

# Installation Guide Alpha Instruments Model 178 Differential Pressure Transducers

Every Model 178 has been tested and calibrated before shipment.

Alpha Instruments M178 pressure transducers sense differential or gauge (static) pressure and convert this pressure difference to a proportional high level analog output for both unidirectional and bidirectional pressure ranges. The standard output is 4 to 20mA.

## Media Compatibility:

Model 178 transducers are designed to be used with air or non-conducting gases. Use with liquids or highly corrosive gases may damage the unit.

## **Environmental Requirement:**

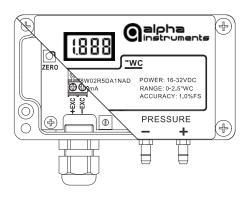
Operating Temperature  $0 \sim 170^{\circ} \text{F (-18} \sim 77^{\circ} \text{C)}$ Compensated Temperature Range  $35 \sim 170^{\circ} \text{F (2} \sim 77^{\circ} \text{C)}$ 

## Pressure Fittings:

The standard Model 178 is to be used with 3/16" I.D. push-on tubing. 8mm barbed brass pressure fittings and other possible pressure fittings are optional. The positive (high) pressure port and the reference (low) pressure port are labeled as " + "and "- " respectively. For best results(quick response), the suggested length of 3/16" I.D. tubing is less than 82 feet (25 meters), 1/4" I.D. tubing is less than 246 feet (75 meters).

#### Electrical Installation(Current Output):

The Model 178 is a two-wire loop-powered 4 to 20mA current output unit and delivers rated current into any external load of 0 to 800 ohms. The detachable terminal block accepts 16 to 26 AWG wires. It has the designation of "+EXC" and "-EXC" (See Diagram 1). The current flows into the "+EXC" terminal and returns back to the power supply through the "-EXC" terminal (See Diagram 2). The 178 can operate from 16-32VDC power supply. The factory calibration is performed with a 24 VDC power supply and a 250ohm load.



# Current Circuit Diagram

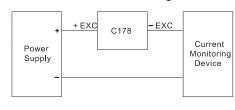


Diagram 1

Diagram 2

The below table shows the maximum wire and receiver resistances as a function of supply voltage.

$V_{min}$	$V_{max}$	R <sub>min</sub>	R <sub>max</sub>	RL at Supply Voltage (Vs)
16	32	0	800	RL≤50(Vs-16)

For Example: Voltage is 24VDC, RL  $\leq$  50(24-16)=400 $\Omega$ , the load resistance should not exceed 400 $\Omega$ .

#### Zero Calibration:

- After 178 transducer is installed, keep power on for one minute or longer to eliminate the warm up shift. Do not apply pressure to either pressure port.
- 2. If the LCD shows "000". There is no need to do the calibration.
- If the LCD does not show "000", press "Z" button down. Wait until the LCD shows "000" and 3 more seconds. Release "Z" button.

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# The zero output should be:

Unidirectional Pressure Range: 4 mA.

Bidirectional Pressure Range: 12mA

**RETURNING PRODUCTS FOR REPAIR:** 

Please contact Alpha Instruments before returning unit for repair to review information relative to your

application. The material should be carefully packaged and shipped prepaid to:

Alpha Instruments Inc.

468 Great Road

Acton, MA 01720, USA

Attn: Repair Department

To assure prompt handling, please supply the following information and include it inside the package or

returned material:

1. Name and phone number of person to contact

Full description of the malfunction

Identify any hazardous material used with product.

Notes: Please remove any pressure fittings and plumbing that you have installed and enclose any

required mating electrical connectors and wiring diagrams. Alpha Instruments will repair and return

of the unit as soon as possible. Non-warranty repairs will not be made without customer approval

and a purchase order to cover repair charges.

LIMITED WARRANTY AND LIMITATION OF LIABILITY:

Alpha Instruments warrants its products to the original consumer purchase for a period of three years

from the date of sale, as shown in Alpha Instruments' shipping documents.

Within the warranty period, Alpha Instruments will repair or replace products found to be defective in

materials or workmanship free of charge, if the following conditions meet:

a) the product has not been subjected to abuse, neglect, accident, incorrect excitation, improper

installation or servicing.

b) the product has not been repaired or altered by anyone except Alpha Instruments.

c) the serial number or date code has not been removed, defaced or otherwise changed.

d) Alpha Instruments is notified in advance of and the product is returned to Alpha Instruments

transportation prepaid.

Alpha Instruments' liability for breach of warranty is limited to repair or replacement, or if the goods

cannot be repaired or replaced, to a refund of the purchase price. Alpha Instruments' liability for all other

breaches is limited to a refund of the purchased price. In no instance shall Alpha be liable for incidental

or consequential damages arising from a breach of warranty, or from the use or installation of its

products.

No representative or person is authorized to give any warranty other than as set out above or to

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assume for Alpha Instruments any other liability in connection with the sale of its products.

E-mail: sales@alphainstruments.com

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