

Electropneumatic Converters for Pneumatic Signals

p/i Converter Type 6134

For two-wire connection

Application

p/i converters are used for converting a pneumatic signal to a standardized electrical signal; especially suited as intermediate elements between pneumatic and electric measuring and control equipment.



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

The input variable constitutes a standardized pneumatic signal, the output variable an electrical d.c. current signal.

Type 6134 p/i Converters are designed for two-wire connection.

The converters are available as rack-mounting units for mounting in 19-in racks, as mounting-rail units for mounting on a top hat rail, or as field units.

Special features

- Compact design with a plug-in width of 4 HP (horizontal pitch = 20 mm / 0.78 inch), or with space-saving cases.
- Small hysteresis and excellent dynamic response due to pressure transducer with deposited metal strain gauge.
- Versions equipped with test sockets used to check the input and output signal on the front panel.

Versions

Type

6134- ☐ ☐

Explosion protection

Without

0

Output circuit EEx ib II C¹⁾

1

Case

Single rack-mounting unit

1

Double rack-mounting unit

2

Field units

3

Mounting-rail unit

4

All rack-mounting units are optionally available with screw or bayonet-type of mounting.

Options

Type 6134-01 with test sockets for checking the electric output signal and the pneumatic input signal.

¹⁾ Type 6134-13 only



Fig. 1 - Type 6134-01 p/i Converter, rack-mounting unit



Fig. 2 - Type 6134-04 p/i Converter, mounting-rail unit



Fig. 3 - Type 6134-03 p/i Converter, field unit

Principle of operation (Fig. 4)

The pressure transducer (1) converts the pressure p of the pneumatic input signal into an electrical d.c. voltage signal. The metal coated strain gauges are connected in a measuring bridge which is supplied by a constant-voltage source (2).

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

Constant d.c. supply is provided by the constant-voltage source (2). Control equipment can be connected in the output circuit. The maximum permissible load impedance in a two-wire transmission system is $U_B = U_S - U_A$. U_S signifies the minimum supply voltage of the two-wire transmission system. The p/i converter requires a minimum natural voltage (minimum required connected voltage) of $U_A = 12 \text{ V}$. In a two-wire transmission system with a minimum supply voltage of $U_S = 20 \text{ V-DC}$, the maximum load impedance is $U_B = 20 \text{ V} - 12 \text{ V} = 8 \text{ V}$ and the permissible load is $R_B = 400 \Omega$.

Rack-mounting units used in non-hazardous areas can be equipped with test sockets (9, 10) used to check the pneumatic input signal and the electric output signal during operation. The output circuit is equipped with an interlock diode which enables the connection of an ammeter with an internal resistance of $R_i \leq 10 \Omega$. The pneumatic input signal is taken from a self-sealing test socket.

Installation

Rack-mounting units are primarily supplied in completely wired 19-in racks according to DIN 41 494 Part 5. As those, they are part of a pre-assembled automation unit. Each rack can hold up to 21 rack-mounting units, i.e. up to 42 conversion units.

The position of installation is arbitrary for all case versions. With field units, however, cables should be inserted from beneath.

Ordering text

Type 6134-.. p/i Converter

Input ... bar / ... psi

Rack-mounting units: Screw / bayonet mounting

Field units: Air connection NPT $\frac{1}{4}$ / ISO 228 G $\frac{1}{4}$

Type 6134-01: Optionally available with pneumatic and electric test sockets

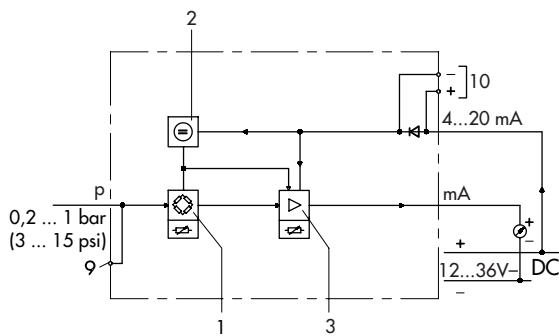
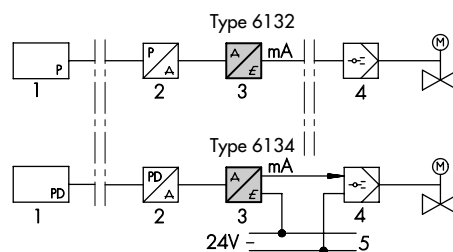


Fig. 4 · Functional diagram of the Type 6134 p/i Converter for two-wire connection

- | | | | |
|---|---|----|---|
| p | Pneumatic input signal | 2 | Constant voltage source |
| 1 | Pressure transducer with strain gauge measuring bridge and potentiometer for adjusting the lower range value (ZERO) | 3 | Measuring amplifier and potentiometer for adjusting the measuring span (SPAN) |
| 9 | Pneumatic test socket | 10 | Output current test socket |



- | | | | |
|---|-----------------------|---|-----------------|
| 1 | Transducer | 3 | p/i converter |
| 2 | Pneumatic transmitter | 4 | Controller |
| | | 5 | Two-wire system |

Fig. 5 · Examples of application

Technical data according to VDE/VDI 2191 · All pressures in bar (psi) gauge

Type	6134-0.	6134-13
Input	0.2...1.0 bar (3...15 psi), overload limit 2 bar (30 psi) or 0.4...2 bar (6...30 psi), overload limit 4 bar (60 psi)	
Output	4...20 mA	
Permissible load at 0(4)...20 mA	$R_B = \frac{U_S - 12 \text{ V}}{20 \text{ mA}}$ See page 2 for details	
Output circuit (Ex)	–	Intrinsically safe ¹⁾
Power supply	Two-wire transmission system 24 V– DC Voltage range 12...45 V– DC	
		Only for intrinsically safe circuit ¹⁾
Performance		
Characteristic	Output linear to the input	
Deviation from terminal-based linearity	≤ 0.2 % ²⁾	
Hysteresis	≤ 0.1 % ²⁾	
Range of inversion	≤ 0.03 % ²⁾	
Ripple of the output signal	≤ 0.5 % ²⁾	
Temperature influence	≤ 0.2 %/10 K for zero ²⁾ and span	
Power supply influence	≤ 0.1 % for supply changes within the stated limits ²⁾	
Load characteristic	≤ 0.1 % ²⁾ in the load range	
EMC noise emission	EN 50081 Part 1	
EMC noise immunity	EN 50082 Part 2	
Safety of equipment	EN 61010	
Class of protection	II	
Overvoltage category	II	
Degree of contamination	2	

¹⁾ Output circuit in type of protection "Intrinsically safe EEx ib II C" (see PTB Certificate of Conformity for details).

²⁾ Stated errors referring to output span.

	Rack-mounting unit	Field unit	Mounting-rail unit
Ambient conditions			
Degree of protection DIN VDE 0450	IP 00	IP 54	IP 20
Ambient temperature	-20 °C...+65 °C (-4...+150°F)		
Storage temperature	-40 °C...+85 °C (-40...+185°F)		
Connection and installation			
Air connection	Integrated pneumatical connector	Tapped hole NPT 1/4 or tapped hole ISO 228 G 1/4	Hose connection for hose 4 x 1, (external diameter Ø 6 mm);
Electrical connection	Electrical connector according to DIN 41 612 (type F)	Screw gland Pg 13.5 (1/2-in cable gland acc. to US standards on request); cable terminals 0.5 to 2.5 mm².	Cable terminals 0.5 to 2.5 mm² rigid cables: 0.2...4 mm² flexible cables: 0.2...2.5 mm²
Installation	Screw or bayonet mounting	Tube mounting with clamp to horizontal or vertical 2-in tube. Wall mounting with screws	Top-hat rail, width 35 mm, DIN EN 50 002 (on request, socket for mounting on G-rails, width 32 mm, DIN EN 50 035)
Weight approx.	0.35kg (0.75lb)	0.8kg (1.8lb)	0.35kg (0.75lb)

Summary of the approved explosion protection certifications

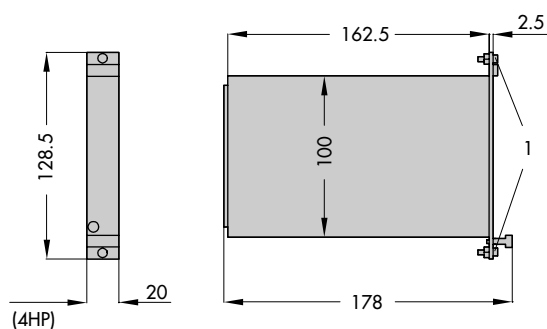
Certificate type	Certificate number	Date	Comments
For Type 6134-1 p/i Converter Certificate of Conformity First addendum	PTB no. Ex-90.C.2091	03.09.1990 26.07.1993	EEx ib II C T6 Modified sensor
For Type 6134-1 p/i Converter GOST Certificate	A-0379	29.03.96	Valid until 2001 1 Ex ib II C T6

The test certificates are included in the "Mounting and operating instructions" and are available on request.

Dimensions in mm

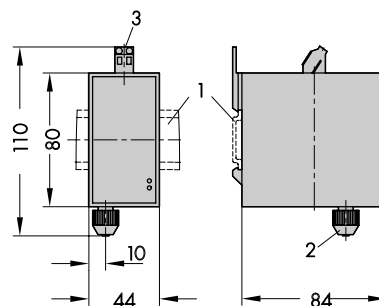
Rack-mounting units

- 1 Screw or bayonet mounting



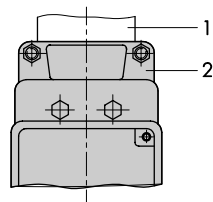
Mounting-rail units

- 1 Top-hat rail
- 2 Air connection
- 3 Electrical connection

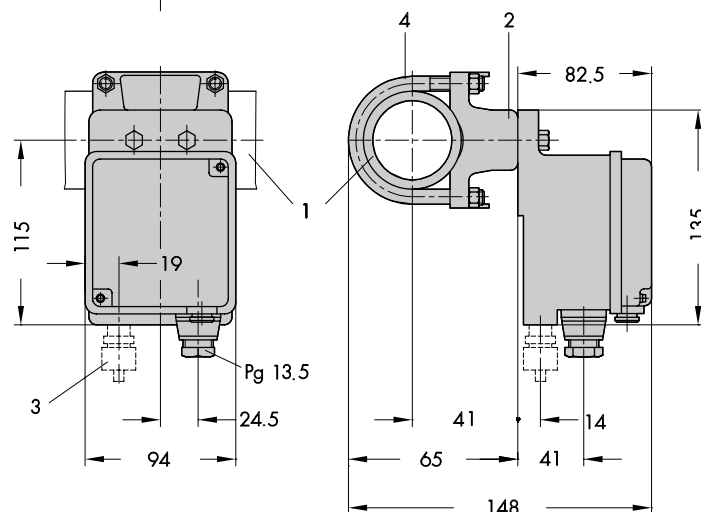


Field units

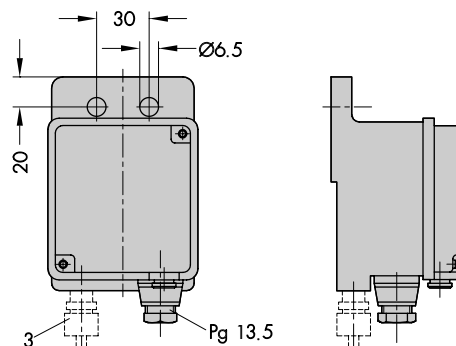
Tube mounting



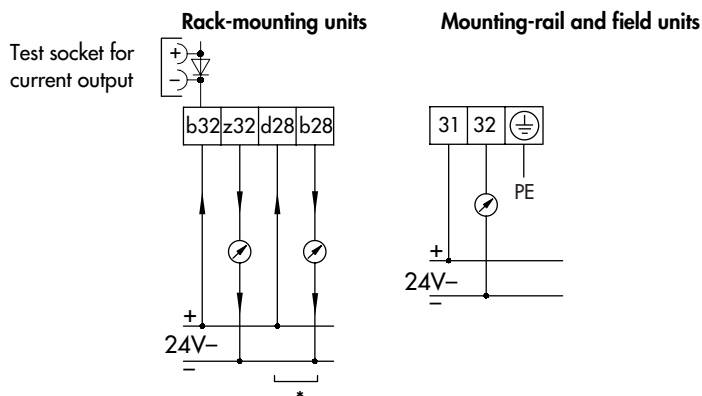
- 1 2-in tube
- 2 Mounting plate
- 3 Input
- 4 Mounting clamp



Wall mounting



Electrical connection



* Only for devices with second p/i converter



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