

## ECA-E55

### Remote Mounting Temperature Switch and Control

#### Description

The E55 Series provides rugged, dependable temperature control for many applications. Available in single or dual output versions, with either an epoxy coated enclosure (designed to meet NEMA Type 4X) or skeleton construction, the E55 combines flexibility with compact size. It has been used in diverse applications such as food service appliances, oven control, and heat tracing.

#### Features

- Increase flexibility with multiple outputs
- Panel or surface mount for trouble-free installation
- External dial provides easy adjustment
- Space saving construction
- Single or dual 15 A switch output
- Skeleton or Enclosure construction - designed to meet NEMA Type 4X
- Optional external manual reset
- Compact size
- Copper or stainless steel bulb & capillary

#### Specifications

Ambient temperature:	-40 to 160°F (-40 to 71°C); set point typically shifts less than 1% of range for a 50°F
Limits:	(28°C) ambient temperature change
Set point repeatability:	± 1% of adjustable range
Shock:	Set point repeats after 15 G, 10 millisecond duration
Vibration:	Set point repeats after 2.5 G, 5-500 Hz
Enclosure classification:	Type E55 & E55A: Designed to meet enclosure type 4X requirements Types E55S & E55AS: Skeleton, open frame construction, not applicable
Enclosure:	Die cast aluminum, epoxy powder coated with stainless steel, gasketed adjustment cover (E55 and E55A)
Switch output:	One or two SPDT; dual switch may be separated up to 100% of range; switches may be wired "normally open" or "normally closed"
Electrical rating:*	15A, 125/250/480 VAC resistive. 22A, 480 VAC for E55-R25HT and E55-L24HT heat trace models. 2A, 24-30 VDC resistive; 1A, 24-30 VDC inductive. 0.5A, 125 VDC resistive. 0.03A, 125 VDC inductive.

\*Note: DC ratings are based on experience - Consult UE for further information



Dual Switch, Type 4X enclosure  
(protective cover removed to show dial adjustment)



Dual switch, skeleton model



## Specifications (continued)

Electrical connection:	1/2" NPT (female) (E55 and E55A)
Weight:	Types E55S, E55AS (skeleton): approximately 12 oz.; Types E55, E55A: approximately 1 lb.
Bulb and capillary:	Models E20BC - E23BC: 6 feet copper; Models E20BS - E23BS: 6 feet stainless steel Model R25HT: 10 feet stainless steel Model L24HT: stainless steel, Local sensor, no capillary, for ambient sensing
Temperature fill:	Non-toxic oil
Temperature deadband:	Typically 1% of range under laboratory conditions. For heat trace models (R25 HT, L24 HT), deadband may be as high as 5% of range under laboratory conditions (70°F circulating bath at rate of 1/2°F per minute change).

## Approvals



UNITED STATES AND CANADA

**E55(A) S Models**

**cULus Listed**

**cURus Recognized**

UL 873, C22.2 no. 24, file #E10667



EUROPE



**Low Voltage Directive (LVD) (2006/95/EC)**

**UEC compliant to LVD**

Products rated lower than 50 VAC and 75 VDC are outside of the scope of the LVD

## Model Chart

Models	Adjustable Set Point Range		Max. Temp.		Dial Div.		Bulb Size
	°F	°C	°F	°C	°F	°C	OD x Length (inches)
<b>Copper bulb &amp; capillary</b>							
E20BC	-130 to 120	-90 to 48.9	170	76.7	10	5	3/8 x 4-1/2
E21BC	0 to 150	-17.8 to 65.6	200	93.3	5	5	3/8 x 7
E22BC	50 to 300	10 to 148.9	350	176.7	10	5	3/8 x 4-1/2
E23BC	150 to 650	65.6 to 343.3	700	371.1	25	10	3/8 x 3-3/4
<b>Stainless steel bulb and capillary</b>							
E20BS <sup>†</sup>	-130 to 120	-90 to 48.9	170	76.7	10	5	3/8 x 4-3/4
E21BS	0 to 150	-17.8 to 65.6	200	93.3	5	5	3/8 x 7-1/4
E22BS	50 to 300	10 to 148.9	350	176.7	10	5	3/8 x 4-3/4
E23BS	150 to 650	65.6 to 343.3	700	371.1	25	10	3/8 x 4
R25HT <sup>**</sup>	25 to 325	-3.9 to 162.8	600	315.6	10	-	1/4 x 7-3/16
L24HT <sup>**</sup>	15 to 140	-9.4 to 60	190	87.8	5	-	3/8 x 7

<sup>†</sup> Not available with Type E55AS

<sup>\*\*</sup> Not available with Types E55A, E55S, E55AS

## 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, and capillary material.

#### Select an **Option** (if applicable)

Refer to the "Options" section. Determine option number based on switch output, optional materials or other product enhancements.

FOR MULTIPLE OPTIONS:

Call United Electric Controls.

### Type

E55	Bulb & capillary; one SPDT output; Epoxy coated enclosure; external adjustment with reference dial, tamper-resistant cover
E55A	Bulb & capillary; two SPDT outputs; Epoxy coated enclosure; external adjustment with reference dial, tamper-resistant cover
E55S	Bulb & capillary; one SPDT output; skeleton construction; external adjustment with reference dial
E55AS	Bulb & capillary; two SPDT outputs; skeleton construction; external adjustment with reference dial

### Switch options\*

0500	Close deadband, 5 A, 125/250 VAC resistive. 3 A, 28 VDC; 1 A, 48 VDC; 0.5 A, 125 VDC resistive. NOT AVAILABLE ON MODELS R25HT, L24HT
0140	Gold contacts, 1 A, 125 VAC resistive, NOT AVAILABLE ON MODELS E55-L24HT, E55-R25HT
1530	External manual reset, 15 A 125/250/480 VAC resistive; 0.5 A, 125 VDC; 0.25 A, 250 VDC resistive. Reset on increasing temperature. NOT AVAILABLE ON TYPES E55S, E55AS, & MODELS R25HT, L24HT
2000	20 A 125/250/480 VAC resistive. 0.5 A, 125 VDC; 0.25 A, 250 VDC resistive. NOT AVAILABLE ON MODELS R25HT, L24HT

### General

M020	Pilot light. AVAILABLE HEAT TRACE MODELS R25HT, L24HT ONLY
M201	Factory set one switch; specify increasing or decreasing temperature and set point. NOT AVAILABLE ON TYPES E55A, E55AS
M202	Factory set two switches; specify increasing or decreasing temperature and set point. NOT AVAILABLE ON TYPES E55, E55S
M270	Calibrated dial in Celsius. NOT AVAILABLE ON HEAT TRACE MODELS R25HT, L24HT
M444	Paper ID tag. NOT AVAILABLE ON HEAT TRACE MODELS R25HT, L24HT
M446	Stainless steel ID tag & wire attachment; limited to 2 lines of 25 characters each max.

### Union connectors\*\*

(Not available on model L24HT or R25HT)

Option	Replacement Number	Description
<u>Brass</u>		
W027	SD6213-27 1/2"	NPT w/ 3/4" bushing
W045	SD6213-45	3/4" NPT
W051	SD6213-51	1/2" NPT
<u>304 Stainless Steel</u>		
W028	SD6213-28	1/2"NPT w/ 3/4" bushing
W046	SD6213-46	3/4" NPT
W050	SD6213-50	1/2" NPT

### Thermowells\*\*

For all bulb & capillary switches, all 1/2" NPT Internal (Not available on models R25HT, L24HT)

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

### Optional lengths:

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

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

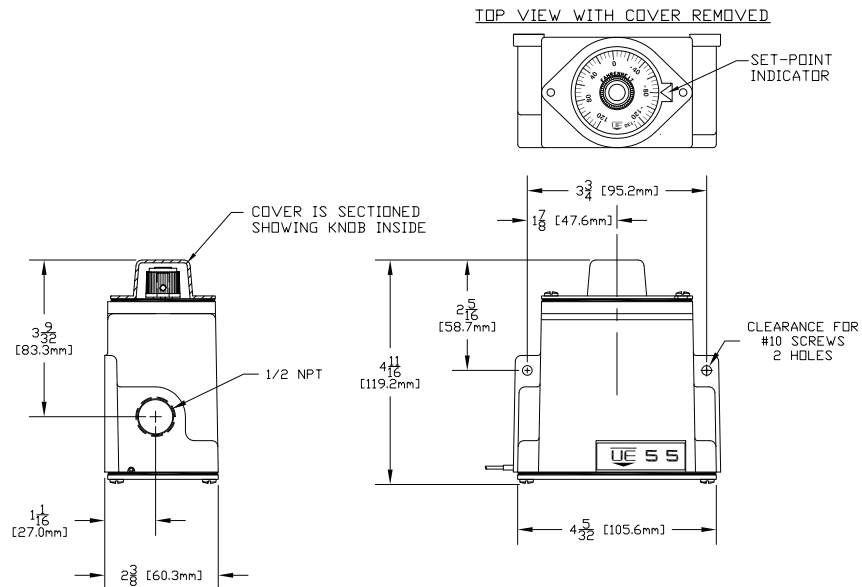
\* All switch options have limited DC capabilities. Consult factory for details.

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

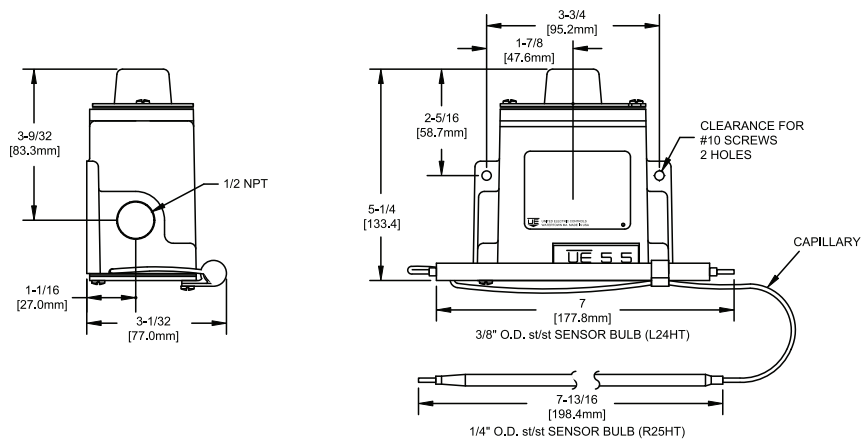
## Dimensional drawings

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

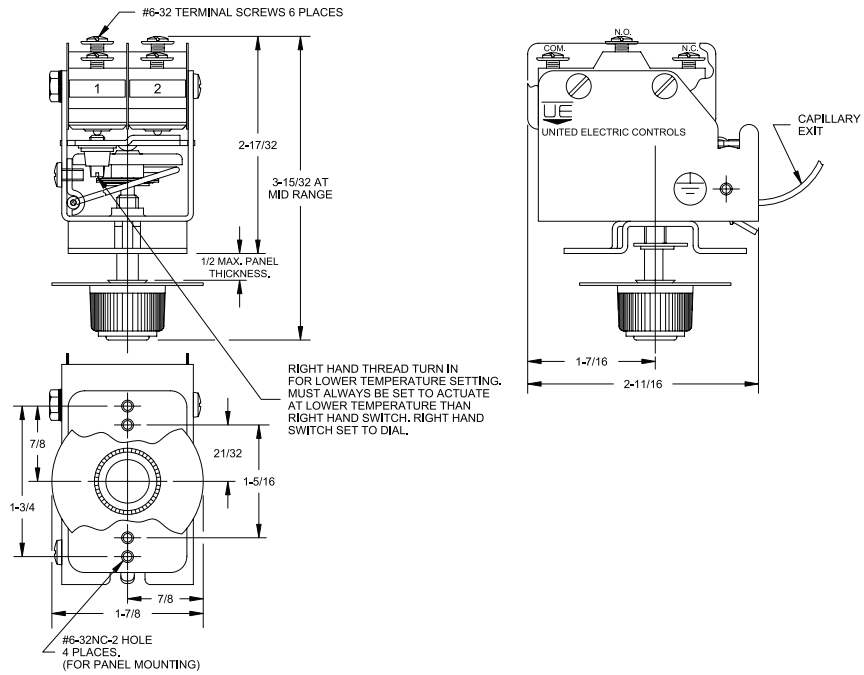
### Types E55 /E55A



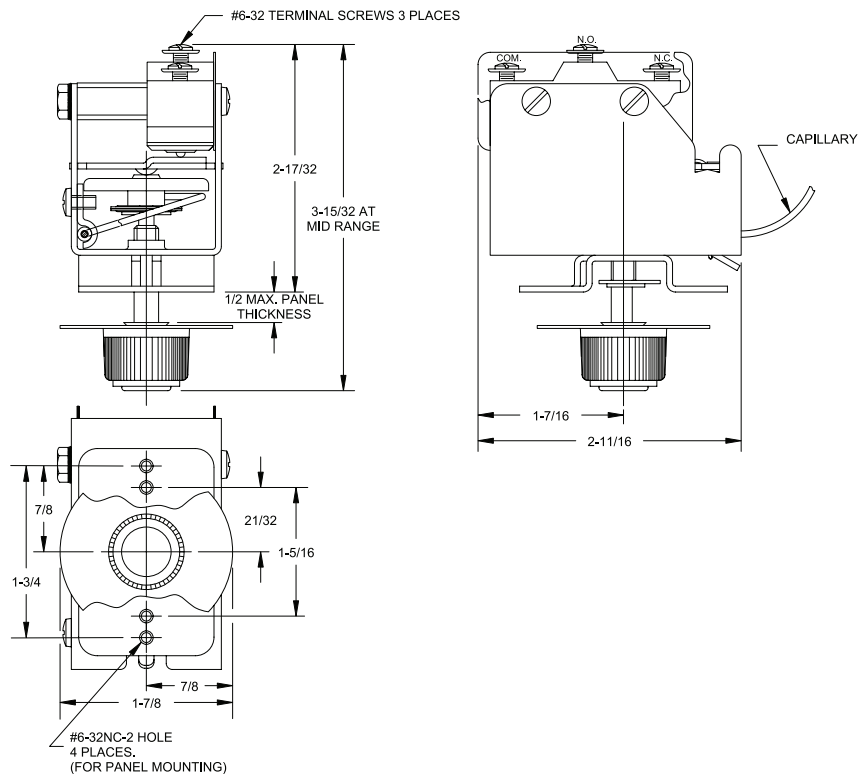
### Type E55 Heat Tracing Models



## Type E55AS



## Type E55S



## 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 inputed 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.*