The differential pressure sensor offers accurate low-differential pressure measurement of air and non-condensing, non-corrosive gases in applications such as air filter monitoring, isolation and clean rooms, building pressurization and dust collectors.

- Silicon piezoresistive differential pressure core
- Aluminum alloy housing
- Senses up to ±1 inches of water column using the QM42-DPS1-1Q model
- Senses up to ±20 inches of water column using the QM42-DPS20-1Q model

### Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Interface</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>QM42-DPS1-1Q</td>
<td>Differential Pressure Sensor ±1 in w.c. and 10 ft of tubing</td>
<td>1-wire serial</td>
<td>2.09 m (6.9 ft) cable with a 5-pin M12 quick disconnect (QD) connector</td>
</tr>
<tr>
<td>QM42-DPS20-1Q</td>
<td>Differential Pressure Sensor ±20 in w.c. and 10 ft of tubing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Wiring

<table>
<thead>
<tr>
<th>5-pin M12 male quick disconnect</th>
<th>Pin</th>
<th>Wire Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>Brown (bn)</td>
<td>Supply +</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>White (wh)</td>
<td>Serial select</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Blue (bu)</td>
<td>Ground</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td></td>
<td>No connection</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Gray (gy)</td>
<td>1-wire serial</td>
</tr>
</tbody>
</table>

### Holding Registers

#### Table 1: Holding registers for the QM42-DPS1-1Q model

<table>
<thead>
<tr>
<th>Sensor Register</th>
<th>Output Type</th>
<th>I/O Range</th>
<th>Holding Register Representation</th>
<th>Measured Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
<td>Minimum (Decimal)</td>
</tr>
<tr>
<td>1</td>
<td>Pressure (Inches of Water)</td>
<td>-1</td>
<td>1</td>
<td>-1000</td>
</tr>
<tr>
<td>2</td>
<td>Pressure (PSI)</td>
<td>-0.036</td>
<td>0.036</td>
<td>-36</td>
</tr>
<tr>
<td>3</td>
<td>Temperature (F)</td>
<td>-40</td>
<td>221</td>
<td>-4000</td>
</tr>
<tr>
<td>4</td>
<td>Temperature (C)</td>
<td>-40</td>
<td>105</td>
<td>-4000</td>
</tr>
<tr>
<td>5</td>
<td>Pressure (Pa)</td>
<td>-248</td>
<td>248</td>
<td>-248</td>
</tr>
</tbody>
</table>

#### Table 2: Holding registers for the QM42-DPS20-1Q model

<table>
<thead>
<tr>
<th>Sensor Register</th>
<th>Output Type</th>
<th>I/O Range</th>
<th>Holding Register Representation</th>
<th>Measured Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
<td>Minimum (Decimal)</td>
</tr>
<tr>
<td>1</td>
<td>Pressure (Inches of Water)</td>
<td>-20</td>
<td>20</td>
<td>-20000</td>
</tr>
<tr>
<td>2</td>
<td>Pressure (PSI)</td>
<td>-0.722</td>
<td>0.722</td>
<td>-722</td>
</tr>
<tr>
<td>3</td>
<td>Temperature (F)</td>
<td>-40</td>
<td>221</td>
<td>-4000</td>
</tr>
</tbody>
</table>
Installing the Pressure Sensor

The pressure sensor can be mounted to any surface using fasteners sized for the 1/8-inch (3.2 mm) diameter through-holes on the base of the unit. The optional BWA-BK-001 bracket may be used for mounting to a magnetic surface.

The supplied tubing has an 1/8 inch inner diameter and is intended to fit the barbed fittings on the high (+) and low (-) pressure ports. Cut the tubing to the length required, but for the best results, keep the tubing as short as possible. Install the high (+) side to the upstream or high-line pressure and install the low (-) side to downstream or low-line pressure.

Differential Pressure Sensor Specifications

Supply Voltage
3.6 V DC to 5.5 V DC

Current Consumption
< 3 mA

Pressure Range
QM42-DPS1-1Q: ±1 inches water column (wc)
QM42-DPS20-1Q: ±20 inches water column (wc)

Output
1-wire serial

Accuracy
0.2% full scale

Communication Hardware
Interface: 1-wire serial interface
Baud rates: 9.6k, 19.2k (default), or 38.4k
Data format: 8 data bits, no parity (default, 1 stop bit)

Measuring Media
Gaseous

Pressure Interface
Dual barbed ports

Temperature
Compensated: –20 °C to +85 °C (–4 °F to +185 °F)
Operating: –25 °C to +85 °C (–13 °F to +185 °F)

Zero/Span Offset Tolerance
Zero temperature drift
± 0.5% full scale per °C
Humidity Limits (non condensing) 0 to 95% RH

Proof and Burst Pressure
QM42-DPS1-1Q: Proof Pressure: 100× Maximum Operating Pressure
QM42-DPS1-1Q: Burst Pressure: 300× Maximum Operating Pressure
QM42-DPS20-1Q: Proof Pressure: 200× Maximum Operating Pressure
QM42-DPS20-1Q: Burst Pressure: 500× Maximum Operating Pressure

Stability
≤ 0.2% full scale per year

Included PVC Tubing
Inner diameter: 0.125 in
Outer diameter: 0.25 in
Length: 10 ft

Indicators
Green flashing: Power ON
Amber flashing: Serial Tx

Communication Protocol
Sure Cross DX80 Sensor Node with a 1-wire Serial Interface

Electrical Connection
Conduit fitting with cable

Connection
2.09 m (6.9 ft) cable with a 5-pin M12 male quick disconnect

Construction
Black anodized aluminum alloy

Environmental Rating
IP67, NEMA 6
Dimensions

All measurements are listed in millimeters [inches], unless noted otherwise.

Figure 1. Dimensions

Accessories

BWA-BK-001
- Includes magnetic mounting bracket SMB42FLM12 and 2 mounting screws

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