

Factsheet SGD43S-M3-Sx

Safe and complete refrigerant leakage detection system for modern HVACR systems

The SGD43S-M3-Sx is specifically designed for the HVACR industry as a complete refrigerant detection system (RDS). It is based on the thermal conductivity measurement principle and features a dual dry-contact relay output that can trigger a signal relay to start a blower, switch off the load or warn a control board. Easy integration and installer-friendly feedback is enabled by a status-indicating LED for quick visual feedback.



With its fast response time and broad compatibility with A2L refrigerants thanks to its versatile multi-refrigerant calibration, it is an essential component for both residential and commercial HVACR systems. The SGD43S-M3-Sx ensures effective leak detection and complies with stringent industry standards, including UL60355-2-40. It offers dual calibration in a single device for R454B and R32 for HVAC applications, as well as a single unit that is triple calibrated for R454A, R454C, and R455A in refrigeration applications.

Applications

- Residential and commercial HVAC systems
- Heat pumps
- Refrigeration equipment

Key features

- **Advanced TC technology**
Detects refrigerant leaks quickly and reliably, minimizing false alarms and operational disruptions.
- **UL compliance**
Meets UL 60335-2-40 ed. 4.0 standards and the upcoming ed. 4.1 standards with self-monitoring capabilities, functioning as either a refrigerant sensor or a complete detection system.
- **Long lifetime**
Operates maintenance-free for over 15 years with factory life-time calibration and no need for re-zeroing.
- **Dual dry-contact relay switch output**
Integrates seamlessly with modern HVAC systems using new A2L refrigerants, eliminating the need for an external mitigation board.
- **RS-485 serial interface**
Enables easy communication and data transmission, along with the relay output, enhancing system testing and design processes.
- **Dual color status light**
Provides clear and immediate status indication for installer convenience.
- **Wide refrigerant compatibility**
Supports R32, R454A, R454B, R454C, and R455 refrigerants, and is resistant to refrigerant poisoning.

Robust and reliable performance

The thermal conductivity (TC) measuring principle offers superior protection against contamination, avoiding optical, chemical, or vibrating sensor components, and their associated drift and degradation mechanics. The robust glass-passivated silicon MEMS chip thermal conductivity sensors, which have been reliably used in medical and automotive applications for decades, proving their technical reliability and widespread validation to the A2L refrigerant detection application.

Sensirion's thermal conductivity CMOSens® MEMS chips are renowned for their excellence in automotive and medical sensor applications on a global scale. Building on this reputation, the SGD43S-M3-Sx sensor is based on the patented CMOSens® TC technology, offering a measuring system that is both long-term stable and lifetime calibrated.

Specifications

Monitored refrigerants	R-32, R-454B (dual calibration) R-454A, R-454C, R-455A (triple calibration)
Connector	8-pin sealable connector
Response time	≤30s
Operating conditions	-40 to +185°F (-40 to +85 °C) 0 to 100 %RH including condensing environments (max. dew point 40 °C) 800 to 1,100 mbar
Accuracy at ambient conditions	±2.5 %LFL
Supply voltage	24V AC/DC
Interface	RS-485/MODBUS and dual dry-contact relay switch output
Relay output	Dual dry-contact relay output
Norm compliance	UL 60335-2-40 (4th editions)
Visual monitoring	Red / green LED status light
IP protection	IP54, if IP54 rated connector is used
Expected lifetime	> 15 years/self-monitored sensor
Size	3.54 x 2.17 x 0.94 in (90 x 55 x 24 mm)