

INFORMATION SHEET

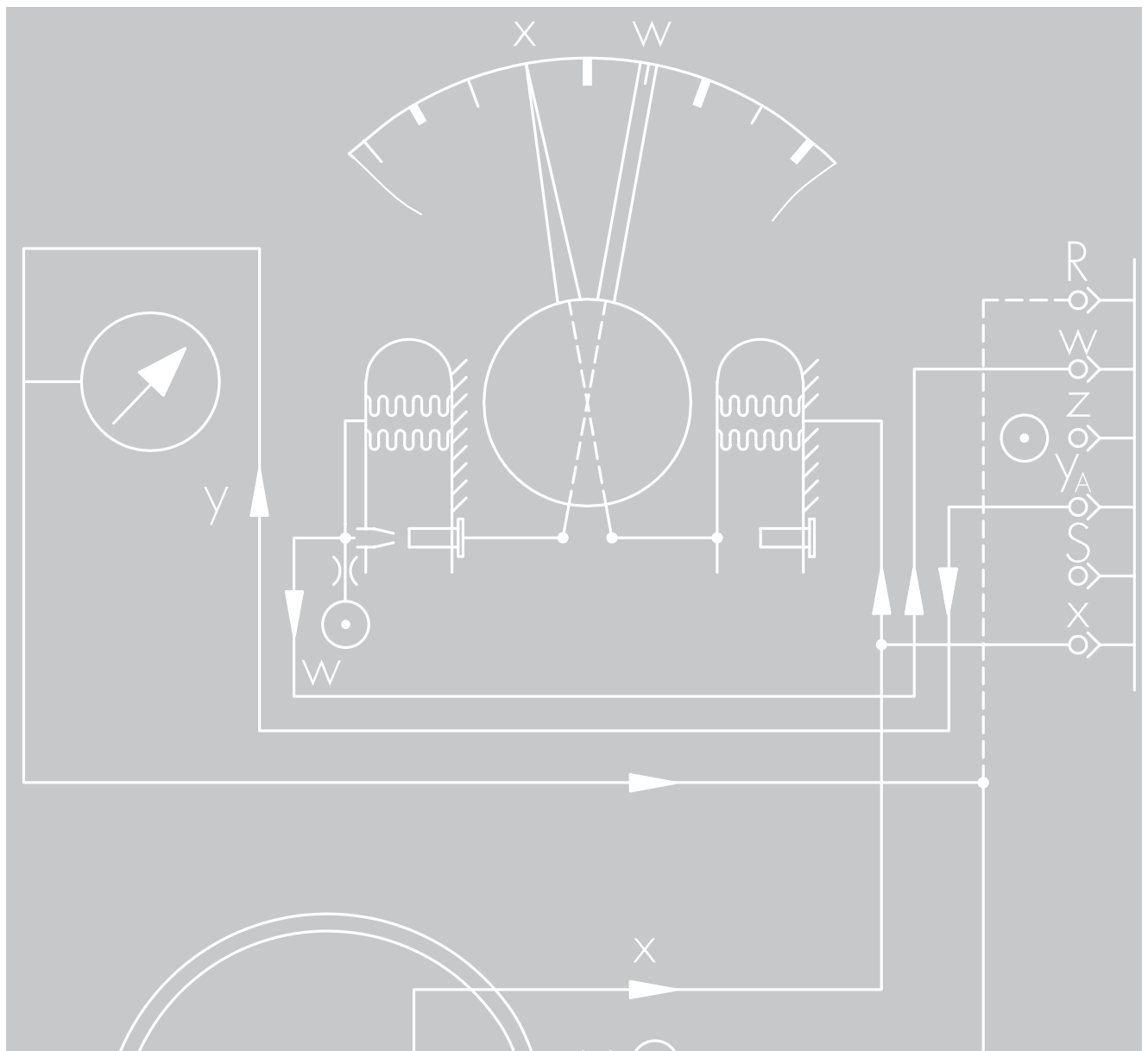
T 7030 EN

Type 3430 Pneumatic Indicating Controllers

Series 430



Controllers for Pressure · Temperature · Standardized signals



Type 3430 Pneumatic Indicating Controllers

Pneumatic indicating controllers are used for the automation of process and industrial plants. The controllers measure directly the controlled variable (pressure, temperature, electric or pneumatic standardized signal), compare the measured value with the set point and issue a pneumatic control signal of 0.2 to 1 bar (3 to 15 psi). A supply pressure of 1.4 bar \pm 0.1 bar (20 psi \pm 1.5 psi) or an operating air pressure of 2 to 12 bar (30 to 180 psi) is required.

The modular controllers represent a complete automation package consisting of a controller station, a controller module suitable for the respective task, and, possibly, a transmitter module as well as other additional equipment. As a result, only one controller and control valve are required to set up a pressure or a temperature control loop.

Special features of Type 3430 Indicating Controllers

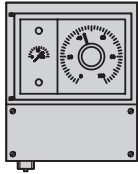
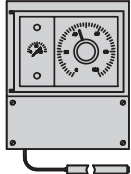
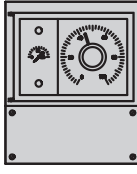
- Version with transmitter module for pressure
- Version with transmitter for temperature with capillary sensor
- Version for standardized signals 0.2 to 1 bar, 3 to 15 psi or 0/4 to 20 mA input
- Fixed set point control
- Set point, controlled variable, set point deviation and output pressure are visible at a glance. All required adjusters and switches can be operated on the front panel.
- Manual/automatic switchover with adjuster for manual output pressure and differential pressure indicator for a bumpless transfer manual/automatic switchover
- Controller modules with PI and PID control. Control parameters and direction of action adjustable
- Possible to equip with internal supply pressure regulator
- Housing suitable for wall, pipe and panel mounting (front frame 192 x 228 mm), optionally with lockable door of transparent plastic (IP 65)
- Use in hazardous areas

All pressure stated as gauge pressure in bar, unless stated otherwise

Table 1: Instrumentation with Type 3430 Indicating Controller

Pressure control		Temperature control	Control with standardized signals	
Pneumatic instrumentation		Pneumatic instrumentation	Pneumatic instrumentation	Electropneumatic instrumentation
Fixed set point control				
1	Type 3432 Controller Station with transmitter module		5	Manual/automatic switchover
2	Type 3432 Controller Station without transmitter module		6	Pneumatic transmitter
3	Transmitter module for pressure or temperature		7	Electrical transmitter
4	i/p converter module for controlled variable x			

Table 2: Selecting a Type 3430 Indicating Controller

Controller for ...	Pressure	Temperature	Standardized signals	
Refer to Data Sheet	▶ T 7032	▶ T 7034	▶ T 7038	
Transmitter module	3435	3436	–	6112/6112 Ex i
Measuring range/input signal	0 to 1.6/2.5/4/6/10/ 16/25/40 bar 0 to 24/36/60/90/150/ 240/360/600 psi	–20 to 30 °C 0 to 50/100/150/200 °C 50 to 150 °C Special temperature ranges –40 to +300 °C	0.2 to 1 bar 3 to 15 psi	4 to 20 mA 0 to 20 mA
Capillary tube version 3 m/6 m length With/without protective hose	–	•	–	
Diaphragm seal	•	–	–	
				
Type 3432-02 Controller Station				
Fixed set point controller			•	
Set point adjuster			•	
Set point display			•	
Controlled variable and output signal display			•	
Manual/automatic switch			•	
Manual adjuster with differential pressure indicator			•	
Controller module	3433-2 (PI controller)	•	•	•
	3433-3 (PID controller)	•	•	•
	3434-2 (PI controller)	•	•	•
Can additionally be equipped with ...				
Type 3708-5003 Supply Pressure Regulator			•	
Door (IP 65), lockable with key or screw lock			•	
Controller module	3433-2	3433-3	3434-2	
Controller action	PI	PID	PI	
Refer to Data Sheet ...	▶ T 7040		▶ T 7041	
Output of controller	0.2 to 1 bar/3 to 15 psi			

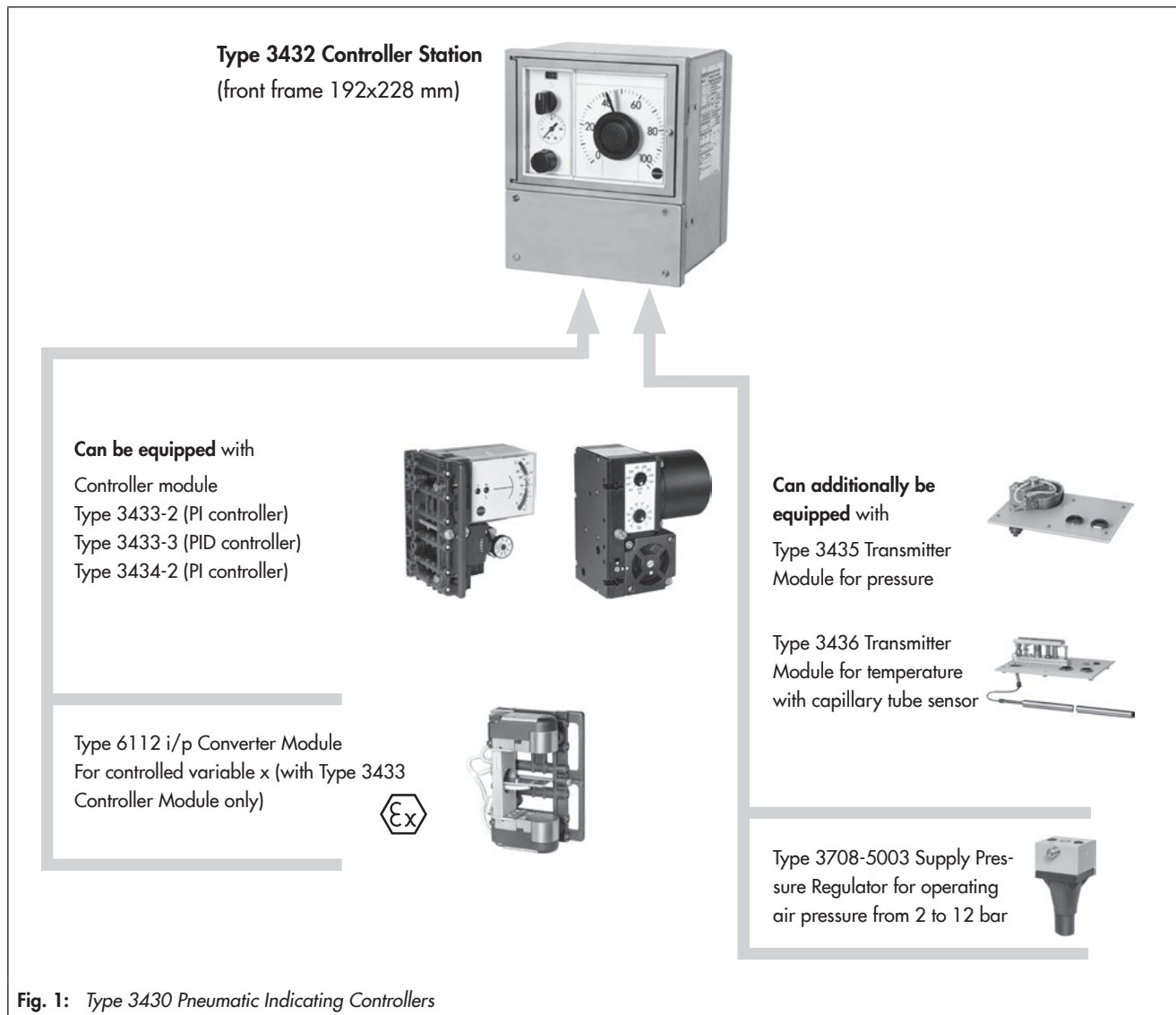


Fig. 1: Type 3430 Pneumatic Indicating Controllers

Versions of the Type 3430 Pneumatic Indicating Controller

All versions of the Type 3430 Pneumatic Indicating Controller contain a Type 3432-02 Controller Station for fixed set point control and a Type 3433 or Type 3434 Controller Module.

The Type 3432-02 Controller Station consists of:

- Housing with set point adjuster
- Controlled variable and output signal display
- Manual/automatic switch
- Adjuster for manual mode
- Differential pressure indication for bumpless manual/automatic switchover

Controller module versions:

- 3433-2 (PI controller)
- 3433-3 (PID controller)
- 3434-2 (PI controller)

The pneumatic indicating controller can be configured to contain a Type 3708-5003 Supply Pressure Regulator and/or a lockable, transparent plastic door (IP 65).

Pneumatic indicating controllers for pressure

This version of the indicating controller contains a Type 3435 Transmitter Module for pressure. Measuring ranges from 0 to 40 bar are available. The transmitter module can be fitted with a diaphragm seal.

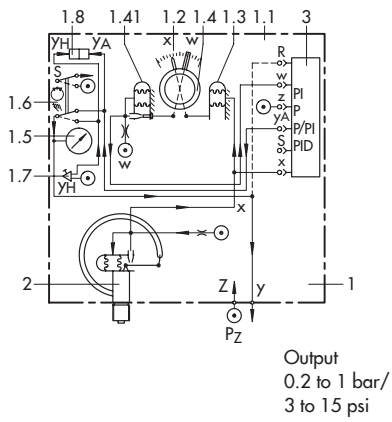
Pneumatic indicating controllers for temperature

This version of the indicating controller contains a Type 3436 Transmitter Module for temperature with a capillary tube sensor. Measuring ranges from -40 to 300 °C are available. The capillary tube is available with or without protective hose in lengths of 3 or 6 m.

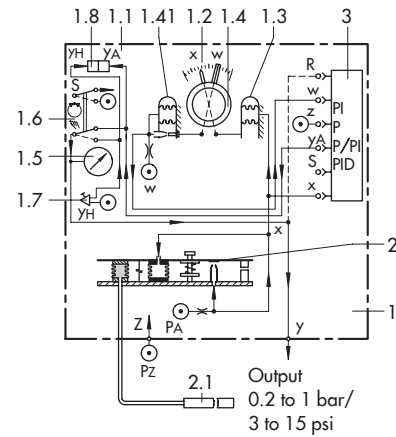
Pneumatic indicating controllers for standardized signals

This version is designed for connection of an external transmitter. Besides pressure and temperature control, it can be used to control the differential pressure, flow rate or other control variables. The controller is designed for the following input signals:

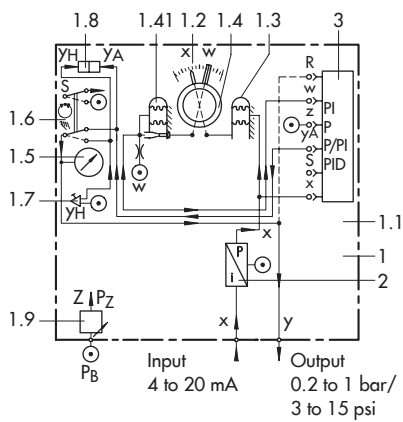
- 0.2 to 1 bar or 3 to 15 psi
- 0/4 to 20 mA with Type 6112 i/p Converter Module, with or without explosion protection (Ex ia according to ATEX)



Pneumatic indicating controllers for pressure



Pneumatic indicating controllers for temperature with capillary sensor



Pneumatic indicating controllers for standardized signals, with Type 6112 i/p Converter Module and Type 3708-5003 Supply Pressure Regulator

- | | |
|-------|---------------------------------------------------------------------------------------|
| 1 | Type 3432-02 Controller Station |
| 1.1 | Housing with door |
| 1.2 | Scale |
| 1.3 | Controlled variable display with pointer, gear mechanism and bellows measuring system |
| 1.4 | Set point adjuster with pointer, gear mechanism and set point calibrator |
| 1.4.1 | Pneumatic servo system |
| 1.5 | Signal pressure gauges |
| 1.6 | Manual/automatic switch |
| 1.7 | Adjuster for manual mode |
| 1.8 | Differential pressure indicator for bumpless manual/automatic switchover |
| 1.9 | Supply pressure regulator |
| 2 | Transmitter module |
| 2.1 | Sensor |
| 3 | Controller module |

Fig. 2: Device versions with functional diagrams

Transmitter modules · i/p converters · Additional equipment

The transmitter modules to measure variables in industrial and processing plants are designed for installing in the Type 3432 Controller Station.

Type 3435 Transmitter Module for pressure with bourdon tube measuring element for set point ranges 0 and 1.6 through 0 to 40 bar; suitable for liquids, gases and vapors. All versions with bourdon tube are made of stainless steel 1.4404 (316L).

Versions with a diaphragm seal have a separating diaphragm, which is coupled with the pressure measuring element of the transmitter over a filler liquid. The diaphragm seal is used to separate the process medium and the transmitter's pressure-bearing parts.

Refer to Data Sheet ► T 7032

Type 3436 Transmitter Module for temperature with capillary tube sensor for measuring ranges from -40 to 300 °C. For pressures up to 16 bar, optionally with thermowells up to PN 100. Version with immersion sensor made of stainless steel 1.4404/1.4571.

Refer to Data Sheet ► T 7034

The **Type 6112 i/p Converter Modules** are used to convert current signals from 0/4 to 20 mA into a pneumatic standardized signal from 0.2 to 1 bar (3 to 15 psi). A converter for the controlled variable x can be installed in controllers for standardized signals. Optionally with input circuit in type of protection Ex ia IIC.

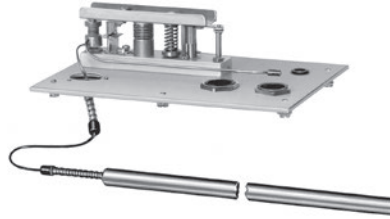
Refer to Data Sheet ► T 7045

If required, versions with Type 3432 Controller Stations can be equipped with a **Type 3708-5003 Supply Pressure Regulator**. In this case, the device is suited for connection to an operating air pressure from 2.0 to 12 bar. The additional supply pressure regulator reduces and controls the operating pressure (p_B), ensuring that the required supply pressure (p_Z) of 1.4 bar or 20 psi is reached.

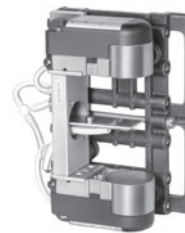
Refer to Data Sheet ► T 8545



Type 3435 Transmitter Module for pressure mounted on base plate of Type 3432 Controller Station



Type 3436 Transmitter Module for temperature with capillary tube sensor



Type 6112 i/p Converter Module



Type 3708-5003 Supply Pressure Regulator

Fig. 3: Transmitter modules, i/p converter module and supply pressure regulator

Controller modules

The **controller modules** are plug-in units designed for mounting in the Type 3432 Controller Station. The connectors of the controller modules are plugged into the self-sealing sockets of the controller station and held by a fastening screw.

The **Type 3433 Controller Modules** have a comparing element that operates according to the motion-balance method with four metal bellows arranged in a square. The proportional-action coefficient K_p can be mechanically adjusted ($K_p = 0.2$ to 20).

Refer to Data Sheet ► T 7040

The **Type 3433-2 PI Controller Module**¹⁾ is fitted with a T_n restrictor for reset times between 0.03 to 50 min.

The **Type 3433-3 PID Controller Module**¹⁾ is similar to Type 3433-2. This module, however, contains a derivative element providing a rate gain of the input branch of the controlled variable x . The derivative element has a derivative-action gain of approx. ten times and a derivative-action time from 0.01 to 10 min that can be adjusted at the T_v restrictor.

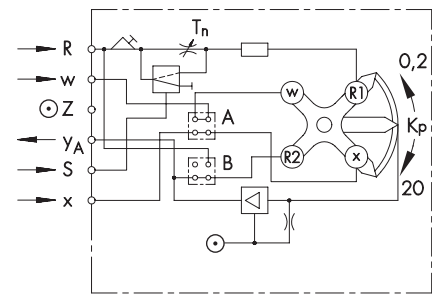
The **Type 3434 Controller Module** features a box-shaped comparator that operates according to the force-balance method. The proportional-action coefficient K_p can be adjusted at a restrictor within the range between 1 and 20.

The **Type 3434-2 PI Controller Module** is fitted with a T_n restrictor for reset times between 0.05 to 20 min.

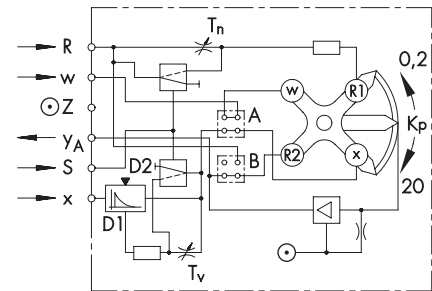
Refer to Data Sheet ► T 7041.

Use in hazardous areas

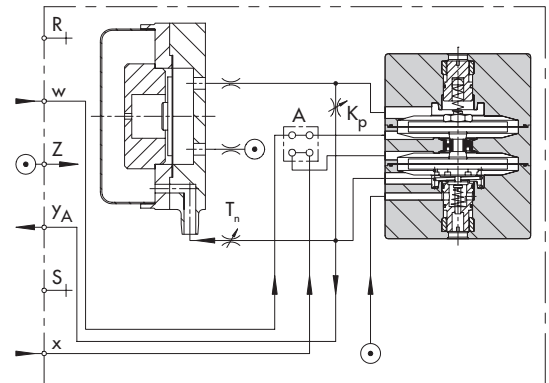
The Type 3430 Controller is suitable for use in hazardous areas of Zone 1 and 2 without its own EU-type examination certificate. A EU-type examination certificate according to 2014/34/EU (ATEX Directive) is not required for the controller. Installed explosion-protected modules have their own EU-type examination certificate.



Type 3433-2 PI Controller Module



Type 3433-3 PID Controller Module



Type 3434-2 PI Controller Module

Fig. 4: Functional diagrams of Types 3433-... and 3434-... Controller Modules

