

# CURRENT TO PRESSURE (I/P) CONVERTER



## TYPE SEX71A

## **1. - Introduction**

SEX71A I/P converters are based on a force balance system with electronic feedback: measuring the output signal by means of a piezoresistive sensor and computing it with dedicated SMT electronics, a reliable and high performing instrument is obtained.

### **Technical Data**

**Input signal:** 4 – 20 mA, 2 wires.

**Output signal:** 20 – 100 kPa (0.2 – 1 bar), or 3 – 15 psi. (see codification)

**Output signal characteristics:** linear in relation to input signal.

Accuracy  $\leq$  0.25% including non linearity, repeatability and hysteresis errors.

**Dead band:** negligible

**Action:** direct

**Protection degree:** IEC 144 – IP 65

**Working temperature limits:** -20 - +70 °C.

**Storage temperature limits:** -30 - +85 °C.

**Relative humidity limit:** 90%

### **Materials of construction**

**Case:** passivated AL UNI 3571 alloy, finished with resin RAL 5014

**Cover:** passivated AL UNI 4514 alloy, brushed with resin RAL 5014

### **Connections**

Air supply and output: 1/4" ANSI B2 1 f

Electrical input signal: threaded connection 1/2 " NPT and cable gland PG 13.5 for 7-12 mm diameter cable

**WEIGHT:** 0.8 kg

### **Options and Accessories**

Output signal: 2 – 20 psi, 2 – 30 psi

Mounting on 35 mm rail according to DIN EN 50022.

Bracket for wall mounting 0.3 kg extra weight.

Bracket for 2 inch tube mounting, 0.9 kg extra weight

### **Technical Specification**

Air supply and output: from 120 to 240 kPa (1.2 – 2.4 bar)

Consumption:  $\approx$  0.04 Nm<sup>3</sup> / h with 140 kPa air supply

Power supply effect: negligible on zero reference

Mounting position: to be mounted in any position.

Adjustments: zero and span adjustments externally accessible.

Flow: 10 m<sup>3</sup> / h with 1.4 bar of supply pressure

Thermal drift: it is referred to -10 - +65 °C range

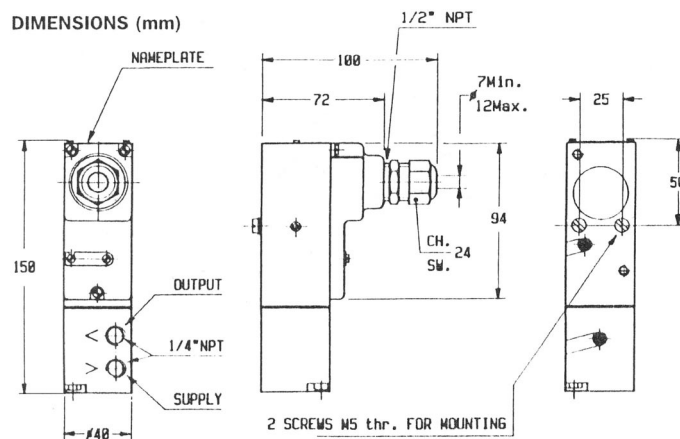
## Explosion Protection

### Classification

Type intrinsic safety Eex ia IIC T5, T4 to EN 50014 and EN 50020 suitable for Zone 0 groups IIA, IIB, IIC.  
Certificate: CESI EX-00.E.063

## Electromagnetic compatibility

Conforms to the standard EM 50081-2, in accordance with EM 50082-2 89/336/EEC and following modifications.



## 2. Theory of Operation

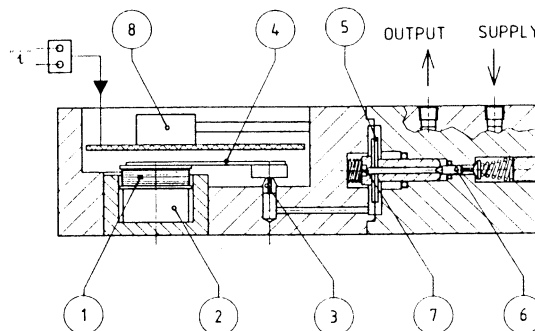
A known part of the input current "i", adjusted during factory calibration, is applied to the mobile coil (1) that is placed into a magnetic field generated by a permanent magnet (2). The force generated by the coil is balanced by the air pressure of the nozzle (3) to which is connected by means of (4).

In a balanced condition the membranes (5) keep the shutter (6) open to compensate the air consumption of the nozzle that receives air from the restrictor (7).

The output pressure is applied to the pressure sensor (8). The electronics provide to compensate the coil current to reduce errors on output pressure.

An increase of the Input Current causes a pressure increase in the chamber at the left of the membranes, closing the shutter and decreasing the pressure output (see fig 1).

Fig. 1



### 3. Installation

#### 3.1.1. - Mounting

To fix the instrument with the mounting accessory supplied with it. The instrument must be always installed in vertical position and with the connections side downward.

#### 3.1.2. - Electrical Connections

The instrument is equipped with gland suitable for cables 7 to 12 mm.

Dismount the cover to enter to the terminal block. Use 3 wires cables (2 for signal and 1 for ground). To respect the polarities indicated near the terminal block.

#### 3.1.3. - Pneumatic Connections

Air supply and output signal connections are 1/4" NPT threaded.

Connect the tubing using the proper fittings. Can be employed plastic or copper tubes. We suggest tubes having 4mm internal diameter.

### 4. Putting into Operation

#### 4.1. - Check of Tubing connections

Before putting into operation make certain that tubing connections are tight.

#### 4.2. - Air Supply

Air supply must be clean and dry. When operating with large volumes (e.g.  $> 0,5 \text{ dm}^3$ ) is useful to increase the electronic Gain turning clockwise the Gain potentiometer (G) .

An excessive increase of the Gain could cause oscillation of the pneumatic switch; in this case it is sufficient to lightly turn anticlockwise the Gain potentiometer (G) . (See Fig. 2.)

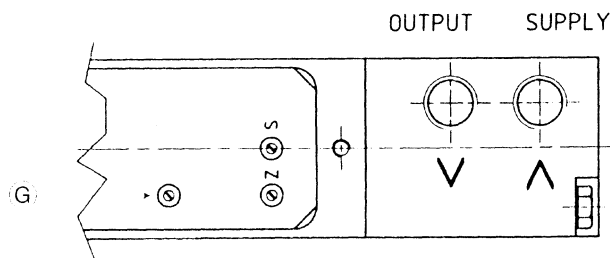
#### 4.3. – Check of the Zeroing

Apply 140 kPa air supply and set the input current at 4 mA and check, with receiver, the output pressure must be 20 kPa (or 3 psi). If necessary, adjust zero with ZERO potentiometer (Fig. 2).

#### 4.4. – Check of the Span

Apply to converter 140 kPa air supply and set the input current at 20 mA and check, with receiver, output pressure must be 100 kPa (or 15 psi). If necessary, adjust the range value with SPAN potentiometer (Fig. 2).

Fig. 2



### 5 - Maintenance

#### 5.1. - Routine Maintenance

Under normal conditions, no maintenance should be required. It is necessary that air supply must be clean and dry.