Model 178
Low Differential Pressure Transducer

alpha instruments

The model 178 Series are low–range differential pressure transducers and transmitters. Each unit features a push–activated ZERO function and an associated LCD display. With a convenient pushbutton, the zero calibration can be performed without any additional equipment. It significantly reduces time and cost for users.

The 178 series has an IP65/NEMA 4 rated aluminum die casting enclosure to withstand environmental effects. The pressure ranges from 0.1"WC to 100"WC, unidirectional or bidirectional. The output can be 2–wire 4 to 20mA or 3–wire 0 to 5V, 0 to 10V(VOLTAGE VERSION TO BE RELEASED), fully protected against short circuiting and incorrect wiring.

All units are temperature compensated. 1.0%, 0.4% and 0.25% accuracies are available. The patented stainless steel diaphragm sensor provides good corrosion resistance, excellent repeatability and long term stability.

Model 178 Specifications

Performance Data	Standard	Optional	Optional
Accuracy* (at room temp)	± 1.0%FS	± 0.4%FS	± 0.25%FS
Non–Linearity (BFSL)	± 0.98%FS	± 0.33%FS	± 0.20%FS
Hysteresis	± 0.20%FS	± 0.10%FS	± 0.10%FS
Non–Repeatability	± 0.10%FS	± 0.10%FS	± 0.10%FS
Thermal Effects (Per °F)	± 0.025%FS	± 0.020%FS	± 0.015%FS
Compensated Range	35 to 140°F (2 to 60°C)		
Maximum Line Pressure	15PSI(100kPa)		
Overpressure	15PSI(100kPa) Proof Pressure. 30PSI(200kPa) Burst Pressure		
Warm–up Time	5 seconds to meet specifications		
Position Effect	Each unit is calibrated in the vertical position. For best accuracy, push the zero of the unit if it is mounted in other position. It is not necessary to adjust the span.		

* RSS of Non–Linearity, Hysteresis, and Non–Repeatability.

Environmental Data and Physical Description

Operating Temperature	32 to 140°F (0 to 60°C)
Storage Temperature	–65 to 220°F (–54 to 105°C)
Electrical Termination	Pluggable Terminal Block with PG–9 or Strain Relief
Pressure Fittings	3/16" O.D. Barbed Brass for 1/8" I.D. Push–on Tubing
Output Adjustment	Push button for Zero, Potentiometer for span
Pressure Media	Typically Air or similar non–conducting Gases
Enclosure	Die–cast aluminum, rated NEMA 4/IP65.
Weight	11.5OZ/330g
Installation	There are two 0.165 inch dia. mounting holes inside the enclosure. Two M4 X 12 pan head screws with washers and nuts are included in the box. See Diagram 1 for outline and dimensions. Zinc plated steel mounting plate with tabs is optional.

Applications:
- ■ HVAC and VAV Control
- ■ Clean Rooms and Isolation Rooms
- ■ Duct Static Pressure Measurement
- ■ Draft Control and Fume Hood Control
- ■ Furnace Air Flow Control
- ■ Power Plant Air Flow Monitor and Control

Features
- ● 3–1/2 Digit LCD Display
- ● Push Button Zero Calibration
- ● 15 PSI Over Pressure
- ● Incorrect Wiring Protection
- ● Rugged Aluminum Housing Rated NEMA 4/IP65
- ● RoHS Compliant

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Model 178 Specifications

Electrical Data (Voltage) (TO BE RELEASED)

Circuit	3–Wire (+EXC, –EXC, OUTPUT)，Protected from Incorrect Wiring
Excitation	16–32VDC
Output*	0–5VDC**，0–10VDC**
Output Impedance	≤5.0 OHMS

* Calibrate with a 50K OHM load, operable with a load greater than 5K OHM for 0–5VDC output, greater than 10K OHM for 0–10VDC output.

** Span Factory Setting: +/–0.5%FS

Electrical Data (Current)

Circuit	2–Wire（+EXC, –EXC）, Protected from Miswiring
Excitation	16–32VDC（see diagram 2 for maximum loop resistance）
Output*	4–20mA**
Bidirectional Output at Zero	12mA as standard
External Load	0–800 OHM

* Calibrated with a 250 OHM load and a 24VDC supply voltage

** Span Factory Setting: +/–0.5%FS
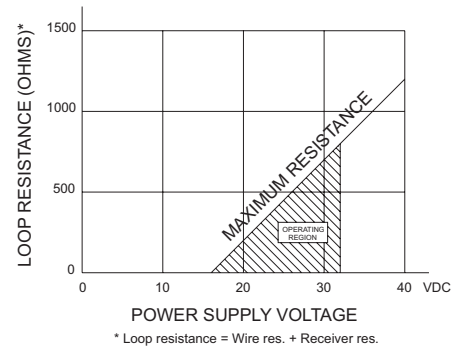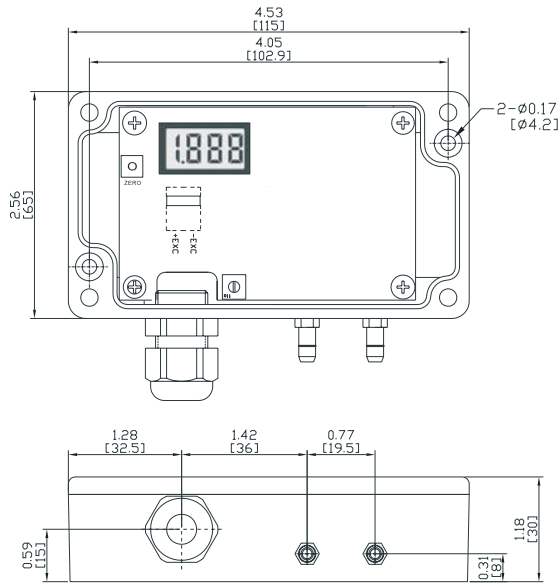

* Loop resistance = Wire res. + Receiver res.

Diagram 2

DIMENSIONS ARE IN: INCH [mm]

∗ A CURRENT OUTPUT UNIT IS SHOWN.

Diagram 1

Ordering Information
Code all blocks in table.

Example: 178W00R1DA1NAD for 178 Transmitter, 0~0.1 in. WC Range, Unidirectional, 4–20mA Output, 1.0% Accuracy, No Calibration Certificate, 3/16" Barbed Brass Pressure Fittings, with LCD Display.

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Model 178	**Unit** P: Pascal W: in. W.C.	**Range** NNNN	**Pressure Type** Differential D: Unidirectional B: Bidirectional	**Output** A: 4–20mA B: 0–5VDC C: 0–10VDC	**Accuracy** 1: 1.0%FS 4: 0.4%FS 2: 0.25%FS	**Certificate** Y (with) N (without)	**Pressure Fitting** A: 3/16" B: 8mm (Barbed Brass)	**Display** D (With) N (without)

Pressure Unit/Range/Type

in. W.C. (Unidirectional)	in. W.C. (Bidirectional)	Pascal (Unidirectional)	Pascal (Bidirectional)
W00R1D=0~0.1 in. W.C.	W0R05B=0~ ± 0.05 in. W.C.	P0025D=0~25 Pa	P12R5B=0~ ± 10 Pa
W0R25D=0~0.25 in. W.C.	W00R1B=0~ ± 0.1 in. W.C.	P0050D=0~50 Pa	P0025B=0~ ± 25 Pa
W00R5D=0~0.5 in. W.C.	W0R25B=0~ ± 0.25 in. W.C.	P0100D=0~100 Pa	P0050B=0~ ± 50 Pa
W0001D=0~1 in. W.C.	W00R5B=0~ ± 0.5 in. W.C.	P0250D=0~250 Pa	P0100B=0~ ± 100 Pa
W02R5D=0~2.5 in. W.C.	W0001B=0~ ± 1 in. W.C.	P0500D=0~500 Pa	P0250B=0~ ± 250 Pa
W0005D=0~5 in. W.C.	W02R5B=0~ ± 2.5 in. W.C.	P1000D=0~1000 Pa	P0500B=0~ ± 500 Pa
W0010D=0~10 in. W.C.	W0005B=0~ ± 5 in. W.C.	P2500D=0~2500 Pa	P1250B=0~ ± 1000 Pa
W0025D=0~25 in. W.C.	W0010B=0~ ± 10 in. W.C.	P5000D=0~5000 Pa	P2500B=0~ ± 2500 Pa
W0050D=0~50 in. W.C.	W0025B=0~ ± 25 in. W.C.	P100CD=0~10000 Pa	P5000B=0~ ± 5000 Pa
W0100D=0~100 in. W.C.	W0050B=0~ ± 50 in. W.C.	P250CD=0~25000 Pa	P125CB=0~ ± 10000 Pa

* Specifications subject to change without notice. If you don't see what you need here, please contact us.

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