DSA®3217/3218-PTP

Scanivalve

Digital Sensor Array

Ethernet Pressure Scanner

Features

• Intelligent pressure scanner

• "Network Ready" Ethernet TCP/IP, FTP & UDP

• 850 samples/channel/second EU

• ±.05% full scale long term accuracy*

• 0 - 750 psi pressure range

• Temperature compensated pressure sensors

• Dual pressure ranges available

• IEEE1588-2008v2 PTP compliant

• Drop-in replacement for DSA3200 series scanners

DSA3217-PTP (shown)

General Description

The DSA3200-PTP series pressure scanners are versatile, all-in-one data acquisition systems. Each DSA3217/3218 -PTP is built on a pressure sensor per measurement channel architecture. Every pressure sensor is uniquely calibrated over a wide temperature range. All data acquisition, data conversion and communications tasks are handled by the integrated A/D converters and processor. This combination provides easy setup, simple operation and long term reliability.

In addition to the electronics, internal calibration valves are included to provide maximum functionality. The valves allow for several logic states including measurement, isolate, calibrate and purge. In the calibration configuration, either a known pressure can be applied for a span verification/ correction, or the sensors can each be pneumatically shorted together allowing for a quick zero offset calibration. This zero offset calibration feature, in conjunction with the sensor's natural stability and repeatability combine to provide maximum long term accuracy.

Once processed, the DSA-PTP outputs the data in either ASCII or Binary format over the Ethernet network TCP/IP or UDP. The DSA-PTP can be setup and all configuration variables can be set over the same Ethernet connection.

The result of the DSA-PTP's careful design is a complete package that makes multi-point pressure acquisition tasks simple. The DSA-PTP's functionality and flexibility make it an excellent fit for a wide range of applications.

Applications

The DSA3200-PTP series is available in two basic configurations; the DSA3217-PTP and the DSA3218-PTP. Both configurations offer the same functionality, but differ in packaging and intended applications. The DSA3217-PTP is enclosed in a stainless steel, splash resistant enclosure intended for most laboratory, educational or other controlled environments. The DSA3218-PTP however, is enclosed in a stainless steel, splash resistant, shock mounted enclosure with Swagelok® fittings on all pneumatic connections. It is intended for applications such as gas turbine testing, flight testing, industrial applications and other more rugged environments.

Additionally, the DSA3218-PTP series offers an optional heater or cooling kit, allowing the DSA-PTP to operate in a much wider temperature range. This allows for year-round operations in open test cells, close-coupled mounting to gas turbine tests, elevated temperatures for Freon testing or any other environment where temperature extremes will be seen or rapid temperature changes are expected.

Again, the DSA3200-PTP's features and options offers support for a wide range of applications and uses. The all-in-one packaging makes configuration easy and operations simple.

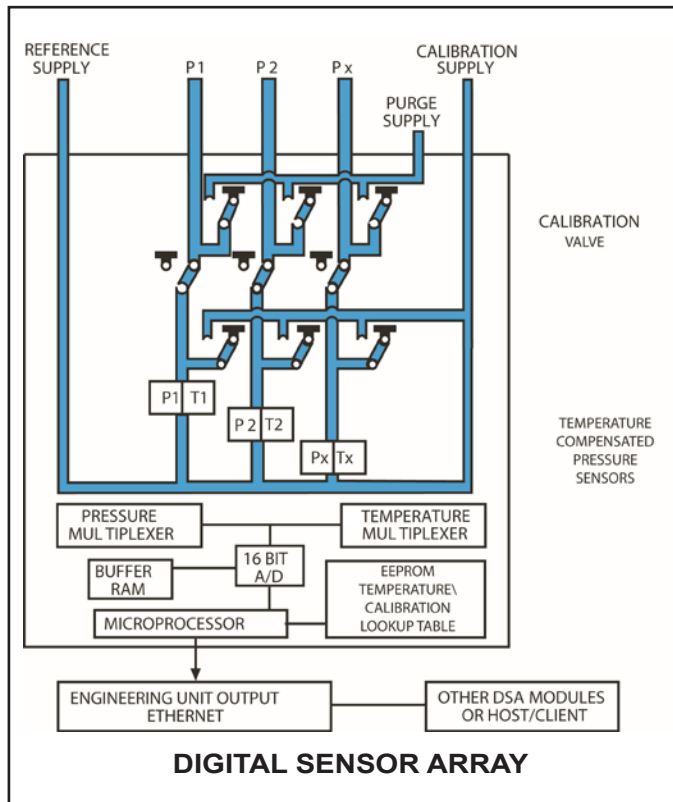*Some ranges, see page 3 for complete accuracy specifications

ISO 9001:2015 CERTIFIED

DSA3217/3218-PTP Features

Calibration Valve

The DSA3217/3218-PTP calibration valve is "Normally Px" where no control pressures or a loss of control pressure defaults the valve to the operate (measure) mode. 90 psi control pressure is required to switch the DSA-PTP calibration valve into purge, calibrate or isolate mode. Each of these states can be established during a test with measurement pressure applied. This flexibility allows the DSA-PTP to be calibrated online with either a zero or multi-point calibration.

An internal solenoid valve is utilized for performing quick zero calibrations without the use of a pressure calibrator. When actuated, the positive side of the pressure sensor is pneumatically shorted to the reference manifold, creating a zero differential. The sensor offsets are then updated and saved in EEPROM.

DIGITAL SENSOR ARRAY

Sensors - High Accuracy, Long Term Stability

Each DSA3217/3218-PTP silicon pressure sensor is thermally compensated and packaged in its own rugged field-replaceable housing. The transducers are factory calibrated over their full pressure and temperature ranges. The resultant calibration data are stored in a 72 plane pressure/temperature look-up table in EEPROM.

As the sensed sensor bridge temperature changes, the microprocessor selects the appropriate temperature plane or interpolates between planes to correct the pressure reading. This on-line temperature correction and quick zero calibration corrects for inherent zero drift and temperature sensitivity, thus assuring a long-term 6 month accuracy of ±.05%FS (typical).

Configurations

DSA3217-PTP and DSA3218-PTP modules can be configured to specifically fit each unique application. A wide variety of pneumatic configurations as well as interface options and environmental options are offered.
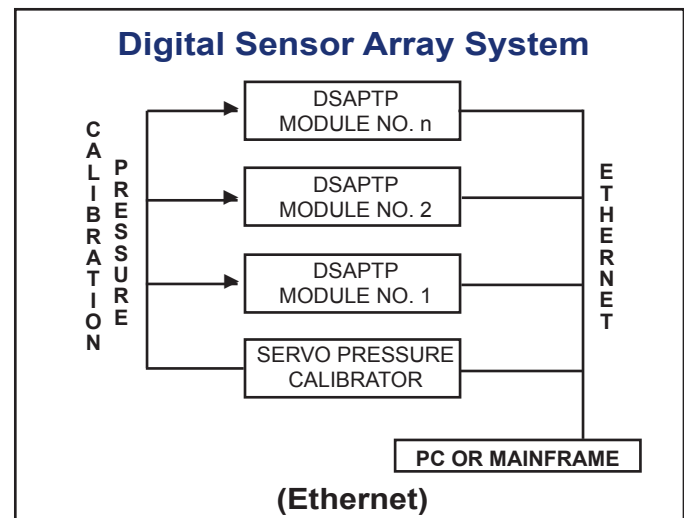
Pneumatic Configurations

Standard DSA-PTP modules come with the reference side of all 16 transducers manifolded to a single reference port. If the DSA is ordered as a dual-range unit, a reference is provide for each range. As an option, the DSA can be configured with individual reference ports for all 16 channels. For more flexibility when differential measurements are required, both DSA3217-PTP and DSA3218-PTP modules can be offered in 8 channel "True Differential" configurations which provides inputs and calibration valves on both sides of each individual transducer.

Interface Options

DSA3218-PTP modules come standard with 1/8" Swagelok® fittings. These can easily be substituted with 1/16", 1/4" or 6mm Swagelok® fittings.

Environmental Options

The DSA3218-PTP is designed for rugged environments, but to supplement this capability the DSA3218-PTP can be offered with a self-controlled internal heater, or input and exhaust ports for cooling. Depending on the environment, DSA-PTP modules with heaters can be operated in ambient temperatures down to -55°C. DSA-PTP modules with cooling kits can be operated to ambient temperatures of 80°C, provided sufficient cooling air flow is provided.

Digital Sensor Array System

(Ethernet)

DSA 3200-PTP System / Specifications

Communications

The DSA3217/3218-PTP module interfaces directly to a host via an Ethernet connection. Scanivalve's free Configuration Utility software for LabVIEW® Runtime is designed to assist a user in establishing communications and configuring the DSA-PTP module. Additionally available is a Software Development Kit for users who want to write their own detailed data acquisition program in LabVIEW®. This Development Kit includes the Configuration Utility software and examples to assist a user in the setup of the system. An OPC driver is also available.

Specifications

Inputs (Px):

DSA3217-PTP:	Standard: 16 each .063 inch (1.6mm) O.D. tubulations
DSA3218-PTP:	Standard: 1/8 inch Swagelok® fittings
	Optional: 1/16 and 1/4 inch Swagelok® fittings

Full Scale Ranges:

Differential: ±5 inch H_2O,10 inch H_2O, 1, 2.5, 5, 15, 30, 50,100, 250, 500, 600, 750 psid (±1.25, 2.5, 7, 17, 35,100, 205, 345, 690,1725, 3450, 4125, 5175kPa)

Absolute: 15, 30, 50, 100 and 250 psia

Accuracy*:

SENSOR PRESSURE RANGE	STATIC ACCURACY (%F.S.)
±5 inch H_2O	±.40%
±10 inch H_2O	±.20%
±1 psid	±.12%
±2.5 psid	±.08%
±5 to 500 psid	±.05%
±501 to 750 psid	±.08%
15 psia to 250 psia	±.05% (with CALB performed)
15 psia to 250 psia	±.10% (without CALB performed)

(Including linearity, hysteresis, and repeatability)

Resolution:	16 bit
Scan Rate:	850 Hz/Channel EU
Communication:	Ethernet 100baseT
Communication Protocol:	TCP/IP or UDP
PTP:	IEEE 1588-2008v2 PTP

Operating Temperature:	DSA3217-PTP: 0°C to 60°C
	DSA3218-PTP: 0°C to 55°C
	below 0°C, specify heater
	above +55°C, specify cooling kit
Temperature Compensated Range:	0°C to 72°C standard
Mating Connector Type:	I/O: RJ-45 (DSA 3217-PTP)
	I/O: D-Code M12(DSA 3218-PTP)
	Power: Bendix PTO6A-8-3S-SR, 3 pin female
	Trigger: Bendix JTO1RE8-6S-SR, 6 pin female

Power Requirements:

DSA3217:	28Vdc nominal @ 400mA (20-36Vdc)
DSA3218: (w/Heater)	28Vdc nominal @ 1.25A (24-36Vdc)
DSA3218: (w/o Heater)	28Vdc nominal @ 400mA
External Trigger:	6.5 mA at 4.5 Vdc minimum edge sensing

Overpressure Capacity: (with no damage)

5 inch H_2O= 2 psi (13.79 kPa)
10 inch H_2O = 2 psi (13.79 kPa)
1 psid = 5 psi (35kPa)
2.5 to 499 psid (3440 kPa) = 2.0x
500 psid (3450 kPa) = 1.5x
750 psid (5175 kPa) = 850psi (5860kPa)

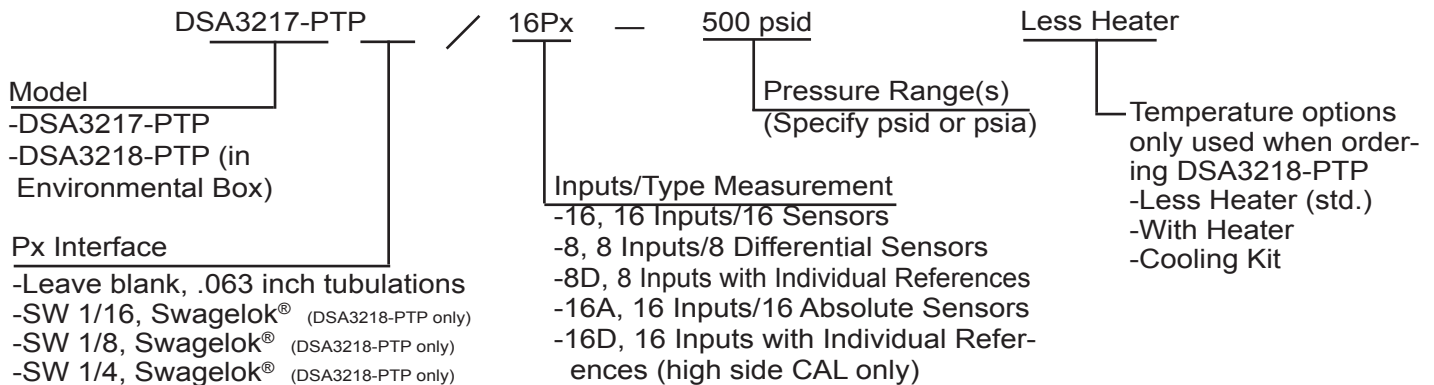|	
Maximum Reference Pressure:	250 psig (1725 kPa)
Media Compatibility:	Gases compatible with silicon, silicone, aluminum, and Buna-N
Weight:	DSA3217-PTP: 6.4 lbs. (2.9 kg)
	DSA3218-PTP: 9.8 lbs. (4.45 kg)
Total Thermal Error over 0 - 60°C Range:	±.001% F.S./°C

Ordering Information

DSA3217-PTP / 16Px — 500 psid   Less Heater

Model
-DSA3217-PTP
-DSA3218-PTP (in Environmental Box)

Px Interface
-Leave blank, .063 inch tubulations
-SW 1/16, Swagelok® (DSA3218-PTP only)
-SW 1/8, Swagelok® (DSA3218-PTP only)
-SW 1/4, Swagelok® (DSA3218-PTP only)

Inputs/Type Measurement
-16, 16 Inputs/16 Sensors
-8, 8 Inputs/8 Differential Sensors
-8D, 8 Inputs with Individual References
-16A, 16 Inputs/16 Absolute Sensors
-16D, 16 Inputs with Individual References (high side CAL only)

Pressure Range(s)
(Specify psid or psia)

Temperature options only used when ordering DSA3218-PTP
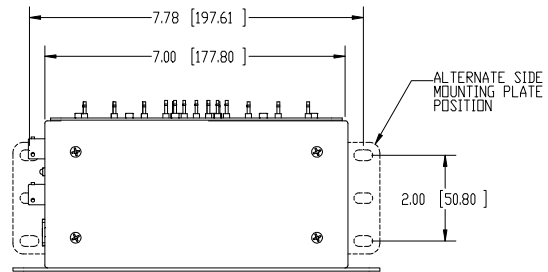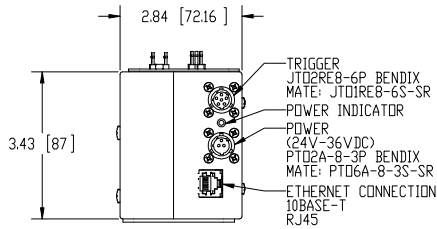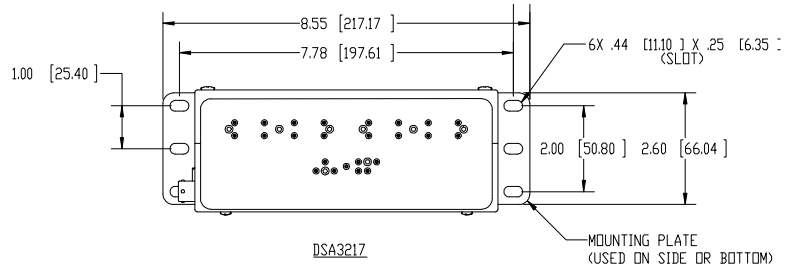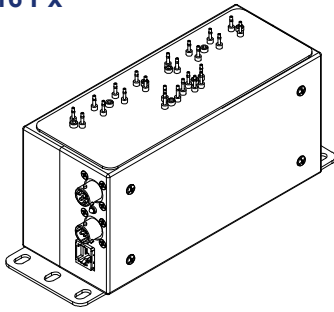-Less Heater (std.)
-With Heater
-Cooling Kit

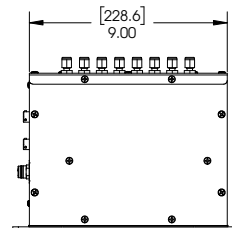*Some combinations of pressure ranges in dual-range modules may dictate a reduction in accuracy

DSA-PTP Dimensions

Dimensions Inches [mm]
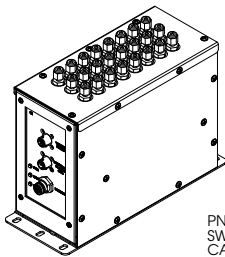
DSA3217-PTP/16 Px

8.55 [217.17]
7.78 [197.61]
1.00 [25.40]
6X .44 [11.10] X .25 [6.35]
(SLOT)
2.00 [50.80]   2.60 [66.04]

DSA3217

MOUNTING PLATE
(USED ON SIDE OR BOTTOM)

2.84 [72.16]

TRIGGER
JT02RE8-6P BENDIX
MATE: JT01RE8-6S-SR
POWER INDICATOR
POWER
(24V-36VDC)
PT02A-8-3P BENDIX
MATE: PT06A-8-3S-SR
ETHERNET CONNECTION
10BASE-T
RJ45

3.43 [87]

7.78 [197.61]
7.00 [177.80]

ALTERNATE SIDE
MOUNTING PLATE
POSITION

2.00 [50.80]

DSA3218-PTP/16Px

6X MOUNTING HOLES
0.437 (11.1) X 0.250 (6.4)
(SLOT)

[266.7]
10.50
[247.7]
9.75
[38.1]
1.50

[38.1]
1.50

PNEUMATIC INPUTS:
SWAGELOK COMPRESSION FITTINGS.
CAN BE:
1/16", 1/8", 1/4", 3MM, 6MM

[9.2]
.36

[105.2]
4.14

EXTERNAL TRIGGER /
BACKUP COMMUNICATIONS:
BULKHEAD: JT02RE8-6P BENDIX
MATE: JT01RE8-6S BENDIX

POWER (20V-36VDC)
BULKHEAD: PT02A-8-3P BENDIX
MATE: PT06A-8-3S BENDIX

[179.5]
7.07

ETHERNET (100BASE T)
BULKHEAD: MOLEX 4-PIN, D-CODED
"ULTRALOCK" FEMALE M12
MATE: ANY 4-PIN, D-CODED MALE M12

[228.6]
9.00

*Each DSA-PTP module comes with the mating trigger and power connector. 3ft Ethernet cable comes with DSA3218-PTP module only.