QM42-DPSx-1Q Differential Pressure Sensor

Features

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.

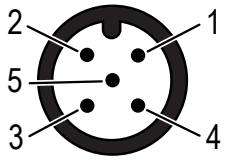


- Silicon piezoresistive differential pressure core
- Aluminum alloy housing
- Senses up to ±1 inches of water column using the **QM42-DPS1-1Q** model
- Senses up to ±5 inches of water column using the **QM42-DPS5-1Q** model
- Senses up to ± 20 inches of water column using the **QM42-DPS20-1Q** model

Models

Model	Description	Interface	Connection
QM42-DPS1-1Q	Differential Pressure Sensor ±1 in w.c. and 10 ft of tubing	1-wire serial	2.09 m (6.9 ft) cable with a 5-pin M12 quick disconnect (QD) connector
QM42-DPS5-1Q	Differential Pressure Sensor ±5 in w.c. and 10 ft of tubing		
QM42-DPS20-1Q	Differential Pressure Sensor ±20 in w.c. and 10 ft of tubing		

Wiring

5-pin M12 male quick disconnect	Pin	Wire Color	Description
	1	Brown (bn)	Supply +
	2	White (wh)	Serial select
	3	Blue (bu)	Ground
	4		No connection
	5	Gray (gy)	1-wire serial communication

Holding Registers

*Holding registers for the **QM42-DPS1-1Q** model*

Sensor Register	Output Type	I/O Range		Holding Register Representation		Measured Results
		Minimum	Maximum	Minimum (Decimal)	Maximum (Decimal)	
1	Pressure (Inches of Water)	-1	1	-1000	1000	Register value ÷ 1000
2	Pressure (PSI)	-0.036	0.036	-36	36	Register value ÷ 1000
3	Temperature (F)	-40	221	-4000	22100	Register value ÷ 100
4	Temperature (C)	-40	105	-4000	10500	Register value ÷ 100
5	Pressure (Pa)	-248	248	-248	248	Register value

*Holding registers for the **QM42-DPS5-1Q** model*

Sensor Register	Output Type	I/O Range		Holding Register Representation		Measured Results
		Minimum	Maximum	Minimum (Decimal)	Maximum (Decimal)	
1	Pressure (Inches of Water)	-5	5	-5000	5000	Register value ÷ 1000
2	Pressure (PSI)	-0.180	0.180	-180	180	Register value ÷ 1000
3	Temperature (F)	-40	221	-4000	22100	Register value ÷ 100
4	Temperature (C)	-40	105	-4000	10500	Register value ÷ 100
5	Pressure (Pa)	-1244	1244	-1244	1244	Register value

Original Instructions
01-Sep-26

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*Holding registers for the **QM42-DPS20-1Q** model*

Sensor Register	Output Type	I/O Range		Holding Register Representation		Measured Results
		Minimum	Maximum	Minimum (Decimal)	Maximum (Decimal)	
1	Pressure (Inches of Water)	-20	20	-20000	20000	Register value ÷ 1000
2	Pressure (PSI)	-0.722	0.722	-722	722	Register value ÷ 1000
3	Temperature (F)	-40	221	-4000	22100	Register value ÷ 100
4	Temperature (C)	-40	105	-4000	10500	Register value ÷ 100
5	Pressure (Pa)	-4977	4977	-4977	4977	Register value

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.

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-DPS5-1Q: ±5 inches water column (wc)
QM42-DPS20-1Q: ±20 inches water column (wc)

Output
1-wire serial

Accuracy
0.2% full scale

Indicators
Green flashing: Power ON
Amber flashing: Serial Tx

Proof and Burst Pressure
QM42-DPS1-1Q: Proof Pressure: 100× Maximum Operating Pressure
QM42-DPS1-1Q: Burst Pressure: 300× Maximum Operating Pressure
QM42-DPS5-1Q: Proof Pressure: 40× Maximum Operating Pressure
QM42-DPS5-1Q: Burst Pressure: 60× Maximum Operating Pressure
QM42-DPS20-1Q: Proof Pressure: 10× Maximum Operating Pressure
QM42-DPS20-1Q: Burst Pressure: 25× 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

Electrical Connection
Conduit fitting with cable

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

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)

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

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

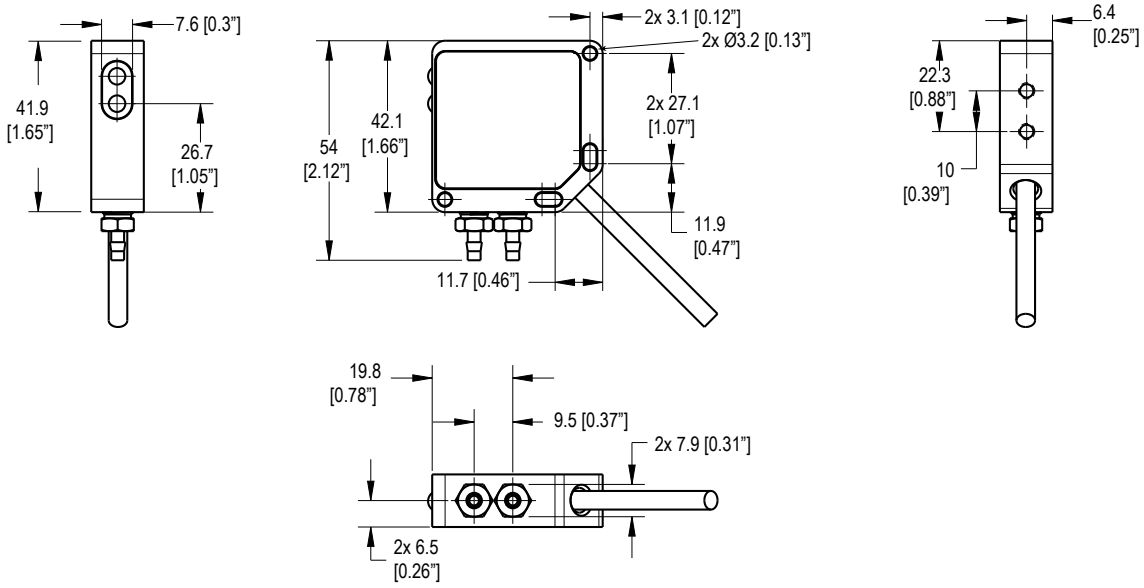
Construction
Black anodized aluminum alloy

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Dimensions

All measurements are listed in millimeters [inches], unless noted otherwise. The measurements provided are subject to change.

Dimensions

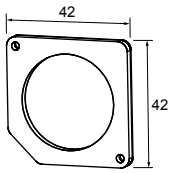


Accessories

Bracket BWA-BK-005 is included with the QM42-DPSx-2Q sensor.

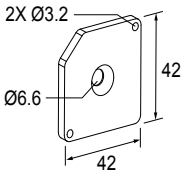
BWA-BK-001

- Includes magnetic mounting bracket **SMB42FLM12** and 2 mounting screws
- CAD Files: DXF, PDF, IGS, STP



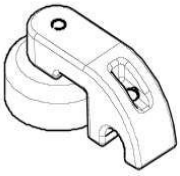
BWA-BK-005

- Use when measuring high-frequency vibrations or when mounting the sensor to curved surfaces
- Includes **SMB42FLAT** stainless steel bracket, 1/4"-28 screw mount, and one piece of 3M™ thermally conductive adhesive transfer tape
- CAD Files: DXF, PDF, IGS, STP



BWA-M12CAB-MAG

- Magnetic bracket to manage Banner M12 cables
- 34 mm x 19 mm overall
- CAD Files: DXF, PDF, IGS, STP



BWA-DPS-PROBE

- Duct pressure probe with 2-inch length hose barb
- 38 mm diameter flange mount



BWA-TUBE-001 Tubing

- Clear PVC Durometer 65A
- Max Pressure 60 PSI at 70°F
- 10 ft long, 1/8 in ID, 1/4 in OD

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