

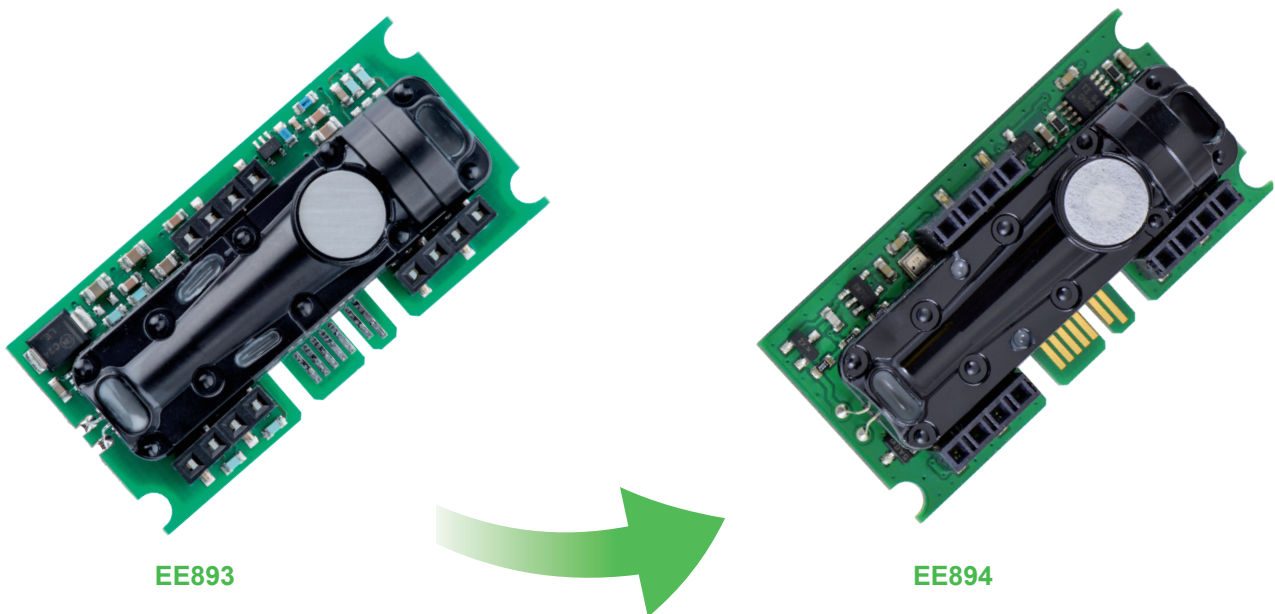
EE893 to EE894 Transition Guide

Use of the EE894 CO₂ Module Generation

Overview

As a success story in the EE89x CO₂ modules timeline, the EE893 is being replaced by the EE894 after more than 6 years on the market. Switching to the EE894 offers some substantial and crucial advantages:

- A further development of the basic measured variable in the CO₂ range through improvements in the electronic processing
- Pressure compensation of the measured data
- Humidity, temperature and pressure are additional measurands available at the digital interface
- Downward compatibility



The EE893 is reaching its End of Life, please observe the following dates:

i	Last-Time-Buy of EE893 is 31 December 2021.
	Last-Time-Delivery of EE893 is 31 March 2022.
	EE894 modules are fully available in mass production. For further information or samples please contact our sales department or use the link www.epluse.com .

Differences (the complete data can be found in the data sheets)

Description	EE893	EE894
Digital interface	E2	I ² C or E2
Average power consumption	58 µA (at 1 h measurement interval) ...3.7 mA (at 15 s measurement interval)	420 µA (at 1 h measurement interval) ...3.2 mA (at 15 s measurement interval)
Peak current	350 mA	320 mA
Pressure dependency at 1013 mbar	0.14 % of the measured value / mbar	0.014 % of the measured value / mbar
Special Features	-	With RH / T / p measurement
Contact pads	Hall tin plated	Galvanic gold plated
PCB	-	According to UL 94 V-0

Table 1: Improvements with EE894

General

The EE893 is reaching its End of Life and will not be shipped after 31 March 2022 (Last-Time-Buy 31 December 2021). This document is a guide to replacing the EE893 with the EE894 and highlights important differences to consider in your design processes.

Communication Compatibility

Both modules are addressed via the E2 bus protocol whereas the EE894 also contains an I²C communication protocol. Find an overview of the different communication options as described in Table 2 and Table 3.

E2 Communication Parameters

Control byte	Bit number				Type of command	EE893	EE894
	7	6	5	4		0x037D (893)	0x037E (894)
0x11	0	0	0	1	Sensor type (group L-Byte)	✓	✓
0x21	0	0	1	0	Sensor type (subgroup)	✓	✓
0x31	0	0	1	1	Available physical measurements	✓	✓
0x41	0	1	0	0	Sensor type (group H-Byte)	✓	✓
0x51	0	1	0	1	Read from internal custom address	✓	✓
0x71	0	1	1	1	Status byte	✓	✓
0x81	1	0	0	0	Measured value 1	low byte	RH
0x91	1	0	0	1		high byte	
0xA1	1	0	1	0	Measured value 2	low byte	T
0xB1	1	0	1	1		high byte	
0xC1	1	1	0	0	Measured value 3	low byte	p
0xD1	1	1	0	1		high byte	
0xE1	1	1	1	0	Measured value 4	low byte	CO ₂ averaged data npc ¹⁾
0xF1	1	1	1	1		high byte	

¹⁾ npc = not pressure compensated

²⁾ pc = pressure compensated

Table 2: Overview of E2 commands for the EE894

i The EE894 module uses clock stretching. Therefore, the SCL is held low by the module after receiving the first byte, as long as the module needs to wake up from sleep mode to fully understand the communication frame.

Wait after each byte until the module releases the clock line. Recommended max. waiting time: 10 ms. In case of failure, repeat communication after ≥ 40 ms for about 3 times.

For full documentation, please refer to the Application Note AN1808-1 "Utilising the E2 Interface for EE894".

I²C Communication Parameters

Command	Function, Description	EE894
0x33 (unshifted)	Slave address	
0xE000	Read Measured values	RH & T
0xE027	Read Measured values	Averaged CO ₂ pc ¹⁾ & RAW CO ₂ pc ¹⁾ & p ²⁾
	CRC Check	Yes

¹⁾ pc = pressure compensated ²⁾ p = pressure

Table 3: Overview of I²C commands for the EE894.

CE and Material Contents

EE893 and EE894 both comply with European RoHS regulations according to 2011/65/EC and (EU) 2015/863.

Further Information

This migration description gives an overview of the most important differences between the EE893 and the EE894, however, it cannot be complete. For more information on specifications, communication, handling and operation, please visit the E+E website www.epluse.com. In case of special queries or if you need assistance with the transition or any other measuring tasks, please contact us directly via www.epluse.com.

Revision History

Date	Revision number	Changes
March 2021	v1.0	Initial version