



GS45

High-concentration CO₂ Transmitter



| Introduction |

eYc GS45 is a non-dispersive infra-red (NDIR) CO₂ sensor module designed specifically for incubator application. With pigtail wire connections, the GS45 comes with internal and external mounting options.

The sensor module is powered with DC 12 V and it converts the measurement into a linear voltage signal (0 ... 5 V corresponding to 0 ... 20 vol.% CO₂) or RS-485 (Modbus communication corresponding to 0 ... 30 vol.% CO₂).

The GS45 also comes with simple maintenance features. The BC wiring connection allows the user to perform a quick background calibration (BC) (Sensor exposed to the fresh-air condition).

| Applications |

Incubators / Residential / Commercial / Industrial spaces

| Specification |

Sensing method	Non-dispersive infrared(NDIR)waveguide technology
Sampling method	Diffusion
Response time($T_{1/e}$)	30 sec diffusion time
Measurement range	0 ... 20% _{vol.} (0 ... 5 V)/ 0 ... 30% _{vol.} (RS-485)
Digital resolution	0.01% _{vol.}
Repeatability	$\pm 0.1\% \text{vol. CO}_2 \pm 2\%$ of measured value
Accuracy ^{1,5}	$\pm 0.2\% \text{vol. CO}_2 \pm 3\%$ of measured value
Pressure dependence	+1.6% reading per kPa deviation from normal pressure, 100 kPa
Calibration support	BC input to trigger background calibration at 400 PPM(0.04% _{vol.})CO ₂ (Short circuit to G0 for at least 10 sec)(0 ... 5V)/ Calibration by Modbus communication(RS-485)
Voltage output	0 ... 5 V corresponding to 0 ... 20 vol.% CO ₂
Output voltage resolution	5 mV or 0.03% CO ₂
Output load	$\geq 10 \text{ k}\Omega$
Communication interface	RS-485 Modbus communication
Storage temperature range	-40 ... +70°C(Non-condensing)
Sensor life expectancy	>15 years ²
Maintenance interval	Every 12 months
Self-diagnostics	Complete function check of the sensor module
Warm-up time	$\leq 1 \text{ min}$
Conformance with the standards	Emission: EN61000-6-3:2001; Immunity: EN61000-6-2:2001; RoHS directive 2002 / 95 / EG
Conformance with standards	Mechanical shock test IEC 60068-2-27 Test Ea; Random vibration test IEC 60068-2-64 Test Fh IEC TR 60721-4-5 table 5: IEC 60721-3-5, Class 5M3(3,6 gRMS)
Vibration immunity test severity	"Mechanical conditions in road vehicles in areas without well-developed road systems, light-weighted vehicles, tracked vehicles and self propelled machines, including installations in places which may be directly hit by flying stones" IED TR 60721-4-2 table 7: IEC 60721-3-2, Class 2M3(3,2 gRMS)
Random vibration test severity	"Transportation in lorries, trailers and all other kinds of transportation in areas without well-developed road systems, by trains with shock reducing buffers and by ships" IEC 60721-3-2, Class A(1,0 gRMS) "Instrumentation and automation equipment on ships"
Operating temperature range	-10 ... 50°C
Operating humidity range	0 ... 95%RH(Non-condensing)
Operating environment	Incubators, residential, commercial and industrial spaces. ⁴
Power input	DC 8 ... 18 V max rating, stabilized to within 10%(on board protection circuits) ³ 40 mA average
Current consumption	<150 mA peak current(Averaged during IR lamp ON, 120 msec) <250 mA peak power(During IR lamp start-up, the first 50 msec)
Electrical connections ⁴	4xAWG24 cable for power input(Red, Black)and voltage outputs(Blue)and background calibration(Yellow)
Dimensions	11x7x2.5 cm(Length)x(Width)x(Approximate Height); External dimensions

Note 1: In normal IAQ applications. Accuracy is defined after minimum 3 weeks of continuous operation. However, some industrial applications do require maintenance.

Please, contact us for further information.

Note 2: SO₂ enriched environments are excluded.

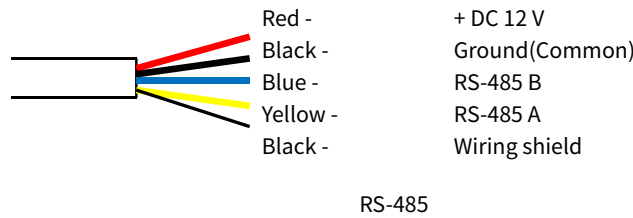
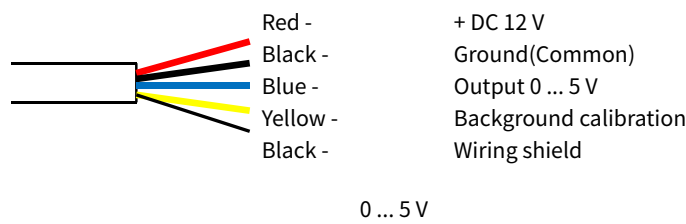
Note 3: Notice that absolute maximum rating is 14 V, so that sensor can be used with 12 V ± 10% supply.

Note 4: Different options exist and can be customized depending on the application. Please, find possible options in this document and contact us for further information.

Note 5: Accuracy is specified over operating temperature range. Specification is referenced to certified calibration mixtures.

Uncertainty of calibration gas mixtures(±2% currently)is to be added to the specified accuracy for absolute measurements.

| Diagram |



| Ordering Guide |

GS45 - Output
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7:0 ... 5 V
 N:RS-485