# M5600

## Wireless Pressure Transducer

- Bluetooth 4.2 Wireless Communication
- Pairing Mode or Advertising (Beaconing) Mode
- 32-Bit Digital Pressure Data Output
- 16-Bit Digital Temperature Data Output
- Weatherproof IP65 Rating
- CR2032/CR2050W Battery Compatible

## Features

- Heavy Industrial CE Approved
- ±0.25% Pressure Non-Linearity
- ±1.0% Total Error Band (TEB)
- -10 to 60°C Compensated Temperature
- Operating Temperature (Battery):
  - -20 to 70°C (Sony/MuRata CR2032)
  - -20 to 85°C (Murata CR2050W)
- Withstands 50g shock and maximal 10g Vibration
- Excellent Long-term Stability

## Applications

- Gas and Liquid Flow Measurements
- Tank Liquid Level Measurements
- Liquid and Gas Filter Monitoring
- Corrosive Gases and Liquids
- Remote and Hard to Reach Locations
- Factory Process Control
- Energy Generation and Management

The M5600 series from TE Connectivity's Sensors Business Unit sets the price and performance standard for wireless pressure transducers used in demanding industrial and smart factory applications.

The modular M5600 wireless pressure transducer from our Microfused line is enclosed in a stainless steel and PBT housing. This high accuracy, 24-bit ADC digital output wireless transducer eliminates hard wiring and provides remote process control and monitoring via Bluetooth® 4.2 Wireless Communication. This series is suitable for measurement of liquid or gas pressure, even for difficult media such as contaminated water, steam, and mildly corrosive fluids.

The wetted surfaces of the pressure ports are made from 17-4PH stainless steel. The port design uses no internal O-rings or organics exposed to the pressure media which provides excellent durability and long-term performance.

FCC, ISED and RED compliant

## STANDARD RANGES

| Range (psi) | Range (Bar) | Gage | Sealed | Compound |
|---|---|---|---|---|
| 0 to 050 | 0 to 3.5 | ● | | ● |
| 0 to 100 | 0 to 007 | ● | | ● |
| 0 to 200 | 0 to 014 | ● | | ● |
| 0 to 300 | 0 to 020 | ● | | ● |
| 0 to 500 | 0 to 035 | ● | | ● |
| 0 to 01k | 0 to 070 | ● | ● | ● |
| 0 to 03k | 0 to 200 | ● | ● | ● |
| 0 to 05k | 0 to 350 | ● | ● | ● |
| 0 to 10k | 0 to 700 | ● | ● | ● |
| 0 to 15k | 0 to 01k | ● | ● | ● |

Intermediate ranges available upon request.

## PERFORMANCE SPECIFICATIONS

Ambient Temperature: 25°C (unless otherwise specified) For custom configurations, consult factory.

| Parameters | | Min | Typ | Max | Units | Notes |
|---|---|---|---|---|---|---|
| Supply Voltage | | 2.3 | 3 | 3.6 | $V_{DC}$ | Replaceable CR2032/CR2050 battery |
| Accuracy | | -0.25 | | 0.25 | %F.S. | RSS of linearity, hysteresis, and repeatability |
| Resolution | | | 0.00005 | | %F.S. | |
| Output Protocol | | | Digital $I^2C$ | | | |
| A/D Resolution | | | 24 | | Bit | |
| Operating frequency | | | 2.4 | | GHz | |
| Cycle life | | 1.00E+6 | | | 0~FS Cycles | |
| Stability | | -0.25 | | 0.25 | %F.S./year | |
| Total Error Band | Port material 17-4PH for all ranges | -1 | | 1 | %F.S. | @25°C over compensated range |
| | Port material 316L for range≤3K psi | -1.5 | | 1.5 | %F.S. | |
| | Port material 316L for range > 3K psi | -2 | | 2 | %F.S. | |
| Proof Pressure | | 2X | | 20k psi | Rated | |
| Burst Pressure | | 5X | | 20k psi | Rated | |
| Compensated Temperature | | -10 | | +60 | °C | |
| Operating Temperature | | -20 | | +70 | °C | CR2032 (Sony/MuRata) |
| | | -20 | | +85 | °C | CR2050W (MuRata) |
| Storage Temperature | | -40 | | +120 | °C | without battery |
| Wireless Protocol | | BLE4.2 | | | | |
| Receiver Operating System | | Android™ 4.3 or above, iOS 7 or above, Windows® XP/7 or above | | | | |
| Signal Pairing Distance | | 65 feet | | | | |
| Signal Transmission Distance | | 65 feet affected by receiver antenna and blocking objects | | | | |
| Battery Life | | 1-5 years depending on use | | | | |
| Battery Level | | Battery level reported in upload data | | | | |
| Weatherproof | | IP65 | | | | |
| Pressure Port Material | | 17-4PH Stainless Steel or 316L Stainless Steel | | | | |
| Enclosure | | Stainless Steel and PBT | | | | |
| Shock | | 50g, 11msec Half Sine Shock per MIL-STD-202G, Method 213B, Condition A | | | | |
| Vibration | | 10Hz to 55Hz, double amplitude 1.52mm, EIA-364-28F, Condition I | | | | |

**Note:**

Battery life depends on its capacity, operating temperature and signal transmission interval.

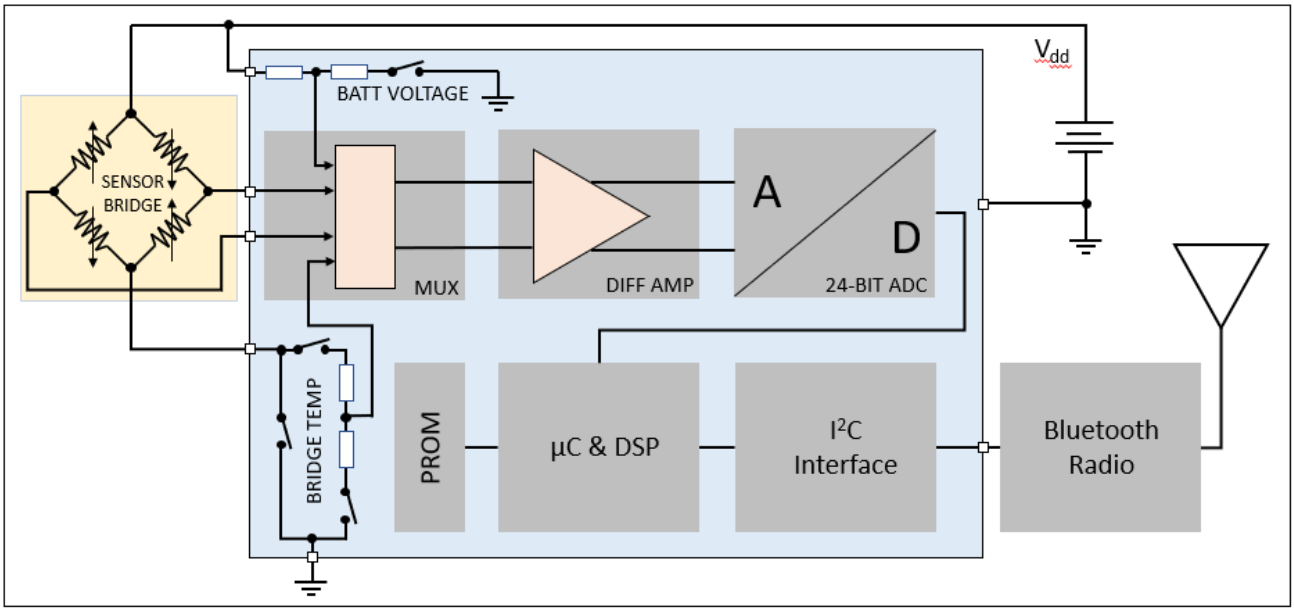
Temperature can impact battery capacity retention even in idle. Check battery specifications for more details.

Factory default data transmission rate is 5sec, which can be adjusted from 100msec to 5sec in smartphone app or PC software.

## COMPLIANCE

EN 55032 Emissions Class A & B
IEC 61000-4-2 Electrostatic Discharge Immunity (4kV contact/8kV air)
IEC 61000-4-3 Radiated, Radio-Frequency Electromagnetic Field Immunity (10V/m, 80M-1GHz); Shift <1.5%
FCC Part 15 Subpart B Unintentional Radiators (US)
ICES-003 Unintentional Radiators (Canada)
RED ETSI EN 301 489-1 V2.1.1 & ETSI 301 480-17 V3.2.1 (Europe)

## BLOCK DIAGRAM




Specific conditions of use

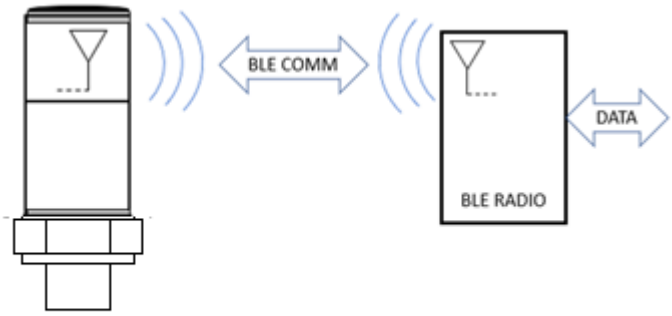
1. The non-metallic parts incorporated in the enclosure may generate an ignition-capable level of electrostatic charge. Upon installation, care shall be taken to avoid locations where the external conditions are conductive to the build-up of electrostatic charge on such surfaces. Additionally, the equipment shall only be cleaned with a damp cloth.

2. The Bluetooth Pressure Transducers do not have an earth ground terminal. The transducers shall be earth grounded as part of the final installation.

## COMMUNICATION PROTOCOLS

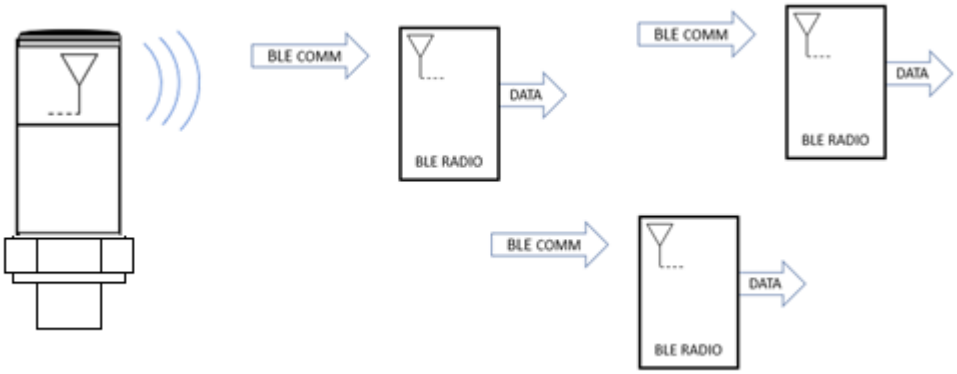
Pairing mode (Model M5600 – xx0):

- The device is set up to be both discoverable and connectable.
- The device is constantly listening for a signal from any other Bluetooth device within range that might send out an inquiry for connection (connection request).
- Once a signal is received and acknowledged, a single two-way communication channel is established, and the two devices will only communicate with each other or be paired.




Advertising (Beaconing) mode (Model M5600 – xx1):

- When power is first applied (insert battery), the device enters the configuration mode (six hours long) which facilitate pairing so updates and software changes can be made. The device is set up to be discoverable but connectable for configuration.
- Six hours after the last pairing, the transducer will switch to low power advertising mode and begin transmitting data. The device is constantly transmitting data (advertising) at higher intervals to save battery. Any other Bluetooth device within range can receive the data and may establish a two-way connection for configuration.



## ORDERING INFORMATION

**Part Number**

**M5600 – 0 0 0 0 0 2 – 05KP G**

### Certification

| | |
|---|---|
| 0 | RoHS, FCC, ISED, RED, CE |

### Port Material

| | |
|---|---|
| 0 | 17-4PH |
| 1 | 316L SS |

### Cleaning

| | |
|---|---|
| 0 | No Selection |
| 1 | Oxygen Clean B40.1 Level IV |
| 2 | With Snubber |

### Output Protocol

| | |
|---|---|
| 0 | Standard |
| 1 | Beaconing |

### Battery Type

| | |
|---|---|
| 0 | No Battery Option |

***Notes:** No battery is shipped with the sensor

### Label Type

| | |
|---|---|
| 0 | Adhesive Label |
| 1 | Laser Marking |

### Pressure Type

| | |
|---|---|
| G | Gauge |
| S | Sealed(≥1kpsi) |
| C | Compound |

Compound pressure range is -14.7 to xxxpsig or -1 to xxxbarg.
(e.g.200PC: -14.7 to 200psig, 020BC: -1 to 20barg)
Sealed type is recommended for high humidity environments.

### Pressure Range

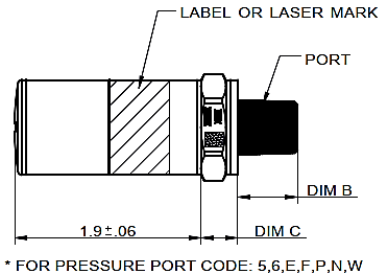
| psi STD | bar STD |
|---|---|
| 050P | 3.5B |
| 100P | 007B |
| 300P | 020B |
| 500P | 035B |
| 01KP | 070B |
| 03KP | 200B |
| 05KP | 350B |
| 10KP | 700B |
| 15KP | 01KB |

Intermediate ranges between 3.5bar to 1kbar available upon request

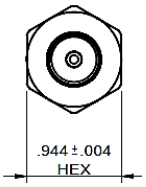
### Pressure Port

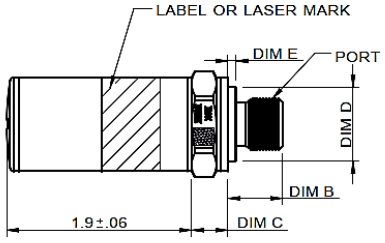
| | |
|---|---|
| 2 | 1/4-19 BSPP |
| 3 | G3/8 JIS B2351 |
| 4 | 7/16-20 UNF MALE SAE J1926-2 STRAIGHT THREAD O-RING BUNA=N 90SH-904 |
| 5 | 1/4-18 NPT |
| 6 | 1/8-27 NPT |
| B | G1/4 JIS B2351 |
| E | 1/4-19 BSPT |
| F | 1/4-19 BSPP FEMALE WITHOUT SNUBBER |
| P | 7/16-20UNF FEMALE SAE J513 STRAIGHT THREAD WITH INTEGRAL VALVE DEPRESSOR |
| Q | M10 X 1.0 mm ISO 6149-2 |
| N | 7/16-20UNF FEMALE SAE J513 STRAIGHT THREAD |
| S | M12 X 1.5 mm ISO 6149-2 |
| U | G1/4 DIN 3852 FORM E GASKET DIN3869-14 NBR |
| W | M20 X 1.5 mm ISO 6149-2 |
| G | M14 X 1.5 mm ISO 6149-2 |

## DIMENSIONS

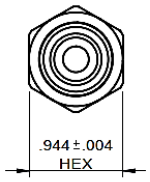



* FOR PRESSURE PORT CODE: 5,6,E,F,P,N,W




* FOR PRESSURE PORT CODE:2,3,4,B,Q,S,U,G




| Code | Port | Dim B Typ. | Dim C Typ. | Dim D Typ. | Dim E Typ. |
|---|---|---|---|---|---|
| 2 | 1/4-19 BSPP | 0.547 [13.9] | 0.366 [9.3] | 0.800 [20.32] | 0.075 [1.91] |
| 3 | G3/8 JIS B2351 | 0.615[15.6] | 0.366 [9.3] | 0.858 [21.79] | 0.075 [1.91] |
| 4 | 7/16-20 UNF Male SAE J1926-2 Straight Thread O-Ring BUNA=N 90SH-904 | 0.508 [12.9] | 0.366 [9.3] | 0.800 [20.32] | 0.075 [1.91] |
| 5 | 1/4-18 NPT | 0.60 [15.24] | 0.366 [9.3] | N/A | N/A |
| 6 | 1/8-27 NPT | 0.39[9.9] | 0.366 [9.3] | N/A | N/A |
| B | G1/4 JIS B2351 | 0.547[13.9] | 0.366 [9.3] | 0.708 [17.98] | 0.075 [1.91] |
| E | 1/4-19 BSPT | 0.50[12.7] | 0.366 [9.3] | N/A | N/A |
| F | 1/4-19 BSPP FEMALE WITHOUT SNUBBER | 0.621[15.8] | 0.366 [9.3] | N/A | N/A |
| P | 7/16-20UNF FEMALE SAE J513 STRAIGHT THREAD WITH INTEGRAL VALVE DEPRESSOR | 0.40[10.9] | 0.444 [11.3] | N/A | N/A |
| Q | M10 X 1.0 mm ISO 6149-2 | 0.449[11.9] | 0.366 [9.3] | 0.543 [13.79] | 0.075 [1.91] |
| N | 7/16-20UNF FEMALE SAE J513 STRAIGHT THREAD | 0.43[10.9] | 0.444 [11.3] | N/A | N/A |
| S | M12 X 1.5 mm ISO 6149-2 | 0.531[13.5] | 0.366 [9.3] | 0.661 [13.79] | 0.098 [2.49] |
| U | G1/4 DIN 3852 FORM E GASKET DIN3869-14 NBR | 0.519[13.2] | 0.366 [9.3] | 0.744 [18.9] | 0.047 [1.19] |
| W | M20 X 1.5 mm ISO 6149-2 | 0.551[14.0] | 0.441 [11.2] | N/A | N/A |
| G | M14 X 1.5 mm ISO 6149-2 | 0.531[13.5] | 0.366 [9.3] | 0.740 [18.8] | 0.098 [2.49] |

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