

# TEIP 11

I/P Signal Converter  
For Standard Signals  
0...20 mA/4...20 mA  
To 0.2...1 bar/3...15 psi  
Model without Power Stage

10/18-0.11 EN



- **Reliable through well-proven concept**  
More than 750 000 times in use
- **Compact design**  
Small dimensions, low weight
- **Robust in terms of construction and function**  
Influence of shock and vibration < 1 % at 10 g
- **Wide operating temperature range**  
From -40 °C (optionally -55 °C) to +85 °C
- **Various signal ranges**  
Input e.g. 0 ... 20 mA or 4 ... 20 mA  
Output 0.2 ... 1 bar or 3 ... 15 psi
- **Complies with the following directives**  
EMC directive 89/336/EEC as of May 1989  
EC directive for the CE conformity certificate
- **Various explosion protection approvals**  
Intrinsically safe and flameproof,  
With international certificates
- **Various designs**  
Control room housing IP 20 for rail mounting  
Aluminium or stainless steel field housing, IP 65  
Single unit, for OEM applications (on request)

**ABB**

### Construction and mode of operation

The signal converter transforms electrical into pneumatic standard signals, e.g. 4...20 mA into 0.2...1 bar.

The patented conversion principle is based on the force-balance method and provides for small dimensions and an especially high resistance to shock and vibration.

The pneumatic module was designed without an air power stage, for the benefit of small dimensions and low cost. Due to the reduced air capacity this signal converter can be used for controlling small volume systems, only.

There is a choice of two models - with "control room housing" or "field housing" - to meet different mounting requirements. Special designs for OEM-specific mounting types are available on request.

Intrinsically safe or flameproof encapsulated devices with international approval certificates are available for use in hazardous areas throughout the world.

### Technical data

#### Input

Signal range

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

Input resistance

$R_i = 260 \text{ ohms at } 20 \text{ }^\circ\text{C, } T_k + 0.4 \text{ \%}/\text{K}$

Overload limit

30 mA (refer to specifications under "Explosion protection" for devices with explosion protection approval)

Capacitance/Inductance

negligible

#### Output

Signal range

0.2...1 bar or 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

Air supply

Instrument air

free of oil, water and dust to DIN/ISO 8573-1 pollution and oil contents according to Class 3 dew point 10 K below operating temperature

Supply pressure

1.4...10 bar or 20....150 psi

Air consumption

equivalent to air capacity

#### Transmission data and influences

Characteristic

linear, direct or reverse action

Deviation

$\leq 1 \text{ \%}$

Hysteresis

$\leq 0.3 \text{ \%}$

Dead band

$\leq 0.1 \text{ \%}$

Temperature

$\leq 0.1 \text{ \%} / \text{K}$  between  $-20 \dots +85 \text{ }^\circ\text{C}$

$\leq 0.2 \text{ \%} / \text{K}$  between  $-55 \dots -20 \text{ }^\circ\text{C}$

Influence of supply air pressure

$\leq 0.8 \text{ \%}$  at 1.4...2 bar/20...30 psi

$\leq 0.8 \text{ \%}$  at 2.....3 bar/30...45 psi

$\leq 0.5 \text{ \%}$  at 3....10 bar/45...150 psi for every 1 bar / 15 psi

Mechanical vibration

$\leq 1 \text{ \%}$  up to 10 g and 10...80 Hz

Seismic vibration

meets requirements to DIN IEC 68-3-3 class III for strong and strongest earthquakes

Mounting orientation

$\leq 0.5 \text{ \%}$  at  $90 \text{ }^\circ$  change

EMI

complies with EMC directive 89/336/EEC as of May 1989 (increased EMI shielding to EN 50082-2 PR as of 11/93)

CE conformity label

complies with EC directive for CE conformity certification

#### Environmental capabilities

Climate class

GPF or FPF to DIN 40040

Temperature  $-40 \dots +85 \text{ }^\circ\text{C}$  or  $-55 \dots 85 \text{ }^\circ\text{C}$

Relative humidity 75 % average

95 % short-time

non-condensing

For operation in hazardous areas observe the following:

1. Max. temperature limits as specified under "Explosion protection".
2. For temperatures  $< -20 \text{ }^\circ\text{C}$  observe special mounting conditions specified in the explosion protection approval.

<b>Technical data</b>
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**Explosion protection**

CENELEC, intrinsically safe (for all units)

EEx ia IIC T4/T5/T6, PTB-No. Ex-93.C.2104X

CENELEC, flameproof (only for "field housing" units)

EEx d IIC T4/T5/T6, BVS-No 90.C.2016X

Observe the following limits for the individual temperature classes:

Temperature class	Short circuit current (max.)	Ambient temperature (max.)
T6	50 mA	60 °C
T6	60 mA	55 °C
T5	60 mA	70 °C
T5	100 mA	55 °C
T5	120 mA	45 °C
T4	60 mA	85 °C
T4	100 mA	85 °C
T4	120 mA	80 °C
T4	150 mA	70 °C

BRITISH Standards (only for "field housing" units)

Ex N II T6 for Zone 2, Certificate SSA 914012

FM "intrinsically safe" (only for "control room housing" units)

I.S.: CL I / DIV 1 / GRP A B C D

N.I.: CL I / DIV 2 / GRP A B C D

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

I.S.: CL I-II-III / DIV 1 / GRP A B C D E F G

N.I.: CL I / DIV 2 / GRP A B C

S.: CL II / DIV 2 / GRP G

S.: CL III / DIV 2

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

X.P.: CL I / DIV 1 / GRP B C D

D.I.P.: CL I II III / DIV 1 GRP E F G

CSA 2 "intrinsically safe" (only for "control room 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 "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

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

X.P.: CL I / DIV 1 / GRP B C D

CL II / DIV 1 / GRP E F G

Other explosion protection approvals - e.g. ASEV - on request

**Control room housing unit**

Material/protection

Aluminum housing, IP 20,  
with plastic cap

Mounting

Rail 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>

Pneumatic connection

two 1/8 NPT threads for air supply and output

Mounting orientation

any

Weight

0.25 kg

Dimensions

see dimensional drawing

**Field housing unit**

Material/protection

Aluminum or stainless steel housing, IP 65,

Surface

Aluminium housing, varnished, two-component varnish

Bottom part of housing varnished black, RAL 9005

Cover light gray, RAL 9002

Stainless steel housing

Electropolished

Mounting

Wall mounting or 2" pipe mounting

with separate stainless steel mounting bracket

or

add-on module for OEM application

Electrical connection

2-pole screw terminal for 2.5 mm<sup>2</sup> in housing

with PG 13.5 cable gland

for "standard", "CENELEC intrinsically safe"

and for "BRITISH Standards Ex N"

with M 20x1.5 thread

for "CENELEC EEx d" (on request cable gland

with Ex d certificate for 9 ... 11 mm Ø cable

attached as a loose part)

with 1/2 NPT thread

for FM/CSA

Pneumatic connection (for air supply and output)

two 1/4 NPT threads

or

2 lateral holes for add-on module

Mounting orientation

any

Weight

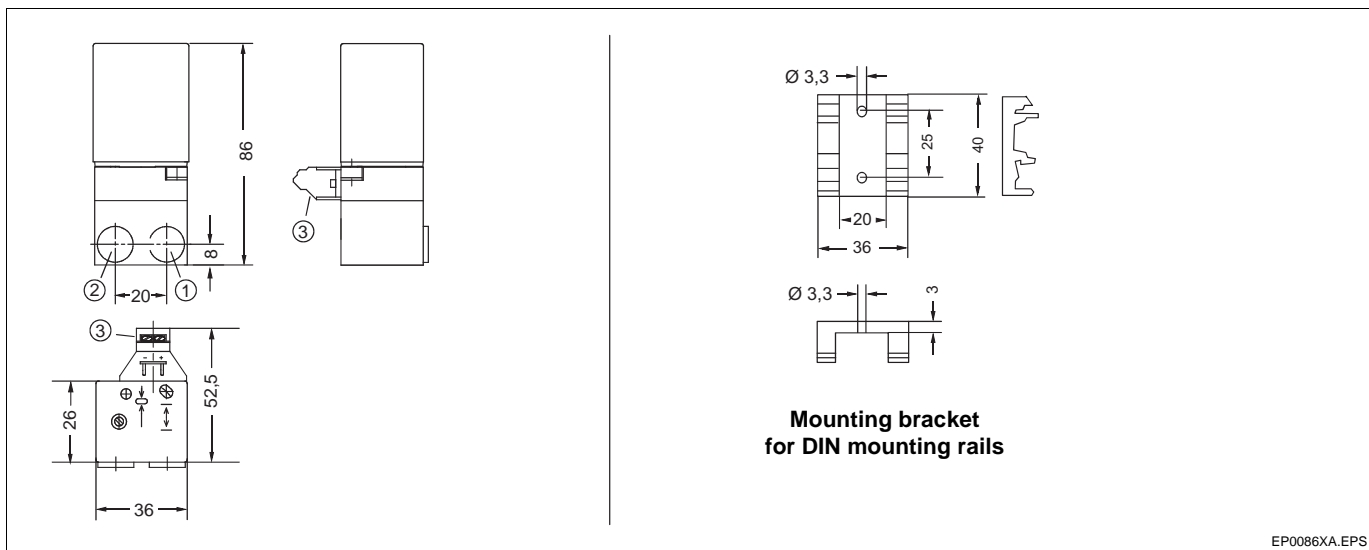
0.62 kg with aluminum housing

1.20 kg with stainless steel housing

Dimensions

see dimensional drawing

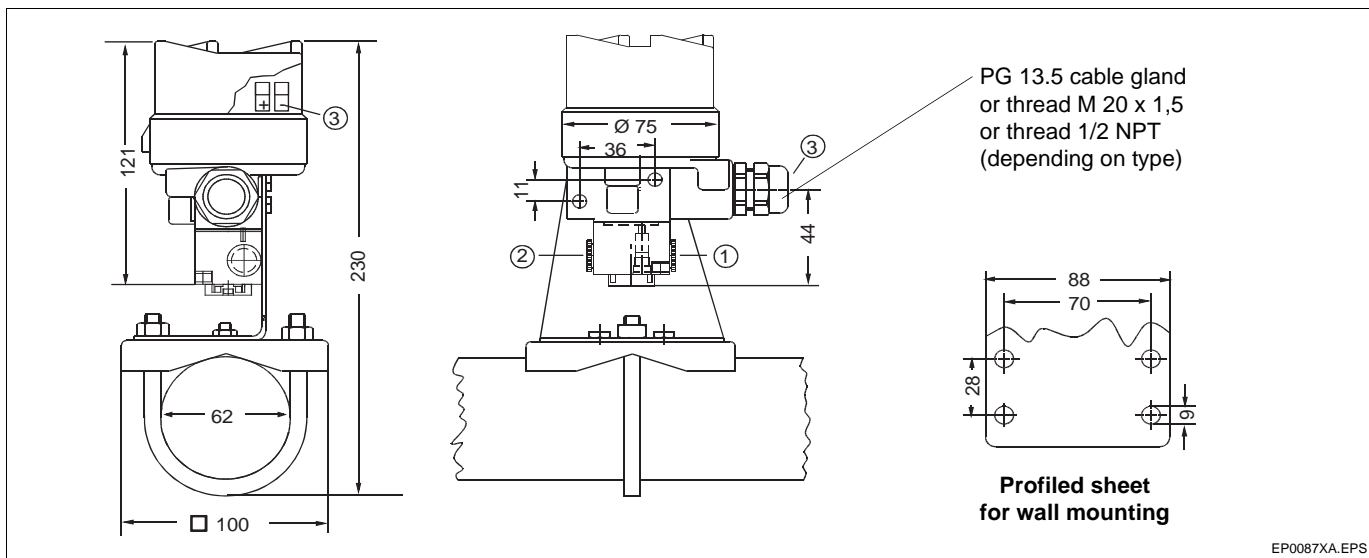
**Dimensional drawings**



EP0086XA.EPS

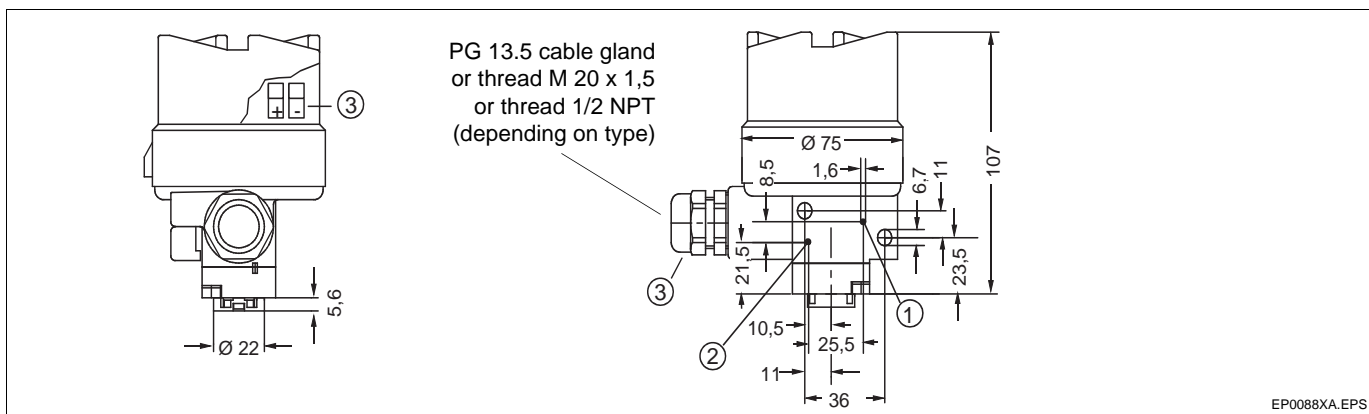
**Control room housing unit**

Connections (all models) 1 = Output, 2 = Air supply, 3 Electrical connections



EP0087XA.EPS

**Aluminum or stainless steel field housing unit for wall or pipe mounting**



EP0088XA.EPS

**Aluminum or stainless steel field housing unit as add-on module for OEM application**

Ordering information										
					Catalog No					
<b>I/P Signal converter TEIP 11 without power stage</b>					<b>V18312-</b>					
<b>Standard (without explosion protection)</b>										
Control room housing, IP 20 for rail mounting					1	1				
Aluminum field housing, IP 65 for wall or pipe mounting					1	2				
Aluminum field housing, IP 65 add-on module for OEM applic.					1	3				
<b>CENELEC EEx ia IIC</b>										
Control room housing, IP 20 for rail mounting					2	1				
Aluminum field housing, IP 65 for wall or pipe mounting					2	2				
Aluminum field housing, IP 65 add-on module for OEM applic.					2	3				
Stainless steel field housing, IP 65 for wall or pipe mounting					2	4				
Stainless steel field housing, IP 65 add-on module for OEM applic.					2	5				
<b>CENELEC EEx d IIC</b>										
Aluminum field housing, IP 65 for wall or pipe mounting					3	2				
Aluminum field housing, IP 65 add-on module for OEM applic.					3	3				
Stainless steel field housing, IP 65 for wall or pipe mounting					3	4				
Stainless steel field housing, IP 65 add-on module for OEM applic.					3	5				
<b>BRITISH Standard Ex N for Zone 2</b>										
Aluminum field housing, IP 65 for wall or pipe mounting					4	2				
Aluminum field housing, IP 65 add-on module for OEM applic.					4	3				
Stainless steel field housing, IP 65 for wall or pipe mounting					4	4				
Stainless steel field housing, IP 65 add-on module for OEM applic.					4	5				
<b>FM/CSA approval for "intrinsically safe"</b>										
Control room housing, IP 20 for rail mounting					5	1				
<b>FM/CSA approval for "intrinsically safe" and "explosion proof"</b>										
Aluminum field housing, IP 65 for wall or pipe mounting					6	2				
Aluminum field housing, IP 65 add-on module for OEM applic.					6	3				
Stainless steel field housing, IP 65 for wall or pipe mounting					6	4				
Stainless steel field housing, IP 65 add-on module for OEM applic.					6	5				

Ordering information									
					Catalog No				
I/P Signal converter TEIP 11 without power stage					V18312-				
Input signal									
0 ... 20 mA					1				
4 ... 20 mA					2				
Output signal									
0.2 ... 1 bar					1				
3 ... 15 psi					2				
Characteristic									
Direct action					1				
Reverse action					2				
Ambient temperature									
-40 ... +85 °C					1				
-55 ... +85 °C					2				
Air supply (air pressure)									
Adjusted to 1.4 bar					1				
3 bar					2				
4 bar					3				
5 bar					4				
as specified (plain text)					9				
Design (varnish/label)									
Standard					1				
OEM-specific upon request									

Accessories				
			Catalog No	
Cable gland EEx d, brass, M 20x1.5 thread			18381-0319343	
Mounting bracket, stainless steel for wall mounting			18381-0319344	
for wall or 2" pipe mounting			18381-0319345	
(for mounting the aluminium or stainless steel field housing)				



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