

117 Series

117 Series

PRESSURE, VACUUM, DIFFERENTIAL PRESSURE, TEMPERATURE



FEATURES

- Epoxy Coated Enclosure and Stainless Steel Component Parts
- Hermetically Sealed Snap Switch, SPDT or DPDT Output
- Terminal Block Wiring
- Adjustable Ranges:
 - "WC ranges: 300 "wc vacuum to 250 "wc pressure (-747 to 623 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 335 °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 and petrochemical and pharmaceutical plants.



FEATURES

- Approved for Division 2 hazardous locations
- Epoxy-coated enclosure with captive cover screws
- Hermetically sealed snap switch, SPDT or DPDT output
- Terminal block wiring
- Welded stainless steel diaphragms
- Ultra-low pressure ranges
- Flush mount sensors

SPECIFICATIONS

STORAGE TEMPERATURE	-65° to 160°F (-54 to 71°C)
AMBIENT TEMPERATURE LIMITS	-40° to 160°F; except models 520-548, 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
SET POINT REPEATABILITY	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: ± 1½% of adjustable range Internal set point lock on all pressure models
SHOCK	Set point repeats after 15 G, 10 millisecond duration
VIBRATION	Set point repeats after 2.5 G, 5-500 Hz
ENCLOSURE	Die cast aluminum (max. 0.6% copper), epoxy powder coated; captive cover screws
ENCLOSURE CLASSIFICATION	Certified to Enclosure Type 4X requirements
SWITCH OUTPUT	One SPDT hermetically sealed snap action switch; switch may be wired "normally open" or "normally closed"; DPDT (option 1190/1195)
ELECTRICAL RATING	11 A 125/250 VAC resistive; 5 A @ 28 VDC; 1 A @ 48 VDC; 1/2 A @ 125 VDC; switch contacts gold flashed
WEIGHT	1½-6½ lbs. Varies with model
ELECTRICAL CONNECTION	1/2" NPT (female); two 7/8" diameter knockouts
PRESSURE CONNECTION	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: 1½" sanitary connection, models 540-548: 1/8" NPT (female)
TEMPERATURE ASSEMBLY	Bulb and capillary: 6 feet 304 stainless steel Immersion stem: nickel-plated brass (standard length only); optional 316L stainless steel
FILL	Non-toxic oil filled
TEMPERATURE DEADBAND	Typically 4% of range under laboratory conditions (70°F ambient circulating bath at rate of 1/2°F per minute change)
REFERENCE SCALE	Pressure: "Low-Medium-High" increment Temperature: calibrated dial scale

APPROVALS



UL listed, **cUL** certified
 Pressure: UL 508, UL 1604, CSA C22.2 No. 14-M91, CSA C22.2 No. 213-1987
 Temperature: UL 508, UL 1604, CSA C22.2 No. 24-M91, CSA C22.2 No. 213-1987



CE Compliance to Low Voltage Directive (LVD).
CE Compliance to Pressure Equipment Directive (PED 97/23/EC).
 Compliance to **NACE** MR-0175. (Standard on models 171-193, 483-493)
Class I, Division 2 Groups A, B, C, and D;
Class II, Division 2 Group F, G
Class III
Class I, Zone 2, Group IIC

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							
Type H117	"wc	mbar	"wc	mbar	psi	bar	psi	bar
Buna N diaphragm and O-ring and 1/2" NPT (female) epoxy coated aluminum pressure connection (Other wetted materials available - see page 9)								
520	300 Vac to 0	-746,7 to 0	0.8 to 32	2 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 to 5,9	200	13,8	400	27,6
522	50 Vac to 50	-124,5 to 124,5	0.4 to 12	1 to 29,8	200	13,8	400	27,6
523	0.5 to 5	1,2 to 12,4	0.4 to 1.2	1 to 3	200	13,8	400	27,6
524	2.5 to 50	6,2 to 124,5	0.4 to 3.2	1 to 7,9	200	13,8	400	27,6
525	10 to 250	24,9 to 622,3	0.4 to 24	1 to 59,7	200	13,8	400	27,6
Welded 316L stainless steel diaphragm and 1/2" NPT (female) 316L pressure connection								
530	300 Vac to 0	-746,7 to 0	0.8 to 60	2 to 149,6	50	3,4	100	6,9
531	10 Vac to 10	-24,9 to 24,9	0.4 to 2.4	1 to 5,9	50	3,4	100	6,9
532	50 Vac to 50	-124,5 to 124,5	0.4 to 12	1 to 29,8	50	3,4	100	6,9
533	0.5 to 5	1,2 to 12,4	0.4 to 1.2	1 to 3	50	3,4	100	6,9
534	2.5 to 50	6,2 to 124,5	0.4 to 3.2	1 to 7,9	50	3,4	100	6,9
535	10 to 250	24,9 to 622,3	0.4 to 40	1 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		Deadband		*Over Range Pressure		** Proof Pressure	
	Low end of range on fall; High end of range on rise							
Type H117	psi	bar	psi	bar	psi	bar	psi	bar
Welded 316L stainless steel diaphragm and pressure connection; 2" sanitary connection. Mates with Tri-Clamp® fitting systems or use with flush mount flanges (see page 9)								
560	0.5 to 15	0,03 to 1	0.3 to 3	0,03 to 0,2	200	13,8	300	20,7
561	1 to 25	0,07 to 1,7	0.3 to 4.5	0,03 to 0,3	200	13,8	300	20,7
562	2 to 50	0,14 to 3,4	0.3 to 7.5	0,03 to 0,5	200	13,8	300	20,7
563	4 to 100	0,3 to 6,9	0.3 to 12	0,03 to 0,8	200	13,8	300	20,7
564	8 to 200	0,6 to 13,8	0.3 to 15	0,03 to 1	200	13,8	300	20,7
Welded 316L stainless steel diaphragm and pressure connection; 1 1/2" sanitary connection. Mates with Tri-Clamp® fitting systems or use with flush mount flanges (see page 9)								
565	5 to 30	0,3 to 2,1	3 to 15	0,21 to 1	1000	68,9	1500	103,4
566	10 to 100	0,7 to 6,9	3 to 36	0,21 to 2,5	1000	68,9	1500	103,4
567	15 to 300	1 to 20,7	9 to 66	0,63 to 4,6	1000	68,9	1500	103,4
Welded 316L stainless steel diaphragm and 1/2" NPT (female) 316L pressure connection, large 0.72" orifice for clean-out purposes								
171	1 to 20	0,07 to 1,4	0.1 to 3	0,007 to 0,2	500	34,5	1000	68,9
172	2 to 50	0,14 to 3,4	0.1 to 5	0,007 to 0,3	500	34,5	1000	68,9
173	4 to 100	0,3 to 6,9	0.1 to 10	0,007 to 0,7	500	34,5	1000	68,9
174	8 to 200	0,6 to 13,8	0.1 to 15	0,007 to 1	500	34,5	1000	68,9
316L stainless steel diaphragm (optional Hastelloy® C, Monel® or Tantalum); Viton® GLT O-ring (optional Kalrez®, Silicone, Ethylene Propylene, or Aflas®); 316 stainless steel 1/2" NPT (female) pressure connection (optional Hastelloy® B or C, or Monel®), large 0.72" orifice for clean-out purposes. Models 188 and 189, 316L stainless steel pressure connection.								
183	1 to 20	0,07 to 1,4	0.3 to 5	0,021 to 0,3	500	34,5	1000	68,9
184	2 to 50	0,14 to 3,4	0.3 to 6	0,021 to 0,4	500	34,5	1000	68,9
185	4 to 100	0,3 to 6,9	0.5 to 10	0,03 to 0,7	500	34,5	1000	68,9
186	8 to 200	0,6 to 13,8	0.5 to 17	0,03 to 1,2	500	34,5	1000	68,9
188	50 to 1000	3,4 to 68,9	30 to 300	2,07 to 20,7	2000	137,9	7000	482,6
189	250 to 3500	17,3 to 241,3	50 to 500	3,45 to 34,5	4000	275,8	7000	482,6
316L stainless steel diaphragm (optional Hastelloy® C, Monel® or Tantalum); Viton® GLT O-ring (optional Kalrez®, Silicone, ethylene propylene or Aflas®); 316 stainless steel 1/2" NPT (female) pressure connection (optional Hastelloy® B or C, or Monel®), 0.06" orifice to dampen pulsations. Models 488 and 489, 316L stainless steel pressure connection								
483	1 to 20	0,07 to 1,4	0.3 to 5	0,021 to 0,3	500	34,5	1000	68,9
484	2 to 50	0,14 to 3,4	0.3 to 6	0,021 to 0,4	500	34,5	1000	68,9
485	4 to 100	0,3 to 6,9	0.5 to 10	0,03 to 0,7	500	34,5	1000	68,9
486	8 to 200	0,6 to 13,8	0.5 to 17	0,03 to 1,2	500	34,5	1000	68,9
488	50 to 1000	3,4 to 68,9	30 to 300	2,07 to 20,7	2000	137,9	7000	482,6
489	250 to 3500	17,3 to 241,3	50 to 500	3,45 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 INCO family of companies
Kalrez® is a registered trademark of E.I. DuPont
Aflas® is a registered trademark of Asahi Glass
Viton® is a registered trademark of E.I. DuPont
Tri-Clamp® is a registered trademark of Tri-Clover, Inc.

PRESSURE MODEL CHART

Model	Adjustable Set Point Range		Deadband		*Over Range			**Proof Pressure	
	psi (<i>unless noted</i>)	bar	psi (<i>unless noted</i>)		bar	psi	bar	psi	bar
Phosphor bronze bellows and 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	0	0	30	2,1
316L stainless steel bellows and 1/4" NPT (female) pressure connection									
358	15 to 200	1 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 (<i>unless noted</i>)	psi	bar				
Welded 316 stainless steel diaphragm and 1/2" NPT (female) pressure connection, large 0.72" orifice for clean-out purposes									
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 to 20,7	10 to 40	60 max	0,7 to 2,7	1500	103,4	2500	172,4
193	20 to 500	1,4 to 34,5	15 to 45	75 max	1 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									
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 to 20,7	10 to 40	60 max	0,7 to 2,7	1500	103,4	2500	172,4
493	20 to 500	1,4 to 34,5	15 to 45	75 max	1 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.

***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).

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

Model	Adjustable Set Point Range		Deadband		*Over Range Pressure		**Proof Pressure	
	Lower end of range on fall; High end of range on rise							
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 to 4	0,07 to 0,3	500	34,5	1000	68,9
702	3 to 100	0,2 to 6,9	2 to 12	0,14 to 0,8	500	34,5	1000	68,9
704	15 to 500	1 to 34,5	15 to 30	1,03 to 2,1	1500	103,4	2500	172,4
706	100 to 1700	6,9 to 117,2	20 to 110	1,38 to 7,6	2000	137,9	2500	172,4

DIFFERENTIAL PRESSURE MODEL CHART

Model	Adjustable Set Point Range		Deadband		***Working Pressure		**Proof Pressure	
Type H117K	psid (unless noted)	bar	psi (unless noted)	bar	psi	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 to 17,4 mbar	0.1 to 1.3 "wc	0,2 to 3,2 mbar	200	13,8	400	27,6
541	2 to 20 "wcd	5 to 49,7 mbar	0.2 to 1.6 "wc	0.5 to 4,0 mbar	200	13,8	400	27,6
542	5 to 50 "wcd	12,4 to 124,4 mbar	0.4 to 4.0 "wc	1,0 to 10,0 mbar	200	13,8	400	27,6
543	10 to 200 "wcd	24,9 to 497,0 mbar	0.8 to 12 "wc	2,0 to 29,9 mbar	200	13,8	400	27,6
544	2 to 20	0,1 to 1,4 bar	0.2 to 2	0,0 to 0,1 bar	1200	82,7	2500	172,4
545	5 to 50	0,3 to 3,4 bar	0.4 to 3.2	0 to 0,1 bar	1200	82,7	2500	172,4
546	10 to 125	0,7 to 8,6 bar	0.7 to 7.0	0,0 to 0,2 bar	1200	82,7	2500	172,4
547	50 to 250	3,4 to 17,2 bar	1.0 to 15.0	0,1 to 1,0 bar	1200	82,7	2500	172,4
548	100 to 500	6,9 to 34,5 bar	2.0 to 20.0	0,1 to 1,4 bar	1200	82,7	2500	172,4

TEMPERATURE MODEL CHART

Model	Adjustable Range		Max. Temp		Scale Division		†Stem/Bulb Size
	°F	°C	°F	°C	°F	°C	OD x Length
Type B117							
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	65.5	10	5	3/8 x 2 5/8"
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	65.5	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 5/8"
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.

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

Pressure

DESCRIPTION

Type H117 - One SPDT output; epoxy coated enclosure; internal adjustment with reference scale

Differential Pressure

Type H117K - One SPDT output; epoxy coated enclosure; internal adjustment with 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, for products set on rising pressure or temperature, due to inherent separation of circuits on falling pressure or temperature. Specify Option 1195 if setting on fall is required. Deadband and minimum set point will increase. NOT AVAILABLE MODELS 523, 533

1195

Hermetically sealed, DPDT, 11 A 125/250 VAC; for products set on falling pressure or temperature due to inherent separation of circuits on rising pressure or temperature. Specify Option 1190 if setting on rise is required. Deadband and minimum set point will increase. NOT AVAILABLE MODELS 523, 533

SENSOR AND OTHER OPTIONS

M201

Factory set one switch

M277

Range indicated on nameplate in kPa/MPa, factory selected. NOT AVAILABLE TEMPERATURE VERSIONS

M278

Range indicated on nameplate in Kg/cm². NOT AVAILABLE TEMPERATURE VERSIONS

M407

CE compliance to Pressure Equipment Directive (category IV)

M444

Paper ID tag

M446

Stainless steel ID tag & wire attachment

M504

316L stainless steel stem. AVAILABLE MODELS 120, 121

M540

Viton[®] construction; wetted parts include Viton[®] diaphragm and O-ring; deadband and low end of range may increase slightly
AVAILABLE MODELS 700-704

M550

Oxygen service cleaning; internal construction may change. NOT AVAILABLE MODEL 706 OR TYPES 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)

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
XD003	Monel diaphragm
XD004	Tantalum diaphragm
XP111	Hastelloy B pressure connection
XP112	Hastelloy C pressure connection
XP113	Monel pressure connection
XR211	Kalrez® O-ring
XR212	Silicone O-ring, NOT AVAILABLE MODELS 188-189, 488-489
XR213	Ethylene propylene O-ring
XR214	Aflas® O-ring

OPTIONAL FLUSH MOUNT FLANGES. AVAILABLE MODELS 560-567

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

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

OPTIONS FOR TEMPERATURE MODELS**UNION CONNECTORS**

Option	Replacement Number	Description
<u>Brass</u>		
W027	SD6213-27	½" NPT w/ ¾" bushing
W045	SD6213-45	¾" NPT
W051	SD6213-51	½" NPT
<u>304 Stainless Steel</u>		
W028	SD6213-28	½" NPT w/ ¾" bushing
W046	SD6213-46	¾" NPT
W050	SD6213-50	½" NPT

THERMOWELLS

For all bulb & capillary switches

<u>Brass</u>		
W075	SD6225-75	½" NPT with ¾" NPT adapter bushing, 4" BT
W191	SD6225-191	½" NPT, 4" BT
W118	SD6225-118	½" NPT with ¾" NPT adapter bushing, 7" BT
W192	SD6225-192	½" NPT, 7" BT
<u>316 Stainless Steel</u>		
W076	SD6225-76	¾" NPT, 4.5" BT
W193	SD6225-193	½" NPT, 4.5" BT
W119	SD6225-119	¾" NPT, 7.5" BT
W177	SD6225-177	½" NPT, 7.5" BT

For all immersion stem switches

W139	SD6225-139	¾" NPT X 1 23/32" BT, BRASS
W140	SD6225-140	¾" 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.

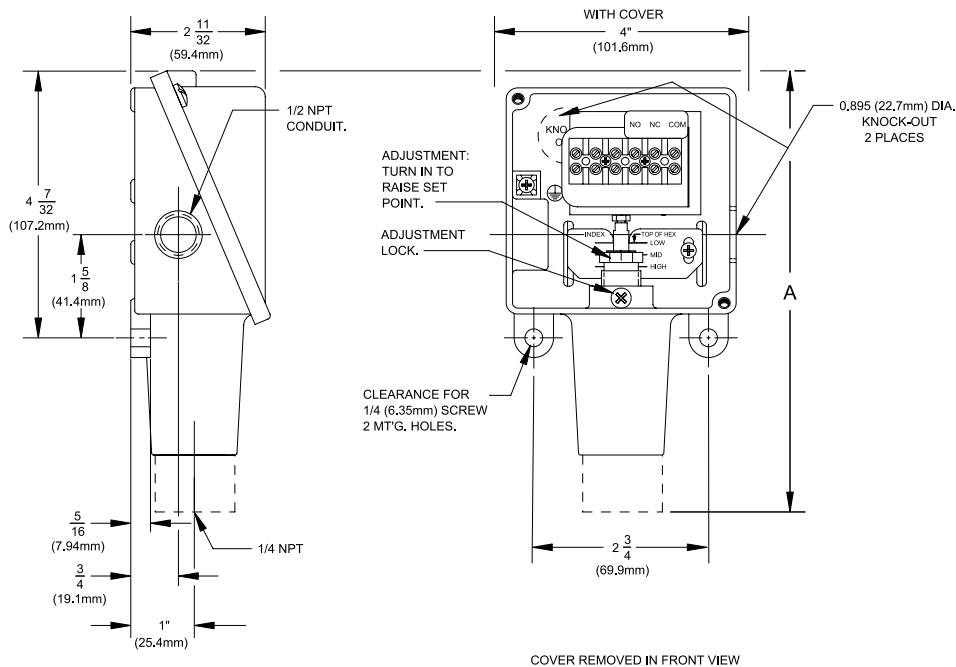
Option	Description
W000	Immersion stem only, Brass
W097	Immersion stem and thermowell. Includes W000 stem and ½" NPT x 1 23/32" BT Brass thermowell
W099	Immersion stem and thermowell. Includes W000 stem and ½" NPT x 1 23/32" BT 316 st/st thermowell.

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.

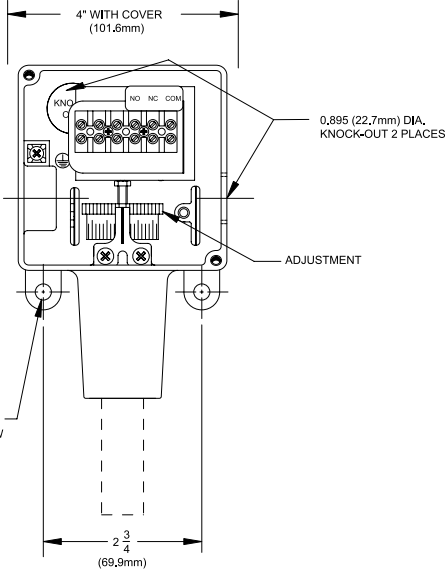
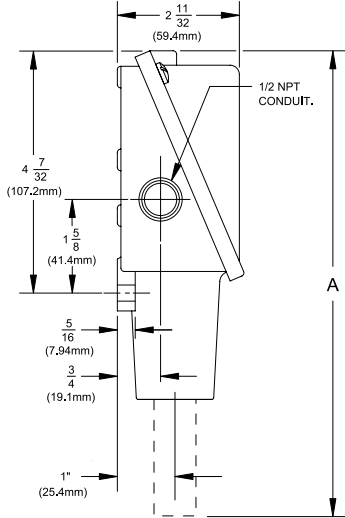
DIMENSIONAL DRAWINGS

Types H117, H117K



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

Types B117, E117

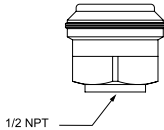


COVER REMOVED IN FRONT VIEW

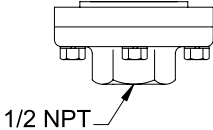
Dimension A			
Models	Inches	mm	NPT
Pressure			
171-174	7.62	193,5	1/2
183-186	7.56	192,0	1/2
188, 189	6.62	168,1	1/2
190-194	6.62	168,1	1/2
218	6.56	166,6	1/4
358-376	7.03	178,6	1/4
483-486	7.56	192,0	1/2
488, 489	6.62	168,1	1/2
490-494	6.62	168,1	1/2
520-525	8.44	214,4	1/2
530-535	8.00	203,2	1/2
540-543	8.62	218,9	1/8
544-548	8.69	220,7	1/8
560-564	6.62	168,1	2" Sanitary Fitting
565-567	6.62	168,1	1 1/2" Sanitary Fitting
700-706	6.56	166,6	1/4
Differential Pressure			
540-543	8.62	218,9	1/8
544-548	8.69	220,7	1/8
Temperature			
120,121	9.38	238,3	Immersion Stem
2BSA-8B5	8.69	220,7	Bulb & Capillary

Pressure Sensors

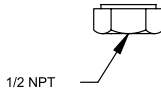
Models 171-174



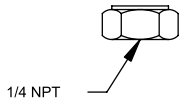
Models 183-186, 483-486



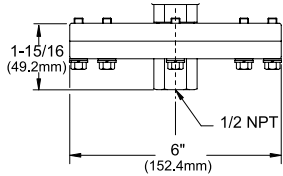
Models 188-194, 488-494



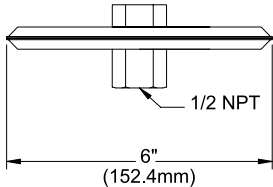
Models 218-376, 700-706



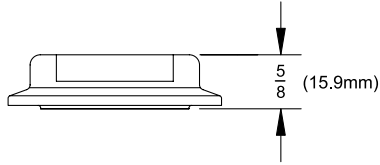
Models 520-525



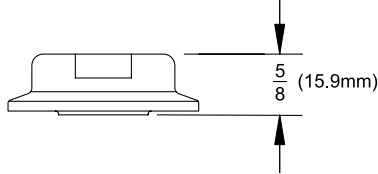
Models 530-535



Models 560-564

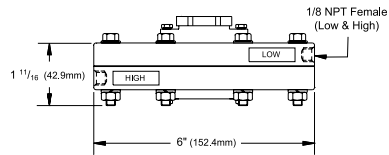


Models 565-567

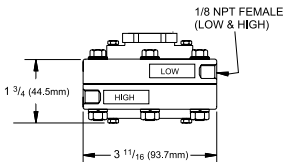


Differential Pressure Sensors

Models 540-543

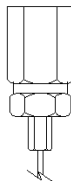


Models 544-548

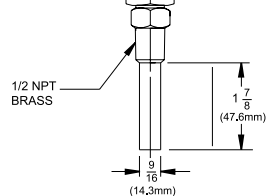


Temperature Sensors

Model 2BSA-8B5



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. Orient unit so that moisture does not enter the enclosure via the electrical connection. When appropriate, this entry point should be sealed to prevent moisture entry.
- Unit must not be altered or modified after shipment. Consult UE if modification is necessary.
- Monitor operation to observe warning signs of possible damage to unit, such as drift in set point or faulty display. Check unit immediately.
- Preventative maintenance and periodic testing is necessary for critical applications where damage could endanger property or personnel.
- For all applications, a factory set unit should be tested before use.
- Electrical ratings stated in literature and on nameplate must not be exceeded. Overload on a switch can cause damage, even on the first cycle. Wire unit according to local and national electrical codes, using wire size recommended in installation sheet.
- Do not mount unit in ambient temperature 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.

U.S. SALES OFFICES

United Electric Controls
32 Highland Rd.
South Hampton, NH 03827
Phone: 603-394-0078
FAX: 603-394-0175

United Electric Controls
28 N. Wise Ave.
Freeport, IL 61032
Phone: 815-235-3501
FAX: 815-235-3847

United Electric Controls
1022 Vineyard Drive
Conyers, GA 30013
Phone: 770-483-8400
FAX: 770-929-8716

United Electric Controls
5829 Grazing Court
Mason, OH 45040
Phone: 513-398-3175
FAX: 513-398-3076

United Electric Controls
27 Summit Terrace
Sparta, NJ 07871
Phone: 973-271-2550
FAX: 973-729-6099

United Electric Controls
102 Salazar Court
Clayton, CA 94517
Phone: 925-524-0210
FAX: 925-524-0210

United Electric Controls
4306 Lakeshore Forest Drive
Missouri City, TX 77459
Phone: 281-431-8134
FAX: 281-431-8158

INTERNATIONAL OFFICES

AUSTRALIA
United Electric Controls
(Australia) PTY Ltd
Unit 2, 615 Warrigal Road
Locked Bag 600
Ashburton, Victoria
3147, Australia
Phone: 613-9567-0750
FAX: 613-9567-0755

BELGIUM
United Electric Controls-Europe
G. Van Gervenstraat 19A
B-9120 Beveren-Waas, Belgium
Phone: 32-37554-383
FAX: 32-37552-747

CANADA
United Electric Controls
(Canada) Ltd
5320 Bradco Boulevard
Mississauga, Ontario
L4W 1G7 Canada
Phone: 905-625-5082
FAX: 905-625-5709

GERMANY
United Electric Controls
An Der Zentlinde 21
D-64711 Erbach, Germany
Phone: 496-062-7400
FAX: 496-062-7501

MALAYSIA
United Electric Controls, Far East
No. 1-2-2, 2nd Floor
Jalan 4/101C
Cheras Business Centre
Batu 5, Jalan Cheras
56100 Kuala Lumpur, Malaysia
Phone: 603-9133-4122
FAX: 603-9133-4155



UNITED ELECTRIC
CONTROLS

180 Dexter Avenue, P.O. Box 9143
Watertown, MA 02471-9143 USA
Telephone: 617 926-1000 Fax: 617 926-2568
<http://www.ueonline.com>

EMCO5000303