

Paine™ Miniature-Satellite Series Pressure Transmitter

VDC, Space Qualified, Miniature, +60 °C, Ranges from 500 to 5,000 PSIA (34 to 344 BAR)



Rated to an operating pressure of 500 to 5,000 PSIA (34 to 344 BAR) and designed with Class 'S', QML-V/ELDRS free electronics to meet EEE INST-002/MSFCSTD- 3012 Level 1 standards, the Miniature-Satellite Series is designed to meet the extreme demands of space flight and orbital operations.

The Miniature-Satellite Series pressure transmitter is a very low mass (only 75 grams), all welded stainless steel construction that provides high measurement performance, accuracy and reliability in mission critical applications.

Paine pressure transmitters have been in space for decades on many satellite and spacecraft programs. From sophisticated booster rocket adjustments on a journey to Jupiter, to orbital positioning controls used to maneuver to the space station, the Miniature-Satellite Series is utilized as a reference and baseline for engineers creating new space rated measurement solutions.

Solutions

- Low and high pressure options
 - 212-30-010-0500 series: 500 psia (34 bar)
 - 212-35-070-05K0 series: 5,000 psia (344 bar)
- Orbital environment ready
- EEE INST-002/MSFCSTD-3012 Grade 1 standard electronics
- Low mass, 75 grams
- Radiation hardening to 100KRad (Si) total dose
- Immunity to Single Event Latch up (SEL)
- Secondary containment to 5,000 PSIA (344 BAR)

Potential applications

- Fuel tank pressure
- Thrustor pressure
- Pressure regulator systems
- Oxygen pressure monitoring
- Space probe servo valve controls
- ROV Maneuvering controls

Features

- **Accuracy:** ±1.5% of the full scale over the calibrated temperature range
- **Operating temperature:**
 - 212-30-010-0500: -40 °F to 140 °F (-40 °C to 60 °C)
 - 212-35-070-05K0: -40 °F to 140 °F (-40 °C to 60 °C)
- **Maximum Expected Operating Pressure (MEOP):**
 - 212-30-010-0500: 500 psia (34 bar)
 - 212-35-070-05K0: 5,000 psia (344 bar)
- **Input voltage:**
 - 212-30-010-0500: ± 12-15 VDC
 - 212-35-070-05K0: ± 12-15 VDC
- **Operating media:** Any compatible with H1025 CRES & 321 CRES
- **Mass:** 2.64 oz (75 grams) maximum

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Specifications

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

Performance

Static error band (beginning of life)

Includes the effects of non-linearity, hysteresis, and repeatability at 24 ± 3 °C. The static error band shall not exceed $\pm 0.25\%$ of the full scale output.

Total error band (beginning of life)

Includes the effects of non-linearity, hysteresis, temperature effects, and input voltage line regulation over the compensated temperature range and input voltage range. The total error band shall not exceed $\pm 1.5\%$ of the full scale output. Referenced to the 24 °C best straight line through actual end points.

Full scale output

- 212-30-010-0500: $+5.000 \pm 0.075$ VDC
- 212-35-070-05K0: $+5.000 \pm 0.075$ VDC

Zero pressure output: (10^{-2} TORR or less)

- 212-30-010-0500: $+0.000 \pm 0.075$ VDC
- 212-35-070-05K0: $+0.000 \pm 0.075$ VDC

Environmental

Operating temperature range:

- 212-30-010-0500: -40 °F to 140 °F (-40 °C to 60 °C)
- 212-35-070-05K0: $+0.000 \pm 0.075$ VDC

Compensated temperature range:

24 °F to 122 °F (-4 °C to 50 °C)

Mechanical

Pressure range: Contact factory for additional pressure ranges.

Pressure table			
Standard part number	MEOP PSIA (BAR)	Proof pressure PSIA (BAR)	Burst pressure PSIA (BAR)
212-30-010-0500	500 (34)	1.5 x MEOP	2.5 x MEOP
212-35-070-05K0	5,000 (344)	1.5 x MEOP	2.5 x MEOP

External leakage: Less than 1×10^{-6} SCC/SEC of HE at proof pressure

Electrical connections: Mates with MS3116-10-6S or equivalent, sold separately

Double barrier secondary containment: To 5,000 PSIA (344 BAR)

Operating media: Any compatible with H1025 CRES and 321 CRES

Pressure tube: Weld-able, Type 321 CRES

Ionizing radiation: Consult factory for mission specific end-of-life accuracy

Weight/mass: 2.64 oz. (75 grams) maximum

Electrical

Input voltage:

- 212-30-010-0500: $\pm 12-15$ VDC
- 212-35-070-05K0: $\pm 12-15$ VDC

Input power:

- 212-30-010-0500: 600 mW maximum
- 212-35-070-05K0: 600 mW maximum

Output impedance: Less than 1000Ω

Output load: Unit shall operate with a resistive load of $10M \Omega$ or greater

Output voltage:

- Full scale output: $+5.000 \pm 0.075$ VDC
- Zero pressure output: (10^{-2} TORR or less) $+0.000 \pm 0.075$ VDC

Output ripple: Less than 10.0 mV RMS, DC to 10kHz

Output capacitance: Less than 1000pF

Frequency response: 10Hz minimum

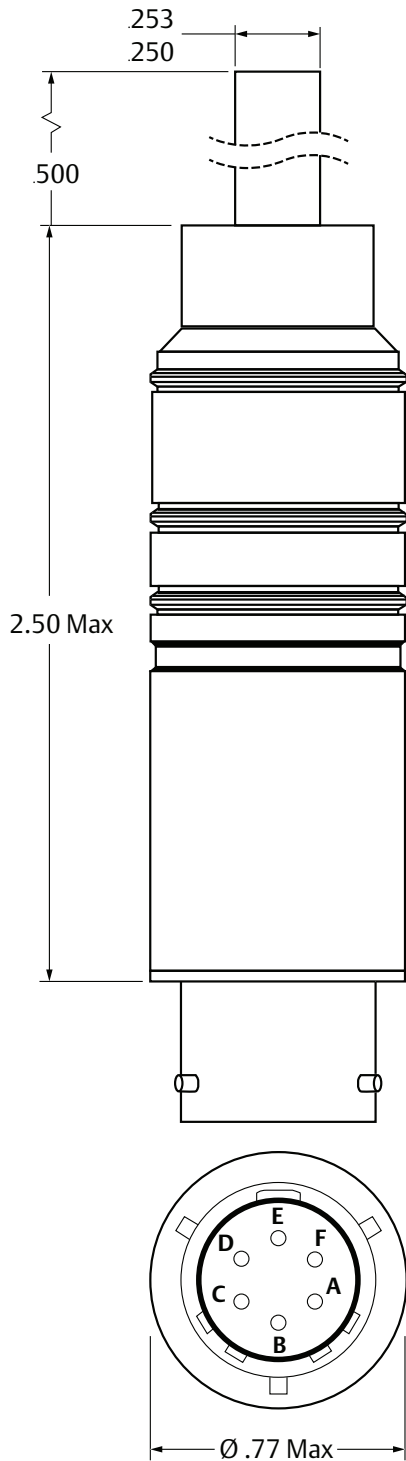
Insulation resistance: All pins (except F) to case, $100M \Omega$ minimum at + 50VDC for 30 seconds

Electrical connections: Mates with MS3116-10-6S or equivalent, sold separately

Connector: Six pin locking bayonet connector mates with MS3116-10-6S or equivalent

Dimensional drawings

Figure 1. Miniature-Satellite Series



Dimensions are inches.




Connection:

PIN	212-30-010-0500 212-35-070-05K0 (±12-15 VDC)
A	+ 12V Input
B	Input return
C	- 12V Input
D	Signal return
E	Signal output
F	Case ground

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