

DF-110E Oxygen Analyzer

Standard Features & Specifications

Effective: April 2010

Performance

Accuracy: (at constant conditions)
The greater of +/- 3% Reading or 0.5% of Measurement Range, but not lower than 0.05% of Full Analyzer Range for 3 range analyzers

Response Time
Responds instantaneously to O₂ change
Typically less than 10 seconds to read 90% of a step change

Range
Ranges are available from 0-10 ppm to 25%

Ambient Operating Temperature
32° to 120° F (0° to 50° C)

Background Gas Compatibility
Standard Sensor:
All inert and passive gases including N₂, H₂, CO, freons, hydrocarbons, etc.
Sensor with Stab-EL Option
Neutralizes trace contaminants including acids such as CO₂, H₂S, Cl₂, NO_x, SO_x, etc. (Consult Delta F for concentration limits)

Gas Sample Conditions

Sample Pressure
Operating limits:
0.2 to 1.0 psig (1.03 to 1.08 Bar) - Standard
2.0 psi vacuum to 0.2 psig (.88 to 1.03 Bar) use pump
1.0 to 10 psig (1.08 to 2.72 Bar) use valve or regulator
Above 10 psig (2.72 Bar) use regulator
Sensor overpressure damage limit: 10 psig (1.7 BarA)

Return Pressure: Atmospheric Vent (optimal)
Limits +5 psig (1.36 BarA) to -5 psig (0.67 BarA)

Flow Rate: 0.5 to 1.5 SCFH (0.24 to 0.7 slpm)

Temperature (Gas Sample) 0° to 150° F (-17.8° to 66°C)

Moisture: No limits (avoid condensation)

Oil/Solvent Mist: < 0.5 mg/ft³ (standard)
> 0.5 mg/ft³ - use filter

Solid Particles: < 2 mg/ft³ (standard)
> 2 mg/ft³ use filter

Gas Flow System

Construction Materials: 304 and 316 SS

Gas Connections: 1/8" compression tube fittings

Construction

Weight: 6 lbs. (7 kg.)

Electrical

Power Input 115 VAC, 50/60 Hz or 230 VAC, 50/60 Hz

Output Signal 0-10 VDC (standard)
OR 0-1, 0-2, 0-5 VDC (optional)
Isolated 4-20 mA DC (optional)

Alarm Visual Electrolyte Condition (standard)

Alarms, optional Low Oxygen and/or High Oxygen (adjustable set-point, relay contacts only)

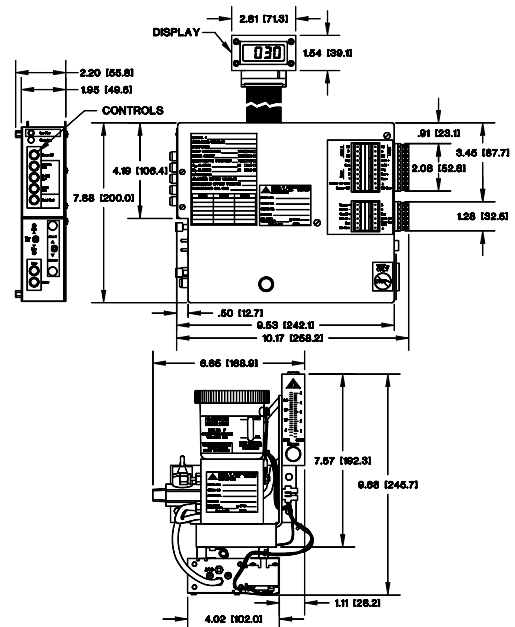
Alarm Relay Rating SPDT - 5 amps at 110 or 220 VAC
Failsafe Action

Indicators, optional Sensor Off, Remote Range
Low Flow (contacts only)
No Failsafe Action

Indicator Contact Rating SPST - 0.5 amps at 24 VDC
or SPTT - 0.5 amps at 24 VDC

Display: 3.5 Digit LCD
4.5 Digit LCD (range dependent)

Analyzer Components



DF-110E Oxygen Analyzer

Optional Equipment

Base Models

Single Range Analyzers

PPM Range	DF-110E Model
0 to 5,000	111E-5000
1,000	111E-1000
500	111E-500
100	111E-100
50	111E-50
10	111E-10

% Ranges	DF-110E Model
0 to 25%	111E-P25
10%	111E-P10
5%	111E-P5
1%	111E-P1

Three Range Analyzers

PPM Ranges	DF-110E Model
100/1,000/10,000	113E-10000
50/500/5,000	113E-5000
10/100/1,000	113E-1000
5/50/500	113E-500
1/10/100	113E-100

% Ranges	DF-110E Model
0.25/2.5/25 %	113E-P25
0.1/1/10 %	113E-P10
0.05/0.5/5 %	113E-P5

Base Options

110-S *Stab-El Acid Gas System*

110-220 *220 VAC Line Voltage* (110 VAC is standard)

Remote Choose only 1 Remote Option

110-RPC *Remote Pump Control*

Enables switch bank control of user supplied external pump
Power Capacity: 5W @ 110VAC (Remote Pump not included)

110-RCOBP *Remote Control of On Board Pump*

Permits control of on-board pump via external, user supplied, switch or Analyzer front panel. Switch Rating: 5W @ 110 VAC (On-board pump, 110-P, must be ordered separately)

110-N4RS *NEMA 4 Remote Sensor*

Includes remote sensor and flowmeter mounted in a NEMA4 enclosure

110-N7RS *NEMA 7 Remote Sensor*

Includes remote sensor mounted in a NEMA7 housing with an external flowmeter, H2 Rated (UL) Flame Arrestors

110-RSH *Remote Sensor Heater*

Plumbing

110-P *Pump with Down Stream Control Valve*

Diaphragm pump mounted on remote sensor bracket for negative pressures to 2.0 psi vacuum (0.88 Bar), or outlet vent back pressure to 3.0 psig (1.2 Bar)

110-GPR *Gauge Pressure Regulator*

Out-board 316 Stainless Steel Pressure Regulator, 3000 psig (208 Bar) inlet capacity; 0-10 psig (2.7 Bar) adjustable outlet pressure. Requires 5 psig (1.36 Bar) minimum inlet pressure

110-APR *Absolute Pressure Regulator*

Vacuum to 500 psig (35.5 Bar) inlet capacity; 4 psia to 25 psia (-10 to +10 psig) (0.32 Bar to 2.7 Bar) adjustable outlet pressure

110-FCV *Flow Control Valve*

Up stream control for pressures less than 10 psig (2.7 Bar)

110-FH *Filter Housing*

(Includes Standard Filter Element, SFE)

Options

Alarms

110-OAL *Oxygen Alarm – Low* (SPDT relay contacts)

110-OAH *Oxygen Alarm – High* (SPDT relay contacts)

110-2OAL *Oxygen Alarms – Low-Low* (Two 110-OAL)

110-2OAH *Oxygen Alarms – High-High* (Two 110-OAH)

110-OALH *Oxygen Alarms – Low-High* (110-OAL & 110-OAH)

Indicators

110-SOI *Sensor Off Indication* (SPST contacts only)

110-RRI *Remote Range Indication* (SPTT contacts only)

110-LFI *Low Flow Indicator* (SPST contacts only)

Outputs Choose 1 only of 110-SAOA, B, or C

110-SAOA *Special Analog Output 0 to 1 VDC*

110-SAOB *Special Analog Output 0 to 2 VDC*

110-SAOC *Special Analog Output 0 to 5 VDC*

110-420 *4 to 20 mA Isolated Output*

Miscellaneous

110-AD *Add Display* (Includes LCD Display and 10 foot cable)

110-GSF *Gas Scale Factor*

Permits meter read-out of O₂ in background gases having significantly different diffusivities compared to nitrogen, such as, He, H₂, or C₃ and heavier hydrocarbons

SFE *Standard Filter Element* (> 1 micron)

FFE *Fine Filter Element* (<1 micron)

DF E-Lectrolyte Blue Electrolyte

DF RSA Replenishment Solution