

IBI-A-C485 – CO₂ Sensor (RS-485 MODBUS)

Key Specifications

Measuring Gas	CO ₂ (Carbon Dioxide)
Sensor Type	NDIR Dual-Beam
Range	0–10,000 ppm
Accuracy	±(50 ppm + 3% of reading)
Resolution	1 ppm
Supply Voltage	DC 5–36 V
Interface	RS-485
Protocol	Modbus RTU
Operating Temperature	0 to 50 °C

Sensor Technology & Integration

The IBI-A-C485 uses **Non-Dispersive Infrared (NDIR) dual-beam** technology to measure CO₂ by detecting infrared absorption at a CO₂-specific wavelength. The dual-beam design continuously compares a measurement channel against a reference channel to compensate for light-source aging, dust, and optics contamination—yielding **high long-term stability** and **low drift**.

Optical measurement is inherently **oxygen-independent** and shows low cross-sensitivity to typical indoor gases. Devices are factory calibrated for ppm-level accuracy with minimal re-calibration under normal indoor conditions. The diffusion-based sampling design supports continuous 24x7 operation with **low maintenance**.

Digital communications via **RS-485 (Modbus RTU)** ensure easy integration with BMS, HVAC/DCV, PLC, and SCADA systems. Standardized registers enable plug-and-play mapping and rapid commissioning.

MODBUS Register Map

Register (Dec)	Parameter	Data Type	Unit / Notes
40001	CO ₂ Concentration	UINT16	ppm
40002	Sensor Status	UINT16	0=OK
40003	Device Address	UINT16	1–247
40004	Baud Rate	UINT16	0=4800, 1=9600

Note: Holding Registers (Function Code 03). DIP switch sets device address; ensure proper RS-485 termination.

