

## PRESSURE, DIFFERENTIAL PRESSURE, AND TEMPERATURE SWITCHES



### FEATURES

- 316 Stainless Steel Construction
- Hermetically Sealed Micro-switch
- Convenient Field Adjustment
- Belleville Actuated
- UL, cUL approved and ATEX compliant
- Dual Seal Certified
- Adjustable Ranges:

Pressure: 1 to 12,500 psi  
(68,9 mbar to 861,9 bar)

Differential Pressure:  
0.7" wcd to 150 psid  
(1,7 mbar to 10,3 bar)

Temperature: -130°F to 650°F  
(-90°C to 340°C)



### OVERVIEW

12 Series hazardous location switches are ideal for operation in tough applications where space is at a premium. A snap-action Belleville spring assembly is used to provide vibration resistance and prolonged switch life. The 316 stainless steel enclosure and hermetically sealed switch provide rugged protection from the environment. Approved for use in hazardous locations worldwide, the 12 Series is installed within applications ranging from offshore oil rigs to rotating equipment, and more.

### FEATURES

- UL, cUL and ATEX approved for Div. 1 or Zone 1 hazardous locations, CE compliant
- Dual seal compliant to ANSI/ISA 12.27.01
- Pressure switch wetted parts are NACE MR-0175 compliant
- Snap-acting Belleville spring for long life, vibration resistance and stability
- Optional Hastelloy® and Monel® sensor material for corrosive media
- Optional medium-pressure and high-pressure autoclave pressure connections
- Mounting bracket available for retrofit applications
- 72" leadwires
- 3-year warranty



## APPLICATIONS

Triple approval (UL, cUL and ATEX) mean the 12 Series meets the demanding requirements of critical applications within hazardous locations. Additionally, the 12 Series complies with ANSI/ISA 12.27.01, "secondary seal requirements for process sealing between electrical systems and flammable or combustible process fluids." It can be used in a variety of applications where space is at a premium. All metal wetted parts comply with NACE MR-0175 and the 316 stainless steel, type 4X enclosure rating assure long-term performance in the harshest environments.

Offshore Platforms



Chemical Plants & Refineries



Instrument Panels



Rotating Equipment

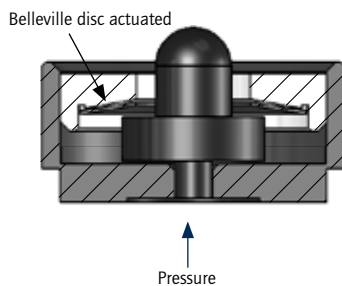


## TECHNOLOGY

At the heart of the 12 Series is a Belleville spring assembly. The spring is a small conical washer that transfers motion to a hermetically sealed 1 or 5 amp microswitch. Its 'snap-action' provides fast, positive contact transfer. The Belleville spring 'snaps over' when pressure is applied and 'snaps back' upon pressure release.

### Advantages:

- Set point stability: The switch performs under challenging environmental conditions such as vibration and temperature changes. In addition, minimal movement of components reduces sensor fatigue thereby increasing life and accuracy.
- Resistance to vibration: Preloading of the electrical switch helps reduce 'contact chatter.'
- Small size: Belleville springs are simple in appearance, but can deliver a heavy load with a relatively small deflection, contributing to a compact design.
- Deadbands: The Belleville is a 'negative-rate' snap acting device, so on-off deadband values are wider at the low end of the range. To minimize deadbands, select a model with a set point at the higher end of the range whenever possible.





### SPECIFICATIONS

<b>STORAGE TEMPERATURE</b>	-58° to 203°F (-50 to 95°C)
<b>OPERATING AMBIENT TEMPERATURE</b>	-58 to 203°F (-50 to 95°C). Set point shifts less than 1% of range for a 50°F (28°C) ambient temperature change. Slight ambient effects for 25-50' extra capillary length on temperature switch models, consult factory.
<b>MEDIA TEMPERATURE</b>	Pressure models: Sensor types 2, 7, 9: -50 to 400°F (-45 to 204°C) Sensor types 3, 4, 8: -20 to 200°F (-28 to 93°C) Sensor types 5, 6: 0 to 320°F (-18 to 160°C) Sensor type P: 0 to 200°F (-18 to 93°C); 20 to 250°F (-7 to 121°C) for optional Viton sensor Differential pressure models: Sensor type K: 0 to 180°F (-18 to 82°C); 20 to 250°F (-7 to 121°C) for optional Viton sensor Temperature models: See model chart.
<b>SET POINT REPEATABILITY</b>	Temperature models: ±1% of adjustable range Pressure models: Sensor types 2, P: ±1.5% of adjustable range Sensor types 3-9: ±1% of adjustable range Differential pressure models: K1 to K3: ±1%, K4 to K6: ±1.5% of adjustable range
<b>SHOCK</b>	Differential pressure and temperature models: set point repeats after 15 G's, 10 millisecond duration Pressure models: Set point repeats after 75 G's, 10 milliseconds
<b>VIBRATION</b>	Differential pressure and temperature models: Set point repeats after 2.5 G's, 10-2000 Hz. Pressure models: Set point repeats after 15 G's, 10-2000 Hz
<b>ENCLOSURE</b>	316 stainless steel
<b>ENCLOSURE CLASSIFICATION</b>	Certified to Enclosure Type 4X Class I, Division 1 product meets enclosure Type 7; Class II, Division I product meets enclosure type 9. Certified to IP66 requirements
<b>SWITCH OUTPUT</b>	Code S: One SPDT, hermetically sealed. Code D: Two SPDT for DPDT action, hermetically sealed
<b>ELECTRICAL RATINGS</b>	Code H: 5 A at 125/250 VAC, 5 A resistive and 3 A inductive at 28 VDC. Silver contacts Code L: 1 A at 125 VAC, 1 A resistive and 0.5 A inductive at 28 VDC Bifurcated gold contacts
<b>ELECTRICAL CONNECTION</b>	Code N: 1/2" NPT (male) with 72" leadwires Code M: M20 metric threads, 72" leads Option M515, 4 terminal DIN connector (DIN 43650 Form A) available SPDT only (does not meet Div. 1 or 2, or ATEX requirements.)

<b>WEIGHT</b>	Temperature models: approximately 1 lb 14 oz. (0,85 kg) Pressure models: approximately 12 ounces (0,34 kg) Differential models: approximately 3 lb (1,4 kg)
<b>TEMPERATURE ASSEMBLY</b>	Non-toxic oil fill; 6 feet 304 stainless steel. Optional lengths available
<b>TEMPERATURE DEADBAND</b>	Typically 2% of range under laboratory conditions (70°F ambient circulating bath at a rate of 1/2°F per minute change)
<b>PRESSURE CONNECTION</b>	1/2" NPT (female) or 1/4" NPT (female). Differential pressure: 1/8" NPT (female) Optional pressure connections available, see page 11.
<b>MOUNTING</b>	Pressure: May be pipe mounted or bracket mounted using kit 62169-13 Differential Pressure: Should be mounted using 2 mounting holes on sensor bracket Temperature: Mounting kit 62169-13 should be specified for new installations

## APPROVALS



### **UNITED STATES AND CANADA** **UL Listed, cUL Certified**

Class I, Division 1 and 2, Groups A, B, C & D  
Class II, Division 1 and 2, Groups E, F & G  
Class III  
Class I, Zone 1, Group IIC  
Enclosure Type 4X  
Pressure: UL 508 & 698; CSA C22.2 No. 14, 25 & 30 -  
File # E40857  
Dual seal certified to ISA 12.27.01 (meets CEC secondary  
seal requirements) standard on straight pressure models  
only  
Temperature: UL 873, 1203; CSA C22.2 No. 24, 25 & 30 -  
File # E43374



### **EUROPEAN UNION** **ATEX Directive 94/9/EC**



II 2 G Ex d IIC T6  
II 2 D Ex tD A21 IP66 T+85C  
Tamb = -50°C to +80°C  
UL International DEMKO A/S (N.B.# 0539)  
Certificate # DEMKO 08 ATEX 0717128X  
EN 60079-0, 60079-1, 61241-0 & 61241-1

### **II 1 G EEx ia IIC T6 (OPTIONAL – code M405)**

Tamb = -50°C to +60°C  
UL International DEMKO A/S (N.B.# 0539)  
Certificate # DEMKO 03 ATEX 0335063  
EN 50014, 50020 & 50284

### **Pressure Equipment Directive (PED) 97/23/EC**

Compliant to PED  
Products rated lower than 7.5 psi are outside the scope of the  
PED



### **Low Voltage Directive (LVD) 73/23/EC & 93/68/EEC**

Compliant to LVD  
Products rated lower than 50 VAC and 75 VDC are outside the  
scope of the LVD  
The Low Voltage Directive does not apply to products for use in  
hazardous locations



### **RUSSIA**

Gosgortekhnadzor Permit **(OPTIONAL – code M406)**  
0ExiaIICT6  
Tamb = -50°C to +60°C  
1ExdIICT6X  
Tamb = -56°C to +85°C  
NANIO CCVE Certification Center  
Certificate # ROSS US.GB05.Bo2933  
GOST R 51330.0, 51330.1, 51330.10 & 51330.14



### MODEL CHART

Model	Adjustable Range Lower end of range on fall; High end of range on rise	Deadband	Over Range Pressure*	Proof Pressure**
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**Sensor Type 2**, 316 stainless steel 1/2" NPT (female) pressure connection and welded diaphragm, 23/32" orifice for clean out purposes. High proof pressure. Not recommended for high cycling applications. (NACE MR-0175 compliant)

	psi	bar	psi	bar	psi	bar	psi	bar
A	10 to 25	0,7 to 1,7	2 to 7	0,1 to 0,5	1000	68,9	2500	172,4
B	15 to 45	1,0 to 3,1	3 to 10	0,2 to 0,7	1000	68,9	2500	172,4
C	25 to 85	1,7 to 5,9	5 to 20	0,3 to 1,4	1000	68,9	2500	172,4
D	50 to 130	3,4 to 9,0	7 to 25	0,5 to 1,7	1500	103,4	2500	172,4
E	100 to 210	6,9 to 14,5	8 to 30	0,6 to 2,1	1500	103,4	2500	172,4
F	160 to 400	11,0 to 27,6	10 to 50	0,7 to 3,4	1500	103,4	2500	172,4
G	275 to 850	19,0 to 58,6	40 to 125	2,8 to 8,6	1500	103,4	2500	172,4

**Sensor Type 3**, 316L stainless steel 1/2" NPT (female) pressure connection, Teflon® coated Polyimide (Kapton®) diaphragm, Buna N O-ring, 1/2" orifice for clean out purposes. (NACE MR-0175 compliant)

**Sensor Type 4**, 316L stainless steel 1/4" NPT (female) pressure connection, Teflon® coated Polyimide (Kapton®) diaphragm, Buna N O-ring, 1/8" orifice. (NACE MR-0175 compliant)

	psi	bar	psi	bar	psi	bar	psi	bar
A	8 to 30	0,6 to 2,1	2 to 6	0,1 to 0,4	600	41,4	1000	68,9
B	15 to 55	1,0 to 3,8	3 to 8	0,2 to 0,6	600	41,4	1000	68,9
C	30 to 170	2,1 to 11,7	5 to 15	0,3 to 1,0	600	41,4	1000	68,9
D	100 to 370	6,9 to 25,5	15 to 50	1,0 to 3,4	600	41,4	1000	68,9
E	200 to 700	13,8 to 48,3	40 to 90	2,8 to 6,2	1500	103,4	3000	206,8
F	400 to 1500	27,6 to 103,4	100 to 250	6,9 to 17,2	3000	206,8	4500	310,3
G	1000 to 3200	68,9 to 220,6	100 to 500	6,9 to 34,5	6000	413,7	10000	689,5
H	2000 to 6000	137,9 to 413,7	400 to 800	27,6 to 55,2	8000	551,6	10000	689,5

**\*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).

**Kapton®** is a registered trademark of E.I. DuPont de Nemours and Company.

**Teflon®** is a registered trademark of the DuPont Company.

**Kalrez®** and **Viton®** are registered trademarks of Dupont Performance Elastomers.

**Hastelloy®** is a registered trademark of Haynes International, Inc.

**Monel®** is a registered trademark of The Special Metals Corporation.

**Aflas®** is a registered trademark of Asahi Glass.

Model	Adjustable Range Lower end of range on fall; High end of range on rise	Deadband	Over Range Pressure*	Proof Pressure**
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**Sensor Type 5**, 316L stainless steel 1/2" NPT (female) pressure connection and diaphragm (optional Hastelloy® C or Monel®), Viton® O-ring (optional Kalrez®, Ethylene Propylene, or Aflas®), 1/2" orifice for clean out purposes. (NACE MR-0175 compliant)

**Sensor Type 6**, 316L stainless steel 1/4" NPT (female) pressure connection and diaphragm (optional Hastelloy® C or Monel®), Viton® O-ring (optional Kalrez®, Ethylene Propylene, or Aflas®), 1/8" orifice. (NACE MR-0175 compliant)

	psi	bar	psi	bar	psi	bar	psi	bar
A	9 to 35	0,6 to 2,4	2 to 7	0,1 to 0,5	600	41,4	1000	68,9
B	25 to 65	1,7 to 4,5	3 to 10	0,2 to 0,7	600	41,4	1000	68,9
C	50 to 150	3,4 to 10,3	5 to 15	0,3 to 1,0	600	41,4	1000	68,9
D	100 to 350	6,9 to 24,1	15 to 50	1,0 to 3,4	600	41,4	1000	68,9
E	250 to 700	17,2 to 48,3	40 to 95	2,8 to 6,6	1500	103,4	3000	206,8
F	400 to 1500	27,6 to 103,4	100 to 300	6,9 to 20,7	3000	206,8	4500	310,3
G	1000 to 3200	68,9 to 220,6	100 to 500	6,9 to 34,5	6000	413,7	10000	689,5
H	2000 to 6000	137,9 to 413,7	400 to 1000	27,6 to 68,9	8000	551,6	10000	689,5

**Sensor Type 7**, 1/2" 316L stainless steel NPT (female) pressure connection and welded diaphragm. Large 23/32" orifice for clean out purposes. (NACE MR-0175 compliant)

	psi	bar	psi	bar	psi	bar	psi	bar
A	3 to 15	0,2 to 1,0	1 to 4	0,1 to 0,3	300	20,7	500	34,5
B	10 to 35	0,7 to 2,4	1 to 6	0,1 to 0,4	300	20,7	500	34,5
C	25 to 85	1,7 to 5,9	3 to 11	0,2 to 0,8	300	20,7	500	34,5
D	65 to 125	4,5 to 8,6	6 to 18	0,4 to 1,2	300	20,7	500	34,5

**Sensor Type 8**, 316L stainless steel 1/4" NPT (female) pressure connection, Teflon® coated Polyimide (Kapton®) diaphragm (optional Hastelloy® C or Monel®), Buna N O-ring (optional Kalrez®, Silicone, Ethylene Propylene, or Aflas®), 1/8" orifice. Non-Belleville actuation. (NACE MR-0175 compliant)

	psi	bar	psi	bar (unless noted)	psi	bar	psi	bar
A <sup>†</sup>	3 to 25	0,2 to 1,7	0.5 to 4	34,5 mbar to 0,3 bar	600	41,4	1000	68,9
B	15 to 75	1,0 to 5,2	1 to 7	0,1 to 0,5	600	41,4	1000	68,9
C	25 to 150	1,7 to 10,3	1 to 12	0,1 to 0,8	600	41,4	1000	68,9
D	50 to 450	3,4 to 31,0	3 to 28	0,2 to 1,9	2000	137,9	3000	206,8
E	100 to 900	6,9 to 62,1	10 to 60	0,7 to 4,1	2000	137,9	3000	206,8
F	500 to 2500	34,5 to 172,4	20 to 140	1,4 to 9,7	6000	413,7	7500	517,1
G	700 to 4000	48,3 to 275,8	40 to 250	2,8 to 17,2	6000	413,7	7500	517,1

**Application Note:** The use of metallic diaphragms where higher pressure shock or heavy cycling is expected should be avoided. Sensor Type 7 or 9 should not be used where system or startup vacuum pressure 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).

<sup>†</sup>Adjustable range is 4 to 25 psi (0,3 to 1,7 bar) for DPDT switch output

### MODEL CHART

Model	Adjustable Range Lower end of range on fall; High end of range on rise	Deadband	Over Range Pressure*	Proof Pressure**
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**Sensor Type 9**, 316L stainless steel 1/2" NPT (female) pressure connection and welded diaphragm. Large 23/32" orifice for clean-out purposes. Non-Belleville actuation. (NACE MR-0175 compliant)

	psi	bar	psi	mbar (unless noted)	psi	bar	psi	bar
A	1 to 15	0,1 to 1,0	0.5 to 2	34,5 to 137,9	300	20,7	500	34,5
B	3 to 50	0,2 to 3,4	0.5 to 4	34,5 to 275,8	300	20,7	500	34,5
C	5 to 100	0,3 to 6,9	1.0 to 8	0,1 to 06 bar	300	20,7	500	34,5

**Sensor Type P**, 316 stainless steel piston and Buna N O-Ring with 316 stainless steel 1/4" NPT (female) pressure connection. Non-Belleville actuation. (NACE MR-0175 compliant)

	psi	bar	psi	bar	psi	bar	psi	bar
0	50 to 500	3,4 to 34,5	15 to 65	1,0 to 4,5	6000	413,7	10000	689,5
1	300 to 1200	20,7 to 82,7	30 to 200	2,1 to 13,8	6000	413,7	10000	689,5
2	600 to 2600	41,4 to 179,3	50 to 350	3,4 to 24,1	6000	413,7	10000	689,5
3	1200 to 5500	82,7 to 379,2	100 to 800	6,9 to 55,2	7500	517,1	10000	689,5
4	4000 to 12,500	275,8 to 861,9	300 to 1250	20,7 to 86,2	14000	965,3	16000	1103,2

**Sensor Type P**, 316 stainless steel piston and Buna N O-Ring with 316 stainless steel 1/4" NPT (female) pressure connection. Belleville actuation. (NACE MR-0175 compliant)

	psi	bar	psi	bar	psi	bar	psi	bar
6	300 to 1200	20,7 to 82,7	30 to 200	2,1 to 13,8	6000	413,7	10000	689,5
7	600 to 2600	41,4 to 179,3	50 to 350	3,4 to 24,1	6000	413,7	10000	689,5
8	1200 to 5500	82,7 to 379,2	100 to 800	6,9 to 55,2	7500	517,1	10000	689,5
9	4000 to 12,500	275,8 to 861,9	300 to 1250	20,7 to 86,2	14000	965,3	16000	1103,2

**\*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).

**Application Note:** The use of metallic diaphragms where higher pressure shock or heavy cycling is expected should be avoided. Sensor Type 7 to 9 should not be used where system or startup vacuum pressure might exceed 26" Hg Vac.



## DIFFERENTIAL PRESSURE MODEL CHART

Model	Adjustable Range Lower end of range on fall; High end of range on rise	Deadband	Working Pressure Range***	Proof Pressure**
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**Sensor Type K**, Buna N diaphragm and sealing diaphragms with epoxy coated aluminum 1/8" NPT (female) pressure connections. Non-Belleville actuation. 303/304 stainless steel mounting bracket attached.

**SPDT Switch (single pole double throw)†**

	"wcd	mbar	"wc	mbar	psi (unless noted)	bar	psi	bar
1	0.7 to 10	1,7 to 24,9	0.2 to 1	0,5 to 2,5	30 "Hg Vac to 200	-1,0 to 13,8	400	27,6
2	3 to 20	7,5 to 49,8	0.3 to 1.5	0,7 to 3,7	30 "Hg Vac to 200	-1,0 to 13,8	400	27,6
3	10 to 150	24,9 to 373,4	0.3 to 5	0,7 to 12,4	30 "Hg Vac to 200	-1,0 to 13,8	400	27,6
	psid	bar	psi	bar (unless noted)	psi (unless noted)	bar	psi	bar
4	2 to 20	0,1 to 1,4	0.3 to 1.5	20,7 to 103,4 mbar	30 "Hg Vac to 1200	-1,0 to 82,7	2500	172,4
5	5 to 80	0,3 to 5,5	1 to 8	0,1 to 0,6	30 "Hg Vac to 1200	-1,0 to 82,7	2500	172,4
6	10 to 150	0,7 to 10,3	1 to 10	0,1 to 0,7	30 "Hg Vac to 1200	-1,0 to 82,7	2500	172,4

**Sensor Type K**, Buna N diaphragm and sealing diaphragms with epoxy coated aluminum and 1/8" NPT (female) pressure connections. Non-Belleville actuation. 303/304 stainless steel mounting bracket attached.

**DPDT Switch (double pole double throw)†**

	"wcd	mbar	"wc	mbar	psi (unless noted)	bar	psi	bar
1	0.7 to 10	1,7 to 24,9	0.2 to 1.5	0,5 to 3,7	30 "Hg Vac to 200	-1,0 to 13,8	400	27,6
2	3 to 20	7,5 to 49,8	0.3 to 2	0,7 to 5,0	30 "Hg Vac to 200	-1,0 to 13,8	400	27,6
3	10 to 150	24,9 to 373,4	0.3 to 8	0,7 to 19,9	30 "Hg Vac to 200	-1,0 to 13,8	400	27,6
	psid	bar	psi	bar	psi	bar	psi	bar
4	2 to 20	0,1 to 1,4	0.3 to 3	20,7 to 206,8 mbar	30 "Hg Vac to 1200	-1,0 to 82,7	2500	172,4
5	5 to 80	0,3 to 5,5	1 to 10	0,1 to 0,7	30 "Hg Vac to 1200	-1,0 to 82,7	2500	172,4
6	10 to 150	0,7 to 10,3	1 to 15	0,1 to 1,0	30 "Hg Vac to 1200	-1,0 to 82,7	2500	172,4

## TEMPERATURE MODEL CHART (Standard capillary: 6ft, 304 st/st)

Installation may require optional mounting bracket kit (P/N 62169-13, see page 14)

Model	Adjustable Range		Max. Temperature		Bulb Size
	°F	°C	°F	°C	
R1	-130 to 120	-90 to 48.9	170	76.7	3/8 O.D. x 4-7/8"
R2	0 to 150	-17.8 to 65.6	200	93.3	3/8 O.D. x 7-1/4"
R3	50 to 300	10 to 148.9	350	176.7	3/8 O.D. x 4-7/8"
R4	150 to 650	65.6 to 343.3	700	371.1	3/8 O.D. x 4"

**\*\*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.

†See page 10 on building a part number for switch codes.



# 12 Series

## 12 Series

### HOW TO ORDER

Select letter or number "codes" to construct part number

Part #	12	S	H	S	N	2	A	M201
	Series	Housing Material	Electrical Rating	Switch Output	Electrical Conduit	Sensor Type	Model	Options

(see next page)

ORDERING CODE	DESCRIPTION	12	S	H	S	N	2	A	M201
<b>SERIES 12 DESIGNATION</b>									
12	Designation for Spectra 12 product line								
<b>HOUSING MATERIAL</b>									
S	316 Stainless Steel								
<b>ELECTRICAL RATING*</b>									
L	1 amp								
H	5 amp								
<b>SWITCH OUTPUT</b>									
S	SPDT								
D	DPDT								
<b>ELECTRICAL CONDUIT</b>									
N	1/2" NPT male								
M	M20 metric thread								
<b>SENSOR TYPE, PRESSURE CONNECTION OR BULB &amp; CAPILLARY</b>									
2	Welded 316 stainless steel diaphragm, 1/2" NPT (female) pressure connection								
3	Teflon® coated Polyimide (Kapton®) diaphragm, Buna N O-ring, 1/2" NPT (female) pressure connection								
4	Teflon® coated Polyimide (Kapton®) diaphragm, Buna N O-ring, 1/4" NPT (female) pressure connection								
5	316L stainless steel diaphragm, Viton® O-ring, 1/2" NPT (female) pressure connection								
6	316L stainless steel diaphragm, Viton® O-ring, 1/4" NPT (female) pressure connection								
7	Welded 316L stainless steel diaphragm, 1/2" NPT (female) pressure connection								
8	Kapton® diaphragm, Buna N O-ring, 1/4" NPT (female) pressure connection (non-Belleville actuation)								
9	316L stainless steel welded diaphragm, 1/2" NPT (female) pressure connection (non-Belleville actuation)								
P	316 stainless steel piston, Buna N O-ring, 1/4" NPT (female) 316 stainless steel pressure connections (Belleville and non-Belleville actuated models)								
K	Kapton® diaphragm, Buna N sealing diaphragm, 1/8" NPT (female) pressure connections (non-Belleville actuation)								
R	Remote bulb & capillary, temperature								

### MODELS, RANGE

A, B, C, D, E, See model chart for range specifications

F, G, H, O, 1, 2,

3, 4, 5, 6, 7, 8, 9

\* All switches have limited DC capabilities. Consult factory for details.

**OPTIONS**

- M201 Factory set switch, specify increasing or decreasing pressure
- M277 Range in kPa or mPa on nameplate, factory selected. NOT AVAILABLE ON TEMPERATURE VERSIONS
- M278 Range in kg/cm<sup>2</sup> on nameplate. NOT AVAILABLE ON TEMPERATURE VERSIONS
- M405 European ATEX intrinsic safety compliance
- M406 Flameproof and intrinsic safety compliance per Russian Gosgortekhnadzor standards
- M421 Gosgortekhnadzor flameproof junction box, pre-wired (not UL approved or ATEX certified) (NOT AVAILABLE ON M20 METRIC THREAD ELECTRICAL CONDUIT VERSION)
- M423 ATEX flameproof compliant junction box, pre-wire (not UL approved) (NOT AVAILABLE ON M20 METRIC THREAD ELECTRICAL CONDUIT VERSION)
- M430 Cover lock
- M444 Paper ID tag
- M446 Stainless steel ID tag and wire attachment
- M460 External ground screw; required for non-metallic conduit systems (ATEX installations only)
- M480 316 Stainless steel construction, pressure connections only, sensor material cannot be changed. AVAILABLE SENSOR TYPE K ONLY.
- M511 1/4" NPT (male) pressure connection for sensor types 3, 4, 5, 6 and 8 only
- M513 UL/CSA approved, explosion proof junction box, pre-wired (meets enclosure 4). NOT AVAILABLE ON M20 METRIC THREAD ELECTRICAL CONDUIT VERSION. NOT ATEX COMPLIANT.
- M515 DIN Connector-4 terminal; conforms to DIN 43650 Form A, (not approved for Class I Div. 1 & 2 or ATEX flame proof requirements). NOT AVAILABLE ON DPDT OR METRIC THREAD ELECTRICAL CONDUIT VERSIONS
- M521 LF4 Medium pressure autoclave 1/4" (female); AVAILABLE SENSOR TYPES P4 & P9 ONLY
- M522 LM4 Medium pressure autoclave 1/4" (male); AVAILABLE SENSOR TYPES P4 & P9 ONLY
- M523 LF6 Medium pressure autoclave 3/8" (female); AVAILABLE SENSOR TYPES P4 & P9 ONLY
- M524 LM6 Medium pressure autoclave 3/8" (male); AVAILABLE SENSOR TYPES P4 & P9 ONLY
- M525 HF4 High pressure autoclave 1/4" (female); AVAILABLE SENSOR TYPES P4 & P9 ONLY
- M526 HM4 High pressure autoclave 1/4" (male); AVAILABLE SENSOR TYPES P4 & P9 ONLY
- M527 HF6 High pressure autoclave 3/8" (female); AVAILABLE SENSOR TYPES P4 & P9 ONLY
- M528 HM6 High pressure autoclave 3/8" (male); AVAILABLE SENSOR TYPES P4 & P9 ONLY
- M540 Viton® construction (deadband and low end of range will increase slightly): SENSOR TYPE K wetted parts include Kapton diaphragm, Viton® O-ring and sealing diaphragm, aluminum pressure connection; SENSOR TYPE 8 wetted parts include stainless steel diaphragm and pressure connection with Viton O-ring; SENSOR TYPE P wetted parts include stainless steel piston and pressure connection with Viton O-ring.
- M541 Ethylene propylene (EPDM) O-ring for sensor types 5, 6, & P only
- M550 Oxygen service cleaning; internal construction and materials may change (includes Viton® diaphragm and/or O-ring when applicable). NOT AVAILABLE ON SENSOR TYPES 3, 4, AND 8
- M924 7/16-20 SAE (female) stainless steel pressure connection. AVAILABLE SENSOR TYPE 6 ONLY
- NC1 NACE certificate; NOT AVAILABLE FOR SENSOR TYPE K AND TEMPERATURE MODELS

**ACCESSORIES**

- 62169-13 Mounting bracket kit (available with pressure and temperature models only)
- 62169-31 ATEX flameproof compliant junction box and terminal kit, not pre-wired (see option code M423)
- 6361-694 Junction box and terminal kit, not pre-wired (see option code M513 for description)

## OPTIONS FOR TEMPERATURE MODELS

### OPTIONAL SENSOR MATERIALS FOR CORROSIVE MEDIA AVAILABLE SENSOR TYPE 8

XD002	Hastelloy® C diaphragm
XD003	Monel® diaphragm
XP112	1/2" NPT Hastelloy® C pressure connection
XP113	1/2" NPT Monel® pressure connection
XP114	1/4" NPT Hastelloy® pressure connection
XP115	1/4" NPT Monel® pressure connection
XR211	Kalrez® O-ring
XR213	Ethylene propylene O-ring
XR214	Aflas® O-ring
XR216	Viton O-ring

### UNION CONNECTORS\*

Option	Replacement Number	Description
	<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

316 Stainless Steel

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

### OPTIONAL LENGTHS

Optional capillary length to ±50' available in 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'.

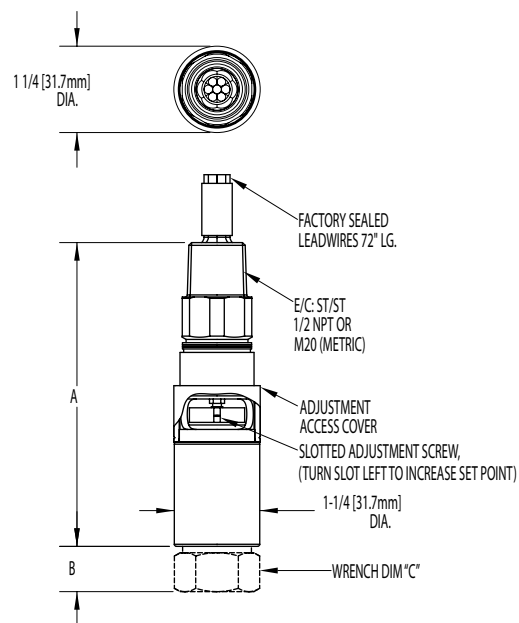
\*Dimensional drawings for union connectors and thermowells may be found at [www.ueonline.com](http://www.ueonline.com)

## DIMENSIONAL DRAWINGS

Dimensional drawings for all models may be found at [www.UEonline.com](http://www.UEonline.com)

### PRESSURE & TEMPERATURE SWITCH / CONNECTION CHART

Type	Description	Dimension "A"		Dimension "B"		Dimension "C"	
		Inches	mm	Inches	mm	Inches	mm
2	1/2" NPT (female)	4.4	111.1	0.7	16.5	1-1/16	27.0
3, 5	1/2" NPT (female)	4.4	111.1	0.6	15.2	1-1/16	27.0
4, 6, 8	1/4" NPT (female)	4.4	111.1	0.6	15.2	1-1/16	27.0
7, 9	1/2" NPT (female)	4.0	100.3	1.6	40.6	1-1/8	28.6
P1-P9	1/4"NPT (female)	4.4	111.1	1.0	25.4	1-1/16	27.0
K1-K3	1/8"NPT (female)	4.4	111.1	1.7	42.9	N/A	N/A
K4-K6	1/8"NPT (female)	4.4	111.1	1.8	44.5	N/A	N/A
R1-R4	Temperature	4.4	111.1	0.6	15.2	N/A	N/A
M521	LF4 Autoclave 1/4" (female)	4.4	111.1	1.2	29.7	1-1/16	27.0
M522	LM4 Autoclave 1/4" (male)	4.4	111.1	1.4	34.8	1-1/16	27.0
M523	LF6 Autoclave 3/8" (female)	4.4	111.1	1.4	36.1	1-1/16	27.0
M524	LM6 Autoclave 3/8" (male)	4.4	111.1	1.5	38.4	1-1/16	27.0
M525	HF4 Autoclave 1/4" (female)	4.4	111.1	1.2	29.7	1-1/16	27.0
M526	HM4 autoclave 1/4" (male)	4.4	111.1	1.3	32.8	1-1/16	27.0
M527	HF6 Autoclave 3/8" (female)	4.4	111.1	1.4	36.1	1-1/16	27.0
M528	HM6 Autoclave 3/8" (male)	4.4	111.1	1.5	37.6	1-1/16	27.0



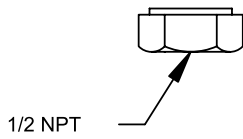
## DIMENSIONAL DRAWINGS

Dimensional drawings for all models may be found at [www.UEonline.com](http://www.UEonline.com)

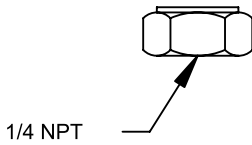
### SENSOR DETAILS

#### Pressure

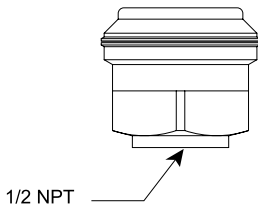
##### TYPES 2, 3, 5 SENSOR



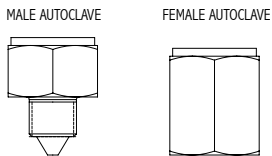
##### TYPES 4, 6, 8 P0-P9



##### TYPES 7, 9 SENSOR



##### TYPES P4 & P9 SENSOR ONLY

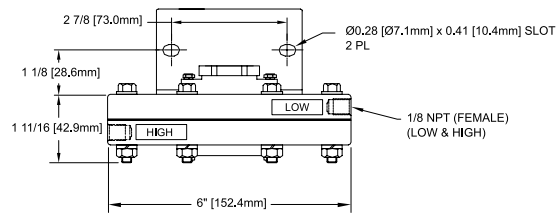


See Options for autoclave types

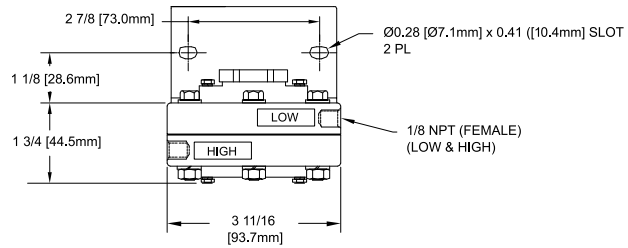
\*Shown with mounting bracket attached

#### Differential Pressure

##### TYPE K1-K3 \*

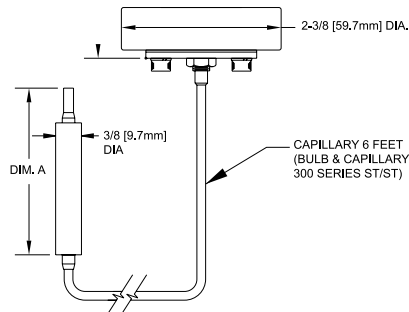


##### TYPES K4-K6 \*



#### Temperature

##### TYPES R1-R4



#### BULB DIMENSIONS

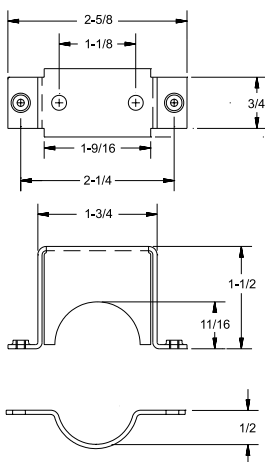
##### Dimension A

Types	Inches	mm
R1	4-7/8"	123.8
R2	7-1/4"	184.2
R3	4-7/8"	123.8
R4	4"	101.6

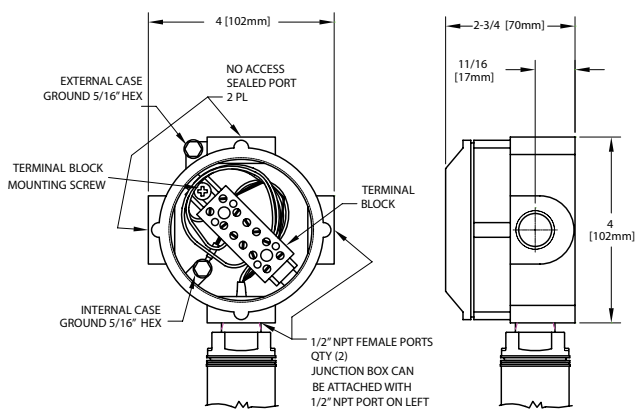
## DIMENSIONAL DRAWINGS

Dimensional drawings for all models may be found at [www.UEonline.com](http://www.UEonline.com)

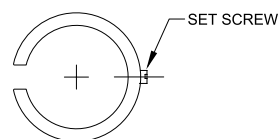
### OPTIONAL MOUNTING BRACKET KIT 62169-13



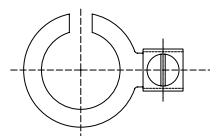
### OPTION M423 JUNCTION BOX



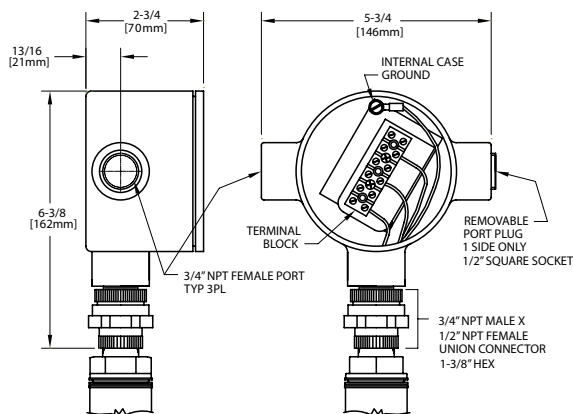
### OPTION M430 COVER LOCK



### OPTION M460 EXTERNAL GROUNDING SCREW

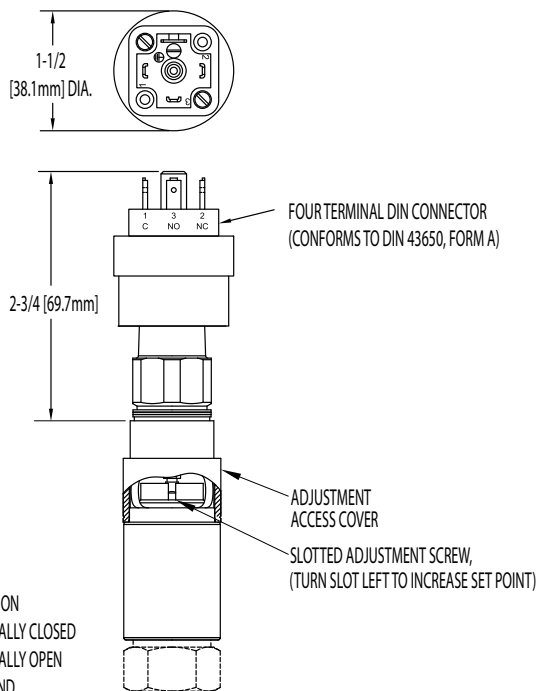


### OPTION M513 JUNCTION BOX



Junction box meets enclosure type 4 requirements only. Not ATEX compliant (see option M423 for ATEX junction box)

### OPTION M515 DIN CONNECTOR.



TERMINALS  
#1 COMMON  
#2 NORMALLY CLOSED  
#3 NORMALLY OPEN  
GROUND

Does not meet Div 1 or 2, or ATEX requirements.



## ALTERNATIVE PRODUCTS FROM UE

### TX200 Series Pressure Transmitters for Class I, Div. 1, Zone 1 Areas

- Welded, hermetically sealed, 316 stainless steel enclosure type 4X/IP66
- Ranges 0 to 15 psi up to 0 to 25,000 psi
- Choice of field adjustable or fixed range models
- 4-20 mA, 1-5 or 0-10 VDC output



### 120 Series

- Explosion-proof line of pressure, differential pressure, and temperature models with wide selection of ranges, sensors and pressure connections
- UL, cUL, ATEX certified for hazardous locations
- Single or dual switch outputs
- Welded stainless steel diaphragm pressure sensor
- Internal or external set point adjustment



### One Series for Division 1 (Zone 1)

- Electronic pressure and temperature switches with no moving parts
- Fully adjustable deadband and smart self diagnostics
- 4-20 mA output and digital process display
- Explosion-proof enclosure for Division 1 (Zone 1) hazardous areas
- 2-wire, 4-wire and loop powered models available
- Digital display and tamper-proof keypad adjustment of setpoint and deadband



### 117 Series

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



### Temperature Sensors

Rugged RTDs and thermocouples for process and energy applications, available with Nema 4X and explosion-proof heads to match heat-trace, turbine, combustion, and stack-emission applications



## RECOMMENDED PRACTICES AND WARNINGS

United Electric Controls Company recommends careful consideration of the following factors when specifying and installing UE pressure transmitters. 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 (i.e., 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.
- Install unit where shock, vibration and ambient temperature fluctuations will not damage unit or affect operation. When applicable, 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. Check unit immediately.
- Preventative maintenance and periodic testing is necessary for critical applications where damage could endanger property or personnel.
- Supply voltage stated in literature and on nameplate must not be exceeded. Overload on a transmitter 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 36 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.

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Be sure to visit [www.ueonline.com](http://www.ueonline.com) for the latest information.

## EXPLOSION-PROOF PRESSURE, VACUUM, DIFFERENTIAL PRESSURE AND TEMPERATURE SWITCHES



### FEATURES

- Class I, Div. 1 & 2, (Zone 1)  
Class II, Div. 1 & 2  
Class III
- Worldwide approvals and certifications
- Choice of one or two SPDT,  
optional DPDT output
- Dual electrical conduit openings
- Terminal block wiring
- Welded diaphragm or bellows sensor
- 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 cULus and ATEX standards, UE's 120 Series is the choice where potentially explosive or highly corrosive atmospheres exist. Additionally, the 120 Series is suitable for use within safety instrumented systems (SIS) according to standard IEC 61511-1. Several 120 Series models have a SIL capability of SIL 2 based upon "proven in use" performance.

The 120 Series offers a variety of pressure, vacuum, differential pressure and temperature ranges, as well as port connections, wetted materials and sensor types. With a common flexible platform, 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 production and transmission, and pharmaceuticals.

### FEATURES

- Approvals include cULus and ATEX
- Optional approvals for Russia, Ukraine, China and Australia
- Internal adjustment screw or external adjustment via calibrated dial(s) with tamper resistant cover
- Integral cover lock
- SPDT, DPDT or dual SPDT output
- Wide variety of sensor materials
- Optional Hastelloy® and Monel® sensor material for corrosive media
- Wide adjustable deadband models
- Flush mount sensors
- Stainless steel flanges conforming to ANSI standards
- Heat tracing temperature models
- 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, 15834-15839: 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: Type B, C and F: $\pm 1\%$ of full scale range Type E: $\pm 2\%$ of full scale range  Pressure models 126-164, S126B-S164B, 171-174, 270-274, 358-376, 520-535, 540-543, 560-564, 701-705, 15622, 15834-15839: $\pm 1\%$ of full scale range; models 450-559: $\pm 1\frac{1}{2}\%$ of full scale range; models 36-39, 183-194, 483-494, 544-548, 565-567, 612-680, 15875: $\pm 1\frac{1}{2}\%$ of full scale range Set point repeats after 15 G, 10 millisecond duration
<b>SHOCK</b>	
<b>VIBRATION</b>	Set point repeats after 2.5 G, 5-500 Hz
<b>ENCLOSURE</b>	Die cast aluminum, epoxy powder coated; gasketed; coverlock; internal set point lock standard on types J, C, F; gasketed stainless steel tamper-resistant dial cover on types B, H, E; aluminum nameplate
<b>ENCLOSURE CLASSIFICATION</b>	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
<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>	15A 125/250/480 VAC resistive (standard) except types J120-15622, 15834-15839, H121-15875: 20A 125/250/480 VAC resistive; H122P; 11A 125/250 VAC resistive; B121-13272, B122-13322, E121-13273, E122-13321; 22A 480VAC resistive. Electrical switches have limited DC capabilities. Consult factory for additional information
<b>REFERENCE SCALES</b>	Types B, E & H: external dial. Scale divisions vary with range (see model charts)
<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" flush mount connection; models 565-567: 1-1/2" flush mount 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. Fill: 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>	See Individual model charts on pages 5-14
<b>DIFFERENTIAL PRESSURE INDICATOR (OPTION M210)</b>	Differential pressure indication available types H121K and H122K with option M210 (check model availability under options); accuracy approximately 1% mid 50% of range, 3% at ends; window is plexiglass and gasketed; indicator may be field adjusted for approximately $\pm 1\%$ accuracy at any set point within range
<b>TEMPERATURE INDICATION</b>	Temperature indication available types 820E and 822E. Indication accuracy is $\pm 1\%$ of adjustable range

## AGENCY APPROVALS



### UNITED STATES AND 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 & 698; CSA C22.2  
No. 25 & 30 - File # E40857  
Temperature: UL 50 & 698; CSA C22.2  
No. 25 & 30 - File # E43374



### EUROPE

#### ATEX Directive (94/9/EC)

II 2 G Ex d IIC T6  
II 2 D Ex tD A21 IP66 T+85°C  
Tamb = -40°C to +75°C  
UL International DEMKO A/S (N.B.# 0539)  
Certificate # DEMKO 09 ATEX 0815573X  
EN 60079-0, 60079-1, 61241-0 & 61241-1



II 1 G EEx ia IIC T6 **(OPTIONAL – code M405)**  
(not available types 820E, 822E)  
Tamb = -50°C to +60°C  
UL International DEMKO A/S (N.B.# 0539)  
Certificate # DEMKO 03 ATEX 0335063  
EN 50014, 50020 & 50284



#### Pressure Equipment Directive (PED) (97/23/EC)

Compliant to PED  
Products rated lower than 7.5 psi are outside the scope of the PED

#### Low Voltage Directive (LVD) (73/23/EC & 93/68/EEC)

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



### RUSSIA

#### Models 120, 121 and 122

Gosgortekhnadzor Permit **(OPTIONAL – code M406)**

OExialICT6  
Tamb = -50°C to +60°C  
NANIO CCVE Certification Center  
Certificate # ROSS US.GB05.Bo2933  
GOST R 51330.0, 51330.1, 51330.10 & 51330.14

#### Models 120, 121, 122, 820 & 822

1ExdIICT6X  
Tamb = -56°C to +85°C (models 120, 121 & 122)  
Tamb = -40°C to +71°C (models 820 & 822)  
NANIO CCVE Certification Center  
Certificate # ROSS US.GB05.Bo2933  
GOST R 51330.0, 51330.1, 51330.10 & 51330.14



### UKRAINE

Gosnadzorohrantruda Permit **(OPTIONAL - code M404)**

1ExdIICT6X  
Tamb = -56°C to +85°C (types 120, 121 & 122)  
Tamb = -40°C to +71°C (types 820 & 822)  
Certificate # 1867.04.30 - 31.62.4



### CHINA

CQST Certified **(OPTIONAL – code M408)**

Exd IIC T6  
DIP A21 TA +85°C  
Tamb. = -40°C to +75°C  
GB 3836.1, 3836.2 & 12476.1  
Pressure: Certificate # CNEx 09.2181X  
Temperature: Certificate # CNEx 09.2180X



### GLOBAL CERTIFICATION\* (INCLUDES AUSTRALIA)

IECEx Certified **(OPTIONAL – code M403)**

Ex d IIC T6  
Ex tD A21 IP66 T+85°C  
Tamb. = -40°C to 75°C  
IEC 60079-0 & 60079-1, 61241-0 & 61241-1  
Certificate # IECEx UL 03.0001X

\* See <http://www.iecex.com/countries.htm> for a list of participating members.



## 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, large 0.72" orifice for clean-out purposes (other wetted materials available see pg. 16)								
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, large 0.72" orifice for clean-out purposes								
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 (unless noted)	psi	mbar (unless noted)	psi	bar	psi	bar
2" sanitary welded 316L stainless steel diaphragm and pressure connection. Mates with Tri-Clamp® fitting systems, (not UE supplied)								
560	0.5 to 15	34,5 mbar to 1,0 bar	0.1 to 1	6,9 to 68,9	200	13,8	300	20,7
561	1 to 25	68,9 mbar to 1,7 bar	0.1 to 1.5	6,9 to 103,4	200	13,8	300	20,7
562	2 to 50	0,1 to 3,4	0.1 to 2.5	6,9 to 172,4	200	13,8	300	20,7
563	4 to 100	0,3 to 6,9	0.1 to 4	6,9 to 275,8	200	13,8	300	20,7
564	8 to 200	0,6 to 13,8	0.1 to 5	6,9 to 344,7	200	13,8	300	20,7
1.5" sanitary welded 316L stainless steel diaphragm and pressure connection. Mates with Tri-Clamp® fitting systems, (not UE supplied)								
565	5 to 30	0,3 to 2,1	1 to 5	68,9 mbar to 0,3 bar	1000	68,9	1500	103,4
566	10 to 100	0,7 to 6,9	1 to 12	68,9 mbar to 0,8 bar	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 (NACE MR-0175 compliant)								
171	1 to 20	68,9 mbar to 1,4 bar	0.1 to 1	6,9 to 68,9	500	34,5	1000	68,9
172	2 to 50	0,1 to 3,4	0.1 to 1.5	6,9 to 103,4	500	34,5	1000	68,9
173	4 to 100	0,3 to 6,9	0.1 to 2.5	6,9 to 172,4	500	34,5	1000	68,9
174	8 to 200	0,6 to 13,8	0.1 to 3.5	6,9 to 241,3	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)



# 120 Series

## 120 Series

### 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 (unless noted)	psi (unless noted)	bar (unless noted)	psi (unless noted)	bar (unless noted)	psi	bar
316L stainless steel diaphragm (optional Hastelloy® C or Monel®); Viton® GLT O-Ring (optional Kalrez®, Silicone, Ethylene Propylene or Aflas®); 316 stainless steel 1/2" NPT (female) pressure connection (optional Hastelloy® 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 (NACE MR-0175 compliant)								
183	1 to 20	0,1 to 1,4	0.3 to 2.5	20,7 to 172,4 mbar	500	34,5	1000	68,9
184	2 to 50	0,1 to 3,4	0.3 to 3	20,7 to 206,8 mbar	500	34,5	1000	68,9
185	4 to 100	0,3 to 6,9	0.5 to 6	34,5 to 413,7 mbar	500	34,5	1000	68,9
186	8 to 200	0,6 to 13,8	1 to 11	0,1 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 or Monel®); Viton®GLT O-Ring (optional Kalrez®, Silicone, Ethylene Propylene or Aflas®); 316 stainless steel 1/2" NPT (female) pressure connection (optional Hastelloy® C or Monel®), 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	0,1 to 1,4	0.3 to 2.5	20,7 to 172,4 mbar	500	34,5	1000	68,9
484	2 to 50	0,1 to 3,4	0.3 to 3	20,7 to 206,8 mbar	500	34,5	1000	68,9
485	4 to 100	0,3 to 6,9	0.5 to 6	34,5 to 413,7 mbar	500	34,5	1000	68,9
486	8 to 200	0,6 to 13,8	1 to 11	0,1 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	6,8 to 20,3 mbar	80 "wc	199,1 mbar	5	0,3
S134B	30 "Hg Vac to 20 psi	-1 to 1,4	0.2 to 0.6 "Hg	6,8 to 20,3 mbar	20	1,4	25	1,7
S137B	15 to 80 "wc	37,3 to 199,1 mbar	2 to 6 "wc	5,0 to 14,9 mbar	80 "wc	199,1 mbar	5	0,3
S144B	0.5 to 20	34,5 mbar to 1,4 bar	0.1 to 0.3	6,9 to 20,7 mbar	20	1,4	25	1,7
S152B	1 to 50	0,1 to 3,4	0.1 to 0.5	6,9 to 34,5 mbar	50	3,4	75	5,2
S156B	2 to 100	0,1 to 6,9	0.2 to 0.6	13,8 to 41,4 mbar	100	6,9	125	8,6
S164B	4 to 200	0,3 to 13,8	0.2 to 1	13,8 to 68,9 mbar	200	13,8	200	13,8

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**Monel®** is a registered trademark of the Special Metals Corporation  
**Tri-Clover** and **Tri-Clamp®** is a registered trademark of Alfa Laval  
**Hastelloy®** is a registered trademark of Haynes International, Inc  
**Aflas®** is a registered trademark of Asahi Glass

## 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		Lower 75% range span		Top 25% range span					
	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
Welded 316 stainless steel diaphragm and 1/2" NPT (female) pressure connection, large 0.72" orifice for clean-out purposes (NACE MR-0175 compliant, except model 194)										
190	5 to 30	0,3 to 2,1	1 to 3	0,1 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	0,1 to 0,6	15 max	1,0	1500	103,4	2500	172,4
192	15 to 300	1,0 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	137,9	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	0,1 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	0,1 to 0,6	15 max	1,0	1500	103,4	2500	172,4
492	15 to 300	1,0 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	137,9	2500	172,4

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 (unless noted)	psi (unless noted)	bar (unless noted)	psi (unless noted)	bar (unless noted)	psi (unless noted)	bar (unless noted)	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	6,8 to 20,3 mbar	80 "wc	199,1 mbar	5	0,3		
134	30 "Hg Vac to 20 psi	-1 to 1,4	0.2 to 0.6 "Hg	6,8 to 20,3 mbar	20	1,4	25	1,7		
137	15 to 80 "wc	37,3 to 199,1 mbar	2 to 6 "wc	5,0 to 14,9 mbar	80 "wc	199,1 mbar	5	0,3		
144	0.5 to 20	34,5 mbar to 1,4 bar	0.1 to 0.3	6,9 to 20,7 mbar	20	1,4	25	1,7		
152	1 to 50	0,1 to 3,4	0.1 to 0.5	6,9 to 34,5 mbar	50	3,4	75	5,2		
156	2 to 100	0,1 to 6,9	0.2 to 0.6	13,8 to 41,4 mbar	100	6,9	125	8,6		
164	4 to 200	0,3 to 13,8	0.2 to 1	13,8 to 68,9 mbar	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	48,3 to 124,1 mbar	100	6,9	800	55,2		
358	15 to 200	1,0 to 13,8	1 to 3	0,1 to 0,2	200	13,8	800	55,2		
361	20 to 300	1,4 to 20,7	1 to 4	0,1 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	0,1 to 0,3	200	13,8	250	17,2		
274	6 to 300	0,4 to 20,7	1 to 5	0,1 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)

**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.



# 120 Series

## 120 Series

### 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	bar	psi	bar	psi	bar	psi	bar
	(unless noted)	(unless noted)	(unless noted)	(unless noted)	(unless noted)			
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	103,4 mbar to 2,1 bar	1 to 2	68,9 mbar to 0,1 bar	500	34,5	1000	68,9
702	3 to 100	0,2 to 6,9	1 to 4	68,9 to 0,3 bar	500	34,5	1000	68,9
703	9 to 300	0,6 to 20,7	1 to 5	68,9 to 0,3 bar	500	34,5	1000	68,9
704	15 to 500	1,0 to 34,5	2 to 8	0,1 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 to -0,1	0.1 to 0.3 "Hg	3,4 to 10,2 mbar	80 "wc	199,1 mbar	225	15,5
451	2 to 80" wc	5 to 199,1 mbar	0.8 to 2 "wc	2 to 5 mbar	80 "wc	199,1 mbar	225	15,5
452	30 "Hg Vac to 20 psi	-1,0 to 1,4	0.1 to 0.4 "Hg	3,4 to 13,5 mbar	20	1,4	225	15,5
453	0.5 to 20	34,5 mbar to 1,4 bar	0.05 to 0.1	3,4 to 6,9 mbar	20	1,4	225	15,5
454	0.8 to 30	55,2 mbar to 2,1 bar	0.05 to 0.2	3,4 to 13,8 mbar	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 to -0,1	0.1 to 0.4 "Hg	3,4 to 13,5 mbar	80 "wc	199,1 mbar	225	15,5
551	2 to 80 "wc	5 to 199,1 mbar	1 to 4 "wc	2,5 to 10 mbar	80 "wc	199,1 mbar	225	15,5
552	30 "Hg Vac to 20 psi	-1,0 to 1,4	0.2 to 0.5 "Hg	6,8 to 16,9 mbar	20	1,4	225	15,5
553	0.5 to 20	34,5 mbar to 1,4 bar	0.1 to 0.2	6,9 to 13,8 mbar	20	1,4	225	15,5
554	0.8 to 30	55,2 mbar to 2,1 bar	0.1 to 0.3	6,9 to 20,7 mbar	30	2,1	225	15,5
555	2 to 100	0,1 to 6,9	0.2 to 0.4	13,8 to 27,6 mbar	100	6,9	225	15,5

**\*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 J120, single switch with internal adjustment, dual conduits with adjustable deadband micro-switch

Model	Adjustable Set Point Range			Adjustable Deadband					Over Range Pressure*		Proof Pressure**		
	Low end of range on fall; High end of range on rise												
	psi	bar		psi	bar				psi	bar	psi	bar	
	(unless noted)	(unless noted)		(unless noted)					(unless noted)		(unless noted)		
Viton® diaphragm and O-ring with 1/4" NPT (female) 303 stainless steel pressure connection													
15622	20 to 200	1,4 to 13,8		12 to 26	0,8 to 1,8				500	34,5	1000	68,9	
	psi	bar		Low end psi	bar	Mid Range psi	bar	High End 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	0,2 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 27	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	137,9	2500	172,4	

## • H121, single switch with external adjustment via reference dial, single conduit with adjustable deadband micro-switch

Model	Adjustable Set Point Range		Adjustable Deadband						Proof Pressure**		Dial Divisions
	Low end of range on fall; High end of range on rise										
			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 <sup>†</sup>	500 to 6000	34,5 to 413, 7	150 to 400	10,3 to 27,6	250 to 500	17,2 to 34,5	450 to 750	31,0 to 51,7	10,000	689,5	100

\*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)

<sup>†</sup>Not available on type H122



### 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**

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 (unless noted)	psi (unless noted)	bar (unless noted)	psi	bar	psi (unless noted)
Welded 316L 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	6,8 to 30,5 mbar	5	0,3	0.5 "Hg
S134B	30 "Hg Vac to 20 psi	-1 to 1,4	0.2 to 1.2 "Hg	6,8 to 40,6 mbar	25	1,7	1 "Hg & 0.5 psi
S137B†	2 to 80 "wc	5 to 199,1 mbar	2 to 10 "wc	5 to 24,9 mbar	5	0,3	2 "wc
S144B	0 to 20	0 to 1,4	0.1 to 0.5	6,9 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	2,8	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 137,9 mbar	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	6,8 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	6,8 to 40,6 mbar	25	1,7	1 "Hg & 0.5 psi
137†	2 to 80 "wc	5 to 199,1 mbar	2 to 10 "wc	5 to 24,9 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	20,7 to 137,9 mbar	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

**\*\*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 type H122



## 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**

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 (unless noted)	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 to 0	0.1 to 0.4 "Hg	3,4 to 13,5 mbar	225	15,5	0.5 "Hg
452	30 "Hg Vac to 20 psi	-1 to 1,4	0.1 to 1 "Hg	3,4 to 33,9 mbar	225	15,5	1 "Hg & 0.5 psi
453	0 to 20	0 to 1,4	0.05 to 0.2	3,4 to 13,8 mbar	225	15,5	0.5
454	0 to 30	0 to 2,1	0.05 to 0.3	3,4 to 20,7 mbar	225	15,5	0.5
Teflon® diaphragm and O-Ring with 316 stainless steel 1/4" NPT (female) pressure connection and cap							
550	30 "Hg Vac to 0 psi	-1 to 0,	0.1 to 0.6 "Hg	3,4 to 20,3 mbar	225	15,5	0.5 "Hg
552	30 "Hg Vac to 20 psi	-1 to 1,4	0.2 to 1 "Hg	6,8 to 33,9 mbar	225	15,5	1 "Hg & 0.5 psi
553	0 to 20	0 to 1,4	0.05 to 0.3	3,4 to 20,7 mbar	225	15,5	0.5
554	0 to 30	0 to 2,1	0.1 to 0.4	6,9 to 27,6 mbar	225	15,5	0.5
555	0 to 100	0 to 6,9	0.25 to 0.75	17,2 to 51,7 mbar	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	0,1 to 0,2	1000	68,9	0.5
702	10 to 100	0,7 to 6,9	1 to 5	0,1 to 0,3	1000	68,9	2
703	30 to 300	2,1 to 20,7	2 to 7	0,1 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. The unit may require calibration (e.g. start-up, testing)

†*Not available on type H122*



# 120 Series

## 120 Series

### PRESSURE MODEL CHART

- **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 (unless noted)	psi (unless noted)	mbar (unless noted)	psi	bar	psi (unless noted)
Welded 316L stainless steel bellows and 1/2" NPT (female) pressure connection							
S126B	30 "Hg Vac to 0 psi	-1 to 0	0.7 to 4 "Hg	23,7 to 135,4	5	0,3	0.5 "Hg
S134B	30 "Hg Vac to 20 psi	-1 to 1,4	1 to 6 "Hg	33,9 to 203,2	25	1,7	1 "Hg & 0.5 psi
S144B	0 to 20	0 to 1,4	0.3 to 3	20,7 to 206,8	25	1,7	0.5
S146B	0 to 30	0 to 2,1	0.4 to 4	27,6 to 275,8	40	2,8	0.5
S156B	0 to 100	0 to 6,9	0.6 to 6	40,4 to 413,7	125	8,6	2
S164B	0 to 200	0 to 13,8	1.5 to 13	0,1 to 0,9 bar	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	0.7 to 4 "Hg	23,7 to 135,4	5	0,3	0.5 "Hg
134	30 "Hg Vac to 20 psi	-1 to 1,4	1 to 6 "Hg	33,9 to 203,2	25	1,7	1 "Hg & 0.5 psi
144	0 to 20	0 to 1,4	0.3 to 3	20,7 to 206,8	25	1,7	0.5
146	0 to 30	0 to 2,1	0.4 to 4	27,6 to 275,8	40	2,8	0.5
156	0 to 100	0 to 6,9	0.6 to 6	40,4 to 413,7	125	8,6	2
164	0 to 200	0 to 13,8	1.5 to 13	0,1 to 0,9 bar	200	13,8	5
Phosphor bronze bellows with nickel-plated brass 1/4" NPT (female) pressure connection							
270	0 to 200	0 to 13,8	6 to 30	0,4 to 2,1 bar	250	17,2	5
274	0 to 300	0 to 20,7	8 to 40	0,6 to 2,8 bar	350	24,1	10
316L stainless steel bellows and 1/4" NPT (female) pressure connection							
358	0 to 200	0 to 13,8	6 to 30	0,4 to 2,1 bar	250	17,2	5
361	0 to 300	0 to 20,7	8 to 40	0,6 to 2,8 bar	350	24,1	10
376	0 to 500	0 to 34,5	10 to 60	0,7 to 4,1 bar	575	39,6	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 to 0	0.4 to 3 "Hg	13,5 to 101,6	225	15,5	0.5 "Hg
452	30 "Hg Vac to 20 psi	-1 to 1,4	0.8 to 6 "Hg	27,1 to 203,2	225	15,5	1 "Hg & 0.5 psi
453	0 to 20	0 to 1,4	0.2 to 2	13,8 to 137,9	225	15,5	0.5
454	0 to 30	0 to 2,1	0.3 to 3	20,7 to 206,8	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 to 0,	0.4 to 3 "Hg	13,5 to 101,6	225	15,5	0.5 "Hg
552	30 "Hg Vac to 20 psi	-1 to 1,4	0.8 to 6 "Hg	27,1 to 203,2	225	15,5	1 "Hg & 0.5 psi
553	0 to 20	0 to 1,4	0.2 to 2	13,8 to 137,9	225	15,5	0.5
554	0 to 30	0 to 2,1	0.3 to 3	20,7 to 206,8	225	15,5	0.5
555	0 to 100	0 to 6,9	0.7 to 7	48,3 to 482,6	225	15,5	2
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	150 to 450	10,3 to 31 bar	10,000	689,5	50
614	500 to 6000	34,5 to 413,7	200 to 500	13,8 to 34,5 bar	10,000	689,5	100

\* **Please note:** Must specify option code 1180 with all models (i.e. H122P-270-1180)

## DIFFERENTIAL PRESSURE MODEL CHART

## • Type J120K, single switch with internal adjustment, dual conduits

Model	Adjustable Set Point Range Low end of range on fall; High end of range on rise		Deadband		Working Pressure***		Proof Pressure**	
	psid (unless noted)	bar (unless noted)	psi (unless noted)	bar (unless noted)	psi (unless noted)	bar	psi	bar
Welded 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	20,7 to 103,4 mbar	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	34,5 to 137,9 mbar	30 "Hg Vac to 180	-1 to 12,4	300	20,7
Welded 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	20,7 to 103,4 mbar	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	34,5 to 137,9 mbar	30 "Hg Vac to 150	-1 to 10,3	180	12,4
Welded 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	0,1 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 199,1 mbar	1 to 4 "wc	2,5 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	6,9 to 20,7 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	6,9 to 27,6 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 6,9	0.2 to 1	13,8 to 68,9 mbar	30 "Hg Vac to 225	-1 to 15,5	225	15,5
Buna N diaphragm and 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 0,6 "wc	0,1 to 1,5 mbar	30 "Hg to 200	-1 to 13,8	400	27,6
541	1 to 20 "wcd	2,5 to 49,8 mbar	0.1 to 1.0 "wc	0.2 to 2,5 mbar	30 "Hg to 200	-1 to 13,8	400	27,6
542	5 to 50 "wcd	12,4 to 124,5 mbar	0.2 to 2.5 "wc	0,5 to 6,2 mbar	30 "Hg to 200	-1 to 13,8	400	27,6
543	10 to 200 "wcd	24,9 to 497,8 mbar	0.5 to 8 "wc	1,2 to 19,9 mbar	30 "Hg to 200	-1 to 13,8	400	27,6
544	2 to 20	0,1 to 1,4	0.1 to 1.3	6,9 to 89,6 mbar	30 "Hg to 1200	-1 to 82,7	2500	172,4
545	5 to 50	0,3 to 3,4	0.2 to 2.2	13,8 mbar to 0,1 bar	30 "Hg to 1200	-1 to 82,7	2500	172,4
546	10 to 125	0,7 to 8,6	0.4 to 5.0	27,6 mbar to 0,3 bar	30 "Hg to 1200	-1 to 82,7	2500	172,4
547	50 to 250	3,4 to 17,2	0.8 to 10	0,1 to 0,7	30 "Hg to 1200	-1 to 82,7	2500	172,4
548	100 to 500	6,9 to 34,5	2.0 to 15	0,1 to 1,0	30 "Hg to 1200	-1 to 82,7	2500	172,4

\*\*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.

### DIFFERENTIAL PRESSURE MODEL CHART

- 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	mbar	psi (unless noted)	bar	psi	bar	
Welded 316L stainless steel bellows and 1/2" NPT (female) pressure connections									
S147B	3 to 30	0,2 to 2,1	0.3 to 2	20,7 to 137,9	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	34,5 to 206,8	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	20,7 to 137,9	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	34,5 to 206,8	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	6,9 to 20,7	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	6,9 to 27,6	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	13,8 to 68,9	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.



Differential Pressure Indicating Option M210

## 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 Range		Max. Temp.		Scale Div.		Stem or Bulb Size* /Finish**
	°F	°C	°F	°C	°F	°C	OD x Length
Type B121, single switch, immersion stem, external adjustment via reference dial. Type B122, 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 1-7/8" below thread, 1/2" NPT nickel-plated brass
121	200 to 425	93.3 to 218.3	475	246.1	5†	5†	9/16" x 1-7/8" below thread, 1/2" NPT nickel-plated brass
13272 (B121) 13322 (B122) (Heat Tracing)	15 to 140	-9.4 to 60	160	71.1	2†	2†	9/16" x 2-11/16" long stainless steel
Type E121, single switch, bulb and capillary, external adjustment via reference dial. Type E122, dual switch, bulb and capillary, external adjustment via reference dial							
2BSA	-120 to 100	-84.4 to 37.8	150	65.6	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	65.6	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"
13273 (E121) 13321 (E122) (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	76.7	N/A		3/8 x 3-3/4"
2BS	-125 to 350	-87.2 to 176.7	400	204.4	N/A		3/8 x 2-5/8"
3BS	-125 to 500	-87.2 to 260	550	287.8	N/A		3/8 x 2-1/8"
4BS	-40 to 120	-40 to 48.9	170	76.7	N/A		3/8 x 6-3/4"
5BS	-40 to 180	-40 to 82.2	230	110	N/A		3/8 x 5"
6BS	0 to 250	-17.8 to 121.1	300	148.9	N/A		3/8 x 4-1/2"
7BS	0 to 400	-17.8 to 204.4	450	232.2	N/A		3/8 x 3"
8BS	50 to 650	10 to 343.3	700	371.1	N/A		3/8 x 3-1/4"

† Types B121, B122 only.

\*Optional immersion stem lengths and capillary lengths are available – consult UE. Standard capillary length is 6 FT except HTPF models which are 10 FT.

\*\*Optional stainless steel immersion stem, and stainless steel armored or Teflon covered capillary available – consult UE.



### INDICATING TEMPERATURE CONTROL MODEL CHART

- **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	148.9	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 – consult UE.*



Explosion proof  
indicating temperature  
switch, available with  
single or dual set points



## 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.  
Fill in the type portion of your part number with the corresponding number.

#### 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 - <b>One</b> SPDT; epoxy coated enclosure; <b>internal</b> adjustment with <b>no reference scale</b> , <b>dual</b> conduits Type H121 - <b>One</b> SPDT; epoxy coated enclosure; <b>external</b> adjustment <b>with reference dial</b> , <b>single</b> conduit Type H122 - <b>Two</b> SPDT; epoxy coated enclosure; <b>external</b> adjustment <b>with reference dial</b> , <b>single</b> conduit Type H122P - <b>Two</b> SPDT; <b>hermetically</b> sealed switches; epoxy coated enclosure; <b>external</b> adjustment <b>with reference dial</b> , <b>single</b> conduit
Differential Pressure	Type J120K - <b>One</b> SPDT; epoxy coated enclosure; <b>internal</b> adjustment with <b>no reference scale</b> , <b>dual</b> conduits Type H121K - <b>One</b> SPDT; epoxy coated enclosure; <b>external</b> adjustment <b>with reference dial</b> , <b>single</b> conduit Type H122K - <b>Two</b> SPDT; epoxy coated enclosure; <b>external</b> adjustment <b>with reference dial</b> , <b>single</b> conduit
Temperature	Type B121 - Immersion stem; <b>one</b> SPDT; epoxy coated enclosure; <b>external</b> adjustment <b>with reference dial</b> , <b>single</b> conduit Type B122 - Immersion stem; <b>two</b> SPDT; epoxy coated enclosure; <b>external</b> adjustment <b>with reference dial</b> , <b>single</b> conduit Type C120 - Immersion stem; <b>one</b> SPDT; epoxy coated enclosure; <b>internal</b> adjustment with <b>no reference scale</b> , <b>dual</b> conduits Type E121 - Bulb and capillary; <b>one</b> SPDT; epoxy coated enclosure; <b>external</b> adjustment <b>with reference dial</b> , <b>single</b> conduit Type E122 - Bulb and capillary; <b>two</b> SPDT; epoxy coated enclosure; <b>external</b> adjustment <b>with reference dial</b> , <b>single</b> conduit Type F120 - Bulb and capillary; <b>one</b> SPDT; epoxy coated enclosure; <b>internal</b> adjustment with <b>no reference dial</b> , <b>dual</b> conduits Type 820E - Bulb and capillary; <b>one</b> SPDT; <b>external</b> adjustment and temperature <b>indication</b> , <b>dual</b> conduits Type 822E - Bulb and capillary; <b>two</b> SPDT; <b>external</b> adjustment and temperature <b>indication</b> , <b>dual</b> 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 AND MODELS 520-535
1010	DPDT switch, 10 amp 125/250 VAC resistive; deadband and minimum set point will increase. 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, 560-567
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, B122, E122, 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, B122, E122, H122, H121K, H122K, H122P or models 523, 533

\*\* All switches have limited DC capabilities. Consult factory for details.



## SWITCH OPTIONS\*\* (CONT.)

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, 560-567, 612-616
1530	External manual reset, 15 amp 125/250/480 VAC resistive; latches on rise only. NOT AVAILABLE TYPES 820E, 822E, B122, E122, H122, H121K, H122K, H122P
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 H122P, 520-535, 540-548
3000	30 amp 125/250/277 VAC resistive. NOT AVAILABLE TYPES 820E, 822E, B121, B122, E122, H121, H122, H121K, H122K, H122P, J120K or models 171-194, 483-494, 520-535, 540-548, 560-567

## SENSOR OPTIONS

M504	316L stainless steel stem. AVAILABLE TEMPERATURE MODELS 120 AND 121 ONLY
M540	Viton® wetted parts with standard pressure connection. Deadbands and low end of range may increase. AVAILABLE MODELS 36-39, 450-454, 540-548. Models 455-457 (Viton® sealing diaphragms and O-rings with Teflon® main diaphragm). Models 612-616 (O-Ring only). AVAILABLE TYPE J120 MODELS 701-705 and TYPES H121 and H122 MODELS 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
6361-762	1/2" NPT MALE to G1/2 male stainless steel pressure fitting adaptor kit
6361-761	1/4" NPT male to G1/2 male stainless steel pressure fitting adaptor kit

## 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 (NACE MR-0175 compliant)
XD003	Monel® diaphragm (NACE MR-0175 compliant)
XP112	Hastelloy® C pressure connection (NACE MR-0175 compliant)
XP113	Monel® pressure connection (NACE MR-0175 compliant)

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

\*\* All switches have limited DC capabilities. Consult factory for details.

**OPTIONAL SENSOR MATERIAL FOR CORROSIVE MEDIA (CONT.)**

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
M320	Tamper resistant cover for indication portion of control, internal adjustment. AVAILABLE TYPES 820E AND 822E ONLY
M403	Flameproof compliance for Australia per IECEx standards NOT AVAILABLE ON 820E AND 822E
M404	Flameproof compliance for Ukraine per Gosnadzorohrantruda standards
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 Gosgortekhnadzor standards. Intrinsic safety NOT AVAILABLE TYPES 820E & 822E
M408	Flameproof compliance for China per CQST standards
M440	Cover chain
M444	Paper ID tag
M446	Stainless steel ID tag & wire attachment
M450	Breather drain. NOT AVAILABLE WITH OPTIONS 1530, M210 OR WITH ATEX CERTIFICATION
M550	Oxygen service cleaning; alcohol cleaning to remove residue from the process connection. NOT AVAILABLE ON H122, MODELS 704 AND 705
6361-704	Surface and pipe mounting hardware. (required for models 520-535, 540-548 when surface mounting)

**ALSO AVAILABLE:** 150# and 300# flanges (consult factory for part numbers)

**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
<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, except Models 13273 and 13321*

<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, 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 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.

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.

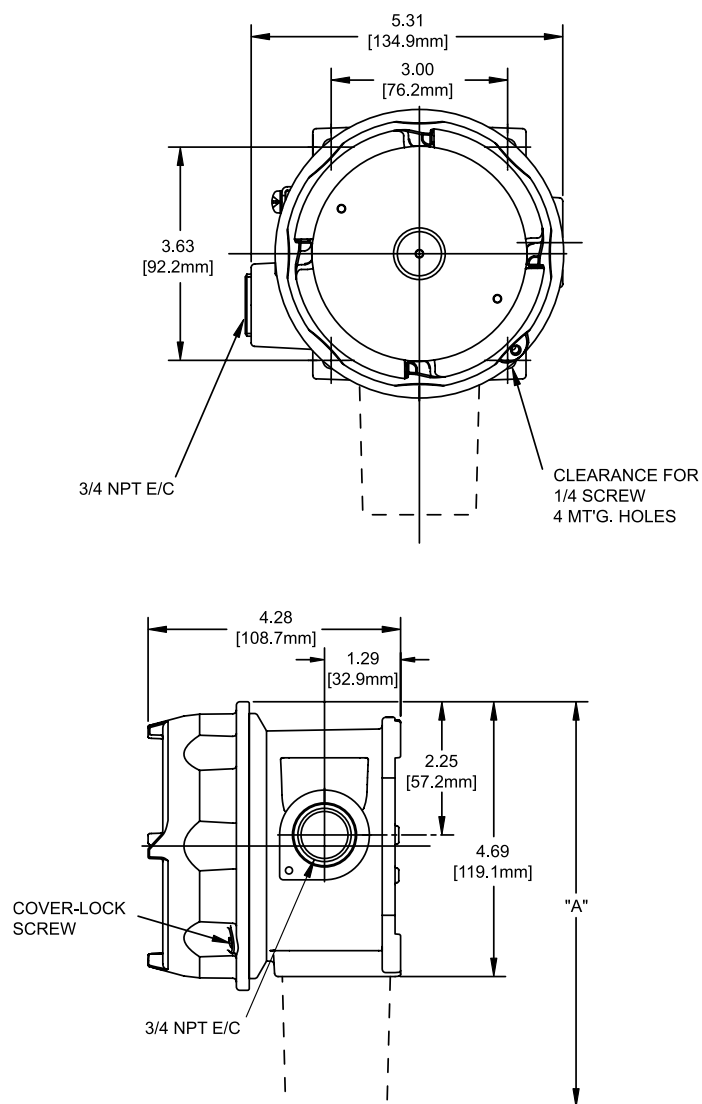
\*Consult UE regarding repeatability and ambient effects on capillary lengths over 30'.

## DIMENSIONAL DRAWINGS

(Dimensional drawings for all models may be found at [www.ueonline.com](http://www.ueonline.com))

### Internal Set Point Adjustment, dual conduits

Types J120, J120K, C120, F120



All dimensions stated in inches (millimeters)

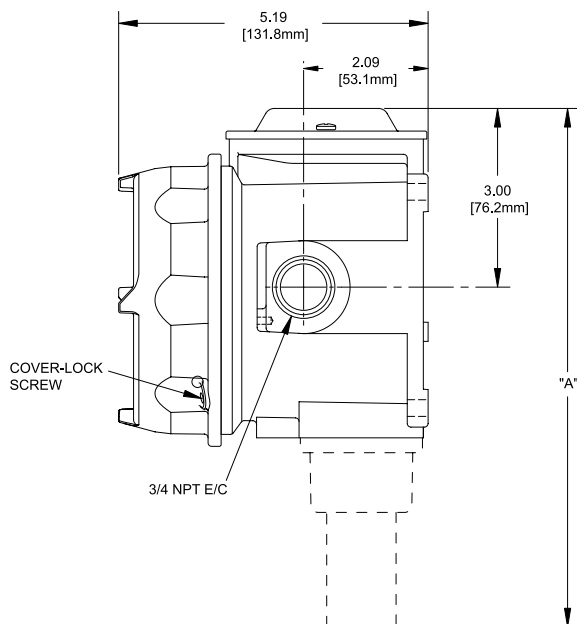
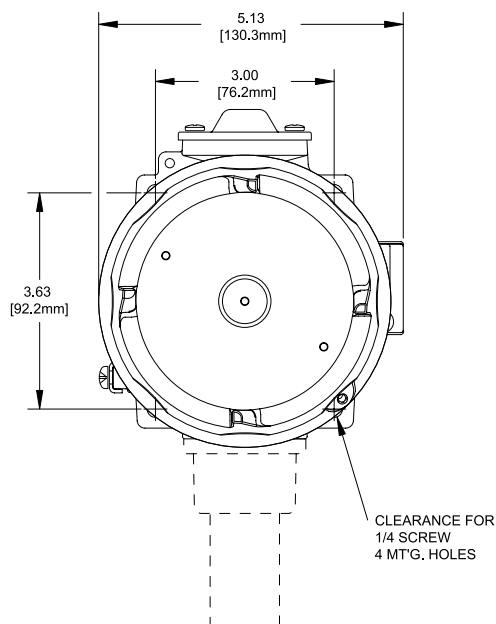
Models	Dimension A		
	Inches	mm	NPT
<b>Pressure</b>			
126-164	7.25	184.2	1/4
S126B-S164B	7.63	193.8	1/2
171-174	8.72	221.5	1/2
183-186, 483-486	8.41	213.6	1/2
188-189, 488-489	7.47	189.7	1/2
190-194, 490-494	7.44	189.0	1/2
270-274	8.13	206.5	1/4
356-361, 376	8.09	205.5	1/4
450, 452	8.81	223.8	1/4
451, 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
560-564	7.53	191.3	2" Sanitary
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
<b>Differential Pressure</b>			
36-39, 147-157, 367	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	9.34	237.2	1/8
544-548	9.41	239.0	1/8
<b>Temperature</b>			
120-121	9.13	231.9	Immersion Stem
1B5-8B5	8.47	215.1	Bulb & capillary

## DIMENSIONAL DRAWINGS

(Dimensional drawings for all models may be found at [www.ueonline.com](http://www.ueonline.com))

### External Set Point Adjustment, single conduit

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



Models	Dimension A		
	Inches	mm	NPT
<b>Pressure</b>			
126-164	8.09	205.5	1/4
S126B-S164B	8.50	215.9	1/2
270-274	7.88	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
<b>Differential Pressure</b>			
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
<b>Temperature</b>			
120,121	10.00	254.0	Immersion Stem
2B5-8B5	9.31	236.5	Bulb & capillary
13272, 13322	10.00	254.0	Immersion Stem (Heat tracing)
13273, 13321	9.31	236.5	Bulb & capillary (Heat tracing)

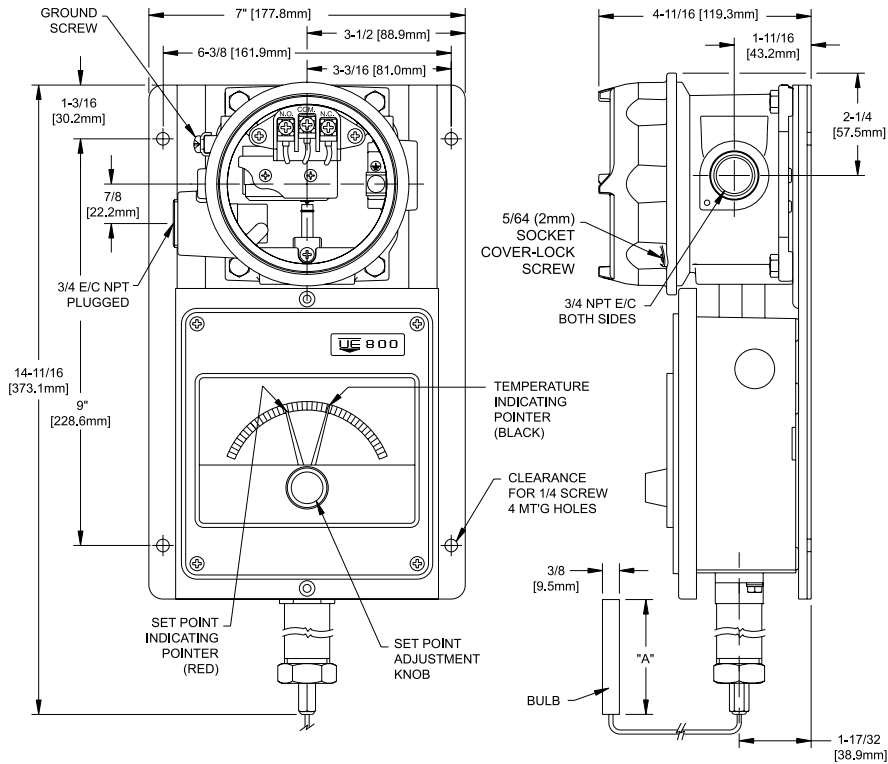


## DIMENSIONAL DRAWINGS

(Dimensional drawings for all models may be found at [www.ueonline.com](http://www.ueonline.com))

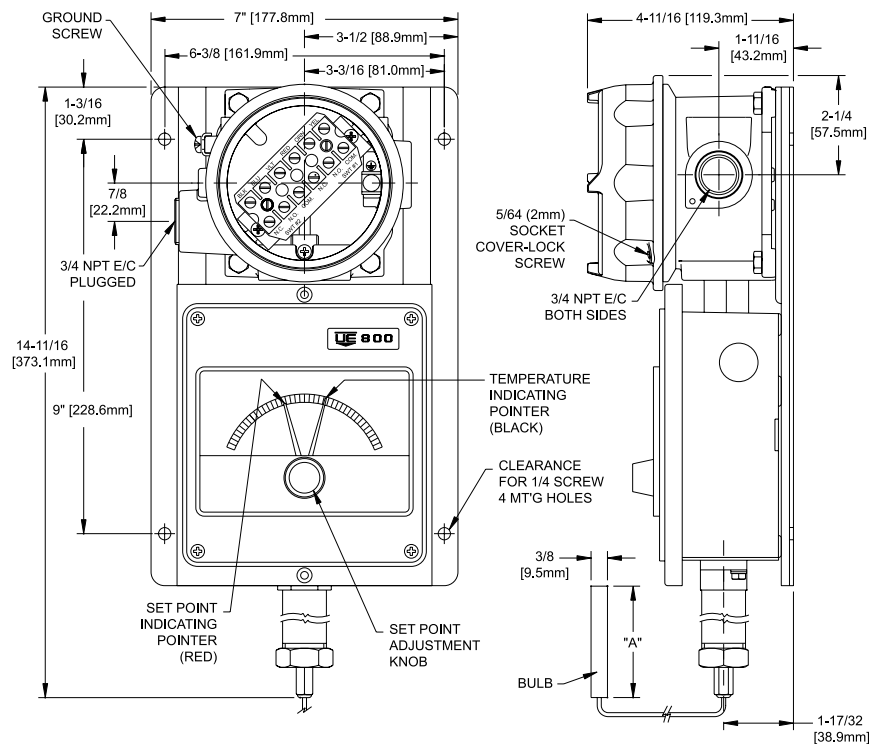
### External Set Point Adjustment & Temperature Indication

**Type 820E**  
single switch



Dimension A		
Models	Inches	mm
1BS	3-3/4	95,3
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**  
dual switch



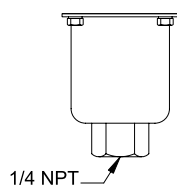


### DIMENSIONAL DRAWINGS

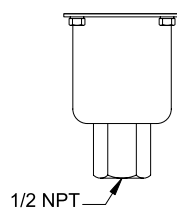
#### SENSORS

##### Pressure Sensors

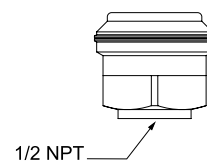
*(see drawings and charts on page 21 & 22 for complete dimensions)*



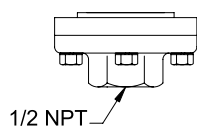
Models 126-164



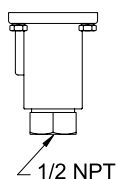
Models S126B-S164B



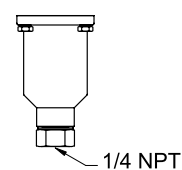
Models 171-174



Models 183-186, 483-486



Models 188-194, 488-494



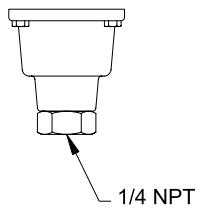
J120 Models 270-376, 680

## DIMENSIONAL DRAWINGS

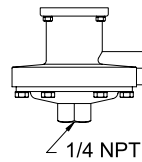
### SENSORS

#### Pressure Sensors

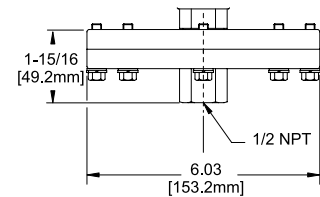
(see drawings and charts on page 21 & 22 for complete dimensions)



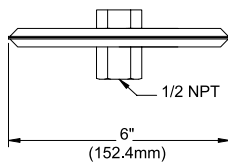
H121/H122 Models 270-376



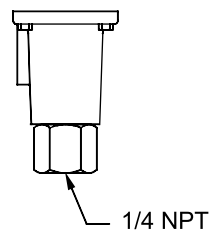
Models 450-454, 550-555



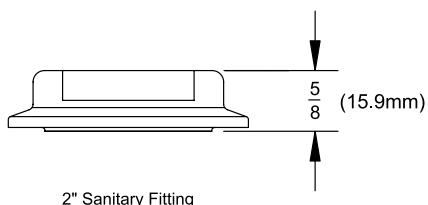
Models 520-525



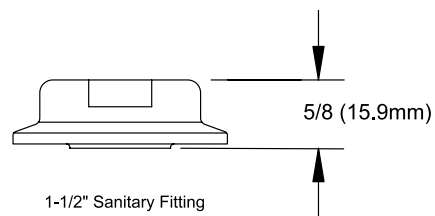
Models 530-535



Models 612-616, 701-705, 15622



Models 560-564



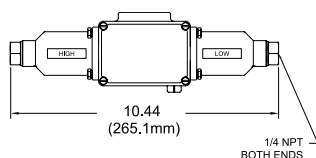
Models 565-567

## DIMENSIONAL DRAWINGS

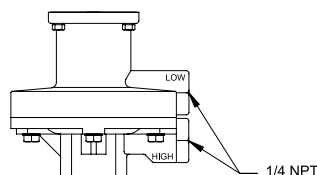
### SENSORS

#### Differential Pressure Sensors

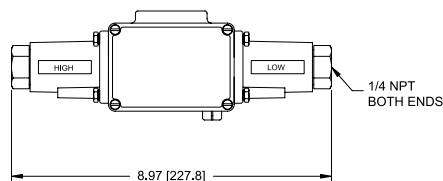
(see drawings and charts on page 21 & 22 for complete dimensions)



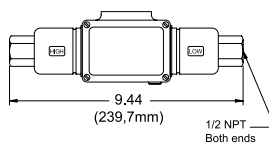
J120K Models 367



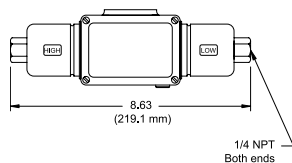
Models 455-457, 559



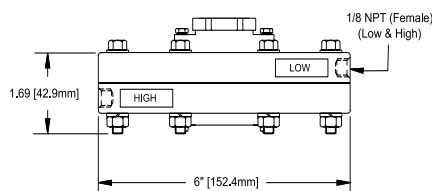
J120K Models 36-39



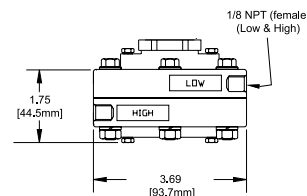
Models S147B-S157B



Models 147-157



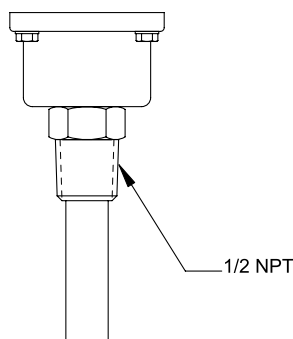
Models 540-543



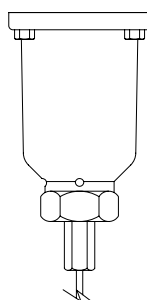
Models 544-548

#### Temperature Sensors

(See drawings and charts on pages 21-23 for complete dimensions, as well as Temperature Model Chart on pages 15-16 for immersion stem and bulb dimensions. The standard capillary length is 6 feet except for models 13273 & 13321 which is 10 feet)



Models  
120-121, 13272, 13322



Models  
1BS-8BS, 13273, 13321

## ALTERNATIVE PRODUCTS FROM UE

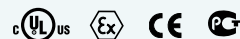
### Stainless Steel 12 Series

- Compact, cylindrical 316 stainless steel design
- Hermetically sealed micro-switch
- Explosion Proof
- Snap-acting belleville spring mechanism for maximum vibration resistance and set point stability
- Pressure ranges 1 to 12,500 psi;  
DP working pressure ranges 0 to 2500 psid;  
temperature ranges -130 to 650°F
- Dual seal compliance to ANSI/ISA 12.27.01



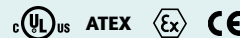
### One Series for Division 1 (Zone 1)

- Electronic pressure and temperature switches with no moving parts
- Fully adjustable deadband and smart self diagnostics
- 4-20 mA output and digital process display
- Explosion-proof enclosure for Division 1 (Zone 1) hazardous areas
- 2-wire, 4-wire and loop powered models available



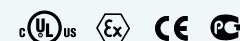
### TX200 Series Pressure Transmitters

- Welded, hermetically sealed, 316 Stainless steel construction
- Ranges 0 to 15 psi up to 0 to 40,000 psi
- Choice of field adjustable or fixed range models
- 4-20 mA transmitter output or 1-5 VDC or 0-10 VDC transducer output
- Variety of pressure connections including NPT, SAE, Autoclave



### One Series for Division 2 (Zone 2)

- Electronic solid-state reliability
- Two-wire operation
- Digital display with keypad set-up
- 100% of range adjustable on-off deadband
- 4-20 mA output models
- Continuous diagnostic health check



### Temperature Sensors

Rugged RTD's and Thermocouples for process and energy applications, available with Nema 4X and explosion-proof heads to match heat-trace, turbine, combustion, and stack-emission applications



## 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. When applicable, 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.
- 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: 905-455-5131

WESTERN  
148 Silver Ridge Close N.W.  
Calgary, Alberta  
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Phone: 403-247-3724  
FAX: 403-247-3724



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## PRESSURE, VACUUM, DIFFERENTIAL PRESSURE, TEMPERATURE



### FEATURES

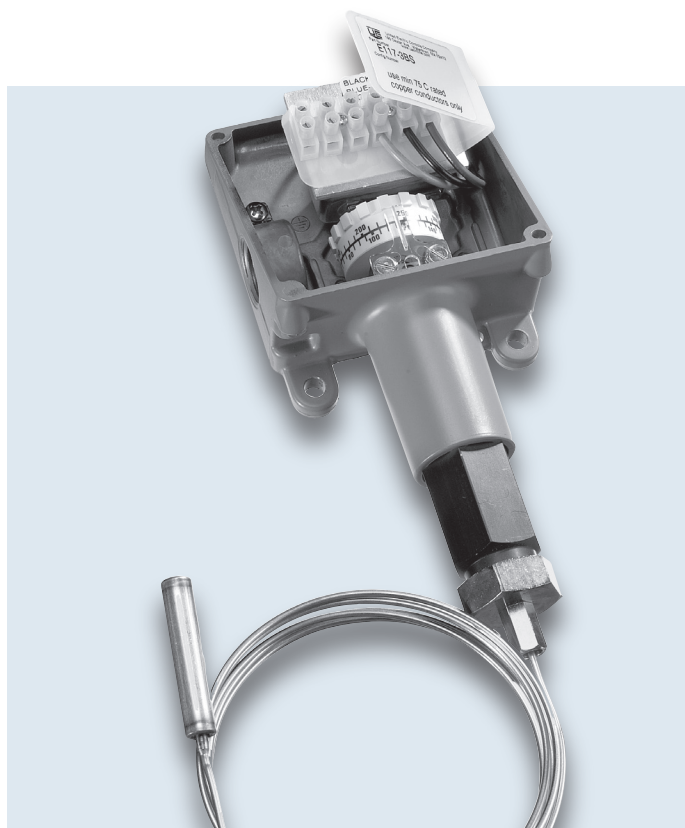
- Epoxy Coated Type 4X Enclosure and Stainless Steel Component Parts
- Hermetically Sealed Snap Switch, SPDT or DPDT Output
- Terminal Block Wiring
- Tamper-Resistant Set Point "Lock"
- Adjustable Ranges:
  - "wc ranges: 300 "wc vacuum to 250 "wc pressure (-747 to 622 mbar)
  - Pressure: 30 "Hg Vac to 3500 psi (-1 to 241 bar)
  - Differential Pressure: 0.8 "wcd to 500 psid (2 mbar to 34.5 bar)
  - Temperature: -120 to 640°F (-85 to 338°C)

### OVERVIEW

Approved for Division 2 hazardous locations and corrosive atmospheres, the 117 Series can be used to measure vacuum, pressure, differential pressure or temperature in a variety of applications. Its compact, epoxy-coated enclosure and hermetically sealed snap switch provide superior corrosion resistance within the harshest environments. Popular sensors in a variety of materials are available, ranging from all welded stainless steel to elastomer diaphragms. Rugged, reliable and cost effective, the 117 Series is an ideal choice for the most demanding applications; typically wastewater treatment, pulp and paper mills, food and beverage plants, steel and aluminum mills, petrochemical, and pharmaceutical plants.

### FEATURES

- Approved for Division 2 hazardous locations
- Optional ATEX or GOST intrinsic safety compliance for Zone 0
- Hermetically sealed snap switch, SPDT or DPDT output
- Welded stainless steel diaphragms
- Optional sensor material for corrosive media
- Ultra-low pressure ranges
- Polished stainless steel flush mount sensors



## SPECIFICATIONS

<b>STORAGE TEMPERATURE</b>	-65° to 160°F (-54 to 71 °C)
<b>AMBIENT TEMPERATURE LIMITS</b>	-40° to 160°F (-40° to 71 °C); except models 520-525, 540-548, 700-706: 0 to 160°F (-18 to 71 °C); set point typically shifts less than 1% of range for a 50°F (28°C) ambient temperature change
<b>SET POINT REPEATABILITY</b>	Temperature models: ± 1% of adjustable range Pressure models 171-174, 218, 358-376, 520-535, 540-543, 560-564 and 700-706: ± 1% of adjustable range; models 183-194, 544-548, 483-494, 565-567: ± 1.5% of adjustable range Internal set point lock on all pressure models
<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, epoxy powder coated, gasketed; captive cover screws; stainless steel nameplate
<b>ENCLOSURE CLASSIFICATION</b>	Enclosure Type 4X
<b>SWITCH OUTPUT</b>	One SPDT hermetically sealed snap action switch; switch may be wired "normally open" or "normally closed"; DPDT (option 1190/1195)
<b>ELECTRICAL RATING</b>	11 A 125/250 VAC resistive; 5 A @ 28 VDC; 1 A @ 48 VDC; 1/2 A @ 125 VDC; switch contacts gold flashed
<b>WEIGHT</b>	1.5-6.5 lbs. Varies with model
<b>ELECTRICAL CONNECTION</b>	1/2" NPT (female); two 7/8" diameter knockouts
<b>PRESSURE CONNECTION</b>	Models 218, 358-376, 700-706: 1/4" NPT (female); models 171-194, 483-494, 520-535: 1/2" NPT (female); models 560-564: 2" sanitary connection; models 565-567: 1.5" sanitary connection, models 540-548: 1/8" NPT (female)
<b>TEMPERATURE ASSEMBLY</b>	Bulb and capillary: 6 feet; 304 stainless steel Immersion stem: nickel-plated brass (standard length only); optional 316L stainless steel
<b>FILL</b>	Non-toxic oil filled
<b>TEMPERATURE DEADBAND</b>	Typically 4% of range under laboratory conditions (70°F ambient circulating bath at rate of 1/2°F per minute change)
<b>REFERENCE SCALE</b>	Pressure: "Low-Medium-High" increment Temperature: Calibrated dial scale

## APPROVALS

**UNITED STATES AND CANADA**

UL Listed, cUL Certified  
Class I, Division 2, Groups A, B, C & D  
Class II, Division 2, Groups F & G  
Class III



Enclosure Type 4X  
Pressure: UL 508 & 1604; CSA C22.2 No. 14  
& 213 - File # E40857  
Temperature: UL 508 & 1604; CSA C22.2 No. 24  
& 213 - File # E43374

**EUROPEAN UNION****ATEX Directive 94/9/EC**

II 1 G EEx ia IIC T6 **(OPTIONAL – code M405)**

Tamb = -50C to +60C  
UL International DEMKO A/S (N.B.# 0539)  
Certificate # DEMKO 03 ATEX 0335063  
EN 50014, 50020 & 50284

**Pressure Equipment Directive (PED) 97/23/EC**

Gage pressure models only  
Category IV, Module H1 **(OPTIONAL – code M407)**  
TÜV Industrie Service, TÜV SÜD AG (N.B.# 0036)  
Certificate # USA 02/04/38/001 thru USA  
02/07/38/033

**Low Voltage Directive (LVD) 73/23/EC & 93/68/EEC**

Compliant to LVD  
Products rated lower than 50 VAC and 75 VDC are outside the scope of the LVD  
The Low Voltage Directive does not apply to products for use in hazardous locations

**RUSSIA**

Gosgortekhnadzor Permit **(OPTIONAL – code M406)**  
OExialICT6  
Tamb = -50C to +60C  
NANIO CCVE Certification Center  
Certificate # RRS 00-22739  
GOST R 51330.0, 51330.1, 51330.10 & 51330.14

## PRESSURE MODEL CHART

Model	Adjustable Set Point Range		Deadband		*Over Range Pressure		**Proof Pressure	
	Low end of range on fall; High end of range on rise							
<b>Type H117</b>	"wc	mbar	"wc	mbar	psi	bar	psi	bar
Buna N diaphragm and O-ring with epoxy coated aluminum 1/2" NPT (female) pressure connection; large 0.72" orifice for clean-out purposes (Other wetted materials available - see page 9)								
520	300 Vac to 0	-746,7 to 0	0.8 to 32	2,0 to 79,6	200	13,8	400	27,6
521	10 Vac to 10	-24,9 to 24,9	0.4 to 2.4	1,0 to 6,0	200	13,8	400	27,6
522	50 Vac to 50	-124,5 to 124,5	0.4 to 12	1,0 to 29,9	200	13,8	400	27,6
523	0.5 to 5	1,2 to 12,4	0.4 to 1.2	1,0 to 3,0	200	13,8	400	27,6
524	2.5 to 50	6,2 to 124,5	0.4 to 3.2	1,0 to 8,0	200	13,8	400	27,6
525	10 to 250	24,9 to 622,3	0.4 to 24	1,0 to 59,7	200	13,8	400	27,6
Welded 316L stainless steel diaphragm and 1/2" NPT (female) pressure connection, large 0.72" orifice for clean-out purposes								
530	300 Vac to 0	-746,7 to 0	0.8 to 60	2,0 to 149,3	50	3,4	100	6,9
531	10 Vac to 10	-24,9 to 24,9	0.4 to 2.4	1,0 to 6,0	50	3,4	100	6,9
532	50 Vac to 50	-124,5 to 124,5	0.4 to 12	1,0 to 29,9	50	3,4	100	6,9
533	0.5 to 5	1,2 to 12,4	0.4 to 1.2	1,0 to 3,0	50	3,4	100	6,9
534	2.5 to 50	6,2 to 124,5	0.4 to 3.2	1,0 to 8,0	50	3,4	100	6,9
535	10 to 250	24,9 to 622,3	0.4 to 40	1,0 to 99,6	50	3,4	100	6,9

**\*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).

Model	Adjustable Set Point Range Low end of range on fall; High end of range on rise		Deadband		*Over Range Pressure		**Proof Pressure	
Type H117	psi	bar (unless noted)	psi	bar (unless noted)	psi	bar	psi	bar
2" sanitary welded 316L stainless steel diaphragm and pressure connection. Mates with Tri-Clamp® fitting systems (not UE supplied)								
560	1 to 15	68,9 mbar to 1 bar	0.3 to 3	20,7 mbar to 0,2	200	13,8	300	20,7
561	1 to 25	68,9 mbar to 1 bar	0.3 to 4.5	20,7 mbar to 0,3	200	13,8	300	20,7
562	2 to 50	0,1 to 3,4	0.3 to 7.5	20,7 mbar to 0,5	200	13,8	300	20,7
563	4 to 100	0,3 to 6,9	0.3 to 12	20,7 mbar to 0,8	200	13,8	300	20,7
564	8 to 200	0,6 to 13,8	0.3 to 15	20,7 mbar to 1	200	13,8	300	20,7
1.5" sanitary welded 316L stainless steel diaphragm and pressure connection. Mates with Tri-Clamp® fitting systems (not UE supplied)								
565	5 to 30	0,3 to 2,1	3 to 15	0,2 to 1,0	1000	68,9	1500	103,4
566	10 to 100	0,7 to 6,9	3 to 36	0,2 to 2,5	1000	68,9	1500	103,4
567	15 to 300	1,0 to 20,7	9 to 66	0,6 to 4,6	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; NACE MR-0175 compliant								
171	1 to 20	68,9 mbar to 1,4 bar	0.1 to 3	6,9 mbar to 0,2	500	34,5	1000	68,9
172	2 to 50	0,1 to 3,4	0.1 to 5	6,9 mbar to 0,3	500	34,5	1000	68,9
173	4 to 100	0,3 to 6,9	0.1 to 10	6,9 mbar to 0,7	500	34,5	1000	68,9
174	8 to 200	0,6 to 13,8	0.1 to 15	6,9 mbar to 1,0	500	34,5	1000	68,9
316L stainless steel diaphragm (optional Hastelloy® C or Monel®); Viton® GLT O-ring (optional Kalrez®, Silicone, Ethylene Propylene, or Aflas®); 316 stainless steel 1/2" NPT (female) pressure connection (optional Hastelloy® C, or Monel®), large 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	0,1 to 1,4	0.3 to 5	20,7 mbar to 0,3	500	34,5	1000	68,9
184	2 to 50	0,1 to 3,4	0.3 to 10	20,7 mbar to 0,4	500	34,5	1000	68,9
185	4 to 100	0,3 to 6,9	0.5 to 16	34,5 mbar to 0,7	500	34,5	1000	68,9
186	8 to 200	0,6 to 13,8	0.5 to 21.5	34,5 mbar to 1,2	500	34,5	1000	68,9
188	50 to 1000	3,4 to 68,9	30 to 300	2,1 to 20,7	2000	137,9	7000	482,6
189	250 to 3500	17,2 to 241,3	50 to 500	3,4 to 34,5	4000	275,8	7000	482,6
316L stainless steel diaphragm (optional Hastelloy® C, or Monel®); Viton® GLT O-ring (optional Kalrez®, Silicone, Ethylene Propylene or Aflas®); 316 stainless steel 1/2" NPT (female) pressure connection (optional Hastelloy® C, or Monel®), 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	0,1 to 1,4	0.3 to 5	20,7 mbar to 0,3	500	34,5	1000	68,9
484	2 to 50	0,1 to 3,4	0.3 to 10	20,7 mbar to 0,4	500	34,5	1000	68,9
485	4 to 100	0,3 to 6,9	0.5 to 16	34,5 mbar to 0,7	500	34,5	1000	68,9
486	8 to 200	0,6 to 13,8	0.5 to 21.5	34,5 mbar to 1,2	500	34,5	1000	68,9
488	50 to 1000	3,4 to 68,9	30 to 300	2,1 to 20,7	2000	137,9	7000	482,6
489	250 to 3500	17,2 to 241,3	50 to 500	3,4 to 34,5	4000	275,8	7000	482,6

**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 pressure might exceed 26" Hg Vac (-0.9 bar). Use of optional diaphragm materials for models 483-489 may increase deadband.

**Hastelloy®** is a registered trademark of Haynes International, Inc.

**Monel®** is a registered trademark of the Special Metals Corporation

**Aflas®** is a registered trademark of Asahi Glass

**Viton® and Kalrez®** are registered trademarks of DuPont Performance Elastomers

**Tri-Clamp®** is a registered trademark of Alfa Laval.

## PRESSURE MODEL CHART

Model	Adjustable Set Point Range Low end of range on fall; High end of range on rise		Deadband			*Over Range Pressure		**Proof Pressure	
Type H117	psi (unless noted)	bar	psi (unless noted)		bar (unless noted)	psi	bar	psi	bar
Phosphor bronze bellows with nickel-plated brass 1/4" NPT (female) pressure connection; 303 stainless steel spring exposed to media									
218	30 "Hg Vac to 0	-1 to 0	2 to 5 "Hg		0,07 to 0,17	3	0,2	30	2,1
Welded 316L stainless steel bellows and 1/4" NPT (female) pressure connection									
358	15 to 200	1,0 to 13,8	6 to 20		0,4 to 1,4	200	13,8	800	55,2
361	20 to 300	1,4 to 20,7	8 to 22		0,6 to 1,5	300	20,7	800	55,2
376	25 to 500	1,7 to 34,5	10 to 28		0,7 to 1,9	500	34,5	800	55,2
			Lower 75% range span	Top 25% range span	Lower 75% range span				
			psi (unless noted)	psi	bar				
Welded 316 stainless steel diaphragm and 1/2" NPT (female) pressure connection, large 0.72" orifice for clean-out purposes; NACE MR-0175 compliant (except model 194)									
190	5 to 30	0,3 to 2,1	3 to 8	10 max	0,2 to 0,6	1500	103,4	2500	172,4
191	10 to 100	0,7 to 6,9	3 to 30	45 max	0,2 to 2,1	1500	103,4	2500	172,4
192	15 to 300	1,0 to 20,7	10 to 40	60 max	0,7 to 2,8	1500	103,4	2500	172,4
193	20 to 500	1,4 to 34,5	15 to 45	75 max	1,0 to 3,1	1500	103,4	2500	172,4
194	80 to 1700	5,5 to 117,2	5 to 120	200 max	0,3 to 8,3	2000	137,9	2500	172,4
Welded 316 stainless steel diaphragm and 1/2" NPT (female) pressure connection, 0.06" orifice to dampen pulsations; NACE MR-0175 compliant (except model 494)									
490	5 to 30	0,3 to 2,1	3 to 8	10 max	0,2 to 0,6	1500	103,4	2500	172,4
491	10 to 100	0,7 to 6,9	3 to 30	45 max	0,2 to 2,1	1500	103,4	2500	172,4
492	15 to 300	1,0 to 20,7	10 to 40	60 max	0,7 to 2,8	1500	103,4	2500	172,4
493	20 to 500	1,4 to 34,5	15 to 45	75 max	1,0 to 3,1	1500	103,4	2500	172,4
494	80 to 1700	5,5 to 117,2	5 to 120	200 max	0,3 to 8,3	2000	137,9	2500	172,4

**Deadband Notes:** 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 welded stainless steel diaphragm sensor and hermetically sealed switch.

**\*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).



Model	Adjustable Set Point Range Low end of range on fall; High end of range on rise		Deadband		*Over Range Pressure		**Proof Pressure	
Type H117	psi	bar	psi	bar	psi	bar	psi	bar
Buna N diaphragm and O-ring with 303 stainless steel 1/4" NPT (female) pressure connection; option M540 Viton® diaphragm and O-ring available								
700	3 to 20	0,2 to 1,4	1,0 to 4	0,1 to 0,3	500	34,5	1000	68,9
702	3 to 100	0,2 to 6,9	2 to 12	0,1 to 0,8	500	34,5	1000	68,9
704	15 to 500	1,0 to 34,5	15 to 30	1,0 to 2,1	1500	103,4	2500	172,4
706	100 to 1700	6,9 to 117,2	20 to 110	1,4 to 7,6	2000	137,9	2500	172,4

**DIFFERENTIAL PRESSURE MODEL CHART**

Model	Adjustable Set Point Range Low end of range on fall; High end of range on rise		Deadband		***Working Pressure		**Proof Pressure	
Type H117K	psi (unless noted)	bar (unless noted)	psi (unless noted)	bar (unless noted)	psi (unless noted)	bar	psi	bar

Kapton® diaphragm, Buna N sealing diaphragms and epoxy coated aluminum 1/8" NPT (female) pressure connections

540	0.8 to 7 "wcd	2,0 to 17,4 mbar	0.1 to 1.3 "wc	0,2 to 3,2 mbar	30 "Hg to 200	-1 to 13,8	400	27,6
541	2 to 20 "wcd	5,0 to 49,8 mbar	0.2 to 1.6 "wc	0.5 to 4,0 mbar	30 "Hg to 200	-1 to 13,8	400	27,6
542	5 to 50 "wcd	12,4 to 124,5 mbar	0.4 to 4.0 "wc	1,0 to 10,0 mbar	30 "Hg to 200	-1 to 13,8	400	27,6
543	10 to 200 "wcd	24,9 to 497,8 mbar	0.8 to 12 "wc	2,0 to 29,9 mbar	30 "Hg to 200	-1 to 13,8	400	27,6
544	2 to 20	0,1 to 1,4	0.2 to 2	13,8 mbar to 0,1	30 "Hg to 1200	-1 to 82,7	2500	172,4
545	5 to 50	0,3 to 3,4	0.4 to 3.2	27,6 mbar to 0,2	30 "Hg to 1200	-1 to 82,7	2500	172,4
546	10 to 125	0,7 to 8,6	0.7 to 7	48,3 mbar to 0,5	30 "Hg to 1200	-1 to 82,7	2500	172,4
547	50 to 250	3,4 to 17,2	1 to 15	0,1 to 1,0	30 "Hg to 1200	-1 to 82,7	2500	172,4
548	100 to 500	6,9 to 34,5	2 to 20	0,1 to 1,4	30 "Hg to 1200	-1 to 82,7	2500	172,4

**TEMPERATURE MODEL CHART**

Model	Adjustable Set Point Range		Max. Temp		Scale Division		†Stem/Bulb Size
Type B117	°F	°C	°F	°C	°F	°C	OD x Length
120	0 to 225	-17.8 to 107.2	275	135	10	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	10	5	9/16" x 1-7/8" below 1/2" NPT thread (nickel-plated brass)
Type E117							Bulb OD x length
2BSA	-120 to 100	-84.4 to 37.8	150	65.6	10	5	3/8 x 2-7/16"
5BS	-20 to 80	-28.9 to 26.7	130	54.4	5	2	3/8 x 5"
4BS	25 to 100	-3.9 to 37.8	150	65.6	2	1	3/8 x 6-3/4"
2BSB	30 to 250	-1.1 to 121.1	300	148.9	10	5	3/8 x 2-7/16"
3BS	100 to 400	37.8 to 204.4	450	232.2	10	5	3/8 x 2-1/8"
8BS	350 to 640	176.7 to 337.8	690	365.6	10	5	3/8 x 3-1/4"

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

†Optional immersion stem lengths and capillary lengths are 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.

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

#### 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 H117 - One SPDT output; epoxy coated enclosure; internal adjustment with "High-Low" reference scale
Differential Pressure	Type H117K - One SPDT output; epoxy coated enclosure; internal adjustment with "High-Low" reference scale
Temperature	Type B117 - Immersion stem; One SPDT output; epoxy coated enclosure; internal adjustment with calibrated dial scale, Type E117 - Bulb and capillary; One SPDT output; epoxy coated enclosure; internal adjustment with calibrated dial scale

### SWITCH OPTIONS\*

1190	Hermetically sealed, DPDT, 11 A 125/250 VAC, products set on rising pressure or temperature only. 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 523, 533
1195	Hermetically sealed, DPDT, 11 A 125/250 VAC; products set on falling pressure or temperature only. 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 523, 533

### SENSOR AND OTHER OPTIONS

M201	Factory set one switch, specify increasing or decreasing pressure or temperature and setpoint
M277	Range indicated on nameplate in kPa/MPa, factory selected. NOT AVAILABLE TEMPERATURE VERSIONS
M278	Range indicated on nameplate in Kg/cm <sup>2</sup> . NOT AVAILABLE TEMPERATURE VERSIONS
M405	Intrinsic safety compliance for European Union per ATEX standards
M406	Intrinsic safety compliance for Russia per Gosgortekhnadzor standards
M407	CE compliance to Pressure Equipment Directive (category IV). AVAILABLE ON MODELS 171-174, 183-189, 192-194, and 700-706 only. Optional sensor material for corrosive media are excluded.
M444	Paper ID tag
M446	Stainless steel ID tag & wire attachment
M449	Mounting bracket kit. Required for models 520-535 when surface mounting. Use kit part number 6361-704 for other models
M504	316L stainless steel immersion stem. AVAILABLE TEMPERATURE MODELS 120, 121 ONLY
M540	Viton® construction (deadband and low end range may increase slightly); wetted parts include Viton® diaphragm and O-ring. AVAILABLE ON MODELS 700-704 (Viton diaphragm and o-ring, stainless steel pressure connection), AND 540-548 (sealing diaphragms only, main diaphragm remains Kapton®, pressure connections remain aluminum)
M550	Oxygen service cleaning; internal construction may change. NOT AVAILABLE PRESSURE MODEL 706 OR TEMPERATURE TYPE E117
SD6286-51	Watertight conduit fitting; converts 7/8" hole to 1/2" NPT (female) fitting
6361-704	Surface and Pipe Mounting Hardware (required for model 520-535, 540-548 when surface mounting)

*\*Refer to Electrical Ratings under Specifications on page 3 for DC ratings.*

**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 MATERIALS FOR CORROSIVE MEDIA.** AVAILABLE MODELS 183-189, 483-489

XD002	Hastelloy® C diaphragm; NOT NACE COMPLIANT
XD003	Monel® diaphragm; NOT NACE COMPLIANT
XP112	Hastelloy® C pressure connection; NOT NACE COMPLIANT
XP113	Monel® pressure connection; NOT NACE COMPLIANT
XR211	Kalrez® O-ring
XR212	Silicone O-ring. NOT AVAILABLE MODELS 188-189, 488-489
XR213	Ethylene Propylene O-ring
XR214	Aflas® O-ring

**OPTIONAL FLUSH MOUNT FLANGES.** AVAILABLE MODELS 560-567

Other flanges (150# and 300#) available, please consult UE. Flanges conform to ANSI B16.5. Maximum pressure is limited by flange rating.

F196	Flush mounted flange, 150#, 1" lap joint, raised face. AVAILABLE MODELS 565-567 ONLY
F197	Flush mounted flange, 150#, 2" lap joint, raised face. AVAILABLE MODELS 560-564 ONLY
F198	Flush mounted flange, 300#, 1" lap joint, raised face. AVAILABLE MODELS 565-567 ONLY
F199	Flush mounted flange, 300#, 2" lap joint, raised face. AVAILABLE MODELS 560-564 ONLY

## OPTIONS FOR TEMPERATURE MODELS

**UNION CONNECTORS** (Dimensional drawings may be found at [www.ueonline.com](http://www.ueonline.com))

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** (Dimensional drawings may be found at [www.ueonline.com](http://www.ueonline.com))

*For all bulb & capillary switches*

<u>Brass</u>		
W075	SD6225-75	1/2" NPT with 3/4" NPT adapter bushing, 4" BT
W191	SD6225-191	1/2" NPT, 4" BT
W118	SD6225-118	1/2" NPT with 3/4" NPT adapter bushing, 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

## OPTIONS FOR TEMPERATURE MODELS

### 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 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.

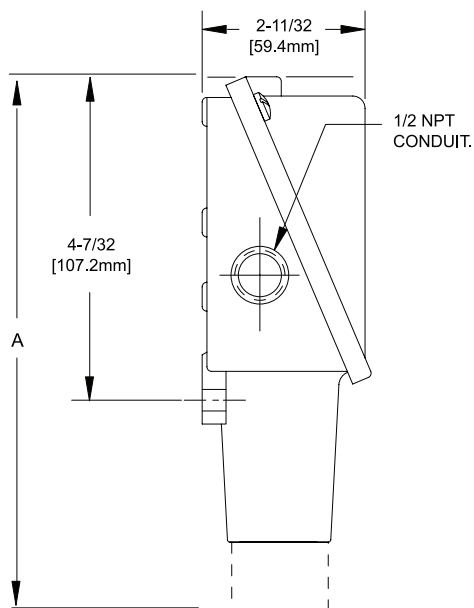
Optional capillary length to \*50' available in copper or 304 st/st. Armor or Teflon® capillary protection available to lengths less than or equal to capillary length. Consult UE for additional information.

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

## DIMENSIONAL DRAWINGS

Dimensional drawings for all models may be found at [www.ueonline.com](http://www.ueonline.com)

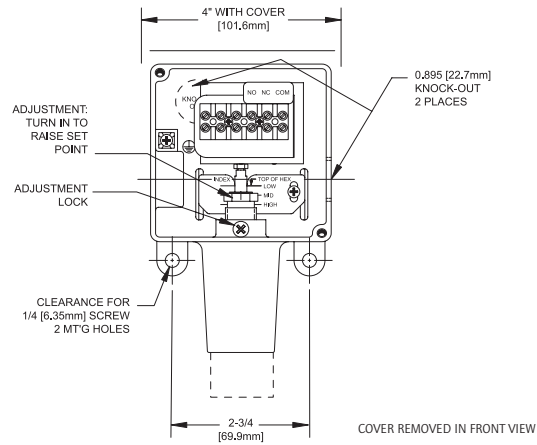
Types H117, H117K, B117, E117



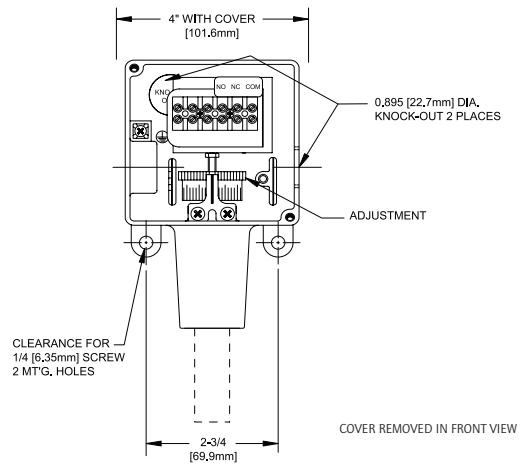
All dimensions stated in inches (millimeters)

Models	Dimension A		
	Inches	mm	NPT
<b>Pressure</b>			
171-174	7.63	193.8	1/2
183-186, 483-486	7.56	192.0	1/2
188, 189, 488-489	6.63	168.4	1/2
190-194, 490-494	6.63	168.4	1/2
218	6.56	166.6	1/4
358-376	7.00	177.8	1/4
520-525	8.44	214.4	1/2
530-535	8.00	203.2	1/2
560-564	6.63	168.4	2" Sanitary Fitting
565-567	6.63	168.4	1-1/2" Sanitary Fitting
700-706	6.63	168.4	1/4
<b>Differential Pressure</b>			
540-543	8.47	215.1	1/8
544-548	8.53	216.7	1/8
<b>Temperature</b>			
120,121	9.38	238.3	Immersion Stem
2BSA-8BS	8.69	220.7	Bulb & Capillary

Types H117, H117K

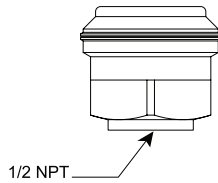


Types B117, E117

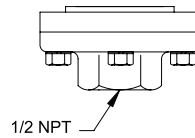


## PRESSURE SENSORS

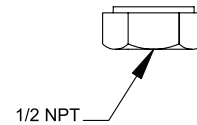
Models 171-174



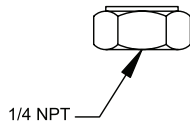
Models 183-186, 483-486



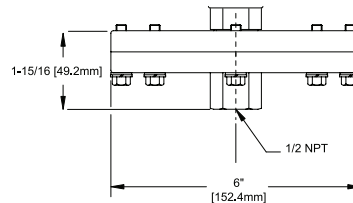
Models 188-194, 488-494



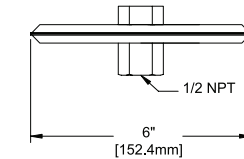
Models 218-376, 700-706



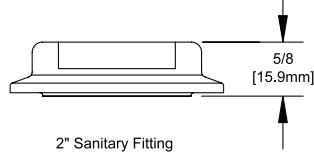
Models 520-525



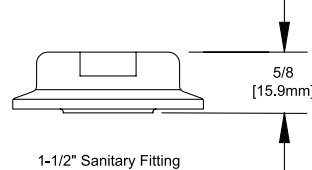
Models 530-535



Models 560-564

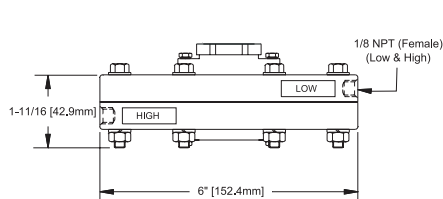


Models 565-567

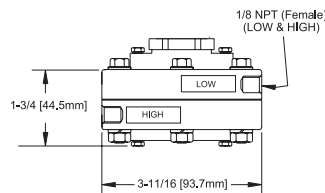


## DIFFERENTIAL PRESSURE SENSORS

Models 540-543

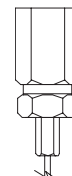


Models 544-548

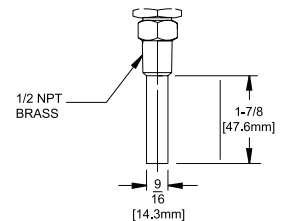


## TEMPERATURE SENSORS

Model 2BSA-8BS



Model 120-121



## 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. When applicable, 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.
- 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 36 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.

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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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