

# Electropneumatic Converters i/p Converters Type 6111



Fig. 1 · Type 6111 in standard version



Fig. 2 · Type 6111 mounted on a supply air manifold



Fig. 3 · Type 6111 in field enclosure

## Mounting and Operating Instructions

**EB 6111 EN**

Edition May 2007



Contents	Page
<b>1</b>	<b>Description</b> . . . . . 3
1.1	Application . . . . . 3
1.2	Versions . . . . . 3
1.3	Technical data . . . . . 5
1.4	Principle of operation . . . . . 6
<b>2</b>	<b>Installation</b> . . . . . 8
2.1	Mounting position . . . . . 8
2.2	Electrical connection . . . . . 9
2.3	Pneumatic connection . . . . . 9
<b>3</b>	<b>Operation</b> . . . . . 10
3.1	Checking zero point and span . . . . . 10
3.2	Zero adjustment for versions with an input signal of 0 to 20 mA . . . . 10
<b>4</b>	<b>Maintenance</b> . . . . . 11
<b>5</b>	<b>Servicing explosion-protected devices</b> . . . . . 11
<b>6</b>	<b>Supply air manifold for rail-mounting unit</b> . . . . . 12
6.1	Mounting the manifold . . . . . 12
6.2	Preparing the manifold . . . . . 12
6.2.1	Connectors . . . . . 12
6.2.2	Connection fittings for pneumatic output signals . . . . . 12
6.2.3	Connecting manifolds . . . . . 14
6.3	Mounting Type 6111 Converter on the manifold . . . . . 14
<b>7</b>	<b>Accessories</b> . . . . . 15
<b>8</b>	<b>Dimensions in mm</b> . . . . . 16
<b>9</b>	<b>Troubleshooting</b> . . . . . 18
	<b>Certificates</b> . . . . . 19



- ▶ *The devices may only be mounted, started up or serviced by fully trained and qualified personnel, observing the accepted industry codes and practices. Make sure employees or third persons are not exposed to any danger.  
All safety instructions and warnings in these mounting and operating instructions, particularly those concerning assembly, start-up and maintenance, must be observed.*
- ▶ *Explosion-protected versions of this converter may only be operated by personnel who have undergone special training or instructions or who are authorized to work on explosion-protected devices in hazardous areas. Refer to section 5 on Servicing explosion-protected versions.*
- ▶ *Any hazards which could be caused in the device by the signal pressure are to be prevented by means of the appropriate measures.*
- ▶ *Proper shipping and appropriate storage of the device are assumed.*
- ▶ **Note!**  
*The device with the CE marking fulfills the requirements of the Directive 94/9/EC and the Directive 89/336/EEC.  
The declaration of conformity is available on request.*

## 1 Description

### 1.1 Application

The devices are used to convert a direct current input signal into a pneumatic output signal for measuring and control. They are especially suitable as intermediate members between electrical measuring devices and pneumatic controllers, or between electrical control devices and pneumatic control valves.

The input is a load-independent direct current of 4 to 20 mA or 0 or 20 mA and the

output is a pneumatic signal of 0.2 to 1 bar or other signal ranges up to max. 8 bar.

### 1.2 Versions

See overleaf for the article code.



## 1.3 Technical data

Type 6111 i/p Converter	Rail-mounting unit		Field unit
Input	4 to 20 mA (0 to 20 mA on request); For split-range: 4 to 12 mA or 12 to 20 mA; Other signals on request		
Load impedance	Standard version: $\leq 6 \text{ V}$ (corresponding to $300 \Omega$ at 20 mA) Explosion-protected version: $7 \text{ V}$ (corresponding to $350 \Omega$ at 20 mA) Versions without electronics: $\leq 4 \text{ V}$ (corresponding to $200 \Omega$ at 20 mA)		
Explosion protection	⊕ II 2 G EEx ia IIC T6	⊕ II 3 G EEx nA II T6	
Output	Standard ranges: 0.2 to 1 bar (3 to 15 psi); 0.4 to 2 bar (6 to 30 psi)		
with Type 6112 i/p Module	Special ranges adjustable at the factory to meet customer specifications		
1) The maximum possible output pressure is 8 bar	Initial value	Span $\Delta p$	
	0.1 to 0.4 bar	0.75 to 1.00 bar	Module A
	0.1 to 0.4 bar	1.00 to 1.35 bar	Module B
	0.1 to 0.4 bar	1.35 to 1.81 bar	Module C
	0.1 to 0.8 bar	1.81 to 2.44 bar	Module D
	0.1 to 0.8 bar	2.44 to 3.28 bar	Module E
	0.1 to 0.8 bar	3.28 to 4.42 bar	Module F
	0.1 to 1.2 bar	4.42 to 5.94 bar	Module G
0.1 to 1.2 bar	5.94 to 8.00 bar <sup>1)</sup>	Module H	
Max. air output capacity	2.0 m <sup>3</sup> /h at an output of 0.6 bar (0.2 to 1.0 bar) 2.5 m <sup>3</sup> /h at an output of 1.2 bar (0.4 to 2.0 bar) 8.5 m <sup>3</sup> /h at an output of 5.0 bar (0.1 to 8.0 bar)		
Supply air	At least 0.4 bar above the upper signal pressure range value, maximum 10 bar without upstream pressure regulator		
Air consumption	0.08 m <sub>n</sub> <sup>3</sup> /h at 1.4 bar · 0.1 m <sub>n</sub> <sup>3</sup> /h at 2.4 bar · Max. 0.26 m <sub>n</sub> <sup>3</sup> /h at 10 bar		
Performance (measured acc. to IEC 770)	Characteristic: Output linear to the input		
Hysteresis	$\leq 0.3 \%$ of final value		
Deviation from terminal-based conformity	$\leq 1 \%$ of final value at terminal-based conformity		
Influence in % of the final value	Supply air: 0.1 % / 0.1 bar Alternating load, supply air failure, interruption of the input current: $< 0.3 \%$ Ambient temperature: Initial value $< 0.03 \%/^{\circ}\text{C}$ · Measuring span $< 0.03 \%/^{\circ}\text{C}$		
Dynamic performance	For an output of 0.2 to 1 bar		
Limiting frequency	5.3 Hz		
Phase shift	-130°		
Variable position	Max. 3.5 % depending on mounting; $\pm 1 \%$ when mounted horizontally		
Ambient conditions	Ambient temperature: -20 to 70 °C · Storage temperature: -40 to 70 °C		
Degree of protection	IP 20	IP 65	
Weight	0.35 kg	1.9 kg	
Housing material	Glass fiber reinforced polyamide	Stainless steel 1.4581	

## 1.4 Principle of operation

The devices consist of an i/p converter module and a connected volume booster.

The supplied direct current  $i$  flows through the plunger coil (2) in the field of the permanent magnet (3). At the balance beam (1), the force of the plunger coil, which is proportional to the current, is balanced against the force of the back-pressure. The back-pressure is produced on the flapper plate (6) by the air jet leaving the nozzle (7). The supply air (SUPPLY 9) flows to the bottom chamber of the volume booster (8) and a certain amount of air determined by the diaphragm position flows past the sleeve (8.5) and leaves through the output (OUTPUT 36).

The output signal  $p_A$  is used also to supply the nozzle (7). The offset spring (8.2) ensures that the output signal is at least 100 mbar even at an input signal of 0 mA. As the input current and the forces acting on the plunger coil increase, the flapper plate (6) moves closer to the nozzle (7). The force of the back-pressure and the cascade pressure  $p_K$  which forms upstream of the throttle (8.4) increase. The cascade pressure will increase until it equals the input current. When the cascade pressure increases, the diaphragm (8.3) and the sleeve (8.5) are pushed downwards, causing the supply air to increase the output pressure  $p_A$  until a new state of equilibrium is reached in the diaphragm chambers.

When the cascade pressure drops, the diaphragm moves upwards, releasing the plug sleeve and thus allowing the output pressure  $p_A$  to escape through the sleeve until the forces are equal again.

## Volume booster, Fig. 4

Volume booster	I (Fig. 4, top)	II (bottom)
Output signal	0.1 bar or more	0 bar or more
i/p module	Type 6109 or Type 6112	Type 6112 only

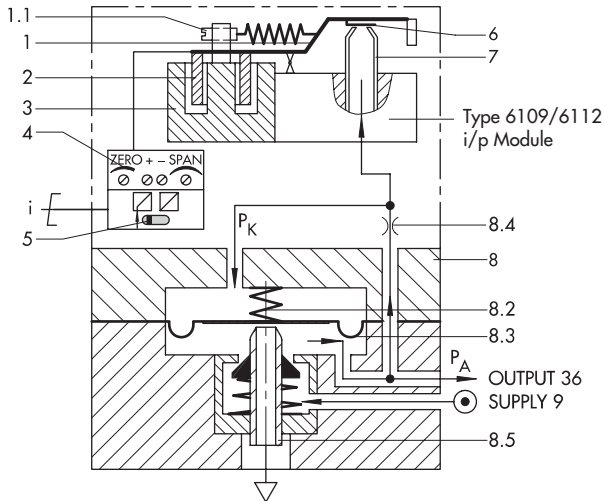
### Note!

A stable supply air network is required for the version with **volume booster II**. It is important that the supply air specifications are strictly adhered to.

## Typical applications

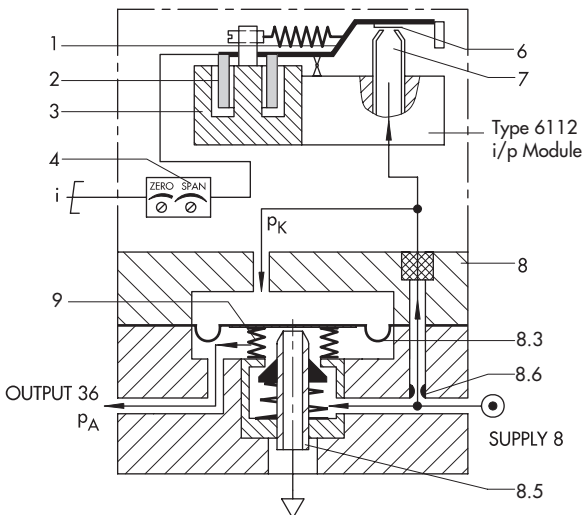
- ▶ **Booster I**  
It can be used in all applications allowing a zero point of min. 0.1 bar. Jumps in the supply air network can be compensated for, without affecting the output signal.  
For example, to control pneumatic control valves.
- ▶ **Booster II**  
It can be used in applications requiring a zero point of 0 bar.  
For example, to control pneumatic cylinders or rollers used in the paper industry.

Version with volume booster I



- 1 Balance beam
- 1.1 Mechanical zero point adjuster (0 to 20 mA version only)
- 2 Plunger coil
- 3 Permanent magnet
- 4 Zero point and span adjusters (not in 0 to 20 mA version)
- 5 Slide switch for switch-off electronic function (not in 0 to 20 mA version)

Version with volume booster II



- 6 Flapper plate
  - 7 Nozzle
  - 8 Volume booster
  - 8.2 Offset spring
  - 8.3 Diaphragm
  - 8.4 Throttle
  - 8.5 Sleeve (exhaust)
  - 8.6 Fixed restrictor
  - 9 Springs
- $p_A$  Output pressure  
 $p_K$  Cascade pressure
- ☉ Supply air

Fig. 4 - Functional diagrams

### Switch-off electronic function (Fig. 5)

Devices with an input range from 4 to 20 mA have a slide switch which activates the switch-off electronic function. This function allows the input signal to be set to 0 mA if it falls below  $4.08 \pm$  tolerance.

This causes the pneumatic output to be vented to approximately 100 mbar. This guarantees, for example, the tight shut-off function of a valve. This function requires a characteristic which passes through the zero point, for example, at an output signal of 0.2 to 1 bar.

If the characteristic line does not pass through zero like, for example, for an allocated output signal from 0.8 to 2.7 bar, then the pneumatic output is vented to a remaining pressure of approx. 0.3 bar when the switch-off electronic function is activated.

## 2 Installation

### 2.1 Mounting position

#### ► Rail-mounting unit

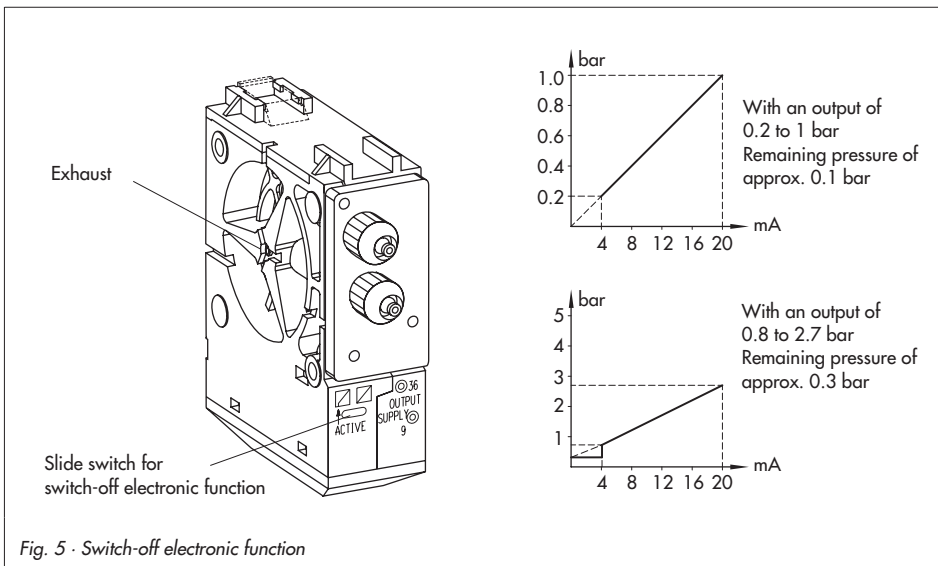
Snap the device onto the top hat rail (refer to page 16).

Optionally, mount to a wall over two holes.

The devices can also be mounted to a **supply air manifold** using the corresponding accessories (refer to section 6).

#### ► Field unit

Mount it using the bracket (1400-7432). Refer to page 17.



## 2.2 Electrical connection



As far as the electrical installation of the device is concerned, the relevant national regulations governing the installation of electrical equipment and the national accident prevention regulations of the country of destination must be adhered to.

In Germany, these are the VDE regulations and accident prevention regulations of the employer's liability insurance.

For installation in hazardous areas, the following standards apply: EN 60079-14: 2003; VDE 0165 Part 1/8.98 "Electrical apparatus for explosive gas areas" and EN 50281-1-2: VDE 0165 Part 2/11.99 "Electrical apparatus for use in the presence of combustible dust".

For the interconnection of intrinsically safe electrical equipment, the permissible maximum values specified in the EC type examination certificate apply ( $U_i$  or  $U_o$ ;  $I_i$  or  $I_o$ ;  $P_i$  or  $P_o$ ;  $C_i$  or  $C_o$ , and  $L_i$  or  $L_o$ ).

### Note!

It is absolutely necessary to keep to the terminal assignment specified in the certificate. Reversal of the electrical connections may cause the explosion protection to be ineffective!

- ▶ Connect the wires for the input signal to the (+) and (-) terminals. The terminals are designed for wires with 0.2 to 2.5 mm<sup>2</sup> (see technical data on page 5). No additional voltage supply is required.

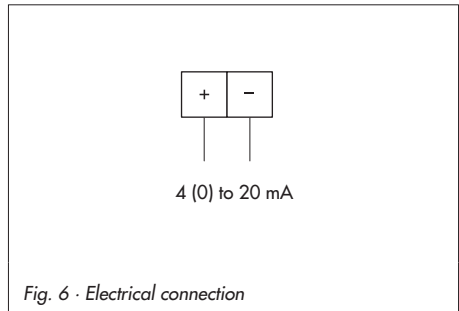


Fig. 6 · Electrical connection

## 2.3 Pneumatic connection

- ▶ **Rail-mounting unit:**  
The standard connections for supply air (SUPPLY 9) and output (OUTPUT 36) are designed as hose connections for hose 4 x 1 mm (6 mm outer diameter) (refer to page 16). The hose connection are also available with 1/8 NPT, G 1/8 or M5 female thread.
- ▶ **Field unit:**  
The connections for supply air and output are designed as taped holes with 1/4-18 NPT threads.

### Supply air (see technical data on page 5)

- ▶ Min. + 0.4 bar above the upper signal pressure range value
- ▶ Max. 10 bar
- ▶ Optional for rail-mounting unit : supply over manifold (see section 6.3)

## 3 Operation

### 3.1 Checking zero point and span

The device converts the input signal proportionally into the output signal.

The signal ranges are specified on the nameplate. The specified range is fixed and can only be changed by approx. 10 % using the potentiometers.

If the converter does not work properly for any reason, check the zero and span.

The **ZERO** and **SPAN** potentiometers are accessible through the holes in the front cover after opening the clear plastic cover (see page 16).

#### **Note!**

*The zero point of devices with booster I cannot be set lower than 0.1 bar.*

*Do not adjust the characteristic in devices with booster II at all as the setting is much more complicated than in the version with booster I.*

#### **Zero:**

1. Connect a pressure gauge (minimum accuracy class 1) to the converter output.
2. Set the supply air to 0.4 bar above the upper output signal range value and apply it to the device.
3. Deactivate the switch-off electronic function at the slide switch (5) (push the switch accessible through the oblong hole at the bottom of the converter away the ACTIVE arrow).

4. Set the input signal to the lower range value with a suitable current source (e.g. for range 4 to 20 mA = 0.2 to 1 bar, set to 4 mA).

The output signal of the pressure gauge should now indicate 0.2 bar.

If this is not the case, readjust the zero point accordingly with the ZERO potentiometer.

#### **Span**

1. Set the input signal to 20 mA (upper range value) using a suitable current source.

The output signal at the pressure gauge should now indicate 1.0 bar.

If this is not the case, readjust the span accordingly with the SPAN potentiometer.

2. Change the input signal abruptly from 20 to 0 mA and check whether the output signal assumes the upper range value of 1.0 bar.

As the adjustment of zero and span influence each other, recheck both values and correct them, if necessary.

### 3.2 Zero adjustment for versions with an input signal of 0 to 20 mA

These versions do not have potentiometers to adjust zero or span, nor the switch-off electronic function.

The zero point can only be adjusted mechanically at the zero screw (1.1). To proceed, remove the front cover and insert a screwdriver through the hole in the cover of the Type 6112 i/p Module (Fig. 4).

## 4 Maintenance

There are no specific maintenance measures to be carried out.

To guarantee trouble-free operation of the converter, make sure that the supply air is always clean.

Air filters and separators of the connected pressure reducing station need to be checked at regular intervals.

## 5 Servicing explosion-protected devices

If a part of the device on which the explosion protection is based needs to be serviced, the device must not be put back into operation until an expert has inspected it according to explosion protection requirements, has issued a certificate stating this or given the device a mark of conformity.

Inspection by an expert is not required if the manufacturer performs a routine test on the device prior to putting it back into operation. The passing of the routine test must be documented by attaching a mark of conformity to the device.

Explosion-protected components may only be replaced by original, checked components from the manufacturer.

Devices that have already been used outside of hazardous areas and are intended for use in hazardous areas in future must comply with the safety demands placed on repaired devices. Prior to operation, they must be tested according to the specifications stipulated for "Repairing explosion-protected devices".

## 6 Supply air manifold for rail-mounting unit

*Supply air manifolds and the corresponding accessories are listed in section 7.*

The manifold (Fig. 7, bottom) is available as an accessory and provides a common air supply for several Type 6111 i/p Converters.

The manifold can be made to be as long as required by combining two or more connecting rails of the manifolds for 3, 4, 5 and 6 converters. Individual manifolds are connected by a coupling (5, order no. 1400-7294) with O-rings (4).

Optionally, the manifold can be fitted with a shut-off valve, pressure gauge as well as hose connections (screw or push-on fittings) for the output signals.

### 6.1 Mounting the manifold

- ▶ To fix the manifold to a wall or to a panel in a control cabinet, drill holes for M5 screws in the groove of the connecting rail.  
Make sure you keep 18 mm distance between the holes and the left and right edge of the rail to allow you to mount the i/p converters properly.

### 6.2 Preparing the manifold

#### 6.2.1 Connectors

- ▶ Mount connectors (3 and 4) at the ends of the manifold rail and secure them in place with the grub screws (6).

#### Supply air

Connect the supply air either over the connector (3) or over a hose screw fitting or push-on fitting (10a or 10b).

- ▶ Firmly screw the hose screw fitting (10a) or push-on fitting (10b) with its O-ring (10.1) into one of the two connectors (3). If the accessories include a shut-off valve (11), mount it between the connector and supply air port screw fitting.

#### End connection

- ▶ Screw stopper (2) into the connector using sealing tape.  
If a pressure gauge (1) is fitted, seal it instead of the stopper.
- ▶ Insert O-rings (4) on both connectors and push them on the left or right side into the connecting rail.
- ▶ Align connectors and secure them in place with the grub screws (6).

#### 6.2.2 Connection fittings for pneumatic output signals

- ▶ Attach the output signal connection (7a or 7b) to the holes on the bottom of the connecting rail (G  $\frac{1}{8}$  thread).  
Fasten the **hose screw fitting connection (7a)** together with a washer (7.1).  
The **hose push-on fitting connection (7b)** has an integrated seal and is fastened **without** the washer (7.1).

- |      |  |    |  |
|------|--|----|--|
| 1    | Pressure gauge   | 12 | Screw with seal  |
| 2    | Stopper  | 15 | Connecting plate (hose connection)                               |
| 3    | Connectors G 1/4   | 16 | Connecting plate (manifold)<br>included in the scope of delivery |
| 4    | O-rings  |    |  |
| 5    | Coupling   |    |  |
| 6    | M4 x 8 grub screw  |    |  |
| 7    | Connection for output signal<br>a: Hose screw connection<br>b: Hose push-on connection |    |  |
| 7.1  | Washer   |    |  |
| 8    | M4 x 16 fillister head screw   |    |  |
| 9    | O-ring   |    |  |
| 10   | Connection for supply air (G 1/4)<br>a: Hose screw fitting<br>b: Hose push-on fitting  |    |  |
| 10.1 | O-ring   |    |  |
| 11   | Shut-off valve   |    |  |
| 11.1 | O-ring   |    |  |

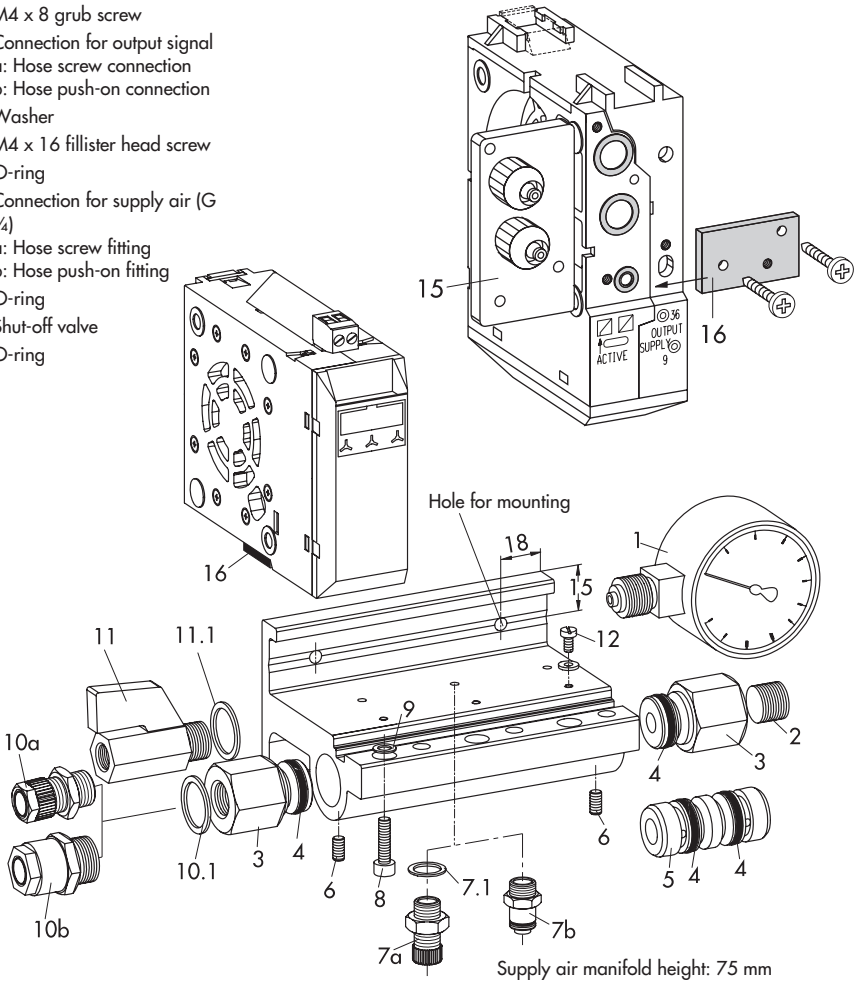


Fig. 7 · Exchanging the connecting plate in the converter (top) · Assembling the supply air manifold (below)

### 6.2.3 Connecting manifolds

A coupling (5) with O-rings (4) is used to connect the individual connecting rails together:

- ▶ Place O-rings (4) on the outer grooves of the coupling (5).
- ▶ Press the coupling into the manifold hole and push on the connecting rail as far as it will go.
- ▶ Screw in grub screws (6) to fasten the parts together.

### 6.3 Mounting Type 6111 Converter on the manifold

- ▶ Attach fastening screws for Type 6111: Insert fillister head screws (8) from below into the holes in the connecting rail and push on O-rings (9) from the top to prevent the screws from falling out.
- ▶ Unscrew the original connecting plate (15) from the bottom of the converter and replace it with the black connecting plate (16) included in the accessories (Fig. 7, top).
- ▶ Slightly tilt the converter upwards and place it on the manifold already mounted (section 6.1). Press the converter down and secure it with the fastening screw (8).
- ▶ **Note!**  
If fewer Type 6111 Converters are mounted on the manifold than it is intended for, seal any unused holes in the supply air duct with the M3 x 6 fillister head screws (12) and O-rings included in the accessories.

Quantity of Type 6111	Combination with coupling				Length of manifold rail <sup>1)</sup> [mm] Height: 75 mm
	Units per manifold rail				
	3	4	5	6	
3	1	–	–	–	108
4	–	1	–	–	144
5	–	–	1	–	180
6	–	–	–	1	216
7	1	1	–	–	252
8	–	2	–	–	288
9	–	1	1	–	324
10	–	–	2	–	360
11	–	–	1	1	369
12	–	–	–	2	432
13	1	–	2	–	468
14	–	1	2	–	504
15	–	–	3	–	540

<sup>1)</sup> Plus the length of the accessories

## 7 Accessories

Accessories for field unit	Order no.
Bracket (stainless steel) incl. two M6 x 12 hex screws and washers for attaching the field unit to the bracket	1400-7432

Supply air manifold for converter units	3	4	5	6
<b>Accessories sets for rail-mounting unit</b>	Order no.			
Supply air manifold in basic version	<b>1400-</b>			
With stopper	7266	7273	7280	7287
With pressure gauge (0 to 6 bar)	7269	7276	7283	7290
With pressure gauge (0 to 6 bar) and shut-off valve	7270	7277	7284	7291
Supply air manifold with hose push-on fittings for outputs (hose 4 x 1) and supply air (hose 8 x 1)	<b>1400-</b>			
With stopper	7267	7274	7281	7288
With pressure gauge (0 to 6 bar) and shut-off valve	7271	7278	7285	7292
Supply air manifold with hose screw fittings for outputs (hose 4 x 1) and supply air (hose 8 x 1)	<b>1400-</b>			
With stopper	7268	7275	7282	7289
With pressure gauge (0 to 6 bar) and shut-off valve	7272	7279	7286	7293
Coupling to connect manifolds	1400-7294			

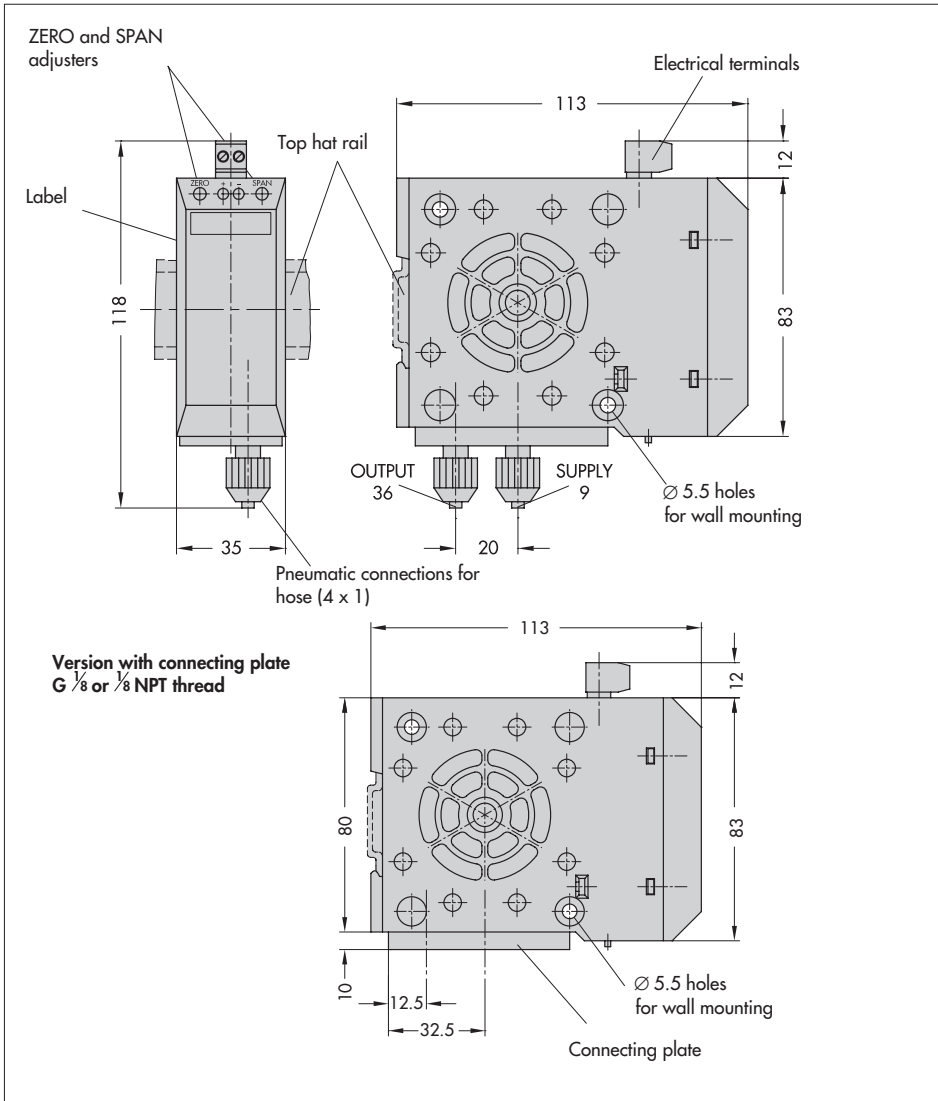
Accessories for supply air manifold (part numbers from Fig. 7)	Thread	Connection for hose D/d	Length [mm] installed	Order no.
Pressure gauge, 0 to 6 bar (1)	G 1/4 A		27	8520-0019
Shut-off valve	G 1/4	–	30	8502-0044
Connector (3)	G 1/4		20	–
Hose screw fitting, output (7a)	G 1/8 A	D/d = 6/4	19	8582-1450
Hose push-on fitting, output (7b)	G 1/8 A	D/d = 6/4	13	8582-1563
Hose screw fitting, supply air (10a)	G 1/4 A	D/d = 10/8	21	8582-1735
Hose push-on fitting, supply air (10b)	G 1/4 A	D/d = 10/8	23	8582-1564
Connecting plate, standard (15)	D 6 hose			0360-2950
Connecting plate, manifold (16)	Attached to manifold			0360-3096

D = Outer diameter

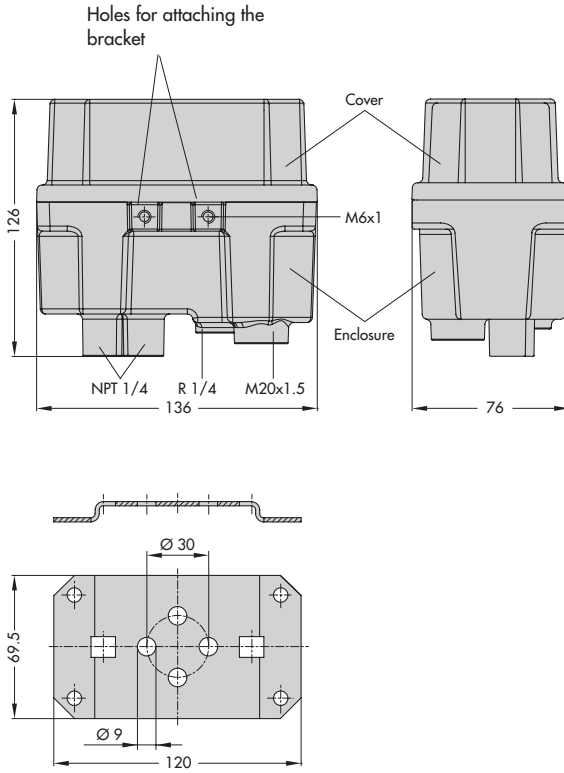
d = Inner diameter

## 8 Dimensions in mm

### ► Rail-mounting unit



► Field unit



Bracket 1400-7432

## 9 Troubleshooting

Problem	Possible cause	Countermeasure	Comments
No output signal despite changing the input signal	Supply air not connected	Check supply air connection, see section 2.3.	
	Incorrect terminal assignment	Connect + and – terminals correctly, see section 2.2	<b>Caution!</b> <i>i/p converter does not need any extra voltage!</i> <b>Do not connect 24 V DC!</b>
	Incorrect input signal	Connect correct signal	See nameplate: 0 – 20 mA or 4 – 20 mA
i/p converter constantly vents off air loudly	Connections for supply air and output at the i/p converter mixed up	Check pneumatic connections, see section 2.3	
i/p converter does not reach 100 % output e.g. 20 mA input: Output only 70 % instead of 100 %	Supply air is too low	Supply air must be 0.4 bar greater than the max. output signal (supply air = 0.4 bar)	See nameplate: Output 0.2 – 1 bar → Supply air at least 1.4 bar
	Input signal faulty	Check whether the input signal at the terminals reaches 100 % (100 % is in standard version, e.g. 20 mA, with split-range 12 mA)	<b>Caution!</b> <i>i/p converter has a load of</i> – max. 6 V (standard version) – max. 7 V (type of protection Ex ia) Check specification concerning control.



## T R A N S L A T I O N

### EC TYPE EXAMINATION CERTIFICATE

- (1) EC Type Examination Certificate Number  
**PTB 01 ATEX 2174**
- (2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres – **Directive 94/9/EC**
- (3) Equipment: **Model 6111-1 /p Converter**
- (4) Manufacturer: **SAWSON AG Mess- und Regeltechnik**
- (5) Address: **Weismüllerstr. 3, 40314 Frankfurt am Main, Germany**
- (6) The equipment and any acceptable variations thereof are specified in the schedule to this certificate.
- (7) The Physikalisch-Technische Bundesanstalt, notified body number 0102, according to Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the essential health and safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres specified in Annex II to the Directive.
- (8) The examination and test results are recorded in confidential report.  
**PTB Ex 01-21297**
- (9) The essential health and safety requirements are satisfied by compliance with  
**EN 50021: 1997 + A1 + A2**  
**EN 50020: 1994**
- (10) If the sign „X“ is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use as specified in the schedule to this certificate.
- (11) According to the Directive 94/9/EC, this EC Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the Manufacture and supply of this equipment.

Statements of Conformity without signature and seal are invalid. This Statement of Conformity may be reproduced only in its entirety without any changes. Extracts or changes shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

Physikalisch-Technische Bundesanstalt Bundesallee 100 D-38116 Braunschweig  
PtB14.60c



(12) The marking of the equipment shall include the following:



Zertifizierungsstelle Explosionsschutz Braunschweig, 26 November 2001  
By order  
(Signature) (Seal)  
Dr. Ing. U. Johannsmeyer  
Regierungsdirktor

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PtB14.60c

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PTB

(13) **S c h e d u l e**

(14) **EC TYPE EXAMINATION CERTIFICATE No. PTB 01 ATEX 2174**

(15) **Description of Equipment**

The model 6111-1.../p-Converter is composed of an i/p module and a downstream pneumatic converter and serves for converting a load-independent current of 1 to 5 mA or 0/4 to 20 mA respectively into a standard pressure signal of 0.2 to 1 bar or 0.4 to 2 bar respectively.

The Model 6111-1.../p Converter is a passive two-terminal network which may be connected to any certified intrinsically safe circuit, provided the permissible maximum values of  $U_i$ ,  $I_i$  and  $P_i$  are not exceeded.

The correlation between temperature classification, permissible ambient temperature ranges and maximum short-circuit currents is shown in the table below:

Temperature class	Permissible ambient temperature range	Maximum short-circuit current
T6	-45 °C ... 60 °C	85 mA or
T5	-45 °C ... 70 °C	100 mA or
T4	-45 °C ... 80 °C	120 mA

**Electrical data**

Signal circuit  
(terminals 11/12)

Type of protection: Intrinsic safety EX ia IIC  
only for connection to a certified intrinsically safe circuit

**Maximum values**

$U_i = 28$  V  
 $I_i = 100$  mA or 85 mA  
 $P_i = 0,7$  W

or

$U_i = 25$  V  
 $I_i = 120$  mA  
 $P_i = 0,7$  W

CI = negligible, UI = negligible

(16) Test report **PTB Ex 01-21297**

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(17) **Special conditions for safe use**

None

(18) **Special health and safety requirements**

In compliance with the standards specified above.

Zertifizierungsstelle Explosionsschutz

Braunschweig, 26 November 2001

By order

(Signature) (seal)

Dr. Ing. U. Johannsmeyer  
Regierungsreferent

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## TRANSLATION

### Statement of Conformity

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres –  
**Directive 94/9/EC**

(3) EC Type Examination Certificate Number

**PTB 02 ATEX 2013 X**

(4) Equipment: Modal 6111-8... i/p-Converter

(5) Manufacturer: SAMSON AG Mess- und Regeltechnik

(6) Address: Weismüllerstr. 3, 60314 Frankfurt am Main, Germany

(7) The equipment and any acceptable variation thereof are specified in the schedule to this certificate and the documents referred to therein.

(8) The Physikalisch-Technische Bundesanstalt, notified body number 0102 according to Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the essential health and safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres specified in Annex II to the Directive.

The examination and test results are recorded in confidential report.

**PTB Ex 02-21420**

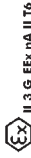
(9) The essential health and safety requirements are satisfied by compliance with

**EN 50021: 1999**

(10) If the sign „X“ is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use as specified in the schedule to this certificate.

(11) In compliance with the Directive 94/9/EC this Statement of Conformity relates only to the design and construction of the equipment specified. Further requirements of this Directive apply to manufacture and marketing of this equipment.

(12) The marking of the equipment shall include the following:



**II 3 G EEx nA II T6**

Zertifizierungsstelle Explosionsschutz  
By order Braunschweig.....

(Signature) (Seal)

Dr. Ing. U. Johannsmeyer  
Regierungsdirktor

Physikalisch-Technische Bundesanstalt  
Braunschweig und Berlin

**S c h e d u l e**

**Statement of Conformity PTB 02 ATEX 2013 X**

**Description of Equipment**

The Model 6111-8, I/P-Converter is composed of an I/P module and a downstream pneumatic converter, and comes to standard lead-in cable current of 1 to 5mA or 0/4 to 20mA respectively into a standard pressure signal of 0.2 to 1bar or 0.4 to 2bar respectively.

The device is intended for use inside and outside of hazardous areas.

The correlation between temperature classification and permissible ambient temperature ranges is shown in the table below:

Temperature class	Permissible ambient temperature range
T6	60°C
T5	-45°C...-70°C
T4	80°C

**Electrical data**

Signal circuit  
(terminals 11/12)

Type of protection: EEx nA II

(16) Test report: **PTB Ex 02-21420**

**Special conditions for safe use**

- The Model 6111-8, I/P-Converter shall be installed in an enclosure providing at least Degree of Protection IP 54 according to IEC Publication 60529:1989.

The wiring shall be connected in such a manner that the connection facilities are not subjected to tensile and/or torsional stress.

**Basic health and safety requirements**

Are satisfied by compliance with the standard specified above.

Zertifizierungsstelle Explosionschutz

Braunschweig,

(Signature)

(seal)

Dr.-Ing. U. Johannsmeyer

Regierungsdirektor

3/3

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**EB 6111 EN**

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