



CAL-301

Ozone Transfer Standard

The Met One Instruments CAL-301 includes a built-in ozone generator and internal zero-air source as well as a compact reference photometer, providing precise feedback control for accurate ozone generation and measuring in one unit.

Ozone generation and measurement are automatically corrected for gas temperature and pressure changes and can be displayed in units of ppm, ppb, ppt, $\mu\text{g}/\text{m}^3$, mg/m^3 , ng/m^3 .

Features

- Self-contained transfer standard with ozone photometer, ozone generator & zero air source in one unit
- Measures & generates accurate ozone calibration levels (photometer accuracy: 1.0 ppb or 1 % of reading, ozone generator output 40 to 1000 ppb at 4 LPM)
- Up to 16 sequences including 32 discreet points
- Allows users to perform inter-station calibrations without disrupting station plumbing
- Measures internally or externally generated ozone so station ozone generators can be easily calibrated
- Internally stored calibration curve generates ozone concentrations when feedback is disabled
- Automatically compensates for temperature, pressure & flow variations to ensure accurate, repeatable readings
- Integral output gas manifold allows up to 4 instruments to be calibrated simultaneously
- Data stored on USB memory stick can be retrieved via RS232, USB interface or the optional ethernet connection
- Connects with Android app via Bluetooth for remote programming, viewing, downloading & emailing.

Specifications

| | |
|--------------------------------|--|
| Range: | 0 - 3000 ppb ozone |
| User interface: | Full numeric keypad on front panel or remotely via computer Large graphic LCD display with unit selection, ppm, ppb, ppt, ug/m ³ , mg/m ³ , ng/m ³ |
| Noise: | < 0.25 ppb or 0.1 % of reading RMS, whichever is greater, with Kalman filter active |
| Lower detectable limit: | 0.5 ppb with Kalman filter active |
| Precision: | < 0.25 ppb or 0.1 % of reading RMS, whichever is greater, with Kalman filter active |
| Linearity: | < 1 % of full scale or 1 ppb |
| Zero drift: | 24 hours: < 1 ppb 7 days: < 1 ppb |
| Span drift: | 7 days: < 0.5 % of reading |

Temperature & Pressure

| | |
|--|--------------------------|
| Compensation: | Temperature/pressure |
| Compensation Temperature range: | 0 to 35 °C |
| Relative humidity: | 0 to 80 % non-condensing |

Ozone Generator (with Feedback)

| | |
|-----------------------|---|
| Flow rate: | 3 to 5 LPM (external zero air) |
| Ozone output: | 40 to 1000 ppb at 4 LPM (internal zero air pump) |
| Accuracy: | 1 ppb or 1 % of reading |
| Repeatability: | 1 ppb or 1% of reading |

Data Logging

8 Gb removable USB memory drive:

- Internal data logger stores up to 12 of 200+ available parameters
- Event log
- Automatic/manual configuration backup

Voltage & Consumption

- 100 – 240 VAC 50/60 Hz (auto-ranging)
- Consumption max 177 VA, operating 87 VA

Dimensions & Weight

- Case dimensions
 - Rack length front to rear: 597 mm (23.5")
 - Total length (w/latch release): 638 mm (25.1")
 - Chassis width: 418 mm (16.5")
- Front panel width: 429 mm (16.9")
- Chassis height: 163 mm/uses 4RU (6.4")
- Front panel height: 175 mm (6.9")
- Weight: 26 kg (57.3 lb).

Communication

Programmable calibrations:

- 16 separate programmable sequences
- 32 separate programmable points

Analog output:

- 1 x menu selectable current or voltage output
- User scalable & auto-ranging between 2 user editable full scale values
- Menu selectable current output of 0 – 20 mA, 2 – 20 mA or 4 – 20 mA
- Voltage output of 0 – 5 V, with menu selectable zero offset of 0 V, 0.25 V or 0.5 V, 12 bit resolution
- Voltage output of 0 – 10 V configured using jumpers (JP3) on rear panel PCA

Analog input:

- 3 x analog inputs (scalable), 0 – 5 V, 16 bit resolution

Digital output:

- RS232 port #1: Normal digital communication*
- RS232 port #2: Multidrop port used for multiple analyzer connections on a single RS232*
- USB port connection on rear panel
- 25 pin connector with discrete status & user control
- USB stick memory (front panel) for data logging, event logging, parameter storage & configuration
- 8 digital outputs, open collector max 400 mA each @ 12 VDC (max total output 2 A)
- 8 digital inputs, 0 – 5 VDC, CAT I rated
- 1 diluent control, + 12 V output
- Optional: TCP/IP*

*Supports the following protocols: Modbus (RTU/TCP), Bayern-Hessern, EC9800, or Advanced.



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