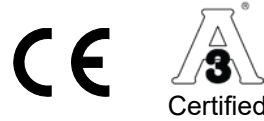


SANITARY PRESSURE TRANSMITTER & SWITCH



TSTDS



FEATURES / BENEFITS

- 3-A, Tri-Clamp® Sanitary Connection
- 0.5% Accuracy (3/4" Tri-Clamp® +/- 1.0%)
- Display and Electrical Connection are Independently Rotatable 335°/343°
- Zero & Span Adjustment
- Designed for "Clean-in-place" and "Sterilize-in-place" 316 Stainless Wetted Parts
- Media Temperature Up to 750°F
- Excellent Long-term Stability

SPECIFICATIONS

Output Signal 4-20mA, 3-wire (standard)
0-5V, 0-10V, 1-6V (3-wire)
Switchable from 4-20mA to 0-10 VDC

Measuring Principle Thin-film-on-steel

Pressure Ranges Vacuum, Compound, Pressure to 7,500psi

	Proof Pressure	Burst Pressure
0/30 - 0/300 psi	3 x range	10 x range
0/500 - 0/7,500 psi	2.5 x range	4 x range

Accuracy NLH at 77°F (BSL) ±0.5% of span (3/4" Tri-Clamp® +/- 1.0%)

Input 15-30 Vdc (4-20mA)
15-30 Vdc (0-5V, 1-6V)
15-30 Vdc (0-10V)

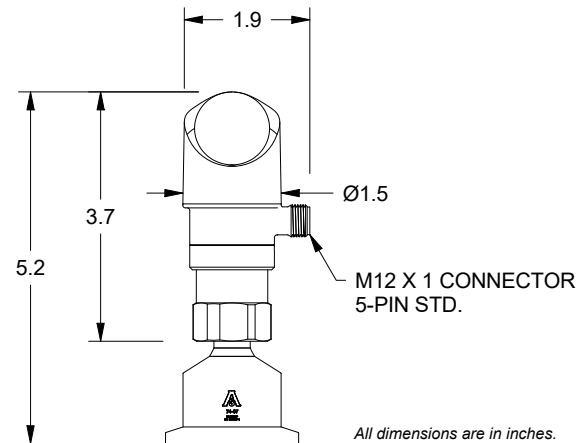
Temperature Temperature effect with 1.5" or 2" Tri-Clamp®: +/-0.1% of span/10°F (for zero and span) or +/-0.02 psi/10°F (greater of)
Note: 3/4" Tri-Clamp® not recommended for temperature variations. Effect is ≤ +/- 0.9 psi/10°F
Media: -13 to 185°F
Ambient: -13 to 185°F

Weight Approximately 6.7 oz

Environmental Rating IP67

Switching Output 2 Transistors PNP

Pressure Unit for Display PSI, Bar, MPa, kPa, mWC, mmWC, %, User Scale



Series TSTDS

Note: Dimensions are nominal and may vary. Check with REOTEMP sales if dimensions are critical. Other case styles available.

SANITARY PRESSURE TRANSMITTER & SWITCH

HOW TO ORDER: Choose options to build a part number. For example: TSTDSP181AM500P1TC15DWD-AG-PM

TSTDs	P18	1	A	M500	-P1
MODEL	RANGE	ACCURACY	OUTPUT SIGNAL	ELECTRICAL CONNECTION	PIN CONFIGURATION
TSTDs = Industrial Pressure Transmitter & Switch w/ Local Display	See <i>Transmitter Technical Reference on pg. 240</i>	1 = ±0.5% Accuracy (Must Be Selected For 1.5"/2"/2.5"/3" Tri-Clamp®) 8 = ±1% Accuracy (Must Be Selected For 3/4" Tri-Clamp®)	A = 4-20mA (2-Wire) (Standard) B = 0-5Vdc (3-Wire) D = 1-6Vdc (3-Wire) E = 0-10Vdc (3-Wire)	† M00 = M12 x 1 (4-Pin) (Non-Standard) † M500 = M12 x 1 (5-Pin) M503 = M12 x 1 (5-Pin) Female w/ 3ft (1 Meter) PVC Shielded Cable M510 = M12 x 1 (5-pin) Female w/ 10ft (3 Meter) PVC Shielded Cable M533 = M12 x 1 (5-pin) Female w/ 33ft (10 Meter) PVC Shielded Cable	-P1 = 5-Pin; 1: U+, 2: Analogue, 3: U-4 SP1, 5: SP2 (Standard) -P2 = 5-Pin; 1: U+, 2: SP2, 3: U-, 4: SP1, 5: Analogue -P3 = 4-Pin; 1: U+, 2: Analogue, 3: U-, 4: SP1 Note: ?? = Length in Feet (e.g. 05 = 5 Feet)

NOTE: Additional electrical connections upon request. Contact Factory.

† Mating connector sold separately.

TC	15	-DWD	-AG	-PM
CONNECTION TYPE	TRI-CLAMP® SIZE	MOUNTING	FILL FLUID	OPTIONS
TC = Tri-Clamp CI = I-Line	75 = 3/4" Tri-Clamp 15 = 1.5" Tri-Clamp 20 = 2" Tri-Clamp 25 = 2.5" Tri-Clamp 30 = 3" Tri-Clamp	-DWD = Direct Mount, Welded -RTR = 6" Cooling Tower -STW = 3" Cooling Standoff -W?? = PVC Coated SS Capillary, Welded Note: ?? = Length in Feet (e.g. 05 = 5 Feet)	-AG = Glycerin USP -BN = Neobee M20 -AS = Silicone DC200 -BS = Food-grade Silicone See pg.95 for Complete Fill Guide	-TS = Stainless Steel Tag (1-10 Characters) -PM = Positive Material Identification Certification -MC = M12x1 Female Connector, Field-Wireable -MCPUR05 = M12x1 Female w/ 5ft (1.5 Meter) PUR Shielded Cable -MCPUR?? = M12x1 Female w/ ?? Feet PUR Shielded Cable -PC = Protective Cap

Diaphragm Seal Suitability Guide

		Total Span* (in psi)									
		Tri-Clamp	2	3	5	10	15	30	60	100	150+
TSA	3/4"	X	X	X	S	S	S	T	T		
TSC	1.5"	S	S	S	T	T					
	2"	S	T	T							
	2.5"	T	T								
	3"	T									

*Total gauge span is additive of negative and positive pressures. Example: -15 - 0 - 30 psi = 45 psi span

- Assembly will function correctly with minimal accuracy degradation.
- T Assembly will function correctly given stable process temperature.
- S Assembly is highly sensitive to orientation and temperature variance. REOTEMP cannot guarantee a stated accuracy.
- X Assembly not offered.

Tri-Clamp® is a registered trademark of Alpha Laval Inc.

TRANSMITTERS

SANITARY PRESSURE TRANSMITTER & SWITCH

TRANSMITTER ONLY SPECIFICATIONS (NOT INCLUDING TRI-CLAMP®/I-LINE)

Parameters			
Name	Standard Setting	Value Range	Short Name
Switch point SP1 (hysteresis mode) Upper switch point FH1 (window mode)	75% Measuring Range	SP1 > RP1 FH1 > FL1 Hysteresis ≥ 1 % FS	SP1
Reset point RP1 (hysteresis mode) Lower switch point FL1 (window mode)	25 % Measuring Range	RP1 < SP1 FL1 < FH1 Hysteresis ≥ 1 % FS	RP1
Switch point SP2 (hysteresis mode) Upper switch point FH2 (window mode)	75 % Measuring range	SP2 > RP2 FH2 > FL2 Hysteresis ≥ 1 % FS	SP2
Reset point RP2 (hysteresis mode) Lower switch point FL2 (window mode)	25 % Measuring range	RP2 < SP2 FL2 < FH2 Hysteresis ≥ 1 % FS	RP2
Switch point delay time SP1 (hysteresis mode) Switch point delay time FH1 (window mode)	0	0 ... 99.99 s	dS1
Switch point delay time RP1 (hysteresis mode) Switch point delay time FL1 (window mode)	0	0 ... 99.99 s	dR1
Switch point delay time SP2 (hysteresis mode) Switch point delay time FH2 (window mode)	0	0 ... 99.99 s	dS2
Switch point delay time RP2 (hysteresis mode) Switch point delay time FL2 (window mode)	0	0 ... 99.99 s	dR2
Functions switching output 1	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc)	ou1
Functions switching output 2	Hysteresis, closer (Hno)	Hysteresis NO (Hno), Hysteresis NC (Hnc) Window NO (Fno), Window NC (Fnc)	ou2
Pressure units	psi	bar, psi, MPa, kPa, m WC	uni
Measuring range adjustment	100 % Nominal pressure	50 ... 100 % Nominal	P-EP
Damping (analogue output)	0.01 s	0.01 ... 3.00 s (time constant)	dAA
Display rotation	No	no, yes (180°)	disr
Display mode	Current pressure value	Pressure value: current, highest, lowest, display off Current value: decimal places selectable (max. 3)	dis
Display actualisation	2	1, 2, 5, 20 Hz	duPd

SANITARY PRESSURE TRANSMITTER & SWITCH

Electrical Data	Output / Supply voltage	4 ... 20 mA: 24 (15...30) VDC 0 ... 5 VDC: 24 (15...30) VDC 1 ... 6 VDC: 24 (15...30) VDC 0 ... 10 VDC: 24 (15...30) VDC
	Switch-on-delay	Typ. 200 ms
	Inverse-polarity protection, short-circuit strength @77°F during 5 min	Integrated
	Current consumption	≤ 30 mA
	Environmental Conditions	
	Media temp	-13°F to 185°F
	Ambient temp	-13°F to 185°F
	Protection ¹	IP67
	Humidity	Max. 95% relative
	Vibration	10g (10...2,000 Hz)
	Shock	50g / 3ms
EMC Protection	Emission	EN/IEC 61000-6-3
	Immunity	EN/IEC 61000-6-2
Mechanical Data	Sensor (wetted parts)	1.4542 (AISI630)
	Pressure connection (wetted parts)	1.4542 (AISI630)
	Sealing	FPM, NBR, EPDM
	Housing	Zinc based die-casting alloy, nickel plated display housing plastic
	Male electrical plug	See ordering information
	Weight	appr. 6.7oz
	Mounting Torque	15 to 20 Nm
	Housing Alignment	Display 335° rotatable, max. 2.5 Nm. Electrical connection 343° rotatable, max. 5 Nm

¹See Electrical Connection

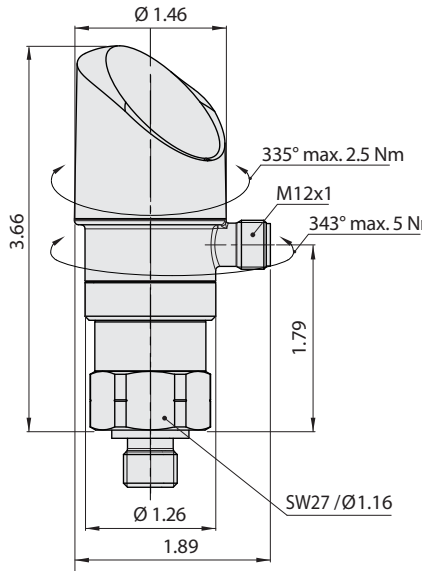
SANITARY PRESSURE TRANSMITTER & SWITCH

Analogue Output			
Output Signal	Switchable 4...20 mA or voltage		
Accuracy	TEB @ -13°F to 185°F	[% FS typ.]	± 1.75
	NLH @ 77°F (BSL)	[% FS typ.]	± 0.5
	TC zero point and span	[% FS /F typ.]	± 0.03
	Long Term Stability 1 year	[% FS typ.]	± 0.1
Current Limiting Output Signal	4 ... 20 mA: 25 mA (overload) 0 ... 10 VDC: < 40 mA (short-circuit)		
Damping (Rise Time)	0.01 ... 3.00 s / 10 ... 90 % Nominal pressure		
Zero Set; ¹⁾ Offset Correction of Analogue Output and Display Indication	± 0.2 % FS		
Measuring Range Zero Point Adjustment (P_nP)	0 ... 50 % FS		
Measuring Range End Point Adjustment (P_EP)	50 ... 100 % FS		
Zero Point Adjustment Analogue Output (o_nP)	Voltage output: 0 ... 2 VDC Current output: 3.9 ... o_EP - 8 mA		
End Point Adjustment Analogue Output (o_EP)	Voltage output: o_nP + 4 ... 10.5 VDC Current output: o_nP + 8 ... 20.1 mA		
Switching Output			
Accuracy	NLH @ 41°F	[% FS typ.]	± 0.5
	TEB @ -13°F to 185°F	[% FS typ.]	± 1.0
	Long term stability 1 Year	[% FS typ.]	≤ ± 0.3
Adjustment Range of Switchpoints	0 ... 100 % FS		
Switching Hysteresis	≥ 1 % FS Switchpoint > reset point		
Switching Resistance	≤ 3 Ω		
Output Function	Hysteresis, Window; normally closed (NC), normally open (NO)		
Switching Current	≤ 0.5 A each switching output		
Current Limiting	≤ 2 A each switching output		
Switching Frequency	max. 200 Hz		
Delay Time	0 ... 99.99 s		
Display			
Display	4-digit 7-segment display 180° flippable with disable function Standard decimal places: ≤ 9: 3 decimal places 10 ... 99: 2 decimal places 100 ... 999: 1 decimal place		
Switching Status Indication	2 LED, red		
Operation	With 3 buttons and menu navigation according to VDMA 24574-1		
Display Resolution	0.1 % FS		
Display Range	-3 ... 103 % FS		
Setting Parameters	See table parameters		
User Scale Unit;	Display zero point: -999 ... 9998		
User Defined Values for Display Indication Zero Point and End Point	Display end point: -998 ... 9999		

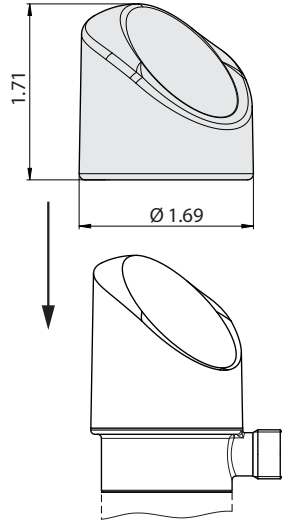
SANITARY PRESSURE TRANSMITTER & SWITCH

TSTDS Dimensions

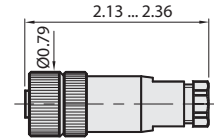
All dimensions are in inches.



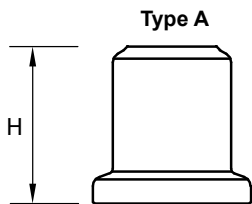
TDS



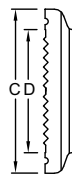
Protective cap



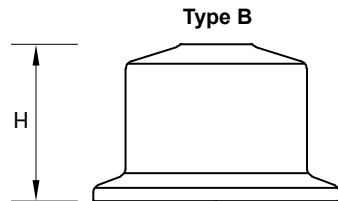
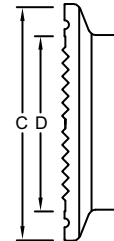
M12 Mating Connector



Type A



Tri-Clamp End Cap



Type B

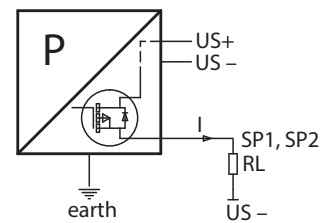
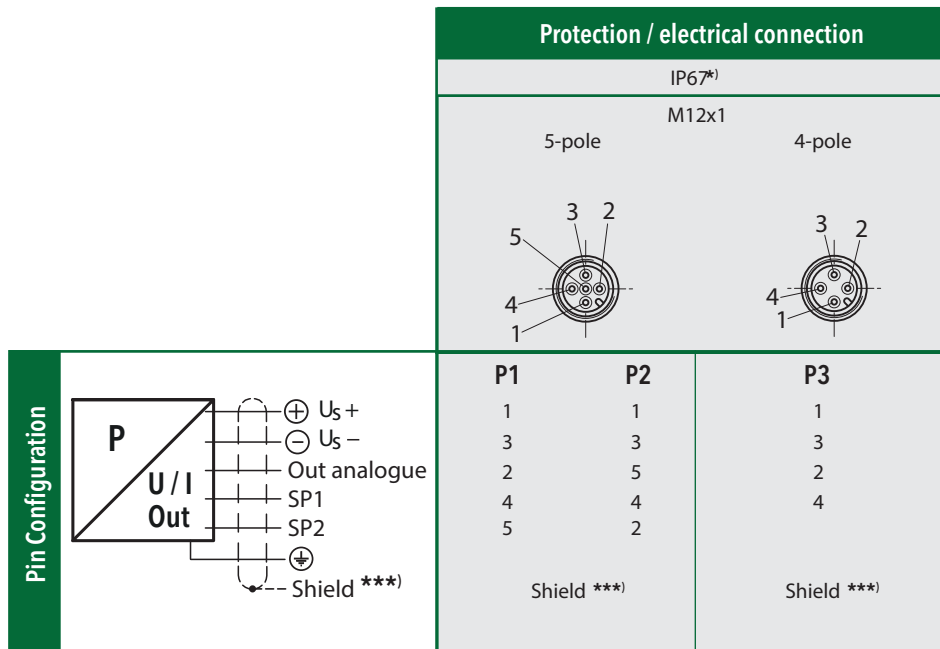
	Type A	Type B				
Process Connection	3/4"	1.5"	2"	2.5"	3"	4"
Outer Diameter (C)	1"	2"	2.5"	3.1"	3.6"	4.7"
Diaphragm (D)	0.65"	1.4"	1.9"	2.2"	2.5"	3.6"
Height (H)	1"	1.3"	1.3"	1.3"	1.3"	1.6"

*DSTC75 ONLY

Note: Height is subject to change based on the adapter required to fit instrument to seal.

SANITARY PRESSURE TRANSMITTER & SWITCH

Electrical connection

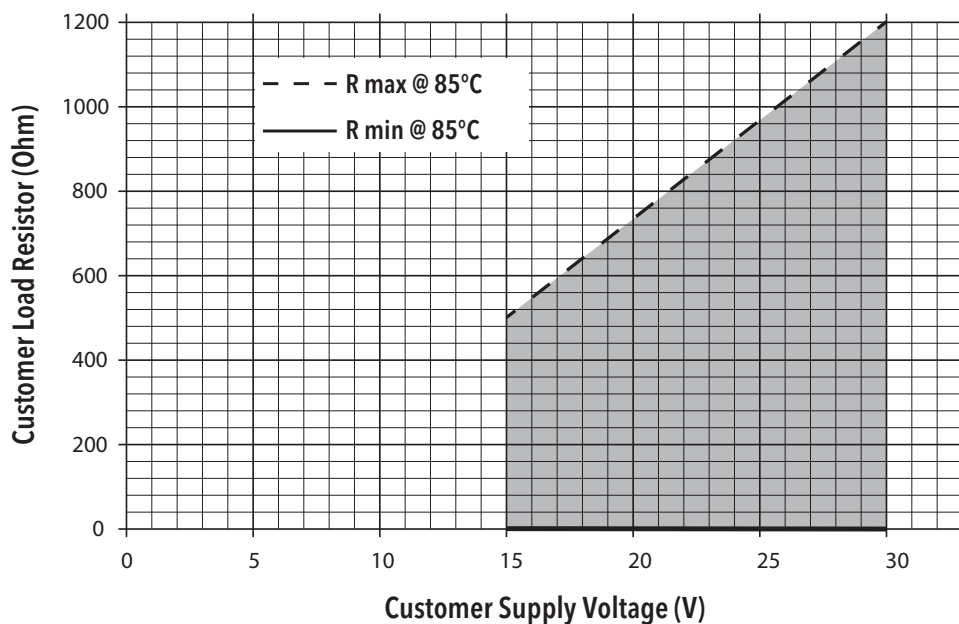


Connection of loads to switching output

*) Provided female connector is mounted according to instructions

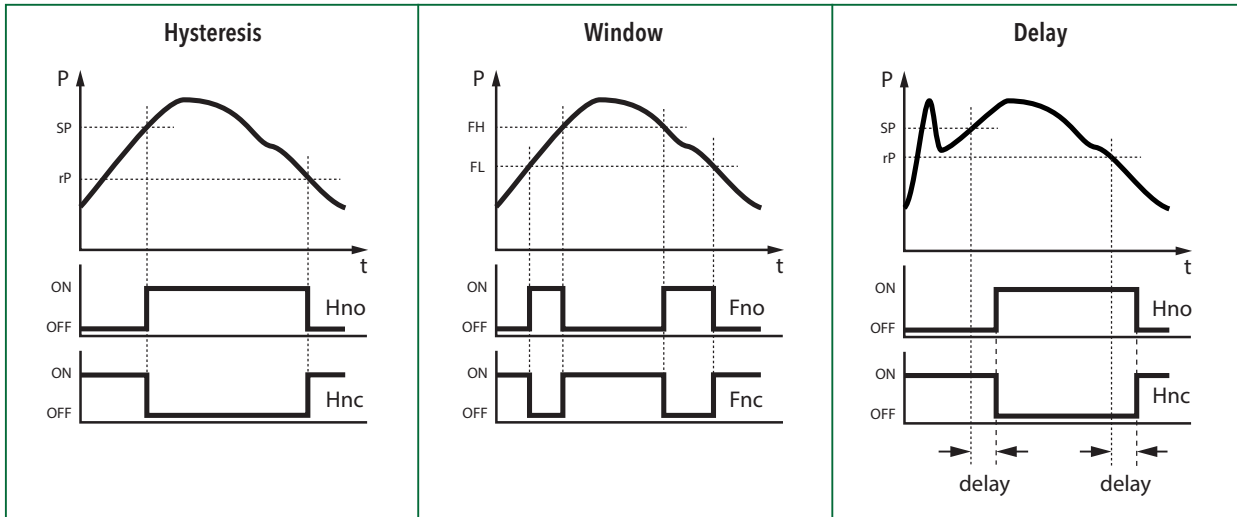
***) The use of a shielded cable is recommended

4...20mA: min./max resistor vs. supply voltage @ Pmax = 100%



SANITARY PRESSURE TRANSMITTER & SWITCH

Functions switching output



TRANSMITTER TECHNICAL REFERENCE

SERIES		T90	TA	TSTA	TSA/ TSB	TSC	TSTP/ TSTDS	TSTC	TG1	TP/ TDS	TC	TE	TH1	THX	TL1
Code		VACUUM													
P01	-30 inHg/0 psi	✓	✓	✓	✓	✓		✓				✓	✓	✓	
P01R	-14.5/0 psi							✓			✓				
Code		COMPOUND RANGES													
P02	-30 inHg/15psi	✓	✓	✓	✓	✓			✓				✓	✓	
P03	-30 inHg/30 psi	✓	✓	✓	✓	✓			✓			✓	✓		
P04	-30 inHg/60 psi	✓	✓	✓	✓	✓			✓						
P05	-30 inHg/100 psi	✓	✓	✓	✓	✓			✓			✓			
P06	-30 inHg/150 psi	✓	✓	✓	✓	✓			✓					✓	
P07	-30 inHg/200 psi	✓	✓	✓								✓			
P08	-30 inHg/300 psi	✓	✓	✓	✓	✓			✓						
P02R	-14.5/0/15 psi							✓			✓				
P03R	-14.5/0/30 psi						✓	✓		✓	✓				
P04R	-14.5/0/60 psi						✓	✓		✓	✓				
P05R	-14.5/0/100 psi						✓	✓		✓	✓				
P06R	-14.5/0/150 psi						✓	✓		✓	✓				
P07R	-14.5/0/200 psi						✓	✓		✓	✓				
P08R	-14.5/0/300 psi						✓	✓		✓	✓				
Code		PRESSURE RANGES													
IN50	0/50 inH ₂ O	✓	✓	✓				✓			✓		✓		✓
IN100	0/100 inH ₂ O	✓	✓	✓				✓	✓		✓		✓		✓
IN200	0/200 inH ₂ O	✓	✓	✓				✓			✓				✓
L11	0/55 INWC	✓	✓	✓		✓		✓			✓		✓		
L12	0/80 INWC	✓	✓	✓		✓		✓			✓		✓		
L13	0/140 INWC	✓	✓	✓		✓		✓	✓		✓		✓		
L14	0/280 INWC	✓	✓	✓	✓	✓		✓	✓		✓		✓		
P11	0/2 psi	✓	✓	✓		✓		✓			✓		✓	✓	✓
P12	0/3 psi	✓	✓	✓		✓							✓	✓	✓
P13	0/5 psi	✓	✓	✓	✓	✓		✓	✓		✓		✓	✓	✓
P14	0/10 psi	✓	✓	✓	✓	✓		✓	✓		✓		✓	✓	✓
P15	0/15 psi	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓
P16	0/30 psi	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
P175	0/50psi	✓	✓	✓			✓	✓		✓	✓				
P17	0/60 psi	✓	✓	✓	✓	✓			✓			✓	✓	✓	✓
P18	0/100 psi	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
P195	0/150 psi	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓
P20	0/200 psi	✓	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓
P21	0/300 psi	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓
P26	0/500 psi	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
P23	0/600 psi	✓	✓	✓	✓	✓			✓				✓		
P27	0/750 psi	✓	✓	✓	✓	✓			✓			✓	✓	✓	✓
P25	0/1000 psi	✓	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓
P30	0/1500 psi	✓	✓						✓	✓			✓		
P31	0/2000 psi	✓	✓						✓	✓			✓		
P32	0/3000 psi	✓	✓						✓	✓			✓		
P34	0/5000 psi	✓	✓						✓	✓			✓	✓	
P35	0/6000 psi	✓	✓						✓				✓		
P28	0/7500 psi	✓	✓						✓	✓			✓	✓	
P37	0/10000 psi	✓	✓						✓				✓	✓	
P38	0/15000 psi								✓				✓	✓	
P39	0/20000 psi												✓		
P40	0/30000 psi												✓		
P41	0/40000 psi												✓		
P42	0/50000 psi												✓		
P43	0/60000 psi												✓		
Code		ABSOLUTE RANGES													
P15A	0/15 psia		✓	✓	✓				✓		✓				
P16A	0/30 psia		✓	✓	✓				✓		✓				
P17A	0/60 psia		✓	✓	✓				✓		✓				
P18A	0/100 psia		✓	✓	✓				✓		✓				
P19A	0/150 psia		✓	✓	✓				✓		✓				
P20A	0/200 psia		✓	✓	✓				✓		✓				

TRANSMITTERS

Don't See the Range You Need?
Other ranges may be available, contact REOTEMP customer service for more information.

✓ Indicates that the option is available
Note: Specifications are subject to change.