

Model

## VR-1500 DP

### Differential

### HART<sup>®</sup> Pressure Transmitter



#### Description

The VR-1500 DP series offers a family of sensors for a wide range of differential pressure measurement applications. The VR-1500 offers excellent accuracy and stability, unmatched installation flexibility and the easiest methods of configuring pressure transmitters on the market. The VR-1500 pressure measurement system combines superior electronics with field-proven, rugged pressure sensors.

#### Set-up and Communication

You choose the method of configuration and communication with the VR-1500. The VR-1500 supports HART<sup>®</sup> Communications, PC Configuration and *Display Mode* Configuration. The VR-1500 is fully

HART<sup>™</sup> compliant. Use HART<sup>™</sup> Communications with the simple Accutech Windows configuration software to remotely access the VR-1500. Additionally, use the optional plug-in display for set-up right at the transmitter. Use whatever method best fits your needs.

#### Superior Performance

- Exceptional Speed and Accuracy
- 0.08% Digital Accuracy
- Guaranteed Measurement Stability
- Automatic Self-Calibration
- Digital Ambient Temperature Compensation

#### Unmatched Versatility

- Extraordinary 100:1 Turn-Down
- Low Range Capability ▶ ¼ In H<sub>2</sub>O Full-Scale
- High DP Capability to 1600 In H<sub>2</sub>O
- High Static Capability to 5801 PSI
- Split Architecture Capability
- Fully HART<sup>®</sup> Compliant
- Suitable for Field or Panel Mounting

#### Simple Operation

- Fast and Easy Set-up
  - Use Hand-held, Display, or PC
- Optional Plug-In LCD Displays

#### Accuracy and Stability

Accutech pioneered automatic self-calibration technology in temperature transmitters and now have the same capability available in an industrial pressure transmitter system. The VR-1500 electronics automatically self-calibrates to on-board reference standards. Combined with our digital ambient temperature compensation, which virtually eliminates ambient temperature drift, the VR-1500 electronics delivers unrivaled stability. Coupled with the rugged, stable and accurate DP series sensor, the VR-1500 pressure transmitter system delivers superior performance.

#### High Turn-Down Ratio

The 100:1 turn-down capability extends the usable range of a sensor. Where two or more transmitters were necessary, now one transmitter system will cover more applications and reduce spare parts inventory.

#### Flow Applications

The VR-1500 DP series has built-in square root extraction for flow applications. Additionally, the VR-1500 has a 22-point user-settable curve so that you can customize nearly any application. The VR-1500's DP sensors can accommodate static line pressures to 5801 PSI on one side or both sides of the diaphragm.

# VR-1500 DP SERIES HART® PRESSURE TRANSMITTER SPECIFICATIONS

## DIFFERENTIAL PRESSURE SENSORS

(Sensor assembly is complete with Explosion Proof Housing for mounting VR-1500 Electronics Module or RMT-KIT for Split Architecture Applications)

Model	Upper Range Limit	Min. Span	Accuracy	Overload Limit(1 side)	(Both sides)
DP-25	25.7 In H <sub>2</sub> O	0.26 In H <sub>2</sub> O	0.005 In H <sub>2</sub> O	5801 PSI	5801 PSI
DP-250	257 In H <sub>2</sub> O	2.57 In H <sub>2</sub> O	0.05 In H <sub>2</sub> O	5801 PSI	5801 PSI
DP-1600	1607 In H <sub>2</sub> O	16.1 In H <sub>2</sub> O	0.32 In H <sub>2</sub> O	5801 PSI	5801 PSI

### ACCURACY

Digital: ± 0.08% of reading plus the accuracy from the table above for selected sensor.

Analog: Digital Accuracy plus ±4µA.

Accuracy includes hysteresis, linearity, and repeatability of both the sensor and transmitter at reference conditions.

### STABILITY

Combined Zero and Span Stability:

Less than ±0.1% of sensor URL for 6 months at 70°F.

### COMBINED ZERO & SPAN TEMPERATURE EFFECT

Less than ±0.07% of Span per 50°F, between 32°F and 158°F ambient.

Less than ±0.14% of Span per 50°F for other ambient temperatures in the operating range.

### COMBINED ZERO & SPAN STATIC PRESSURE EFFECT

Less than 0.1% of Span per 1000 PSI.

### OUTPUT

Analog: Two-wire, 4-20mA

Digital: HART® simultaneous communication.

### OUTPUT RANGE ADJUSTMENTS

Non-interacting Zero and Full-scale:

Analog Zero Adjustment            100% of Sensor Range  
 Analog Full-scale Adjustment    Normal or Reverse Acting  
 Turndown Capability: 100:1

### OUTPUT MINIMUM SPAN

1% of selected sensor full-scale value.

### OUTPUT RESOLUTION

Analog: 2.1µA

Digital: 6 significant digits.

### CUSTOM CURVE CAPABILITY

22-point user selectable via HART® Communications.

### DYNAMIC RESPONSE

Update Rate: 100 milliseconds, typical.

Response to Step Change: 250 milliseconds (63% to one time constant), minimum.

Start-up time: 7 seconds. Operation to specification, less than 30 seconds.

Ambient Temperature Change: Self-correcting for ambient changes up to 20°C per hour.

### POWER & LOAD

Power Requirements: 12-42 VDC (no load)

Load Limitations:  $R(K\Omega) = (V_{Supply} - 12 \text{ VDC}) / (23mA)$

### MATERIALS OF CONSTRUCTION

Stainless Steel Body / Stainless Steel

### O-RING MATERIAL

Viton C

### TEMPERATURE LIMITS

Process Temperature

-40 to +250°F Steady State

-40 to +482°F up to 1 minute intervals

Ambient Temperature

Sensor: -40 to +230°F

Transmitter: -40 to +185°F

Display: -4 to +158°F (Full visibility)

-40 to +185°F (Reduced visibility)

### HUMIDITY LIMITS

0 to 100%

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**Split Architecture**

The VR-1500's unique capability of splitting the sensor assembly from the electronics module increases installation flexibility. Mount the transmitter on a pipe stand, wall or even on a DIN rail – up to 150 feet away from the sensor. This allows for convenient calibration, diagnostics and viewing of the optional local display.