

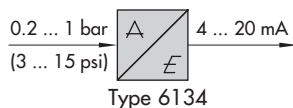
#### Application

For converting a pneumatic signal to a standardized electrical signal, especially suitable as intermediate elements between pneumatic and electric control and measuring equipment.



p/i converters are used as an interface between pneumatic and electric measuring and control devices, for example, for connecting pneumatic transmitter to electrical equipment, such as controllers, computers or control systems.

The input variable is a standardized pneumatic signal and the output variable is a standardized electrical signal.



The Type 6134 Converters are designed for two-wire connection and are available as a rail-mounting unit or field unit.

#### Rail-mounting unit

- Compact design
- Equipped with either one or two p/i converter units
- Potentiometers for adjusting zero and span

#### Field unit

- For use in hazardous areas in a flameproof enclosure (Ex d) or in an intrinsically safe (Ex ia) version conforming to ATEX
- Potentiometers for adjusting zero and span
- Material for wall mounting
- Options:
  - Input pressure gauge (1400-8838)
  - Pipe mounting for 2" pipes (1400-5656)



Fig. 1 · Type 6134-04 p/i Converter with one or two p/i converter units



Fig. 2 · Type 6134-x3 p/i Converter, field unit

### Principle of operation (Fig. 3)

The pressure  $p$  of the standardized pneumatic signal is converted into an electrical DC voltage signal by a capacitive ceramic pressure sensor (1).

The DC voltage signal which is proportional to the pressure is amplified in the measuring amplifier (3) to a defined level. Both the lower range value and span can be adjusted using potentiometers on the front panel.

The constant DC voltage source (2) is used to supply the DC voltage at a constant level. Control equipment can be connected to the output circuit.

### Output circuit:

In two-wire systems, the maximum permissible load at the output of Type 6134 is:

$$U_B = U_S - U_A \quad R_B = U_B / 20 \text{ mA}$$

$U_B$  Maximum permissible load impedance

$R_B$  Maximum permissible load

$U_S$  Supply voltage of the two-wire circuit

$U_A$  12 V, minimum natural voltage of the Type 6134

**Example:**  $U_S = 20 \text{ V DC}$

Maximum permissible load impedance:  $U_B = 20 \text{ V} - 12 \text{ V} = 8 \text{ V}$

Load:  $R_B = U_B / 20 \text{ mA} = 400 \Omega$   
 $R_B = U_B / 4 \text{ mA} = 2000 \Omega$  }  $R_B = 400 \text{ to } 2000 \Omega$

### Ordering text

| Order no.                                  | 6134- | X | X | X | X | X | X | X | X |
|--|-------|---|---|---|---|---|---|---|---|
| <b>Explosion protection</b>                |       |   |   |   |   |   |   |   |   |
| Without                                    |       | 0 |   |   |   |   |   |   |   |
| ⊕ II 2G EEx ia IIC T6 (ATEX)               |       | 1 | 3 |   |   |   |   |   |   |
| ⊕ II 2G EEx d IIC T6 (ATEX)                |       | 2 | 3 |   |   |   |   |   |   |
| <b>Version</b>                             |       |   |   |   |   |   |   |   |   |
| Field unit                                 |       |   | 3 | 0 |   |   |   |   |   |
| Rail-mounting unit                         |       |   |   |   |   |   |   |   |   |
| with one p/i converter unit                |       | 0 | 4 | 1 |   |   |   |   |   |
| with two p/i converter units               |       | 0 | 4 | 2 |   |   |   |   |   |
| <b>Input</b>                               |       |   |   |   |   |   |   |   |   |
| 0.2 to 1 bar                               |       |   |   |   |   |   |   | 1 |   |
| 3 to 15 psi                                |       |   |   |   |   |   |   | 2 |   |
| <b>Electrical connection</b>               |       |   |   |   |   |   |   |   |   |
| Rail-mounting unit Screw terminals         |       | 0 | 4 |   |   |   |   | 0 |   |
| Field unit 1/2 - 14 NPT                    |       |   | 3 | 0 |   |   |   | 1 |   |
| M20 x 1.5                                  |       |   | 3 | 0 |   |   |   | 2 |   |
| <b>Pneumatic connection</b>                |       |   |   |   |   |   |   |   |   |
| Hose connection                            |       | 0 | 4 |   |   |   |   | 0 | 0 |
| 1/4 - 18 NPT                               |       |   | 3 | 0 |   |   |   | 1 |   |
| ISO-228/1 - G 1/4                          |       |   | 3 | 0 |   |   |   | 2 |   |
| <b>Degree of protection</b>                |       |   |   |   |   |   |   |   |   |
| IP 20                                      |       | 0 | 4 |   |   |   |   | 0 | 0 |
| IP 54                                      |       |   | 3 | 0 |   |   |   |   | 1 |
| IP 65                                      |       |   | 3 | 0 |   |   |   |   | 2 |
| <b>Pressure gauge for output pressure</b>  |       |   |   |   |   |   |   |   |   |
| Without                                    |       |   |   |   |   |   |   |   | 0 |
| With                                       |       |   | 3 | 0 |   |   |   |   | 1 |
| <b>Temperature range</b>                   |       |   |   |   |   |   |   |   |   |
| $T_{\min} \geq -20 \text{ }^\circ\text{C}$ |       |   |   |   |   |   |   |   | 0 |
| $T_{\min} \geq -40 \text{ }^\circ\text{C}$ |       |   | 3 | 0 |   |   |   |   | 1 |

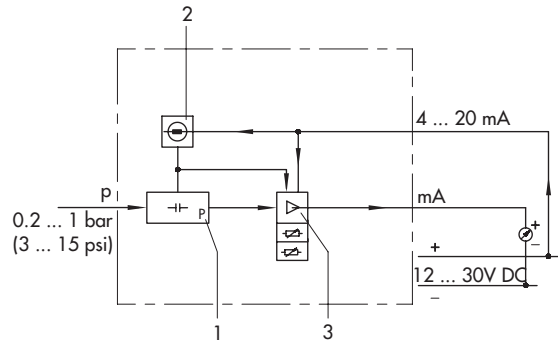


Fig. 3 · Functional diagram of Type 6134 p/i Converter for two-wire connection

- p Pneumatic input signal
- 1 Capacitive sensor for pressure
- 2 Constant voltage source
- 3 Measuring amplifier and potentiometers for adjusting SPAN and ZERO

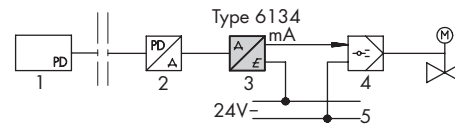


Fig. 4 · Typical application

- 1 Sensor
- 2 Pneumatic transmitter
- 3 p/i converter
- 4 Controller
- 5 Two-wire circuit

Modernized plants can continue using pneumatic converters by connecting them to the electric components over the Type 6132.

Technical data acc. to VDE/VDI 2191 · All pressures in bar (gauge). Other pressures on request.

| p/i Converter                               | Type               | 6134-04   | 6134-03, -13, -23   |
|---|--------------------|---|---|
| Version                                     |                    | Rail-mounting unit  | Field unit  |
| Explosion protection acc. to ATEX (94/9/EC) |                    | -   | ⊕ II 2G EEx ia IIC T6<br>⊕ II 2G EEx d IIC T6   |
| p/i converter unit/device                   |                    | 1 or 2  | 1   |
| Input                                       |                    | 0.2 to 1.0 bar (3 to 15 psi), overloadable up to 5 bar (72.5 psi)   |   |
| Output                                      |                    | 4 to 20 mA <sup>1), 2)</sup>  |   |
| Perm. load at 0(4) to 20 mA                 |                    | $R_B = (U_S - 12 \text{ V}) / 20 \text{ mA}$ ; $U_S$ = minimum supply voltage   |   |
| Auxiliary power                             |                    | Two-wire network 24 V-, voltage range 12 to 30 V- <sup>1), 2)</sup>   |   |
| <b>Performance</b>                          |                    |   |   |
| Characteristic                              |                    | Output, linear to input   |   |
| Deviation f. terminal-based linearity       |                    | For limit point setting: $\leq 0.2 \%$ <sup>3)</sup>  |   |
| Hysteresis                                  |                    | Negligible  |   |
| Ripple of the output signal                 |                    | $\leq 0.5 \%$ <sup>3)</sup>   |   |
| Temperature influence                       | For zero and span: | $\leq 0.15 \% / 10 \text{ K}$ <sup>3)</sup>   |   |
| Influence of auxiliary power                |                    | -   |   |
| Load influence                              |                    | -   |   |
| EMC noise emission                          |                    | EN 61 000-6-3   |   |
| EMC noise immunity                          |                    | EN 61 000-6-2   |   |
| <b>Ambient conditions</b>                   |                    |   |   |
| Degree of protection DIN VDE 0470           |                    | IP 20   | IP 54/IP 65   |
| Ambient temperature                         |                    | -20 to 70 °C  | Without explosion protection:<br>-20 to 70 °C<br>-40 to 70 °C (only with IP 65)<br>With explosion protection: <sup>2)</sup><br>-20 to 60 °C<br>-40 to 60 °C (only with IP 65)               |
| Storage temperature                         |                    | -40 to 80 °C  | -40 to 80 °C  |
| <b>Connections and installation</b>         |                    |   |   |
| Mounting position                           |                    | Any   | Venting facing downwards  |
| Pneumatic connection (input)                |                    | Hose connection for hose<br>4 x 1 mm, outer $\varnothing$ 6 mm  | 2 x Tapped hole (left or right can optionally be used)<br>ISO 228: G 1/4 or 1/4-18 NPT  |
| Electrical connection (output)              |                    | Terminals for wires for 0.5 to 2.5 mm <sup>2</sup><br>Rigid wires: 0.2 to 4 mm <sup>2</sup><br>Flexible wires: 0.2 to 2.5 mm <sup>2</sup> | Female thread: M20 x 1.5 or 1/2-14 NPT,<br>internally: terminals for 0.5 - 2.5 mm <sup>2</sup> wires<br>Rigid wires: 0.2 to 4 mm <sup>2</sup><br>Flexible wires: 0.2 to 2.5 mm <sup>2</sup> |
| Mounting                                    |                    | Top-hat rail 35 mm wide, DIN EN 60715   | Wall mounting <sup>4)</sup> 1400-8837 or<br>pipe mounting to 2" pipes, 1400-5656  |
| Weight                                      |                    | 1 converter unit: 0.23 kg<br>2 converter units: 0.9 kg  | Approx. 1 kg  |

1) Type 6134-13: Intrinsically safe circuit

3) All errors specified related to output span

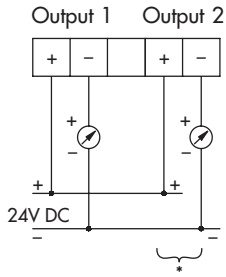
2) See EC Type Examination Certificate for details  
(electric data, connection conditions, etc.)

4) Included in scope of delivery

#### Summary of issued explosion protection certificates

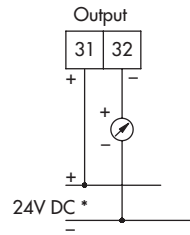
| Type of certificate             | Certificate number | Date       | Comments               |
|---------------------------------|--------------------|------------|------------------------|
| <b>for Type 6134-1</b>          |                    |            |                        |
| EC Type Examination Certificate | PTB 04 ATEX 2023   | 2004-03-19 | ⊕ II 2 G EEx ia IIC T6 |
| <b>for Type 6134-2</b>          |                    |            |                        |
| EC Type Examination Certificate | PTB 03 ATEX 1214   | 2003-11-06 | ⊕ II 2 G EEx d IIC T6  |

## Electrical connection



**Rail-mounting unit**

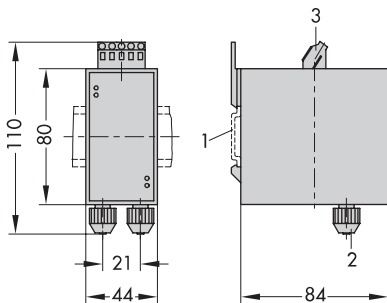
\* Only assigned in devices with two p/i converter units.



**Field unit**

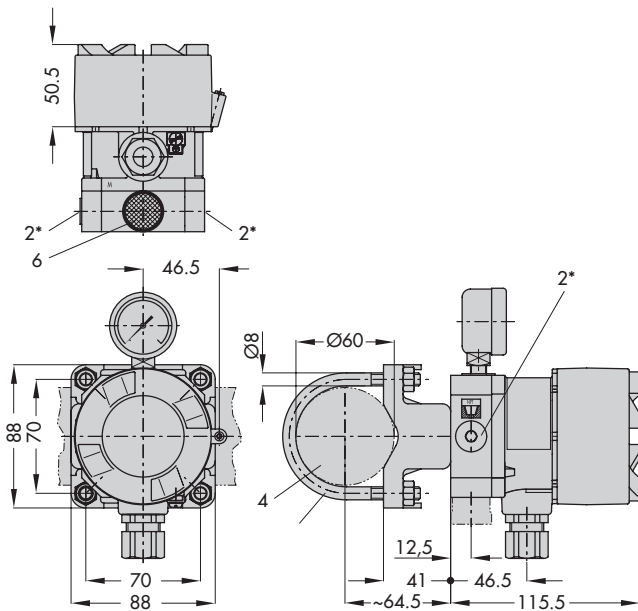
\* For explosion-protected versions (Ex ia) intrinsically safe circuit (see EC Type Examination Certificate).

## Dimensions in mm

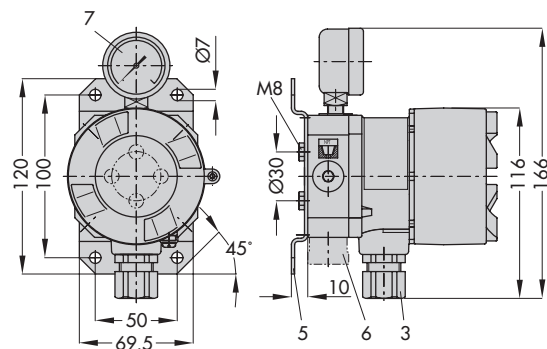


- 1 Top-hat rail
- 2 Pneumatic connection (input)
- 3 Electrical connection (output)
- 4 Pipe mounting (1400-5656)
- 5 Wall mounting
- 6 Venting IP 54/IP 65
- 7 Pressure gauge (1400-8838)

\* Left or right can optionally be used



**Field unit · Pipe mounting (2" pipes)**



**Field unit · Wall mounting**

