

117 Series Temperature Switch

Types B117, E117

UNITED ELECTRIC CONTROLS

Installation and Maintenance Instructions

Please read all instructional literature carefully and thoroughly before starting. Refer to the final page for the listing of Recommended Practices, Liabilities and Warranties.

GENERAL

MISUSE OF THIS PRODUCT MAY CAUSE EXPLOSION AND PERSONAL INJURY. THESE INSTRUCTIONS MUST BE THOROUGHLY READ AND UNDERSTOOD BEFORE UNIT IS INSTALLED.

c UL us THIS EQUIPMENT IS SUITABLE FOR CLASS I, DIVISION 2, GROUPS A,B,C,D; CLASS II, DIVISION 2, GROUPS F AND G; CLASS III; OR NON-HAZARDOUS LOCATIONS ONLY.

THESE PRODUCTS DO NOT HAVE ANY FIELD REPLACEABLE PARTS. ANY SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2

Types B117 (Immersion Stem)
The 117 Series temperature switch utilizes a liquid filled sensor which expands or contracts against a bellows to detect a temperature change. The response, at a pre-determined set point, actuates or deactuates a SPDT or DPDT snap-acting switch, converting the temperature signal into an electrical signal. Control set point is adjusted by turning an internal dial (see adjustment - Part II).

Types E117 (Bulb & Capillary)
The 117 Series temperature switch utilizes a liquid-filled sensing bulb which hydraulically transmits temperature change to a bellows. The response, at a pre-determined set point, actuates or deactuates a SPDT or DPDT snap-acting switch, converting the temperature signal into an electrical signal. Control set point is adjusted by turning an internal dial (see adjustment - Part II).

MAXIMUM TEMPERATURE: THE HIGHEST TEMPERATURE TO WHICH A SENSING ELEMENT MAY BE OCCASIONALLY EXPOSED TO WITHOUT ADVERSELY AFFECTING SET POINT CALIBRATION AND REPEATABILITY. MAXIMUM TEMPERATURE STATED IN LITERATURE AND ON NAMEPLATE MUST NEVER BE EXCEEDED, EVEN BY TEMPERATURE OVERSHOOTS IN THE SYSTEM. OCCASIONAL OPERATION OF UNIT UP TO MAX. TEMPERATURE IS ACCEPTABLE (E.G., START-UP, TESTING). CONTINUOUS OPERATION SHOULD BE RESTRICTED TO THE DESIGNATED ADJUSTABLE RANGE.

Please refer to product bulletin for product specifications. Product bulletins may be found at www.ueonline.com.

Part I - Installation

Tools Needed
Adjustable Wrench
Flasthead screwdriver
Hammer (for alternate wire knockouts)

MOUNTING

WARNING: EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

INSTALL UNIT WHERE SHOCK, VIBRATION AND TEMPERATURE FLUCTUATIONS ARE MINIMAL. DO NOT MOUNT UNIT IN AMBIENT TEMPERATURES EXCEEDING PUBLISHED LIMITS. 100 SERIES TEMPERATURE SWITCHES CAN BE MOUNTED IN ANY POSITION, PROVIDED THE ELECTRICAL CONDUIT IS NOT FACING UP. ORIENT UNIT SO THAT MOISTURE IS PREVENTED FROM ENTERING THE ENCLOSURE.

ALWAYS HOLD A WRENCH ON THE TEMPERATURE HOUSING HEX WHEN MOUNTING UNIT. DO NOT TIGHTEN BY TURNING ENCLOSURE. THIS WILL DAMAGE SENSOR AND WEAKEN SOLDERED OR WELDED JOINTS.

Mount the unit via the (2) 1/4" screw clearance holes on the enclosure (see Mounting Dimensions).

For remote mounting, fully immerse the bulb and 6" capillary in the control zone. For best control, it is generally desirable to place the bulb close to the heating or cooling source in order to sense temperature fluctuations quickly. Be sure to locate the bulb so it will not be exposed to temperature beyond the instrument range limits.

WIRING

DISCONNECT ALL SUPPLY CIRCUITS BEFORE WIRING UNIT. WIRE UNITS ACCORDING TO NATIONAL AND LOCAL ELECTRICAL CODES. MAXIMUM RECOMMENDED WIRE SIZE IS 14 AWG. THE RECOMMENDED TIGHTENING TORQUE FOR FIELD WIRING TERMINALS IS 7 TO 17 IN-LBS.

ELECTRICAL RATINGS STATED IN LITERATURE AND ON NAMEPLATE SHOULD NEVER BE EXCEEDED. OVERLOAD ON A SWITCH CAN CAUSE FAILURE ON THE FIRST CYCLE.

Remove the two screws retaining the cover and cover gasket. A 1/2" NPT conduit connection is provided on the left hand side of the enclosure. Two cast-in 7/8" diameter knock outs for electrical conduits are located on the side and back of enclosure (see dimensional drawings, opposite page). These can easily be knocked out by placing a blade of a screwdriver in groove and tapping sharply with a hammer. The terminal block terminals are clearly labeled "Common", "Normally Open" and "Normally Closed." For units supplied with DPDT, all terminals are labeled and the following color coding applies.

	SPDT	**DPDT**	
		SWT1	SWT2
Common	Violet	Violet	Yellow
Normally Closed	Black	Black	Red
Normally Open	Blue	Blue	Orange

Grounding screw and clamp (cast in symbol) are provided. Keep the wire as short as possible to prevent interference with the plunger.

Part II - Adjustments

To change set point, turn dial and align with pointer.

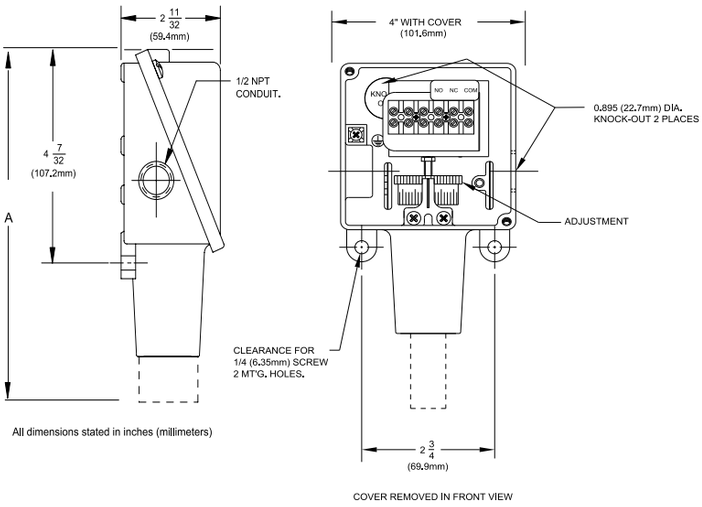
Types B117 and E117 with dial knob controls are factory calibrated for maximum accuracy at the midpoint of the scale.

Re-calibration
To re-calibrate, turn dial to desired set point. If the actual temperature and set point temperature do not agree, turn the 3/16" hex fine adjustment screw to the left (clockwise) to raise and to the right (counter-clockwise) to lower temperature setting.

Dimensions

Dimensional drawings for all models may be found at www.ueonline.com.

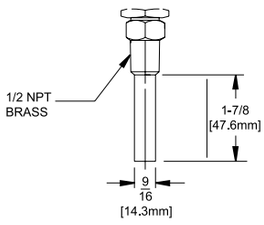
B117, E117



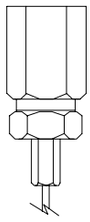
Dimension A		
Model	Inches	mm
B117 (models 120-121) Immersion Stem	9.38	238.1
E117 (models 2BSA-8BS) Bulb & Capillary	8.69	220.6

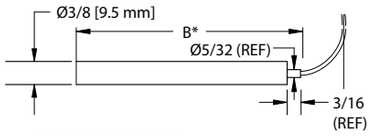
Temperature Sensors

Immersion Stem
Models 120-121



Bulb & Capillary
Models 2BSA - 8BS





* USE DIMENSION "B" FOR SEPERABLE WELL INSTALLATIONS.

Dimension B		
Model	Inches	mm
2BSA	2-5/8	66.7
2BSB	2-5/8	66.7
3BS	2-1/8	54.0
4BS	6-3/4	171.5
5BS	5	127.0
8BS	3-1/4	82.6

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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