

# 110L...-PCB / 430L...-PCB Series

## Signal conditioned precision pressure transducers

### FEATURES

- 1 to 50 mbar, 1 to 30 "H<sub>2</sub>O gage or differential pressure (custom calibrations available)
- 1...6 V or 4...20 mA output
- Internal supply regulation
- Precision temperature compensated and calibrated
- Special calibrations for small volumes on request



### SERVICE

Non-corrosive, non-ionic working fluids such as dry air and dry gases.

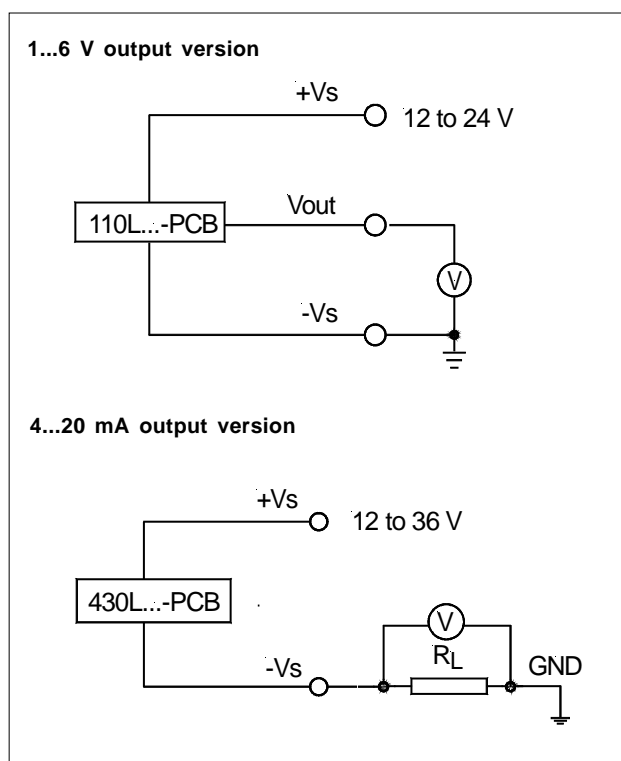
Scale: 1 cm  
1 inch

### SPECIFICATIONS

#### Maximum ratings

|   |             |
|---|-------------|
| Supply voltage                          |             |
| 110L...-PCB                             | 12...24 V   |
| 430L...-PCB <sup>1</sup>                | 12...36 V   |
| Maximum load current (110L...-PCB only) |             |
| source                                  | 20 mA       |
| sink                                    | 10 mA       |
| Temperature limits                      |             |
| Storage                                 | -25 to 85°C |
| Operating                               | -10 to 70°C |
| Compensated                             | 0 to 50°C   |
| Lead temperature(4 sec soldering)       | 300°C       |
| Humidity limits (pressure inlets only)  | 0 - 80 %RH  |

### ELECTRICAL CONNECTION



# 110L...-PCB / 430L...-PCB Series

## Signal conditioned precision pressure transducers

### PERFORMANCE CHARACTERISTICS

1...6 V output version (unless otherwise noted  $V_s = 15\text{ V}$ ,  $R_L > 100\text{ k}\Omega$ ,  $t_{amb} = 25^\circ\text{C}$ )

| Characteristics                                 |                                      |                   | Min. | Typ.  | Max.  | Proof pressure <sup>2</sup> | Common mode pressure | Unit    |                   |
|---|--------------------------------------|-------------------|------|-------|-------|-----------------------------|----------------------|---------|-------------------|
| Operating pressure <sup>3</sup>                 | differential devices                 | 112LP02D-PCB      | 0    |       | 2     | 200                         | 300                  | mbar    |                   |
|   |                                      | 112LP05D-PCB      | 0    |       | 5     | 200                         | 300                  |         |                   |
|   |                                      | 112LP10D-PCB      | 0    |       | 10    | 200                         | 300                  |         |                   |
|   |                                      | 112LP25D-PCB      | 0    |       | 25    | 300                         | 600                  |         |                   |
|   |                                      | 112LP50D-PCB      | 0    |       | 50    | 300                         | 600                  |         |                   |
|   | pressure/vacuum devices <sup>3</sup> | 113LP01D-PCB      | -1   |       | 1     | 200                         | 300                  |         |                   |
|   |                                      | 113LP02D-PCB      | -2   |       | 2     | 200                         | 300                  |         |                   |
|   |                                      | 113LP05D-PCB      | -5   |       | 5     | 200                         | 300                  |         |                   |
|   |                                      | 113LP10D-PCB      | -10  |       | 10    | 200                         | 300                  |         |                   |
|   |                                      | 113LP25D-PCB      | -25  |       | 25    | 300                         | 600                  |         |                   |
|   |                                      | 113LP50D-PCB      | -50  |       | 50    | 300                         | 600                  |         |                   |
|   | differential devices                 | 112LU01D-PCB      | 0    |       | 1     | 80                          | 160                  |         | "H <sub>2</sub> O |
|   |                                      | 112LU02D-PCB      | 0    |       | 2     | 120                         | 240                  |         |                   |
|   |                                      | 112LU05D-PCB      | 0    |       | 5     | 120                         | 240                  |         |                   |
| 112LU10D-PCB                                    |                                      | 0                 |      | 10    | 240   | 360                         |                      |         |                   |
| 112LU20D-PCB                                    |                                      | 0                 |      | 20    | 240   | 360                         |                      |         |                   |
| 112LU30D-PCB                                    |                                      | 0                 |      | 30    | 240   | 360                         |                      |         |                   |
| pressure/vacuum devices <sup>3</sup>            |                                      | 113LU01D-PCB      | -1   |       | 1     | 80                          | 160                  |         |                   |
|   |                                      | 113LU02D-PCB      | -2   |       | 2     | 120                         | 240                  |         |                   |
|   |                                      | 113LU05D-PCB      | -5   |       | 5     | 120                         | 240                  |         |                   |
|   |                                      | 113LU10D-PCB      | -10  |       | 10    | 240                         | 360                  |         |                   |
|   | 113LU20D-PCB                         | -20               |      | 20    | 240   | 360                         |                      |         |                   |
| 113LU30D-PCB                                    | -30                                  |                   | 30   | 240   | 360   |                             |                      |         |                   |
| Zero pressure offset <sup>4</sup>               | 112L...-PCB                          | 0.95              | 1.0  | 1.05  |       |                             | V                    |         |                   |
|   | 113L...-PCB                          | 3.4               | 3.5  | 3.6   |       |                             |                      |         |                   |
| Full scale span <sup>5</sup>                    | 112L...-PCB                          | 4.9               | 5.0  | 5.1   |       |                             |                      |         |                   |
|   | 113L...-PCB                          | 2.4               | 2.5  | 2.6   |       |                             |                      |         |                   |
| Full scale output                               |                                      |                   | 6.0  |       |       |                             |                      |         |                   |
| Output at lowest specified pressure             | 113L...-PCB                          |                   | 1.0  |       |       |                             |                      |         |                   |
| Thermal effects (0 to 50°C) <sup>6</sup>        | Offset                               | 113LP01D-PCB      |      | ±0.08 | ±0.20 |                             |                      | %FSO/°C |                   |
|   |                                      | 11...LP02D-PCB    |      | ±0.04 | ±0.10 |                             |                      |         |                   |
|   |                                      | 11...LU01D-PCB    |      | ±0.04 | ±0.10 |                             |                      |         |                   |
|   |                                      | all other devices |      | ±0.02 | ±0.05 |                             |                      |         |                   |
|   | Span                                 | 113LP01D-PCB      |      | ±0.08 | ±0.20 |                             |                      |         |                   |
|   |                                      | 11...LP02D-PCB    |      | ±0.04 | ±0.10 |                             |                      |         |                   |
|   |                                      | 11...LU01D-PCB    |      | ±0.04 | ±0.10 |                             |                      |         |                   |
|   |                                      | all other devices |      | ±0.02 | ±0.04 |                             |                      |         |                   |
| Non-linearity and hysteresis (BSL) <sup>7</sup> |                                      |                   |      | ±0.1  | ±0.25 |                             | %FSO                 |         |                   |
| Long term stability <sup>8</sup>                |                                      |                   |      | ±0.5  |       |                             |                      |         |                   |
| Response time (10 to 90 %)                      |                                      |                   |      | 1     |       |                             | ms                   |         |                   |
| Position sensitivity                            | all 1 and 2 mbar devices             |                   |      | 0.5   |       |                             | %FSO/g               |         |                   |
|   | all other devices                    |                   |      | 0.1   |       |                             |                      |         |                   |
| Current consumption                             |                                      |                   |      | 4.2   |       |                             | mA                   |         |                   |
| Power supply rejection                          | Offset                               |                   |      | 0.05  |       |                             | %FSO/V               |         |                   |
|   | Span                                 |                   |      | 0.05  |       |                             |                      |         |                   |

# 110L...-PCB / 430L...-PCB Series

## Signal conditioned precision pressure transducers

### PERFORMANCE CHARACTERISTICS

4...20 mA output version (unless otherwise noted  $V_S = 15\text{ V}$ ,  $R_L = 100\ \Omega$ ,  $t_{amb} = 25^\circ\text{C}$ )

| Characteristics                                 |                                      |                   | Min.         | Typ.  | Max.  | Proof pressure <sup>2</sup> | Common mode pressure | Unit    |     |                   |
|---|--------------------------------------|-------------------|--------------|-------|-------|-----------------------------|----------------------|---------|-----|-------------------|
| Operating pressure <sup>3</sup>                 | differential devices                 | 432LP01D-PCB      | 0            |       | 1     | 200                         | 300                  | mbar    |     |                   |
|   |                                      | 432LP02D-PCB      | 0            |       | 2     | 200                         | 300                  |         |     |                   |
|   |                                      | 432LP05D-PCB      | 0            |       | 5     | 200                         | 300                  |         |     |                   |
|   |                                      | 432LP10D-PCB      | 0            |       | 10    | 200                         | 300                  |         |     |                   |
|   |                                      | 432LP25D-PCB      | 0            |       | 25    | 300                         | 600                  |         |     |                   |
|   |                                      | 432LP50D-PCB      | 0            |       | 50    | 300                         | 600                  |         |     |                   |
|   | pressure/vacuum devices <sup>3</sup> | 433LP01D-PCB      | -1           |       | 1     | 200                         | 300                  |         |     |                   |
|   |                                      | 433LP02D-PCB      | -2           |       | 2     | 200                         | 300                  |         |     |                   |
|   |                                      | 433LP05D-PCB      | -5           |       | 5     | 200                         | 300                  |         |     |                   |
|   |                                      | 433LP10D-PCB      | -10          |       | 10    | 200                         | 300                  |         |     |                   |
|   |                                      | 433LP25D-PCB      | -25          |       | 25    | 300                         | 600                  |         |     |                   |
|   |                                      | 433LP50D-PCB      | -50          |       | 50    | 300                         | 600                  |         |     |                   |
|   | differential devices                 | 432LU01D-PCB      | 432LU01D-PCB | 0     |       | 1                           | 80                   |         | 160 | "H <sub>2</sub> O |
|   |                                      |                   | 432LU02D-PCB | 0     |       | 2                           | 120                  |         | 240 |                   |
| 432LU05D-PCB                                    |                                      |                   | 0            |       | 5     | 120                         | 240                  |         |     |                   |
| 432LU10D-PCB                                    |                                      |                   | 0            |       | 10    | 240                         | 360                  |         |     |                   |
| 432LU20D-PCB                                    |                                      |                   | 0            |       | 20    | 240                         | 360                  |         |     |                   |
| 432LU30D-PCB                                    |                                      |                   | 0            |       | 30    | 240                         | 360                  |         |     |                   |
| pressure/vacuum devices <sup>3</sup>            |                                      | 433LU01D-PCB      | -1           |       | 1     | 80                          | 160                  |         |     |                   |
|   |                                      | 433LU02D-PCB      | -2           |       | 2     | 120                         | 240                  |         |     |                   |
|   |                                      | 433LU05D-PCB      | -5           |       | 5     | 120                         | 240                  |         |     |                   |
|   |                                      | 433LU10D-PCB      | -10          |       | 10    | 240                         | 360                  |         |     |                   |
| 433LU20D-PCB                                    | -20                                  |                   | 20           | 240   | 360   |                             |                      |         |     |                   |
| 433LU30D-PCB                                    | -30                                  |                   | 30           | 240   | 360   |                             |                      |         |     |                   |
| Zero pressure offset <sup>4</sup>               | 432L...-PCB                          | 3.9               | 4.0          | 4.1   |       |                             | mA                   |         |     |                   |
|   | 433L...-PCB                          | 11.9              | 12.0         | 12.1  |       |                             |                      |         |     |                   |
| Full scale span <sup>5</sup>                    | 432L...-PCB                          | 15.8              | 16.0         | 16.2  |       |                             |                      |         |     |                   |
|   | 433L...-PCB                          | 7.9               | 8.0          | 8.1   |       |                             |                      |         |     |                   |
| Full scale output                               |                                      |                   | 20.0         |       |       |                             |                      |         |     |                   |
| Output at lowest specified pressure             | 433L...-PCB                          |                   | 4.0          |       |       |                             |                      |         |     |                   |
| Thermal effects (0 to 50°C) <sup>6</sup>        | Offset                               | 43...LP01D-PCB    |              | ±0.08 | ±0.20 |                             |                      | %FSO/°C |     |                   |
|   |                                      | 43...LP02D-PCB    |              | ±0.04 | ±0.10 |                             |                      |         |     |                   |
|   |                                      | 43...LU01D-PCB    |              | ±0.04 | ±0.10 |                             |                      |         |     |                   |
|   |                                      | all other devices |              | ±0.02 | ±0.05 |                             |                      |         |     |                   |
|   | Span                                 | 43...LP01D-PCB    |              | ±0.08 | ±0.20 |                             |                      |         |     |                   |
|   |                                      | 43...LP02D-PCB    |              | ±0.04 | ±0.10 |                             |                      |         |     |                   |
|   |                                      | 43...LU01D-PCB    |              | ±0.04 | ±0.10 |                             |                      |         |     |                   |
|   |                                      | all other devices |              | ±0.02 | ±0.04 |                             |                      |         |     |                   |
| Non-linearity and hysteresis (BSL) <sup>7</sup> |                                      |                   | 0.1          | 0.25  |       |                             | %FSO                 |         |     |                   |
| Long term stability <sup>8</sup>                |                                      |                   | ±0.2         |       |       |                             | %FSO                 |         |     |                   |
| Response time (10 to 90 %)                      |                                      |                   | 1            |       |       |                             | ms                   |         |     |                   |
| Position sensitivity                            | all 1 and 2 mbar devices             |                   |              | 0.5   |       |                             |                      | %FSO/g  |     |                   |
|   | all 1 "H <sub>2</sub> O devices      |                   |              | 0.5   |       |                             |                      |         |     |                   |
|   | all other devices                    |                   |              | 0.1   |       |                             |                      |         |     |                   |
| Current consumption (I <sub>i</sub> = 20 mA)    |                                      |                   | 4.2          |       |       |                             | mA                   |         |     |                   |
| Power supply rejection                          | Offset                               |                   |              | 0.05  |       |                             |                      | %FSO/V  |     |                   |
|   | Span                                 |                   |              | 0.05  |       |                             |                      |         |     |                   |

# 110L...-PCB / 430L...-PCB Series

## Signal conditioned precision pressure transducers

### Specification notes:

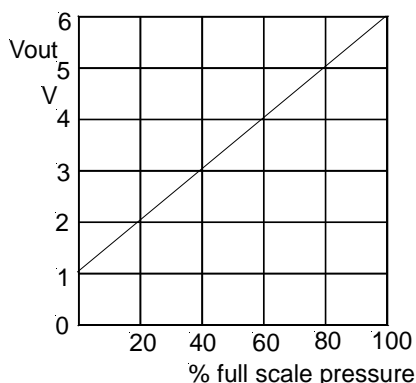
1. The minimum supply voltage is directly proportional to the load resistance seen by the transmitter. For more details see the [load limitation](#) diagram.
2. Proof pressure is the maximum pressure which may be applied without causing damage to the sensing element.
3. The output signal is proportional to the pressure applied to port B, relative to port A, e.g. the output signal increases when vacuum is applied to port A relative to port B.
4. Calibrated after minimum 3 minutes warm-up time.
5. Full scale span is the algebraic difference between the positive full scale output and the zero pressure offset.
6. Thermal effects tested and guaranteed from 0 - 50°C relative to 25°C. All specifications shown are relative to 25°C.
7. Non-linearity refers to the **Best Straight Line** fit measured for offset pressure, full scale pressure and 1/2 full-scale pressure.
8. Change in output after one year or 1 million pressure cycles.

## OUTPUT CHARACTERISTICS

### 1...6 V output versions

#### Differential devices

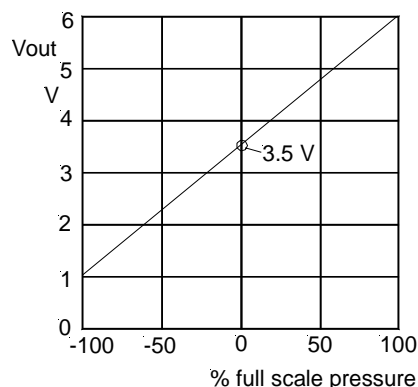
#### 112L...-PCB



### 1...6 V output versions

#### Pressure/vacuum devices

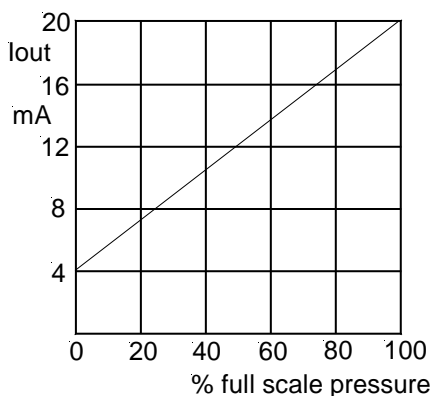
#### 113L...-PCB



### 4...20 mA output versions

#### Differential devices

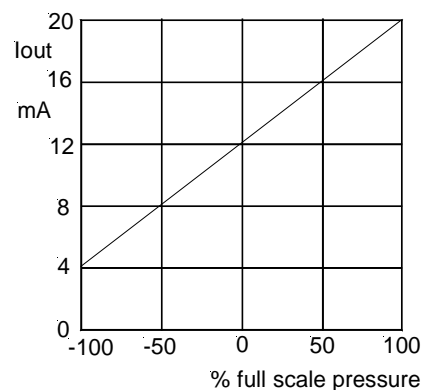
#### 432L...-PCB



### 4...20 mA output versions

#### Pressure/vacuum devices

#### 433L...-PCB

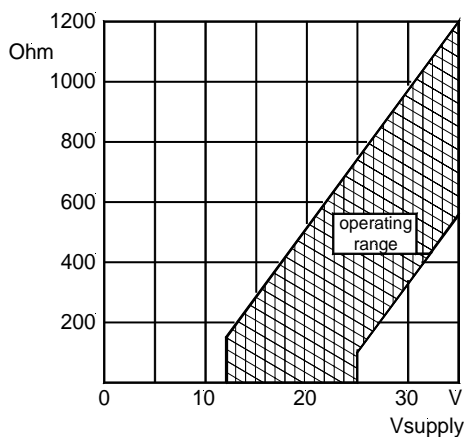


# 110L...-PCB / 430L...-PCB Series

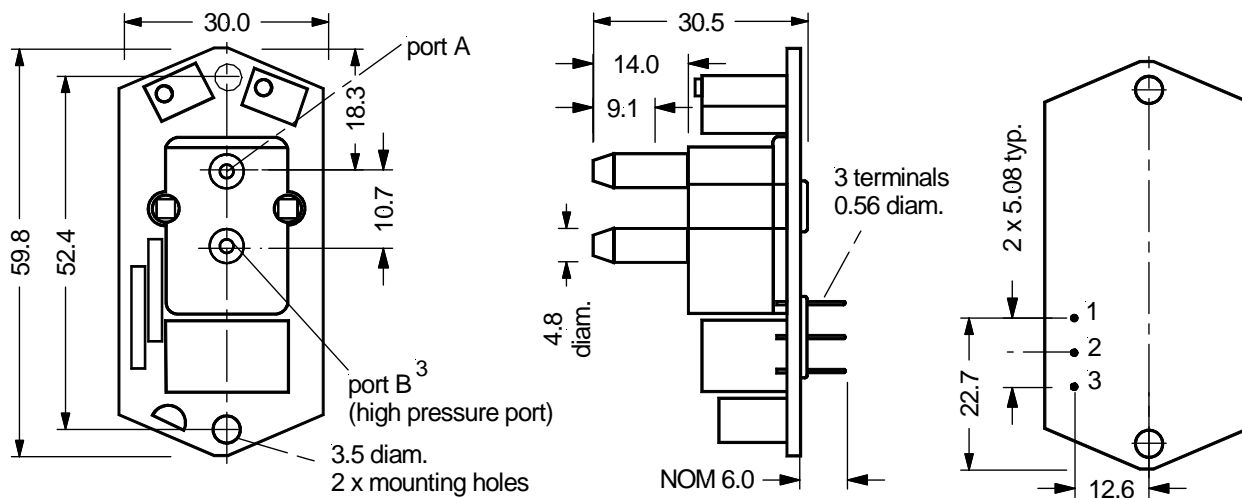
## Signal conditioned precision pressure transducers

### LOAD LIMITATION

4...20 mA output versions



### OUTLINE DRAWING



mass: 20 g

dimensions in mm

#### PIN CONNECTION:

| Pin | Connection      |                   |
|-----|-----------------|-------------------|
|     | 1 - 6 V version | 4 - 20 mA version |
| 1   | +Vs             | NC                |
| 2   | -Vs             | -Vs               |
| 3   | Vout            | +Vs               |

# 110L...-PCB / 430L...-PCB Series

## Signal conditioned precision pressure transducers

### ORDERING INFORMATION

| Operating pressure        |                         | Part number    |                  |
|---------------------------|-------------------------|----------------|------------------|
|                           |                         | 1...6 V output | 4...20 mA output |
| Differential/gage devices | 0 - 1 mbar              | ---            | 432LP01D-PCB     |
|                           | 0 - 2 mbar              | 112LP02D-PCB   | 432LP02D-PCB     |
|                           | 0 - 5 mbar              | 112LP05D-PCB   | 432LP05D-PCB     |
|                           | 0 - 10 mbar             | 112LP10D-PCB   | 432LP10D-PCB     |
|                           | 0 - 25 mbar             | 112LP25D-PCB   | 432LP25D-PCB     |
|                           | 0 - 50 mbar             | 112LP50D-PCB   | 432LP50D-PCB     |
| Pressure/vacuum devices   | 0 ±1 mbar               | 113LP01D-PCB   | 433LP01D-PCB     |
|                           | 0 ±2 mbar               | 113LP02D-PCB   | 433LP02D-PCB     |
|                           | 0 ±5 mbar               | 113LP05D-PCB   | 433LP05D-PCB     |
|                           | 0 ±10 mbar              | 113LP10D-PCB   | 433LP10D-PCB     |
|                           | 0 ±25 mbar              | 113LP25D-PCB   | 433LP25D-PCB     |
|                           | 0 ±50 mbar              | 113LP50D-PCB   | 433LP50D-PCB     |
| Differential/gage devices | 0 - 1"H <sub>2</sub> O  | 112LU01D-PCB   | 432LU01D-PCB     |
|                           | 0 - 2"H <sub>2</sub> O  | 112LU02D-PCB   | 432LU02D-PCB     |
|                           | 0 - 5"H <sub>2</sub> O  | 112LU05D-PCB   | 432LU05D-PCB     |
|                           | 0 - 10"H <sub>2</sub> O | 112LU10D-PCB   | 432LU10D-PCB     |
|                           | 0 - 20"H <sub>2</sub> O | 112LU20D-PCB   | 432LU20D-PCB     |
|                           | 0 - 30"H <sub>2</sub> O | 112LU30D-PCB   | 432LU30D-PCB     |
| Pressure/vacuum devices   | 0 ± 1"H <sub>2</sub> O  | 113LU01D-PCB   | 433LU01D-PCB     |
|                           | 0 ± 2"H <sub>2</sub> O  | 113LU02D-PCB   | 433LU02D-PCB     |
|                           | 0 ± 5"H <sub>2</sub> O  | 113LU05D-PCB   | 433LU05D-PCB     |
|                           | 0 ± 10"H <sub>2</sub> O | 113LU10D-PCB   | 433LU10D-PCB     |
|                           | 0 ± 20"H <sub>2</sub> O | 113LU20D-PCB   | 433LU20D-PCB     |
|                           | 0 ± 30"H <sub>2</sub> O | 113LU30D-PCB   | 433LU30D-PCB     |

**Custom calibrations available**

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