

Ultima MOS-5 Intelligent Hydrogen Sulfide Sensor

Microprocessor-based transmitter designed for use with Metal Oxide Semiconductor (MOS) sensor

Suitable for use in SIL 3 systems and approved by FM and CSA, the Ultima MOS-5 Sensor detects ppm levels of hydrogen sulfide (H₂S), providing status indication and alarm outputs. Features include one-person calibration, event logging via HART, wireless capability, and four operating modes. With high tolerance for a broad range of temperatures, humidity levels and short-term high H₂S concentrations, the Ultima MOS-5 Gas Sensor is ideal for use in oil and gas applications, chemical plants and many other industrial applications.

Highlights of the Ultima MOS-5 Sensor:

- Robust construction, proven for use within extreme environments
- Precise and reliable MOS sensor is highly selective; unaffected by many gases commonly present in plant environments
- User self-calibration: simply activate magnetic switch and apply gas—no special tools or area declassification are required
- Reduced use of H₂S calibration gas and personnel time required to perform routine maintenance saves time and money
- Suitable for use in SIL 3 systems and approved by FM and CSA
- Functions within wide range of ambient temperatures and high humidity
- Two-year product warranty, including long-life MOS sensor

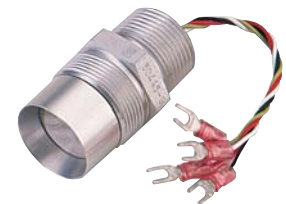
Features

Intelligent Sensor

- Detection ranges (0-20 ppm, 0-50 ppm and 0-100 ppm) enable wide range of applications
- 4-20 mA output is the industry standard for remote alarm and fault indication
- HART and Modbus communication provide complete status and control capability
- Warning, alarm and fault relays provide local alarm capability
- Remaining sensor life indication reduces downtime by providing estimate of remaining sensor life
- Calibration, calibration check and setup modes simplify operation and maintenance
- Event logging stores fault, gas check, calibration, and alarm event history

H₂S Sensor & Accessories

- Solid-state operation functions within harsh environments
- High selectivity—does not respond to hydrocarbons—enables low false alarm risk
- Unaffected by over-range exposure, reducing the need for sensor replacement
- Robust mechanical design is vibration- and shock-resistant
- Resistance to high humidity and range of ambient temperatures makes sensor suitable for worldwide use
- Specific sensors meet ISA-92.0.01 performance standard



System Specifications	
SENSOR TYPE	Continuous diffusion, adsorption type Metal Oxide Semiconductor (MOS)
SENSOR LIFE	3 to 5 years typical
REPEATABILITY	±2 ppm or 10% of applied gas, whichever is greater
RESPONSE TIME	T50: 5-10 seconds (nominal) of full scale with full scale gas applied
MEASURING RANGES	0-20 ppm, 0-50 ppm 0-100 ppm
MODES	Calibration, calibration check, setup, operating
ELECTRICAL CLASSIFICATION CSA/FM	Class I, Division 1, Groups B, C & D; Class I, Zone 1 IIB+H2, T6, Type 4X (Tamb = -40°C to 60°C)
ATEX	EEx d IIB+H2, T5 II2G, IP66 (Tamb = -40°C to 70°C)
WARRANTY	2 years
APPROVALS	ATEX, CSA, FM, CE Marking, HART-registered, SIL 2 and 3 suitable*, FM certified to IEC 61508
STANDARD PART NUMBER	MOS5-10011 0-100 ppm H ₂ S, 4-20 mA output, w/o relays or Modbus; FM, CSA, ATEX approvals

H2S Sensor Specifications	
TYPE	Metal Oxide Semiconductor (MOS)
RESPONSE TIME	With wire screen flame arrestor: T ₅₀ ≤ 10 seconds With sintered stainless steel flame arrestor: T50 ≤ 30 seconds On application of full scale gas according to ANSI/ISA-92.0.01
TEMPERATURE RANGE CSA FM	-40°F to 167°F (-40°C to 75°C) -40°F to 140°F (-40°C to 60°C)
LIFE	3 - 5 years
ELECTRICAL CLASSIFICATION	Class I, Div. 1, Groups B, C, and D; Ex d IIC
WARRANTY	2 years

Environmental Specifications	
OPERATING TEMPERATURE RANGE ELECTRONICS STD. SENSOR (FM) STD. SENSOR (ATEX)	-40°F to 167°F (-40°C to 75°C) -40°F to 167°F (-40°C to 75°C) -40°F to 158°F (-40°C to 70°C)
STORAGE TEMPERATURE RANGE	-58°F to 185°F (-50°C to 85°C)
OPERATING HUMIDITY RANGE	5% to 100% RH, non-condensing

Mechanical Specifications	
LENGTH	6.4" (161 mm)
HEIGHT	3.4" (86 mm)
WIDTH	4.1" (104 mm)
WEIGHT	5.5 lbs. (2.5 kg)
MOUNTING HOLES	5.0" (127 mm) (center to center)

Electrical Specifications	
INPUT POWER	24 VDC nominal, 20 to 36 VDC 350 mA max.
RELAY RATINGS (OPTIONAL)	8A @ 250 VAC / 8A @ 30 VDC res. max. (3x) SPDT - Warning, Alarm and Fault
ANALOG SIGNAL MALFUNCTION GAS CHECK/CAL SETUP MODE ZERO READING 0-100% SCALE OVER-RANGE	0-20 mA (650 ohms max. load) 0 mA** 1.5 mA*** 1.5 mA*** 4 mA + 0.2 mA 4-20 mA 20-22 mA
RFI/EMI PROTECTION	Complies with EN50270, EN61000-3-2, EN61000-3-3
STATUS INDICATORS	3-digit LED display with gas concentration, Warn and Alarm LEDs, calibration prompts, fault codes, and setup options
RS-485 OUTPUT (OPTIONAL)	Modbus RTU, suitable for linking up to 128 units or up to 247 units with repeaters
BAUD RATE	2400, 4800, 9600, or 19200 BPS
HART (OPTIONAL)	HART 6, HART Device Description Language available. AMS Aware
FAULTS MONITORED	Calibration error, sensor heater error, low DC supply, EEPROM, EPROM, setup error, gas check time exceeded, switch input error, internal errors
CABLE REQUIREMENTS	3-wire shielded cable. Max. distance between Ultima MOS-5 Sensor and power source or remote sensor @ 24 VDC nominal (20 ohm loop): 14 AWG - 2240 ft. (824 m) Max. distance for analog output (600 ohms max): 14 AWG - 8000 ft. (2400 m)

* Use in typical environments has a lower safety rating than in clean environments

** Under HART, current values can be either 3.5 mA or 1.25 mA, depending upon user selection

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