



# Environmental Monitor

010-0031 Datasheet



## OVERVIEW

The EM31 is a wireless, waterproof, data logging temperature sensor which surfaces data to the Samsara cloud via Samsara Vehicle or Asset Gateways. The EM31 can also connect to accessory probes (ACC-EM-P1) for a wider range of temperature applications.

With precise sensors and an easy-to-install wireless design, Samsara environmental monitors are ideal for ensuring food safety during transportation, monitoring warehouse conditions, and other applications that rely on environmental data to ensure quality or maintain compliance.

## HIGHLIGHTS

<b>Wireless</b>	Wirelessly monitors temperature with proprietary 2.4 GHz when connected to compatible Samsara powered gateway
<b>Waterproof</b>	Waterproof, ruggedized design with LCD display
<b>Battery Powered</b>	Runs for 3+ years (subject to conditions) on a single user replaceable AA battery



# Technical Specifications

## INCLUDED SENSORS

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Temperature	<p>Ambient temperature sensor located on the side of the device</p> <p><b>Range</b></p> <p>-40° to 60° C (limited by operating range)</p> <p><b>Accuracy</b></p> <p>-10° to 60° C, Typical: <math>\pm 0.3^{\circ}</math>, C Max: <math>\pm 0.4^{\circ}</math> C -30° to -10° C, Typical: <math>\pm 0.7^{\circ}</math>, C Max: <math>\pm 0.9^{\circ}</math> C</p> <p>The EM31 can also connect to accessory probes (ACC-EM-P1), located at the bottom of the device, for a wider range of temperature applications. Additional information below.</p>
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## WIRELESS CONNECTIVITY

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Real-time	Sampling every 4 seconds and transmitting new data to Vehicle or Asset Gateways in near real time
Auto-discovery	Automatically detects and connects to any compatible Samsara powered gateway to transmit data
Range	330 ft / 100 m (line of site). Actual range depends on RF interference, building materials, and physical obstacles
Radio Frequency	2.4 Ghz, proprietary low-power sensor data protocol

## DATA LOGGING

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Offline Storage	Built-in flash memory logs 30 days of data when Internet connectivity is unavailable
Data upload	Automatic (zero-touch) wireless data upload via Samsara gateways

# Technical Specifications (cont'd)

## ENCLOSURE

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Material	Polycarbonate. Flame Retardant (UL94 V-0)
Dimensions	8.6 × 6.5 × 2.3 cm
Weight	72g
Display	23 × 18 mm TN Reflective, Transmissive Positive Custom LCD display
Operating temperature	-30° to 60°C
Battery power	Typical battery life 3+ years. Actual battery life may be affected by extreme temperature or signal strength  1x AA Energizer L91 batteries (user replaceable)
Environmental protection	IP67 rated dustproof and water resistant up to 1m submerged. IP69k rated for protection against high temperature and high pressure water. ISO 16750-3 vibration rated. IK06 impact rated. Not designed for use as a primary fire protection and/or life safety system

## SAMSARA CLOUD

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Visibility and management	Near real-time visibility, SMS and email alerts, and historical reports via Samsara dashboard for web and mobile devices
All-inclusive license	Requires EM license, which includes maintenance and support, dashboard access, sensor data storage, and feature updates

## ACCESORIES

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What's included	2x Philips metal drilling screws
ACC-EM-P1	Optional probe which enables measurement at an additional location and at an extended temperature range

# Technical Specifications (cont'd)



## ACC-EM-P1 EXTERNAL PROBE

Overview	Optional probe available for purchase that enables measurement at an additional location and at an extended temperature range
Operating Temperature	-40°C to 85°C
Probe Specification	Stainless steel, 50mm length, 6.0mm diameter
Cable Specification	PVC Jacket
Cable Dimensions	1.27m or 50 inches in length

# Technical Specifications (cont'd)

## LEGAL DISCLAIMERS

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Any installation not in accordance with the instructions in the installation guide or otherwise in the Documentation may result in physical injury or property damage.

Do not use this product other than as described by the relevant IP rating or recommended operating conditions. Damage or injury may result.

This hardware and any associated software may not be compatible with third party products and/or services. This hardware and associated software may interact, interface, or integrate with third party products and/or services and may not be validated or supported by such third parties and may interfere with the operations of or void warranties for such third party products and/or services.

Do not install or adjust hardware while driving or operating the vehicle.

Do not install this hardware in a location that could interfere with the driver's visibility or operation of vehicle controls.

Do not install this hardware on or near airbag panels or within the working range of an airbag.

Failure to follow these directions could result in serious injury or death.

Consult applicable local laws and ordinances to determine any installation restrictions. It is the installer's responsibility to comply with all applicable laws and ordinances when installing this hardware.

Do not install this hardware on or near flammable or otherwise hazardous materials. This hardware may burst if placed near flammable or other hazardous materials, creating a risk of fire, burn, shock, or other serious injury.

# Regulations

## IC REGULATIONS

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This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This equipment complies with Innovation, Science and Economic Development Canada RF exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated to ensure a minimum of 20 cm spacing to any person at all times.

CAN ICES-3(B)/NMB-3(B)

### IC Radiation Exposure Statement:

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

### IC Déclaration d'exposition aux radiations:

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.

# Regulations (cont'd)

## FEDERAL COMMUNICATION COMMISSION INTERFERENCE STATEMENT

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

**FCC Caution:** Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**FCC Caution:** Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

### **FCC Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.