

# Serinus® Cal 3000

## OZONE TRANSFER STANDARD



Reliability, accuracy and precision are hallmarks of ACOEM Ecotech's product range. It's why Ecotech's Calibrators have long been trusted worldwide.

The Serinus® Cal 3000 includes an ozone photometer for the accurate creation and delivery of ozone concentrations when calibrating ozone analysers. The photometer accurately and continuously measures the ozone concentration to control output of the internal ozone generator, providing an accurate ozone source for routine ozone calibration.

### FEATURES

- New Serinus® Cal user interface makes all functions simple and intuitive
- In-built photometer and ozone generator for use as a Level 3 ozone transfer standard
- Ozone photometer based on the reliable and proven technology used in the Serinus® 10 gas analyser.

### DILUTION & SPAN FLOWS

<b>Dilution Gas Inputs:</b>	1 standard 100 - 200 kPa (g) (2 optional)
<b>Source Gas Inputs:</b>	4 standard 100 - 200 kPa (g) (8 optional)
<b>Dilution Mass Flow Controller:</b>	10 SLPM, 0 Deg, 1 ATM (std), 1 SLPM, 2 SLPM, 5 SLPM or 20 SLPM (optional), 2nd MFC (optional)
<b>Source Mass Flow Controller:</b>	50 SCCM, 0 Deg, 1 ATM (std), 10 SCCM, 20 SCCM, 100 SCCM, 500 SCCM or 1 SLPM, 2 SLPM (optional), 2nd MFC* (optional)
<b>Flow Accuracy (Constant Temp):</b>	Within 1 % of full scale
<b>Flow Repeatability:</b>	Within 0.15 % of full scale
<b>Linearity:</b>	Within 0.15 % of full scale
<b>Operating Gas Pressure:</b>	100 - 200 kPa
<b>Zero Drift:</b>	< 0.6 % per year
<b>Response Time:</b>	< 5 seconds
<b>Output Manifold:</b>	4 output ports standard
<b>Dilution Ratio:</b>	Variable 10:1 to 2000:1 (std configuration)

### Case Dimensions

<b>Rack length:</b>	597 mm (23.5") (front to rear)
<b>Total length (with latch release):</b>	638 mm (25.1")
<b>Chassis width:</b>	418 mm (16.5")
<b>Front panel width:</b>	429 mm (16.9")
<b>Chassis height:</b>	163 mm / uses 4RU (6.4")
<b>Front panel height:</b>	175 mm (6.9")
<b>Weight:</b>	23.8 kg

\* Additional source MFC reduces available source ports by 1 and results in no analog output being available.

## COMMUNICATION

### User Interface

- Via front panel keypad or computer

### Programmable calibrations:

- 16 separate programmable sequences
- 32 separate programmable points

### Analog Output:

- Voltage output of 0 to 5 V, with menu selectable zero off set of 0, 5 or 10 %

### Analog Input

- Three analog voltage inputs (0 - 5 VDC) CAT I rated

### Digital Output

- RS232 port #1: Normal digital communication
- RS232 port #2: Multidrop port used for multiple analyser connections on a single RS232
- USB port connection on rear panel
- 25 pin connector with discrete status and user control
- USB stick memory (front panel) for data logging, event logging and parameter storage
- 8 Digital Outputs, open collector max 400 mA each at 12 VDC (max total output 2A)
- 8 Digital Inputs, 0 - 5 VDC,
- CAT I rated
- 1 Diluent Control, + 12 V output

## POWER

### Operating Voltage

- 100 - 240 V VAC 50 / 60 Hz (autoranging)

### Power Consumption

- 165 VA maximum 95 VA after warm-up

### Operating Conditions Ambient Temperature Range

- 0 - 45 °C (32 - 104°F), 20 - 35 °C for optimum performance

### Pressure

- Maximum altitude: 3000 m above sea level

## OZONE GENERATOR

### Output Concentration:

- 3 ppb to 5000 ppb

### Flow Rate:

- Variable dependent on Dilution Mass Flow Controller installed

### Repeatability:

- < 1 % short term (24 hours) 5 % long term at constant temperature and humidity

## PHOTOMETER

### Range:

- 0 - 20 ppm

### Precision:

- 0.5 ppb or 0.2 % of reading, whichever is greater

### Linearity:

- < 1 % of full scale

### Noise At Zero:

- < 0.25 ppb

### Response Time:

- 30 seconds to 95 %

### Zero Drift:

- Temperature: 1.0 ppb per °C
- 24 hours: < 0.3 ppb
- 7 days: < 0.3 ppb

### Span Drift:

- Temperature: 0.1 % per °C
- 7 days: 0.5 % of reading

