

MSP300

Pressure Transducer

SPECIFICATIONS

- **Analog Output or 14-Bit Digital Pressure with 11-Bit Temperature Output**
- **One Piece Stainless Steel Construction**
- **Low Cost**
- **17-4PH or 316L Stainless Steel**
- **Customizable**

The MSP300 pressure transducer from the Microfused line of TE is suitable for measurement of liquid or gas pressure, even for difficult media such as contaminated water, steam, and mildly corrosive fluids.

The transducer pressure cavity is machined from a solid piece of 17-4PH or 316L stainless steel. The standard version includes a 1/4 NPT pipe thread allowing a leak-proof, all metal sealed system. With excellent durability, there are no welds or organics exposed to the pressure media.

TE's proprietary Microfused technology, derived from demanding aerospace applications, employs micromachined silicon piezoresistive strain gages fused with high temperature glass to a stainless steel diaphragm. This approach achieves media compatibility simply and elegantly while providing an exceptionally stable sensor without the PN junctions of conventional micromachined sensors.

This product is geared towards industrial and commercial OEMs for small to high volume applications. Standard configurations are suitable for many applications. Please contact factory for your customization needs.

FEATURES

- One Piece Stainless Steel Construction
- Ranges up to 15kpsi
- Digital Pressure and Temperature Output or Analog mV/Amplified Output
- ±1 %Span Accuracy
- UL Certification (analog only)

APPLICATIONS

- Pumps and Compressors
- Hydraulic/Pneumatic Systems
- Automotive Test Systems
- Energy and Water Management
- Medical Gas Pressure
- Leak Detection
- Remote Measuring Systems
- General Pressure Measurements

STANDARD RANGES

Range (psi)	Range (Bar)	Gage/Compound
0 to 100	0 to 007	•
0 to 200	0 to 010	•
0 to 300	0 to 020	•
0 to 500	0 to 035	•
0 to 01k	0 to 070	•
0 to 03k	0 to 200	•
0 to 05k	0 to 350	•
0 to 10k	0 to 700	•
0 to 15k	0 to 01k	•

ALL INTERMEDIATE RANGES ARE STANDARD

PERFORMANCE SPECIFICATIONS (ANALOG)

Supply Voltage: 5.0V, Ambient Temperature: 25°C (unless otherwise specified)

PARAMETERS	MIN	TYP	MAX	UNITS	NOTES
Pressure Accuracy (RSS combined Non Linearity, Hysteresis & Repeatability)	-1		1	%Span	BFSL @ 25°C
Pressure Cycles	1.00E+6			0~F.S. Cycles	
Proof Pressure	2X			Rated	
Burst Pressure	5X		20000PSI	Rated	Whichever is less
Isolation, Body to Any Lead	50			MΩ	@ 250V_{DC}
Long Term Stability (1 year)	-0.25		0.25	%Span	
Zero Thermal Error	-2.0		2.0	%Span	Over comp. temp
Span Thermal Error	-2.0		2.0	%Span	Over comp. temp
Zero Offset (mV Output)	-3.0		3.0	%Span	@ 25°C
Zero Offset (V Output)	-2.0		2.0	%Span	@ 25°C
Span Tolerance	-2.0		2.0	%Span	@ 25°C
Compensated Temperature	0		55	°C	
Operating Temperature	-20		+85	°C	
Storage Temperature	-40		+85	°C	
Load Resistance (R_L, mV Output)	1			MΩ	
Load Resistance (R_L, V Output)	5			KΩ	
Response Time		1		ms	
Shock	50g, 11 msec Half Sine Shock per MIL-STD-202G, Method 213B, Condition A				
Vibration	±20g, MIL-STD-810C, Procedure 514.2-2, Curve L				
Wetted Material (except elastomer seal)	17-4PH or 316L Stainless Steel				

For custom configurations, consult factory.

PERFORMANCE SPECIFICATIONS (DIGITAL)

Supply Voltage: 3.3V, Ambient Temperature: 25°C (unless otherwise specified)

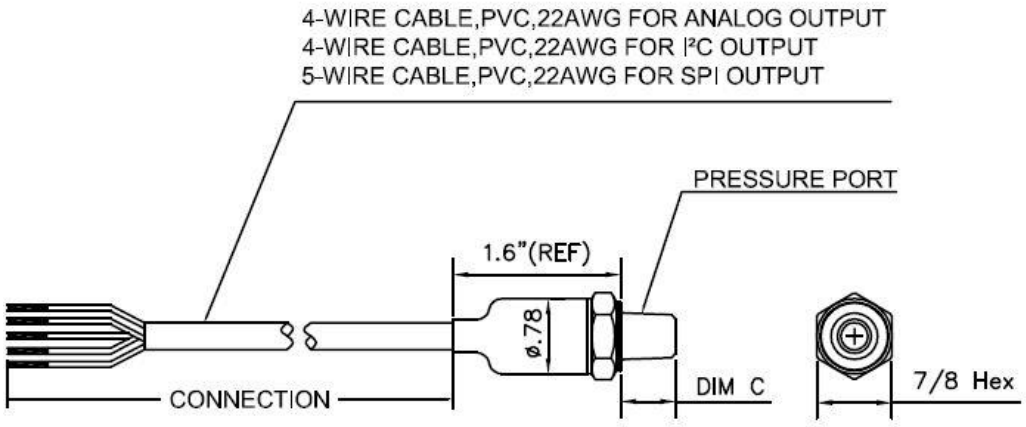
PARAMETERS	MIN	TYP	MAX	UNITS	NOTES
Supply Voltage	2.7		5.0	V_{DC}	
Output at Zero Pressure	720	1000	1280	Count	
Output at FS Pressure	14720	15000	15280	Count	
Current Consumption			3.5	mA	
Proof Pressure	2X			Rated	
Burst Pressure	5X		20000PSI	Rated	Whichever is less
Isolation, Body to Any Lead	50			MΩ	@ 250V_{DC}
Pressure Cycles	1.00E+6			0~F.S. Cycles	
Pressure Accuracy (RSS combined Non Linearity, Hysteresis & Repeatability)	-1		1	%Span	BFSL @ 25°C
Temperature Accuracy	-3		3	°C	1
Zero Thermal Error	-2.0		2.0	%Span	Over comp. temp
Span Thermal Error	-2.0		2.0	%Span	Over comp. temp
Long Term Stability (1 year)	-0.25		0.25	%Span	@ 25°C
Compensated Temperature	0		55	°C	
Compensated Temperature Output	512		1075	Count	
Response time			3	ms @ 4MHz	Non-sleep mode, 2
Response time			8.4	ms @ 4MHz	Sleep mode, 2
Operating Temperature	-20		+85	°C	
Storage Temperature	-40		+85	°C	
Shock	50g, 11 msec Half Sine Shock per MIL-STD-202G, Method 213B, Condition A				
Vibration	±20g, MIL-STD-810C, Procedure 514.2-2, Curve L				
Wetted Material (except elastomer seal)	17-4PH or 316L Stainless Steel				

For custom configurations, consult factory.

Notes

1. Reflect pressure port diaphragm temperature over the compensated temperature range.
2. Response time is from power on to reading measurement data.

DIMENSIONS



CODE	PORT	DIM C
2	1/4-19 BSPP	0.453[11.50]
4	7/16-20 UNF-A MALE SAE J514 STRAIGHT THREAD O-RING BUNA-N 70SH-904, ID8.92mm x W1.83mm	0.435[11.05]
5	1/4-18 NPT	0.596[15.14]
6	1/8-27 NPT	0.475[12.06]
E	1/4-19 BSPT	0.50[12.70]
F	1/4-19 BSPP FEMALE	0.70[17.78]
K	1/8-27 NPT FEMALE	0.70[17.78]
P	7/16-20 UNF-2A FEMALE SAE J514 STRAIGHT THREAD WITH INTEGRAL VALVE DEPRESSOR	0.689[17.50]
Q	M10 x 1.0 mm	0.42[10.67]
S	M12 x 1.5 mm	0.53[13.46]
U	G/14 DIN 3852 FORM E GASKET DIN3869-14 NBR	0.519[13.18]
W	M20 x 1.5 mm	0.702[17.83]

CODE	CONNECTION TYPE
1	CABLE 2 FT
2	CABLE 4 FT
3	CABLE 10 FT
M	CABLE 1 M
N	CABLE 2 M
P	CABLE 5 M (ANALOG ONLY)
R	CABLE 10 M (ANALOG ONLY)

NOTE: FOR PRESSURE PORT CODE 'W', TYPICAL HEX DIMENSION WILL BE 1.260[32.00]

OUTPUT (ANALOG)

Code	Output	Supply	Ratiometricity	Red	Black	Green	White
1	0 – 50mV	5V	Yes	+Supply	-Supply	+Output	-Output
2	0 – 100mV	5V	Yes	+Supply	-Supply	+Output	-Output
3	0.5 – 4.5V	5 ± 0.25V	Yes	+Supply	Common	Cut Off	+Output
4	1 – 5V	10 – 30V	No	+Supply	Common	Cut Off	+Output
5	4 – 20mA	9 – 30V	No	+Supply	-Supply	Cut Off	Cut Off

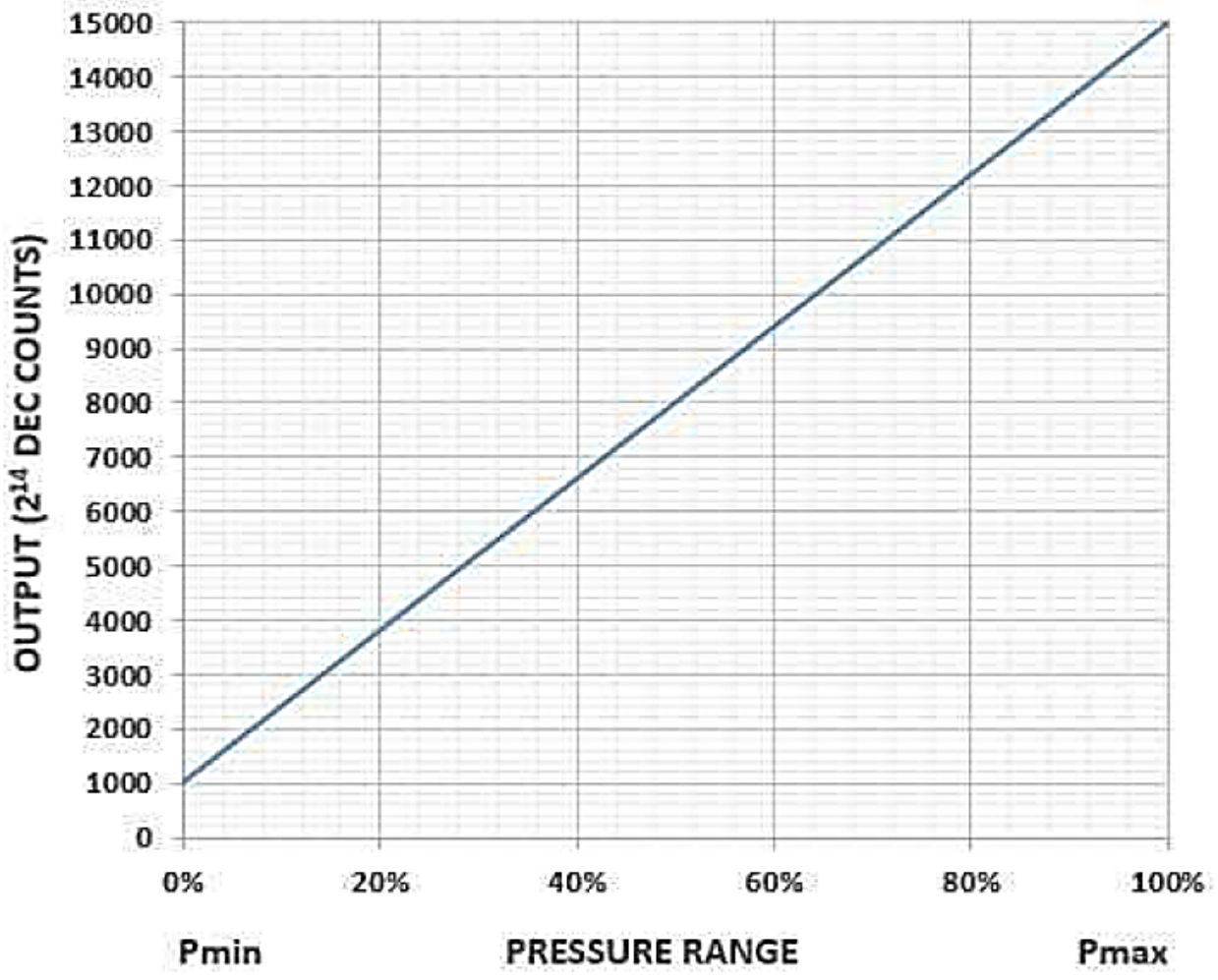
OUTPUT (DIGITAL)

Code	Output	Supply	Red	Black	Green	White	Yellow
J	I^2C	2.7 – 5.0V	+Supply	-Supply	SCL	SDA	--
S	SPI	2.7 – 5.0V	+Supply	-Supply	SCLK	MISO	SS

PRESSURE OUTPUT

SENSOR OUTPUT AT SIGNIFICANT PERCENTAGES

% OUTPUT	DIGITAL COUNTS (DECIMAL)	DIGITAL COUNTS (HEX)
0%	1000	0 × 3E8
5%	1700	0 × 6A4
10%	2400	0 × 960
50%	8000	0 × 1F40
90%	13600	0 × 3520
95%	14300	0 × 37DC
100%	15000	0 × 3A98

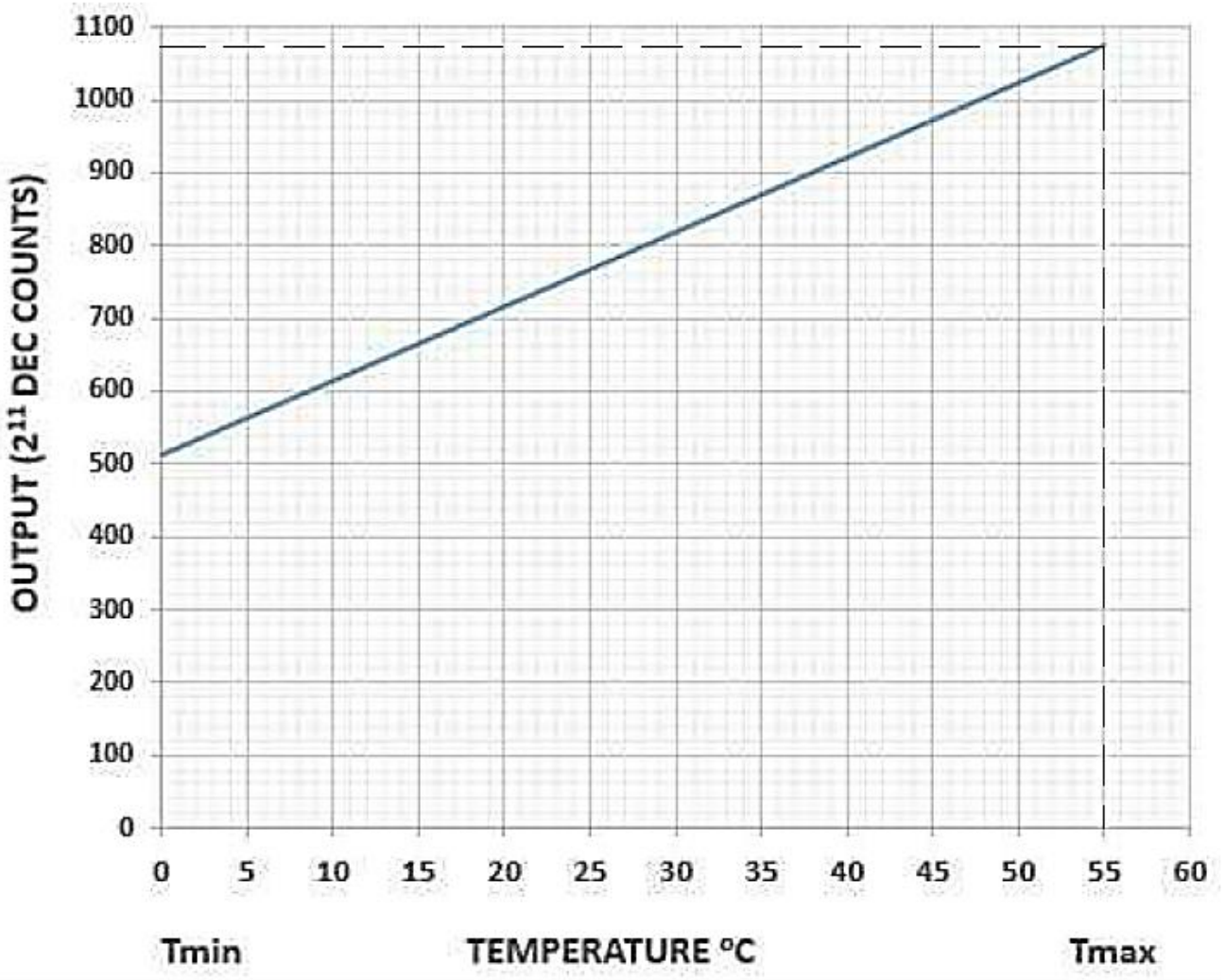


$$\text{OUTPUT (DECIMAL COUNTS)} = \frac{15000-1000}{Pmax - Pmin} \times (Papplied - Pmin) + 1000$$

TEMPERATURE OUTPUT

TEMPERATURE OUTPUT

OUTPUT °C	DIGITAL COUNTS (DECIMAL)	DIGITAL COUNTS (HEX)
0	512	0 × 200
10	614	0 × 266
25	767	0 × 2FF
40	921	0 × 399
55	1075	0 × 433



$$\text{OUTPUT (DECIMAL COUNTS)} = \frac{(\text{OUTPUT°C}+50°\text{C})\times 2048}{150℃ - (-50℃)}$$

ORDERING INFORMATION

M30 3 3 – 1 0 0 0 0 K – 350B G

Output		
Code	Output Signal	Supply Voltage
1	0-50mV	5V
2	0-100mV	5V
3	0.5-4.5V	5±0.25V
4	1-5V	10-30V
5	4-20mA	9-30V
J*	I^2C	2.7-5.0V
S*	SPI	2.7-5.0V

*Digital Options

Cable Length	
1	2 feet
2	4 feet
3	10 feet
M	1 meter
N	2 meter
P	5 meter (Analog only)
R	10 meter (Analog only)

Port Material	
0	17-4PH Stainless Steel
1	316L Stainless Steel

Cleaning	
0	No Selection
1	Oxygen Clean B40.1, Level IV

Sleep (Digital Only)	
0	Non-sleep Mode
1	Sleep Mode

Code Address for I^2C (Digital Only)	
0	0X28H
1	0x36H
2	0x46H
3	0x48H
4	0x51H

SPI Default Code '0'

Pressure Reference	
G	Gauge
C	Compound

Pressure Ranges	
Psi Std	Bar Std
100P	007B
200P	010B
300P	020B
500P	035B
01KP	070B
03KP	200B
05KP	350B
10KP	700B
15KP	01KB

All Intermediate Ranges are Standard

Pressure Port		
Code	**Port Type**	**Dim C**
2	1/4-19 BSPP	0.453[11.50]
4	7/16-20 UNF-2A Male SAE J514 Straight Thread O-Ring Boss O-Ring BUNA-N 70SH-904 ID8.92mm X W1.83mm	0.435[11.05]
5	1/4-18 NPT	0.596[15.14]
6	1/8-27 NPT	0.475[12.06]
E	1/4-19 BSPT	0.50[12.70]
F	1/4-19 BSPP Female	0.70[17.78]
K	1/8-27 NPT Female	0.70[17.78]
P	7/16-20 UNF-2A Female SAE J514 Straight Thread w/ Integral Valve Depressor	0.689[17.50]
Q	M10x1.0mm	0.420[10.67]
S	M12x1.5mm	0.53[13.90]
U	G1/4 DIN 3852 Form E Gasket DIN3869-14 NBR	0.547[13.90]
W	M20 x 1.5mm	0.702[17.83]

OLD ORDERING INFORMATION

MSP-300-100 – P – 5 – P – 1

Pressure Ranges	
Psi Std	Bar Std
100	007
200	010
300	020
500	035
01K	070
03K	200
05K	350
10K	700
15K	01K

All Intermediate Ranges are Standard

Cable Length	
1	2 feet
2	4 feet
3	10 feet
M	1 meter
N	2 meter
P	5 meter
R	10 meter

Pressure Unit	
P	Psi
B	Bar

Output		
Code	Output Signal	Supply Voltage
1	0-50mV	5V
2	0-100mV	5V
3	0.5-4.5V	5±0.25V
4	1-5V	10-30V
5	4-20mA	9-30V

Code	Port Type
B	1/4-19 BSPP
D	7/16-20 UNF-2A Male SAE J514 Straight Thread O-Ring Boss O-Ring BUNA-N 70SH-904 ID8.92mm X W1.83mm
N	1/4-18 NPT
A	1/8-27 NPT
E	1/4-19 BSPT
F	1/4-19 BSPP Female
H	1/8-27 NPT Female
P	7/16-20 UNF-2A Female SAE J514 Straight Thread w/ Integral Valve Depressor
Q	M10x1.0mm
S	M12x1.5mm
C	G1/4 DIN 3852 Form E Gasket DIN3869-14 NBR
W	M20 x 1.5mm

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