



### Benefits

- Trigger ITS devices directly from sensor
- Low power with power saving features for solar installations
- SDI-12 communications for simple integration
- Integrated fan improves air temperature and relative humidity accuracy

## Description

The Model 5439 Surface Sentinel non-intrusive surface temperature sensor provides surface temperature, air temperature, relative humidity and dew point measurements for warning systems and fixed weather stations. Premium materials are used to meet the demands of road weather professionals.

The surface temperature is measured by an accurate non-contact infrared temperature sensor. Air temperature and relative humidity are measured from an accurate sensor from which dew point is calculated. The sensor has an integrated fan for applications where higher accuracy air temperature and relative humidity readings are needed.

The sensor is typically mounted on a pole or tower next to a road surface. It can be used for remote monitoring or in an autonomous system.

In the remote monitoring configuration, the Surface Sentinel can be connected to industry standard datalogger and telemetry options to send data to a central software system. The standard open-architecture data output is available via SDI-12 to provide a common interface for retrieving the atmospheric and road data from the sensor.

In the autonomous system configuration, a contact output provided direct from the sensor can be used to trigger ITS devices based on user-defined sensor thresholds. An example would be to trigger a "BRIDGE MAY BE ICY" sign when the bridge surface is near or below freezing.

## Product Applications

- **RWIS expansion.** Low cost way to fill in gaps between existing road weather stations.
- **Weather responsive traffic management.** Alert vehicles or pedestrians of hazardous weather conditions by triggering flashing warning signs. Perfect for Bridge may freeze before road signs.
- **System alerts.** Alarm road crews that conditions are suitable for frost development. Let the paint striping crew know that the road conditions are ready to start work. Road or sidewalk buckling alert in hot conditions.



# Surface Sentinel

## Specifications

### Surface Temperature

Range	-40° to 185° F (-40° to 85° C)
Accuracy	± 1° at 32° F otherwise ± 2° F (± 0.5° C at 0° C otherwise ± 1° C)
Reaction Time	63% of step changes in 1 second

### Air Temperature

Range	-40 to 149° F (-40 to 65° C)
Accuracy	± 0.4° at 32° F otherwise ± 1° F (± 0.2° C at 0° otherwise ± 0.5° C)
Reaction Time	63% of step change in 15 minutes

### Humidity

Range	0 to 100% RH
Accuracy	±1.8% at 10% to 90% RH otherwise ±3%
Reaction Time	63% of 35 to 80% step change in 12 seconds

Measurement Time . . . . . Less than 1.0 second, fan off

Measurement Distance Range . . . 3 to 50 ft (1 to 15 m)

Elevation Angle . . . . . 35° to 90° from vertical

Field of View . . . . . 12°

Measuring Area . . . . . 2 ft (0.6 m) diameter at 10 ft (3 m)

Fan Power Management . . . . . Based on light level

Emissivity . . . . . 0.96

Outputs . . . . . SDI-12, open collector

Operating Voltage . . . . . 9.6 to 16 VDC, per SDI-12 spec

Current Draw . . . . . 170 µA (average at 2 minute measurement without fan)  
210 mA (max with fan running) at 12 VDC supply voltage  
7 mA (when measuring, without fan)

Cable . . . . . 33 ft (10 m) standard

Mounting . . . . . 2 x 2 in (5.1 x 5.1 cm) spaced ¼ inch - 20 threaded PEM nuts

Materials . . . . . Anodized aluminum, polycarbonate

Operating Air Temp . . . . . -40° to 185° F (-40° C to 85° C)

Operating Humidity . . . . . 0 to 100% RH

Dimensions . . . . . 8 x 3 x 3 in (20 x 8 x 8 cm)

Weight . . . . . 2 lbs (0.9 kg)

Shipping Weight . . . . . 4 lbs (1.8 kg)

CE Compliant . . . . . EN 61326-1

RoHS . . . . . Yes

## Ordering Guide

Model 5439-00 . . . . . Surface Sentinel sensor with tinned leads

Model 5439-02 . . . . . Surface Sentinel sensor with MS connector

## Options/Spare Parts

Model 5439-70 . . . . . Pole mounting bracket 1 to 2 inch (2.5 to 5.1 cm) diameter

Model 5433-71 . . . . . Pole mounting bracket 3 to 8 inch (7.6 to 20.3 cm) diameter



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