

## ▀ Modbus Register Table CION Home (EMCIONH $\underline{x}$ xxx) & Semipublic (EMCION $\underline{s}$ xxx)

### ▀ GENERAL

This Modbus Register Table applies to charging stations starting with the article numbers EMCIONH... and EMCIONS... . Read the operating instructions and the instruction manual beforehand. In the latter you will find a description of how to configure the charger. You can find this under the following link: <https://www.schrack.com/services/cion-docu> or by scanning the QR-Code:



### ▀ ACTIVATE THE MODBUS RTU INTERFACE

Following preferences must be set:

- DIP switch 1:    **OFF**
- DIP switch 2:    **OFF**

Optional the bus address can be set via DIP switch 3 and 4:

Description	DIP switch 3	DIP switch 4
Bus address 1	OFF	ON
Bus address 2	ON	OFF
Bus address 3	ON	ON
Bus address X (Loaded from configuration memory – see register 500. Default: 4)	OFF	OFF

## FUNCTION CODES

0x03 (Read Holding Register) ... to read from registers  
0x06 (Write Single Register) ... to write a single register (e.g. register 100)  
0x10 (Write Multiple Register) ... to write a multiple register

## DATA TYPES

### uint16\_t

Data length: 16 Bit/2 Byte  
Data type: 2-Byte-Integer unsigned/ EIS 10u / DPT 7.yyy

### boolean

Data length: 1 Bit  
Data type: 1-bit / EIS 1 / DPT 1.yyy

### bit

Data length: 16 Bit/2 Byte  
Data type: Like „boolean“ but multiple bits of a register are used

### char

Data length: 16 Bit/2 Byte  
Data type: Character/ EIS 13 / DPT 4.yyy

## ■ MULTIPLE REGISTERS

Example register 800-814 manufacturer:

In this case registers 800 to 814 must be read. Register 800 are the higher-order bytes, register 101 the lower-order ones.

For example, if you read register 800 = {0x53, 0x43}, register 801 {0x48, 0x52}, ... and so on, they are combined as follows: {0x53, 0x43, 0x48, 0x52, ...}.

All registers together combined you get: 0x5343485241434B20546563686E696B20476D62482020202020202020.

ASCII decoded you will get: „SCHRACK Technik GmbH“.

## ■ BASE ADDRESS

The „base address“ for all registers is „0“.

If, for example, register 100 is read, this is resolved to 0x64 in hexadecimal.

There are rarely systems with a default base address of "1", which cannot be changed. In this case, register 99 must be entered in order to read register 100.

**GENERAL REGISTERS TO CONTROL THE CHARGER**

Register-address	Register designation/name	R/W	Data type	Description of the registers
100	Charging enable/disable	R/W	uint16_t	Enable of the charging process. This value can only be set in modbus RTU operation mode. This register is also set automatically if charging is enabled via input E1 or RFID local. 0 ... Charging not allowed ≥1 ... Charging allowed
101	Target charging current	R/W	uint16_t	Target charging current, which will be communicated to the vehicle. This register can and should be used to set during a charging process for load management use cases. values: 6 to 32
102	LED control	R/W	uint16_t	0 ... Manual LED control (via register 103-109) ≥1 ... Automatic LED control
103	LED period duration	R/W	uint16_t	LED period duration in 64 μs steps (a value of 15624 corresponds to 1 s)
104	Red channel duration	R/W	uint16_t	Red LED period duration in 64 μs steps (a value of 15624 corresponds to 1 s)
105	Green channel duration	R/W	uint16_t	Green LED period duration in 64 μs steps (a value of 15624 corresponds to 1 s)
106	Blue channel duration	R/W	uint16_t	Blue LED period duration in 64 μs steps (a value of 15624 corresponds to 1 s)
107	Red channel polarity	R/W	uint16_t	0 ... Common ground ≥1 ... Common +12 V DC
108	Green channel polarity	R/W	uint16_t	0 ... Common ground ≥1 ... Common +12 V DC
109	Blue channel polarity	R/W	uint16_t	0 ... Common ground ≥1 ... Common +12 V DC
118	Locking motor	R/W	uint16_t	0 ... Automatic 1 ... Manual lock 2 ... Manual unlock ≥3 ... Automatic

■ STATUS (1)

Register-address	Register designation/name	R/W	Data type	Description of the registers
120	Charging enable blocked	R	boolean	0 ... No; 1 ... Yes
121	Status summary The single bits are described below.	R	bit	Each individual bit has its own meaning. Depending on the status of the bit, a distinction is made between "No" and "Yes"
... Bit 0	Charging cable plugged	R		0 ... No; 1 ... Yes
... Bit 1	Charging contactor 1 active	R		0 ... No; 1 ... Yes
... Bit 2	Reserved	R		0 ... No; 1 ... Yes
... Bit 3	Ventilation requirement met	R		0 ... No; 1 ... Yes
... Bit 4	Connector locking control	R		0 ... No; 1 ... Yes
... Bit 5	Reserved	R		0 ... No; 1 ... Yes
... Bit 6	Collective fault	R		0 ... No; 1 ... Yes
... Bit 7	Fault: Power failure FI/LS	R		0 ... No; 1 ... Yes
... Bit 8	Fault: Charging cable	R		0 ... No; 1 ... Yes
... Bit 9	Fault: Charging cable rejected	R		0 ... No; 1 ... Yes
... Bit 10	Fault: Charging contactor	R		0 ... No; 1 ... Yes
... Bit 11	E1 impuls mode	R		0 ... No; 1 ... Yes
... Bit 12	Fault: RCMU self-test error	R		0 ... No; 1 ... Yes
... Bit 13	Fault: RCMU leakage current detected	R		0 ... No; 1 ... Yes

■ STATUS (2)

Register-address	Register designation/name	R/W	Data type	Description of the registers
126	Current charging current	R	uint16_t	Actual charging current in ampere, the charger is communicating to the vehicle
127	Max. charging current	R	uint16_t	Maximum charging current (before interaction via 0-10 V interface)
129 -138	RFID tag	R	char	Currently read RFID UID tag, ASCII coded. e.g.: 0x31, 0x32, 0x33, 0x34 results in "1234"
139	CP signal state	R	char	CP signal state, ASCII coded. 65 ... 0x41 ... „A“ 66 ... 0x42 ... „B“ 67 ... 0x43 ... „C“ 68 ... 0x44 ... „D“ 69 ... 0x45 ... „E“ 70 ... 0x46 ... „F“
140	CP generator state	R	uint16_t	CP-Generator state 1 ... DC positive 2 ... DC negative 3 ... PWM 4 ... 0 V
141	Ampacity of charging cable	R	uint16_t	Max. allowed charging current in ampere due to the connected charging cable. values: 0, 13, 20, 32, 63
142	CP high value	R	uint16_t	CP high value of the ADC
143	CP low value	R	uint16_t	CP low value of the ADC
144	PP value	R	uint16_t	PP value of the ADC
146	Communication error	R	boolean	0 ... No error 1 ... Error on PP or CP

■ STATUS (3)

Register-address	Register designation/name	R/W	Data type	Description of the registers
148	Voltage E1	R	uint16_t	Voltage on input E1 (1023 ... 12 V DC)
149	Voltage E3	R	uint16_t	Voltage on input E3 (1023 ... 12 V DC)
151 - 152	Charging duration	R	uint32_t	Charging duration in seconds
153 - 154	Plugged duration	R	uint32_t	Duration of the plugged state in seconds
167	Main voltage monitoring	R	uint16_t	Voltage on clamp C1 1023 ... 240 V AC 511 ... 0 V AV
303	Current temperature	R	uint16_t	Temperature in the charge controller in °C
306	Controller state	R	boolean	0 ... No error 1 ... error
502	Number of RFID cards	R	uint16_t	Number of RFID cards stored in the charge controller

**KONFIGURATION (1)**

Register-address	Register designation/name	R/W	Data type	Description of the registers
305	Locking duration	R/W	uint16_t	1 ... Plugged to unplugged 2 ... Charge begin to charge finished 3 ... Charge begin to unplugged
308	Control output A4	R/W	boolean	0 ... Low (0 V DC) 1 ... High (12 V DC) 2 ... High (12 V DC), if car is connected 3 ... High (12 V DC) impulse, if a RFID is accepted 4 ... High (12 V DC), if a ventilation is needed
500	Bus address override <b>(Default: 4)</b>	R/W	uint16_t	RS485 Modbus bus address, which will be selected when DIP 3 and DIP 4 are in ON position. (Bus address 175 [0xAF] always responds to this command)
501	Max. charging current override <b>(Default: 13)</b>	R/W	uint16_t	Max. charging current in ampere, which will be selected when DIP 5 and DIP 6 are in OFF position.
503	RFID authentication timeout	R/W	uint16_t	Timeout in seconds, where the car can be connected after authentication
504	Modbus timeout	R/W	uint16_t	Timeout in seconds, after which the RGB mapping „Bus communication error“ is active.
506	Type 2 configuration	R/W	uint16_t	0 ... socket 1 ... attached cable 2 ... socket – reject 13 A cable 3 ... socket – reject 13 A and 20 A cables
507	Min. charging current <b>(Default: 6)</b>	R/W	uint16_t	Minimum charging current in ampere. values: 6 to 32
508	Disable LLB control (only relevant for chargers with LLB)	R/W	uint16_t	0 ... LLB activated >0 ... LLB deactivated



**KONFIGURATION (2)**

Register-address	Register designation/name	R/W	Data type	Description of the registers
509	Baudrate (Default: 5)	R/W	uint32_t	0 ... 9600 1 ... 14400 2 ... 19200 3 ... 28800 4 ... 38400 5 ... 57600 >5 ... 115200
530	No bus communication	R/W	uint16_t	Meaning of RGB colors. (ATTENTION: With EMCIONSxxx the RGB colors can be processed different due to the LED board)
531	Error	R/W	uint16_t	
532	Charging disabled, No car connected	R/W	uint16_t	
533	Charging disabled, Car connected	R/W	uint16_t	
534	Charging enabled, No car connected	R/W	uint16_t	
535	Charging enabled, Car not charging	R/W	uint16_t	
536	Charging enabled, Car charging	R/W	uint16_t	
537	RFID: Authentication successful	R/W	uint16_t	
538	RFID: Auth. error or CP inaktiv	R/W	uint16_t	
541	RFID: Tag teaching mode active	R/W	uint16_t	
542	RFID: Tag successfully saved	R/W	uint16_t	

**INFORMATIONEN LADECONTROLLER**

Register-address	Register designation/name	R/W	Data type	Description of the registers
700	DIP switch position	R	bit	
... Bit 0	DIP 1	R		0 ... No; 1 ... Yes
... Bit 1	DIP 2	R		0 ... No; 1 ... Yes
... Bit 2	DIP 3	R		0 ... No; 1 ... Yes
... Bit 3	DIP 4	R		0 ... No; 1 ... Yes
... Bit 4	DIP 5	R		0 ... No; 1 ... Yes
... Bit 5	DIP 6	R		0 ... No; 1 ... Yes
800-814	Manufacturer designation	R	char	Manufacturer designation ASCII coded e.g. 0x5343485241434B20546563686E696B20476D62482020202020202020 results in „SCHRACK Technik GmbH“
816-830	Device designation	R	char	Device designation including revision number ASCII coded e.g. 0x454D43494343312D2D2D20202030303932303632392D3031202020202020 resultiert zu „EMCICC1--- 00920629-01“
832-847	Firmware version	R	char	Firmware version including date ASCII coded e.g. 0x3030333039303035362D30312020202020202020202020203230323230393133 results in „003090056-01 20220913“
1000	Soft reset	W	uint16_t	0 ... no action 1234 ... Reset