



Industrial Submersible Pressure Transducer

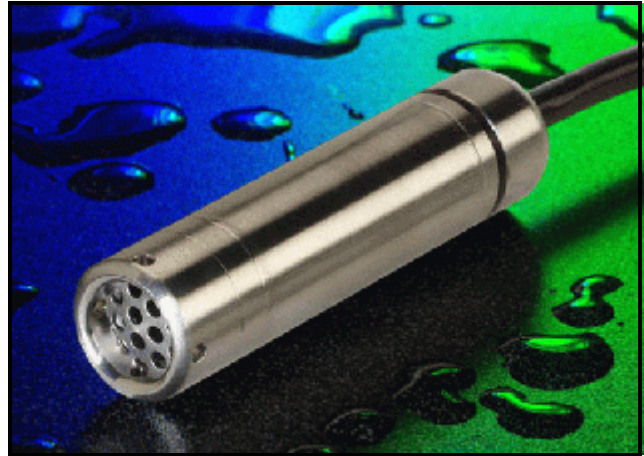
ISO-9001 Certified



Series 700

FEATURES

- High Static Accuracy & Repeatability
- Welded 316 SS or Titanium Construction
- Small Rugged Package
- User-Specified Pressure Ranges Available
- 100% Computer-Tested, Calibrated, and Serialized
- Unique Cable Seal System
- Fully Temperature Compensated
- Datalogger Compatible



APPLICATIONS

- Well Monitoring
- Slug Tests
- Pump Control
- Ground Water Monitoring
- Soil Remediation
- Oceanographic Research
- Lift Stations
- Level Control
- Surface Water Monitoring

The Series 700 family of submersible pressure transducers is specifically designed to meet the rigorous environments encountered in liquid level measurement and control. They can be configured to perform to specifications under the most adverse, reactive conditions.

These transducers incorporate the latest advancements in piezoresistive pressure sensing technology. A stability-enhancing charged "Field Shield" is vapor deposited directly to the pressure cell. A welded 316 stainless steel or titanium diaphragm, with a spring rate ratio of 1000:1, and a piezoresistive pressure cell are used for contact with the media. The transducer housing is an all-welded design, constructed of corrosion resistant 316 SS. A titanium housing and sensor are also offered for extremely corrosive media.

The Series 700 also features state-of-the-art, surface mount internal signal conditioning which provides a power supply rejection of 0.001% and either a 4-20 mA, 0-5 VDC, or mV process signal. Approvals to FM, CSA, and UL are standard for Class I, Div 1, Groups A, B, C and D, and Class II, Div 1, Groups E, F and G, and Class III, Div 1 hazardous locations. These instruments also meet CE approval according to EN-50081- 1.1992; EN-50081-2.1994; EN-50082-1.1992; and EN-50082-2.1995. Hazardous locations installation must be to local and national electrical codes and installed with an approved electrical barrier, such as manufactured by R.Stahl, Inc. KPSI transducers are type approved by the American Bureau of Shipping (ABS).

Each transducer is shipped with a vent filter that prevents moisture from entering the cable vent tube and with traceable calibration data. This data specifies input/output conditions and actual data recorded at zero and full scale during manufacture. Optional calibrations are available when additional performance characteristics are required. All units have low power requirements.

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Parameter	735	730	720	710	700	Units	Comments
PRESSURE RANGES							
Pressure Ranges ¹	0 - 2 through 0 - 300					psig	intermediate ranges available
		0-15 through 0-300	0-5 through 0-300			psis	735 only available in psig
Proof Pressure	1.5					x FS	
Burst Pressure	2.0					x FS	
STATIC PERFORMANCE							
Static Accuracy ²	±0.05	±0.10	±0.25	±0.50	±1.00	%FSO BFSL	consult factory for options
Thermal Error ³	±0.05				±0.10	%FSO/ °C	
Resolution	Infinitesimal						
ENVIRONMENTAL							
Wetted Materials ¹	316 SS or Titanium; Fluorocarbon						
Compensated Temp Range ⁴	0 to 50					°C	options available
Operating Temp Range	-20 to 60					°C	options available
ELECTRICAL							
Excitation	2.5 - 10 5 9 - 30					VDC	mV output (ratiometric) mV output (non-ratiometric) mA, VDC output
Input Current	3.5 20					mA max	mV, VDC output mA output
Output	2.5 - 10 0 - 100 ⁴ 0 - 5 4 - 20					mV/V mV VDC mA	ratiometric, range dependent non-ratiometric 3 wire 2 wire
Zero Offset	±5 ±60 ±0.12					mV mV mA	mV output VDC output mA output
Insulation Resistance	100					mega ohms	at 50 VDC
Circuit Protection	Polarity, surge/shorted output						
PHYSICAL							
Weight	198					grams	excluding cable
Cable	Self-sealing polyurethane jacketed shielded cable with polyethylene vent tube. 90 kilograms pull strength. Conductors are 22 AWG.					70 g/m	specify cable length as separate line item Tefzel jacket optional.
Mounting Provisions	Suspended by cable. For turbulent conditions, specify optional mount bracket or conduit fitting						.

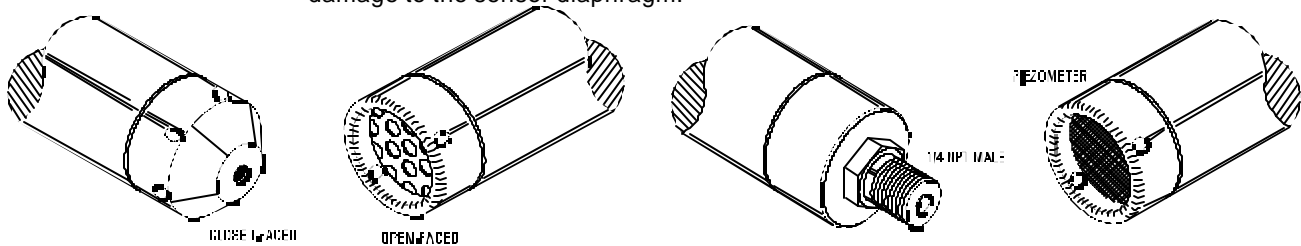
Notes:

- 1 Consult factory for highly corrosive media, tighter tolerances on environmental specifications and special low/high pressure applications.
- 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. For pressure ranges 3 psig and lower or 15 psis and lower, thermal specifications are subject to increase due to deranged level of operating pressure range (ie. FS output). Consult with factory representative for details.
- 4 0-50 mV FSO for ranges <10 psi.

Specifications subject to change without notice.

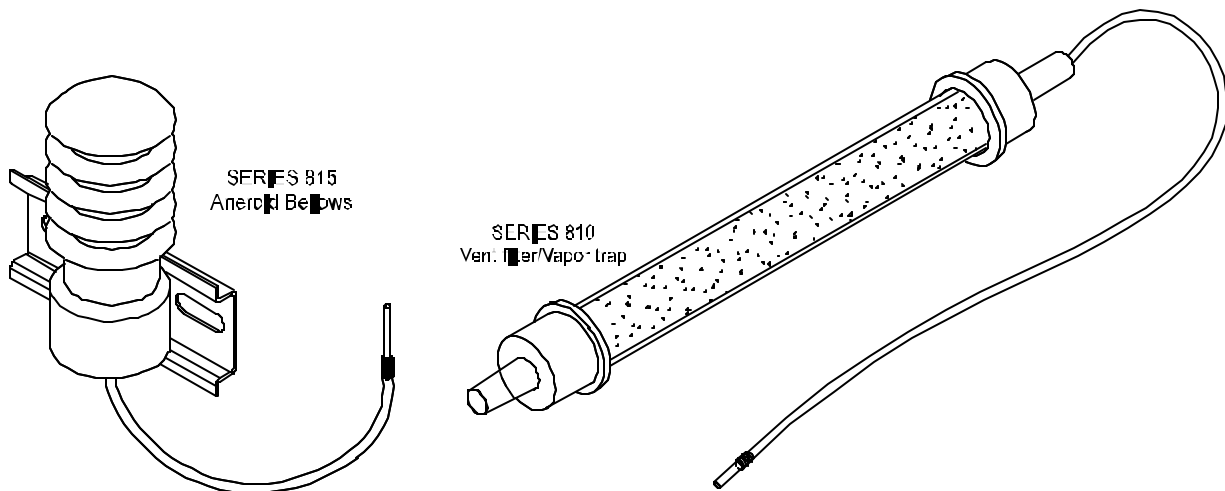
Field Installable Nose Caps

Several different user-installable nose caps are available for the Series 700, 710, 720, 730 submersible pressure transducers. The closed-faced port end cap with #8-32UNC-2B threaded hole is best used where weights are required and for those installations where users may encounter sharp, protruding objects. The standard submersible open-faced port end cap which allows maximum contact with the liquid media is ideal for wastewater and "greasy" applications where clogging of the sensor is a concern. The 1/4" male NPT pressure port end cap is not only useful for calibration purposes but also allows the device to be used as a submersible or above ground pressure transducer. The piezometer port end cap allows the unit to be buried in the ground without damage to the sensor diaphragm.



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 700 we ship. These filters must be periodically replaced as the desiccant becomes spent, which is apparent by a change in desiccant color from blue to pink. Replacement filters are available from the factory. 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 that the bellows may not be a suitable replacement for the desiccant cartridge in applications where extremely high accuracy is required, usually 0.1% or better, and pressure ranges below 2 psi. The user is cautioned to evaluate a bellows in the specific application intended.



Surge/Lightning Protection

Surge protection is offered for 0-5 VDC (PN OPTION-012) and 4-20 mA (PN OPTION-009) outputs for our 700 family of submersible pressure transducers. This is achieved through the use of 2 protectors. One is located in a 6.5 inch long, 1 inch OD 316 SS housing extension attached directly to the non-pressure sensing end of the transducer while the other is located at the surface and grounded via DIN-rail or ground wire. Whether lightning protection is employed or not, the cable shield is left exposed so that the shield can be attached to an earth ground. A unit ordered with this option is warranted for the life of the instrument against damage due to voltage surge.

Submersible Cable

Our submersible transducers utilize two different types of custom cable made specifically for submersible applications. The most common is our polyurethane-jacketed cable. Our unique design includes Kevlar strength members to prevent errors due to cable elongation and a water block liner to "self-seal" the cable in the event of accidental cuts to the cable jacket. This is the cable of choice for most applications, including potable water, sewage, rivers, streams, and even leachate.

The other choice is our Tefzel-jacketed cable. Tefzel is the better choice when media are expected that are not compatible with polyurethane or when a high degree of abrasion is anticipated. While more expensive than polyurethane cable, it can save money in the long term due to lower maintenance costs. Some applications where Tefzel is utilized include remediation wells, drinking water tanks that are periodically sanitized with chemicals such as sodium hypochlorite and where it is not possible or practical to remove the transducer during the sanitization process. Installations where it is expected that the cable will be subjected to sharp objects and/or abrasion would also be a good candidate for Tefzel. In the case where the user is not sure which material is best, contact the KPSI applications department for assistance. 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.

Display Meters

These are easy-to-use, industrial grade digital process meters with many features:

- single button scaling
- NEMA 4X front panel
- linearization with square root extraction
- 4-20 mA output option
- 2 or 4 control relay options
- isolated 24 VDC transmitter power supply
- steady 4½" digital display + extra zero display
- 4 visual alarm points
- UL approval

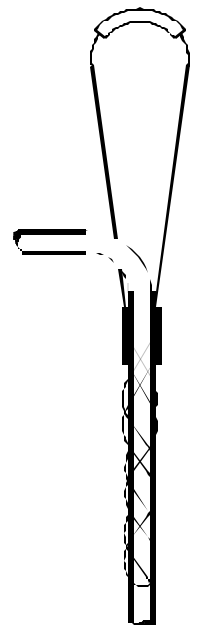
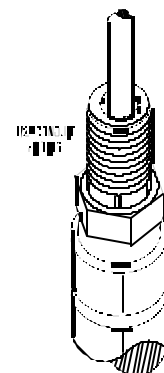
Uncomplicated setup is accomplished through single-button and stand-alone scaling. An internal 24 VDC power supply simplifies 4-20 mA current loop setup by eliminating the need for an external power supply.

The optional 4-20 mA isolated output provides a signal to an independent RTU or data logger. Also, the options for either 2 or 4 control relays means the it can function as a controller. These SPDT relays can be programmed for automatic or automatic+manual reset. They can also be programmed for 0-100% deadband.

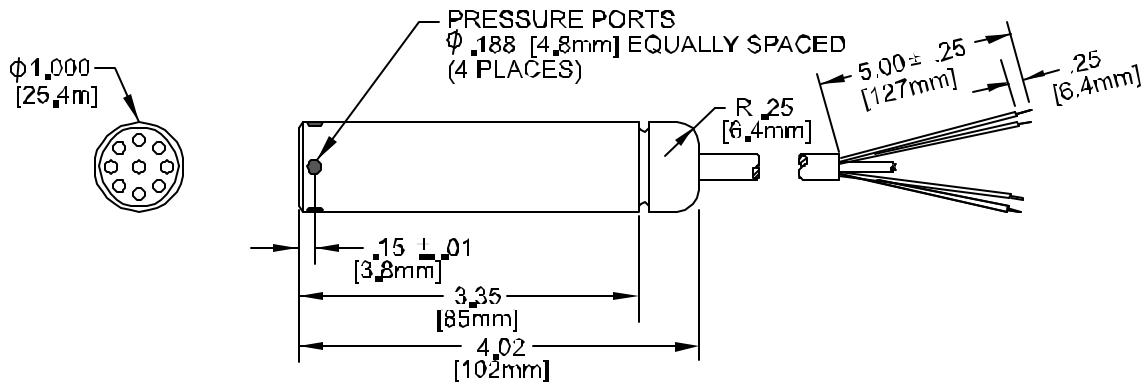
Installation Tips

Most users either suspend our submersible transducer in a 1" or 2" PVC instrumentation still well or attach the transducer using our optional ½" M NPT fitting to a rigid conduit.

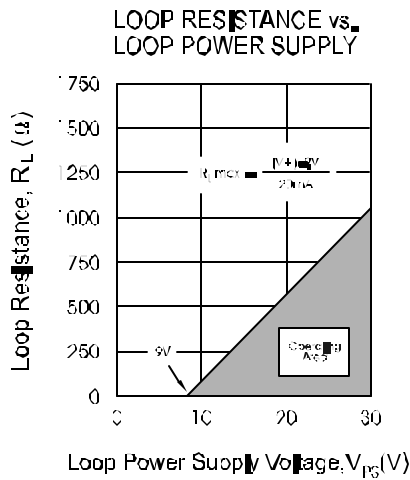
When suspending the cable, users often utilize our cable hanger (PN 12-90-0931). This device slides onto the cable from the bare-wire end. The cable hanger can be positioned anywhere on the cable by pushing the ends together. Once positioned, the cable hanger contracts to provide a snug grip.



CABLE HANGER



ELECTRICAL TERMINATION		
(2,3 or 4) 22AWG CONDUCTORS IN A SHIELDED CABLE WITH SENSOR BREATHER AND POLYURETHANE JACKET		
(4) 4-20 mA	RED BLACK	+ EXCITATION - EXCITATION
(3) 0-5 VDC	RED BLACK WHITE	+ EXCITATION - EXCITATION + SIGNAL
(2,5,6) mV	RED BLACK WHITE GREEN	+ OUTPUT + EXCITATION - EXCITATION - OUTPUT
ALL	BLUE	CABLE SHIELD



Series 700

Order Information

Standard shipment is 5 working days upon receipt of order. Expedited 2 working day shipment is available. All orders are shipped FOB from our factory in Hampton, Virginia.

Ordering Information

Model No.									
7	0	0	±1.0%	FSO Static Accuracy Submersible Pressure Transducer, Stainless Steel					
7	1	0	±0.50%	FSO Static Accuracy Submersible Pressure Transducer, Stainless Steel					
7	2	0	±0.25%	FSO Static Accuracy Submersible Pressure Transducer, Stainless Steel					
7	3	0	±0.10%	FSO Static Accuracy Submersible Pressure Transducer, Stainless Steel					
7	3	5	±0.05%	FSO Static Accuracy Submersible Pressure Transducer, Stainless Steel					
7	0	0	T	±1.0% FSO Static Accuracy Submersible Pressure Transducer, Titanium					
7	1	0	T	±0.50% FSO Static Accuracy Submersible Pressure Transducer, Titanium					
7	2	0	T	±0.25% FSO Static Accuracy Submersible Pressure Transducer, Titanium					
7	3	0	T	±0.10% FSO Static Accuracy Submersible Pressure Transducer, Titanium					
7	3	5	T	±0.05% FSO Static Accuracy Submersible Pressure Transducer, Titanium					
9	9	9	9						
Pressure Format									
				1 Gage, vented reference					
				3 Sealed gage					
				4 Absolute					
Excitation/Signal									
			9	3 VDC Input, VDC Output					
				4 VDC Input, 4-20 mA Output					
				5 VDC Input, mV Output (Ratiometric*)					
				7 Temperature Output Option (available with 4-20 mA only)					
Pressure Connection									
				0 Standard submersible screen (open-faced)					
				2 1/4" - 18 NPT Male					
				B Closed-face Nosecap					
				C Closed-face, Delrin Nosecap					
				E Piezometer Nosecap					
Electrical Connections									
				0 Standard submersible cable exit					
				4 1/2" - 14 NPT Male conduit connection					
Pressure Range									
				0 - 2 psi through 0 - 300 psi					
				Examples: 0-2 psi = 0002; 0-10 psi = 0010; 0-100 psi = 0100					

* Nonratiometric output available, please contact KPSI Customer Service

Warranty: The Series 700 family of products is warranted against defects in material and workmanship for 2 years 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.