VAISALA

Vaisala Differential Pressure Transmitter PDT102

Die deutschsprachige Version kann von www.vaisala.com/PDT102 heruntergeladen werden.

Vous pouvez télécharger la version française sur www.vaisala.com/PDT102.

日本語版は www.vaisala.com/PDT102 からダウンロードできます。

您可以访问 www.vaisala.com/PDT102 下载简体中文翻译。

WARNING - READ BEFORE INSTALLATION

Vaisala Differential Pressure Transmitter PDT102 is a high-performance instrument designed primarily for use in life science and cleanroom applications. PDT102 is not authorized for use as a critical component in life support devices or systems. Consult Vaisala before installing if there are any questions or concerns.

Overpressure: Pressure spikes in excess of the rated overpressure capability of the transmitter may cause irreversible electrical and/or mechanical damage to the transmitter.

Static electrical charges: To avoid damage to the transmitter the operator/installer should follow proper ESD (electrostatic discharge) protection procedures.

TECHNICAL SPECIFICATION

Performance

Measurement range (bidirectional)		±50 Pa or ±0.25 in H_2O
Overpressure	Proof pressure	0.7 bar
	Burst pressure	1.7 bar
	Static pressure	1.7 bar
Pressure type		Differential, gauge, vacuum and compound
Accuracy	(incl. non-linearity, hysteresis, repeatability and zero/span calibration settings)	0.25 % span or 0.5 % span, depending on choice
Repeatability	for 0.25 % span accuracy	0.03 %
	for 0.5 % span accuracy	0.05 %
Electrical resolution		1 x 10^{-4} span
Long-term stability		≤0.5 % span/year
Response time (10...90 %)		250 ms
Warm-up time		15 s
Compensated temperature range		+2...+57 °C (+35.6...+134.6 °F)
Temperature dependence		±(0.036 Pa + 0.036 % of reading)/°C or ±(0.0001 inH_2O + 0.02% of reading)/°F (reference 21 °C or 70 °F)
Mounting position error (zero adjustable)		≤0.25 %
Adjustments (front accessible)	Zero (span low)	±5 % span
	Span (span high)	±3 % span

Operating environment

Operating temperature	-29...+70 °C (-20.2...+158 °F)
Storage temperature	-40...+82 °C (-40...+179.6 °F)
Electromagnetic compatibility	EN61326-1, Basic immunity test requirements

Note: If used in an electromagnetic field of 3 V/m, with narrow frequency area of 80 - 120 Mhz, it is possible that the current output of PDT102 can deviate max. 0.3 % (with accuracy specified 0.25%).

Inputs and outputs

Process connection		1/8 NPT female according to ANSI/ASME B1.20.1
Output signal	2-wire	4...20 mA
	3-wire	0...5 V
Operating voltage		12...36 VDC
Max. loop resistance for 4...20 mA		≤ (Supply voltage - 12V)/0.022 A
Supply current	for 0...5 V output	max. 10 mA
	for 4...20 mA output	max. 20 mA
Electrical connection		Screw terminals, 12...22 AWG (0.33 up to 3.31 mm^2)

Mechanics

Medium (measured gas)		Clean and dry air, non-conducting and non-corrosive gases
Material	Process connection	Brass
	Sensor element	Silicon, aluminum, glass
	Case	Polycarbonate, glass filled (UL94-V-1)
Mounting		DIN rail EN 50022, EN 50035 and EN 50045
Housing classification		IP30
Weight		0.16 kg

MOUNTING

When securing to EN50022 rail first hook the top portion of the rear clip onto the top of the rail and push gently into place. To remove, simply place finger behind lower rear lever and pull forward. To remove from the EN50035 rail, grasp the unit, push up, and rotate the bottom out. For the EN50045, pull down and rotate the bottom out.

Multiple units can be stacked across the rail. Internal circuitry is vented through the bottom of each unit. Tag holes are fabricated into the lower rear lever and the housing below the terminal strip for calibration reference tagging and/or ID location.

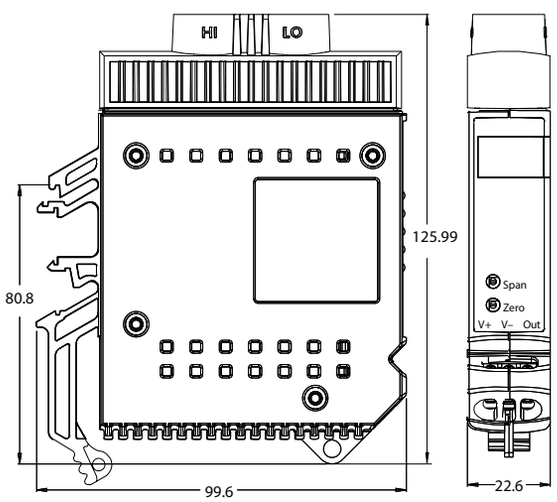

Figure 1 Dimensions (in mm)

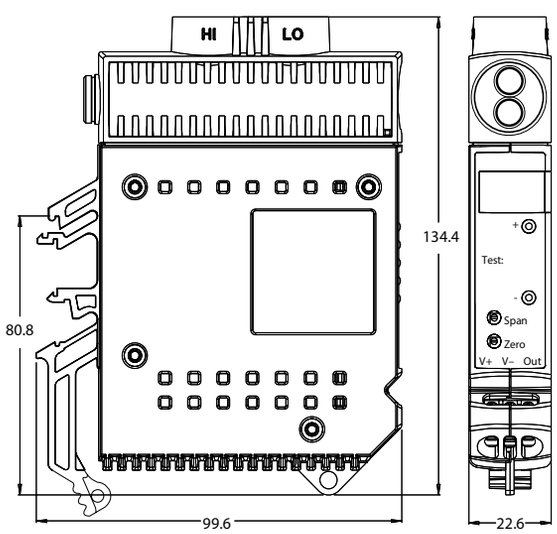

Figure 2 Dimensions with Process Valve Actuator and Test Jacks (in mm)

ELECTRICAL WIRING

PDT102 with voltage output operates on any supply voltage between 12...36 VDC drawing less than 10 mA (24 VDC typical).

Use of a shielded cable, with the shield grounded, is required. Do not connect the shield to the transmitter. Maximum cable length for voltage output wiring is 30 m (98.4 ft).

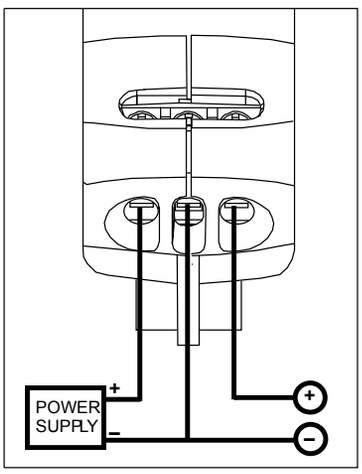

Figure 3 Voltage Output Wiring

The voltage required for a 4...20 mA output is dependent on the loop resistance of the circuit. Refer to Figure 5 showing the minimum supply voltage (Vmin) required for a given Loop Resistance (RL).

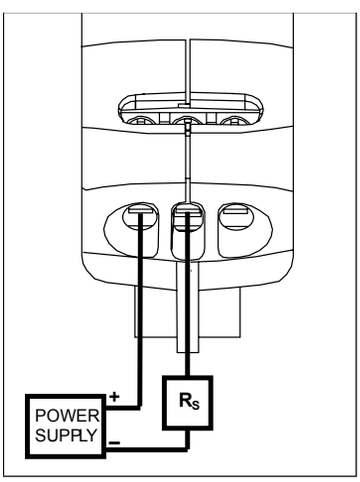

Figure 4 Current Output Wiring

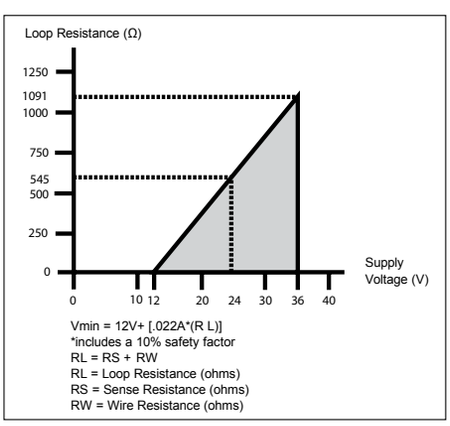

Figure 5 Load Limitations

FRONT ACCESS TEST JACKS (OPTION)

The front access test jacks provide on-line process reference signal or calibration signal without disconnecting power supply wiring. Measurements can be made using a standard multimeter. Reference signals through the test jacks are made in series for 4...20 mA output and in parallel for voltage output.

Gold plated contacts accept standard 0.08″ microtip test leads, snapping in place for secure measurements.

PROCESS VALVE ACTUATOR (OPTION)

The process valve actuator option includes the process valve actuator, actuator tool, and 7″ of silicon tubing. The actuator tool identifies the Calibration (CAL) and Monitoring (MON) modes, and has ports for the (HI) and (LO) pressure references. From the (OFF) position the actuator tool can be inserted and removed.

- In the CAL mode the PDT102 is isolated from the process and allows externally generated test pressure input for calibration.
- In the MON mode the system pressures can be monitored using a handheld pressure instrument without physically unplugging the process tubes. In this mode an on-line measurement can be captured. Using the front access test jacks, a reference signal can also be captured without process interruption.

CALIBRATION

Calibration should be performed after installation and after 100 days from installation. Yearly recalibration is recommended.

1. Pneumatically connect the transmitter's pressure ports to each other. If the transmitter has the process valve actuator option, rotate it clockwise 90 degrees to isolate the PDT102 from the process, and short the HI and LO ports on the actuator tool using the silicon tubing supplied.
2. Measure the analog output of the transmitter to establish the zero offset.
3. If the reading is not at the middle of the output range (for example, 12 mA for 4 … 20 mA output), the zero point of the transmitter has shifted. To remove the zero shift, adjust the transmitter as described below.

ADJUSTMENT

Note: You need a high accuracy pressure standard and high quality electrical meter to adjust the PDT102.

1. Connect the pressure standard to the ports of the PDT102.
2. Bring the pressure to 0 % of the transmitter's span (-50 Pa or -0.25 in H_2O, depending on model).
3. Adjust the zero potentiometer on the front of the transmitter so that the analog output value is at the low end of its range. Use a 3/32" or 2.5 mm slotted or Phillips screwdriver to turn the potentiometer.
4. Now bring the pressure to 100 % of the transmitter's span (+50 Pa or +0.25 in H_2O, depending on model).
5. Adjust the span potentiometer on the front of the transmitter so that the analog output value is at the high end of its range.

WARRANTY

For warranty information, visit our Internet pages at: www.vaisala.com/warranty.

DISPOSAL

Dispose of the unit according to local regulations. Do not dispose of with regular household waste. Recycle all applicable material.

