



PRODUCT DATASHEET

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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)



MLT 2 Multi-Component Gas Analyzer

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
- O₂: 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

Gas Components		Minimum Ranges	Maximum Ranges
Acetic acid ⁽¹⁾	CH ₃ COOH	0–2,000 ppm	0–5 %
Acetone	CH ₃ COCH ₃	0–500 ppm	0–12 %
Acrolein	C ₃ H ₄ O	0–2,000 ppm	0–2 %
Ammonia	NH ₃	0–100 ppm	0–100 %
Carbon monoxide	CO	0–10 ppm ⁽²⁾	0–100 %
Carbon dioxide	CO ₂	0–5 ppm ⁽²⁾	0–100 %
Chlorine ⁽¹⁾	Cl ₂	0–1,000 ppm	0–100 %
Hexane	C ₆ H ₁₄	0–300 ppm	0–9,000 ppm
Hydrogen	H ₂	0–1 % ⁽²⁾	0–100 %
Hydrogen cyanide ⁽¹⁾	HCN	0–100 ppm	0–40 %
Mercury vapor	Hg	0–50 ppb	0–20 ppm
Methane	CH ₄	0–300 ppm	0–100 %
Methanol	CH ₃ OH	0–1,000 ppm	0–5 %
Nitrogen dioxide	NO ₂	0–10 ppm ⁽²⁾	0–5 %
Nitrogen monoxide	NO	0–150 ppm	0–100 %
Nitrogen oxides	NO _x	0–5 ppm	0–1 %
Oxygen	O ₂	0–1 % ⁽²⁾	0–100 % ⁽¹⁾
Phosgene ⁽¹⁾	COCl ₂	0–100 ppm	0–100 %
Sulphur dioxide	SO ₂	0–25 ppm	0–80 %
Sulphur hexafluoride	SF ₆	0–5 ppm	0–2 %
Water vapor ⁽³⁾	H ₂ O	0–1,000 ppm	0–10 %

(1) Non-standard components require special calibration and linearization methods

(3) Dew point must not exceed ambient temperature

(2) Non-standard specifications

Table 2 - Electrical Specifications

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

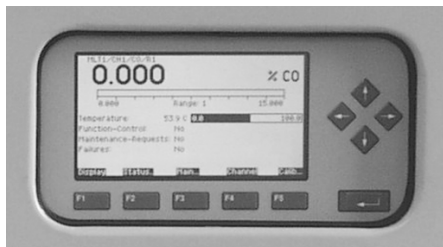


Figure 2 - Standard front panel

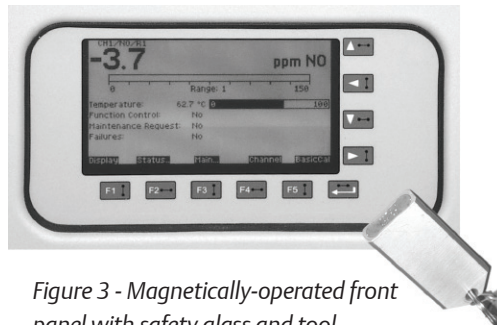


Figure 3 - Magnetically-operated front panel with safety glass and tool

Table 3 - Performance Specifications

	NDIR/UV	Oxygen Sensor (pO ₂ and eO ₂)	Thermal Conductivity (TCD)
Detection limit	≤ 1 % ^{(1) (4)}	< 1 % ^{(1) (4)}	< 1 % ^{(1) (4)}
Linearity	≤ 1 % ^{(1) (4)}	≤ 1 % ^{(1) (4)}	≤ 1 % ^{(1) (4)}
Zero-point drift	≤ 2 % per week ^{(1) (4)}	≤ 2 % per week ^{(1) (4)}	≤ 2 % per week ^{(1) (4)}
Span (sensitivity) drift	≤ 0.5 % per week ^{(1) (4)}	≤ 1 % per week ⁽¹⁾	≤ 1 % per week ^{(1) (4)}
Repeatability	≤ 1 % ^{(1) (4)}	≤ 1 % ^{(1) (4)}	≤ 1 % ^{(1) (4)}
Response time (t₉₀)	3 s < t ₉₀ < 7 s ^{(3) (5)}	≤ 5 s ^{(3) (6)} < Approx. 12 s ^{(3) (9)}	15 s < t ₉₀ ≤ 30 s ^{(3) (7)}
Permissible gas flow	0.2–1.5 l/min	0.2–1.0 l/min ⁽⁶⁾ /0.2–1.5 l/min. ⁽⁹⁾	0.2–1.5 l/min. ± 0.1 l/min
Influence of gas flow		≤ 2 % ^{(1) (4)}	≤ 1 % ^{(1) (4) (13)}
Maximum gas pressure	≤ 1,500 hPa abs. (≤ 7 psig)	Atm. pressure ⁽⁶⁾ /≤ 1,500 hPa abs. ⁽⁹⁾ (≤ 7 psig)	≤ 1,500 hPa abs. (< 7 psig)
Influence of temperature - At constant temperature - With pressure compensation ⁽⁸⁾	≤ 0.1 % per hPa (2) ≤ 0.01 % per hPa (2)	≤ 0.1 % per hPa (2) ≤ 0.01 % per hPa (2)	≤ 0.1 % per hPa (2) ≤ 0.01 % per hPa (2)
Permissible ambient temperature	+5 °C to +40 °C ⁽¹⁰⁾	+5 °C to +40 °C ⁽¹⁰⁾	+5 °C to +40 °C ⁽¹⁰⁾
Influence of temperature (at constant pressure) - On zero point - On span (sensitivity)	≤ 1 % per 10 K ⁽¹⁾ ≤ 1 % per 10 K ⁽¹⁾ ≤ 5 % (+5 to +40 °C) ^{(1) (11)}	≤ 1 % per 10 K ⁽¹⁾ ≤ 1 % per 10 K ⁽¹⁾	≤ 1 % per 10 K in 1 h ⁽¹⁾ ≤ 1 % per 10 K in 1 h ⁽¹⁾
Thermostat control ^{(12) (14)}	None	Approx. 55 °C ⁽⁶⁾ /None ⁽⁹⁾	Approx. 75 °C
Warm-up time ^{(12) (14)}	Approx. 50 minutes ⁽⁵⁾	Approx. 50 minutes ⁽⁶⁾	Approx. 50 minutes

(1) Related to full scale

(2) Related to measuring value

(3) From gas analyzer inlet at gas flow of 1.0 l/min (electr. = 2 s)

(4) Constant pressure and temperature

(5) Dependent on integrated photometer bench

(6) Paramagnetic oxygen measurement (pO₂)

(7) Depending on measuring range

(8) Pressure sensor is required

(9) Electrochemical oxygen measurement (eO₂), 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

Compliances	CSA–C/US, EN61326, EN 61010, NAMUR, PAC, C–Tick GOST: VNIIMS, Pattern (Belarus)
Suitability tests	TÜV Rheinland: CO/SO ₂ /NO/NO ₂ /O ₂ acc. TI Air, 13 th BlmSchV and 17 th BlmSchV EN 14181, EN 14956 TÜV Nord: FDA test: 0–10 ppm CO and 0–5 ppm CO ₂
Measuring Components	More than 60 gases are detectable, e.g.: NO, NO ₂ , SO ₂ , CO, CO ₂ , CH ₄ , C ₆ H ₁₄ , SF ₆ , H ₂ O, N ₂ O, O ₂ , NH ₃ , R13a, H ₂ , etc.
Gas connections for sample, reference or purge gas	MLT 2: 8 fittings, 6/4 mm PVDF Option: stainless steel 6/4 mm, 1/4"; for more options c.f
Protection class of enclosure	IP 65 according to IEC 60529 (designed to meet NEMA 4) for outdoor installation to be protected against direct sunlight
Permissible humidity (non-condensing)	< 90 % rel. humidity at 20 °C (68 °F) < 70 % rel. humidity at 40 °C (104 °F)
Weight	Approx. 30–35 kg depending on configuration
Options	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)

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_B ≤ 500 Ω)
- 2–10 V and 4–20 mA
(R_B ≤ 500 Ω)

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, 0–30V DC / 2.2 mA (for remote functions)
- 24 digital outputs, 5–30V DC/500 mA

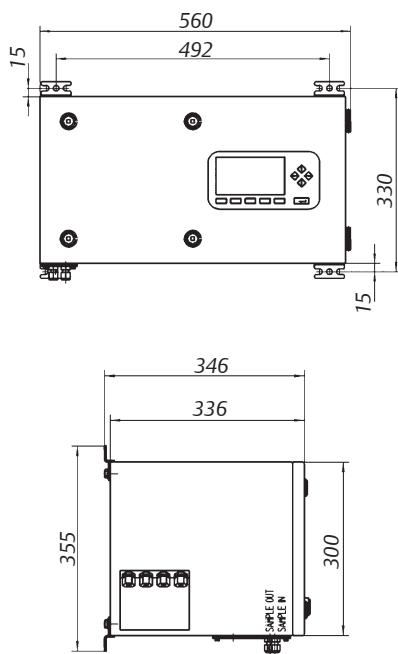
Network

- FOUNDATION™ fieldbus
- LON (analyzer network)

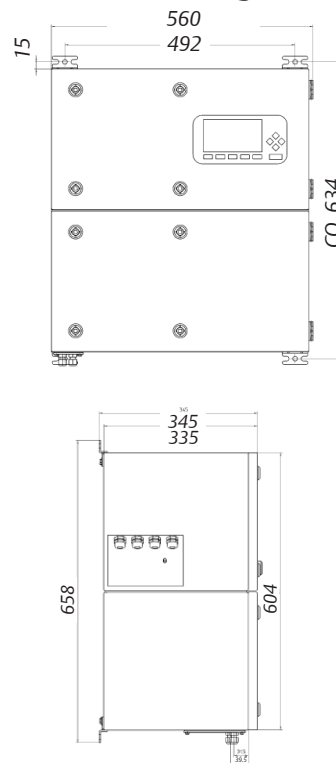
Dimensions

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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Our offering:

	Pressure Measurement		Level Measurement
	Temperature Measurement		Flow Measurement
	Marine Measurement & Analytical		Gas Analysis
	Liquid Analysis		Flame and Gas Detection
	Tank Gauging		Wireless Infrastructure
	Acoustic & Discrete		

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