

# General Specifications

# Model MG8G (General Purpose) Paramagnetic Oxygen Analyzer

GS 11P03A03-01E

## ■ GENERAL

The Model MG8G Paramagnetic Oxygen Analyzer measures the concentration of oxygen based on the fact that a magnet attracts gaseous oxygen. The sensor employs a magnetic proportional flow rate system, which has been developed based on our long and field-proven experience, providing improved and advanced performance. Whereas Zirconia Oxygen Analyzers cannot measure oxygen in flammable gas mixtures, the MG8G can measure oxygen concentration in flammable gas mixtures.

The converter is microprocessor based, to provide ease of use and self-diagnostics.

It can be used together with a sampling unit to measure oxygen in high temperature, high pressure, high dusty, or high-humidity process gas mixtures.



## ■ FEATURES

- **Long-life Sensor Regardless of Measurement Gas Types**

A clean auxiliary gas (N<sub>2</sub>), not process gas, is always flowing past the detection unit sensor. Therefore, a stabilized output can be obtained for a long period uninfluenced by contamination in the process gas or by corrosive gas.

- **90% Response within 3 sec**

Since a thermistor having high sensitivity and a high speed of response directly detects variations in an auxiliary gas, a response can be derived instantaneously. Moreover, since the thermistor does not come into contact with the process gas, a long service life and stable high-speed response can be obtained.

- **Structure with No Movable Parts**

Having no movable parts, the MG8G is excellent in seismic-proof property and shock resistance. Since the material along the process-gas flow path is made of JIS SUS316 stainless steel, it has excellent durability.

- **Interference-gas Compensation Function**

A flammable gas (such as H<sub>2</sub>) has a little magnetism, although their magnetism is very low compared to oxygen. This causes error in a paramagnetic oxygen analyzer to result in error.

However, the MG8G has a function to compensate for one type of interfering gas (or multicomponent gas having constant of its mixture ratio) using the differences in gas densities.

- **Easy Operation with Large Display**

The large display can display oxygen concentration, thermostat temperature of the detector, cell output, and so on. The analog bar graphs can indicate the analog output statuses for each range.

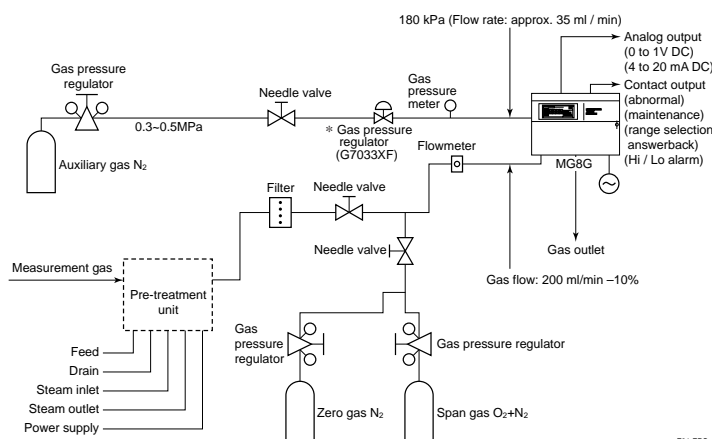
- **One-touch Calibration, Automatic Calibration for Labor-saving**

Calibration is enabled by only pressing the calibration button after turning on the calibration gas (zero/span gas) flow. Further, an automatic calibration mode is available if you need.

- **Multiple Self-diagnosis Functions**

Since five types of errors including cell error, analog error, and temperature error are clearly displayed, appropriate actions can be immediately taken.

## ■ BASIC SYSTEM CONFIGURATION



\* Gas pressure regulator for auxiliary gas is supplied as standard accessory with oxygen analyzer.

## STANDARD SPECIFICATIONS

Measurement Object: Oxygen concentration in gaseous mixture

Measurement System: Paramagnetic system

Measurement Range: 0-5 to 0-25 vol%O<sub>2</sub>  
3 ranges can be programmed arbitrarily within the above specified range.

Self-diagnostic content: Sensor unit error, Constant temperature chamber error, Analog error, Memory error, Calibration coefficient error

Analog output signal: 4 to 20 mA DC (load resistance: Maximum 550 Ω)

Contact output: Contact rating; 3 A at 250 V AC or 30 V DC, dry contacts

Fail; 1 point, open or closed when error occurs, user configurable

Contact is activated when sensor unit error, constant temperature chamber error, analog error, memory error, or calibration coefficient error (when automatic or semiautomatic calibration is enabled) occurs

Maintenance status; 1 point, closed during maintenance

Range answerback or high/low alarm; 2 points, normally deenergized (open)

Range answerback or high/low alarm contact output, user selectable

Operate solenoid valve: 3 points, Switching between zero and span calibration gas and measured gas.

Maximum load; AC 1A

Contact input:

Input specification; Contact ON: 200 Ω or less, Contact OFF: 100 kΩ or greater

Remote range switching; 2 points, Output ranges 1 to 3 can be switched by external contact signal.

Calibration start; 1 point, calibration start command by external contact signal.

Calibration methods:

- (1) Automatic calibration at set intervals by internal timer
- (2) Semiautomatic calibration started by external contact input
- (3) Manual calibration in the field

Calibration gas:

Zero gas; N<sub>2</sub> gas

Note: Zero gas should not contain O<sub>2</sub> gas with a concentration equal to or greater than 0.1% of the upper range value.

Span gas: Dry air (instrument air O<sub>2</sub>: 20.95 vol%) or standard gas containing O<sub>2</sub> gas with a concentration of 80 to 100 % of the span value (balance nitrogen).

Auxiliary gas pressure:

N<sub>2</sub>, 180 kPa (Approx. 35 ml/min)

Note: Auxiliary gas should not contain O<sub>2</sub> gas with a concentration equal to or greater than 0.1 % of the upper range value.

Measurement gas condition:

Flow; 200ml/min ± 10 %, The gas flow rate may be less than 200 ml/min depending on the composition of the measurement gas.

Temperature; 0 to 50°C

Humidity; No moisture condensation in the flow path or the sensor.

Warm-up time: Approx. 2.5 hours

Installation condition:

Ambient temperature; -5 to 55°C

Humidity; 10 to 95 %RH (No condensing)

Power supply: 100 - 115 V AC 50/60 Hz or 200 - 240 V AC 50/60 Hz

Power consumption: 100 - 115 V AC; Max. 110 VA, normally approx. 25 V  
200 - 240 V AC; Max. 125 VA, normally approx. 35 V

Materials in contact with gas:

SUS316 stainless steel, Fluorine-contained rubber

Line connection: Rc1/4

Conduit connection port: Ø27 hole

Installation: Indoor, panel or wall mounting

Structure: Dustproof, General purpose

Dimension: 406 (W) × 288 (H) × 216 (D) mm

Weight: Approx. 18kg

Characteristics

Repeatability: ±1% or less of F.S.

Linearity: ±1% or less of F.S.

Response time : 90% response within 3 sec. (from changing analog output at measured gas flow rate 200 ml / min.)

Zero drift: ±1.5% or less of F.S. / Week

Span drift: ±2% or less of F.S. / Week

Temperature drift: ±1.5% or less of F.S. / 10°C

Effects of measured gas flow rate: ±1% or less of F.S. for the rated flowrate ±10%

## MODEL AND SUFFIX CODE

Model	Suffix Code	Option	Specification
MG8G	-----	-----	Paramagnetic oxygen analyzer
Measurement range	-M	-----	0 - 5 to 25 vol% O <sub>2</sub>
Wetted material	A	-----	SUS316, Fluorine-contained
Power supply	-2	-----	200 - 240V AC, 50/60Hz
	-5	-----	100 - 115V AC, 50/60Hz
Auxiliary gas	-W	-----	N <sub>2</sub> gas
Flow rate of auxiliary gas	L	-----	Standard (35 ml / min)
Language	-J	-----	Japanese
	-E	-----	English
Auto calibration	-C	-----	available
Style code		*C	Style *C

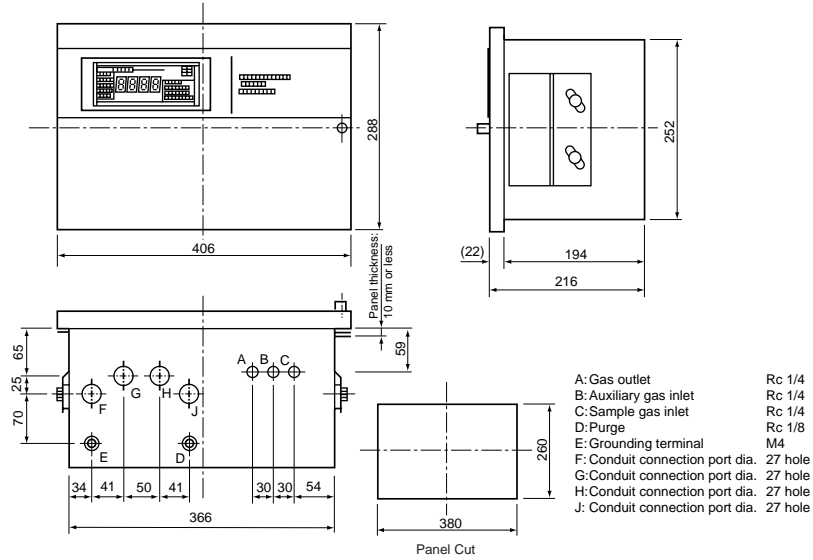
MST01.EPS

## STANDARD ACCESSORIES

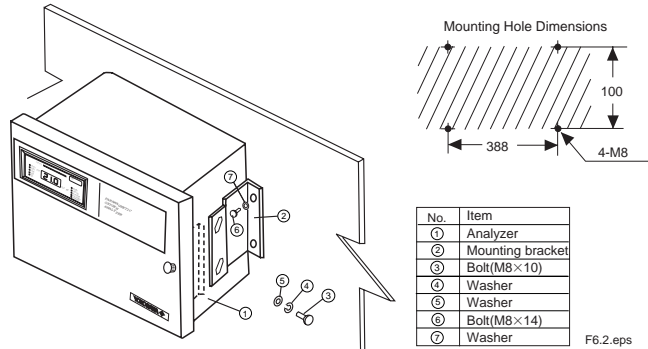
Item	Parts No.	Qty	Description
Fuse	A1111EF	2	250V 2A
Spanner	G7050YZ	1	for adjustment of sensor angle
Regulator	G7033XF	1	for Auxiliary gas
Mirror	K9320CC	1	for adjustment of sensor angle
User's Manual	-	1	

T01.EPS

**EXTERNAL DIMENSIONS**

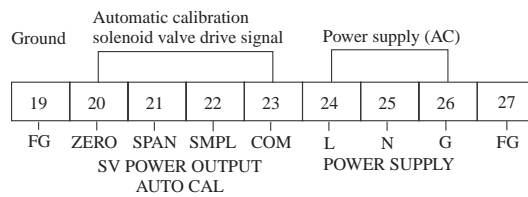
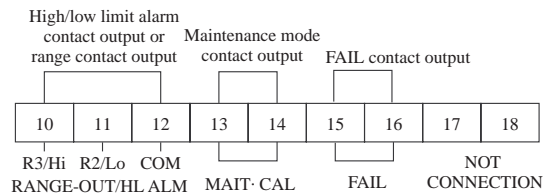
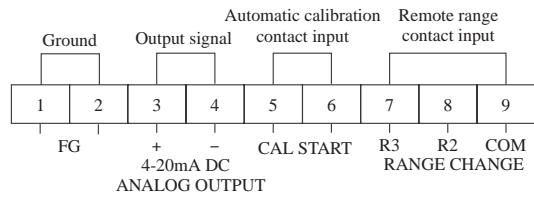


**Panel Mount**



**Wall Mount**

**WIRING CONNECTION**



F04.EPS

**Inquiry Sheet for the MG8G Paramagnetic Oxygen Analyzer.**

Please place checkmarks in the appropriate boxes and fill in the necessary information in the blanks.

1. General

Customer : \_\_\_\_\_  
 Tag No. : \_\_\_\_\_  
 Plant name : \_\_\_\_\_  
 Sampling point : \_\_\_\_\_

2. Utilities and Installation Conditions

Power supply :  V AC ± %, Hz± %  
                    V AC ± %, Hz± %  
 Air supply (instrument air) : pressure ..... kPa  
 Steam : pressure ..... kPa;  
           temperature ..... °C  
 Cooling water : temperature ..... °C  
 Distance between sampling point and analyzer  
                   : ..... m ;  
 Distance between analyzer and control panel  
                   : Approx. .... m ;

3. Process Conditions

Process Gas Component	Concentration (vol%)		
	Nor.	Max.	Min.
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
Process pressure (kPa)			
Process temperature (°C)			
Dust (g/Nm <sup>3</sup> )			
Water content <input type="checkbox"/> vol%, <input type="checkbox"/> °C, <input type="checkbox"/> °F Saturated			
Corrosiveness	<input type="checkbox"/> No <input type="checkbox"/> Yes		

T05.EPS

4. Installation Conditions

Temperature : Max. .... °C; Min. .... °C  
                   Max. .... °F; Min. .... °F  
 Corrosive gases :  Not present  Present .....  
 Vibration :  No  Yes .....  
 Location where the analyzer and sampling system are installed:  
 Indoors  Outdoors  Other \_\_\_\_\_

5. Scope of Estimate

Model MG8G Paramagnetic Oxygen Analyzer \_\_\_\_\_ / set  
 Auxiliary gas pressure meter \_\_\_\_\_ / set  
 Auxiliary gas cylinder  10 l  40 l \_\_\_\_\_ / set  
 Auxiliary gas pressure reducing valve \_\_\_\_\_ / set  
 Zero gas cylinder  10 l  40 l \_\_\_\_\_ / set  
 Zero gas pressure deducing valve \_\_\_\_\_ / set  
 Span gas cylinder  10 l  40 l  
                   Range of \_\_\_ to \_\_\_ vol% O<sub>2</sub> \_\_\_\_\_ / set  
                   Range of \_\_\_ to \_\_\_ vol% O<sub>2</sub> \_\_\_\_\_ / set  
 Span gas pressure reducing valve \_\_\_\_\_ / set  
 Spare parts for \_\_\_\_\_ year(s) \_\_\_\_\_ / set  
 Sampling probe (\*) \_\_\_\_\_ / set  
 Sampling system (\*) \_\_\_\_\_ / set

\* : Arrangements will be made separately.  
 Tokuchu sheet is required.