

CO₂

ALL YOU NEED TO MEASURE CO₂



The range of ROTRONIC CO₂ measuring equipment includes a comprehensive choice of transmitters, handheld instruments, data loggers and a display panel. They are all perfectly suited for monitoring and controlling indoor air quality.

TRANSMITTERS

CF SERIES - OVERVIEW **128-129**

CF3 SERIES - CO₂ **130-133**

CF5 SERIES - CO₂ AND TEMPERATURE **134-137**

CF8 SERIES - SPECIAL CO₂ APPLICATIONS **138**



DATA LOGGERS

CL11 **139**



CO₂ DISPLAY **140**



HANDHELD INSTRUMENTS

CP11 **141-142**



ACCESSORIES

ZERO CALIBRATION KIT **143**



TRANSMITTERS

Transmitters	CF3-W-EU-(Disp) CF3-W-US-(Disp)	CF3-W-EU-Disp-FLI CF3-W-US-Disp-FLI	CF3-D-(Disp)
Working principle	Nondispersive infrared (NDIR) with automatic baseline correction (ABC)		
CO ₂ measurement range (optional)	0...2000 ppm 0...5000 ppm	0...2000 ppm 0...5000 ppm	0...2000 ppm 0...5000 ppm
Temperature measurement range			
Accuracy CO ₂	±30 ppm, ±3 % of reading		
Accuracy temperature			
Housing			
Wall version	✓	✓	
Duct version			✓
Display option	✓	✓	✓
IP protection	IP30	IP30	IP65
Dimensions	EU: 100 x 80 x 28 mm US: 130 x 85 x 30 mm	EU: 100 x 80 x 28 mm US: 130 x 85 x 30 mm	142 x 85 x 46 mm Probe: 245 x 22 x 15
Outputs			
0...10 VDC	✓	✓	✓
0...20 mA			
4...20 mA	✓		✓
Modbus interface			
RS-485 interface			
Functions			
Visual alarm (LED)		✓	
Audible alarm (beep tone)		✓	
Relay			

TRANSMITTERS

			
CF3-W-IND-(Disp)	CF5-W-(Disp)	CF5-D-(Disp)	CF5-W-IND-Disp
Non-dispersive infrared (NDIR) with automatic baseline correction (ABC)			
0...2000 ppm 0...5000 ppm	0...2000 ppm 0...5000 ppm	0...2000 ppm 0...5000 ppm / 0...10 %vol	0...2000 ppm 0...5000 ppm / 0...10 %vol
0...50 °C (32...122 °F)		0...50 °C (32...122 °F)	
±30 ppm, ±3 % of reading			
±0.5 °C		±0.5 °C	
✓	✓		✓
✓	✓	✓	✓
IP54	IP30	IP65	IP54
142 x 85 x 46 mm	120 x 82 x 30 mm	142 x 85 x 46 mm Probe: 245 x 22 x 15	142 x 85 x 46 mm
✓	✓	✓	✓
		Optional	✓
		Optional	✓
			✓
			✓
Optional			

CF3 SERIES



Features

- Measures CO₂ by infrared measurement technique (NDIR)
- Standard measurement range: 0...2000 ppm
- Accuracy: ±30 ppm, ±3 % of reading
- Range of application: 0...50 °C / 0...95 %RH
- Analog output signals
- Automatic calibration

POWER SUPPLY

- Low voltage: 3/4-wire

SIGNAL OUTPUTS

- Current output
- Voltage output

VERSION

- Space mount version
- Duct version
- Wall version

OUTPUT PARAMETERS

- CO₂

OUTPUT SCALING

- CO₂: range selectable, standard 0...2000 ppm

DISPLAY

- Display optional



CF3 SPACE MOUNT VERSION

Applications

Measures CO₂ in offices, conference rooms, classrooms, public buildings, etc.

Standard EU and US

Order code	CF3-W-EU-Disp	CF3-W-US-Disp
Output signals	0...10 VDC 4...20 mA	
Supply voltage	16...29 VDC / VAC	
Display	Optional	

Standard EU and US with alarm

Order code	CF3-W-EU-Disp-FLI	CF3-W-US-Disp-FLI
Output signals	0...10 VDC	
Supply voltage	16...29 VDC / VAC	
Display	Yes	
Alarm function	Audible and light signal, alarm threshold at 1400 ppm (adjustable)	

CO ₂ measurement range	Standard 0...2000 ppm Optional 0...5000 ppm	
Dimensions	100 x 80 x 28 mm	130 x 85 x 30 mm

INCLUDED

- Factory adjustment certificate
- Short instruction manual



EU version

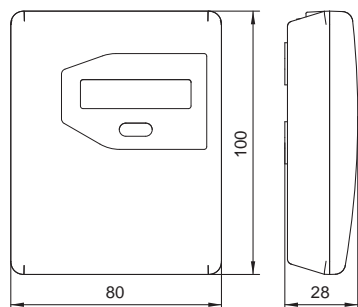


US version

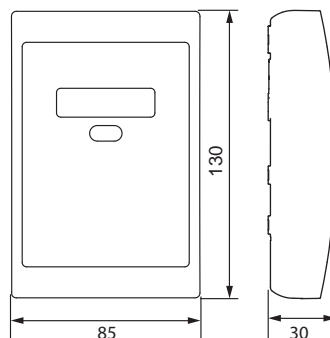


US version FLI

EU version



US version



CF3 DUCT AND WALL VERSIONS

Applications

Measures CO₂ in ventilation pipes and industrial applications



Duct version

Order code	CF3-D-Disp
Output signals	0...10 VDC 4...20 mA
Supply voltage	16...29 VDC / VAC
Display	Optional
Dimensions	142 x 85 x 46 mm, probe: 245 mm
Protection	IP65



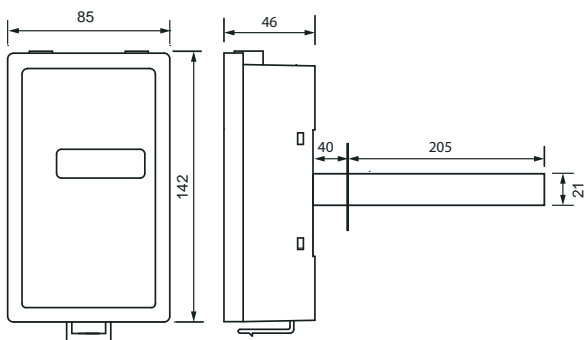
Wall version (industry)

Order code	CF3-W-IND-Disp
Output signals	0...10 VDC 4...20 mA
Supply voltage	16...29 VDC / VAC
Display	Optional
Dimensions	142 x 85 x 46 mm
Protection	IP54
CO ₂ measurement range	Standard 0...2000 ppm, optional 0...5000 ppm

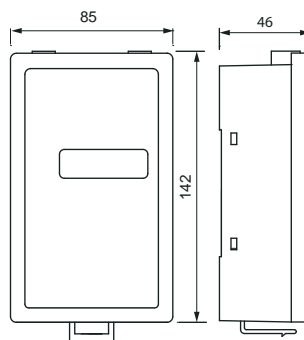
INCLUDED

- Factory adjustment certificate
- Short instruction manual

CF3-D-Disp



CF3-W-Disp



TRANSMITTERS

Specifications	CF3-W-EU-Disp CF3-W-US-Disp	CF3-W-EU-Disp-FLI CF3-W-US-Disp-FLI	CF3-D-Disp	CF3-W-IND-Disp
General				
Parameters	Carbon dioxide (CO ₂)			
Housing material	ABS			
Protection	IP30	IP30	IP65	IP54
Dimensions	EU: 100 x 80 x 28 mm US: 130 x 85 x 30 mm		142 x 85 x 46 mm	
Weight	80 g	110 g	250 g	220 g
Display	Optional (4 digits, 7-segment LCD)	Standard (4 digits, 7-segment LCD)	Optional (4 digits, 7-segment LCD)	
Electrical connections	Screw terminals 1.5 mm ²			
Power supply	16...29 VDC / VAC			
Power consumption	<1 W			
Application temperature housing / electronics	0...50 °C / 0...95 %RH (non-condensing)			
CE / EMC compatibility	EMC Directive 89/336/EEC			
CO₂ measurement				
Measurement technique	Nondispersive infrared (NDIR) with automatic baseline correction (ABC)			
Measurement range	Standard 0...2000 ppm, optional 0...5000 ppm			
Accuracy	±30 ppm ±3 % of reading			
Warm-up time	<1 min.			
Long-term stability	<±10 ppm			
Pressure dependence	+1.6 % of measured value per kPa change from normal pressure (101.3 kPa)			
Maintenance	No maintenance necessary in normal indoor use			
Lifetime	>15 years			
Analog output				
Number	2	1	2	
Current	4...20 mA	N/A	4...20 mA	
Voltage	0...10 VDC			
Functions				
Alarm function	N/A	Audible and light signal, alarm threshold at 1400 ppm (adjustable)	N/A	
Self test	Complete function test			

CF5 SERIES



Features

- Measures CO₂ by infrared measurement technique (NDIR) + temperature
- Standard measurement range: 0...2000 ppm
- Accuracy: ±30 ppm, ±3 % of reading
- Range of application: 0...50 °C / 0...95 %RH
- Analog output signals
- Automatic calibration

POWER SUPPLY

- Low voltage: 3/4-wire

SIGNAL OUTPUTS

- Current output
- Voltage output
- Modbus / RS-485

VERSION

- Space mount version
- Duct version
- Wall version

OUTPUT PARAMETERS

- CO₂ and temperature

OUTPUT SCALING

- CO₂: range selectable, standard 0...2000 ppm

DISPLAY

- Display optional



CF5 SPACE MOUNT VERSION

Applications

Measures CO₂ and temperature in offices, conference rooms, classrooms, public buildings, etc.

Standard

Order code	CF5-W-Disp
Output signals	0...10 VDC 0/4...20 mA
Supply voltage	16...29 VDC / VAC
Display	Optional
CO ₂ measurement range	Standard 0...2000 ppm, optional 0...5000 ppm



Options

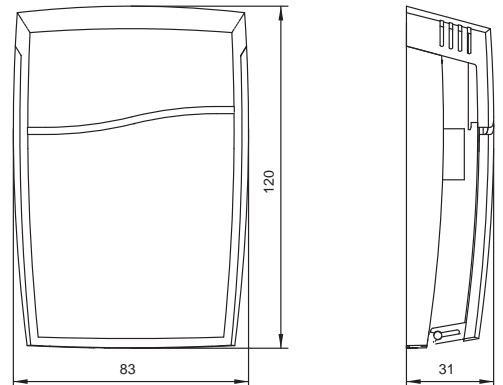
RL	Relay
MB	Modbus interface
RS-485	RS-485 interface

INCLUDED

- Factory adjustment certificate
- Short instruction manual

RECOMMENDED ACCESSORIES

- Service cable CF5/8 Comm Cable



CF5 DUCT AND WALL VERSIONS

Applications

Measures CO₂ and temperature in ventilation pipes and industrial applications



Duct version

Order code	CF5-D-Disp
Output signals	0...10 VDC 0/4...20 mA
Supply voltage	16...29 VDC / VAC
Display	Optional
Dimensions	142 x 85 x 46 mm, probe: 245 mm
Protection	IP65



Wall version (industry)

Order code	CF5-W-IND-Disp
Output signals	0...10 VDC 0/4...20 mA
Supply voltage	16...29 VDC / VAC
Display	Optional
Dimensions	142 x 85 x 46 mm
Protection	IP54
CO ₂ measurement range	Standard 0...2000 ppm, optional 0...5000 ppm

Options

RL	Relay
10%	Measurement range 0...10 % volume
MB/RS-485	Modbus / RS-485 interface

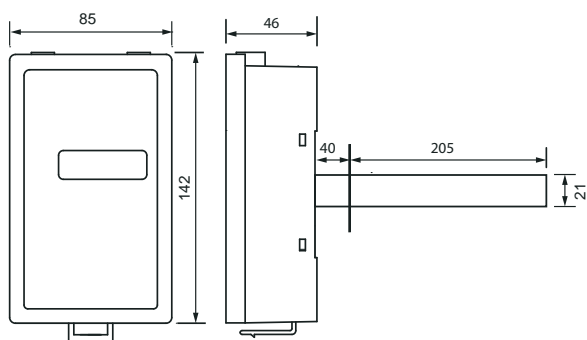
INCLUDED

- Factory adjustment certificate
- Short instruction manual

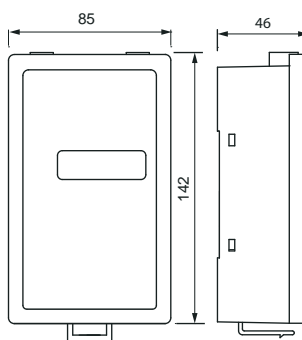
RECOMMENDED ACCESSORIES

- Service cable CF5/8 Comm Cable

CF5-D-Disp



CF5-W-Disp



TRANSMITTERS

Specifications	CF5-W-Disp	CF5-D-Disp	CF5-W-IND-Disp
General			
Parameters	Carbon dioxide (CO ₂) and temperature		
Housing material	ABS		
Protection	IP30	IP65	IP54
Dimensions	120 x 82 x 30 mm	142 x 85 x 46 mm	
Weight	150 g	250 g	
Display	Optional (4 digits, 7-segment LCD)		
Electrical connections	Screw terminals 1.5 mm ²		
Power supply	16...29 VDC / VAC		
Power consumption	<3 W		
Application temperature housing / electronics	0...50 °C / 0...95 %RH (non-condensing)		
CE / EMC compatibility	EMC Directive 89/336/EEC		
CO₂ measurement			
Measurement technique	Nondispersive infrared (NDIR) with automatic baseline correction (ABC)		
Measurement range	Standard 0...2000 ppm, optional 0...5000 ppm		
Accuracy	±30 ppm ±3 % of reading		
Warm-up time	<1 min.		
Long-term stability	<± 0.3 % of measurement range		
Pressure dependence	+1.6 % of measured value per kPa change from normal pressure (101.3 kPa)		
Maintenance	No maintenance necessary in normal indoor use		
Lifetime	>15 years		
Temperature measurement			
Temperature sensor	NTC		
Measurement range	0...50 °C / 0...100 °F		
Accuracy	0.5 K		
Analog output			
Number	2		
Current	0/4...20 mA		
Voltage	0...10 VDC		

GREENHOUSE



Applications

Measures CO₂ and temperature in greenhouses and wherever adverse environmental conditions prevail

	CF8-W-Disp-GH
Output signals	0...10 VDC 0/4...20 mA
Supply voltage	16...29 VDC / VAC
Measurement range	0...2000 / 5000 ppm 0...4 % vol (0...40,000 ppm) 0...50 °C
Relay	Open <900 ppm, closed >1000 ppm (range adjustable)
Protection	IP54



INCUBATOR

Applications

Measures CO₂ in incubators and climate chambers

Order code	CF8-D/W-IN
Output signals	0...5 VDC 4...20 mA
Supply voltage	16...29 VDC / VAC
Measurement range	0...3 % vol (0...30,000 ppm)
Dimensions	Ø40 x 102 mm
Protection	IP67

INCLUDED

- Factory adjustment certificate
- Short instruction manual

RECOMMENDED ACCESSORIES

- Service cable CF5/8 Comm Cable

Reference

See www.rotronic.com for specifications and other models

CL11 BENCHTOP DISPLAY UNIT

Benchtop display unit for monitoring indoor air quality. Measures and records CO₂, relative humidity and temperature.

Applications

Indoor air quality (IAQ) measurements in offices, schools, etc.

Features

- Measures and records CO₂, relative humidity and temperature
- Accuracy: $\pm 2.5\%RH$ / $\pm 0.3\text{ K}$ / $\pm 30\text{ ppm}$
- ROTRONIC HYGROMER® IN-1 humidity sensor
- 40,000 data point memory for CO₂, humidity and temperature values
- Maximum, minimum and average value display
- Adjustable audible and visual CO₂ alarm
- Real time clock with backup battery
- Includes free logging and configuration software



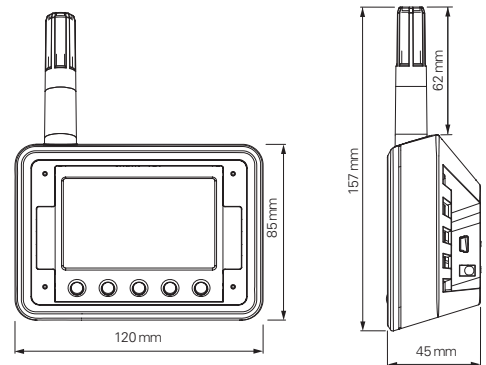
Order code	CL11
Probe type	CO ₂ infrared (NDIR) with automatic calibration (ABC) Humidity: ROTRONIC HYGROMER® IN-1 Temperature: NTC
CO ₂ measurement range	0...5000 ppm
Range of application	0...50 °C / 0...95 %RH, non-condensing
Material	ABS
Power supply	AC adapter
Protection	IP30

INCLUDED

- Short instruction manual
- AC adapter AC1214
- ROTRONIC software SW21

RECOMMENDED ACCESSORIES

• Humidity calibration device	ER-15
• Humidity standard for calibration 35 %RH	EA35-SCS
• Humidity standard for calibration 80 %RH	EA80-SCS
• External temperature probe	AC1215



CO₂ DISPLAY



Room panel for monitoring indoor air quality. Measures and records CO₂, relative humidity and temperature.

Applications

Indoor air quality (IAQ) measurements in offices, schools, etc.

Features

- Measures and records CO₂, relative humidity and temperature
- Accuracy: ±2.5 %RH / ±0.3 K / ±30 ppm
- ROTRONIC HYGROMER® IN-1 humidity sensor
- 18,000 data point memory for CO₂, humidity and temperature values
- Adjustable visual CO₂ indicator
- Data download via USB stick
- Display of date and time



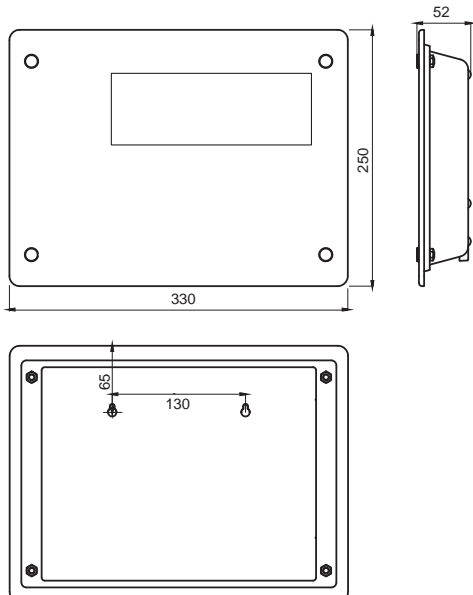
Order code	CO ₂ DISPLAY
Probe type	CO ₂ infrared (NDIR) with automatic calibration (ABC) Humidity: ROTRONIC HYGROMER® IN-1 Temperature: NTC
CO ₂ measurement range	0...5000 ppm
Range of application	0...50 °C / 0...95 %RH, non-condensing
Material	ABS
Power supply	AC adapter, 12 V
Dimensions	330 x 250 x 50 mm

INCLUDED

- Short instruction manual
- AC adapter AC1214
- Screws and plugs for mounting
- Factory adjustment certificate

RECOMMENDED ACCESSORIES

• Humidity calibration device	ER-15
• Humidity standard for calibration 80 %RH	EA80-SCS
• Humidity standard for calibration 35 %RH	EA35-SCS
• External temperature probe	AC1215
• Zero calibration kit	CO2 CALIBRATOR



CP11

Portable monitoring of indoor air quality. Measures and records CO₂, relative humidity and temperature.

Applications

Mobile inspections and random tests of indoor air quality in offices, schools, etc.

Features

- Measures and records CO₂, relative humidity and temperature
- Accuracy: ±2.5 %RH / ±0.3 K / ±30 ppm
- ROTRONIC HYGROMER® IN-1 humidity sensor
- 18,000 data point memory for CO₂, humidity and temperature values
- Maximum, minimum and average value display
- Adjustable audible CO₂ alarm
- Adjustable automatic power off function
- Includes logging and configuration software

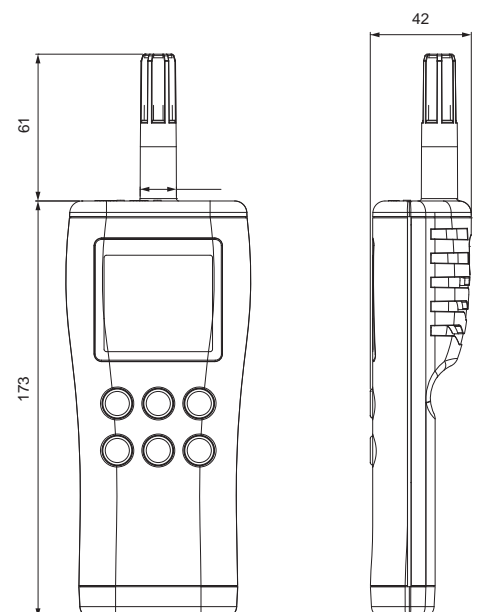
Order code	CP11
Probe type	CO ₂ infrared (NDIR) with automatic calibration (ABC) Humidity: ROTRONIC HYGROMER® IN-1 Temperature: NTC
CO ₂ measurement range	0...5000 ppm
Range of application	0...50 °C / 0...95 %RH, non-condensing
Material	ABS
Power supply	4 AA batteries / optional AC adapter
Protection	IP30

INCLUDED

- Short instruction manual
- 4 x AA batteries
- ROTRONIC software SW21
- USB cable
- Soft case

RECOMMENDED ACCESSORIES

• AC adapter 5 VDC	AC1214
• Humidity calibration device	ER-15
• Humidity standard for calibration 35 %RH	EA35-SCS
• Humidity standard for calibration 80 %RH	EA80-SCS



SPECIFICATIONS

Specifications	CL11	CP11	CO ₂ DISPLAY
General			
Parameters	CO ₂ , relative humidity and temperature		
Memory capacity	40,000 values with time stamp, automatic recording (%RH / °C / ppm)	18,000 values with time stamp, automatic recording (%RH / °C / ppm) 99 single values with time stamp, manual recording (%RH / °C / DP / WBT / ppm)	18,000 values with time stamp, automatic recording (%RH / °C / ppm)
Housing material / Protection	ABS / IP30		
Dimensions	157 x 120 x 45 mm	77 x 42 x 234 mm	330 x 250 x 50 mm
Weight	200 g	290 g	1400 g
Display	Two-line LCD with backlight		Seven-segment display
Alarm	Audible and visual, adjustable for CO ₂ measurement	Audible, adjustable for CO ₂ measurement	Visual, adjustable for CO ₂ measurement
Power supply	AC adapter AC1214	4 AA batteries / optional AC adapter AC1214	AC adapter
Current consumption	50 mA	40 mA	<700 mA
Application temp. housing / electronics	0...50 °C / 0...95 %RH, non-condensing		
Service interface	USB Mini port		
CE / EMC compatibility	CE conformance 2004/108/EC		
CO₂ measurement			
Measurement principle	Infrared (NDIR) with automatic calibration (ABC)		
Measurement range	0...5000 ppm		
Accuracy at 23 °C ±5 K	±30 ppm ±5 % of measured value		
Zero drift	<10 ppm/year		
Maintenance	No maintenance (standard indoor applications)		
Humidity measurement			
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		
Long-term stability	<1.5 %RH/year		
Response time	<30 s τ63, without filter		
Temperature measurement			
Sensor	NTC		
Measurement range	-20...60 °C		
Accuracy at 23°C ±5 K	±0.3 K		
Response time	4 s t90		

ZERO CALIBRATION KIT

Features

- Instrument generates CO₂- free air for calibration of CO₂ sensors at "zero point"
- Average absorption time of 9 hours per cartridge
- Power supply via AC adapter or internal rechargeable battery
- Charging function

Order code	CO2-CALIBRATOR
Working principle	Neutralization of CO ₂ from the ambient air
Purity	20...25 ppm
Dimensions	156 x 89 x 26 mm
Weight	270 g
Gas flow	320...340 ml/min.
Application temperature	0...45 °C
Rechargeable battery	Li-ion, 7.4 V
AC adapter	2 VDC, 0.5 A

INCLUDED

- Short instruction manual
- AC adapter
- 2 x set of replacement cartridges (5 pc. per set)

CO₂ REPLACEMENT CARTRIDGES

Features

- Replacement cartridges for CO₂ CALIBRATOR
- Set with 5 cartridges

Order code **CO2 CARTRIDGE**

