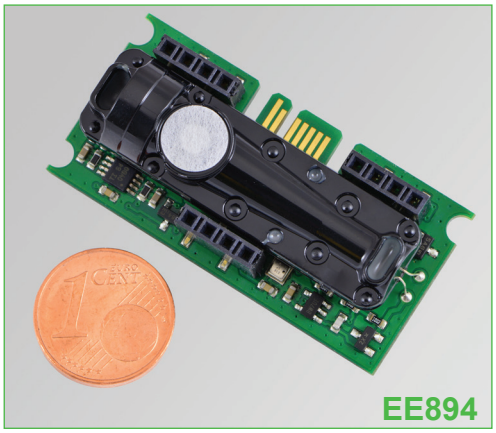
EE894

Digital Sensor Module for CO_2, Temperature, Humidity and Ambient Pressure

The EE894 module is ideal for demand controlled ventilation and building automation. It incorporates the E+E dual wavelength NDIR CO_2 sensor, which compensates for ageing effects, is highly insensitive to pollution and offers outstanding long term stability. Beside CO_2, the module measures also relative humidity (RH), temperature (T) and ambient pressure (p).

A multiple point CO_2 and T factory adjustment procedure leads to excellent CO_2 measurement accuracy over the entire T working range. The pressure compensation minimizes the impact of altitude and ambient pressure variations onto the CO_2 measured data.

The measured data, with a range of up to 1% CO_2, is available on the I²C or the E2 digital interface. The EE894 is available in two sizes and with electrical connection via contact pins and pads, which facilitate the design-in.



An optional kit for the E2 interface facilitates easy configuration of the module and the adjustment of the CO_2, RH, T and p measurement. The CO_2 measurement interval can be set according to the application requirements; by this the average current consumption can be reduced to 420 µA, ideal for battery-operated devices.

Typical Applications

Demand controlled ventilation
Building automation
Data loggers and hand helds
Wireless transmitters

Key features

Autocalibration
Outstanding long-term stability
Temperature and pressure compensated
Low power consumption
Small size

Technical Data

Measured values

CO_2

Measurement principle	Dual wavelength NDIR (non-dispersive infrared technology)
Working range	0...2000 / 5000 / 10000 ppm
Accuracy at 25 °C and 1013 mbar [1] (77 °F and 14.69 psi)	0...2000 ppm: < ± (50 ppm +2% of the measured value) 0...5000 ppm: < ± (50 ppm +3% of the measured value) 0...1% (0...10000 ppm): < ± (100 ppm +5% of the measured value)
Response time t_{90}	105 s with measured data averaging (smooth output) 60 s without measured data averaging [2]
Temperature dependency	typ. ± (1 + CO_2 concentration [ppm] / 1000) ppm/°C (-20...45 °C) (-4...113 °F)
Pressure dependency	0.014 % of the measured value / mbar (ref. to 1013 mbar)
Calibration interval [3]	>5 years
Sampling interval	from 15 s (factory setup) up to 1 h; user selectable

Relative humidity

Working range	0…95 % RH (non condensing)
Accuracy at 25 °C (77 °F)	typ. ± 3 % RH (20...80 % RH)

Pressure

Working range	700…1100 mbar (10.15...15.95 psi)
Accuracy at 25 °C (77 °F)	typ. ± 2 mbar (20…80 % RH)
Temperature dependency	± 0.015 mbar/K

Temperature

Working range	-40…60 °C (-40...140 °F)
Accuracy at 25 °C (77 °F)	typ. ± 0.5 °C (± 0.9 °F)

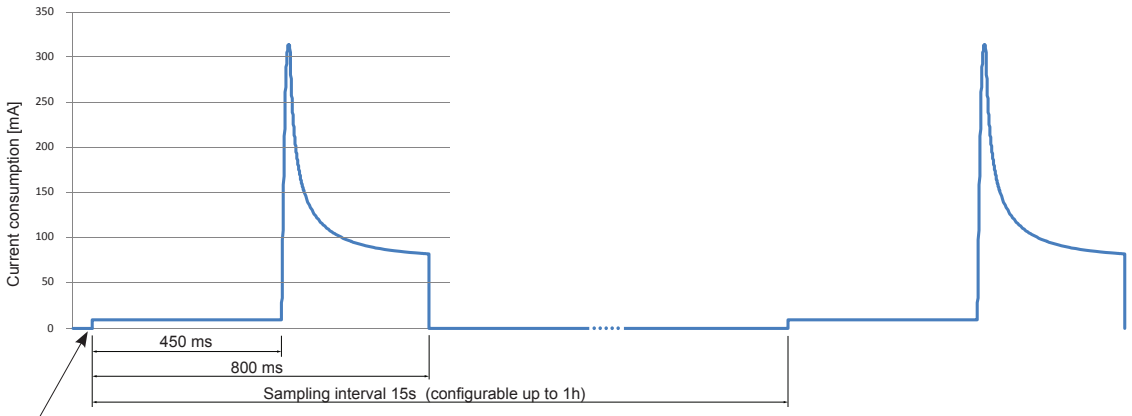
1) With data averaging (smooth output) for averaging output.
2) Available only for I²C.
3) Recommended under normal operating conditions in building automation.

General

Digital interface	I²C or E2
Supply voltage	4.75 - 7.5 V DC
Average current [4]	420 µA (at 1 h sampling interval)
at 25 °C (77 °F) and 5 V supply	3.2 mA (at 15 s sampling interval)
Electrical connection	contact pins and edge card socket
Working and storage conditions	-40...60 °C (-40...140 °F)
	0...95 % RH (not condensating)
	700...1100 mbar (10.15...15.95 psi)

4) The average current depends on the CO_2 sampling interval.

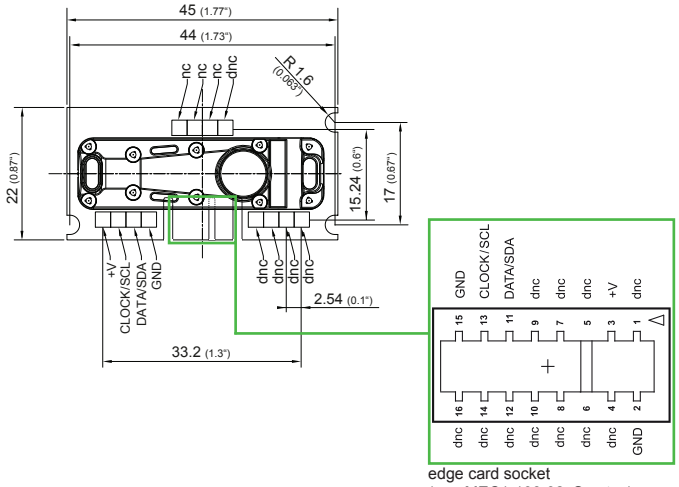
Power Consumption / Peak Current



First reading occurs 5...15 seconds after power on, for details see Application Note at www.epluse.com/ee894.

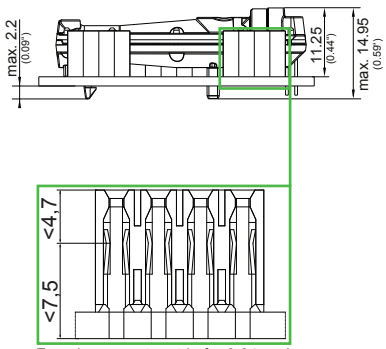
Connection Diagram / Dimensions in mm (inch)

EE894 compact



edge card socket
(e.g. MEC1-108-02, Samtec)

nc..... not connected
dnc.... do not connect

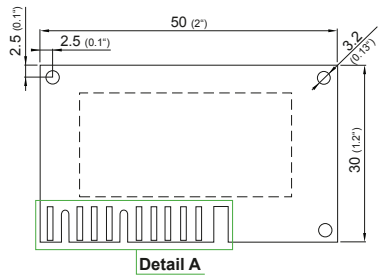


Female connector strip for 0.64 □ pins
contact spacing 2.54 mm (0.1")

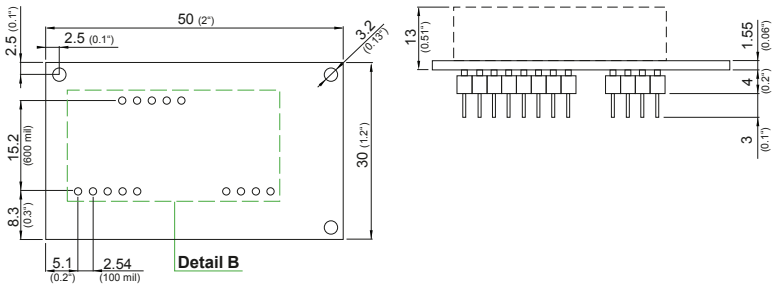
Connection Diagram / Dimensions in mm (inch)

EE894 standard

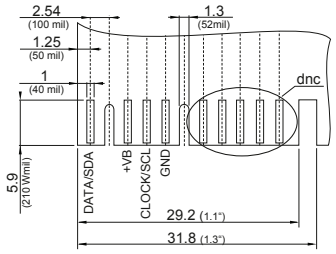
Contact Pads



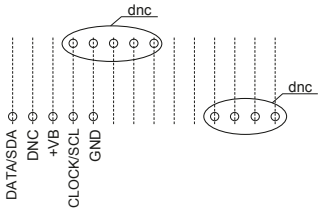
Contact Pins
for DIP-28 wide IC socket 28-pin or for soldering



Detail A / Connection Diagram:

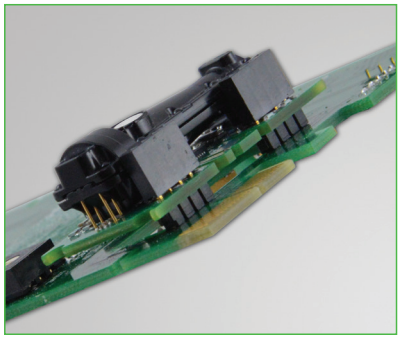


Detail B / Connection Diagram:

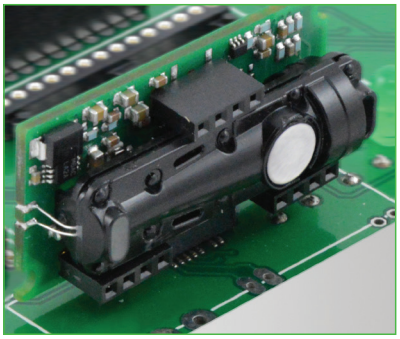


nc..... not connected
dnc.... do not connect

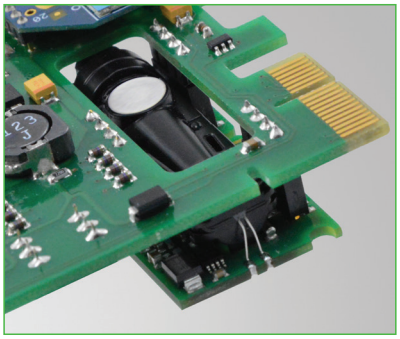
Mounting Examples



Mounting from the top



Mounting with edge card socket



Mounting from the bottom
(space saving)

Accessories (see also data sheet "Accessories")

E2 Test and Configuration Adapter	HA011010
E+E Product Configuration Software	EE-PCS (Download: www.epluse.com/Configurator)

Ordering Guide

		EE894
Model	CO_2 + T + RH + p	no code
CO_2 measuring range	0...2000 ppm	HR2000
	0...5000 ppm	HR5000
	0...1% (0...10000 ppm)	HR1
Size	compact	no code
	standard	PCB8
Connection (only for standard size)	contact pads	E25
	contact pins	E26
Interface	I²C	no code
	E2	J2

Order Example

EE894-HR2000J2

Model:	CO_2 + T + RH + p
CO_2 measuring range:	0...2000 ppm
Size:	compact
Interface:	E2

EE894-HR5000PCB8E25

Model:	CO_2 + T + RH + p
CO_2 measuring range:	0...5000 ppm
Size:	standard
Connection	contact pads
Interface:	I²C

Support Literature

www.epluse.com/EE894