

Model

322

Multichannel Percent Oxygen Monitoring System

The Model 322 multichannel system monitors the concentration of percent oxygen (O_2) levels at one or more locations. Typical applications include life support, area monitoring, controlled environments, inert gas blanketing, and other situations that involve monitoring and safeguarding people and processes.

The Model 322 incorporates a "building block" concept that allows easy expandability. Model 322 systems can be as large or as small as needed—depending on the number of points that require monitoring. The system is easy-to-use and provides accurate, reliable monitoring of oxygen levels from 0-1% to 0-100%. Full scale ranges as high as 0-10 atmospheres partial-pressure O_2 are also available for hyperbaric applications.

System Design

A typical Model 322 system consists of:

- at least one control module
- one or more channel modules
- one or more oxygen probes

Each control module is a 19-inch relay rack mounted unit that holds up to 8 channel modules. The channel modules simply and easily plug into the control module, for easy upgrading in the field. Standard cabinets are available for 3-channel, 8-channel and 64-channel systems.

Each channel is an independent, self-contained instrument that connects to a separate oxygen probe



mounted at a remote location. Probes can be installed at any distance up to one mile from the control module.

Features

- 19" relay rack mounted control module accepts up to 8 plug-in channel modules
- Each channel module is a complete self-contained oxygen monitoring instrument
- System design makes it easy to add or remove channels for in-field upgrades
- Oxygen probes can be mounted up to one mile from the control module
- 0-1 VDC signal output
- 0-25% O_2 measuring range (others available)
- Patented Micro-Fuel Cell oxygen sensor
- Air calibration . . . no zero or span gases required
- Field-proven, reliable and durable

Options

- Analog meter readout
- Caution, high and failure alarms
- Power other than 110 VAC
- Multiple ranges (up to 3)
- Special ranges (as low as 0-1% O_2)
- Panel- or bulkhead-mounted cabinet for 3-channel system
- Table-top cabinet for 8-channel system
- Free-standing cabinet for 64-channel system
- Special oxygen probes

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The Control Module

The control module is the Model 322's standard housing that accommodates up to 8 channel modules. A Model 322 system utilizes as many control modules as necessary to contain the number of channels required. Only external AC power is required for the control module to be fully operational.

Standard and optional features of the control module are illustrated in Figure 1. The control module's integral audible alarm automatically actuates whenever any alarm condition exists on any of its 8 channels. Additional alarm capability offered on the control module also actuates whenever any of its 8 channels is in the corresponding alarm state (failure, no. 1 or no. 2).

If a meter is not desired on each channel, a meter common to all 8 channels is required on the control module.

The Channel Module

The channel module (see Figure 2) is the basic building block of the Model 322 system. Each channel module is a complete self-contained alarm/control oxygen monitoring instrument; a Model 322 system contains as many channel modules as required. Power is provided by the control module, and each channel becomes operational when plugged into the control module.

Standard and optional features of the channel module are illustrated in Figure 3. The push-to-display common meter indicator is located on the control module; optionally, an individual meter can be provided on each channel.



Figure 2 — Channel module

The standard channel module is provided with a single range of analysis (typically 0-25% O₂). Up to three switch-selectable ranges are optionally available. A standard 0-1 VDC analog signal output is furnished on all channel modules.

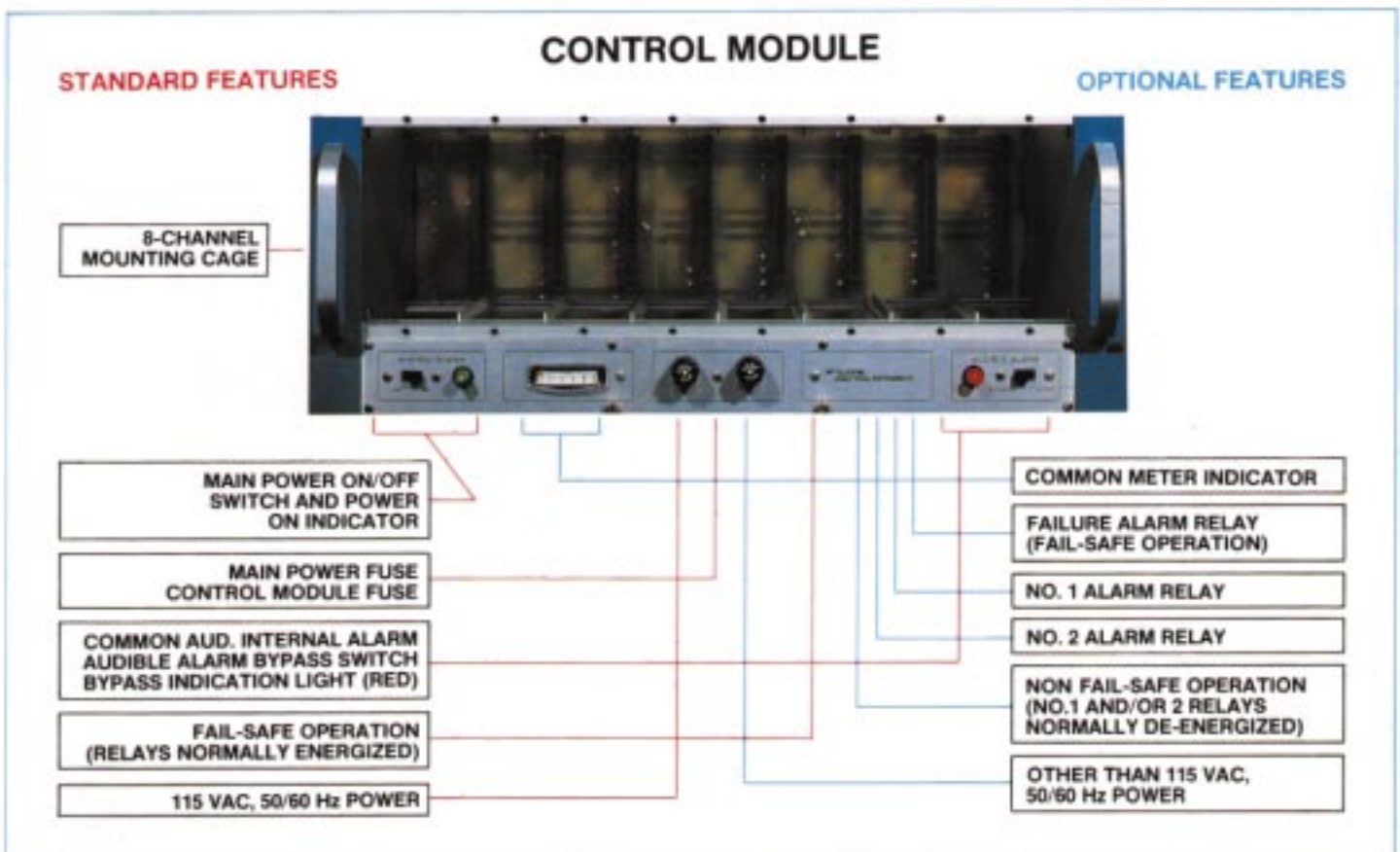


Figure 1 — Control module, features and options



Figure 4 — Oxygen probe and sensor

Oxygen Probe

Each channel module connects to a field-mounted oxygen probe. The milliamp signal from the probe allows mounting up to one mile from the channel module.

Probes are available for use in general purpose and hazardous areas. Special weather-resistant housings, flow-thru adapters, air aspirators, pump-driven sampling systems, remote calibration systems, and many other standard and custom probe assemblies are available. The standard probe is shown in Figure 4.

Maintenance-Free Sensor

Each probe contains Teledyne's patented* Micro-Fuel Cell sensor for the accurate measurement of oxygen concentration. The Micro-Fuel Cell is a sealed electrochemical device with no electrolyte to change or electrodes to clean, so it is virtually maintenance-free. The sensor is specific to oxygen and is capable of accurate analysis even in the presence of hydrocarbons. Also, because it has an absolute zero, no zero gases are needed for calibration.

Special Systems

In addition to standard features and options, Teledyne also provides special sensors, custom-engineered probes and complete monitoring systems to satisfy unique application requirements. Custom cabinets and other enclosures designed to precise specifications are also available. For example, standard enclosures are available for compact smaller systems (see Figure 5) as well as for larger systems up to 64 channels.

For a solution to your specific requirements, contact your local Sales Representative or Teledyne Analytical Instruments.



Figure 5 — 3-channel Model 132/322 bulkhead mounted system (panel mounted version also available)

*U.S. Patent Nos. 3,429,796 and 3,767,552

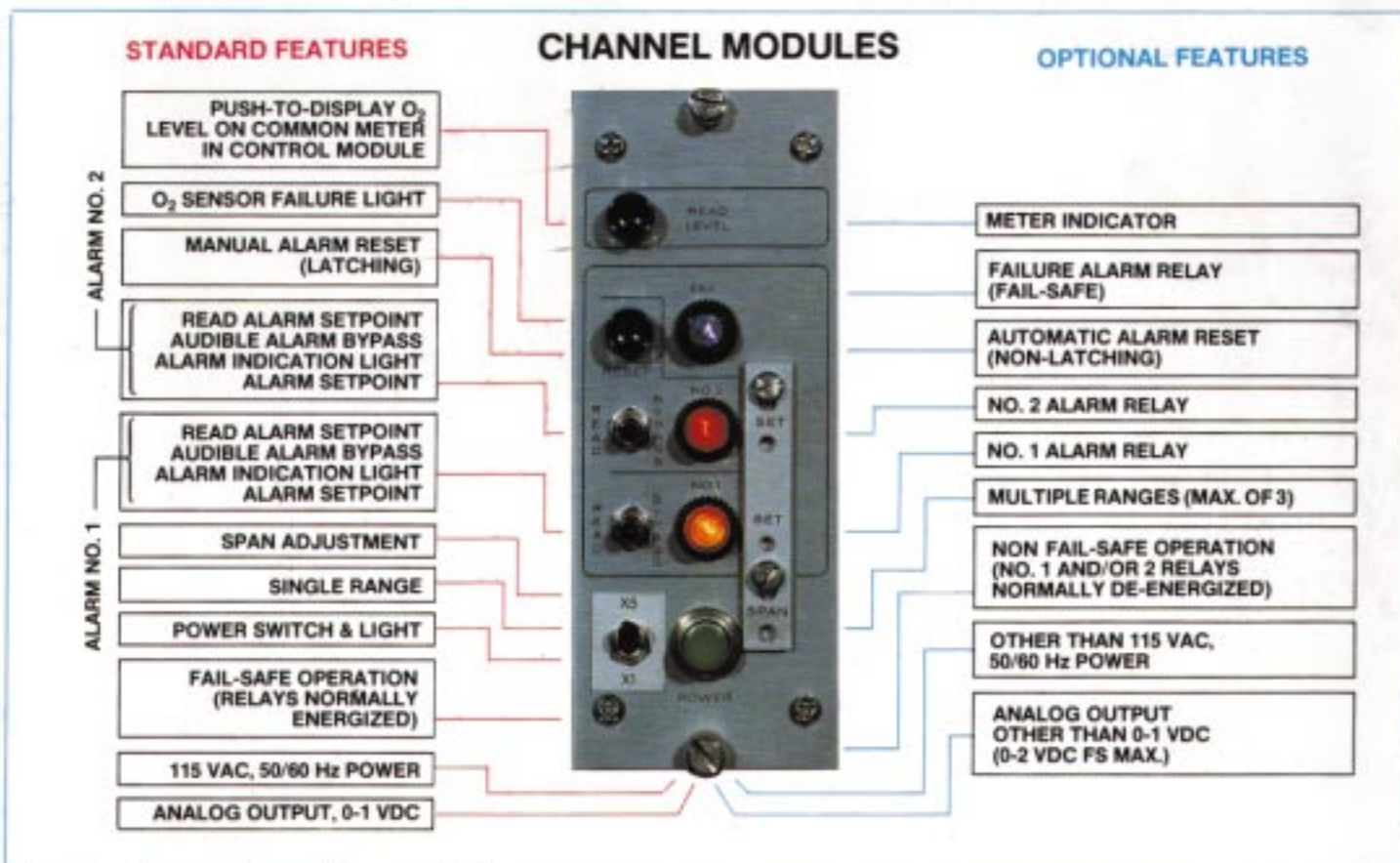


Figure 3 — Channel module, features and options

Specifications*

OXYGEN SENSOR

Operating principle:

Electrochemical (Micro-Fuel Cell)

Operating Temperature Range:

+32° F to +122° F (0° C to 50° C)

Sensitivity:

0.5% of full scale (fs)

Accuracy:

±2% of fs at constant temperature; ±5% of reading or ±2% of fs, whichever is greater, throughout the operating temperature range.

Response Time:

B-1 Cell—90% of fs in 7 seconds

B-3 Cell—90% of fs in 13 seconds

C-3 Cell—90% of fs in 30 seconds

Life Expectancy (in air):

B-1 Cell—8 months

B-3 Cell—12 months

C-3 Cell—18 months

Cell Warranty:

B-1 Cell—6 months

B-3 Cell—12 months

C-3 Cell—12 months

Oxygen Probe Mounting:

2 mounting holes, 3/16" dia.; 2-3/8" c-to-c (custom probes available for special applications)

SYSTEM

Measuring Range:

Any single range between 0-1% and

0-100% O₂—standard

Multiple ranges (up to 3)—optional

Operating Temperature Range:

g32° F to g122° F (0° C to 50° C)

Power Requirement:

115 VAC, 60 Hz (others available)

Maximum Power Consumption:

120W (8-channel system)

Optional Alarms:

Form "C" SPDT contacts rated at 5A, 115 VAC resistive.

User to specify latching or non-latching operation.

Indicator Lights:

25,000 hour rating

Analog Output:

0-1 VDC or less; 2 VDC fs max.

Maximum Distance Between Control Module and Probe:

Approx. one mile (16 gauge or larger size wire)

Field Connections:

Barrier-type terminal strips with screw connections

Weight (approx.):

Control module — 11 lbs (5 kg); Channel module —

2.7 lbs (1.2 kg); Oxygen probe — 0.3 lbs (0.1 kg)

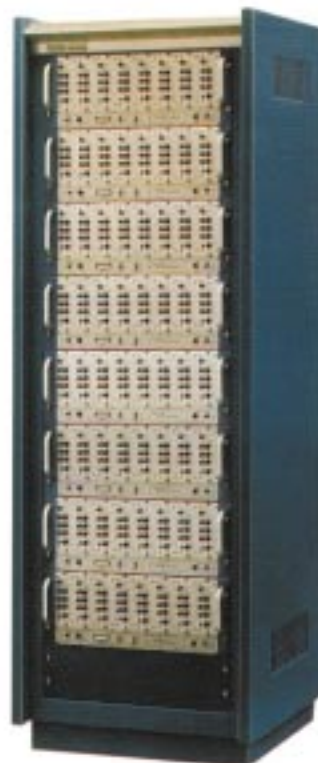
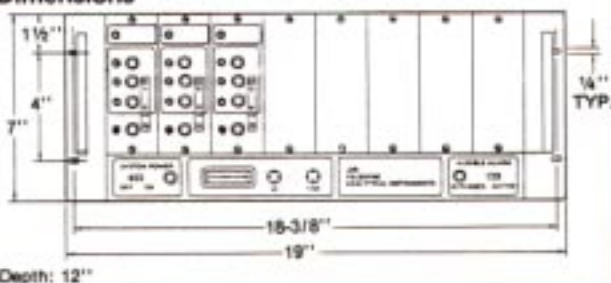


Figure 6 — 64-channel system

Dimensions



* Specifications subject to change without notice

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