Description

The DPIL is suitable for measurement of differential pressures across pumps, boilers, chillers, filters etc. in HVAC applications. The use of thick film resistances fixed on a ceramic chip gives no mechanical ageing or creepage. The sensor is loop-powered giving a 4 to 20 mA signal equivalent to the measuring range. Electrical connection is via a DIN (4350-A) IP65 connector (supplied) and pressure connections are screw compression fittings for 6 mm pipe. It is supplied complete with a mounting bracket.

Features

- Wide temperature range
- 4 to 20 mA output
- IP65 Housing

Physical

[Diagram showing physical dimensions and features of the DPIL Liquid Differential Pressure Sensor]
FUNCTIONALITY

The differential pressure is applied across a ceramic chip onto which are fixed thick film resistances. The ceramic chip is protected from the medium by EPDM (Ethylene propylene) seals. The internal amplifier produces a 2 wire (loop-powered) 4 to 20 mA signal.

The pressure connections are screw compression fittings for 6 mm outside diameter pipes.

The electrical connection is via a DIN 43650-A connector with IP65 seal suitable for 11 mm (0.43”) outside diameter cable.
INSTALLATION

The system pressure (maximum of P1 and P2 above ambient pressure) must be less than the limit stated in the specification. Also the maximum overload on one side (P1 or P2) must not be exceeded (see specifications).

The installation procedure involves:
Choose location
Mount sensor
Connect pressure points
Connect to controller
Configure input channel
Test system

The installation procedure is covered in the DPIL Installation Instructions TG200125.

CONNECTIONS

Example differential pressure measurement

Note that \( \frac{1}{2} \) and sensor case have capacitive connection but not electrical connection.

DISPOSAL

WEEE Directive:

At the end of their useful life the packaging and product should be disposed of using a suitable recycling centre.
Do not dispose of with normal household waste.
Do not burn.

ORDER CODES

<table>
<thead>
<tr>
<th>(range)</th>
<th>Overload 1 side (max)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P1</td>
</tr>
<tr>
<td>0.5:0 to +0.5 bar</td>
<td>3 bar</td>
</tr>
<tr>
<td>1:0 to +1 bar</td>
<td>5 bar</td>
</tr>
<tr>
<td>2.5:0 to +2.5 bar</td>
<td>12 bar</td>
</tr>
<tr>
<td>4:0 to +4 bar</td>
<td>12 bar</td>
</tr>
<tr>
<td>6:0 to +6 bar</td>
<td>12 bar</td>
</tr>
<tr>
<td>10:0 to +10 bar</td>
<td>20 bar</td>
</tr>
</tbody>
</table>
**SPECIFICATIONS**

Output: 4 to 20 mA (protected against polarity reversal).

Accuracy:
- ± 1.3% full scale (/0.5, /1, /2.5)
- ± 0.8% full scale (/4)
- ± 0.5% full scale (/6, /10)

Temperature coefficient:
- ± 0.1% full scale /°C, 0.055%/°F (/0.5, /1, /2.5)
- ± 0.06% full scale /°C, 0.033%/°F (/4)
- ± 0.04% full scale /°C, 0.022%/°F (/6, /10)

Power: 11 to 33 Vdc

Supply Current: 25 mA (max)

System pressure: Maximum overpressure (P1 and P2 simultaneously) 25 bar

Overload pressure: Maximum overpressure (P1 or P2 separately) see table in order code section.

Ruptive pressure: 37.5 bar

Dimensions: 77 mm x 125 mm x 40 mm (max) (3.03” x 4.92” x 1.57”)

77 mm x 145 mm x 40 mm (3.03” x 5.71” x 1.57”) including bracket

Weight: 494g (1.09 lbs)

Load cycle: 50 Hz (max)

Dynamic response: Response time <5 ms

Pressure connectors: Screw compression fittings (CuZn vni) for 6 mm O/D pipe

Electrical Connections: DIN 43650-A (IP65)

Materials:
- Housing in contact with medium: Ceramic/INOX 1.4305, PTFE
- Seals: EPDM (Ethylene propylene)

Temperature: Medium and ambient: -15 °C to +80 °C (+5 °F to +176 °F)

Protection: IP65

EMC

Emissions: EN50081-1

Immunity: EN50082-1, and -2

**Input channel and sensor scaling**

The input channel should be linked for loop powered current, I.

The sensor type module must be set up with the correct scaling.

The recommended method of setting the sensor type scaling is to use SET. For all IQ2 series controllers with firmware version 2.1 or greater, or IQ3 series controllers, the appropriate SET Unique Sensor Reference given below should be used.

<table>
<thead>
<tr>
<th>Pressure</th>
<th>0.5 bar</th>
<th>1 bar</th>
<th>2.5 bar</th>
<th>4 bar</th>
<th>6 bar</th>
<th>10 bar</th>
</tr>
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<tbody>
<tr>
<td>Y</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>E</td>
<td>0.5</td>
<td>1</td>
<td>2.5</td>
<td>4</td>
<td>6</td>
<td>10</td>
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<tr>
<td>P</td>
<td>1</td>
<td>4</td>
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</tr>
<tr>
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<td>8</td>
<td>15</td>
<td>25</td>
<td>30</td>
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<td>0</td>
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<td>0</td>
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<tr>
<td>O1</td>
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<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>O2</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Alternatively, set scaling mode to 5 (characterise) and enter scaling manually as defined in appropriate table below. Note that for IQ3 the scaling mode and exponent (E) do not need to be set up.

Type 2, current (mA)

For all other IQ Controllers see sensor scaling reference card TB100521A.

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