CIRAS-SC Single Channel CO_2/H_2O Analyzer

The **CIRAS-SC** is a single channel, absolute CO_2/H_2O infrared gas analyzer for measurement of a single gas stream. It requires 12V DC power and designed to be controlled and operated by a remote computer.

Applications

- Plant/Crop physiology
- Atmosphere & pollution CO_2 monitoring
- CO_2 enrichment studies
- Animal/insect physiology
- Industrial process control

Features

- High precision, non-dispersive infrared gas analyzers for CO_2 and H_2O
- CO_2 Range: 0-2,000 ppm (up to 9,999 ppm)
- Fast response
- Analog & digital (RS232) linear output
- Excellent stability achieved by built-in auto-zero facility
- Fully compensated for changes in temperature, pressure and gas interactions
- Built-in sampling pump with mass flow controllers
- Insensitive to vibration, no moving parts ensuring high reliability
- Internal & external logging

PP SYSTEMS

Data Sheet

Technical Specifications

Analysis Method
Non-dispersive infrared, configured as an absolute absorptiometer with microprocessor control of linearization.

The analyzers simultaneously measure Absolute CO_2 and humidity of the sample gas

The CIRAS-SC has 2 analyzers for absolute measurement.

Measurement Range

CO_2: 0-2,000 µmol mol^{-1} (Optimal Range)
0-9,999 µmol mol^{-1} (Max. Range)

H_2O: 0-75 mb

Corrections are made for temperature, pressure and foreign gas broadening.

Precision (Absolute)

CO_2: 0.2 µmol mol^{-1} at 300 ppm
0.5 µmol mol^{-1} at 1,750 ppm
3.0 µmol mol^{-1} at 9,999 ppm

H_2O: 0.015 mb at 0 mb
0.020 mb at 10 mb
0.030 mb at 50 mb

Linearity
Better than 1.0% throughout the range, with calibration at 2,000 ppm CO_2 or 40 mb.

Stability (CO_2 Analysis)
Automatic Zero at regular intervals, corrects for sample cell contamination, source and detector ageing and pre-amplifier gain changes.

Response Time
Electrical: 0.5 seconds
Display/Analog Output: 1.6 seconds
Pneumatic: < 5 seconds

Air Sampling
100 cm^3 min^{-1} using an integral DC pump. Both analysis and reference pumps fitted with mass flow controllers. The analyzer may be used in open and closed systems.

Environmental Sensor Inputs
3 input channels are available. There is integral conditioning of PP Systems' environmental sensors (%RH, Temperature, PAR, etc.).

Analog Output (CO_2/H_2O)
8 bit D/A converter giving 0.5% resolution. Output voltage 0-5V. Both minimum and maximum voltage are defined by user.

RS232 Output
Stored/current data output in standard ASCII format at 1200 baud.

Analyzer Control
All analyzer functions/controls are controlled by the PC (software supplied).

Real Time Clock
Accuracy: Better than 1 min/month at 25° C.
Operating Temperature: 0-70° C.

Recording Options
By PC or by the instrument. Automatic logging at user selectable intervals between 10 seconds and 1 hour, controlled by internal real-time clock.

Data Storage
Internal battery backed RAM, stores up to 1,640 records. Memory is maintained during battery change.

Instrument Status Dectection
Indication of instrument malfunction, including low battery voltage (< 10.5V) through the RS232 output. Auto restart if momentary failure.

Power Supply
External 12V DC power supply with small ripple. Input voltage must not exceed 15V. An optional internal 12V battery can be supplied giving up to 2 hours continuous use.

Power Consumption
12.0 W (initial warm-up)
3.5 W (normal operation)

Operating Environment
0-45° C, non-condensing. In dirty environments, external air filtration is required.

Housing
Powder coated, 1.5mm thick aluminum enclosure. An optional, lightweight version is available with a 1mm thick housing.

Dimensions
280mm W x 205 mm D x 100mm H

Weight
2.5 kg. (Standard Unit)
1.8 kg. (Optional, lightweight version)
(Optional, internal battery adds 0.6 kg. to the weight if used).

PP Systems is continuously updating its products and reserves the right to amend product specifications without notice.

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