

T 6126 EN

Electropneumatic Converter for Direct Current Signals

Type 6126 Current-to-Pressure Converter

Type 6126 Voltage-to-Pressure Converter



Application

Used to convert a direct-current input signal into a pneumatic output signal for measuring and control tasks · Particularly suitable as intermediate element between electric measuring devices and pneumatic controllers or between electric control devices and pneumatic control valves

The signal converter accepts a load-independent 0 to 20 mA direct-current input signal or a 0/2 to 10 V voltage signal.

Depending on the supply air pressure, the converter supplies a pneumatic output signal of 0.2 to 1 bar (3 to 15 psi) or 0.4 to 2 bar (6 to 30 psi).

The electropneumatic converter is available with either a Type 6109 or 6112 i/p Module. Type 6112 offers further output signal ranges (see Technical data).

Special features

- Small dimensions, low weight and rugged housing
- Excellent dynamic behavior
- Relatively large air output with low air supply consumption
- Output pressure up to 5 bar
- Central venting
- Effect of vibration is small
- Versions with reversed characteristic available (only with Type 6112 i/p Module)
- Option of connecting a pressure gauge parallel to the output
- Operation possible without an upstream pressure regulator
- Zero reset at specific mA value when switch-off electronics are activated (function can be activated as required)
- Zero point and span can be adjusted at potentiometers in devices with electronics

Versions

For **non-hazardous areas**:

- **Type 6126-0** with electronics, i. e. switch-off electronic function and potentiometer for zero and span
- **Type 6126-0** without electronics

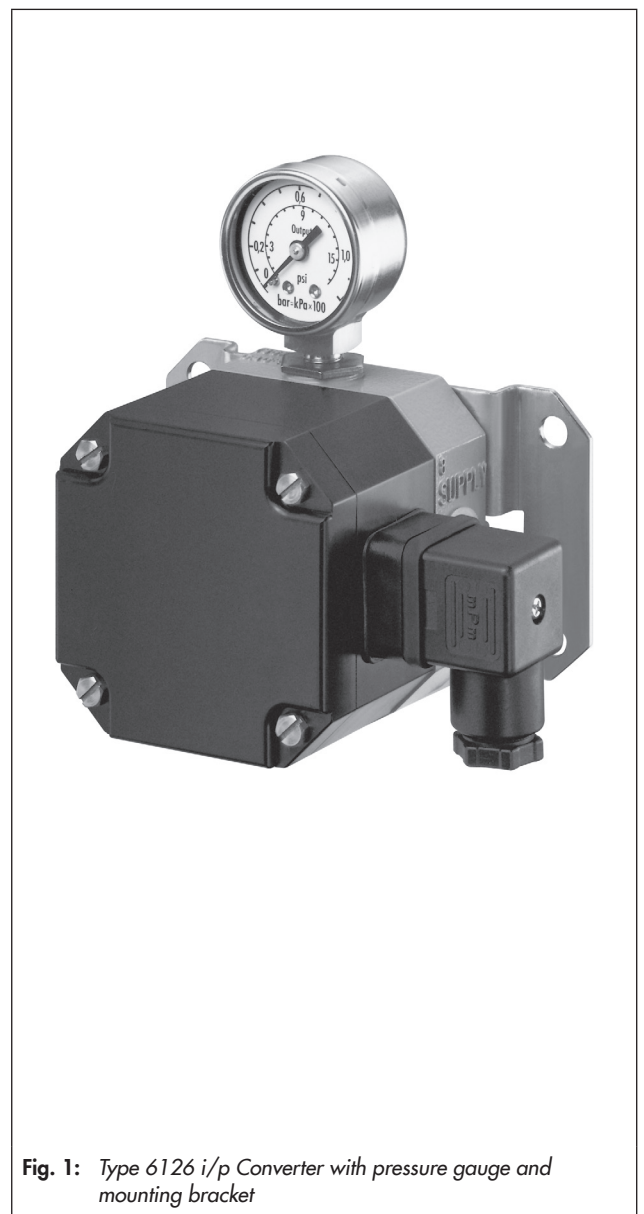


Fig. 1: Type 6126 i/p Converter with pressure gauge and mounting bracket

Principle of operation

The electropneumatic converter consists of an i/p converter module, which operates according to the force-balance principle and a downstream volume booster.

When operated, the supplied direct current (4) flows through the plunger coil (2) located in the field of a permanent magnet (3). At the balance beam (1), the force of the plunger coil, which is in proportion to the current, is balanced against the force of the dynamic backpressure. The backpressure is produced on the flapper plate (6) by the air jet leaving the nozzle (7).

The supply air (8) flows to the bottom chamber of the volume booster. A certain amount of air determined by the diaphragm position flows past the sleeve (9) and leaves through the output (36).

As the input current and the forces acting on the plunger coil increase, the flapper moves closer to the nozzle. This causes the backpressure and the cascade pressure p_k upstream of the restriction (8.2) to increase until the cascade pressure corresponds with the input current. The increasing cascade pressure pushes the diaphragm (10) and the plug sleeve (9) downward. As a result, the output pressure p_A increases until a new state of equilibrium is reached in the diaphragm chambers. When the cascade pressure drops, the diaphragm moves upward, releasing the plug sleeve and thus allowing the output pressure p_A to escape through the venting (EXHAUST) until the forces are equal again.

Converter modules with an input signal range from 4 to 20 mA have a slide switch which activates the switch-off electronics. The electronics cause the pneumatic output to be vented less than 100 mbar when the input signal falls below 4.08 mA tolerance. In this way, the tight shut-off function of a valve can be guaranteed.

Installation

The converter can be mounted to a wall, pipe or directly to the control valve. The bracket for wall mounting is included in scope of delivery (see Ordering data).

The converter is to be installed horizontally, with the pressure gauge (or screw plug) facing upward. If a different mounting position is used, the zero point in devices with electronics must be corrected using the ZERO adjuster.

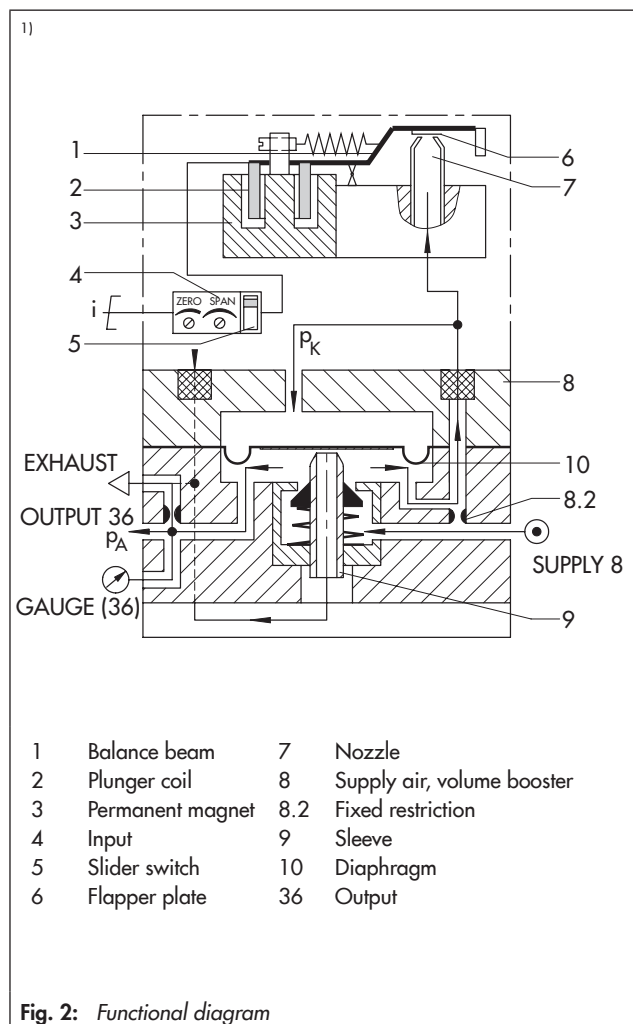


Fig. 2: Functional diagram

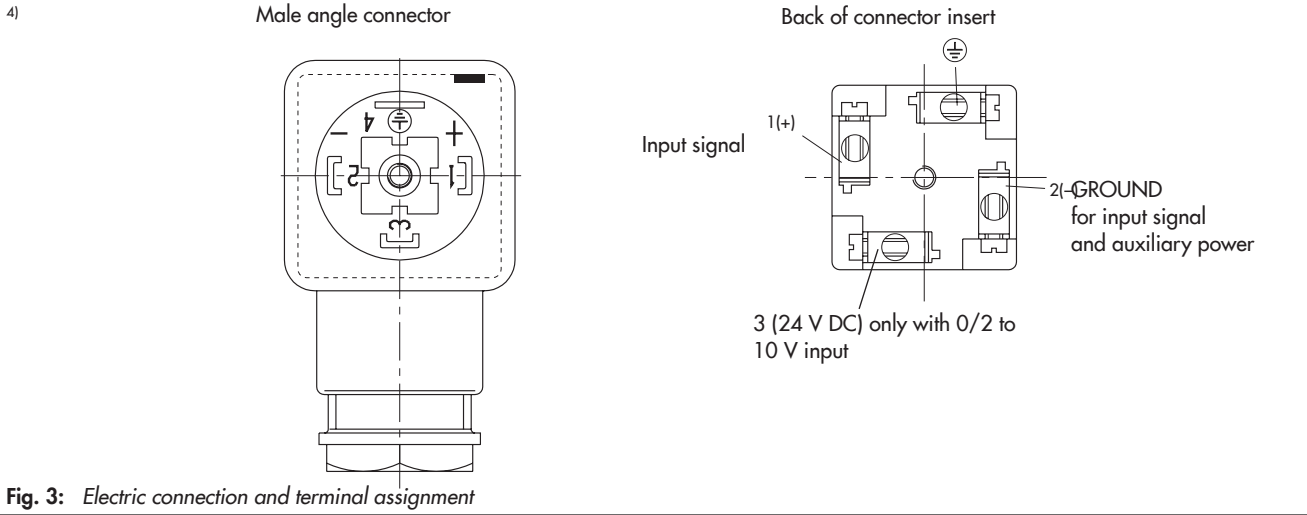
Technical data

Type	No explosion protection	Type 6126-0
Input		0/4 to 20 mA 0/2 to 10 V (30 kΩ input resistance) with 24 V DC power supply Load impedance ≤6 V (corresponding to 300 Ω at 20 mA)
Output		0.2 to 1 bar (3 to 15 psi) with Type 6109 or Type 6112 i/p Module 0.4 to 2 bar (6 to 30 psi) with Type 6112 i/p Module (special ranges up to max. 5 bar (75 psi) with Type 6112 i/p Module)
	Air output capacity ¹⁾	2.0 m ³ /h at an output of 0.6 bar (0.2 to 1.0 bar) 2.5 m ³ /h at an output of 1.2 bar (0.4 to 2.0 bar)
Supply air	Pneumatic	At least 0.4 bar (6 psi) above the upper signal pressure range value, max. 5.4 bar (80 psi) without supply pressure regulator
	Air quality acc. to ISO 8573-1: 2001	Max. particle size and density: Class 4 · Oil content: Class 3 · Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected
	Air consumption ²⁾	0.08 m _n ³ /h at 1.4 bar (20 psi) 0.1 m _n ³ /h at 2.4 bar (35 psi)
	24 V DC (with voltage-to-pressure converter)	10 to 28 V DC 9 to 25 mA (max. 30 mA) for 0/2 to 10 V input
Characteristic		Characteristic: Output linear to input
	Hysteresis	≤0.3 % of final value
	Deviation from terminal-based conformity	≤1 % of final value
	Effect in % of the upper range value	Supply air: 0.1 %/0.1 bar ²⁾ Alternating load, supply air failure, interruption of the input current: <0.3 % Ambient temperature: lower range value <0.03 %/K, span <0.03 %/K
Dynamic response (measured according to IEC 60770-1)		
	Limiting frequency	5.3 Hz
	Phase shift	-130 °
Variable position		Max. 3.5 % depending on attachment: ±1 % when horizontal (Type 6109) Max. 1 % depending on attachment: ±0.3 % when horizontal (Type 6112)
Ambient conditions, degree of protection, compliance and weight		
Ambient temperature		-25 to +70 °C
Degree of protection		IP 54/IP 65
Compliance		CE ENEC
Weight		Approx. 0.6 kg
Materials		
Enclosure		Die-cast aluminum, chromated and plastic coated/glass-fiber-reinforced polyamide
Other parts		Corrosion-resistant material

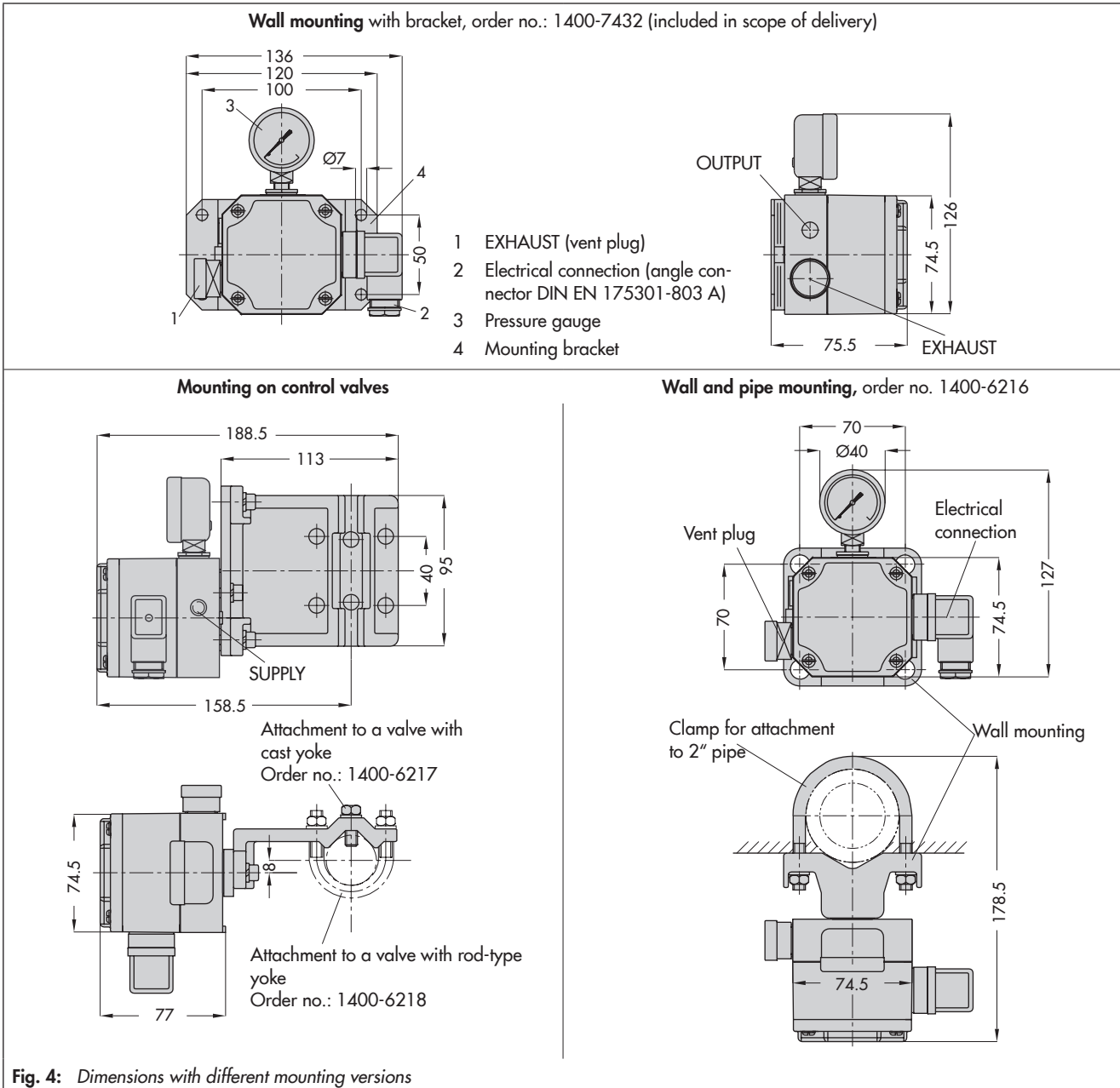
²⁾ Measured with 2 m hose with 4 mm inside diameter and 6 mm outside diameter

³⁾ Measured with average output pressure

Electrical connection



Dimensions in mm



Ordering data

Article code		Type 6126-	...	...	...	...	...	...	...	...	...	...	...	...	...
Explosion protection	Without	0													
Pneumatic connection	1/4 -18 NPT	1													
	ISO-228/1 - G 1/4	2													
i/p converter module	Type 6109 ¹⁾		1						0	0					
	Type 6112		2												
Input	4 to 20 mA				1										
	0 to 20 mA, without switch-off electronics ²⁾		2		2										
	4 to 20 mA, without switch-off electronics ²⁾ (no longer available)				3										
	0 to 10 V, 24 V DC power supply ⁵⁾				4										
	2 to 10 V, 24 V DC power supply				5										
Output	0.2 to 1.0 bar					0	1								
	3 to 15 psi					0	2								
	0.4 to 2.0 bar		2			0	4								
	6 to 30 psi		2			0	5								
Special ranges ^{3) 4)}	Initial value 0.1 to 0.4 bar; span 0.75 to 1.00 bar		2			1	1								
	Initial value 0.1 to 0.4 bar; span 1.00 to 1.35 bar		2			1	2								
	Initial value 0.1 to 0.4 bar; span 1.35 to 1.81 bar		2			1	3								
	Initial value 0.1 to 0.8 bar; span 1.81 to 2.44 bar		2			1	4								
	Initial value 0.1 to 0.8 bar; span 2.44 to 3.28 bar		2			1	5								
	Initial value 0.1 to 0.8 bar; span 3.28 to 4.42 bar		2			1	6								
	Initial value 0.1 to 1.2 bar; span 4.42 to 5.94 bar		2			1	7								
	Direction of action	Increasing/increasing							0						
Increasing/decreasing								1							
Degree of protection	IP 54								0						
	IP 65								1						
Output pressure gauge	Without									0					
	With pressure gauge in bar									1					
	With pressure gauge 0 to 0.6 MPa/0 to 6 kg/cm ²									2					
Temperature range	T _{min} ≥ -25 °C										0				
Special version	Without											0	0	0	
	Type 6109 i/p Module, 4 to 20 mA, without switch-off electronics, 0.2 to 1.0 bar output											0	0	8	
	Raised zero (up to max. 1.5 bar)											3	0	0	
	Raised zero (up to max. 3.0 bar)											3	0	1	

¹⁾ Only with 0.2 to 1 bar (3 to 15 psi) output

²⁾ Without switch-off electronics and without potentiometer for zero point and span correction. Not possible with Type 6109 i/p module, adjusted to 3 to 15 psi

³⁾ Raised zero up to 3 bar (45 psi) possible as special version

⁴⁾ Specify setting range, e.g. set to 0.1 to 4 bar; output pressure max. 5 bar, supply air 5.4 bar

⁵⁾ 0 to 5 V input possible as special version.

Accessories

Mounting material for	Order no.
- Bracket for wall mounting, stainless steel (1.4301)	1400-7432 (included in scope of delivery)
- Wall and pipe mounting (2" pipes)	1400-6216
- Mounting on cast yoke according to NAMUR ¹⁾	1400-6217
- Mounting on rod-type yoke according to NAMUR ¹⁾	1400-6218

¹⁾ Only mounting part without assembly and without any possibly required screw fitting. Order together with mounting unit (M6116).

Pressure gauge retrofit

- Pressure gauge: 0 to 1.2 bar pressure range	0080-0185
- Pressure gauge: 0 to 6 bar pressure range	0080-0186
- Pressure gauge: 0 to 10 bar pressure range	8520-0032
- Pressure gauge: pressure range 0 to 0.6 MPa/0 to 6 kg/cm ²	0800-0204
- For all pressure gauges: screw fitting	0250-1090
- Male screw fitting G 1/4 on hose with 4 mm inside diameter and 6 mm outside diameter, brass	8582-1452
- Male screw fitting 1/4 NPT on hose with 4 mm inside diameter and 6 mm outside diameter, brass	8582-1523
- T-union for hose with 4 mm inside diameter and 6 mm outside diameter, brass	8582-1480