

Surface Sentinel

Model 5439



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 Ices 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.

Non-intrusive road condition sensor

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.



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

Specifications

COMPONENT		SPECIFICATION
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

SENSOR OPTIONS

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