

# CL11

## INDOOR AIR QUALITY DATA LOGGER

- Measures and logs CO<sub>2</sub>, relative humidity and temperature
- ROTRONIC HYGROMER® IN-1 humidity sensor
- 40,000 data point memory for CO<sub>2</sub>, humidity and temperature values
- Maximum, minimum and average values displayed
- Adjustable audible and visual CO<sub>2</sub> alarm
- Real time clock with backup battery
- Optional external temperature probe
- Includes software for configuration and data download



# CL11

## BE PRECISE: THE MAIN ADVANTAGES AT A GLANCE

The CL11 benchtop display unit is the latest development of an inexpensive multiple parameter meter that simultaneously measures and records CO<sub>2</sub>, humidity and temperature. Equipped with the field-tested ROTRONIC HYGROMER® IN-1 humidity sensor, this instrument offers unbeatable value for money. Using the ROTRONIC software package SW2.x, it can be easily set to record as required and data can then be downloaded, saved and analyzed.

### Sensors / Calibration

- HYGROMER® IN-1 humidity sensor
- Calibration of humidity sensor at 35/80 %RH
- Automatic CO<sub>2</sub> calibration and manually at 400 ppm

### Data logging function

- 40,000 data point memory for CO<sub>2</sub>, humidity and temperature values
- Data download using the included ROTRONIC Software SW2.x or with the optional HW4 Software

### Connections

- Mini USB port for connection to a PC
- 5 VDC power supply connector for the included AC adapter

### CO<sub>2</sub> alarm

- Adjustable audible CO<sub>2</sub> alarm

### Large display

- With backlight

### Controls

- Large buttons for easy operation

### Temperature probe

- External temperature probe AC1215 (optional)



## APPLICATIONS



Indoor air quality

## PRINCIPLES

The CL11 data logger evaluates air quality with the combined measurements of CO<sub>2</sub>, humidity, and temperature. These measurements are important to understand Indoor Air Quality (IAQ) in classrooms, conference and waiting rooms, as well as any indoor areas where people gather. A high concentration of carbon dioxide can develop quickly when closed rooms with insufficient ventilation are filled with people.

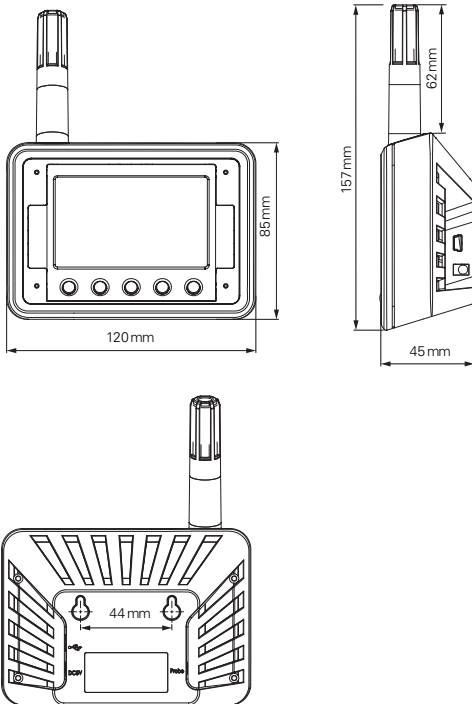
Carbon dioxide (CO<sub>2</sub>) is a colorless and odorless gas that exists in the earth's atmosphere and which is dangerous in high concentrations. The proportion of CO<sub>2</sub> in natural ambient air is about 0.04% or 400 ppm. Exhaled air contains approximately 3.8% by volume CO<sub>2</sub>, which quickly mixes with the ambient air. When closed rooms are insufficiently ventilated, the levels of CO<sub>2</sub> increase quickly leading to fatigue and loss of concentration for the rooms occupants. In order to initiate improvements to the air quality, for example by increasing the supply of fresh air, it is important to measure the key parameters of indoor air quality. These parameters are CO<sub>2</sub>, humidity, and temperature.

### Guidelines

350 - 450 ppm	400 - 1,200 ppm	>1,000 ppm	5,000 ppm (0.5%vol)	38,000 ppm (3.8%vol)	>100,000 ppm (10%vol)
Fresh air outdoors	Room air	Fatigue and loss of concentration become apparent	Maximum permissible value at the workplace during an 8-hour workday	Breathing air (direct exhalation)	Nausea, vomiting, loss of consciousness and death

## TECHNICAL INFORMATION

### Dimensions



### Suitable accessories

Art. no.	Description
ER-15	Humidity calibration device
EA35-SCS	Humidity standard 35 %RH
EA80-SCS	Humidity standard 80 %RH
AC1215	External temperature probe

### Included

- 1 CL11 data logger
- 1 AC adapter AC1214
- 1 ROTRONIC software SW2.x

### General

Parameters	CO <sub>2</sub> , relative humidity and temperature
Range of application	0...50 °C / 0...100 %RH, non-condensing
Power supply	Via AC1214 AC adapter (included in the delivery package)
IP protection	IP30
Clock	Real time clock with 5 min. battery backup
Alarm	Adjustable for CO <sub>2</sub> measurement

### Technical information/Functions

Current consumption	50 mA
Warm-up time	<1 min.
Memory capacity	40,000 values with time stamp, automatic recording (%RH / °C / CO <sub>2</sub> / external temperature probe)

### CO<sub>2</sub> measurement

Measurement principle	Non dispersive infrared (NDIR) with automatic baseline correction (ABC)
Measurement range	0...5,000 ppm
Accuracy at 23 °C ±5 K	±30 ppm ±5 % of the measured value
Response time	<10 sec @ 30 cc/min. flow, <3 min diffusion time
Adjustment point	Automatic calibration, manual calibration at 400 ppm
Pressure dependence	+1.6 % reading per kPa
Null drift	<10 ppm/year
Maintenance	No maintenance (standard indoor application)

### Humidity measurement

Humidity sensor	ROTRONIC HYGROMER® IN-1
Measurement range	0...100 %RH
Accuracy at 23 °C ±5 K	<2.5 %RH (10...90 %RH)
Adjustment points	35, 80 %RH
Response time τ63	<30 s, without filter
Long-term stability	<1.5 %RH / year

### Temperature measurement

Sensor	Thermistor
Measurement range	-20...60 °C
Accuracy at 23 °C ±5 K	±0.3 °K
Response time	4 s

### Conformities / Housing

CE / EMC compatibility	EMC DIRECTIVE 2004/108/EC, standard EN61326-1:2006
Housing material	ABS
Dimensions	157 x 120 x 45 mm
Weight	Approx. 200 g
Software	ROTRONIC SW2.x free of charge, HW4 subject to charge

### External temperature probe AC1215 (available as optional extra)

Sensor	Thermistor
Measurement range	-20...70 °C
Accuracy	±0.6 °C @ 5...40 °C, ±1.0 °C rest of range
Material of probe	Stainless steel
Material of handle	PVC
Probe dimensions	Ø 3.8 x 100 mm
Handle dimensions	Ø 12.3 x 74 mm
Cable length	116 cm
Connector	Jack plug Ø 2.5 x 11 mm