Model **DSA®3207-3307**

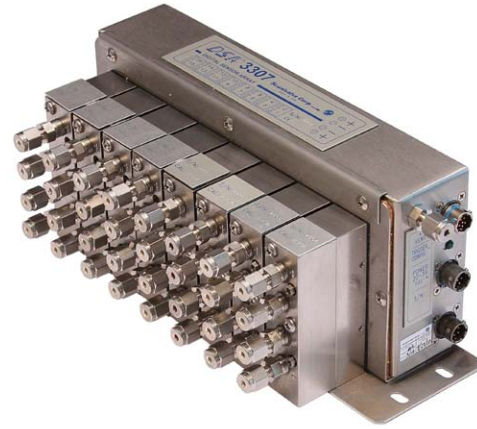## Liquid Digital Sensor Array

Scanivalve

Features

- **Intelligent pressure modules**
- **Ethernet TCP/IP "Network Ready"**
- **0 – 1500 psi pressure range**
- **Temperature compensated sensors**
- **Liquid pressure measurement (psid, psig, psia)**
- **"All Media" compatibility**
- **Time stamped data available**
- **500 samples/channel/second**

DSA3307/Base with 8 ea. Sensor packs

General Description

The DSA3200/3300 series pressure acquisition systems represent the next generation of multi-point electronic pressure scanning. Model DSA3207/3307 Digital Sensor Array, incorporates 2 to 16 temperature compensated media isolated piezoresistive pressure sensors.

Each DSA module also contains RAM, a 16 bit A/D converter, and a microprocessor using VX Works real time operating system, in a compact self-contained module. The result is a network ready intelligent pressure scanning module for "all media" service.

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

Applications

The DSA3207/3307 Digital Sensor Array is a rugged design for use with turbine and diesel engine test applications, or any liquid measurement application. It is ideal for industrial pressure measurement where long calibration intervals are required and temperatures can vary greatly. An optional heater kit is available for temperatures down to -20° C. DSA firmware allows for liquid head correction and online rezeroing of the pressure sensors.

There are 3 configurations listed below available for measuring liquids:

- Gauge measurement (wet/dry)
- Absolute measurement (wet)
- Differential measurement (wet/wet)

Model DSA3207—Gauge & Absolute (wet/dry)

This model contains a stainless steel diaphragm isolating the measurement side of each pressure transducer from the media. The back side of the gauge transducer must be dry. This design also contains a bleed valve per transducer for venting gas bubbles from the input lines. These individual bleed valves also allow for back filling the DSA input lines.

Model DSA3307—Differential (wet/wet)

This NEW model DSA3307 contains 2-16 single sensing element pressure transducers that are isolated from the media on both sides by a 316L stainless steel diaphragm.
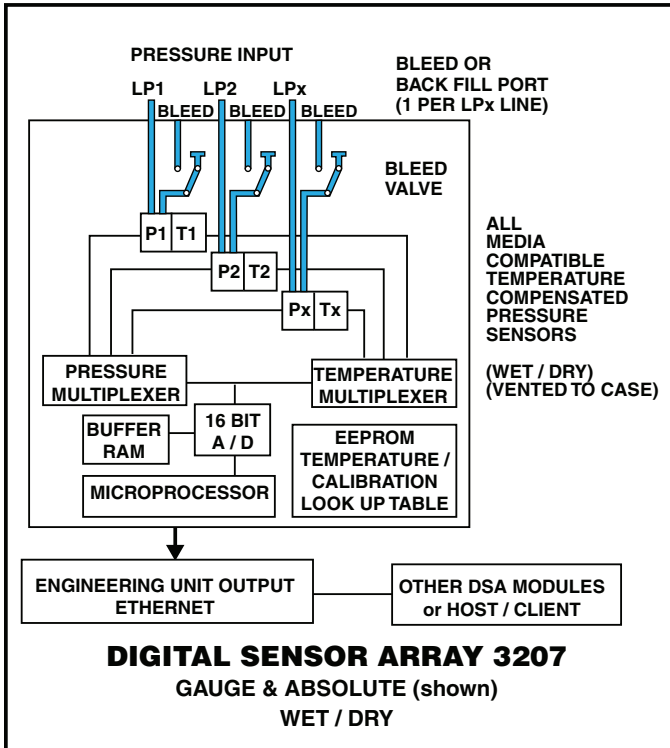
It is used in applications for measuring flow or when measuring high line low differential liquid measurements.

ISO 9001:2008 CERTIFIED

DSAModule

On-line Sensor Compensation Calibration

Each DSA3207/3307 piezoresistive pressure sensor is isolated from the media to be measured by a stainless steel diaphragm and body. This pressure sensor package is rugged and field replaceable.

PRESSURE INPUT
LP1 LP2 LPx
BLEED BLEED BLEED
BLEED OR BACK FILL PORT (1 PER LPx LINE)
BLEED VALVE

P1 T1
P2 T2
Px Tx

ALL MEDIA COMPATIBLE TEMPERATURE COMPENSATED PRESSURE SENSORS
(WET / DRY) (VENTED TO CASE)

PRESSURE MULTIPLEXER
TEMPERATURE MULTIPLEXER
BUFFER RAM
16 BIT A / D
EEPROM TEMPERATURE / CALIBRATION LOOK UP TABLE
MICROPROCESSOR

ENGINEERING UNIT OUTPUT ETHERNET
OTHER DSA MODULES or HOST / CLIENT

DIGITAL SENSOR ARRAY 3207
**GAUGE & ABSOLUTE (shown)**
WET / DRY

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 memory. A re-zero calibration can be performed on demand. Each pressure sensor's offset is then updated and saved in flash memory.

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.

Each pressure input channel is isolated and independent. Up to 8 pressure ranges can be incorporated into one module. In addition, each pressure input channel can be a different fluid.

Gauge & Absolute (wet/dry)

Model DSA3207 contains a stainless steel diaphragm isolating only the measurement side of the pressure transducer, the backside must be dry. This design also contains a bleed valve per sensor.

LPx LPx
Bleed Bleed
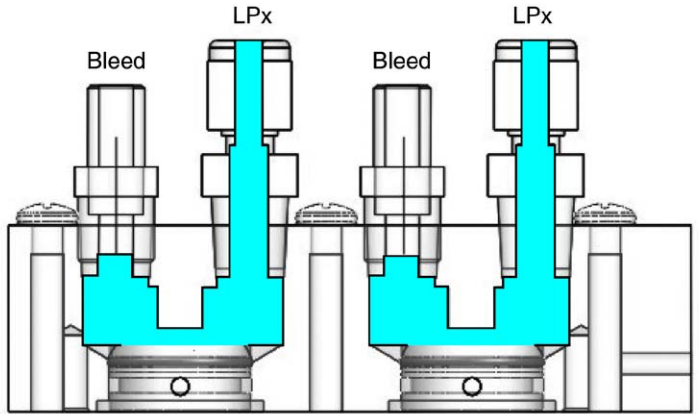
Differential (wet/wet)

Model DSA3307 contains a single sensing element pressure transducer that is isolated from the media on both sides by a 316L stainless steel diaphragm. A shunt-purge valve is installed to provide flow between the positive and negative pressure inputs and allow gas bubbles to be purged from the system.

Positive Pressure Input Negative Pressure Input Negative Pressure Input Positive Pressure Input
OPEN CLOSED
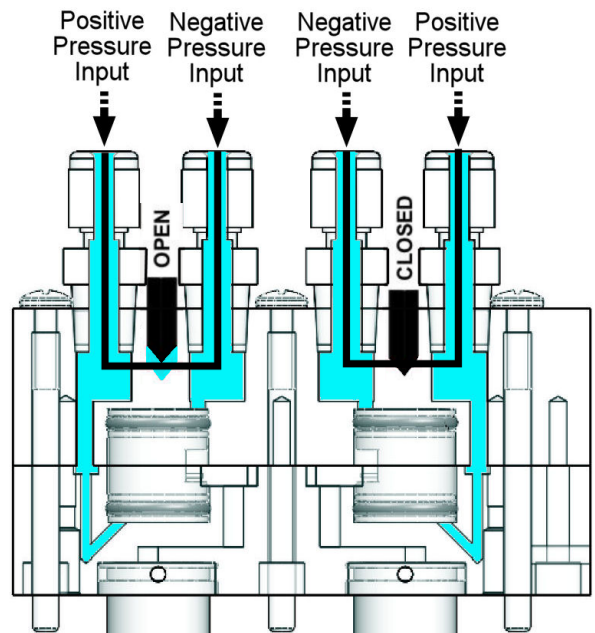
Each DSA module has a unique, factory set, MAC address. The IP address of the DSA module is user configurable.

DSA3207/3307 System Network

The DSA3207/3307 module interfaces directly to a PC, host computer, or over an Ethernet network. Up to 1024 nodes (DSA or DTS modules, or 3rd party devices) may be connected on one subnet.

Data are transmitted via Ethernet TCP/IP or UDP 10BaseT in Engineering units using ASCII or binary format. Data are transmitted at a maximum of 500 samples/channel/sec.

Scanivalve's optional Configuration Utility (includes LabVIEW®2009 runtime engine) is designed to assist a user in configuring the DSA modules. Also available is a Scanivalve Software Development kit for LabVIEW® 2009 for users who want to write their own detailed data acquisition program in LabVIEW®. This Development Kit includes examples and the Configuration Utility.

Specifications

Inputs (Px): 2 up to 32 1/8 inch Swagelok® stainless steel fittings

PRESSURE   **ACCURACY (%F.S.)**

RANGES (psi)	GAUGE	ABSOLUTE*	DIFFERENTIAL
1	N/A	N/A	Contact Factory
5	±0.20%	N/A	±0.50%
15	±0.12%	±0.12%	±0.50%
30	±0.12%	±0.12%	±0.50%
50	N/A	N/A	±0.50%
100	±0.12%	±0.12%	±0.50%
250	±0.12%	±0.12%	N/A
300	N/A	N/A	±0.50%
500	±0.15%	N/A	N/A
1000-1500	±0.30%	N/A	N/A

Accuracy is dependent upon performing CALB

Resolution: 16 bit

Scan Rate: 500 samples/channel/sec EU

Communication: Ethernet 10baseT

Protocol: TCP/IP or UDP

Operating Temperature: 0 – 60° C
With heater -20 to 60° C

Temperature Compensated Range: 0 – 69° C

Mating Connector Type: I/O: PTO6A-8-4S-SR
Power: Bendix PTO6A-8-3S, 3 pin female

Trigger: Bendix JT06RE8-6S-SR, 6 pin female

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

External Trigger: 6.5 mA at 9-15Vdc minimum edge sensing

Maximum overload sensor pressures without damage

sensor pressure range (psi)	DSA3307		DSA3207
	maximum line pressure applied equally both sides (psi)	maximum overload pressure applied to one side only (psi)	maximum overload pressure (psi)
1	50	5	2
5	100	15	10
15	100	45	30
30	100	90	60
50	250	150	N/A
100	250	250	200
250	N/A	N/A	500
300	500	500	N/A
500	N/A	N/A	1000
1000	NA	N/A	2000
1500	N/A	N/A	2000

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

Wetted parts are constructed from 300 series stainless steel. Note: Standard internal O-rings are BUNA-N. Consult factory for optional internal o-ring materials such as Viton or Neoprene®.

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

DSA3307: 15.5 lbs. (7.03 kg) With 8 ea. DSA3307/2DLPx installed.

Total Thermal Error Over 0-60° C Range: +/- .003% F.S./° C

Ordering Information/ Dimensions

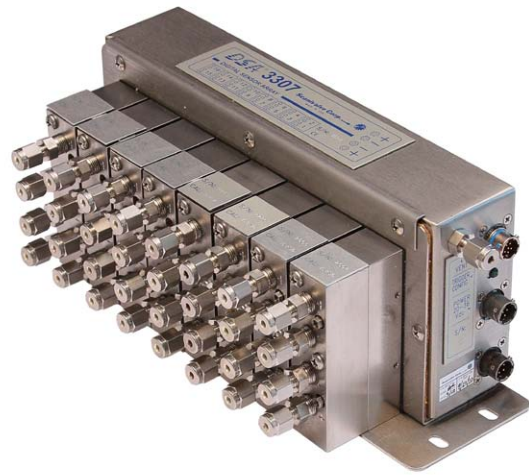Ordering DSA3207 or DSA3307 is done in two parts:

1. Base—The base contains all of the electronics, connectors, firmware, and up to 8 blanking plates filling up unused spaces.

Scanco No. DSA3207/Base (gauge or absolute)

Scanco No. DSA3307/Base (differential)

(Transducers ordered separately - see below)

2. Pressure Transducer Two Pack—The transducer package contains 2 each isolated pressure transducers of the same pressure range. Order 1 up to 8 sensor packs for each DSA3207/3307 Base. Up to 8 different pressure ranges can be connected on one base.

Scanco No.	**DSA3307**	/	**2LPx**	–	**xxpsig**		**BUNA-N**
	DSA3007 (psig, psia)				pressure range		Elastomer
	DSA3307 (psid only)				psig, psia, psid		-BUNA-N (standard)
					(specify)		-Neoprene®
			-2LPx Liquid, gauge				-Viton
			-2LAPx Liquid, absolute				
			-2DLPx Liquid, differential (DSA3307 only)				

DSA3207/16LPx and DSA3307/16DLPx Inches [mm]
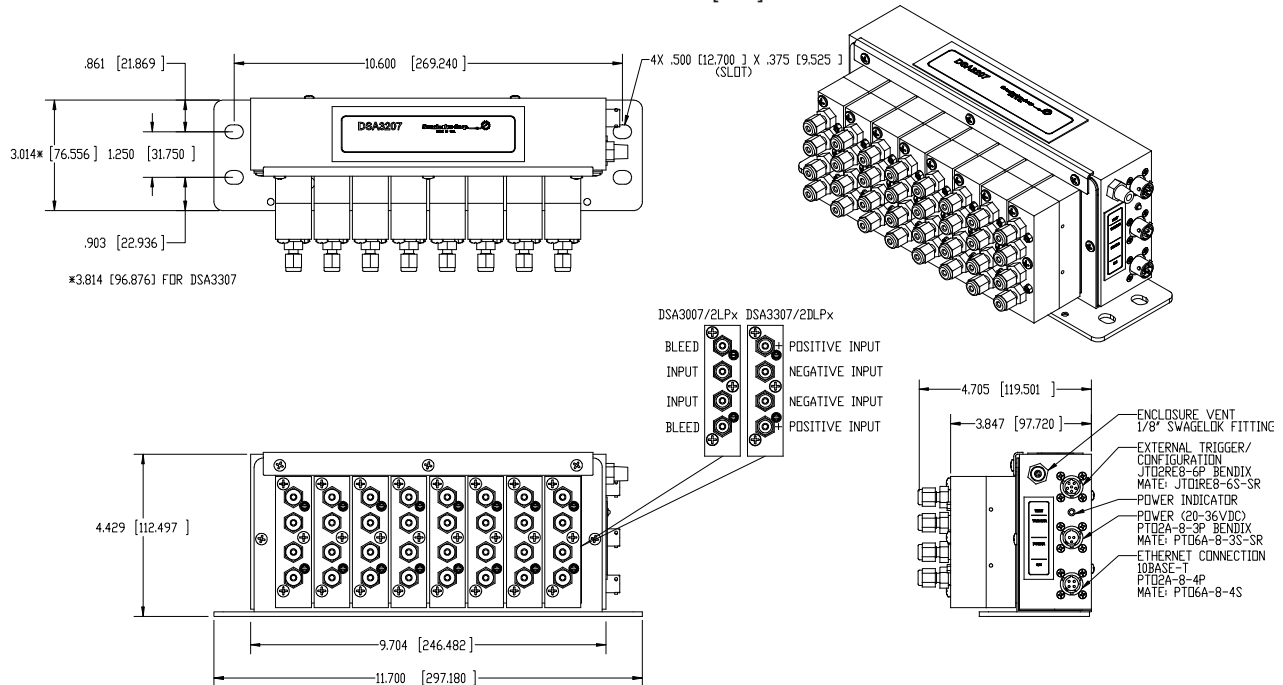
Each DSA module comes with the mating trigger, Ethernet, and power connector.

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