



## Description

The airflow and velocity transmitter series FSE is design to control the air flow into air duct in HVAC systems and in VAV applications.

## Technical specifications

### Measurement ranges

#### Velocity

Range 2: 0...400 FPM (0...2 m/s)  
 Range 10: 0...2000 FPM (0...10 m/s)  
 Range 20: 0 - 4000 FPM (0...20 m/s)

#### Temperature

0...50°C

#### Accuracy velocity

Range 2: 0...400 FPM <20 FPM +5% from reading  
 Range 10: 0...2000 FPM <100 FPM +5% from reading  
 Range 20: 0...4000 FPM <200 FPM +5% from reading

#### Temperature

<0,55° C for v > 100 FPM

Accuracy specications include: general accuracy, temperature drift, linearity, hysteresis, long term stability, and repetition error.



### Media compatibility

Dry air or non-aggressive gases

### Measuring units

FPM and °F

### Measuring element

temperature: NTC10K, velocity: Pt1000

### Electrical

Input 24 VAC/DC ± 10%, current consumption 35 mA (50 mA with relay) + 40 mA with current output

### Output signal 1

(Tout) 0...10 VDC (linear to temperature) 0...50°C L min 1K VDC Output = 32°F + (9 degrees F \* volts)  
 4 - 20 mA (linear to temperature) 0...50°C L max 400 mA Output = 32°F + [5.625 degrees F \* (mA - 4)]

### Output signal 2

(vout) 0...10 VDC (linear to FPM), L min 1K, 4...20mA (linear to FPM), L max 400

### Relay out

3 screw terminal block 0,2...1,5 mm<sup>2</sup>, potential free SPDT, 250 VAC, 6A / 30 VDC, 6 A adjustable switching point and hysteresis

### Display

3 1/2 Digit LCD display

### Size

45,7 x 12,7 mm

### Electrical connections

2 each

### Power supply & Signal out

4 screw terminal block 16-24 AWG (0,2...1,5 mm<sup>2</sup>)

### Relay Out

3 screw terminal block 16-24AWG (0.2 – 1.5 mm<sup>2</sup>)

### Cable inlet

2 x M16

### Working temperature

0...50°C

### Storage temperature

-20...70°C

### Working humidity

0 to 95% RH, non condensing

### Protection type

IP54

### Dimensions housing

90 x 95 x 36 mm

### Dimensions probe

Ø: 10 mm

### Length

210 mm

### Immersion length with flange

Adjustable 50...180 mm

### Mounting

2 screw holes, 4 mm

### Materials

Case ABS (UL 94 V-0 approved), cover PC (UL 94 V-0 approved), pocket stainless steel

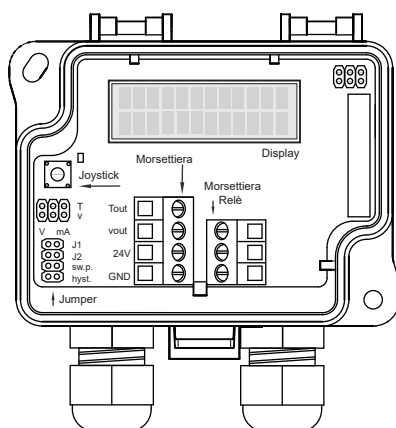
### Standards

CE-conformity, RoHS, LVD, WEEE

Models	Display + relay
FSE1	•
FSE2	-



## Electrical connections



## Installation

- 1) Mount the device in desired location, see Step 1.
  - 2) Open the lid and route cable through strain relief and connect the wires to terminal block, see Step 2. Use separate strain relief for each cable.
  - 3) The device is now ready for configuration.
- WARNING!** Apply power after the device is properly wired.

### STEP 1 (mounting device)

- 1) Select mounting location (in a duct).
- 2) Use the mounting angle of the device as a template and mark the screw holes.
- 3) Mount the ange on the duct with screws (not included), Figure 1a.
- 4) Adjust the probe to desired depth. Ensuring the end of the probe reaches the middle of the duct, Figure 1b.
- 5) Tighten the screw on the ange, to hold the probe in position.

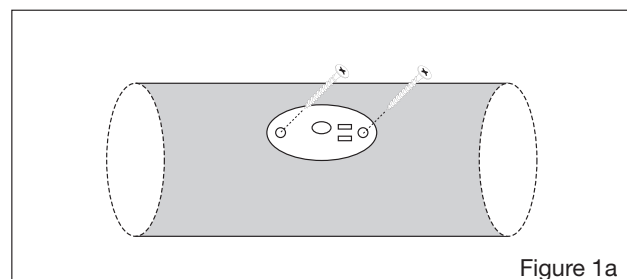


Figure 1a

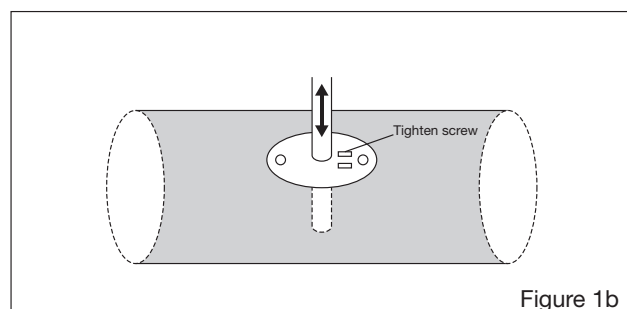


Figure 1b

### STEP 2 (Wiring diagrams)

For CE compliance, a properly grounded shielding cable is required.

- 1) Unscrew strain relief and route cable(s). Use the strain relief on left for power in and signal out (Tout/vout) and the strain relief on right for relay.
- 2) Connect the wires as shown in Figures 2a and 2b.
- 3) Tighten the strain relief.

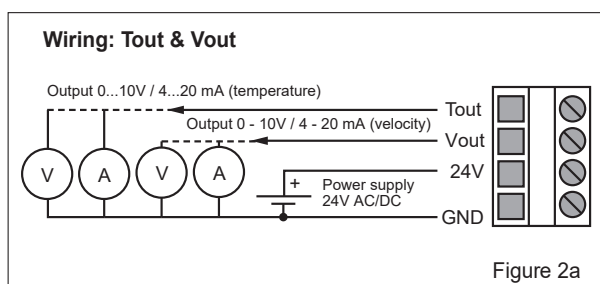


Figure 2a

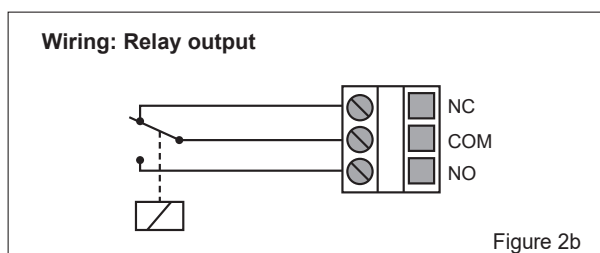


Figure 2b

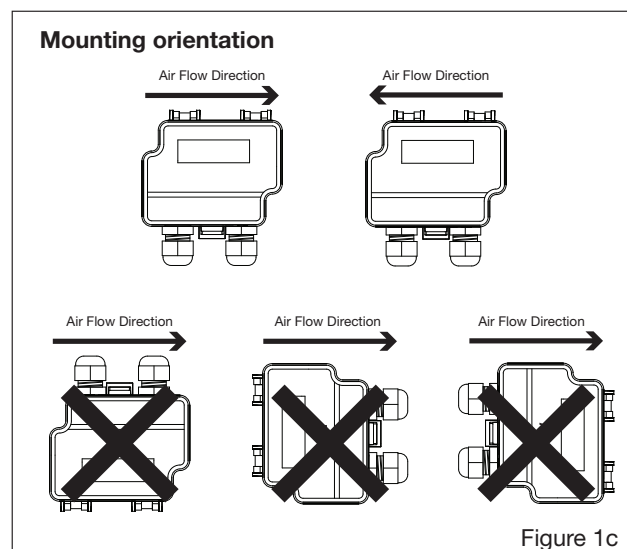


Figure 1c



Configuration requires:

- 1) Select the desired measurement mode, Step 3.
- 2) Select the desired measurement range, Step 4.
- 3) Configure the relay (optional), Steps 5 and 6.

Selection convention used to input configuration information into FSE Transducer

Entering configuration information into the FSE Air Velocity and Temperature transducer is accomplished with the Joystick, see Figure 5, the Display, and Jumpers installed and removed from the set of three (3) or four (4) jumper pins, see Figure 5.

**Joystick** Pressing down or tilting (Tilt Up/Down or Side to Side) will cycle the display through the available menu choices. The Joystick will only cycle the choices up, if you accidentally pass your preferred selection continue to activate the Joystick until your selection reappears.

**Jumpers** Jumpers are used in two (2) different ways:

- 1) Jumpers are installed, and remain installed, to select the required choice, see Steps 3 and 4.
- 2) Jumpers are installed, a choice is made, and the jumper is removed, see Steps 5 and 6.

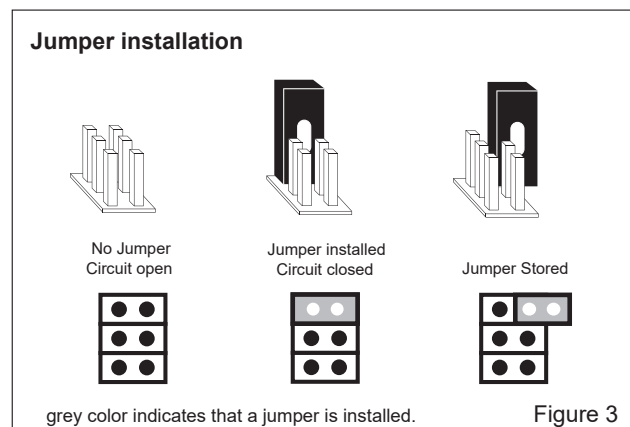


Figure 3

### STEP 3 (select measurement mode)

Configure the outputs:

- 1) Select the output mode, Current (4-20 mA) or Voltage (0-10V), by installing jumpers as shown in Figure 3b. Both outputs, Temperature (T) and Velocity (v), are configured separately.

### STEP 4 (select measurement range)

Select the measurement range by installing jumpers as shown in Figure 4. Note: Figure 3, Jumper Installation.

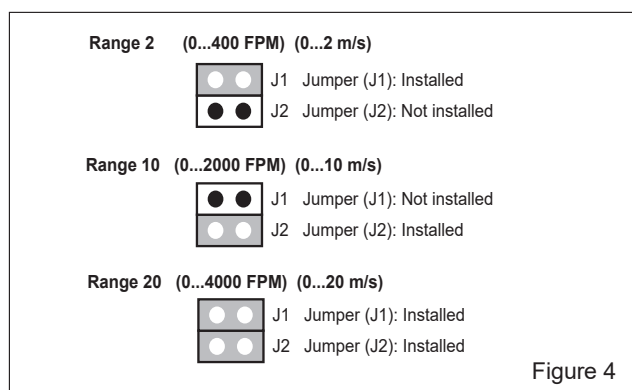


Figure 4

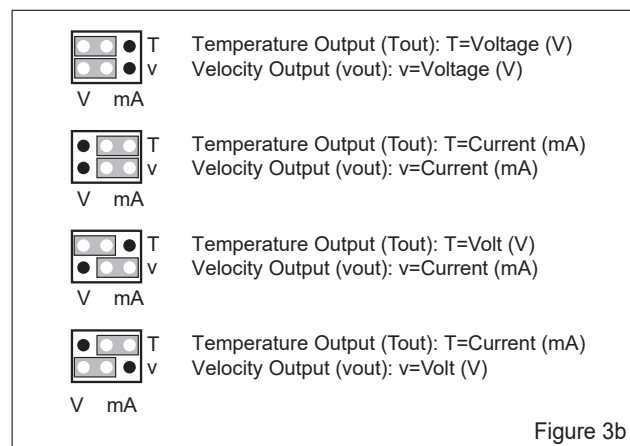


Figure 3b

### STEP 5 (configure relay) (jumper sw.p)

Note: display is required.

- 1) Install jumper to pins labeled sw.p. (Switching Point), see Figure 5.
- 2) Press down/tilt the push-button (joystick). The values (FPM) for the Switching Point (relay on/off) will cycle up. Continue until the required value (FPM) is shown on the display.
- 3) Remove and store jumper after configuration is completed.

### STEP 6 (configure relay) (jumper hyst.)

- 1) Install jumper to pins labeled hyst. (hysteresis), see Figure 5.
- 2) Press down/tilt the push-button (joystick). The values (FPM) for the hysteresis of the relay switching point will cycle up to the maximum value. Continue until the required value (FPM) is shown on the display.
- 3) Remove and store jumper after configuration is completed.

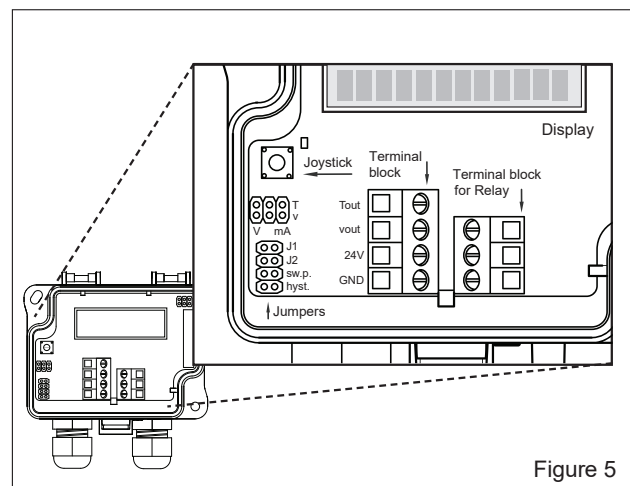
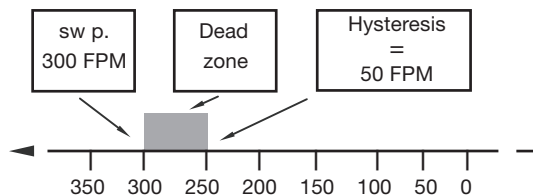


Figure 5



## About hysteresis

Hysteresis represents a dead-zone less than or equal to 20% of the Range Selected. The hysteresis is anchored at the Switching Point (sw p.), extending to the hysteresis range selected.



In above example Switch Point is set at 300 FPM, and hysteresis is set at 50 FPM. As the velocity increases over 300 FPM, the relay will open/close. As velocity reduces, the relay will not close/open until the velocity passes 250 FPM, thus preventing rapid cycling.

Range		Maximun Hysteresis	
m/s	FPM	m/s	FPM
0...2	0...400	0,4	80
0...10	0...2.000	2	400
0...20	0...4.000	4	800

The Hysteresis Maximum setting is based on the Range Selected.

## ■ Dimensions (mm)

