

# Paine 212-40-020 Series Pressure Transducer

VDC, Miniature, HP/HT, +210 °C, Ranges to 30,000 PSIA (2068 BAR)



**212-40-020 Series is our miniature VDC, High Pressure/High Temperature (HP/HT) combination transducer designed specifically for extreme oil field applications. Silicon on Insulator (SOI) electronics technology provides precise continuous high temperature measurement, accuracy and stability all in a miniature 1/2 inch diameter package. Offered in pressure ranges up to 30,000 PSIA (2068 BAR) the 212-40-020 Series features proven high performance and reliability in the toughest applications and can easily be customize to your specific requirements.**

## Solutions

- Ranges up to 30,000 PSIA.
- SOI Electronics Technology.
- High Pressure and High Temperature Measurement.
- 1/2 inch Diameter Package.
- All-Welded, Sealed Construction.
- Harsh/Extreme Environment Ready.

## Potential Applications

- Downhole Tools (MWD, LWD, Wireline and more...)
- Offshore Energy Exploration.
- Industrial Control Systems and Automation.
- Artificial Lift and Sub Sea Risers.
- Engine Sensing and Controls.

## Features

- **Full Scale (F.S.) Sensitivity:** 2.8 mV/V nominal.
- **Total Error Band (Non-Linearity, Hysteresis and Thermal Effects):** 0.10%/0.125% of Full Scale (F.S.) Output over the calibrated temperature range.
- **Output:** VDC.
- **Operating Temperature:** -40 °F to +410 °F (-40 °C to +210 °C).
- **Pressure Range:** 0-5,000 to 0-30,000 psia (344 to 2068 bar).
- **Operating Media:** Compatible with alloy UNS NO7718 solution annealed and aged to a minimum hardness of 40HRC.
- **Pressure Fitting:** Per MS33656-E3.

## Specifications

**Calibration:** Calibration Certificates are supplied with each unit and available on-line.

## Performance

**Total Error (Non-Linearity, Hysteresis and Thermal Effects)**

**Bounds Shall Be:** Per the “Pressure table” on page 3 as compared to the serial number specific polynomial model P(T mv) for all input pressures and temperatures over the calibrated range.

**Output at Zero Pressure:** 0.5 ± 0.25 VDC.

**Output at Full Scale Pressure (F.S.O.):** 4.25 ± 0.5 VDC.

**Temperature Output at +73 °F (+23 °C):** 3.40 ± 0.5 VDC.

**Temperature Output at +392 °F (+200 °C):** 2.52 ± 0.5 VDC.

## Environmental

**Operating Temperature Range:** -40 °F to +410 °F (-40 °C to +210 °C).

**Calibrated Temperature Range:** +75 °F to +392 °F (24 °C to +200 °C).

**Environmental:** Error due to combined effect of shock, vibration and acceleration shall be less than 0.05% of Full Scale per G.

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## Mechanical

**Pressure Range:** Contact factory for additional pressure ranges.

Pressure table				
Standard part number	Pressure range PSIA (BAR)	Proof pressure PSIA (BAR)	Burst pressure PSIA (BAR)	Total error (% FSO)
212-40-020-02	0-10,000 (0-689)	15,000 (1,034)	20,000 (1,378)	± 0.10%
212-40-020-04	0-20,000 (0-1,378)	25,000 (1,723)	30,000 (2,068)	± 0.10%
212-40-020-07	0-30,000 (0-2,068)	37,500 (2,585)	40,000 (2,757)	± 0.125%

**External Case Pressure:** 20,000 psi (1,378 bar) maximum at +392 °F (+200 °C).

**Operating Media:** Any compatible with alloy UNS N07718 solution annealed and aged to a maximum hardness of 40 HRC.

**Pressure Fitting:** Per MS33656-E3 using annealed alloy 600 replaceable seal provided with each transducer.

## Electrical

**Excitation:** 5.00 ± 0.15 VDC, (5 VDC nominal) no reverse polarity protection, output ratiometric to excitation.

- **DO NOT** exceed 5.25 VDC.
- **DO NOT** allow excitation to contact Pin B, Pressure Out, or Pin C, Temperature Out.

**Input Current:** 8 mA maximum.

**Output Current:** 1 mA maximum. Short Circuit Protected.

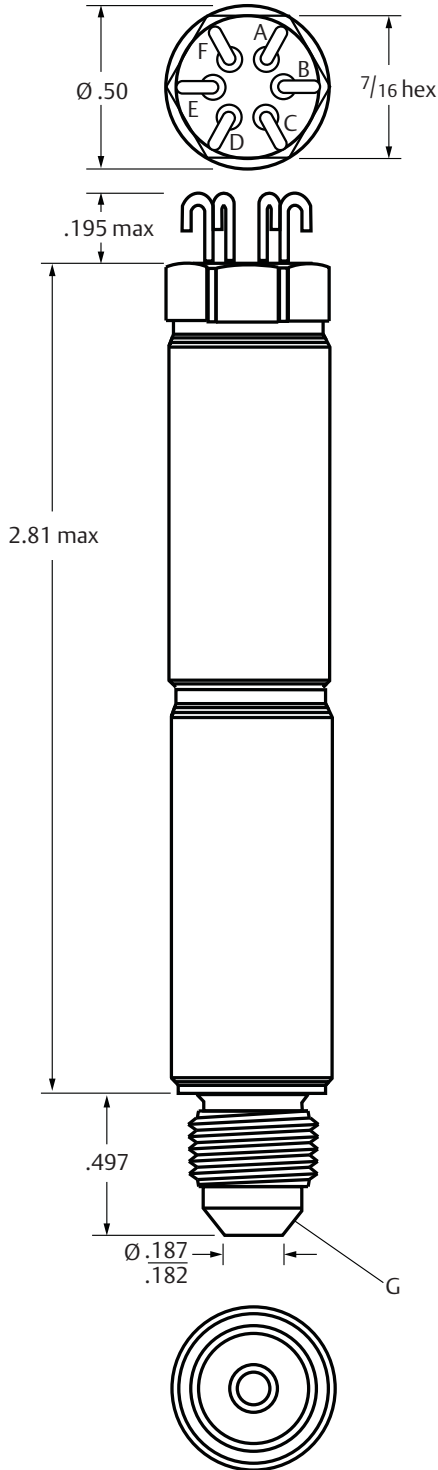
**Input/Output Isolation:** Input/output not isolated.

**Insulation Resistance:** All conductors together to case, 100 MΩ minimum at 50 VDC and +73 °F (+23 °C).

**Electrical Connections:** 6ea, high temperature solderable pins.

# Dimensional Drawings

Figure 1. 212-40-020 Series



Connections	
PIN	Function
A	Power in
B	Pressure signal
C	Temperature signal
D	Power return
E	Signal return
F	Do not connect

A - F. See Connections table  
 G. Fitting end per MS33656-E3

Dimensions are inches.

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