

## QM42 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  $\pm 1$  inches of water column using the **QM42-DPS1-2Q** model
- Senses up to  $\pm 5$  inches of water column using the **QM42-DPS5-2Q** model
- Senses up to  $\pm 20$  inches of water column using the **QM42-DPS20-2Q** model
- RS-485 Modbus serial communication

## QM42-DPSx-2Q Models

Model	Description	Interface	Connection
<b>QM42-DPS1-2Q</b>	Differential Pressure Sensor $\pm 1$ in. w.c. and 10 ft of tubing	RS-485 Modbus	2.09 m (6.9 ft) cable with a 5-pin M12 quick disconnect (QD) connector
<b>QM42-DPS5-2Q</b>	Differential Pressure Sensor $\pm 5$ in. w.c. and 10 ft of tubing		
<b>QM42-DPS20-2Q</b>	Differential Pressure Sensor $\pm 20$ in. w.c. and 10 ft of tubing		

## Wiring

This sensor is designed for use as a Modbus server. This sensor can be plugged into any Modbus RS-485 network, compatible MultiHop Data Radio, or DXMR90 Series Controller. Flying lead models use the listed wire colors and sensor connections.

### Wiring

5-pin M12 Male Connector	Pin	Wire Color	Sensor Connection
	1	brown (bn)	Power IN (+): 10 to 30 V DC
	2	white (wh)	RS485 / D1 / B / +
	3	blue (bu)	Ground (-)
	4	black (bk)	RS485 / D0 / A / -
	5	gray (gr)	Not Used

## QM42-DPS1-2Q Holding Registers

Holding registers for the QM42-DPS1-2Q model

Modbus Register	Output	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 $\div$ 1000
2	Pressure (PSI)	-0.036	0.036	-36	36	Register value $\div$ 1000
3	Temperature (F)	-40	221	-4000	22100	Register value $\div$ 100
4	Temperature (C)	-40	105	-4000	10500	Register value $\div$ 100
5	Pressure (Pa)	-248	248	-248	248	Register value
1201	Pressure Sample Interval	0	65000	0	65000	
1202	Temperature Sample Interval	0	65000	0	65000	
6101	Baud	0=9.6k, 1=19.2k (default), 2=38.4k				
6102	Parity	0=none (default), 1=odd, 2=even				
6103	Modbus Server Address	1 (default) through 247				



*Holding registers for the QM42-DPS5-2Q model*

Modbus Register	Output	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
1201	Pressure Sample Interval	0	65000	0	65000	
1202	Temperature Sample Interval	0	65000	0	65000	
6101	Baud	0=9.6k, 1=19.2k (default), 2=38.4k				
6102	Parity	0=none (default), 1=odd, 2=even				
6103	Modbus Server Address	1 (default) through 247				

*Holding registers for the QM42-DPS20-2Q model*

Modbus Register	Output	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
1201	Pressure Sample Interval	0	65000	0	65000	
1202	Temperature Sample Interval	0	65000	0	65000	
6101	Baud	0=9.6k, 1=19.2k (default), 2=38.4k				
6102	Parity	0=none (default), 1=odd, 2=even				
6103	Modbus Server Address	1 (default) through 247				

The default pressure and temperature sample intervals are 5 seconds (holding register value of 80). The holding register values increment the sample rate in intervals of 62.5 ms.

## 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**

10 V DC to 30 V DC

**Current Consumption**

< 3 mA

**Pressure Range**

**QM42-DPS1-2Q:** ±1 inches water column (wc)

**QM42-DPS5-2Q:** ±5 inches water column (wc)

**QM42-DPS20-2Q:** ±20 inches water column (wc)

**Output**

RS-485 Serial

**Accuracy**

0.2% full scale

**Proof and Burst Pressure**

**QM42-DPS1-2Q:** Proof Pressure: 100× Maximum Operating Pressure

**QM42-DPS1-2Q:** Burst Pressure: 300× Maximum Operating Pressure

**QM42-DPS5-2Q:** Proof Pressure: 40× Maximum Operating Pressure

**QM42-DPS5-2Q:** Burst Pressure: 60× Maximum Operating Pressure

**QM42-DPS20-2Q:** Proof Pressure: 10× Maximum Operating Pressure

**QM42-DPS20-2Q:** Burst Pressure: 25× Maximum Operating Pressure

**Stability**

≤ 0.2% full scale per year

**Communication Hardware**

Interface: RS-485 Serial  
 Baud rates: 9.6k, 19.2k (default), or 38.4k  
 Data format: 8 data bits, no parity (default, 1 stop bit)  
 Active Communications Current: 2.95 mA at 30 V DC  
 Protocol: RS-485 Modbus RTU

**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)

**Indicators**

Green flashing: Power ON  
 Amber flashing: Serial Tx

**Measuring Media**

Gaseous

**Electrical Connection**

Conduit fitting with cable

**Included PVC Tubing**

Inner diameter: 0.125 in  
 Outer diameter: 0.25 in  
 Length: 10 ft

**Connection**

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

**Construction**

Black anodized aluminum alloy

**Zero/Span Offset Tolerance**

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

**Environmental Rating**

IP67

**Certifications**



Banner Engineering BV  
 Park Lane, Culliganlaan 2F bus 3  
 1831 Diegem, BELGIUM

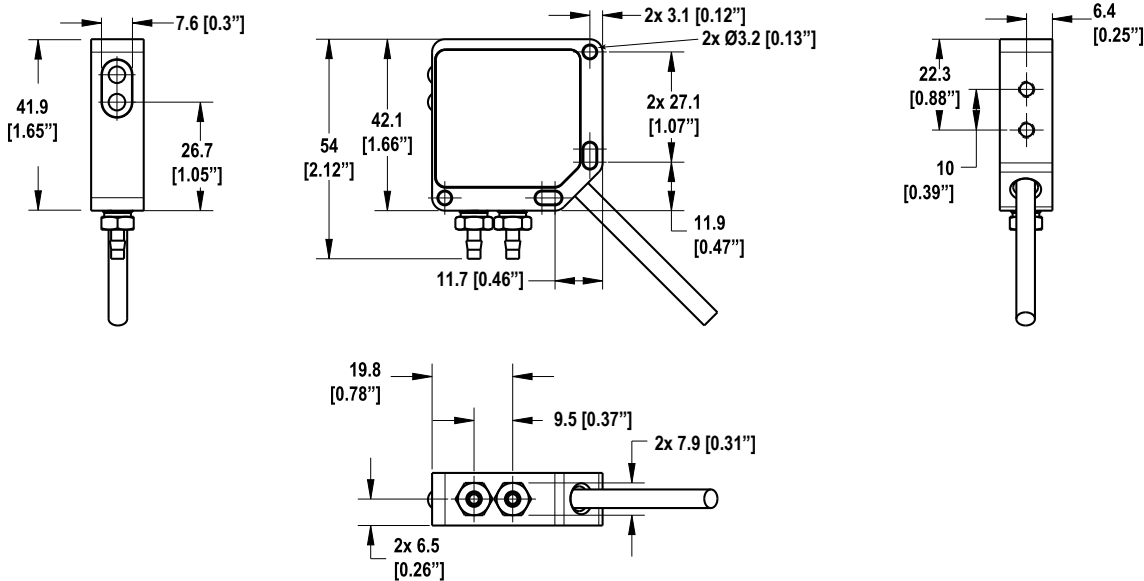


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**Dimensions**

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

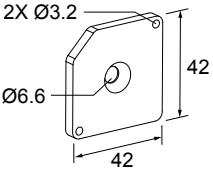
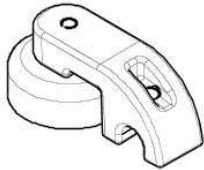
Dimensions



**QM42-DPS Accessories**

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

<p><b>BWA-BK-001</b></p> <ul style="list-style-type: none"> <li>Includes magnetic mounting bracket <b>SMB42FLM12</b> and 2 mounting screws</li> </ul>	
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<p><b>BWA-BK-005</b></p> <ul style="list-style-type: none"> <li>• Use when measuring high-frequency vibrations or when mounting the sensor to curved surfaces</li> <li>• Includes <b>SMB42FLAT</b> stainless steel bracket, 1/4"-28 screw mount, and one piece of 3M™ thermally conductive adhesive transfer tape</li> </ul>	
<p><b>BWA-M12CAB-MAG</b></p> <ul style="list-style-type: none"> <li>• Magnetic bracket to manage Banner M12 cables</li> <li>• 34 mm x 19 mm overall</li> </ul>	

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For patent information, see [www.bannerengineering.com/patents](http://www.bannerengineering.com/patents).

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