

Application

P controller for temperature control with pneumatic control valves

The controller is used at the point of measurement to control the temperature. It compares the temperature measured by the temperature sensor with the adjusted set point and issues a pneumatic signal between 0.2 to 1 bar at the output. This signal pressure acts on the connected pneumatic control valve. The controller requires a supply pressure of 1.4 bar.

Special features

- Pneumatic proportional controller with fixed expansion bulb sensor
- Set point ranges from 0 to 200 °C or from 100 to 300 °C
- Low-priced, easy-to-service control equipment including no more than two units (controller and control valve)
- Operating state clearly indicated by set point, supply air and output pressure readings
- Continuously adjustable proportional band $X_p = 2$ to 20 %

Versions

Type 3301 · Bulb sensor made of CrNiMo steel 1.4571 smooth without mounting parts, 400 mm shaft length · Set point ranges optionally between 0 and 200 °C or 100 and 300 °C

Type	Set point range	Configuration ID (Var.-ID)
3301-9001	0 to 200 °C	1063422
3301-9002	100 to 300 °C	1294879

Accessories

Screw glands · Thermowell made of CrNiMo steel · Clamping flange · Screw fittings 1/8 NPT for pipe ...



Note:

Further pneumatic controllers for temperature: Series 430 · Pneumatic indicating controllers for temperature with capillary sensor or Pt 100 sensor. Details in Information Sheet ▶ T 7030 EN.

Installation

- The controller can be installed in any position. Make sure that the effective length of the sensor is completely surrounded by the medium.
- Install a reference thermometer close to the controller to monitor the temperature.

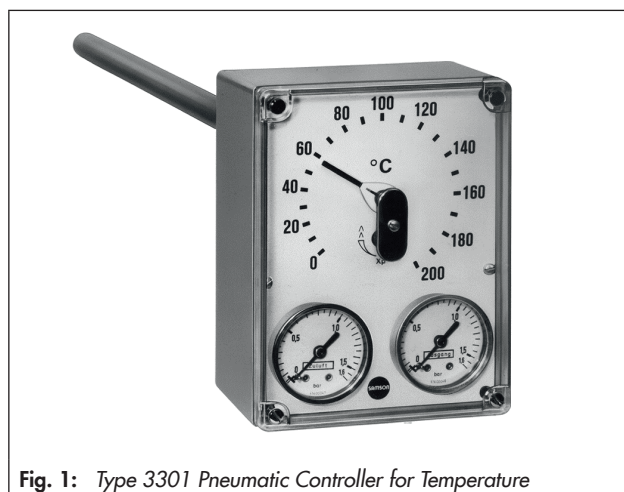


Fig. 1: Type 3301 Pneumatic Controller for Temperature

Technical data · Materials according to DIN EN · All pressures in bar (gauge)

Type 3301 Pneumatic Controller for Temperature	
Measuring system	Mechanical-type expansion sensor
Bulb sensor	Ø 12 mm, 400 mm long, minimum immersion depth 330 mm
Material	Stainless steel 1.4571
Set point, continuously adjustable	0 to 200 °C or 100 to 300 °C
Control signal y (output)	Output pressure 0.2 to 1 bar
Supply air	1.4 ± 0.1 bar
Air consumption in steady state	0.25 m ³ /h
Max. air output capacity	0.11 m ³ /h
Proportional band X_p	Continuously adjustable 2 and 20 %
Operating point	0.6 bar
Temperature influence	0.03 %/°C
Perm. ambient temperature	-10 to +90 °C
Max. operating pressure at the sensor	60 bar
Weight	Approx. 2 kg

Ordering text

Type 3301 Pneumatic Controller for Temperature
Set point range: 0 to 200 °C or 100 to 300 °C

Principle of operation (see Fig. 2)

The mechanical-type expansion sensor, consisting of an Invar rod (12) and an outer steel tube (11), creates a travel that is proportional to the temperature. This causes the spring-mounted differential plate (3) to move and, as a result, the distance between the nozzle (2) and flapper (4) to change. The supply air p_z flows through the restriction (1) to the nozzle (2). These two components act as a pressure divider controlled by the flapper. As a result, the output pressure p_A (0.2 to 1 bar) is regulated proportional to the system deviation.

The set point is adjusted at the screw (8) connected to the set point pointer (7). The proportional band is adjusted at the adjustment screw (6). The position of the red dot on the screw (6) indicates the adjusted operating direction.

Operating direction increasing/increasing $\hat{\lambda}$:

The output pressure p_A increases as the temperature at the sensor increases.

Operating direction increasing/decreasing λ :

The output pressure p_A decreases as the temperature at the sensor increases.

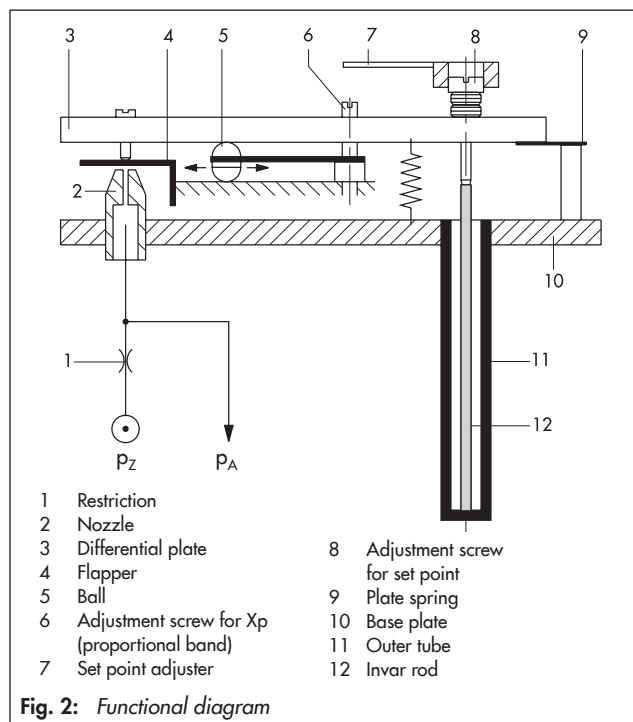


Fig. 2: Functional diagram

Dimensions in mm and weights

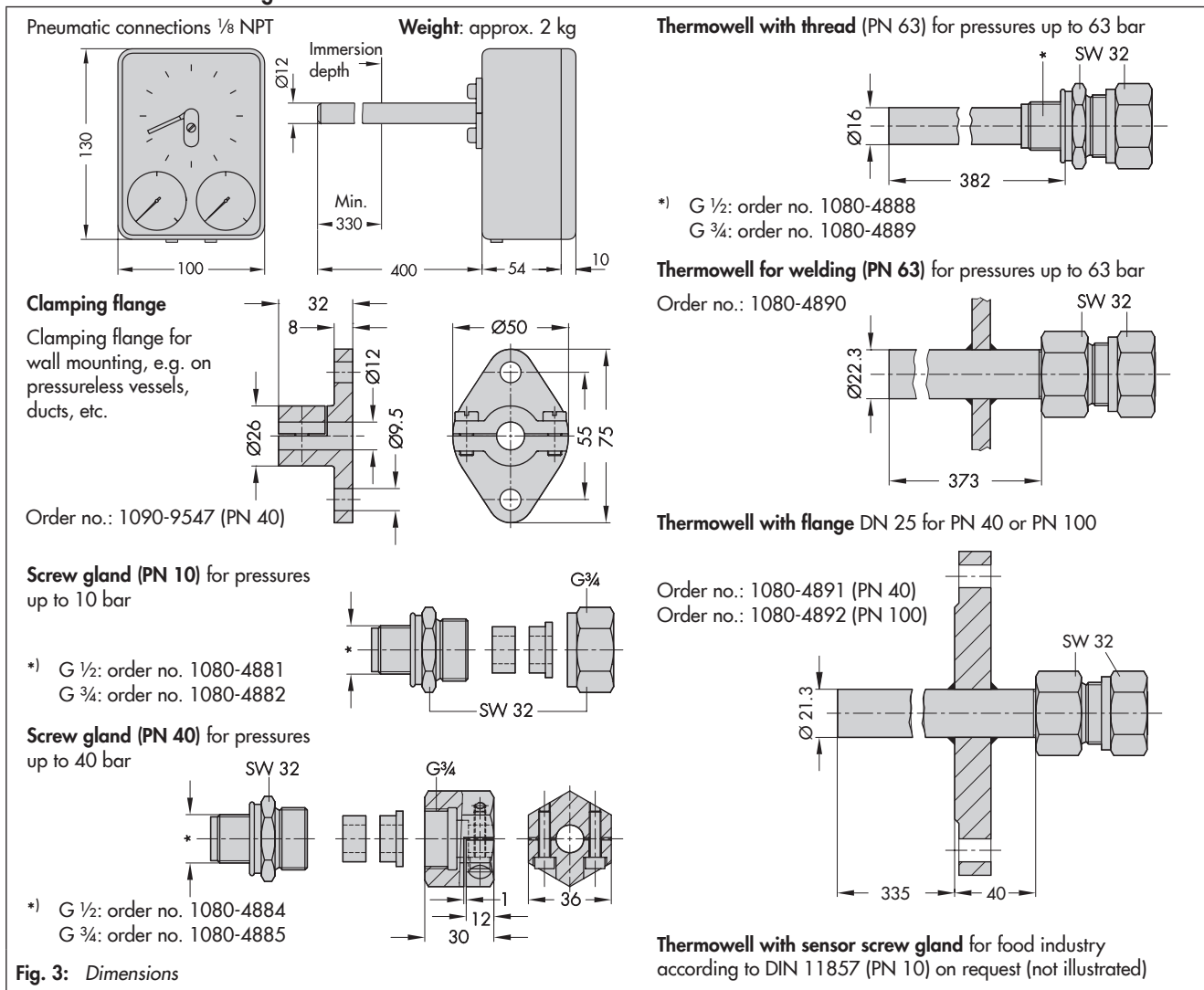


Fig. 3: Dimensions

Specifications subject to change without notice



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