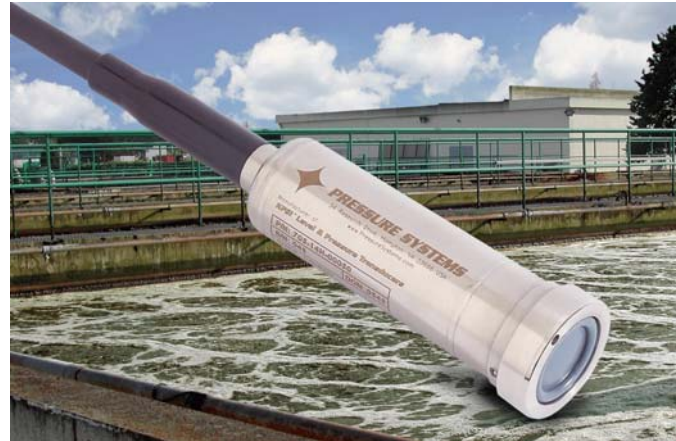


FEATURES

- Flush Teflon® coated Elastomeric Diaphragm
- Custom Level Ranges from 6-115 ft (2-35 m) H₂O
- Analog Outputs of 4-20 mA or 0-5 VDC
- Welded 316 SS or Titanium Construction
- Optional Lifetime Lightning Protection
- Optional Temperature Measurement Output
- Custom Polyurethane or Tefzel® Cable Lengths



APPLICATIONS

- Lift Stations
- Slurry
- Pump Control

The Series 705 is a submersible hydrostatic level transducer specifically designed to meet the adverse environments encountered in wastewater applications. The suitably-sized transducer features a wide sensing area comprised of a Teflon® coated elastomeric diaphragm for reliable operation in highly viscous or slurry environments.

All KPSI Transducers utilize a highly accurate pressure sensor assembly. The assembly is integrated with supporting electronics in a durable waterproof housing constructed of 316 SS or Titanium. The attached polyurethane or Tefzel® 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 IS approved by UL, CUL and FM; and have a IP 68 and NEMA 6P housing protection rating. The Series 705 is CE compliant to EN 61000-6-4:2001 and EN 61000-6-2:2001.

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Order On-Line!

E-commerce: LEVELandPRESSURE.com

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Series 705

Specifications

Specifications subject to change without notice.

Parameter	705	Units	Comments
LEVEL RANGES			
Full Scale Level Ranges ¹	6 thru 115 (2 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 ²	±1.00	%FSO	BFSL method
Resolution	Infinitesimal		
ENVIRONMENTAL			
Wetted Materials	316 SS or Titanium, Teflon [®] , Viton [®] , polyurethane		Teflon [®] and Viton [®] are registered trademarks of DuPont.
Compensated Temp Range	0 to 50	°C	
Thermal Error ^{3,4}	±0.10 Prorated	%FSO/°C	for level ranges >23' (7m) H ₂ O for level ranges ≤ 23' (7m) H ₂ O
Operating Temp Range	-20 to 60	°C	
Protection Rating	IP 68, NEMA 6P		
ELECTRICAL			
Excitation	9 - 30	VDC	for mA and VDC
Input Current	20 3.5	mA max	for mA output for VDC output
Output	4 - 20 0 - 5	mA VDC	options available ⁵
Zero Offset	±0.20 < 0.1	mA VDC	for mA output for VDC output
Output Impedance	See Loop Resistance diagram on page 7 <10	ohm	for mA output for VDC output
Insulation Resistance	100	mega ohm	at 50 VDC
Circuit Protection	Polarity, surge/shorted output		

Parameter	705	Units	Comments
PHYSICAL			
Approximate Weight	0.5 (227) 0.05 (79)	lbs (g) lbs/ft (g/m)	transducer cable
Cable			Tefzel [®] and Kevlar [®] are registered trademarks of DuPont.
Jacket Material	Polyurethane (std) Tefzel [®] (opt)		
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
TEMPERATURE OUTPUT OPTION (NOT INTRINSIC SAFETY APPROVED)			
Temperature Range	0 to 50 -20 to 60	°C	available for 4-20mA output versions only
Output Signal	4-20	mA	
Temperature Measurement Accuracy	±4	°C	
LIGHTNING PROTECTION (OPTIONAL)			
Life Expectancy	> 1000 operations		
Peak Clamping Voltage	36 volts		
Response Time	< 10 nsecs		

Notes:

- 1 Intermediate level ranges are available.
- 2 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.
- 3 Thermal error is the maximum allowable deviation from the Best Fit Straight Line due to a change in temperature, per ISA S51.1
- 4 Worst case over compensated temperature range
- 5 Optional VDC outputs can be provided up to 2.5 VDC less than the excitation supply voltage

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.

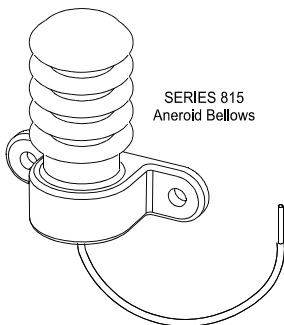
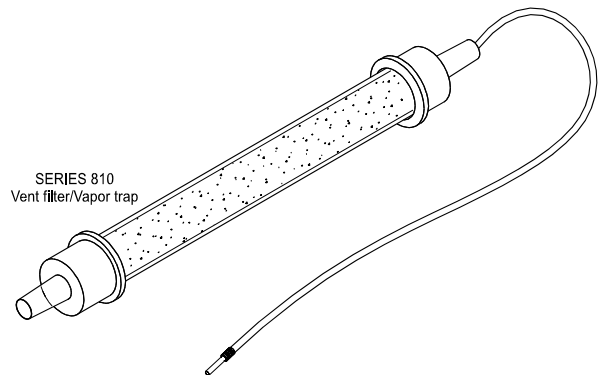
The other alternative is a Tefzel®-jacketed cable which provides superior chemical resistance and toughness yet preserving the other features found in the polyurethane-jacketed cable. Tefzel® is a Teflon® derivative from DuPont and is the better choice for caustic media or when a high degree of abrasion 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 705 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



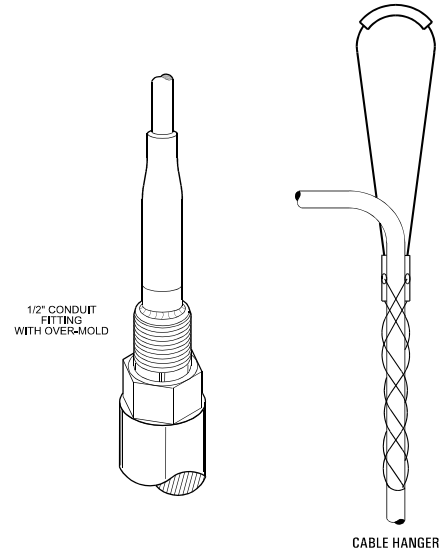
For those applications where periodic maintenance is not practical, our Series 815 Aneroid Bellows is a direct replacement for the vent filter. This sensitive bellows responds to and transmits changes in atmospheric pressure to the sensor while remaining a maintenance-free, closed system. It should be 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 705 family of submersible transducers may be suspended directly in the media or in a perforated 2" PVC instrumentation still well. Alternately, the transducer may be attached to a rigid conduit using a 1/2" NPT male conduit fitting.

When suspended 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.

For applications requiring cable length in excess of 500 feet, consult the factory for proper installation and maintenance.



Process Connection

The Series 705 submersible level transducer comes standard with a flush elastomeric outer diaphragm that works well in applications where grease and highly viscous liquids could cause buildup on the measuring end.

Optional Lifetime Lightning/Surge Protection

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

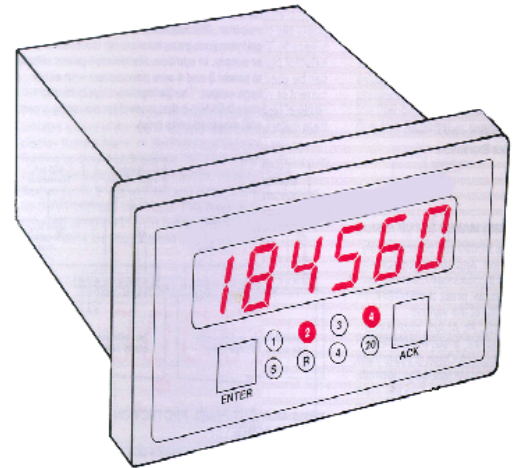
As an option, a precision silicon temperature sensor can be installed within the transducer to provide a separate 4-20 mA temperature measurement output over the range of 0 to 50°C or -20 to 60°C. The accuracy of the temperature measurement is ±4°C. **Transducers ordered with this option do not carry IS approvals.**

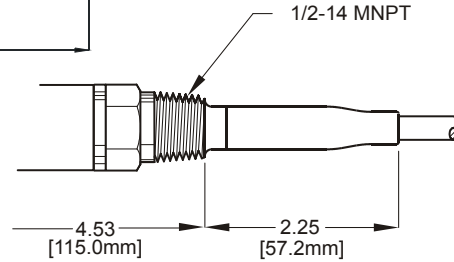
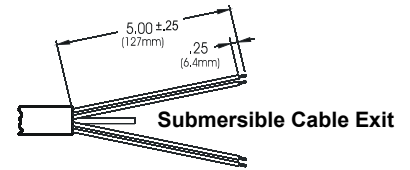
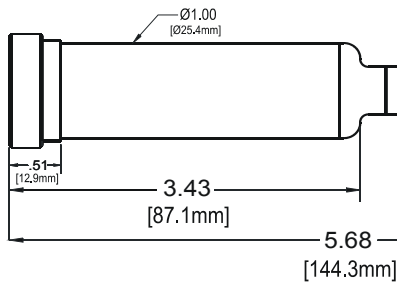
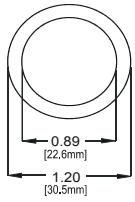
Display Meter

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.

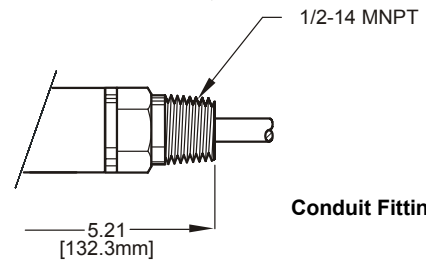
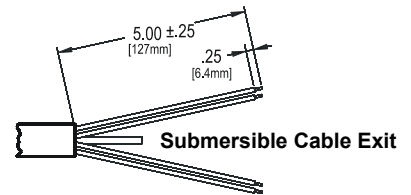
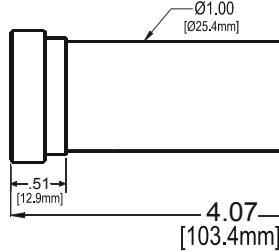
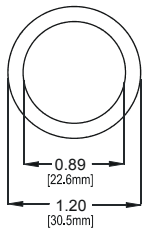
The Model 3620 Pump Controllers provide a more rugged package specifically designed to operate external pumps via two 10-amp SPDT alarm contacts. The 3620 provides front panel scaling, operates from -20 to 70°C, and uses 120 or 240 VAC. The NEMA 4X rated enclosure can be surface or panel mounted and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





Molded Cable Seal

Conduit Fitting



Gland Cable Seal

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

