CGP-31

Handheld Carbon Dioxide Meter

CO₂ Measurement in Gas or Liquid Phase Samples
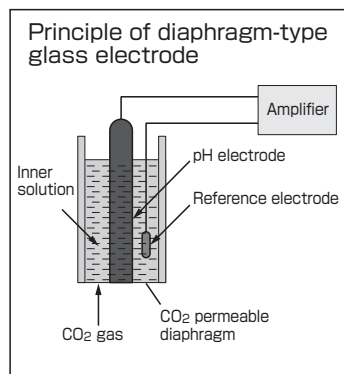
Wide Range
(0.1 to 100%)

Power Saving Design
(2000 hours continuous measurement with two AA batteries)
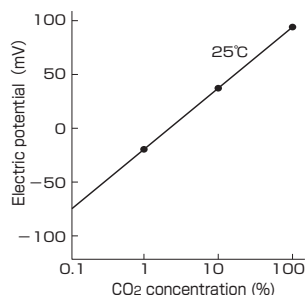
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Measurement principle

A diaphragm-type glass electrode based on the electrochemical principle is employed for this CO_2 gas sensor. According to this principle, when CO_2 gas passes through the diaphragm and dissolves in the inner solution, the pH of the solution changes. Because the change of the pH is proportional to the CO_2 concentration, the degree of change is measured to determine the CO_2 concentration. The following figure indicates the relationship, which exhibits good linearity characteristics, between the CO_2 concentration and the electric potential of the glass electrode. If there is a 10-fold change in the CO_2 concentration, there is an approximately 60 mV change in the electric potential.

Principle of diaphragm-type glass electrode

Relationship between the CO_2 concentration and the electric potential difference of the glass electrode

Specifications

Measurement method		Diaphragm-type glass electrode method
Measurement range	CO_2	Liquid phase : 1.49 to 1490 mg/L Gas phase : 0.1 to 100%
	Temperature	5.0 to 50.0℃
Display range	CO_2	Liquid phase : 0.000 to 2.020 mg/L, 0.00 to 20.20 mg/L, 0.0 to 202.0 mg/L, 0 to 2020 mg/L Gas phase : 0.000 to 0.202%, 0.00 to 2.02%, 0.0 to 20.2%, 0 to 202% Range selection : Automatic/ Manual
	Temperature	−5.0 to 110.0℃
Repeatability	CO_2	±5% FS or less (Measurement conducted using standard solutions)
	Temperature	±0.5℃ or less
Response time		90% response : Approx. 2 min. (Measurement conducted using standard solutions)
Calibration method		Two-point calibration using a standard CO_2 solutions or standard gases
External output ports*		・RS-232C (non-isolated) : Personal computer or external printer EPS-P30 (optional) ・Analog output (non-insulated) : Three output ports for concentration, temperature, and range
Waterproof construction (meter part)		IP 67 (enabled when the sensor is connected and on the external I/O ports are masked) ＊The meter part can be submerged at a depth of 1 m for up to 30 min.
Ambient temperature/ humidity		0 to 45 ℃ , no more than 90% (no condensation)
Power source		Two AA alkaline batteries/ nickel hydrogen batteries Dedicated AC adapter (6 VA, optional) also available
Power consumption		Approximately 0.003 W (when using batteries)
External dimensions		Meter part : Approx. 68 mm (W)×35 mm (H)×173 mm (L)
Weight		Meter part : Approx. 280 g (includes batteries)

＊Special cable is required to use the RS-232C interface and the analog output port simultaneously. Please contact us for details.
 If the sample is grounded, make sure to insulate the RS-232C and analog output port.

Note 1) A DKK-TOA stirrer or commercially available stirrer would be needed to use standard solutions for calibrations.

Note 2) The lower (sensing) part of the sensor probe has been designed for immersion into a liquid samples. However, the upped part, around where the cable entry is located, is not suitable for immersion into liquid samples. Therefore the sensor probe should not be completely immersed into liquid samples.

Features

■Excellent selectivity

The diaphragm-type glass electrode method is employed to guard against the effects of other mixed gases (except acid gases and basic gases). There is also no need for drying sample because the sensor is relatively unaffected by humidity.

■Concentration conversion function

You can specify to switch between the gas phase concentration (%(v/v)) and the liquid phase concentration (mg/L).

■Memory function capable of saving up to 1,000 data items

Supports auto-save for specified intervals*

＊Short interval memory function: 1 sec. to 99 min. 59 sec.
 Long interval memory function: 2 min. to 99 hrs. 59 min.
 (When using the long interval memory function, the switch turns off (enters sleep mode) after measuring concentration for 1 minute. It remains off until the next measurement starts.)

■Interface for External Devices

(Ability to connect the meter to a personal computer, an external printer, and a recorder.)

We also provide special data acquisition software for loading saved measurement data into a personal computer in text format.

Standard accessories

CO_2 electrode ELX-008(cable length : 1m)
(Only included when full set is ordered)
Calibration cell CGC-202L(3 pcs)
Powder of CO_2 calibration solution : 143D044
Ion strength adjuster: 143D045
Protection cover (with shoulder belt)
Electrode stand
Electrode holder
AA alkaline battery (trial use) (2)
Instruction manual

Optional parts

Product	Model / Code No.
Stirrer	ST-7
External printer (with connection cable)	EPS-P30
Analog output cable (1.5 m)	118N063
Data acquisition software	GP-LOG
RS-232C connection cable (2 m)	118N062
AC adapter	—

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⚠ CAUTION Do not operate producuts before consulting instruction manual.