

## IP24 IP-Transducer for field service



For conversion of a standard electrical signal into a standard pneumatic signal.

### FEATURES

- High air capacity
- Low input resistance
- Easy adaptation of the converter to ranges 0 to 20 mA or 4 to 20 mA
- Mode of action normal or reverse
- Easy change of the output signal from “bar” to “psi”
- Version in EEx ia IIC T6 (ATEX) available

## TECHNICAL DATA <sup>1)</sup>

### Input

Signal range . . . . . 4 to 20 mA / 0 to 20 mA /  
0 to 10 mA / 0 to 10 V  
Input resistance . . . . . < 220 Ω  
with Signal range  
0 to 10 mA / 0 to 10 V . . . . . > 1000 Ω

### Output

Signal range normal . . . . . 0.2 to 1 bar, 3 to 15 psi,  
20 to 100 kPa, 0.2 to 4 bar  
Signal range reverse . . . . . 1 to 0.2 bar, 15 to 3 psi,  
100 to 20 kPa, 4 to 0.2 bar  
Air capacity . . . . . ± 2500 l/h  
Load characteristic  
(measured at 0.6 bar) . . . . . ± 3 %  
with exhausted flow 550 l/h  
with delivered flow 550 l/h

**Supply air** . . . . . 1.4 ± 0.1 bar or 20 ± 1.4 psi  
Air consumption . . . . . < 100 l/h  
Air supply <sup>1)</sup> . . . . . according to ISO 8573-1  
Solid particle size and density class 2.  
Oil rate . . . . . class 3  
For air supply, we recommend the FOXBORO ECKARDT  
FRS923 filter regulator.

### Transmission performance

Characteristics . . . . . linear  
Non-linearity . . . . . < 0.3 % of final value  
Hysteresis . . . . . < 0.1 %  
Supply pressure  
dependence . . . . . < 0.25 %/0.1 bar  
Temperature influence  
Output normal . . . . . < 0.3 %/10 K  
Output reverse . . . . . < 0.5 %/10 K  
Sensitivity level . . . . . < 0.02 %

### Step response

Input	10 ---> 90 %		90 ---> 10 %	
	100 cm <sup>3</sup>	1 000 cm <sup>3</sup>	100 cm <sup>3</sup>	1 000 cm <sup>3</sup>
T <sub>99</sub>	< 1.2 s	2 s	< 1.2 s	2 s

### Ambient conditions

Ambient temperature <sup>2)</sup> . . . . . -25 to +80 °C  
Transportation- and  
storage temperature . . . . . -40 to +85 °C  
Humidity . . . . . < 100 %,   
condensation permitted

The device can be operated at a class D1 location in  
accordance with IEC 654, part 1.

### Electromagnetic Compatibility EMC

Operating conditions . . . . . industrial environment  
Immunity according to  
- NAMUR recommendation NE21 fulfilled  
- EN 61 326 . . . . . fulfilled  
- EN 61 000-6-2 . . . . . fulfilled  
Emission according to  
- EN 55 011,  
Group 1, Class A . . . . . fulfilled  
- EN 61 000-6-2 . . . . . fulfilled

### Housing

Dimensions . . . . . see drawing page 4  
Material . . . . . cast aluminum, grey finish  
Protection class . . . . . IP 54 (horizontal service),  
IP 55 (vertical service,  
bottom connections),  
IP 65 (optional)

### Mounting

Mounting type . . . . . wall or pipe  
Service position . . . . . vertical, bottom connection  
Operating position . . . . . as desired

### Connections

Pneumatic . . . . . <sup>1</sup>/<sub>4</sub> NPT internal thread  
Electric  
Line entry . . . . . 1 or 2 cable glands M20x1.5  
(others with Adapter AD-...)  
Cable diameter . . . . . 6 to 12 mm (0.24 to 0.47 in)  
Screw terminals . . . . . Screw terminals for wires  
up to 2.5 mm<sup>2</sup> (AWG 14)

**Weight** . . . . . 3.6 kg

### CE label

Electromagnetic compatibility 89/336/EWG  
Low-voltage regulation . . . . . w/o EX:73/23/EWG fulfilled  
(with Ex: not applicable)

### Explosion protection

Type of protection . . . . . Intrinsic Safety  
II 2 G EEx ib/ia IIB/IIC T4/T6  
Certificate of Contormity . . . . . PTB 03 ATEX 2215

For operation in certified intrinsically safe circuits with the  
following maximum values:

U<sub>i</sub> . . . . . 30 V  
I<sub>i</sub> . . . . . 150 mA  
P<sub>i</sub> . . . . . 2 W

The effective internal capacitance C<sub>i</sub> and inductance L<sub>i</sub> are  
negligibly low.

The control circuit is electrically isolated from ground.

2) Ex version: -25 to +60 °C

1) Performance data obtained under standard reference conditions

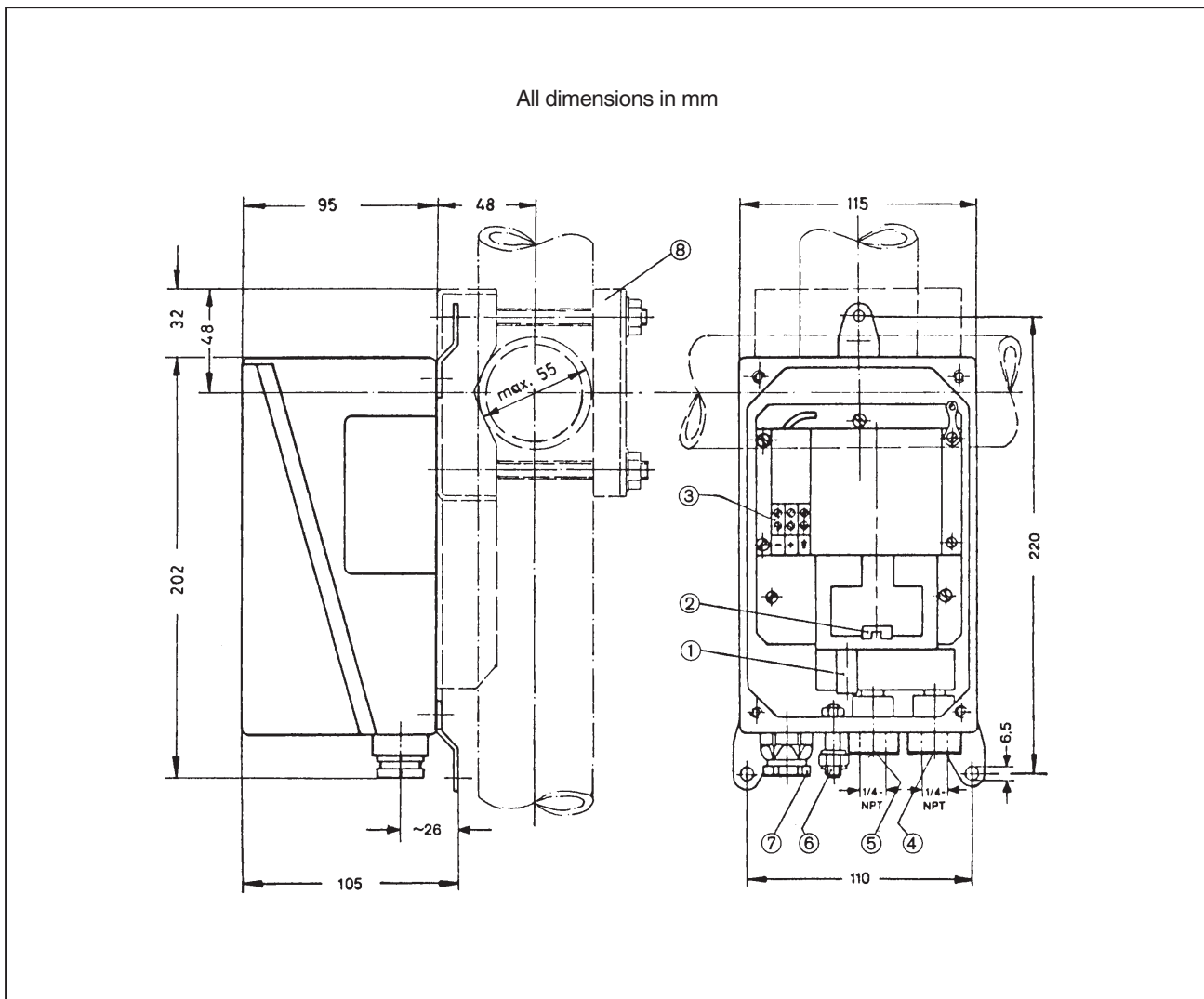
**MODEL CODES IP24**

<b>IP-Transducer for field service</b>	<b>IP24</b>					011004
<b>Input</b>						
Signal Range 0 - 20 mA . . . . .	-A					
Signal Range 4 - 20 mA . . . . .	-B					
Signal Range 0 - 10 mA . . . . . (a)	-C					
Signal Range 0 - 10 V . . . . . (a)	-D					
<b>Output</b>						
Signal Range 0.2 - 1 bar . . . . .					K	
Signal Range 3 - 15 psi . . . . .					L	
Signal Range 20 - 100 kPa . . . . .					M	
Signal Range 0.2 - 4 bar . . . . . (a)					N	
Signal Range 0.2 - 5 bar . . . . . (a)					P	
Signal Range 0.2 - 6 bar . . . . . (a)					Q	
<b>Mode of Action</b>						
Normal (For Version ZZZ) . . . . .						D
Normal (For Version EAA according to ATEX) . . . . .						E
Reverse . . . . .						R
<b>Electrical Certification</b>						
II 2 G EEx ia IIC T6 . . . . .						EAA
Without . . . . .						ZZZ
<b>Options</b>						
Attachment Kit For Pipe Mounting . . . . .						-A
Protection Class IP65 . . . . .						-B
Calibration In kp/cm <sup>2</sup> . . . . .						-C
Assembled free of oil and Grease / Designed for Aux. Energy Oxygen . . . . .						-S
<b>Tag No. Labeling</b>						
Stamped With Weather Resistant Color . . . . .						-G
Stainless Steel Label Fixed With Wire . . . . .						-L
<b>Example:</b>						
	IP24	-A	K	D	EAA	-AG
(a) Only available with Mode of Action Code D						

MODEL CODES Accessories

<b>Adapter</b>	<b>AD</b>
Adapter 1/2" NPT to 3/4" NPT (stainless steel) . . . . .	-A3
Adapter M20 x 1.5 to G1/2" (internal thread) (stainless steel) . . . . .	-A8
Adapter M20 x 1.5 to 1/2" - 14 NPT (internal thread) (brass with nickel coating) . . . . .	-A5
Adapter M20 x 1.5 to 1/2" - 14 NPT (internal thread) (stainless steel) . . . . .	-A6
Adapter (plastic) M20 x 1.5 to PG13.5 (internal thread) . . . . .	-A9

## DIMENSIONS



- |  |                            |
|--|----------------------------|
| 1 Zero adjustment                              | 5 Output signal connection |
| 2 Span adjustment                              | 6 Earth                    |
| 3 Input signals: terminals 2.5 mm <sup>2</sup> | 7 Cable gland              |
| 4 Supply air connection                        | 8 Pipe mounting kit        |

Subject to alterations - reprinting, copying and translation prohibited. Products and publications are normally quoted here without reference to existing patents, registered utility models or trademarks. The lack of any such reference does not justify the assumption that a product or symbol is free.

FOXBORO ECKARDT GmbH  
 Postfach 50 03 47  
 D-70333 Stuttgart  
 Tel. # 49(0)711 502-0  
 Fax # 49(0)711 502-597  
<http://www.foxboro-eckardt.com>  
<http://www.foxboro.com/instrumentation>

DOKT 535 883 026

**Invensys.**