

T 6134 EN

Type 6134 p/i Converter for two-wire connection

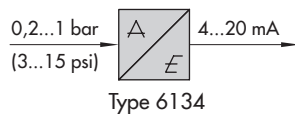


Application

Used to convert a pneumatic signal into a standardized electric signal · Particularly suitable as intermediate element between pneumatic and electric measuring and control devices.

p/i converters serve as an interface between pneumatic and electric measuring and control units, being used for example to connect pneumatic transmitters to electric controllers, computers or process control systems.

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



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

Rail-mounting unit (Fig. 1)

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

Field unit (Fig. 2)

- For use in hazardous areas in a flameproof enclosure (Ex d) or in an intrinsically safe (Ex ia) version according to ATEX
- Potentiometers for zero and span adjustment
- Material for wall mounting
- Options:
 - Input pressure gauge (order no. 1400-8838)
 - Pipe mounting for 2" pipes (order no. 1400-5656)



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

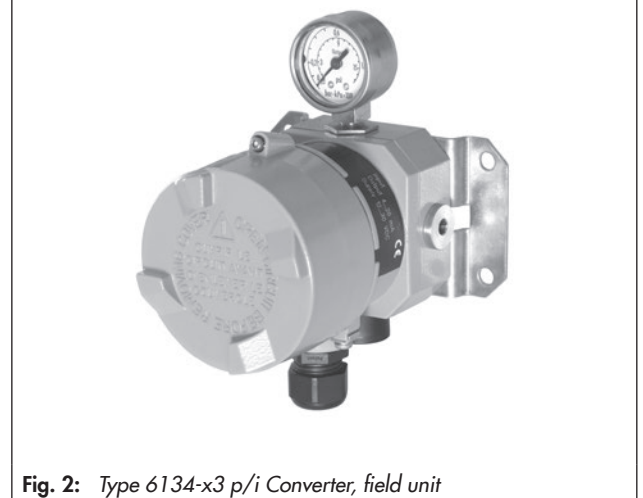


Fig. 2: Type 6134-x3 p/i Converter, field unit

Principle of operation (Fig. 3)

A capacitive ceramic pressure sensor (1) is used to convert the pressure p of the pneumatic input signal into an electric DC voltage signal.

The DC voltage signal which is proportional to the pressure is amplified to a defined level in the measuring amplifier (3). 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:

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

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: calculation of the load range

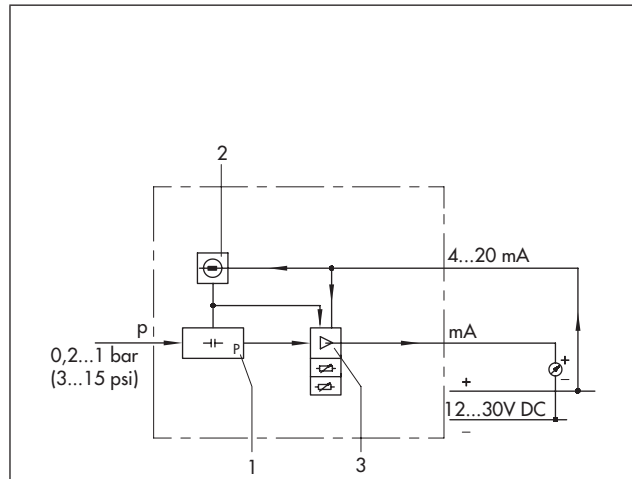
- Supply voltage: $U_S = 20 \text{ V DC}$,
Output: 4 to 20 mA
- Maximum permissible load impedance:
 $U_B = 20 \text{ V} - 12 \text{ V} = 8 \text{ V}$

Load:

$$R_B = 8 \text{ V} / 20 \text{ mA} = 400 \Omega$$

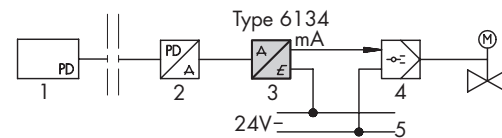
$$R_B = 8 \text{ V} / 4 \text{ mA} = 2000 \Omega$$

$$R_B = 400 \text{ to } 2000 \Omega$$



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

Fig. 3: Schematic diagram of the Type 6134 p/i Converter for two-wire connection



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

Modernized plants can continue using pneumatic converters by connecting them to the electric components over the Type 6134.

Fig. 4: Sample application

Table 1: Technical data according to VDE/VDI 2191

Type	Type 6132-04	Types 6132-03, -13, -23
Version	Rail-mounting unit	Field unit
Explosion protection according to ATEX	–	II 2G EEx ia IIC T6 II 2G EEx d IIC T6
p/i converter unit/device	1 or 2	1
Input	0.2 to 1 bar (3 to 15 psi), overloadable up to 2 bar (30 psi)	
Output	4 to 20 mA ^{1), 2)}	
Perm. load at 0/4 to 20 mA	$R_b = \frac{U_S - 12\text{ V}}{20\text{ mA}}$, U_S = supply voltage	
Supply voltage	Two-wire network Voltage range 12 to 30 V DC ^{1) 2)}	
Characteristic		
Characteristic	Output linear to input	
Hysteresis	Negligible	
Deviation from terminal-based linearity	≤0.2 % ³⁾	
Ripple of output signal	≤0.5 % ³⁾	
Effect of temperature	≤0.15 %/10 K for zero and span	
Influence of auxiliary power and load	–	
EMC noise emission	EN 61000-6-3	
EMC noise immunity	EN 61000-6-2	
Ambient conditions, degree of protection, weight		
Permissible ambient temperature	–20 to +70 °C	Without explosion protection: –20 to 70 °C –40 to 70 °C (only with IP 65) With explosion protection ²⁾ : –20 to 60 °C –40 to 60 °C (only with IP 65)
Perm. storage temperature	–40 to +80 °C	–40 to +80 °C
Perm. transportation temperature	–40 to +80 °C	–40 to +80 °C
Degree of protection acc. to EN 60529	IP 20	IP 54/IP 65
Weights		
1 converter unit	0.225 kg	1.005 kg
2 converter units	0.285 kg	–
Installation and connections		
Mounting orientation	Any	Vent plug facing downward
Air connection	Hose connection for 4x1 mm, 6 mm outside diameter	2x tapped holes (use of left or right hole optional): ISO 228/1 - G ¼ or ¼-18 NPT
Electrical connection		
Female thread	–	M20x1.5 or ½-14 NPT
Terminals for wires	0.5 to 2.5 mm ²	0.5 to 2.5 mm ² (internal)
Fixed wires	0.2 to 4 mm ²	0.2 to 4 mm ²
Flexible wires	0.2 to 2.5 mm ²	0.2 to 2.5 mm ²
Mounting		
	35 mm top-hat rail, DIN EN 60715	Bracket for wall mounting (included in scope of delivery) or pipe mounting for 2" pipes (order no. 1400-5656)

¹⁾ Type 6134-13: intrinsically safe circuit

²⁾ See 'Certificates' section for details (electric data, connection conditions, etc.)

³⁾ All errors specified based on output span

Summary of explosion protection approvals

Type	Type of approval	Certificate number	Date	Comments
6134-1	EC type examination certificate	PTB 04 ATEX 2003	2004-03-19	II 2G EEx ia IIC T6
6134-2		PTB 03 ATEX 1214	2003-11-06	II 2G EEx d IIC T6

Electrical connection · Two-wire connection

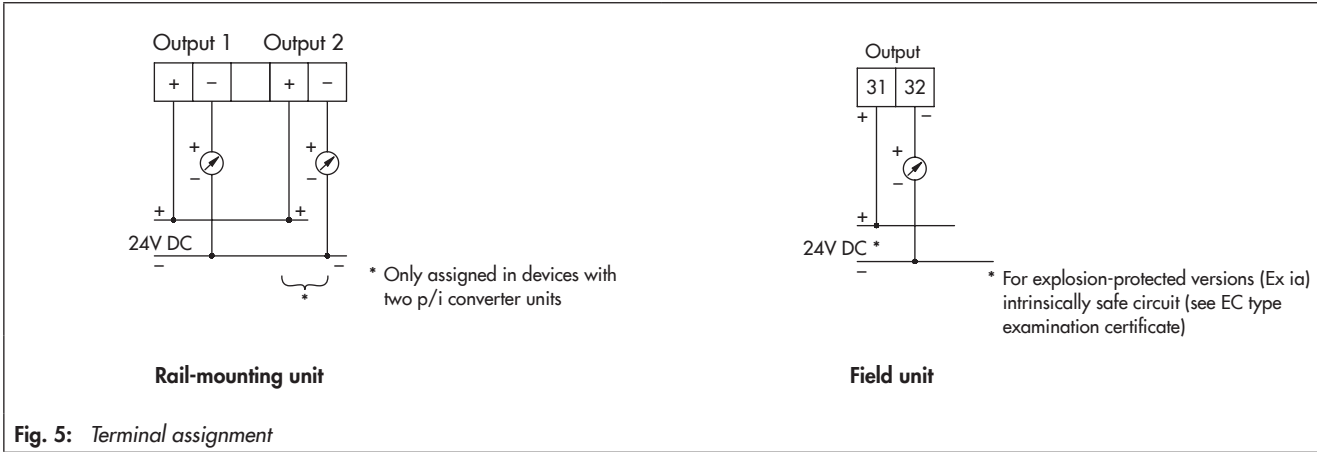


Fig. 5: Terminal assignment

Dimensions in mm

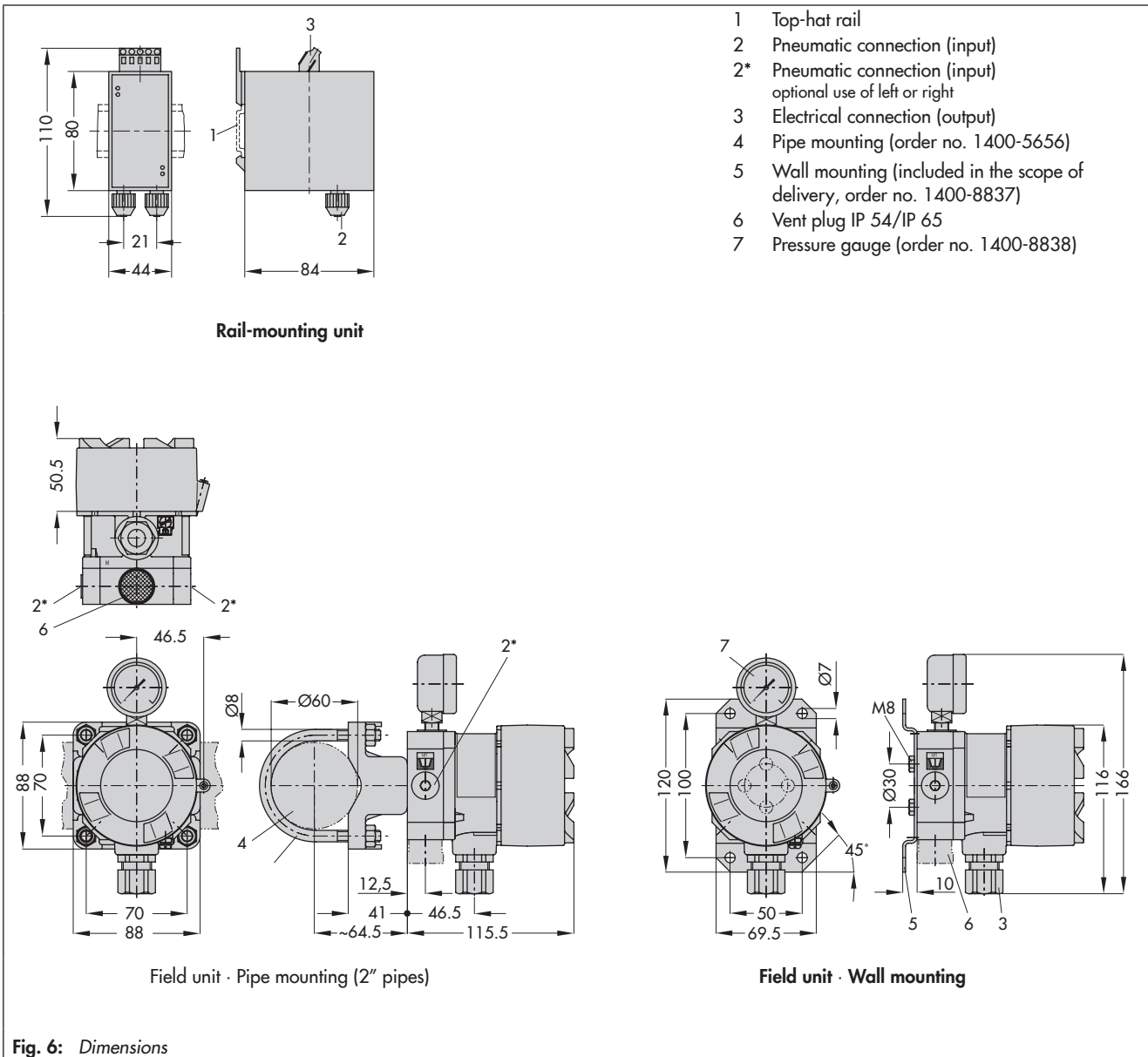


Fig. 6: Dimensions

Article code

	Type 6134-										
	x	x	x	x	x	x	x	x	x	x	x
Explosion protection											
Without	0										
ATEX: II 2G EEx ia IIC T6	1	3									
ATEX: II 2G EEx d IIC T6	2	3									
Version											
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								
Input											
0.2 to 1 bar					1						
3 to 15 psi					2						
Electrical connection											
Rail-mounting unit, screw terminals	0	4			0						
Field unit, ½-14 NPT		3	0		1						
Field unit, M20x1.5		3	0		2						
Pneumatic connection											
Hose connection	0	4			0	0					
¼-18 NPT		3	0			1					
ISO-228/1 - G ¼		3	0			2					
Degree of protection											
IP 20	0	4			0	0	0				
IP 54		3	0				1				
IP 65		3	0				2				
Pressure gauge											
Without									0		
With		3	0						1		
Temperature range											
T _{min} ≥ -20 °C										0	
T _{min} ≥ -40 °C		3	0							1	
Output signal											
4 to 20 mA											0

