

## TUP 214...262 F001: Stem-type temperature transducer

### How energy efficiency is improved

Accurate recording of temperature in pneumatic installations for optimal control of HVAC systems.

### Areas of application

Pneumatic temperature measurement and/or control of liquid or gaseous media in tanks, boilers or pipelines in combination with pneumatic control equipment (Centair).

### Features

- Part of the Centair family of systems
- Immersion stem made of nickel filled with expansion fluid
- Conversion of temperature into a standard 0.2 to 1.0 bar pneumatic signal
- Compressed-air connections with Rp 1/8" female thread

### Technical description

- Supply pressure 1.3 bar  $\pm$  0.1
- Nozzle/ball system
- Linearity of output signal <2%

| Type         | Measuring range<br>°C | Length of stem<br>total<br>mm | active<br>mm | Temp. range<br>of sensor<br>°C | Weight<br>kg |
|--------------|-----------------------|-------------------------------|--------------|--------------------------------|--------------|
| TUP 214 F001 | -20...40              | 304                           | 201          | -25...70                       | 0,16         |
| TUP 224 F001 | 5...35                | 304                           | 201          | -25...70                       | 0,16         |
| TUP 242 F001 | 0...120               | 214                           | 112          | -25...150                      | 0,15         |
| TUP 262 F001 | 80...200              | 214                           | 112          | -25...210                      | 0,15         |

|                                              |                      |                            |         |                          |
|----------------------------------------------|----------------------|----------------------------|---------|--------------------------|
| Supply pressure <sup>1)</sup>                |                      | Time constant in air       | 0,5 m/s | 3,2 min                  |
| via external restrictor $\varnothing$ 0,2 mm | 1,3 $\pm$ 0,1 bar    |                            | 3,0 m/s | 1,6 min                  |
| Output pressure                              | 0,2...1,0 bar        | Influence of temp. at head |         |                          |
| Air consumption                              | 33 l <sub>n</sub> /h | TUP 214, TUP 224           |         | 0,07 K/K                 |
| Linearity                                    | < 2%                 | TUP 242, TUP 262           |         | 0,12 K/K                 |
| Time constant in water                       |                      | Permissible ambient temp.  |         | 0...70 °C                |
| without sheath                               | 12 s                 | Connection diagram         |         | <a href="#">A02781</a>   |
| with sheath                                  | 70 s                 | Dimension drawing          |         | <a href="#">M297632</a>  |
| sheath and heat-conducting paste             | 25 s                 | Fitting instructions       |         | <a href="#">MV 23210</a> |

### Accessories

- 0364439 300\*** LW7 sheath of brass, 300 mm, for TUP 214/224 with R½ thread; max. 16 bar <sup>2)</sup>.
- 0364439 225\*** LW7 sheath of brass, 225 mm, for TUP 242/262 with R½ thread; LW7 max. 16 bar <sup>2)</sup>.
- 0226811 300\*** LW7 sheath of stainless-steel, 300 mm, for TUP 214/224 with G½ A; max. 25 bar <sup>2)</sup>.
- 0226811 225\*** LW7 sheath of stainless-steel, 225 mm, for TUP 242/262 with G½ A; max. 25 bar <sup>2)</sup>.
- 0364263 000\*** Welding bushing of steel, with G½ female thread; flat seal of copper <sup>2)</sup>.
- 0364264 000\*** Welding bushing of stainless-steel, with G½ female thread; flat seal of copper and Teflon (for aggressive media) <sup>2)</sup>.
- 0297631 000\*** Fixing flange of thermoplastic for direct fitting onto air duct.

\*) Dimension drawing for accessory is available under the same number.

- 1) In the RCP and RPP 20 controllers, the restrictors  $\varnothing$  0,2 mm are fitted at inputs 3 and 4.  
See Section 60 on regulations concerning the quality of supply air, especially at low ambient temperatures.
- 2) See page 29.01 or 29.001 for further technical details.

### Operation

The expansion fluid in the immersion stem expands when heated and exerts a proportional pressure on the diaphragm box. This is converted by spring converter into a force acting on the force-comparison lever. The bleed-off nozzle-ball system converts this force into a pressure change. When the pressure is rising, the output pressure also rises.

### Engineering and fitting instructions

The positional effect can be negated by making the necessary adjustment of the screw in the centre of the diaphragm box. The tension of the spring converter should not be altered, because the measuring span is unaffected by either fitting or use.

### Technical information

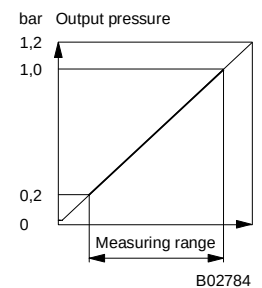
Technical manual: centair system 304991 003



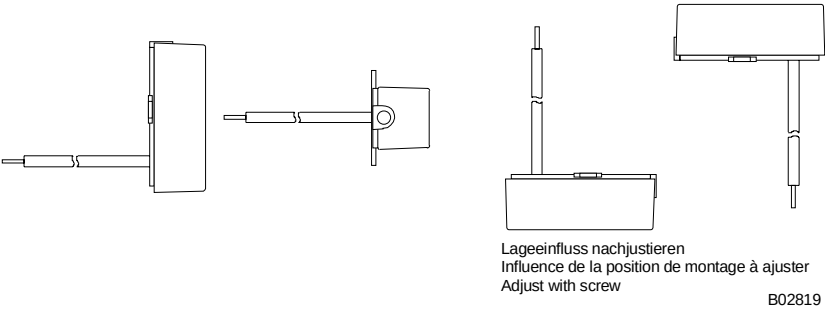
T03235



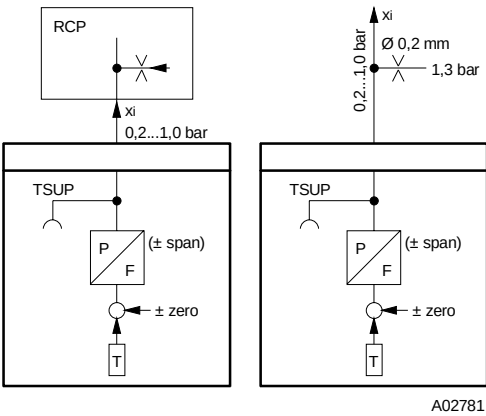
Y02818



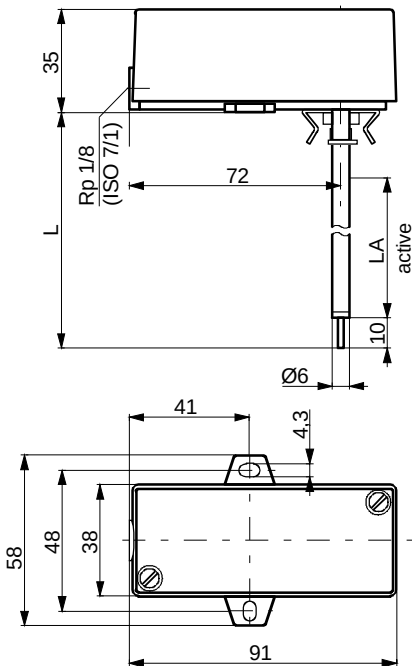
Permissible fitting positions



Connection diagram



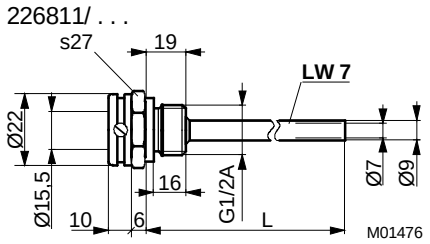
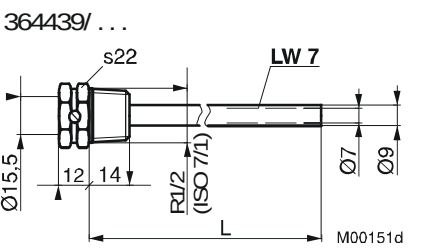
Dimension drawing



| TYP     | L   | LA  |
|---------|-----|-----|
| TUP 214 | 304 | 201 |
| TUP 224 | 304 | 201 |
| TUP 242 | 214 | 112 |
| TUP 262 | 214 | 112 |

M297632

Accessories



364263  
364264

