

# Paine 420-22-0010 Series Pressure Transmitter

Digital, Ultra Capacitance, 175°C, Pressure and Temperature



The 420-22-0010 Series is our high precision digital transmitter offering output of both pressure and temperature measurements. With full scale accuracy of .02%, long term stability of .02 % per year and designed to operate to 20,000 PSIA (1379 BAR) and 347°F (175°C). Utilizing proprietary, high precision-ultra capacitance technology, the 420-22-0010 Series is designed for harsh, long term petroleum and natural gas applications, providing unsurpassed precision, performance, and stability over a wide temperature range.

## Features

- Custom hybrid electronics exhibit extremely low thermal transient error for high reliability during rapid changes in temperature.
- Compensation for thermal gradients commonly experienced in exploration and production activities provides increased accuracy.
- Self-calibrating gain and offset techniques reduce added thermal error.
- Slim 0.51" (1.29 cm) diameter form factor saves critical tool space.
- Customizable interface options available for fit-for-use designs.

## Potential Applications

- Well Monitoring
- Well Logging
- Artificial Lift
- Production Control Monitoring

## Specifications

- Paine Standard Part Number: **420-22-0010-20K0**
- Accuracy: .02%
- Long Term Stability: .02% per year.
- Pressure Range: 0-20,000 PSIA (1379 BAR).
- Operating Temperature: 14°F to 347°F (-10°C to 175°C).
- Calibrated Temperature: 75°F to 347°F (23.9°C to 175°C).
- Digital Output: UART-TTL, I2C
- Temperature Output: °F or °C.
- Temperature Measurement: -40°F to 347°F (-40°C to 175°C).
- Temperature Resolution: 12 Bits Minimum, Better Than .09°F (.05°C)
- User Guide: Refer to user guide 200.203 for more information, instructions and product details.

## Specifications

### Performance specifications

#### Performance

**Accuracy:**  $\pm .02\%$  of the Full Scale (F.S.) over the calibrated temperature range. Accuracy is relative to primary standard at time of calibration and includes nonlinearity, hysteresis, non-repeatability and thermal effects as compared to a serial number specific polynomial model P(T,Rp). Transmitter body needs to be coupled to ground.

**Stability:** .02% F.S. maximum per year at the maximum calibrated temperature and pressure.

**Operating Pressure Range:** 0-20,000 (1379 bar) Contact factory for custom pressure ranges.

**Proof Pressure:** 25,000 psia (1723 bar).

**Burst Pressure:** 30,000 psia (2413 bar).

**Operating Temperature Range:** 14°F to 347°F (-10°C to 175°C). **Do not pressurize below -14°F (-10°C)**

**Calibrated Temperature Range (Pressure Measurement):** 75°F to 347°F (+23.9°C to 175°C)

**Storage Temperature Range:** -40°F to 347°F (-40°C to 175°C)

**Pressure Output in PSI:** Fully compensated for the effects of temperature & non-linearity.

**Pressure Resolution:** 16 bits min, .0001% FS RMS and .0043% F.S. peak to peak with a 10 second sample rate.

**Temperature Output:** °F or °C.

**Temperature Measurement:** -40°F to 347°F (-40°C to 175°C).

**Temperature Resolution:** 12 bits minimum. Better than .09°F (.05°C).

**Temperature Calibration Accuracy from 60°F to 212°F (20°C to 100°C):**  $\pm 1^\circ\text{C}$

### Functional specifications

#### Electrical

**Digital Output:** UART-TTL, I2C (Input Voltage Level).

**Pressure Output in PSI:** Fully compensated for the effects of temperature and non-linearity.

**Input Voltage:** 2.9 to 5.0 VDC, calibration valid at  $5.0 \pm .01$  VDC.

**Input Current:** 30 mA maximum at 5.0 VDC.

**Reverse Polarity:** "POWER IN" is protected from the application of reverse polarity.

**Over Voltage Protection:** Do not exceed 5.25 VDC.

**Insulation Resistance:** All conductors except pin 5, together simultaneously to case: 100M $\Omega$  minimum at 50 VDC and 75°F  $\pm 5^\circ\text{F}$  (23°C  $\pm 2.8^\circ\text{C}$ ). The case must be connected or coupled to ground for accurate results.

**Electrical Connection Functions:** See Figure 1.

Pin 1: Power In

Pin 2: UART Rx

Pin 3: UART Tx

Pin 4: Power Return / Communication Return

Pin 5: Case Ground

Pin 6: I2C SDA

Pin 7: I2C SCL

### Physical specifications

#### Material selection

Emerson provides a variety of Paine product with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Paine product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options and components for the particular application. Emerson is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.

**Pressure Media:** Fluids and gases compatible with UNS NO7718, solution annealed and aged to a maximum hardness of 40 HRC.

**Electrical Connection:** Mates with Glenair® P/N: 801-007-16Z16-7SA. Connector sold separately.

**Pressure Fitting:** HiP HM2.

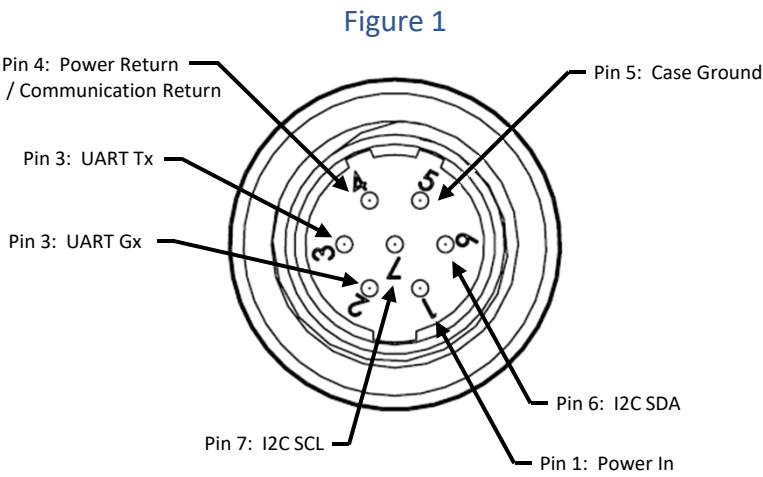
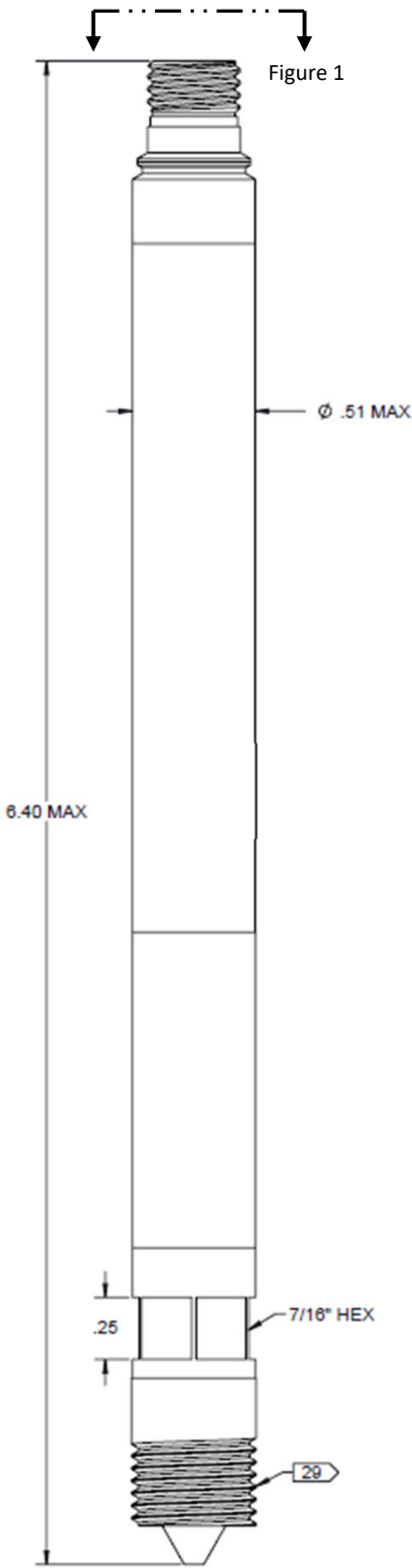
**Recommended Installation Torque:** 75 in-lb. (8.5 Nm).

#### Installation Information:

- Transmitter body must be mechanically restrained for use in high shock and/or vibration applications.
- Thermal coefficient of the mounting expansion should not exceed  $8.3 \times 10^{-6}$  in./in.°F for operation above 100°F

**Electrostatic Discharge (ESD):** This transmitter is susceptible to ESD, per ANSI/ESD STM5.1 Human Body Model (HBM) Class 3A and must be protected.

Mechanical Specifications



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