ABL

Installation and User Guide CCMS312

Description
The charging current management system CCMS312 is used as a control unit for up to 8 eMH1 (EVCC).

Functions of the CCMS312:

- Simple load management – equal distribution of the maximum current I_m ,that can be provided by upstream infrastructure to the requesting eMH1
- Display and change the maximum current I_m
- Display the actual charging current I_a for each eMH1
- Display the status of the connected eMH1

CCMS312 includes:

- LC display with 3 lines of 16 characters
- 6 functional buttons
- two RJ12-headers as RS485-communication interface
- a 12V supply terminal
- two network cables LOMK130
- one supply cable LOMK430

Technical data

Power supply PWR	Header	MOLEX MiniFit JR 5569 2pol.
	Rated voltage	12V= (9.0 … 30.0V)
	Rated current	40mA
	Max. length of cable	3m
	Fuse	750mA slow blow onboard (non-replaceable)
Serial RS485 interface	Header	2x RJ12
	Data rate	38.4kBd, 8 data bit, 1 stop bit, no parity
	Max. length of cable	10m per segment
	Max. number of bus nodes	10 (1x CCMS312, 8x eMH1, 1x PC or equiv.) Each eMH1 requires a unique address! Use 120Ω-resistor to terminate both ends of the network, if necessary!
Ambient temperature (storage)	-30 … 85°C	
Ambient temperature (operation)	-25 … 55°C	
Relative humidity	10 … 90% no condensation	
IP rating	IP20	

Declaration of conformity

CE

CCMS312 is marked with the CE-tag. Corresponding declaration of conformity is available on request at ABL SURSUM Bayerische Elektrozubehör GmbH & Co. KG or as download at www.abl-sursum.com

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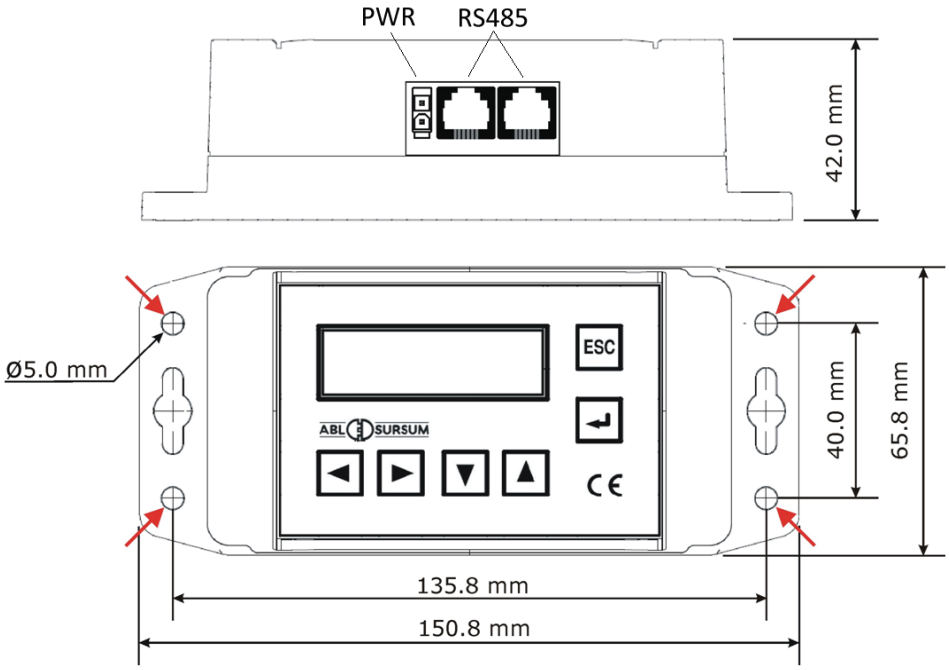
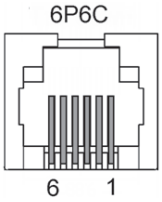
Dimensions



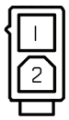
Assembly

- Assembly is done by 4 screws Ø4.5 mm on a stable and even surface
- Strain relief must be provided externally
- Power is supplied via a separate power adapter

Terminal assignment



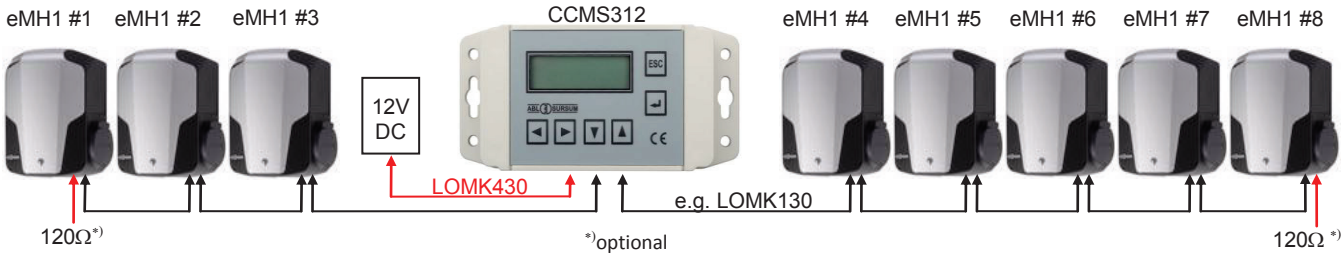
Pin	X2/3 (RS485)
1	M (GND485)
2	M (GND485)
3	A
4	B
5	M (GND485)
6	RESET



Pin	X1 (Power)
1	+12V
2	M (GND)

GND and GND485 are connected via a 100 Ohm resistor.

RS485-Network

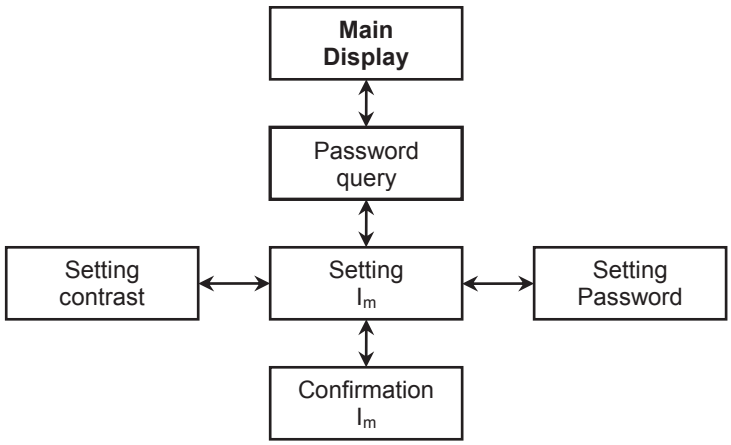


The sequence of eMH1 and CCMS312 is not relevant.
Linear wiring of the RS485-network is mandatory. Tree and star topologies must not be used!

Setup

Step	To do
1	All eMH1 must have a firmware for charging current management systems eMH1 with charging socket: V2.7 or higher eMH1 with charging cable: V5.3 or higher
2	Setup unique CCMS address for each eMH1 Setting address of eMH1 can be done using the user software EVCC_Set_I (V1.1 or higher)
3	Connection and fixture of network-cables
4	Connect CCMS312 to power-supply using LOMK430 and switch on power-supply
5	Set maximum current I_m and password.
6	Functional test (all eMH1 detected?)

Display



Explanation of buttons

◄ Button to the left
► Button to the right
▼ Button to bottom
▲ Button to top
ESC Button Escape
↵ Button Enter

If a button is not listed in the following description of functions, no function is provided for that button in this mode!

Basic functions in each window:

- Push ESC → Main Display
- No button pushed within 1 minute → Main Display

Test Mode

By simultaneously pushing ESC and ↵ while switching on the power-supply the stored eMH1 are deleted and the Test-Mode is activated:

1. Display is colored black to identify possible pixel errors
2. Push ↵ to continue test; corresponding message is shown; Test-Mode is terminated by any other button
3. Push ◄, ►, ▼ and ▲ separately; corresponding message is shown
4. Push ESC to change contrast of display

Main Display

In the Main Display the maximum current I_m, that can be provided by upstream infrastructure, the actual maximum charging current of each eMH1 (I_a) and the status of the eMH1 are displayed.

		C	C	M	S	3	1	2		V	1	.	2		
I	m	:	x	x	x	A		1	2	3	4	5	6	7	8
I	a	:		y	y	A		z	z	z	z	z	z	z	z

xxx := $I_{m;}$ yy := I_a; z:= Status eMH1

z	*Function*	*Description*
-	NONEXISTANT	eMH1 not stored
*	OFFLINE	eMH1 stored but not detected
A	OFF	State A: Standby eMH1
W	WAIT	State B1: EV detected, not enabled by CCMS312
B	EVFOUND	State B2: EV detected; waiting for request for charging by EV or charging stopped/interrupted by EV
C	CHARGE	State C: Request for charging by EV
E	ERROR	State E: Error eMH1
U	UNKNOWN	Unknown state received from eMH1
M	MANUAL	eMH1 in Manual-(Service-)Mode
I	IDLE	eMH1 deactivated by CCMS312. If the eMH1 is in state B for more than 30 minutes, it is deactivated for 15 minutes to maximize I_a for remaining eMH1

Actual maximum charging current per eMH1 (I_a) is calculated as following:
$I_a = I_m / N$
I_m := current, that can be provided by upstream infrastructure
N := Number of eMH1 in state W, B or C

I_a is round down to following values automatically:
0A, 6A, 7A, 8A, 9A, 10A, 11A, 12A, 13A, 14A, 15A, 16A, 18A, 20A, 22A, 24A, 26A, 28A, 30A, 32A

If an additional eMH1 enters state W, I_a is recalculated:

$I_a \geq 6A$	all eMH1 are adjusted to new I_a; the additional eMH1 is enabled (status B)
$I_a < 6A$	all eMH1 keep old I_a; the additional eMH1 is not enabled (Status W). „W“ flashes for that eMH1, that will be enabled first, if possible

Example (I_m = 22A):

1.	EV connected to eMH1 #3 (Status W)	1. Recalculate I_a: 22A/1 = 22A ⇒ I_a = 22A 2. Adjust I_a at all eMH1 3. Enable #3 (Status B resp. C)
2.	EV connected to eMH1 #5 (Status W)	1. Recalculate I_a: 22A/2 = 11A ⇒ I_a = 11A 2. Adjust I_a at all eMH1 3. Enable #5 (Status B resp. C)
3.	EV connected to eMH1 #2 (Status W)	1. Recalculate I_a: 22A/3 = 7,33A ⇒ I_a = 7A 2. Adjust I_a at all eMH1 3. Enable #2 (Status B resp. C)
4.	EV connected to eMH1 #7 (Status W)	1. Recalculate I_a: 22A/4 = 5,5A<6A (!) ⇒ I_a = 7A 2. #7 not enabled (Status W flashing)
5.	EV connected to eMH1 #4 (Status W)	1. Recalculate I_a: 22A/4 = 5,5A<6A (!) ⇒ I_a = 7A 2. #4 not enabled (Status W)
6.	EV disconnected from eMH1 #3 (Status A)	1. Recalculate I_a: 22A/4 = 5,5A<6A (!) ⇒ I_a = 7A 2. Adjust I_a at all eMH1 3. After 10s #7 is enabled (Status B resp. C) 4. #4 not enabled (Status W flashing)

Password query

To enter function (main display) push button „↵“

To make changes, the correct password must be entered in the password query.

		C	C	M	S	3	1	2		V	1	.	2		
				P	A	S	S	W	O	R	D				
				*	*	*	*	*	*	*	*				

********: 8 character password

When shipped, the password is “********”.

Button functions:

◄ , ►	Select a position in the password, the selected digit blinks	
▲ , ▼	Capital letters, numbers and the special characters “*”, “?”, “!” and “_” can be selected	
↵	Password is correct	→ Maximum current setting
	Password is incorrect	→ Main Display

Setting Maximum current I_m

Following values are available for I_m:

12A, 14A, 16A, 18A, 20A, 22A, 24A, 26A, 28A, 30A, 32A, 48A, 63A, 70A, 80A, 100A, 125A

Due to safety reasons I_m must be set twice.

		C	C	M	S	3	1	2		V	1	.	2		
									I	m	:	x	x	x	A
	C	o	n	f	i	r	m		I	m	:	y	y	y	A

xxx: Maximum current

yyy: Confirm maximum current

Button functions:

◄	I_m:	→ Contrast setting
	Confirm I_m:	→ I_m:
►	I_m:	→ Confirm I_m:
	Confirm I_m:	→ Password change
▲	Increase value	
▼	Decrease value	
↵	I_m = Confirm I_m	→ Maximum current confirmation

Confirmation maximum current

For safety reasons, I_m must be confirmed again in the maximum current confirmation.

		C	C	M	S	3	1	2		V	1	.	2		
	C	o	n	f	i	r	m		I	m	:	x	x	x	A
				*		y	y	y	y	y		*			

xxx: Maximum current

yyyyy: Confirmation NO or YES

Button functions maximum current confirmation:

▲ , ▼ Toggle between NO and YES

↵ „NO“ → Maximum current setting

„YES“ → Accept maximum current → Main Display

Setting contrast

		C	C	M	S	3	1	2		V	1	.	2		
		C	o	n	t	r	a	s	t	:		k	k		

kk: Contrast value

Button functions:

▲ , ▼ Change contrast

↵ Accept new contrast → Main Display

ESC Restore old contrast → Main Display

Password change

Via the password change a new password can be set.

		C	C	M	S	3	1	2		V	1	.	2		
		P	W	1	:	*	*	*	*	*	*	*	*		
		P	W	2	:	*	*	*	*	*	*	*	*		

********: 8 character password

Button functions:

◄ , ► Select a position in the password, the selected digit blinks

▲ , ▼ Capital letters, numbers and the special characters “*”, “?”, “!” and “_” can be selected

↵ PW1 = PW2 → store new password → Main Display

To reset the CCMS312 to factory settings a PC / laptop and the program “chip45boot2” are required!