

# Model IR4000

Multi-Point Monitors for use with Model IR400 Point IR Gas Detector



General Monitors



## Applications

- Chemical plants
- Compressor stations
- Drilling and production platforms
- Fuel loading facilities
- Oil well logging
- LNG/LPG processing and storage facilities
- Refineries
- Wastewater treatment facilities



## Features & Benefits

- IR4000M can connect to as many as eight remote IR400 or IR5500 Detectors, operating as integrated gas detection systems with voting.
- IR4000M onboard data concentrator reads status for up to eight devices at once with one command, useful in large, multi-point systems.
- IR4000M can calibrate, gas-check and zero multiple IR400 Detector devices based upon a single command, providing ease of maintenance and accessibility.
- Explosion-proof enclosure and magnetic interface allows for installation and calibration within hazardous locations.
- Optional eight-amp relays expand system functions, potentially eliminating need for additional equipment such as a PLC.

## Description

The IR4000 Monitor is available in two options: Model IR4000S Single-Point Monitor and Model IR4000M Multi-Point Monitor. Both feature a three-digit LED display and user interface to Model IR400 point IR gas detector. The monitor allows local calibration and displays gas concentration. Both are housed in an explosion-proof junction box enclosure that can be installed in hazardous locations adjacent to the detectors.

Optional relays for both monitors provide output for Alarm, Warn, and Fault conditions occurring at each detector. Users can select operating mode, warn, and alarm setpoints via a magnetically activated switch. The relays are user-programmable as latching or non-latching, normally de-energized or normally energized. Latching relays can be reset via a remote reset input or via the magnetic switch.

Model IR4000M Multi-Point Monitor is a display, relay module, and a data concentrator. It provides monitoring and control functions for up to eight connected IR400 or IR5500 gas detectors. The highest current % LEL among all connected detectors is shown continuously during normal operation. In addition, IR4000M reads seven data items from each of the detectors connected to it, at least once per second. An extensive set of menus are navigated using a magnetic switch to request the status and configuration data stored by the IR4000M. In addition, more than 200 IR5500 and IR400 Monitor Modbus registers provide the greatest possible flexibility in reviewing current status data and settings, and configuring operating parameters. For example, the IR4000M can report % LEL data for all eight detectors with one command, which is useful in large multi-point systems.



The Safety Company

*Because every life has a purpose...*

System Specifications	
<b>CLASSIFICATION</b>	Class I, Divisions 1 & 2, Groups B, C, & D, Type 4X Class I, Zone 1, IIB + H <sub>2</sub> (Ta=-40° C to +75° C) Ex d, IIB + H <sub>2</sub> T5 Gb Ex tb IIIC, T100° C Db, IP66 (Ta=-60° C to +75° C)
<b>WARRANTY</b>	Two years
<b>APPROVALS</b>	ATEX, IECEx, CE, MED (IR4000S), DNV(IR4000S), FM 6310/6320 & CSA 22.2 No. 152 Performance approved HART registered (IR4000M) SIL 2 suitable (FM)
Environmental Specifications	
<b>OPERATING TEMPERATURE RANGE</b>	-40° F to +167° F (-40° C to +75° C)
<b>STORAGE TEMPERATURE RANGE</b>	-58° F to +185° F (-50° C to +85° C)
<b>OPERATING HUMIDITY RANGE</b>	10% to 95% RH, non-condensing
Mechanical Specifications	
<b>LENGTH</b>	6.5" (165 mm)
<b>WIDTH</b>	6.0" (152 mm)
<b>HEIGHT</b>	3.21" (82 mm)
<b>WEIGHT</b>	5.5 lbs (2.5 kg)
<b>MOUNTING HOLES</b>	5.05" (127 mm) center to center
<b>HOUSING</b>	Aluminum 6061-T6 alloy (cover) A356-T6 alloy (base) or 316 stainless steel

Specifications subject to change without notice.

Electrical Specifications	
<b>INPUT POWER</b>	IR4000M 20-36 VDC @ 100 mA max IR4000S 20-36 VDC @ 83 mA max 24 VDC nominal
<b>ANALOG SIGNAL</b>	0-21.7 mA (600 ohms max.-IR4000M) 0-21.7 mA (500 ohms max.-IR4000S) STARTUP, FAULT ( <i>non-HART</i> ) 0 mA STARTUP, FAULT ( <i>HART</i> )* 1.25 mA CAL, ZERO, GAS CHECK* 1.5 mA DIRTY OPTICS* 2.0 mA 0 TO 100% LEL 4 to 20 mA ( <i>proportional</i> ) OVER-RANGE 20 to 21.7 mA
<b>STATUS INDICATORS</b>	Three-digit LED display with gas concentration, Warn and Alarm LEDs, calibration prompts, fault codes, and setup options
<b>RELAY RATINGS (OPTIONAL)</b>	8 A @ 250 VAC / 8 A @ 30 VDC res. max. (3x) SPDT - Warning, Alarm & Fault
<b>RS-485 OUTPUT (OPTIONAL)</b>	Single Modbus (IR4000S) or dual redundant Modbus RTU (IR4000M), suitable for linking up to 128 units or up to 247 units with repeaters
<b>BAUD RATE</b>	2400, 4800, 9600, or 19200 BPS
<b>HART (OPTIONAL)</b>	HART 6, HART Device Descriptor available. AMS aware
<b>FAULTS MONITORED</b>	Re-calibration error, EPROM Checksum error, Optics failure / blockage; low supply voltage, EEPROM checksum error, reference or active lamp failure, heater failure, time to re-zero unit
<b>CABLE REQUIREMENTS</b>	Max. distance between IR4000 and power source @ 24 VDC nominal (20 ohm loop): 14 AWG (2.0 mm <sup>2</sup> ) – 2606 ft (794 m) Max. distance for analog output (500 ohms max): 14 AWG (2.0 mm <sup>2</sup> ) - 9000 ft. (2740m)
<b>WIRELESS COMMUNICATION</b>	Available with ELPRO Technologies wireless devices
<b>STANDARD CONFIGURATION</b>	<b>IR4000S-0-0-02-1-0-1</b> IR400 (methane, 0-20 mA, splash guard w/screen), no relays, aluminum  <b>IR4000M-0-0-00-1-0-1-1</b> No relays, no Modbus, detector sold separately IR400 (methane, 0-20 mA, splash guard w/screen), no relays, aluminum

\* Under HART, the analog output minimum level can be configured as 3.5 mA or as stated above, depending on user selection.

Note: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products. Specifications subject to change without notice.



ID 1465-06-MC / Dec 2015  
© MSA 2015 Printed in U.S.A.

Corporate Headquarters:  
**MSA**  
1000 Cranberry Woods Drive  
Cranberry Township, PA 16066  
United States  
+1-724-776-8600  
[info.us@MSAsafety.com](mailto:info.us@MSAsafety.com)

Design Center:  
**General Monitors**  
26776 Simpatica Circle  
Lake Forest, CA 92630  
United States  
+1-949-581-4464  
[info.gm@MSAsafety.com](mailto:info.gm@MSAsafety.com)

Additional locations can be found on our web site:  
[www.MSAsafety.com](http://www.MSAsafety.com)