



Charge Module S/E EVB Datasheet

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1 Revisions

Revision	Release Date	Changes
2	23 February 2024	Added Order Information for V0R5b Updated Board Picture Updated connector information Added JP10 & JP11 Updated connector, jumper, switches diagramm - Added information about required connectors for X1 & X3
1	5 January 2023	initial release

2 Introduction

The CMS/ CME EVB evaluation board includes everything you need to evaluate the Charge Module S/E. It comes with jumpers to select either EV or EVSE evaluation mode, LEDs to display the status as well as onboard power converters (external supply: 12V).

- based on Charge Module S/E
- suitable for direct connection to the CP signal in electric vehicle charging
- external 12 V power supply (not included)
- GPIO / UART / I2C / SPI-Interface

Description	Value
Power supply	12 V
Power consumption	<4 W
Temperature range	-40 °C to +85 °C
Outline dimension	100 mm x 115 mm
RoHS	CMS / CME EVB is RoHS compliant.

Table 1 Operational

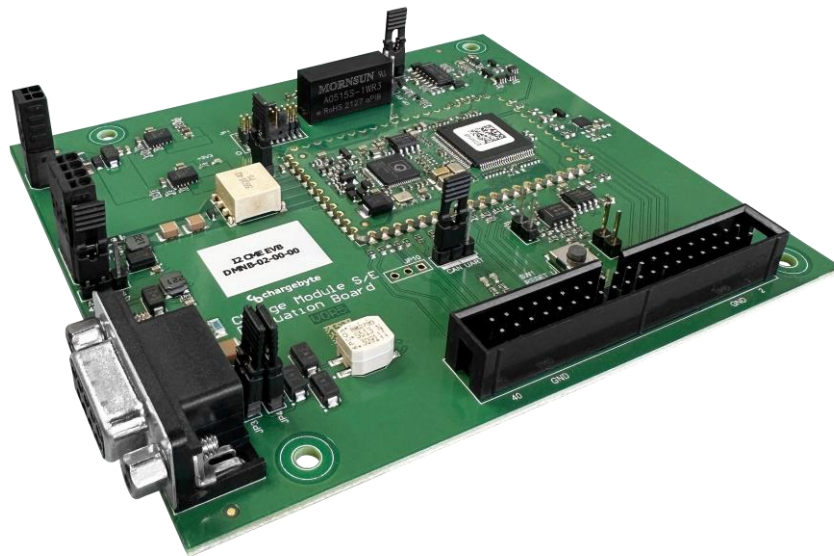


Figure 1 Rendered PCB layout of the evaluation board.

3 Reference Documents

3.1 Datasheets

The datasheets of the Charge Module S and Charge Module E can be found on our website or are available on request.

The User Guides of our Modules regarding also the firmware of the Modules are available on request.

4 Overview

The block diagram shows the components included on the evaluation board, in addition to the CME / CMS. The required interfaces are a 12V power supply, the CP and PP connections as well as the CAN communication. Using the JTAG interface or the GPIOs is optional.

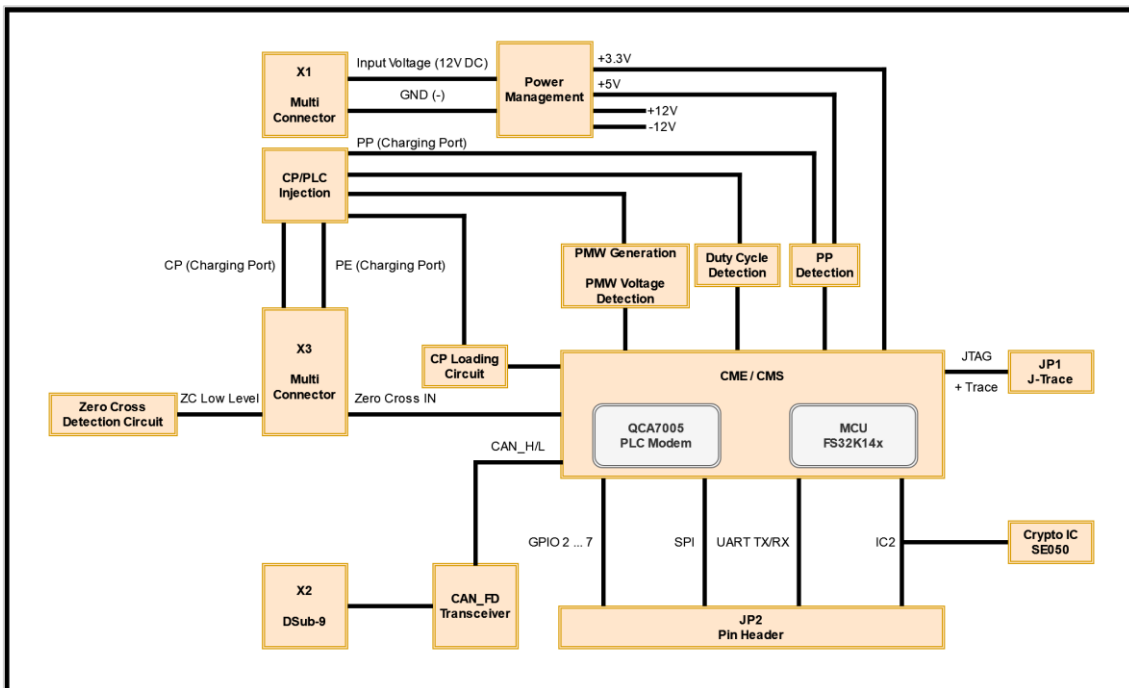


Figure 2 Block diagram CMS / CME EVB

5 Mechanical Dimensions

The mechanical dimensions and mounting hole positions of this product are displayed in the following figure.

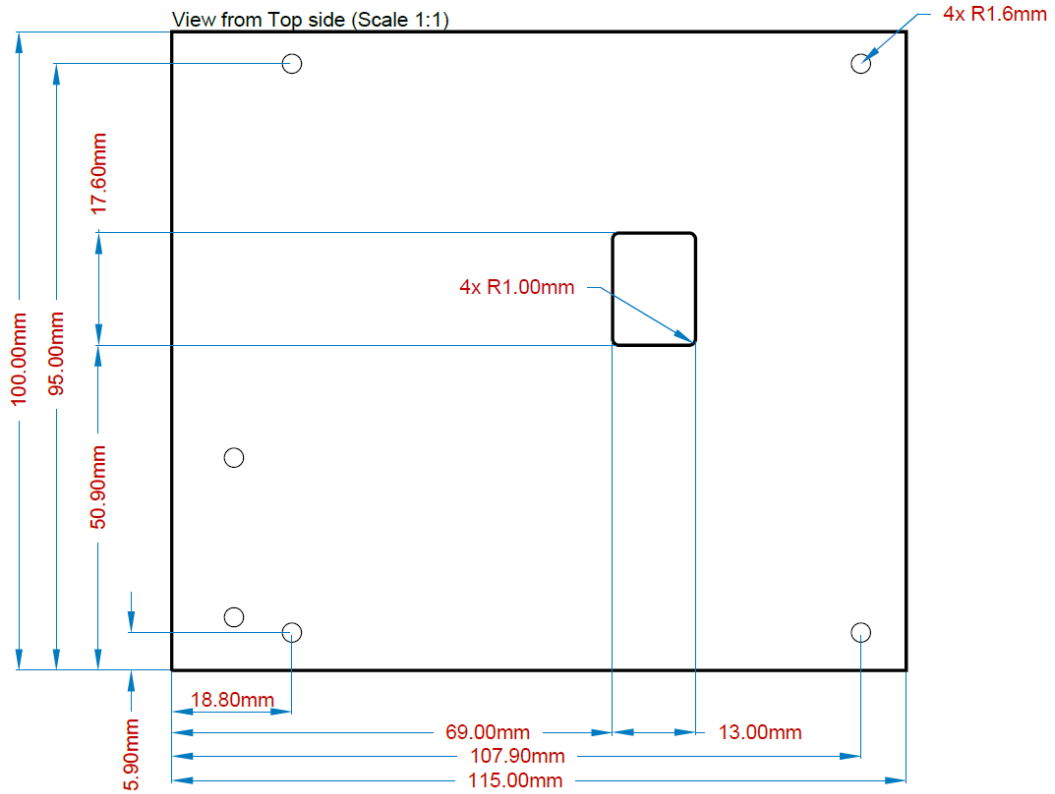


Figure 3 Mechanical Dimensions CMS / CME EVB (top view)

6 Connectors, Jumpers, Switches

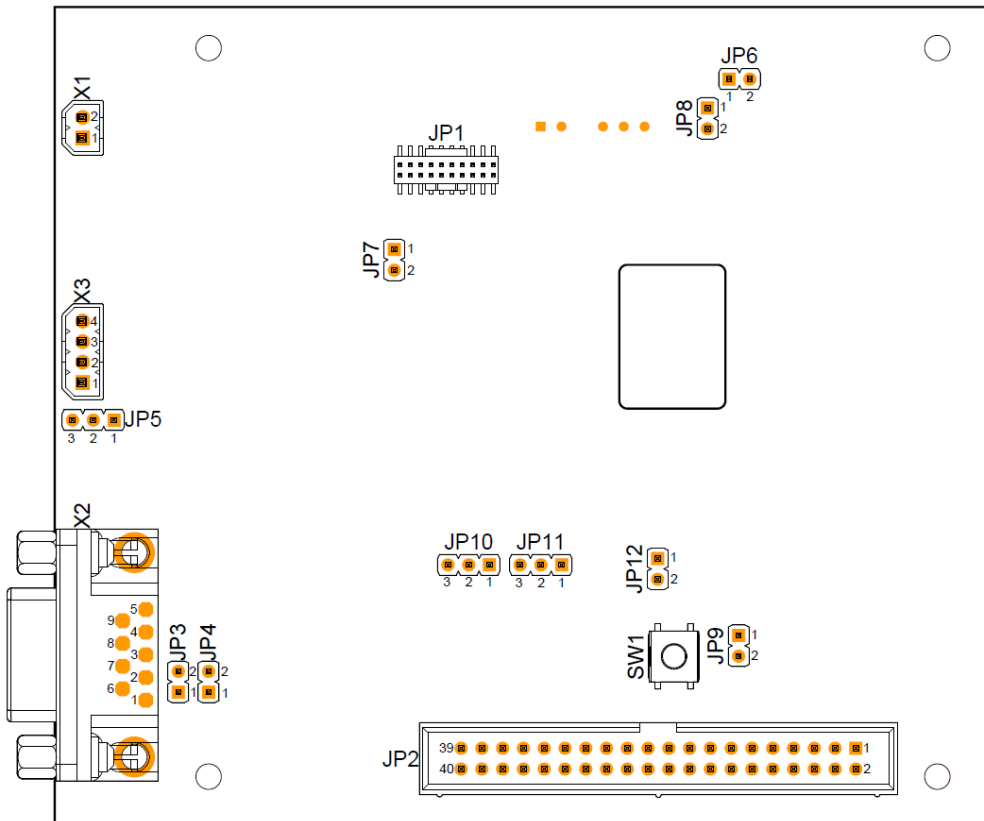


Figure 4 Connectors CMS / CME EVB (top view)

6.1 Board connectors

6.1.1 X1 - Power supply connector

This EVB must be powered via a 12 V power supply. Please connect a suitable power supply to the connector X1, which provides the necessary 12 V. Please note that the evaluation board uses up to 300 mA.

6.1.1.1 Required connector

To create a connection to X1, the correct connectors must be used. We recommend the following connector:

Manufacturer	MPN	Description
Würth Elektronik	69134600002B	TERM BLOCK PLUG 2POS 2.50MM

6.1.2 X2 - D-Sub / CAN connector

This EVB has one D-Sub connector. X2 is a CAN bus connection with data transmission speed up to 1 Mbit/s.

Pin	Signal	Description
1	-	Not connected
2	CAN_L	CAN bus signal (dominant low)
3	CAN_GND	CAN ground
4	-	Not connected
5	(CAN_SHLD)	Optional shield (Connected to GND)
6	-	Not connected
7	CAN_H	CAN bus signal (dominant high)
8	-	Not connected
9	-	Not connected

Table 2 D-Sub connector pin description

6.1.3 X3 - Charging connector

The charging connector provides interfaces to the Control Pilot (CP), Proximity Pilot (PP) and Protective Earth (PE). Powerline Communication (PLC) is transmitted and received via Control Pilot.

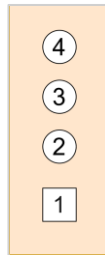


Figure 5 X3 pin layout

6.1.3.1 Required connector

To create a connection to X3, the correct connectors must be used. We recommend the following connector:

Manufacturer	MPN	Description
Würth Elektronik	691346000004B	TERM BLOCK PLUG 4POS 2.50MM

Pin	Signal
1	Proximity Pilot
2	Control Pilot
3	PE
4	ZC IN

Table 3 X3 pin description

6.1.4 JP1 - JTAG

A J-Link can be connected to this interface. The user of the EVB needs a 19-pin Cortex-M adapter to connect it to the segger debugger.

<https://www.segger.com/products/debug-probes/j-link/accessories/adapters/19-pin-cortex-m-adapter/>

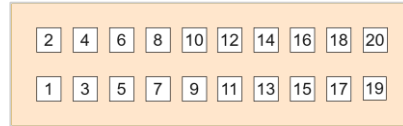


Figure 6 JP1 pin layout

Pin	Signal	Pin	Signal
1	+3,3V	11	not connected
2	JTAG TMS	12	Trace CLK
3	GND	13	not connected
4	JTAG TCLK	14	Trace D0
5	GND	15	GND
6	JTAG TDO	16	Trace D1
7	not connected	17	GND
8	JTAG TDI	18	Trace D2
9	not connected	19	GND
10	RESET MCU	20	Trace D3

Table 4 JP1 pin description

6.1.5 JP2

This is a general purpose interface to get access to the various GPIOs as well as the embedded communication interfaces UART, SPI and I2C.



Figure 7 JP2 pin layout

Pin	Signal	Pin	Signal
1	not connected	21	MISO
2	not connected	22	RESET MCU
3	I2C SDA0	23	SCK
4	not connected	24	SPI CS
5	I2C SDL0	25	GND
6	GND	26	GPIO 7
7	GPIO 2	27	not connected
8	reserved	28	not connected
9	GND	29	not connected
10	reserved	30	GND
11	GPIO 4	31	GPIO 13
12	GPIO 3/SE05_EN	32	UART0 RX
13	GPIO 5	33	UART0 TX
14	GND	34	GND
15	GPIO6	35	GPIO 11
16	IRQ	36	GPIO 12
17	not connected	37	GPIO 9
18	not connected	38	GPIO 10
19	MOSI	39	GND
20	GND	40	GPIO 8

Table 5 JP2 pin description

6.2 Jumper / Switches

6.2.1 Overview

In this section you will learn how to use the jumpers and switches of the board ([Figure 4](#)) to activate the various possibilities of the EVB.

Jumper /Switch	Configuration for EV	Configuration for EVSE	Description
JP3	Set by costumer	Set by costumer	CAN-H termination if the customer has terminated the topology. Set if EVB is at the end of the line and should terminate.
JP4	Set by costumer	Set by costumer	CAN-L termination if the customer has terminated the topology. Set if EVB is at the end of the line and should terminate.
JP5	Standard specific	Open	Configure EVB according to different standards. EV: Connect 1 & 2 for SAE J1772 (2.7kOhm), Connect 2 & 3 for IEC 62196-2 (4.7kOhm). EVSE NOT CONNECTED
JP6	Open	Plugged (closed)	Set for EVSE variant, open for EV variant.
JP7	Set (closed)	Set (closed)	Supply CMS/CME with voltage.
JP8	Plugged (closed)	Open	Set EV variant, open for EVSE variant.
JP9	N/A	N/A	Can be used to reset the MCU.
JP10	N/A	N/A	Not available.
JP11	Set by costumer	Set by costumer	Determine interface availability on the EVB (UART or CAN). Connect 1 & 2 for UART, Connect 2 & 3 for CAN.
JP12	Plugged (closed)	Standard specific	Set for EV variant (SAE J1772 & IEC 62196-2) & set for EVSE variant (IEC 62196-2), open for EVSE variant (SAE J1772).
SW1	N/A	N/A	Can be used to reset the MCU.

Table 6 Jumper termination overview

7 Software

The CMS / CME EVB comes with firmware and settings flashed that enable you to get it up and running as fast as possible. Users who want to use it with CME or CMS need to flash different settings.

The flashed firmware is always the newest available at the time of production with the default settings.

For operation the user mainly needs the proprietary UDS tool provided by chargebyte.

UDS tool: This program is used to update to the latest firmware, to update the configuration, read the PCAP files and read/write PIB files (see compatible hardware adapters in the tool settings).

Microboot: This program can also be used to update to the latest firmware available for the EVB (with PCAN/Vector).

Other useful, but not absolutely necessary software are the PCAN-Explorer.

PCAN-Explorer: This program is useful to record CAN traces and analyze them for problems.

For a detailed guide regarding the software, please have a look at the User Guide of the Charge Module S or the Charge Module E.

8 Order Information

The following table provides an overview of the available Evaluation Board variants

Order Code	Module	HW Version	SW Version
I2CMSEVB-DMNC-02-00-00	Charge Module S	V0R5b	latest stable release
I2CMEEVB-DMNC-02-00-00	Charge Module E	V0R5b	latest stable release

Table 7 Evaluation Board Order Codes

9 Handling



This electronic component is sensitive to electrostatic discharge (ESD)

10 Contact

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