


# CL-220-E
# CL-221-E
# CL-222-E
# CL-223-E
# CL-224-E
# CL-225-E
# CL-226-E
# CL-227-E
# CL-228-E
# CL-229-E

PM1/PM2.5/PM10/CO/CO2 /NH3/H2S/HCHO/TVOC/ Temperature/Humidity/Dew Point Data Logger Module

## Features

- Able to record PM1/PM2.5/PM10, CO, $CO_2$, $NH_3$, $H_2S$, HCHO, TVOC, Temperature, Humidity and Dew Point
- Non-dispersive Infrared (NDIR) $CO_2$ Sensor
- Up to 450,000 records with date and time stamps
- Web-based Configuration Interface
- Simple and Powerful Software Utility, iOS App and Android App Included
- Supports the DCON, Modbus RTU/TCP, and MQTT Protocols
- Features RS-485/Ethernet/PoE Communication Interfaces
- Relay Output for Alarm or IAQ Device Control

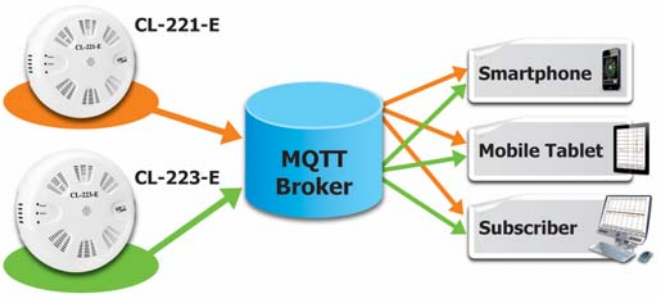
## Introduction

The CL-220 series of data logger devices can be used to record PM1/PM2.5/PM10 and the number of particles (0.3µm, 0.5µm, 1µm, 2.5µm, 5µm, 10µm), CO, $CO_2$, $NH_3$, $H_2S$, HCHO, TVOC, temperature, humidity and dew point information, including the date and time stamps, and are able to store up to 450,000 downloadable records.

Real-time data can be accessed from the CL-200 data logger from anywhere and at any time using the free Windows software, the iOS App, or the Android App, as long as they are connected to the same local network as the data logger.

Support is provided for common industrial protocols such as DCON, Modbus RTU, and Modbus TCP, as well as the emerging machine-to-machine (M2M)/)IoT (Internet of Things) connectivity protocol – MQTT. The CL-200 data logger can be connected via widely used communication interfaces including RS-485, Ethernet and PoE, meaning that the device can be easily integrated into existing HMI or SCADA systems, ensuring trouble-free maintenance in distributed control systems.

### Supports the MQTT Protocol for IoT Applications



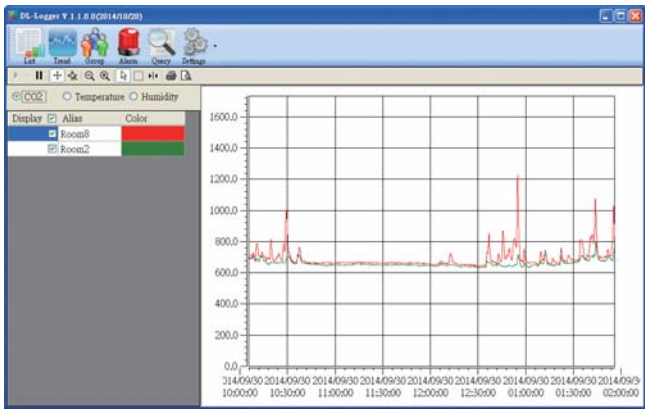

### Multi-platform Remote Access Software

Real-time data from the CL-200 data logger can be accessed from anywhere and at any time using the iAir Utility, the iOS or Android App, or via a regular web browser, as long as they are connected to the same local network as the data logger.



### Simple and Powerful Utility

The iAir Utility is a powerful tool that is designed for configuring the modules, monitoring real-time data, grouping CL-200 modules to view and manage the status of distribution groups, downloading log data, which can be exported to a CSV fi le that can then be imported into any industry-standard software or spreadsheet for analysis.





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## Specifications

| | |
|---|---|
| **COM Ports** | |
| Ports | 1 x RS-485<br>1 x Ethernet |
| Protocol | DCON and Modbus/RTU (RS-485)<br>Modbus TCP and MQTT (Ethernet) |
| **Ethernet** | |
| Ports | 10/100 Base-TX, 8-Pin RJ-45 x1 (Auto-negotiating, Auto-MDI/MDIX, LED indicators) |
| PoE | Yes |
| **System** | |
| Alarm | PM1/PM2.5/PM10/CO/$CO_2$/$NH_3$/$H_2S$/HCHO/TVOC/RH/Temperature |
| Real Time Clock | Yes |
| Data Logger | Yes, up to 450,000 records |
| **Relay Output** | |
| Channels | 1 x Form A, SPST<br>30 VDC @ 16 A or 250 VAC @ 16 A |
| **Power** | |
| Consumption | Non-PoE: 2.3 W (Max.)<br>PoE: 2.5 W (Max.) |
| Powered from Terminal Block | +12 ~ +48 VDC |
| **Mechanical** | |
| Dimensions (mm) | Ø 150 x 53 (Ø x H) |
| Installation | Ceiling Mounting/Wall Mounting |
| Ingress Protection Rating | IP20 |
| **Environment** | |
| Operating Temperature | 0 ~ 50°C |
| Storage Temperature | -30 ~ +75°C |
| Humidity | 10 ~ 90% RH, Non-condensing |

| **CL-22X-E Series** | **Type of Sensor** | | | | | | | | **Communication** |
|---|---|---|---|---|---|---|---|---|---|
| | **Particle** | **Gas Sensor** | | | | | | | |
| | PM1/PM2.5/PM10 Particle | CO | $CO_2$ | HCHO | $NH_3$ | $H_2S$ | TVOC | T & RH | |
| **CL-220-E** | √ | - | - | - | - | - | - | √ | RS-485 + Ethernet/ PoE |
| **CL-221-E** | | √ | - | - | - | - | - | | |
| **CL-222-E** | | - | √ | - | - | - | - | | |
| **CL-223-E** | | √ | √ | - | - | - | - | | |
| **CL-224-E** | | - | - | √ | - | - | √ | | |
| **CL-225-E** | | - | - | - | √ | - | - | | |
| **CL-226-E** | | - | - | - | - | √ | - | | |
| **CL-227-E** | | - | - | √ | - | - | - | | |
| **CL-228-E** | | - | - | - | - | - | √ | | |
| **CL-229-E** | | √ | √ | √ | - | - | √ | | |



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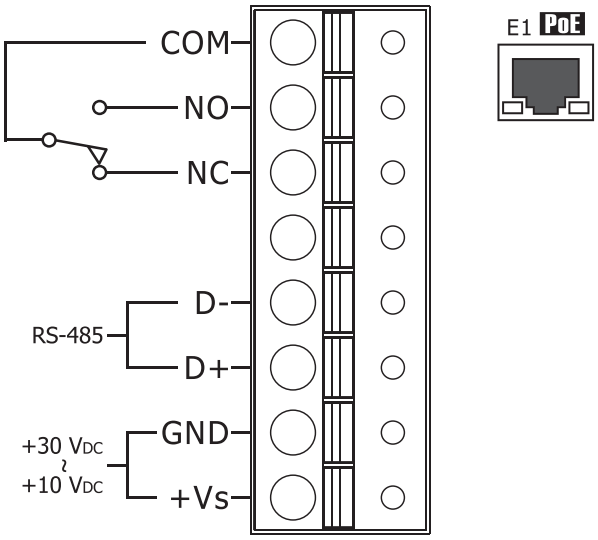
## I/O Specifications

| Type of Sensor | Range | Resolution | Accuracy | Response Time | Warm-up Time | Life Time |
|---|---|---|---|---|---|---|
| **PM1/PM2.5/PM10 /Particle (Note1)** | 0 to 1,000μg/m3 ( Laser Type) | 1μg/m3 | ± 10% of FSR. | 1 seconds | 20 seconds | 5 years |
| **CO** | 0 to 1000 ppm (Electrochemical) | 1 ppm | ±5% of measured value | 30 seconds | 5 minutes | 5 years |
| **$CO_2$** | 0 to 9999 ppm (NDIR) | 1 ppm | ±40 ppm ±3% of measured value | 120 seconds | 5 minutes | 15 years |
| **HCHO** | 0 ppb to 2000 ppb (Electrochemical) | 1 ppb | - | ≤60 seconds | 180 seconds | 3 years |
| **TVOC** | 0 ppb to 60000 ppb (MEMS Metal Oxide) | 1 ppb | ±15% | 60 seconds | 180 seconds | 5 years |
| **$NH_3$** | 0 to 100 ppm (Electrochemical) | 1 ppm | ±5% of measured value | < 120 seconds | 180 seconds | 2 years |
| **$H_2S$** | 0 to 100 ppm (Electrochemical) | 1 ppm | ±5% of measured value | < 120 seconds | 180 seconds | 2 years |
| **Temperature** | -10 ~ +50°C | 0.1°C | ±0.6°C | - | - | 10 years |
| **Relative Humidity** | 0 ~ 100% RH, Non-condensing | 0.1% RH, Non-condensing | ±5% RH, N on-condensing | - | - | 10 years |
| **Dew Point** | Calculated using temperature and relative humidity | 0.1°C | - | - | - | 10 years |

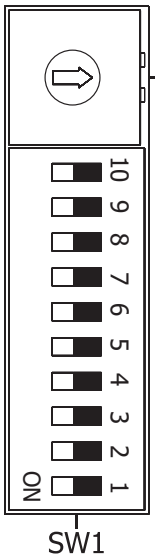
Note1: 5 years, the filter patch (FLT-C002) by replaceable

| **Particle** | |
|---|---|
| **Sizes** | 0.3μm, 0.5μm, 1μm, 2.5μm, 5μm, 10μm |

## Pin Assignments & WireConnections

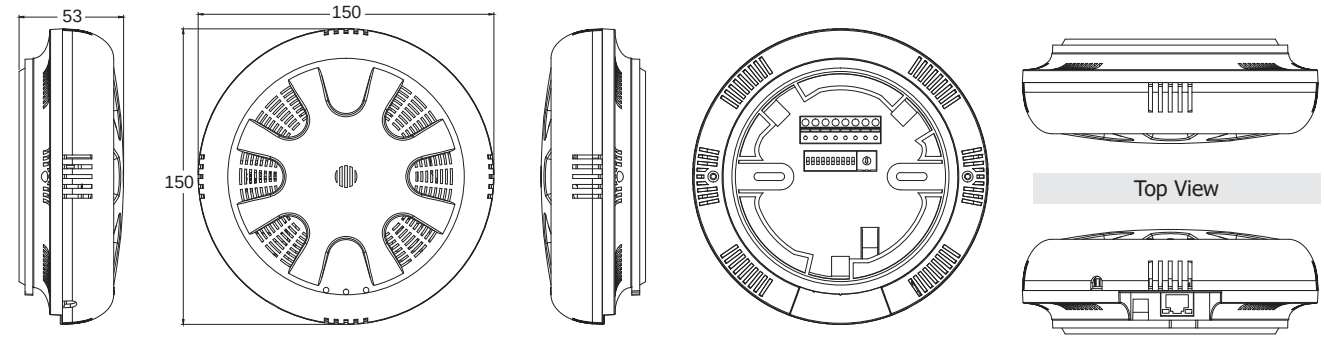



## DIP Switch Settings




| SW1- | ON | OFF |
|---|---|---|
| 1 | DCON | Modbus |
| 2 | SW Config | HW Config |
| 3 | High Node | Low Node |
| 4 | INIT | RUN |
| 5~10 | Reserved | |

## Dimensions (Units: mm)



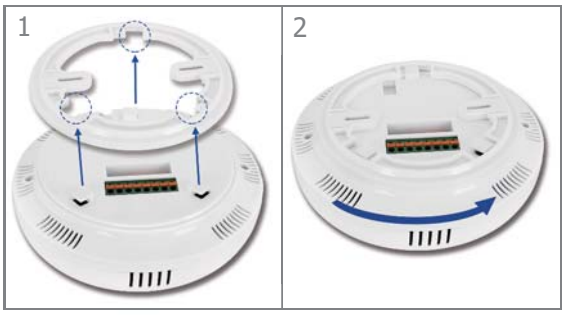

Left View | Front View | Right View | Rear View | Top View | Bottom View



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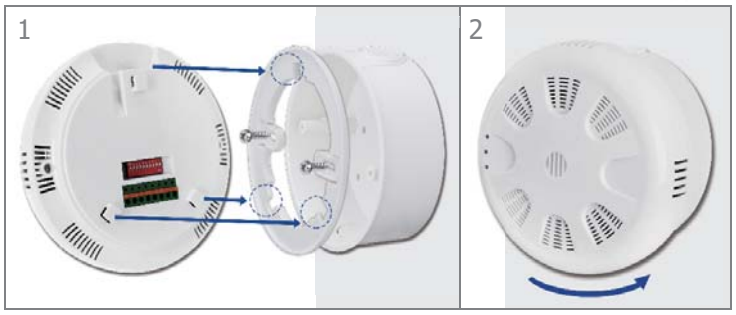
## Installation

### Ceiling Mounting




### Wall Mounting (+ External Wall Box EWB-C150)






### Replaceable Filter Patch:

CL-22x Series offers a replaceable filter patch on the back of the hood filter. This mechanism makes users to replace only the filter patch rather than uninstall all devices.

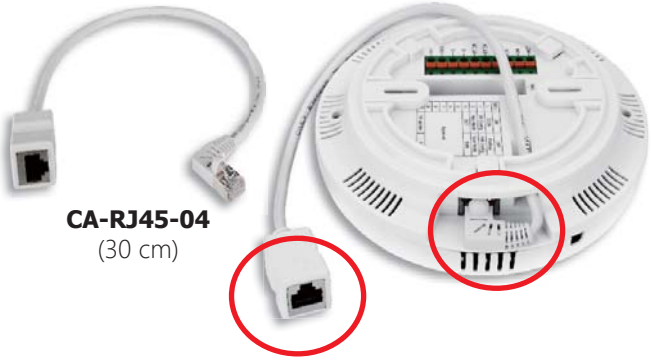





**Filter Patch**
**FLT-C002**

### CL-2xx-E + RJ45 Cable:

CL-2xx-E (Ethernet Type) are with optional angle-bent RJ45 cable to smoothly install the Ethernet plug in the hole of the ceiling-mounted.



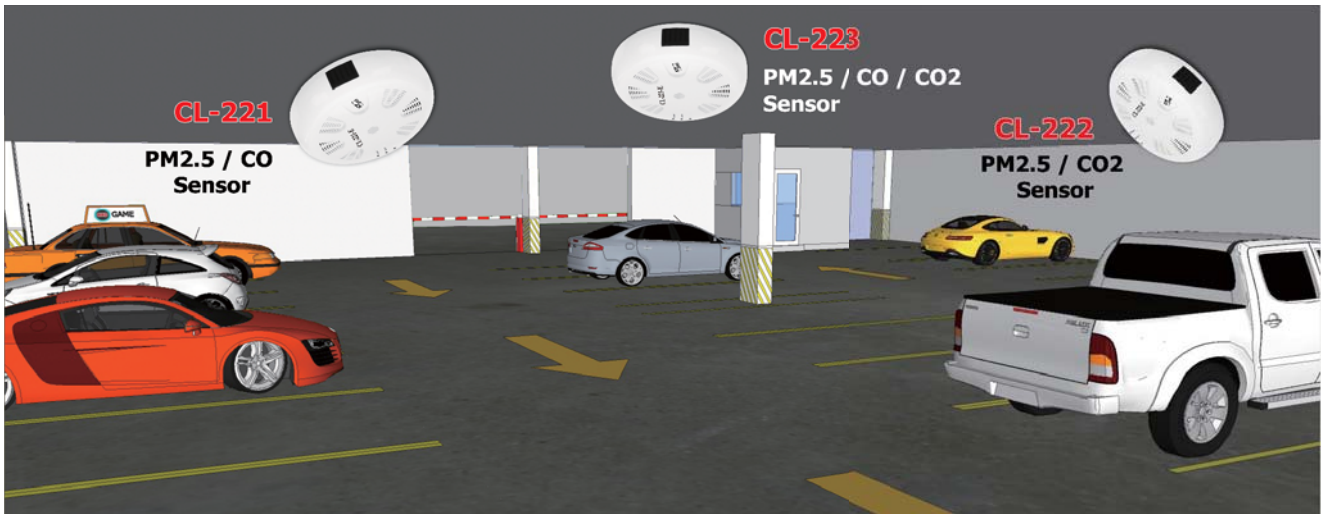
**CA-RJ45-04**
(30 cm)

## Applications

- Transportation of Food or Pharmaceuticals
- Food and Beverage Industry (HACCP)
- Blood Stations and Pharmacies
- Building and Energy Management
- Warehouse Management
- Museums, Archives and Galleries

### Indoor or Underground Parking Lot Automatic Monitoring Solution

The air quality automation system for indoor or underground parking lot can use the CL-220 series modules to monitor the health and safity information, such as PM1,PM2.5,PM10, CO, $CO_2$, temperature, humidity, dew point, and more...

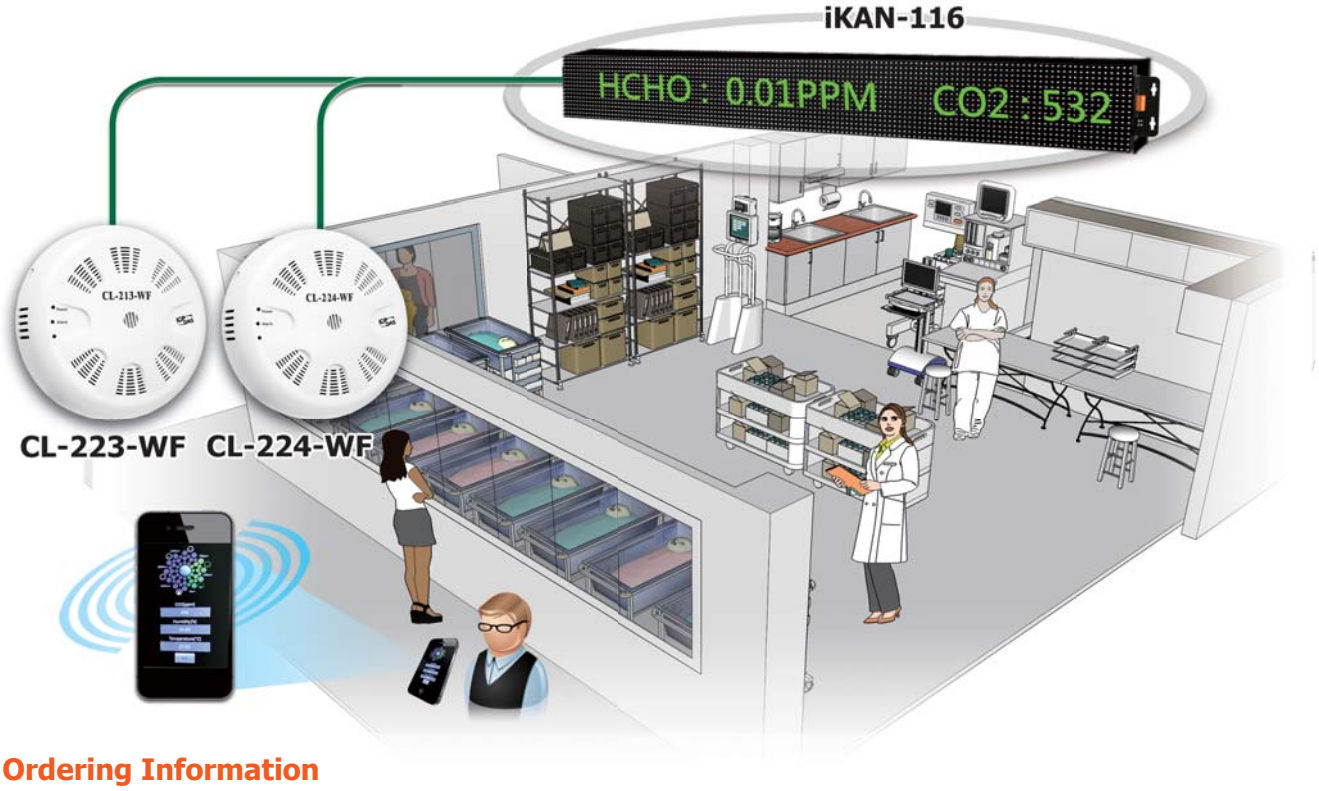





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## Preschool Air Quality Monitoring

Indoor air quality is a key matter for children in preschool. ICP DAS provide a solution toward this environment include CL-213-E, CL-204-E modules to monitor the fumes and Particle Matters such as PM1, PM2.5, PM10, CO, $CO_2$, HCHO, TVOC, and etc. Combine with ICP DAS iKAN series LED monitors, teachers in the preschool can easily check the real-time Air Quality Index. Furthermore, diversity of SCADA software is also compatible with these monitoring modules and can upload received data into remote database. Teachers can use their mobile App to remotely check the AQI or other fumes data to make sure that the Air Quality is always in the safety range.




## Ordering Information

| | |
|---|---|
| **CL-220-E CR** | PM1/PM2.5/PM10/Temperature/Humidity/ Dew Point Data Logger Module (RS-485, Ethernet PoE) (RoHS) |
| **CL-221-E CR** | PM1/PM2.5/PM10/CO/Temperature/Humidity/ Dew Point Data Logger Module (RS-485, Ethernet PoE) (RoHS) |
| **CL-222-E CR** | PM1/PM2.5/PM10/$CO_2$/Temperature/Humidity/ Dew Point Data Logger Module (RS-485, Ethernet PoE) (RoHS) |
| **CL-223-E CR** | PM1/PM2.5/PM10/CO/$CO_2$/Temperature/Humidity/ Dew Point Data Logger Module (RS-485, Ethernet PoE) (RoHS) |
| **CL-224-E CR** | PM1/PM2.5/PM10/HCHO/TVOC/Temperature/Humidity/Dew Point Data Logger Module (RS-485, Ethernet PoE) (RoHS) |
| **CL-225-E CR** | PM1/PM2.5/PM10/$NH_3$/Temperature/Humidity/ Dew Point Data Logger Module (RS-485, Ethernet PoE) (RoHS) |
| **CL-226-E CR** | PM1/PM2.5/PM10/$H_2S$/Temperature/Humidity/ Dew Point Data Logger Module (RS-485, Ethernet PoE) (RoHS) |
| **CL-227-E CR** | PM1/PM2.5/PM10/HCHO/Temperature/Humidity/ Dew Point Data Logger Module (RS-485, Ethernet PoE) (RoHS) |
| **CL-228-E CR** | PM1/PM2.5/PM10/TVOC/Temperature/Humidity/ Dew Point Data Logger Module (RS-485, Ethernet PoE) (RoHS) |
| **CL-229-E CR** | PM1/PM2.5/PM10/CO/CO2/HCHO/TVOC/Temperature/Humidity/Dew Point Data Logger Module (RS-485, Ethernet PoE) (RoHS) |

## Accessories

| | |
|---|---|
| EWB-C150  | External Wall Box for the CL-200 series |
| CA-RJ45-04  | RJ45 Cable, Male-Female, 30 cm (90º) |
| FLT-C002  | Replaceable Filter Patch |



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