



Non-Fouling Submersible Level Transducer

ISO-9001:2000 Certified

KPSI™ Transducers

Series 750

FEATURES

- Custom Level Ranges to 115 ft (35 m) H₂O
- Analog Outputs of 4-20mA or 0-5 VDC
- Accuracy of $\pm 0.25\%$ FS
- Welded 316 SS and Teflon® PTFE Construction
- Non-clogging 2.75" Sensing Area
- Integral Diaphragm Protector
- Optional Lifetime Lightning Protection
- Optional Temperature Measurement Output
- Custom Cable Lengths



APPLICATIONS

- Lift Stations
- Pump Control
- Slurry

The Series 750 submersible hydrostatic level transducer is specifically designed to meet the rigorous environments encountered in a slurry or highly viscous environment. It provides precision depth measurement under most hostile conditions.

All KPSI Transducers utilize a highly accurate pressure sensor assembly specifically designed for hostile fluids and gases. The assembly is integrated with supporting electronics in a durable waterproof housing constructed of 316SS. The attached electrical cable is custom manufactured to Pressure Systems' specifications and includes Kevlar® members to prevent errors due to cable elongation as well as a unique water block feature that self-seals in the event of accidental cuts to the cable. Each transducer is shipped with our latest SuperDry™ Vent Filter that prevents moisture from entering the vent tube for at least one year without maintenance even in the most humid environments.

These units are designed for installation in a Class I, Division 1, Groups A, B, C, and D, Class II, Division 1, Groups E, F and G, Class III, Division 1 hazardous location when connected to appropriate apparatus such as those manufactured by R. G. Stahl, Inc., and others. KPSI transducers are type approved by the American Bureau of Shipping (ABS) and are UL, FM, and CSA approved and have a IP 68 and NEMA 6P housing protection rating. The Series 750 is CE compliant to EN 61000-6-4:2001 and EN 61000-6-2:2001.

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Series 750

Specifications

Specifications subject to change without notice.

Parameter	750	Units	Comments
LEVEL RANGES			
Full Scale Level Ranges ⁴	10 thru 115 (3 thru 35)	ft H ₂ O (m H ₂ O)	vented gage reference
Proof Pressure	1.5	x FS	
Burst Pressure	2.0	x FS	
STATIC PERFORMANCE			
Static Accuracy ¹	±0.25	%FSO	BFSL method
Resolution	Infinitesimal		
ENVIRONMENTAL			
Wetted Materials	316 SS; Delrin®; Teflon® PTFE polyurethane or Viton®.		Delrin®, Viton® and Teflon® are registered trademarks of DuPont.
Compensated Temp Range	0 to 50	°C	
Thermal Error ²	±0.10	%FSO/°C	worst case over compensated temperature range
Operating Temp Range	-20 to 60	°C	
Protection Rating	IP 68, NEMA 6P		
ELECTRICAL			
Excitation	9 - 30	VDC	for mA and VDC output
Input Current	20 3.5	mA max	for mA output for VDC output
Output	4 - 20 0 - 5	mA VDC	options available ³
Zero Offset	±0.20 <0.1	mA VDC	for mA output, max. for VDC output
Output Impedance	See Loop Resistance diagram on page 5 <10	ohm	for mA output for VDC output
Insulation Resistance	100	mega ohm	at 50 VDC
Circuit Protection	Polarity, surge/shorted output		
PHYSICAL			
Approximate Weight	3.5 (1588) 0.05 (79)	lbs (g) lbs/ft (g/m)	transducer cable
Cable Jacket Material	Polyurethane (std) Tefzel® (opt)		Tefzel®, Teflon® and Kevlar® are registered trademarks of DuPont.
Pull Strength	200 (90)	lbs (kg)	
Number of Conductors	4		
Conductor Size	22	AWG	
Cable Seal	Molded Polyurethane Viton® Gland		for polyurethane cable for Tefzel® cable

Notes:

- 1 Static accuracy includes the combined errors due to nonlinearity, hysteresis and nonrepeatability on a Best Fit Straight Line (BFSL) basis, at 25°C per ISA S51.1.
- 2 Thermal error is the maximum allowable deviation from the Best Fit Straight Line due to a change in temperature, per ISA 51.1.
- 3 Optional VDC outputs can be provided up to 2.5 VDC less than the excitation supply voltage.
- 4 Intermediate level ranges are available.

Parameter	750	Units	Comments
TEMPERATURE OUTPUT OPTION (AVAILABLE FOR 4-20 mA OUTPUT ONLY)			
Temperature Range	0 to 50 -20 to 60	°C	
Temperature Output Signal	4-20	mA	
Temperature Measurement Accuracy	±4	°C	

Uniquely-Designed Submersible Cable

Our level transducers utilize one of two types of custom cable made specifically for submersible applications. The cable of choice for most applications is a polyurethane-jacketed cable incorporating Kevlar® strength members to prevent errors due to cable elongation, and a water block liner to prevent water intrusion due to minor cuts to the cable jacket. Polyurethane cable is attached to the transducer using an injection molded polyurethane cable seal.

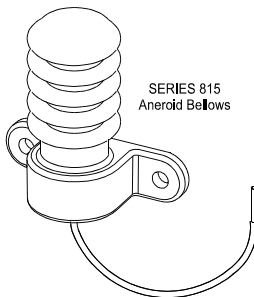
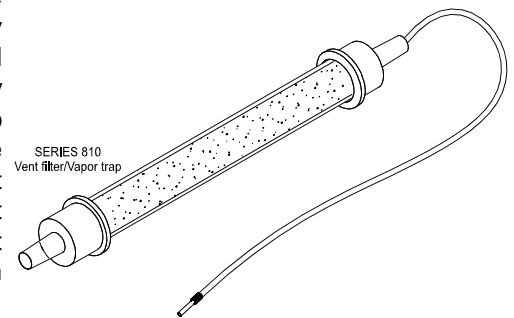
The other alternative is a Tefzel®-jacketed cable which provides superior chemical resistance and toughness yet preserving the other features found in the polyurethane-jacketed cable. Tefzel® is a Teflon® derivative from DuPont and is the better choice for caustic media or when a high degree of abrasion is anticipated. While more expensive and less flexible, it can save money in the long term due to reduced maintenance costs. Tefzel® cable is attached to the transducer using a compressed Viton® gland cable seal.

Both submersible cables have a pull strength of over 200 lbs. In all installations, care should be taken to ensure no damage occurs to the cable as cable damage represents one of the most frequent causes of transducer failure. In the case where the user is not sure which material is best, contact Pressure Systems for assistance.

Moisture Protection

Our submersible transducers are equipped with custom, vented cable. The vent provides an atmospheric reference for the sensor, which is necessary for ensuring the highest possible accuracy when making a level measurement. It must be noted that if left unprotected, it provides a pathway for water vapor to enter the level transducer. This vapor will condense into water and could create an offset in the transducer output, or cause permanent damage. For these reasons, a Series 810 desiccant-filled vent filter is provided free of charge with each Series 750 we ship. Our latest SuperDry™ Vent Filter prevents moisture from entering the vent tube for at least one year without maintenance. Replacement filters are available from the factory.

SuperDry™ Long Life Vent Filter

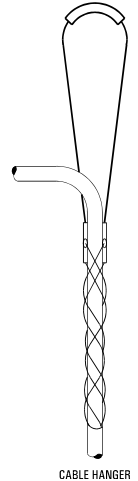


For those applications where periodic maintenance is not practical, our Series 815 Aneroid Bellows is a direct replacement for the vent filter. This sensitive bellows responds to and transmits changes in atmospheric pressure to the sensor while remaining a maintenance-free, closed system. It should be noted, however, that the Bellows may not be a suitable replacement for the desiccant cartridge in applications where extremely high accuracy is required, usually 0.25% or better or where the bellows may be exposed to extreme temperature changes. The user is cautioned to evaluate a Bellows in the specific application intended.

Installation Tips

The Series 750 submersible transducers may be suspended directly in the media.

When suspending by the cable, users often utilize our cable hanger (PN# 12-90-0931). This device slides onto the cable from the bare-wire end and is easily positioned anywhere on the cable by pushing the ends together. Once positioned, the cable hanger contracts to provide a snug grip.

**Lifetime Lightning/Surge Protection Option**

Lightning/Surge protection is offered for output signal versions of 0-5 VDC (PN# OPTION-012) and 4-20 mA (PN# OPTION-009). The option is ordered separately from the transducer.

Protection is achieved through the use of 2 components. One is located in a 6.5 inch long, 1 inch OD 316 SS housing extension to the non-sensing end of the transducer while the other is located at the surface and grounded via DIN-rail or ground wire. This option requires a minimum input voltage of 12 VDC. **A unit ordered with this option is warranted for the life of the instrument against damage due to voltage surge.**

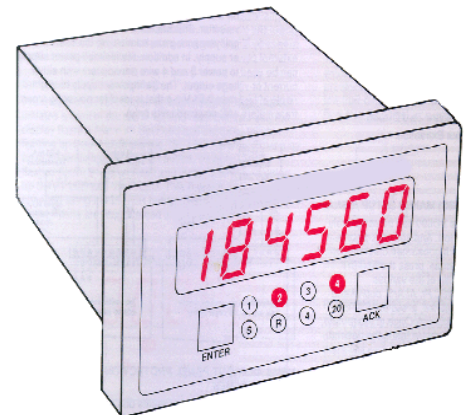
Temperature Measurement Output Option

As an option, a precision silicon temperature sensor can be installed within the transducer to provide a separate 4-20 mA temperature measurement output over the range of 0 to 50°C or -20 to 60°C. The accuracy of the temperature measurement is $\pm 4^\circ\text{C}$.

Display Meter

Pressure Systems offers two types of Display Meters to provide a visual readout of a single KPSI transducer having mA or VDC output. Both varieties utilize a red 0.54" LED display with 4 active characters to indicate a numeric range of -1999 to 9999. The units operate from VAC power and provide a 24 VDC supply for power to the transducer.

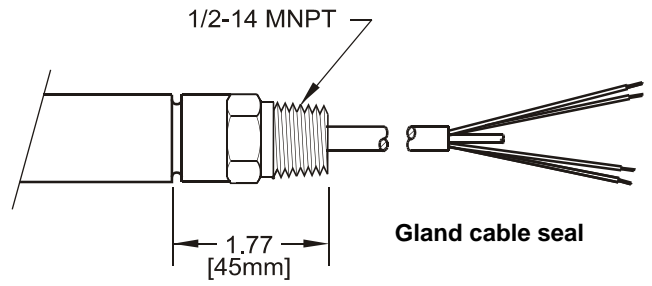
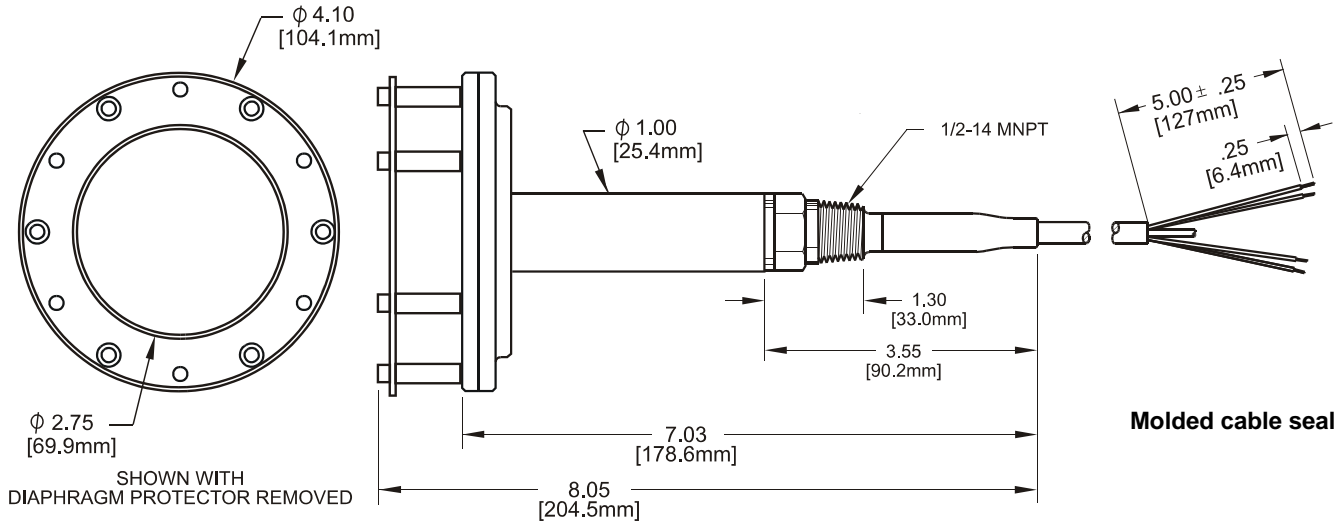
The Model 3019 Digital Readouts provide a sophisticated display of the transducer output with six 14-segment LED's for display of true alphanumeric characters; the last two used for process descriptors. These readouts offer programmable input configuration, isolated transducer power supply, selectable 2-point scaling or up to 17-point linearization, optional 4-20 mA retransmission, and two or four optional 10-amp SPDT alarm contacts for control. The 3019 has a NEMA 4X front panel with a polycarbonate bezel and a 1/8 DIN aluminum housing measuring 1.9375" H x 3.75" W x 6.5" D.



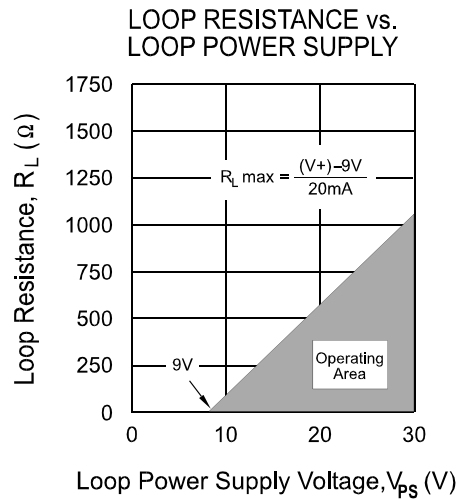
The Model 3620 Pump Controllers provide a more rugged package specifically designed to operate external pumps via two 10-amp SPDT alarm contacts. The 3620 provides front panel scaling, operates from -20 to 70°C, and uses 120 or 240 VAC. The NEMA 4X rated enclosure can be surface or panel mounted and measures 3.2" H x 5.5" W x 2.7" D.

Series 750

Technical Data



ELECTRICAL TERMINATION		
22AWG CONDUCTORS IN A SHIELDED CABLE WITH VENT TUBE		
4-20 mA	RED BLACK	+ EXCITATION - EXCITATION
0-5 VDC	RED BLACK WHITE	+ EXCITATION - EXCITATION + SIGNAL
ALL	DRAIN WIRE	SHIELD



Standard shipment is 5 working days upon receipt of order. Expedited shipment of 1-4 working days is available. All orders are shipped FOB from our factory in Hampton, Virginia.

Ordering Information

Model No.															
7	5	0	Anti-Fouling Submersible Level Transducer, ±0.25% FSO Static Accuracy												
↓	↓	↓													
			Reference Pressure Format												
			1	Vented gage											
			Output												
			↓	3	VDC (specify voltage range)										
				4	4-20 mA										
				7	4-20 mA, temperature measurement option, 0 to 50°C										
				G	4-20 mA, temperature measurement option, -20 to 60°C										
			Pressure Connection												
			↓	D	Diaphragm protector										
			Electrical Connections												
				4	½" - 14 NPT male conduit fitting with molded cable seal										
				B	½" - 14 NPT male conduit fitting with gland cable seal										
			Level Range												
			↓	See Note											
7	5	0	-	1		D	-	4	0						

Note:

The part number requires the level range to be expressed in pounds per square inch (psi) out to three decimal places. Use the following conversions for water at 4°C to calculate the level range for inclusion in the part number.

ft H₂O / 2.3067 = psi
 m H₂O x 1.421 = psi

Examples:

5 ft H₂O / 2.3067 = 2.168 psi (enter 002.168 in the part number)
 10m H₂O x 1.421 = 14.210 psi (enter 014.210 in the part number)

Cable and Lightning Protection:

- PN: 26-03-0424ER Polyurethane-jacketed vented cable, 4 conductor
- PN: 26-03-0324A Tefzel®-jacketed vented cable, 4 conductor
- PN: Option-009 Lightning protection option for 4-20 mA output
- PN: Option-012 Lightning protection option for VDC output

Warranty: The Series 750 is warranted against defects in material and workmanship for 24 months from date of shipment. Products not subjected to misuse will be repaired or replaced. THE FOREGOING IS IN LIEU OF ANY OTHER EXPRESSED OR IMPLIED WARRANTIES. We reserve the right to make changes to any product herein assume no liability arising out of applications or use of any product or circuit described. Products described in this Specification are not intended for life support applications.