

Actuators & Positioners

Electro-Pneumatic Converters

I/P Signal Converters - TEIP 11

Model without Booster Stage

- **Reliable through well-proven concept**
 - More than 1,000,000 units 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 certificate
- **Various models**
 - Aluminium or stainless steel field housing, IP 65 (NEMA 4X)
- **Single Units**
 - for OEM Applications (on request)



**Series I/P Signal Converters
for Standard Signals
without Booster Stage**

I/P Signal Converter without Booster Models 22/06-66 and 22/06-67

A new variable air supply design for use with pneumatic positioners.

ABB introduces an I/P configuration designed specifically for use with pneumatic positioners. The highlight of this unit is its capability to accept a wide range of air supply pressures - from 30 to 150 psi - which eliminates the need for a second regulator. All units are calibrated from stock for an 80 psi supply. Recalibration to other air supply pressures are done at no extra charge.

This low volume unit is engineered specifically for close mounting with pneumatic positioners and provides 1/4" NPT connections for air supply and output. Integrated air filter is standard.

The basic design of this unit is the same as that of our standard I/P units, so it has an inherent immunity to vibration and shock, regardless of mounting position.

OEM versions are available. Consult factory for details. "Press Fit" Version for custom applications also available.

Construction and mode of operation

The signal converter transforms electrical into pneumatic standard signals, e.g. 4...20 mA into 0.2...1 bar or 3...15 psi.

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.

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

Special designs for OEM-specific mounting types are available on request.

Technical Data

Input

Signal range 0 - 20 mA or 4 - 20 mA

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

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 (max.)

At supply air pressure	kg/h	Nm ³ /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 / 145 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 - 145 psi

Air consumption equivalent to air capacity

Transmission data and influences

Characteristic linear, direct or reverse action

Deviation: $\leq 1\%$

Hysteresis: $\leq 0.3\%$

Dead band: $\leq 0.1\%$

Temperature	$\leq 0.1\%$ / K between -20...+85°C $\leq 0.2\%$ / K between -55...-20°C
Influence of Supply Air Pressure	$\leq 0.8\%$ / 1.4...2 bar / 20...30 psi $\leq 0.8\%$ / 2.....3 bar / 30...45 psi $\leq 0.5\%$ / 3...10 bar / 45...150 psi for every 1 bar / 15 psi
Mechanical vibration	$\leq 1\%$ 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	$\leq 0.5\%$ at 90° 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...+85°C or -55...85°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 °C observe special mounting conditions specified in the explosion protection approval.

Explosion Protection

ATEX 1487X, intrinsically safe
EEx ia IIC T4/T5/T6,
ATEX E121X, flameproof
EEx d IIC T4/T5/T6,

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

FM "intrinsically safe"

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"

X.P.: CL I / Div 1 / Grp B C D
D.I.P.: CL I II III / Div 1 Grp E F G

CSA "intrinsically safe"

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"

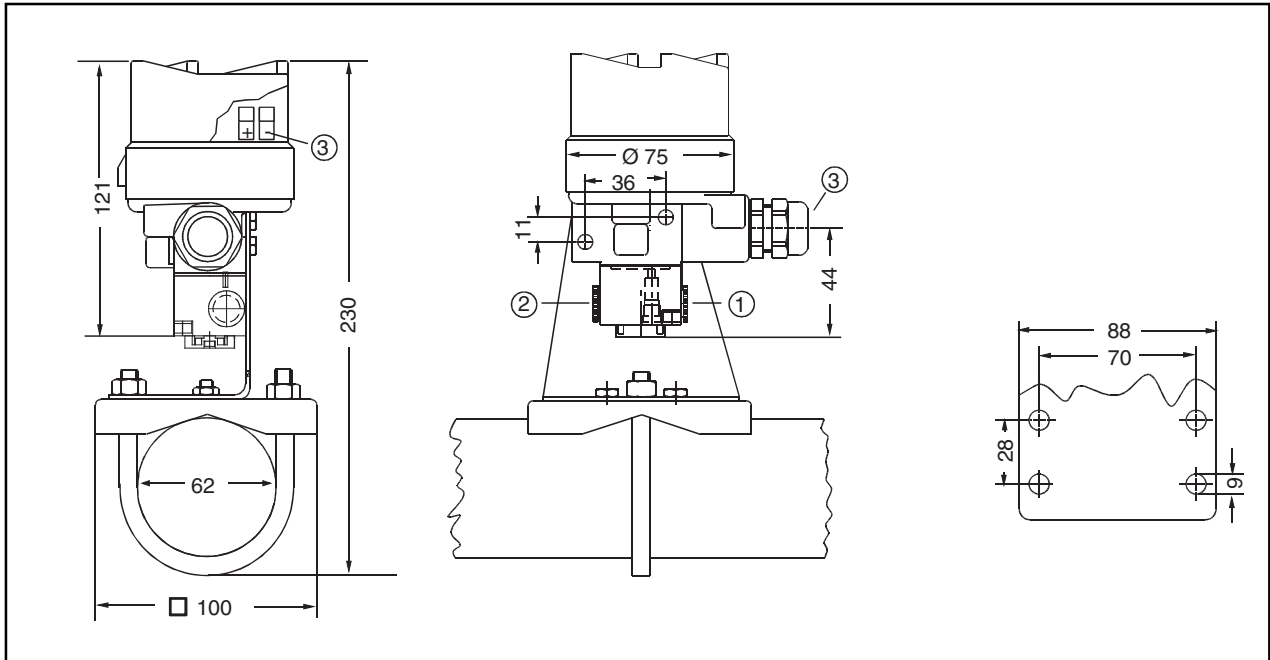
X.P.: CL I / Div 1 / Grp B C D
CL II / Div 1 / Grp E F G

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

Field housing unit

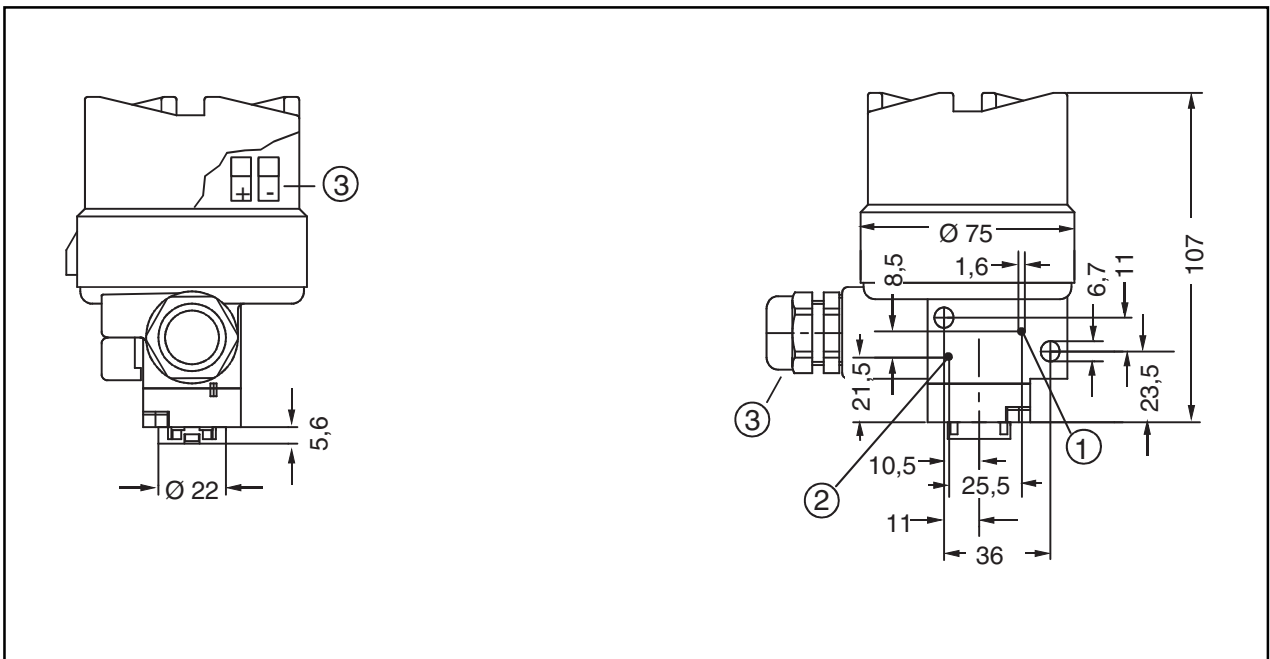
Material/protection	Aluminium or stainless steel housing, IP 65 (NEMA 4X)	Pneumatic Connection	(for air supply and output) two 1/4 NPT threads
Surface	Aluminium housing, varnished, two-component varnish Bottom part of housing varnished black, RAL 9005 Cover light gray, RAL 9002 Stainless steel housing Electropolished	Mounting Orientation	or 2 lateral holes for add-on module any
Mounting	Wall mounting or 2" pipe mounting with separate stainless steel mounting bracket or add-on module for OEM application	Weight	0.62 kg with aluminum housing 1.20 kg with stainless steel housing
Electrical Connection	2-pole screw terminal for 2.5mm ² in housing with PG 13.5 cable gland for "standard", "ATEX intrinsically safe" with M 20x1.5 thread for "ATEX 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	Dimensions	see dimensional drawing

Dimensional Drawings



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

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



Aluminum or stainless steel field housing unit as add-on module for OEM application (Press Fit)

Ordering Information									
	Model No.								
I/P Signal converter TEIP 11 without booster (power) stage	V18312H- (01 - 08)	— 09	— 10						
Standard (without explosion protection)									
Control room housing, IP 20 for rail mounting		1	1						
Aluminum field housing, IP 65 for wall or pipe mounting (NEMA 4X)		1	2						
Aluminum field housing, IP65 add-on module for OEM applications (NEMA 4X)		1	3						
ATEX EEx ia IIC									
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, IP65 add-on module for OEM applications		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 applications		2	5						
ATEX EEx d IIC									
Aluminum field housing, IP 65 for wall or pipe mounting		3	2						
Aluminum field housing, IP65 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						
BRITISH Standard Ex N for Zone 2									
Aluminum field housing, IP 65 for wall or pipe mounting		4	2						
Aluminum field housing, IP65 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						
FM/CSA approval for "Intrinsically safe"									
Control room housing, IP 20 for rail mounting		5	1						
FM/CSA approval for "Intrinsically safe" and "explosion proof"									
Aluminum field housing, IP 65 for wall or pipe mounting (NEMA 4X)		6	2						
Aluminum field housing, IP65 add-on module for OEM applications (NEMA 4X)		6	3						
Stainless steel field housing, IP 65 for wall or pipe mounting (NEMA 4X)		6	4						
Stainless steel field housing, IP 65 add-on module for OEM applications (NEMA 4X)		6	5						

CF = Consult factory

Standard Products =

Ordering Information							
				Model No.			
I/P Signal converter TEIP 11 without booster (power) stage				V18312H-		— 11	— 12
				(01 - 11)		— 13	— 14
						— 15	— 16
Input Signal							
0 ... 20 mA				1			
4 ... 20 mA				2			
Output							
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) (Refer to Stock Version Nomenclature)							
Adjusted to 1.4 bar (20.3 psi)						1	
3 bar (43.5 psi)						2	
4 bar (58.0 psi)						3	
5 bar (72.5 psi)						4	
as specified (plain text)						9	
Design (varnish/label)							
Standard (Refer to Stock Version Nomenclature)						1	
Grey (Refer to Stock Version Nomenclature)						7	
OEM-specific upon request							
Accessories							
Cable gland EEx d, brass, M20 x 1.5 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)							
Stock Versions							
Field Housing							
<u>Explosion Protection</u>	<u>Housing</u>	<u>Input</u>	<u>Output</u>				
Without	Aluminum	4-20mA	3-15 psi	V18312H-12221127			
FM/CSA	Aluminum	4-20mA	3-15 psi	V18312H-62221121			
FM/CSA	Stainless Steel	4-20mA	3-15 psi	V18312H-64221141			
Press Fit							
<u>Explosion Protection</u>	<u>Housing</u>	<u>Input</u>	<u>Output</u>				
Without	Aluminum	4-20mA	3-15 psi	V18312H-13221127			
FM/CSA	Aluminum	4-20mA	3-15 psi	V18312H-63221121			
FM/CSA	Stainless Steel	4-20mA	3-15 psi	V18312H-65221121			
Instruction Bulletin (one copy is supplied at no charge with order)				42/18-46-3XA			

CF = Contact Factory

Standard Products =

Notes

ABB has Sales & Customer Support
expertise in over 100 countries worldwide

www.abb.com

The Company's policy is one of continuous product
improvement and the right is reserved to modify the
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