

RDC Charger

User manual



Robotina test d.o.o.

OIC-Hrpelje 38 Hrpelje
SI-6240 Kozina
Slovenia

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EV fleet 5

EV fleet

RDC charger supports connection of up to 8 RDC Chargers - EV fleet.

In such configuration only one RDC Charger (master) is in charge of other connected chargers (slave). Master RDC Charger monitors:

- current draw by other slave chargers and in real time allocates (limits) available capacity allowing them to charge without overloading,
- data from slaves such as power, energy & settings and synchronize them with cloud service, therefore no need for extra [IOT linker](#) on slave RDC Charger.

Note: If there is no grid power sensor, master charger enables limiting of complete ev fleet by virtual grid power sensor.



Only one RDC charger is master in ev fleet !

Procedure to set RDX Charger as slave is as follows:

- [RDC Charger](#) → set Max current (1)
- [RDC Charger](#) → enable “EVSE works as slave” (2) Master SN presents serial number of master charger, it will appear once connection is established.
- [RDC Charger](#) → set current if connection with master is lost (3)
- [HEMS Configurator](#) → settings → set static IP (it's recommended) (4)
- [HEMS Configurator](#) → limiter → set “No limiter” for RDC Charger (5)

The screenshots illustrate the configuration process for setting an RDX Charger as a slave. The first screenshot shows the RDX Charger interface with the 'Max current' set to 20 A (1) and 'EVSE works as slave' checked (2). The second screenshot shows the HEMS Configurator 'System settings' with a static IP address of 192.168.0.124 (4). The third screenshot shows the 'Dynamic Load Management' section with 'No limiter' selected for the RDX Charger (5).

	Grid current limit [A]			L1	L2	L3	Voltage [V]	Phase order	Priority	
	Used current limit:	L1	L2							L3
MAX current limit:	25	25	25							
Enable cluster slave connection										
Limit if connection with master is lost:	0	0	0							
Enable limiting from cloud										
Cloud current limit:	1200	1200	1200							
Limit if connection with cloud is lost:	1200	1200	1200							
Power [w]										
Total	L1	L2	L3	L1	L2	L3	L1	L2	L3	
Grid	7424	2541	2320	2563	11,1	10,9	11,2	230	230	230
Max Charger	7424	2541	2320	2563	11,1	10,9	11,2	231	232	233
Oil radiator	0	0	0	0	0,0	0,0	0,0	230	230	230

Procedure to set RDC Charger as master is as follows:

- HEMS Configurator → settings → output column → select “EVSE RDC external” at desired position (1). Note that “EVSE inter.” is reserved and can't be changed!

The screenshot shows the HEMS Configurator v2.0.1 interface. The 'System settings' section is active, displaying various configuration options like 'autodetect', 'eStore SN', 'HIQ Home SN', and 'Virtual grid PS'. Below this, there are tables for 'SOURCES' and 'CONSUMERS'. The 'CONSUMERS' table has columns for 'icon', 'consumer management', 'meter', 'sub', 'output', 'man.time', and 'P nominal'. The 'RDC Charger' row is highlighted, and a red arrow points to the 'EVSE inter.' entry in the 'output' column. A yellow box highlights the 'EVSE inter.' entry and the 'Digital-8' entry below it. The 'output' column also shows '1' in the 'man.time' column for the 'EVSE inter.' entry. The 'Permanent memory parameters' section at the bottom includes buttons for 'init parameters', 'save parameters', 'read parameters', 'backup', and 'restore'.

SOURCES	icon	source management	meter	sub	new device
Grid	Grid	✓ OK		VIRTUAL PH	/
/	/	✗ /	add	del	/
/	/	✗ /	add	del	/
/	/	✗ /	add	del	/
/	/	✗ /	add	del	/
Unknown	/	✗	add	del	/

CONSUMERS	icon	consumer management	meter	sub	output	man.time	P nominal
RDC Charger	Electric car	✓ OK	PM3-E-D	✗	EVSE inter.	1	0w
/	/	✗ /	/	✗	/	0w	✓
/	/	✗ /	/	✗	/	0w	✓
/	/	✗ /	/	✗	/	0w	✓
/	/	✗ /	/	✗	/	0w	✓
/	/	✗ /	/	✗	/	0w	✓
/	/	✗ /	/	✗	/	0w	✓
El.heater	Water boiler	✗ /	/	✗	Digital-8	0w	2500w
Background	Home	✗ /	/	✗	/	/	✓

- HEMS Configurator → settings → enter name and select icon (2). Message “Error - device is not responding” may appear as IP address is not defined yet.

HEMS Configurator v2.0.1

System settings

autodetect

HEMS SN: 31498 (v1.2.7b)

✓ eStore SN: 16853 enable

✗ HIQ Home SN:0 enable

✓ Virtual grid PS: enable

Internal temperature: 41,6°C

Modbus (wired) cycle time: 721ms Modbus (wireless) cycle time: 266ms Modbus (TCP) cycle time: 1415ms

IP address: 192.168. 0.231

Obtain an IP address automatically (DHCP)

Use the following IP address (static IP)

IP address: 192.168. 0.231

Subnet mask: 255.255.255. 0

Default gateway: 192.168. 0. 1

DNS server: 8. 8. 8. 8

long-press

SOURCES	icon	source management	meter	sub	new device
Grid	Grid	✓ OK			VIRTUAL PH
/	/	add del	/	/	/
/	/	add del	/	/	/
/	/	add del	/	/	/
/	/	add del	/	/	/
/	/	add del	/	/	/
Unknown	/				

Error: no response from device.
[add]
[del] - clear type

CONSUMERS	icon	consumer management	meter	sub	output	man.time	P nominal	
RDX Charger	Electric car	✓ OK	PM3-E-D	✗	EVSE Inter.	0min	✓	
/	/	add del	/	✗	/	0min	✓	
/	/	add del	/	✗	/	0min	✓	
/	/	add del	/	✗	/	0min	✓	
40105	Electric car	⚠ Error - device is not responding	EVSE RDX ex	✗	EVSE RDX ex	2	0min	✓
/	/	add del	/	✗	/	0min	✓	
40001	Electric car	⚠ Error - device is not responding	EVSE RDX ex	✗	EVSE RDX ex	0min	✓	
/	/	add del	/	✗	/	0min	✓	
El.heater	Water boiler	✗ /	/	✗	/	0min	✓	
/	/	add del	/	✗	/	0min	✓	
Background	Home				Digital-8	0min	2500W	✓

Permanent memory parameters

Scan w-less dev. WM / WR binding

long-press autosave parameters

Fri 12:05:16 2023.feb.10 HEMS SN: 31498 (v1.2.7b)

- HEMS Configurator → limiter:
- (3) enter allowed current value of grid fuses in case of connected grid power sensor, or max current limit of complete ev fleet if there is virtual grid active
- (4) make sure to configure phase order for grid and RDC Chargers correct as dynamic load management may not work properly. **Double check!**
- (5) select limiter priority for chargers: no limiter, limit last (last to be limited), limit second, limit first (first to be limited)

Dynamic Load Management

		Grid current limit [A]		
		L1	L2	L3
Used current limit:		20	20	20
MAX current limit:		20	20	20

Enable cluster slave connection
 master current limit: 0 0 0
 Limit if connection with master is lost: 0 0 0

Enable limiting from cloud
 Cloud current limit: 3200 3200 3200
 Limit if connection with cloud is lost: 3200 3200 3200

		Power [W]				Current [A]			Voltage [V]			Phase order	Priority
		Total	L1	L2	L3	L1	L2	L3	L1	L2	L3		
Grid	▲	8739	3159	2780	2800	13,7	12,1	12,3	230	230	230	L1 L2 L3	4
	⊗												
	⊗												
	⊗												
	⊗												
RDX Charger	⊗	389	389	0	0	1,7	0,0	0,0	228	0	0	L1 L2 L3	No limiter
	⊗												
40105	⊗	8350	2770	2780	2800	12,0	12,1	12,3	231	232	233	L1 L2 L3	▲ Limit first
	⊗												
40001	⊗	0	0	0	0	0,0	0,0	0,0	231	234	231	L1 L2 L3	No limiter
	⊗												
El.heater	⊗	0	0			0,0	0,0	0,0	230			L1	No limiter
	⊗												
Background	▲	0	0	0	0	0,0	0,0	0,0					

GRID FREQUENCY [Hz] 0,00

Fri 12:30:48 2023.feb.10 HEMS SN: 31490 (v1.2.7b)

- HEMS Configurator → IO mux → enter IP address of slave RDC Charger (6). Serial number (SN) will be listed automatically once connection is established.

IO mux

Wireless relay WR-1 output function			
	act.	status	output function
WR 1	⊗		/
WR 2	⊗		/
WR 3	⊗		/
WR 4	⊗		/
WR 5	⊗		/
WR 6	⊗		/
WR 7	⊗		/
WR 8	⊗		/

HEMS input and output function (wired connection)		
	input/output function	out mode
QX0	Digital-1	normal
QX1	Digital-2	normal
QX2	Digital-3	normal
QX3	Digital-4	normal
I012	WR 1 channel 0	normal
I013	Linker reset	normal
I014	/	normal
I015	/	normal
IX0	Toggle consumer-1	normal
IX1	Toggle consumer-2	normal
IX2	Toggle consumer-3	normal

Heat pump control mode					
	Off	Reduced	Normal	Increased	Increased +
Heat pump 1	⊗	⊗	✓	⊗	⊗
Heat pump 2	⊗	⊗	✓	⊗	⊗
Heat pump 3	⊗	⊗	✓	⊗	⊗
Heat pump 4	⊗	⊗	✓	⊗	⊗

Slave device IP address		
Device	IP address	SN
Grid	0.0.0.0	0
	0.0.0.0	0
	0.0.0.0	0
	0.0.0.0	0
	0.0.0.0	0
RDX Charger	0.0.0.0	0
	0.0.0.0	0
40105	192.168.0.109	40105
	192.168.0.215	0
40001	192.168.0.124	40001
	0.0.0.0	0
El.heater	0.0.0.0	0

Fri 12:07:13 2023.feb.10 HEMS SN: 31490 (v1.2.7b)

- HEMS Configurator → ev fleet:

- (7) master RDC Charger,
 (8) connected slave RDC Charger with enabled control by master (green tick) and
 (9) connected slave RDC Charger with disabled control (red X) → master can not control it! To enable control, run RDC Charger app on slave charger and enable “EVSE works as slave”.

HEMS Configurator v2.0.1

Charger ID	Status	EVSE max	Max current	Last session	Time	Energy	Slave SN	Control
RDX Charger	Charging	391 W	16 A	145 h 24 min	26392 Wh	0	Master	7
	On	0 W	0 A	0 h 00 min	0 Wh	0	0	
	Off	0 W	0 A	0 h 00 min	0 Wh	0	0	
40105	Charging	7650 W	32 A	143 h 48 min	312850 Wh	40105	✓	8
	Off	0 W	0 A	0 h 00 min	0 Wh	0	0	
40001	EV not connected	0 W	0 A	6 h 32 min	40670 Wh	40001	✗	9
	On	1350 W	0 A	0 h 00 min	0 Wh	0	0	
	Off	0 W	0 A	0 h 00 min	0 Wh	0	0	

Settings for all chargers:

- Priority charg.
- Locked
- Allow charging with ventilation
- Disable button
- Turn LED off after 3 minutes of inactivity
- Economy charging:
 - Current: 6 A
 - Charge only at LD tariff
 - Charge with surplus energy

Event log: RFID_QR

EVSE works as slave (7)

Limit if connection with master is lost: 0 A

thu 15:26:39 2023.feb.09 HEMS SN: 31490 (v1.2.7b)