Model DSA®/ZOC

Technology and Valve Selection

Scanivalve Corp.

Data Sheet No. G425

General

ZOC (Zero, Operate, Calibrate) electronic pressure scanners use individual pressure sensors for each unknown pressure input (Px). All ZOC units also contain in-situ calibration valving, multiplexer, instrument amplifier, as well as a sensor excitation regulator. The channels are addressed with a 4, 5, or 6 bit binary address with the selected channel amplified and output at 0 to ±2.5Vdc full scale. (Optional 5Vdc and 10Vdc outputs available)

Scan Rates

A ZOC electronic pressure scanner can be addressed and scanned 20 - 50 kHz, depending on the model.

Sensor Excitation

The ZOC electronic pressure scanners have on-board sensor excitation voltage regulators. This eliminates the need for the user to supply a separate 5Vdc sensor excitation as well as associated noise pickup and I^2R losses in long excitation wires.The ZOC17, ZOC16TC, and DSA3200 series utilize constant current excitation.

Dual Ranging

All DSA and ZOC pressure scanners (except ZOC22) are built in groups of 8 pressure sensors. Each group of 8 sensors has its own reference and calibration manifold. Therefore, DSA and ZOC pressure scanners can be dual or multi-ranged depending on model. This option allows the use of fewer pressure scanners when only a few pressures of one range are required.

Field Replaceable Sensors

Replaceable pressure sensors facilitate field repair of damaged sensors. Two different sensor packages are utilized:
1. ZOC22, 23 and 33 pressure scanners incorporate "S" sensors which are mounted on a miniature base with gold contacts.
2. The DSA3200 series and ZOC17 pressure scanners include temperature compensated pressure sensors in a plug-in TO-8 housing.

ZOC17, DSA3200 Temperature Compensated Pressure Sensor

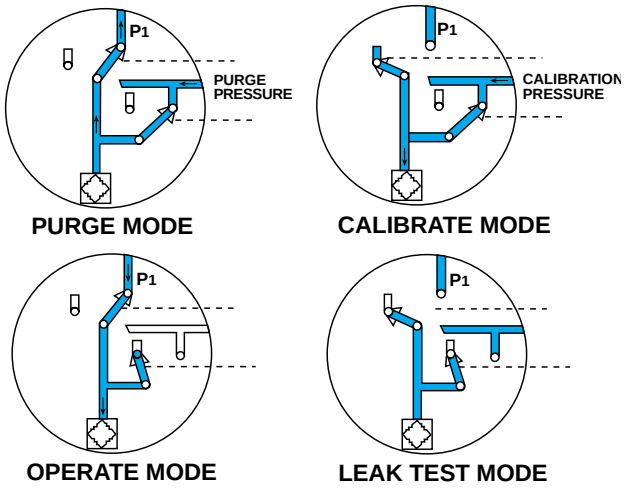
ZOC22, 23, & 33 Pressure Sensor

Complete Systems

Scanivalve's ZOC electronic pressure scanners are available as complete systems tailored to a customer's specific requirements. Complete ZOC systems may be operated on a "stand-alone" basis, utilized with Scanivalve's DSM3000/3200 Digital Service Module, RAD3200, or in conjunction with a host data acquisition system.

On-Line Calibration

All DSA (except DSA3207 for liquids) and ZOC electronic pressure scanners incorporate integral pneumatic valves that allow four modes of operation. This calibration valving has proven to be highly reliable with a life expectancy greater than 1,000,000 cycles. The 4 modes of operation are:



These integral calibration pneumatic valves provide an on-line calibration feature allowing the user to conduct a full calibration for each sensor on demand.

Calibration Valve Operation

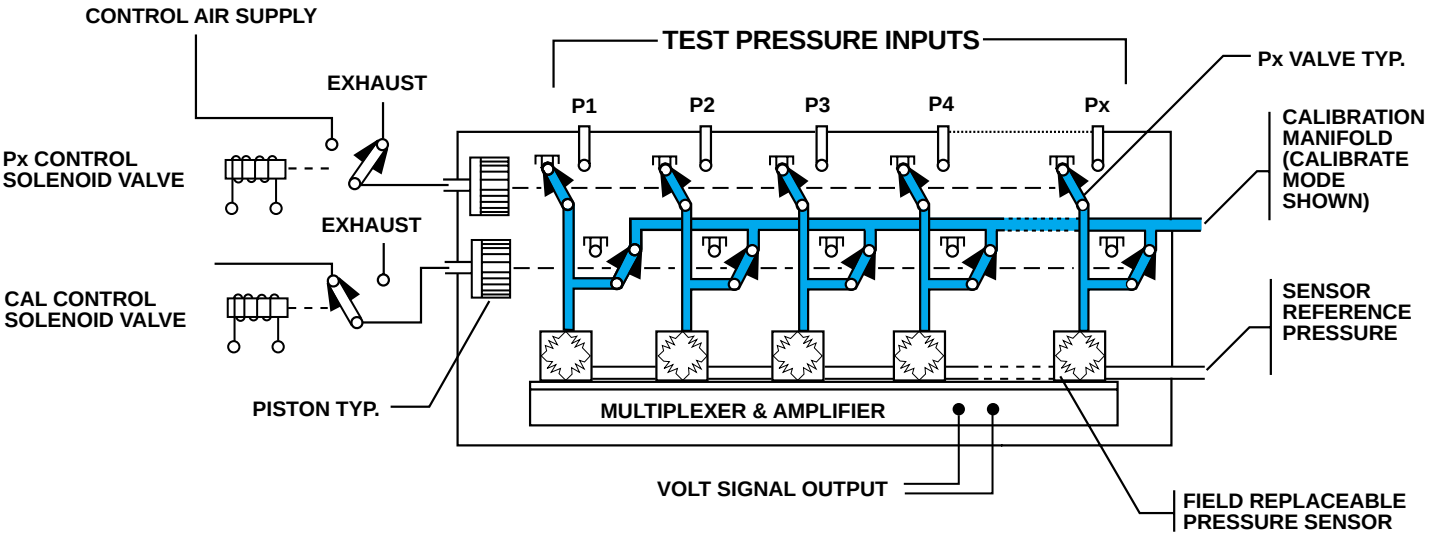
Operate Mode This mode connects each Px (unknown pressure input) with its associated pressure sensors.

Calibrate Mode This mode connects all of the pressure sensors to the correct calibration manifold.

Purge Mode This mode connects both the Px inputs and pressure sensors to a common calibration manifold. Condensation and contaminants can then be purged back through the Px lines. Refer to the next page for detailed purge features and methods available.

Leak Test Mode This mode allows each pressure sensor to be leak tested. It also functions as a means to isolate the sensors from harsh environments in the Px lines.

ZOC22B, 23B, and 33 Electronic Pressure Scanner Calibration Valving



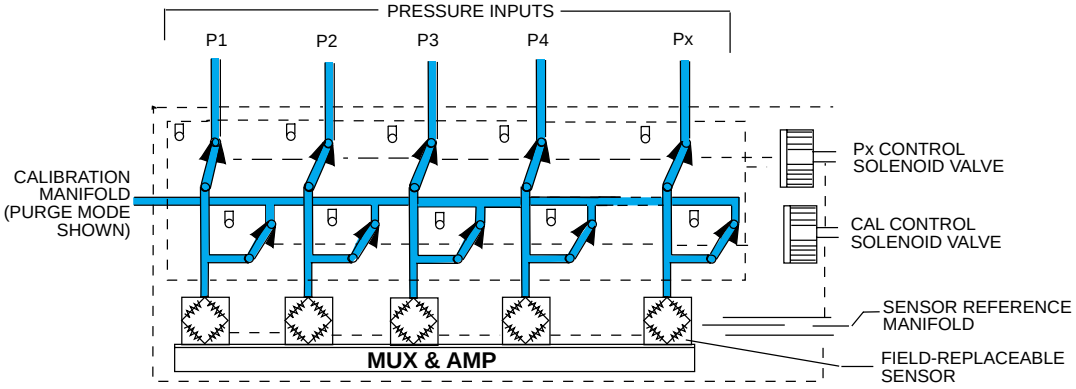
Px Unknown Pressure Input

Purge Features Available

The following describes the two purge methods that are available for the DSA and ZOC electronic pressure scanners.

	Manifold Purge	Sensors Isolated From Purge Pressure
ZOC Standard Purge Features	YES	NO
Isolate Purge	YES	YES

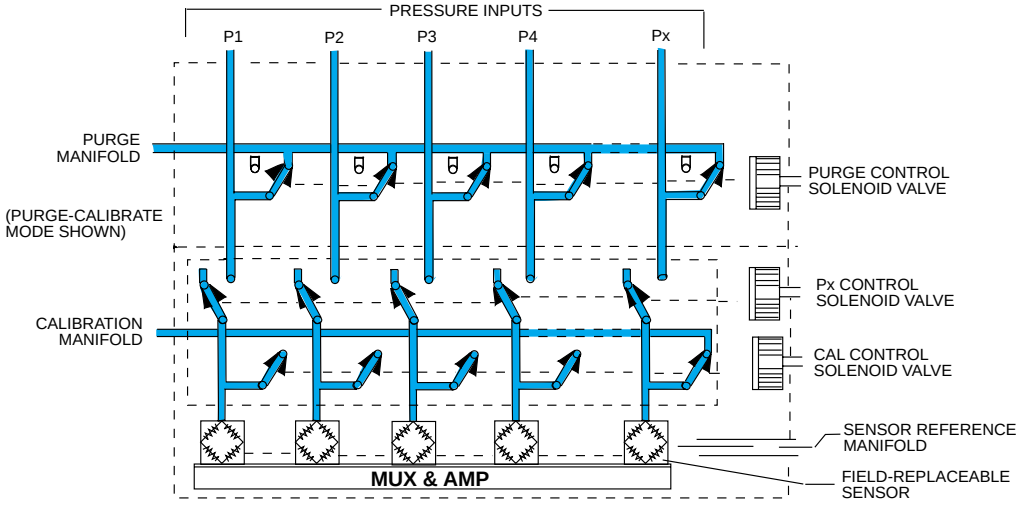
1. Standard Purge Method — ZOC22, 23 & 33
One of the 4 modes of operation of the ZOC calibration valve is the purge mode. A purge pressure is applied to the calibration manifold. Each group of 8 Px inputs in each ZOC valve then is purged simultaneously. The pressure sensors see the purge pressure but are capable of withstanding 200 - 400% overpressure without damage, depending on the model and pressure range.



2. Isolate Purge Method — DSA and ZOC17
The isolate-purge method still provides a manifolded purge pressure (per group of 8 Px) as does the purge method described in item 1 above. The main difference in this method is that all pressure sensors are isolated from the purge pressure. This purge method eliminates possible damage to the sensors when a high purge pressure is required. This isolate-purge calibration valve is standard on Models DSA3217, DSA3218, DSA3016, and ZOC17. There are two additional benefits of the isolate purge method:

a. The ability to purge the pressure input lines at the same time the sensors are being calibrated.

b. No control pressure is required to put the calibration valving in the Operate mode. (Normally Px)



Valve shown is in Purge-Calibration Mode. Calibration is taking place simultaneously while Px lines are being purged.

ZOC Electronic Pressure Scanner Selection Chart

Model Number		Cable Serviced			
	ZOC22B	**ZOC23B**	**ZOC33**	**ZOC17**
Full Scale Pressure Ranges	±10 inch H_2O to 50 psid	±10 inch H_2O to 50 psid	±10 inch H_2O to 50 psid	±10 inch H_2O to 750 psid
Number of Px Inputs/ Number of Sensors	32/32 or (X2) 64/32	32/32 or (X2) 64/32	64/64 or (X2) 128/64	8/8 or 16/16
Dimensions – Inches (mm) H W D	1.42 (36) 0.55 (13.97) 4.12 (104.6)	1.44 (36.54) .25 (6.35) 1.26 (32.00)	1.68 (42.8) 1.20 (30.48) 4.475 (113.67)	3.235 (82.2) 1.67 (42.5) 3.325 (84.5)-8Px 6.70 (170.20)-16Px
Common Applications	Wind Tunnel Flight Test Wind Engineering	Wind Tunnel Flight Test Wind Engineering	Wind Tunnel Flight Test Wind Engineering	Flight Test Engine Test Industrial Applications
Refer to Detailed ZOC Data Sheet	G436	G431	G480	G447

DSA3200 Series Pressure Modules

Model DSA3200 series, Digital Sensory Array, incorporates up to 16 temperature compensated piezoresistive pressure sensors, RAM, 16 bit A/D converter, and a microprocessor in a compact self-contained module. The result is a network ready intelligent pressure scanning module.

The microprocessor compensates for temperature changes and performs engineering unit conversion.

The microprocessor also controls the actuation of an internal calibration valve to perform on-line zero and multipoint calibrations. This on-line calibration capability virtually eliminates sensor thermal errors with a long term system accuracy of ±.05% FS. Pressure data are output in engineering units via Ehternet TCP/IP.

Model Number	**DSA3217**	**DSA3218**	**DSA3207**	**DSA3016**
Full Scale Pressure Ranges	±10 inch H_2O to 750 psid	±10 inch H_2O to 750 psid	0–1000 psig	±10 inch H_2O to 750 psid
No. of Px Inputs	8 or 16	8 or 16	2 up to 16	16 up to 128
Design	Cable Serviced	Cable Serviced	Cable Serviced	Rack Mounted
Fluid	Gas	Gas	Liquid	Gas
Refer to Detailed DSA Data Sheet	G511	G511	G521	G530

ZOC Electrical Input Modules

Model Number	**Cable Serviced ZOCEIM**	**Rack Mounted ZOC16EIM**
Range	20mV to 10Vdc	20mV to 10Vdc
Number of Inputs per Module	16 or 32	16
Common Applications	Analog inputs from load, torque, signal conditioned thermocouple, RPM, and wheatstone bridge transducers	
Refer to Detailed ZOC Data Sheet	G466	G467

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