Product Data Sheet
PDS 103-755A.A01
January, 2003

Model 755A

Gaseous Oxygen Analyzer

- Canadian Standards Association-certified
- High resolution LED digital display
- Ideal for oxygen purity measurement
- Small, rugged, shock-resistant sensing unit
- Plug-in alarms/current output options
- Adjustable speed of response
- Barometric pressure compensation

The Model 755A gaseous oxygen analyzer from Rosemount Analytical provides continuous measurement of gaseous oxygen with the highest accuracy and reliability. The heart of this instrument is a compact paramagnetic sensing unit, designed to monitor a wide variety of ranges for virtually every application.

FEATURES

The Model 755A gaseous oxygen analyzer uses the physical paramagnetic measurement technique exclusively. This method offers distinct operating advantages over combination measurements, such as thermal conductivity, thermal convection or chemical reaction. Two advantages of this technique are: (1) faster response and, (2) linear detector output.

The 755A continuously measures from 0 to 1% to 0 to 100% oxygen with a resolution of 0.1% fullscale. Standard zero or suppressed zero is available with a range span as narrow as 1% and a zero suppression as large as 99%. Standard response time is 20 seconds.

In addition, the Model 755A includes an integral absolute pressure compensation circuit. This provides the user with an oxygen readout that is automatically corrected for barometric pressure variations. (See General Specifications.)

Housed in a NEMA-3R aluminum case, the analyzer is available with options for dual alarms and 0 to 20 mA or 4 to 20 mA current output. All optional features can be added at the factory or in the field with the simple addition of plug-in circuit boards. The paramagnetic sensing assembly is mounted on a platinum suspension for shock resistance. This assembly is designed for ease of maintenance and installation.

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PRINCIPLE OF OPERATION

The Model 755A measures the paramagnetic susceptibility of oxygen. This susceptibility is much higher than other common gases. When oxygen is present in a magnetic field, the oxygen tends to concentrate in the area of the magnetic field.

The Model 755A measures the total magnetic susceptibility of the sample. This total is almost entirely due to the oxygen present, so the measurement is an accurate indication of oxygen content.

The test body is mounted on a platinum suspension in a non-uniform magnetic field (see Figure 1). The magnetic force exerted upon the test body is proportional to the difference in the volume magnetic susceptibilities of the test body and the surrounding gas. If the gas is more paramagnetic than the test body, the magnetic force tends to repel the test body; and if the gas is less paramagnetic, the magnetic force tends to attract the test body into the magnetic field.

A diamond-shaped mirror is mounted on the platinum suspension and reflects light from the prefocused light source equally onto two photocells when the test body is in the neutral position.

When the volume magnetic susceptibility of the gas increases, a magnetic force is applied to the test body rotating it out of the field. The suspension mirror on the test body also rotates so that the photocells become unequally illuminated and, through the amplifier, apply feedback current to the test body. The electromagnetic force generated by the feedback current is opposite and almost equal to the magnetic force.

As a linear function of the oxygen concentration, this feedback current is easily converted to an analog output signal which is used for readout and recording purposes.

Barometric pressure has a pronounced effect on the calibration and operation of oxygen analyzers. These effects are much more pronounced on higher concentrations, especially when using suppressed ranges such as 99 to 100% oxygen. In the Model 755A, the analyzer exhaust port is usually vented directly into the atmosphere. Internal circuitry automatically corrects the oxygen readout for barometric pressure variations.

PHYSICAL SPECIFICATIONS

Case Mounting: Panel mounting (surface or stanchion accessory)

Case Classification: General purpose enclosure (CSA-certified) meets NEMA-3R

Air Purge (Optional): Type Z per ANSI/NFPA 496*

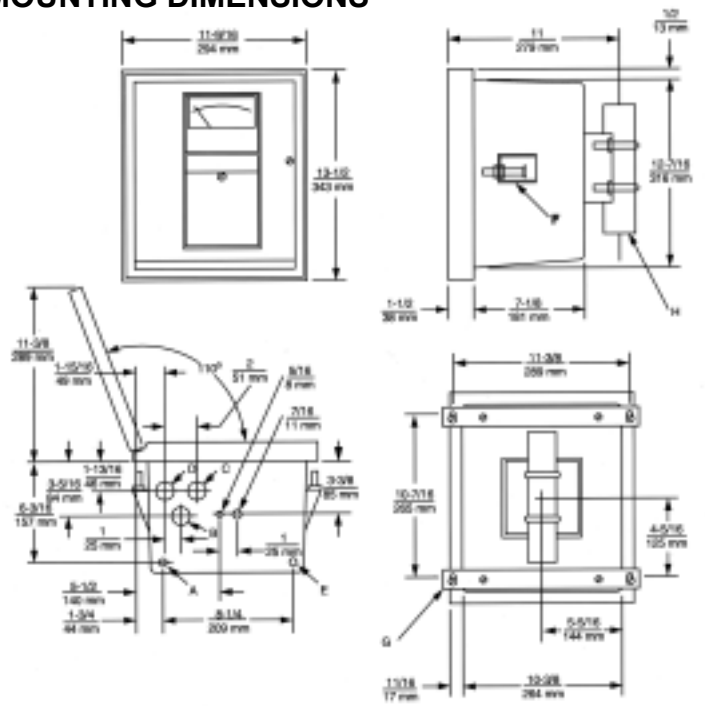
ALARM SPECIFICATIONS

Contacts: 2 independently adjustable relay contacts, SPDT relay
Adjustable: 1 to 100% fullscale
Contact Ratings: 5 A, 240 VAC resistive
5 A, 120 VAC, 28 VDC, resistive
Dead Band: Adjustable from 1 to 20% of fullscale

* When installed with user supplied components, meets requirements for Class I, Division 2 locations per National Electrical Code (ANSI/NFPA 70) for analyzers sampling non-flammable gases. Analyzers sampling flammable gases must utilize an explosion-proof enclosure or be protected by a continuous dilution purge system in accordance with standard ANSI/NFPA 496-1989, Chapter 8. Consult factory for recommendations.

OUTLINE AND MOUNTING DIMENSIONS

A. Inlet for optional purge (1/4-18 NPT)
B. 1-1/16 (27 mm) DIA or 3/4 conduit fitting recommended for alarm connections
C. 1-1/16 (27 mm) DIA for 3/4 conduit fitting recommended for signal output connections
D. 1-1/16 (27 mm) DIA for 3/4 conduit fitting recommended for power cable
E. Outlet for optional purge (1/4-18 NPT)
F. Bracket and hardware for panel mounting supplied (quantity two)
G. Wall mounting brackets 3/16 (5 mm) thick x 12-1/2 (318 mm) long and hardware (optional accessory kit)
H. Vertical or horizontal stanchion, mounting bracket and hardware for 2" (51 mm) pipe (optional accessory kit)
1. Recommended panel cutout, 10-9/16 (268 mm) wide x 12-5/8 (321 mm) high (1" [25.4 mm] max. panel thickness)
2. All dimensions are in Inches ±1/16 (2mm)



GENERAL SPECIFICATIONS

Digital Display: 0.00 to 100.00% oxygen

Output to Recorder: Any incremental span, selectable: 0 to 1, 0 to 2, 0 to 5, 0 to 10, 0 to 20, 0 to 50, or 0 to 100% oxygen within the overall range. Other spans available as special order

Reproducibility: ±0.01% oxygen

Response Time: (90% of fullscale) Adjustable from 5 to 25 seconds

Sample Flow Rate: Range 50 to 500 cc/min. Constant flow at 250 cc/min. ±20 cc/min. recommended

Inlet Pressure Range: 12.7 psia to 24.7 psia (88 kPa to 170 kPa)

Ambient Temperature Limits: Maximum: 120°F (49°C)
Minimum: -20°F (-29°C)

Sample Dryness: Sample dewpoint below 110°F (43°C), sample free of entrained liquids

Sample Temperature Requirements: 50° to 150°F (10° to 66°C)

Barometric Pressure Compensation: Oxygen readout automatically corrected to within ±1% of fullscale for barometric pressure variations within 3% of target value and to within ±2% of fullscale for barometric pressure variations within ±5% of target value. The target value may be set anywhere within range of 12 to 15 psia (83 to 103 kPa). Outlet vented to atmosphere

Zero and Span Drift: ±1% fullscale (±2% of fullscale for 99 to 100% range) per 24 hours provided that ambient temperature does not change by more than 20°F (11°C). ±2.5% fullscale per 24 hours with ambient temperature change over entire range

NOTE: 99 to 100% range specifications apply over temperature span of 40° to 100°F (4° to 38°C)

Materials in Contact with Sample Gas: Stainless steel, glass, titanium, Paliney No. 7**, epoxy resin, Viton-A***, platinum, nickel

Electrical:
Supply Voltage and Frequency:
115V ±10V, 50/60 Hz selectable when ordered
230V ±10V, 50/60 Hz

Power Consumption: 300 W maximum, 75 W nominal

Output: 0 to 10 mV, 0 to 100 mV, 0 to 1 V, 0 to 5 VDC (Isolated Current Output Optional: 4 to 20 mA, 0 to 20 mA)

Note: Intended Use – The Model 755 Series is intended for use as an industrial process measurement device only. It is not intended for use in medical, diagnostic or life support applications and no independent agency certifications or approvals are to be implied as covering such applications.

Specifications subject to change without notice.
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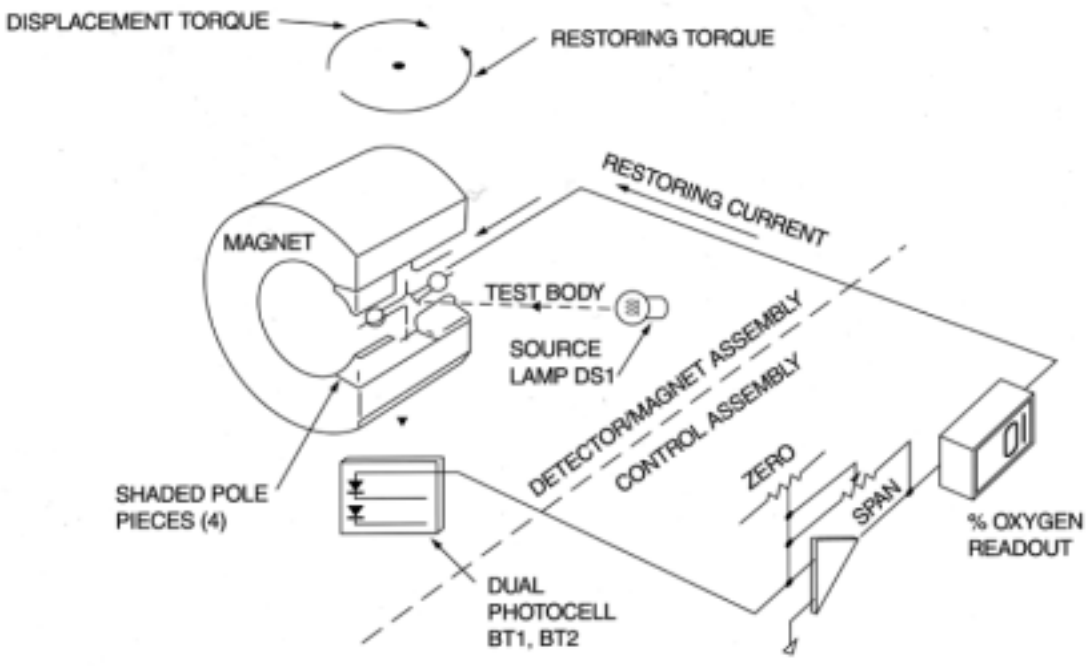
FIGURE 1



ORDERING INFORMATION

755A	MODEL 755A OXYGEN ANALYZER – DIGITAL METER

Code	Ranges
1 [1]	0-0-100% Oxygen on Display (Recorder Output can be selected for any full scale span of 5%, 10%, 20%, 50%, or 100% using any zero offset) [5]
2	0.0-100% Oxygen on Display (Recorder Output span of 5% or greater for zero based ranges)
9	Special

Code	Corrosion Resistance
1	Standard Detector
2	Detector with rhodium plated current loop [3]
3	Detector with stainless steel tubing [4]
4	Detector with rhodium plated current loop and stainless steel tubing
09	Special

Code	Output
01	Voltage: 0-10 mV, 0-100 mV, 0-1 V or 0-5 VDC
02	Current: 0, 4-20 mA, Isolated
99	Special

Code	Alarm Relays
00	None
01	Dual
99	Special

Code	Case
01	General Purpose (NEMA-3R)
02	General Purpose W/ISA Type Z Purge [2]
03	General Purpose W/Tropicalization
04	General Purpose Purge W/Tropicalization
99	Special

Code	Operation
01	115V, 50/60 Hz
02	230V, 50/60 Hz
99	Special

Code	
00	Features as selected above
99	Special

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Notes: Pricing for the options listed above applies only when they are supplied as installed options on new instruments.
[1] Display recorder output of increments of less than 5% using any zero offset (add 5451).
[2] Flow or pressure indicator not supplied.
[3] Rhodium plated current loop used when sample stream contains chlorinated hydrocarbons/chlorine.
[4] Stainless steel tubing used when sample stream contains chlorinated hydrocarbons, acids and H_2S.
[5] In order to deliver analyzer in a timely manner, please specify the uppermost range used in your application (i.e., 99-100%, 95-100%, etc.)

ACCESSORIES **(Order as separate line item)**

Part No.	Description
190365	Pipe Stanchion Mounting Kit
638661	Wall Mounting Kit
245364	Instruction Manual

MISCELLANEOUS PRODUCT INFORMATION

Mounting Dimension Drawing	632349
Schematic	617149
Product Information Bulletin	L71-755

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