Specifications and Ordering Information

3500/63 Hazardous Gas Monitor

Description

The 3500/63 Hazardous Gas Monitor is a six-channel monitor that is used as a safety-system element by providing levels of alarms based on the concentration of combustible gases. An alarm issued by this monitor indicates that the gas concentration is sufficient to cause personal safety concerns because of explosion or asphyxiation. It is designed for use with heated catalytic-bead gas sensors (Hydrogen and Methane) and indicates hazardous gas concentration as a percentage of the lower explosive level (LEL). The monitors can be utilized in either a simplex or redundant (TMR) 3500 Rack configuration..

The Hazardous Gas Monitor application is particularly suited for enclosed or confined spaces where combustible gases are used as fuels or are being handled, pumped or compressed. If a leak occurs, the gases may accumulate and reach a potentially explosive concentration. Detection and alarming on gas concentrations is critical for the protection of personnel in the area and for the protection of the equipment. Housings around natural gas fired industrial gas turbines, hydrogen pipeline compressors, or compressor doghouses are all examples of confined spaces where combustible gases could accumulate.

When used in a Triple Modular Redundant (TMR) configuration, Hazardous Gas Monitors must be installed adjacent to each other in groups of three. When used in this configuration, two types of voting are employed to insure accurate operation and to avoid single- point failures.

Specifications

Inputs

Signal:	3-wire heated catalytic bead, single-arm resistance bridge.
Sensor Constant Current (each sensor):	290 to 312 mA @ 23 °C 289 to 313 mA @ -30 °C to 65°C
Sensor OK Range:	Detects sensor and field wiring open circuits.
Sensor Cable Resistance:	20 Ù per bridge leg maximum
Input Impedance:	200 KÙ
Power Consumption:	7.0 Watts, typical.
External transducer Power	+24 Vdc +4 / -2 Vdc @ 1.8 A Minimum
Monitor Alarm Inhibit	Contact closure inhibits monitor alarms.
Voltage	+5 Vdc typical
Current	0.4 mA typical, 4 mA peak

Outputs

Front Panel LEDs

OK LED:	Indicates when the Hazardous Gas Monitor is operating properly.
TX/RX LED:	Indicates when the Hazardous Gas Monitor is communicating with other modules in the 3500 Rack.
Bypass LED:	Indicates when the Hazardous Gas Monitor or a channel in the monitor is in Bypass Mode.
Cal LED	Indicates that the Hazardous Gas Monitor is in either the Calibration mode or the Calibration Check mode.
Recorder Output	Applies to each channel
Current Output	4 to 20 mA representing 0 to 100% of monitor channel full scale.
Not OK / Bypass current	User Selectable
Compliance Voltage	12 Vdc maximum
Load Impedance	600 Ù maximum

Signal Conditioning

Specified at +25°C (+77°F).

Accuracy:	Within ±0.33% of full-scale typical, ±1% maximum.
Full Scale Range:	Maximum 100 LEL units.
Resolution:	0.0015%

Alarms

Alarm Setpoints:	Alert and danger setpoints can be set for the value measured by the monitor. All alarm setpoints are set using software configuration. Alarms are adjustable and can normally be set from 0 to 100% of full-scale for each measured value. The Hazardous Gas Monitor only has over alarm setpoints.
Alarm Accuracy:	Within 0.13% of the desired value
Alarm Hysteresis:	Fixed 0.5% full scale.
Alarm Time Delays:	Alarm delays can be programmed using software, and can be set as follows:
Alert:	From 1 to 60 seconds in 1 second intervals.
Danger:	From 1 to 60 seconds in .5 second intervals or to the minimum alarm time delay.

Proportional Values	Hazardous Gas LEL, Remaining Calibration interval

Environmental Limits

Operating Temperature:	-30°C to +65°C (-22°F to +150°F)
Storage Temperature:	-40°C to +85°C (-40°F to +185°F).
Humidity:	95%, noncondensing.

CE Mark Directives (Pending)

EMC Directives:

IEC 60533:	Radiated Emissions Conducted Emissions DNV Std for Cert 2.4 (3.14 & 3.15) ClassNK, Part 7, Chapter 1 (1.3)
EN50082-2:	Electrostatic Discharge EN 61000-4-2, Radiated Susceptibility EN 61000-4-3, Conducted Susceptibility EN 61000-4-6, Electrical Fast Transient EN 61000-4-4, Magnetic Field EN 61000-4-8,

Low Voltage Directives:

EN 61010-1	Safety Requirements

Hazardous Area Approvals

CSA-NRTL/C:	When used with Internal/External Termination I/O Module: Class I, Division 2, Groups A through D

Physical

Monitor Module

Dimensions (Height x Width x Depth):	241.3 mm x 24.4 mm x 241.8 mm (9.50 in x 0.96 in x 9.52 in).
Weight:	0.82 kg (1.8 lbs.).

I/O Modules

Dimensions (Height x Width x Depth):	241.3 mm x 24.4 mm x 99.1 mm (9.50 in x 0.96 in x 3.90 in).
Weight:	0.20 kg (0.44 lbs.).

3500 Rack Space Requirements

Monitor Module:	1 full-height front slot.
I/O Modules:	1 full-height rear slot.

Ordering Considerations

General

If the 3500/63 Hazardous Gas Detection Monitor is added to an existing 3500 Monitoring System, the following (or later) firmware and software versions are required:

3500/20 RIM Firmware - Revision L or later,
3500/22M
3500 Rack Configuration Software - Version 3.6 or later,
3500/01 Data Acquisition Software - Version 2.42 or later,
3500/02 Operator Display Software - Version 1.42 or later,
System 1™ Version 5.0 or later

External Termination Blocks cannot be used with Internal Termination I/O modules.

When ordering I/O Modules with External Terminations, the External Termination Blocks and Cables must be ordered separately.

Ordering Information

3500/63-AX-BX	(00 denotes a selection of None)
A: Input/Output Module:	**01** Internal Termination Catalytic Bead **02** External Termination Catalytic Bead
B: Agency Approvals:	**00** None **01** CSA-NRTL/C

External Termination Blocks

165902-01	3500/63 External Termination Block (Transducer, Terminal Strip Connectors).
165901-01	3500/63 External Termination Block (Transducer, Euro Style Connectors).

133892-01	3500/63 External Termination Block (Recorder, Terminal Strip Connectors).
133900-01	3500/63 External Termination Block (Recorder, Euro Style Connectors).
00580440	Connector Header, Internal Termination, 3 Position
00580445	Connector Header, Internal Termination, 9 Position
00580446	Connector Header, Internal Termination, 12 Position
164895-01	/O Module with External Terminations
166848-01	3500/63 Manual

CABLES

3500/63 Transducer (XDCR) Signal to External Termination (ET) Block Cable

134544-AXXXX-BXX

Option Descriptions

A: Cable Length	**0 0 0 5**	5 feet (1.5 metres)
	0 0 0 7	7 feet (2.1 metres)
	0 0 1 0	10 feet (3 metres)
	0 0 2 5	25 feet (7.5 metres)
	0 0 5 0	50 feet (15 metres)
	0 1 0 0	100 feet (30.5 metres)
B: Assembly Instructions	**0 1**	Not Assembled
	0 2	Assembled

3500/63 Recorder Signal to External Termination (ET) Block Cable

134543-AXXXX-BXX

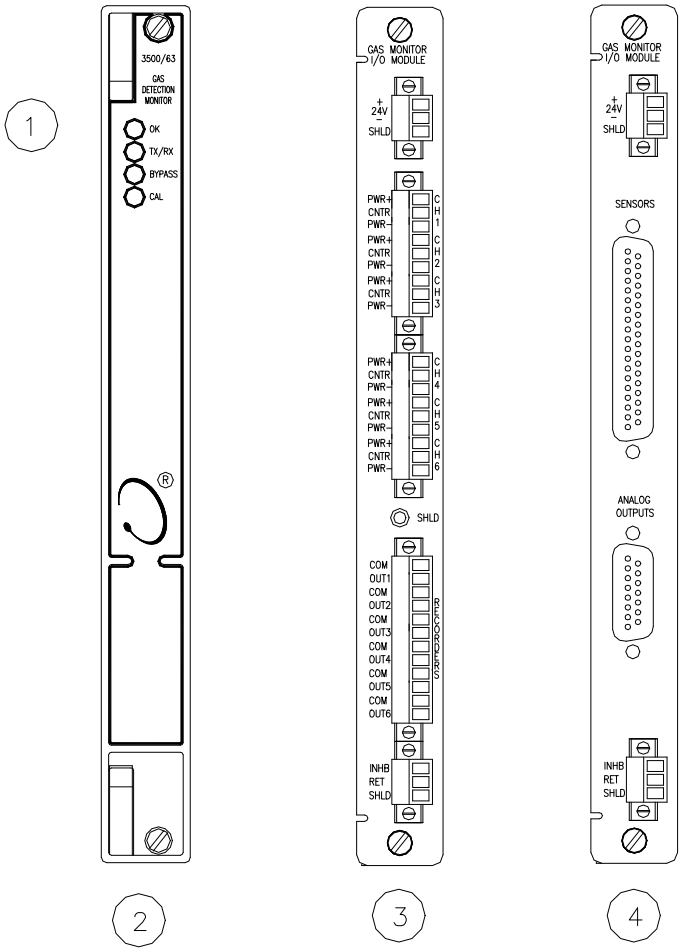
Option Descriptions

A: Cable Length	**0 0 0 5**	5 feet (1.5 metres)
	0 0 0 7	7 feet (2.1 metres)
	0 0 1 0	10 feet (3 metres)
	0 0 2 5	25 feet (7.5 metres)
	0 0 5 0	50 feet (15 metres)
	0 1 0 0	100 feet (30.5 metres)
B: Assembly Instructions	**0 1**	Not Assembled
	0 2	Assembled

Spares

163179-04	3500/63 Monitor
164578-01	I/O Module with Internal Terminations

Figures and Tables



1) Status LEDs
2) Main Module Front View
3) Internal Terminations I/O Module
4) External Terminations I/O Module

Front and rear views of the Hazardous Gas Monitor

All data is subject to change without notice