITTERS, VOC

DB-RLQ

Analysis of the air quality based on a mixed gas VOC (Volatile Organic Compounds) sensor.

Detectable gases:

- carbon monoxide CO
- hydrogen sulfide $H_2S$
- solvent vapours
- cigarette smoke
- car exhaust
- air produced by human breathing
- combustion smoke from wood, paper and plastics.

| Technical data | |
|---|---|
| Supply voltage | 15…36 V DC or 24 V AC/DC ± 10%, 50-60 Hz |
| Outputs | 0…10 V DC, 0…20 mA or 4…20 mA, selectable by jumpers |
| Sensor | VOC |
| Ambient temperature | 0…50 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Storage temperature | -20…+50 °C |
| Storage humidity | < 95 % RH |
| Casing | Plastic material similar to RAL 9010 |
| Weight | 80 g |
| Dimensions | 75 x 75 x 25 mm |
| Protection class | IP30 (case) |
| Isolation class | III |
| Certification | EN 60335-1: safety / EN 60529: IP degree of protection / EN 60730: domestic controls |

| Article | Output | Application |
|---|---|---|
| DB-RLQ | 0…10 V DC, 0…20 mA, 4…20 mA | Room |
| DB-RLQ5 | 0…5 V DC, 0…20 mA, 4…20 mA | Room |

# DUCT AIR QUALITY TRANSMITTERS, VOC

DB-KLQ

Analysis of the air quality based on a mixed gas VOC (Volatile Organic Compounds) sensor.

Detectable gases:

- carbon monoxide CO
- hydrogen sulfide $H_2S$
- solvent vapours
- cigarette smoke
- car exhaust
- air produced by human breathing
- combustion smoke from wood, paper and plastics.

| Technical data | |
|---|---|
| Supply voltage | 15…36 V DC or 24 V AC/DC ± 10%, 50-60 Hz |
| Outputs | 0…10 V DC, 0…20 mA or 4…20 mA, selectable by dip-switch |
| Sensor | VOC |
| Ambient temperature | 0…50 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Storage temperature | -20…+50 °C |
| Storage humidity | < 95 % RH |
| Casing | Plastic material similar to RAL 9010 |
| Weight | 80 g |
| Dimensions | 65 x 59 x 36 mm (tube L = 206 mm, diameter = 16 mm) |
| Protection class | IP30 (case) |
| Isolation class | III |
| Certification | EN 60335-1: safety / EN 60529: IP degree of protection / EN 60730: domestic controls |

| Article | Output | Application |
|---|---|---|
| DB-KLQ | 0…10 V DC, 0…20 mA, 4…20 mA | Duct |
| DB-KLQ5 | 0…5 V DC, 0…20 mA, 4…20 mA | Duct |

# HUMIDITY TRANSMITTERS AND HUMIDISTATS

## ROOM HUMIDISTAT

Electromechanical humidistat for room mounting with synthetic element.

| Technical data | |
|---|---|
| Sensor element | Synthetic element |
| Switch capacity | Humidify: 2 (1) A, 230 V ACDehumidify: 5 (1) A, 230 V AC |
| Humidity range | 30...100 % RH |
| Hysteresis | 4 % at 50 % RH |
| Ambient temperature | 0…60 °C |
| Ambient humidity | < 95 % RH (non-condensing) |
| Weight | 130 g |
| Dimensions | 115 x 70 x 35 mm |
| Protection class | IP20 |
| Isolation class | II |

DBZH-101

| Article | Hidden setpoint |
|---|---|
| DBZH-101 | - |
| DBZH-101U | X |

## ROOM HUMIDISTAT

Electromechanical humidistat with a synthetic element. The setpoint knob can be locked.

| Technical data | |
|---|---|
| Sensor element | Synthetic element |
| Output | One, 230 V AC, 5 A, change-over |
| Setpoint | 35...95 % RH |
| Hysteresis | 7 % RH |
| Mounting | Room |
| Dimensions | 86 x 86 x 30 mm |
| Protection class | IP30 |

DBZH-102

| Article | Description |
|---|---|
| DBZH-102 | Room humidistat, 1-step |

## DUCT HUMIDISTAT

Humidistat to be mounted in the duct. Synthetic element.

| Technical data | |
|---|---|
| Sensor element | Synthetic element |
| Contact | Dust-tight microswitches with SPDT contacts |
| Switch capacity | 15 (2) A, 230 V AC0.25 A, 230 V DC |
| Humidity range | 30...100 % RH |
| Hysteresis | 4 % at 50% RH |
| Max. air velocity | 8 m/s |
| Ambient temperature | 0...60 °C |
| Ambient humidity | < 95 % RH (non-condensing) |
| Storage temperature | -30…+60 °C |
| Storage humidity | < 95 % RH (In the case of voltage below 48 V, the humidistat can be used up to 100% RH) |
| Tube length | 220 mm |
| Material, tube | Nickel-plated brass, perforated |
| Casing | ABS |
| Weight | 480 g |
| Dimensions | 108 x 70 x 72 mm |

DBKH-10

| Article | Hidden setpoint | Protection class |
|---|---|---|
| DBKH-10 | - | IP54 |
| DBKH-10U | X | IP65 |

## DUCT/WALL HUMIDISTAT, 1- OR 2-STEP

Electromechanical humidistat with change-over contact. Human hair element.

| Technical data | |
|---|---|
| Sensor element | Human hair |
| Output | 10 A, 250 V AC, change-over |
| Setpoint | 10...100 % RH |
| Hysteresis | 3 % RH |
| Mounting | Duct or wall |
| Dimensions | 80 x 85 x 88 mm |
| Protection class | IP54 |
| Isolation class | I |

DBKH-10H

| Article | Output | Step differential |
|---|---|---|
| DBKH-10H | 1-step | - |
| DBKH-20H | 2-step | 0...25 % RH |

## HUMIDITY TRANSMITTER FOR ROOM MOUNTING, OUTPUT 0…10 V, IP30

Transmitters for relative humidity and temperature measurement.
They have good long-term stability and are resistant to contamination.

| Technical data | |
|---|---|
| Supply voltage, 0...10 V DC | 24 V AC ± 10% / 15...35 V DC |
| Supply voltage, 4...20 mA | Max. 28 V, min. 10 + 0.02 x RL (where RL is the circuit loop resistance (RL < 500 Ω)) |
| Power consumption | < 1 W |
| Output signal | 0...10 V DC or Modbus |
| Working range, temperature | 0…50 °C |
| Working range, humidity | 10...90 % RH |
| Accuracy, humidity | ±3 % RH at 20 °C |
| Mounting | Room |
| Dimensions | 100 x 85 x 30.5 mm |
| Protection class | IP30 |
| Isolation class | III |

| Article | Humidity range | Output signal | Display |
|---|---|---|---|
| TUA-M | 0...100% RH | Modbus | - |
| TUA-D-M | 0...100% RH | Modbus | X |
| TUA | 0...100% RH | 0...10 V DC | - |
| TUA-D | 0...100% RH | 0...10 V DC | X |

TTUA

TTUA-D

Modbus

## HUMIDITY TRANSMITTER FOR ROOM MOUNTING, OUTPUT 4…20 MA, IP30

News!

| Technical data | |
|---|---|
| Supply voltage | Max 28 V DC, Min (11+(0,02xRL)) V DC |
| Power consumption | < 1 W |
| Ambient temperature | 0…50 °C |
| Ambient humidity | <95% RH |
| Transformer power | >=1 W |
| Accuracy, humidity | ±3 % RH at 20 °C |
| Mounting | Room |
| Dimensions | 100 x 85 x 30.5 mm |
| Protection class | IP30 |
| Isolation class | III |

| Article | Humidity range | Display | Output signal |
|---|---|---|---|
| TUA-C | 0...100% UR | - | 4...20 mA (2 wires) |
| TUA-CD | 0...100% UR | X (4 digits) | 4...20 mA (2 wires) |

TUA-C

TUA-CD

# HUMIDITY AND TEMPERATURE TRANSMITTER FOR ROOM MOUNTING, OUTPUT 4…20 MA, IP30

News!

| Technical data | |
|---|---|
| Output signal | 4…20 mA (2 wire) |
| Supply voltage | Max. 28 V DC, Min. 11+(0.02xRL) V DC |
| Power consumption | 1.2 W |
| Temperature range | 0…50 °C |
| Ambient humidity | <95 % RH |
| Humidity range | 0…100 % RH |
| DC power | Min. 2 W |
| Accuracy, humidity | ±3% RH at 20 °C |
| Accuracy, temperature | ±0.5°C at 20°C |
| Mounting | Room |
| Dimensions (WxHxD mm) | 100 x 85 x 30.5 |
| Protection class | IP30 |
| Isolation class | III |

| Article | Description |
|---|---|
| TTUA-C | Humidity and temperature transmitter |
| TTUA-CD | Humidity and temperature transmitter with display (4 digits) |

TTUA-C

TTUA-CD

# HUMIDITY/TEMPERATURE TRANSMITTER FOR ROOM MOUNTING

Transmitter for relative humidity and temperature measurement. It has good long-term stability and is resistant to contamination.

TTUA

TTUA-D

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ±10 % / 15...35 V DC |
| Power consumption | < 1 W |
| Transformer power | 2 VA |
| Working range, temperature | 0…50 °C |
| Working range, humidity | 10…90 % RH |
| Accuracy, humidity | ±3 % RH at 20°C |
| Mounting | Room |
| Dimensions | 100 x 85 x 30.5 mm |
| Protection class | IP30 |

| Article | Description | Display | Output signal | Accuracy, temperature |
|---|---|---|---|---|
| TTUA | RH + °C | - | 0...10 V + 0…10 V | ± 0.4 °C |
| TTUA-PT100 | RH + PT100, 100 Ohm (0°C) | - | 0...10 V + ohm | ± 0,3 °C |
| TTUA-PT1000 | RH + PT1000, 1000 Ohm (0°C) | - | 0...10 V + ohm | ± 0,3 °C |
| TTUA-NTC1.8 | RH + NTC 1.8, 1800 Ohm/25°C | - | 0...10 V + ohm | ± 0,5 °C |
| TTUA-NTC2.2 | RH + NTC 2.2, 2252 Ohm/25°C | - | 0...10 V + ohm | ± 0,2 °C |
| TTUA-NTC10-01 | RH + NTC 10, 10 kOhm/25°C | - | 0...10 V + ohm | ± 0,2 °C |
| TTUA-NTC10-02 | RH + NTC 10, 10 kOhm/25°C | - | 0...10 V + ohm | ± 0,3 °C |
| TTUA-NTC10-03 | RH + NTC 10, 10 kOhm/25°C | - | 0...10 V + ohm | ± 0,25 °C |
| TTUA-NTC20 | RH + NTC 20, 20 kOhm/25°C | - | 0...10 V + ohm | ± 0,2 °C |
| TTUA-NI1000-01 | RH + Ni1000, 1000 Ohm/0°C | - | 0...10 V + ohm | ± 0,5 °C |
| TTUA-NI1000-02 | RH + Ni1000, 1000 Ohm/0°C | - | 0...10 V + ohm | ± 0,5 °C |
| TTUA-D | RH + °C | X | 0...10 V + 0…10 V | ± 0.4 °C |
| TTUA-D-PT100 | RH + PT100, 100 Ohm/0°C | X | 0...10 V + ohm | ± 0,3 °C |
| TTUA-D-PT1000 | RH + PT1000, 1000 Ohm (0°C) | X | 0...10 V + ohm | ± 0,3 °C |
| TTUA-D-NTC1.8 | RH + NTC 1.8, 1800 Ohm/25°C | X | 0...10 V + ohm | ± 0,5 °C |
| TTUA-D-NTC2.2 | RH + NTC 2.2, 2252 Ohm/25°C | X | 0...10 V + ohm | ± 0,2 °C |
| TTUA-D-NTC10-01 | RH + NTC 10, 10 kOhm/25°C | X | 0...10 V + ohm | ± 0,2 °C |
| TTUA-D-NTC10-02 | RH + NTC 10, 10 kOhm/25°C | X | 0...10 V + ohm | ± 0,3 °C |
| TTUA-D-NTC10-03 | RH + NTC 10, 10 kOhm/25°C | X | 0...10 V + ohm | ± 0,25 °C |
| TTUA-D-NTC20 | RH + NTC 20, 20 kOhm/25°C | X | 0...10 V + ohm | ± 0,2 °C |
| TTUA-D-NI1000-01 | RH + Ni1000, 1000 Ohm/0°C | X | 0...10 V + ohm | ± 0,5 °C |
| TTUA-D-NI1000-02 | RH + Ni1000, 1000 Ohm/0°C | X | 0...10 V + ohm | ± 0,5 °C |
| TTUA-M | Humidity and temperature transmitter | - | Modbus | ± 0.2 °C |
| TTUA-D-M | RH + °C | X | Modbus | ± 0.2 °C |

# HUMIDITY TRANSMITTER FOR WALL MOUNTING, IP 65

| Technical data | |
|---|---|
| Supply voltage, 0...10 V DC | 18...24 V AC / 18...35 V DC |
| Supply voltage, 4...20 mA | Max 30 V DC, Min (11+(0,02xRL)) V DC |
| Power consumption | < 1 W |
| Transformer power | 2 VA |
| Ambient humidity | 10…95 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Accuracy | ±3 % RH at 20 °C |
| Temperature dependence of electronics | Output 4…20 mA: 0.015 °C/°C |
| Material, casing cover | White polycarbonate |
| Material, casing base | Grey polycarbonate |
| Weight | 170 g |
| Dimensions | 75 x 172 x 36 mm |
| Protection class | IP65 (sensor excluded) |
| Isolation class | III |

TUE

| Article | Humidity range | Output |
|---|---|---|
| TUE1 | 0…100 % RH | 0…10 V DC |
| TUE2 | 0…100 % RH | 4…20 mA |
| TUE3 | 0…100 % RH | 0…5 V DC |

*Operating temperature limit -5…+50 °C*

# HUMIDITY/TEMPERATURE TRANSMITTER FOR WALL MOUNTING, IP65

| Technical data | |
|---|---|
| Power consumption | < 1 W |
| Ambient humidity | 10…95 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Accuracy, humidity | ± 3% RH at 20 °C |
| Material, casing cover | White polycarbonate |
| Material, casing base | Grey polycarbonate |
| Weight | 170 g |
| Dimensions | 75 x 172 x 36 mm |
| Protection class | IP65 (sensor excluded) |
| Isolation class | III |

TUTE

| Article | Supply voltage | Temperature range | Output temperature | Output humidity | Accuracy, temperature |
|---|---|---|---|---|---|
| TUTE0111 | 18...24 V AC / 18...35 V DC | 0…+50 °C | 0…10 V DC | 0…10 V DC | ± 1°C |
| TUTE0121 | 18...24 V AC / 18...35 V DC | -30…+50 °C | 0…10 V DC | 0…10 V DC | ± 1.5°C |
| TUTE0131 | 18...24 V AC / 18...35 V DC | 0…+100 °C | 0…10 V DC | 0…10 V DC | ± 2°C |
| TUTE0212 | Max 30 V DC, Min 11+(0,02xRL) V DC | 0…+50 °C | 4…20 mA | 4…20 mA | ± 1°C |
| TUTE0222 | Max 30 V DC, Min 11+(0,02xRL) V DC | -30…+50 °C | 4…20 mA | 4…20 mA | ± 1.5°C |
| TUTE0232 | Max 30 V DC, Min 11+(0,02xRL) V DC | 0…+100 °C | 4…20 mA | 4…20 mA | ± 2°C |
| TUTE1101 | 18...24 V AC / 18...35 V DC | -5…+50 °C | NTC 10K-02 | 0…10 V DC | ± 0.6°C |
| TUTE1102 | Max 30 V DC, Min 11+(0,02xRL) V DC | -5…+50 °C | NTC 10K-02 | 4…20 mA | ± 0.6°C |
| TUTE1103 | 18...24 V AC / 18...35 V DC | -5…+50 °C | NTC 10K-02 | 0…5 V DC | ± 0.6°C |
| TUTE1301 | 18...24 V AC / 18...35 V DC | -5…+50 °C | NTC 1K8 | 0…10 V DC | ± 0.6°C |
| TUTE1302 | Max 30 V DC, Min 11+(0,02xRL) V DC | -5…+50 °C | NTC 1K8 | 4…20 mA | ± 0.6°C |
| TUTE1401 | 18...24 V AC / 18...35 V DC | -5…+50 °C | NTC 10K-01 | 0…10 V DC | ± 0.2°C |
| TUTE1402 | Max 30 V DC, Min 11+(0,02xRL) V DC | -5…+50 °C | NTC 10K-01 | 4…20 mA | ± 0.2°C |
| TUTE1501 | 18...24 V AC / 18...35 V DC | -5…+50 °C | NTC 10K-03 | 0…10 V DC | ± 0.2°C |
| TUTE1502 | Max 30 V DC, Min 11+(0,02xRL) V DC | -5…+50 °C | NTC 10K-03 | 4…20 mA | ± 0.2°C |
| TUTE1601 | 18...24 V AC / 18...35 V DC | -5…+50 °C | NTC 20K | 0…10 V DC | ± 0.6°C |
| TUTE1602 | Max 30 V DC, Min 11+(0,02xRL) V DC | -5…+50 °C | NTC 20K | 4…20 mA | ± 0.6°C |
| TUTE1701 | 18...24 V AC / 18...35 V DC | -5…+50 °C | PT1000 | 0…10 V DC | ± 0.6°C |
| TUTE2101 | 18...24 V AC / 18...35 V DC | -5…+50 °C | PT100 | 0…10 V DC | ± 0.3°C |
| TUTE2102 | Max 30 V DC, Min 11+(0,02xRL) V DC | -5…+50 °C | PT100 | 4…20 mA | ± 0.3°C |

*Operating temperature limit -5…+50 °C*

# DUCT HUMIDITY TRANSMITTER

| Technical data | |
|---|---|
| Supply voltage, 0...10 V DC | 18...24 V AC / 18...35 V DC |
| Supply voltage, 4...20 mA | Max 30 V DC, Min (11+(0,02xRL)) V DC |
| Power consumption | < 1 W |
| Sensor | Capacitive |
| Ambient temperature | -5…+50 °C |
| Ambient humidity | 10…95 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Accuracy | ±3 % RH at 20 °C |
| Casing | Cover: white polycarbonate<br>Base: grey polycarbonate |
| Weight | 260 g |
| Dimensions | 75 x 103 x 266 mm |
| Protection class | IP65 |
| Isolation class | III |

TUC

| Article | Humidity range | Output |
|---|---|---|
| TUC1 | 0…100 % RH | 0…10 V DC |
| TUC2 | 0…100 % RH | 4…20 mA (2 wires) |
| TUC3 | 0…100 % RH | 0...5 V DC |

## ACCESSORY

| Article | Description |
|---|---|
| DBZ-22 | Mounting bracket for air duct transmitters |

DBZ-22

*Operating temperature limit -5…+50 °C. These transmitters are supplied with mounting bracket model DBZ-22.*

# DUCT HUMIDITY/TEMPERATURE TRANSMITTER

| Technical data | |
|---|---|
| Power consumption | < 1 W |
| Sensor | Temperature: resistive<br>Humidity: capacitive |
| Ambient humidity | 10…95 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Accuracy | Humidity: ± 3% RH at 20 °C<br>Temperature:<br>Max error 1 °C (range 0…50 °C)<br>Max error 1.5 °C (range -30…+50 °C)<br>Max error 2 °C (range 0…100 °C) |
| Casing | Cover: white polycarbonate<br>Base: grey polycarbonate |
| Weight | 260 g |
| Dimensions | 75 x 103 x 266 mm |
| Protection class | IP65 (sensor excluded) |
| Isolation class | III |

TUTC

| Article | Supply voltage | Temperature range | Output temperature | Output humidity |
|---|---|---|---|---|
| TUTC0111 | 18...24 V AC / 18...35 V DC | 0…+50 °C | 0…10 V DC | 0…10 V DC |
| TUTC0121 | 18...24 V AC / 18...35 V DC | -30…+50 °C | 0…10 V DC | 0…10 V DC |
| TUTC0131 | 18...24 V AC / 18...35 V DC | 0…+100 °C | 0…10 V DC | 0…10 V DC |
| TUTC0212 | Max 30 V DC, Min 11+(0,02xRL) V DC | 0…+50 °C | 4…20 mA | 4…20 mA |
| TUTC0222 | Max 30 V DC, Min 11+(0,02xRL) V DC | -30…+50 °C | 4…20 mA | 4…20 mA |
| TUTC0232 | Max 30 V DC, Min 11+(0,02xRL) V DC | 0…+100 °C | 4…20 mA | 4…20 mA |
| TUTC1101 | 18...24 V AC / 18...35 V DC | -5…+50 °C | NTC 10K-02 | 0…10 V DC |
| TUTC1102 | Max 30 V DC, Min 11+(0,02xRL) V DC | -5…+50 °C | NTC 10K-02 | 4…20 mA |
| TUTC1103 | 18...24 V AC / 18...35 V DC | -5…+50 °C | NTC 10K-02 | 0…5 V DC |
| TUTC1301 | 18...24 V AC / 18...35 V DC | -5…+50 °C | NTC 1K8 | 0…10 V DC |
| TUTC1302 | Max 30 V DC, Min 11+(0,02xRL) V DC | -5…+50 °C | NTC 1K8 | 4…20 mA |
| TUTC1401 | 18...24 V AC / 18...35 V DC | -5…+50 °C | NTC 10K-01 | 0…10 V DC |
| TUTC1402 | Max 30 V DC, Min 11+(0,02xRL) V DC | -5…+50 °C | NTC 10K-01 | 4…20 mA |
| TUTC1501 | 18...24 V AC / 18...35 V DC | -5…+50 °C | NTC 10K-03 | 0…10 V DC |
| TUTC1502 | Max 30 V DC, Min 11+(0,02xRL) V DC | -5…+50 °C | NTC 10K-03 | 4…20 mA |
| TUTC1601 | 18...24 V AC / 18...35 V DC | -5…+50 °C | NTC 20K | 0…10 V DC |
| TUTC1602 | Max 30 V DC, Min 11+(0,02xRL) V DC | -5…+50 °C | NTC 20K | 4…20 mA |
| TUTC1701 | 18...24 V AC / 18...35 V DC | -5…+50 °C | PT1000 | 0…10 V DC |
| TUTC2101 | 18...24 V AC / 18...35 V DC | -5…+50 °C | PT100 | 0…10 V DC |
| TUTC2102 | Max 30 V DC, Min 11+(0,02xRL) V DC | -5…+50 °C | PT100 | 4…20 mA |

## ACCESSORY

| Article | Description |
|---|---|
| DBZ-22 | Mounting bracket for air duct transmitters |

DBZ-22

*Operating temperature limit -5…+50 °C. These transmitters are supplied with mounting bracket model DBZ-22.*

# FLOW, AIR AND LIQUID SWITCHES AND TRANSMITTERS

## LIQUID FLOW SWITCH

A series of electromechanical flow switches, suited for pipes of industrial plants: heating and air conditioning, refrigeration systems and heat pumps. Available in brass (suitable for normal media), and stainless steel AISI 316L (compatible with certain aggressive media).

SF1E

SF2E

SF3E

| Technical data | |
|---|---|
| Media | Water, Water max. 50% glycol |
| Contacts | Dust-tight microswitch with switching contacts SPDT |
| Switch capacity | 15 (8) A, 24...250 V AC |
| Ambient temperature | -40...+85 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Media temperature | -40...+120 °C |
| Storage temperature | -40…+85 °C |
| Storage humidity | < 95 % RH |
| Connection | Standard R1" (DIN 2999) for series SF1 and SF2 |
| Material, casing cover | Transparent Polycarbonate (PC) |
| Material, casing base | ABS |
| Paddles | Stainless steel AISI 316L |
| Weight | 950 g |
| Dimensions | 140 x 62 x 65 mm |
| Protection class | IP65 class I |
| Isolation class | I |

| Article | For pipes (diameter) | Flow | Media | "T" pipe fitting | Max. pressure |
|---|---|---|---|---|---|
| SF1K | 1...8" | 0.6…90.8 $m^3/h$ | Normal (body in brass) | - | 1100 kPa (11 bar) |
| SF1E | 1...8" | 0.6…90.8 $m^3/h$ | Normal (body in brass) | - | 1100 kPa (11 bar) |
| SF1RE | 1...8" | 0.2…55.3 $m^3/h$ | Normal (body in brass) | - | 1100 kPa (11 bar) |
| SF2E | 1...8" | 0.6…90.8 $m^3/h$ | Corrosive (AISI 316L compatibility) | - | 30100 kPa (30 bar) |
| SF2RE | 1...8" | 0.2…55.3 $m^3/h$ | Corrosive (AISI 316L compatibility) | - | 3000 kPa (30 bar) |
| SF3E | 1/2" | 0.174…0.846 $m^3/h$ | Normal (body in brass) | X | 1100 kPa (11 bar) |
| SF4E | 3/4" | 0.138…0.768 $m^3/h$ | Normal (body in brass) | X | 1100 kPa (11 bar) |
| SF6E | 1" | 0.124…1.0 $m^3/h$ | Normal (body in brass) | X | 1100 kPa (11 bar) |

### ACCESSORIES

| Article | Description |
|---|---|
| DBZ-09 | Stainless steel Aisi 316L paddles for liquid flow switch |

DBZ-09

*Models SF1E and SF2E with TÜV approval.*
*Notes: the flow switches are supplied with paddles model DBZ-09.*
*On request available: 1" NPT connection version (product code "SFxx/NPT") for SF1 and SF2 series.*

## SF1K/SF1E/SF2E

### Flow chart $H_2O$

| Pipe connector Ø | Qmax m³/h recommended | Min. adjustment m³/h cut-off cut-in | Max. adjustment m³/h cut-off cut-in |
|---|---|---|---|
| 1“ | 3,6 | 0,6 (1,0) | 2,0 (2,1) |
| 1 1/4“ | 6,0 | 0,8 (1,3) | 2,8 (3,0) |
| 1 1/2“ | 9,0 | 1,1 (1,7) | 3,7 (4,0) |
| 2“ | 15,0 | 2,2 (3,1) | 5,7 (6,1) |
| 2 1/2“ | 24,0 | 2,7 (4,0) | 6,5 (7,0) |
| 3“ | 36,0 | 4,3 (6,2) | 10,7 (11,4) |
| 4“ | 60,0 | 11,4 (14,7) | 27,7 (29,0) |
| 4“ Z | 60,0 | 6,1 (8,0) | 17,3 (18,4) |
| 5“ | 94,0 | 22,9 (28,4) | 53,3 (55,6) |
| 5“ Z | 94,0 | 9,3 (12,9) | 25,2 (26,8) |
| 6“ | 120,0 | 35,9 (43,1) | 81,7 (85,1) |
| 6“ Z | 120,0 | 12,3 (16,8) | 30,6 (32,7) |
| 8“ | 240,0 | 72,6 (85,1) | 165,7 (172,5) |
| 8“ Z | 240,0 | 38,6 (46,5) | 90,8 (94,2) |

For models with suffix “Z” the longest paddle must be used to obtain the values indicated on th table.
Pressure drop at the maximum flow (Qmax): 0,08 bar

**Nota**: the values indicated on schedule have been measured with the flow switch mounted on horizontal position.

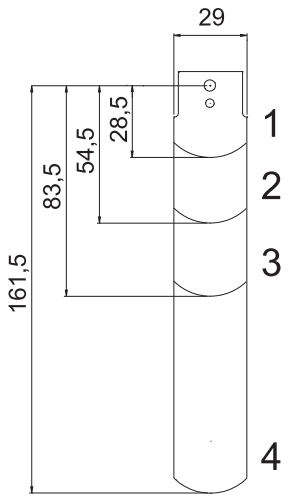
## SF1RE/SF2RE

### Flow chart $H_2O$

| Pipe connector Ø | Min. adjustment m³/h cut-off cut-in | Max. adjustment m³/h cut-off cut-in |
|---|---|---|
| 1“ | 0,2 (0,6) | 1,0 (1,1) |
| 1 1/4“ | 0,25 (0,9) | 1,4 (1,6) |
| 1 1/2“ | 0,5 (1,2) | 1,6 (2,2) |
| 2“ | 0,9 (2,3) | 3,6 (4,1) |
| 2 1/2“ | 1,2 (3,1) | 4,9 (5,5) |
| 3“ | 2,1 (4,9) | 7,4 (8,2) |
| 4“ | 4,9 (11,3) | 17,1 (19,1) |
| 4“ Z | 3,3 (7,7) | 11,6 (13,0) |
| 5“ | 9,7 (22,4) | 34,0 (37,9) |
| 5“ Z | 5,0 (11,5) | 17,5 (19,6) |
| 6“ | 13,6 (31,5) | 47,6 (53,2) |
| 6“ Z | 6,1 (14,1) | 21,4 (23,9) |
| 8“ | 25,7 (59,6) | 90,1 (100,7) |
| 8“ Z | 21,7 (36,5) | 55,3 (61,8) |

**Nota**: the values indicated on schedule have been measured with the flow switch mounted on horizontal position.

**Palette** (models without “T” pipe fitting)




| PIPE | PADDLES |
|---|---|
| 1” | 1 |
| 1 1/4” | 1 |
| 1 1/2” | 1 |
| 2” | 1+2 |
| 2 1/2” | 1+2 |
| 3” | 1+2+3 |
| 4” | 1+2+3 |
| 4” Z | 1+2+3+4 |
| 5” | 1+2+3 |
| 5” Z | 1+2+3+4 |
| 6” | 1+2+3 |
| 6” Z | 1+2+3+4 |
| 8” | 1+2+3 |
| 8” Z | 1+2+3+4 |

## SF3E/4E/6E

### Flow chart with „T“ fittings

| SF- | Pipe connector with “T“ pipe fitting Ø | Min. adjustment m³/h cut-off cut-in | Max. adjustment m³/h cut-off cut-in |
|---|---|---|---|
| 3E | 1/2“ | 0,174 (0,48) | 0,846 (0,948) |
| 4E | 3/4“ | 0,138 (0,408) | 0,768 (0,858) |
| 6E | 1“ | 0,2 (0,6) | 1,0 (1,1) |

The “T” connectors have cylindrical GAS thread.

**Nota**: the values indicated on schedule have been measured with the flow switch mounted on horizontal position.

5

# LIQUID FLOW SWITCHES

Switches for liquid flow control.

Well-suited for:

- heating and air conditioning systems
- refrigeration systems.

DB25MI

| Technical data | |
|---|---|
| Media | Water, Water max. 50% glycol |
| Contacts | Dust-tight microswitch with SPDT contacts |
| Switch capacity | 5 A, 250 V AC |
| Media temperature | -20…+110 °C |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH |
| Max. pressure | 2500 kPa = 25 bar |
| Pressure loss at $Q_{max}$ | 1 kPa = 0.01 bar |
| Tolerance | ± 15 % end of scale |
| Hysteresis | Min. 0.7 l/min |
| Plug | Internally threaded connector DIN 43650-A |
| Casing | ABS V0 |
| Body | Brass |
| Paddles | Stainless steel |
| Packing | NBR |
| Weight | 300…990 g |
| Dimensions | 102 x 30 x 83…104 mm |
| Isolation class | II |
| Protection class | IP65 |

| Article | Connection | Setting range | Max. recommended flow (l/min) |
|---|---|---|---|
| DB10MI | 3/8” | 5 - 6 l/min ($H_2O$) | 10 l/min ($H_2O$) |
| DB15MI | 1/2” | 6 - 7 l/min | 20 l/min |
| DB20MI | 3/4” | 7.5 - 11 l/min | 40 l/min |
| DB20MI/1 | 3/4” | 13 - 16 l/min | 40 l/min |
| DB25MI | 1” | 19 - 24 l/min | 60 l/min |
| DB32MI | 1 1/4” | 30 - 50 l/min | 80 l/min |
| DB40MI | 1 1/2” | 50 - 60 l/min | 100 l/min |
| DB50MI | 2” | 70 - 90 l/min | 150 l/min |

*The indicated values have been measured with the flow switch mounted horizontally.*

## AIR FLOW SWITCH

Air or non-aggressive gas flow control. Alarm signal for flow shortage. Well-suited for air ducts, air conditioning and air handling systems.

SL1E

| Technical data | |
|---|---|
| Contacts | Dust-tight microswitch with SPDT contacts (NC/NO) |
| Switch capacity | 15 (8) A, 24…250 V AC |
| Ambient temperature | -40...+85 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Media temperature | -10…+85 °C |
| Storage temperature | -40…+85 °C |
| Storage humidity | < 95 % RH |
| Material, casing cover | Transparent PC |
| Material, casing base | ABS |
| Body | Brass |
| Paddles | Stainless steel AISI 301 |
| Weight | 630 g |
| Dimensions | 265.5 x 140 x 102 mm |
| Protection class | IP65 |

| Article | Cut out | Cut in | Max. air temperature |
|---|---|---|---|
| SL1E | min. 1.0 m/s - max. 8.0 m/s | min. 2.5 m/s - max. 9.2 m/s | 85 °C |

### ACCESSORIES

| Article | Description |
|---|---|
| DBZ-08 | Stainless steel AISI 301 paddle for air flow switch |

DBZ-08

*Supplied with paddel model DBZ-08. The values indicated on schedule have been measured with the flow switch mounted on horizontal position.*

## AIR VELOCITY TRANSMITTER

For air velocity measurement in ventilation ducts.

TVAN

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ±20 %, 4 VA |
| Working range | 0...10 m/s, 0...15 m/s, 0...20 m/s |
| Output signal | 0...10 V (max. 1 mA), 4...20 mA |
| Time constant | 1.5 s at 10 m/s |
| Accuracy | ±(0.2 m/s + 3 % of the value) at 0...10 m/s<br>±(0.2 m/s + 3 % of the value) at 0...15 m/s<br>±(0.2 m/s + 4 % of the value) at 0...20 m/s |
| Damping | 0.2 or 2 s |
| Ambient temperature | -10...+50 °C |
| Insertion length | 50...200 mm - adjustable |
| Mounting | Duct |
| Dimensions | 90 x 85 x 255 mm |
| Protection class | IP65 |

| Article | Description |
|---|---|
| TVAN | Air velocity transmitter |

# LUX TRANSMITTERS

## LUX TRANSMITTER

In- or outdoor lux transmitter with a passive PT1000 temperature sensor as well as DIP-switches for scaling the output signal.

News!

| Technical data | |
|---|---|
| Supply voltage | 16…36 V DC, 24 V AC |
| Analogue output | 0...10 V. Min. load resistance 10 kΩ. |
| Accuracy, lux | ±10 % |
| Operating temperature | -30…+70 °C |
| Relative humidity | 0…98 %, non-condensing |
| Connection | Screw clamps 1.5 mm² |
| Measuring range | 0...1000 / 0...10000 / 0...50000 / 0...100000 lux |
| Weight | 107 g |
| Dimensions (WxHxD) | 59 x 65 x 37.5 mm |
| Protection class | IP65 |

### MODELS

| Article | Description |
|---|---|
| LTWT10/PT1000 | Lux transmitter |

## AIR DIFFERENTIAL PRESSURE SWITCHES

Differential pressure for air or non-aggressive and non-inflammable gas control.

| Technical data | |
|---|---|
| Contacts | Microswitch with SPDT contacts, according to EN 1854 (EN 60730) |
| Switch capacity | 1.5 (0.4) A, 250 V AC |
| Ambient temperature | -20…+85 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Storage temperature | -40…+85 °C |
| Max. pressure | 100 mbar |
| Diaphragm | Silicone (LSR) |
| Casing | Polystyrene |
| Weight | 180…210 g |
| Dimensions | Ø 118 x h 57.5 mm |
| Protection class | IP54 |

| Article | Range | Hysteresis |
|---|---|---|
| DBL-205A | 0.3…4.0 mbar (30…400 Pa) | 0.15 mbar ± 15% |
| DBL-205B | 0.5…5.0 mbar (50…500 Pa) | 0.2 mbar ± 15% |
| DBL-205C | 0.2…3.0 mbar (20…300 Pa) | 0.1 mbar ± 15% |
| DBL-205D | 2…10 mbar (200…1000Pa) | 1.0 mbar ± 15% |
| DBL-205E | 5…25 mbar (500…2500 Pa) | 1.5 mbar ± 15% |

DBL

DBZ-06

DBZ-14A

DBZ-14B

### ACCESSORIES

| Article | Description |
|---|---|
| DBZ-06 | Connection set with 2 PVC duct connectors, 2 m flexible PVC pipe and 4 screw |
| DBZ-14A | Set with mounting bracket and screws (S-shaped) |
| DBZ-14B | Set with mounting bracket and screws (L-shaped) |

*Articles available in multipack /M: DBL-205.../M (45 pcs.)*

# MANOMETERS AND AIR DIFFERENTIAL PRESSURE SWITCHES

Differential pressure visualization of air or non-aggressive and non-inflammable gases with alarm at a pre-set value.

DB-M6P6

The compact unit consists of:

- a differential manometer with an inclined liquid pipe, complete of tank to allow temporary overpressure
- a bottle containing indication liquid and 2 stickers (red/green)
- a differential pressure switch connected to the manometer with PVC hose, complete of pressure adjustment knob, terminals for electrical connections and cable gland PG 9 (protection class according to EN 60529: IP54)
- PVC hose Ø 4 x 7 - 2.2 m length, pipes and fixing screws

| Technical data | |
|---|---|
| Contacts | Dust-tight microswitch with SPDT contacts |
| Switch capacity | 3 (2) A, 250 V AC |
| Ambient temperature | -40…+60 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Storage temperature | DB-M…: -45…+70 °C<br>DB-M…P…: -25…+70 °C |
| Accuracy | 5 Pa |
| Fluid | ISO-paraffin with density at 15 °C<br>DB-M6P6: red colour<br>DB-M10P13: blue colour |
| Electrical connection | With terminals and cable gland PG9 |
| Material | ABS, PMMA, PC |
| Packing | NBR |
| Weight | 400…820 g |
| Dimensions | 290 x 140 x 64 mm |
| Protection class | IP54 class II |
| Isolation class | II |

| Article | Manometer range | Pressure switch range | Hysteresis | Max. pressure |
|---|---|---|---|---|
| DB-M6 | 0…600 Pa | - | - | 200 kPa |
| DB-M6P6 | 0…600 Pa | 40…600 Pa | 30 Pa | 50 kPa |
| DB-M10 | 0…1500 Pa | - | - | 200 kPa |
| DB-M10P13 | 0…1500 Pa | 100…1300 Pa | 80 Pa | 50 kPa |

# DIFFERENTIAL PRESSURE TRANSMITTERS 0…2.5 BAR

Differential pressure transmitter for monitoring differential gaseous pressure, non-aggressive media. Can be mounted in any position.

Possible areas of applications are:

- air-conditioning and clean rooms
- building automation
- valve and flap contro;
- fluid and level monitoring
- control of air flows

984M.3X3104

984M.343714

DBZ-06

| Technical data | |
|---|---|
| Supply voltage | 24 V AC / DC with output 0...10 V DC and 4...20 mA 24 V DC with output 4...20 mA (2 wires) |
| Outputs | 0…10 V DC (max 10 mA)<br>4…20 mA (20…500 Ohm) |
| Sensor | Piezoresistive |
| Ambient temperature | 0…50 °C |
| Ambient humidity | 10...95 % RH (non-condensing) |
| Storage temperature | -10…+70 °C |
| Accuracy | < ± 0.2 % of end of scale |
| Typical long term stability | < ± 0.5 % to ± 2.5 % of end of scale/year |
| Response time | 100 ms or 1 sec., selectable |
| Installation | Can be mounted in any position |
| Casing | Housing with process connection P2 made of ABS, mounting part with process connection P1 made of POM |
| Weight | 170 g |
| Dimensions | Max. Ø 118 x h 57.5 mm |
| Protection class | IP54 |
| Certification | EN60770, EN61326 |

| Article | Range 1 | Range 2 | Output signal | Display |
|---|---|---|---|---|
| 984M.323204 | 0...100 Pa (1.0 mbar) | 0...250 Pa (2.5 mbar) | 4…20 mA | - |
| 984M.343304 | 0...500 Pa (5.0 mbar) | 0...1000 Pa (10 mbar) | 4…20 mA | - |
| 984M.343714 | 0...500 Pa (5.0 mbar) | 0...1000 Pa (10 mbar) | 0…10 V DC | X |
| 984M.353704 | 0...1000 Pa (10 mbar) | 0...2500 Pa (25 mbar) | 0…10 V DC | - |
| 984M.353D04 | 0...1000 Pa (10 mbar) | 0...2500 Pa (25 mbar) | 4…20 mA | - |
| 984M.3x3204 | -50…50 Pa (-0,5…0,5 mbar) | - | 4…20 mA | - |
| 984M.3x3114 | -50…50 Pa (-0,5…0,5 mbar) | - | 0…10 V DC | X |
| 984M.3x3104n_07 | -250…250 Pa (-2,5…2,5 mbar) | - | 0…10 V DC | - |

*For other models, please contact Industrietechnik.*

## ACCESSORIES

| Article | Description |
|---|---|
| DBZ-06 | Connection set with 2 PVC duct connectors, 2 m flexible PVC pipe and 4 screw |
| DBZ-14A | Set with mounting bracket and screws (S-shaped) |
| DBZ-14B | Set with mounting bracket and screws (L-shaped) |
| 104552 | Test certificate |

DBZ-14A

DBZ-14B

## DIFFERENTIAL PRESSURE TRANSMITTER FOR AIR, WITH DISPLAY

TPDA

Microprocessor-controlled differential pressure transmitter for measurement of air and neutral gases. This transmitter has four different measuring ranges in the same unit. The range is selected by means of buttons under the cover. Other functions are zero-point adjustment and electronic damping of the signal.

Supplied with 2 m plastic tube and two pressure outlets.

| Technical data | |
|---|---|
| Supply voltage | 24 V AC or DC, 5 VA |
| Output signal | 0...10 V DC or 4...20 mA |
| Working range | 0...100 Pa, 0...300 Pa, 0...500 Pa and 0...1000 Pa |
| Accuracy | ±1 % at 20°C |
| Electronic damping | 0...20 s |
| Display | LED, 3 digits |
| Dimensions | 129 x 89 x 58 mm |
| Protection class | IP54 |

| Article | Description |
|---|---|
| TPDA | Differential pressure transmitter with display |

## DIFFERENTIAL PRESSURE TRANSMITTER WITH BUILT-IN CONTROLLER, WITH DISPLAY

TPDA-C

Microprocessor-controlled differential pressure transmitter with built-in controller for control of dampers, frequency converters, VAV systems, gases etc. It has four separate measurement ranges in the same unit. The range is selected by means of buttons under the cover.

Supplied with 2 m plastic tube and two pressure outlets.

Selectable working range. Adjustable damping of the measuring signal.

| Technical data | |
|---|---|
| Supply voltage | 24 V AC or DC, 5 VA |
| Output signal, pressure | 0...10 V DC or 4...20 mA |
| Output signal, controller | 0...10 V DC |
| Working range | 0...100 Pa, 0...300 Pa, 0...500 Pa and 0...1000 Pa |
| Accuracy | ±1 % at 20°C |
| P-band | 0...300 % |
| I-time | 0...999 s |
| D-factor | 0...999 s |
| Electronic damping | 0...20 s |
| Display | LED, 3 digits |
| Mounting | Wall |
| Dimensions | 129 x 89 x 58 mm |
| Protection class | IP54 |

| Article | Description |
|---|---|
| TPDA-C | Differential pressure transmitter with built-in controller, with display |

## DIFFERENTIAL PRESSURE TRANSMITTER WITH ANALOGUE OUTPUTS FOR AIR NON-CORROSIVE GASES

Differential pressure transmitter for HVAC applications with one or two analog outputs. The transmitter can be configured for output signals 0-10 V or 4-20 mA.

| Technical data | |
|---|---|
| Supply voltage | 24 V AC/DC ±15 % |
| Overall accuracy pressure | ≤ 1 % full scale |
| Power consumption | 0…10 V mode : 2 VA (rms), min. trafo size 7,5 VA4…20 mA mode : 2.7 VA (rms), min. trafo size 9 VA |
| Operating temperature | -25…+50 °C |
| Protection class | IP54 |

| Article | Working range | Number of sensors |
|---|---|---|
| TPDA12A | 0…1250 Pa | 1 |
| TPDA25A | 0…2500 Pa | 1 |
| TPDA75A | 0…7500 Pa | 1 |
| TPDA1225A2 | PS1: 0…1250 Pa / PS2: 0…2500 Pa | 2 |
| TPDA1275A2 | PS1: 0…1250 Pa / PS2: 0…7500 Pa | 2 |

News!

TPDAxxxxAx

## DIFFERENTIAL PRESSURE TRANSMITTER WITH COMMUNICATION FOR AIR AND NON-CORROSIVE GASES

Differential pressure transmitter with I/O modules for HVAC applications.

| Technical data | |
|---|---|
| Supply voltage | 24 V AC/DC ±15 % |
| Overall accuracy pressure | ≤ 1 % full scale |
| Power consumption | 2 VA (rms), min. trafo size 7,5 VA |
| Operating temperature | -25…+50 °C |
| Communication | EXOline / Modbus |
| Protection class | IP54 |
| **Universal inputs (UI1, UI2) to be configured as PT1000, Ni1000 (6180 ppm/K), digital or 0...10 V inputs** | |
| PT1000 input | -40…+60°C / -40…+140°F, accuracy ±1 K (-25…0°C), ±0.5 K (0…50°C) |
| Ni1000 input | -40…+60°C / -40…+140°F, accuracy ±1 K (-25…0°C), ±0.5 K (0…50°C) |
| Digital input | Potential-free contacts on/off (closed=on) |
| 0...10 V input | ±1 % full scale accuracy |

| Article | Working range | Number of sensors | Operating temperature |
|---|---|---|---|
| TPDA12C | 0…1250 Pa | 1 | -10...+50 °C |
| TPDA25C | 0…2500 Pa | 1 | -10...+50 °C |
| TPDA75C | 0…7500 Pa | 1 | -10...+50 °C |
| TPDA12C2 | PS1: 0…1250 Pa / PS2: 0…1250 Pa | 2 | -10...+50 °C |
| TPDA25C2 | PS1: 0…2500 Pa / PS2: 0…2500 Pa | 2 | -25...+50 °C |
| TPDA1225C2 | PS1: 0…1250 Pa / PS2: 0…2500 Pa | 2 | -10...+50 °C |
| TPDA1275C2 | PS1: 0…1250 Pa / PS2: 0…7500 Pa | 2 | -10...+50 °C |

News!

TPDAxxxxCx

EXOline

Modbus

# PRESSURE TRANSMITTER FOR LIQUIDS AND GASES

Pressure transmitter for measurement of liquids and gases.

News!

| Technical data | |
|---|---|
| Output signal | 0...10 V DC (three-wire) or 4...20 mA (two-wire) |
| Pressure connection | G 1/4" (outside thread) |
| Dynamic response time | < 2 ms, 1 ms typically |
| Tolerable overload | ≤ 4 bar 3.0 x full scale, > 4 bar 2.5 x full scale |
| Media temperature | -15…+125 °C |
| Ambient temperature | -30...+85 °C |
| Storage temperature | -50...+100 °C |
| Accuracy, characteristic line | ±0.3 % full scale * |
| Accuracy, resolution | 0.1 % full scale * |
| Accuracy, thermal characteristic | Max. ±0.2 % full scale / 10 K * |
| Accuracy, long-term stability according to IEC EN 60770-1 | Max. ±0.25 % full scale * |
| Sealing | FPM |
| Weight | 90 g |
| Cable length | 1.5 m |
| Protection class | IP67 |

## MODELS

| Article | Working range | Output signal | Supply voltage | Power consumption |
|---|---|---|---|---|
| TPGL1 | 0...100 kPa (1 bar) | 0...10 V DC | 12...33 V DC / 24 V AC ±15 % | < 7 mA |
| TPGL1-420 | 0...100 kPa (1 bar) | 4...20 mA | Max 33 V DC, Min 7+(0,02xRL) V DC | < 23 mA |
| TPGL2.5 | 0...250 kPa (2.5 bar) | 0...10 V DC | 12...33 V DC / 24 V AC ±15 % | < 7 mA |
| TPGL2.5-420 | 0...250 kPa (2.5 bar) | 4...20 mA | Max 33 V DC, Min 7+(0,02xRL) V DC | < 23 mA |
| TPGL6 | 0...600 kPa (6 bar) | 0...10 V DC | 12...33 V DC / 24 V AC ±15 % | < 7 mA |
| TPGL6-420 | 0...600 kPa (6 bar) | 4...20 mA | Max 33 V DC, Min 7+(0,02xRL) V DC | < 23 mA |
| TPGL10 | 0...1000 kPa (10 bar) | 0...10 V DC | 12...33 V DC / 24 V AC ±15 % | < 7 mA |
| TPGL10-420 | 0...1000 kPa (10 bar) | 4...20 mA | Max 33 V DC, Min 7+(0,02xRL) V DC | < 23 mA |
| TPGL16 | 0...1600 kPa (16 bar) | 0...10 V DC | 12...33 V DC / 24 V AC ±15 % | < 7 mA |
| TPGL16-420 | 0...1600 kPa (16 bar) | 4...20 mA | Max 33 V DC, Min 7+(0,02xRL) V DC | < 23 mA |
| TPGL25 | 0...2500 kPa (25 bar) | 0...10 V DC | 12...33 V DC / 24 V AC ±15 % | < 7 mA |
| TPGL25-420 | 0...2500 kPa (25 bar) | 4...20 mA | Max 33 V DC, Min 7+(0,02xRL) V DC | < 23 mA |
| TPGL40 | 0...4000 kPa (40 bar) | 0...10 V DC | 12...33 V DC / 24 V AC ±15 % | < 7 mA |
| TPGL40-420 | 0...4000 kPa (40 bar) | 4...20 mA | Max 33 V DC, Min 7+(0,02xRL) V DC | < 23 mA |

## ACCESSORIES

| Article | Description |
|---|---|
| TPL105074 | Mounting spacer which lowers the temperature at higher media temperatures than the sensor can handle. |
| DBZ-AD1 | Adapter 1/4" to 1/2". For mounting immersion sensors in 1/2". |

*For other models please contact Industrietechnik.*

TPL105074

DBZ-AD1

# DIFFERENTIAL PRESSURE TRANSMITTER FOR LIQUIDS AND GASES

Differential pressure transmitter for measurement of liquids (also glycol-mixed) and gases (not ammonia).

TPDL

| | |
|---|---|
| Supply voltage | 24 V CA / 18…33 V DC ± 15% (output signal 0…10 V), 0.1 VA<br>11…33 V DC ± 15%, two-wire (output signal 4…20 mA), 0.5 VA |
| Output signal | 0…10 V DC or 4…20 mA (two-wire) |
| Ambient temperature | -15…+85 °C |
| Accuracy | TPDL10…TPDL250: ± 1.3 % es<br>TPDL400: ± 0.8 % es<br>TPDL600…TPDL2500: ± 0.5 % es |
| Connection | Screw fitting for Ø 6 mm pipe included |
| Electrical connection | DIN EN 175301 803-A |
| Dimensions | 68 x 40 x 113 mm |
| Protection class | IP65 |

| Article | Output signal | Working range |
|---|---|---|
| TPDL10 | 0…10 V DC | 0...10 kPa (0...0.1 bar) |
| TPDL10-420 | 4…20 mA | 0...10 kPa (0...0.1 bar) |
| TPDL20 | 0…10 V DC | 0…20 kPa (0…0.2 bar) |
| TPDL20-420 | 4…20 mA | 0…20 kPa (0…0.2 bar) |
| TPDL40 | 0…10 V DC | 0…40 kPa (0…0.4 bar) |
| TPDL40-420 | 4…20 mA | 0…40 kPa (0…0.4 bar) |
| TPDL100 | 0…10 V DC | 0…100 kPa (0…1 bar) |
| TPDL100-420 | 4…20 mA | 0…100 kPa (0…1 bar) |
| TPDL250 | 0…10 V DC | 0…250 kPa (0…2.5 bar) |
| TPDL250-420 | 4…20 mA | 0…250 kPa (0…2.5 bar) |
| TPDL400 | 0…10 V DC | 0…400 kPa (0…4 bar) |
| TPDL400-420 | 4…20 mA | 0…400 kPa (0…4 bar) |
| TPDL600 | 0…10 V DC | 0…600 kPa (0…6 bar) |
| TPDL600-420 | 4…20 mA | 0…600 kPa (0…6 bar) |
| TPDL1000 | 0…10 V DC | 0…1000 kPa (0…10 bar) |
| TPDL1000-420 | 4…20 mA | 0…1000 kPa (0…10 bar) |
| TPDL1600 | 0…10 V DC | 0…1600 kPa (0…16 bar) |
| TPDL1600-420 | 4…20 mA | 0…1600 kPa (0…16 bar) |
| TPDL2500 | 0…10 V DC | 0…2500 kPa (0…25 bar) |
| TPDL2500-420 | 4…20 mA | 0…2500 kPa (0…25 bar) |

| Article | Description |
|---|---|
| TPDL-NIPPEL | Nipple (R=1/8" 27 NPT) for connection of Ø 6 mm copper pipe |
| TPDL-R | Copper pipe, Ø 6 mm, length 30 cm |

TPDL-NIPPEL

TPDL-R

*For other models please contact Industrietechnik.*

## LEVEL SWITCHES

Level control of normal liquids contained in tanks and barrels.

Alarm signal of minimum or maximum level.

SQ01

| Technical data | |
|---|---|
| Contacts | Dust-tight microswitch with SPDT contacts |
| Switch capacity | 15 (8) A, 24…250 V AC |
| Ambient temperature | -40…+85 °C |
| Ambient humidity | 10…90 % RH (non-condensing) |
| Media temperature | max. +85 °C |
| Storage temperature | -40…+85 °C |
| Storage humidity | < 95 % RH |
| Level length | 200 mm |
| Protection class | IP65 |
| Isolation class | I |
| **Material** | |
| Material, casing cover | Transparent polycarbonate |
| Material, casing base | ABS |
| Body | Brass |
| Float | Acrylic |
| Weight | 960 g |
| Dimensions | 140 x 62 x 65 mm |

| Article | Hysteresis | Max. temperature | Max. pressure |
|---|---|---|---|
| SQ01 | 10/14 mm | +85 °C | 11 bar |

# 6 Damper actuators

## DAMPER ACTUATORS, 2 NM

Designed for applications with small dampers (0.5 m²) of ventilation and air handling units.

DAK-DMK

| Technical data | |
|---|---|
| Max. damper size | 0.5 m² |
| Torque | 2 Nm |
| Frequency | 50…60 Hz |
| Rotation angle | 95° |
| Ambient temperature | -20…+50 °C |
| Ambient humidity | 5...95% UR |
| Noise level | Max 45 dB |
| Mounting | Directly on jack shaft |
| For jack shaft | 6…16 mm Ø (round shaft), 5…11 mm (square shaft) |
| Weight | 600 g |
| Protection class | IP54 |
| Isolation class | III (DAK230: class II) |
| Certification | CE |

| Article | Supply voltage | Control signal | Power consumption | Auxiliary switch | Stroke time |
|---|---|---|---|---|---|
| DAK24 | 24 V AC/ DC | On/off or 3 point | 2,0 W | - | 35...45 s |
| DAK24S | 24 V AC / DC | On/off or 3 point | 2.0 W | 1 fixed SPDT 3 (1.5) A / AC 230 V positioned on 10° | 35...45 s |
| DAK230 | 230 V AC | On/off or 3 point | 1,5 W | - | 35...45 s |
| DAK230S | 230 V AC | On/off or 3 point | 1.5 W | 1 fixed SPDT 3 (1.5) A / AC 230 V positioned on 10° | 35...45 s |
| DMK24 | 24 V AC / DC | 2...10 V DC | 2,5 W | - | 45...55 s |

## DAMPER ACTUATORS, 4 NM

Well-suited for applications with small dampers (up to 1 m²) in ventilation and air handling units.

DAN-DMN

| Technical data | |
|---|---|
| Max. damper size | 1 m² |
| Torque | 4 Nm |
| Frequency | 50…60 Hz |
| Stroke time | 35 s |
| Rotation angle | Operating: 90°<br>Limitation: 5…85° in 5° steps |
| Ambient temperature | -20…+50 °C |
| Ambient humidity | 5…95 % RH |
| Noise level | Max 45 dB |
| Mounting | Directly on jack shaft |
| For jack shaft | 10…16 mm Ø (round shaft), 10…12 mm (square shaft) |
| Protection class | IP44 or IP54 with cable glands |
| Isolation class | III (DAN230: class II) |
| Certification | CE |

| Article | Supply voltage | Control signal | Power consumption | Auxiliary switch | Weight |
|---|---|---|---|---|---|
| DAN24 | 24 V AC / DC | On/off or 3 point | Operating: 2.5 W<br>At end stops: 0.85 W | - | 900 g |
| DAN24S | 24 V AC / DC | On/off or 3 point | Operating: 2.5 W<br>At end stops: 0.85 W | 2 x 3 (1.5) A / AC 230 V | 900 g |
| DAN230 | 230 V AC | On/off or 3 point | Operating: 4.0 W<br>At end stops: 3.0 W | - | 1000 g |
| DAN230S | 230 V AC | On/off or 3 point | Operating: 4.0 W<br>At end stops: 3.0 W | 2 x 3 (1.5) A / AC 230 V | 1000 g |
| DMN24 | 24 V AC / DC | 0…10 V DC | Operating: 2.5 W<br>At end stops: 0.85W | - | 900 g |

# DAMPER ACTUATORS, 8 NM

Well-suited for applications with dampers (2 $m^2$) in ventilation and air handling units.

DAS-DMS

| Technical data | |
|---|---|
| Max. damper size | 2 $m^2$ |
| Torque | 8 Nm |
| Frequency | 50…60 Hz |
| Stroke time | 30 s |
| Rotation angle | Operating: 90° (93° mechanical)<br>Limitation: 5…85° in 5° steps |
| Ambient temperature | -20…+50 °C |
| Ambient humidity | 5…95 % RH |
| Noise level | Max 45 dB |
| Mounting | Drectly on jack shaft |
| For jack shaft | 10…20 mm Ø (round shaft), 10…20 mm (square shaft) |
| Weight | 1200 g |
| Protection class | IP44 or IP54 with cable glands |
| Isolation class | III (DAS230, DMS230: class II) |
| Certification | CE |

| Article | Supply voltage | Control signal | Power consumption | Auxiliary switch |
|---|---|---|---|---|
| DAS24 | 24 V AC / DC | on/off or 3 point | Operating: 3.9 W<br>At end stops: 0.4 W | - |
| DAS24S | 24 V AC / DC | on/off or 3 point | Operating: 3.9 W<br>At end stops: 0.4 W | 2 x 3 (1.5) A / AC 230 V |
| DAS230 | 230 V AC | on/off or 3 point | Operating: 4.8 W<br>At end stops: 1.2 W | - |
| DAS230S | 230 V AC | on/off or 3 point | Operating: 4.8 W<br>At end stops: 1.2 W | 2 x 3 (1.5) A / AC 230 V |
| DMS24 | 24 V AC / DC | Y1: 0(2)…10 V DC<br>Y2: 0(4)…20 mA<br>U: 0(2)…10 V DC (feedback signal) | Operating: 4.0 W<br>At end stops: 0.7 W | - |
| DMS24S | 24 V AC / DC | Y1: 0(2)…10 V DC<br>Y2: 0(4)…20 mA<br>U: 0(2)…10 V DC (feedback signal) | Operating: 4.0 W<br>At end stops: 0.7 W | 2 x 3 (1.5) A / AC 230 V |
| DMS230 | 230 V AC | Y1: 0(2)…10 V DC<br>Y2: -<br>U: 0(2)…10 V DC (feedback signal) | Operating: 4.8 W<br>At end stops: 1.0 W | - |
| DMS230S | 230 V AC | Y1: 0(2)…10 V DC<br>Y2: -<br>U: 0(2)…10 V DC (feedback signal) | Operating: 4.8 W<br>At end stops: 1.0 W | 2 x 3 (1.5) A / AC 230 V |

# DAMPER ACTUATORS, 16 NM

Well-suited for applications with dampers (4 m²) in ventilation and air handling units.

DA-DM

| Technical data | |
|---|---|
| Max. damper size | 4 m² |
| Torque | 16 Nm |
| Frequency | 50…60 Hz |
| Stroke time | 80 s |
| Rotation angle | Operating: 90° (93° mechanical)<br>Limitation: 5…85° in 5° steps |
| Ambient temperature | -20…+50 °C |
| Ambient humidity | 5…95 % RH |
| Noise level | Max 45 dB |
| Mounting | Directly on jack shaft |
| For jack shaft | 10…20 mm Ø (round shaft), 10…20 mm (square shaft) |
| Weight | 1200 g |
| Protection class | IP44 or IP54 with cable glands |
| Isolation class | III (DA230, DM230: class II) |
| Certification | CE |

| Article | Supply voltage | Control signal | Power consumption | Auxiliary switch |
|---|---|---|---|---|
| DA24 | 24 V AC / DC | on/off or 3 point | Operating: 3.9 W<br>At end stops: 0.4 W | - |
| DA24S | 24 V AC / DC | on/off or 3 point | Operating: 3.9 W<br>At end stops: 0.4 W | 2 x 3 (1.5) A / AC 230 V |
| DA230 | 230 V AC | on/off or 3 point | Operating: 4.8 W<br>At end stops: 1.2 W | - |
| DA230S | 230 V AC | on/off or 3 point | Operating: 4.8 W<br>At end stops: 1.2 W | 2 x 3 (1.5) A / AC 230 V |
| DM24 | 24 V AC / DC | Y1: 0(2)…10 V DC<br>Y2: 0(4)…20 mA<br>U: 0(2)…10 V DC (feedback signal) | Operating: 4.0 W<br>At end stops: 0.7 W | - |
| DM24S | 24 V AC / DC | Y1: 0(2)…10 V DC<br>Y2: 0(4)…20 mA<br>U: 0(2)…10 V DC (feedback signal) | Operating: 4.0 W<br>At end stops: 0.7 W | 2 x 3 (1.5) A / AC 230 V |
| DM230 | 230 V AC | Y1: 0(2)…10 V DC<br>Y2: -<br>U: 0(2)…10 V DC (feedback signal) | Operating: 4.8 W<br>At end stops: 1.0 W | - |
| DM230S | 230 V AC | Y1: 0(2)…10 V DC<br>Y2: -<br>U: 0(2)…10 V DC (feedback signal) | Operating: 4.8 W<br>At end stops: 1.0 W | 2 x 3 (1.5) A / AC 230 V |

# DAMPER ACTUATORS, 24 NM

Well-suited for applications with dampers (6 $m^2$) in ventilation and air handling units.

DAL-DML

| Technical data | |
|---|---|
| Max. damper size | 6 $m^2$ |
| Torque | 24 Nm |
| Frequency | 50…60 Hz |
| Stroke time | 125 s |
| Rotation angle | Operating: 90° (93° mechanical)<br>Limitation: 5…85° in 5° steps |
| Ambient temperature | -20…+50 °C |
| Ambient humidity | 5…95 % RH |
| Noise level | Max 45 dB |
| Mounting | Directly on jack shaft |
| For jack shaft | 10…20 mm Ø (round shaft), 10…20 mm (square shaft) |
| Weight | 1200 g |
| Protection class | IP44 or IP54 with cable glands |
| Isolation class | III (DAL230, DML230: class II) |
| Certification | CE |

| Article | Supply voltage | Control signal | Power consumption | Auxiliary switch |
|---|---|---|---|---|
| DAL24 | 24 V AC / DC | on/off or 3 point | Operating: 3.9 W<br>At end stops: 0.4 W | - |
| DAL24S | 24 V AC / DC | on/off or 3 point | Operating: 3.9 W<br>At end stops: 0.4 W | 2 x 3 (1.5) A / AC 230 V |
| DAL230 | 230 V AC | on/off or 3 point | Operating: 4.8 W<br>At end stops: 1.2 W | - |
| DAL230S | 230 V AC | on/off or 3 point | Operating: 4.8 W<br>At end stops: 1.2 W | 2 x 3 (1.5) A / AC 230 V |
| DML24 | 24 V AC / DC | Y1: 0(2)…10 V DC<br>Y2: 0(4)…20 mA<br>U: 0(2)…10 V DC (feedback signal) | Operating: 4.0 W<br>At end stops: 0.7 W | - |
| DML24S | 24 V AC / DC | Y1: 0(2)…10 V DC<br>Y2: 0(4)…20 mA<br>U: 0(2)…10 V DC (feedback signal) | Operating: 4.0 W<br>At end stops: 0.7 W | 2 x 3 (1.5) A / AC 230 V |
| DML230 | 230 V AC | Y1: 0(2)…10 V DC<br>Y2: -<br>U: 0(2)…10 V DC (feedback signal) | Operating: 4.8 W<br>At end stops: 1.0 W | - |
| DML230S | 230 V AC | Y1: 0(2)…10 V DC<br>Y2: -<br>U: 0(2)…10 V DC (feedback signal) | Operating: 4.8 W<br>At end stops: 1.0 W | 2 x 3 (1.5) A / AC 230 V |

# DAMPER ACTUATORS, 32 NM

Well-suited for applications with medium or large dampers (8 m²) in ventilation and air handling units.

DAG-DMG

| Technical data | |
|---|---|
| Max. damper size | 8 m² |
| Torque | 32 Nm |
| Frequency | 50…60 Hz |
| Rotation angle | Operating: 0…90°<br>Limitation: 5…85° in 5° steps |
| Ambient temperature | -20…+50 °C |
| Ambient humidity | 5…95 % RH |
| Noise level | Max 45 dB |
| Mounting | Directly on jack shaft |
| For jack shaft | 10…20 mm Ø (round shaft), 10…16 mm (square shaft) |
| Protection class | IP44 or IP54 with cable glands |
| Isolation class | III (DAG230: class II) |
| Certification | CE |

| Article | Supply voltage | Control signal | Power consumption | Auxiliary switch | Stroke time | Weight |
|---|---|---|---|---|---|---|
| DAG24 | 24 V AC / DC | on/off or 3 point | Operating: 4.0 W<br>At end stops: 0.5 W | - | 160 s | 1100 g |
| DAG24S | 24 V AC / DC | on/off or 3 point | Operating: 4.0 W<br>At end stops: 0.5 W | 2 x 3 (1.5) A / AC 230 V | 160 s | 1100 g |
| DAG230 | 230 V AC | on/off or 3 point | Operating: 4.8 W<br>At end stops: 1.2 W | - | 160 s | 1200 g |
| DAG230S | 230 V AC | on/off or 3 point | Operating: 4.8 W<br>At end stops: 1.2 W | 2 x 3 (1.5) A / AC 230 V | 160 s | 1200 g |
| DMG24 | 24 V AC / DC | Y1: 0(2)…10 V DC<br>Y2: 0(4)…20 mA<br>U: 0(2)…10 V DC (feedback signal) | Operating: 2.5 W<br>At end stops: 0.3 W | - | 240 s | 1200 g |
| DMG24S | 24 V AC / DC | Y1: 0(2)…10 V DC<br>Y2: 0(4)…20 mA<br>U: 0(2)…10 V DC (feedback signal) | Operating: 2.5 W<br>At end stops: 0.3 W | 2 x 3 (1.5) A / AC 230 V | 240 s | 1200 g |

## DAMPER ACTUATORS WITH SPRING RETURN, 5 NM

Well-suited for applications with security dampers used as antifreeze, antismoke or for sealing in the hygienic-sanitary field.

DAN230F

| Technical data | |
|---|---|
| Max. damper size | 1 m² |
| Torque | 5 Nm |
| Frequency | 50…60 Hz |
| Running time, actuator | 50…70 s |
| Running time, spring return | < 20 s |
| Rotation angle | Operating: 90° (95° mechanical)<br>Limitation: 5…85° in 5° steps |
| Ambient temperature | -20…+50 °C |
| Ambient humidity | 5…95 % RH |
| Noise level | Max 45 dB |
| Mounting | Directly on jack shaft |
| For jack shaft | 10…16 mm Ø (round shaft), 7…11 mm (square shaft) |
| Protection class | IP54 |
| Isolation class | II |
| Certification | CE |

| Article | Supply voltage | Power consumption | Auxiliary switch | Weight |
|---|---|---|---|---|
| DAN24F | 24 V AC / DC | Operating: 7.2 W<br>At end stops: 2.5 W | - | 1800 g |
| DAN24FS | 24 V AC / DC | Operating: 7.2 W<br>At end stops: 2.5 W | 2 x SPDT 3 (1.5) A / AC 230 V | 1800 g |
| DAN230F | 230 V AC | Operating: 4.2 W<br>At end stops: 2.5 W | - | 1900 g |
| DAN230FS | 230 V AC | Operating: 4.2 W<br>At end stops: 2.5 W | 2 x SPDT 3 (1.5) A / AC 230 V | 1900 g |



## DAMPER ACTUATORS WITH SPRING RETURN, 10 NM

Well-suited for applications with security dampers used as antifreeze, antismoke or for sealing in the hygienic-sanitary field.

DAT230F

| Technical data | |
|---|---|
| Max. damper size | 2 m² |
| Torque | 10 Nm |
| Frequency | 50…60 Hz |
| Running time, actuator | 100 s |
| Running time, spring return | 25 s |
| Rotation angle | -5°…+95° |
| Ambient temperature | -20…+50 °C |
| Ambient humidity | 5…95 % RH |
| Noise level | Max 45 dB |
| Mounting | Directly on jack shaft |
| For jack shaft | 10…19 mm Ø (round shaft), 10…16 mm (square shaft) |
| Weight | 2300 g |
| Protection class | IP54 |
| Isolation class | III (DAT230F: class II) |
| Certification | CE |

| Article | Supply voltage | Power consumption | Auxiliary switch |
|---|---|---|---|
| DAT24F | 24 V AC / DC | operating: 5,0 W | - |
| DAT24FS | 24 V AC / DC | operating: 5,0 W | 2 x 3 (1,5) A / AC 230 V |
| DAT230F | 230 V AC | operating: 6,5 W | - |
| DAT230FS | 230 V AC | operating: 6,5 W | 2 x 3 (1,5) A / AC 230 V |

## DAMPER ACTUATORS WITH SPRING RETURN, 20 NM

Well-suited for applications with security dampers used as antifreeze, antismoke or for sealing in the hygienic-sanitary field.

DB-DA230F

| Technical data | |
|---|---|
| Max. damper size | 3 m² |
| Torque | 20 Nm |
| Frequency | 50…60 Hz |
| Running time, actuator | 150 s |
| Running time, spring return | 20 s |
| Rotation angle | 90° |
| Ambient temperature | -20…+50 °C |
| Ambient humidity | 5…95 % RH |
| Noise level | Motor: < 45 dB<br>Spring: < 65 dB |
| Mounting | Directly on jack shaft |
| For jack shaft | 9…20 mm Ø (round shaft), 10…16 mm (square shaft) |
| Weight | 1800 g |
| Protection class | IP54 |
| Isolation class | III (DB-DA230F: class II) |
| Certification | CE |

| Article | Supply voltage | Control signal | Power consumption | Auxiliary switch |
|---|---|---|---|---|
| DB-DA24F | 24 V AC / DC | 2-point | operating: 6,0 W / 8,0 VA | - |
| DB-DA24F-S2 | 24 V AC / DC | 2-point | operating: 6,0 W / 8,0 VA | 2 x 5 (1,5) A / AC 230 V |
| DB-DA230F | 230 V AC | 2-point | operating: 9,0 W / 10,0 VA | - |
| DB-DA230F-S2 | 230 V AC | 2-point | operating: 9,0 W / 10,0 VA | 2 x 5 (1,5) A / AC 230 V |
| DB-DM24F | 24 V AC / DC | 0...10 V DC | operating: 7,0 W / 9,0 VA | - |

## DAMPER ACTUATORS WITH SPRING RETURN FOR FIRE DAMPERS, 5 NM

Well-suited for applications with security / fire dampers used as antifreeze, antismoke or for sealing in the hygienic-sanitary field.

AF230SE

| Technical data | |
|---|---|
| Max. damper size | 1 m² |
| Torque | 5 Nm |
| Frequency | 50…60 Hz |
| Thermal protection | Duct 72°C |
| Running time, actuator | 50…70 s |
| Running time, spring return | < 20 s |
| Rotation angle | 90° (95° mechanical) |
| Ambient temperature | -20…+50 °C |
| Ambient humidity | 5…95 % RH |
| Noise level | Max < 45 dB |
| Mounting | Directly on jack shaft |
| For jack shaft | 12 mm (square shaft) |
| Protection class | IP54 |
| Isolation class | II |
| Certification | CE |

| Article | Supply voltage | Power consumption | Auxiliary switch | Weight |
|---|---|---|---|---|
| AF24SE | 24 V AC / DC | Operating: 7.2 W<br>At end stops: 2.5 W | 2 SPDT fixed 3 (1.5) A / AC 230 V | 1800 g |
| AF230SE | 230 V AC | Operating: 4.2 W<br>At end stops: 2.5 W | 2 SPDT fixed 3 (1.5) A / AC 230 V | 1900 g |

## DAMPER ACTUATORS WITH SPRING RETURN FOR FIRE DAMPERS, 8 NM

Well-suited for applications with security / fire dampers used as antifreeze, antismoke or for sealing in the hygienic-sanitary field.

NF24SE

| Technical data | |
|---|---|
| Max. damper size | 1.5 m² |
| Torque | 8 Nm |
| Frequency | 50…60 Hz |
| Thermal protection | Duct 72°C |
| Running time, actuator | 75…95 s |
| Running time, spring return | < 25 s |
| Rotation angle | 90° (95° mechanical) |
| Ambient temperature | -20…+50 °C |
| Ambient humidity | 5…95 % RH |
| Noise level | Max < 45 dB |
| Mounting | Directly on jack shaft |
| For jack shaft | 12 mm (square shaft) |
| Protection class | IP54 |
| Isolation class | II |
| Certification | CE |

| Article | Supply voltage | Power consumption | Auxiliary switch | Weight |
|---|---|---|---|---|
| NF24SE | 24 V AC / DC | Operating: 7.0 W<br>At end stops: 2.0 W | 2 SPDT fixed 3 (1.5) A / AC 230 V | 2200 g |
| NF230SE | 230 V AC | Operating: 8.0 W<br>At end stops: 5.5 W | 2 SPDT fixed 3 (1.5) A / AC 230 V | 2300 g |

## DAMPER ACTUATORS WITH SPRING RETURN FOR FIRE DAMPERS, 20 NM

Well-suited for applications with security / fire dampers used as antifreeze, antismoke or for sealing in the hygienic-sanitary field.

DB-SF

| Technical data | |
|---|---|
| Max. damper size | 3 m² |
| Torque | 20 Nm |
| Frequency | 50…60 Hz |
| Thermal protection | Duct 72°C (only models ...TA-12) |
| Running time, actuator | 150 s |
| Running time, spring return | Max 20 s |
| Rotation angle | 90° |
| Ambient temperature | -20…+50 °C |
| Ambient humidity | 5…95 % RH |
| Noise level | Motor: < 45 dB<br>Spring: < 65 dB |
| Mounting | Directly on jack shaft |
| For jack shaft | 12 mm (square shaft) |
| Weight | 2500 g |
| Protection class | IP54 |
| Isolation class | III (DB-SF2: class II) |
| Certification | CE |

| Article | Supply voltage | Power consumption | Auxiliary switch | Thermal protection |
|---|---|---|---|---|
| DB-SF1.90/12 | 24 V AC / DC | operating: max. 6,5 W / 8,5 VA | 2 x 5 (1,5) A / AC 230 V | - |
| DB-SF1.90TA/12 | 24 V AC / DC | operating: max. 6,5 W / 8,5 VA | 2 x 5 (1,5) A / AC 230 V | 72° on the duct |
| DB-SF2.90/12 | 230 V AC | operating: max. 9,0 W / 10,0 VA | 2 x 5 (1,5) A / AC 230 V | - |
| DB-SF2.90TA/12 | 230 V AC | operating: max. 9,0 W / 10,0 VA | 2 x 5 (1,5) A / AC 230 V | 72° on the duct |

# POSITION TRANSDUCER

| Article | Supply voltage | Output signal | Control signal | Mounting |
|---|---|---|---|---|
| DB-PA | 24 V AC/DC | 0(2)…10 V DC ($R_{load}$ > 6K8) (control override) | 0(2)…10 V DC | Wall |
| DB-PF | 24 V AC/DC | 0(2)…10 V DC ($R_{load}$ > 6K8) (control override) | 0(2)…10 V DC | Front-end |

DB-PA

DB-PF

# 7 Valves and valve actuators

X Recommended choice

◆ Other possible alternative

| | | | | |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
| | | | | | SM | FCA | SE1 | SE1C |
| | | | | | synchronous, spring return 24 V AC, 230 V AC | synchronous, spring return 230 V AC | thermostatic, on/off, 24/230 V AC 0...10 V, 24 V AC | thermostatic, on/off, 24/230 V AC |
| **ACTUATORS AND VALVE BODIES COUPLING** | | | | | | | 100-140 N | 90 N |
|  | DB-VZ | threaded 2-, 3-way | | G 1/2–1 | X | | | |
|  | FCV | threaded 2-, 3-way | | G 1/2–1 1/4 | | X | | |
|  | VFX2 | threaded 2-way | stroke 2.5 mm | G 1/2–3/4 | | | X | |
|  | VFX3 | threaded 3-way | | | | | X | |
|  | VFX4 | threaded 3-way, 4 port | | | | | X | |
|  | VFPIP/ VFPIM/ VFPI | pressure independent valves | stroke 2.7mm | DN 15–25 | | | | X |
|  | VFZ2 | threaded 2-way | stroke 5.5 mm | G 1/2-1 1/2 | | | | |
| | VFZ3 | threaded 3-way | | | | | | |
|  | VFS2 | threaded 2-way, | stroke 16.5 mm | G 1/2-2 | | | | |
| | VFS3 | threaded 3-way | | | | | | |
|  | VFSF2 | flanged 2-way | stroke 16.5 mm | DN 20–50 | | | | |
| | VFSF3 | flanged 3-way | | | | | | |
|  | VFG2 | female threaded 2-way | stroke 20 mm | DN 15–50 | | | | |
| | VFG3 | female threaded 3-way | | | | | | |
|  | VFD2 | male threaded 2-way | stroke 20 mm | DN 15–50 | | | | |
| | VFD3 | male threaded 3-way | | | | | | |
|  | VFFG2 VFFG3 | flanged 2-way 3-way | stroke 20 mm | DN 50-65 | | | | |
| | | | stroke 40 mm | DN 80-200 | | | | |
|  | VFL2 | flanged 2-way | stroke 20 mm | DN 65-80 | | | | |
| | | | stroke 40 mm | DN 100-150 | | | | |
|  | VFL3 | flanged 3-way 3-wayflanged 3-way | stroke 20 mm | DN 65-80 | | | | |
| | | | stroke 40 mm | DN 100-150 | | | | |
|  | VFDH | flanged 2-way | stroke 20 mm | DN 15–50 | | | | |
| | | | stroke 20 mm | DN 65-80 | | | | |
| | | | stroke 38 mm | DN 100 | | | | |
| | | | stroke 40 mm | DN 125-150 | | | | |
|  | VF | butterfly | | DN 32–80 | | | | |

|  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
| SE1.2 | SE4 | SE6 | SE5 | SE10 | SE18 | SE25 | DAL, DML | DAG, DMG |
| 2-, 3-point, 24/230 V AC<br>0...10 V, 24 V AC | 2-, 3-point, 24/230 V AC<br>0...10 V, 24 V AC | | 3-point/ 24/230 V AC<br>0...10/2...10 V DC, 24 V AC | | | | 2-, 3-point, 24/230 V AC<br>0...10 V, 24 V AC | |
| 120 N | 400 N | 600 N | 500 N | 1000 N | 1800 N | 2500 N | 24 Nm | 32 Nm |
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| | | | X | ◆ | | | | |
| | | | | | X | ◆ | | |
| | | | | | ◆ | X | | |
| | | | ◆ | X | ◆ | ◆ | | |
| | | | | | X with art. 02133011 | ◆ with art. 02133011 | | |
| | | | | | X | ◆ | | |
| | | | | | ◆ | X | | |
| | | | X | ◆ | | | | |
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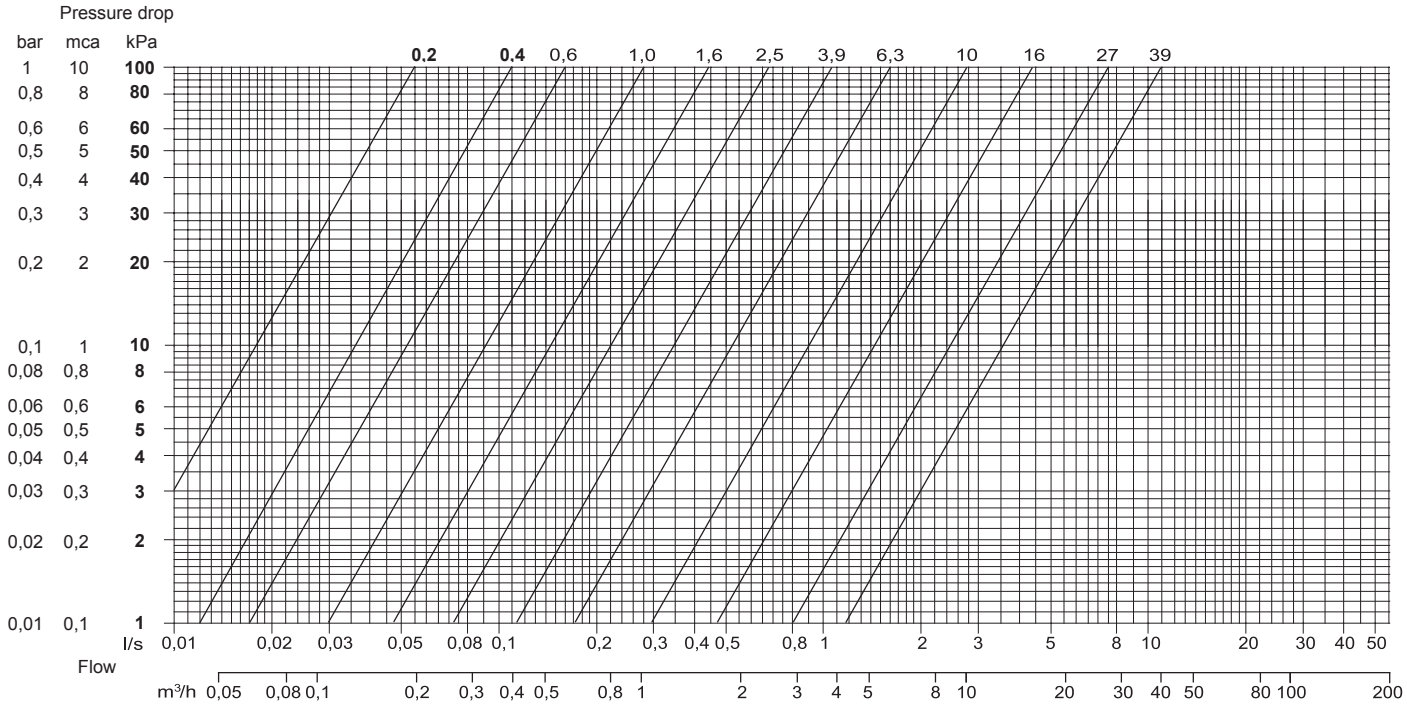
| | | | | | X | ◆ | | |
| | | | | | | X | | |
| | | | | | | | X | X |

# CALCULATION OF $K_{VS}$ VALUE

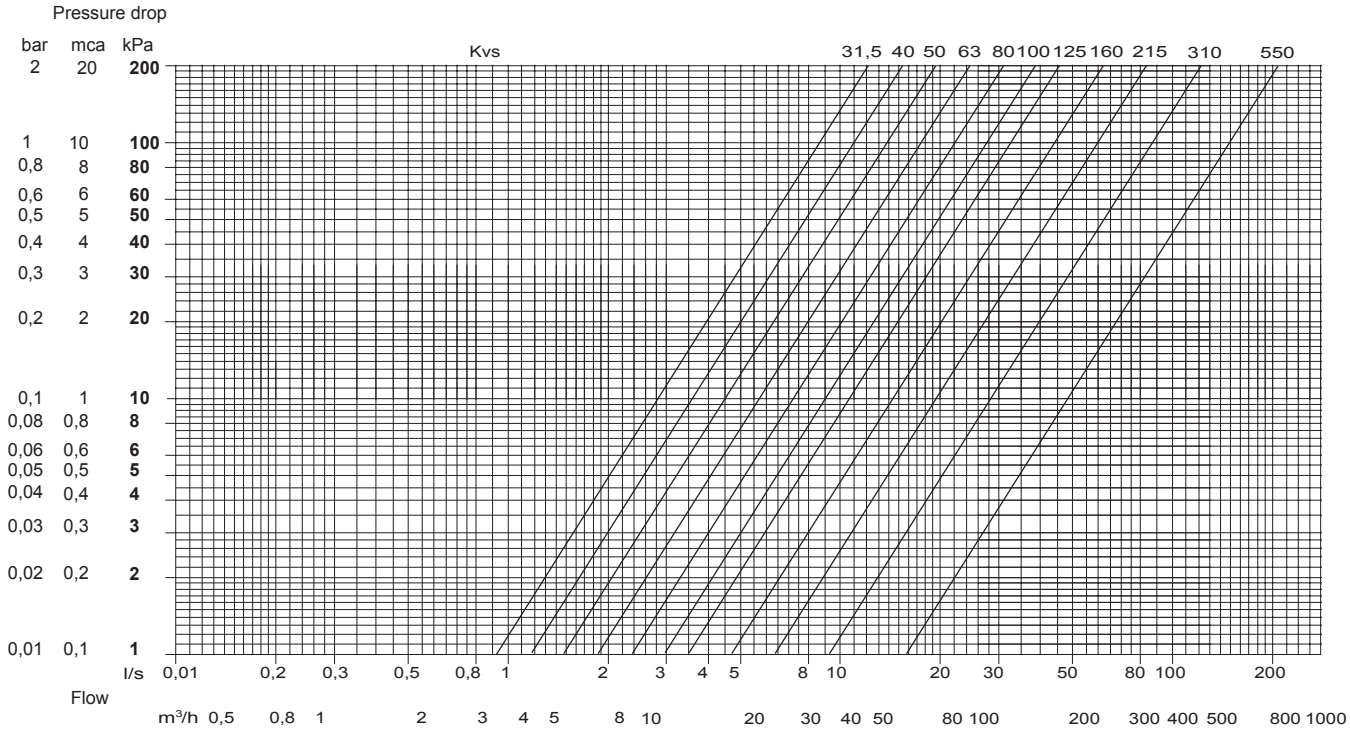



The **pressure drop diagram** allows the Calculation of Kvs for a regulation valve. It correlates the flow rate with the pressure drop. The axes use a logarithmic scale so that you can represent any of Kvs value with a straight line.

Example:

**TO CHOOSE A KVS VALUE FOR A VALVE HAVING A PRESSURE DROP OF 80 KPA AND A FLOW RATE OF 0,2 L/S:**

- Draw a horizontal line corresponding to the pressure drop value (DP = 80 kPa)
- Draw a vertical line in correspondance of the flow rate value (0.2 l / s)
- Then draw a straight line from the intersection formed up to the nearest Kvs line
- Read the value of the corresponding Kvs
- Result: 1.0 Kvs



# THERMAL ACTUATORS FOR MANIFOLDS AND VALVES

Thermal actuator to be used on manifolds and VFPIP / VFPIM / VFPI valves

| Technical data | |
|---|---|
| Sensor element | Special wax |
| Power consumption | 3 VA |
| Ambient temperature | 0…50 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Storage temperature | -10…+60 °C Humidity: < 95 % RH |
| Peak current | SE1C24, SE1C24S < 0.25 A<br>SE1C230, SE1C230S < 0.70 A |
| Auxiliary switch | 3 A 230 V AC |
| Cable | PVC, section 2(4) x 0.50 mm², length 1 m |
| Connection | Metal ring M30 x 1.5 |
| Material, casing | Matt polycarbonate, self extinguishing V0 - V1 according to UL94 |
| Weight | 150 g |
| Dimensions | Ø 48.5 x h 65 mm |
| Protection class | IP40 If mounted vertically: IP44<br>clas II (SE1C230, SE1C230S)<br>class III (SE1C24, SE1C24S) |
| Control signal | On/Off |

SE1C

| Article | Supply voltage | Auxiliary switch | Run-on time |
|---|---|---|---|
| SE1C24 | 24 V AC ± 10%, 50/60 Hz | - | 4.5 min (20°C) |
| SE1C230 | 230 V AC ± 10%, 50/60 Hz | - | 3.5 min (20°C) |
| SE1C24S | 24 V AC ± 10%, 50/60 Hz | X | 4.5 min (20°C) |
| SE1C230S | 230 V AC ± 10%, 50/60 Hz | X | 3.5 min (20°C) |

## ACCESSORIES

| Article | | Description |
|---|---|---|
| ADVFX | | Adapter for SE1C/VFX coupling up to Kvs 2.5 to allow the valve to be normally open on direct way |
| ADV11 | actuator SE1C… | Adapter for valve with 2.7 mm stroke (to be ordered separately) |

ADVFX

*Articles available in multipack /M: SE1C.../M (72 pcs.)*

# ON-OFF ZONE VALVES

On-Off control of heat or cool water flow. The valves must be combined with the SM actuator.

DB-VZ2-20

| Technical data valve | |
|---|---|
| Storage temperature | -20…+70 °C |
| Humidity | < 95 % RH |
| Media temperature | 0…105 °C |
| Nominal pressure (PN) | 16 bar |
| Weight | 270…750 g |
| **Material** | |
| Body | Forged brass |
| Stem | Stainless steel AISI 302 |
| Packing | NBR |

## 2-WAY VALVES

| Article | Nominal diameter | Connection | Kvs | Max. diff. pressure |
|---|---|---|---|---|
| DB-VZ2-15 | DN15 | G 1/2” | 1.6 $m^3/h$ | 250 kPa (2,5 bar) |
| DB-VZ2-20 | DN20 | G 3/4” | 1.6 $m^3/h$ | 100 kPa (1 bar) |
| DB-VZ2-25 | DN25 | G 1” | 1.6 $m^3/h$ | 60 kPa (0,6 bar) |

| Article | Nominal diameter | Connection | Kvs | Max. diff. pressure |
|---|---|---|---|---|
| DB-VZ3-15 | DN15 | G 1/2” | 1.6 $m^3/h$ | 250 kPa (2,5 bar) |
| DB-VZ3-20 | DN20 | G 3/4” | 1.6 $m^3/h$ | 100 kPa (1 bar) |
| DB-VZ3-25 | DN25 | G 1” | 1.6 $m^3/h$ | 60 kPa (0,6 bar) |

# ACTUATOR FOR DB-VZ ON-OFF ZONE VALVES

Actuators with auxiliary microswitch for 2-way and 3-way DB-VZ valves.

SM24-CA

| Technical data actuator | |
|---|---|
| Power consumption | 7 VA |
| Load | max. 3A, 125…250 V AC |
| Opening time | ≤ 10 s |
| Closing time, spring | ≤ 5 s |
| Ambient temperature | 2…60 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Material, casing base | Aluminium alloy casting |
| Material, casing cover | Fire-proof ABS |
| Dimensions | 77 x 65 x 62 mm |
| Protection class | IP40 |
| Isolation class | II |

## ACTUATORS

| Article | Supply voltage | Auxiliary switch |
|---|---|---|
| SM230/CA | 230 V AC ± 10% | X |
| SM24/CA | 24 V AC ± 10% | X |

# PRESSURE INDEPENDENT CONTROL VALVES

The valve is a combined differential pressure regulator, flow limiter and equal percentage control valve with full stroke and authority. The pressure independent control valves are suitable for constant or variable temperature systems and can be used as constant flow limiters in constant volume systems (with no actuators), or as pressure independent control valves in variable volume systems (with actuators).

The VFPIP / VFPIM / VFPI valves DN15-25 are intended to be used together with ITK's SE1Cxxx or SE1.2xxx actuators.

News!

| Technical data | |
|---|---|
| Application | Heating/cooling systems, fan coil units, radiant cooling and ventilation |
| Pressure class | 25 bar |
| Flow characteristics | Equal percentage |
| Rangeability | 50 ~ 100 : 1 |
| Max. diff. pressure | 600 kPa |
| Stroke | 2,7 mm |
| Media | Hot water, cold water, glycol-mixed water (max. 50 % glycol) |
| Max. leakage | 0.01 % of maximum flow, Class IV IEC 60534-4 |
| Media temperature | -10…+120 °C |
| **Material** | |
| Body | Brass CW602N (CZ121) |
| Plug parabol | Brass CW614N (CZ132) |
| Stem | Stainless steel |
| O-rings | EPDM |
| Pressure controller | EPDM, stainless steel and high resistance polymer |

## MODELS WITHOUT MEASURING PORT CONNECTORS

| Article | Nominal diameter | Connection | Max. flow rate | Max. start up pressure | Range-ability | Stroke | Actuator |
|---|---|---|---|---|---|---|---|
| VFPI15-150 | DN15 | G½" | 150 l/h | 20 kPa | 50 ~ 100 : 1 | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |
| VFPI15-600 | DN15 | G½" | 600 l/h | 25 kPa | 50 ~ 100 : 1 | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |
| VFPI15-900 | DN15 | G½" | 900 l/h | 30 kPa | 50 ~ 100 : 1 | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |
| VFPI20-600 | DN20 | G¾" | 600 l/h | 25 kPa | 50 ~ 100 : 1 | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |
| VFPI20-900 | DN20 | G¾" | 900 l/h | 30 kPa | 50 ~ 100 : 1 | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |

*The VFPI models are non-stock items.*

## MODELS WITH MEASURING PORT CONNECTORS BUT NO MEASURING PORTS

| Article | Nominal diameter | Connection | Max. flow rate | Max. start up pressure | Rangeability | Max. diff. pressure | Stroke | Actuator |
|---|---|---|---|---|---|---|---|---|
| VFPIP15-150 | DN15 | G1/2” | 150 l/h | 20 kPa | 50 ~ 100 : 1 | 600 kPa | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |
| VFPIP15-600 | DN15 | G1/2” | 600 l/h | 25 kPa | 50 ~ 100 : 1 | 600 kPa | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |
| VFPIP15-780 | DN15 | G1/2” | 780 l/h | 35 kPa | 50 ~ 100 : 1 | 600 kPa | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |
| VFPIP20-1000 | DN20 | G3/4” | 1000 l/h | 30 kPa | 50 ~ 100 : 1 | 600 kPa | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |
| VFPIP20-1500 | DN20 | G3/4” | 1500 l/h | 35 kPa | 50 ~ 100 : 1 | 600 kPa | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |
| VFPIP25-1500 | DN25 | G1” | 1500 l/h | 35 kPa | 50 ~ 100 : 1 | 600 kPa | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |

## MODELS WITH MEASURING PORTS

| Article | Nominal diameter | Connection | Max. flow rate | Max. start up pressure | Rangeability | Stroke | Actuator |
|---|---|---|---|---|---|---|---|
| VFPIM15-150 | DN15 | G1/2” | 150 l/h | 20 kPa | 50 ~ 100 : 1 | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |
| VFPIM15-600 | DN15 | G1/2” | 600 l/h | 25 kPa | 50 ~ 100 : 1 | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |
| VFPIM15-780 | DN15 | G1/2” | 780 l/h | 35 kPa | 50 ~ 100 : 1 | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |
| VFPIM20-1000 | DN20 | G3/4” | 1000 l/h | 30 kPa | 50 ~ 100 : 1 | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |
| VFPIM20-1500 | DN20 | G3/4” | 1500 l/h | 35 kPa | 50 ~ 100 : 1 | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |
| VFPIM25-1500 | DN25 | G1” | 1500 l/h | 35 kPa | 50 ~ 100 : 1 | 2.7 mm | SE1C230, SE1C24, SE1.2F24/PT, SE1.2F230/PT, SE1.2M24-3.2/PT |

## ELECTROMECHANICAL ACTUATORS FOR THE PCTV, PCTVM AND PCTVS VALVES

News!

| Technical data | |
|---|---|
| Max. media temperature | 95 °C |
| Ambient temperature | 0…50 °C |
| Protection class | IP43 |
| Force | 120 N +30% -20% |
| Stroke time | 8 s/mm |

### MODELS

| Article | Control signal | Stroke | Supply voltage | Power consumption |
|---|---|---|---|---|
| SE1.2F24/PT | 3-point | 6 mm (max.) | 24 V AC | 1.5 W / 2.5 VA |
| SE1.2F230/PT | 3-point | 6 mm (max.) | 230 V AC | 2.2 W / 6.5 VA |
| SE1.2M24-3.2/PT | 0…10 V | 6 / 3.2 mm | 24 V AC | 1.5 W / 2.5 VA |

### ACCESSORIES

| Article | Actuator | Description |
|---|---|---|
| ADV12 | SE1.2… | Adapter for valve with 2,7 mm stroke (to be ordered separately) |

## INTERNALLY THREADED 2- AND 3-WAY VALVES

Valves intended for on/off control of hot or cold water in heating or cooling systems. The valves can only be used together with FCA actuators and are available as both 2- and 3-way models.

FCV-220

FCV-320

| Technical data | |
|---|---|
| Application | Heating systems, cooling systems, fan-coil units, ventilation systems |
| Max. leakage | 0.0 % of the kvs value |
| Media | Hot water, cold water, glycol-mixed water (max. 50 % glycol) |
| Media temperature | 2…94 °C |
| Pressure rating | PN16 (240 psi) |
| Connection | Internal thread BSP according to ISO 228/1 |
| **Material** | |
| Body | Brass CW614N |
| Ball | EPDM |
| O-rings | EPDM |

### 2-WAY

| Article | Nominal diameter | Connection | Kvs | Max. diff. pressure | Actuator |
|---|---|---|---|---|---|
| FCV-215 | DN15 | G1/2” | 3.2 $m^3/h$ | 200 kPa (2 bar) | FCA-2 |
| FCV-220 | DN20 | G3/4” | 4.6 $m^3/h$ | 150 kPa (1,5 bar) | FCA-2 |
| FCV-225 | DN25 | G1” | 5.7 $m^3/h$ | 100 kPa (1 bar) | FCA-2 |
| FCV-232 | DN32 | G1 1/4” | 10 $m^3/h$ | 80 kPa (0,8 bar) | FCA-2 |

### 3-WAY

| Article | Nominal diameter | Connection | Kvs | Max. diff. pressure | Actuator |
|---|---|---|---|---|---|
| FCV-315 | DN15 | G1/2” | 3.2 $m^3/h$ | 150 kPa (1,5 bar) | FCA-3 |
| FCV-320 | DN20 | G3/4” | 4.6 $m^3/h$ | 100 kPa (1 bar) | FCA-3 |
| FCV-325 | DN25 | G1” | 5.7 $m^3/h$ | 100 kPa (1 bar) | FCA-3 |
| FCV-332 | DN32 | G1 1/4” | 8.4 $m^3/h$ | 80 kPa (0,8 bar) | FCA-3 |

# ACTUATORS FOR INTERNALLY THREADED 2- AND 3-WAY VALVES

Actuator intended for on/off control of hot or cold water in heating or cooling systems. The actuator has a synchronous motor and spring return mechanism. It is intended for use together with Regin's ZFCM valves.

FCA-2

FCA-3

| Technical data | |
|---|---|
| Supply voltage | 230 V AC, 50…60 Hz |
| Control signal | On/off |
| Power consumption | 6 VA |
| Opening time | Approx. 15 s |
| Closing time, spring | 4…5 s |
| Ambient temperature | 0…60 °C |
| Storage temperature | -20…+65 °C |
| Material | ABS |
| Dimensions | 91 x 68 x 65 mm |
| Protection class | IP44 |

| Article | Valve |
|---|---|
| FCA-3 | FCV-3 |
| FCA-2 | FCV-2 |

# 2-, 3-WAY AND 3-WAY (BYPASS) ZONE VALVES

Valves for control of heating and cooling in fan-coil or chilled beams applications. The valves are intended to be used together with the thermal SE1 actuators. They are available as 2- and 3-way versions, as well as bypass versions. The valves have linear flow characteristics.

| Technical data | |
|---|---|
| Pressure rating | PN16 |
| Connection | BSP externally threaded according to ISO 228/1 |
| Flow characteristics | Linear |
| Max. leakage | 0 % of the kvs value |
| Media | Hot water, cold water, glycol-mixed water (max. 40 % glycol) |
| Media temperature | 2…95 °C |
| Stroke | 2.5 mm |
| **Material** | |
| Body | Brass CW614N |
| Plug | PA + GF |
| Stem | PA + GF |
| Spring | Stainless steel |
| Packing box | PPO + GP |
| O-rings | FKM |

VFX214

VFX314

VFX337

## 2-WAY

| Article | Nominal diameter | Connection | Kvs, A-AB | Kvs, B-AB | Max. diff. pressure | Actuator |
|---|---|---|---|---|---|---|
| VFX210 | DN15 | G1/2” | 0.25 m³/h | - | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX211 | DN15 | G1/2” | 0.4 m³/h | - | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX212 | DN15 | G1/2” | 0.6 m³/h | - | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX213 | DN15 | G1/2” | 1.0 m³/h | - | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX214 | DN15 | G1/2” | 1.6 m³/h | - | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX235 | DN20 | G3/4” | 2.5 m³/h | - | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX237 | DN20 | G3/4” | 4.0 m³/h | - | 80 kPa (0,8 bar) | SE1TP / SE1M |
| VFX239 | DN20 | G3/4” | 6.0 m³/h | - | 80 kPa (0,8 bar) | SE1TP / SE1M |

VFX414

## 3-WAY

| Article | Nominal diameter | Connection | Kvs, A-AB | Kvs, B-AB | Max. diff. pressure | Actuator |
|---|---|---|---|---|---|---|
| VFX310 | DN15 | G1/2” | 0.25 m³/h | 0.25 m³/h | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX311 | DN15 | G1/2” | 0.4 m³/h | 0.4 m³/h | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX312 | DN15 | G1/2” | 0.6 m³/h | 0.6 m³/h | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX313 | DN15 | G1/2” | 1.0 m³/h | 0.8 m³/h | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX314 | DN15 | G1/2” | 1.6 m³/h | 1.0 m³/h | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX335 | DN20 | G3/4” | 2.5 m³/h | 1.6 m³/h | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX337 | DN20 | G3/4” | 4.0 m³/h | 2.5 m³/h | 80 kPa (0,8 bar) | SE1TP / SE1M |
| VFX339 | DN20 | G3/4” | 6.0 m³/h | 4.0 m³/h | 80 kPa (0,8 bar) | SE1TP / SE1M |

VFX437

VFX237

## 3-WAY WITH BYPASS

| Article | Nominal diameter | Connection | Kvs, A-AB | Kvs, B-AB | Max. diff. pressure | Actuator |
|---|---|---|---|---|---|---|
| VFX410 | DN15 | G1/2” | 0.25 m³/h | 0.25 m³/h | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX411 | DN15 | G1/2” | 0.4 m³/h | 0.4 m³/h | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX412 | DN15 | G1/2” | 0.6 m³/h | 0.6 m³/h | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX413 | DN15 | G1/2” | 1.0 m³/h | 0.8 m³/h | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX414 | DN15 | G1/2” | 1.6 m³/h | 1.0 m³/h | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX435 | DN20 | G3/4” | 2.5 m³/h | 1.6 m³/h | 250 kPa (2,5 bar) | SE1T / SE1M |
| VFX437 | DN20 | G3/4” | 4.0 m³/h | 2.5 m³/h | 80 kPa (0,8 bar) | SE1TP / SE1M |
| VFX439 | DN20 | G3/4” | 6.0 m³/h | 4.0 m³/h | 80 kPa (0,8 bar) | SE1TP / SE1M |

## ACCESSORIES

| Article | Description |
|---|---|
| VTP | Override control |
| ADVFX | Adapter for SE1C/VFX coupling up to Kvs 2.5 to allow the valve to be normally open on direct way |

VTP

ADVFX

*Articles available in multipack /M: VFX21.../M (140 pcs.); VFX31.../M (120 pcs.); VFX 41.../M (100 pcs.); VFX235/M (136 pcs.) VFX335/M (120 pcs.); VFX435/M (80 pcs.)*

## THERMAL ACTUATOR FOR VFX VALVES

Thermal actuator with position indicator for control of valves in heating or cooling systems. The actuator can be used to control radiator circuits, solar heating systems, heating or cooling coils, floor heating etc. To be combined with the VFX range of valves.

| Technical data | |
|---|---|
| Stroke | 2.5 mm |
| Ambient temperature | 0…50 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Storage temperature | -20…+70 °C |
| Storage humidity | < 95 % RH (non-condensing) |
| Closing/opening time | SE1T230, SE1TP230: 210 s / SE1T24, SE1TP24: 270 s |
| Peak current | 24 V AC: < 0.25 A / 230 V AC: < 0.70 A |
| Auxiliary switch | 250 V AC 3 A |
| Cable | PVC, section 2 x 0.50 mm², 2 m length |
| Connection | M30 x 1.5 metal ring |
| Material, casing | Matt polycarbonate, self extinguishing V0 - V1 according to UL94 |
| Weight | 200 g |
| Dimensions | Ø 40 x 61 mm |
| Protection class | IP40 (IP44 when vertically mounted) |
| Isolation class | II (SE1T230, SE1TP230)III (SE1T24,SE1TP24,SE1M24 and SE1MP24) |

SE1T230

SE1T230S

SE1M24

| Article | Force | Supply voltage | Control signal | Power consumption | Stroke time | Auxiliary switch |
|---|---|---|---|---|---|---|
| SE1T24 | 100 N | 24 V AC ± 10 %, 50/60 Hz | On/Off | 3.0 VA | 4.5 min | - |
| SE1T24S | 100 N | 24 V AC ± 10 %, 50/60 Hz | On/Off | 3.0 VA | 4.5 min | X |
| SE1T230 | 100 N | 230 V AC ± 10 %, 50/60 Hz | On/Off | 3.0 VA | 3.5 min | - |
| SE1TP24 | 140 N | 24 V AC ± 10 %, 50/60 Hz | On/Off | 3.0 VA | 4.5 min | - |
| SE1TP24S | 140 N | 24 V AC ± 10 %, 50/60 Hz | On/Off | 3.0 VA | 4.5 min | X |
| SE1TP230 | 140 N | 230 V AC ± 10 %, 50/60 Hz | On/Off | 3.0 VA | 3.5 min | X |
| SE1T230S | 100 N | 230 V AC ± 10 %, 50/60 Hz | On/Off | 3.0 VA | 3.5 min | X |
| SE1TP230S | 140 N | 230 V AC ± 10 %, 50/60 Hz | On/Off | 3.0 VA | 3.5 min | X |
| SE1MP24 | 140 N | 24 V AC ± 10 %, 50/60 Hz | 0...10 V DC | 3.5 VA | 3.5 min | - |
| SE1M24 | 100 N | 24 V AC ± 10 %, 50/60 Hz | 0...10 V DC | 3.5 VA | 4.5 min | - |

*Articles available in multipack /M: SE1T.../M - SE1M.../M (72 pz.)*

# THREADED GLOBE VALVES IN CAST IRON, STROKE 5.5 MM

VFZ valve bodies are used in HVAC systems to control fluid in heating, cooling, refrigeration, ventilation in civil or industrial plants.

VFZ valve bodies are motorized by SE4 series electric actuators.

VFZ210

VFZ325

| Technical data | |
|---|---|
| Pressure rating | PN16 (ISO7268 / EN1333) |
| Connection | BSP internally threaded |
| Flow characteristics | Linear |
| Max. leakage | Direct way A → AB perfect sealing<br>Indirect way B → AB 0.2 % Kvs |
| Media temperature | -10…+120 °C |
| Media | Water, water with glycol max. 50% |
| Rangeability | 50:1 |
| Stroke | 5.5 mm |
| **Material** | |
| Body | Cast-iron G25 |
| Plug | Brass OT58 |
| Stem | Stainless steel AISI 304 |
| Spring | Stainless steel AISI 304 |
| Packing box | Brass OT58 |
| O-rings | FKM |

## 2-WAY

| Article | Nominal diameter | Connection | Kvs | Max. diff. pressure |
|---|---|---|---|---|
| VFZ210 | DN15 | G 1/2” | 0.25 $m^3/h$ | 250 (1000) kPa / 2,5 (10) bar |
| VFZ211 | DN15 | G 1/2” | 0.4 $m^3/h$ | 250 (1000) kPa / 2,5 (10) bar |
| VFZ212 | DN15 | G 1/2” | 0.63 $m^3/h$ | 250 (1000) kPa / 2,5 (10) bar |
| VFZ213 | DN15 | G 1/2” | 1.0 $m^3/h$ | 250 (1000) kPa / 2,5 (10) bar |
| VFZ214 | DN15 | G 1/2” | 1.6 $m^3/h$ | 250 (1000) kPa / 2,5 (10) bar |
| VFZ215 | DN15 | G 1/2” | 2.5 $m^3/h$ | 250 (1000) kPa / 2,5 (10) bar |
| VFZ218 | DN20 | G 3/4” | 4.0 $m^3/h$ | 200 (500) kPa / 2 (5) bar |
| VFZ220 | DN20 | G 3/4” | 6.3 $m^3/h$ | 200 (500) kPa / 2 (5) bar |
| VFZ225 | DN25 | G 1” | 10.0 $m^3/h$ | 200 (250) kPa / 2 (2,5) bar |
| VFZ232 | DN32 | G 1 1/4” | 13.0 $m^3/h$ | 200 (250) kPa / 2 (2,5) bar |
| VFZ240 | DN40 | G 1 1/2” | 18.0 $m^3/h$ | 200 (200) kPa / 2 (2) bar |

## 3-WAY

| Article | Nominal diameter | Connection | Kvs | Max. diff. pressure |
|---|---|---|---|---|
| VFZ310 | DN15 | G 1/2” | 0.25 $m^3/h$ | 250 (1000) kPa / 2,5 (10) bar |
| VFZ311 | DN15 | G 1/2” | 0.4 $m^3/h$ | 250 (1000) kPa / 2,5 (10) bar |
| VFZ312 | DN15 | G 1/2” | 0.63 $m^3/h$ | 250 (1000) kPa / 2,5 (10) bar |
| VFZ313 | DN15 | G 1/2” | 1.0 $m^3/h$ | 250 (1000) kPa / 2,5 (10) bar |
| VFZ314 | DN15 | G 1/2” | 1.6 $m^3/h$ | 250 (1000) kPa / 2,5 (10) bar |
| VFZ315 | DN15 | G 1/2” | 2.5 $m^3/h$ | 250 (1000) kPa / 2,5 (10) bar |
| VFZ318 | DN20 | G 3/4” | 4.0 $m^3/h$ | 200 (500) kPa / 2 (5) bar |
| VFZ320 | DN20 | G 3/4” | 6.3 $m^3/h$ | 200 (500) kPa / 2 (5) bar |
| VFZ325 | DN25 | G 1” | 10.0 $m^3/h$ | 200 (250) kPa / 2 (2,5) bar |
| VFZ332 | DN32 | G 1 1/4” | 13.0 $m^3/h$ | 200 (250) kPa / 2 (2,5) bar |
| VFZ340 | DN 40 | G 1 1/2” | 18.0 $m^3/h$ | 200 (200) kPa / 2 (2) bar |

*Max. differential pressure: The values in brackets are the max differential pressure when the valve is fully closed. The servomotor can safely open and close the valve. The value without brackets represents the suggested max pressure drop (valve fully open).*

# VALVE ACTUATORS 400 N FOR VFZ VALVES

The electric actuator SE4 is suitable for driving the VFZ valve body series in HVAC systems.

The actuator is equipped with a torque limit device which powers off the motor when end stops are reached.

The actuator SE4M24 is self-adjusting. When it is powered-on, the stroke is automatically adapted to the valve, no calibration is required.

The actuator is fitted with manual override by a hexagonal key. An internal LED indicates the current state of the actuator: adjustment, control, end stop position, error condition.

SE4M24

| Technical data | |
|---|---|
| Ambient temperature | 0…50 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Storage temperature | -20…+70 °C Humidity: < 95 % RH |
| Closing/opening time | ~ 70 s |
| Cable | Plug-in type in PVC, section 3 x 0.50 mm², 1.5 m length |
| Connection | Metal ring 3/4" (on request M30 x 1.5) |
| Casing | Matt polycarbonate, self extinguishing V0 - V1 according to UL94 |
| Weight | 360 g |
| Dimensions | 90 x 70 x 104.5 mm |
| Protection class | IP54 |
| Isolation class | II (SE4F230)III(SE4M24,SE4F24) |

| Article | Supply voltage | Control signal | Power consumption |
|---|---|---|---|
| SE4F24 | 24 ± 10% V AC, 50/60 Hz | 2-, 3-point (floating) | 5.0 VA |
| SE4F230 | 110…240 ± 10% V AC, 50/60 Hz | 2-, 3-point (floating) | 7.0 VA |
| SE4M24 | 24 ± 10% V AC, 50/60 Hz | 0…10 V DC, 4…20 mA | 5.0 |

*On request available version with M30 x 1.5 ring connection instead of 3/4" (product code "SE4xxM30")*

# THREADED GLOBE VALVE IN CAST IRON, STROKE 16.5 MM

VFS valve bodies are used in HVAC systems to control fluids in heating, cooling, refrigeration, ventilation in civil and industrial plants. VFS valve bodies are motorized by SE6 series electric actuators.

VFS232

VFS325

| Technical data | |
|---|---|
| Pressure rating | PN16 (ISO7268 / EN1333) |
| Connection | BSP internally threaded |
| Flow characteristics | Direct way A → AB equal-percentage<br>Indirect way B → AB linear |
| Max. leakage | Direct way A → AB perfect sealing<br>Indirect way B → AB 0.2 % KVs |
| Media temperature | -10…+130 °C |
| Media | Water, water with max. 50% glycol saturated steam max. 2.5 ata |
| Rangeability | 50:1 |
| Stroke | 16.5 mm |
| **Material** | |
| Body | Cast-iron G25 |
| Plug | Brass OT58 |
| Stem | Stainless steel AISI 304 |
| Spring | Stainless steel AISI 304 |
| Packing box | Brass OT58 |
| O-rings | FKM |

## 2-WAY

| Article | Nominal diameter | Connection | Kvs | Max. diff. pressure |
|---|---|---|---|---|
| VFS215 | DN15 | G 1/2” | 2.5 $m^3/h$ | 220 (1100) kPa / 2,2 (11) bar |
| VFS218 | DN20 | G 3/4” | 4.0 $m^3/h$ | 220 (1100) kPa / 2,2 (11) bar |
| VFS220 | DN20 | G 3/4” | 6.3 $m^3/h$ | 220 (1100) kPa / 2,2 (11) bar |
| VFS225 | DN25 | G 1” | 10.0 $m^3/h$ | 220 (700) kPa / 2,2 (7) bar |
| VFS232 | DN32 | G 1 1/4” | 16.0 $m^3/h$ | 220 (440) kPa / 2,2 (4,4) bar |
| VFS240 | DN40 | G 1 1/2” | 25.0 $m^3/h$ | 220 (270) kPa / 2,2 (2,7) bar |
| VFS250 | DN50 | G 2” | 40.0 $m^3/h$ | 220 (220) kPa / 2,2 (2,2) bar |
| VFS252 | DN50 | G 2” | 30.0 $m^3/h$ | 220 (220) kPa / 2,2 (2,2) bar |

## 3-WAY

| Article | Nominal diameter | Connection | Kvs | Max. diff. pressure |
|---|---|---|---|---|
| VFS315 | DN15 | G 1/2” | 2.5 $m^3/h$ | 220 (1100) kPa / 2,2 (11) bar |
| VFS318 | DN20 | G 3/4” | 4.0 $m^3/h$ | 220 (1100) kPa / 2,2 (11) bar |
| VFS320 | DN20 | G 3/4” | 6.3 $m^3/h$ | 220 (1100) kPa / 2,2 (11) bar |
| VFS325 | DN25 | G 1” | 10.0 $m^3/h$ | 220 (700) kPa / 2,2 (7) bar |
| VFS332 | DN32 | G 1 1/4” | 16.0 $m^3/h$ | 220 (440) kPa / 2,2 (4,4) bar |
| VFS340 | DN40 | G 1 1/2” | 25.0 $m^3/h$ | 220 (270) kPa / 2,2 (2,7) bar |
| VFS350 | DN50 | G 2” | 40.0 $m^3/h$ | 220 (220) kPa / 2,2 (2,2) bar |
| VFS352 | DN50 | G 2” | 30.0 $m^3/h$ | 220 (220) kPa / 2,2 (2,2) bar |

*Max. differential pressure: The values in brackets are the max differential pressure when the valve is fully closed. The servomotor can safely open and close the valve. The value without brackets represents the suggested max pressure drop (valve fully open).*

# FLANGED GLOBE VALVE – STROKE 16.5 MM

VFSF valve bodies are used in HVAC systems to control fluids in heating, cooling, refrigeration, ventilation in civil and industrial plants. VFSF valve bodies are motorized by SE6 series electric actuators.

VFSF240

VFSF325

| Technical data | |
|---|---|
| Pressure rating | PN16 (ISO7268 / EN1333) |
| Connection | Flanged |
| Flow characteristics | VFSF2 - VFSF3: direct way A → AB equal-percentage<br>VFSF3: indirect way B → AB linear |
| Max. leakage | Direct way A → AB perfect fitAngle way B → AB 0,2 % of KVs |
| Media temperature | -10…+130 °C |
| Media | Water, water with glycol max 50% saturated steam max 2,5 ata |
| Rangeability | 50:1 |
| Stroke | 16.5 mm (max. 18.3) |
| **Material** | |
| Body | Cast-iron G25 |
| Plug | Brass OT58 |
| Stem | Stainless steel AISI 304 |
| Spring | Stainless steel AISI 304 |
| Packing box | Brass OT58 |
| O-rings | FKM |

## 2-WAY

| Article | Nominal diameter | Connection | Kvs | Max. diff. pressure |
|---|---|---|---|---|
| VFSF215 | DN15 | G 1/2” | 2.5 $m^3/h$ | 220 (1100) kPa / 2,2 (11) bar |
| VFSF220 | DN20 | G 3/4” | 6.3 $m^3/h$ | 220 (1100) kPa / 2,2 (11) bar |
| VFSF225 | DN25 | G 1” | 10.0 $m^3/h$ | 220 (700) kPa / 2,2 (7) bar |
| VFSF232 | DN32 | G 1 1/4” | 16.0 $m^3/h$ | 220 (440) kPa / 2,2 (4,4) bar |
| VFSF240 | DN40 | G 1 1/2” | 25.0 $m^3/h$ | 220 (270) kPa / 2,2 (2,7) bar |
| VFSF250 | DN50 | G 2” | 40.0 $m^3/h$ | 220 (220) kPa / 2,2 (2,2) bar |

## 3-WAY

| Article | Nominal diameter | Connection | Kvs | Max. diff. pressure |
|---|---|---|---|---|
| VFSF315 | DN15 | G 1/2” | 2.5 $m^3/h$ | 220 (1100) kPa / 2,2 (11) bar |
| VFSF320 | DN20 | G 3/4” | 6.3 $m^3/h$ | 220 (1100) kPa / 2,2 (11) bar |
| VFSF325 | DN25 | G 1” | 10.0 $m^3/h$ | 220 (700) kPa / 2,2 (7) bar |
| VFSF332 | DN32 | G 1 1/4” | 16.0 $m^3/h$ | 220 (440) kPa / 2,2 (4,4) bar |
| VFSF340 | DN40 | G 1 1/2” | 25.0 $m^3/h$ | 220 (270) kPa / 2,2 (2,7) bar |
| VFSF350 | DN50 | G 2” | 40.0 $m^3/h$ | 220 (220) kPa / 2,2 (2,2) bar |

*Max. differential pressure: The values in brackets are the max differential pressure when the valve is fully closed. The servomotor can safely open and close the valve. The value without brackets represents the suggested max pressure drop (valve fully open).*

# VALVE ACTUATORS 600 N

Electric actuator are suitable for driving VFS / VFSF valves.

The actuator is equipped with manual override by a hexagonal key and with a torque limit device to power off the motor when end stops are reached. The SE6M24 has an additional feedback signal output.

An internal LED indicates the current state of the actuator: adjustment, control, end stop position, error condition.

SE6F230

| Technical data | |
|---|---|
| Ambient temperature | 0…50 °C |
| Ambient humidity | 10...90 % RH (non-condensing) |
| Storage temperature | -20…+70 °C Humidity: < 95 % RH |
| Closing/opening time | ~ 80 s |
| Auxiliary switch | 3(1) A 230 V AC |
| Connection | Cable section 1 mm²length 1 m |
| Material, casing | Matt polycarbonate |
| Material, casing base | PA6 V0 |
| Bracket | PA6 30 GF V0, max. working temp.: -30…+140 °CTraction breaking load: 1500 kg/cm2 |
| Weight | 470 g |
| Dimensions | 112 x 82 x 148 mm |
| Protection class | IP54 |
| Isolation class | II (SE6F230)III (SE6M24, SE6F24) |

| Article | Stroke | Supply voltage | Control signal | Power consumption | Auxiliary switch |
|---|---|---|---|---|---|
| SE6F24 | 16.5 mm | 24 ± 10% V AC, 50/60 Hz | 2-, 3-point | 5.0 VA | - |
| SE6F24S | 16.5 mm | 24 ± 10% V AC, 50/60 Hz | 2-, 3-point | 5.0 VA | X |
| SE6F230 | 16.5 mm | 110…240 ± 10% V AC, 50/60 Hz | 2-, 3-point | 8.0 VA | - |
| SE6F230S | 16.5 mm | 110…240 ± 10% V AC, 50/60 Hz | 2-, 3-point | 8.0 VA | X |
| SE6M24 | 16.5 mm | 24 ± 10% V AC, 50/60 Hz | 0…10 V DC / 4…20 mA | 6.0 VA | - |

## ACCESSORIES

| Article | Description |
|---|---|
| ADV1 | Adapter for 2S and 3S valves series by Industrietechnik (grey body, obsolete models) |
| ADV2 | Adapter for 2S- and 3S- valves series by Industrietechnik (black body, obsolete models) |
| ADV3 | Adapter for VMB / VSB valves of the Controlli series |

ADV1

# INTERNALLY THREADED 2-WAY VALVES

The valves are designed for control of hot, cold or glycol-mixed water in heating and ventilation systems. They are pressure balanced (from DN20-50, not DN15) and can therefore handle high differential pressure with low force. The valves are intended to be used together with Industrietchnik's SE5... actuators. They should not be used in domestic water systems.

VFG2

| Technical data | |
|---|---|
| Pressure rating | PN16 |
| Connection | BSP internally threaded according to ISO 228/1 |
| Flow characteristics | Equal percentage |
| Max. leakage | 0.0 % of the kvs value (PTFE gasket, carbon-filled 25 %, no leakage) |
| Max. diff. pressure | 1600 kPa (16 bar) |
| Media | Hot water, cold water, glycol-mixed water (max. 50 % glycol) |
| Media temperature | -5…+140 °C |
| Rangeability | 100:1 |
| Stroke | 20 mm |
| **Material** | |
| Body | Brass CW614N |
| Seat | Brass CW614N |
| Plug | Stainless steel 1.4301 |
| Stem | Stainless steel 1.4305 |
| Seat packing | PTFE with 25 % carbon |
| O-rings | EPDM |

## MODELS

| Article | Nominal diameter | Connection | Kvs | Actuator |
|---|---|---|---|---|
| VFG215-0,6 | DN15 | G½" | 0.6 $m^3/h$ | SE5 |
| VFG215-1,0 | DN15 | G½" | 1.0 $m^3/h$ | SE5 |
| VFG215-1,6 | DN15 | G½" | 1.6 $m^3/h$ | SE5 |
| VFG215-2,5 | DN15 | G½" | 2.5 $m^3/h$ | SE5 |
| VFG220-1,6 | DN20 | G¾" | 1.6 $m^3/h$ | SE5 |
| VFG220-2,7 | DN20 | G¾" | 2.7 $m^3/h$ | SE5 |
| VFG220-3,9 | DN20 | G¾" | 3.9 $m^3/h$ | SE5 |
| VFG225-6,3 | DN25 | G1" | 6.3 $m^3/h$ | SE5 |
| VFG225-10 | DN25 | G1" | 10 $m^3/h$ | SE5 |
| VFG232-10 | DN32 | G1¼" | 10 $m^3/h$ | SE5 |
| VFG232-16 | DN32 | G1¼" | 16 $m^3/h$ | SE5 |
| VFG240-16 | DN40 | G1½" | 16 $m^3/h$ | SE5 |
| VFG240-27 | DN40 | G1½" | 27 $m^3/h$ | SE5 |
| VFG250-27 | DN50 | G2" | 27 $m^3/h$ | SE5 |
| VFG250-39 | DN50 | G2" | 39 $m^3/h$ | SE5 |

## ACCESSORIES

| Article | Description |
|---|---|
| IS02420001 | Spare parts kit, O-ring kit for BTV valves from DN15 to DN25 |
| IS6321457301 | Spare parts kit, packing box |

IS02420001

IS6321457301

# INTERNALLY THREADED 3-WAY VALVES

Valves designed for control of hot, cold or glycol-mixed water in heating and ventilation systems. They also function very well in domestic water systems. The valves are intended for use together with SE5... actuators. Valves with DN32-50 may also be used with SE10..., if a larger actuating force is required.

VFG3

| Technical data | |
|---|---|
| Pressure rating | PN16 |
| Connection | BSP internally threaded according to ISO 228/1 |
| Flow characteristics | Equal percentage |
| Max. leakage | 0.1 % of Kvs |
| Media | Hot water, cold water, glycol-mixed water (max. 50 % glycol) |
| Media temperature | -5…+185 °C |
| Rangeability | 100:1 |
| Stroke | 20 mm |
| **Material** | |
| Body | Gunmetal CC491K (RG5) |
| Seat | Gunmetal CC491K (RG5) |
| Plug | Gunmetal CC491K (RG5) |
| Stem | Stainless steel 1.4305 |
| Packing box | Dezincification resistant brass CW 602N, self-adjusting teflon |
| O-rings | Viton |

## 3-WAY

| Article | Nominal diameter | Connection | Max. diff. pressure | Kvs | Actuator |
|---|---|---|---|---|---|
| VFG315-0,63 | DN15 | G½" | 1600 kPa / 16 bar | 0.63 $m^3/h$ | SE5 |
| VFG315-1,0 | DN15 | G½" | 1600 kPa / 16 bar | 1.0 $m^3/h$ | SE5 |
| VFG315-1,6 | DN15 | G½" | 1600 kPa / 16 bar | 1.6 $m^3/h$ | SE5 |
| VFG315-2,1 | DN15 | G½" | 1600 kPa / 16 bar | 2.1 $m^3/h$ | SE5 |
| VFG315-2,7 | DN15 | G½" | 1600 kPa / 16 bar | 2.7 $m^3/h$ | SE5 |
| VFG320-4,2 | DN20 | G¾" | 1600 kPa / 16 bar | 4.2 $m^3/h$ | SE5 |
| VFG320-5,6 | DN20 | G¾" | 1600 kPa / 16 bar | 5.6 $m^3/h$ | SE5 |
| VFG325-10 | DN25 | G1" | 1000 kPa / 10 bar | 10 $m^3/h$ | SE5 |
| VFG332-16 | DN32 | G1¼" | 600 kPa / 6 bar | 16 $m^3/h$ | SE5, SE10 |
| VFG340-27 | DN40 | G1½" | 400 kPa / 4 bar | 27 $m^3/h$ | SE5, SE10 |
| VFG350-39 | DN50 | G2" | 250 kPa / 2,5 bar | 39 $m^3/h$ | SE5, SE10 |

## ACCESSORIES

| Article | Description |
|---|---|
| IS0603080300 | Spare parts kit, packing box |

IS0603080300

# EXTERNALLY THREADED 2-WAY VALVE

2-way valves designed for control of cold, hot or glycol-mixed water, for use in domestic water systems or district heating within the temperature range -5°C...+150°C. They are pressure balanced (from DN20-50, not DN15) and can therefore handle high differential pressure with low force. The valves are intended to be used together with SE5... actuators.

VFD2

IS0603080300

| Technical data | |
|---|---|
| Pressure rating | PN16 |
| Connection | BSP externally threaded according to ISO 228/1; supplied with threaded connections |
| Flow characteristics | Equal percentage |
| Max. leakage | 0.0 % of the Kvs value (PTFE gasket, carbon-filled 25 %, no leakage) |
| Media | Hot water, cold water, glycol-mixed water (max. 50 % glycol) |
| Media temperature | -5…+150 °C |
| Rangeability | 100:1 |
| Stroke | 20 mm |
| Max. diff. pressure | 1600 kPa (16 bar) |
| **Material** | |
| Body | Gunmetal CC491K (RG5) |
| Seat | Stainless steel 1.4301 |
| Plug | Stainless steel 1.4305 |
| Stem | Stainless steel 1.4305 |
| Seat packing | PTFE with 25 % carbon |
| Packing box | Dezincification resistant brass CW 602N, self-adjusting teflon |
| O-rings | Viton |
| **Material, connections** | |
| Nut | Malleable cast iron, galvanized |
| Nipple | Dezincification resistant brass CW 602N |
| Fitting seal | Novatec Premium 2, Nitrile bonded aramid fibre with graphite |

## MODELS

| Article | Nominal diameter | Kvs | Actuator |
|---|---|---|---|
| VFD215-0,63 | DN15 | 0.63 $m^3/h$ | SE5 |
| VFD215-1,25 | DN15 | 1.25 $m^3/h$ | SE5 |
| VFD215-1,6 | DN15 | 1.6 $m^3/h$ | SE5 |
| VFD215-2,5 | DN15 | 2.5 $m^3/h$ | SE5 |
| VFD215-4,0 | DN15 | 4 $m^3/h$ | SE5 |
| VFD220-5,0 | DN20 | 5 $m^3/h$ | SE5 |
| VFD220-6,3 | DN20 | 6.3 $m^3/h$ | SE5 |
| VFD225-8,0 | DN25 | 8 $m^3/h$ | SE5 |
| VFD225-10 | DN25 | 10 $m^3/h$ | SE5 |
| VFD232-12,5 | DN32 | 12.5 $m^3/h$ | SE5 |
| VFD232-16 | DN32 | 16 $m^3/h$ | SE5 |
| VFD240-20 | DN40 | 20 $m^3/h$ | SE5 |
| VFD240-25 | DN40 | 25 $m^3/h$ | SE5 |
| VFD250-31,5 | DN50 | 31.5 $m^3/h$ | SE5 |
| VFD250-40 | DN50 | 40 $m^3/h$ | SE5 |

# EXTERNALLY THREADED CONTROL VALVE, MANUALLY CONVERTIBLE TO EITHER 2-WAY OR 3-WAY (SELECTABLE)

Valves intended for control of cold, hot and glycol-mixed water in heating, ventilation and domestic water systems. The valves are intended to be used together with Industrietechnik's SE5... actuators. Valves with DN32-50 may also be used with SE10... if a larger actuating force is required.

VFD3

| Technical data | |
|---|---|
| Pressure rating | PN16 |
| Connection | BSP externally threaded according to ISO 228/1; supplied with threaded connections |
| Flow characteristics | Equal percentage |
| Max. leakage | 0.1 % of the kvs value |
| Media | Hot water, cold water, glycol-mixed water (max. 50 % glycol) |
| Media temperature | -5…+185 °C |
| Rangeability | 100:1 |
| Stroke | 20 mm |
| **Material** | |
| Body | Gunmetal CC491K (RG5) |
| Seat | Gunmetal CC491K (RG5) |
| Plug | Gunmetal CC491K (RG5) |
| Stem | Stainless steel 1.4305 |
| Packing box | Dezincification resistant brass CW 602N, self-adjusting teflon |
| O-rings | Viton |
| **Material, connections** | |
| Nut | Malleable cast iron, galvanized |
| Nipple | Dezincification resistant brass CW 602N |
| Fitting seal | Novatec Premium 2, Nitrile bonded aramid fibre with graphite |
| Cover lid | Dezincification resistant brass CW 602N |

## MODELS

| Article | Nominal diameter | Max. diff. pressure | Kvs | Actuator |
|---|---|---|---|---|
| VFD315-0,63 | DN15 | 1600 kPa / 16 bar | 0.63 $m^3/h$ | SE5 |
| VFD315-1,25 | DN15 | 1600 kPa / 16 bar | 1.25 $m^3/h$ | SE5 |
| VFD315-1,6 | DN15 | 1600 kPa / 16 bar | 1.6 $m^3/h$ | SE5 |
| VFD315-2,5 | DN15 | 1600 kPa / 16 bar | 2.5 $m^3/h$ | SE5 |
| VFD315-4,0 | DN15 | 1600 kPa / 16 bar | 4 $m^3/h$ | SE5 |
| VFD320-5,0 | DN20 | 1600 kPa / 16 bar | 5 $m^3/h$ | SE5 |
| VFD320-6,3 | DN20 | 1600 kPa / 16 bar | 6.3 $m^3/h$ | SE5 |
| VFD325-8,0 | DN25 | 1000 kPa / 10 bar | 8 $m^3/h$ | SE5 |
| VFD325-10 | DN25 | 1000 kPa / 10 bar | 10 $m^3/h$ | SE5 |
| VFD332-12,5 | DN32 | 600 kPa / 6 bar | 12.5 $m^3/h$ | SE5 |
| VFD332-16 | DN32 | 600 kPa / 6 bar | 16 $m^3/h$ | SE5, SE10 |
| VFD340-20 | DN40 | 400 kPa / 4 bar | 20 $m^3/h$ | SE5, SE10 |
| VFD340-25 | DN40 | 400 kPa / 4 bar | 25 $m^3/h$ | SE5, SE10 |
| VFD350-31,5 | DN50 | 250 kPa / 2,5 bar | 31.5 $m^3/h$ | SE5, SE10 |
| VFD350-40 | DN50 | 250 kPa / 2,5 bar | 40 $m^3/h$ | SE5, SE10 |

## ACCESSORIES

| Article | Description |
|---|---|
| IS0603080300 | Spare parts kit, packing box |

IS0603080300

# 2- AND 3-WAY DIN-STANDARD FLANGED VALVE , DIN

Control valves for use in heating, cooling and ventilation systems. They are intended to be used together with SE actuators. The valves have DIN-standard lengths.

VFFG2

VFFG3

| Technical data | |
|---|---|
| Pressure rating | PN16 |
| Connection | Flanged according to EN 1092-2 |
| Flow characteristics | A - AB = equal percentage, B - AB = linear |
| Max. leakage | 0 % of Kvs |
| Media | Hot water, cold water, glycol-mixed water (max. 50 % glycol) |
| Media temperature | -5…+120 °C |
| Rangeability | 100:1 (DN50…200), > 50:1 (DN25…40) |
| Max. diff. pressure | If a smaller actuator than the suggested one is used, the max. differential pressure may be different. More information is available in the product sheet. |
| **Material** | |
| Body | Cast iron Grade 250 |
| Plug | Gunmetal 1400 LG2 (DN50…200), Brass CW614N (DN25…40) |
| Seat | Gunmetal 1400 LG2 (DN50…200), Cast iron Grade 250 (DN25…40) |
| Stem | Stainless steel 1.4305 |
| Packing box | Brass CW614N |
| Bonnet | Brass CW614N |
| O-rings | EPDM |
| Packing | Aramid reinforced rubber |

## 2-WAY VALVES

| Article | Kvs | Nominal diameter | Max. diff. pressure | Actuator |
|---|---|---|---|---|
| VFFG225-6,3 | 6.3 $m^3/h$ | DN25 | 400 kPa / 4 bar | SE5, SE10 |
| VFFG225-10 | 10 $m^3/h$ | DN25 | 400 kPa / 4 bar | SE5, SE10 |
| VFFG232-10 | 10 $m^3/h$ | DN32 | 350 kPa / 3,5 bar | SE5, SE10 |
| VFFG232-16 | 16 $m^3/h$ | DN32 | 350 kPa / 3,5 bar | SE5, SE10 |
| VFFG240-16 | 16 $m^3/h$ | DN40 | 300 kPa / 3 bar | SE5, SE10 |
| VFFG240-25 | 25 $m^3/h$ | DN40 | 300 kPa / 3 bar | SE5, SE10 |
| VFFG250-31,5 | 31.5 $m^3/h$ | DN50 | 450 kPa / 4,5 bar | SE18 |
| VFFG250-40 | 40 $m^3/h$ | DN50 | 450 kPa / 4,5 bar | SE18 |
| VFFG265-50 | 50 $m^3/h$ | DN65 | 350 kPa / 3,5 bar | SE18 |
| VFFG265-63 | 63 $m^3/h$ | DN65 | 350 kPa / 3,5 bar | SE18 |
| VFFG280-80 | 80 $m^3/h$ | DN80 | 300 kPa / 3 bar | SE18 |
| VFFG280-100 | 100 $m^3/h$ | DN80 | 300 kPa / 3 bar | SE18 |
| VFFG2100-125 | 125 $m^3/h$ | DN100 | 200 kPa / 2 bar | SE18 |
| VFFG2100-160 | 160 $m^3/h$ | DN100 | 200 kPa / 2 bar | SE18 |
| VFFG2125-215 | 215 $m^3/h$ | DN125 | 120 kPa / 1,2 bar | SE25 |
| VFFG2150-310 | 310 $m^3/h$ | DN150 | 100 kPa / 1 bar | SE25 |
| VFFG2200-550 | 550 $m^3/h$ | DN200 | 200 kPa / 2 bar | SE25 |

### 3-WAY VALVES

| Article | Kvs | Nominal diameter | Max. diff. pressure | Actuator |
|---|---|---|---|---|
| VFFG325-6,3 | 6.3 m³/h | DN25 | 400 kPa / 4 bar | SE5, SE10 |
| VFFG325-10 | 10 m³/h | DN25 | 400 kPa / 4 bar | SE5, SE10 |
| VFFG332-10 | 10 m³/h | DN32 | 350 kPa / 3,5 bar | SE5, SE10 |
| VFFG332-16 | 16 m³/h | DN32 | 350 kPa / 3,5 bar | SE5, SE10 |
| VFFG340-16 | 16 m³/h | DN40 | 300 kPa / 3 bar | SE5, SE10 |
| VFFG340-25 | 25 m³/h | DN40 | 300 kPa / 3 bar | SE5, SE10 |
| VFFG350-31,5 | 31.5 m³/h | DN50 | 450 kPa / 4,5 bar | SE18 |
| VFFG350-40 | 40 m³/h | DN50 | 450 kPa / 4,5 bar | SE18 |
| VFFG365-50 | 50 m³/h | DN65 | 350 kPa / 3,5 bar | SE18 |
| VFFG365-63 | 63 m³/h | DN65 | 350 kPa / 3,5 bar | SE18 |
| VFFG380-80 | 80 m³/h | DN80 | 300 kPa / 3 bar | SE18 |
| VFFG380-100 | 100 m³/h | DN80 | 300 kPa / 3 bar | SE18 |
| VFFG3100-125 | 125 m³/h | DN100 | 200 kPa / 2 bar | SE18 |
| VFFG3100-160 | 160 m³/h | DN100 | 200 kPa / 2 bar | SE18 |
| VFFG3125-215 | 215 m³/h | DN125 | 120 kPa / 1,2 bar | SE25 |
| VFFG3150-310 | 310 m³/h | DN150 | 100 kPa / 1 bar | SE25 |
| VFFG3200-550 | 550 m³/h | DN200 | 70 kPa / 0,7 bar | SE25 |

## 2- AND 3-WAY DIN-STANDARD FLANGED VALVE

*Available spring 2017*

Control valves intended for use in heating, cooling and ventilation systems. They are intended to be used together with the SExx actuators. The valves have DIN-standard dimensions.

| Technical data | |
|---|---|
| Pressure rating | PN16 |
| Connection | Flanged according to EN 1092-2 |
| Flow characteristics | A → AB: 0-30 % open = linear, 30 - 100 % open = equal percentageB → AB: linear |
| Max. leakage | A - AB: DN65…DN80 = max 0.1 % of the kvs value, DN100…DN150 = max 0.2 % of the kvs valueB - AB: Max 2 % of the kvs value |
| Media | Hot water, cold water, glycol-mixed water (max. 50 % glycol) |
| Media temperature | -5…+120 °C |
| Rangeability | 100:1 |
| **Material** | |
| Body | Cast iron Grade 200 |
| Seat | Cast iron Grade 200 |
| Plug | Stainless steel 1.4301 |
| Stem | Stainless steel 1.4301 |
| Packing box | Brass CW 617N |
| Bonnet | Cast iron Grade 200 |
| O-rings | EPDM |
| Packing | Aramid reinforced rubber |

VFL2

VFL3

### 3-WAY VALVES

| Article | Nominal diameter | Kvs | Stroke | Actuator |
|---|---|---|---|---|
| VFL265-52 | DN65 | 52 m³/h | 20 mm | SE18, SE25 |
| VFL80-79 | DN80 | 79 m³/h | 20 mm | SE18, SE25 |
| VFL2100-124 | DN100 | 124 m³/h | 40 mm | SE18, SE25 |
| VFL2125-200 | DN125 | 200 m³/h | 40 mm | SE18, SE25 |
| VFL2150-300 | DN150 | 300 m³/h | 40 mm | SE18, SE25 |
| VFL365-52 | DN65 | 52 m³/h | 20 mm | SE18, SE25 |
| VFL380-79 | DN80 | 79 m³/h | 20 mm | SE18, SE25 |
| VFL3100-124 | DN100 | 124 m³/h | 40 mm | SE18, SE25 |
| VFL3125-200 | DN125 | 200 m³/h | 40 mm | SE18, SE25 |
| VFL3150-300 | DN150 | 300 m³/h | 40 mm | SE18, SE25 |

# FLANGED 2-WAY DIN-STANDARD VALVE FOR DISTRICT HEATING

Pressure balanced 2-way valve intended for control of hot, cold or glycol-mixed water, ideal for district heating within the temperature range -5...+185°C. Intended for use with the SE5.../SE10.../SE18.../SE25... actuators.

VFDH

| Technical data | |
|---|---|
| Pressure rating | PN16 |
| Connection | Flanges according to EN 1092-2 |
| Flow characteristics | Equal percentage |
| Max. leakage | 0.0 % of the kvs value (PTFE gasket, carbon-filled 25 %, no leakage) / 0.05 % of kvs for NTVS…-…M models with metal packing |
| Media | Hot water, cold water, glycol-mixed water (max. 50 % glycol) |
| Media temperature | -5…+185 °C |
| Rangeability | 100:1 |
| Max. diff. pressure | 1600 kPa (16 bar) |
| **Material** | |
| Body | Nodular cast iron (GJS) EN-JS1050 |
| Seat | Stainless steel 1.4301 or gunmetal CC491K (RG5) |
| Plug | Stainless steel 1.4305 (DN15…DN100) or gunmetal CC491K (RG5) (DN125…DN150) |
| Stem | Stainless steel 1.4305 |
| Lining | Stainless steel 1.4301 |
| Seat packing, soft seal | PTFE with 25 % carbon |
| Seat packing, metal seal | Stainless steel 1.4057 |
| Packing box | Dezincification resistant brass CW 602N, self-adjusting teflon |
| O-rings | Viton |

## MODELS

| Article | Nominal diameter | Kvs | Stroke | Actuator |
|---|---|---|---|---|
| VFDH15-1,6 | DN15 | 1.6 $m^3/h$ | 20 mm | SE5 |
| VFDH15-2,7 | DN15 | 2.7 $m^3/h$ | 20 mm | SE5 |
| VFDH20-6,3 | DN20 | 6.3 $m^3/h$ | 20 mm | SE5 |
| VFDH25-10 | DN25 | 10 $m^3/h$ | 20 mm | SE5 |
| VFDH32-16 | DN32 | 16 $m^3/h$ | 20 mm | SE5 |
| VFDH40-27 | DN40 | 27 $m^3/h$ | 20 mm | SE5 |
| VFDH50-39 | DN50 | 39 $m^3/h$ | 20 mm | SE5 |
| VFDH65-63 | DN65 | 63 $m^3/h$ | 20 mm | SE10 |
| VFDH80-100 | DN80 | 100 $m^3/h$ | 20 mm | SE10 |
| VFDH100-160 | DN100 | 160 $m^3/h$ | 38 mm | SE18 |
| VFDH125-215 | DN125 | 215 $m^3/h$ | 40 mm | SE25 |
| VFDH150-310 | DN150 | 310 $m^3/h$ | 40 mm | SE25 |

## ACCESSORIES

| Article | Description |
|---|---|
| IS0603080300 | Spare parts kit, packing box |

IS0603080300

## VALVE ACTUATOR, 24 V SUPPLY VOLTAGE AND 3-POSITION CONTROL

Valve actuator for control of Industrietechnik's range of valves. Available in models with actuator force of 500, 1000, 1800 or 2500 N. The actuators can be operated manually with the manual over-ride mechanism on the lid.

SE5

SE10-SE18-SE25

| Technical data | |
|---|---|
| Supply voltage | 24 V AC |
| Control signal | 3-point |
| Stroke time | 3 s/mm |
| Ambient temperature | 0...50 °C |
| Storage temperature | -40...80 °C |
| Ambient humidity | 10...90 % RH |
| Protection class | IP54 |

### MODELS

| Article | Max. power consumption | Force | Stroke |
|---|---|---|---|
| SE5F24 | 4.5 VA | 500 N | 10…30 mm |
| SE10F24 | 8 VA | 1000 N | 10…30 mm |
| SE18F24 | 8 VA | 1800 N | 10…52 mm |
| SE25F24 | 12 VA | 2500 N | 10…52 mm |

## VALVE ACTUATOR, 24 V SUPPLY VOLTAGE AND 0...10 V DC CONTROL

Valve actuator with automatic stroke adjustment for control of Industrietechnik's range of valves. Available in models with actuator force of 500, 1000, 1800 or 2500 N. The actuators can be operated manually with the manual override mechanism on the lid.

SE5

SE10-SE18-SE25

| Technical data | |
|---|---|
| Supply voltage | 24 V AC/DC |
| Control signal | 0...10 V DC or 2...10 V DC |
| Ambient temperature | 0…50 °C |
| Storage temperature | -40...80 °C |
| Ambient humidity | 10...90 % RH |
| Protection class | IP54 |

### MODELS

| Article | Max. power consumption | Force | Stroke | Stroke time |
|---|---|---|---|---|
| SE5M24 | 4.5 VA | 500 N | 10…30 mm | 1.5 s/mm |
| SE10M24 | 8 VA | 1000 N | 10…30 mm | 3 s/mm |
| SE18M24 | 8 VA | 1800 N | 10…52 mm | 3 s/mm |
| SE25M24 | 12 VA | 2500 N | 10…52 mm | 3 s/mm |

## VALVE ACTUATOR, 230 V SUPPLY VOLTAGE AND 3-POSITION CONTROL

Valve actuator for control of Industrietechnik's range of valves. Available in models with actuator force of 500, 1000, 1800 or 2500 N. The actuators can be operated manually with the manual override mechanism on the lid.

SE5

SE10-SE18-SE25

| Technical data | |
|---|---|
| Supply voltage | 230 V AC ±15 %, 50 Hz |
| Control signal | 3-point |
| Power consumption | 12 VA |
| Stroke time | 3 s/mm |
| Ambient temperature | 0...50 °C |
| Storage temperature | -40...+80 °C |
| Ambient humidity | 10...90 % RH |
| Protection class | IP54 |

### MODELS

| Article | Force | Stroke | Max. power consumption |
|---|---|---|---|
| SE5F230 | 500 N | 10…30 mm | 4.5 VA |
| SE10F230 | 1000 N | 10…30 mm | 6 VA |
| SE18F230 | 1800 N | 10…52 mm | 8 VA |
| SE25F230 | 2500 N | 10…52 mm | 12 VA |

## BUTTERFLY VALVES

The VF series of butterfly valves are designed for use in LPW (low pressure water) heating and air conditioning systems.

VF65

| Technical data | |
|---|---|
| Pressure rating | PN16 |
| Media temperature | -15…+90 °C |

| Article | Nominal diameter | Kvs | Max. diff. pressure | Actuator |
|---|---|---|---|---|
| VF32 | DN32 | 40 $m^3/h$ | 1000 kPa / 10 bar | DAL... / DML24 |
| VF40 | DN40 | 50 $m^3/h$ | 1000 kPa / 10 bar | DAL... / DML24 |
| VF50 | DN50 | 99 $m^3/h$ | 800 kPa / 8 bar | DAL... / DML24 |
| VF65 | DN65 | 170 $m^3/h$ | 600 kPa / 6 bar | DAL... / DML24 |
| VF80 | DN80 | 261 $m^3/h$ | 600 kPa / 6 bar | DAG... / DMG24 |

### ACCESSORY

| Article | Description |
|---|---|
| KIT-VF32/80 | Assembly kit for butterfly valves VF with electric actuator |

KIT-VF32/80

*The valves are supplied with the assembly kit model KIT-VF32/80.*

## ELECTRIC ACTUATORS FOR VF VALVES SERIES

Bi-directional actuators with manual override, 2 SPDT auxiliary switches, selectable rotation direction, IP44 or IP54 with cable glands.

| Article | Torque | Running time, actuator | Supply voltage | Control signal | Auxiliary switch |
|---|---|---|---|---|---|
| DAL24S | 24 | 125 s | 24 V AC / DC | on/off or 3 point | 2 x 3 (1.5) A / AC 230 V |
| DAL230S | 24 | 125 s | 230 V AC | on/off or 3 point | 2 x 3 (1.5) A / AC 230 V |
| DML24S | 24 | 125 s | 24 V AC / DC | Y1: 0(2)...10 V DC<br>Y2: 0(4)...20 mA<br>U: 0(2)...10 V DC (feedback signal) | 2 x 3 (1.5) A / AC 230 V |
| DAG24S | 32 | 160 s | 24 V AC / DC | on/off or 3 point | 2 x 3 (1.5) A / AC 230 V |
| DAG230S | 32 | 160 s | 230 V AC | on/off or 3 point | 2 x 3 (1.5) A / AC 230 V |
| DMG24S | 32 | 240 s | 24 V AC / DC | Y1: 0(2)...10 V DC<br>Y2: 0(4)...20 mA<br>U: 0(2)...10 V DC (feedback signal) | 2 x 3 (1.5) A / AC 230 V |

DAL-DML

DAG-DMG

## HEATER FOR STEM VALVES SERIES VFS AND VFSF

Heating valve stem to be used in systems with liquid at temperatures < 0 °C. For use in environments with extreme conditions to prevent the blockage from ice formation of valves series VFSF and VFS.

| Technical data | |
|---|---|
| Supply voltage | 24 V AC ± 10%, 50/60 Hz |
| Power consumption | 30 W |
| Ambient temperature | 5…40 °C (limit of use) |
| Media temperature | 0…-10 °C (limit of use) |
| Dimensions | Six-sided polygon 65 mm thickness: 12.7 mm |
| Protection class | IP65 |

| Article | Description |
|---|---|
| HEATER1 | Heater for stem valves series VFS and VFSF |

HEATER1

# 8 Presence and smoke detectors


## PRESENCE DETECTOR

Detector providing a signal when someone enters the room. The detector has a pulse-detecting function that minimizes the risk of false alarms. Settable on/off delays and change-over relay.

| Technical data | |
|---|---|
| Supply voltage | 24 AC/DC |
| Alarm relay | 200 mA, 24 V AC/DC, potential-free, change-over relay |
| Current consumption | 5 mA |
| Temperature range | -20…+50 °C |
| Ambient humidity | Max. 95 % RH |
| Dimensions | Wall model: 112 x 66 x 45 mm<br>Ceiling model: Ø 110 x h 44 mm |
| Protection class | IP20 |

| Article | Mounting | Detection area |
|---|---|---|
| SIR24-P | Wall | 15 m, 110° angle |
| SIR24-PC | Ceiling | Height x 2.5 = coverage diameter, 25° angle |

SIR24-P

SIR24-PC

## SMOKE DETECTOR FOR DUCT MOUNTING

Single-tube detector, including 600 mm Venturi tube.

| Technical data | |
|---|---|
| Supply voltage | 9...33 V DC (via CABV control unit).<br>24 V AC ±15 % for RAC models. |
| Power consumption, incl. end resistor (not RAC(M)) | Normal operation: 11 mA at 24 V DC. Alarm condition: 50 mA at 24 V DC. Service alarm condition: 20 mA at 24 V DC. |
| Mounting | Duct |
| Tube length | 540 mm Ø 30 mm |
| Dimensions | 155 x 115 x 75 mm |
| Protection class | IP54 |

| Article | Description |
|---|---|
| SSDD-OE65 | Optical detector |
| SSDD-OE50 | Optical detector with service alarm |
| SSDD-OE65-RAC | Optical detector with AC power supply and relay output only |

SSDD-OE65

### ACCESSORIES

| Article | Description |
|---|---|
| SSDD-TDS | Mounting spacer for insulated pipe ducts |
| SSDD-VR600 | Venturi tube, 600 mm length (standard) |
| SSDD-VR2000 | Venturi tube, 2000 mm length |

SSDD-TDS

## OPTICAL SMOKE DETECTOR FOR CEILING MOUNTING

| Technical data | |
|---|---|
| Supply voltage | 9...33 V DC (via CABV control unit) |
| Current consumption | 0.14 mA (50 mA if an alarm occurs) |
| Mounting | Ceiling |
| Dimensions | Ø 100 x h 50 mm |
| Protection class | IP43 |

| Article | Description | Service alarm |
|---|---|---|
| SSDC65-OE | Optical detector | - |
| SSDC50-OE-GA4 | Optical detector with service alarm | X |

SSDC-OE-GA4

### ACCESSORIES

| Article | Description |
|---|---|
| SSDC-BP | Socket for SSDC50 and SSDC65 detectors |
| SSDC-BPR-S50 | Socket for SSDC50 detectors with built-in change-over relay (24 V AC) |
| SSDC-BPR-S65 | Socket for SSDC65 detectors with built-in change-over relay (24 V AC) |

SSDC-BP

SSDC-BPR-S50

## CONTROL UNITS FOR SMOKE DETECTORS

Control unit for smoke detectors. Provides power supply and alarm handling for smoke detectors, with or without service alarm. Two relay contacts for alarm handling.

| Technical data | |
|---|---|
| Current consumption | 30 mA (70 mA if an alarm occurs) |
| Mounting | DIN-rail |
| Number of modules | 3 |
| Dimensions | 52 x 85 x 74 mm |
| Protection class | IP20 |

| Article | Supply voltage | Alarm outputs | Description |
|---|---|---|---|
| CABV24-300/D | 24 V AC/DC | Two change-over contacts (smoke alarms) | Control unit |
| CABV24-S-300/D | 24 V AC/DC | One change-over contact (smoke), one closing contact (smoke), one closing contact (service) | Control unit with service alarm |
| CABV-300/D | 230 V AC | Two change-over contacts (smoke alarms) | Control unit |
| CABV-S-300/D | 230 V AC | One change-over contact (smoke), one closing contact (smoke), one closing contact (service) | Control unit with service alarm |

CABV24-300/D

CABV24-S-300/D

## SMOKE SPRAY

Spray for control of smoke detectors. Suitable for control of ionisation or optical smoke detectors.

| Article | Description |
|---|---|
| SPRAY-260 | Smoke spray, 260 ml |

SPRAY-260

# 9 Miscellaneous products

## TRANSFORMER, 15 VA

With built-in thermal overload-limiting device.

| Technical data | |
|---|---|
| Supply voltage | 230 V AC |
| Output voltage | 24 V AC |
| Max. load | 15 VA |
| Mounting | DIN-rail |
| Number of modules | 3 |
| Dimensions | 52 x 85 x 74 mm |
| Protection class | IP20 |

TR15

| Article | Description |
|---|---|
| TR15 | Transformer |

## TRANSFORMER, 40 VA

Transformer with built-in PTC fuse. Overload and short-circuit proof.

| Technical data | |
|---|---|
| Supply voltage | 230 V AC |
| Output voltage | 12 V AC and 24 V AC |
| Max. load | 40 VA |
| Number of modules | 3 |
| Mounting | DIN-rail |
| Dimensions (WxHxD) | 53 x 90 x 60 mm |
| Protection class | IP20 |

TR40

| Article | Description |
|---|---|
| TR40 | Transformer |

## TRANSFORMER, 60 VA

With replaceable fuses on both poles of the secondary side. Overload and short-circuit proof.

| Technical data | |
|---|---|
| Supply voltage | 230 V AC |
| Output voltage | 24 V AC |
| Max. load | 60 VA |
| Dimensions (WxHxD) | 73 x 124 x 67 mm |
| Mounting | Wall |
| Protection class | IP44 |

TR60

| Article | Description |
|---|---|
| TR60 | Transformer |

## STEP CONTROLLER, 1- OR 2-STAGE

Step controllers suitable for heating/cooling or alarm applications. They convert a 0...10 V DC input signal to a relay output. The controllers are suitable for DIN-rail or cabinet mounting and have adjustable switching points. The step controller with 2 relays can be set to either binary or sequential control. Individually settable on/off levels

| Technical data | |
|---|---|
| Supply voltage | 24 V AC, 2 VA |
| Input signal | 0…10 V DC |
| Settings | 0...10 V DC |
| Mounting | DIN-rail |
| Number of modules | 3 |
| Dimensions | 52 x 85 x 74 mm |
| Protection class | IP20 |

| Article | Description | Output | Step differential |
|---|---|---|---|
| SC1 | Step controller with 1 relay (change-over) | One relay, change-over, 10 A, 250 V AC | - |
| SC2 | Step controller with 2 relays (closing) | Two relays, closing, 10 A, 250 V AC | 0...2 V DC |

SC1

SC2

## STEP CONTROLLER, 4- OR 6-STAGE

Controllers intended for control of electric heating coils, four or six relays. They can be used with any controller with a 0...10 V DC or 10...2 V DC output signal. The step controllers also have an analogue output (0…10 V) for control of an electric heating controller to give proportional heating between steps.

| Technical data | |
|---|---|
| Supply voltage | 24 V AC, 6 VA |
| Output | 4 alt. 6 relays (closing), binary or sequential control |
| Input signal | 0...10 V DC |
| Output signal | 0…10 V DC |
| Mounting | DIN-rail |
| Number of modules | 6 |
| Dimensions | 100 x85 x 74 mm |
| Protection class | IP20 |

| Article | Description | Run-on time |
|---|---|---|
| SC4 | Step controller with 4 relays | - |
| SC6 | Step controller with 6 relays | 3 min |

SC4

SC6

# FROST PROTECTION UNIT

The electronic frost protection unit is mainly intended for use in air handling systems. If the temperature falls below the setpoint, the relays will fall and an alarm LED lights up. The unit should be connected to an NTC sensor placed on the heating coil or return water pipe. The frost protection unit has two alarm relays and manual or automatic reset.
The sensor must have 0...30°C temperature range.

When there is frost risk, the device has a 0...10 V DC control output that can be used to override the valve.

FV

| Technical data | |
|---|---|
| Supply voltage | 24 V AC |
| Power consumption | 2 VA |
| Setpoint | 0…15 °C |
| P-band, control signal override | 5 K (fixed) |
| Mounting | DIN-rail |
| Number of modules | 3 |
| Dimensions | 52 x 85 x 74 mm |
| Protection class | IP20 |
| **Inputs** | |
| Sensor inputs | One, 0...30°C (NTC sensor) |
| Control signal | 0...10 V DC (from the controller) |
| **Outputs** | |
| Relays | 24 V AC, 1 A, change-over and 230 V AC, 1 A, breaking contact |
| Output signal | 0...10 V DC |

| Article | Description |
|---|---|
| FV | Frost protection unit (delivered without a sensor) |

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Bressanone, 01/06/2016

# CONVERSION CHARTS

| | UNIT | FACTOR | UNIT | FACTOR | UNIT |
|---|---|---|---|---|---|
| **Length** | Inches<br>Feet | x 25.4<br>x 0.3048 | = mm<br>= m | x 0.03937<br>x 3.208 | = inches<br>= feet |
| **Area** | Square inches<br>Square feet | x 645.16<br>x 0.0929 | = $mm^2$<br>= $m^2$ | 0.00155<br>x 10.764 | = $in^2$<br>= $ft^2$ |
| **Volume** | Cubic inches<br>Cubic feet<br>Cubic feet<br>Pints<br>Imp.gal<br>Imp.gal | x 16387<br>x 0.02832<br>x 28.32<br>x 0.56825<br>x 4.546<br>x 0.004546 | = $mm^3$<br>= $m^3$<br>= litre<br>= litre<br>= litre<br>= $m^3$ | 0.000061<br>x 35.31<br>x 0.0353<br>x 1.7598<br>x 0.22<br>x 220 | = $in^3$<br>= $ft^3$<br>= $ft^3$<br>= Pints<br>= Imp.gal<br>= Imp.gal |
| **Mass** | lb (pounds) | x 0.4536 | = kg | x 2.2046 | = lb |
| **Force** | lb (pounds) | x 4.448 | = N | x 0.22482 | = lb |
| **Speed** | ft/min | x 0.00508 | = m/s | x 196.85 | = ft/m |
| **Flow** | imp.gal/min<br>Imp.gal/h<br>$ft^3$/min | x 0.07577<br>x 0.000126<br>x 0.000472 | = l/s<br>= $m^3$/s<br>= $m^3$/s | x 13.2<br>x 7936.51<br>x 2118.64 | = imp.gal/min<br>= imp.gal/h<br>= $ft^3$/min |
| **Heating power** | kcal/h | x 1.163 | = W | x 0.8598 | = kcal/h |
| **Pressure** | $lb/in^2$<br>$lb/in^2$<br>$kg/cm^2$ | x 0.0689<br>x 0.0703<br>x 0.9807 | = bar<br>= $kg/cm^2$<br>= bar | x 14.5<br>x 14.22<br>x 1.020 | = $lb/in^2$<br>= $ib/in^2$<br>= $kg/cm^2$ |

| | kPa | Pa | bar | mmWC | mWC | MPa | $kp/CM^2$ | psi |
|---|---|---|---|---|---|---|---|---|
| 1 kPa | | 1000 | 0.01 | 100 | 0.1 | 0.001 | 0.01 | 0.15 |
| 1 Pa | 0.001 | | 0.00001 | 0.1 | 0.0001 | 0.000001 | 0.00001 | 0.00015 |
| 1 bar | 100 | 100000 | | 10000 | 10 | 0.1 | 1 | 15 |
| 1 mmWC | 0.01 | 10 | 0.0001 | | 0.001 | 0.00001 | 0.0001 | 0.0015 |
| 1 mWC | 10 | 10000 | 0.1 | 1000 | | 0.01 | 0.1 | 1.5 |
| 1 MPa | 1000 | 1000000 | 10 | 100000 | 100 | | 10 | 150 |
| 1 $kp/cm^2$ | 100 | 100000 | 1 | 10000 | 10 | 0.1 | | 15 |
| 1 psi | 6.666667 | 6666.667 | 0.066667 | 666.6667 | 0.666667 | 0.006667 | 0.066667 | |

| | | |
|---|---|---|
| bar | x 14.50377 | = psi |
| bar | x 100 | = kPa |
| $kg/cm^2$ | x 14.22334 | = psi |
| inches Hg | x 0.4912 | = psi |
| $N/m^2$ | x 1.0 | = Pa |
| mbar | x 100 | = Pa |
| °C | x (1.8x°C)+32 | = °F |
| kgcm | x 0.098 | = Nm |
| litre | x 1000 | = $m^3$ |
| gal (IMP) | x 4.5460 | = litre |
| gal (US) | x 3.7854 | = litre |
| gal (IMP) | x 1.20095 | = gal (US) |

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”We believe that listening and being creative are the keys to innovation and smart solutions”


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