

K85 CO₂ PCB

Pin header



PCB to integrate as CO₂ sensor as a transmitter in DCV or monitor in IAQ

K85 CO₂ PCB Pin header measures CO₂ 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 – 10 V and 4 – 20 mA and wide input voltage tolerance with protection against reverse power supply polarity.

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 CO ₂	0 – 2000 ppm
OUT1 Analogue output	0 – 5 V or 0 – 10 V
OUT2 Analogue output	4 – 20 mA
Accuracy CO ₂	±40 ppm ±3% of reading (@ 15 – 35 °C, 20 – 70% RH (non-condensing))
Dimensions, max	88 x 50 x 14 mm ¹
Weight	25 g
Life expectancy	>15 years
Operating temperature range	0 – 50 °C
Operating humidity range	0 – 95% RH (non-condensing)
Power supply	24 V AC / V DC
Power consumption	3 VA @ 24 V AC, 3 W @ 24 V DC peak, <0.9 W average

Note 1: For tolerances see mechanical drawing.

Key benefits

- High measurement accuracy
- Two analogue outputs
Voltage, with scalable range selectable by dip switch, and/or milliampere
- Digital input
Overrides outputs, forcing max ventilation
- ABC (Automatic Baseline Correction)
Maintenance-free operation with autonomous recalibration, selectable by dip switch
- PCB prepared for adding;
Cable terminal blocks
Thermistor for passive measurement of temperature
Slide potentiometer (for offsetting temperature)



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Senseair
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an Asahi Kasei company

CO2 PCB K85 Technical Specification

General performance:

Storage temperature range	-20 – 70 °C, (non-condensing) ¹
Sensor life expectancy	>15 years ²
Warm-up time	1 minute (@ full specs <15 minutes)
Conformance with standards	RoHS directive 2011/65/EU
Operating temperature range	0 – 50 °C
Operating humidity range	0 – 95% RH, (non-condensing)
Operating environment	In normal IAQ applications, SO ₂ enriched and corrosive environments are excluded

Electrical / Mechanical:

Power input	24 V AC ±20%, 50/60 Hz (half-wave rectifier input). Absolute max. ratings 16 – 40 V DC
Power consumption	<0.9 W average
Peak power consumption	3 VA for 24 V AC, 3 W for 24 V DC
Electrical connections	Screw terminal for connecting stranded wire 26 – 16 AWG (0.14 – 1.5 mm ²)

CO₂ Measurement:

Sensing method	Non-dispersive infrared (NDIR) ³
Sampling method	Diffusion
Measurement rate	0.5 Hz
Response time (T90%)	≤2 minutes, diffusion
Measurement range	0 – 2000 ppm _{vol.}
Accuracy	±40 ppm ±3% of reading (@ 15 – 35 °C, 20 – 70% RH (non-condensing) and standard pressure 101.3 kPa) ^{4, 5, 6}
Pressure dependence	+1.6% reading per kPa deviation from standard pressure, 101.3 kPa

Analogue outputs:

OUT1 Voltage output:	0 – 5 V or 0 – 10 V for 0 – 2 000 ppm _{vol.} , selectable by dip switch No. 1. Default: 0 – 10 V
D/A Conversion accuracy	≤±(20 mV + 2% of output)
D/A Resolution	<10 mV
Electrical characteristics	ROUT <100 Ω (DC) RLOAD >5 kΩ
Fail safe	Protected against reverse power supply polarity
OUT2 Current output:	4 – 20 mA
D/A Conversion accuracy	≤±(0.3 mA + 2% of output)

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- Note 1: Storage in sealed ESD bags.
- Note 2: With ABC 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) weeks of continuous operation.
Some industrial applications do require maintenance.
- Note 6: Accuracy outside the specified conditions: ±60ppm ±3% of reading.