

# UltraStable 10,000

High Accuracy Stainless Steel Pressure Transducer for demanding



**The UltraStable 10,000 series from Measurement Specialties Inc.** is the first choice for applications requiring high accuracy in a rugged environment. The .05% accuracy and typical total error band of 0.25% provide a stable platform for test stands and high accuracy industrial pressure applications. The high stability rating is provided through IC Sensors solid-state UltraStable technology. This MEMS based technology provides stability over a wide temperature range with excellent repeatability and minimal hysteresis.

US 10,000 incorporates a 316L stainless steel pressure fitting, isolation diaphragm and rugged IP 65 rated housing. Digital compensation provides complete signal conditioning with direct path analog output. Output options include a 3-wire analog voltage output and a 2-wire 4-20 mA transmitter output.

The design is a modernization of the popular PS10,000. The unique compensation technique

includes both linearity and thermal error correction.

Thus enabling the ability to shrink the overall size and still manufacture a transducer with great performance. The PS10,000 is used in hundreds of test stands for the aerospace and automotive industries. Many OEM customers that need precise measurements prefer the transducer due to its high accuracy and economical price. The US10,000 is the third model introduced in the "US" pressure line. First was the US600 introduced as a high performance OEM transducer followed by the low cost US300.

Standard outputs include 0 to 5V, 0 to 10V and 4 to 20mA current loop. Fittings include 1/4-18 NPT, 1/4 BSP (G1/4) and 7/16-20 SAE-4, all with male pressure ports.



## FEATURES

- ◆ .05% Accuracy, typical
- ◆ 0.25% Total Error Band from -25°C to 85° C, typical
- ◆ -25°C to 85° C Operating Temperature
- ◆ IP65, NEMA 4, 100% stainless steel isolation
- ◆ MEMS Piezoresistive silicon sensor, for minimal hysteresis
- ◆ Advanced digital compensation of both temperature and non-linearity
- ◆ CE compliant
- ◆ Great performance/price ratio
- ◆ Special fittings, connections and outputs are available

## APPLICATIONS

- ◆ Military/Aerospace Test stands
- ◆ Automotive Test stands
- ◆ Calibration equipment
- ◆ High Accuracy
- ◆ Stationary motor fuel control
- ◆ High end industrial machinery

## CE compliant per the following specifications:

IEC 61326 2002-02	IEC 61000-4-3 (2002)
IEC 55022	IEC 61000-4-4 (1995+A1:2001)
IEC 61000-4-2 (1995+A2:2001)	IEC 61000-4-8 (1995+A1:2001)001

## environmental performance

Specification	Units	Amplified			Notes
		Min.	Typ.	Max.	
Operating temperature	Deg. C	-25		85	1
Total Error Band (TEB) -25C to 85C	% Span	0.5	0.25	0.5	2,3,4
Environmental protection		IP 65 (Cable version)			
		All materials compatible			
Media compatibility		with 316 stainless steel			

Notes:

- 1) Consult factory for wider temperature ranges
- 2) With reference to 25°C

- 3) 100°C compensation available. Consult factory
- 4) TEB includes all accuracy errors, thermal errors, span and zero tolerances



## mechanical specifications

Specification	Value	Notes
Proof pressure	3x rated pressure	
Burst pressure	4x rated pressure or 15k psi	1
Vibration	±20G MIL-STD-810C, Procedure 514.2, Figure 514.2-2, Curve L	
Shock	100G 11ms	
Pressure cycles	1 million cycles 0 to full scale	

1) Which ever is less, 10X burst available on some pressure ranges. Consult factory

## ordering information

US1	Output	Connection	Specials	port type	Pressure range	Pressure unit
US1	X	X	00000	X	XXXX	X
Output	Connection	Specials	Port Type	Pressure range		Pressure units
6= 0 to 5V	1= cable 1 m	Specials are designated by a 5 digit number.	2=1/4 BSP 4=7/16-20 SAE-4 5=1/4-18 NPT	005P=0 to 5psi	001B = 0 to 1 Bar	A = absolute G = gauge
7= 0 to 10V	2= special cable length			015P=0 to 15psi	002B = 0 to 2 Bar	
8=4-20 mA	5 = PT1H-10-06 (Bendix style)			030P=0 to 30psi	005B = 0 to 5 Bar	
X=Special output		C = CE version T= test data	X= special port	050P=0 to 50psi	007B = 0 to 7 Bar	
				100P=0 to 100psi	010B = 0 to 10Bar	
				300P=0 to 300psi	020B = 0 to 20 Bar	
				500P=0 to 500psi	035B = 0 to 35 Bar	
				01KP=0 to 1Kpsi	070B = 0 to 70 Bar	
				03KP=0 to 3Kpsi	100B = 0 to 100 Bar	
				05KP=0 to 5K psi	200B = 0 to 200 Bar	
				10KP=0 to 10K psi	250B = 0 to 250 Bar	
					350B = 0 to 350 Bar	
					700B = 0 to 700 Bar	

**Example:**

US165-00005-100PG is an UltraStable 10000 with 0 to 5V out, BendixConnector, nothing special, 1/4 NPT pressure port and 100 psi gage.

US181-C00002-015PG is an UltraStable 10000 with 4-20 mA, 2-wire, output, 2 feet of cable, CE compliant, 1/4 BSP male pressure port and 15 psi gage.

## static performance specifications

	Units	Amplified 0 – 5 V, 0 – 10 V out			Amplified 4 to 20 mA			Notes
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Offset	% Span	-.25	.1	+.25	-.25	.1	+.25	2,3
Span	% Span	-.25	.1	+.25	.25	.1	+.25	2,3
Accuracy	% Span	-.1	.05	+.1	-.1	.05	+.1	2,4
Long Term	% Span/		.1			.1		
Stability	year							
Frequency response	kHz			1				6
Supply Voltage	V	8		30	8		30	1
Supply Current	mA	2.5	3	3.5				
Output Impedance	Ohms		<20			1 Meg ohm		2
Isolation	M Ohm	10			10			5

- Notes:
- 1) Supply voltage must be 3 volts greater than output voltage for amplified products
  - 2) Room temperature calibration (25C)
  - 3) For custom offset & span calibration consult factory.
  - 4) Combined BFSL linearity, hysteresis & repeatability
  - 5) @ 100VDC
  - 6) 1 KHz –3 db



## mechanical dimensions

