



# 120 Series

## 120 Series

### **PRESSURE, VACUUM, DIFFERENTIAL PRESSURE, TEMPERATURE**

#### **FEATURES**

- Class I, Div. 1 & 2, Groups B, C, & D  
Class II, Div. 1 & 2, Groups E, F, & G  
Class III
- Choice of one or two SPDT,  
optional DPDT output
- Dual electrical conduit openings
- Terminal block wiring
- Welded diaphragm or bellows sensor
- Cover lock
- Ultra-low pressure ranges



### OVERVIEW

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, UE's 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.

An innovator in the application of Threshold Detection and Switching™ technology since 1931, United Electric's primary focus is the protection of equipment, processes and people.

### 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
- Wide variety of sensor materials
- Optional Hastelloy®, Monel® and Tantalum sensor material for corrosive media
- Flush mount sanitary sensors
- Stainless steel, Hastelloy®, Monel® flanges conforming to ANSI standards
- Indicating Differential Pressure Module
- Most models available for immediate delivery!



## SPECIFICATIONS

<b>STORAGE TEMPERATURE</b>	-65 to 160°F (-54 to 71°C)
<b>AMBIENT TEMPERATURE LIMITS</b>	-58 to 160°F (-50 to 71°C); models 36-39, 520-525, 540-548, 701-705: 0 to 160°F (-17 to 71°C); Types 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
<b>SET POINT REPEATABILITY</b>	Temperature models: ±1% of adjustable 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
<b>SHOCK</b>	Set point repeats after 15 G, 10 millisecond duration
<b>VIBRATION</b>	Set point repeats after 2.5 G, 5-500 Hz
<b>ENCLOSURE</b>	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 nameplate
<b>ENCLOSURE CLASSIFICATION</b>	Certified to enclosure type 4X. Types 820E, 822E; designed to meet NEMA 4 requirements with option M300; Class I, Division 1 product meet enclosure type 7; Class II, Division 1 products meet enclosure type 9. Certified to IP66 requirements
<b>SWITCH OUTPUT</b>	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". Two SPDT hermetic sealed switches available on H122P models
<b>ELECTRICAL RATING</b>	15 A 125/250/480 VAC resistive (standard) except types H122P; 11A 125/250 VAC resistive; B121-13272, B122-13322, E121-13273, E122-13321; 22A 480VAC resistive
<b>REFERENCE SCALES</b>	Types B, E & H: external dial. Scale divisions vary with range.
<b>WEIGHT</b>	3-8 lbs. Varies with type and model
<b>ELECTRICAL CONNECTION</b>	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
<b>PRESSURE CONNECTION</b>	Models S126B-S164B, 171-194, 483-494, 520-535: 1/2" NPT (female); models 560-564: 2" sanitary connection; models 565-567: 1 1/2" sanitary connection; models 540-548: 1/8" NPT (female); all others: 1/4" NPT (female)
<b>TEMPERATURE ASSEMBLY</b>	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. <b>Fill:</b> Model 1BS: solvent filled; models 2BS-8BS: non-toxic oil filled
<b>TEMPERATURE DEADBAND</b>	Type F120, 820E, 822E: typically 1%; type 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)
<b>PRESSURE DEADBAND</b>	<b>See Individual model charts</b>
<b>DIFFERENTIAL PRESSURE INDICATION (OPTION M210)</b>	Differential pressure indication available types H121K 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
<b>TEMPERATURE INDICATION</b>	Temperature indication available types 820E and 822E. Indication accuracy is ±1% of adjustable range

## AGENCY APPROVALS



**Class I**, Division 1 & 2, Groups B, C & D  
**Class II**, Division 1 & 2, Groups E, F & G  
**Class III**  
**Class I**, Zone 1, Group IIB + H<sub>2</sub> T<sub>6</sub>

**UL** Listed, **cUL** Certified  
 Pressure: UL 50, 698; CSA C22.2 No. 25-1966, 30-M1986,  
 CEC Part 1 – File #E40857  
 Temperature: UL 50, 698; CSA C22.2 No. 25-1966, 30-M1986,  
 CEC Part 1 – File #E43374



**CENELEC/DEMKO A/S** (N.B. #0539)  
**Demko A/S** certified to **ATEX** Directive (94/9/EC)  
 II 2 G EEx d IIC T<sub>6</sub>, Tamb: -40 °C to +71 °C (-40 °F to +160 °F), IP 66  
 II 2 D T+85°C, Tamb: -40 °C to +71 °C (-40 °F to +160 °F), IP 66

EN 50 014, EN 50 018, EN 50 281, EN 60529  
 Certificate #DEMKO 03 ATEX 0305048



**CENELEC/TÜV** Süddeutschland Bau und Betrieb GmbH (N.B. #0036)  
**TÜV** certified to PED (97/23/EC)  
 Category IV, Module H1 (must select option M407)  
 Certificate #USA 02/04/38/001 thru USA 02/07/38/033

UEC Compliant to LVD (73/23/EC & 93/68/EEC)  
 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 MODEL CHART

Type J120, single switch with internal adjustment, dual conduits

Model	Adjustable Set Point Range		Deadband		Over Range Pressure*		Proof Pressure**	
	Low end of range on fall; High end of range on rise "wc	mbar	"wc	mbar	psi	bar	psi	bar
Buna N diaphragm and O-Ring with epoxy coated aluminum, 1/2" NPT (female) pressure connection (other wetted materials available see pg 15)								
520	300 Vac to 0	-746,7 to 0	0.2 to 8	0,5 to 19,9	200	13,8	400	27,6
521	10 Vac to 10	-24,9 to 24,9	0.1 to 0.6	0,2 to 1,5	200	13,8	400	27,6
522	50 Vac to 50	-124,5 to 124,5	0.1 to 3	0,2 to 7,5	200	13,8	400	27,6
523	0.5 to 5	1,2 to 12,4	0.1 to 0.3	0,2 to 0,7	200	13,8	400	27,6
524	2.5 to 50	6,2 to 124,5	0.1 to 0.8	0,2 to 2,0	200	13,8	400	27,6
525	10 to 250	24,9 to 622,3	0.1 to 6	0,2 to 14,9	200	13,8	400	27,6
Welded 316L stainless steel diaphragm and 1/2" NPT (female) 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	1,2 to 12,4	0.1 to 0.3	0,2 to 0,7	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				
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	0,3 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
Welded 316L stainless steel diaphragm and 1/2" NPT (female) pressure connection, large 0.72" orifice for clean-out purposes								
171	1 to 20	0,07 to 1,4	0.1 to 1	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

**Application Note:** The use of metallic diaphragms where higher pressure shock or heavy cycling is expected should be avoided. Models 171-174 should not be used where system or start-up vacuum might exceed 26 " Hg Vac

**\*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. The unit may require calibration (e.g. start-up, testing)

**Deadband note:** Models 190-194, 490-494 are expressed as the lower 75 % and top 25% of the range span because of the operating characteristics of the diaphragm sensor and switch.

## Type J120, single switch with internal adjustment, dual conduits (cont)

Model	Adjustable Set Point Range		Deadband			Over Range Pressure*		Proof Pressure **	
	Low end of range on fall; High end of range on rise								
	psi (unless noted)	bar	psi (unless noted)	bar		psi (unless noted)	bar	psi	bar
316L stainless steel diaphragm (optional Hastelloy® C, Monel® or Tantalum); Viton® GLT O-Ring (optional Kalrez®, Silicone, Ethylene Propylene or Aflas®); 316 stainless steel 1/2" NPT (female) pressure connection (optional Hastelloy® B or C, or Monel®), 0.72" orifice for clean-out purposes. Models 188 and 189 have a 316L stainless steel 1/2" NPT (female) pressure connection									
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	3,4 to 68,9	25 to 125		1,7 to 8,6	2000	137,9	7000	482,6
189	250 to 3500	17,2 to 241,3	50 to 300		3,4 to 20,7	4000	275,8	7000	482,6
316L stainless steel diaphragm (optional Hastelloy® C, Monel® or Tantalum); Viton®GLT O-Ring (optional Kalrez®, Silicone, Ethylene Propylene or Aflas®); 316 stainless steel 1/2" NPT (female) pressure connection (optional Hastelloy® B or C, or Monel®), 0.06" orifice to dampen pulsations. Models 488 and 489 have a 316L stainless steel 1/2" NPT (female) pressure connection									
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 and 1/2" NPT (female) pressure connection									
S126B	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
S134B	30 "Hg Vac to 20 psi	-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
			Lower 75% range span	Top 25% range span	Lower 75% range span				
			psi	psi	bar				
Welded 316 stainless steel diaphragm and 1/2" NPT (female) pressure connection, 0.72" orifice for clean-out purposes									
190	5 to 30	0,3 to 2,1	1 to 3	6 max	0,07 to 0,2	1500	103,4	2500	172,4
191	10 to 100	0,7 to 6,9	1 to 8	15 max	0,07 to 0,6	1500	103,4	2500	172,4
192	15 to 300	1,0 to 20,7	3 to 18	25 max	0,2 to 1,2	1500	103,4	2500	172,4
193	20 to 500	1,4 to 34,5	4 to 30	45 max	0,3 to 2,1	1500	103,4	2500	172,4
194	80 to 1700	5,5 to 117,2	5 to 120	150 max	0,3 to 8,3	2000	138,9	2500	172,4
Welded 316 stainless steel diaphragm and 1/2" NPT (female) pressure connection, 0.06" orifice to dampen pulsations									
490	5 to 30	0,3 to 2,1	1 to 3	6 max	0,07 to 0,2	1500	103,4	2500	172,4
491	10 to 100	0,7 to 6,9	1 to 8	15 max	0,07 to 0,6	1500	103,4	2500	172,4
492	15 to 300	1,0 to 20,7	3 to 18	25 max	0,2 to 1,2	1500	103,4	2500	172,4
493	20 to 500	1,4 to 34,5	4 to 30	45 max	0,3 to 2,1	1500	103,4	2500	172,4
494	80 to 1700	5,5 to 117,2	5 to 120	150 max	0,3 to 8,3	2000	138,9	2500	172,4

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**Hastelloy®** is a registered trademark of Haynes International, Inc  
**Monel®** is a registered trademark of the INCO family of companies

**Kalrez®** and **Teflon®** are registered trademarks of E.I. Dupont  
**Aflas®** is a registered trademark of Asahi Glass  
**Tri-Clamp®** is a registered trademark of Tri-Clover, Inc.

### PRESSURE MODEL CHART

Type J120, single switch with internal adjustment, dual conduits (cont)

Model	Adjustable Set Point Range		Deadband		Over Range Pressure*		Proof Pressure**	
	Low end of range on fall; High end of range on rise psi (unless noted)	bar	psi (unless noted)	bar	psi (unless noted)	bar	psi	bar
Brass bellows with nickel-plated brass 1/4" NPT (female) pressure connection; models 126 & 134 have zinc-plated steel spring which is 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 0.6 "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
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
Phosphor bronze bellows with nickel-plated brass 1/4" NPT (female) 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

**\*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. The unit may require calibration (e.g. start-up, testing)

## Type J120, single switch with internal adjustment, dual conduits (cont)

Model	Adjustable Set Point Range		Deadband		Over Range Pressure*		Proof Pressure**	
	Low end of range on fall; High end of range on rise psi (unless noted)	bar	psi (unless noted)	bar	psi (unless noted)	bar	psi	bar
303 stainless steel piston with Buna N O-Ring and 303 stainless steel 1/4" NPT (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 3000	8,6 to 206,8	40 to 250	2,8 to 17,2	6000	413,7	10000	689,5
616	700 to 5000	48,3 to 344,7	40 to 375	2,8 to 25,9	6000	413,7	10000	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 nickel-plated brass 1/4" NPT (female) pressure connection; Optional Viton diaphragm and O-Ring available								
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	0,2 to 1,4	1500	103,4	2500	172,4
Buna N diaphragm and O-Ring with 1/4" NPT (female) aluminum connection and cap								
450	30 "Hg Vac 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
451	2 to 80" wc	0,005 to 0,2	0.8 to 2 "wc	0,002 to 0,005	80 "wc	0,2	225	15,5
452	30 "Hg Vac to 20 psi	-1,0 to 1,4	0.1 to 0.4 "Hg	0,003 to 0,01	20	1,4	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 316 stainless steel with 1/4" NPT (female) 316 stainless steel pressure connection and cap								
550	30 "Hg Vac to 3 "Hg Vac	-1,0 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	0,002 to 0,01	80 "wc	0,2	225	15,5
552	30 "Hg Vac to 20 psi	-1,0 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

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**\*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. The unit may require calibration (e.g. start-up, testing)



### PRESSURE MODEL CHART

Type H121, single switch with external adjustment via reference dial, single conduit

Type H122, dual switch with external adjustment via reference dial, single conduit

Type H122P\*, two hermetically sealed single switches with external adjustment via reference dial, single conduit

Model	Adjustable Set Point Range		Deadband		Proof Pressure**		Dial Divisions
	Low end of range on fall; High end of range on rise						
	psi (unless noted)	bar	psi (unless noted)	bar	psi	bar	psi (unless noted)
Welded 316 stainless steel bellows and 1/2" NPT (female) pressure connection							
S126B	30 "Hg Vac to 0 psi	-1 to 0	0.2 to 0.9 "Hg	0,007 to 0,03	5	0,3	0.5 "Hg
S134B	30 "Hg Vac to 20 psi	-1 to 1,4	0.2 to 1.2 "Hg	0,007 to 0,04	25	1,7	1 "Hg & 0.5 psi
S137B†	2 to 80 "wc	0,005 to 0,2	2 to 10 "wc	0,005 to 0,02	5	0,3	2 "wc
S144B	0 to 20	0 to 1,4	0.1 to 0.5	0,007 to 0,03	25	1,7	0.5
S146B	0 to 30	0 to 2,1	0.1 to 0.6	0,007 to 0,04	40	2,8	0.5
S156B	0 to 100	0 to 6,9	0.2 to 0.8	0,014 to 0,06	125	8,6	2
S164B	0 to 200	0 to 13,8	0.3 to 2	0,021 to 0,14	200	13,8	5
Brass bellows with nickel-plated brass 1/4" NPT (female) pressure connection; models 126 & 134 have a zinc-plated steel spring which is exposed to media							
126	30 "Hg Vac to 0 psi	-1 to 0	0.2 to 0.9 "Hg	0,007 to 0,03	5	0,3	0.5 "Hg
134	30 "Hg Vac to 20 psi	-1 to 1,4	0.2 to 1.2 "Hg	0,007 to 0,04	25	1,7	1 "Hg & 0.5 psi
137†	2 to 80 "wc	0,005 to 0,2	2 to 10 "wc	0,005 to 0,02	5	0,3	2 "wc
144	0 to 20	0 to 1,4	0.1 to 0.5	0,007 to 0,03	25	1,7	0.5
146	0 to 30	0 to 2,1	0.1 to 0.6	0,007 to 0,04	40	2,8	0.5
156	0 to 100	0 to 6,9	0.2 to 0.8	0,014 to 0,06	125	8,6	2
164	0 to 200	0 to 13,8	0.3 to 2	0,021 to 0,14	200	13,8	5
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 with Buna N O-Ring and 303 stainless steel 1/4" NPT (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 206,8	40 to 250	2,8 to 17,2	10,000	689,5	50
614	500 to 6000	34,5 to 413,7	50 to 400	3,4 to 27,6	10,000	689,5	100

**\*Please note:** Must specify option code 1180 with all models.

**\*\*Proof Pressure:** The maximum pressure to which a pressure sensor may be occasionally subjected, which causes no permanent damage. The unit may require calibration (e.g. start-up, testing)

†Not available on types H122 and H122P



Type H121, single switch with external adjustment via reference dial, single conduit

Type H122, dual switch with external adjustment via reference dial, single conduit

Type H122P\*, two hermetically sealed single switches with external adjustment via reference dial, single conduit

Model	Adjustable Set Point Range		Deadband		Proof Pressure**		Dial Divisions
	Low end of range on fall; High end of range on rise psi (unless noted)	bar	psi (unless noted)	bar	psi	bar	psi (unless noted)
Phosphor bronze bellows with nickel-plated brass 1/4" NPT (female) 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 aluminum 1/4" NPT (female) pressure connection and cap							
450	30 "Hg Vac to 0 psi	-1,0 to 0	0.1 to 0.4 "Hg	0,003 to 0,01	225	15,5	0.5 "Hg
452	30 "Hg Vac to 20 psi	-1,0 to 1,4	0.1 to 1 "Hg	0,003 to 0,03	225	15,5	1 "Hg & 0.5 psi
453	0 to 20	0 to 1,4	0.05 to 0.2	0 to 0,01	225	15,5	0.5
454	0 to 30	0 to 2,1	0.05 to 0.3	0 to 0,02	225	15,5	0.5
Teflon® diaphragm and O-Ring with stainless steel 1/4" NPT (female) 316 pressure connection and cap							
550	30 "Hg Vac to 0 psi	-1,0 to 0,	0.1 to .6 "Hg	0,003 to 0,02	225	15,5	0.5 "Hg
552	30 "Hg Vac to 20 psi	-1,0 to 1,4	0.2 to 1 "Hg	0,007 to 0,03	225	15,5	1 "Hg & 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 nickel-plated brass 1/4" NPT (female) pressure connection; Optional Viton diaphragm and O-Ring available (models 701-703)							
701†	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

**\*Please note:** Must specify option code 1180 with all models.

**\*\*Proof Pressure:** The maximum pressure to which a pressure sensor may be occasionally subjected, which causes no permanent damage. The unit may require calibration (e.g. start-up, testing)

†Not available on types H122 and H122P

††Not available on type H122P

### DIFFERENTIAL PRESSURE MODEL CHART

Type J120K, single switch with internal adjustment, dual conduits

Model	Adjustable Set Point Range		Deadband		Working Pressure***		Proof Pressure**	
	Low end of range on fall; High end of range on rise							
	psid (unless noted)	bar	psi (unless noted)	bar	psi (unless noted)	bar	psi	bar
316L stainless steel bellows and 1/2" NPT (female) pressure connections								
S147B	3 to 30	0,2 to 2,1	0.3 to 1.5	0,02 to 0,1	30 "Hg Vac to 100	-1 to 6,9	300	20,7
S157B	10 to 100	0,7 to 6,9	0.5 to 2	0,03 to 0,14	30 "Hg Vac to 180	-1 to 12,4	300	20,7
Brass bellows with nickel-plated brass 1/4" NPT (female) pressure connections								
147	3 to 30	0,2 to 2,1	0.3 to 1.5	0,02 to 0,1	30 "Hg Vac to 100	-1 to 6,9	180	12,4
157	10 to 100	0,7 to 6,9	0.5 to 2	0,03 to 0,14	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	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 303 stainless steel 1/4" NPT(female) pressure connections								
36	3 to 30	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	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	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	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 aluminum 1/4" NPT(female) pressure connections								
455	5 to 80 "wcd	12,4 to 200 mbar	1 to 4 "wc	2 to 10 mbar	30 "Hg Vac to 225	-1 to 15,5	225	15,5
456	2 to 20	0,1 to 1,4	0.1 to 0.3	7 to 21 mbar	30 "Hg Vac to 225	-1 to 15,5	225	15,5
457	3 to 30	0,2 to 2,1	0.1 to 0.4	7 to 28 mbar	30 "Hg Vac to 225	-1 to 15,5	225	15,5
Teflon® and Buna N diaphragms, Buna N O-Ring with aluminum 1/4" NPT (female) pressure connections								
559	10 to 100	0,7 to 6,90	0.2 to 1	14 to 69 m bar	30 "Hg Vac to 225	-1 to 15,5	225	15,5
Kapton® diaphragms, Buna N sealing diaphragms with 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	200	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	200	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	200	13,8	400	27,6
543	10 to 200 "wcd	24,9 to 497,0 mbar	0.5 to 6,0 "wc	1,2 to 14,9 mbar	200	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	1200	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	1200	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	1200	82,7	2500	172,4
547	50 to 250 psid	3,4 to 17,2 bar	0.8 to 0,7 psi	0,1 to 0,5 bar	1200	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	1200	82,7	2500	172,4

**Kapton®** is a registered trademark of E.I. DuPont

**\*\*Proof Pressure:** The maximum pressure to which a pressure sensor may be occasionally subjected, which causes no permanent damage. The unit may require calibration (e.g. start-up, testing)

**\*\*\*Working Pressure Range:** The pressure range within which two opposing sensors can be safely operated and still maintain set point adjustability provided the difference in pressure between them does not exceed the designated adjustable range

Type H121K, single switch with external adjustment dial via reference dial, single conduit

Type H122K, dual switch with external adjustment dial via reference dial, single conduit

Model	Adjustable Set Point Range		Deadband		Working Pressure***		Proof Pressure**		Dial Divisions
	Low end of range on fall; High end of range on rise								
	psid	bar	psi (unless noted)	bar	psi (unless noted)	bar	psi	bar	psi
316L stainless steel bellows and 1/2" NPT (female) pressure connections									
S147B	3 to 30	0,2 to 2,1	0.3 to 2	0,02 to 0,14	30 "Hg Vac to 100	-1 to 6,9	300	20,7	0.5
S157B	10 to 100	0,7 to 6,9	0.5 to 3	0,03 to 0,2	30 "Hg Vac to 180	-1 to 12,4	300	20,7	2
Brass bellows with nickel-plated brass 1/4" NPT (female) pressure connections									
147	3 to 30	0,2 to 2,1	0.3 to 2	0,02 to 0,14	30 "Hg Vac to 100	-1 to 6,9	180	12,4	0.5
157	10 to 100	0,7 to 6,9	0.5 to 3	0,03 to 0,2	30 "Hg Vac to 150	-1 to 10,3	180	12,4	2
Buna N diaphragm, O-Ring with aluminum 1/4" NPT (female) pressure connections									
456	2 to 20	0,1 to 1,4	0.1 to 0.3	0,01 to 0,02	30 "Hg Vac to 225	-1 to 15,5	225	15,5	0.5
457	3 to 30	0,2 to 2,1	0.1 to 0.4	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 aluminum 1/4" NPT (female) pressure connections									
559	10 to 100	0,7 to 6,9	0.2 to 1.0	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. The unit may require calibration (e.g. start-up, testing)

**\*\*\*Working Pressure Range:** The pressure range within which two opposing sensors can be safely operated and still maintain set point adjustability provided the difference in pressure between them does not exceed the designated adjustable range



Differential Pressure Indicating Option M210

### TEMPERATURE MODEL CHART

Type B121, B121-13272 (HTFP), single switch, immersion stem, external adjustment via reference dial, single conduit  
 Type B122, B122-13322 (HTFP), dual switch, immersion stem, external adjustment via reference dial, single conduit  
 Type C120, single switch, immersion stem, internal adjustment, dual conduits  
 Type E121, E121-13273 (HTFP), single switch, bulb and capillary\*\*\*, external adjustment via reference dial, single conduit  
 Type E122, E122-13321 (HTFP), 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 Range		Max. Temp.		Scale Div.		Stem or Bulb Size*/Finish**
	°F	°C	°F	°C	°F	°C	
Type B121, B121-13272 (HTFP), single switch, immersion stem, external adjustment via reference dial.Type B122, B122-13322 (HTFP), dual switch, immersion stem, external adjustment via reference dial.Type C120, single switch, immersion stem, internal adjustment							
120*	0 to 225	-17.8 to 107.2	275	135	5	5	9/16" x 17/8" below thread, 1/2" NPT nickel-plated brass
121*	200 to 425	93 to 218.3	475	246.1	5	5	9/16" x 17/8" below thread, 1/2" NPT nickel-plated brass
HTFP (Freeze Protection)	15 to 140	-9.4 to 60	160	71.1	2	2	9/16" x 211/16" stainless steel
Type E121, E121-13273 (HTFP), single switch, bulb and capillary***, external adjustment via reference dial.Type E122, E122-13321 (HTFP), 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"
HTFP (Heat Tracing)	25 to 325	-3.9 to 162.8	360	182.2	5	5	1/4" x 10 1/4"
Type F120, single switch, bulb and capillary***, internal adjustment							
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"

\*Optional immersion stem lengths and capillary lengths are available  
 \*\*Optional stainless steel immersion stem and capillary covering available.  
 \*\*\*Standard capillary lengths are 6ft

## 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 Range		Max. Temp.		Scale Div.		Bulb Size
	°F	°C	°F	°C	°F	°C	OD x Length
1BS	-180 to 120	-117.8 to 48.9	170	76.7	5	5	3/8 x 3 3/4"
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	76.7	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 available*



## HOW TO ORDER

### BUILDING A PART NUMBER

#### Select a **Type**

Refer to the "Type" section below.

Determine type number based on switch output, enclosure, adjustment and reference.

#### Select a **Model**

Refer to the "Model Charts"

Determine model based on adjustable range, deadband and proof pressure.

Fill in the model portion of your part number with the corresponding number.

#### Select an **Option**

Refer to the "Options" section

Determine option number based on switch output, optional materials or other product enhancements.

Fill in the option portion of your part number with the corresponding number.

Leave "option" portion blank if no options are needed. FOR MULTIPLE OPTIONS: Call United Electric Controls.

#### TYPE

#### DESCRIPTION

Pressure	Type J120 - One SPDT; epoxy coated enclosure; <b>internal</b> adjustment with no reference scale, dual conduits Type H121 - One SPDT; epoxy coated enclosure; <b>external</b> adjustment with reference dial, single conduit Type H122 - <b>Two</b> SPDT; epoxy coated enclosure; external adjustment with reference dial, single conduit Type H122P - Two SPDT; <b>hermetically</b> sealed switches; epoxy coated enclosure; external adjustment with reference dial, single conduit
Differential Pressure	Type J120K - One SPDT; epoxy coated enclosure; <b>internal</b> adjustment with no reference scale, dual conduits Type H121K - One SPDT; epoxy coated enclosure; <b>external</b> adjustment with reference dial, single conduit Type H122K - <b>Two</b> SPDT; epoxy coated enclosure; <b>external</b> adjustment with reference dial, single conduit
Temperature	Type B121 - Immersion stem; one SPDT; epoxy coated enclosure; <b>external</b> adjustment with reference dial, single conduit Type B122 - Immersion stem; <b>two</b> SPDT; epoxy coated enclosure; external adjustment with reference dial, single conduit Type C120 - Immersion stem; one SPDT; epoxy coated enclosure; <b>internal</b> adjustment with no reference scale, dual conduits Type E121 - Bulb and capillary; one SPDT; epoxy coated enclosure; <b>external</b> adjustment with reference dial, single conduit Type E122 - Bulb and capillary; <b>two</b> SPDT; epoxy coated enclosure; external adjustment with reference dial, single conduit Type F120 - Bulb and capillary; one SPDT; epoxy coated enclosure; <b>internal</b> 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; <b>two</b> SPDT; external adjustment and temperature indication, dual conduits

### SWITCH OPTIONS

0140	Gold contacts, 1 amp 125 VAC resistive, not available type H122P, 820E, & 822E
0500	Close deadband, 5 amp 125/250 VAC resistive. NOT AVAILABLE TYPE H122P MODELS 520-535
1010	DPDT switch, 10 amp 125/250 VAC resistive. NOT AVAILABLE TEMPERATURE VERSIONS; TYPES H122, H122P, H122K; OR J120K MODELS 36-39, 367, AND 540-548; OR J120 MODELS 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 TYPES 820E, 822E, H122P, H122K, B122, AND J120K MODELS 36-39; J120 MODELS 171-194, 483-494, 520-535
1180	Hermetically sealed, SPDT, 11 amp 125/250 VAC resistive, must be specified with type H122P. NOT AVAILABLE TYPES 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 types 820E, 822E, B121, B122, E121, E122, H121, H122, H121K, H122K, H122P or models 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 types 820E, 822E, B121, B122, E121, E122, H121, H122, H121K, H122K, H122P or models 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 types 820E, 822E, B121, B122, E121, E122, H121, H122, H121K, H122K, H122P or models 171-194, 483-494, 520-535, 612-616

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

**SWITCH OPTIONS (CONT)**

1530	External manual reset, 15 amp 125/250/480 VAC resistive; latches on rise only. Not available types 820E, 822E, B121, B122, E121, E122, H121, H122, H121K, H122K, H122P models 520-535 or with ATEX certification
1535	High ambient, 15 amp 125/250 VAC resistive; temperatures up to 250°F (120°C). Not available types 820E, 822E, H122P models 520-535
1537	Vapor sealed switch, 15 amp 125/250 VAC resistive. Not available types 820E, 822E, H122P or models 520-535
1539	Fungus resistant case, 15 amp 125/250 VAC resistive. Not available types 820E, 822E, H122P or models 520-535
2000	20 amp 125/250 VAC resistive. Not available models 520-535, 540-548
3000	30 amp 125/250/300 VAC resistive. Not available types 820E, 822E, B121, B122, H121, H122, H121K, H122K, H122P for models 36-39, 171-193, 483-493, 520-535, 540-548, 560-567

**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 models 36-39, 450-457, 540-548 (Kapton® diaphragm, Viton® O-ring and sealing diaphragms), 612-616 (O-ring only) with standard pressure connection. Available TYPE J120 MODELS 701-705 and TYPES H121 and H122 MODELS 701-703 with stainless steel pressure connection.

**OPTIONAL SENSOR MATERIAL FOR "WC RANGES. AVAILABLE MODELS 520-525**

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
XC006	316L Stainless steel pressure connection, Kapton® diaphragm, Viton® O-Ring
XC007	316L Stainless steel pressure connection, Teflon® diaphragm, Viton® O-Ring

**OPTIONAL SENSOR MATERIAL FOR CORROSIVE MEDIA. AVAILABLE MODELS 183-189, 483-489**

XD002	Hastelloy® C diaphragm
XD003	Monel® diaphragm
XD004	Tantalum diaphragm
XP111	Hastelloy® B pressure connection
XP112	Hastelloy® C pressure connection
XP113	Monel® pressure connection
XR211	Kalrez® O-Ring
XR212	Silicone O-Ring. Not available models 188-189, 488-489
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, MODELS 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/cm <sup>2</sup> . Not available on temperature versions
M300	NEMA 4 construction, available types 820E & 822E only
M320	Tamper resistant cover for indication portion of control, internal adjustment, available types 820E & 822E only
M407	CE Compliance to Pressure Equipment Directive (category IV). Not available on models 126, 137, 520-524, 530-534, 550, 551, S126B, S137B and all temperature models.
M440	Cover chain
M444	Paper ID tag
M446	Stainless steel ID tag & wire attachment
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 models 520-535, 540-548 when surface mounting)

**ALSO AVAILABLE:** Separable thermowells, optional immersion stem and capillary lengths; armor cable to protect capillaries; union connectors; 150# and 300# flanges (consult factory for part numbers)

**NOTE:** No options are available on Heat Trace and Freeze Protection products except M201, M444 and M446





### OPTIONS FOR TEMPERATURE MODELS

#### UNION CONNECTORS

Option	Replacement Number	Description
<u>Brass</u>		
W027	SD6213-27	1/2" NPT w/ 3/4" bushing
W045	SD6213-45	3/4" NPT
W051	SD6213-51	1/2" NPT
<u>304 Stainless Steel</u>		
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, all 1/2" NPT Internal*

<u>Brass</u>		
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	SD6225-192	1/2" NPT, 7" BT
<u>316 Stainless Steel</u>		
W076	SD6225-76	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*

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

#### 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; available 100, 105 (except Model 119), 117, 120 and 400 Series.

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 ST/ST thermowell

#### OPTIONAL LENGTHS

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

Optional capillary length to \*50' available in copper or 304 st/st. Armor or Teflon® capillary protection available to lengths less than or equal to capillary length. Consult UE for additional information.

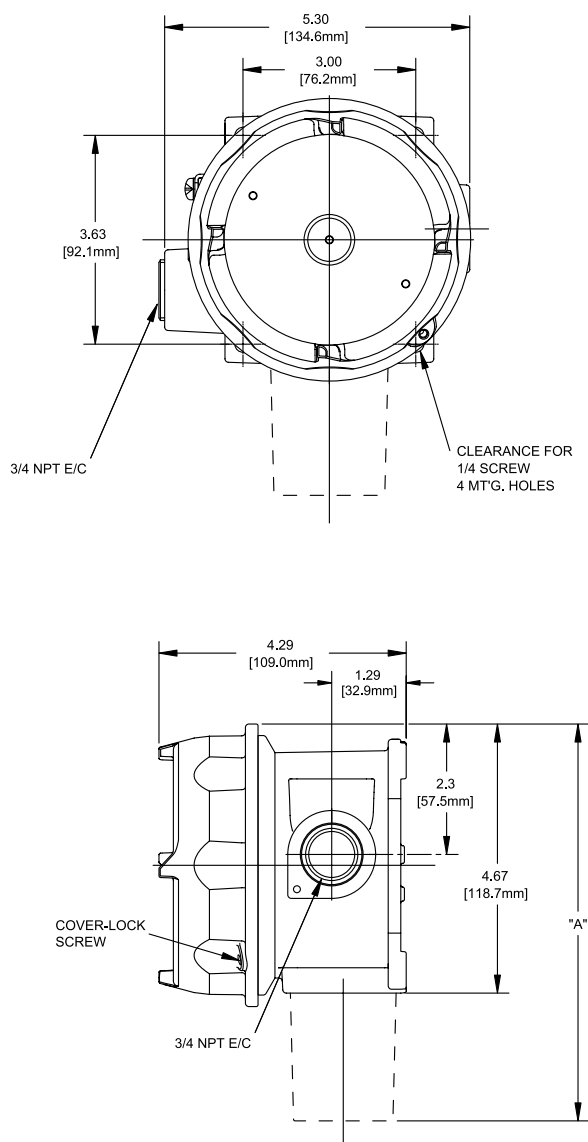
\*Consult UE regarding repeatability and ambient effects on capillary lengths over 30'.

# DIMENSIONAL DRAWINGS

120 Series  
Explosion Proof

## Internal Set Point Adjustment, dual conduits

Types J120, J120K, C120, F120



All dimensions stated in inches (millimeters)

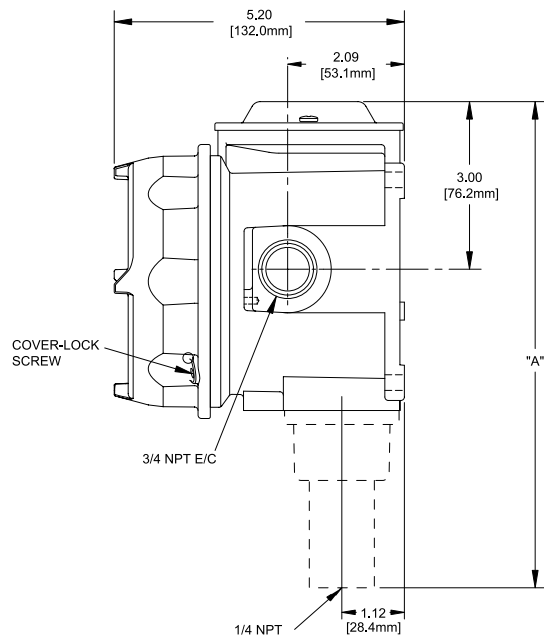
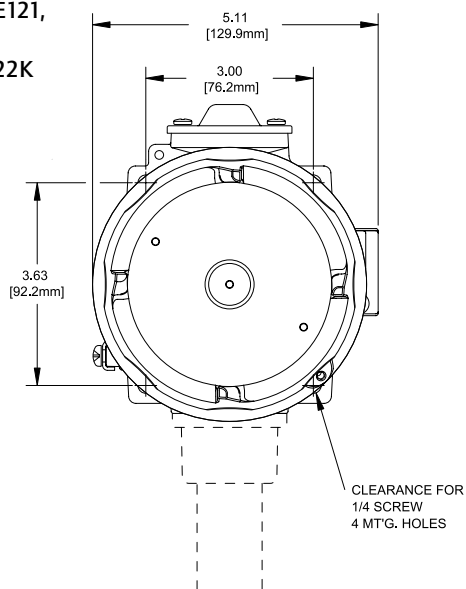
Dimension A			
Models	Inches	mm	NPT
<b>Pressure</b>			
126-164	7.30	185.4	1/4
5126B-S164B	7.70	195.6	1/2
171-174	8.53	216.7	1/2
183-186, 483-486	8.53	216.7	1/2
188-189, 488-489	7.53	191.3	1/2
190-194, 490-494	7.53	191.3	1/2
270-376, 680	8.20	208.3	1/4
450, 452	8.95	227.3	1/4
451, 453, 454	8.20	208.3	1/4
520-525	9.40	238.8	1/2
530-535	9.00	228.6	1/2
550, 552	8.95	227.3	1/4
551, 553-555	8.40	213.4	1/4
560-564	7.63	193.8	2" Sanitary
565-567	7.63	193.8	1 1/2" Sanitary
612, 616	7.90	200.7	1/4
701-705	7.53	191.3	1/4
<b>Differential Pressure</b>			
36-39, 367	7.63	193.8	1/4
147-157	7.63	193.8	1/4
S147B-S157B	7.63	193.8	1/2
455-559	8.55	217.2	1/4
540-543	9.60	243.8	1/8
544-548	9.70	246.47	1/8
<b>Temperature</b>			
120, 121	9.07	230.4	Immersion stem
1BS-8BS	9.03	229.4	Bulb & capillary

## DIMENSIONAL DRAWINGS

120 Series  
Explosion Proof

### External Set Point Adjustment, single conduit

Types B121, B122, E121,  
E122, H121, H122,  
H122P, H121K, H122K

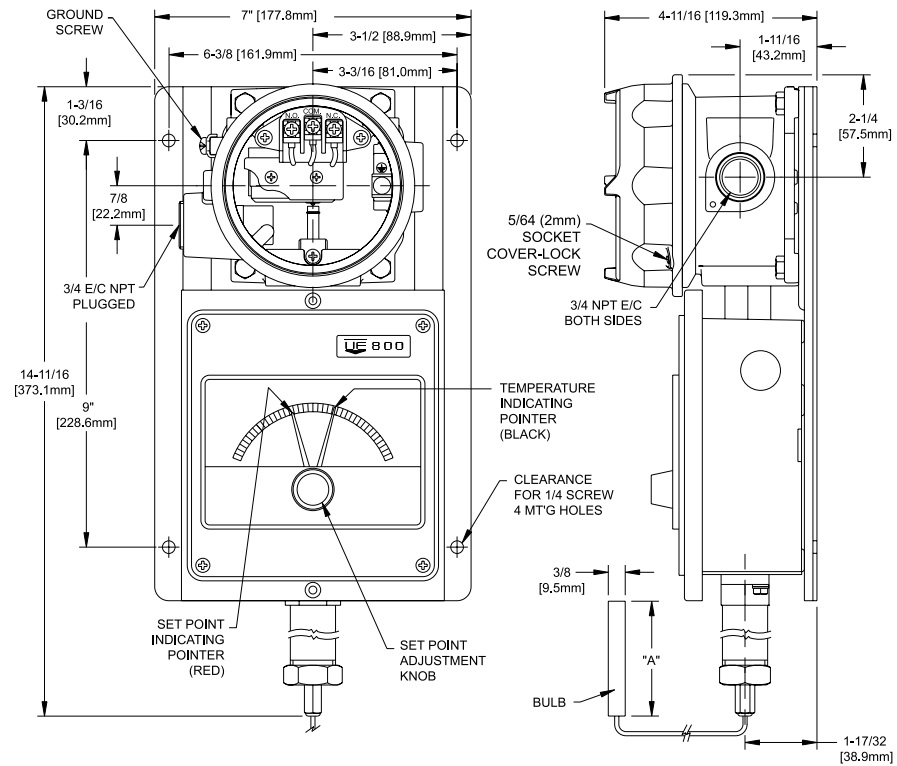


Dimension A			
Models	Inches	mm	NPT
<b>Pressure</b>			
126-164	8.13	206.5	1/4
S126B-S164B	8.58	217.9	1/2
270-376	7.85	199.4	1/4
450, 452	9.80	248.9	1/4
453, 454	9.10	231.1	1/4
550, 552	9.75	247.7	1/4
553-555	9.25	235.0	1/4
612, 616	8.65	219.7	1/4
701-705	8.31	211.1	1/4
<b>Differential Pressure</b>			
147-157	8.44	214.4	1/4
S147B-S157B	8.44	214.4	1/2
456-559	9.4	238.8	1/4
<b>Temperature</b>			
120, 121	10.00	254.0	Immersion stem
2B5-8B5	9.90	251.5	Bulb & capillary
13272, 13322	—	—	Immersion stem (Freeze protection)
13273, 13321	—	—	Bulb & capillary (Heat tracing)

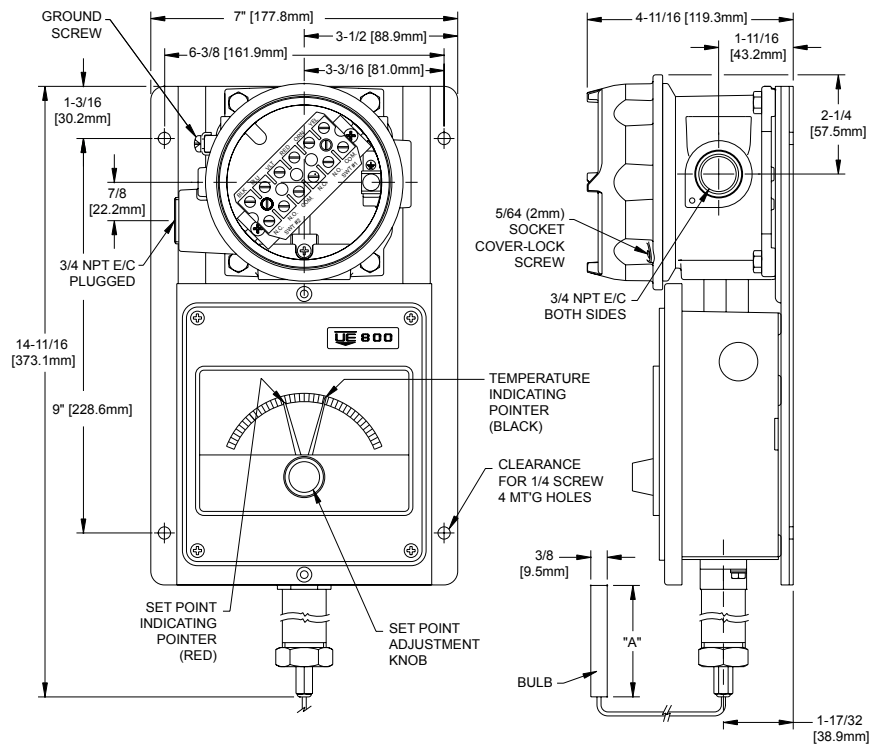
# DIMENSIONAL DRAWINGS

## External Set Point Adjustment & Temperature Indication

Type 820E  
single switch



Type 822E  
dual switch

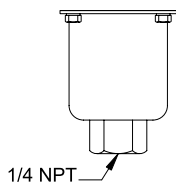


### DIMENSIONAL DRAWINGS

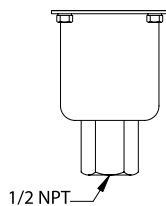
#### SENSORS

##### Pressure Sensors\*

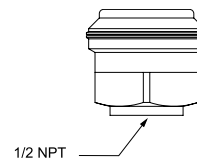
(see drawings and charts on page 17 & 18 for complete dimensions)



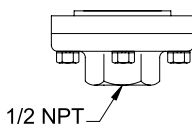
Models 126 - 164



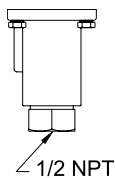
Models S126B - S164B



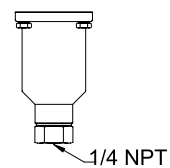
Models 171-174



Models 183 - 186, 483-486



Models 188-194, 488-494



J120 Models  
270-376, 680

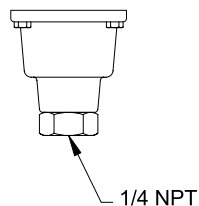
\*For all pressure types unless noted

# DIMENSIONAL DRAWINGS

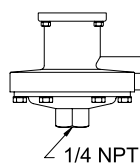
## SENSORS

### Pressure Sensors\*

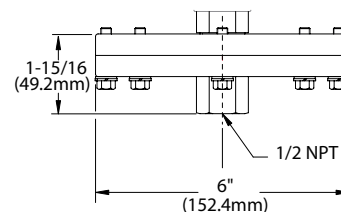
(see drawings and charts on page 17 & 18 for complete dimensions)



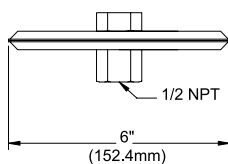
**H121 Models 270-376**



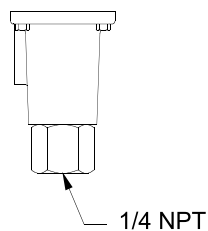
**Models 450-454, 550-555**



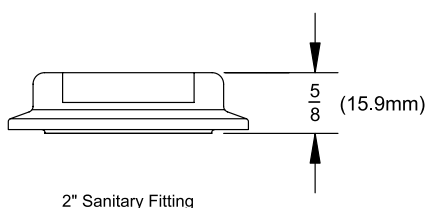
**Models 520-525**



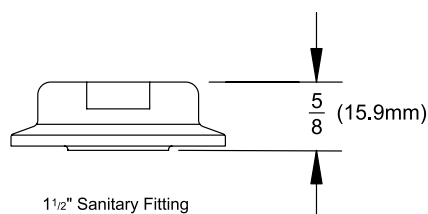
**Models 530-535**



**Models 612-616, 701-706**



**Models 560-564**



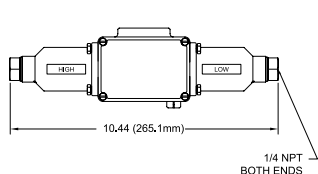
**Models 565-567**

## DIMENSIONAL DRAWINGS

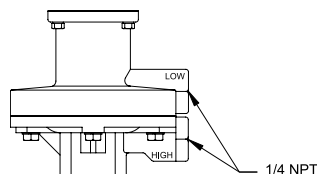
### SENSORS

#### Differential Pressure Sensors

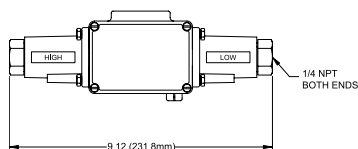
(see drawings and charts on page 17 & 18 for complete dimensions)



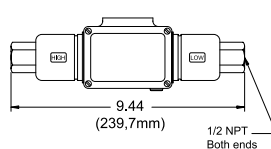
J120K Models 367



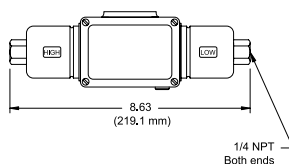
Models 455-457, 559



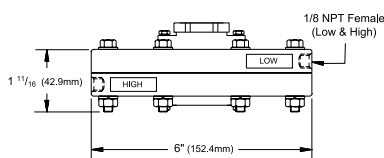
J120K Models 36-39



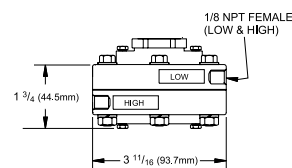
Models S147B - S157B



Models 147-157



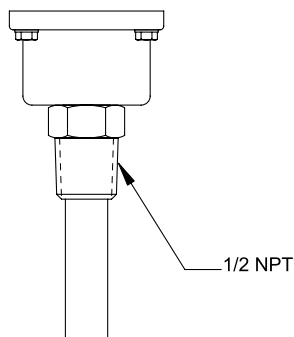
Models 540-543



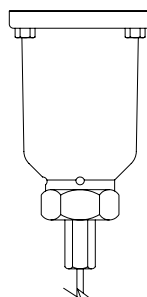
Models 544-548

#### Temperature Sensors

(see drawings and charts on page 16 and 17 for complete dimensions)



Models 120-121



Models 1B5-8B5



## ALTERNATIVE PRODUCTS FROM UE

### One Series Electronic Pressure and Temperature Switches

- Solid-state reliability with health-checking diagnostics
- Available with innovative low power "2-Wire" model for discrete input to PLC's or DCS; or models to switch 115/230 VAC loads
- Enclosure type 4X design, approved for Class I, Division 2 hazardous or intrinsically safe locations
- Digital display and tamper-proof keypad adjustment of setpoint and deadband
- Optional dual switch or 4-20 mA analog output



### Spectra 12 Series Pressure & Temperature Switches for Hazardous Locations

- Compact, cylindrical stainless steel design
- Hermetically-sealed switch
- Explosion-proof, hazardous location agency approvals from UL, ATEX, cUL
- Snap-acting bellville spring mechanism to enhance vibration and setpoint stability
- Pressure Ranges 1 to 6000 psi; Differential Pressure Working Pressure Ranges 0 to 2500 psid; Temperature Ranges -130 to 650°F



### 360 Series Pressure Switches

- Compact, #316 Stainless Steel Housing
- Hermetically sealed switch
- CSA, NRTL/C, ATEX certified for hazardous locations
- Pressure ranges 3 to 9,000 psi



### 117 Series Single Switch for Corrosive and Hazardous Division 2 Locations

- Compact pressure, differential pressure and temperature models
- Hermetically-sealed SPDT and DPDT output
- Approved for Class I, Division 2 hazardous locations
- Epoxy-coated weather-tight design houses stainless steel internal construction
- Convenient terminal block wiring



### 460 Series Pressure Transmitters for Hazardous Locations

- Welded, #316 stainless steel construction
- CSA, NRTL/C, CENELEC EE xd certified for hazardous location
- Ranges 0 to 15,000 psi
- Choice of field or factory-sealed zero and span calibration
- 4-20 mA or 0-4 VDC output

AVAILABLE  
FALL 2003



For more information, request Bulletins or visit [www.ueonline.com](http://www.ueonline.com)

## RECOMMENDED PRACTICES AND WARNINGS

United Electric Controls Company recommends careful consideration of the following factors when specifying and installing UE pressure and temperature units. Before installing a unit, the Installation and Maintenance instructions provided with unit must be read and understood.

- To avoid damaging unit, proof pressure and maximum temperature limits stated in literature and on nameplates must never be exceeded, even by surges in the system. Operation of the unit up to maximum pressure or temperature is acceptable on a limited basis (e.g., start-up, testing) but continuous operation must be restricted to the designated adjustable range. Excessive cycling at maximum pressure or temperature limits could reduce sensor life.
- A back-up unit is necessary for applications where damage to a primary unit could endanger life, limb or property. A high or low limit switch is necessary for applications where a dangerous runaway condition could result.
- The adjustable range must be selected so that incorrect, inadvertent or malicious setting at any range point cannot result in an unsafe system condition.
- Install unit where shock, vibration and ambient temperature fluctuations will not damage unit or affect operation. Orient unit so that moisture does not enter the enclosure via the electrical connection. When appropriate, this entry point should be sealed to prevent moisture entry.
- Unit must not be altered or modified after shipment. Consult UE if modification is necessary.
- Monitor operation to observe warning signs of possible damage to unit, such as drift in set point or faulty display. Check unit immediately.
- Preventative maintenance and periodic testing is necessary for critical applications where damage could endanger property or personnel.
- For all applications, a factory set unit should be tested before use.
- Electrical ratings stated in literature and on nameplate must not be exceeded. Overload on a switch can cause damage, even on the first cycle. Wire unit according to local and national electrical codes, using wire size recommended in installation sheet.
- Do not mount unit in ambient temp. exceeding published limits.

## LIMITED WARRANTY

Seller warrants that the product hereby purchased is, upon delivery, free from defects in material and workmanship and that any such product which is found to be defective in such workmanship or material will be repaired or replaced by Seller (Ex-works, Factory, Watertown, Massachusetts. INCOTERMS); provided, however, that this warranty applies only to equipment found to be so defective within a period of 24 months from the date of manufacture by the Seller. Seller shall not be obligated under this warranty for alleged defects which examination discloses are due to tampering, misuse, neglect, improper storage, and in any case where products are disassembled by anyone other than authorized Seller's representatives. EXCEPT FOR THE LIMITED WARRANTY OF REPAIR AND REPLACEMENT STATED ABOVE, SELLER DISCLAIMS ALL WARRANTIES WHATSOEVER WITH RESPECT TO THE PRODUCT, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

## LIMITATION OF SELLER'S LIABILITY

Seller's liability to Buyer for any loss or claim, including liability incurred in connection with (i) breach of any warranty whatsoever, expressed or implied, (ii) a breach of contract, (iii) a negligent act or acts (or negligent failure to act) committed by Seller, or (iv) an act for which strict liability will be inputted to seller, is limited to the "limited warranty" of repair and/or replacement as so stated in our warranty of product. In no event shall the Seller be liable for any special, indirect, consequential or other damages of a like general nature, including, without limitation, loss of profits or production, or loss or expenses of any nature incurred by the buyer or any third party.

*UE specifications subject to change without notice.*

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FAX: 603-394-0175

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Conyers, GA 30013  
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FAX: 770-929-8716

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5829 Grazing Court  
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Phone: 513-398-3175  
FAX: 513-398-3076

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Clayton, CA 94517  
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4306 Lakeshore Forest Drive  
Missouri City, TX 77459  
Phone: 281-431-8134  
FAX: 281-431-8158

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(Australia) PTY Ltd  
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Locked Bag 600  
Ashburton, Victoria  
3147, Australia  
Phone: 613-9567-0750  
FAX: 613-9567-0755

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FAX: 32-37552-747

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FAX: 905-625-5709

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FAX: 496-062-7501

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56100 Kuala Lumpur, Malaysia  
Phone: 603-9133-4122  
FAX: 603-9133-4155



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