

### Features

- 0 - 750 psid pressure range
- Temperature compensated pressure sensors
- Dual pressure ranges available
- $\pm 0.08\%$  full scale accuracy
- Scan rates up to 50kHz
- On board constant current sensor excitation
- Isolate-Purge feature standard



*ZOC17IP/8Px Muxless  
Pressure Scanner (shown)*

### General Description

The Model ZOC17 is a cable-serviced electronic pressure scanner that accepts 8 or 16 pneumatic inputs. Each ZOC17 module incorporates 8 or 16 piezoresistive, temperature-compensated pressure sensors. These pressure sensors are manufactured in a vibration resistant housing which makes for easy field replacement, minimizing downtime in the event of sensor damage. The ZOC17 electronic pressure scanner also contains a pneumatic calibration valve, a high speed multiplexer (50kHz), and an instrumentation grade amplifier.

The integral calibration valve allows the ZOC pressure sensors to be automatically calibrated on-line. The ZOC17 calibration valve utilizes "Normally Px" valve logic where no control pressure defaults the valve to the operate mode.

The ZOC17 can be use as an analog scanner integrated into a data system, or it can be used in conjunction with a Scanivalve ERAD4000 or DSM4000 pressure data system. National instruments LabVIEW VI's are available for both the ERAD4000 and the DSM4000 to make integration simple.

### Applications

The ZOC17 electronic pressure scanner is ideal for flight and turbine engine testing applications where ambient temperatures vary. It is also ideal for other industrial pressure measurement situations where high measurement pressures may be encountered (750 psi max.). The ZOC temperature compensated pressure sensors are more than ten times less sensitive to temperature than typical piezoresistive pressure sensors. They may be mounted in any position and orientation, so the units may be installed close to the pressure sources to be measured.

When further temperature stability is required, as well as for use below 0°C, it is recommended that the ZOC17 pressure scanner be placed in a thermostatically controlled heater jacket, Model ZOC17TCU.

For those users that want a complete pressure measurement system, The ZOC17/16Px pressure scanner can be used with either or DSM4000 or RAD4000 pressure data system. These systems convert the ZOC17 analog signals to temperature-corrected Engineering Units. The data are then output via Ethernet TCP/IP or UDP.

For those users that want to integrate the ZOC17 with their own A/D and data system, both multiplexed and non-multiplexed modules are available.

# ZOC17 Features and Options

## ZOC Calibration Valve Control Pressure

The ZOC17 calibration valves are “Normally Px” where no control pressure or a loss of control pressure defaults the ZOC calibration valve to the operate (sense) mode. 90 psi (120 psi for high pressures) control pressure is required to switch the ZOC calibration valve into purge, calibrate or isolate mode. This calibration valve allows the ZOC sensors to be automatically calibrated on-line.

## Purge Feature

Isolate Purge valve is standard with all ZOC17 calibration valves. This valving isolates the pressure sensors from the applied purge pressures. This technique permits the safe use of high purge pressures without damaging the pressure sensors due to high over-pressure. The ISO purge valve logic also allows a pressure calibration to be performed during the purge process.

## Dual Range

Each group of 8Px (pressure inputs) contains its own calibration valving and reference, thus a single ZOC17/16Px pressure scanner can incorporate up to two pressure ranges for maximum flexibility.

## ZOC17 Sensors

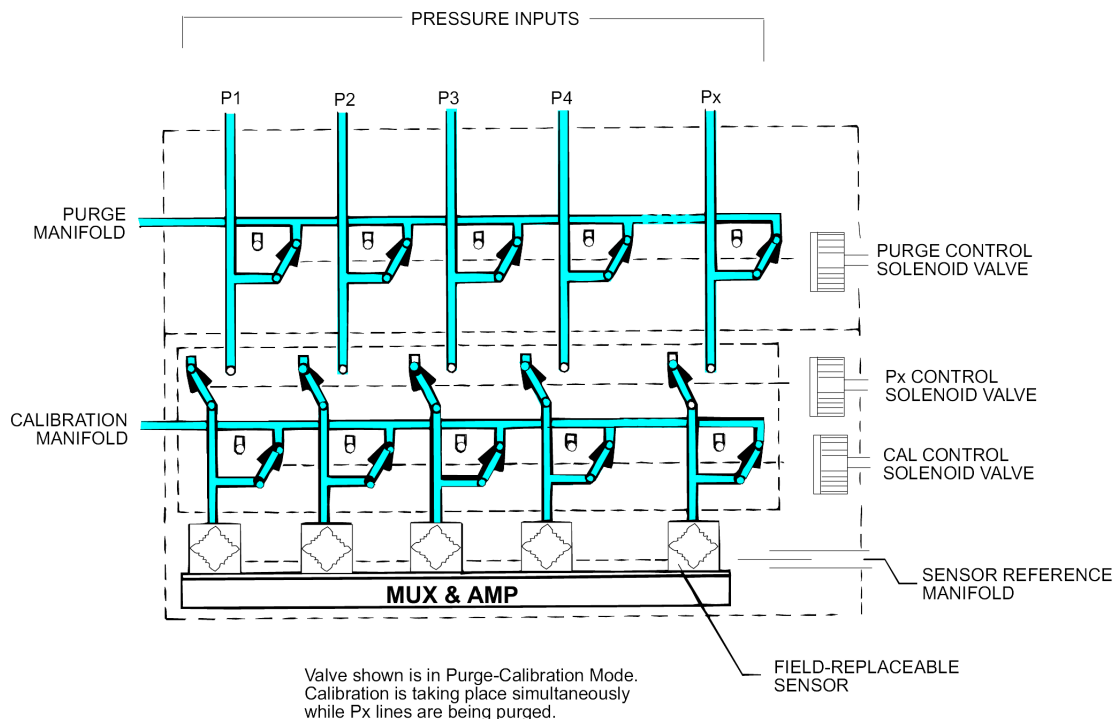
The ZOC17 pressure sensors are manufactured in a vibration resistant can with each pressure sensor having temperature compensating circuits. A constant current excitation is regulated on board the ZOC17 module, rather than a constant voltage, thus adding to the long term stability of the pressure sensors. No special tools are required for access to the sensors or for field replacement.

**Muxless** — The ZOC17 is available in an 8 channel muxless version (less amplifier and multiplexer). Each pressure sensor has its own 30-120mV F.S. analog output that is accessible through the electrical I/O connector.

**Muxless — Amplifier Per Channel (APC)** — The ZOC17 is available in an 8 channel muxless version (less multiplexer). Each pressure sensor has its own amplifier per channel with nominal  $\pm 2.5Vdc$  output per channel. 3.0Vdc and 5.0Vdc available upon request.

**Muxed** — The ZOC17 is available in a 16 channel muxed version that includes a multiplexer and amplifier. A CMOS level binary address is required to select the appropriate channel. The corresponding channel is then amplified and output at  $\pm 0 - 2.5Vdc$  F.S. or 0 - 5.0Vdc and 0 - 10.0Vdc F.S. outputs also optionally available.

## ZOC Pressure Sensor Module Schematic



# Specifications

**Inputs (Px):** 8 or 16 each .063 inch (1.6mm) O.D. tubulations. Optional 1/16 inch Swagelok fittings.

**Full Scale Ranges:** ±10 inch H<sub>2</sub>O, 1, 2.5, 5, 15, 30, 50, 100, 250, 500, 600, 750 psid (±2.5, 7, 17, 35, 100, 205, 350, 700, 1725, 3500, 4200, 5250kPa)

**Accuracy:** (Including linearity, hysteresis, and repeatability) 10 inch H<sub>2</sub>O\* = ±.20 % F.S.  
1 psid = ±.15% F.S.  
2.5 psid = ±.10% F.S.  
3 psid to 500 psid = ±.08% F.S.  
600 to 750 psid = ±.12% F.S.

**Sensor Addressing:** (Muxed only) 4 bit binary, CMOS level

**Full Scale Output:** (Muxed) Standard: ±2.5Vdc nominal  
Optional: ±5Vdc, ±10Vdc

**Full Scale Output:** (Muxless) (Muxless APC) ±30-120mV per sensor  
2.5Vdc per channel (nominal)  
3.0 Vdc or 5.0Vdc optional

**Resolution:** Infinite

**Scan Rate:** 50kHz

**Operating Temperature:** 0° to 70°C standard

**Temperature Compensated Range:** 0° to 50°C (Higher compensated ranges available.)

**Temperature Sensitivity:**

Range	Zero	Span
10 inch H <sub>2</sub> O	.009% FS/°C	.007% FS/°C
1 to 750 psid	.009% FS/°C	.007% FS/°C

**Connector Type:** Muxed  
Canon 15 pin MDM-15SL2P  
Muxless  
Canon 21 pin MDM-21SL2P  
APC - DB25P

**Power Requirements:** ±15Vdc @ 100mA Nominal Muxed  
±15Vdc @ 25mA Nominal Muxless  
±15Vdc @ 200mA APC

**Overpressure Capability:** (With no damage) 10 inch H<sub>2</sub>O = 2 psi (13.79kPa)  
1 psid = 5 psi (35kPa)  
2.5 - 499 psid (3493kPa) = 200%  
500 psid (3500kPa) = 150%  
600 psid (4200kPa) = 125%  
750 psid (5250kPa) = 100%

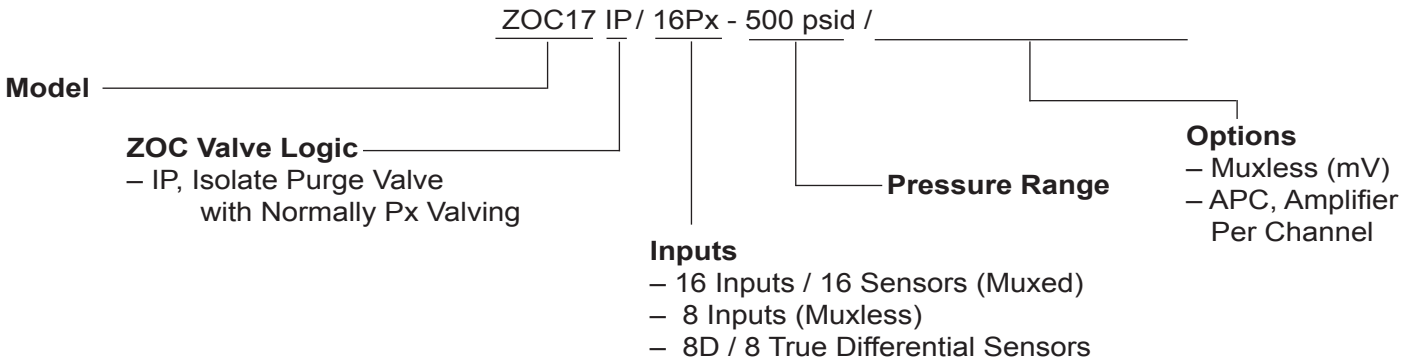
**Maximum Reference Pressure:** 250 psig (1725kPa)

**Media Compatibility:** Gases compatible with silicon, silicone, aluminum, and Buna-N

**Weight:** ZOC17IP/8Px (Muxless): 1.5 lbs.  
ZOC17IP/16Px (Muxed): 3.2 lbs.  
ZOC17IP/8Px (APC): 1.75 lbs.

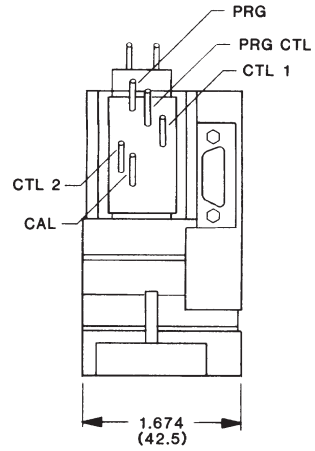
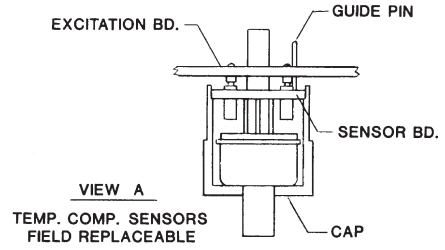
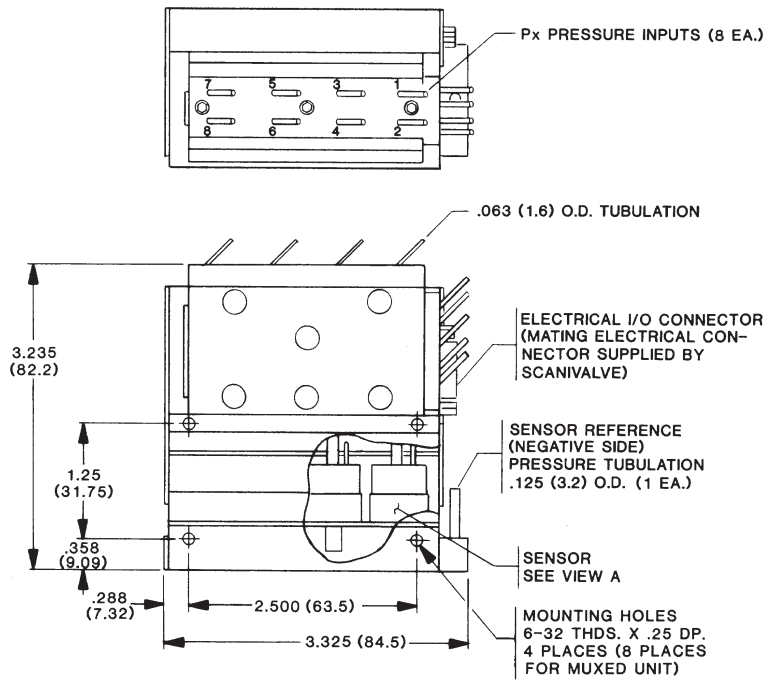
\*10 inch H<sub>2</sub>O = 25.4 cm H<sub>2</sub>O = .36127 psi

# Ordering Information

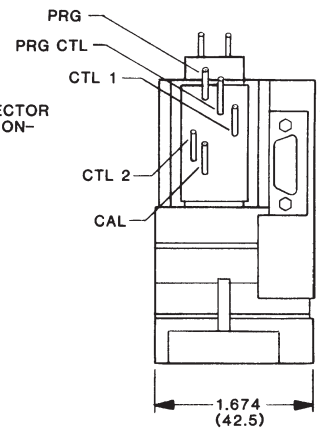
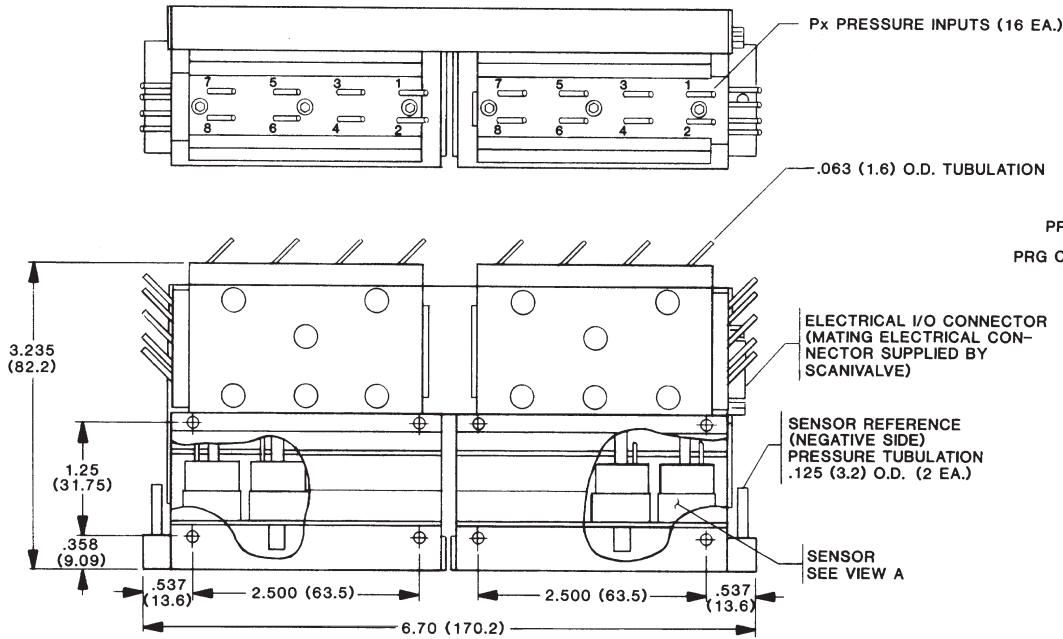


**Dimensions** inches (mm)

**ZOC17IP/8Px-XX PSID MUXLESS**



**ZOC17IP/16Px-XX PSID MUXED**



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