Application
For panel mounting (front frame 72x144 mm)
Manual control unit for instrumentation with separate controller or other control equipment · Automation of industrial and process plants · Fixed set point, follow-up or cascade control

The manual control unit is designed for input and output signals of 0.2 to 1.0 bar and for a supply pressure of 1.4 bar. The manual control unit is suitable for connection of the Type 3423 Controller Module (▶ T 7521) with Type 3426 Control Room Housing (▶ T 7512) as well as other pneumatic standardized controllers or corresponding control equipment. It meets the special requirements of the processing industry.

Special features
– Compact design with a mounting depth of 180 mm (260 mm installation depth)
– Set point, controlled variable and system deviation are easy to read off the vertical 100 mm-long flat scale
– All adjusters, switches and displays can be adjusted from the front
– Universal version (Type 3427-1), standard with selector switch $w_{\text{int}}/w_{\text{ext}}$
– Use in hazardous areas

Fig. 1: Type 3427 Manual Control Station, front view

Fig. 2: Type 3427-1 Manual Control Unit
Design and principle of operation

The Type 3427 Manual Control Unit consists of a housing, plug-in unit with displays and operating controls as well as a flexible hose harness, which connects the plug-in unit to the connecting plate.

- Fig. 3 shows the displays and operating controls.
- Fig. 4 shows the functional diagram with the pneumatic circuit.
- Fig. 5 shows the pneumatic connection.

The internal set point is adjusted at the set point adjuster (5). The external set point is input at the connection $w_{\text{ext}}$ with an input signal of 0.2 to 1 bar. The selector switch $w_{\text{int}}/w_{\text{ext}}$ (13) is used to select the internal or external set point. The internal set point $w_{\text{int}}$ is selected in the delivered state. The selector switch $w_{\text{int}}/w_{\text{ext}}$ (13) is accessible after releasing the lock (11) and pulling the plug-in unit (1.2) out of the housing (1.1). The set point can be displayed at the set point display (4) and issued at the connection $w$ as a 0.2 to 1 bar signal. The controlled variable is supplied as a 0.2 to 1 bar input signal at the connection $x$ and displayed at the controlled variable display (3).

Set point and controlled variable are displayed on a scale with 0 to 100 % range or physical measuring range. The manual/automatic switchover (6) is used to select the manual or automatic mode. The supply pressure in manual mode (1.4 bar) and (0 bar in automatic mode) is issued at connection S.

The manual output pressure ($y_{\text{H}}$) is set at the adjuster (7) and displayed at the display (9). The automatic output pressure ($y_{\text{A}}$) is applied to the connection $y_{\text{A}}$ and displayed at the display (8). Both output pressures are shown on a scale ranging between 0 and 1.2 bar. The signal pressure is issued at the connection $y$. The arrow symbol (12) is used to indicate the OPEN or CLOSED valve position at 100 % signal pressure.

The device is supplied with a supply pressure of 1.4 bar at connection Z. After pulling out the plug-in unit, the supply pressure can be tested at the test connection $X_{\text{test}}$ (21) using the yellow test connector included in the scope of delivery to connect a pressure gauge using a hose with 2 mm inside diameter.

![Fig. 3: Type 3427-1 Manual Control Unit, with the plug-in unit pulled out of the housing](image-url)
Type 3427 Manual Control Station

Type 3423 Controller Module with Type 3426 Control Room Housing

Design and use

Type 3427-1 Manual Control Station
The functional diagram shows the pneumatic circuit of the Type 3427-1 Manual Control Unit.

Type 3423 Controller Module with Type 3426 Control Room Housing
The functional diagram shows a complete controller made by interconnecting Type 3427-1 Manual Control Unit with Type 3423-2 Controller Module and Type 3426-2 Control Room Housing ▶ T 7512

For fixed set point and slave control
Can be used as master or slave controller in cascade control

Symbols for schematic diagram

- Pneumatic connection
- Supply air
- Pneumatic adjuster
- Plug-on connection
- Venting
- Blind connection
- Manual/automatic switch

Control circuits with Type 3427 Manual Control Unit (schematics)

Fixed set point control
Follow-up control
Cascade control

1. Pneumatic transmitter
2. Type 3427 Manual Control Station
3. Type 3423 Controller Module with Type 3426 Control Room Housing
3.1 Master controller
3.2 Slave controller
4. Control valve

- Controlled variable (actual value)
- Input
- External reference variable (external set point)
- Input
- Output pressure

Fig. 4: Control applications

Installation and connections
Two rails are used to fasten the manual control unit in the control panel. Pneumatic line connections: threaded holes 1/8 NPT in the connecting plate

Type 3427 Manual Control Station

Connections:

- S Binary output manual/automatic mode
- w Reference variable (set point) output
- R Feedback
- x Controlled variable (actual value) input
- y Manipulated variable input in automatic mode
- C Supply
- w_{\text{ext}} External reference variable (external set point) input
- y Output pressure
- 1.4 Connecting plate for pneumatic connections

Panel cut-out 138 x 68+0.7 mm
Distance between center lines:
Min. 73 or 170 mm

Seal unused connections with the threaded plugs included in the scope of delivery.

Fig. 5: Dimensions in mm and connections
## Technical data

<table>
<thead>
<tr>
<th>Type 3427 Manual Control Station</th>
<th>3427-1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Version</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Set point/controlled variable display</strong></td>
<td>2 metal bellows pressure gauge, upright · Signal range: 0.2 to 1 bar · Accuracy class 1 (synchronism 0.6) · Scale inscription: 0 to 100 % or special inscription with physical measuring range; length: 100 mm</td>
</tr>
<tr>
<td><strong>Output display</strong></td>
<td>2 bourdon tube pressure gauges, horizontal · Signal range: 0 to 1.2 bar · Accuracy class 2.5 · Scale inscription: 0 to 1.2 bar; length: 36 mm</td>
</tr>
<tr>
<td><strong>Adjuster for manipulated variable in manual mode</strong></td>
<td>Output signal 0.2 to 1 bar · Max. 0.02 to 1.35 bar · Max. air delivery &gt;1.5 m³/h · Air consumption depending on adjuster: 0.1 m³/h</td>
</tr>
<tr>
<td><strong>Input signal</strong></td>
<td>0.2 to 1 bar</td>
</tr>
<tr>
<td><strong>Output signal</strong></td>
<td>0.2 to 1 bar · Max. 0.02 to 1.35 bar</td>
</tr>
<tr>
<td><strong>Supply air</strong></td>
<td>Supply air 1.4 ±0.1 bar · Air consumption &lt;0.15 m³/h</td>
</tr>
<tr>
<td><strong>Air quality acc. to ISO 8573-1</strong></td>
<td>Maximum particle size and density: Class 3 · Oil content: Class 2 · Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected</td>
</tr>
<tr>
<td><strong>Permissible ambient temperature</strong></td>
<td>−20 to +60 °C</td>
</tr>
<tr>
<td><strong>Pressure Equipment Directive</strong></td>
<td>2014/68/EU, Article 4.3 (sound engineering practice)</td>
</tr>
<tr>
<td><strong>Compliance</strong></td>
<td>EAC</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Approx. 1.8 kg</td>
</tr>
</tbody>
</table>

## Use in hazardous areas

The Type 3427 Manual Control Unit 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.

## Ordering text

- Type 3427 Manual Control Station
  - Type 3427-1 for 0.2 to 1 bar
  - Scale inscription: specify range and unit.