



100 Series

Temperature Switches
Types B100, C100, E100 & F100



Installation and Operation Instructions

Please read all instructional literature carefully and thoroughly before starting.
Refer to the final page for the Warranty.

GENERAL

⚠ MISUSE OF THIS PRODUCT MAY CAUSE DAMAGE TO EQUIPMENT OR PERSONAL INJURY. THESE INSTRUCTIONS MUST BE THOROUGHLY READ AND UNDERSTOOD BEFORE UNIT IS INSTALLED.

Cert number	20181204-E10667
Applicable Area	North America
Markings	UL Recognized
Applicable Standards	UL 873; C22.2 No. 24

Cert number	DEMKO 11 ATEX 1105261X
Applicable Area	Europe (EU)
Markings	II 1 G Ex ia IIC T6 Ga
Applicable Standards	EN IEC 60079-0; EN 60079-11

Cert number	IECEx UL 14.0075X
Applicable Area	International
Markings	Ex ia IIC T6 Ga -50 °C ≤ Tamb ≤ +60 °C
Applicable Standards	IEC 60079-0; IEC 60079-11

⚠ ATEX AND IEC SPECIFIC CONDITIONS OF USE: ENCLOSURE CONTAINS ALUMINUM. CARE MUST BE TAKEN TO AVOID IGNITION HAZARD DUE TO IMPACT OR FRICTION.

i MAX. TEMPERATURE* LIMITS LISTED ON NAMEPLATE MUST NEVER BE EXCEEDED, EVEN BY SURGES IN THE SYSTEM. OCCASIONAL OPERATION OF UNIT UP TO MAX. TEMPERATURE IS ACCEPTABLE, E.G., START-UP AND TESTING. CONTINUOUS OPERATION SHOULD NOT EXCEED THE DESIGNATED ADJUSTABLE TEMPERATURE RANGE.

* Maximum Temperature - the highest temperature to which a sensing element may be occasionally operated without adversely affecting set point calibration and repeatability.

⚠ THIS PRODUCT DOES NOT HAVE ANY FIELD REPLACEABLE PARTS. ANY SUBSTITUTION OF COMPONENTS SHALL INVALIDATE AGENCY CERTIFICATION(S).

i DEVICE MUST NOT BE ALTERED OR MODIFIED AFTER SHIPMENT. CONSULT UE IF MODIFICATION IS NECESSARY.

The 100 Series temperature switch utilizes either a liquid filled sensing stem (immersion stem, direct mounting) or liquid filled sensing bulb (bulb & capillary, remote mounting) to detect a temperature change. The response at a pre-determined set point actuates a SPDT snap-acting microswitch, converting the temperature signal into an electrical signal. Control set point may be varied by turning the internal adjustment hex (C100, F100) or reference dial (B100, E100) according to the procedures outlined (See Part II – Adjustments).

Please refer to the product technical datasheet at www.ueonline.com for product specifications.

Part I - Installation

- ⚠** Adjustable wrench
- Flathead screwdriver
- Hammer (for alternate wire knockouts)

Mounting

⚠ INSTALL DEVICE WHERE SHOCK, VIBRATION AND TEMPERATURE FLUCTUATIONS ARE MINIMAL. DO NOT INSTALL DEVICE IN AMBIENT TEMPERATURES THAT EXCEED PUBLISHED LIMITS ON THE NAMEPLATE.

i DEVICE SHOULD BE MOUNTED TO PREVENT MOISTURE FROM ENTERING THE ENCLOSURE. VERTICAL MOUNTING IS RECOMMENDED.

i ALWAYS USE A WRENCH ON LOCAL MOUNT, IMMERSION STEM HEX (SEE FIGURE 3). DO NOT TIGHTEN BY TURNING THE ENCLOSURE AS THIS WILL DAMAGE THE SENSOR AND WEAKEN WELDED JOINTS.

i AVOID BENDING OR COILING THE CAPILLARY TUBING TIGHTER THAN 1/2" RADIUS. EXERCISE CAUTION WHEN MAKING BENDS NEAR THE CAPILLARY ENDS.

i ON MODELS SUPPLIED WITH AN EXTERNAL MANUAL RESET BUTTON, BE SURE TO LEAVE SUFFICIENT FINGER SPACE OVER THE RESET BUTTON FOR THE OPERATOR TO RESET THE CONTROL.

For remote mounting, mount the unit via the (2) 1/4" screw clearance holes on the enclosure (See Dimensions). Fully immerse the bulb and 6" capillary in the control zone. 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 that it will not be exposed to temperatures beyond the instrument range limits.

Wiring



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



DO NOT EXCEED ELECTRICAL RATINGS LISTED ON NAMEPLATE. OVERLOAD ON A SWITCH CAN CAUSE FAILURE, EVEN ON THE FIRST CYCLE.



ENSURE ELECTRICAL CONDUIT ENTRIES ARE PROPERLY SEALED TO PREVENT MOISTURE ENTRY.

1 Remove the two screws retaining the cover and cover gasket.

2 A 1/2" NPT conduit connection is located on the left side of the enclosure. Two cast-in 7/8" diameter knockouts for electrical conduit are located on the side and rear of enclosure (See Dimensions). These can easily be knocked out by placing the blade of a screwdriver in the groove and tapping sharply with a hammer.

3 Connect conduit to the enclosure and wire directly to the switch terminals according to local and national electrical codes. Bring the wires up to terminals from the rear of the enclosure allowing enough slack so as not to affect switch movement when making setting adjustments. The three switch terminals are clearly labeled "common", "norm open", and "norm closed".

If lead wires are supplied, color coding is as follows:

TERMINALS	Manual Reset Option 1530 SPDT
Common (COM)	Violet
Normally Open (NO)	Blue
Normally Closed (NC)	Black

A grounding screw and clamp (cast in symbol) is provided which meets a 35 lb. pull test. Keep the wire as short as possible to prevent interference with the plunger and, if applicable, the optional adjustable deadband switch wheel (option1519).

Part II - Adjustments



• 3/16 Open End Wrench

NOTE: For set point adjustments and recalibration, immerse sensor (immersion stem or bulb and 6" of capillary) in a calibrated temperature source and stabilize unit.

Types C100 and F100

Remove cover. Switch has a hex adjustment screw inside enclosure (See Figure 1). If switch transfer point differs from actual temperature, adjust setting. To raise the temperature setting, turn the hex clockwise. To lower the temperature setting, turn the screw counter-clockwise. When making adjustments, do not exceed the maximum temperature rating on nameplate.

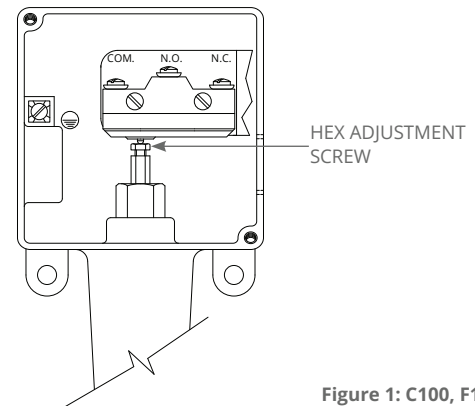


Figure 1: C100, F100

Types B100 and E100 (with reference dial)

To change the set point, turn dial and align with pointer. Controls are factory calibrated for maximum accuracy at the midpoint of the scale.

Re-calibration

To re-calibrate, turn dial to desired set point (See Figure 2). If the actual temperature and set point temperature do not agree, turn hex adjustment screw clockwise to raise and counterclockwise to lower temperature setting.

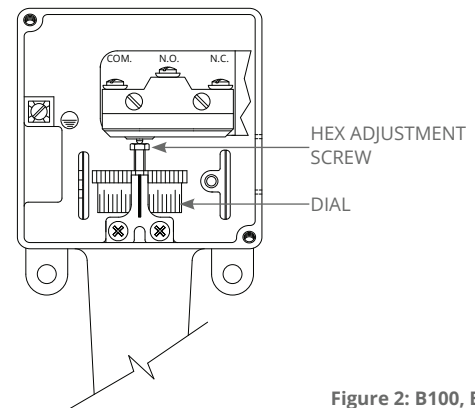


Figure 2: B100, E100

Types with Adjustable Deadband Switch (Option 1519)

Types with option code 1519 incorporate a snap switch with integral adjustment wheel. Turning this wheel raises or lowers the temperature rise set point. The fall set point remains constant. To use the adjustable deadband switch: To increase deadband, turn the adjustment wheel left. This increases the rise set point while keeping the fall set point constant.

Consult UE for additional information.

Types with Manual Reset Button (Option 1530)

These optional models incorporate a snap switch that when actuated, remains actuated until the temperature decreases and the reset button (located on top of the control) is manually depressed to reset the switch.



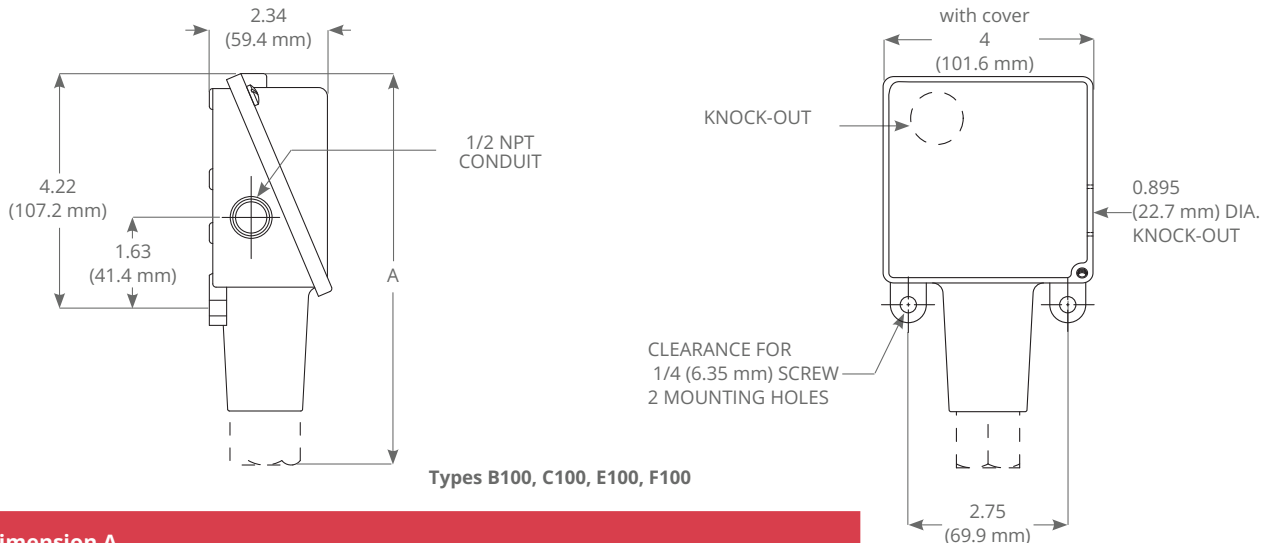
AFTER COMPLETING SETTING ADJUSTMENT, BE SURE TO REINSTALL ENCLOSURE COVER.

Recommended Practices

- A redundant device is necessary for applications where damage to the primary device could endanger life, limb or property. A high or low limit switch is necessary for applications where a dangerous runaway condition could result.
- Monitor operation to observe warning signs of possible damage to device, such as drift in set point. Check device immediately.
- Preventative maintenance and periodic testing is necessary for critical applications where damage could endanger property or personnel.

Part III - Dimensions

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



Dimension A				
Type	Model	Inches	mm	Connection
B100, C100	120-121, 13546	9.38	238.3	Immersion stem
E100, F100	1-8, 13545	8.69	220.7	Bulb & Capillary

Temperature Sensors

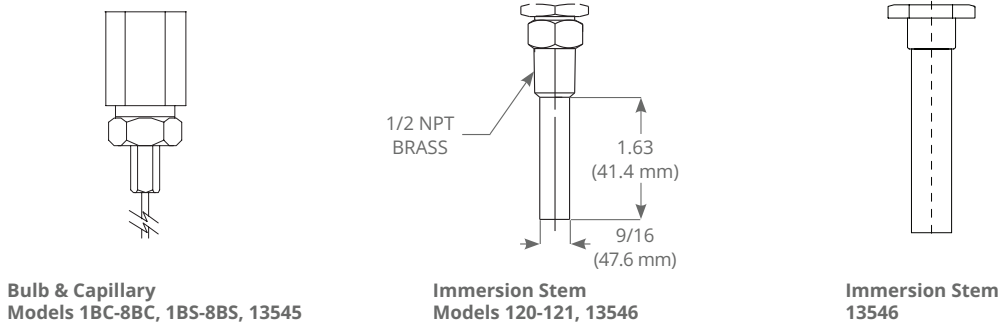
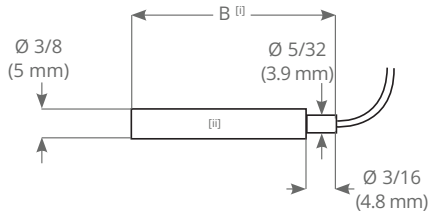


Figure 3



Remote Bulb

Ⓛ USE DIMENSION "B" FOR SEPARABLE WELL INSTALLATIONS
 Ⓛ Except model 13273, 13321 bulb OD is Ø 1/4 (6,35 mm)

Dimension B		
Models	Inches	mm
1BC/BS	3.75	95.3
2BC/BS/ BCA/BCB/ BSA/BSB	2.60	66.0
3BC/BS	2.13	54.1
4BC/BS	6.75	171.5
5BC/BS	5.00	127.0
6BC/BS	4.50	114.3
7BC/BS	3.00	76.2
8BC/BS	3.25	82.6
13545	11.63	295.4

French Warnings Translations

Page	Warning Text	Texte d'Avertissement
1	MISUSE OF THIS PRODUCT MAY CAUSE DAMAGE TO EQUIPMENT OR PERSONAL INJURY. THESE INSTRUCTIONS MUST BE THOROUGHLY READ AND UNDERSTOOD BEFORE UNIT IS INSTALLED.	Une mauvaise utilisation de cet appareil peut endommager l'équipement ou provoquer des blessures corporelles. Ces consignes doivent être lues attentivement et bien comprises avant l'installation de l'appareil.
1	ATEX AND IEC SPECIFIC CONDITIONS OF USE: ENCLOSURE CONTAINS ALUMINUM. CARE MUST BE TAKEN TO AVOID IGNITION HAZARD DUE TO IMPACT OR FRICTION.	Conditions spécifiques d'utilisation ATEX et IEC: Le boîtier contient de l'aluminium. Des précautions doivent être prises pour éviter tout risque d'inflammation dû à un choc ou à un frottement.
1	THIS PRODUCT DOES NOT HAVE ANY FIELD REPLACEABLE PARTS. ANY SUBSTITUTION OF COMPONENTS SHALL INVALIDATE AGENCY CERTIFICATION(S).	Aucun composant ne peut être remplacé sur le terrain. Tout remplacement de composant invalidera toutes les approbations et certifications données par un tiers.
1	INSTALL DEVICE WHERE SHOCK, VIBRATION AND TEMPERATURE FLUCTUATIONS ARE MINIMAL. DO NOT INSTALL DEVICE IN AMBIENT TEMPERATURES THAT EXCEED PUBLISHED LIMITS ON THE NAMEPLATE.	Installer l'appareil dans un endroit où les chocs, les vibrations et les variations de température sont minimales. Ne pas installer l'appareil dans un lieu où les températures ambiantes dépassent les limites indiquées sur la plaque signalétique de l'appareil.
2	DISCONNECT ALL SUPPLY CIRCUITS BEFORE WIRING DEVICE. WIRE DEVICE IN ACCORDANCE WITH LOCAL AND NATIONAL ELECTRICAL CODES. MAXIMUM RECOMMENDED WIRE SIZE IS 14 AWG AND RECOMMENDED TIGHTENING TORQUE FOR FIELD WIRING TERMINALS IS 7 TO 17 IN-LBS	Avant le branchement de l'appareil, déconnecter l'installation sur laquelle l'appareil doit être monté. Réaliser le branchement électrique selon les codes électriques nationaux et locaux. Le diamètre maximal recommandé pour les fils est de 14 AWG. Le couple de serrage pour la borne de raccordement est de 7 à 17 IN-LBS.
2	DO NOT EXCEED ELECTRICAL RATINGS LISTED ON NAMEPLATE. OVERLOAD ON A SWITCH CAN CAUSE FAILURE, EVEN ON THE FIRST CYCLE.	Les seuils électriques indiqués dans la documentation et sur les plaques signalétiques ne doivent jamais être dépassés. La surtension peut causer une panne de l'appareil dès les premier cycle.

LIMITED WARRANTY

Seller warrants that the device hereby purchased is, upon delivery, free from defects in material and workmanship and that any such device 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 device 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 devices 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 DEVICE, 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 device. 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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CONTROLS

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