



## Digital Liquid Pressure Measurement

### Features

- Intelligent pressure modules
- Ethernet TCP/IP Protocol "Network Ready"
- 0 - 1000 psi pressure range
- Temperature compensated pressure sensors
- Liquid Pressure Measurement
- $\pm .12\%$  full scale long term accuracy
- Time stamped data available
- 500 samples/channel/second EU



*DSA3207/Base  
With 8 ea, DSA3007/2LPx (Shown)*

### General Description

The DSA3200 series pressure acquisition systems represent the next generation of multi-point electronic pressure scanning. Model DSA3207 Digital Sensor Array, incorporates 2 to 16 temperature compensated media isolated piezoresistive pressure sensors with individual bleed valves. Each DSA module also contains 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 for liquid service.

The microprocessor compensates for temperature changes and performs engineering unit conversion. Pressure data are output in engineering units via Ethernet using TCP/IP protocol.

The Model DSA3207 incorporates 2 to 16 manually activated bleed valves for venting gas from the input lines. These individual bleed valves also allow for back charging the DSA input lines. DSA firmware allows for liquid head correction and rezeroing of the pressure sensors. The pressure transducers have a long-term accuracy of  $\pm .12\%$  FS (ranges 15-300 psi). Recalibration is recommended at 6 month intervals.

### Applications

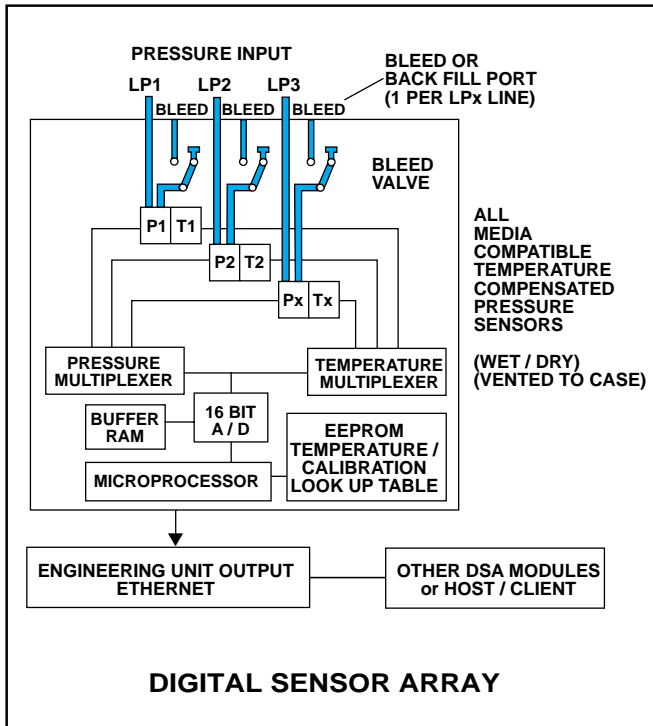
The DSA3207 Digital Sensor Array is designed for turbine engine and diesel engine test applications, and other liquid applications. It is ideal for industrial pressure measurement where long calibration intervals are required and temperatures can vary greatly. The DSA temperature compensated pressure sensors are more than ten times less sensitive to temperature than typical piezoresistive pressure sensors.

The materials of construction include 316 stainless steel and BUNA-N seals. Neoprene and Viton<sup>®</sup> seals are also available.

DSA<sup>®</sup> is a registered trademark of Scanivalve Corp.  
Windows<sup>®</sup> and MS-DOS<sup>®</sup> are registered trademarks of Microsoft Corp.  
LabVIEW<sup>®</sup> is a registered trademark of National Instruments, Corp.  
VEE<sup>®</sup> is a registered trademark of Agilent.  
Viton<sup>®</sup> is a registered trademark of Dupont Dow Elastomers.

## On-Line Sensor Compensation and Calibration

Each DSA3207 piezoresistive pressure sensor is housed in a fluid filled cavity. The housing is isolated from the media to be measured by a stainless steel diaphragm and body. This pressure sensor package is rugged and field replaceable.

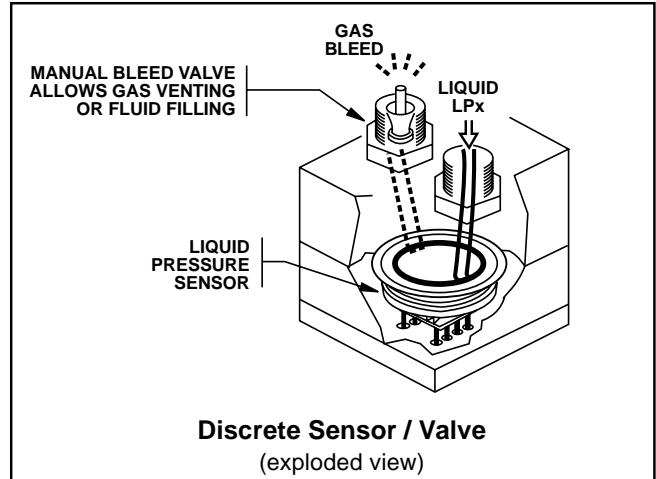


The pressure sensors are factory calibrated over their full pressure and temperature ranges. The resultant calibration data are stored in a 60 plane pressure/temperature look-up table in EEPROM. A rezero calibration can be performed on demand. Each pressure sensor's offset is then updated and saved in EEPROM.

As the sensor bridge temperature changes, the microprocessor selects the appropriate temperature plane or interpolates between planes to correct the pressure reading. This on-line calibration corrects for zero drift and liquid head pressure, thus assuring a long-term 6 month accuracy of  $\pm 0.12\%$  FS.

Each pressure input channel is isolated and independent. Eight pressure ranges can be incorporated into one DSA3207 module. In addition, each pressure input channel can be a different fluid.

As an example, channel 1 could be 50 psi range measuring water, and channel 9 could be 100 psi measuring Diesel Fuel No. 2.



Each DSA module has a unique, factory set, MAC address. When running TCP/IP protocol, the DSA modules support ARP (Address Resolution Protocol) to enable the client/host to determine the relationship between the IP address and the MAC address. The IP address is user assignable.

All scan and calibration variables are configured through software by the user. This includes number of frames per scan, number of averages per frame, sampling speed, etc.

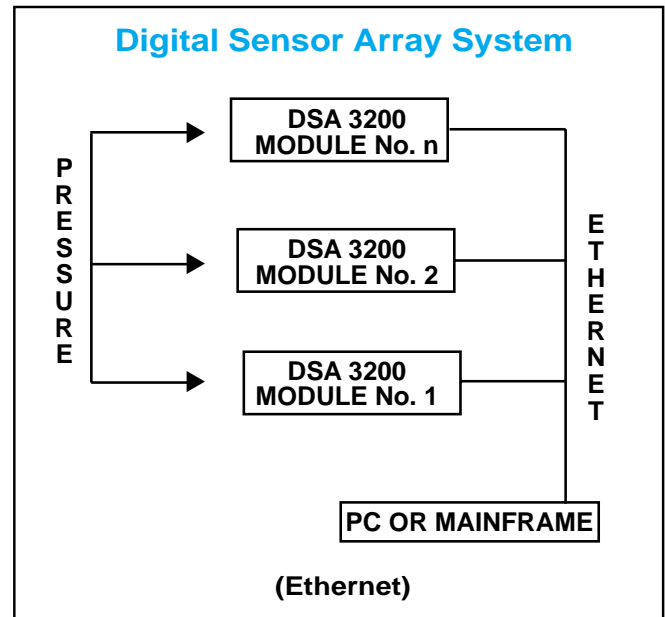
The DSA module may be tested through the Ethernet port. These tests include the ability to scan raw counts, calibrate the A/D converter, measure the sensor temperature, and zero drift.

# DSA<sup>®</sup> 3200 System / Specifications

## DSA3200 System Network

The DSA3207 module interfaces directly to a PC, host computer, or Ethernet network. Up to 1024 nodes (DSA or DEI modules, or third party devices) may be connected on one network.

A Windows<sup>®</sup> based communication program, DSALINK2, is available from Scanivalve. It allows menu driven communication for easy startup with the DSA3200 series module via TCP/IP. Telnet communication is easy with ASCII commands. Optional LabVIEW<sup>®</sup>, or Agilent's VEE<sup>®</sup> software provides graphical data display and coordinates other utility programs. An OPC driver is also available.



## Specifications

**Inputs (Px):** Standard: minimum 2 up to 16 1/8 inch Swagelok<sup>®</sup> stainless steel fittings

**Full Scale Ranges:**  
Gauge or Absolute: 5, 15, 30, 100, 250, 500, and 1000 psig

**Gauge Accuracy:**  
(Including linearity, hysteresis, and repeatability)

Sensor Pressure Range	Gauge Static Accuracy (% F.S.) <sup>*</sup>
5 psig	±.2%
15 -300 psig	±.12%
500 psig	±.15%
1000 psig	±.25%

**Absolute Accuracy:** Consult factory for absolute accuracies.

**Resolution:** 16 bit

**Scan Rate:** 500 Hz/Channel EU

**Communication:** Ethernet 10baseT

**Communication Protocol:** TCP/IP or UDP

**Operating Temperature:** 0°C to 60°C

**Temperature Compensated Range:** 0°C to 60°C

**Connector Type:**  
I/O: PTO6A-8-4S-SR  
Power: Bendix PTO6A-8-3S, 3 pin female  
Trigger: Bendix PTO2A-10-6S 6 pin female

**Power Requirements:**  
DSA3207: 28Vdc nominal @ 400mA (20-36Vdc)

**External Trigger:** 6 mA at 4 Vdc minimum edge sensing

**Overpressure Capacity:** 200% of full scale pressure range

**Reference Pressure:** Static for gauge  
N/A for absolute

**Media Compatibility:** Water, fuel oil, lubricating oils, on sense side only of transducers.

Note: Standard internal O-rings are BUNA-N. Consult factory for optional internal valve materials such as Viton<sup>®</sup> or Neoprene.

**Weight:** DSA3207: 9.5 lbs. (4.31 kg) with 8 ea. DSA3007/2LPx installed

**Total Thermal Error over 0 - 60°C Range:** ±.003% F.S./°C

<sup>\*</sup>Consult factory for accuracy with absolute pressure sensors.

# DSA® Ordering Information/Dimensions

## Ordering Information

Ordering DSA3207 is done in two parts:

1. Base - The base contains all of the electronics, connectors, firmware, and up to 8 blanking plates filling up unused spaces. (Transducers ordered separately - see below)

Scanco No. DSA3207/Base-10baseT

2. Pressure Transducer Two Pack - The transducer package contains 2 each isolated diaphragm pressure transducers of the same pressure range. Order one package or up to 8 packages for each DSA3207 Base. Up to 8 separate pressure ranges can be connected on one base.

Scanco No. DSA3007 / 2LPX - xxpsig BUNA-N

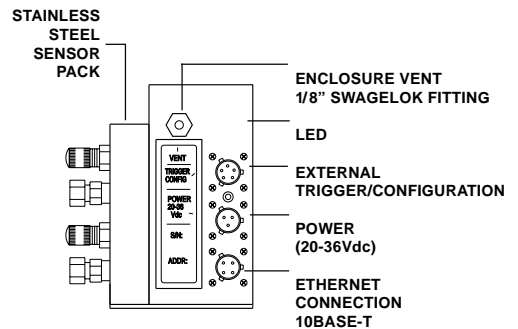
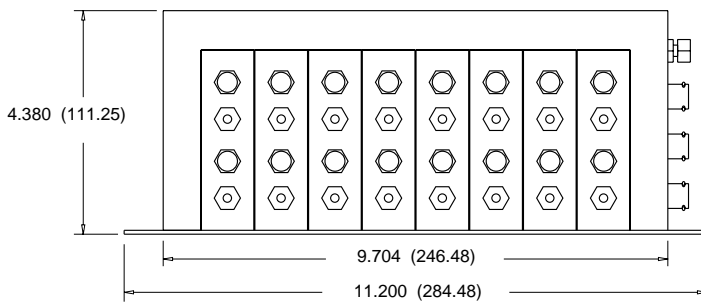
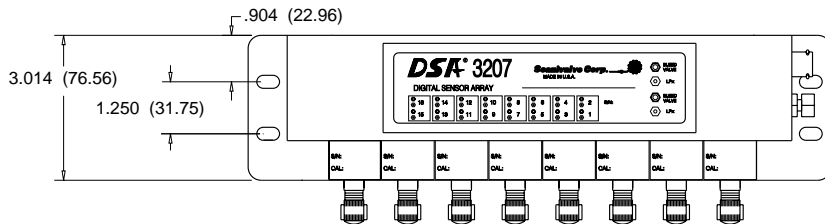
Pressure range (Specify psig or psia)  
 Elastomer  
 -BUNA-N (std)  
 -Neoprene  
 -Viton®

-2L Liquid measurements, gauge  
 -2LA Liquid measurements, absolute



## Dimensions Inches (mm)

### DSA3207/16LPx



\*Each DSA module comes with the mating trigger, ethernet, and power connector.

#### Distributed by:

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