



A99B Series Temperature Sensor

Description

The A99B Series Temperature Sensors are passive PTC (Positive Temperature Coefficient) sensors. The A99B sensors are splashproof and are designed to measure temperature in a variety of refrigeration applications. Several accessories allow easy tailoring of the temperature sensor to various mounting configurations.

Applications include temperature sensing for freezers and coolers, as well as in defrost termination sensing, space and return air temperature sensing, and condenser fan cycling.

Refer to the *A99B Series Temperature Sensors Product Bulletin (LIT-125186)* for important product application information.

Features

- variety of lead lengths available to encompass most application requirements and simplify wiring sensors
- an assortment of mounting hardware provides configurations for many applications
- exceptional accuracy of sensing element provides excellent performance in a wide variety of control applications
- stainless steel sensing bulb allows use in more applications than other types of bulbs without corrosion
- lead length may be extended up to 800 ft (244 m)



A99B Temperature Sensors

Repair Information

If the A99B Series Temperature Sensor fails to operate within its specifications, replace the unit. For a replacement sensor, contact the nearest Johnson Controls® representative.

Selection Chart

| Product Code Number | Description |
|---------------------|---|
| A99BA-200C | PTC Silicon Sensor with Shielded Cable; Cable length 6-1/2 ft (2 m); Range: -40 to 212°F (-40 to 100°C) |
| A99BB-25C | PTC Silicon Sensor with PVC Cable; Cable length 9-3/4 in. (0.25 m); Range: -40 to 212°F (-40 to 100°C) |
| A99BB-200C | PTC Silicon Sensor with PVC Cable; Cable length 6-1/2 ft (2 m); Range: -40 to 212°F (-40 to 100°C) |
| A99BB-300C | PTC Silicon Sensor with PVC Cable; Cable length 9-3/4 ft (3 m); Range: -40 to 212°F (-40 to 100°C) |
| A99BB-500C | PTC Silicon Sensor with PVC Cable; Cable length 16-3/8 ft (5 m); Range: -40 to 212°F (-40 to 100°C) |
| A99BB-600C | PTC Silicon Sensor with PVC Cable; Cable length 19-1/2 ft (6 m); Range: -40 to 212°F (-40 to 100°C) |
| A99BC-25C | PTC Silicon Sensor with High Temperature Silicon Cable; Cable length 9-3/4 in. (0.25 m); Range: -40 to 248°F (-40 to 120°C) |
| A99BC-300C | PTC Silicon Sensor with High Temperature Silicon Cable; Cable length 9-3/4 ft (3 m); Range: -40 to 248°F (-40 to 120°C) |
| A99BC-500C | PTC Silicon Sensor with High Temperature Silicon Cable; Cable length 16-3/8 ft (5 m); Range: -40 to 248°F (-40 to 120°C) |
| A99BC-1500C | PTC Silicon Sensor with High Temperature Silicon Cable; Cable length 49 ft (15 m); Range: -40 to 248°F (-40 to 120°C) |

Accessories

| Product Code Number | Description |
|---------------------|---|
| A99-CLP-1 | Surface Mounting Clip for the A99B Temperature Sensor |
| ADP11A-600R | 1/2 in. diameter EMT Conduit Adaptor (box of 10) for use with BOX10A-600R |
| BOX10A-600R | PVC Enclosure |
| SHL10A-600R | Sun Shield for Single Sensor |
| SHL10A-603R | Sun Shield for Two Sensors |
| WEL11A-601R | Immersion Well |

Applications

The A99B temperature sensor line offers an economical solution for a wide variety of temperature sensing needs in refrigeration and HVAC applications.

Typical temperature sensing applications and environments include:

- freezers
- display cases
- walk-in coolers
- reach-in coolers
- defrost termination temperature sensing
- condenser fan cycling
- space and return air temperature sensing
- outdoor air sensing
- process cooling and heating

Technical Specifications

| A99B Series Temperature Sensor | | |
|------------------------------------|--|---|
| Sensing Range | A99BA | -40 to 212°F (-40 to 100°C) |
| | A99BB | -40 to 212°F (-40 to 100°C) |
| | A99BC | -40 to 248°F (-40 to 120°C) |
| Reference Resistance | 1,035 ohms at 77°F (25°C) | |
| Accuracy | 0.9°F (0.5°C) between 5 and 167°F (-15 and 75°C) | |
| Sensor Construction | Stainless steel probe | |
| Sensor Lead Wire Insulation | A99BA | Shielded PVC cable |
| | A99BB | PVC cable |
| | A99BC | High temperature silicon cable |
| Lead Wire Gauge | 22 AWG | |
| Maximum Allowable Bulb Temperature | 257°F (125°C) | |
| Ambient Operating Conditions | A99BA | -40 to 212°F (-40 to 100°C); 0 to 100% RH, condensing |
| | A99BC | -40 to 248°F (-40 to 120°C); 0 to 100% RH, condensing |
| Ambient Storage Conditions | A99BA | 40 to 221°F (-40 to 105°C); 0 to 100% RH, condensing |
| | A99BB | 40 to 221°F (-40 to 105°C); 0 to 100% RH, condensing |
| | A99BC | -40 to 266°F (-40 to 130°C); 0 to 100% RH, condensing |

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products. © 2015 Johnson Controls, Inc. www.johnsoncontrols.com



Bulb Wells

Description

Bulb Wells are used in conjunction with Remote Bulb Temperature Controls where bulb insertion into a vessel or container to sense temperature is required. These wells are used with TE-6000 and TE-6300 Series Sensors.

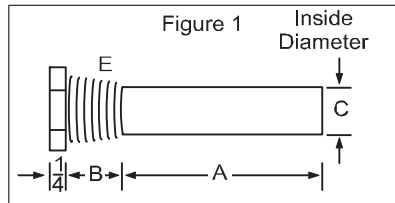
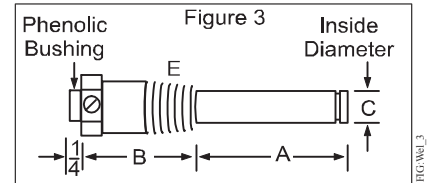
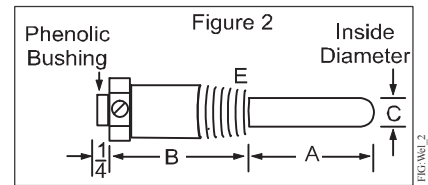
A variety of shapes, sizes, and materials are available for a wide range of applications. Refer to the appropriate temperature control for the exact bulb well required.

Accessories

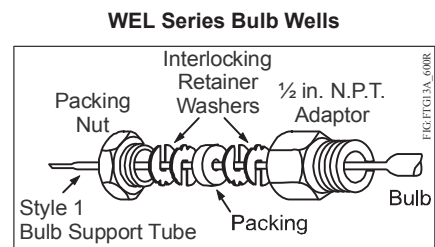
The Code No. FTG13A-600R Packing Nut Assembly is used in applications where the temperature does not fall below -35°F (-37°C). The maximum liquid pressure limit is 150 psig (1,034 kPa). Use with Style 1, 3/8 in. diameter bulb for direct immersion application. A19s require models with support tube; A70s and A72s do not need support tubes.

Repair Information

If the Bulb Wells fail to operate within their specifications, replace the unit. For a replacement Bulb Well, contact the nearest Johnson Controls® representative.



WEL Series Bulb Well



FTG13A-600R

Selection Charts

WEL Series Bulb Wells

| Product Code Number | See Figure | Dimension, in. | | | Pipe Thread, in. | | Material | | Maximum Temp °F | Maximum Pressure psig | Type of Solder Joint | Plating |
|--------------------------|------------|----------------|---------|------|------------------|-----------|-----------------|-----------------|-----------------|-----------------------|----------------------|-----------|
| | | A | B | C | Inside D | Outside E | Connector | Tube | | | | |
| WEL11A-601R ¹ | 2 | 2-3/8 | 2-5/16 | .299 | – | 1/2 | Brass | Copper | 250 | 300 | Soft | – |
| WZ-1000-2 ² | 1 | 5-1/4 | 1-1/4 | .500 | 1/2 | 1/2 | Stainless steel | Stainless steel | 300 | 400 | – | – |
| WZ-1000-4 | 1 | 5-1/4 | 1-1/4 | .500 | 1/2 | 1/2 | Stainless steel | Stainless steel | 600 | 400 | – | – |
| WZ-1000-5 ² | 2 | 2-3/8 | 2-5/16 | .299 | – | 1/2 | Malleable | Brass | 250 | 300 | – | – |
| WEL14A-601R ³ | 3 | 7-9/16 | 1-13/16 | .430 | – | 1/2 | Brass | Copper | 250 | 300 | Silver | Brite-Dip |
| WEL14A-602R ³ | 3 | 4-15/16 | 1-13/16 | .430 | – | 1/2 | Brass | Copper | 250 | 300 | Silver | Brite-Dip |
| WEL14A-603R ³ | 3 | 5-13/16 | 1 13/16 | .430 | – | 1/2 | Brass | Copper | 250 | 300 | Silver | Brite-Dip |
| WEL16A-600R ¹ | 2 | 2-3/8 | 1-5/16 | .299 | – | 1/2 | Brass | Copper | 250 | 300 | Soft | – |
| WEL16A-601R | 2 | 2-13/16 | 1-13/16 | .375 | – | 1/2 | Brass | Copper | 250 | 300 | Soft | – |
| WEL17A-600R ³ | 1 | 10-7/16 | 3/4 | .763 | 1/2 | 3/4 | Malleable | Copper | 250 | 250 | Silver | Tin |
| WEL17A-601R ³ | 1 | 8-11/16 | 3/4 | .763 | 1/2 | 3/4 | Malleable | Copper | 250 | 250 | Silver | Tin |
| WEL17A-602R ³ | 1 | 10-7/16 | 3/4 | .753 | 1/2 | 3/4 | Malleable | Steel | 250 | 540 | Silver | Tin |
| WEL17A-604R ³ | 1 | 14-13/32 | 3/4 | .763 | 1/2 | 3/4 | Malleable | Copper | 250 | 250 | Silver | Tin |
| WEL18A-600R ³ | 1 | 3-1/2 | 3/4 | .773 | 1/2 | 3/4 | Malleable | Steel | 250 | 150 | Silver | Tin |
| WEL18A-602R ³ | 1 | 3-1/2 | 3/4 | .773 | 1/2 | 3/4 | Malleable | Brass | 250 | 150 | Silver | Tin |

1. With phenolic bushing 0.093 in. slot
2. Includes thermal compound
3. For 11/16 in. diameter style 4 bulbs. Style 1 can be used, but is not fastened into well

T-800 Wells

| Product Code Number | Description |
|---------------------|----------------------------------|
| T-800-1605 | Brass well, 6-1/2 inch |
| T-800-1606 | Stainless steel well, 5-1/4 inch |
| T-800-1618 | Brass well, 9-1/2 inch |
| T-800-1620 | Brass well, 9-1/2 inch |



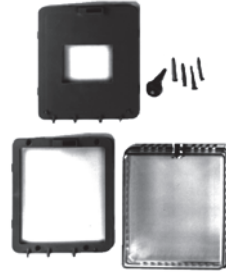
G Series Thermostat and Humidistat Guards



GRD10-1R
Wire Guard



GRD10A-601
Cast Aluminum Guard



GRD10A-608
Large Clear Plastic Guard



GRD10A-609
Rectangular Clear Plastic Guard

Description

The G Series Guards protect thermostats and humidistats from damage, vandalism, tampering, and unauthorized adjustment. They are available in plastic, cast aluminum, or wire construction.

Features

- clear plastic guards have tumbler-type key locks
- GRD10A-608 and -609 include a mounting ring for mounting to a wall or flat surface
- plastic baseplate and plastic mounting ring available
- the baseplate mounts to a flat surface or to a single or double outlet box
- the mounting ring permits mounting over a thermostat or humidistat already installed

Applications

Ideal for locations where locked protection is required, such as schools, warehouses, churches, hospitals, or offices.

Selection Chart

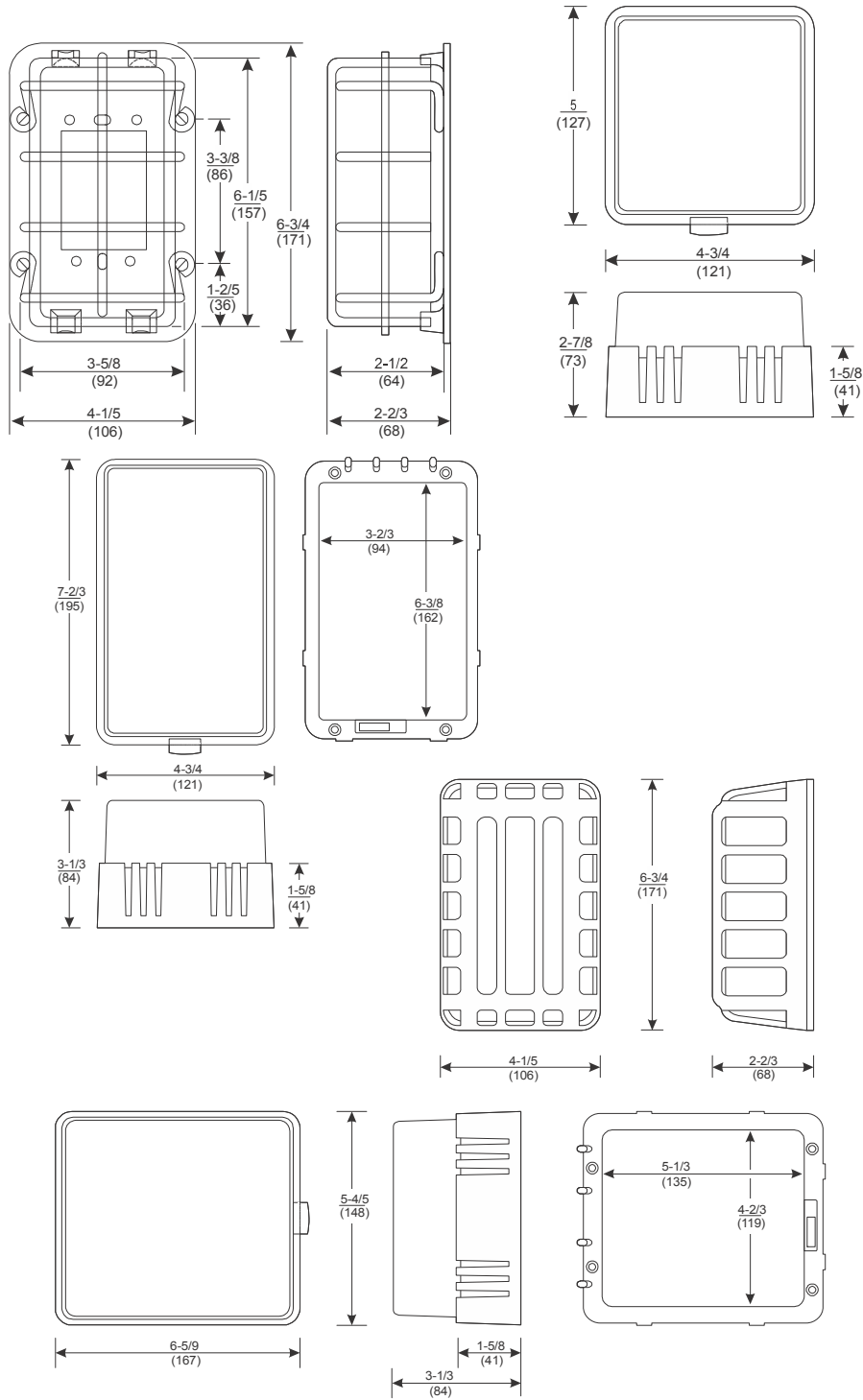
| Product Code Number | Description | Thermostat or Humidistat Series Number | | | | |
|---------------------|---|--|-----|-----|--------------------|-----|
| | | T22 | T25 | T26 | T28 No Switches | T91 |
| GRD10-1R | Wire guard only | ✓ | — | ✓ | — | ✓ |
| GRD10A-600 | Wire guard and baseplate | ✓ | — | ✓ | — | ✓ |
| GRD10A-601 | Aluminum guard and baseplate | ✓ | — | ✓ | ✓ | ✓ |
| GRD10A-606 | Plastic guard with baseplate | ✓ | ✓ | — | ✓ | ✓ |
| GRD10A-608 | Plastic guard with baseplate, mounting ring | ✓ | ✓ | ✓ | ✓ | ✓ |
| GRD10A-609 | Plastic guard with baseplate, mounting ring | ✓ | ✓ | ✓ | ✓ | ✓ |

Repair Parts

Replacement key **KEY12A-600** (set of two) is available.



G Series Thermostat and Humidistat Guards (Continued)



grc10a_dm.eps

grc10a_dm2.eps

G Series Dimensions, in. (mm)

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products. © 2015 Johnson Controls, Inc. www.johnsoncontrols.com



T22, T25, T26, T28, T46, and T91 Accessories

Description

Replacement Knob and Cover Kits

Replacement Knob Kit numbers KNB17A-600R, KNB20A-600R, and KNB26A-600R are designed as direct replacements for original equipment knobs.

Faceplates

Faceplates are available with metal or plastic covers.

Thermostat Trim Plates

Trim plate PLT231-1R is for mounting two wall thermostats such as T22, T25, T26, T58, T91 or one thermostat and one humidistat on a three-gang electrical box. The PLT61A-600 is a similar three-gang plate but with one cutout and a 3/8 in. hole for mounting accessory switches.

These plates are finished in tawny silver to complement the design of the thermostat and humidistat.



PLT61A-600 Faceplate

Selection Charts

Replacement Knob and Cover Kits

| Product Code Number | Description | Replacement Knob For |
|---------------------|--|--|
| KNB17A-600R | Includes two plastic knobs | T91, T22, T25, and T26 with metal knob and metal cover |
| KNB20A-600R | Includes one plastic knob | T26 and W43 with plastic knob and metal cover |
| KNB26A-600R | Includes one plastic knob with trim disc | T26, T46, and W43 with plastic cover |

Faceplates

| Product Code Number | Mounting Position | Type of Adjustment | Cutout for Thermometer | Use With | Temperature Scale |
|---|-------------------|--------------------|------------------------|----------------------------------|-------------------|
| Faceplates for T22, T25, T26, T80, T91, and W43 with Metal Cover | | | | | |
| PLT213-6R | Vertical | Concealed | No | T26, T91BA, W43 with metal cover | None |
| Faceplates for T26, W43 AND W45 with Plastic Cover | | | | | |
| PLT333-1R | Vertical | Knob | Yes | T26, T46 | Fahrenheit |
| PLT333-2R | Horizontal | Knob | Yes | T26 | Fahrenheit |
| PLT333-3R | Vertical | Concealed | Yes | T26, T46 | Fahrenheit |
| PLT333-4R | Horizontal | Concealed | Yes | T26 | Fahrenheit |
| PLT333-5R | Vertical | Knob | Yes | T26, T46 | Celsius |
| PLT333-12R | Vertical | Concealed | No | T26, T46, and W43 | None |

Trim Plates

| Product Code Number | Description | Replacement Trim Plate For |
|---------------------|-------------------------|--|
| PLT231-1R | Tawny silver trim plate | T22, T25, T26, T28, T58, T91, W42, W43 |



T91 Series Room Temperature Sensor

Description

The T91 Series Temperature Sensor is a solid state thermistor sensor detects temperature changes in a room or similar space.

Series T91 Sensors may be used directly with Series M100Q Motor Actuators.

Refer to the *T91 Thermistor Room Temperature Sensor Product Bulletin (LIT-125675)* for important product application information.

Applications

Use for room or space temperature sensing to position sequencers or actuators for heating and/or cooling systems.

Features

- highly sensitive thermistor sensing element
- fast response
- integral Fan and System switch options
- vertical or horizontal mounting
- three types of adjusters: external knob, concealed knob, or provisions for remote setpoint
- easy to install and wire
- separable mounting plate with screws saves installation time



T91 Series Room Temperature Sensor

Repair Information

If the T91 Series Room Temperature Sensor fails to operate within its specifications, replace the unit. For a replacement sensor, contact the nearest Johnson Controls® representative.

Selection Chart

| Product Code Number ¹ | Range °F (°C) | Thermometer | Setpoint Adjustment | Switches | |
|----------------------------------|---------------|-------------|---------------------|----------|--------|
| | | | | Fan | System |
| T91BAA-1C | 40/90 (5/32) | No | Remote | — | — |
| T91BBA-1C | 40/90 (5/32) | No | Concealed | — | — |
| T91BCA-1C | 40/90 (5/32) | Yes | Knob | — | — |

1. Supplied with vertical faceplate installed.

Technical Specifications

| T91 Series Room Temperature Sensor | |
|------------------------------------|---|
| Ambient Temperature | -40 to 140°F (-40 to 60°C) |
| Baseplate | 0.050 in. (1 mm) cold rolled steel with dichromate dip finish |
| Cover | 0.025 in. (1 mm) cold rolled steel. Baked on tawny silver finish. Faceplate is aluminum with dark brown and light brown finish. Letters and markings are bright aluminum surface. |
| Electrical Rating for Switches | 5 A at 24 VAC |
| Wiring Connections | 6 in. No. 18 color coded wire leads |