


Explosion-Proof Gaseous Oxygen Analyzer

- Factory Mutual  Approved
Class 1, Div. 1, Groups B, C and D
- One sensing unit for all ranges
- Small, rugged, shock resistant
sensing unit
- Plug-in alarms/current output options
- Adjustable speed of response –
5 to 25 seconds



The Model 755EX Explosion-Proof Gaseous Oxygen Analyzer from Rosemount Analytical provides a 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 755EX Explosion-Proof Gaseous Oxygen Analyzer utilizes 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 Model 755EX offers range options varying from 0 to 1% to 0 to 100% fullscale, all accomplished with one versatile sensing unit.

Housed in an explosion-proof enclosure, the analyzer is (FM) approved for installation in Class 1, Groups B, C and D, Div. 1 hazardous areas. 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.

Standard response time is 20 seconds, but is adjustable from 5 to 25 seconds.

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PRINCIPLE OF OPERATION

The Model 755EX 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.

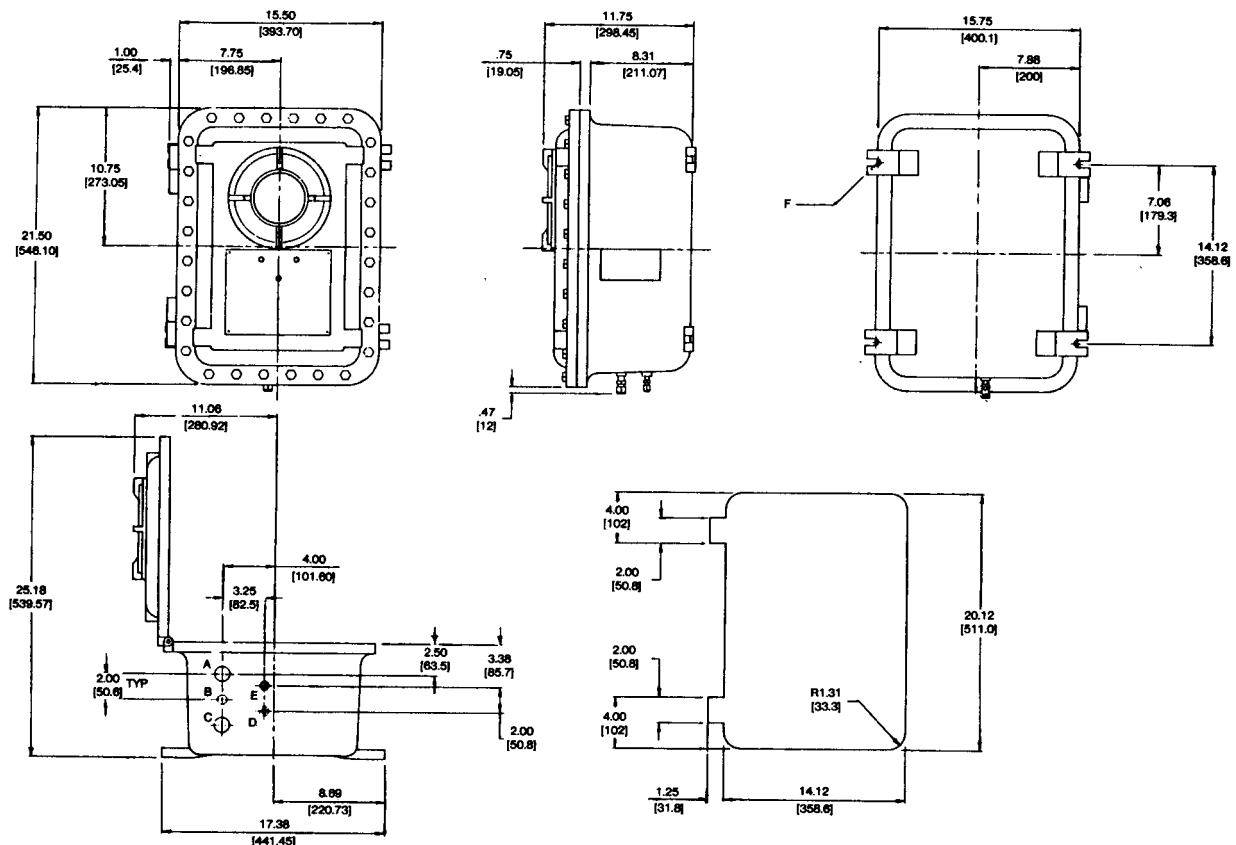
The Model 755EX measures the total magnetic susceptibility of the sample. This total is almost entirely due to the oxygen present, so the measurement is an accurate indication of oxygen content.

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 which 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, tending to rotate 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 electro-magnetic force generated by the feedback current is opposite and almost equal to the magnetic force. This current is a linear function of the oxygen concentration. The effect of this current is converted to an output that may be recorded for a permanent record of oxygen concentration.

OUTLINE AND MOUNTING DIMENSIONS – 755EX



- A. 1" - 11" (Conduit Supplied by Customer) Power Cable and Optional Alarm Cable.
- B. 1/2" Plugged Hole
- C. 1" - 11" (Conduit Supplied by Customer) Signal Output Cable.
- D. Sample Inlet - Combination Fitting for 1/8 (3.18 MM) O.D. Tubing.

- E. Sample Outlet - Combination Fitting for 3/8 (9.53 MM) O.D. Tubing.
- F. Recommended Wall Mounting Hardware Four (4) 1/2 (12.72 MM) Dia. Hex Bolts Supplied by Customer.

PHYSICAL SPECIFICATIONS

Explosion Proof Case: Class 1, Groups B, C, and D, Division 1. Factory Mutual Approved

Weight: 118.5 lbs. (53.75 kg) NEMA 7 rating

ALARM SPECIFICATIONS

Contacts: 2 independently adjustable relay contacts, SPDT relay

Adjustable: 1 to 100% fullscale

Contact Ratings: 5 Amps, 240 VAC Resistive
5 Amps, 120 VAC, 28 VDC, Resistive

Dead Band: Adjustable from less than 1% to 20% of fullscale

GENERAL SPECIFICATIONS

Range Options: 0 to 1, 0 to 2.5, 0 to 5, 0 to 10% fullscale,

0 to 5, 0 to 10, 0 to 25, 0 to 50% fullscale,
0 to 10, 0 to 25, 0 to 50, 0 to 100% fullscale,
0 to 1, 0 to 2.5, 0 to 5, 0 to 25% fullscale,
0 to 1, 0 to 5, 0 to 10, 0 to 25% fullscale

Reproducibility: $\pm 0.01\%$ oxygen or $\pm 1\%$ fullscale, whichever is greater

Response Time: Adjustable 5 to 25 seconds
(20 sec 90% of fullscale at 200 cc/min. typical)

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: 20° to 120°F
(-7° to 49°C)

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

Barometric Pressure Compensation: None

Zero and Span Drift: $\pm 1\%$ fullscale per 24 hrs. provided that ambient temp. does not change by more than 20°F (11°C).

$\pm 2.5\%$ of fullscale per 24 hrs. with ambient temperature change over entire range

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

Electrical:

Supply Voltage and Frequency:

120 V ± 10 V, 50/60 Hz selectable when ordered

240 V ± 10 V, 50/60 Hz

Power Consumption: 300 watts maximum, 75 watts nominal

Output: 0 to 10 mV, 0 to 100 mV, 0 to 1 V, 0 to 5 VDC
Optional: 4 to 20 ma, 0 to 20 ma
Isolated current output

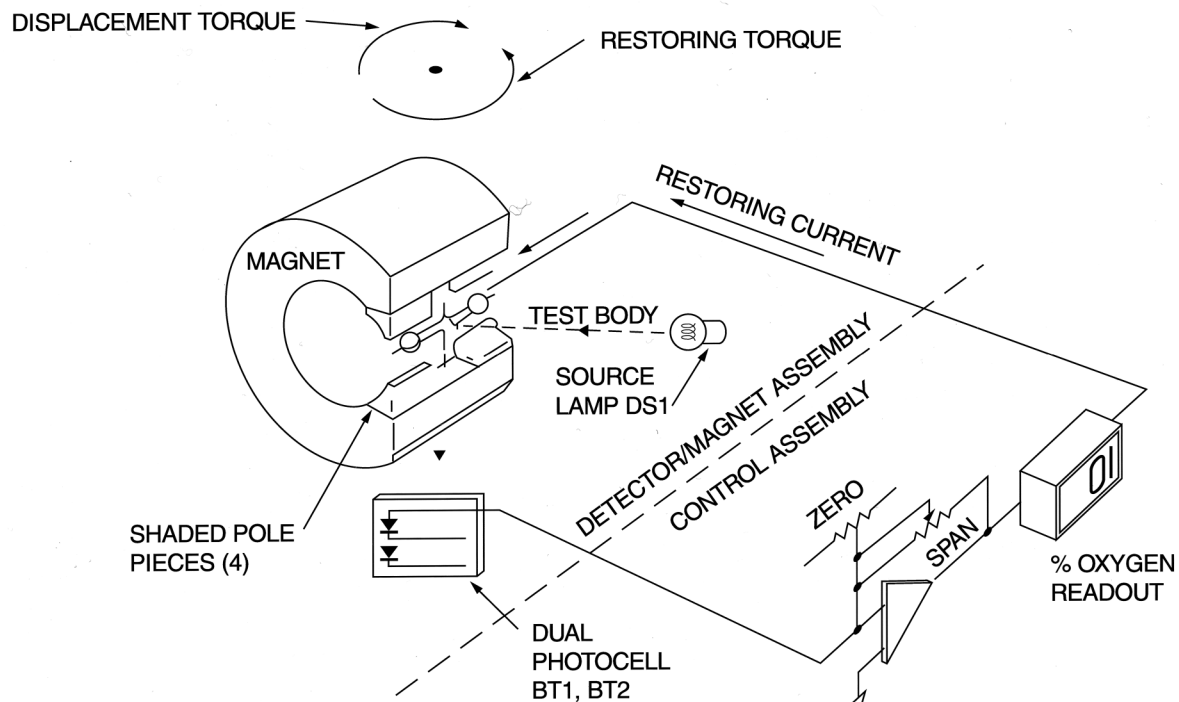
Note: Intended Use – The Model 755EX is intended for use as an industrial process measurement device only. It is not intended for use in medical, diagnostic, or life support applications, and no independent agency certifications or approvals are to be implied as covering such applications.

Specifications subject to change without notice.

* Paliney No. 7 is a registered trademark of J.M. Ney Co., Hartford, CT.

** Viton is a registered trademark of E.I. DuPont de Nemours & Co., Inc.

FIGURE 1



ORDERING INFORMATION

755EX MODEL 755 OXYGEN ANALYZER EXPLOSION-PROOF VERSION – ANALOG METER ³							
Code		Ranges					
1		0-1, 2.5, 5 and 10% full scale					
2		0-5, 10, 25 and 50% full scale					
3		0-10, 25, 50 and 100% full scale					
4		0-1, 2.5, 5 and 25% full scale					
5		0-1, 5, 10 and 25% full scale					
9		Special					
Code		Corrosion Resistance ¹					
1		Standard					
2		Detector with rhodium plated current loop ¹					
3		Detector with stainless steel tubing ²					
4		Detector with rhodium plated current loop and stainless steel tubing					
9		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		Class 1, Groups B, C, D, Division 1					
02		Class 1, Groups B, C, D, Division 1 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					
755EX	11	01	00	01	01	00	Example

Notes:

Pricing for the options listed above applies only when they are supplied as installed options on new instruments.

¹ Rhodium plated current loop used when sample stream contains chlorinated hydrocarbons/chlorine.

² Stainless steel tubing used when sample stream contains chlorinated hydrocarbons, H₂S and acids.

³ Factory Mutual (FM) Approved, Class 1, Groups B, C, D, Division 1.

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