CO_2 PCB K85

PCB to integrate as CO_2 sensor as a transmitter in DCV or monitor in IAQ

CO_2 PCB K85 measures CO_2 concentration in ambient air, with additional options for measuring temperature and allows flexible connectivity.

K85 reuses the core sensor optics from the S8 module, but comes pre-assembled on a robust PCB-board with industrial standard analogue outputs, e.g. 0 to 10V and 4 to 20mA and wide input voltage tolerance with reverse-polarity protection.

Pin layout for additional connectors and terminals allow for further options; e.g. thermistor for temperature and potentiometer for temperature offsets.

The article is prepared to be mounted in an suitable enclosure as a wall-mounted or duct-mounted transmitter.

Standard specification

Measured gas	Carbon dioxide (CO_2)
Operating principle	Non-dispersive infrared (NDIR)
Measurement range	0–2000 ppm
OUT1 analogue output	0–5VDC or 0–10V
OUT2 analogue output	4–20mA
Accuracy	±40ppm ±3% of reading (@ 15–35°C, 20–70%RH (non condensing) (Additional tolerances see next page)
Dimensions	88 x 50 x 14 mm
Weight	25g
Life expectancy	15 years
Operation temperature range	0–50°C
Storage temperature	-20–70°C
Power supply	24V AC/DC
Power consumption	3VA @ 24VAC, 3W @ 24VDC peak <0.9W average

Key benefits

- High measurement accuracy
- Two analogue outputs
  - Voltage, with scalable range selectable by dip switch, and/or milliAmpere
- Digital input
- ABC
- PCB prepared for adding:
  - Cable terminal blocks
  - Termistor for passive measurement of temperature
  - Slide potentiometer (for offsetting temperature)

Senseair

CO_2 PCB Technical Specification

General Performance:

Storage Temperature Range	-20–70°C[1]
Sensor Life Expectancy	15years[2]
Warm-up Time	1 minute (@ full specs <15 minutes)
Operating Temperature Range	0–50°C
Operating Humidity Range	0–95%RH (non condesing)
Operating Environment	In normal IAQ applications CO_2 enriched and corrosive environments are excluded

Electrical / Mechanical:

Power Input	24VAC/DC ±20%, 50/60Hz (half-wave rectifier input) Absolute max. ratings 16.5–40VDC
Power Consumption	<0.9W average
Peak Power Consumption	3VA for 24VAC, 3W for 24VDC
Electrical Connections[4]	Screw terminal for connecting stranded wire 26–16AWG (0.14–1.5mm^2)

CO_2 Measurement:

Sensing Method	Non-dispersive infrared (NDIR)[3]
Sampling Method	Diffusion
Measurement Rate	0.5Hz
Response Time (T90%)	≤2minutes, diffusion
Measurement Range	0–2000ppm$_{vol}$
Accuracy[4,5,6]	±40ppm ±3% of reading (@ 15–35°C, 20–70%RH (non condensing and standard pressure 101.3kPa)
Pressure Dependence	+1.6% reading per kPa deviation from standard pressure, 101.3kPa

Analogue Outputs:

OUT1 Voltage Output:	0–5V or 0–10V for 0–2 000ppm$_{vol}$., selectable by dip switch No. 1. Default: 0–10V
D/A Conversion Accuracy	≤±(20mV + 2% of output)
D/A Resolution	<10mV
Electrical Characteristics	R_{OUT} <100Ω (DC) R_{LOAD} >5kΩ
Fail Safe	Polarity protection
OUT2 Current Output:	4–20mA
D/A Conversion Accuracy	≤±(0.3mA + 2% of output)
D/A Resolution	<0.02mA
Electrical Characteristics	R_{LOAD} <500Ω

Note 1: Storage in sealed ESD bags.
Note 2: With ABC (Automatic Baseline Correction) ON, Default: ON (selectable with dip switch No. 2), or regular maintenance.
Note 3: Waveguide technology with ABC algorithm.
Note 4: Uncertainty of calibration gases (±1% currently) should be added to the specified accuracy.
Note 5: In normal IAQ applications. Accuracy is defined after minimum three (3) ABC periods of continuous operation.
Some industrial applications do require maintenance.
Note 6: Accuracy outside the specified conditions: ±60ppm ±3% of reading.