

UNITED ELECTRIC

120 Series, Pressure, Vacuum, Diff. Pressure & Temp. Switches

Explosion Proof, Adjustable Ranges 30" Vac to 6000 PSI, -180 to 650°F

DESCRIPTION

As safety requirements become more stringent, the determining factor in specifying an industrial pressure, differential pressure and/or temperature switch rests upon that switch protecting equipment, processes and personnel. Meeting hazardous location requirements through adherence to UL, CSA, and ATEX standards, the 120 Series is the choice where potentially explosive or highly corrosive atmospheres exist.

The 120 Series offers a variety of pressure, differential pressure, vacuum and temperature ranges, as well as port connections, wetted materials and sensor types. With common, flexible "platforms", models can quickly be adapted at the factory for special requirements, such as ranges, process connections and electrical ratings. Typical industries using 120 Series switches include chemical, petrochemical, refinery, oil and gas pipelines & production and pharmaceuticals.



SPECIFICATIONS

GENERAL

Storage Temperature: -65° to 160°F (-54 to 71°C)

Ambient Temperature: -58 to 160°F (-50 to 71°C); ranges 36-39, 520-525, 540-548, 701-705: 0 to 160°F (-17 to 71°C); Models 820E, 822E: -40 to 160°F (-40 to 71°C) set point typically shifts less than 1% of range for a 50°F (28°C) ambient temperature change; less than 2% for types E121 & E122

Set Point Repeatability: Temperature models: Type B, C and F: ±1% of full scale range Type E: ±2% of full scale range
Pressure models: 126-164, S126B-S164B, 171-174, 270-274, 358-376, 520-535, 540-543, 560-564, 701-705: ±1% of adjustable range; models 450-559: ±1/2% of adjustable range; models 36-39, 183-194, 483-494, 544-548, 565-567, 612-680: ±1 1/2% of adjustable range

Shock: Set point repeats after 15 G, 10 millisecond duration

Vibration: Set point repeats after 2.5 G, 5-500 Hz

Enclosure: Die cast aluminum (max. 0.4% copper), epoxy powder coated; gasketed; coverlock; internal set point lock standard on types J, C, F; gasketed aluminum tamper-resistant dial cover on types B, H, E; aluminum name plate

Enclosure Class: Certified to enclosure type 4X. Class I, Division 1 product meets enclosure type 7; Class II, Division 1 product meets enclosure type 9. Certified to IP66 requirements

Switch Output: One or two SPDT; dual switch may be separated up to 100% of range; except type 822E where switch #2 can be set up to 25% of range span below switch #1 setpoint; switches may be wired "normally open" or "normally closed".

Electrical Rating: 15A 125/250/480 VAC resistive (standard), 2A @ 30 VDC, 1A @ 48 VDC, 0.5A @ 125 VDC; except types J120-15622, 15834-15839, H121-15875: 20A 125/250/480 VAC resistive, 6A @ 30 VDC, 0.5A @ 125 VDC, 0.25A @ 250 VDC; except types B121-13272, B122-13322, E121-13273, E122-13321: 22A 480 VAC resistive, 2A @ 30 VDC, 1A @ 48 VDC, 0.4A @ 125 VDC.

NOTE: DC Ratings are based on experience - Consult factory for further information. VDC ratings are not listed on nameplates

Weight: 3-7.5 lbs; Varies with type & model

Reference Scales: Types B, E & H: external dial. Scale divisions vary with range.

Electrical Connection: Type H, B, E; one 3/4" NPT E/C; type J, C, F, 820E, 822E; two 3/4" NPT E/C; terminal block standard

Pressure Connection: Models S126B-S164B, 171-194, 483-494, 520-535: 1/2" NPT (female); models 565-567: 1-1/2" flush mount connection; models 540-548: 1/8" NPT (female); all others: 1/4" NPT (female)

Temperature Assembly: Bulb and capillary: 6 feet 304 stainless steel (standard) except for E121-13273 and E122-13321: 10 feet; Immersion stem: nickel-plated brass (standard) except for B121-13272 and B122-13322: stainless steel.

FEATURES

- Approvals include cULus, ATEX & SAA; compliance with CE and NACE standards
- Internal adjustment or external adjustment via calibrated dials with tamper resistant cover
- Single or Dual Output
- Optional Hastelloy®, Monel® and Tantalum sensor material for corrosive media
- Indicating Differential Pressure Module

Temperature Deadband: Models F120, 820E, 822E: typically 1%; B-, C-, and E- 121 and 122: typically 2% of range under laboratory conditions (70°F [21°C] ambient circulating bath at rate of 1/2°F per minute change)

Pressure Deadband: See model charts

Differential Pressure Indication: Differential pressure indication available models H1211 and H122K with option M210; accuracy approximately 1% mid 50% of range, 3% at ends; window is plexiglass and gasketed; indicator may be field adjusted for approximately ±1% accuracy at any set point within range

Temperature Indication: Temperature indication available models 820E and 822E. Indication accuracy is ±1% of adjustable range

Approvals:

United States & Canada
Class I, Division 1 and 2, Groups B, C & D
Class II, Division 1 and 2, Groups E, F & G
Class III
Class I, Zone 1, Group IIB + H2 T6
Enclosure Type 4X
UL Listed, cUL Certified
Pressure: UL 50 & 1203; CSA C22.2 No. 25 & 30 - File # E40857
Temperature: UL 50 & 1203; CSA C22.2 No. 25 & 30 - File # E43374

Europe
ATEX Directive (94/9/EC)
II 2 G Ex d IIC T6 Gb
II 2 D Ex tb IIIC T85°C Db IP66
Tamb = -40°C to +75°C
UL International DEMKO A/S (N.B.# 0539)
Certificate # DEMKO 09 ATEX 0815573X Rev. 2
EN 60079-0, 60079-1, 60079-31
II 1 G Ex ia IIC T6 Ga (OPTIONAL - code M405)
(not available types 820E, 822E)
Tamb = -50°C to +60°C
UL International DEMKO A/S (N.B.# 0539)
Certificate # DEMKO 11 ATEX 1105261 Rev. 0
EN 60079-0, 60079-11, 60079-26

Pressure Equipment Directive (PED) (97/23/EC) : Compliant to PED. Product rated lower than 7.5 psi are outside the scope of the PED.

Low Voltage Directive (LVD) (2006/95/EC): UEC compliant to LVD. Products rated lower than 50 VAC and 75 VDC are outside of the scope of the LVD. The Low Voltage Directive does not apply to products for use in hazardous locations.

Pressure Type J120, Single Switch With Internal Adjustment, Dual Conduits

Model	Adjustable Set Point Range		Deadband		*Over Range Pressure		**Proof Pressure			
	inches w.c.	mbar	inches w.c.	mbar	psi	bar	psi	bar		
Buna N diaphragm and O-Ring with epoxy coated aluminum, 1/2" NPT (female) press. conn., 0.72" orifice for clean-out purposes (other wetted materials available)										
520	300 Vac to 0	-746.7 to 0	0.2 to 8	0.5 to 19.9	100	6.9	100	6.9		
521	10 Vac to 10	-24.9 to 24.9	0.1 to 0.6	0.2 to 1.5	100	6.9	100	6.9		
522	50 Vac to 50	-124.5 to 124.5	0.1 to 3	0.2 to 7.5	100	6.9	100	6.9		
523	0.5 to 5.0	1.2 to 12.4	0.1 to 0.3	0.2 to 0.70	100	6.9	100	6.9		
524	2.5 to 50	6.2 to 124.5	0.1 to 0.8	0.2 to 2.0	100	6.9	100	6.9		
525	10 to 250	24.9 to 622.3	0.1 to 6	0.2 to 14.9	100	6.9	100	6.9		
Welded 316L stainless steel diaphragm with 1/2" NPT (female) 316L pressure connection										
530	300 Vac to 0	-746.7 to 0	0.2 to 15	0.5 to 37.3	50	3.4	100	6.9		
531	10 Vac to 10	-24.9 to 24.9	0.1 to 0.6	0.2 to 1.5	50	3.4	100	6.9		
532	50 Vac to 50	-124.5 to 124.5	0.1 to 3	0.2 to 7.5	50	3.4	100	6.9		
533	0.5 to 5.0	1.2 to 12.4	0.1 to 0.3	0.2 to 0.70	50	3.4	100	6.9		
534	2.5 to 50	6.2 to 124.5	0.1 to 0.8	0.2 to 2.0	50	3.4	100	6.9		
535	10 to 250	24.9 to 622.3	0.1 to 10	0.2 to 24.9	50	3.4	100	6.9		
	psi	bar	psi	bar	psi	bar	psi	bar		
Welded stainless steel diaphragm with 1/2" NPT (female) pressure connection, large 0.72" orifice for clean-out purposes (NACE MR-0175 compliant)										
171	1 to 20	0.07 to 1.4	0.1 to 1.0	0.01 to 0.1	500	34.5	1000	68.9		
172	2 to 50	0.14 to 3.4	0.1 to 1.5	0.01 to 0.1	500	34.5	1000	68.9		
173	4 to 100	0.3 to 6.9	0.1 to 2.5	0.01 to 0.2	500	34.5	1000	68.9		
174	8 to 200	0.6 to 13.8	0.1 to 3.5	0.01 to 0.2	500	34.5	1000	68.9		
2" sanitary welded 316L stainless steel diaphragm and pressure connection. Mates with Tri-Clamp® fitting systems										
560	0.5 to 15	0.03 to 1.0	0.1 to 1	0.01 to 0.1	200	13.8	300	20.7		
561	1 to 25	0.07 to 1.7	0.1 to 1.5	0.01 to 0.1	200	13.8	300	20.7		
562	2 to 50	0.14 to 3.4	0.1 to 2.5	0.01 to 0.2	200	13.8	300	20.7		
563	4 to 100	0.03 to 6.9	0.1 to 4	0.01 to 0.3	200	13.8	300	20.7		
564	8 to 200	0.6 to 13.8	0.1 to 5	0.01 to 0.3	200	13.8	300	20.7		
1.5" sanitary welded 316L stainless steel diaphragm and pressure connection. Mates with Tri-Clamp fitting systems										
565	5 to 30	0.3 to 2.1	1 to 5	0.1 to 0.3	1000	68.9	1500	103.4		
566	10 to 100	0.7 to 6.9	1 to 12	0.1 to 0.8	1000	68.9	1500	103.4		
567	15 to 300	1.0 to 20.7	3 to 22	0.2 to 1.5	1000	68.9	1500	103.4		
316L stainless steel diaphragm (optional Hastelloy® C 276 or Monel® 400); Viton® GLT O-Ring (optional Kalrez®, Ethylene Propylene or Aflas®); 316 stainless steel 1/2" NPT (female) pressure connection (optional Hastelloy® C 276 or Monel® 400), 0.72" orifice for clean-out purposes. Models 188 and 189 have a 316L stainless steel 1/2" NPT (female) pressure connection (NACE MR-0175 compliant)										
183	1 to 20	0.07 to 1.4	0.3 to 2.5	0.021 to 0.2	500	34.5	1000	68.9		
184	2 to 50	0.14 to 3.4	0.3 to 3	0.021 to 0.2	500	34.5	1000	68.9		
185	4 to 100	0.3 to 6.9	0.5 to 6	0.03 to 0.4	500	34.5	1000	68.9		
186	8 to 200	0.6 to 13.8	1 to 11	0.07 to 0.8	500	34.5	1000	68.9		
188	50 to 1000	3.45 to 68.9	25 to 125	1.7 to 8.6	2000	137.9	7000	482.6		
189	250 to 3500	17.3 to 241.3	50 to 300	3.4 to 20.7	4000	275.8	7000	482.6		
316L stainless steel diaphragm (optional Hastelloy® C 276 or Monel® 400); Viton®GLT O-Ring (optional Kalrez®, Ethylene Propylene or Aflas®); 316 stainless steel 1/2" NPT (female) pressure connection (optional Hastelloy® C 276 or Monel® 400), 0.06" orifice to dampen pulsations. Models 488 and 489 have a 316L stainless steel 1/2" NPT (female) pressure connection (NACE MR-0175 compliant)										
483	1 to 20	0.07 to 1.4	0.3 to 2.5	0.021 to 0.2	500	34.5	1000	68.9		
484	2 to 50	0.14 to 3.4	0.3 to 3	0.021 to 0.2	500	34.5	1000	68.9		
485	4 to 100	0.3 to 6.9	0.5 to 6	0.03 to 0.4	500	34.5	1000	68.9		
486	8 to 200	0.6 to 13.8	1 to 11	0.07 to 0.8	500	34.5	1000	68.9		
488	50 to 1000	3.4 to 68.9	25 to 125	1.7 to 8.6	2000	137.9	7000	482.6		
489	250 to 3500	17.2 to 241.3	50 to 300	3.4 to 20.7	4000	275.8	7000	482.6		
Welded 316L stainless steel bellows with 1/2" NPT (female) pressure connection										
S126B	30" to 3" Hg Vac	-1 to 0	0.2 to 0.6" Hg	0.01 to 0.02	80"wc	0.2	5	0.3		
S134B	30" Hg Vac to 20	-1 to 1.4	0.2 to 0.6" Hg	0.01 to 0.02	20	1.4	25	1.7		
S137B	15 to 80"wc	0.04 to 0.2	2 to 6"wc	0.01 to 0.02	80"wc	0.2	5	0.3		
S144B	0.5 to 20	0.04 to 1.4	0.1 to 0.3	0.01 to 0.02	20	1.4	25	1.7		
S152B	1 to 50	0.07 to 3.4	0.1 to 0.5	0.01 to 0.03	50	3.4	75	5.2		
S156B	2 to 100	0.14 to 6.9	0.2 to 0.6	0.01 to 0.04	100	6.9	125	8.6		
S164B	4 to 200	0.28 to 13.8	0.2 to 1	0.01 to 0.01	200	13.8	200	13.8		
Model	Adjustable Set Point Range		Deadband				*Over Range Pressure		**Proof Pressure	
	psi	bar	Lower 75% range		Top 25% Range		psi	bar	psi	bar
Welded stainless steel diaphragm with 1/2" NPT (female) pressure conn., large 0.072" orifice for clean-out purposes (NACE MR-0175 compliant, except model 194)										
190	5 to 30	0.3 to 2.1	1 to 3	0.07 to 0.2	6 max	0.4	1500	103.4	2500	172.4
191	10 to 100	0.7 to 6.9	1 to 8	0.07 to 0.6	15 max	1.0	1500	103.4	2500	172.4
192	15 to 300	1 to 20.7	3 to 18	0.2 to 1.2	25 max	1.7	1500	103.4	2500	172.4
193	20 to 500	1.4 to 34.5	4 to 30	0.3 to 2.1	45 max	3.1	1500	103.4	2500	172.4
194	80 to 1700	5.5 to 117.2	5 to 120	0.3 to 8.3	150 max	10.3	2000	138.9	2500	172.4
Welded 316 stainless steel diaphragm with 1/2" NPT (female) pressure connection, 0.06" orifice to dampen pulsations (NACE MR-0175 compliant, except model 194)										
490	5 to 30	0.3 to 2.1	1 to 3	0.07 to 0.2	6 max	0.4	1500	103.4	2500	172.4
491	10 to 100	0.7 to 6.9	1 to 8	0.07 to 0.6	15 max	1.0	1500	103.4	2500	172.4
492	15 to 300	1 to 20.7	3 to 18	0.2 to 1.2	25 max	1.7	1500	103.4	2500	172.4
493	20 to 500	1.4 to 34.5	4 to 30	0.3 to 2.1	45 max	3.1	1500	103.4	2500	172.4
494	80 to 1700	5.5 to 117.2	5 to 120	0.3 to 8.3	150 max	10.3	2000	138.9	2500	172.4

***Over Range Pressure:** The maximum pressure that may be applied continuously without causing damage and maintaining set point repeatability
**** Proof Pressure:** The maximum pressure to which a pressure sensor may be occasionally subjected, which causes no permanent damage. Unit may require calibration.

Pressure Type J120, Single Switch With Internal Adjustment, Dual Conduits (cont'd)

Model	Adjustable Set Point Range High end of range on rise, low end on fall		Deadband		*Over Range Pressure		**Proof Pressure	
	psi (unless noted)	bar	psi (unless noted)	bar	psi	bar	psi	bar
Brass bellows with 1/4" NPT (female) nickel-plated brass pressure connection; Models 126 & 134 have zinc-plated steel spring exposed to media								
126	30 to 3" Hg Vac	-1 to 0.1	0.2" to 0.6" Hg	0.01 to 0.02	80"wc	0.2	5	0.3
134	30" Hg Vac to 20 psi	-1 to 1.4	0.2" to 6" Hg	0.01 to 0.02	20	1.4	25	1.7
137	15 to 80"wc	0.04 to 0.19	2 to 6"wc	0.01 to 0.02	80"wc	0.2	5	0.3
144	0.5 to 20	0.04 to 1.4	0.1 to 0.3	0.01 to 0.02	20	1.4	25	1.7
152	1 to 50	0.07 to 3.4	0.1 to 0.5	0.01 to 0.03	50	3.4	75	5.2
156	2 to 100	0.14 to 6.9	0.2 to 0.6	0.01 to 0.04	100	6.9	125	8.6
164	4 to 200	0.3 to 13.8	0.2 to 1	0.01 to 0.01	200	13.8	200	13.8
Phospher bronze bellows with 1/4" NPT (female) nickel-plated brass pressure connection								
270	4 to 200	0.3 to 13.8	1 to 4	0.07 to 0.3	200	13.8	250	17.2
274	6 to 300	0.4 to 20.7	1 to 5	0.07 to 0.3	300	20.7	350	24.1
Welded 316L stainless steel bellows and 1/4" NPT (female) pressure connection								
356	15 to 100	1.0 to 6.9	0.7 to 1.8	0.05 to 0.1	100	6.9	800	55.2
358	15 to 200	1.0 to 13.8	1 to 3	0.07 to 0.2	200	13.8	800	55.2
361	20 to 300	1.4 to 20.7	1 to 4	0.07 to 0.3	300	20.7	800	55.2
376	25 to 500	1.7 to 34.5	1.5 to 5	0.1 to 0.3	500	34.5	800	55.2
303 stainless steel piston and Buna-N O-Ring with 1/4" (female) pressure connection (not recommended for gas service since drying of the O-Ring seal can allow bleeding of medium into the atmosphere)								
612	125 to 3,000	8.6 to 206.8	40 to 250	2.8 to 17.2	6,000	413.7	10,000	689.5
616	700 to 5000	48.3 to 344.7	40 to 375	2.8 to 25.9	6,000	413.7	10,000	689.5
316 stainless steel bellows and 1/4" NPT (female) pressure connection (not recommended for rapid or high cycling pressure changes)								
680	100 to 1700	6.9 to 117.2	9 to 40	0.6 to 2.8	1700	117.2	2500	172.4
Buna-N diaphragm and O-Ring with 1/4" NPT (female) nickel-plated brass pressure connection; Optional Viton® diaphragm & O-Ring available for code 704-705								
701	1.5 to 30	0.1 to 2.1	1 to 2	0.07 to 0.14	500	34.5	1000	68.9
702	3 to 100	0.2 to 6.9	1 to 4	0.07 to 0.3	500	34.5	1000	68.9
703	9 to 300	0.6 to 20.7	1 to 5	0.07 to 0.3	500	34.5	1000	68.9
704	15 to 500	1.0 to 34.5	2 to 8	0.14 to 0.6	1500	103.4	2500	172.4
705	30 to 1000	2.1 to 68.9	3 to 20	0.21 to 1.4	1500	103.4	2500	172.4
Buna-N diaphragm and O-Ring with 1/4" NPT (female) stainless steel pressure connection and cap								
450	30" to 3" Hg Vac	-1.0 to -0.1	0.1 to 0.3" Hg	0.003 to 0.1	80"wc	0.2	225	15.5
452	30" Hg Vac to 20 psi	-1 to 1.4	0.1 to 0.4" Hg	0.003 to 0.01	20	1.4	225	15.5
Buna-N diaphragm and O-Ring with 1/4" NPT (female) aluminum pressure connection and cap								
451	2 to 80	5 to 199.1	0.8 to 2" wc	2 to 5 mbar	80"wc	199.1 mbar	225	15.5
453	0.5 to 20	0.03 to 1.4	0.05 to 0.1	0.003 to 0.01	20	1.4	225	15.5
454	0.8 to 30	0.06 to 2.1	0.05 to 0.2	0.003 to 0.014	30	2.1	225	15.5
Teflon® diaphragm and O-Ring with 1/4" NPT (female) 316L stainless steel pressure connection and cap								
550	30" to 3" Hg Vac	-1 to 0.1	0.1 to 0.4" Hg	0.003 to 0.01	80"wc	0.2	225	15.5
551	2 to 80"wc	0.005 to 0.2	1 to 4"wc	0.003 to 0.01	80"wc	0.2	225	15.5
552	30" Hg Vac to 20 psi	-1 to 1.4	0.2 to 0.5" Hg	0.007 to 0.02	20	1.4	225	15.5
553	0.5 to 20	0.03 to 1.4	0.1 to 0.2	0.007 to 0.014	20	1.4	225	15.5
554	0.8 to 30	0.06 to 2.1	0.1 to 0.3	0.007 to 0.02	30	2.1	225	15.5
555	2 to 100	0.14 to 6.9	0.2 to 0.4	0.014 to 0.03	100	6.9	225	15.5

Pressure Type J120, Single Switch With Internal Adjustment, Dual Conduits With Adjustable Deadband Micro-switch

Model	Adjustable Set Point Range High end of range on rise, low end on fall		Adjustable Deadband		*Over Range Pressure		**Proof Pressure	
	psi	bar	psi	bar	psi	bar	psi	bar
Viton® diaphragm and O-ring with 1/4" NPT (female) 316 stainless steel pressure connection								
15622	20 to 200	1.4 to 13.8	12 to 16	0.8 to 1.8	500	34.5	1000	68.9

Model	Adjustable Set Point Range High end of range on rise, low end on fall		Adjustable Deadband						*Over Range Pressure		**Proof Pressure	
			Low End		Mid Range		High End					
	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
Buna N diaphragm and O-Ring with nickel-plated brass 1/4" NPT (female) pressure connection												
15834	3 to 30	0.1 to 2.1	1.5 to 4	0.1 to 0.3	2 to 4.5	0.1 to 0.3	2.5 to 5	0.2 to 0.3	500	34.5	1000	68.9
15835	5 to 100	0.3 to 6.9	3 to 6	0.2 to 0.4	4 to 7.5	0.3 to 0.5	5 to 9	0.3 to 0.6	500	34.5	1000	68.9
15836	9 to 300	0.6 to 20.7	4 to 11	0.3 to 0.8	5 to 13	0.3 to 0.9	5 to 16	0.3 to 1.1	500	34.5	1000	68.9
15837	15 to 500	1 to 34.5	8 to 25	0.6 to 1.7	9 to 28	0.6 to 1.9	10 to 31	0.7 to 2.1	1500	103.4	2500	172.4
15838	30 to 1000	2.1 to 68.9	9 to 30	0.6 to 2.1	10 to 35	0.7 to 2.4	30 to 90	2.1 to 6.2	1500	103.4	2500	172.4
15839	100 to 1700	6.9 to 117.2	25 to 60	1.7 to 4.1	40 to 80	2.8 to 5.5	50 to 100	3.4 to 6.9	2000	137.5	2500	172.4

*Over Range Pressure: The maximum pressure that may be applied continuously without causing damage and maintaining set point repeatability

** Proof Pressure: The maximum pressure to which a pressure sensor may be occasionally subjected, which causes no permanent damage. Unit may require calibration.

Type H121, Single Switch With External Adjustment Via Reference Dial, Single conduit with Adjustable Deadband Micro-switch

Model	Adjustable Set Point Range High end of range on rise, low end on fall		Adjustable Deadband						*Proof Pressure	
			Low End		Mid Range		High End			
	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
303 stainless steel piston with Buna N O-Ring and 303 stainless steel 1/4" NPT (female) pressure connection, includes adjustable deadband micro-switch (not recommended for gas service since drying of the O-Ring seal can allow bleeding of medium into the atmosphere)										
15875	500-6000	34.5 to 413.7	150 to 400	10.3 to 27.6	250 to 500	17.2 to 34.5	450 to 700	31 to 51.7	10,000	689.5

**Type H121, Single Switch With External Adjustment Via Reference Dial, Single Conduit
Type H122, Dual Switch With External Adjustment Via Reference Dial, Single Conduit**

Model	Adjustable Set Point Range		Deadband		*Proof Pressure		Dial Divisions
	psi	bar	psi	bar	psi	bar	psi
Welded 316L stainless steel bellows with 1/2" NPT (female) pressure connection							
S126B	30" Hg Vac to 0	-1 to 0	0.2 to 0.9" Hg	7 to 30.5 mbar	5	0.3	0.5" Hg
S134B	30" Hg Vac to 20	-1 to 1.4	0.2 to 1.2" Hg	7 to 40.6 mbar	25	1.7	1" Hg & 0.5 psi
S137BType (H122 N/A)	2 to 80"wc	0.005 to 0.2	2 to 10"wc	5 to 20 mbar	5	0.3	2"wc
S144B	0 to 20	0 to 1.4	0.1 to 0.5	7 to 34.5 mbar	25	1.7	0.5
S146B	0 to 30	0 to 2.1	0.1 to 0.6	6.9 to 41.4 mbar	40	2.78	0.5
S156B	0 to 100	0 to 6.9	0.2 to 0.8	13.8 to 55.2 mbar	125	8.6	2
S164B	0 to 200	0 to 13.8	0.3 to 2	20.7 to 138 mbar	200	13.8	5
Brass bellows with 1/4" NPT (female) nickel-plated brass pressure connection; Models 126 & 134 have zinc-plated steel spring exposed to media							
126	30" Hg Vac to 0	-1 to 0	0.2" to 0.9" Hg	7 to 30.5 mbar	5	0.3	0.5" Hg
134	30" Hg Vac to 20 psi	-1 to 1.4	0.2" to 1.2" Hg	7 to 40.6 mbar	25	1.7	1" Hg & 0.5 psi
137 (Type H122 N/A)	2 to 80"wc	0.005 to 0.2	2 to 10"wc	5 to 20 mbar	5	0.3	2"wc
144	0 to 20	0 to 1.4	0.1 to 0.5	6.9 to 34.5 mbar	25	1.7	0.5
146	0 to 30	0 to 2.1	0.1 to 0.6	6.9 to 41.4 mbar	40	2.8	0.5
156	0 to 100	0 to 6.9	0.2 to 0.8	13.8 to 55.2 mbar	125	8.6	2
164	0 to 200	0 to 13.8	0.3 to 2.0	20.7 to 138 mbar	200	13.8	5
Welded 316L stainless steel bellows and 1/4" NPT (female) pressure connection							
358	0 to 200	0 to 13.8	1.5 to 8	0.1 to 0.6	250	17.2	5
361	0 to 300	0 to 20.7	2 to 9	0.1 to 0.6	350	24.1	10
376	0 to 500	0 to 34.5	3 to 12	0.2 to 0.8	575	39.6	10
303 stainless steel piston and Buna-N O-Ring with 1/4" (female) pressure connection (not recommended for gas service since drying of the O-Ring seal can allow bleeding of medium into the atmosphere)							
612	200 to 3000	13.8 to 207	40 to 250	2.8 to 17.2	10000	689.5	50
614	500 to 6000	34.5 to 413.7	50 to 400	3.4 to 27.6	10000	689.5	100

Model	Adjustable Set Point Range		Deadband		*Proof Pressure		Dial Divisions
	psi	bar	psi	bar	psi	bar	psi
Phospher bronze bellows with 1/4" NPT (female) nickel-plated brass pressure connection							
270	0 to 200	0 to 13.8	1.5 to 8	0.1 to 0.6	250	17.2	5
274	0 to 300	0 to 20.7	2 to 10	0.1 to 0.7	350	24.1	10
Buna N diaphragm and O-Ring with 1/4" NPT (female) stainless steel connection and cap							
450	30" Hg Vac to 0	-1 to 0 mbar	0.1 to 0.4"wc	0.003 to 0.01	225	15.5	0.5" Hg
452	30" Hg Vac to 20 psi	-1 to 1.4 mbar	0.1 to 1" Hg	0.003 to 0.03	225	15.5	1" & 0.5 psi
Buna-N diaphragm and O-Ring with 1/4" NPT (female) aluminum pressure connection and cap							
453	0 to 20	0 to 1.4 mbar	0.05 to 0.2	0 to 0.01	225	15.5	0.5
454	0 to 30	0 to 2.1 mbar	0.05 to 0.3	0 to 0.02	225	15.5	0.5
Teflon® diaphragm and O-Ring with 1/4" NPT (female) 316L stainless steel pressure connection and cap							
550	30" Hg Vac to 0	-1 to 0	0.1 to 0.6" Hg	0.003 to 0.02	225	15.5	0.5" Hg
552	30" Hg Vac to 20 psi	-1 to 1.4	0.2 to 1" Hg	0.007 to 0.03	225	15.5	1" & 0.5 psi
553	0 to 20	0 to 1.4	0.05 to 0.3	0 to 0.02	225	15.5	0.5
554	0 to 30	0 to 2.1	0.1 to 0.4	0.01 to 0.03	225	15.5	0.5
555	0 to 100	0 to 6.9	0.25 to 0.75	0.02 to 0.05	225	15.5	2
Buna-N diaphragm and O-Ring with 1/4" NPT (female) nickel-plated brass pressure connection; Optional Viton® diaphragm & O-Ring available for code 701 & 703							
701 (Type H122 N/A)	3 to 30	0.2 to 2.1	1 to 3	0.07 to 0.2	1000	68.9	0.5
702	10 to 100	0.7 to 6.9	1 to 5	0.07 to 0.3	1000	68.9	2
703	30 to 300	2.1 to 20.7	2 to 7	0.14 to 0.5	1000	68.9	10
704	50 to 500	3.4 to 34.5	3 to 12	0.2 to 0.8	2500	172.4	10
705	200 to 1000	13.8 to 68.9	5 to 25	0.3 to 1.7	2500	172.4	25

* **Proof Pressure:** The maximum pressure to which a pressure sensor may be occasionally subjected, which causes no permanent damage. Unit may require calibration.

Differential Pressure Type J120k Single Switch With Internal Adjustment, Dual Conduit

Model	Adjustable Set Point Range High end of range on rise, low end on fall		Deadband		***Working Pressure Range		**Proof Pressure	
	"wcd/psid	mbar/bar	"wc/psi	mbar/bar	psi	bar	psi	bar
Welded 316L bellows with 1/2" NPT (female) pressure connections								
S147B	3 to 30 psid	0.2 TO 2.1 bar	0.3 TO 1.5 psi	0.02 to 0.1bar	30" Hg Vac to 100	-1 to 6.9	300	20.7
S157B	10 to 100 psid	0.7 TO 6.9 bar	0.5 TO 2 psi	0.03 to 0.14 bar	30" Hg Vac to 180	-1 to 12.4	300	20.7
Welded Brass bellows with 1/4" NPT (female) nickel-plated brass pressure connections								
147	3 to 30 psid	0.2 to 2.1 bar	0.3 to 1.5 psi	0.02 to 0.1bar	30" Hg Vac to 100	-1 to 6.9	180	12.4
157	10 to 100 psid	0.7 to 6.9 bar	0.5 to 2 psi	0.03 to 0.14 bar	30" Hg Vac to 150	-1 to 10.3	180	12.4
316L stainless steel bellows and 1/4" NPT (female) pressure connections								
367	10 to 100 psid	0.7 to 6.9	4 to 10	0.3 to 0.7	0 to 350	0 to 24.1	500	34.5
Buna-N diaphragm and O-Ring with stainless steel 1/4" NPT (female) pressure connections								
36	3 to 30 psid	0.2 to 2.1	1 to 5	0.07 to 0.3	0 to 350	0 to 24.1	1000	68.9
37	10 to 100 psid	0.7 to 6.9	2 to 8	0.1 to 0.6	0 to 500	0 to 34.5	1000	68.9
38	30 to 300 psid	2.1 to 20.7	2 to 15	0.1 to 1.0	0 to 1000	0 to 68.9	2500	172.4
39	50 to 500 psid	3.4 to 34.5	3 to 20	0.2 to 1.4	0 to 1000	0 to 68.9	2500	172.4
Buna-N diaphragm and O-Ring with 1/4" NPT (female) aluminum pressure connections								
455	5 to 80 "wcd	12.4 to 200 mbar	1 to 4" wcd	2 to 10 mbar	30" Hg Vac to 225	-1 to 15.5	225	15.5
456	2 to 20 psid	0.1 to 1.4 bar	0.1 to 0.3 psi	6.9 to 20.7 mbar	30" Hg Vac to 225	-1 to 15.5	225	15.5
457	3 to 30 psid	0.2 to 2.1 bar	0.1 to 0.4 psi	6.9 to 27.6 mbar	30" Hg Vac to 225	-1 to 15.5	225	15.5
Buna-N diaphragm, Buna-N sealing diaphragms and epoxy coated aluminum 1/8" NPT (female) pressure connections								
540	0.2 to 7" wcd	0.5 to 17.4 mbar	0.05 to 0.4" wc	0.1 to 0.1 mbar	30" Hg to 200	-1 to 13.8	400	27.6
541	1 to 20" wcd	2.5 to 49.7 mbar	0.1 to 0.7" wc	0.2 to 1.7 mbar	30" Hg to 200	-1 to 13.8	400	27.6
542	5 to 50" wcd	12.4 to 124.4 mbar	0.2 to 2.0" wc	0.5 to 5.0 mbar	30" Hg to 200	-1 to 13.8	400	27.6
543	10 to 200" wcd	24.9 to 497 mbar	0.5 to 6.0" wc	1.2 to 14.9 mbar	30" Hg to 200	-1 to 13.8	400	27.6
544	2 to 20 psid	0.1 to 1.4 bar	0.1 to 0.8 psi	6.9 to 55.2 mbar	30" Hg to 1200	-1 to 82.7	2500	172.4
545	5 to 50 psid	0.3 to 3.4 bar	0.2 to 1.6 psi	0 to 0.1 bar	30" Hg to 1200	-1 to 82.7	2500	172.4
546	0 to 125 psid	0.7 to 8.6 bar	0.4 to 3.5 psi	0 to 0.2 bar	30" Hg to 1200	-1 to 82.7	2500	172.4
547	50 to 250 psid	3.4 to 17.2 bar	1.5 to 7.2 psi	0.1 to 0.5 bar	30" Hg to 1200	-1 to 82.7	2500	172.4
548	100 to 500 psid	6.9 to 34.5 bar	2.0 to 12.0 psi	0.1 to 0.8 bar	30" Hg to 1200	-1 to 82.7	2500	172.4
Teflon® and Buna-N diaphragms, Buna-N O-Ring with 1/4" (female) aluminum pressure connections								
559	10 to 100 psid	0.7 to 6.9 bar	0.2 to 1 psi	14 to 69 mbar	30" Hg Vac to 225	-1 to 15.5	225	15.5

**Differential Pressure Type H121K single switch with external adjustment via reference dial
Differential Pressure Type H122K dual switch with external adjustment via reference dial**

Range/Material Code	Adjustable Set Point Range High end of range on rise, low end on fall		Deadband		***Working Pressure Range		**Proof Pressure		Dial Divisions
	"wcd/psid	mbar/bar	"wc/psi	mbar/bar	psi	bar	psi	bar	psi
Welded 316L bellows with 1/2" NPT (female) pressure connections									
S147B	3 TO 30 psid	0.2 TO 2.1 bar	0.3 TO 2 psi	20 to 140 mbar	30" Hg Vac to 100	-1 to 6.9	300	20.7	0.5
S157B	10 TO 100 psid	0.7 TO 6.9 bar	0.5 TO 3 psi	30 to 200 mbar	30" Hg Vac to 180	-1 to 12.4	300	20.7	2
Brass bellows with 1/4" NPT (female) nickel-plated brass pressure connections									
147	3 to 30 psid	0.2 to 2.1 bar	0.3 TO 2 psi	20 to 140 mbar	30" Hg Vac to 100	-1 to 6.9	180	12.4	0.5
157	10 to 100 psid	0.7 to 6.9 bar	0.5 TO 3 psi	30 to 200 mbar	30" Hg Vac to 150	-1 to 10.3	180	12.4	2
Buna-N diaphragm and O-Ring with 1/4" NPT (female) aluminum pressure connections									
456	2 to 20 psid	0.1 to 1.4 bar	0.1 to 0.3 psi	0.01 to 0.02	30" Hg Vac to 225	-1 to 15.5	225	15.5	0.5
457	3 to 30 psid	0.2 to 2.1 bar	0.1 to 0.4 psi	0.01 to 0.03	30" Hg Vac to 225	-1 to 15.5	225	15.5	0.5
Teflon® and Buna-N diaphragms, Buna-N O-Ring with 1/4" (female) aluminum pressure connections									
559	10 to 100 psid	0.7 to 6.9 bar	0.2 to 1 psi	0.01 to 0.07	30" Hg Vac to 225	-1 to 15.5	225	15.5	2

**** Proof Pressure:** The maximum pressure to which a pressure sensor may be occasionally subjected, which causes no permanent damage. Unit may require calibration.
*****Working Pressure Range:** The pressure range within which two opposing sensors can be safely operated and still maintain set point adjustability.

TEMPERATURE MODEL CHART

Type B121, single switch, immersion stem, external adjustment via reference dial, single conduit

Type B122, dual switch, immersion stem, external adjustment via reference dial, single conduit

Type C120, single switch, immersion stem, internal adjustment, dual conduits

Type E121, single switch, bulb and capillary, external adjustment via reference dial, single conduit

Type E122, dual switch, bulb and capillary, external adjustment via reference dial, single conduit

Type F120, single switch, bulb and capillary, internal adjustment, dual conduits

Model	Adjustable Set Point		Max. Temp		Scale Division		Stem/Bulb Size OD x Length
	°F	°C	°F	°C	°F	°C	
Model B121, single switch, immersion stem, external adjustment via reference dial. Model B122, dual switch, immersion stem, external adjustment via reference dial. Model C120, single switch, immersion stem, internal adjustment							
120	0 to 225	-17.8 to 107.2	275	135	5*	5*	9/16" x 1-7/8" below 1/2" NPT thread (nickel-plated brass)
121	200 to 425	93.3 to 218.3	475	246.1	5*	5*	9/16" x 1-7/8" below 1/2" NPT thread (nickel-plated brass)
13272 (B121) 13322 (B122) (Heat Tracing Freeze Protection)	15 to 140	-9.4 to 60	160	71.1	2*	2*	9/16" x 2-11/16" stainless steel
Model E121, single switch, bulb and capillary, external adjustment via reference dial. Model E122, dual switch, bulb and capillary, external adjustment via reference dial							
2BSA	-120 to 100	-84.4 to 37.8	150	65.5	5	5	3/8 x 2-5/8"
2BSB	30 to 250	1.1 to 121.1	300	148.9	5	5	3/8 x 2-5/8"
3BS	100 to 400	37.8 to 204.4	450	232.2	5	5	3/8 x 2-1/8"
4BS	25 to 100	-3.9 to 37.8	150	65.5	2	1	3/8 x 6-3/4"
5BS	-20 to 80	-28.9 to 26.7	130	54.4	2	2	3/8 x 5"
8BS	350 to 640	176.7 to 337.8	690	365.6	5	5	3/8 x 3-1/4"
13272 (E121) 13321 (E122)	25 to 325	-3.9 to 162.8	360	182.2	5	5	1/4" x 9-1/2"
Model F120, single switch, bulb and capillary***, internal adjustment							
Stainless steel bulb & capillary							
1BS	-180 to 120	-117.8 to 48.9	170	76.6	-	-	3/8 x 3-3/4"
2BS	-125 to 350	-87.2 to 176.7	400	204.4	-	-	3/8 x 2-5/8"
3BS	-125 to 500	-87.2 to 260	550	287.8	-	-	3/8 x 2-1/8"
4BS	-40 to 120	-40 to 48.9	170	76.6	-	-	3/8 x 6-3/4"
5BS	-40 to 180	-40 to 82.2	230	110	-	-	3/8 x 5"
6BS	0 to 250	-17.8 to 121.1	300	148.8	-	-	3/8 x 4-1/2"
7BS	0 to 400	-17.8 to 204.4	450	232.2	-	-	3/8 x 3"
8BS	50 to 650	10 to 343.3	700	371.1	-	-	3/8 x 3-1/4"

EXPLOSION-PROOF INDICATING TEMPERATURE CONTROLS

Type 820E, single switch, external adjustment and temperature indication, dual conduits

Type 822E, dual switch, external adjustment and temperature indication, dual conduits

Model	Adjustable Set Point		Max. Temp		Scale Division		Stem/Bulb Size OD x Length
	°F	°C	°F	°C	°F	°C	
2BS	-125 to 350	-87.2 to 176.7	400	204.4	10	5	3/8 x 2-5/8"
3BS	-125 to 500	-87.2 to 260	550	287.8	10	5	3/8 x 2-1/8"
4BS	-40 to 120	-40 to 48.9	170	76.6	5	2	3/8 x 6-3/4"
5BS	-40 to 180	-40 to 82.2	230	110	5	2	3/8 x 5"
6BS	0 to 250	-17.8 to 121.1	300	148.8	5	2	3/8 x 4-1/2"
7BS	0 to 400	-17.8 to 204.4	450	232.2	10	5	3/8 x 3"
8BS	50 to 650	10 to 343.3	700	371.1	10	10	3/8 x 3-1/4"



Standard capillary length is 6ft. optional lengths and capillary protection available

ORDERING INFORMATION

SPECIFY TYPE, MODEL (FROM CHARTS) THEN OPTIONS IF REQUIRED

EXAMPLE: J120-274-0140-M201(100 PSI RISING)

Type- Pressure

Type J120 - One SPDT; epoxy coated enclosure; internal adjustment with no reference scale, dual conduits

Type H121 - One SPDT; epoxy coated enclosure; external adjustment with reference dial, single conduit

Type H122 - Two SPDT; epoxy coated enclosure; external adjustment with reference dial, single conduit

Type- Differential Pressure

Type J120K - One SPDT; epoxy coated enclosure; internal adjustment with no reference scale, dual conduits

Type H121K - One SPDT; epoxy coated enclosure; external adjustment with reference dial, single conduit

Type H122K - Two SPDT; epoxy coated enclosure; external adjustment with reference dial, single conduit

Type- Temperature

Type B121 - Immersion stem; one SPDT; epoxy coated enclosure; external adjustment with reference dial, single conduit

Type B122 - Immersion stem; two SPDT; epoxy coated enclosure; external adjustment with reference dial, single conduit

Type C120 - Immersion stem; one SPDT; epoxy coated enclosure; internal adjustment with no reference scale, dual conduits

Type E121 - Bulb and capillary; one SPDT; epoxy coated enclosure; external adjustment with reference dial, single conduit

Type E122 - Bulb and capillary; two SPDT; epoxy coated enclosure; external adjustment with reference dial, single conduit

Type F120 - Bulb and capillary; one SPDT; epoxy coated enclosure; internal adjustment with no reference dial, dual conduits

Type 820E - Bulb and capillary; one SPDT; external adjustment and temperature indication, dual conduits

Type 822E - Bulb and capillary; two SPDT; external adjustment and temperature indication, dual conduits

Switch Options^{1,2,3}

0140 Gold contacts, 1 amp 125 VAC resistive, NOT AVAILABLE MODELS H122P, 820E, & 822E

0500 Close deadband, 5 amp 125/250 VAC resistive. NOT AVAILABLE MODEL H122P Ranges 520-535

1010 DPDT switch, 10 amp 125/250 VAC resistive. NOT AVAILABLE TEMPERATURE VERSIONS; MODELS H122, H122P H122K; OR J120K RANGES 36-39, 367, AND 540-548; OR J120 RANGES 171-194, 483-494, 520-535, 560-567, 680

1070 10 amp 125 VDC or VAC resistive; deadband and minimum set point will increase. NOT AVAILABLE MODELS 820E, 822E, H122P, H122K, B122, AND J120K RANGES 36-39; J120 RANGES 171-194, 483-494, 520-535

1180 Hermetically sealed SPDT, 11 amp 125/250 VAC resistive, must be specified with model H122P. NOT AVAILABLE MODELS B122, E122, H122, H121K and H122K, 820 AND 822E; deadband and minimum set point will increase.

1190 Hermetically sealed DPDT, 11 amp 125/250 VAC; products set on rising pressure or temperature due to inherent separation of circuits on falling pressure or temperature; specify option 1195 if setting on fall is required; deadband and minimum set point will increase. Not available models 820E, 822E, B121, B122, E121, E122, H121, H122, H121K, H122K, H122P or ranges 523, 533

1195 Hermetically sealed DPDT, 11 amp 125/250 VAC; products set on falling pressure or temperature due to inherent separation of circuits on rising pressure or temperature; specify option 1190 if setting on rise is required; deadband and minimum set point will increase. Not available models 820E, 822E, B121, B122, E121, E122, H121, H122, H121K, H122K, H122P or ranges 523, 533

1519* Adjustable deadband, 15 amp 125/250/480 VAC resistive; adjustable wheel changes rise setting only; if adjustment of fall setting is required use primary adjustment; deadband and minimum set point will increase. Not available models 820E, 822E, B121, B122, E121, E122, H121, H122, H121K, H122K, H122P or ranges 171-194, 483-494, 520-535, 612-616

1535 High ambient, 15 amp 125/250 VAC resistive; temperatures up to 250°F (120°C). Not available models 820E, 822E, H122P ranges 520-535

1537 Vapor sealed switch, 15 amp 125/250 VAC resistive. Not available models 820E, 822E, H122P or ranges 520-535

1539 Fungus resistant case, 15 amp 125/250 VAC resistive. Not available models 820E, 822E, H122P or ranges 520-535

2000 20 amp 125/250 VAC resistive. Not available ranges 520-535, 540-548

3000 30 amp 125/250/300 VAC resistive. Not available models 820E, 822E, B121, B122, H121, H122, H121K, H122K, H122P for ranges 36-39, 171-193, 483-493, 520-535, 540-548, 560-567

¹ All switches have limited DC capabilities. VDC ratings are not listed on nameplates. Consult factory for details.

² Deadbands change when switch options are added. Consult factory for details.

³ Not available for models 15622, 15834-15839, 15875, 13272, 13273, 13321 and 13322.

*Please note: In order to accommodate free movement of adjustable wheel, left hand electrical conduit is permanently sealed.

Sensor Options

M504 316L stainless steel stem. Available temperature models 120 and 121 only

M540 Viton® construction; (deadbands and low end of range may increase slightly) wetted parts include Viton® diaphragm and O-Ring. Available ranges 36-39, 450-457, 540-548 (Kapton® diaphragm, Viton® O-ring and sealing diaphragms), 612-616 (O-ring only) with standard pressure connection. Available MODEL J120 RANGES 701-705 and MODEL H121 and H122 RANGES 701-703 with stainless steel pressure connection.

M913 1/4" NPT (female) stainless steel pressure connection. AVAILABLE ON MODELS S126B - S146B, S152B, S156B, S164B, 188 AND 189 ONLY

M914 1/2" NPT (female) stainless steel pressure connection. AVAILABLE ON MODELS 356, 358, 361, 376, 612 AND 616 ONLY

6361-761 1/4" NPT male to G1/2 male stainless steel pressure fitting adaptor kit

6361-762 1/2" NPT male to G1/2 male stainless steel pressure fitting adaptor kit

Optional Sensor For "WC Ranges. Available for range codes 52-525

XC001 Aluminum pressure connection, Viton® diaphragm, Viton® O-Ring

XC002 Aluminum pressure connection, Kapton® diaphragm, Buna-N O-Ring

XC003 Aluminum pressure connection, Kapton® diaphragm, Viton® O-Ring

XC004 316L Stainless steel pressure connection, 316L Stainless steel diaphragm, Viton® O-Ring (Over range pressure is limited to 100 psi)

XC005 316L Stainless steel pressure connection, Viton® diaphragm, Viton® O-Ring

XC007 316L Stainless steel pressure connection, Teflon® diaphragm, Viton® O-Ring

Optional Sensor Material For Corrosive Media, Available Range Codes 183-189, 483-489

XD002	Hastelloy® C diaphragm
XD003	Monel® diaphragm
XP112	Hastelloy® C pressure connection
XP113	Monel® pressure connection
XR211	Kalrez® O-Ring
XR213	Ethylene propylene O-Ring
XR214	Aflas® O-Ring

Other Options

M201	Factory set one switch
M202	Factory set two switches. Not available single switch versions
M210	Differential pressure indication. Available on H121K, H122K, RANGES 147, 157, S147B, S157B only
M277	Range indicated on nameplate in kPa or MPa. Not available on temperature versions
M278	Range indicated on nameplate in Kg/cm2. Not available on temperature versions
M320	Tamper resistant cover for indication portion of control , internal adjustment, available models 820E & 822E only
M391	Flame proof, intrinsic safety for INMETRO compliance.
M395	Flame proof compliance Ex d per Korea Occupational Safety and Health Agency (KOSHA)
M404	Flameproof compliance for Ukraine per Gosnadzorohrantruda permits.
M405	Intrinsic safety compliance for European Union per ATEX standards. NOT AVAILABLE TYPES 820E AND 822E
M406	Flameproof and intrinsic safety compliance for Russia per EAC permit. Intrinsic safety NOT AVAILABLE TYPES 820E & 822E
M440	Cover chain
M444	Paper ID tag
M446	Stainless steel ID tag & wire attachment
M449	Surface mounting hardware kit that is required for models 520-535 & 540-548 when surface mounting. Use option code only at time of ordering product, otherwise use surface and pipe mounting kit part number 6361-704 as a separate order or for other models.
M450	Breather drain. Not available with options 1530, M210, M415 or with ATEX certification
M550	Oxygen service cleaning; internal construction may change
6361-704	Surface and pipe mounting hardware. (required for ranges 520-535, 540-548 when surface mounting)

NOTE: Options available on models 13272, 13273, 13321, 13322, 15622, 15834-15839 and 15875 are M201, M202, M444, M446 and various certification related documentation only.

OPTIONS FOR TEMPERATURE MODELS**UNION CONNECTORS**

Option	Replacement Number	Description
Brass		
W027	SD6213-27	1/2" NPT w/ 3/4" bushing
W045	SD6213-45	3/4" NPT
W051	SD6213-51	1/2" NPT
304 Stainless Steel		
W028	SD6213-28	1/2" NPT w/ 3/4" bushing
W046	SD6213-46	3/4" NPT
W050	SD6213-50	1/2" NPT

THERMOWELLS

For all bulb & capillary switches, except Models 13273 and 13321

Brass		
W075	SD6225-75	3/4" NPT bushing adapter, 4" BT
W191	SD6225-191	1/2" NPT, 4" BT
W118	SD6225-118	3/4" NPT bushing adapter, 7" BT
W192 S	D6225-192	1/2" NPT, 7" BT
316 Stainless Steel		
W076 S	D6225-76	3/4" NPT, 4.5" BT
W193	SD6225-193	1/2" NPT, 4.5" BT
W119	SD6225-119	3/4" NPT, 7.5" BT
W177	SD6225-177	1/2" NPT, 7.5" BT

For all immersion stem switches except Models 13272 and 13322

W139	SD6225-139	3/4" NPT X 1 23/32" BT, BRASS
W140	SD6225-140	3/4" NPT X 1 23/32" BT, 316 SS

W000 IMMERSION STEM AND THERMOWELLS

Note: Option W000 is a special Immersion Stem construction that has no external thread. This option fits inside a special thermowell and is secured with a set-screw.

Option Description

W000 Immersion stem only, BRASS

W097 Immersion stem and thermowell. Includes W000 stem and 1/2" NPT x 1 23/32" BT BRASS thermowell

W099 Immersion stem and thermowell. Includes W000 stem and 1/2" NPT x 1 23/32" BT 316 SS thermowell

OPTIONAL LENGTHS

Optional immersion stem lengths to 15" available in brass, with or without 316 SS thermowell. Consult Clark for additional information.

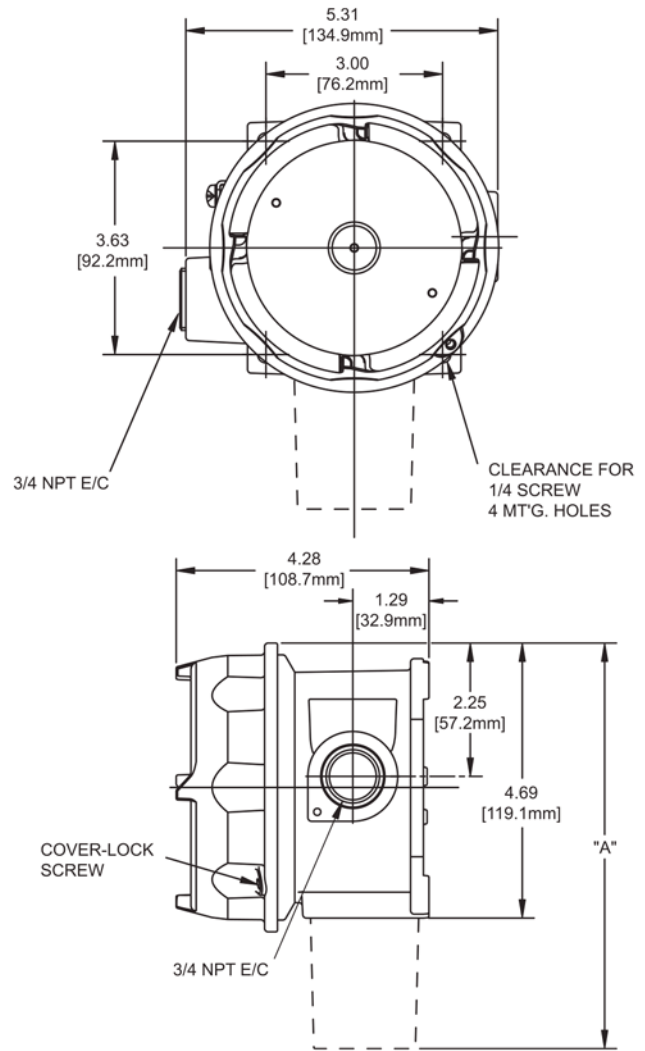
Optional capillary length to *50' available in copper or 304 SS. Armor or Teflon® capillary protection may be available to lengths less than or equal to capillary length. Consult Clark for additional information.

*Consult Clark regarding repeatability and ambient effects on capillary lengths over 30'.

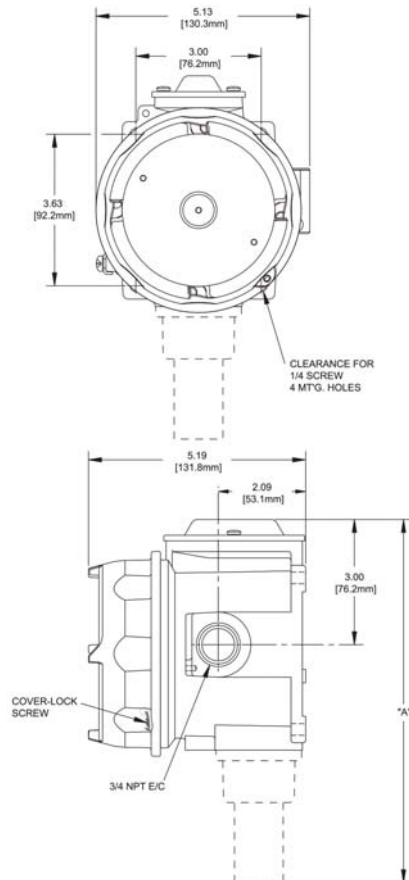
DIMENSIONS

Internal set point adjustment, dual contacts
Types J120, J120K, C120, F120

Dimension A			
Model	Inches	mm	NPT
Pressure			
126-124	7.25	184.2	1/4
S126B-S164B	7.63	193.8	1/2
171-174	8.72	221.5	1/2
183-186, 483-486	8.41	213.6	1/2
188-189, 488-489	7.47	189.7	1/2
190-194, 490-494	7.44	189.0	1/2
270-274	8.13	206.5	1/4
356-361, 376	8.09	205.5	1/4
450, 452	8.81	223.8	1/4
451, 453, 454	8.06	204.7	1/4
520-525	9.25	235.0	1/2
530-535	8.84	224.5	1/2
550, 552	8.81	223.8	1/4
551, 553-555	8.34	211.8	1/4
565-567	7.53	191.3	1-1/2" Sanitary
612, 616	7.88	200.2	1/4
680	8.13	206.5	1/4
701-705, 15622	7.44	189.0	1/4
Differential Pressure			
36-39, 147-157,	7.59	192.8	1/4
S147B-S157B	7.59	192.8	1/2
455-457, 559	8.44	214.4	1/4
540-543	9.44	237.2	1/8
544-548	9.34	239.0	1/8
Temperature			
120, 121	9.13	231.9	Immersion Stem
2BS-8BS	8.47	215.1	Bulb & Capillary



External Set Point Adjustment, single conduit
Types B121, B122, E121, E122, H121, H122, H121K, H122K

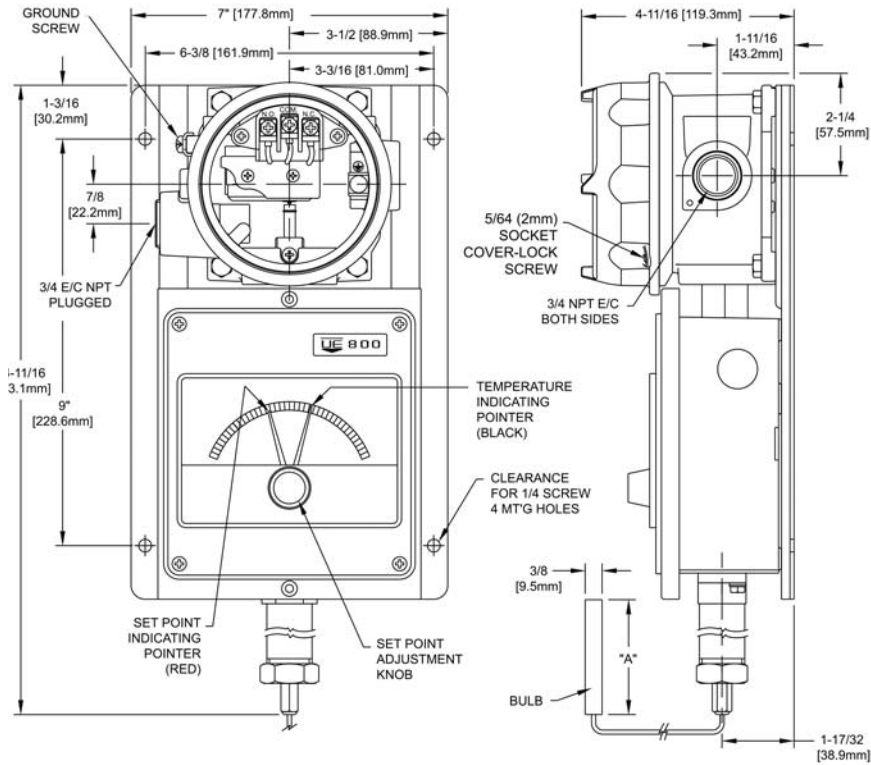


Dimension A			
Model	Inches	mm	NPT
126-124	8.09	205.5	1/4
S126B-S164B	8.50	215.9	1/2
270-274	7.68	200.2	1/4
358-376	7.81	198.4	1/4
450, 452	9.69	246.1	1/4
453, 454	8.94	227.1	1/4
550, 552	9.75	247.7	1/4
553-555	9.31	236.5	1/4
612, 614	8.75	222.3	1/4
701-705	8.31	211.1	1/4
Differential Pressure			
147-157	8.44	214.4	1/4
S147B-S157B	8.44	214.4	1/2
456-457, 559	9.31	236.5	1/4
Temperature			
120, 121	10.00	254.0	Immersion Stem
2BS-8BS	9.31	236.5	Bulb & Capillary
13272, 13322	10	254.0	Immersion Stem (Heat Tracing)
13273, 13321	9.31	236.5	Bulb & Capillary (Heat Tracing)

DIMENSIONS INCHES (MM)

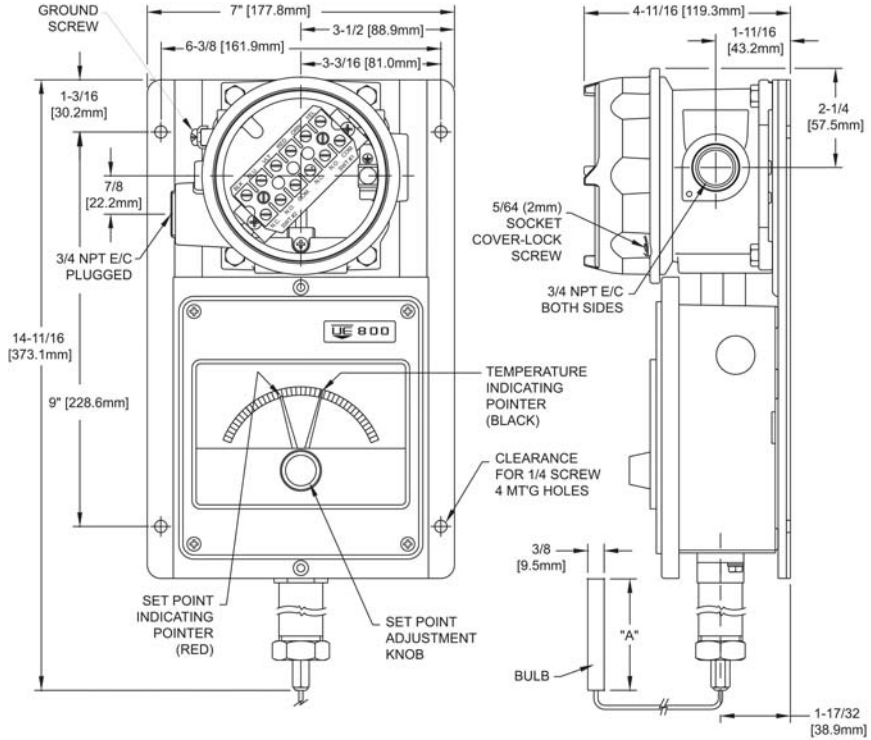
Type 820E, single switch, external adjustment and temperature indication
 Type 822E, dual switch, external adjustment and temperature indication

Type 820E



Dimension A		
Model	Inches	mm
2BS	2-5/8	66.7
3BS	2-1/8	54.0
4BS	6-3/4	171.5
5BS	5	127.0
6BS	4-1/2	114.3
7BS	3	76.2
8BS	3-1/4	82.6

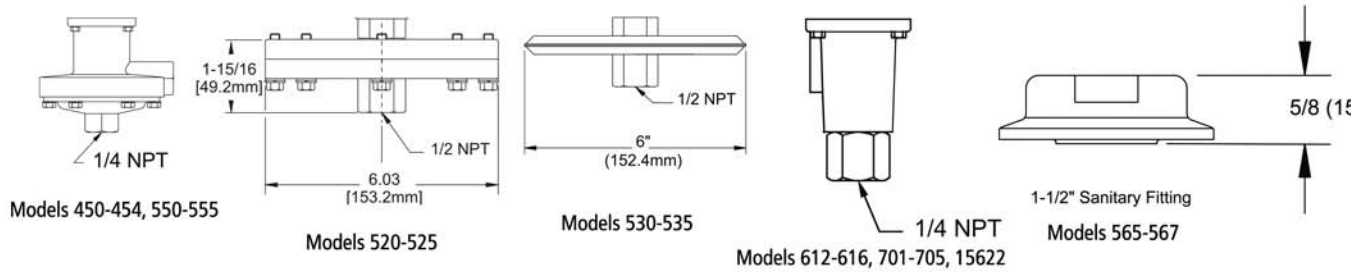
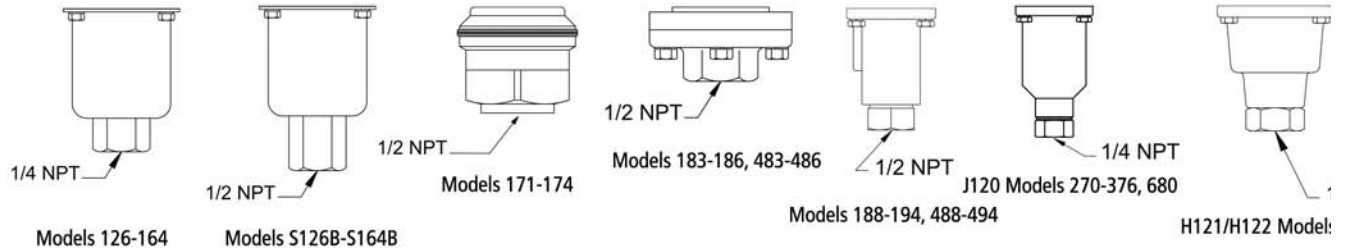
Type 822E



DIMENSIONS INCHES (MM)

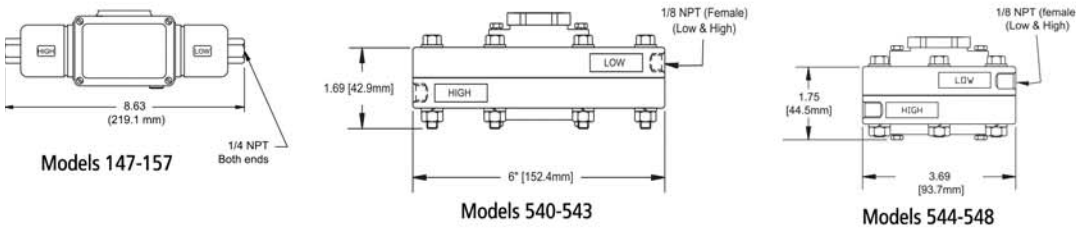
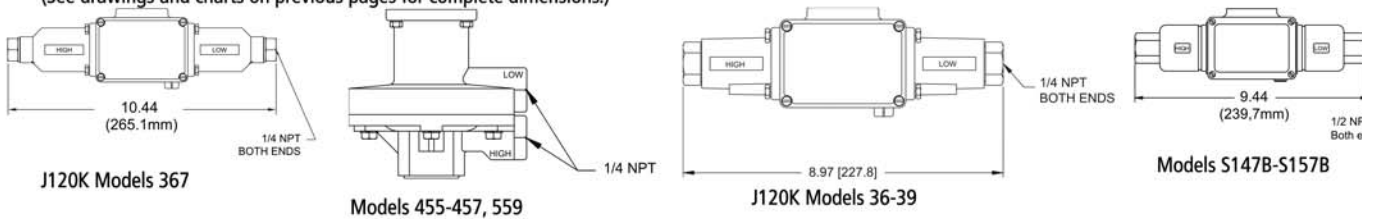
Pressure Sensors

(See drawings and charts on previous pages for complete dimensions.)



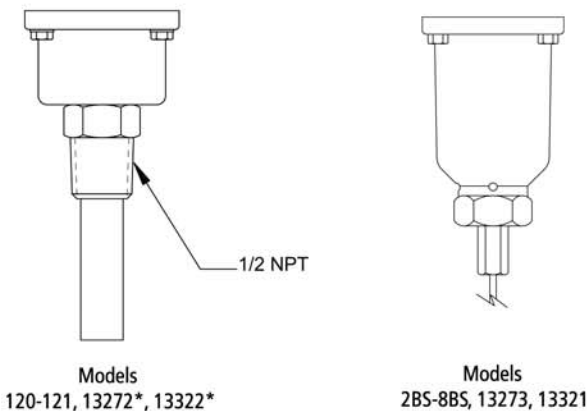
Differential Pressure Sensors

(See drawings and charts on previous pages for complete dimensions.)



Temperature Sensors

(See drawings and charts on previous pages for complete dimensions, as well as Temperature Model Chart for immersion stem and bulb dimensions. The standard capillary length is 6 feet except for models 13273 & 13321 which is 10 feet)



*Please Note: These models do not include the 1/2 NPT