

## INSTALLATION & MAINTENANCE INSTRUCTIONS

### DESCRIPTION

DS series pressure transducers accurately measure pressure of gases or fluids. The output is an electrical signal based on the measurement.

Conditioning of the electrical signal from the strain gauge sensor gives either 0-10 VDC or 4-20 mA output (consult factory for other available outputs). The electrical output is a linear ratio of the pressure sensed. DS series transducers are enclosed in a rugged aluminum housing. A strain relief protects the wiring from damage caused by excessive pulling force.

The standard version (DS) measures pressure using a piezo-resistive semiconductor sensor chip.

The stainless steel version (DST) utilizes the same silicon etched device mounted on a stainless steel diaphragm. On these units, no elastomers or o-rings contact the pressurized media. All media wetted parts are ANSI type 316L stainless steel.

The NEMA4 version (WT) is electrically identical to the DS series. The WT series is housed in a slightly larger canister that is sealed against fluid spray from any direction.

### INSTALLATION TIPS

1. When installing a DS to sense downstream pressure it is best to place the device directly before where air is being used. This ensures that the valve maintains the desired pressure at the point of use.
2. Ensure that pressure seen by the DS does not exceed original maximum pressure. If a change this large is needed, consult factory first. Failure to do so may result in damage to the pressure sensor.

### Before you get started, please read these warnings

- ◆ Examine the product. Ensure that you received what you ordered.
- ◆ Read this guide first before you start and save it for later use.
- ◆ All compressed air and power should be shut off before installing, removing or performing maintenance on this product.
- ◆ Installation and use of this product should be under the supervision and control of properly qualified personnel in order to avoid the risk of injury or death.
- ◆ Media vents through exhaust port. The exhaust port should be vented into a safe area.



### SPECIFICATIONS

ELECTRICAL	
Supply Voltage	15-24 VDC
Supply Current*	35-50 mA
Analog Output	0-10 VDC   4-20 mA
MECHANICAL	
Pressure Ranges	Vacuum - 7,000 PSIG
Response Time	100µs
Repeatability (DSB, DSW, DSL)	±0.02% F.S.
Repeatability (DST)	±0.25% F.S.
Accuracy (DSB, DSW, DSL)	±0.2% F.S.
Accuracy (DST)	±0.5% F.S.
Operation Temperature	32°F to 158°F
Port Size	1/8" NPT & 1/4" NPT
PHYSICAL	
WEIGHT	
DSB	4.8 oz.
DSW	11.2 oz.
DST	5.4 oz.
DSL	1.6 oz.
MATERIAL	
DSW & DSB	Viton, Aluminum & 360 PC Brass
DST	316L Stainless Steel & Aluminum
DSL	Aluminum & Buna-N
MEDIA	
DSW, DSB, DST, DSL	Non corrosive gases
DST	Non corrosive fluids
SHOCK	
DSW, DSB, DST, DSL	100 G's of force

## CALIBRATION PROCEDURE

The DSW, DSB, DST & DSL series pressure transducers are factory calibrated. Should further calibration be required, please follow these procedures.

Two calibration potentiometers on the pressure transducer set the overall zero and span points. They are located on the back of the transducer recessed in two holes. These adjustments are set by the factory and covered with metallic tape. This metal tape may be removed to recalibrate the unit.<sup>1</sup>

If the unit needs recalibrated, it may be desirable to consult the factory about purchasing a 3-pin connector which allows easy access to the green, white, and black wires of the transducer.

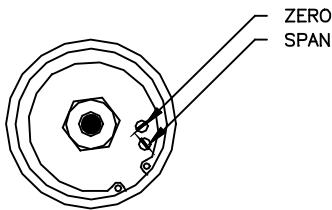
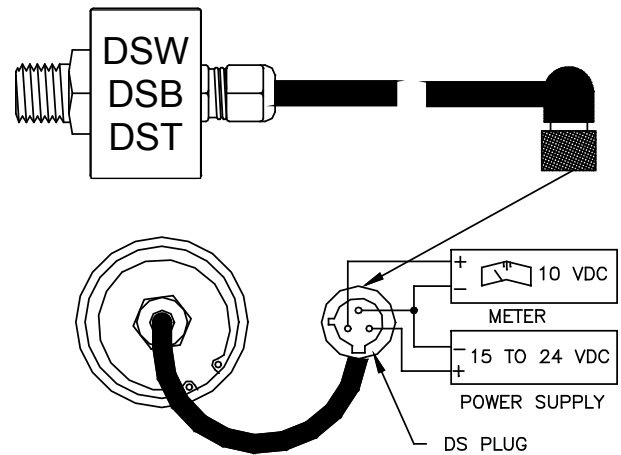


Figure 1

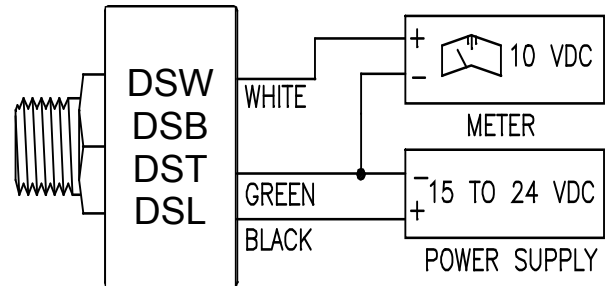
1. Remove the metal tape<sup>1</sup> from the transducer lid to expose screwdriver slot adjustments of the calibration potentiometers.
2. Make correct electrical connection for the model of transducer being calibrated. (see "ELECTRICAL CONNECTION" on this document for proper wiring).
3. Apply the maximum desired pressure to the pressure port.
4. Turn the span adjustment to set the maximum desired electrical output signal.
5. Apply the minimum desired pressure to the pressure port. If the minimum desired pressure is zero, then use a setting equal to 10% of the maximum desired pressure.
6. Turn the zero adjustment to set the minimum desired electrical output signal. If using 10% of the maximum desired pressure, then set the minimum electrical output signal to be 10% of the maximum desired electronic output signal. (ie: 5.6mA for a 4-20mA device).
7. Repeat steps #3-#6 until accuracy specifications of the device are met.

<sup>1</sup> In the DSW Series, you must remove the lid.

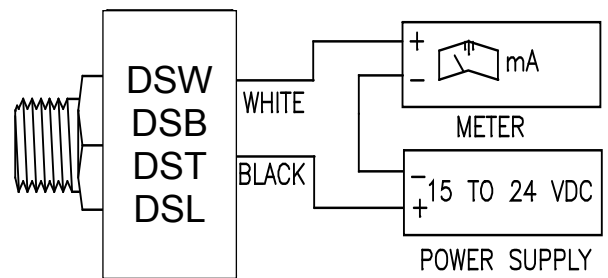
## ELECTRICAL CONNECTION



### WIRING FOR 0-10 VDC OUTPUT

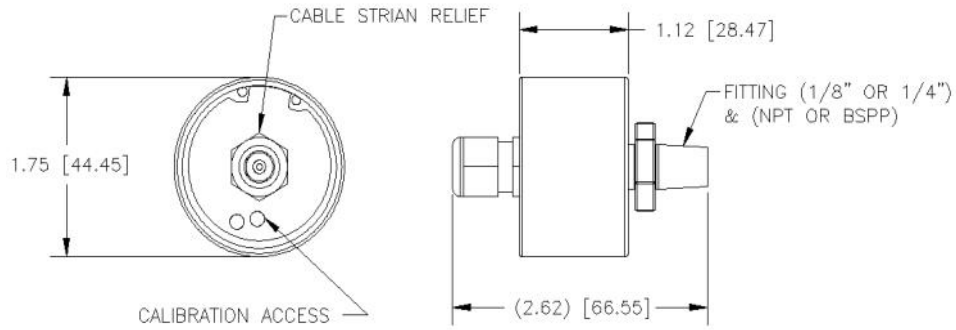


### WIRING FOR 4-20 mA OUTPUT

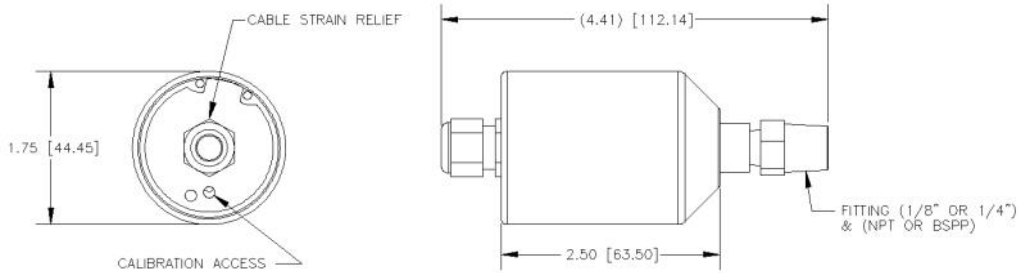


# DIMENSIONS

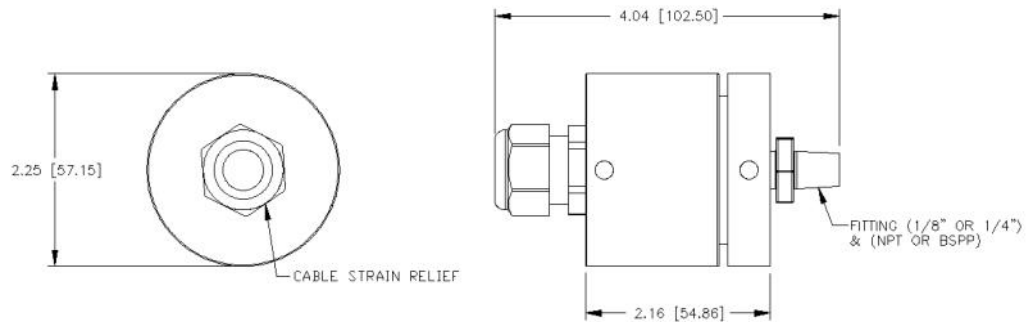
## DSB SERIES



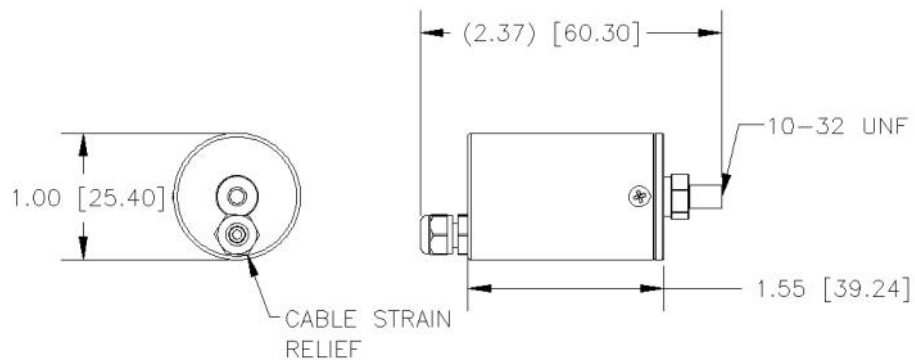
## DST SERIES



## DSW SERIES



## DSL SERIES



ACCURACY	±0.2% F.S.	PRESSURE	Full Vac to 7500 PSIG (483 Bar)								
PORT SIZE	1/8" & 1/4"	PRESSURE TRANSDUCERS									
Example Part Number											
DS	T	E	W00	Z	P	10	BR	G	A	O2	
	1	2	3	4	5	6	7	8	9	10	OPTIONS

### Section Reference

1	Type	2	Signal Type
B	Standard (up to 175 psig)	E	0 to 10 VDC
L	Compact (up to 30 psig)	I	4 to 20 mA DC
T	Stainless Steel (up to 7500 psig)	K	0 to 5 VDC
W	Watertight (up to 175 psig)	V	1 to 5 VDC
		Z	1.9 to 9.5 VDC

3	Electrical Connection		
W00	Receptacle on Can, 3-pin Male	20 Foot, Cable with Flying Leads	X20
F00	18 Inch, 3-pin Female RF	25' Foot, Cable with Flying Leads	X25
F03	3 Foot, 3-pin Female RF	18 Inch, 3-pin Female	Y00
F06	6 Foot, 3-pin Female RF	3 Foot, 3-pin Female	Y03
F12	12 Foot, 3-pin Female RF	6 Foot, 3-pin Female	Y06
X00	18 Inch, Cable with Flying Leads	12 Foot, 3-Pin Female	Y12
X03	3 Foot, Cable with Flying Leads	20 Foot, 3-Pin Female	Y20
X06	6 Foot, Cable with Flying Leads	25 Foot, 3-pin Female	Y25
X12	12' Foot, Cable with Flying Leads		

4	Zero Offset	5	Zero Offset Pressure
N	0% Pressure is Below Zero	Typical is 0° - If greater than 30% of full scale pressure (#8 below), please consult factory. *If Z for Zero Offset, Please Leave this Section (#6) Blank	
P	0% Pressure is Above Zero		
Z	0% Pressure is Zero (Typical)		

6	Full Scale Pressure Type
N	100% Pressure is Below Zero
P	100% Pressure is Above Zero
Z	100% Pressure is Zero

7	Full Scale Pressure
	Must be less than or equal to 7,500 psig

08	Pressure Unit (no additional fee - all)		
PS	PSI	Inches Hg	IH
MB	Millibars	Inches H <sub>2</sub> O	IW
BR	Bar	Millimeters H <sub>2</sub> O	MW
KP	Kilo-pascal	Kilograms/cm <sup>2</sup>	KG
MP	Mega-pascal	TORT (Requires A for Unit of Measure #11)	TR
MH	Millimeters Hg	Centimeters H <sub>2</sub> O	CW
PA	Pascal		

9	Pressure Unit of Measure
A	Absolute Pressure (Not Available with DST)
G	Gauge Pressure

10	Pneumatic Connection (Type = Section #1)	
A	1/4" NPT Male	Type B, T, W Only
B	1/8" NPT Male	Type B, T, W Only
C	1/4" BSPP Female	Type T Only
D	1/8" NPT Female	Type T Only
E	1/4" BSPT Male	Type B, W Only
F	1/8" BSPT Male	Type T Only
G	10-32 UNF Female	Type L Only

## Safety Precautions



Please read all of the following Safety Precautions before installing or operating any Proportion-Air, Inc. equipment or accessories. To confirm safety, be sure to observe 'ISO 4414: Pneumatic Fluid Power - General rules relating to systems' and other safety practices.

### Warning

Improper operation could result in serious injury to persons or loss of life!

- PRODUCT COMPATIBILITY**  
Proportion-Air, Inc. products and accessories are for use in industrial pneumatic applications with compressed air media. The compatibility of the equipment is the responsibility of the end user. Product performance and safety are the responsibility of the person who determined the compatibility of the system. Also, this person is responsible for continuously reviewing the suitability of the products specified for the system, referencing the latest catalog, installation manual, Safety Precautions and all materials related to the product.
- EMERGENCY SHUTOFF**  
Proportion-Air, Inc. products cannot be used as an emergency shutoff. A redundant safety system should be installed in the system to prevent serious injury or loss of life.
- EXPLOSIVE ATMOSPHERES**  
Products and equipment should not be used where harmful, corrosive or explosive materials or gases are present. Unless certified, Proportion-Air, Inc. products cannot be used with flammable gases or in hazardous environments.
- AIR QUALITY**  
Clean, dry air is not required for Proportion-Air, Inc. products. However, a 40 micron particulate filter is recommended to prevent solid contamination from entering the product.
- TEMPERATURE**  
Products should be used with a media and ambient environment inside of the specified temperature range of 32°F to 158°F. Consult factory for expanded temperature ranges.
- OPERATION**  
Only trained and certified personnel should operate electronic and pneumatic machinery and equipment. Electronics and pneumatics are very dangerous when handled incorrectly. All industry standard safety guidelines should be observed.
- SERVICE AND MAINTENANCE**  
Service and maintenance of machinery and equipment should only be handled by trained and experienced operators. Inspection should only be performed after safety has been confirmed. Ensure all supply pressure has been exhausted and residual energy (compressed gas, springs, gravity, etc.) has been released in the entire system prior to removing equipment for service or maintenance.

### Caution

Improper operation could result in serious injury to persons or damages to equipment!

- PNEUMATIC CONNECTION**  
All pipes, pneumatic hose and tubing should be free of all contamination, debris and chips prior to installation. Flush pipes with compressed air to remove any loose particles.
- THREAD SEALANT**  
To prevent product contamination, thread tape is not recommended. Instead, a non-migrating thread sealant is recommended for installation. Apply sealant a couple threads from the end of the pipe thread to prevent contamination.
- ELECTRICAL CONNECTION**  
To prevent electronic damage, all electrical specifications should be reviewed and all electrical connections should be verified prior to operation.

### Exemption from Liability

- Proportion-Air, Inc. is exempted from any damages resulting from any operations not contained within the catalogs and/or instruction manuals and operations outside the range of its product specifications.
- Proportion-Air, Inc. is exempted from any damage or loss whatsoever caused by malfunctions of its products when combined with other devices or software.
- Proportion-Air, Inc. and its employees shall be exempted from any damage or loss resulting from earthquakes, fire, third person actions, accidents, intentional or unintentional operator error, product misapplication or irregular operating conditions.
- Proportion-Air, Inc. and its employees shall be exempted from any damage or loss, either direct or indirect, including consequential damage or loss, claims, proceedings, demands, costs, expenses, judgments, awards, loss of profits or loss of chance and any other liability whatsoever including legal expenses and costs, which may be suffered or incurred, whether in tort (including negligence), contract, breach of statutory duty, equity or otherwise.

### Warranty

Proportion-Air, Inc. products are warranted to the original purchaser only against defects in material or workmanship for one (1) year from the date of manufacture. The extent of Proportion-Air's liability under this warranty is limited to repair or replacement of the defective unit at Proportion-Air's option. Proportion-Air shall have no liability under this warranty where improper installation or filtration occurred.