

# Bourns® Training Module

Pressure Sensors

BPS110, BPS120, BPS130

**BOURNS®**

# ***Bourns® Precision Sensor Overview***

## ***Pressure Sensors***

- The Bourns® Precision Sensor (BPS) portfolio has dependable sensors for every type of pressure, from precision, ultra low pressure to high temperatures, harsh environments. Quality, Performance and Reliability are the core values of this family of environmental condition sensors.




### ***Highlights***

- **High Sensitivity** for Ultra low pressure ranges
- **Stable performance** over life time of product
- **Low TEB** (total error band) over the calibrated temperature range
- **Extended Temperature Range** available (-40°C to 150°C)
- **Models with Harsh media compatibility** (air, liquid, and gases)

### ***Focus Applications***

- Medical – Patient monitoring equipment, Respiration monitoring and control
- Industrial – Process Control
- HVAC – Commercial & Industrial
- Consumer – White Goods, Appliances
- Heavy Equipment – Transmission fluid, fuel systems, EGR systems

# Initial Product Portfolio – Pressure Sensor

Series	Photo	Pressure Range	Calibrated Temperature Range	Output	Accuracy	TEB (Total Error Band)	Measurement Type	Features
BPS110		0.15 PSI 0.30 PSI 1.0 PSI	0°C to 60°C	Amplified Analog, 5% to 95% $V_s$	0.25% FS	±1.5%	<ul style="list-style-type: none"> <li>Differential</li> <li>Gauge</li> </ul>	<ul style="list-style-type: none"> <li>Ultra low pressure</li> <li>Surface mount package</li> </ul>
BPS120		0.15 PSI 0.30 PSI 1.0 PSI	0°C to 60°C	I <sup>2</sup> C, 13 bit	0.25% FS	±1.5%	<ul style="list-style-type: none"> <li>Differential</li> <li>Gauge</li> </ul>	<ul style="list-style-type: none"> <li>Ultra low pressure</li> <li>Surface mount package</li> </ul>
BPS130		15 PSI 30 PSI 100 PSI 300 PSI 500 PSI	-40°C to 150°C	Amplified Analog, 10% to 90% $V_s$	0.25% FS	±2.5%	<ul style="list-style-type: none"> <li>Gauge</li> <li>Absolute</li> </ul>	<ul style="list-style-type: none"> <li>High Temperature</li> <li>Liquid / Gas, Harsh media compatible</li> </ul>

# Model BPS110 & BPS120 Portfolio

*Extremely Accurate, Ultra-low Pressure Sensing Capability*

**High Precision for Ultra-low  
Pressure Ranges**

## Benefits

- ***Ability to measure ultra-low pressures in sensitive applications***
- ***Fully calibrated and compensated output for more efficient processes***
- ***Long-term stability for improved repeatability***



***Primary Industries –  
Medical\*, HVAC***

## Features

- 1.5 % FS TEB (total error band) over a temperature range of 0 to +60 °C
- Operating temperature range: -40 °C to +85 °C
- Calibrated pressure ranges down to 1 " H2O
- Gauge and differential calibration
- Digital (I<sup>2</sup>C) or amplified analog output
- Custom port configuration and custom calibration available

\*Excluding lifesaving, life-critical and life-sustaining applications.

# Model BPS130 Portfolio

*High Temperature, High Pressure, Harsh Media  
Compatibility with High Accuracy*

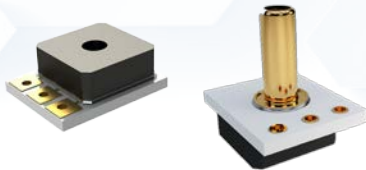
**Compatible with Harsh  
Environments**

## Benefits

- ***Capable of operating in high temperature environments with highly accurate output***
- ***No need for intermediate diaphragm when working with certain harsh media\****
- ***Ability to work with a wide range of pressures***
- ***Stable, repeatable performance over the lifetime of the sensor***

## Features

- Operating temperature range: -40 °C to +150 °C
- Pressure range: 15 PSI to 500 PSI
- Gauge and absolute calibration
- Amplified analog output
- Wetted materials: ceramic, glass, silicon, Au/Sn
- Custom enclosure configuration and custom calibration available



***Primary Industries –  
HVAC, Light to Medium Industrial,  
Heavy Equipment***

*\* Check with factory for details*

# Pressure Sensing – Focus Applications



BPS110, BPS120

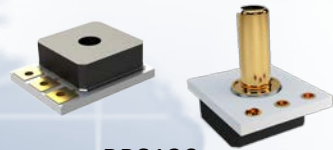
## High Precision for Ultra low pressure ranges

- **Medical – Patient monitoring equipment, Respiration monitoring and control**
  - Low differential and gauge pressure sensors for CPAP respiratory, ventilation, and general gases applications
- **HVAC – Commercial & Industrial**
  - Low pressure differential pressure sensors for filter monitoring and VAV controller

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## High Temperature, High pressure, and Harsh Media compatible

- **HVAC – Commercial & Industrial**
  - High pressure, absolute and gauge pressure, sensors for harsh environments, resistant against moisture, dust and particles
- **Industrial – Process Control**
  - Harsh environment pressure sensors for high temperatures, resistant against moisture, dust, particles, and chemicals
- **Heavy Equipment – Gases and Fluid pressure**
  - Custom Engineered Pressure Sensors
  - High temperature capability (up to 150°C)
  - Compatible with transportation fluids and gases\*
  - High working and burst pressure ranges



BPS130

\* Check with Factory for details

# How to order

## BPS1XX-AA0P15-2DG

**BPS - Bourns® Precision Sensors**

### Model Series

Board mount Pressure Sensors

110 = Analog Amplified, TEB  $\pm 1.5\%$ ,  $-40^{\circ}$  to  $85^{\circ}$  C, 5V  
120 = Digital, TEB  $\pm 1.5\%$ ,  $-40^{\circ}$  to  $85^{\circ}$  C, 5V  
130 = Analog Amplified, metal port, TEB  $\pm 2.5\%$ ,  $-40^{\circ}$  to  $150^{\circ}$  C, 5V  
**140 = Analog Amplified, ceramic port, TEB  $\pm 2.5\%$ ,  $-40^{\circ}$  to  $150^{\circ}$  C, 5V**  
**150 = Analog Amplified, TEB  $\pm 2.5\%$ ,  $-40^{\circ}$  to  $85^{\circ}$  C, 5V**  
**160 = Digital, TEB  $\pm 2.5\%$ ,  $-40^{\circ}$  to  $85^{\circ}$  C, 5V**

### Media Compatibility

A = Air/Gas  
L = Liquid  
H = Harsh Media

### Pressure Type

A = Absolute  
G = Gauge  
D = Differential

### Packaging

E = "xx" Reel  
G = "xx" reel  
T = Tubes  
Blank = Trays

### Port Style

M = Manifold Mount  
S = Single Port, Vertical  
D = Dual Port, Horizontal

### Terminal Pin

1 = No terminal pins  
2 = Surface Mount Terminal pins  
3 = Vertical terminal pins

### Pressure (psi)

0P15 = .15  
0P30 = .30  
01P0 = 1.0  
015P = 15  
030P = 30  
100P = 100  
300P = 300  
**500P = 500**

**Pressure  
(Bar)**  
TBD

**Pressure (" H2O)**  
TBD

Red = indicates future expansions of portfolio

# Reference Materials

New Product Briefs  
Data Sheets  
Sample Kits  
Training Modules  
Application Notes  
Website



## Introduction

Recent advances in sensor technology, packaging, and manufacturing have enabled the development of precision sensors that are small, rugged, and accurate. These sensors are used in a wide range of applications, from industrial process control to automotive engine management.

The BPS110 and BPS120 series of precision sensors are designed for high accuracy and long-term stability. They are available in both analog and digital output formats, and are compatible with a wide range of operating conditions.

Key features of the BPS110 and BPS120 series include:

- High accuracy (±0.1% FS)
- Long-term stability (±0.05% FS/yr)
- Wide operating range (-40°C to +125°C)
- Low power consumption
- Small size (3.5mm x 2.5mm x 1.5mm)
- Rugged construction

### Key Features

Series: BPS110 and BPS120  
Model: BPS110, BPS120

#### Inputs

- 1. Analog inputs
- 2. Digital inputs
- 3. Temperature inputs
- 4. Pressure inputs
- 5. Humidity inputs
- 6. Gas inputs

#### Outputs

- 1. Analog outputs
- 2. Digital outputs
- 3. Temperature outputs
- 4. Pressure outputs
- 5. Humidity outputs
- 6. Gas outputs

#### Options

- 1. High accuracy

## Product Portfolio

### Product Portfolio

Model	Series	Output	Operating Range	Accuracy	Stability	Power	Size	Material
BPS110	Series 1	Analog	-40°C to +125°C	±0.1% FS	±0.05% FS/yr	100µA	3.5mm x 2.5mm x 1.5mm	Stainless Steel
BPS120	Series 2	Digital	-40°C to +125°C	±0.1% FS	±0.05% FS/yr	100µA	3.5mm x 2.5mm x 1.5mm	Stainless Steel
BPS130	Series 3	Analog	-40°C to +125°C	±0.1% FS	±0.05% FS/yr	100µA	3.5mm x 2.5mm x 1.5mm	Stainless Steel
BPS140	Series 4	Digital	-40°C to +125°C	±0.1% FS	±0.05% FS/yr	100µA	3.5mm x 2.5mm x 1.5mm	Stainless Steel

### Product Portfolio

Series: BPS110 and BPS120

Model: BPS110, BPS120

#### Inputs

- 1. Analog inputs
- 2. Digital inputs
- 3. Temperature inputs
- 4. Pressure inputs
- 5. Humidity inputs
- 6. Gas inputs

#### Outputs

- 1. Analog outputs
- 2. Digital outputs
- 3. Temperature outputs
- 4. Pressure outputs
- 5. Humidity outputs
- 6. Gas outputs

#### Options

- 1. High accuracy

For more information, please contact our sales team.

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### NEW PRODUCT BRIEF

#### Bourns® Models BPS110 & BPS120

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#### FEATURES

- High accuracy (±0.1% FS)
- Long-term stability (±0.05% FS/yr)
- Wide operating range (-40°C to +125°C)
- Low power consumption
- Small size (3.5mm x 2.5mm x 1.5mm)
- Rugged construction

#### INTRODUCTION

Recent advances in sensor technology, packaging, and manufacturing have enabled the development of precision sensors that are small, rugged, and accurate. These sensors are used in a wide range of applications, from industrial process control to automotive engine management.

#### MARKET SEGMENT OVERVIEW

The BPS110 and BPS120 series of precision sensors are designed for high accuracy and long-term stability. They are available in both analog and digital output formats, and are compatible with a wide range of operating conditions.

### NEW PRODUCT BRIEF

#### Bourns® Model BPS130

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#### FEATURES

- High accuracy (±0.1% FS)
- Long-term stability (±0.05% FS/yr)
- Wide operating range (-40°C to +125°C)
- Low power consumption
- Small size (3.5mm x 2.5mm x 1.5mm)
- Rugged construction

#### INTRODUCTION

Recent advances in sensor technology, packaging, and manufacturing have enabled the development of precision sensors that are small, rugged, and accurate. These sensors are used in a wide range of applications, from industrial process control to automotive engine management.

#### MARKET SEGMENT OVERVIEW

The BPS130 series of precision sensors are designed for high accuracy and long-term stability. They are available in both analog and digital output formats, and are compatible with a wide range of operating conditions.

### PRELIMINARY

#### BPS110 Series - 12 mm Analog Low Pressure Sensor

**Features**

- Compensated analog output
- Ultra-low pressure sensing
- Range and differential types
- For use in clean, dry air and non-corrosive gases
- Tape and reel packaging
- RoHS compliant\*

**Applications**

- Industrial:

  - Process monitoring
  - Package Automation

- Medical:

  - Diagnostic equipment
  - Analytic equipment

**Electrical Characteristics**

Supply Voltage (Vcc)	4.75 V minimum, 5.1 V typical, 5.25 V maximum
Supply Current (Icc)	0.25 mA minimum, 1 mA typical, 1.4 mA maximum
Output Current	0.25 mA minimum, 1 mA typical, 1.4 mA maximum
Operating Temperature	-40°C to +125°C
Storage Temperature	-55°C to +150°C
Min Output Load Resistance	Recommended Input Data

**Performance Character**

Pressure Range: -100 to +100 mmHg

Output: 0 to 100 mV

Accuracy: ±0.1% FS

Stability: ±0.05% FS/yr

Power: 100µA

Size: 3.5mm x 2.5mm x 1.5mm

Material: Stainless Steel

### PRELIMINARY

#### BPS120 Series - 12 mm Digital Low Pressure Sensor

**Features**

- Compensated digital output
- Ultra-low pressure sensing
- Range and differential types
- For use in clean, dry air and non-corrosive gases
- Tape and reel packaging
- RoHS compliant\*

**Applications**

- Industrial:

  - Process monitoring
  - Package Automation

- Medical:

  - Diagnostic equipment
  - Analytic equipment

**Electrical Character**

Supply Voltage (Vcc): 4.75 V minimum, 5.1 V typical, 5.25 V maximum

Supply Current (Icc): 0.25 mA minimum, 1 mA typical, 1.4 mA maximum

Output Current: 0.25 mA minimum, 1 mA typical, 1.4 mA maximum

Operating Temperature: -40°C to +125°C

Storage Temperature: -55°C to +150°C

Min Output Load Resistance: Recommended Input Data

**Performance Chara**

Pressure Range: -100 to +100 mmHg

Output: 0 to 100 mV

Accuracy: ±0.1% FS

Stability: ±0.05% FS/yr

Power: 100µA

Size: 3.5mm x 2.5mm x 1.5mm

Material: Stainless Steel

### PRELIMINARY

#### BPS130 Series - 10 mm Analog High Pressure Sensor

**Features**

- Compensated analog output
- Ultra-low pressure sensing
- Range and differential types
- For use in clean, dry air and non-corrosive gases
- Tape and reel packaging
- RoHS compliant\*

**Applications**

- Industrial:

  - Process monitoring
  - Package Automation

- Medical:

  - Diagnostic equipment
  - Analytic equipment

**Electrical Characteristics**

Supply Voltage (Vcc)	4.75 V minimum, 5.1 V typical, 5.25 V maximum
Supply Current (Icc)	0.25 mA minimum, 1 mA typical, 1.4 mA maximum
Output Current	0.25 mA minimum, 1 mA typical, 1.4 mA maximum
Operating Temperature	-40°C to +125°C
Storage Temperature	-55°C to +150°C
Min Output Load Resistance	Recommended Input Data

**Performance Characteristics**

Pressure Range: -100 to +100 mmHg

Output: 0 to 100 mV

Accuracy: ±0.1% FS

Stability: ±0.05% FS/yr

Power: 100µA

Size: 3.5mm x 2.5mm x 1.5mm

Material: Stainless Steel

# Value Proposition

## Highly Reliable Precision Environmental Sensors for demanding applications

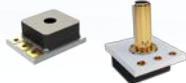
### Pressure Sensors

- *Model BPS110 & BPS120*



- **High Precision for Ultra-low Pressure Ranges**
- 1.5 % FS TEB (total error band) over a temperature range of 0 to +60 °C
- Digital (I<sup>2</sup>C) or analog output
- Custom port configuration and custom calibration available

- *Model BPS130*



- **High Temperature, Medium Pressure Range and Harsh Media Compatible\***
- Operating temperature range -40 °C to +150 °C
- 2.5 % TEB (total error band) over the entire operating temperature range
- Custom enclosure configuration and custom calibration available

\* Check with Factory for details

**Thank you!**

**BOURNS®**