Environmental certification
- MCERTS SIRA certificate MC99000 1/00

User-friendly
- language options
- selectable system alarms
- comprehensive diagnostics
- includes reference air supply

Reliable
- steel enclosure
- NEMA 4X/IP66
- proven track record
Introduction

The ZDT Analyzer/Alarm Unit is a versatile microprocessor-based oxygen analyzer designed for combustion control and efficiency management. The Unit is used in conjunction with the high quality ABB zirconia oxygen probes.

The low temperature version of the ZDT is designed to operate with the ZFG2 low temperature oxygen probe – see separate data sheet SS/ZFG2.

The standard analyzer has high/low alarm relays and a single linear or logarithmic isolated retransmission. Display features include %O₂, cell temperature, heater control output, cell mV, alarm set points, calibration sequence diagnostics and output settings.¹

The analyzer provides oxygen readout with computation based on the probe mV signal. The mV output signal is Nernstian in form and follows the equation:

\[ E(\text{mV}) = 0.496T \left( \frac{P_0}{P_1} \right)^{\frac{1}{2}C} \pm C(\text{mV}) \]

Where

- \( T \) = Absolute temperature (°K)
- \( P_0 \) = Partial pressure reference \( O_2 \) (air)
- \( P_1 \) = Partial pressure sample \( O_2 \)
- \( C \) = Cell constant
- 0.0496 = Faraday's Gas Constant

Reference air for the ZFG2 probe can be supplied by an optional integral pump within the ZDT, or by external regulated instrument air. Flow rate of the integral pump is approximately 1 l/min⁻¹ (0.264 gallons min⁻¹).

Construction and Operation

The ZDT Unit is housed in a sheet steel enclosure, environmentally protected to NEMA 4X (IP66).

The analyzer is based on the proven 4600 Series transmitter with two-line display and four tactile membrane switches. The measured value display-line is a 5-digit, 7-segment green back-lit LCD while the information display-line is a 16-character, single-line, dot-matrix, green back-lit LCD.

The information display can be user-programmed for display in English, French, German or Spanish language.

The [ ] switch enables movement from the 'Operating Page' to the oxygen calibration sequence. Use of the appropriate security code allows further access to the pages for 'Set Up Outputs' and 'Electrical Calibration'. The [ ] switch is used to select the various programming pages while the [ ] and [ ] switches change programmable values.

In the Oxygen Calibration Page a User Code is required to proceed beyond the diagnostic information to the calibration sections.
Specification – Analyzer

Display

Measured value
- 5-digit x 7-segment back-lit LCD

Information
- 16-character, single line, dot matrix, back-lit LCD

Parameters
- %O₂ (0 to 25%)
- Cell temperature
- Cell mV

Two O₂ alarm set points – alarm 2 can be configured as a common failure alarm for any of the following:
- THC open circuit
- Cell under temperature
- Calibration failed
- Power failure

Accuracies

System accuracy *

Display resolution
- ±1 digit

Display
- ±2% of reading
- or ±0.1 O₂ whichever is greater

Retransmission
- ±2% of reading
- or ±0.1% O₂ whichever is greater

Error due to power supply variation
- Less than 0.1% for +6% –20% variation from nominal supply voltage

* ZDT Unit with a ZFG2 probe when calibrated against a certified test gas

Environmental Data

Operating temperature limits
- –5°C to 55°C (23°F to 131°F) all functions
- –20° to 70°C (–4° to 158°F) retransmission

Storage temperature limits
- –25° to 55°C (–13° to 131°F)

Operating humidity limits
- Up to 95% RH non-condensing

Power Supply

Voltage requirements
- 100 to 130V, 200 to 260V 50/60Hz

Power consumption
- 110VA

Insulation
- Mains to earth (line to ground) 2kV RMS

Outputs and Set Points

No. of relays
- Two

Relay contacts
- Single pole changeover
  - Rating: 250V AC 250V DC max.
  - Loading:
    - (non-inductive): 750VA 30W max.
    - (inductive): 75VA 3W max.

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Certification

MCERTS
- Sira certificate MC990001/00
Electrical Connections

ABB Supplied Conduit

User Supplied Cables

<table>
<thead>
<tr>
<th>Cable/Tubing Reference</th>
<th>Description</th>
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<tbody>
<tr>
<td>Cell output cable</td>
<td>16/0.2 laid-up red and blue twin copper braid with overall PVC sheath</td>
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<tr>
<td>Thermocouple cable</td>
<td>Ni Cr/Ni Al (Type K EN60 584.3)</td>
</tr>
<tr>
<td>Heater cable</td>
<td>Max. run 100m (328 ft.). Max. loop impedance 2Ω</td>
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<tr>
<td>Air tubing</td>
<td>¼ in. (0.64mm) OD x ½ in. (0.32mm) stainless steel, nylon or PVC tube (100°C [212°F] ambient max.)</td>
</tr>
</tbody>
</table>
Overall Dimensions – Analyzer

Dimensions in mm (in.)

- 4 x 9.5 OD (≈) holes for M8 fixing
- Fixing Centers
  - 227 (8.9)
  - 403 (15.9)
  - 463 (17.8)
- 252 (9.92)
- 150 (5.9)
- 5 (0.2)
- 133 (5.2)
System Schematic Diagram

A – Internal Reference Air Connection

B – External Reference Air Connection
### Ordering Information

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