



CIRCONTROL
Mobility & eMobility

Raption 50 Gen2 Series

Service Manual



Raption 50 Gen2 Series Service Manual

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1

This manual provides service and maintenance information for Circontrol Charge Point, which has been designed and tested to allow electric vehicle charging, specified in IEC 61851.

This document has different sections describing electrical components inside the Charge Point and a step-by-step installation procedure.

It is mandatory to follow the basic security information supplied in this manual to ensure safe and proper installation.

Failure to follow safety instructions may involve personal injury, equipment damage and danger of death. CIRCONTROL is not responsible for events arising from such breach.

THE FOLLOWING SYMBOLS ARE USED FOR IMPORTANT SAFETY INFORMATION IN THIS DOCUMENT

ELECTRIC RISK



- This symbol indicates a potentially hazardous situation which, if not avoided may result in a risk of fire, serious injury or death.
- The Charge Point must be disconnected from any power source before performing any maintenance, repair or electrical manipulation inside.

ATTENTION!



- Follow the instructions preceded by this symbol, if not respect them or perform them correctly, may result in minor or moderate injury to the user, damage to equipment, damage to facilities or other property.
- Handling the equipment can cause injuries as result of the dimension and weight. Persons handling the unit must wear safety shoes and gloves.

So, hello!



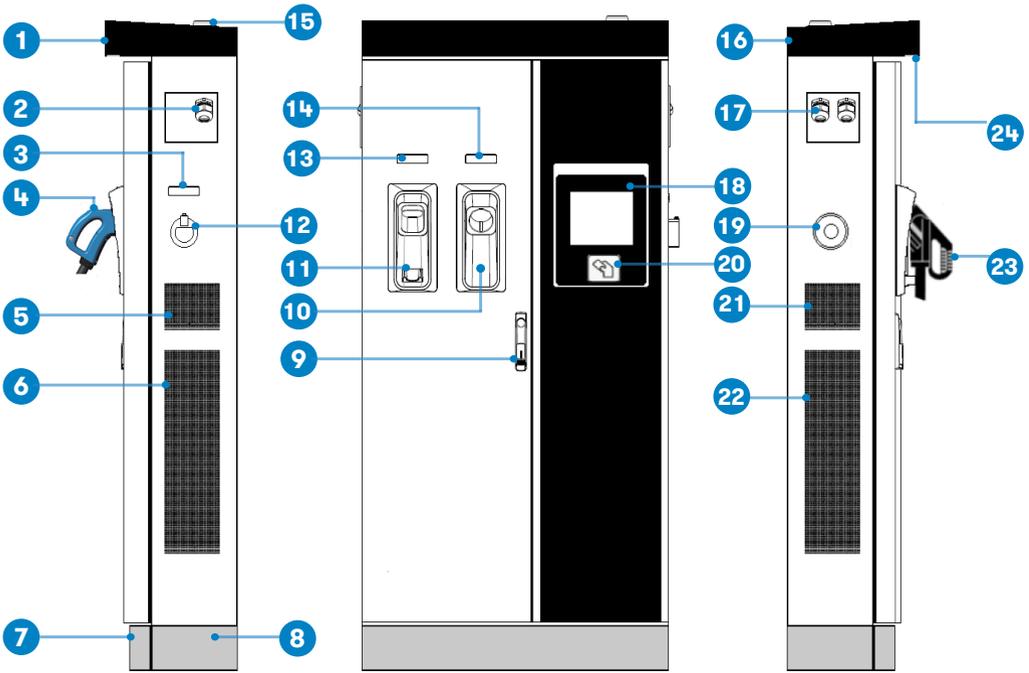
Read carefully all the instructions before doing any maintenance work inside the Charge Point.

Important safety instructions

- Read all the instructions before using and configuring the Charge Point.
- Do not use the Charge Point for anything other than electric vehicle charging modes are expected in IEC 61851.
- Do not modify the Charge Point. If modified, CIRCONTROL will reject all responsibility and the warranty will be void.
- Comply strictly with electrical safety regulations according to your country.
- Do not make repairs or manipulations with the unit energized.
- Only trained and qualified personnel should have access to the electrical parts inside the Charge Point.
- Check the installation annually by qualified technician.
- Remove from service any item that has a fault that could be dangerous for users (broken connectors, caps that don't close...).
- Use only Circontrol supplied spare parts.
- Do not use this product if the enclosure or the EV connector is broken, cracked, open, or shows any other indication of damage.
- Adaptors or conversion adaptors and cord extensions set are NOT allowed to be used.

2

A Main features



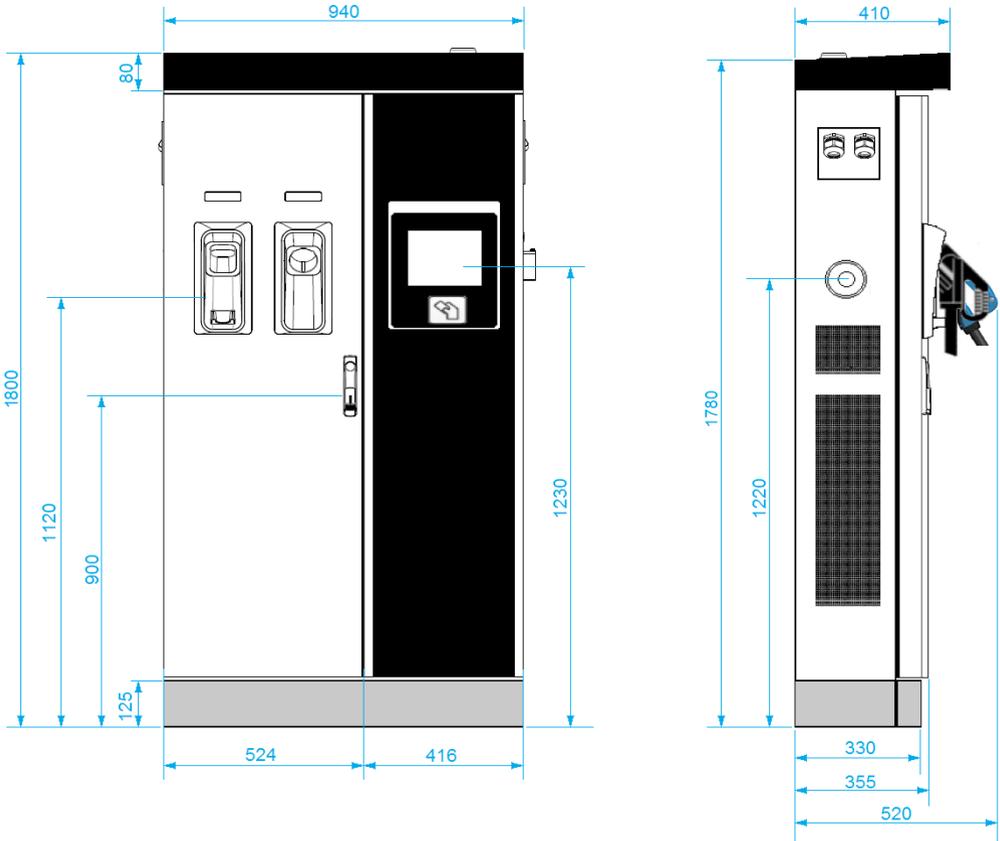
Features

1- Cover	2- Exit AC cable	3- AC light beacon	4- CHAdeMO connector	5- Air inlet
6- Air outlet	7- Decorative front panel	8- Decorative rear panel	9- Handle	10- CHAdeMO holder
11- CCS holder	12- AC holder or socket 32A *	13- CCS light beacon	14- CHAdeMO light beacon	15- Antenna
16- Air outlet	17- Exit DC cable	18- Touch screen + Axial fan	19- Emergency button	20- RFID reader
21- Air inlet	22- Air inlet	23- CCS connector	24- Courtesy light	

(*) Depending of the model, the components can vary.

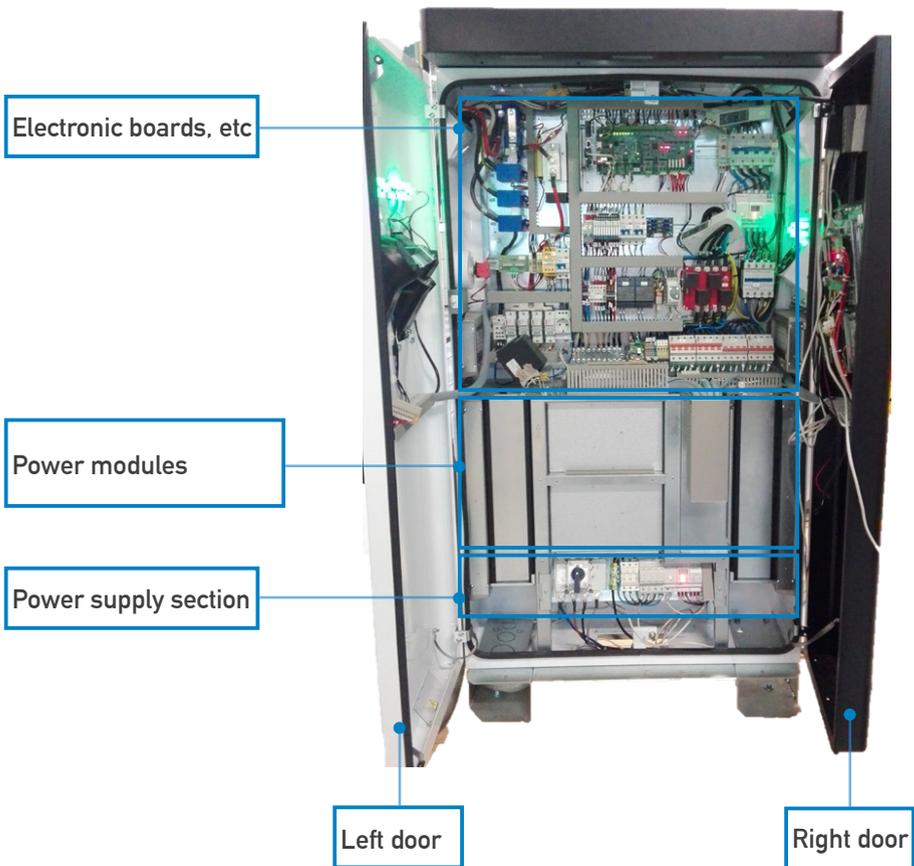
B Dimensions

- Units specified in millimeters:

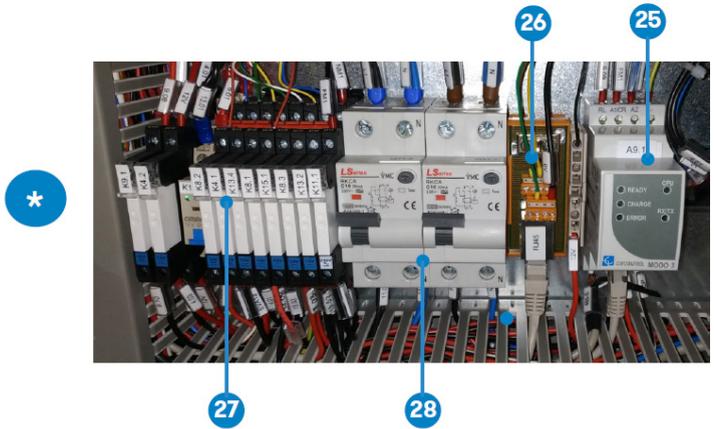
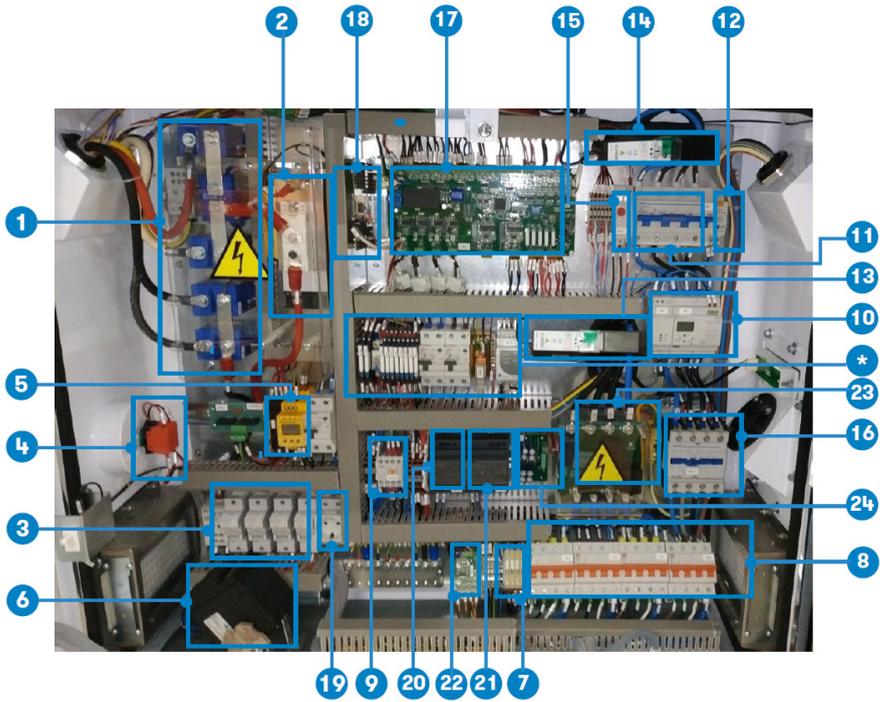


Components Overview

Inside the Charge Point it is possible to differentiate four main parts. In the upper part there are the electronic boards, the electrical protections and the electrical actuators. In the medium part there are the power modules. In the lower part there is the power input supply section and the last important part is in both doors.

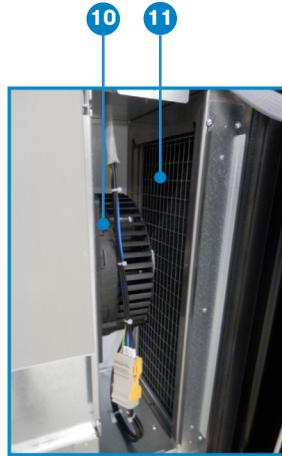


1 – ELECTRONIC BOARDS, ETC (UPPER PART)



1- DC Contactor. 12Vdc. 120A(KM7.1/KM7.2/KM8.2/KM8.3)	2- Diode rectifier 162A (E6.1) with forced ventilation (M6.1)	3- Fuse holder 1pole 14x51 (F6.1/ F6.2/F6.3/F6.4)
4- Emergency button (S9.1)	5- Isolation protection device(B15.1)	6- Heater with fan 400W (M13.3)
7- Ceramic fuse 5x20 1A (F3.1/F3.2/F3.3/F3.4)	8- Miniature circuit breaker 4 poles 25A class C (Q4.1/Q4.2/Q4.3/Q4.4)	9- Conctactor 10A/230VAC GMR-4M 2a2b (K13.3)
10- Three-phase MID energy meter (P9.1)	11- AC MCB (Q9.1)	12- Auxiliar contact 6A (Q9.2)
13- RCD protection (T4.1)	14- RCD protection (T9.1)	15- Panel thermostat NC. 10A 250Vac (B13.1)
16- Contactor 4 Poles 80A 230Vac (KM10.1)	17- Mode 4 Control Board (N14.1)	18- CCS Control board (A15.2)
19- Service schuko (E11.1)	20- 24Vdc Power Supply (J11.1)	21- 12Vdc Power Supply (J11.2)
22- Expansion board (P5.1)	23- Relays board (J4.1)	24- SuperCapacitors Board (J07.1)
25- Mode 3 (A9.1))	26- RJ45 Adaptor (X9.3)	27- 12Vdc Relays (K91, K4.1, K4.2, K8.1, K8.3, K13.2, K13.4, K15.1)
28- RCBO 1P+N 10A 30mA class A (Q11.1, Q11.2, Q11.3)		

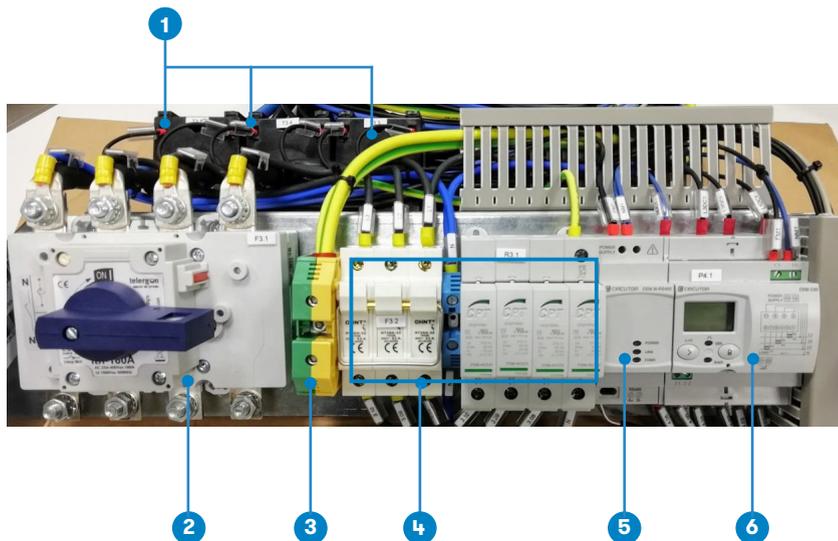
2 – POWER MODULES (MEDIUM PART)





1- Kit filters for Raption 50	2- Upper power modules (A5.1/A5.2)	3- Lower power modules (A5.3/A5.4)
4- Ventilation chamber access	5- Kit filters for Raption 50	6- Centrifugal fan 190mm for power stage (M12.2)
7- Kit filters for Raption 50	8- Power module 12.5kW 1 (A5.1)	9- Power module 12.5kW 2 (A5.2)
10- Centrifugal fan 190mm for power stage (M12.2)	11- Air outlet filters	12- Power module 12.5kW 3 (A5.3)
13- Power module 12.5kW 4 (A5.4)		

3 – POWER SUPPLY SECTION (LOWER PART)



<p>1- Current transformer TC5 100/5 (T3.3/ T3.4/ T3.5) for MID AC Meter - CEM-C30 for DC side</p>	<p>2- Switch disconnector 3 poles + neutral 160A(F3.1). Main circuit breaker</p>	<p>3- Ground terminal block</p>
<p>4- Transient surge protector device (optional component)</p>	<p>5- Communications module for CEM energy meters (T4.1)</p>	<p>6- Three-phase MID energy meter. Indirect measurement 5(10)A(P4.1)</p>

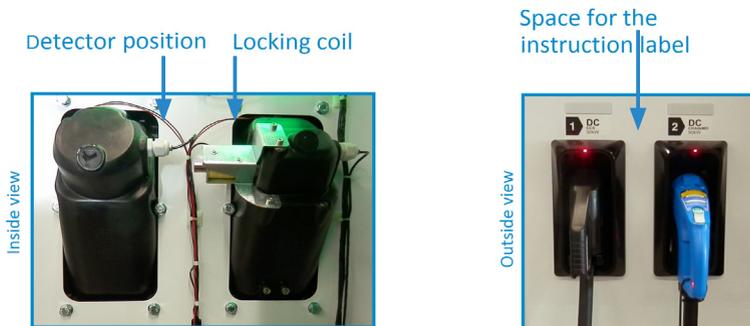
Note: in order to find more details about the cable installation, please, refer to the Installation Manual.

4 – LEFT DOOR

On the left door it is placed the CHAdeMO and CCS holders and beacon lights. Optionally, locking system can be included too.

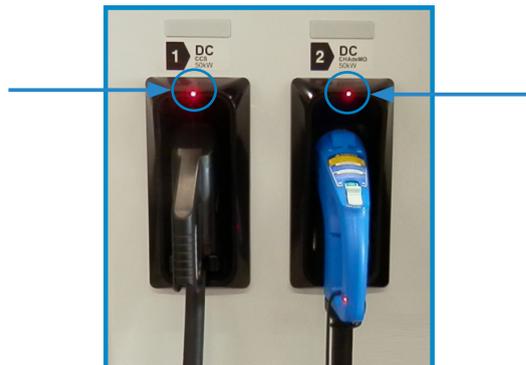
When using a unit with **‘Mechanical connector locking’** accessory at DC holders, is not possible to pull back the connectors from holders until user has shown RFID card and selected the connector he wants to charge with.

There is one label placed between the CHAdeMO and the CCS holders explaining about this functionality. Follow the instructions given in this label and the HMI screen.

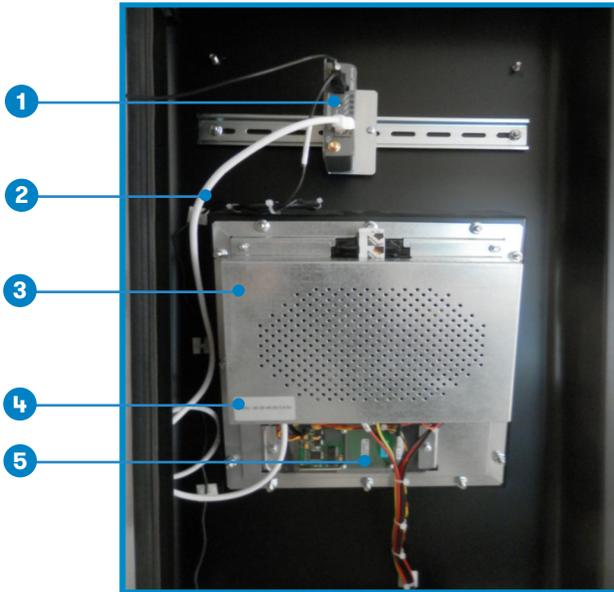


Also, there is one LED over each holder indicating the lock state:

- **Red** → Connector locked
- **Off** → Connector unlocked

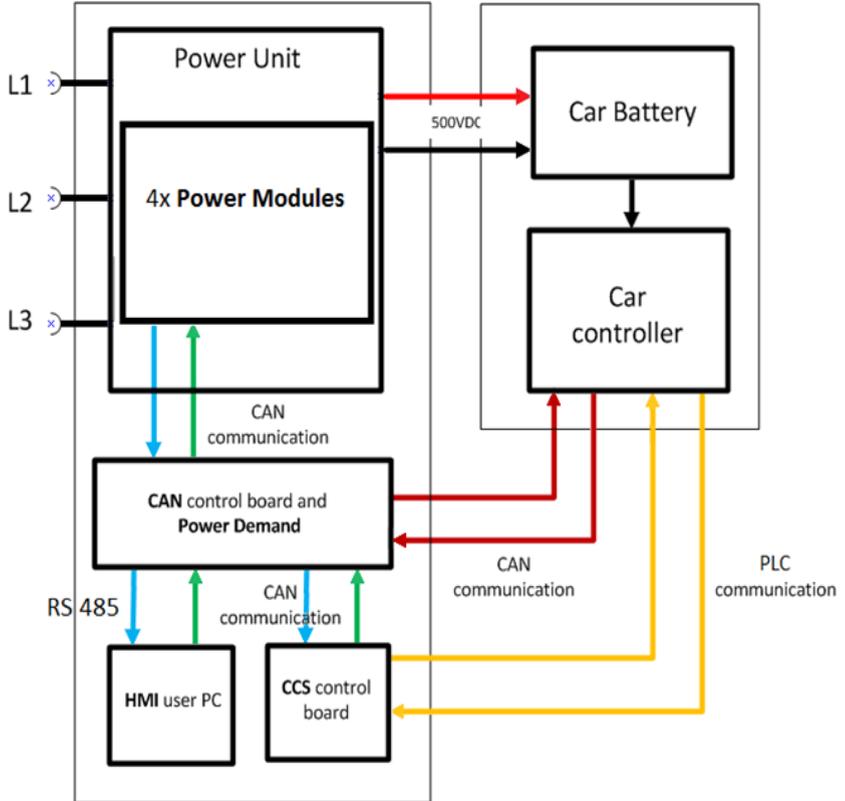


5 – RIGHT DOOR



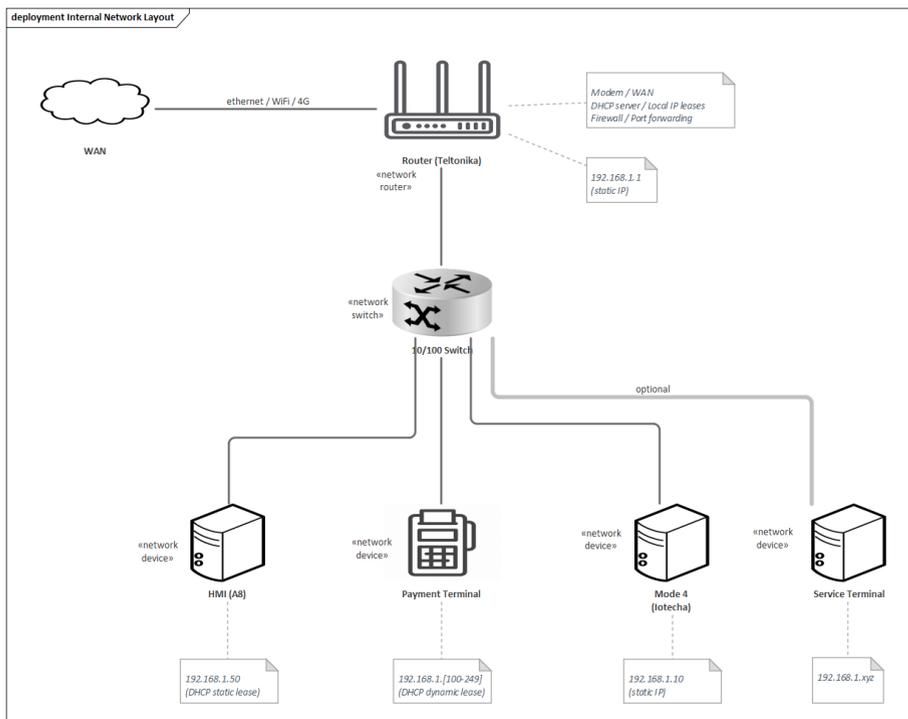
1- Router (A11.2)	2- UTP 6 - Ethernet cable	3- PC Screen cover
4- Unit's MAC number	5- RFID card reader (B11.1)	

6 – BLOCK DIAGRAM



7 – COMMUNICATIONS SCHEME

Find in the next scheme all the components communicating via TCP/IP Ethernet and its respective IPs.



As there are IPs already in use, when connecting a service terminal (laptop) to the charging station use DHCP or work with static IP 192.168.1.90. In this way, communications issues caused by components sharing same IP will be avoided.

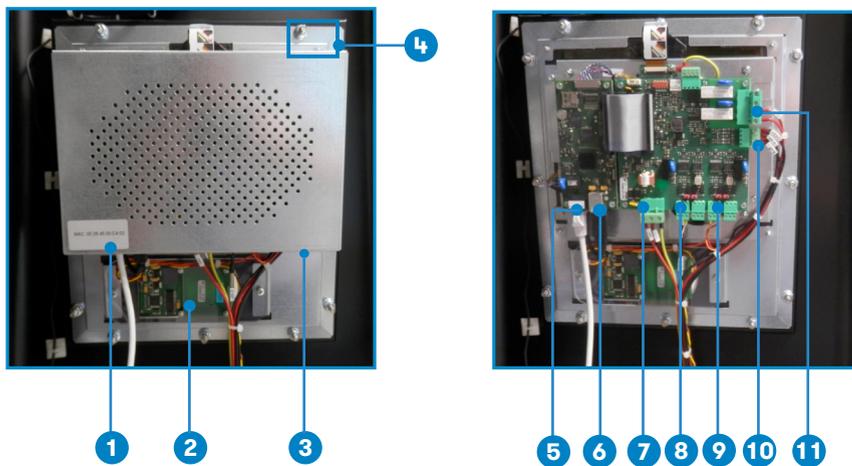


3

A PC Screen (HMI)

The PC screen (HMI) and the RFID reader are located at the right door. Normally, at the RJ45 port it is connected the Ethernet cable coming from the router when it is installed. However, it is also here where the Service PC should be connected when Charging Station has to be configured.

Internal application and firmware of the Charging Station are located in the Screen. This device, among other functions, is controlling the communications of the internal components.

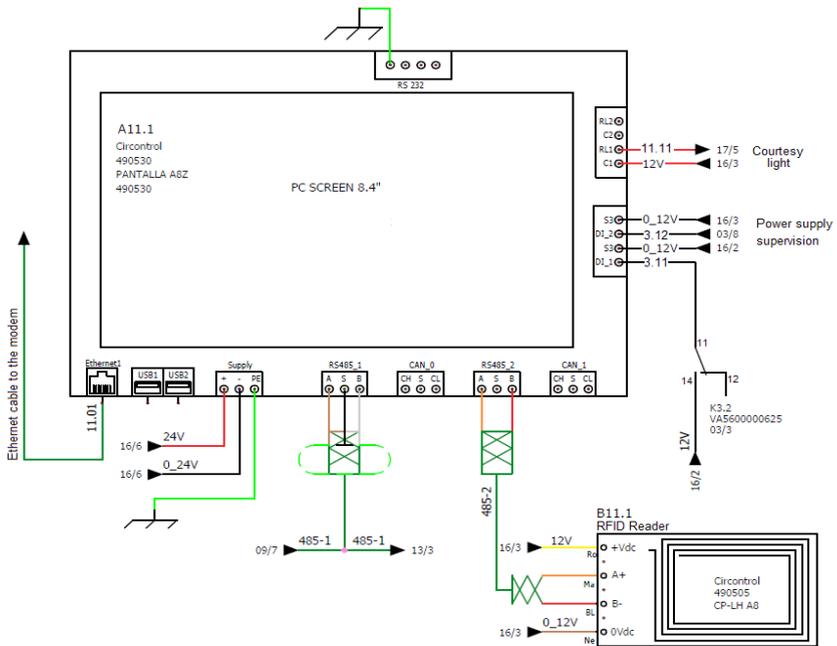


1- MAC Address sticker	2- RFID card reader (B11.1)	3- PC Screen cover
4- Cover's nut x 4	5- RJ45 port	6- USB port
7- PC Screen power supply	8- RS485_1 communication	9- RS485_2 communication
10- Power supply supervision	11- Courtesy lights connector	

Control devices

Electrical scheme

Screen has two RS485 connectors. In one of them there is the RFID reader and the other there is a bus of communications with many devices.



RS485 Connector 1:

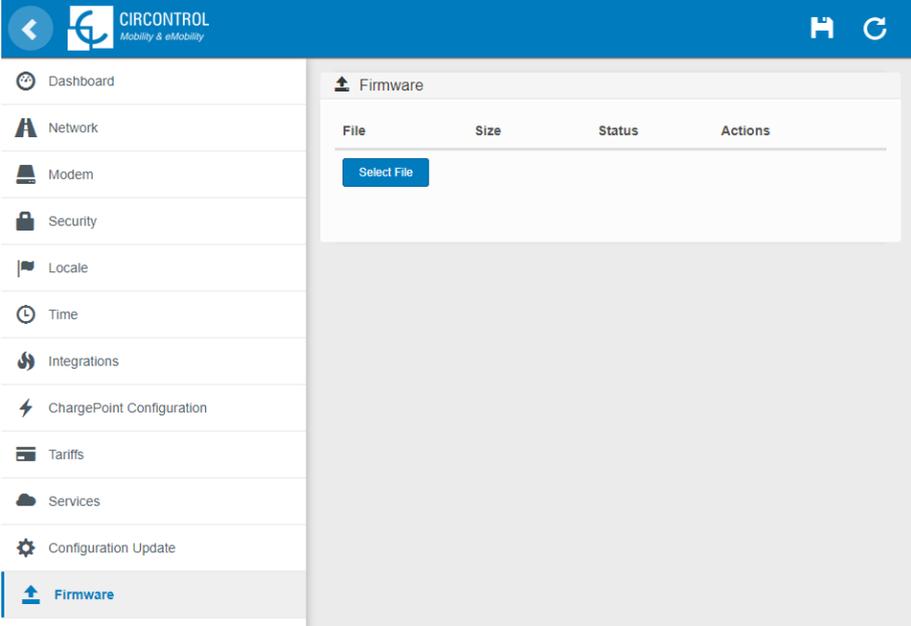
- Mode 4 (Main + Exp)
- Mode 3
- Meter (AC + DC)

RS485 Connector 2:

- RFID Reader

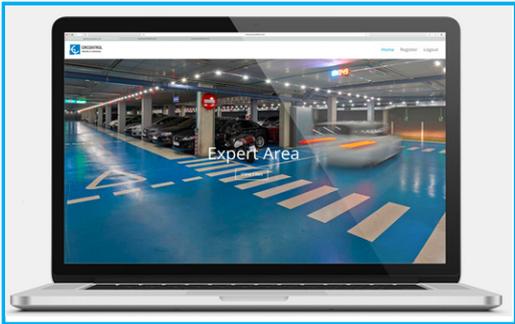
Update

Screen can be updated from the Setup Webpage.



Find the details of the procedure in the Instruction Manual.

Firmware file can be obtained from the Expert Area.



B Mode 4 Board

Mode 4 board is controlling the communications of the Charging Station with the Electric vehicle.

Also, most of the alarms like the emergency button, isolation protectors or clixon are managed by this board.

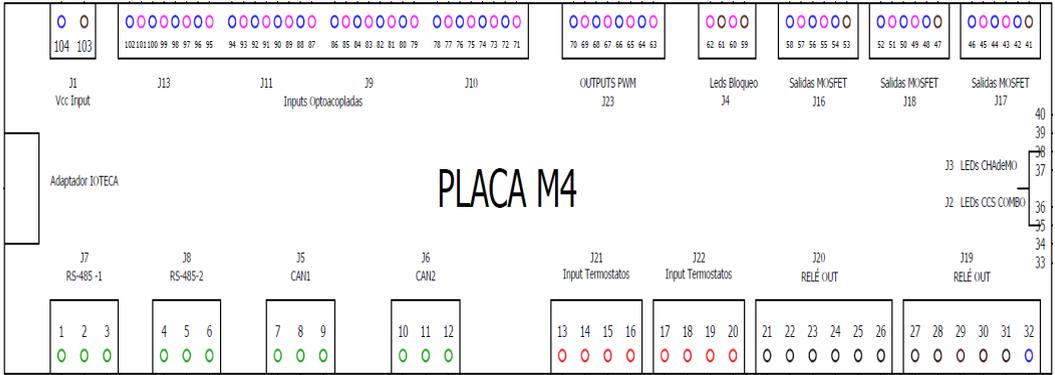
Raption 50 Gen2 uses a different model of board, bigger with enough input and output connectors. So, this new board is capable to manage all the functions unlike the Raption 50 Gen1 that needed two boards, main and expansor.



Item	Name	Function
1	J1	Power supply connector, 12Vdc
2	J13	Inputs for Emergency, VCC; Lock CCS and Lock CHA
3	J11	Inputs for Clixon, tamper and Isolation Detection
4	J9	Inputs for Tacometer, relay state CHA, Precharge state CCS
5	J10	Inputs for Opto (J) and relays state of CCS
6	J23	Outputs PWM turbines control
7	J4	Leds lock system

8	J16	Enable/disable power modules output
9	J18	Outputs doe Bender test, lock CCS, precharge, heater.
10	J17	Outputs for diode fan, modules.
11	J7	RS485-1-M communications with isolation detector device
12	J8	RS485-2-S Communications with the screen
13	J5	CAN 1 communications with CHAdeMO cable
14	J6	CAN 2 communications with Expansion board
15	J22	Input thermostats from CCS cable
16	J20	Relay output CHA cable and CCS contactor
17	J19	Relay output CHA contactor and CHA lock
18	J2	CCS LEDs
19	J3	CHA LEDs

Electrical scheme

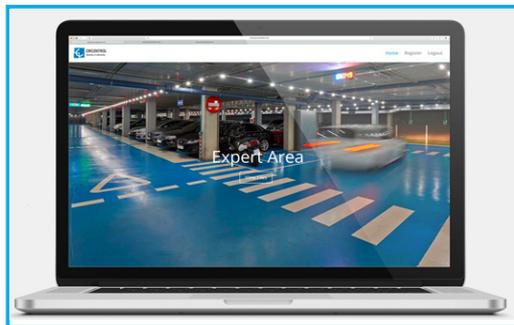


Update

Mode 4 board is updated automatically by the Screen.

So, when Screen is updated, both components are getting a new firmware version, each one its corresponding.

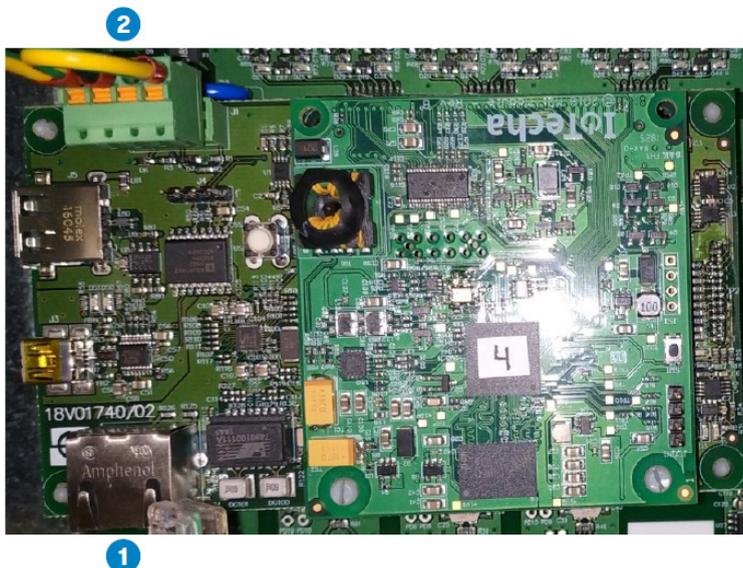
Check in the previous point, the procedure to update the Screen and find the necessary files in the Expert Area.



CCS Board

This board is in charge of the communications of the CCS connector. It works as a bridge between the EV and the Mode 4, translating the communications from PLC to CAN protocol.

Raption 50 Gen2 uses a different board, which is integrated in the Mode 4 control board. To perform this integration there is a coupler board in between.



Item	Name	Function
1	J1	Ethernet port for communications
2	J2	Car connector communications (CP)

This board has a default IP which cannot be changed: 192.168.1.10.

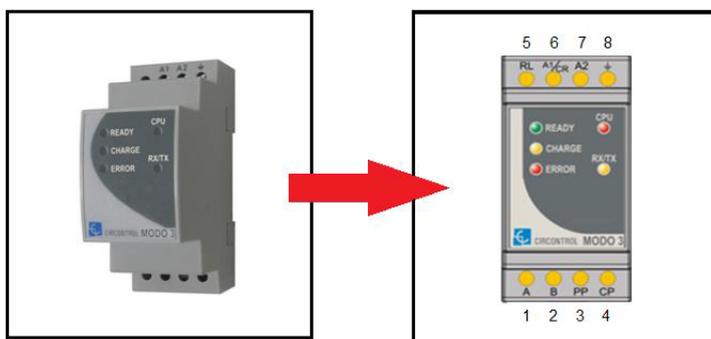
It is used basically for firmware upgrades. Settings **must not** be changed or modified.

D Mode 3 Device

Mode 3 Charge Controller (A6) is responsible for conducting the Mode 3 communications and allows charging electrical vehicle as defined by IEC 61851 for AC side.

Communication to the device is only possible via RS485 communications through inputs 1 and 2. The device integrates an Ethernet port, which does not allow connectivity to TCP/IP networks. It is used for internal use as digital inputs and outputs.

The default configuration modbus address is set at 96 and baud rate is set to 19200bps.



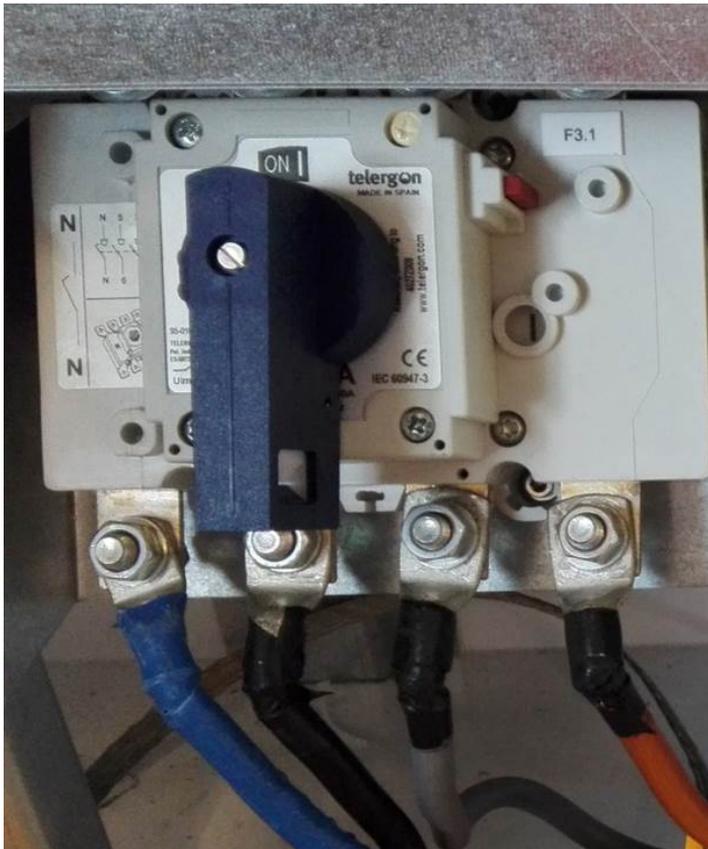
Item	Name	Function
1	A- RS-485 BUS	Terminal (+)
2	B- RS-485 BUS	Terminal (-)
3	PP- EV Connection	Proximity (PP)
4	CP-EV Connection	Control Pilot (CP)
5	RL- Contactor	Contactor coil
6	A1- Power Supply	Phase
7	A2- Power Supply	Neutral
8	Ground	Ground

4

A Disconnect

Main disconnect, located in the bottom of the charger.

This device isolates the Charging Station from the grid.



Protection devices

B RCD

Composed by a compact system that includes a current transformer and differential relay that activates when current leakage is detected.

There are two of them installed, one in the AC circuit and another one in the DC circuit (before the AC/DC converters).

By default, RCDs are type A, but optionally can be type B.

Type A:



Type B (optional)::



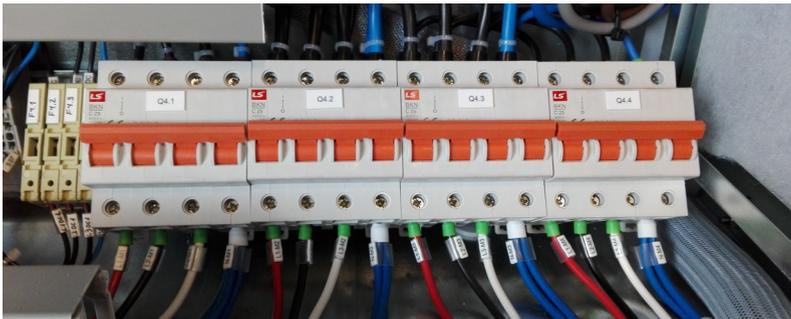
MCBs

There are few MCBs in the Raption protecting components from overcurrents and overtemperatures in the cables.

AC Circuit:



Power Modules:



RCBOs

There are three RCBOs in the Raption protecting the Auxiliary branches.

From the left to the right:

- Service Schuko
- Ventilation / Heater
- Main supply



Backflow diode and Clixon

Backflow diode protects the internal components of the Raption from any current that could come from the opposite side, from the EV to the Charging Station.

This may occur in case there is a problem balancing the voltages, either on the EV or in the Charging Station side.

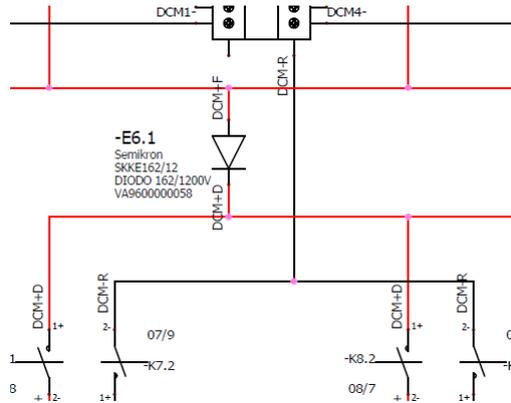


In order to keep a safe temperature in this zone, it is installed a radiator and a fan.

Additionally, it is installed a Clixon. This component will notify the Mode 4 board in case temperature in this zone is above 80°C. This alarm will generate an error that will stop any live charging session and will keep the unit out of service until problem is fixed.

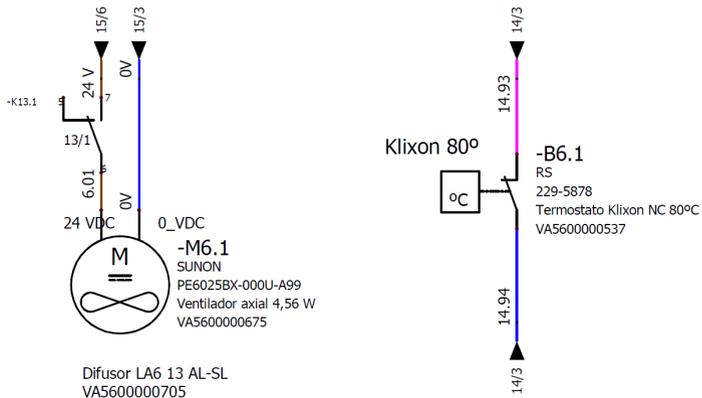
Electrical scheme

Backflow diode is located just after the power modules, when positive and negative wire are collected, and before the output contactors.



And in the next picture:

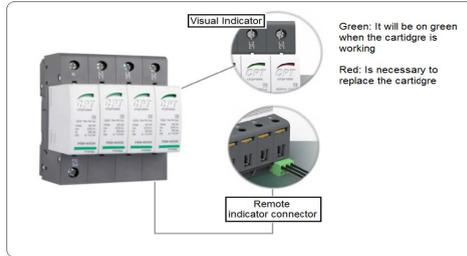
- Fan, managed by the Expansor board
- Clixon system, that sends an alarm to the Main board if there is a temperature error.



F Transient surge protector

The charging station can be equipped with four pole transient surge protector as an optional protection. It has four interchangeable cartridges based on varistor.

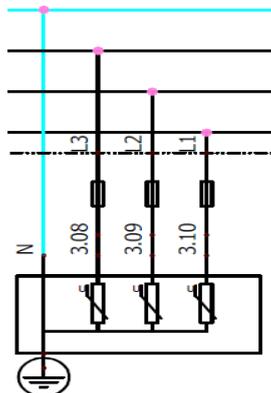
Also, it is equipped with a visual indicator and a remote indicator. Remote indicator is not integrated, so make sure visually that the status of the cartridges is correct during maintenance tasks.



It is installed next to the main disconnector. Includes three fuses.



Electrical scheme



Isolation protection device

The ISOMETER isoEV423 monitors the insulation charging stations for electric vehicles for DC between 0 and 1100Vdc.

This device protects both DC connectors in the output side. It is measuring constantly the resistance between positive wire to the ground and negative wire to the ground. If the resistance value is very low it will generate an alarm as it is needed a high value to keep the safety.



Operation LEDs

Power ON LED: It will be in green if the device is power up. It will be flashing if there is some connection error.

Alarm LED, "AL1": Lights when alarm value AL1 has activated or overvoltage alarm (flashes during connection error).

Alarm LED, "AL2": Lights when alarm value AL2 has activated or undervoltage alarm (flashes during connection error).

Alarm 2 advises that resistance value is getting closer to the limit value. It notifies the Mode 4 board but does not stop the operation of the Charging Station. It is just a warning

It is the Alarm 1 the one that stops Charging Station operation because there is not enough resistance to ensure the isolation protection.



Additional function

Bender does not only work as an Isolation Protector. It has a secondary function.

It is measuring the Output Voltage in DC for both connectors and provides these values to the controller device, Mode 4 board.

5

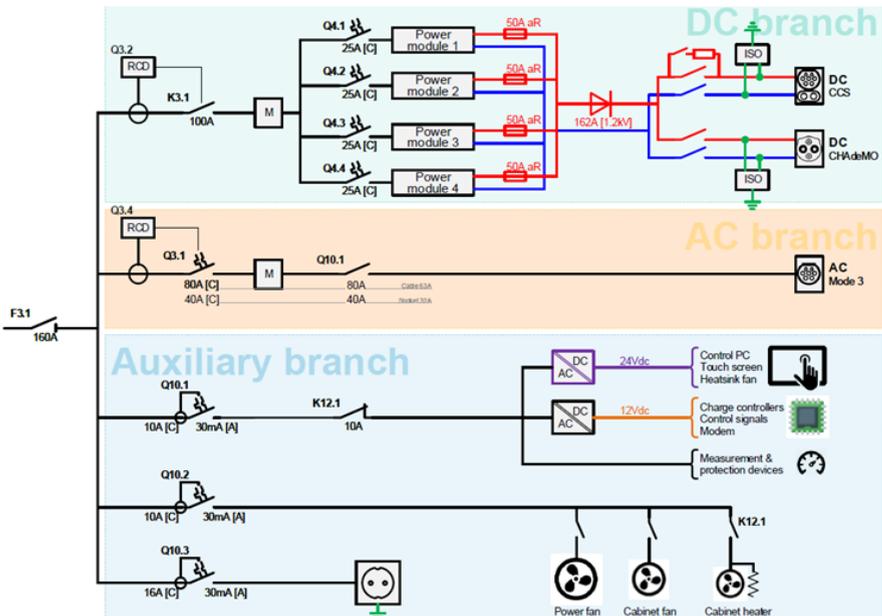
Raption 50 is divided internally into 5 different circuits:

Main branches:

- DC
- AC

Auxiliar branches:

- Supply of internal components.
- Heater/Ventilation
- Service schuko



Other components

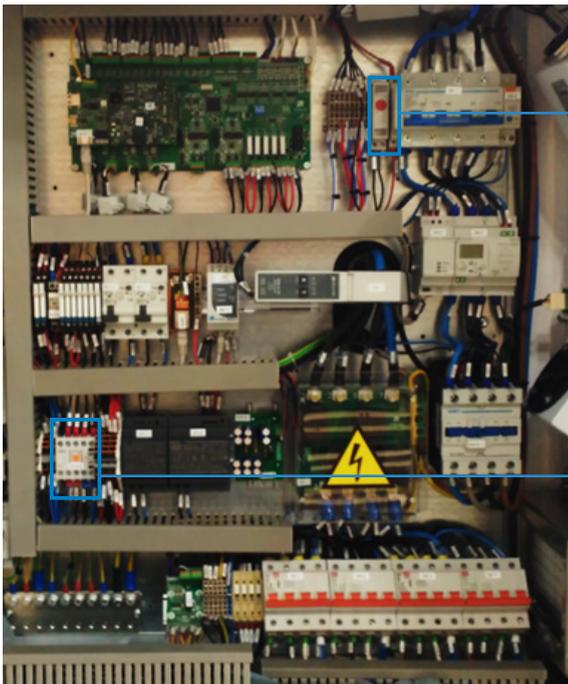
A Heater system

The heater system is managed by the Mode 4 board. Depending on the temperature measured by the board, heater will be activated when necessary in order to keep the temperature over the minimum values.

The objective is to keep the unit over -15°C . So heater will be activated previously in order to avoid reaching this value.

Additionally, there is a protection system for the commissioning in the coldest countries, where temperature can be extremely low and affect Charging Station operation

This system is based on the thermostat highlighted in the next picture and the Contactor K13.3, which is normally closed.



Thermostat



Contactor



The thermostat is configured at -15°C . If temperature is lower than this value, contactor will open.

When K13.3 contactor opens, it does two functions simultaneously:

- 1 — Disconnects the supply of the internal components.
- 2 — Activates the heater.

So, as a result, when the Charging Station is powered and the environmental temperature is lower than -15°C this system is activated. Even being powered, the Charging Station will remain with all the components turned off while heater is activated.

When temperature is high enough, Raption will start to work normally.



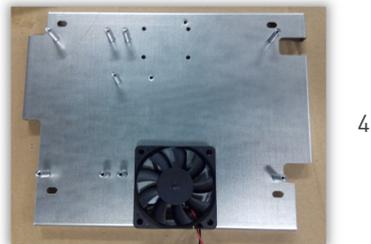
B Ventilation system

Raption is equipped with some fans in order to keep a safe temperature through different sections of it.

There are 4 fans in the Charge Station:

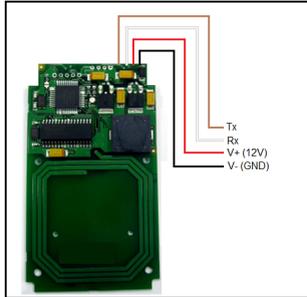
- 1 — On the roof.
- 2 — On the Backflow diode.
- 3 — In the Power modules section.
- 4 — In the A8 screen (this component was not originally installed).

Screen/s's fan is working always. The other 3 fans will work while Charge Point has an active charge transaction in DC side or temperature is higher than 50°C.



RFID reader

The RFID reader is a device that can send and receive radio signals with RFID tags to identify the end-user without physical contact between the charger and the card.



Wire Colour	RS-485 Communications
Brown	Tx
White	Rx
Wire Colour	Power supply
Red	V+ (12V)
Black	V- (GND)

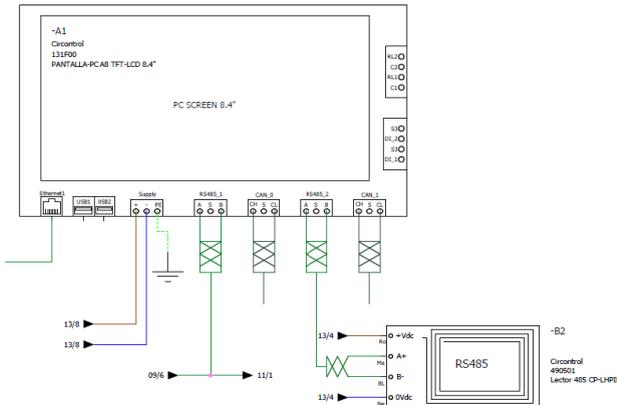
Operation LEDs

RFID reader has a LED status indicator. Looking at the LED status indicator colour:

Green LED: RFID configured and ready to be used. In this case, there is no additional configuration required to operate with RFID reader.

Orange LED: RFID not configured. Show a RFID card and reboot the Charging Station.

Electrical scheme



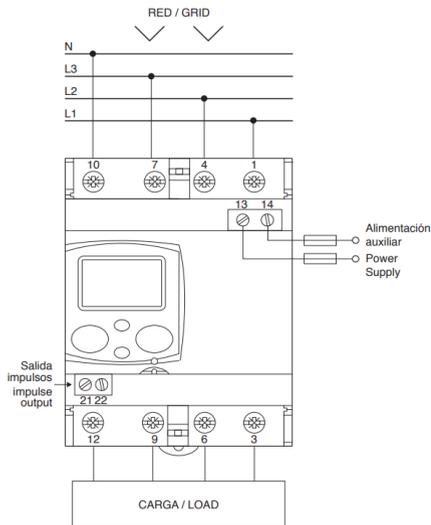
AC meter

The three-phase electrical energy meter for AC side, measures current and voltage that is supplied to the AC socket. The meter has RS485 communications with the Screen A1.

Depending on the Raption model, this meter may be a CEM C30 or CEM C20.



Electrical scheme



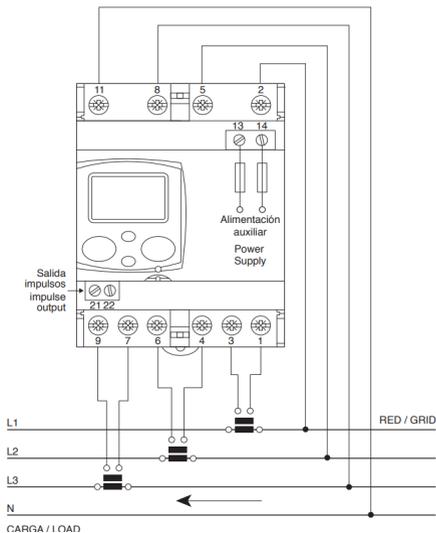
E DC meter

The three-phase electrical energy meter for indirect measurement for the DC side, measures current and voltage that supplies the DC sockets. The meter has RS485 communications with the Screen A1.

This meter is a CEM C30.



Electrical scheme



SuperCapacitors board

The SuperCapacitors board provides enough supply to the Mode 4 control board to perform a controlled stop of an on-going charging session, in case there is a blackout or the RCBO of the main supply (Q11.1) triggers.



This board allows that the 12Vdc electronics remain supplied for few seconds when unit is powered OFF.

Power supplies

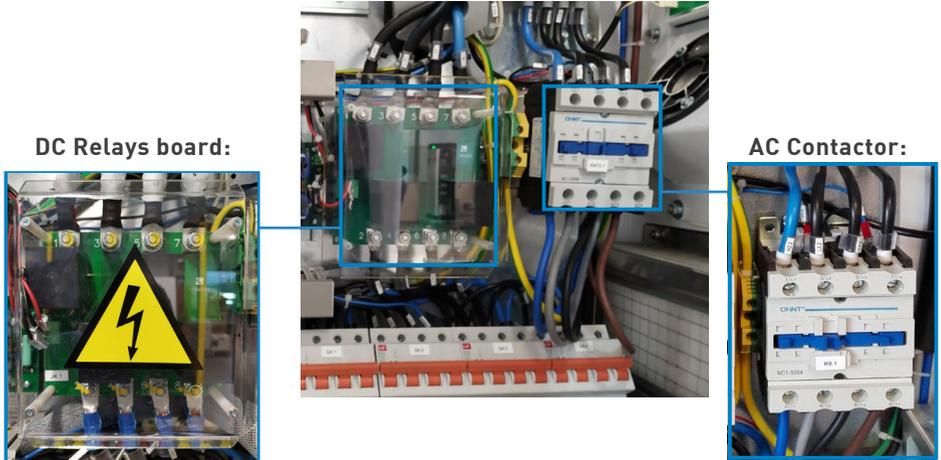
There is a power supply of 12Vdc and another one of 24Vdc supplying most of the internal components: fans, boards, screen, router, etc.



Power supply 24Vdc

Power supply 12Vdc

Contactors



DC Relays board:

This board closes when Charging Station is powered ON for a power modules detection procedure. This procedure may last around 5 minutes. If relays board remains closed for a longer period of time, it means that one or more power modules haven't been detected. Check if they are correctly supplied.

Relays board has to be open in standby.

It will close too when Charging Station is charging in the DC side.

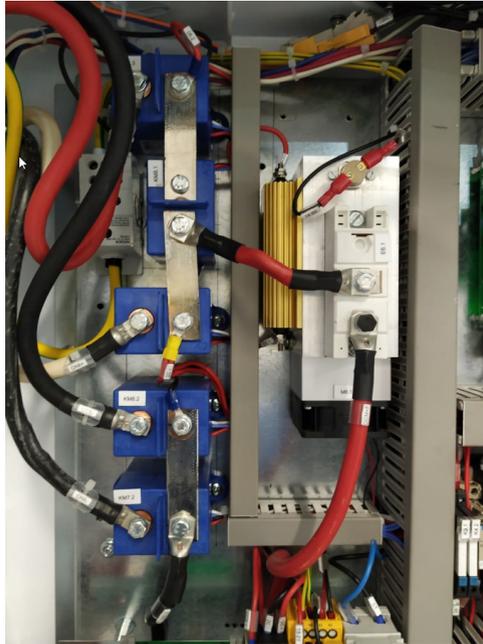
AC Contactor:

AC contactor closes when Charging Station is charging in the AC side.

DC Output Contactors:

There are 5 DC output contactors:

- Two for CHAdeMO cable.
- Two for CCS2 cable.
- One for CCS2 precharge circuit.



Raption 50 Gen 2 mounts different output contactors than Raption Gen 1. These ones allow Welding detection function. When one of the contactors is welded, Mode 4 control board will receive this information and will identify which is the faulty contactor. An alarm will be generated to avoid incoming charging sessions.



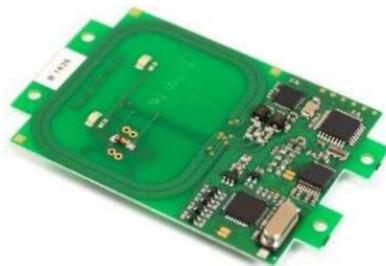
6

A RFID Reader - Legic

Alternative RFID reader Legic Advant / Legic Prime.

This model is compliant of a higher number of ISO certifications.

- LEGIC Advant
- LEGIC Prime
- ISO14443 A+B compatible to part 4: MIFARE DESFireEV13), MIFARE Plus S, X3), MIFARE Pro X3), MIFARE SmartMX3), SLE66Rxx (my-d move)3), SLE44R351), PayPass1), NTAG2xx4),
- ISO15693:EM4x353), Tag-It3), SRF55Vxx (my-d vicinity)3), ICODE SLI3)
- MIFARE: Classic3), Classic EV14), Mini1), Ultralight3), Ultralight C3), UltralightEV14)
- Sony FeliCa1)
- NFC Forum Tag Type 2-43)
- PicoPass1), HID iCLASS1), HID iCLASS SE/SR1)

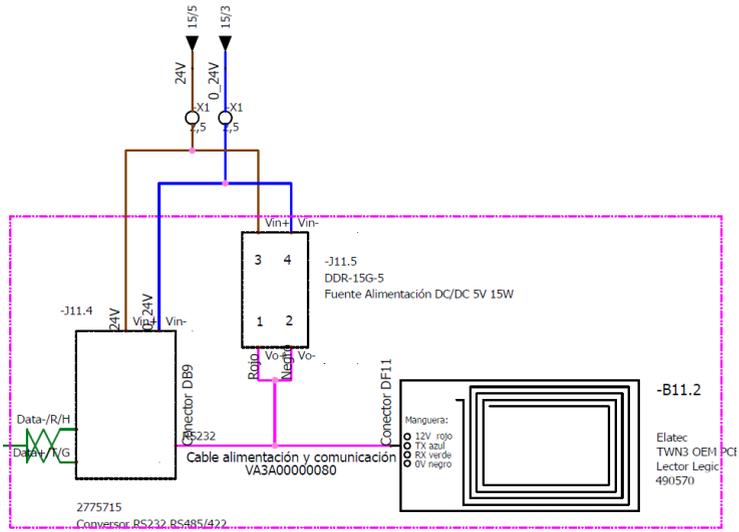


Other optional components

Electrical scheme

This RFID reader has two particular points.

- It is supplied with 5Vdc, so it is necessary a power supply device converting from 24Vdc to 5Vdc.
- It communicates via RS232 protocol. It is necessary to convert this signal to RS485, so there is installed a converter in between.



Teltonika RUT 240

Raption can include optionally a router in order to allow the Charging Station to communicate and remote access.

This device is used normally to establish communications with a CSMS so Raption can be remotely managed.

It also allows remote access, which is very useful for maintenance, remote diagnosis and eventually, to adjust the settings of the Charging Station, such as tariffs or language.



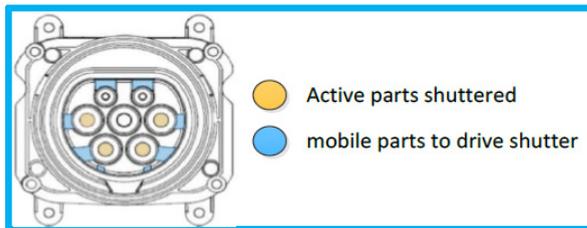
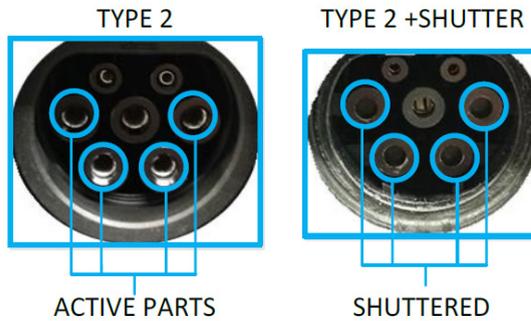
Settings

Find the step by step explanation about how to configure this device in the User Manual of the Raption 50. There will be found all the details that need to be taken into account.

Shutter protection

For the units with AC side that build Socket-outlet instead of a cable, it is possible to install shutter protection.

Socket-outlet has electrical active parts which can be accessible. Shutter solution protects people from these electrical active parts, avoiding any risk.



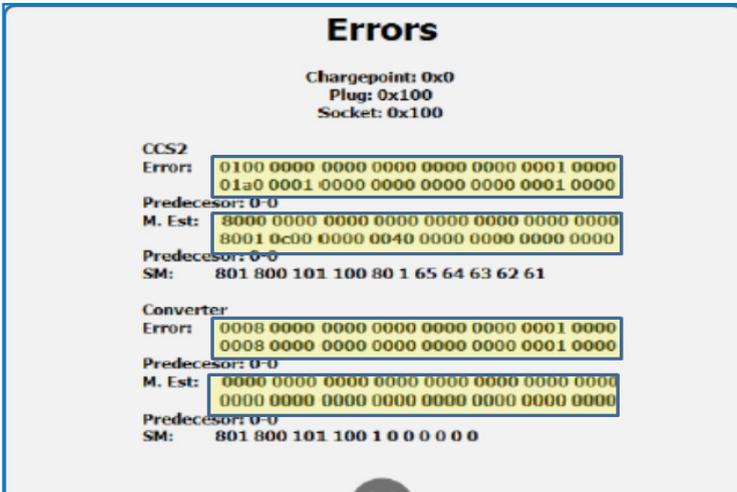
6

A Troubleshooting introduction

The Charging Station can report about different sort of errors, coming from different parts or devices.



When the 'Error screen' appears, the 'Information' touch button has to be pressed in order to see the error message, as can be seen below, which needs to be decoded to understand what is happening to the Charging Station.:



Troubleshooting & Errors

This section provides the necessary information to decode, identify and understand the errors. However, eventually, Circontrol staff help may be needed to solve the issues. In that case, please, contact ps-support@circontrol.com to get help.

When contacting Circontrol, it is important to provide some background information regarding the issue. It is essential to answer the questions exposed below to receive a proper support. Answering these points, will be helpful for customer too, in order to understand the error and allow the maintenance staff to fix the problems by itself.

MAIN QUESTIONS:

- 1 — Serial number of the Charging Station.
- 2 — Charging Station updated? Firmware version.
- 3 — Charging Station previously repaired?
- 4 — Particular configuration (f.e. power reduced)?
- 5 — Remote Connection?
- 6 — OCPP integrations activated?
- 7 — Troubles during commissioning or installation?

Others:

- 8 — Clarifying pictures, videos or extra information



Another important point is to locate the error. It is basic to identify which connector is affected and find in which moment EVSE is going into the error state.

By doing this, components that could cause the error will be located.

LOCATING THE ERROR:

1 — Which connectors are in error?

Identifying the connector(s) in fault, will indicate us which components have to be checked. Basically the ones related with the faulty connector(s).

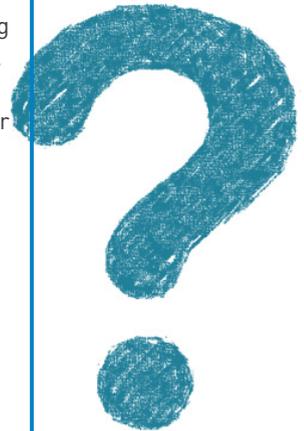
For example, Mode 3 is related only with AC charging sessions and CCS board is related only with CCS ones.

2 — In which step of the charging session the error shows up?

- Charging session does not even start
- During initial checks.
- Starting process.
- Randomly during charging session.
- Stopping process.
- Permanent error.

3 — Does the error appear with a specific car model?

Circontrol performs interoperability tests periodically with the new brand cars of the market in order to ensure a correct compatibility between charging stations and EVs.



Service staff can perform some basic checks on those situations where they don't have the tools to decode the error or access to the EVSE.

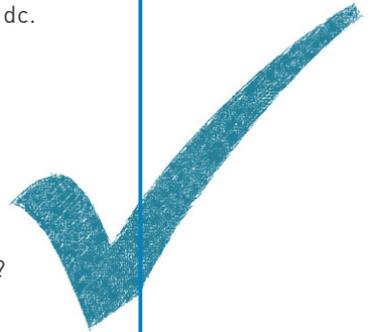
These checks can provide helpful information and eventually fix the issue.

BASIC CHECKS

- Verify that no MCBs have been triggered.
- Verify all fuses of the station.
- Check supply of the station 230/400V
- Check power supplies of 12V dc and 24V dc.

Visual inspection on the charger:

- All devices powered?
- Any external device physically damaged?
- Any internal device damaged?
- Any cable performing a bad contact?
- Any device in fault status?



Log files

Log files provide useful information about the Charging Station. All the steps it goes through, the current status, detail about the charging session, error code, etc.

All this information will be helpful when trying to locate and identify an error.

However, there is a very important point to take into account:

- Logs are lost when Screen is powered OFF or rebooted.
- Memory reserved for logs storage is limited. Once it is full, first registers will be overwritten.

Memory capacity allows registers storage even for a few days, but this will vary depending on the activity of the EVSE.

To solve this problem, it is possible to install a Micro SD card in the Screen. Important events will be stored there and can be consulted.

Access to the log files web page using the next links:

[http://\"IP ADDRESS\"/services/chargePointsInterface/log.html](http://\)

Or

[http://\"IP ADDRESS\"/services/cpi/log](http://\)

Access to the events stored using:

[http://\"IP ADDRESS\"/services/cpi/record.xml](http://\)

Page will show up with the registers stored. Name of each register refers to the date it was stored and it is associated to an ID (maximum of 25). To access to an specific register use:

[http://\"IP ADDRESS\"/services/cpi/record.xml?id=X](http://\)

Where X is the number of the ID you want to consult.



[http://\"IP ADDRESS\"/services/cpi/record.xml](http://\):

```
<logRecordInfo>
  <logRecord>
    <id1</id>
    <file>20200302112427.log</file>
  </logRecord>
  <logRecord>
    <id2</id>
    <file>20200225151743.log</file>
  </logRecord>
  <logRecord>
    <id3</id>
    <file>20200221114555.log</file>
  </logRecord>
  <logRecord>
    <id4</id>
    <file>20200218164329.log</file>
  </logRecord>
  <logRecord>
    <id5</id>
    <file>20200218164313.log</file>
  </logRecord>
  <logRecord>
    <id6</id>
    <file>20200218164305.log</file>
  </logRecord>
  <logRecord>
    <id7</id>
    <file>20200218164251.log</file>
  </logRecord>
  <logRecord>
    <id8</id>
    <file>20200218164242.log</file>
  </logRecord>
  <logRecord>
    <id9</id>
    <file>20200218164109.log</file>
  </logRecord>
  <logRecord>
    <id10</id>
    <file>20200218164101.log</file>
  </logRecord>
  <logRecord>
    <id11</id>
    <file>20200218164049.log</file>
  </logRecord>
  </logRecordInfo>
```

Then, to access to a specific register, for example n°2:

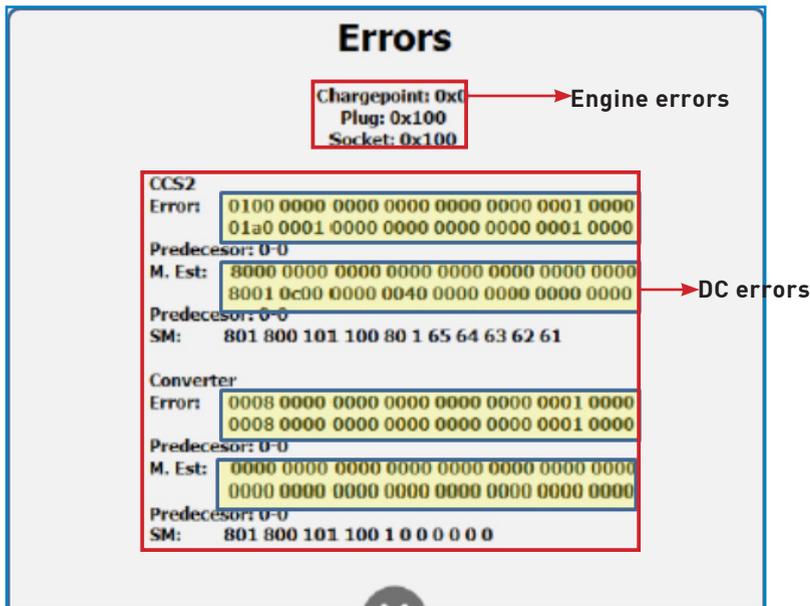
[http://\"IP ADDRESS\"/services/cpi/record.xml?id=2](http://\)

```
Feb 25 04:36:40 (none) user.debug octgpi.5: Heart-beating
Feb 25 04:36:40 (none) user.debug pss[121]: XCDDeviceEventServer:sendEvent: Buffered event id=0: <event>{type:1/type:1/id:2/<id>time:1582069407/<time>info:deviceId:1d0472C24E1-7800-4578-80D1-C1D385A702B/<id>name:EVSE/<name>/<deviceId/</info>/event}
Feb 25 04:36:40 (none) user.debug pss[121]: XCPProcessMTTRequestPutChargePointsInterface:sendDeviceError: PUT /services/chargePointsInterface/dateTime.xml: 204
Feb 25 04:36:40 (none) user.debug octgpi.5: Synchro date: Done
Feb 25 04:36:40 (none) user.info octgpi.5: OCPP time synchronization
Feb 25 04:36:40 (none) user.debug octgpi.5: Service HTTP: /services/user/events.xml
Feb 25 04:36:40 (none) user.debug octgpi.5: >>> EVENT *****
Feb 25 04:36:40 (none) user.debug octgpi.5: 1: <events>{engine:PSI_INTEGRATED_APP/<engine>event:type:1/type:1/id:2/<id>time:
Feb 25 04:36:40 (none) user.debug octgpi.5: 2: e:1582069407/<time>info:deviceId:1d0472C24E1-7800-4578-80D1-C1D385A702B/<id>
Feb 25 04:36:40 (none) user.debug octgpi.5: 3: <name>EVSE/<name>/<deviceId/</info>/event/</events>
Feb 25 04:36:40 (none) user.debug octgpi.5: *****
Feb 25 04:36:40 (none) user.debug octgpi.5: Not managed event
Feb 25 04:36:40 (none) user.debug octgpi.5: Event processed
Feb 25 04:36:40 (none) user.debug pss[121]: XCDDeviceEventServer:sendEvent: Success id=0 in 0.000000 sec (XDC code = 204) sending event to PSI_INTEGRATED_APP
Feb 25 04:36:40 (none) user.debug octgpi.5: Heart-beating
Feb 25 04:36:40 (none) user.debug pss[121]: XCDDeviceEventServer:sendEvent: Buffered event id=0: <event>{type:1/type:1/id:2/<id>time:1582069620/<time>info:deviceId:1d0472C24E1-7800-4578-80D1-C1D385A702B/<id>name:EVSE/<name>/<deviceId/</info>/event}
Feb 25 04:36:50 (none) user.info octgpi.5: Synchro date: Done
Feb 25 04:36:50 (none) user.debug octgpi.5: OCPP time synchronization
Feb 25 04:36:50 (none) user.debug octgpi.5: Service HTTP: /services/user/events.xml
Feb 25 04:36:50 (none) user.debug octgpi.5: >>> EVENT *****
Feb 25 04:36:50 (none) user.debug octgpi.5: 1: <events>{engine:PSI_INTEGRATED_APP/<engine>event:type:1/type:1/id:2/<id>time:
Feb 25 04:36:50 (none) user.debug octgpi.5: 2: e:1582069620/<time>info:deviceId:1d0472C24E1-7800-4578-80D1-C1D385A702B/<id>
Feb 25 04:36:50 (none) user.debug octgpi.5: 3: <name>EVSE/<name>/<deviceId/</info>/event/</events>
Feb 25 04:36:50 (none) user.debug octgpi.5: *****
Feb 25 04:36:50 (none) user.debug octgpi.5: Not managed event
Feb 25 04:36:50 (none) user.debug pss[121]: XCDDeviceEventServer:sendEvent: Success id=0 in 0.000000 sec (XDC code = 204) sending event to PSI_INTEGRATED_APP
Feb 25 04:36:50 (none) user.debug octgpi.5: Event processed
Feb 25 04:36:50 (none) user.debug pss[121]: XCPProcessMTTRequestPutChargePointsInterface:sendDeviceError: PUT /services/chargePointsInterface/dateTime.xml: 204
Feb 25 05:16:50 (none) user.debug octgpi.5: Heart-beating
Feb 25 05:16:52 (none) user.debug pss[121]: XCDDeviceEventServer:sendEvent: Buffered event id=0: <event>{type:1/type:1/id:2/<id>time:1582067932/<time>info:deviceId:1d0472C24E1-7800-4578-80D1-C1D385A702B/<id>name:EVSE/<name>/<deviceId/</info>/event}
Feb 25 05:16:52 (none) user.info octgpi.5: OCPP time synchronization
Feb 25 05:16:52 (none) user.debug octgpi.5: Synchro date: Done
Feb 25 05:16:52 (none) user.debug pss[121]: XCPProcessMTTRequestPutChargePointsInterface:sendDeviceError: PUT /services/chargePointsInterface/dateTime.xml: 204
Feb 25 05:16:52 (none) user.debug octgpi.5: Service HTTP: /services/user/events.xml
```

Decoding the error

There is a specific order which has to be followed to decode the error.

First step is to identify the parts of the error.



As indicated in the picture above there are 'Engine errors' and also 'DC errors'.

Errors from AC side are normally easier to identify. Most of the times they can be fixed with the 'Engine error' section.

Procedure for DC charging is more complex than AC. For that reason, there is the second part that provide more information about the errors that may occur.

Regardless of the error type, the check order always must be:

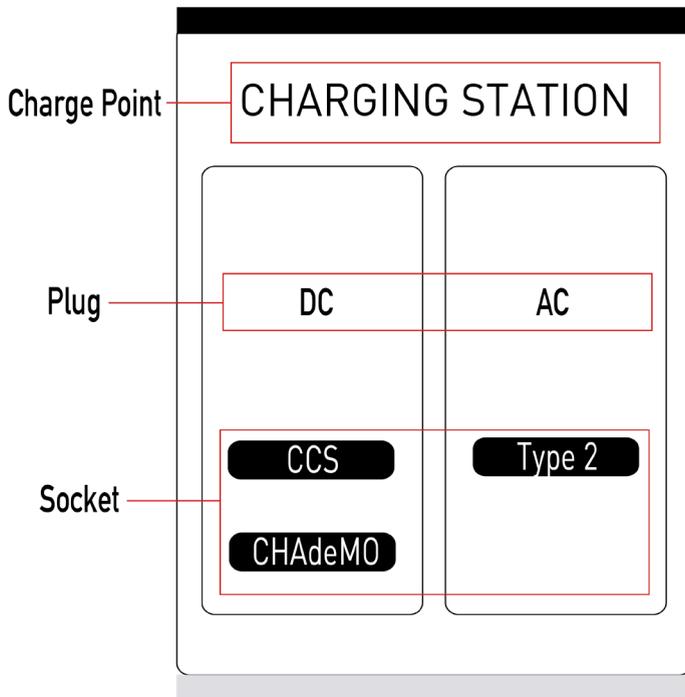
1. Engine errors
2. DC errors.

ENGINE ERRORS

This part is divided in three different levels.

Every level has its own code and a table for consulting the meaning of the code. The correct order to check these levels is:

1. **Socket:** One plug may have more than one socket. Error can affect one socket and the plug still being available.
2. **Plug:** Error affecting one plug. All sockets contained are in error state when plug is inoperative.
3. **Chargepoint:** General errors affecting the entire Charging Station (E.g.: RFID error).



CHARGEPOINT LEVEL

Error	Hexadecimal	Decimal	Description
OK	0x0	0	No error
CFG	0x1	1	Invalid Configuration
READER	0x2	2	Reader Error.
DISPLAY	0x4	4	Display Error.
TAMPER	0x8	8	Tamper Error.
TILT	0x10	16	Charge point is tilted.
SUPPLY	0x20	32	Power Supply dropped.
RCD	0x40	64	RCD dropped.
TEMPERATURE	0x80	128	Temperature out of range
OTHER	0x100	256	Other error not defined above.
COMMUNICATION	0x200	512	One or more devices configured on the charge point are not communicating.
TYPE	0x400	1024	Device installed is not the same as configured.
VERSION	0x800	2048	Incorrect device version.
GROUND	0x1000	4096	PE error.
MCB	0x2000	8192	Charge Point MCB tripped
OFFLINE	0x4000	16384	Charge point is offline



PLUG LEVEL

Error	Hexadecimal	Decimal	Description
OK	0x0	0	No error.
CFG	0x1	1	Invalid Configuration.
MASTER	0x2	2	Charge Point error. Plug is inoperative. Check Charge point error affected.
USER_INTERFACE	0x4	4	User Interface error.
LOCK	0x8	8	Lock error.
SUPPLY	0x10	16	Power supply dropped.
RCD	0x20	32	RCD tripped
CONTACTOR	0x40	64	Contactora failed.
METER	0x80	128	Meter failed.
EMERGENCY	0x100	256	Emergency button pressed.
TEMPERATURE	0x200	512	Temperature out of range.
EV COMMUNICATION_ DEVICE	0x400	1024	Communication between charge point and vehicle failed.
EV_CORD	0x800	2048	Proximity pin error. (Mode 3)
OTHER	0x1000	4096	Other error not defined above.
COMMUNICATION	0x2000	8192	One or more devices configured on the socket are not communicating.
OVERCURRENT	0x4000	16384	Current consumption exceeded.
MCB	0x8000	32768	MCB tripped
VOLTAGE	0x10000	65536	Voltage out of range.
SOCKET	0x20000	131072	All sockets contained by the plug are in error state. Plug is inoperative. Check sockets affected.
TAMPER	0x40000	262144	Tamper Error

SOCKET LEVEL

Error	Hexadecimal	Decimal	Description
OK	0x0	0	No error.
CFG	0x1	1	Invalid Configuration.
MASTER	0x2	2	Plug error. Socket is inoperative. Check plug error affected.
USER_INTERFACE	0X4	4	User Interface error.
LOCK	0x8	8	Lock error.
SUPPLY	0x10	16	Power supply dropped.
RCD	0X20	32	RCD tripped
CONTACTOR	0X40	64	Contactator failed.
METER	0x80	128	Meter failed.
EMERGENCY	0x100	256	Emergency button pressed.
TEMPERATURE	0x200	512	Temperature out of range.
EV COMMUNICATION_ DEVICE	0X400	1024	Communication between charge point and vehicle failed.
EV_CORD	0x800	2048	Proximity pin error. (Mode 3)
OTHER	0x1000	4096	Other error not defined above.
COMMUNICATION	0x2000	8192	One or more devices configured on the socket are not communicating.
OVERCURRENT	0x4000	16384	Current consumption exceeded.
MCB	0x8000	32768	MCB tripped
VOLTAGE	0x10000	65536	Voltage out of range.

DC ERRORS

This part has to be checked only after reviewing the Engine section.

In some cases, Engine section does not provide enough information, describes a general error or is not conclusive. These situations require to continue investigating using the DC error.

DC error section is also divided in subparts. There are lines for the **Connector** error (CCS2 or CHA) and lines for the **Converter** (power modules). Both of them, Connector and Converter provide information about the **Error** and the states of the machine (**M. Est**). Finally, there are the code lines. In all cases, first line provides information about the **current situation** of the Charging Station, second line about the **historic**.

Errors

Chargepoint: 0x0
Plug: 0x100
Socket: 0x100

CCS2

Error: 0100 0000 0000 0000 0000 0000 0001 0000
01a0 0001 0000 0000 0000 0000 0001 0000

Predecessor: 0x0

M. Est: 8000 0000 0000 0000 0000 0000 0000 0000
8001 0c00 0000 0040 0000 0000 0000 0000

Predecessor: 0x0

SM: 801 800 101 100 80 1 65 64 63 62 61

Converter

Error: 0008 0000 0000 0000 0000 0000 0001 0000
0008 0000 0000 0000 0000 0000 0001 0000

Predecessor: 0x0

M. Est: 0000 0000 0000 0000 0000 0000 0000 0000
0000 0000 0000 0000 0000 0000 0000 0000

Predecessor: 0x0

SM: 801 800 101 100 1 0 0 0 0 0

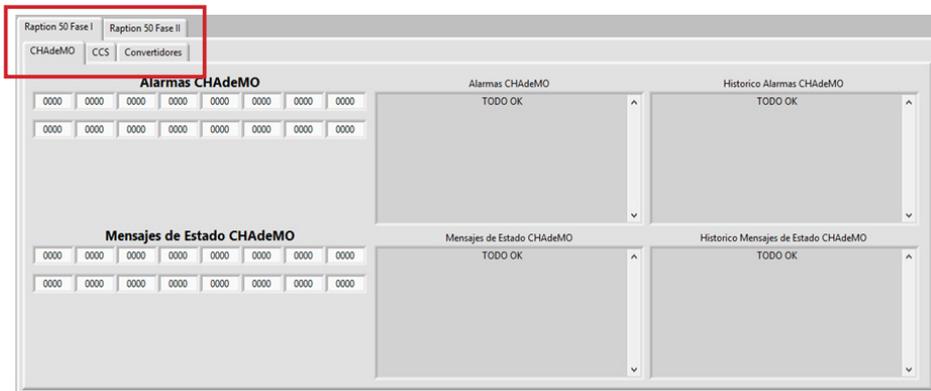
Current situation

Historic

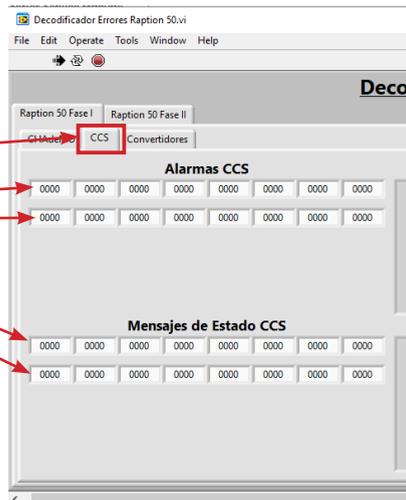
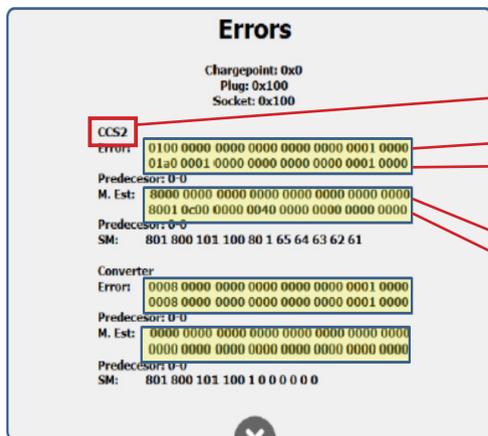
To understand this DC error section, it is required a decoding tool. This tool is available in the Expert Area. Post sales team, ps-support@circontrol.com can provide it too if necessary.

Identify if your Raption is Gen1 or Gen2 and select proper option in the tabs from the top.

Introduce the lines from the error code in the Connector faulted and Converter section.



Example about how to fill the decoder tool.



Errors

Chargepoint: 0x0
Plug: 0x100
Socket: 0x100

CCS2
Error: 0100 0000 0000 0000 0000 0000 0001 0000
01a0 0001 0000 0000 0000 0000 0001 0000
Predecisor: 0x0
M. Est: 8000 0000 0000 0000 0000 0000 0000 0000
8001 0c00 0000 0040 0000 0000 0000 0000
Predecisor: 0x0
SM: 801 800 101 100 00 1 65 64 63 62 61

Converter
Error: 0008 0000 0000 0000 0000 0000 0001 0000
0008 0000 0000 0000 0000 0000 0001 0000
Predecisor: 0x0
M. Est: 0000 0000 0000 0000 0000 0000 0000 0000
0000 0000 0000 0000 0000 0000 0000 0000
Predecisor: 0x0
SM: 801 800 101 100 1 0 0 0 0 0

Once error code has been introduced, the right side of the decoder tool will show indications regarding the issue, the faulty component or the possible causes..

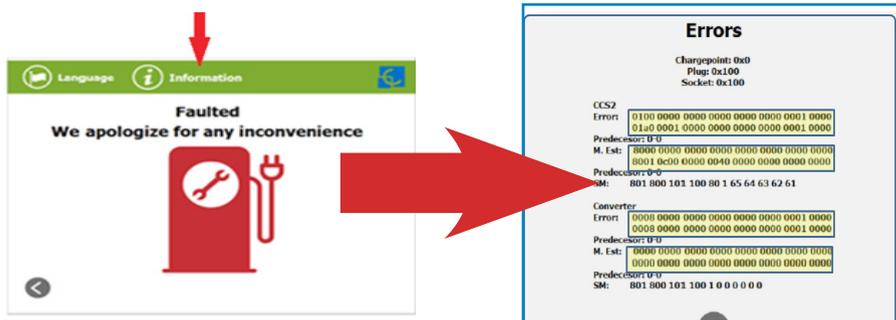
It is shown the current error (or alarm) and the historical. In some cases, historical is helpful in order to understand how the charger went into the error state.

CCS2 Example:

Converters Example:

Error code in remote

As it has been shown at the beginning of this chapter, error can be consulted directly from the screen, by pressing the connector in fault status and the 'Information' button.



However, in most of the cases, service staff wants to know this code in advance in order to prepare the on-site assistance. This error code can be consulted remotely from the log files.

Search the Vector of Error Flags Objects section:

```
Nov 8 09:39:18 raption user.info pss[306]: ----- VECTOR OF ERROR FLAGS OBJECTS -----
Error Flags Object --> Module Type: 31, Name: CCS2 Error flags: 0000 0000 0000 0000 0000 0000 0000 0000 0020 Historical error
flags: 0000 0000 0000 0000 0000 0000 0000 0000 0120 Predecessor errors: 0 - 0 Status message flags: 0000 0000 0000 0000 0000
0001 0000 0001 Historical status message flags: 0000 0000 0000 0000 0000 0001 0000 0001 Predecessor status messages:
0 - 0 State machines: 701 700 2080 80 1 0 701 700 1080 80 1203

Nov 8 09:39:18 raption user.info pss[311]: ----- VECTOR OF ERROR FLAGS OBJECTS -----
Error Flags Object --> Module Type: 10, Name: Converter Error flags: 0000 0000 0000 0000 0000 0000 0000 0000 0000 Historical
error flags: 0000 0009 0000 0000 0000 0000 0000 4000 Predecessor errors: 0 - 0 Status message flags: 0000 0000 0000
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 Predecessor status
messages: 0 - 0 State machines: 2 803 802 801 800 0 0 0 0 0
```



With a few line breaks it can be turned into a more familiar look:

```
Nov 8 09:39:18 raption user.info pss[306]: ----- VECTOR OF ERROR FLAGS OBJECTS -----  
Error Flags Object -> Module Type: 31,  
Name: CCS2 Error flags: 0000 0000 0000 0000 0000 0000 0000 0020  
Historical error flags: 0000 0000 0000 0000 0000 0000 0000 0120  
Predecessor errors: 0 - 0  
Status message flags: 0000 0000 0000 0000 0000 0001 0000 0001  
Historical status message flags: 0000 0000 0000 0000 0000 0001 0000 0001  
Predecessor status messages: 0 - 0 State machines: 701 700 2080 80 1 0 701 700 1080 80 1203  
Nov 8 09:39:18 raption user.info pss[311]: ----- VECTOR OF ERROR FLAGS OBJECTS -----  
Error Flags Object -> Module Type: 10,  
Name: Converter Error flags: 0000 0000 0000 0000 0000 0000 0000 0000  
Historical error flags: 0000 0009 0000 0000 0000 0000 0000 4000  
Predecessor errors: 0 - 0 Status message flags: 0000 0000 0000 0000 0000 0000 0000 0000  
Historical status message flags: 0000 0000 0000 0000 0000 0000 0000 0000  
Predecessor status messages: 0 - 0 State machines: 2 803 802 801 800 0 0 0 0 0
```

At first, it is shown the part of the error related with the Connector and then, the Converter error. Same format as in the Display, which can be easily decoded.



Communication errors

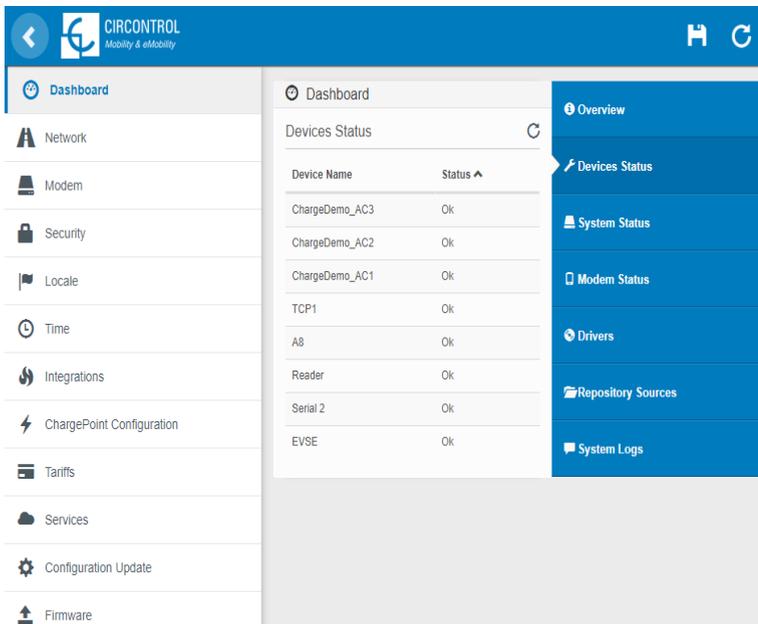
When an internal device cannot reach the main controller of the Charging Station, the Screen, a communications error will be generated.

These types of errors can be generated by many reasons::

- Device improperly powered
- Cables incorrectly fastened or bad contact.
- Problems in the RS485 bus.
- Faulty device.

The setup webpage, allows service staff to identify the component(s) that is not communicating, so spare part(s) can be prepared in advance for an eventual replace.

Check in the 'Dashboard' section, in the 'Devices status' tab if all components are 'OK':



The screenshot shows the CIRCONTROL web interface. The main content area displays the 'Devices Status' tab with the following table:

Device Name	Status
ChargeDemo_AC3	Ok
ChargeDemo_AC2	Ok
ChargeDemo_AC1	Ok
TCP1	Ok
A8	Ok
Reader	Ok
Serial 2	Ok
EVSE	Ok

The right-hand sidebar contains the following menu items: Overview, Devices Status, System Status, Modem Status, Drivers, Repository Sources, and System Logs.

OCPP Errors

Most common troubles establishing communications with a Central System.

OCPP 1.5

Connect failed in tcp_connect

Common causes:

Host URL introduced is not correct. Check it on OCPP configuration.

Raption / eVolve Master:

- Check if DHCP=ON within Network section on web page from CP. Reboot required.

Evolve / WB Smart:

- Check if embedded modem is connected to the network. Otherwise check modem parameters (some cellular providers requires especial APN configuration).
- If no modem. Then ethernet IP address must be static, using gateway and DNS from this network. Do not use DHCP=ON

Detail: bind failed in soap_bind / 'Error 28'

OCPP Listening Ports configured already used by default by the unit: 80, 8080, 65432, 22.

Can not get charge device name

The internal application of charge point is corrupted/lost or is not installed.

It requires to upload a file provided by post sales support within Configuration Update section on web page of the charge point.



Notifying Boot - 200

CS should check if charger is added in their side.

Check charge point ID within OCPP configuration on CP side. http://ip_address:8080/html/setup.html

Notifying Boot - -1

There is some kind of filter on the network related with the size of the messages sent from the charger, maybe in the simcard provider side or in the CS. This filter cause that the message, or part of the message is not sent to the CS, so information is not completely delivered. That problem can be solved adjusting the MTU to a lower value. Default value is 1500, and a good solution would be to adjust it to 1000 or 1200 bytes. In this way problem is solved as messages size is lower than the filter.

Raption / eVolve Master:

- Teltonika RUT240 allows you to adjust this paramter in the Network←Mobile section.
- Ask Simcard provider to adjust the MTU value to 1000 or 1200 bytes.

Evolve / WB Smart:

- Ask Simcard provider to adjust the MTU value to 1000 or 1200 bytes.

HTTP/1.1 404 Not Found

Charger reaches the CS and could not logged in:

The Host URL introduced is not correct. Please, review and make sure it is properly written. Take into account that it is case sensitive:
http://ip_address:8080/html/setup.html



SSL/TLS error

HTTPS URL's requires a certificate that must to be uploaded to the OCPP integrations webpage.

The Certificate uploaded is not correct.

Time and Date are not correctly synchronised

Getting valid public ID timeout

Raption / eVolve Master:

- The password of the modem (f.e. admin01 in Teltonika Rut240) has been changed. It cannot be changed.
- Check the list of Blocked IPs of the modem. If IP of the charger is included there, remove it from the list

Evolve / WB Smart

- Check if Network → Public Address Manager is selected as Embedded modem
- Check with Sim card provider if Sim card is activated (In some cases Roaming is required too)

The screenshot shows the 'Block Unwanted Access' configuration page in the Teltonika web interface. The page is divided into several sections:

- SSH Access Secure:** Includes an 'Enable' checkbox (checked), a 'Clean after reboot' checkbox (unchecked), and a 'Fail count' input field set to 5.
- WebUI Access Secure:** Includes an 'Enable' checkbox (unchecked), a 'Clean after reboot' checkbox (unchecked), and a 'Fail count' input field set to 5.
- List Of Blocked Addresses:** This section is highlighted with a red box. It features a search bar, a table with columns for 'Service', 'Blocked address', and 'Blocked date', and a message stating 'There are no addresses blocked'. Below the table, it indicates 'Showing 1 to 1 of 1 entries'.

No Data, get host by name failed in tcp_connect()

Hostname cannot be resolved in charge point side:http://ip_address:8080/html/setup.html

Raption / eVolve Master:

- Check 'Enable DNS protection' parameter in Teltonika router.
- Check if DHCP=ON within Network section on web page from CP. Reboot required.

Evolve / WB Smart:

- Check if embedded modem is connected to the network. Otherwise check modem parameters (some cellular providers requires especial APN configuration).
- If no modem. Then ethernet IP address must be static, using gateway and DNS from this network. Do not use DHCP=ON.



OCPP 1.6

CS Connection FAILED. Fail reason: Underlying Transport Error

Hostname cannot be resolved in charge point side:http://ip_address:8080/html/setup.html

Host URL introduced is not correct. Check it on OCPP configuration.

Raption / eVolve Master:

- Check 'Enable DNS protection' parameter in Teltonika router.
- Check if DHCP=ON within Network section on web page from CP. Reboot required.

Evolve / WB Smart:

- Check if embedded modem is connected to the network. Otherwise check modem parameters (some cellular providers requires especial APN configuration).
- If no modem. Then ethernet IP address must be static, using gateway and DNS from this network. Do not use DHCP=ON.

CS Connection FAILED. Fail reason: Timer Expired

Charge point has resolved the DNS of the URL but not able to reach CS.

Raption / eVolve Master:

- Check if DHCP=ON within Network section on web page from CP. Reboot required.

Evolve / WB Smart:

- Check if embedded modem is connected to the network. Otherwise check modem parameters (some SIM card providers requires especial APN configuration).
- If no modem. Then ethernet IP address must be static, using gateway and DNS from this network. Do not use DHCP=ON.

CS Connection FAILED. Fail reason: Invalid HTTP status

Charger reaches the CS, but it has rejected the charge point ID configured.

- CS should check if charger is added in their side.
- Check charge point ID within OCPP configuration on CP side. http://ip_address:8080/html/setup.html



Power modules errors

LED lights placed in rectifier:

1 – LED named “OK”: Green/Yellow bi-color

2 – LED named “RFA”: Red

Meaning of colours in relation with service:

Colour	System Status
Green	Everything ok No diagnostic or user interaction required
Yellow	Check following table for further diagnosis
Red	Replace rectifier



Meaning of colours in relation with LED status:

Colour	LED Status	System Status
Green	ON	Correct operation
	OFF	Not able to provide output power Any protection circuit limit the full capacity of the rectifier
Yellow	ON	Any protection circuit limit the full capacity of the rectifier
	OFF	Correct operation Not able to provide output power
Red	ON	Internal malfunction or fan fault
	OFF	Correct operation

8

The unit needs regular maintenance and part inspection during its life.

Before starting with the maintenance or with the part replacement procedure, it is very important to disconnect Charging station from any power source.

Pay attention if you see the following symbols to prevent electrical hazards.



When performing some inspection and servicing at the equipment, except if is absolutely necessary, make sure to switch OFF all circuit breakers before starting to work.

The charger contains electric, mechanical and consumable components that must be periodically checked, in order to keep the correct operation of the Charging Station and keep it in the best conditions throughout its useful lifetime.

This section informs how to perform the preventive maintenance, the frequency in doing it and the components to verify inside the charger.

To perform the first inspection of the Raption and the preventive maintenance, please see the “Wear check list DC chargers”

Maintenance

The maintenance plan is based in years from start-up, hours of charging or standby, and cycles of charging. Depending of the group of components, is necessary to apply a specific maintenance period. Check the periods in the next table:

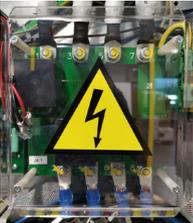
	Years from start-up							Estimated time (hours) for replacement
	6 months / 2K cycles	1 year / 4K cycles	2 years / 8K cycles	3 years / 12K cycles	4 years / 16K cycles	5 years / 20K cycles		
General maintenance								
Preventive maintenance*	I	I	I	I	I	I		1,5
Control devices								
Screen ensemble Raption 50	-	I	I	I	I	R		0,3
Connectors and sockets								
Type 2 Connector	-	I	I	R	I	I		0,75
CCS Connector	-	I	I	R	I	I		0,75
CHAdeMO Connector	-	I	I	R	I	I		0,75
Power								
Power modules	-	I	I	I	I	R		0,25
SuperCapacitors Board	I	I	R	I	R	I		0,15
Contactors and relays								
Switching contactors	-	-	I	-	I	R		0,5
Switching relays	-	-	I	-	I	R		0,15
Power contactors/relays	-	I	R	I	R	I		2
Ventilation and heating								
Control part fans	-	I	I	R	I	I		1,5
Power part fans	-	I	I	I	I	R		1
Filters	-	R	R	R	R	R		1
Isolation top hat seal**	-	R	R	R	R	R		0,5

* Raption WearCheck list

** Should be replaced every time top hat is opened to assure IP

Key: I Inspection C Clean R Replace

Another important point to check is the torque of the components. Here a list indicating the specific torque for those components:

Component	Description	Torque
	MCBs	2Nm
	RCBs	2,5Nm
	Disconnecter	13Nm
	Backflow diode	6,5Nm
	Relays board	3,9Nm



AC output contactor

2,5Nm



DC output contactors

6,5Nm



Hat top

3,5Nm



Clamp for CHAdeMO connector

7Nm



Clamp for CCS connector

3Nm



Clamp for AC connector

2,5Nm



In order to update easily the content of the Annexes from this manual, it has been created the next list. All this material is available in Circontrol's Expert Area where can be downloaded by being registered.

List of Annexes:

1. CCS cable maintenance.
2. CHA cable maintenance.
3. Wearcheck list Raption 50.
4. Isolation protection device settings.
5. Devices torque quick guide.
6. Spare parts list

Annexes

Find all the documents from the List of Annexes in the Expert Area. If you have any trouble, ask ps-support@circontrol.com for the requested file or document.



<https://expertarea.circontrol.com/>

10

GENERAL DATA

Display HMI	8" colour antivandal touch screen
Light beacon	RGB Colour indicator
RFID reader	ISO / IEC14443-1/2/3 MIFARE Classic
RFID Extension	Legic Advant / Legic Prime ISO 15693/ISO 18092. Sony FeliCa
Compliance	CE / Combo-2 (DIN 70121; ISO15118) IEC 61851-1; IEC 61851-23; IEC 61851-21-2 CHAdeMO compatible
Rated diversity factor	0,8

MECHANICAL DATA

Enclosure rating	IP54 / IK10		
Enclosure material	Stainless steel		
Enclosure access	Frontal key locked door		
Connector type	AC	DC	
	Type 2 tethered cable / socket	JEVS G105	CCS 2/ CCS 1*
Cable length	3 meters / ---	3 meters	3 meters
Net weight	235 Kg		
Dimensions (D x W x H)	410** x 940 x 1800 mm		

Technical Data

ENVIRONMENTAL CONDITIONS

Operating temperature	-30°C to +45°C
Storage temperature	-40°C to +60°C
Operating humidity	5% to 95% Non-condensing
Sound level in operation	< 55 dB

CONNECTIVITY

Ethernet	10/100BaseTX (TCP-IP)
Cellular	Modem 4G / GPRS / GSM / WiFi Hotspot *
Interface protocol	OCPP 1.5 or OCPP 1.6J

ELECTRICAL DATA

Power supply	3P+N+PE
Voltage range	400 VAC +/- 10%
Power factor	> 0.98
Efficiency	95 % at nominal output power
Standby consumption	38 W
THDi	< 5%
Frequency	50/60 Hz
Electrical protections	Overcurrent protection, RCD and Overvoltage protection *
AC electrical meter	EN 50470-1 and EN 50470-3 (MID European standards)
Overcurrent protection	MCB class C
Safety protection	RCD type A (type B optional)

(*) Depending on the model, these components are optional.

(**) 520 mm with the cables hanged.

Models Specifications

MODELS	CCS	CCS T2C32	CCS T2S32
Maximum AC input current	76 A (38 A*)	108 A (70 A*)	108 A (70 A*)
Required power supply capacity	53 kVA (26 kVA*)	75 kVA (48 kVA*)	75 kVA (48 kVA*)
Maximum output power	50 kW (25 kW*) (@400 VDC)	DC:50 kW (25 kW*) (@400 VDC) AC:22 kW	DC:50 kW (25 kW*) (@400 VDC) AC:22 kW
Output voltage range	DC:50 - 500 V	DC: 50 - 500 V AC: 400 V	DC: 50 - 500 V AC: 400 V
Maximum output current	DC:125 A (63 A*)	DC:125A AC:32 A	DC:125A AC:32 A
Connection	CCS 2 	CCS 2 Type 2 Tethered cable 	CCS 2 Type 2 Socket (Lock system) 

MODELS	CCS CHA	CCS CHA T2S32	CCS CHA T2C32	CCS CHA T2C63
Maximum AC input current	76 A (38 A*)	108 A (70 A*)	108 A (70 A*)	138 A (101 A*)
Required power supply capacity	53 kVA (26 kVA*)	75 kVA (48 kVA*)	75 kVA (48 kVA*)	96 kVA (70 kVA*)
Maximum output power	50 kW (25 kW*) (@400 VDC)	DC:50 kW (25 kW*) (@400 VDC) AC:22 kW	DC:50 kW (25 kW*) (@400 VDC) AC:22 kW	DC:50 kW (25 kW*) (@400 VDC) AC:43 kW
Output voltage range	DC:50 - 500 V	DC: 50 - 500 V AC: 400 V	DC: 50 - 500 V AC: 400 V	DC: 50 - 500 V AC: 400 V
Maximum output current	DC:125 A	DC:125 A AC:32 A	DC:125 A AC:32 A	DC:125 A (63 A*) AC:63 A
Connection	CCS 2 - JEVS G105 	CCS 2 - JEVS G105 Type 2 Socket (Lock system) 	CCS 2 - JEVS G105 Type 2 Tethered cable 	CCS 2 - JEVS G105 Type 2 Tethered cable 



Need help?

In case of any query or need further information, please contact our **Post-Sales Department**



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CIRCONTROL

Mobility & eMobility

**CIRCONTROL Raption 50
Series Service MANUAL**

A comprehensive guide on
how to use and configure your
Raption 50 Charging Station.

V1.4, February edition 2021