

# AF00, AF01, AF10, and AF20 OUTSIDE TEMPERATURE SENSORS

## PRODUCT DATA



### FEATURES

- Pt 1000, Ni 1000, NTC 10k, or NTC 20k temperature sensing element
- Wide sensing range
- High accuracy

### Models

| OS no.     | sensor type | IP rating | comments | sensing range                   |
|------------|-------------|-----------|----------|---------------------------------|
| AF00-B54   | Pt 1000     | 54        | --       | -40...+70 °C<br>(-40...+158 °F) |
| AF00-B65   | Pt 1000     | 65        | --       |                                 |
| AF01-B54   | Ni 1000     | 54        | --       |                                 |
| AF01-B65   | Ni 1000     | 65        | --       |                                 |
| AF10-B54   | NTC 10k     | 54        | --       |                                 |
| AF10-B65   | NTC 10k     | 65        | --       |                                 |
| AF20-B54   | NTC 20k     | 54        | --       |                                 |
| AF20-B65   | NTC 20k     | 65        | --       |                                 |
| AF20-B54-N | NTC 20k     | 54        | no logo  |                                 |

### GENERAL

The AF00, AF01, AF10, and AF20 Outside Temperature Sensors contain a single sensor element, and are used to detect outside temperature in heating, ventilation, and air conditioning systems enabling weather-related temperature control.

The innovative mounting concept with a mounting bracket (which ensures that the housing is held at the proper distance to the mounting surface for correct measurement) allows for easy installation and unbiased detection of ambient temperature.

The sensors are suitable for use in systems using Ni 1000, Pt 1000, NTC 10k, or NTC 20k temperature sensing elements.

### SPECIFICATION

#### Nominal value

|         |                                |
|---------|--------------------------------|
| Pt 1000 | 1000 $\Omega$ at 0 °C (32 °F)  |
| Ni 1000 | 1000 $\Omega$ at 0 °C (32 °F)  |
| NTC 10k | 10 k $\Omega$ at 25 °C (77 °F) |
| NTC 20k | 20 k $\Omega$ at 25 °C (77 °F) |

#### Accuracy

|                          |                               |
|--------------------------|-------------------------------|
| Pt 1000 (IEC751 Class B) | $\pm 0.3$ °C at 0 °C (32 °F)  |
| Ni 1000                  | $\pm 0.4$ °C at 0 °C (32 °F)  |
| NTC 10k                  | $\pm 0.2$ °C at 25 °C (77 °F) |
| NTC 20k                  | $\pm 0.2$ °C at 25 °C (77 °F) |

#### Sensitivity

|         |   |
|---------|---|
| Pt 1000 | $\approx 3.85$ $\Omega$ / K                         |
| Ni 1000 | $\approx 6.18$ $\Omega$ / K                         |
| NTC 10k | -440 $\Omega$ / K at 25 °C (non-linear)             |
| NTC 20k | $\approx -934.5$ $\Omega$ / K at 25 °C (non-linear) |

**Connection** two-wire (2x0.22 mm<sup>2</sup>)

**Time constant**  $\leq 3$  min.

**Enclosure material** polycarbonate, UL94-V0 approved

**Protection class** IP54 / IP65 as per EN 60529

**Ambient Limits (wiring box)**

Storage temperature -30...+70 °C (-22...+158 °F)  
 Humidity 0...95% rh, non-condensing

**Dimensions** See Fig. 1 below.

**DIMENSIONS**

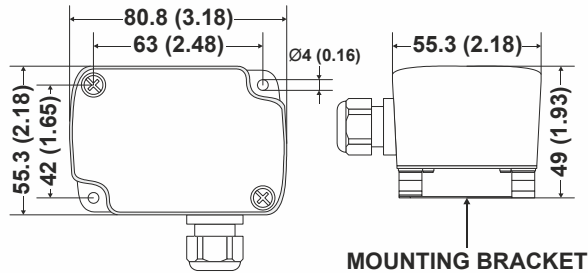


Fig. 1. Dimensions of the outside temperature sensor in mm (inches)

**WIRING**

| wiring run           | max. length    |
|----------------------|----------------|
| sensor to controller | 200 m (660 ft) |

Offset due to wire resistance per 10 m of distance from sensor to controller, when using the AF00 (Pt 1000):

| type of wire                | Pt 1000            |
|-----------------------------|--------------------|
| 0.5 mm <sup>2</sup> (AWG20) | 0.18 °C (0.324 °F) |
| 1.0 mm <sup>2</sup> (AWG17) | 0.09 °C (0.162 °F) |
| 1.5 mm <sup>2</sup> (AWG15) | 0.06 °C (0.108 °F) |

**NOTE:** Use shielded wiring in areas with high EMI.  
 Keep 15 cm (5.9") minimum distance between sensor lines and 230 Vac power lines.



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