A99xY Series Temperature Sensors

Product Bulletin

A99DY, A99EY, A99LY, A99RY, A99SY

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The A99xY Series Temperature Sensors offer an economical solution for a wide variety of temperature sensing needs in the cooling, heating, ventilation, air conditioning, and refrigeration application field.

The A99xY Series Temperature Sensors include various models, such as:

- bulb sensors
- bulb well sensors
- room sensors
- outdoor sensors
- duct sensors
- rod sensors
- strap-mount sensors

The A99xY Series Temperature Sensors are passive Positive Temperature Coefficient (PTC) sensors. Each sensor is calibrated to a published temperature-resistance-characteristic curve, which results in a high degree of accuracy over a wide temperature range.

Figure 1: A99xY Series Temperature Sensors

Table 1: Features and Benefits

Features	Benefits
Variety of Lead Lengths	Encompasses most application requirements and simplifies wiring sensors.
Wide Range of Enclosures for Sensing Elements	Meets many application needs.
Assortment of Mounting Hardware Available	Provides custom configurations for many applications.
Very Accurate Sensing Element	Provides suitable performance in a wide variety of control applications.
PG13.5 Cable Connector or Gland for Models with Polycarbonate Housing	Provides protection against humidity and secures cable.
High Resistance Variation per Degree	Allows for extended lead length up to 800 ft (243.8 m) with minimal error (depending on selected wire size).
Stainless Steel Sensor Bulb	Allows use in more applications than other types of bulbs; no corrosion.

Applications

A99xY Series Temperature Sensors are typically used with Johnson Controls/PENN® System 450™ and A419 Electronic Temperature Controls.

Typical 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

IMPORTANT: All A99xY Temperature Series Sensors are intended to provide an input to equipment under normal operating conditions. Where failure or malfunction of the A99xY Series Temperature Sensors could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the A99xY Series Temperature Sensors.

Sensor Temperature Averaging

Multiple sensors may be wired in a series parallel arrangement to provide an average temperature reading in an area when one sensor cannot provide a representative temperature reading. For example, this arrangement can be accomplished with 4, 9, or 16 (2^2, 3^2, or 4^2) sensors.

In a series parallel arrangement, there must always be the same number of parallel-connected sensors as there are series-connected sensors.

In Figure 2 through Figure 4, each parallel leg is represented as a column of sensors and each series leg as a row of sensors.

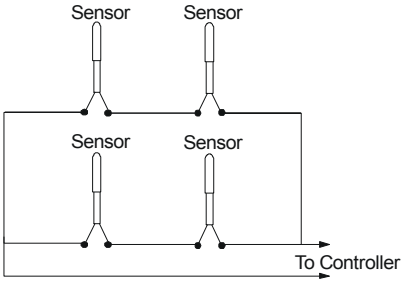

Figure 2: Four-Sensor Averaging Wiring

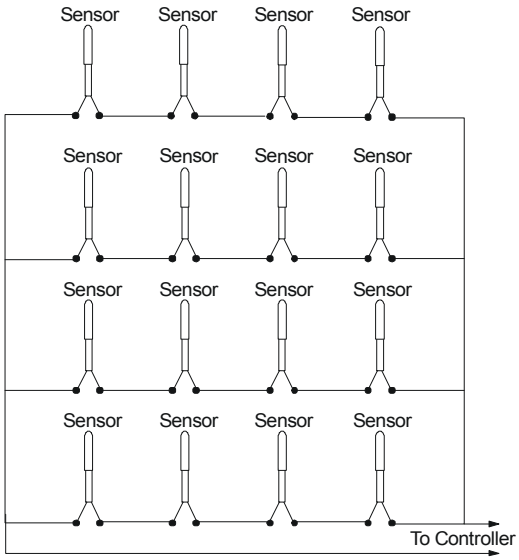

Figure 3: 16-Sensor Averaging

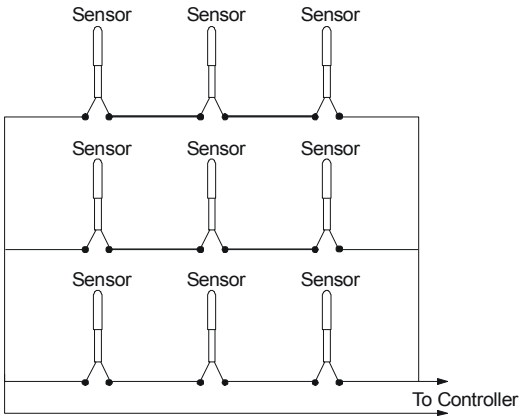

Figure 4: Nine-Sensor Averaging Wiring

Dimensions

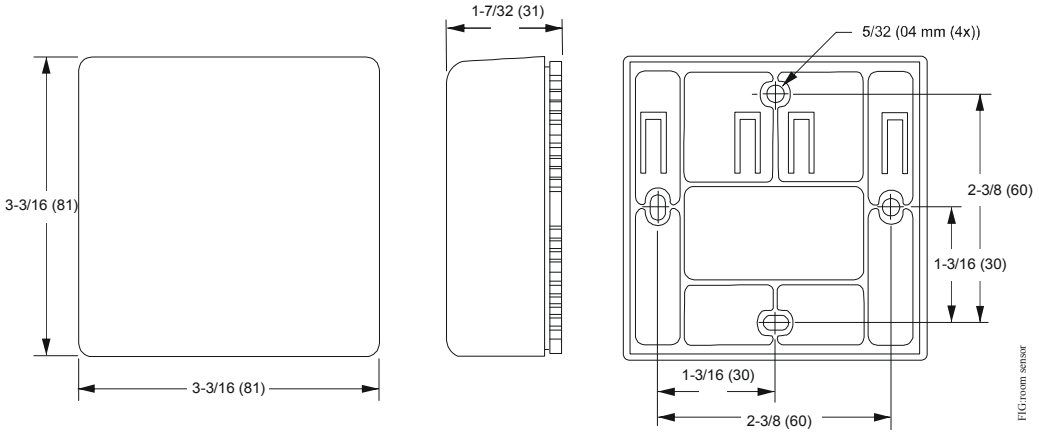

Figure 5: A99RY-1C (with GRD004NG11 Housing) Room Sensor Dimensions, in. (mm)

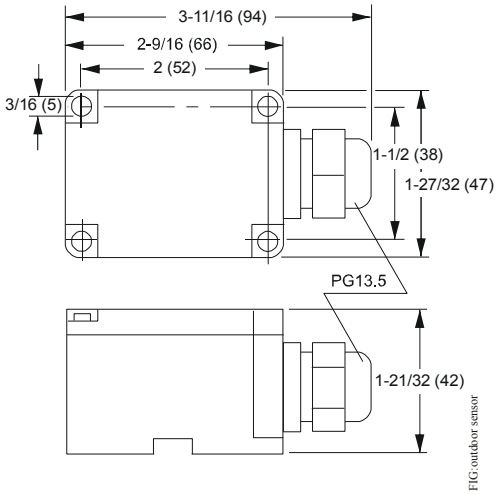

Figure 6: A99EY-1C Outside Sensor Dimensions, in. (mm)

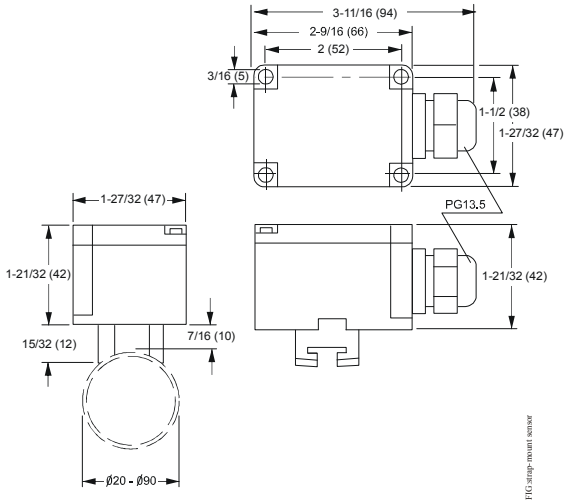

Figure 7: A99SY-1C Strap-Mount Sensor Dimensions, in. (mm)

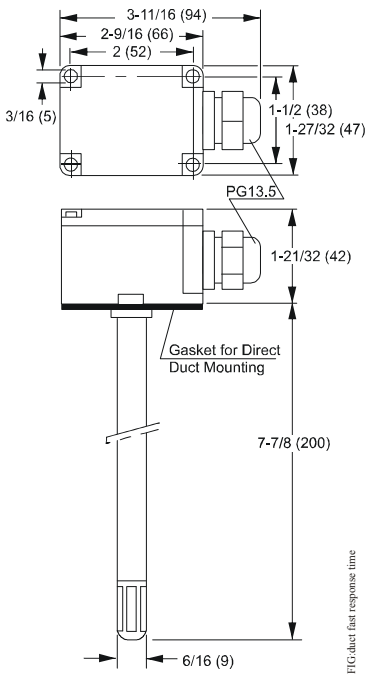

Figure 8: A99DY-200C Duct/Fast Response Sensor Dimensions, in. (mm)

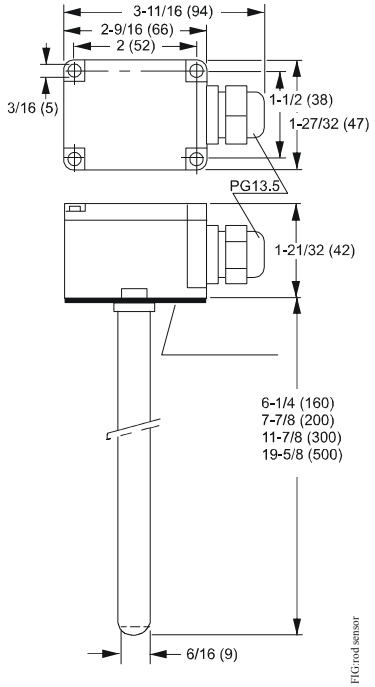

Figure 9: A99LY160C, -200C, -300C, and -500C Rod Sensor Dimensions, in. (mm)

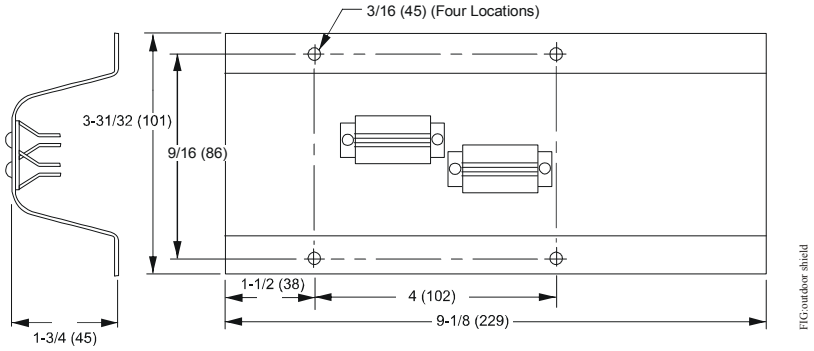

Figure 10: SHL10A-600R and -603R Outdoor Shield Dimensions, in. (mm)

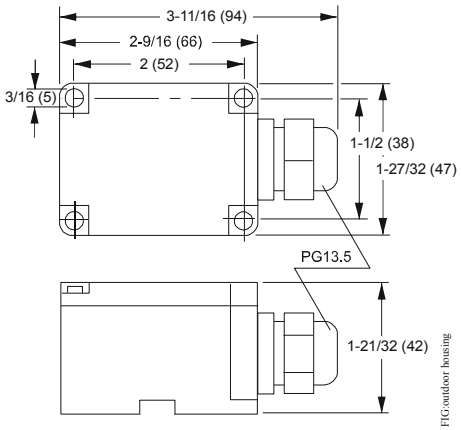

Figure 11: HSG012N600 Outdoor Housing Dimensions, in. (mm)

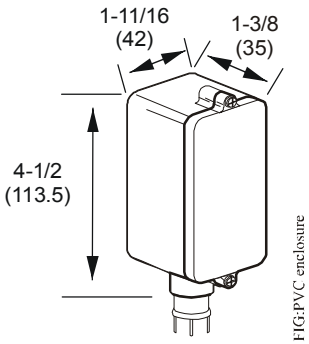

Figure 12: BOX10A-600R PVC Enclosure Box Dimensions, in. (mm)

Figure 13: ADP11A-600R EMT Conduit Adaptor Dimensions, in. (mm)

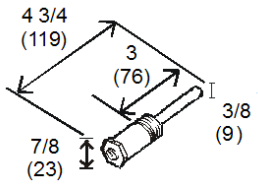

Figure 14: WEL11A-601R Immersion Well Dimensions, in. (mm)

Ordering Information

Table 2: Temperature Sensors

Product Code Number	Product Description
A99DY-200C	Duct/Rod PTC Silicon Sensor with Polycarbonate Enclosure, Copper Rod, Fast Response, Range: -4 to 140°F (-40 to 60°C)
A99EY-1C	Outside PTC Silicon Sensor with NEMA 4 Enclosure, Range: -4 to 140°F (-40 to 60°C)
A99LY-160C	PTC Silicon Sensor with 6-1/4 in. (160 mm) Copper Rod, Polycarbonate NEMA 4 Enclosure, Range: -58 to 212°F (-50 to 100°C)
A99LY-200C	PTC Silicon Sensor with 7-7/8 in. (200 mm) Copper Rod, Polycarbonate NEMA 4 Enclosure, Range: -58 to 212°F (-50 to 100°C)
A99LY-300C	PTC Silicon Sensor with 11-7/8 in. (300 mm) Copper Rod, Polycarbonate NEMA 4 Enclosure, Range: -58 to 212°F (-50 to 100°C)
A99LY-500C	PTC Silicon Sensor with 19-5/8 in. (500 mm) Copper Rod, Polycarbonate NEMA 4 Enclosure, Range: -58 to 212°F (-50 to 100°C)
A99RY-1C	PTC Silicon Sensor with ASB Enclosure, Range: -4 to 140°F (-20 to 60°C)
A99SY-1C	PTC Silicon Strap-Mount Sensor with NEMA 4 Enclosure, Range: -4 to 140°F (-20 to 60°C)

Table 3: Accessories (Order Separately)

Product Code Number	Product Description
ADP11A-600R	1/2 in. Diameter EMT Conduit Adapter (Box of 10) for Use with BOX10A-600R
BOX10A-600R	PVC Enclosure
GRD004N611	Enclosure for A99RY-1C Temperature Sensor
HSG012N600	Outside Housing
SHL10A-600R	Sun Shield for Single Sensor
SHL10A-603R	Sun Shield for Two Sensors
WEL11A-601R	Immersion Well

Repair Information

If a A99xY Series Temperature Sensor fails to operate within its specifications, replace the unit. For a replacement sensor, contact your nearest Johnson Controls® representative.

When contacting the supplier, state the model number of the sensor. The sensor model is printed on the yellow label wrapped around the sensor cable.

Technical Specifications

A99xY Temperature Sensors

Sensing Range	**A99DY, A99RY**	-4 to 140°F (-20 to 60°C)
	A99EY	-40 to 140°F (-40 to 60°C)
	A99LY	-58 to 212°F (-50 to 100°C)
	A99SY	-40 to 203°F (-40 to 95°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		High Temperature Silicon Cable
Lead Wire Gauge		22 AWG (0.6 mm Diameter)
Maximum Allowable Bulb Temperature		257°F (125°C)
Ambient Operating Conditions		-40 to 212°F (-40 to 100°C), 0 to 100% RH, Condensing
Ambient Storage Conditions		-40 to 221°F (-40 to 105°C), 0 to 100% RH, Condensing

The performance specifications are nominal and conform to acceptable industry standard. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.

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