2025

MINT Charger compatibility test report

VERSION 2.0

EN

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Table of Revisions

Date	Version	Description of Changes	Status	Author
07-06-2022	1.0	Concept	Draft	Sven Lemmens
14-06-2022	1.1	Modification after feedback	Release	Sven Lemmens
01-07-2022	1.2	Modification text	Release	Sven Lemmens
24-11-2022	1.3	Modification text RFID	Release	Frederik Leempoels
14-02-2024	1.4	Adding DC chargers	Release	Sven Lemmens
10-01-2025	2.0	New template	Release	Marco Cicarelli

1 General information

Brand	
Model	
Firmware version	
Code Creator version	
Package version	

Table 1: General information.

2 Checklist for MINT requirements

2.1 Hardware AC

Read / Write	Functionality	Passed
Read	The current per phase of each charging point / connector.	
Read	The status of a charging session (A1, B1, B2, C1, C2, F and E, or alternatively, 0-Available, 1-Preparing_TagId_Ready, 2-Preparing_EV_Ready, 3-Charging, 4-SuspendedEV, 5-SuspendedEVSE, 6-Finishing, 7-Reserved, 8-Unavailable, 9-UnavailableFwUpdate, 10-Faulted, 11-UnavailableConnObj).	
Read	The RFID of the associated badge that changed the status of the charge point to initialize an active charging session (B2). In short, the RFID code that activated the charging session.	
Read	The total energy counter, the voltage and the power on each phase and the total power.	
Write	The current per phase of each charging point / connector.	
Write	Temporarily interrupt a charging session by writing 0A.	
Write	End a charging session by sending a deactivation command.	
Write	Set the watchdog timer, which will refresh on all registers after each write command. This watchdog timer will write the fallback current to the EV.	
Write	Set a fallback current.	

Table 2: Hardware AC checklist.

2.2 Hardware DC

Read / Write	Functionality	Passed
Read	The current per phase of each charging point / connector.	
Read	The status of a charging session (A1, B1, B2, C1, C2, F and E, or alternatively, 0-Available, 1-Preparing_TagId_Ready, 2-Preparing_EV_Ready, 3-Charging, 4-SuspendedEV, 5-SuspendedEVSE, 6-Finishing, 7-Reserved, 8-Unavailable, 9-UnavailableFwUpdate, 10-Faulted, 11-UnavailableConnObj).	
Read	The RFID of the associated badge that changed the status of the charge point to initialize an active charging session (B2). In short, the RFID code that activated the charging session.	
Read	The total energy counter, the voltage and the power on each phase and the total power.	
Write	The current per phase of each charging point / connector.	
Write	Temporarily interrupt a charging session by writing 0A.	
Write	End a charging session by sending a deactivation command.	
Write	Set the watchdog timer, which will refresh on all registers after each write command. This watchdog timer will write the fallback current to the EV.	
Write	Set a fallback current.	

Table 3: Hardware DC checklist.

2.3 Software[1]

Protocol	Modbus TCP / RTU

Table 4: Software checklist.

3 Why do we need these functionalities?

MINT has the following objectives:

- Meet the needs of the EV user, so the vehicle is charged at the requested time.
- Reduce the total load on the electrical system as much as possible and consider self-generated energy or dynamic prices.
- Predict the required amount of energy a car needs. Since every charging session can be different (number of kWh, departure time, ...), we need to read the RFID badge to link the user/vehicle to a standard departure time and, hence, the required amount of energy. As an alternative, the user profile can be transmitted via the MINT DataHub, and optionally, the user will be able to modify a charging session through a smartphone application.
- Consider additional data to optimise the software:
  - Charging on 1, 2 or 3 phases.
  - The phase rotation in the cabling or distribution boards.
  - The maximum payload of the vehicle.
  - The maximum current in each part of the electrical installation.

Depending on all incoming measurement data and preferences, an optimal curve is calculated for each charging point. To respond to changing conditions, this calculation is repeated every 15 minutes. All measurements and corresponding corrections are conducted continuously, and occasionally, to prioritize others, a vehicle may temporarily not even be charged.

4 What are your benefits?

Using MINT has these important advantages:

- Maximum user comfort. Vehicles are charged in a timely manner, considering all charging sessions and conditions.
- Greatly reduced load on the electrical system. It may be possible to avoid an additional investment.
- Maximum car consumption if applicable.
- Reduced costs, among other things, through peak shaving.

[1] Valid for AC and DC chargers.