WATERPROOF USB CARBON DIOXIDE (CO2) SENSOR — DXC220

DXC220 with its optional external connector and temperature probe.

DESCRIPTION

The DXC220 is a USB-connected carbon dioxide (CO2) gas sensor for monitoring and data acquisition purposes. Built around a state-of-the-art non-dispersive infrared (NDIR) CO2 sensor, it features exceptional accuracy, performance and stability. In addition, the DXC220 automatically compensates the CO2 value against the ambient temperature, thanks to its built-in precision temperature sensor. Optionally, some models are available with an external water resistant and precision temperature and humidity sensor probe, allowing an accurate reading of the surrounding conditions. The waterproof M8 connector makes the probe field-replaceable and is perfect for quick replacement or custom cable length. It can also optionally be purchased with a built-in precision barometer for additional error correction [1] and data acquisition. The DXC220 is rated IP64, thanks to its water-resistant housing and hydrophobic/oleophobic air filters. It may be installed in harsh and damp environments and sustain water sprays.

APPLICATIONS

- Incubator CO2 monitoring
- Manufacturing processes
- Material engineering
- LIMS integration
- OEM integration
- Chemistry of construction materials
- Civil and environmental engineering
- R&D
- Scientific research
- Pre-certification
- Education

INSTALLATION TIME
Less than 10 minutes

UNIQUE SERIAL NUMBER
Each unit is assigned a unique serial number allowing for traceability and certification

FREE DAQ SOFTWARE
Real-time data visualization and logging

DATA INTEGRATION
Command-line tools for direct data access and integration

ALSO AVAILABLE
Traceability certificates

SPECIFICATIONS

Parameter	Condition	Value	Units
Carbon dioxide			
Operating temperature[1]	–	0 to 45	°C
CO_2 detection range	Typ.	0 to 20	%
Accuracy	Typ. at 23°C and 101.5 kPa	±(70 ppm + 5%)	–
Non-linearity	Full scale	1	%
Operating pressure range	–	95 to 106	kPa
Error due to pressure	Per 0.133 kPa	0.13	%
Stabilisation time	–	1	Hrs
Response time[2]	t63%	25	s
Samples rate	–	2	s
Number of IR channel	–	2	ch
Sensor life	Up to, condition dependend	15	years
Auto-calibration mechanism	–	No	–
Factory calibrated[3]	Individually	Yes	–
Calibration gas	Traceable, ±0.01%	5	%
Temperature (optional)			
External probe	–	Yes	-
Operating range	–	-40 to 70	°C
Accuracy	Typ., 0 to 70°C	±0.2	°C
Accuracy	-40 to 0°C	±0.5	°C
Resolution	Typ.	0.01	°C
Repeatability	Typ.	0.06	°C
Response time	t63%	8	s
Factory calibrated[4]	Individually	Yes	–

SPECIFICATIONS

Parameter	Condition	Value	Units
Relative humidity (optional)			
External probe	–	Yes	–
Operating range[5]	Non-condensing	0 to 100	%RH
Accuracy	Typ., 25°C, 0 to 100 %RH	±2	%RH
Accuracy	Max., 25°C, 0 to 90 %RH	±2.5	%RH
Accuracy	Max., 25°C, 90 to 100 %RH	±3.5	%RH
Resolution	Typ.	0.01	%RH
Repeatability	–	0.15	%RH
Factory calibrated[4]	Individually	Yes	–
Power supply			
Voltage	Powered through a USB port	5	V
Current Consumption	At 5V	≈30	mA
Current Consumption	Peak, 0.5s	85	mA
Mechanical			
Dimensions	See schema below	–	–
Colour	Black	–	
Weight	Without probe	185	g
Housing			
Operating temperature[1]	–	0 to 45	°C
Operating relative humidity	–	0-100	%RH
Storage conditions	–	-10 to 60	°C
Material	ABS plastic		
IP rating[6]	–	65	–
Temperature compensated	–	Yes	–

Miscellaneous

Fully linearized	–	Yes	–
Sensors technology	nondispersive infrared	NDIR	–
Long-term stability	–	Yes	–

[1] Exposing the DXC220 at T > 45°C might result in permanent damage.

[2] Time for achieving 63% of a respective step function. Response time depends on design-in, heat exchange and environment of the sensor in the final application.

[3] The CO2 sensor part is individually calibrated by Dracal technologies and ready to use prior to shipping.

[4] The temperature/humidity and the pressure sensors are individually calibrated by their respective manufacturers.

[5] If water condensation or splashing is possible, protect the probe (if installed) using extra precautions. Extra housing for the probe may be required depending on the application.

[6] Only the CO2 housing is protected at this level.

[7] In a fully controlled environment.

All dimensions are in inches

AVAILABLE CHANNEL
As displayed in our logging software

CHANNEL ID*	DESCRIPTION	TYPE	NATURE
00	CO2 GAS PPM (filtered)	CO2 Gas PPM	Real
01	CO2 GAS PPM (instant)	CO2 Gas PPM	Real
02	SHT31 Temperature	Temperature	Real
03	SHT31 Relative Humidity	Relative Humidity	Real
04	Internal temperature	Temperature	Real
05	Internal Relative Humidity	Relative Humidity	Real
06	SHT31 Temperature	Temperature	Real
07	Dew point	Dew point	Virtual
08	Humidex	Humidex	Virtual
09	Heat index	Heat index	Virtual
10	Internal Dew point	Dew point	Virtual

* Channel Id as it appears in QTenki. Virtual channel Id differs in QTenki and usbtenkiget.

AVAILABLE CHANNEL (without external probe)
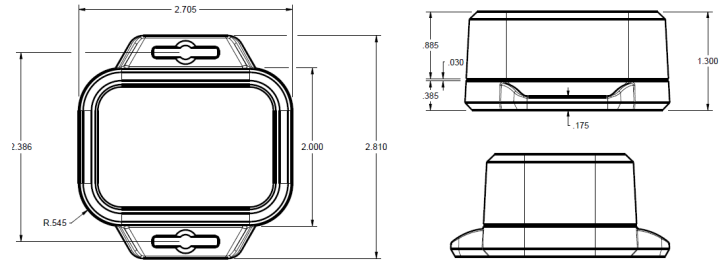### As displayed in our logging software

CHANNEL ID*	DESCRIPTION	TYPE	NATURE
00	CO2 GAS PPM (filtered)	CO2 Gas PPM	Real
01	CO2 GAS PPM (instant)	CO2 Gas PPM	Real
02	Internal Temperature	Temperature	Real
03	Internal Relative Humidity	Relative Humidity	Real
04	Internal Dew point	Dew point	Real

WARNING: Keep in mind that electromagnetic interferences (EMI) may adversely reduce the precision of the sensor. Avoid using this unit close to EMI sources such as or, transformers, high voltage and fluorescent light.

WARNING: Do not install the sensor on a flat surface (table, bench, etc.).

WARNING: **DO** respect the operational temperature limits to avoid a significant and permanent shift of the CO2 sensor precision.

NOTE: The temperature **probe**, if present, is not waterproof and must be protected if contact with water is possible.
If the probe is inadvertently splashed or submerged in water for a few seconds, unplug the unit and let it dry few hours.

TIP: Avoid installing the sensor in a location where considerable vibrations may be present. Large vibrations can introduce extra inaccuracy in the pressure and CO2 readings.

TIP: The sensor will perform better when installed on a wall (vertically), with the USB cable downward.

DXC220 Only, without optional external connector and temperature probe.

ORDERING

PRODUCT(S)

PART NUMBER	OPTION	DESCRIPTION
601028	USB-DXC220	USB Water resistant (WR) CO2 20% for harsh environments, without probe
601029	USB-DXC220t	USB WR CO2 sensor 20%, with temperature and relative humidity probe, 12 cm
601096	VCP-DXC220t1	USB WR CO2 sensor 20%, with temperature and relative humidity probe, 100 cm
601098	VCP-DXC220t6	USB WR CO2 sensor 20%, with temperature and relative humidity probe, 180 cm

TRACEABILITY CERTIFICATE(S)

DT1DGX1-USB-DXC2xx	1-point CO2 calibration certificate for one (1) unit, 5%.

Warning: This product is not designed for use in, and should not be used for, human applications.

Note: While every effort has been made to ensure accuracy in this publication, no responsibility can be accepted for errors or omissions.

Note: Data may change without notification, and you are strongly advised to obtain copies of the most recently issued datasheet.

Sales:
sales@dracal.com

General Inquiries:
info@dracal.com

Technical Support:
support@dracal.com

Visit us at:
www.dracal.com

Dracal Technologies Inc.
7900 boul. Taschereau
Édifice A, suite 204
Brossard, QC, Canada
J4X 1C2