

Paine™ 212-40-020 Series Pressure Transducer

VDC, Miniature, HP/HT, +210 °C, Ranges to 30,000 PSIA (2,068 BAR)



The Paine™ 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-in. diameter package. Offered in pressure ranges up to 30,000 PSIA (2,068 BAR) the Paine 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-in.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 F.S. output over the calibrated temperature range.
- **Output:** VDC
- **Operating temperature:** -40 to +410 °F(-40 to +210 °C)
- **Pressure range:** 0-5,000 to 0-30,000 psia (344 to 2,068 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 online.

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 to +410 °F (-40 to +210 °C)

Calibrated temperature range: +75 to +392 °F (24 to +200 °C)

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

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Mechanical

Pressure range: Contact factory for additional pressure ranges.

Table 1. 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 (1378 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: 12.5 mA maximum

Output current: 1 mA maximum. Short circuit protected.

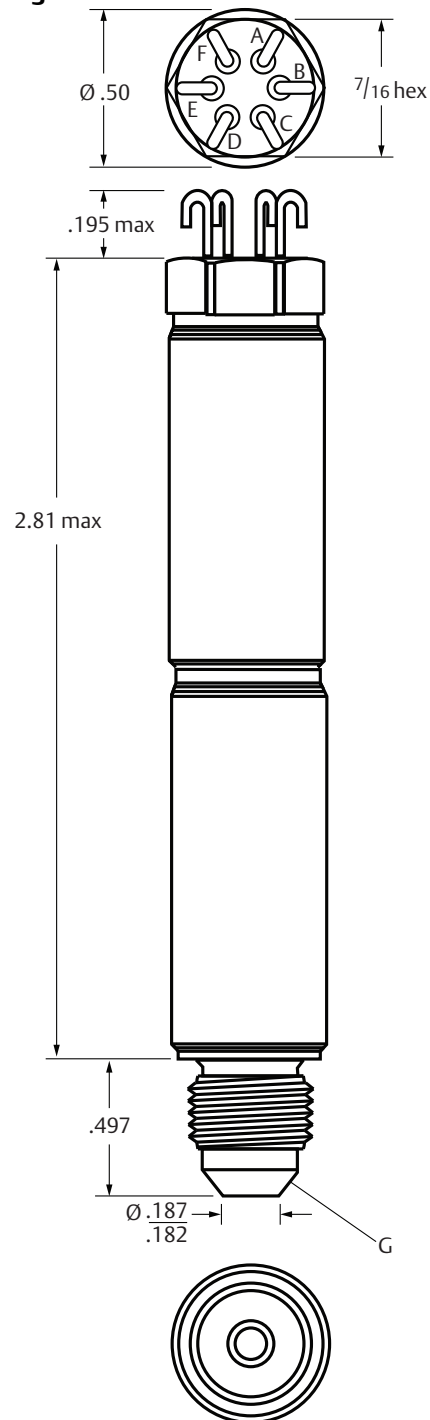
Input/output isolation: Input/output not isolated.

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

Electrical connections: Six each, high temperature solderable pins

Dimensional drawings

Figure 1. Paine 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 shown in inches.


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