



Gas & Flame Detection

3M™ Meridian

Universal Gas Detector



Description

Designed with safety and reliability in mind, the Meridian universal gas detector is suitable for use in SIL-2 and SIL-3-rated systems under the IEC 61508 standards, certified by TUV-Rheinland, an independent third-party agency. Third party SIL certification validates that the product meets the most rigorous standards for reliability and performance and confirms its ability to reduce your potential for downtime and increase your safety factor.

Features

- Minimal drift
- High specificity
- Digital ID
- Broader toxic gas detection



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Universal Gas Detector

The term “universal” is frequently used in the industry to characterize gas detectors that address both toxic and combustible gases, but it is rare to find instruments that truly live up to that claim. Upon close inspection, you will find that often the only characteristic that can be called “universal” is their user interface. In other words, the instrument provides a common user interface for both combustible and toxic gas detection.

At 3M | Gas & Flame Detection, we believe “universal” should be much more than a common user interface, and we applied this thinking to every aspect of the design of the Meridian universal gas detector. You will find that the Meridian universal gas detector is the industry’s first truly universal gas detection platform.

Single detector head for all applications

Whether you need an infrared or catalytic bead sensor to detect combustible gases or an electrochemical sensor for a toxic environment, the Meridian universal gas detector utilizes a single detector head to easily accept all sensor types. There is no requirement for distinct personality boards in the gas detector or different detector heads to make the instrument behave as a combustible or toxic gas detector. The Meridian gas detector accepts all sensor types in one detector. Simply attach the specific toxic or combustible sensor to the universal detector head and the Meridian gas detector will automatically determine the type of gas to be detected. Installation of the sensor is a simple plug-and-play action. At 3M | Gas & Flame Detection, we are always looking to anticipate your future needs. We designed the Meridian gas detection platform to be future proof, allowing you to take advantage of new sensing technologies from 3M | Gas & Flame Detection while maintaining ease of use and peace of mind.

Single of accessories

The Meridian gas detector has a single set of accessories for your application needs—another merit of a truly universal gas detection platform. Because all accessories for the Meridian gas detector are designed for the universal detector head, there is no need for purchasing separate accessories for toxic and combustible applications.

The following accessories are available for the Meridian Transmitter:



CALIBRATION ADAPTER:
Easily attaches to the sensor housing to deliver calibration gases to the detector head.



FLOW CELL:
Allows customers to bring a gas sample to the sensor.



DELUGE GUARD:
Protects the sensor from heavy rain and water spray from plant wash down routines.



DUCT MOUNT KIT:
Allows you to remote mount sensors onto ventilation ducts to verify.



SENSOR SIMULATOR:
A useful commissioning and troubleshooting tool to locally simulate gas concentration and trigger a response from the detector.



UNIVERSAL MOUNTING KIT:
With predefined cut outs, you can easily replace older gas detectors with the Meridian detector, making it an ideal choice for retrofit applications.

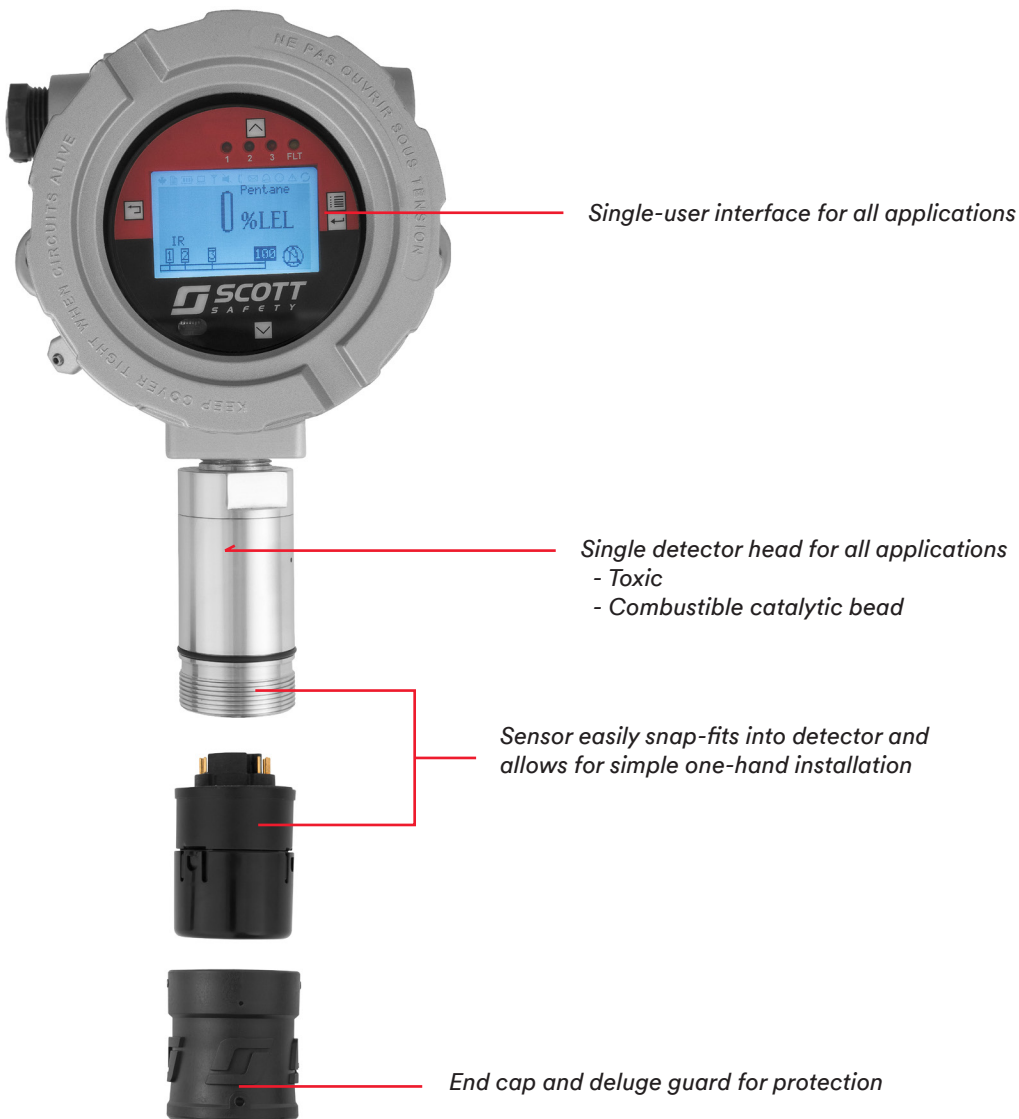


SUN SHIELD:
Deflects direct sunlight from the Meridian reducing glare on the display. It also helps reduce the internal temperature of the transmitter.

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Universal Gas Detector

One detector with global approvals and a plug-and-play design



Safety integrity level:

Designed with safety and reliability in mind, the Meridian universal gas detector is suitable for use in SIL-2 and SIL-3-rated systems under the IEC 61508 standards, certified by TÜV-Rheinland, an independent third-party agency. Third party SIL certification validates that the product meets the most rigorous standards for reliability and performance and confirms its ability to reduce your potential for downtime and increase your safety factor.

Key regulator approvals:

- cCSA_{US}
- ATEX
- IECEX
- INMETRO
- EURASIAN CUSTOMS UNION*
- CHINA Ex, CCCF*
- RCM*
- MARINE DIRECTIVE - SHIP'S WHEEL, ABS
- SIL-2 certified by TÜV-Rheinland
- *pending

Global certifications and approvals

The Meridian gas detector is certified using the highest international standards for global use. Our goal is to offer customers one instrument that can be used across regions. So whether you procure the instrument for use in a chemical plant in North America, on an FPSO in Latin America or in an oil refinery in Europe or Asia, the instrument will have the necessary approvals required for use in that region. Unlike industry standard offerings, the Meridian gas detector is not a collection of gas detectors, each certified for use in a particular region. What makes it truly universal is that it is a single detector that has all the required approvals for global use.

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Advancement in Sensor Technology

At 3M | Gas & Flame Detection, we believe in innovation with a purpose. To that end, we made a number of advancements in our sensor technology with the Meridian universal gas detector to deliver additional value to our customers and reduce their overall cost of ownership.



Sensor replacement without declassifying the area

The Meridian gas detector's intrinsically safe, plug-and-play sensor design allows you to perform sensor replacements without powering down the instrument. You no longer need to declassify an area during sensor replacement. This allows you to maintain your plant production uptime and maintain a safe working environment for workers at the same time.

Toxic sensors offer range invariant calibration

Sensor calibration, while absolutely necessary, can be a very challenging and time-consuming activity. To help our customers reduce operational hazard and maintenance cost, we have designed a toxic sensor technology that is linear throughout and range agnostic. With the Meridian gas detector, you can calibrate a toxic sensor to a particular gas level and then make adjustment to the range later without having to re-calibrate the sensor to the new range.

For example, to optimize maintenance workload, you can calibrate sensors in a batch in the lab and set them to a default range. Upon installation, the range on the sensors can be adjusted to the requirements of the specific location. The range on the sensor can be readjusted anytime to the set of pre-defined ranges by the end user. This sensor design also provides flexibility in easily calibrating sensors where a specific gas range is inaccessible or unavailable. Simply calibrate the sensor with an available surrogate gas range and then readjust the sensor range to the set of predefined ranges available for that sensor.

Automatic sensor voltage detection and adjustment

To minimize installation and commissioning time, the Meridian automatically detects current voltage and makes the required voltage adjustments for catalytic bead sensors without intervention from the installer. This reduces installation time and also the required tooling expertise necessary for sensor installation.

Complete sensor range & Best-in-class sensor performance

Full-range detection

The Universal Gas Detection System detects a full range of combustible and toxic gases.

Combustible gases:

- Acetaldehyde
- Acetone
- Acetylene
- Ammonia
- Benzene
- Butadiene
- Butane
- Butanol
- Butyl Acetate
- Chlorobenzene
- Cyclohexane
- Decane
- Diethyl Ether
- Ethane
- Ethanol
- Ethyl Acetate
- Ethylbenzene
- Ethylene
- Ethylene Oxide
- Heptane
- Hexane
- Hydrogen
- Isobutane
- Isobutylene
- Isopentane
- Isopropanol
- Methane
- Methanol
- Methyl Chloride
- Methylene Chloride
- Methyl Ethyl Ketone (MEK)
- Octane
- Octamethyl Trisiloxane
- Pentane
- Propane
- Propylene
- Propylene Oxide
- Styrene
- Tetrahydrofuran
- Toluene
- Vinyl Chloride
- Xylene

Toxic gases:

- Ammonia
- Bromine
- Carbon Dioxide
- Carbon Monoxide
- Chlorine
- Chlorine Dioxide
- Fluorine
- Hydrogen*
- Hydrogen Chloride
- Hydrogen Cyanide
- Hydrogen Fluoride
- Hydrogen Sulfide
- Methanol
- Nitrogen Dioxide
- Oxygen
- Ozone
- Silane
- Sulfur Dioxide

Rock Solid Sensor available for toxic gases highlighted in bold.

Multiple Sensors

The Meridian gas detector allows up to three sensors to be attached to a single instrument. Use the multi-sensor detector to:

- Monitor for toxic and combustible gases from the same detector.
- Accurately detect gases particularly difficult to detect due to cross interference from other gases.
- Reduce your overall cost per point of detection while increasing overall safety.
- Remotely mount sensors up to 100 feet from the gas detector to meet requirements of specific applications.

The Rock Solid Advantage: More Reliable, Accurate Detection

- **Minimal drift:** Performs reliably in harsh real-world environments by significantly reducing effects of temperature and humidity.
- **High specificity:** Allows for much lower interference from other gases than conventional gas sensors, reducing cross interference from other gases present and reduces the likelihood of a false alarm.
- **Digital ID:** Provides automatic recognition when sensors are replaced, reducing the likelihood of user error during maintenance in the field.
- **Broader toxic gas detection:** Several ranges are available for each gas to optimize the sensor's response in the environment.



The right choice for your Gas Detection application

Making the best decision for today

One product for toxic and combustible applications with global approvals

- Reduces inventory costs
- Reduces training costs
- Simplifies installation

Easy to install, commission and train your instrumentation workers

- Reduces start-up time
- Reduces labor associated with initial installation
- Reduces risk for installer error

Rock Solid sensing technology offers accurate and reliable detection

- Reduces the impact of environmental factors
- Improves safety factor of the facility

Advanced communication protocols offer detailed diagnostics data allowing for proactive maintenance and a safer environment

- Offers flexibility in developing your gas detection system through industry standard communication protocols
- Increases safety by allowing improved access to real-time information on the detector status and environment
- Incorporation of a SIL-2-rated device into your facilities' operation for industry validated best-in-class performance

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Making the best decision for tomorrow

Ability to incorporate new sensing technology in the future

- Future proof plug-and-play design allows all future sensing technologies from Scott to easily integrate into the Meridian gas detector

Ability to seamlessly incorporate new communication protocols

- Stay current on industry trends and take advantage of new industry standard communications protocols as they become available on the Meridian gas detection platform—another example of future proof design

Reduce maintenance time and cost associated with sensor calibration

- Innovative sensor design allows for bench calibration and range invariant calibration for toxic sensor, which optimize ongoing maintenance workloads and offer significant cost savings
- Scott Global Service network and Scott Plus warranty system

Reduce cost, waste and environmental impact with an environment-friendly sensor design

- Commit to green technology initiatives and environmental stewardship

Communication Protocols:

Designed for global use, the Meridian universal gas detector supports industry standard protocols for integration into any industrial network. Support for digital protocols allows for advanced diagnostics data to be available, making it possible to take proactive measures to maintain a safe environment and lowering your overall cost of ownership.

- Standard, wired protocols
 - 4–20 mA
 - Modbus
- Optional protocols
 - WiredHART



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Product specification

Certifications

Global Approvals	IECEX, cCSAus, ATEX, INMETRO, EURASIAN CUSTOMS UNION*, CHINA EX*, CCCF*, RCM*, INDUSTRY CANADA, CE, MARINE DIRECTIVE SHIP'S WHEEL, ABS, SIL-2 (Third Party Certification by TUV-Rheinland)
Area Classification	Class I Div. 1 Group ABCD, Class II Div. 1 Group EFG, Class III Equipment Group I/II, Zone 0/20 & Zone 1/21, IIC

Environmental

Operating Temperature	-40° to 75° Celsius
Humidity	5–95% RH (non condensing)
Storage Temperature	-55° to 75° Celsius

Specifications

Power	2 wire, 3 wire, 4 wire
Operating Voltage 3/4 wire	10-30 VDC (24 VDC nominal)
Operating Voltage 2 wire	18-30 VDC (24 VDC nominal)
Power Consumption	2.2 - 3.2 Watts based on sensor configuration Add 2.6 Watts to any configuration if heated display is used
Enclosure Material	Copper-free aluminum, 316 stainless steel
Enclosure Ingress Protection	NEMA 4X, IP66
Terminal Junction Box Material	Copper-free aluminum, 316 stainless steel
Terminal Junction Box Conduit Connection	3/4" NPT (M20 adapter available)
Communication	4–20 mA, MODBUS; Optional HART
Maximum 4–20 loop load, OHMS (@24 VDC)	680 Ohms current source 680 Ohms current sink
Alarms	3 programmable alarms with set and reset (adjustable deadband); 1 fail safe system fault
Relays	4 Form C relays, rated 5 Amp at 30 VDC/240 VAC, resistive loads
Display	Graphical LCD display visible in bright sunlight. Display indicates Sensor Name, Gas Name, Full Scale of Range, Gas Concentration, Fault, Alarm Status, Trend Graph with selectable time scale showing current reading, set points and full scale. Display provides simple, intuitive calibration instructions and guides user through the calibration process.
Languages	English, Portuguese, French, Spanish, Chinese, Russian
User Configuration Control	Transmitter GUI, HART hand-held Communicator, MODBUS
User Interface Access Control	Transmitter provides controlled access to sensor range, alarm settings and other safety functions; password protection for secure configuration control
Memory	Non-volatile memory ensures configuration parameters are retained in the event of power loss

Sensor specifications

Sensor Types	Combustible: Catalytic bead Electrochemical: Standard and Scott Rock Solid sensors
Number of Sensors	Supports up to 3 sensors per detector

Installation

Weight	Aluminum enclosure: 6.5 lbs (3 kg); Stainless steel enclosure: 11 lbs (5 kg)
Wiring	Detector accepts industry standard 2-wire, 3-wire or 4-wire inputs

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