Echoflex   Wireless CO2 Sensor

Type(s)

Project

Date

Notes

GENERAL INFORMATION

The Wireless CO2 Sensor (RCT) uses wireless technology to communicate accurate indoor CO2, temperature, and relative humidity readings to compatible controllers or gateways.The RCT sensor is designed for commercial facilities where indoor environmental quality is of concern and potential savings from utilizing CO2 based demand controlled ventilation is desired. The sensor is equipped with a solar panel that harvests light energy from natural or artificial light sources. Excess energy is stored for use in periods of darkness allowing the sensor to operate for as long as 75 hours with no light. A CR2032 battery is installed for calibration purposes or to provide backup power for up to five years in continued low light applications.

The RCT incorporates Echoflex's latest diagnostic and configuration features to ensure calibrated CO2 values, wireless range and solar harvesting capability. At the push of a button, the RCT sensor can indicate current CO2 levels via three colored LEDs. Simple button press and hold sequences can display solar energy harvesting performance and Echoflex's Range Confirmation technology will indicate radio signal strength.

Sensor status updates are dynamically controlled driven by power management logic that determines the messaging rate to ensure consistent and timely updates. Further control logic monitors quick changes in data values and can push immediate sensor updates to linked receivers.

An on-board absolute pressure sensor provides correction for CO2 readings when at higher altitudes ensuring accuracy with each reading. CO2 calibration can be initiated manually or as an automatic self-calibration routine.

The Echoflex RCT sensor works with many gateways from common BEMS manufacturers to provide explicit, accurate, and timely monitoring of a facility's interior spaces.

ORDERING INFORMATION

Wireless CO2 Sensor

MODEL	DESCRIPTION
RCT-1H-UW	902 MHz Model
RCT-1H-YW	868 MHz Model

FEATURES

- Solar powered, wireless CO2, temperature and relative humidity sensor
- Wall mount with removable back plate
- Easily calibrated in ambient air
- Integrated self-calibration feature eliminates maintenance
- Built-in absolute pressure sensor corrects CO2 reading for altitude
- Integrated solar harvesting energy level via LED indication
- Integrated Range Confirmation via LED indication
- Reliable radio reception range of 24 m (80 ft) - commercial office spaces (typical), up to 100 m (330 ft) line of sight
- Smart power management logic manages sampling and message transmission based on real time ambient light levels
- Current CO2 level can be displayed at sensor via LED indication
- CR2032 Coin cell battery included for low light conditions
- Operates in light conditions as low as 5 foot candles (50 lux)

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PRODUCT SPECIFICATIONS

Carbon Dioxide Sensing

Measurement range	0–2,000 ppm
Technology	Ultra low power, LED-based NDIR
Accuracy	± 50 ppm with resolution of 10 ppm
Altitude/pressure compensation	Built-in correction
Self-calibration	Automatic background calibration (ABC)

Temperature Sensing

Sensing range	0°C to 51°C (32°F to 124°F)
Accuracy	± 0.5°C (± 0.3°C)
Resolution	0.2°C (0.36°F)

Relative Humidity

Sensing range	0%–100% RH range
Accuracy	±3% RH at 10%–90% ±7% at 0%–10% and 90%–100%
Resolution	0.5%

Power Supply

Operational light level	5 foot candles (50 lux)
Minimum charge for operation	10 minutes at 18.5 foot candles (200 lux)
Charging light level	18.5 foot candles (200 lux)
Maintain charge time	18.5 foot candles (200 lux) for 6 hours
Maximum charge time	16 hours at 18.5 foot candles (200 lux)
Operating life at full charge	75 hours at 0 lux
Battery	CR2032 coin cell

I/O Information

Inputs	Link button, Test button
Outputs	LEDs - red, green and blue

Communications

Radio frequency	902 MHz(U) or 868 MHz(Y)
Antenna	Integrated whip
Transmission range	24 m (80 ft) - commercial office spaces (typical), up to 100 m (330 ft) line of sight

Mechanical

Operating temperature	-25°C to 50°C (-13°F to 122°F)
Weight	115 g (4 oz)
Dimensions	135x72x24 mm (5.3x2.8x0.9 in)
Mounting	Screws or double-sided tape (not included)

Regulatory and Compliance

902 MHz model	FCC Part 15.231 Remote Control Transmitter IC RSS-210 RoHs compliant
868 MHz model	CE Mark RoHs compliant

Temperature Monitoring

AMBIENT LIGHT LEVEL	TEMPERATURE/RH SAMPLING RATE	CO2 SAMPLING RATE	HEARTBEAT RATE
> 200 lux (18.5 fc)	16 seconds	300 seconds (5 minutes)	300 seconds (5 minutes)
< 200 lux (18.5 fc)	32 seconds	600 seconds (10 minutes)	600 seconds (10 minutes
< 50 lux (5 fc) for 16 hours	64 seconds	1,200 seconds (20 minutes)	1,200 seconds (20 minutes)

PHYSICAL

Wireless CO2 Sensor Weight and Dimensions†

MODEL	HEIGHT		WIDTH		DEPTH		WEIGHT	
	mm	in	mm	in	mm	in	g	oz
RCT	137	5.4	72	2.8	32	1.3	115	4

†Note: Mounts in typical flush-mount North American style two-gang electrical boxes, minimum depth 51 mm (2.0 in)

137 mm
(5.4 in)

72 mm
(2.8 in)

32 mm
(1.3 in)