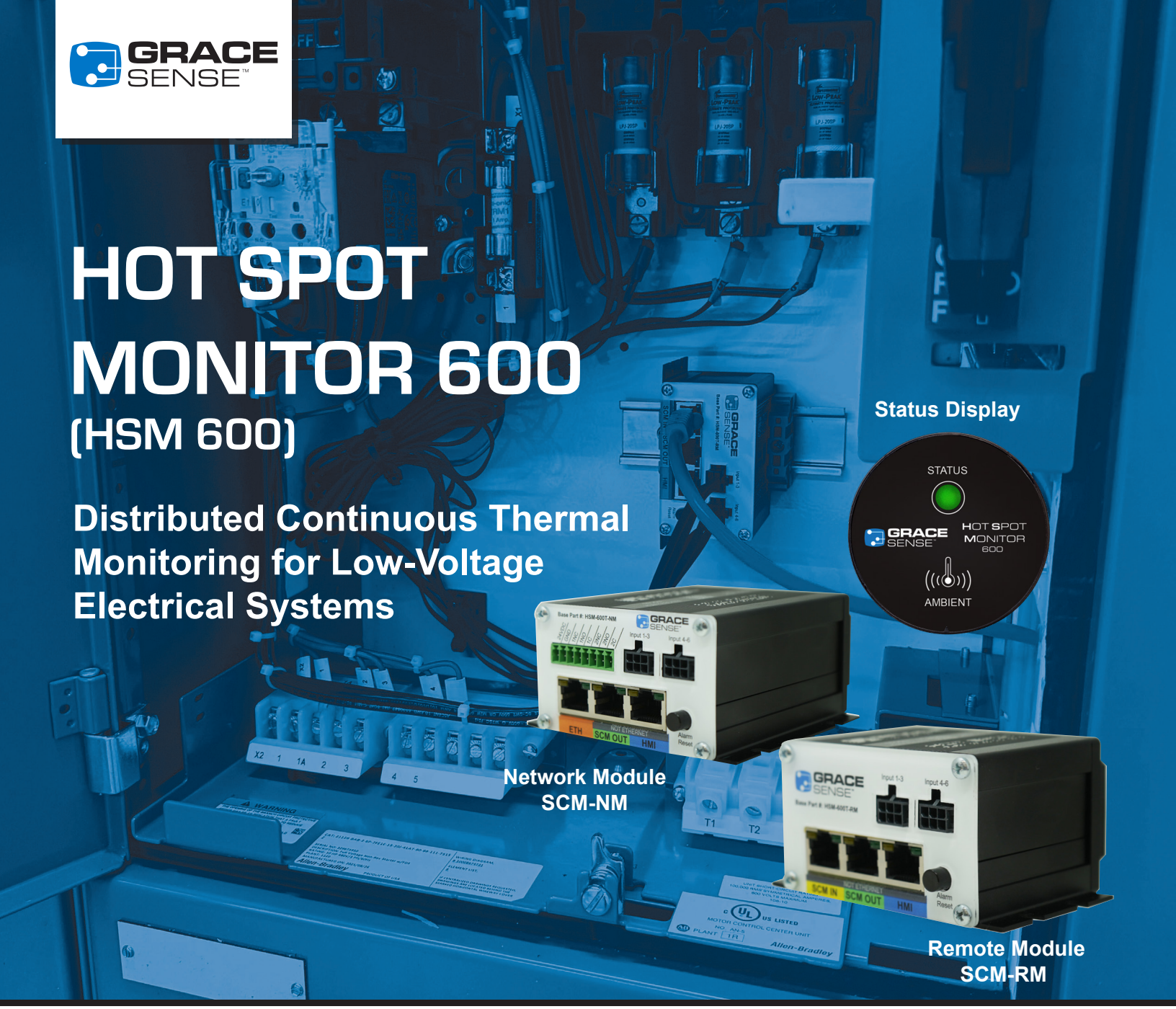
HOT SPOT MONITOR 600
(HSM 600)

Distributed Continuous Thermal Monitoring for Low-Voltage Electrical Systems



HSM FEATURES & BENEFITS

- **Optimized for Low-Voltage Systems (≤600 VAC):** Designed specifically for low-voltage switchgear and switchboards, UPS, PDUs, RPPs, MCCs, and other critical infrastructure.
- **Distributed Monitoring Architecture:** Modular Sensor Conditioning Modules allow scalable deployment across multiple compartments and panels.
- **Advanced Alarming & Analytics:** Supports absolute temperature, Rise Over Ambient (ΔT), phase-to-phase variance, and dew point monitoring.
- **Industrial Network Integration:** Native Modbus TCP/IP and EtherNet/IP™ enable integration into PLCs, SCADA systems, and plant-wide monitoring platforms.
- **Supports Condition-Based Maintenance Programs:** Aligns with industry best practices for continuous condition monitoring outlined in standards such as NFPA 70B and IEEE 2969.

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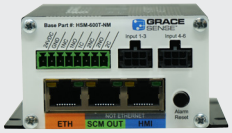
OPERATION

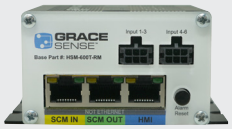
The GraceSense™ Hot Spot Monitor 600 (HSM 600) is a permanently installed, distributed Continuous Thermal Monitoring (CTM) solution designed to detect abnormal temperature rise at critical electrical connection points in low-voltage equipment. By providing continuous, real-time visibility into developing thermal conditions, the HSM 600 enables maintenance and reliability teams to identify risk earlier, reduce unplanned downtime, and improve electrical safety.

Thermistor sensors are mounted on or near critical electrical connection points such as bus bars, lugs, cable terminations, and insulated conductors. These sensors continuously measure temperature and feed real-time data to the HSM 600 Sensor Conditioning Modules (SCM's) which would be installed within a low voltage electrical compartment. The system records absolute sensor temperature, delta temperatures and environmental conditions leading to condensation risk. Configurable warning and alarm thresholds alert personnel before conditions escalate into failures. All events are time-stamped and logged for diagnostics, trending, and root-cause analysis.

TECHNICAL SPECIFICATIONS

Status Display sold separately. For Ordering Information see the back page of this datasheet

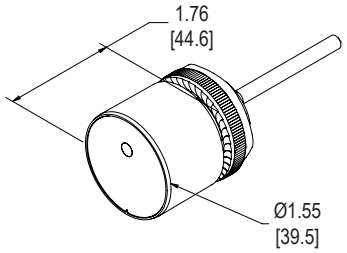




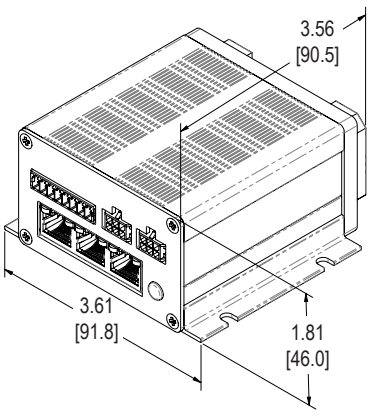
MODEL	SCM-NM	SCM-RM
Description	The primary system controller and communications gateway. Supports six temperature inputs, integrated ambient and humidity sensing, alarm relay outputs, and an embedded web utility for system configuration.	Expand system capacity by adding additional functionality in remote compartments. Multiple SCM-RMs can be daisy-chained to a single SCM-NM for distributed monitoring.
Input Power	24VDC Input, 1A max, Class 2 or Limited Power Source	
Output Power	24VDC, 18W Max	24VDC - Powered over RJ45 from SCM-NM
Maximum Voltage	24VDC Input	
Power Consumption	Approx 1.50 Watts	
Housing & Dimensions	Extruded Aluminum, 3.62"L x 3.61"W x 1.84"H	Extruded Aluminum, 3.62"L x 2.64"W x 1.84"H
Mounting	Surface Mount or DIN Rail	
Communications	EtherNet/IP™, Modbus TCP/IP *(AOP Available)*	DNP3 directly to SCM-NM via RJ45
SCM Temperatures	**Operate**: -20ºC to +75ºC	
System Isolation	**Power:** DC/DC Converter **Communications:** Digital Isolation IC	
Network Cabling between SCM Devices *(sold separately)*	RJ45, 600V Rated, Shielded	
Onboard Sensors	Ambient & Humidity *(Used for equipment Dew Point Calculation)*	
Onboard Memory	8Mb	
Latching Alarm Reset Pushbutton	Faceplate Pushbutton to Reset Latched Alarms (Latched Alarms also reset via HSM Web Utility)	
Relay Contact Outputs	Two Form-C Relay Contacts (NO/NC), 24VDC pulsed signal only, for Hardwired Warning & Alarm Notifications, if activated	N/A
Status Display Module	Local LED behavior denoting alarms/warnings & external ambient reference	
Embedded Web Utility for configurations	User interface for status viewing, threshold setup, data download	Setup originates in SCM Network Module
Certifications	UL Listed, CE	

DIMENSIONS

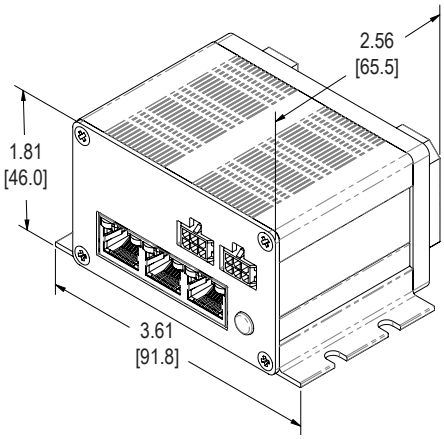
Status Display



Network Module

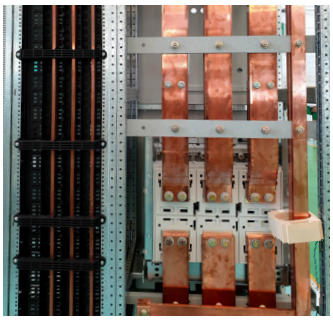


Remote Module



APPLICATIONS

- Low-voltage switchgear and distribution panels
- Motor Control Centers (MCCs).
- Control panels and automation enclosures
- Bus bars and cable terminations
- Variable frequency drives and starters
- UPS systems and low-voltage battery systems
- PDUs and RPPs

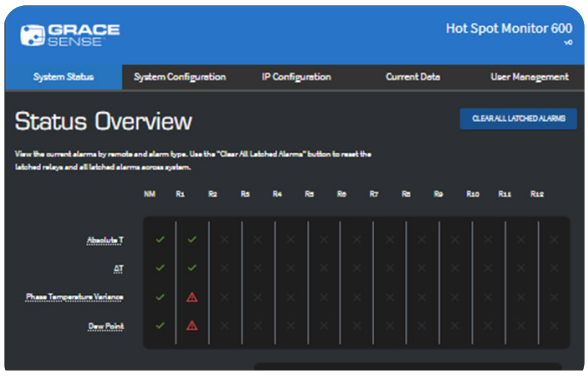


COMMUNICATION

The embedded GraceSense™ Web Utility within the SCM-NM provides intuitive navigation for configuring network settings, warning and alarm thresholds, relay outputs, and alarm functionality. Once configured, the device supports communication via Modbus TCP or EtherNet/IP™ to enable real-time visibility and analysis. Data can also be downloaded directly from the SCM-NM for offline review and trending.

Configuration files may be saved locally or exported as an AOP file or memory map. Memory maps can also be imported to efficiently pre-load device settings.

Refer to the HSM 600 Installation Guide at www.GraceSense.com for more information.



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ORDERING INFORMATION

PART NUMBER:

G-HSM- Sensor Type **-** SCM Type **-** Thermistor Input 1 **-** Thermistor Input 2 **-** Status Display

Sensor Type	
CODE	DESCRIPTION
600T	HSM 600 Series Thermistor

Sensor Conditioning Module (SCM) Type	
CODE	DESCRIPTION
XX	No Module
NM	Network Module *(Required for ALL systems)*
RM	Remote Module *(No more than 12 additional units – each defined)*

Thermistor Inputs *(Loomed in sets of 3)*	
CODE	DESCRIPTION
XXX	No Thermistor
0605	Thermistors, 600V Rated, 0.5m Length
0610	Thermistors, 600V Rated, 1.0m Length
0620	Thermistors, 600V Rated, 2.0m Length

Status Display with Ambient	
CODE	DESCRIPTION
XXX	No Display
SD1	Status Display, Potted Male with 1.0m Cable
SD2	Status Display, Potted Female with 3.0” Pigtail

FREQUENTLY ASKED QUESTIONS

Q: What is the maximum number of SCM modules I can connect together?

A: Up to 12 SCM-RMs can be daisy chained from a single SCM-NM using the 600VAC-rated RJ45 cable.

Q: Can I use standard Ethernet cables for networking the modules?

A: No. The system requires a 600VAC-rated, shielded RJ45 cable designed for power and communication in electrical environments. To purchase, contact your local distributor.

Q: Do I need a Status Display module for each SCM?

A: Not required but recommended.

- *One Status Display connected to the SCM-NM provides visibility for alarms in the HSM 600 network. Multiple Status Displays improve compartment level visibility for alarms*
- *Since the Status Display also houses the ambient sensor for ΔT, it is recommended to mount at least one module off the profile of the equipment. Additional Status Display modules connected to SCM-RMs can reference internal compartment ambient for ΔT if configured that way within the HSM 600 Web Utility*

Q: How is dew point calculated?

A: Each SCM includes onboard ambient temperature and humidity sensors. Dewpoint is calculated internally and compared to a user defined threshold within the HSM 600 Web Utility.

Q: Can the HSM 600 operate as a stand alone device?

A: Yes — the SCM-NM can operate independently. The SCM-RM cannot; it requires an SCM-NM for power and communication.

Q: What types of alarms can be generated?

A:

- *High temperature (single sensor absolute value)*
- *Phase to ambient ΔT*
- *Phase to phase ΔT*
- *Dew point risk (condensation warning)*

Q: Are the thermistor sensors safe to mount directly on bus bars?

A: Yes. They are UL listed at 600VAC, designed for direct mounting on busbars or insulated cables using cable ties, rubber tape, Velcro® or thermal epoxy.

Q: Can the system integrate with SCADA or PLCs?

A: Yes. The SCM-NM supports Modbus TCP/IP, Ethernet/IP™, Hardwired relay outputs for alarm signaling

Q: How do I download data or configure thresholds?

A: Use the embedded HSM 600 Web Utility accessible on the leftmost Ethernet port on the SCM-NM, then navigate to the CURRENT DATA menu tab and in the lower right corner is the DOWNLOAD LOG section where (3) different files are available for download.

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