

JT400 Multivariable Transmitter

Ultra-Low Power Platform with Integrated I/O

The industry's first ultra-low power, multivariable (DP/P/T) transmitter provides best-in-class measurement accuracy, USB, and I/O.

DESIGNED FOR EASE OF USE: The JT400 incorporates the latest advances in low power technology. It is very easy to install and startup. And configuration with the JT400 GUI makes setup straight forward.

BROAD COMPATIBILITY: A variety of interfaces (USB, RS-232, RS-485) and protocols allow the JT400 to readily drop-in to practically any SCADA or natural gas measurement network.



ULTRA LOW POWER

- Industry's lowest current draw, 1 mA at 4.0 Vdc

High Accuracy for Custody Transfer

- Industry-leading, 0.05% DP measurement accuracy is standard
- Best-in-class static pressure (0.035%) and temperature (0.1°C) measurements
- Best-in-class pressure (0.1%) and temperature (0.125%) effects on DP

INTERFACE

Drop-in Compatibility

- Standard mapping via BSAP, Enron Modbus and ROC compatible protocols
- Automatic protocol detection
- Process I/O
- 2 AI, 4 DI/DO (selectable per-point)

Hazardous Area Classifications

- Class I, Division 1, Groups C, D Explosion-proof UL/CUL

Simplified User Interface

- Intuitive menu operation, live trending

PHYSICAL OVERVIEW

The JT400 is designed specifically for remote measurement of Differential Pressure, Static Pressure and Temperature with external RTD.

Diaphragm Material: SS316 or Hastelloy C

Flange Material: SS316 or Hastelloy C

Fill Medium: DC 200 Silicone Oil

Process Connections: ¼" NPT on flanges or manifold mount

Electrical Connections: ½" and ¾" NPT conduit connections

Explosion Proof Housing: Low copper aluminum, polyester paint

Local indication: 6- ½ - Digit LCD display selectable engineering units

Process Temperature – RTD Interface, 100 Ohms
A three-wire platinum RTD per DIN 43760 is supported. The temperature, T, in degrees Celsius is calculated using the Calendar Van Dusen Equation according to the DIN EN 60751 standard for Class A & B RTDs.

Auto RTD error detection

The user may enter the coefficients from a custom calibrated RTD.

User connections: Pluggable terminal blocks

POWER SUPPLY INFORMATION

Operating Voltage Range: 4.0 to 30.0 VDC

AVERAGE CURRENT DRAW:

1 mA (typ.)

TURN-ON TIME:

Measured input variables will be within specifications less than two seconds after power is applied to the JT400.

ACCURACY AND PERFORMANCE SPECIFICATIONS

All specifications are for the digital, floating-point signal.

DIFFERENTIAL PRESSURE AND STATIC PRESSURE

Combined effects of nonlinearity, non-repeatability and hysteresis at reference pressure and over the operating temperature range:

DP linear mode: $\pm 0.05\%$ of Calibrated Span or 0.015% of URL, whichever is greater.

Static Pressure $\pm 0.035\%$ of span or 0.015% of URL whichever is greater.

Temperature effect on Differential pressure:
 $\pm 0.21\%$ URL maximum combined shift zero and span with an ambient temperature change of 60°C (108°F).
 $\pm 0.17\%$ URL maximum for Static pressure ranges.

Static pressure effects on Differential pressure:
Zero error: $\pm 0.1\%$ URL max, for a change in static pressure of 1000 PSI
Span error: $\pm 0.1\%$ reading max, for a change in static pressure of 1000 PSI
Static effects may be calibrated out.

Long term stability at constant conditions:
 $\pm 0.05\%$ URL/Year Typical
Mounting position effect: ± 2 in H₂O max, which can be calibrated out
Ripple and noise: Per ISA 50.1 Section 4.6

OVER RANGE CAPABILITY

All sensors remain accurate to $\pm 0.1\%$ while over-pressured up to 133% of URL.

Proof Pressure: $1\frac{1}{2}$ x URL without recalibration

MOUNTING EFFECTS

Mounting torque effects: None
Flow direction change effects: No "oil canning"

PROCESS TEMPERATURE INPUT SPECIFICATIONS

RTD Conversion Accuracy: $\pm 32^{\circ}\text{F}$ ($\pm 0.1^{\circ}\text{C}$), or $\pm 0.1\%$ of reading, whichever is greater

Ambient temperature effect on RTD measurement:
 $\pm 32^{\circ}\text{F}$ / $^{\circ}\text{F}$ max ($\pm 0.01^{\circ}\text{C}$ / $^{\circ}\text{C}$ max)
Long term stability at constant conditions:
 $\pm 32^{\circ}\text{F}$ / $\pm 0.25^{\circ}\text{C}$ / month max

ENVIRONMENTAL SPECIFICATIONS

Temperature limits:

Sensor body: -40 to 176°F (-40 to +80°C)

Electronics: -40 to 176°F (-40 to +80°C)

With Display: -22 to 140°F (-30 to +60°C)

Storage: -40 to 212 (-40 to +100°C)

Humidity limits: When covers are properly installed, unit will withstand 0 to 100% RH (Type 4 enclosure)

Vibration: $\pm 0.1\%$ URL/g max 10-500Hz in any axis per SAMA PMC-31-1 Sect. 5.3 Cond. 3

Electromagnetic compatibility:

Conditions: Twisted pair wires including RTD. Covers installed and wiring run in grounded conduit. 10V/m, 20-500 MHz per SAMA PMC-33-1 (IEC 801.3)

DP and SP: $\pm 0.25\%$ URL

RTD Temperature: $\pm 1^\circ\text{C}$

OPTIONAL LIQUID CRYSTAL DISPLAY (LCD)

The Optional LCD display is configurable for units, variable display sequence and period

USER INTERFACE

With a laptop computer, the JT400 transmitter can be quickly calibrated and configured. The computer interfaces to the USB port and the network port wiring does not need to be disconnected. A variety of communication interfaces are offered for the JT400:

RS-485

RS-232

USB (The JT400 may be powered over USB)

COMMUNICATION PROTOCOLS

BSAP

Enron Modbus

ROC compatible

ACCESSORIES

The following items are ordered separately:

Manifold adapters (“fubols”)

Three-valve or five-valve manifold

Mounting brackets

Explosion-proof USB connector

RTD

FIELD UPGRADEABLE FIRMWARE

Firmware factory updates and added options may be added through the USB port in the field without loss of calibration.

USER CONFIGURABLE I/O

Four digital inputs may be configured as open drain digital outputs.

Two 1-5 V analog inputs have a 10% over range capability.

PRESSURE SENSOR RANGES

Multivariable sensor is available in:

Differential Pressure/Static Pressure

150 in H₂O / 1000 PSI

150 in H₂O / 2000 PSI

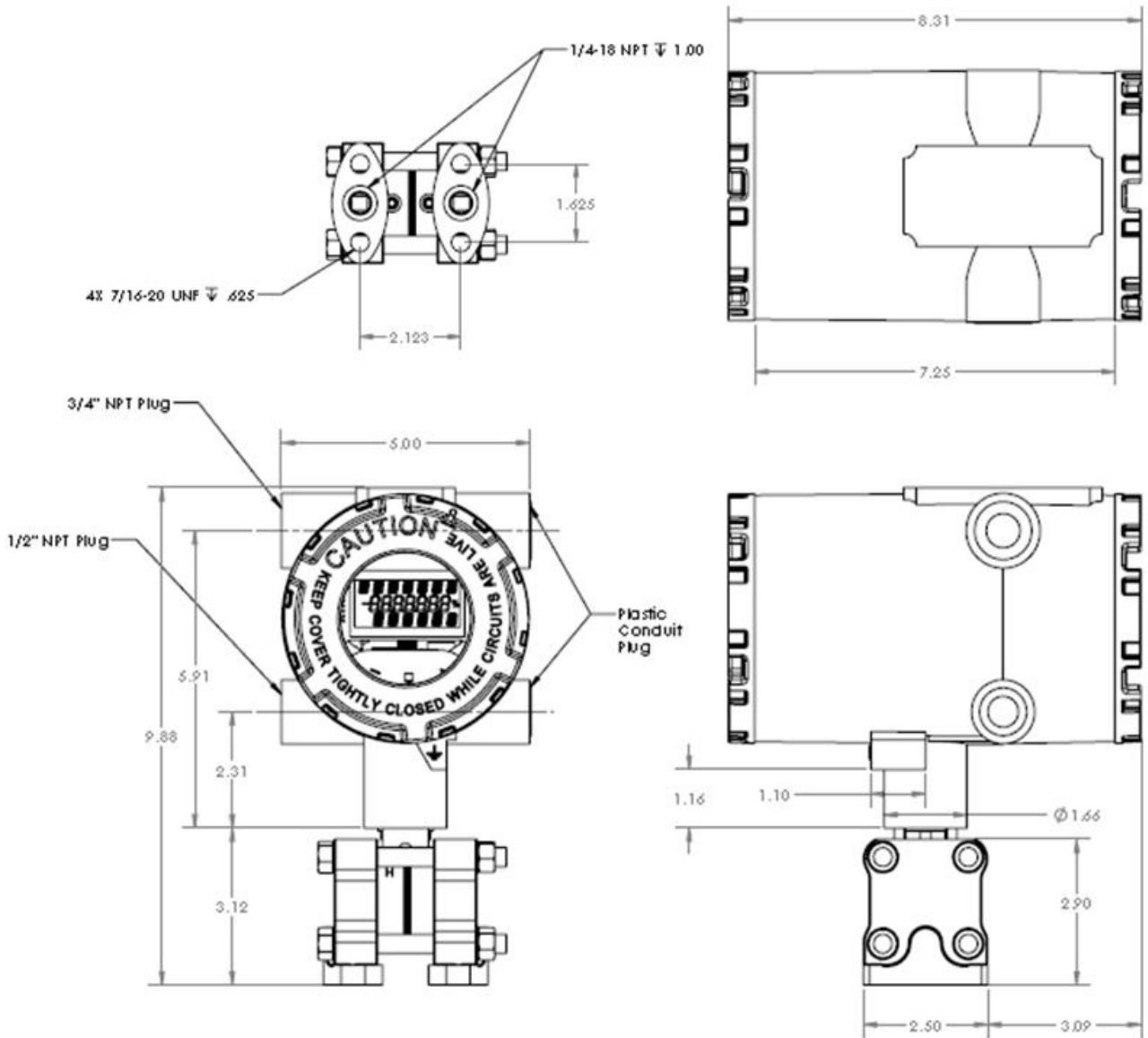
300 in H₂O / 1000 PSI

300 in H₂O / 2000 PSI

400 in H₂O / 2000 PSI

700 in H₂O / 2000 PSI

DIMENSIONS



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