MLT 2
Multi-Component Gas Analyzer

The MLT Series of gas analyzers from Emerson offer precise gas measurement analysis through its multi-component, multi-channel capabilities and supports various sensor and detector technologies, including:

- Infrared, Ultraviolet (NDIR, UV)
- Thermal conductivity detectors (TCD)
- Paramagnetic sensors ($pO_2$)
- Electrochemical sensors ($eO_2$)
- Chemiluminescence (CLD)
- Flame ionization detectors (FID)

The MLT 2 analyzer can measure up to five components and the measuring principles may be combined in a variety of combinations. Configured as a host analyzer to control an extensive measuring system or as a stand-alone unit, it is equipped with an LCD front panel with numerical and graphical measuring value indication.

All MLT 2 variations may be equipped with analog and or digital I/Os. The host analyzer I/O is available to all analyzer modules connected within the analyzer network. Upgraded with a CSA-C/US-approved Z purge pressurization system, the MLT 2 can be installed in Division 2 hazardous areas.

Applications

- Chemical process analysis and control
- Metallurgical process gas monitoring
- Furnace atmosphere measurements in hardening gas applications
- Process monitoring in coal/wood gasification
- Ambient air monitoring in chemical plants
- Continuous Emissions Monitoring Systems (CEMS)

Features

- Part of PlantWeb® field-based architecture and compatible with DeltaV™
- Multi-component analyzer with multi-channel capability (up to five channels in a single unit)
- Wall-mountable stainless steel IP 65 field housing (designed to meet NEMA 4 specs)
- High-performance micro-flow NDIR detector allows ranges as low as 0 to 10 ppm CO and 0 to 5 ppm CO₂
- Robust NDIR solid-state detector for higher ranges
- NDUV vacuum diode
- $O_2$: fast response paramagnetic or long-term stable electrochemical oxygen sensor
- Thermal conductivity cell
- Process-approved sensors with solvent-resistant, corrosion-resistant, intrinsically safe measuring cells, and stainless steel tubing available
- Additional options:
  - Integrated thermostat controlled compartment for physical components
  - Integrated sample handling system
  - Analog, digital and serial interfaces
  - Impact-tested front panel, magnetically operated
  - Autocalibration via internal or external valve block
  - Pressure and flow rate measurement
Specifications

Please contact your Emerson representative if your requirements are outside the specifications listed below. Improved performance, other products and material offerings may be available depending on the application.

Table 1 - Gases and Measuring Ranges

<table>
<thead>
<tr>
<th>Gas Components</th>
<th>Minimum Ranges</th>
<th>Maximum Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid (1)</td>
<td>CH₃COOH</td>
<td>0–2,000 ppm</td>
</tr>
<tr>
<td>Acetone</td>
<td>CH₃COCH₃</td>
<td>0–500 ppm</td>
</tr>
<tr>
<td>Acrolein (1)</td>
<td>C₃H₄O</td>
<td>0–2,000 ppm</td>
</tr>
<tr>
<td>Ammonia</td>
<td>NH₃</td>
<td>0–100 ppm</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>CO</td>
<td>0–10 ppm (2)</td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td>CO₂</td>
<td>0–5 ppm (2)</td>
</tr>
<tr>
<td>Chlorine (1)</td>
<td>Cl₂</td>
<td>0–1,000 ppm</td>
</tr>
<tr>
<td>Hexane</td>
<td>C₆H₁₄</td>
<td>0–300 ppm</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>H₂</td>
<td>0–1 % (2)</td>
</tr>
<tr>
<td>Hydrogen cyanide (1)</td>
<td>HCN</td>
<td>0–100 ppm</td>
</tr>
<tr>
<td>Mercury vapor</td>
<td>Hg</td>
<td>0–50 ppb</td>
</tr>
<tr>
<td>Methane</td>
<td>CH₄</td>
<td>0–300 ppm</td>
</tr>
<tr>
<td>Methanol</td>
<td>CH₃OH</td>
<td>0–1,000 ppm</td>
</tr>
<tr>
<td>Nitrogen dioxide</td>
<td>NO₂</td>
<td>0–10 ppm (2)</td>
</tr>
<tr>
<td>Nitrogen monoxide</td>
<td>NO</td>
<td>0–150 ppm</td>
</tr>
<tr>
<td>Nitrogen oxides</td>
<td>NOₓ</td>
<td>0–5 ppm</td>
</tr>
<tr>
<td>Oxygen</td>
<td>O₂</td>
<td>0–1 % (2)</td>
</tr>
<tr>
<td>Phosgene (1)</td>
<td>COCl₂</td>
<td>0–100 ppm</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>SO₂</td>
<td>0–25 ppm</td>
</tr>
<tr>
<td>Sulphur hexafluoride</td>
<td>SF₆</td>
<td>0–5 ppm</td>
</tr>
<tr>
<td>Water vapor (3)</td>
<td>H₂O</td>
<td>0–1,000 ppm</td>
</tr>
</tbody>
</table>

(1) Non-standard components require special calibration and linearization methods
(2) Non-standard specifications
(3) Dew point must not exceed ambient temperature

Table 2 - Electrical Specifications

<table>
<thead>
<tr>
<th>Input</th>
<th>Cable glands, internal terminals</th>
<th>Input voltage</th>
<th>93–132V AC and 196–264V AC, 47–63 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>120/230V AC, 50/60 Hz selected with internal switch</td>
<td>Input power</td>
<td>700V AC maximum, depending on configuration</td>
</tr>
</tbody>
</table>

Figure 2 - Standard front panel
Figure 3 - Magnetically-operated front panel with safety glass and tool
Table 3 - Performance Specifications

<table>
<thead>
<tr>
<th>Compliances</th>
<th>NDIR/UV</th>
<th>Oxygen Sensor (pO2 and eO2)</th>
<th>Thermal Conductivity (TCD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSA–C/US, EN 61326, EN 61010, NAMUR, PAC, C–Tick</td>
<td>≤ 1 % (^{(1)}) (^{(4)})</td>
<td>&lt; 1 % (^{(1)}) (^{(4)})</td>
<td>&lt; 1 % (^{(1)}) (^{(4)})</td>
</tr>
<tr>
<td>GOST: VNIIMS, Pattern (Belarus)</td>
<td>≤ 1 % (^{(1)}) (^{(4)})</td>
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<td>≤ 1 % (^{(1)}) (^{(4)})</td>
</tr>
<tr>
<td>Suitability tests</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TÜV Rheinland: CO/NO(_2)/NO2/NO/NOx acc. Ti Air, 13th BlmSchV and 17th BlmSchV EN 14181, EN 14956</td>
<td>3 s &lt; (t_{90}) &lt; 7 s (^{(1)}) (^{(3)}) (^{(5)})</td>
<td>≤ 5 s (^{(3)}) (^{(6)}) &lt; Approx. 12 s (^{(3)}) (^{(9)})</td>
<td>15 s &lt; (t_{90}) &lt; 30 s (^{(3)}) (^{(7)})</td>
</tr>
<tr>
<td>TÜV Nord:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring Components</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than 60 gases are detectable, e.g.: NO, NO(_2), SO(_2), CO, CO(_2), CH(_4), C(<em>6)H(</em>{14}), SF(_6), H(_2)O, N(_2)O, O(_2), NH(_3), R13a, H(_2), etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas connections for sample, reference or purge gas</td>
<td>MLT 2: 8 fittings, 6/4 mm PVDF</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Option: stainless steel 6/4 mm, 1/4''; for more options c.f.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection class of enclosure</td>
<td>IP 65 according to IEC 60529 (designed to meet NEMA 4) for outdoor installation to be protected against direct sunlight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permissible humidity (non-condensing)</td>
<td>&lt; 90 % rel. humidity at 20 °C (68 °F) &lt; 70 % rel. humidity at 40 °C (104 °F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 30–35 kg depending on configuration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Options</td>
<td>Integrated flow sensor and pressure sensors and thermostated box for physical components (standard 55 °C, optional up to 120 °C), integrated pump, fine dust filter with throttle, solenoid valve blocks, magnetically operated and impact tested front panel, pressurization systems for Division 2 (CSA–C/US)</td>
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(1) Related to full scale
(2) Related to measuring value
(3) From gas analyzer inlet at gas flow of 1.0 l/min (eletr. = 2 s)
(4) Constant pressure and temperature
(5) Dependent on integrated photometer bench
(6) Paramagnetic oxygen measurement (pO\(_2\))
(7) Depending on measuring range
(8) Pressure sensor is required
(9) Electrochemical oxygen measurement (eO\(_2\)), not for use with sample gas containing FCHC’s
(10) Higher ambient temperature (45 °C) on request
(11) Starting from 20 °C to +5° or to +40 °C
(12) Sensor/cell only
(13) Flow variation within ± 0.1 l/min
(14) Option “thermostated box” with temperature 55 °C

Performance Specifications

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Signal Outputs, Interface

SIO and DIO (Options)
- 2–8 analog signal outputs
  - SIO, optically isolated, sub-modular structure:
    - 0–10 V and 0–20 mA
      - \(R_x \leq 500 \Omega\)
    - 2–10 V and 4–20 mA
      - \(R_x \leq 500 \Omega\)
- 3 relay contacts (SIO, NAMUR):
  - Contact rating: 1 A, 30 V

Serial Interfaces (SIO, option):
- RS 232 C or RS 485

Digital I/Os (DIO, optically isolated, freely programmable from a list of commands):
- 8 digital inputs, 0–30 DC / 2.2 mA (for remote functions)
- 24 digital outputs, 5–30 DC/500 mA

Network
- FOUNDATION™ fieldbus
- LON (analyzer network)
Dimensions
The drawings below represent the minimum recommended installation guidelines for the MLT 2 Multi-Component Gas Analyzer. Please contact your Emerson representative for detailed installation recommendation of your application.

MLT 2 - Single Housing Version

MLT 2 - Dual Housing Version

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