

# Valve Actuation I/P Signal Converter for HVAC

January 1, 2016

## I/P Converter for HVAC applications

A compact, low-cost, high performance current to pneumatic converter for HVAC manufacturers and contractors.

### Introduction

This I/P transducer is developed especially for the HVAC market and shares many of the same characteristics of the industrial I/P unit presently being used for process control applications, characteristics that are normally only found on industrial grade converters.

The unique conversion system, with its stationary coil and low-mass moving magnet, gives this unit an unusually high level of transfer characteristics for maximum reliability and repeatability.

The air capacity is high while air consumption is extremely low, system air compressor requirements can often be reduced. The unit is insensitive to vibrations and shock, and can be mounted in any position without recalibration.

These features, not frequently found in HVAC, provide minimal maintenance and full benefit from your control system. The stand-alone unit can be easily rail mounted in locations generally too small for competitive units. Yet it is still easily accessible.

### Resistance to Shock and Vibration

A low-mass moving magnet controlled by a powerful, stationary electromagnetic coil makes the converter insensitive to shock and vibration, providing unsurpassed stability.

### High Repeatability and Reliability

Precision engineered with sturdy construction to meet high performance levels for increased overall system performance.



### Low Air Consumption with High Throughput Capacity

Consuming compressed air at a rate of only 0.08 scfm (0.2 kg/h), the converter reduces air demand, requiring a smaller, less costly pneumatic system yet can deliver a throughput of 1.6 scfm (3 kg/h).

### Quick Calibration

Accessible connections make calibration faster and easier, reducing maintenance time and costs.

### Small Size and Weight

The DIN rail-mount HVAC I/P is lightweight 0.55 lbs. (0.25 kg) and has a footprint measuring a mere 1.26x1.42 inches (32x36 mm), saving valuable panel space.

### Convenient Installation and Maintenance

The HVAC I/P comes with screw-type terminals for electrical connections and 1/8" NPT connections for pneumatic connections.

### Easy Mounting

The HVAC I/P simply snaps on any type DIN rail for easy mounting.

# Specifications

## Input

- Range: 4-20 mA
- Resistance:  $R_i \leq 200$  Ohms
- Capacitance: Negligible

## Output

- Range: 3-15 psig (0.2-1 bar)
- Characteristic: Linear to input current
- Air Capacity: 1.6 scfm (3 kg/h)

## Air Supply

- Compressed air: 20 psig (40 psig max) + 1.5 psig (1.4 + 0.1 bar)
- Air quality: Oil, Water, Dust-free to  $\leq 5\mu\text{m}$
- Consumption: 0.08 scfm (0.2 kg/h)

## Transmission Behavior:

- Linearity:  $\leq +3\% - 0\%$
- Hysteresis:  $\leq 0.3\%$
- Response threshold:  $\leq 0.1\%$
- Temperature influence:  $\leq 0.1\% / \text{deg. F}$   
 $\leq 0.2\% / \text{deg. K}$
- Air supply influence:  $\leq 0.3\% / 1.5$  psig (0.1 bar)
- Position influence:  $\leq 0.5\%$
- Vibration influence:  
 $\leq 0.5\%$  for an acceleration up to 10g and a frequency up to 80 Hz
- Response time: 10-90% and 90-10%  
0.3 sec. with a volume of 0.035 cf (100 ml)
- 10-90% 1.5 sec. with a volume of 0.35 cf (1000 ml)
- 90-10% 2.5 sec. with a volume of 0.35 cf (1000 ml)

## Ambient Temperature

- Operation: -40 to +180 deg. F (-40 to +82 deg. C)
- Storage: -40 to +180 deg. F (-40 to +82 deg. C)

## Mode of Protection

- Touch-proof, IP 20, NEMA 1

## Connections

- Supply port: 1/8" F NPT
- Output port: 1/8" F NPT

## Mounting

- Clip-on base for:  
Cap rail EN 50022-35 x 7.5  
G rail EN 50035-G32  
Cap rail EN 50045-15 x 5

## Weight

- 0.55 lbs (0.25 kg)

## Wiring & Checkout Procedure

All electrical connections must be made in accordance with job wiring diagrams and national electrical codes. Wiring terminations are made on screw terminals labeled "+" and "-". Verify with a milliamp meter that a 4-20 ma DC signal is present and check if polarity is correct. Also verify 20 psi of main supply air.

Check transducer operation in this way:

1. Adjust input signal to 20 ma DC; output pressure should be 15 psi.
2. Adjust input signal to 4 ma DC; output signal should be 3 psi.

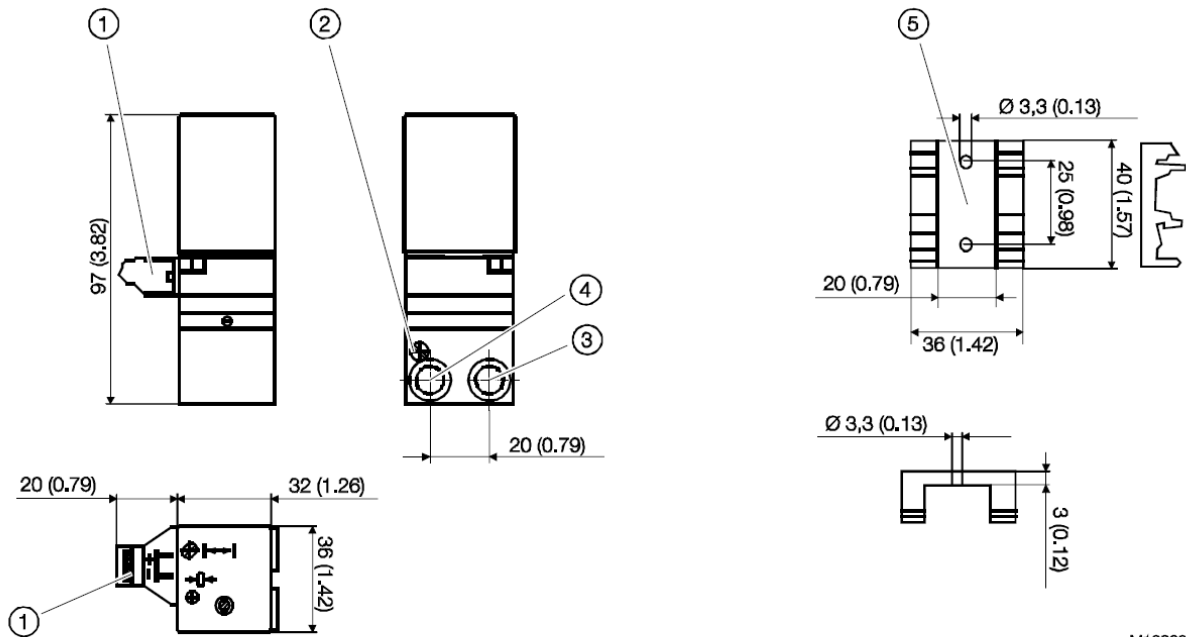
The transducer is highly accurate, for best transducer performance laboratory-quality meters and gauges are required to check calibration properly.

The HVAC I/P provides zero position adjustment for accurate alignment as required, typically for HVAC applications the span position does not require any adjustment therefore this function is eliminated to provide improved ease of use.

## Ordering information

- Description: HVAC I/P Signal Converter
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- Part Number: 7958057

## Dimensional information



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

Figure 2. Drawing from I/P instruction manual

For additional information go to:

- [www.abb.com/measurement](http://www.abb.com/measurement)  
Select Positioners - TEIP11/TEIP11-PS I/P converter
- [Link](#) to web page for TEIP

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