

# TEIP11 DATASHEET

JUNHO 2013

# TEIP11-PS

## I/P signal converter for standard signals

### Measurement made easy



#### Proven and reliable concept

#### Compact design

- Small dimensions, low weight

#### Sturdy construction and solid functionality

- Influence of shock and vibration < 1% at 10 g

#### Variety of signal ranges

- Input, e.g., 0 ... 20 mA or 4 ... 20 mA
- Output 0.2 ... 1 bar (3 ... 15 psi)

#### Complies with the following directives

- EMC Directive 89/336/EEC as of May 1989
- CE mark meets the EC directive for the CE certificate of conformity

#### Additional temperature range

- From -40 (optional -55) ... 85 °C  
(-40 (optional -67) ... 185 °F)

#### Ex protection approvals

- ATEX, FM/CSA, GOST for intrinsically safe and Explosion proof operation

#### Several different designs

- IP 20 control room housing unit for rail mounting
- IP 20 control room housing unit for block mounting
- IP 54 plastic field housing unit
- IP 65 aluminum or stainless steel housing unit

#### Single module

- For OEM application (upon request)

# TEIP11-PS

## I/P signal converter for standard signals

### Concept

The TEIP11-PS signal converter converts electrical standard signals, e.g. 4 ... 20 mA to 0.2 ... 1 bar (3 ... 15 psi). It is therefore a connecting link between electrical/electronic and pneumatic systems. The signal conversion process is similar to the patented force balance method.

Special features of the TEIP11-PS signal converter are its relatively small dimensions and outstanding operational stability when subject to shock and vibration. The converter can be subjected to loads up to 10 g with less than 1% effect on function.

### Designs

#### Control room housing unit for rail mounting

The control room housing unit for rail mounting is the most user-friendly and lowest priced model in the signal converter line.

A mounting base that is compatible with all commercially available EN rails is used for installation.

The housing unit with plastic cap has an IP 20 protection class.

#### Control room housing unit for block mounting

The control room housing unit for block mounting enables you to install a number of converters in a small space. This design features central air supply via connection block and stop valves in the air connectors of the integrated signal converter. A maximum of 4 signal converters can be fitted on the connection blocks required for block mounting. If necessary, 2 or 3 (or max. 4) connection blocks can be connected to each other to create block units of 4-8-12-16 signal converters. Stop valves allow you to mount or remove individual converters during operation.

The housing units are available in a variety of models to meet your installation requirements. For potentially explosive conditions, units that offer intrinsically safe operation or pressure-resistant encapsulation are available with international approval certificates for use worldwide.

Various ranges can be supplied on the input side and the output side for signal conversion (see information in chapter **Technical Data**, page 3)

A power supply of only 1.4 bar (20 psi) of compressed air is required.

#### Field housing

The field housing unit is designed for installation onsite or in the field. Housing units are available in the following models (and protection classes): plastic (IP 54), aluminum (IP 65) and stainless steel (IP 65). The housing units are suitable for wall mounting and 2" pipe mounting.

A specially designed signal converter in a plastic housing unit enables the use of combustible gas as a power supply instead of the standard compressed air.

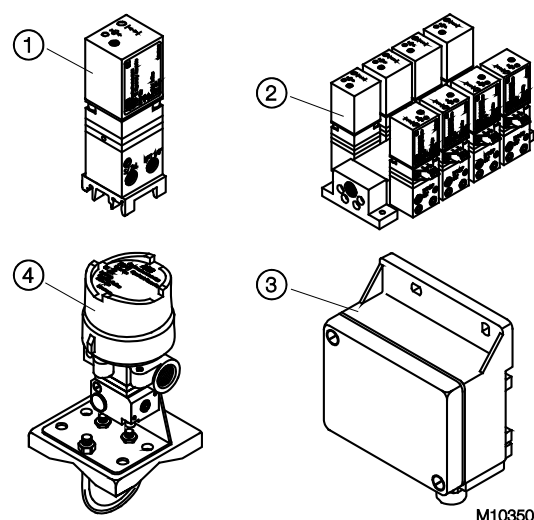


Fig. 1

- ① Control room housing unit for rail mounting
- ② Control room housing unit for block mounting
- ③ Plastic field housing unit
- ④ Aluminum or stainless steel field housing unit

M10350

## Technical Data

### Input (electric)

#### Signal range

0 ... 20 mA or 4 ... 20 mA

0 ... 10 mA or 10 ... 20 mA

4 ... 12 mA or 12 ... 20 mA

(additional ranges available upon request)

#### Input resistance

$R_i = 260 \, \Omega$  at 20 °C (68 °F),  $T_k + 0.4 \, \%/K$

#### Overload limit

30 mA (for explosion-proof devices, see the information in chapter "Ex relevant specifications" on page 6)

#### Capacitance/inductance

Negligible

### Output (pneumatic)

#### Signal range

0.2 ... 1 bar (3 ... 15 psi)

#### Air capacity

$\geq 5 \, \text{kg/h} = 4.1 \, \text{Nm}^3/\text{h} = 2.4 \, \text{scfm}$

#### Load power acc. to VDE / VDI 3520

$\geq 0.95 \, \text{kg/h} = 0.9 \, \text{Nm}^3/\text{h} = 0.5 \, \text{scfm}$

### Power supply (pneumatic)

#### Instrument air

Free of oil, water, and dust acc. to DIN/ISO 8573-1

Pollution and oil content according to Class 3

Pressure dew point 10 K below operating temperature

#### Supply pressure

$1.4 \pm 0.1 \, \text{bar}$  ( $20 \pm 1.5 \, \text{psi}$ ) (for output 1 bar (15 psi))

#### Air consumption

$\leq 0.2 \, \text{kg/h} = 0.16 \, \text{Nm}^3/\text{h} = 0.1 \, \text{scfm}$

### Transmission data and influences

#### Characteristic curve

Linear, direct, or reverse action

#### Deviation

$\leq 0.5 \, \%$

#### Hysteresis

$\leq 0.3 \, \%$

#### Dead band

$\leq 0.1 \, \%$

#### Temperature

$\leq 1 \, \%$  / 10 K within -20 ... 85 °C (-4 ... 185 °F)

$\leq 2 \, \%$  / 10 K within -55 ... -20 °C (-67 ... -4 °F)

#### Power supply

$\leq 0.3 \, \%$  / 0.1 bar (1.5 psi) change in pressure

#### Mechanical vibration

$\leq 1 \, \%$  up to 10 g and 20 ... 80 Hz

#### Seismic vibration

Meets the requirements of DIN IEC 68-3-3 Class III for strong and strongest earthquakes.

#### Mounting orientation

Zero point  $\leq 0.4 \, \%$  at 90° change of position

#### Step response

10 ... 90 % and 90 ... 10 % 0.6 s

5 ... 15 % and 15 ... 5 % 0.25 s

45 ... 55 % and 55 ... 45 % 0.2 s

85 ... 95 % and 95 ... 85 % 0.15 s

#### EMC

Meets the requirements of EMC Directive 89/336/EEC of May 1989 (increased interference immunity as per EN 50082-2 PR of 11/93).

#### CE marking

Complies with the EC directive for CE conformity

# TEIP11-PS

## I/P signal converter for standard signals

### Operating conditions at installation site

#### Ambient temperature

Depending on the ordered model:

-40 ... 85 °C (-40 ... 185 °F)

-55 ... 85 °C (-67 ... 185 °F)

For Ex d:

-40 ... 85 °C (-40 ... 185 °F)

#### Required protection

IP 20 for control room housing unit for rail or block mounting,

IP 54 for plastic housing unit,

IP 65 for aluminum or stainless steel field housing unit

#### Mounting position

Any

### Environmental capabilities

#### Climate class

GPF or FPF acc. to DIN 40040

Temperature:

-55 ... 85 °C (-67 ... 185 °F)

-45 ... 85 °C (-49 ... 185 °F)

Relative humidity for operation, storage, or transport:

75 % average, 95 % short-term,

no condensation

### Design for rail mounting

#### Material / Degree of protection

IP 20 aluminum housing unit, with plastic cover

#### Assembly

Rail mounting:

EN 50022 - 35 x 7.5

EN 50035 - G 32

EN 50045 - 15 x 5

#### Electrical connection

2-pole screw terminal for 2.5 mm<sup>2</sup> (14 AWG)

#### Pneumatic connection

1/8 NPT tap hole for air supply and output

#### Weight

0.25 kg (0.55 lb)

#### Dimensions

See chapter "Dimensions".

### Design for block mounting

#### Material/protection class

IP 20 aluminum housing unit, with plastic cover

#### Assembly

In block format with special connection block (accessory),  
max. 4 connection blocks each with 4 signal converters

#### Electrical connection

2-pole screw terminal for 2.5 mm<sup>2</sup> (14 AWG)

#### Pneumatic connection

3/8 NPT tap hole for air supply

(main connection to connection block)

1/8 NPT tap hole for output

(on each individual signal converter)

#### Mounting position

Any

#### Weight

0.3 kg (0.66 lb)

#### Dimensions

See chapter "Dimensions".

### **Design for field housing unit (plastic)**

#### **Material / Degree of protection**

Polyester housing unit, black, IP 54

#### **Assembly**

Wall or 2" pipe mounting  
(2" pipe mounting for vertical pipes only)

#### **Electrical connection**

2-pole screw terminal for 2.5 mm<sup>2</sup> (14 AWG) in housing unit,  
Pg 11 cable gland for cable entry

#### **Pneumatic connection**

1/8 NPT tap hole for air supply and output

#### **Air outlet**

For gas exhaust with 6 mm (0.24 inch) cut or crimp connection

#### **Mounting position**

Any

#### **Weight**

1.0 kg (2.20 lb)

#### **Dimensions**

See chapter "Dimensions".

### **Design for field housing unit (aluminum/stainless steel)**

#### **Material / Degree of protection**

IP 65 aluminum or stainless steel housing unit

#### **Surface**

Aluminum housing,  
painted with dual component coating,  
lower section, black, RAL 9005,  
screw-on cover, Pantone 420,  
stainless steel housing unit,  
electrolytically polished

### **Assembly**

Wall or 2" pipe mounting  
With stainless steel mounting bracket (accessory)

#### **Electrical connection**

2-pole screw terminal for 2.5 mm<sup>2</sup> (14 AWG) in housing unit,  
NPT 1/2" cable gland for cable entry  
For ATEX "intrinsically safe":  
M20 x 1.5 tap hole for cable entry  
For ATEX "Ex d":  
(Cable gland with Ex d approval available as an accessory on request)  
NPT 1/2" tap hole for cable entry with FM/CSA

#### **Pneumatic connection**

1/4" NPT tap hole for air supply and output

#### **Weight**

0.62 kg (1.37 lb) with aluminum housing unit  
1.20 kg (2.65 lb) with stainless steel housing unit

#### **Dimensions**

See chapter "Dimensions".

#### **Accessories**

##### **"Ex d" cable gland**

Brass, with M20 x 1.5 thread

##### **Stainless steel mounting bracket for wall mounting or 2"-pipe mounting**

For aluminum or stainless steel field housing unit

#### **Material for block mounting**

Connection block for 4 signal converters,  
panel with 3/8 NPT central air connector,  
dummy panel

# TEIP11-PS

## I/P signal converter for standard signals

### Ex relevant specifications

#### ATEX/GOST

##### Flameproof enclosure

##### Labelling

Certificate of conformity	II 2 G Ex d IIC T4/T5/T6 Gb
Type	DMT 02 ATEX E 121 X
Device class	DOC. 900771
Standards	II 2G
	EN 60079-0: 2012
	(General requirements)
	EN 60079-1: 2007
	(Flameproof enclosure "d")

##### Electrical data

Current	≤ 50 mA
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##### Pneumatic data

Supply pressure	< 10 bar
Output signal	< 1 bar

##### Pneumatic data TEIP11-PS

Supply pressure	< 2.5 bar
Output signal	< 2 bar

##### Thermal data

T4: -40 °C < Tamb < 85 °C
T5: -40 °C < Tamb < 70 °C
T6: -40 °C < Tamb < 55 °C

#### Special Requirements

The I/P converter is suitable for use in an ambient temperature range of -40 °C to max. 85 °C.

If the I/P converter is used at an ambient temperature above 60 °C or below -20 °C, use cable entries and cables suitable for a service temperature corresponding to the maximum ambient temperature increased by 10 K or corresponding to the minimum ambient temperature.

Versions with an intrinsically safe control head may no longer be used as "intrinsically safe" if they have been previously used as a flameproof type of ignition protection with a non-intrinsically-safe power supply.

### Operation as intrinsically safe equipment

#### Labelling

Certificate of conformity	II 2G Ex ia IIC T6 resp. T4 Gb
Type	TÜV 99 ATEX 1487 X
	TEIP11,
	Doc. 901068-SMDxxxx
	TEIP11-PS,
	Doc. 901068-SMDxxxx
	TEIP11-PS,
	Doc. 901069-SMDxxxx
Device class	II 2G
Standards	EN 60079-0:2009
	EN 60079-11:2012

#### Temperature classes for the following versions:

TEIP11 Doc. 901068-SMD and TEIP11-PS Doc. 901068-SMD and TEIP11-PS Doc. 901069-SMD

Temperature class	Input current	Ambient temperature range
T4	120 mA	-55 ... 60 °C
T4	100 mA	-55 ... 85 °C
T6	60 mA	-55 ... 40 °C

TEIP11 Doc. 901068 and TEIP11-PS Doc. 901069 and TEIP11-PS Doc. 901069

Temperature class	Input current	Ambient temperature range
T6	50 mA	-55 ... 60 °C
T6	60 mA	-55 ... 55 °C
T5	60 mA	-55 ... 70 °C
T4	60 mA	-55 ... 85 °C
T5	100 mA	-55 ... 55 °C
T4	100 mA	-55 ... 85 °C
T5	120 mA	-55 ... 45 °C
T4	120 mA	-55 ... 80 °C
T4	150 mA	-55 ... 70 °C

### Explosion protection ratings

$L_i$	$U_i$	$P_i$
50 mA	42.5 V	2.125 W
60 mA	38.8 V	2.328 W
100 mA	30 V	3.0 W
120 mA	28 V	3.36 W
150 mA	25.5 V	3.825 W

### Special Requirements

The I/P converter TEIP11-PS Doc. type 901069 or Doc. 901069-SMD must be set up outdoors as a pneumatic power supply when used with combustible gases.

The supplied gas must be kept sufficiently free of air and oxygen to prevent a potentially explosive atmosphere from forming.

The gas must always be routed to the outside.

### FM/CSA

#### Intrinsically safe FM

FM "intrinsically safe" (not for metal field housing units)  
I.S.: CL I/Div 1/Grp A B C D

FM "intrinsically safe" (only for metal field housing units)  
I.S.: CL I-II/Div 1/Grp A B C D E F G  
S.: CL II/Div 2/Grp G  
S.: CL III/Div 2

#### Non-incendive FM

N.I.: CL I/Div 2/Grp A B C D (not for metal field housing units)  
N.I.: CL I/Div 2/Grp A B C (only for metal field housing units)

#### Intrinsically safe CSA

CSA "intrinsically safe" (not for metal field housing units)  
I.S.: CL I/Div 1/Grp A B C D  
CL I / Div 2 / Grp A B C D

CSA "intrinsically safe" (only for metal field housing units)  
I.S.: CL I/Div 1/Grp A B C D  
CL II / Div 1 / Grp E F G  
CL III  
CL I / Div 2 / Grp A B C D  
CL II / Div 2 / Grp E F G

#### Non-incendive CSA

FM "explosion proof" (only for metal field housing units)  
X.P.: CL I/Div 1/Grp B C D  
D.I.P.: CL II III/Div 2/Grp E F G

CSA "explosion proof" (only for metal field housing units)  
X.P.: CL I/Div 1/Grp B C D

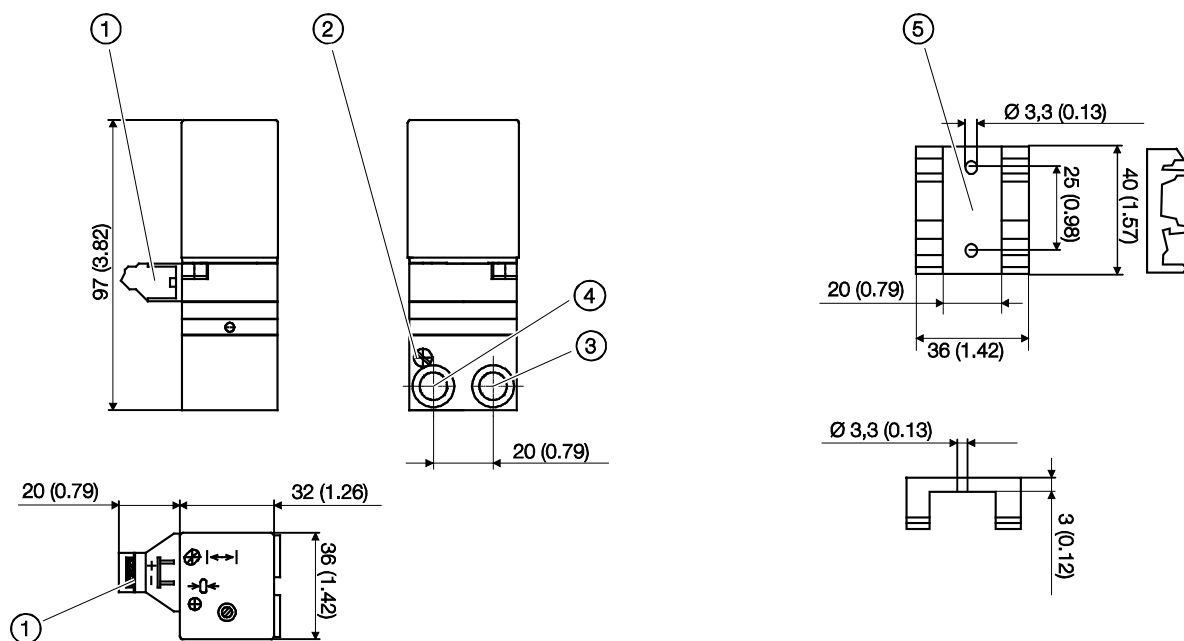


# TEIP11-PS

## I/P signal converter for standard signals

### Dimensions

Design for control room housing unit for rail mounting

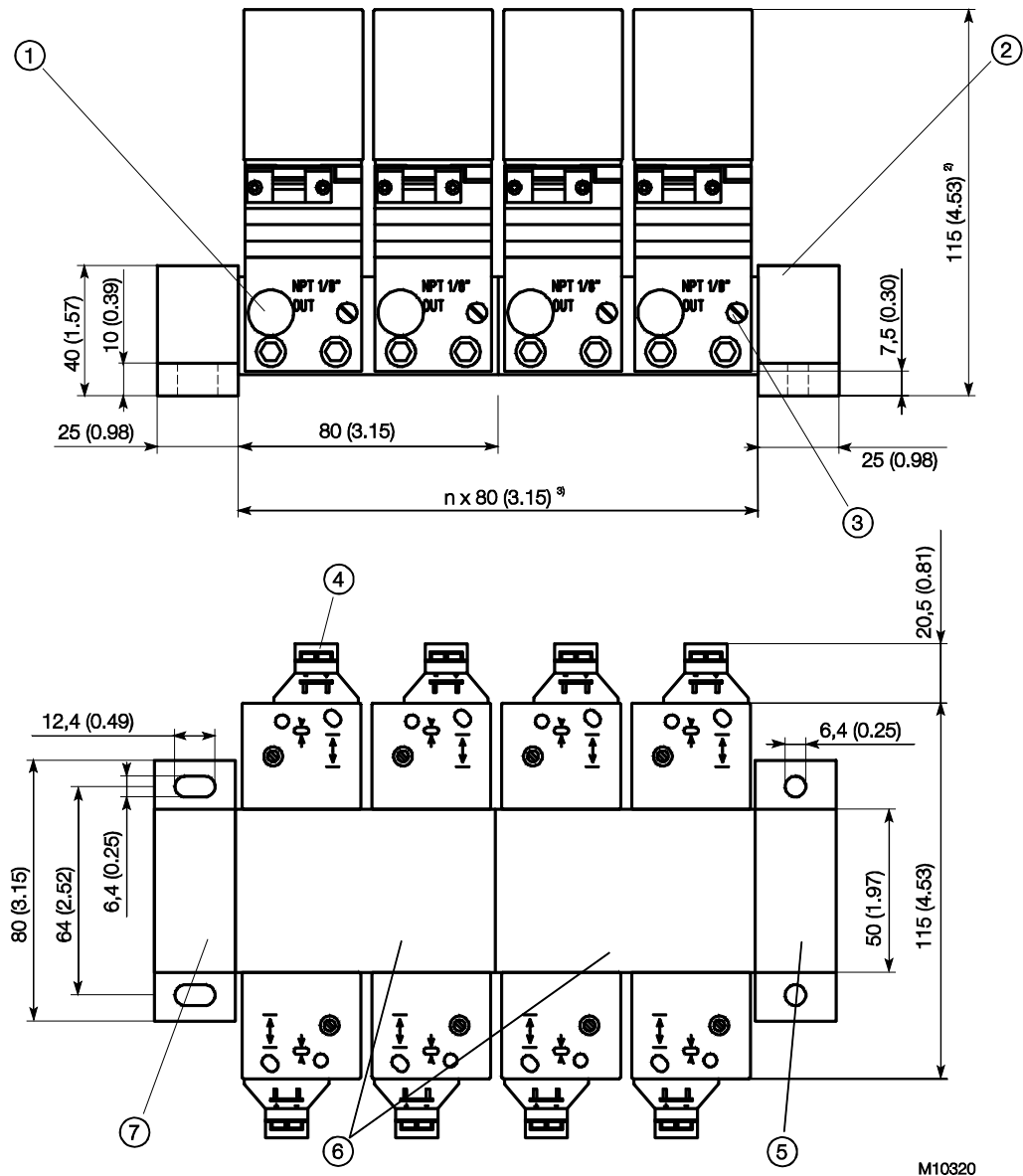


M10323

Fig. 2: Sensor side, dimensions in mm (inch)

① Electrical connections ② Filter ③ Output ④ Air supply ⑤ Mounting element for DIN rail mounting

### Design for control room housing unit for block mounting



M10320

Fig. 3: Dimensions in mm (inches)

- ① Output ② Air supply ③ Filter ④ Electrical connections ⑤ Panel with central air supply connection ⑥ Connection blocks  
⑦ Dummy panel

1) 0.2 ... 1 bar (2.90 ... 14.50 psi) version

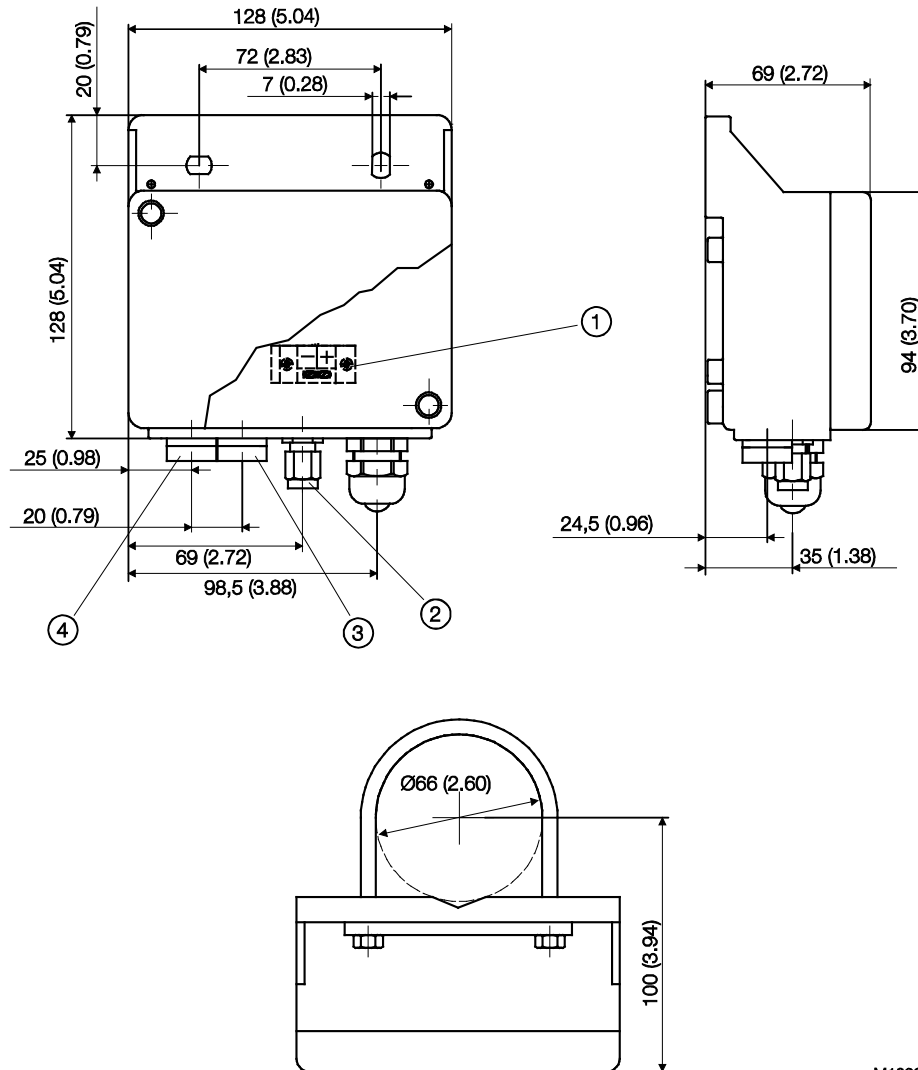
2) 0.4 ... 1 bar (5.80 ... 14.50 psi) version

3) Length 80 mm (3.15 inch) for each connection block

# TEIP11-PS

## I/P signal converter for standard signals

### Design for plastic field housing unit

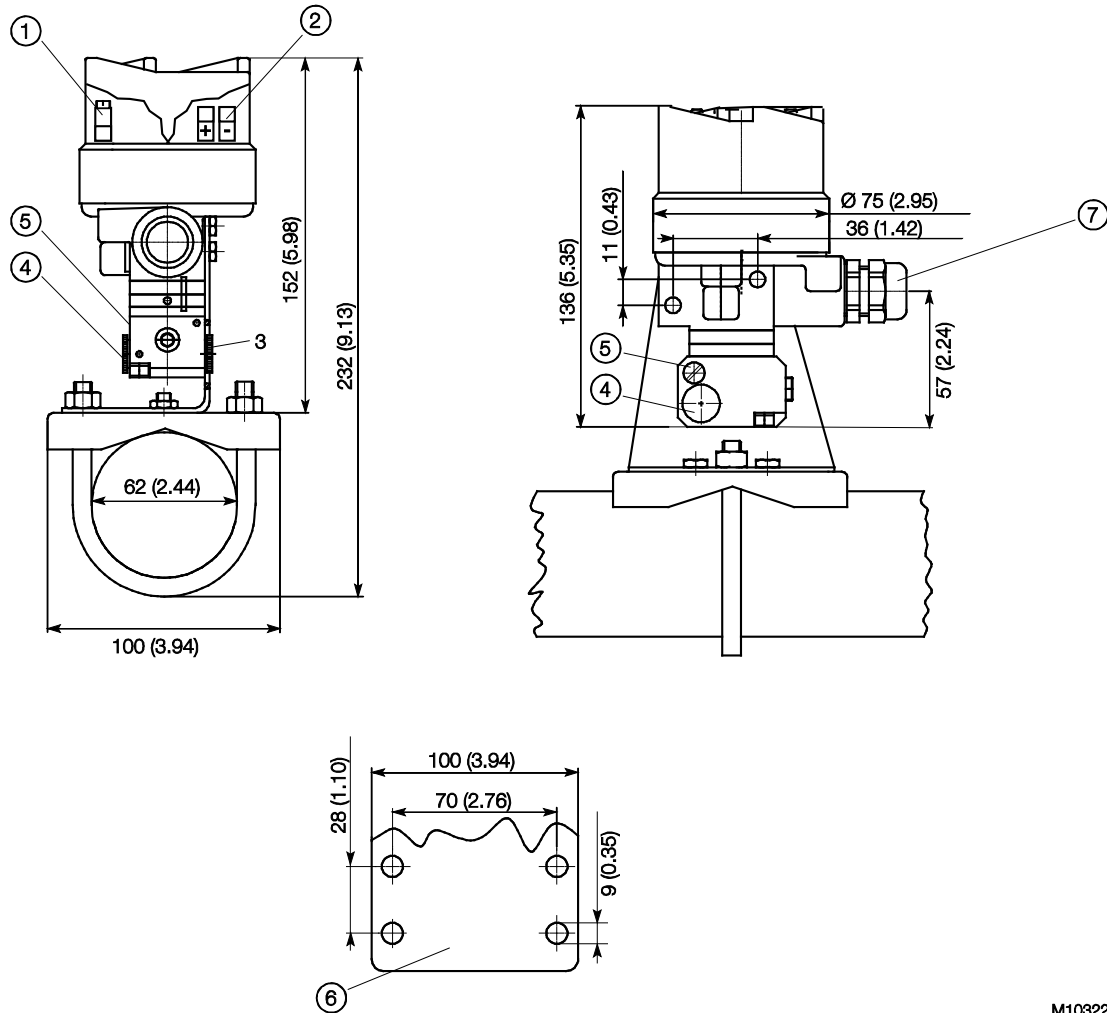


M10321

Fig. 4: Dimensions in mm (inches)

① Electrical connections ② Connection only with version for operation with combustible gas for diverting the escaping gas/6 mm (0.24) screw crimp connection ③ Air supply ④ Output ⑤ Cable gland

# Design for aluminum or stainless steel field housing unit



M10322

Fig. 5: Dimensions in mm (inches)

① Ground terminal ② Electrical connections ③ Output ④ Air supply ⑤ Filter ⑥ Profiled sheet for wall mounting ⑦ Cable gland

# TEIP11

## I/P signal converter for standard signals

### Measurement made easy



#### Current in air pressure

#### Proven and reliable concept

#### Compact design

- Small dimensions, low weight

#### Sturdy construction and solid functionality

- Influence of shock and vibration < 1 % at 10 g

#### Variety of signal ranges

- Input, e.g. 0 ... 20 mA or 4 ... 20 mA
- Output 0.2 ... 1 bar (3 ... 15 psi)

#### Wide temperature range

- From -40 (optional -55) ... 85 °C  
(-40 (optional -67) ... 185 °F)

#### Approvals for explosion protection

- ATEX, FM/CSA, GOST for intrinsically safe and pressure-resistant operation

#### Several different designs

- IP 20 control room housing unit for rail mounting
- IP 65 aluminum or stainless steel field housing unit
- For OEM application (on request)

# TEIP11

## I/P signal converter for standard signals

### Concept

The TEIP11 signal converter converts electrical standard signals, e.g. 4 ... 20 mA to 0.2 ... 1 bar (3 ... 15 psi). It is therefore a connecting link between electrical/electronic and pneumatic systems. The signal conversion process is similar to the patented force balance method.

Special features of the TEIP11 signal converter are its relatively small dimensions and outstanding operational stability when subject to shock and vibration. The converter can be subjected to loads up to 10 g with less than 1% effect on function.

The housing units are available in a variety of models to meet your installation requirements. For potentially explosive conditions, units that offer intrinsically safe operation or pressure-resistant encapsulation are available with international approval certificates for use worldwide.

Various ranges can be supplied on the input side and the output side for signal conversion (see information in chapter Specifications, page 3)

A power supply of only 1.4 ... 10 bar (20 ... 150 psi) of compressed air is required.

In order to ensure smaller dimensions and lower costs, an air power stage is not included in the pneumatic unit.

This reduces the air capacity, meaning that the I/P signal converter can only be used to control small-volume air systems.

### Designs

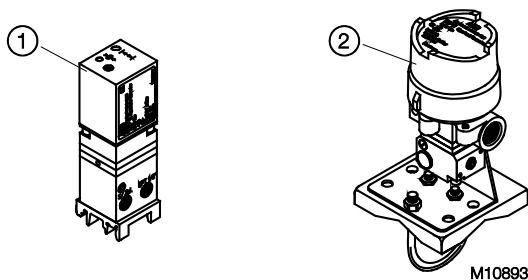


Fig. 1

- ① Control room housing unit for rail mounting
- ② Aluminum or stainless steel field housing unit

#### Control room housing unit for rail mounting

The control room housing unit for rail mounting is the most user-friendly and lowest priced model in the signal converter line.

A mounting base that is compatible with all commercially available EN rails is used for installation.

The housing unit with plastic cap has an IP 20 protection class.

#### Field housing

The field housing unit is designed for installation onsite or in the field. Housing units are available in the following models (and protection classes): plastic (IP 54), aluminum (IP 65) and stainless steel (IP 65). The housing units are suitable for wall mounting and 2" pipe mounting.

## Specifications

### Input (electric)

#### Signal range

0 ... 20 mA or 4 ... 20 mA

0 ... 10 mA or 10 ... 20 mA

4 ... 12 mA or 12 ... 20 mA

(additional ranges available upon request)

#### Input resistance

$R_i = 260 \, \Omega$  at 20 °C (68 °F),  $T_k + 0.4 \, \%/K$

#### Overload limit

30 mA (for explosion-proof devices, see the information in chapter "Ex relevant specifications" on page 5)

#### Capacitance/inductance

Negligible

### Output (pneumatic)

#### Signal range

0.2 ... 1 bar (3 ... 15 psi)

#### Air capacity

at supply air pressure	[kg/h]	[Nm <sup>3</sup> /h]	[scfm]
1.4 bar (20 psi)	0.05	0.041	0.024
2.0 bar (30 psi)	0.07	0.057	0.033
4.0 bar (60 psi)	0.10	0.082	0.048
6.0 bar (90 psi)	0.16	0.130	0.076
10.0 bar(150 psi)	0.25	0.205	0.120

### Power supply (pneumatic)

#### Instrument air

Free of oil, water, and dust acc. to DIN/ISO 8573-1

Pollution and oil content according to Class 3

Pressure dew point 10 K below operating temperature

#### Supply pressure

1.4 ... 10 bar (20 ... 150 psi)

#### Air consumption

Equivalent to air capacity

### Transmission data and influences

#### Characteristic curve

Linear, direct, or reverse action

#### Characteristic curve deviation

$\leq 1 \, \%$

#### Hysteresis

$\leq 0.3 \, \%$

#### Dead band

$\leq 0.1 \, \%$

#### Temperature

$\leq 1 \, \%$  / 10 K within -20 ... 85 °C (-4 ... 185 °F)

$\leq 2 \, \%$  / 10 K within -55 ... -20 °C (-67 ... -4 °F)

#### Power supply

$\leq 0.8 \, \%$  at 1.4 ... 2 bar (20 ... 30 psi)

$\leq 0.8 \, \%$  at 2 ... 3 bar (30 ... 45 psi)

$\leq 0.5 \, \%$  at 3 ... 10 bar (45 ... 150 psi for every 1 bar (15 psi))

#### Mechanical vibration

$\leq 1 \, \%$  up to 10 g and 20 ... 80 Hz

#### Seismic vibration

Meets the requirements of DIN IEC 68-3-3 Class III for strong and strongest earthquakes.

#### Mounting orientation

Zero point  $\leq 0.5 \, \%$  at 90° change of position

#### Step response

10 ... 90 % and 90 ... 10 % 0.6 s

5 ... 15 % and 15 ... 5 % 0.25 s

45 ... 55 % and 55 ... 45 % 0.2 s

85 ... 95 % and 95 ... 85 % 0.15 s

#### EMC

Meets the requirements of EMC Directive 89/336/EEC of May 1989 (increased interference immunity as per EN 50082-2 PR of 11/93).

#### CE marking

Complies with the EC directive for CE conformity

# TEIP11

## I/P signal converter for standard signals

### Operating conditions at installation site

#### Ambient temperature

Depending on the ordered model:

-40 ... 85 °C (-40 ... 185 °F)

-55 ... 85 °C (-67 ... 185 °F)

For Ex d:

-40 ... 85 °C (-40 ... 185 °F)

#### Mounting position

Any

### Environmental capabilities

#### Climate class

GPF or FPF acc. to DIN 40040

Temperature:

-55 ... 85 °C (-67 ... 185 °F)

-45 ... 85 °C (-49 ... 185 °F)

Relative humidity for operation, storage, or transport:

75 % average, 95 % short-term,

no condensation

### Design for rail mounting

#### Material / IP rating

IP 20 aluminum housing unit, with plastic cover

#### Assembly

Rail mounting:

EN 50022 - 35 x 7.5

EN 50035 - G 32

EN 50045 - 15 x 5

#### Electrical connection

2-pole screw terminal for 2.5 mm<sup>2</sup> (14 AWG)

#### Pneumatic connection

1/8 NPT tap hole for air supply and output

#### Weight

0.25 kg (0.55 lb)

#### Dimensions

See chapter "Dimensions".

### Design for field housing unit (aluminum/stainless steel)

#### Material / IP rating

IP 65 aluminum or stainless steel housing unit

#### Surface

Aluminum housing, painted with dual component coating, lower section, black, RAL 9005, screw-on cover, Pantone 420,

stainless steel housing unit, electrolytically polished

#### Assembly

Wall or 2" pipe mounting

With stainless steel mounting bracket (accessory)

#### Electrical connection

2-pole screw terminal for 2.5 mm<sup>2</sup> (14 AWG) in housing unit, NPT 1/2" cable gland for cable entry.

For ATEX "intrinsically safe":

NPT 1/2" tap hole for cable entry.

For ATEX "Ex d":

M20 x 1.5 tap hole for cable entry with FM/CSA

(Cable gland with Ex d approval available as an accessory on request)

#### Pneumatic connection

1/4" NPT tap hole for air supply and output

#### Weight

0.62 kg (1.37 lb) with aluminum housing unit

1.20 kg (2.65 lb) with stainless steel housing unit

#### Dimensions

See chapter "Dimensions".

#### Accessories

##### "Ex d" cable gland

Brass, with M20 x 1.5 thread

#### Stainless steel mounting bracket for wall mounting or 2"-pipe mounting

For aluminum or stainless steel field housing unit

#### Material for block mounting

Connection block for 4 signal converters, panel with 3/8 NPT central air connector, dummy panel



## Ex relevant specifications

### ATEX/GOST

#### Flameproof enclosure

<b>Labelling</b>	II 2 G Ex d IIC T4/T5/T6 Gb
Certificate of conformity	DMT 02 ATEX E 121 X
Type	DOC. 900771
Device class	II 2G
Standards	EN 60079-0: 2012 (General requirements) EN 60079-1: 2007 (Flameproof enclosure "d")

#### Electrical data

Current	≤ 50 mA
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#### Pneumatic data

Supply pressure	< 10 bar
Output signal	< 1 bar

#### Pneumatic data TEIP11-PS

Supply pressure	< 2.5 bar
Output signal	< 2 bar

#### Thermal data

T4: -40 °C < Tamb < 85 °C
T5: -40 °C < Tamb < 70 °C
T6: -40 °C < Tamb < 55 °C

### Special Requirements

The I/P converter is suitable for use in an ambient temperature range of -40 °C to max. 85 °C.

If the I/P converter is used at an ambient temperature above 60 °C or below -20 °C, use cable entries and cables suitable for a service temperature corresponding to the maximum ambient temperature increased by 10 K or corresponding to the minimum ambient temperature.

Versions with an intrinsically safe control head may no longer be used as "intrinsically safe" if they have been previously used as a flameproof type of ignition protection with a non-intrinsically-safe power supply.

## Operation as intrinsically safe equipment

### Labelling

Certificate of conformity	II 2G Ex ia IIC T6 resp. T4 Gb TÜV 99 ATEX 1487 X TEIP11, Doc. 901068-SMDxxxx TEIP11-PS, Doc. 901068-SMDxxxx TEIP11-PS, Doc. 901069-SMDxxxx
Device class	II 2G
Standards	EN 60079-0:2009 EN 60079-11:2012

### Temperature classes for the following versions:

TEIP11 Doc. 901068-SMD and TEIP11-PS Doc. 901068-SMD and TEIP11-PS Doc. 901069-SMD

Temperature class	Input current	Ambient temperature range
T4	120 mA	-55 ... 60 °C
T4	100 mA	-55 ... 85 °C
T6	60 mA	-55 ... 40 °C

TEIP11 Doc. 901068 and TEIP11-PS Doc. 901069 and TEIP11-PS Doc. 901069

Temperature class	Input current	Ambient temperature range
T6	50 mA	-55 ... 60 °C
T6	60 mA	-55 ... 55 °C
T5	60 mA	-55 ... 70 °C
T4	60 mA	-55 ... 85 °C
T5	100 mA	-55 ... 55 °C
T4	100 mA	-55 ... 85 °C
T5	120 mA	-55 ... 45 °C
T4	120 mA	-55 ... 80 °C
T4	150 mA	-55 ... 70 °C

### Explosion protection ratings

$L_i$	$U_i$	$P_i$
50 mA	42.5 V	2.125 W
60 mA	38.8 V	2.328 W
100 mA	30 V	3.0 W
120 mA	28 V	3.36 W
150 mA	25.5 V	3.825 W

# TEIP11

## I/P signal converter for standard signals

### FM/CSA

#### Intrinsically safe FM

FM "intrinsically safe" (not for metal field housing units)

I.S.: CL I/Div 1/Grp A B C D

FM "intrinsically safe" (only for metal field housing units)

I.S.: CL I-II/Div 1/Grp A B C D E F G

S.: CL II/Div 2/Grp G

S.: CL III/Div 2

#### Non-incendive FM

N.I.: CL I/Div 2/Grp A B C D (not for metal field housing units)

N.I.: CL I/Div 2/Grp A B C (only for metal field housing units)

### Intrinsically safe CSA

CSA "intrinsically safe" (not for metal field housing units)

I.S.: CL I/Div 1/Grp A B C D

CL I / Div 2 / Grp A B C D

CSA "intrinsically safe" (only for metal field housing units)

I.S.: CL I/Div 1/Grp A B C D

CL II / Div 1 / Grp E F G

CL III

CL I / Div 2 / Grp A B C D

CL II / Div 2 / Grp E F G

### Non-incendive CSA

FM "explosion proof" (only for metal field housing units)

X.P.: CL I/Div 1/Grp B C D

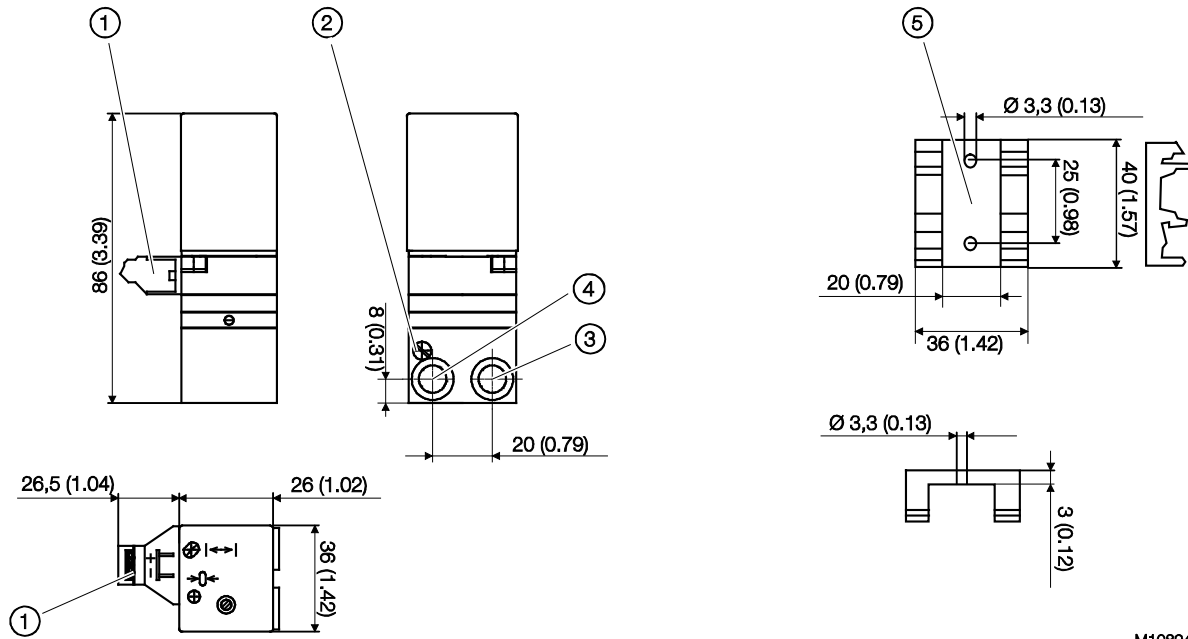
D.I.P.: CL II III/Div 2/Grp E F G

CSA "explosion proof" (only for metal field housing units)

X.P.: CL I/Div 1/Grp B C D

## Dimensions

### Design for control room housing unit for rail mounting



M10894

Fig. 2: Dimensions in mm (inches)

① Electrical connections ② Filter ③ Output ④ Air supply ⑤ Mounting element for DIN rail mounting

# TEIP11

## I/P signal converter for standard signals

Design for aluminum or stainless steel field housing unit

For wall mounting or pipe mounting

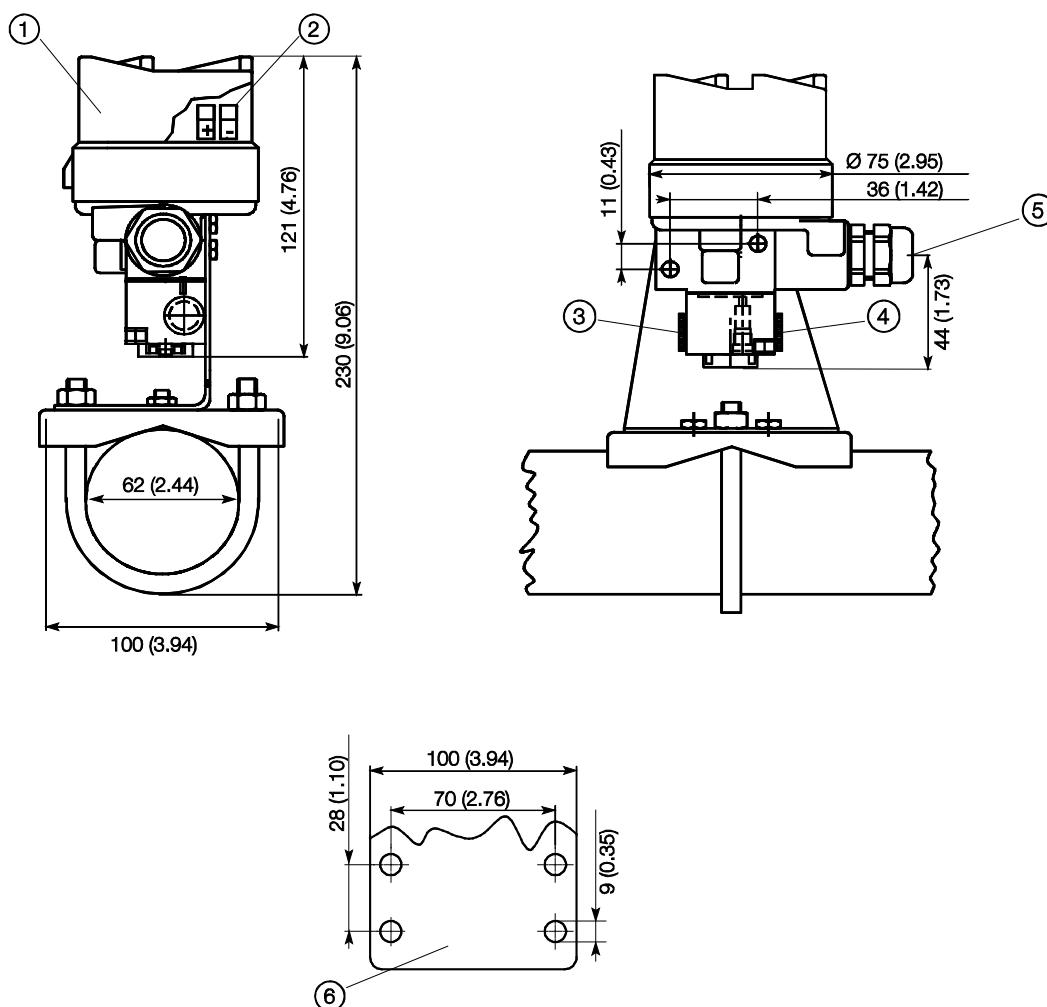


Fig. 3: Dimensions in mm (inches)

① Ground terminal ② Electrical connections ③ Air supply ④ Output ⑤ Cable gland ⑥ Base mounting holes

M10895

# Mounting module for OEM applications

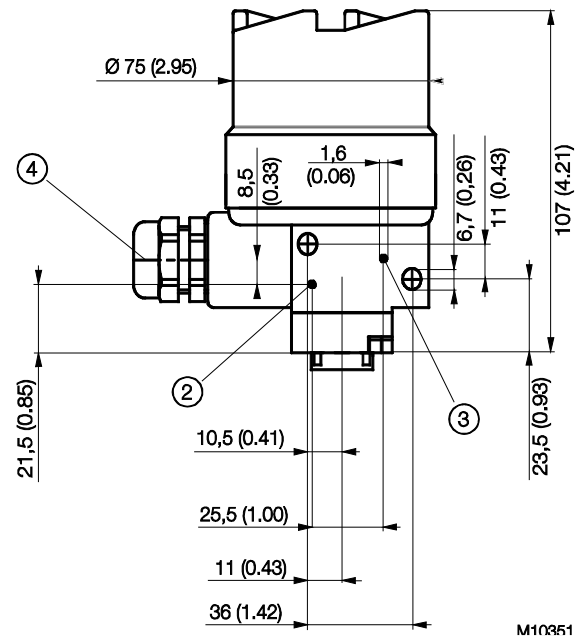
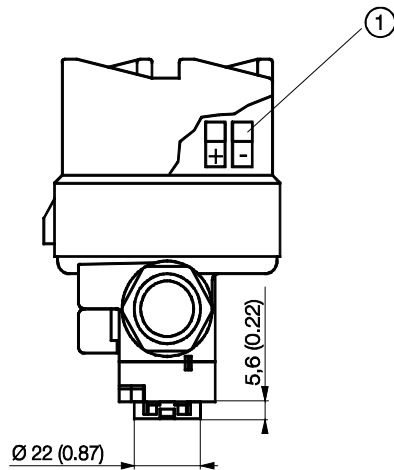


Fig. 4: Dimensions in mm (inches)

① Electrical connections ② Air supply ③ Output ④ Cable gland

M10351

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