

# HOT SPOT MONITOR 600 (HSM 600)

Distributed Continuous Thermal  
Monitoring for Low-Voltage  
Electrical Systems

Status Display



Network Module  
SCM-NM

Remote Module  
SCM-RM

## 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 ( $\Delta T$ ), 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.

## OPERATION



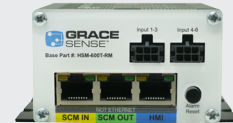
The GraceSense™ Hot Spot Monitor 600 (HSM 600) is a permanently installed, distributed Continuous Thermal Monitoring (CTM) solution designed to detect abnormal temperature rise at critical electrical connection points in low-voltage equipment. By providing continuous, real-time visibility into developing 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



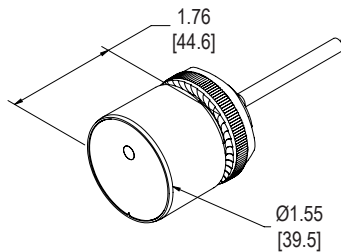
Status Display  
sold separately.  
For Ordering Information  
see the back page  
of this datasheet



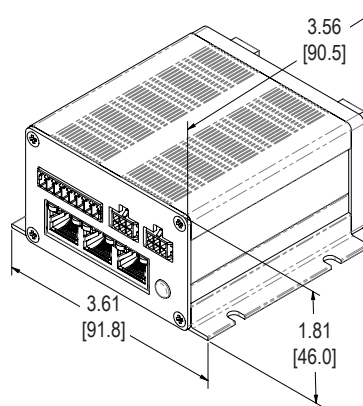
| MODEL                                                 | SCM-NM                                                                                                                                                                                                         | SCM-RM                                                                                                                                                                 |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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: -20°C to +75°C                                                                                                                                                                                        |                                                                                                                                                                        |
| 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                                                                                                                                                                                                      |                                                                                                                                                                        |

## DIMENSIONS

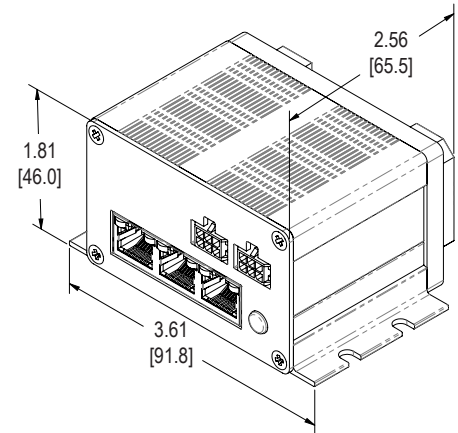
Status Display



Network Module

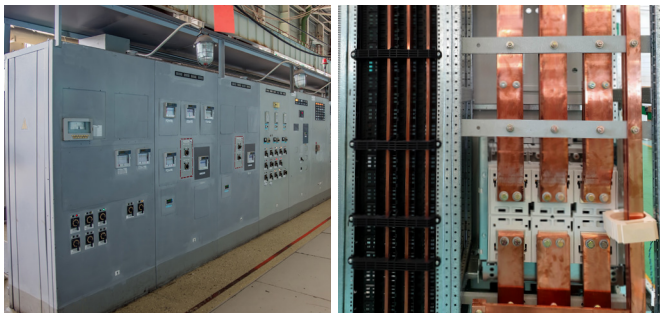


Remote Module



## 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

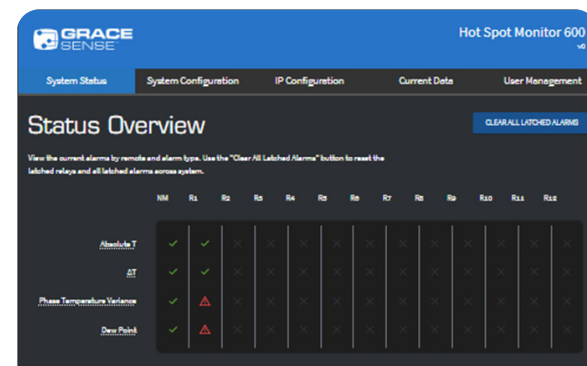


## COMMUNICATION

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](http://www.GraceSense.com) for more information.**

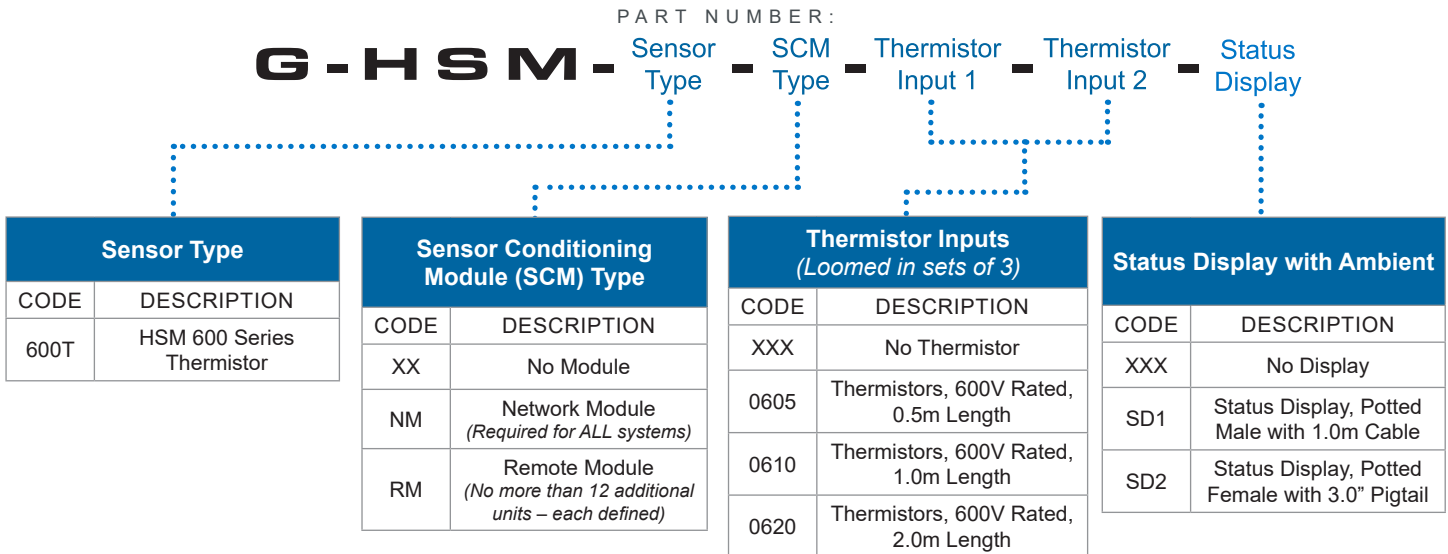


FOR MORE INFORMATION VISIT [GRACESENSE.COM](http://GRACESENSE.COM) OR CALL 1.800.280.9517

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## ORDERING INFORMATION



## 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  $\Delta T$ , 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  $\Delta T$  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  $\Delta T$
  - Phase to phase  $\Delta T$
  - 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.

