MTE Meter Test Equipment Inc.

4949 S Syracuse Street
Denver, CO 80237

MTE Meter Test Equipment Inc.

Company Profile

- Headquarters
  - Zug, Switzerland
- Production/R&D Facilities
  - Brackel, Germany
    (30km south of Hamburg)
- Employees: approx. 100
- Sales: approx. 55 mio. US$ (2025)
- History
  - 1982: EMH Energie-Messtechnik GmbH
  - 1995: MTE Meter Test Equipment AG
    (spin-off from Landis+Gyr)
- Product Segments
  - Stationary energy meter test equipment
  - Portable energy meter test equipment
  - HYDROCAL online DGA
    (dissolved gas analysis instruments for monitoring of power transformers)

Production facilities near Hamburg, Germany

Headquarters in Zug, Switzerland

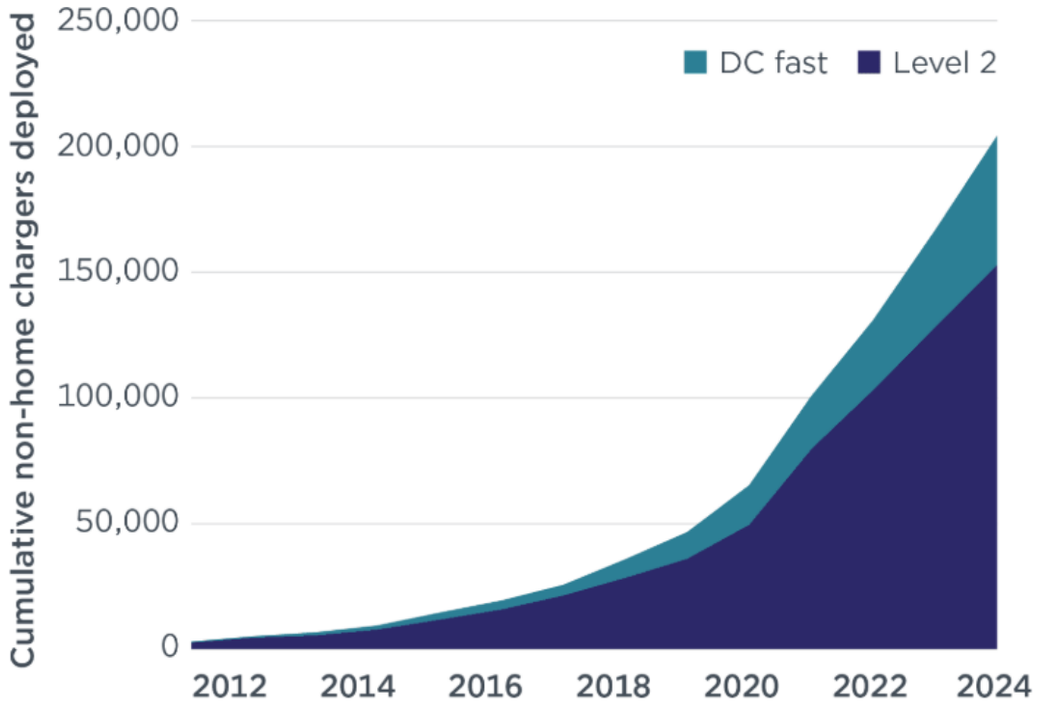
MTE Meter Test Equipment Inc.

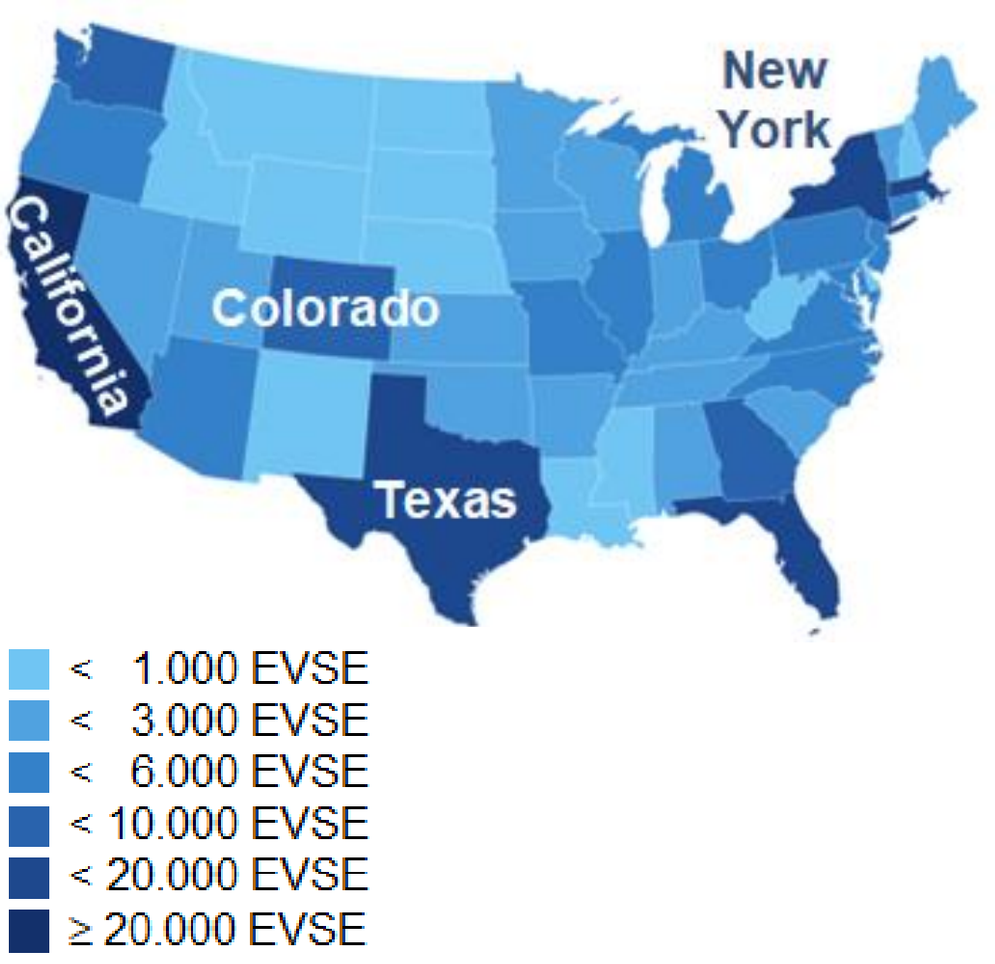
MTE's Solutions for E-Mobility Testing acc. NIST Handbook HB 44-2026 NIST EPO No. 30 07-2026

E-Mobility Testing

Background

Public Charging Infrastructure





E-Mobility Testing

Background

Charging Connectors

- AC EVSE
  - SAE J1772 (EN 62196 Type 1)
  - NACS (TESLA)
  - Voltage 120/240V AC
  - Current up to 80A AC

SAE J1772

NACS

- DC EVSE
  - CCS1
  - NACS (TESLA)
  - CHAdeMO (disappearing)

CCS1

E-Mobility Testing

Rules & Regulations Update 2026

NIST Handbook HB 44-2026 **Jan. 2026**

- Section 3-40 Electric Vehicles Fueling System

NIST Examination Procedure Outlines EPO No. 30 Jul. 2025

- Retail Electric Vehicle Fueling Systems
- Test Procedures
  - AC — MMQ: 0.5kWh

Light Load Test	4A .. 10A
Midrange Load Test	40%.. 60% of MDA
Full Load Test	70%..100% of MDA

  - DC — MMQ: 1.0kWh

Light Load Test	10%.. 20% of MDA – min. 30A
Full Load Test	25%.. 100% of MDA
OR	
Man-in-the-Middle (EVSE = Load)	min. 40% of MDA

E-Mobility Testing

PWS 3.3 *genX* Reference Standard Cl. 0.05%

Universal EVSE Reference Standard

- Measurement
  - AC 0.. 80A | 0.. 600V 1-/3-phase
  - DC 0..500A | 0..1.000V
  - Accuracy class 0,05%
- Power Supply
  - 46..300VAC
  - 100Wh NiMh battery pack
- Interfaces
  - Ethernet (RJ45)
  - USB A (1x) B (2x)
  - WLAN/*genX* Webserver
- Operation
  - 9” (800 x 480 pixel) TFT touch screen
- Operation & Documentation Software CAL*egration*
  - CAL*egration* Report Generator

E-Mobility Testing

PPL 150

Singlephase Dissipative AC Load up to 15kW

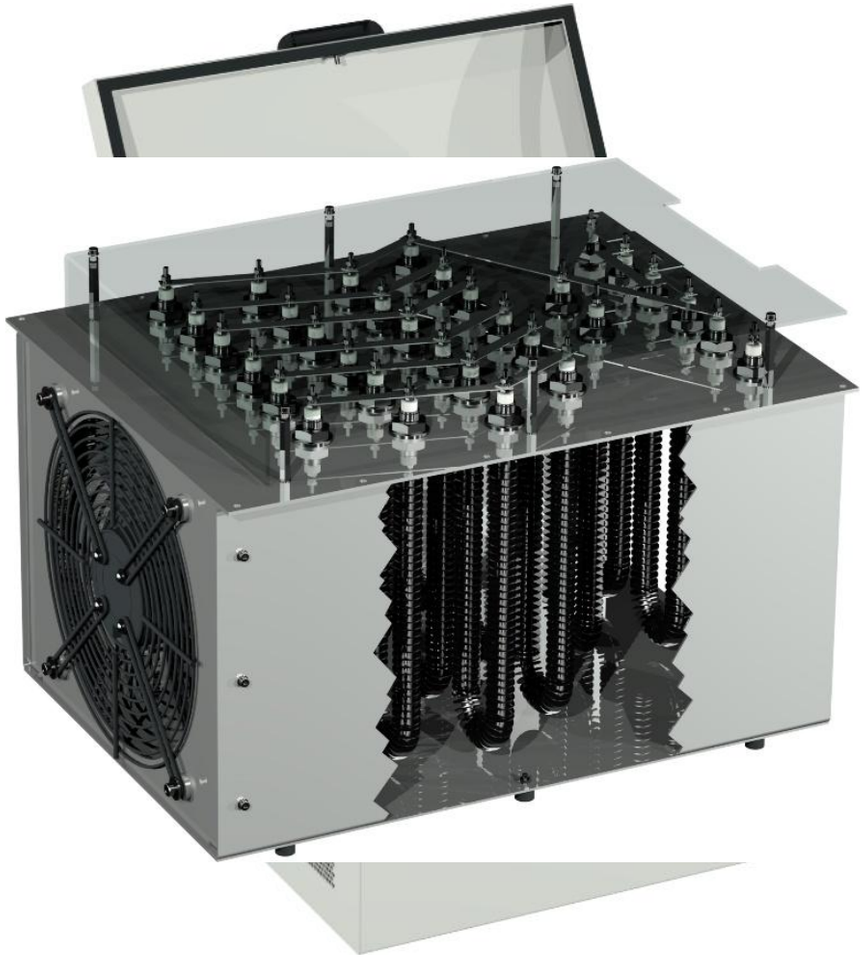
- Max. Power Dissipation
  - 120VAC 31A 3,7kW
  - 240VAC 62A 15,0kW
  - 208VAC 54A 11,2kW
- Charging Connectors
  - SAE J1772/EN 62196 Type 1
  - NACS
- Functions
  - Support of PWS 3.3 *genX*
  - Singlephase AC measurement up to 62A
  - Integrated battery to power PWS 3.3 *genX* and fans before/after charging (charged by EVSE during charging)
  - Car simulation by resistance/diode network

E-Mobility Testing

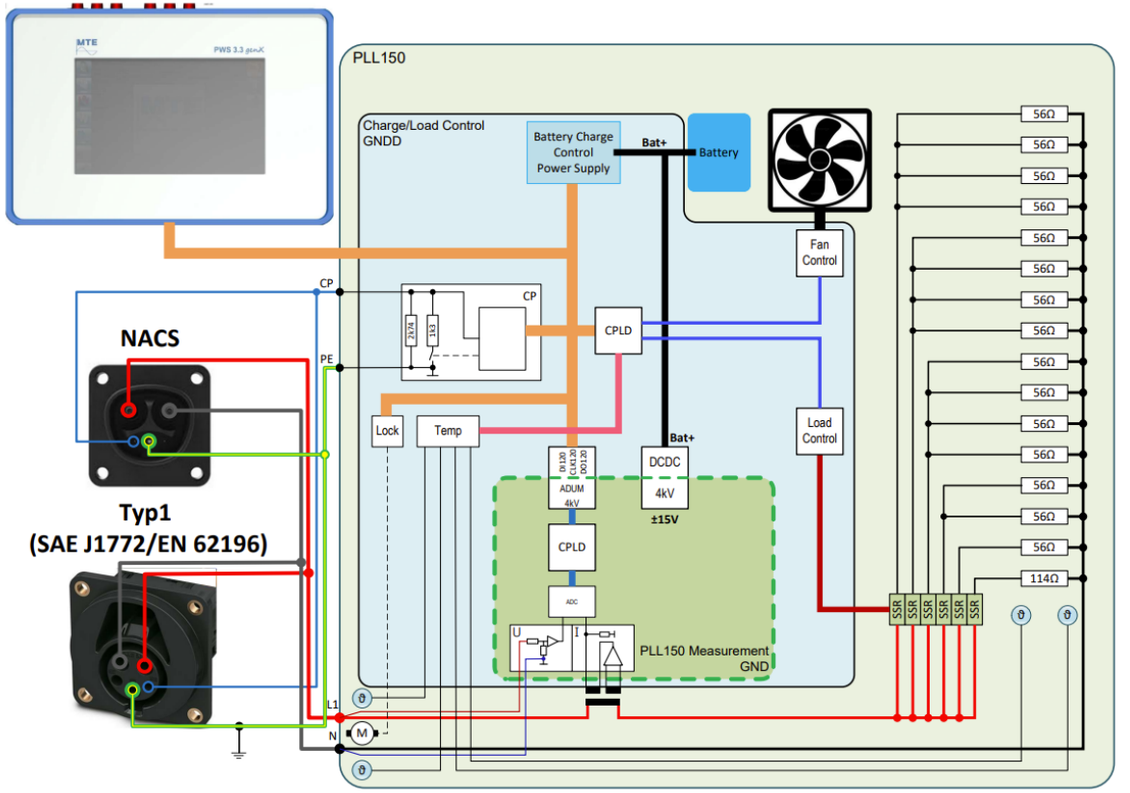
PPL 150

Singlephase Dissipative AC Load up to 15kW

❑ Mechanical Setup



❑ Block Diagram



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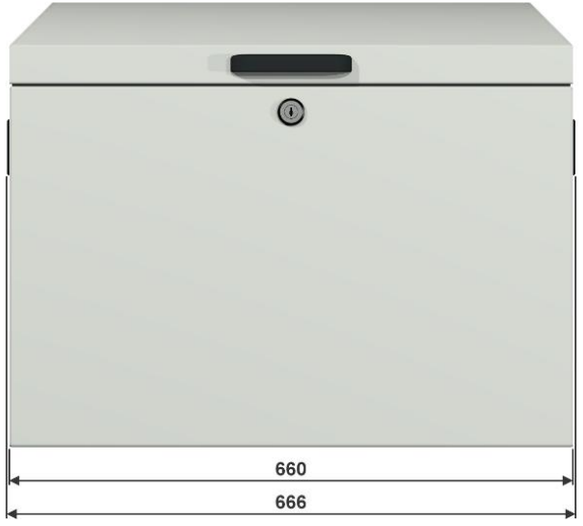
4949 S Syracuse Street • Suite 550 • Denver • CO 80237
Phone 720 355 3714 • Internet www.mteus.com

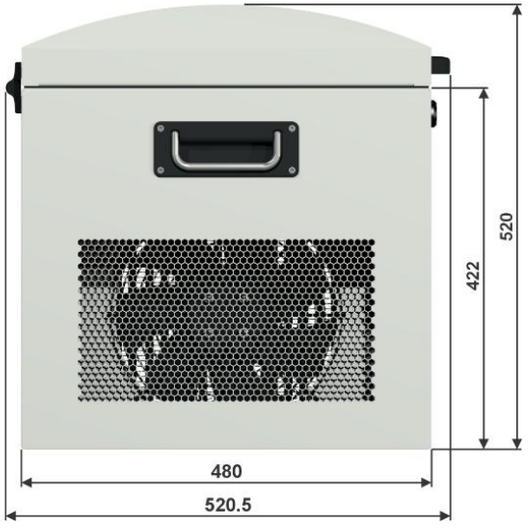
E-Mobility Testing

PPL 150

Singlephase Dissipative AC Load up to 15kW

- Mechanical Setup





  - Width approx. 20”
  - Depth approx. 19”
  - Height approx. 26”
- Weight
  - PPL 150 approx. 70lb
  - PWS 3.3 *genX* approx. 4lb

E-Mobility Testing

eMOB I-500.1 AC/DC

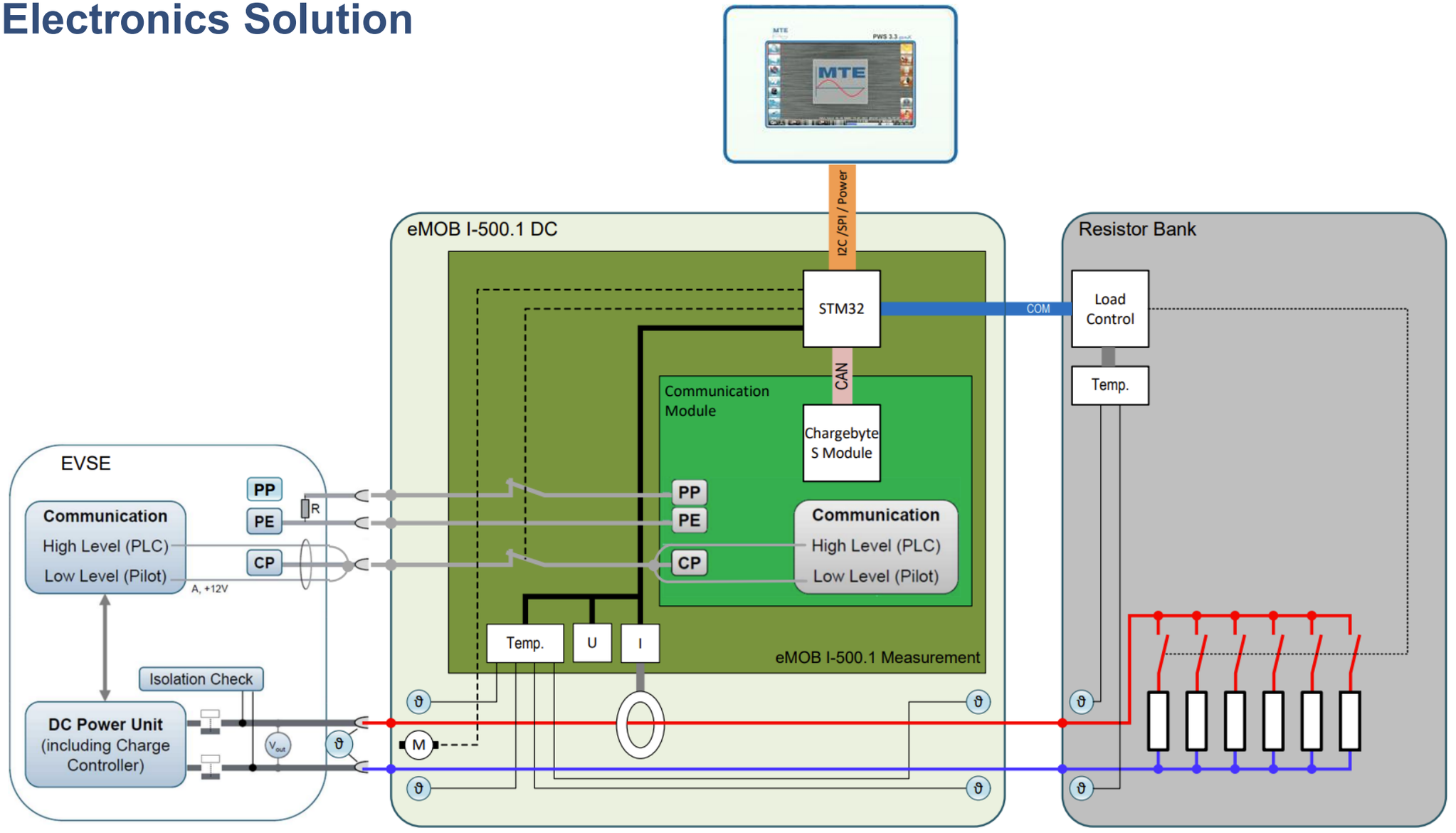
Mechanical Solution

- Modularity
  - supports SAE J1772 AC EVSE up to 80A AC
  - supports both CCS1 and NACS EVSE up to 500A DC
  - PTS 3.1 *genX* DC connection socket for PWS 3.3 *genX*
  - STÄUBLI high current connectors for various connection cables to different charging cables/dissipative loads
- Current Range
  - 1mA .. 80A AC singlephase
    - Accuracy class 0,05% for active, reactive and apparent power
  - 1A .. 500A DC
    - Accuracy class 0,05% for active power

E-Mobility Testing

eMOB I-500.1 AC/DC

Electronics Solution

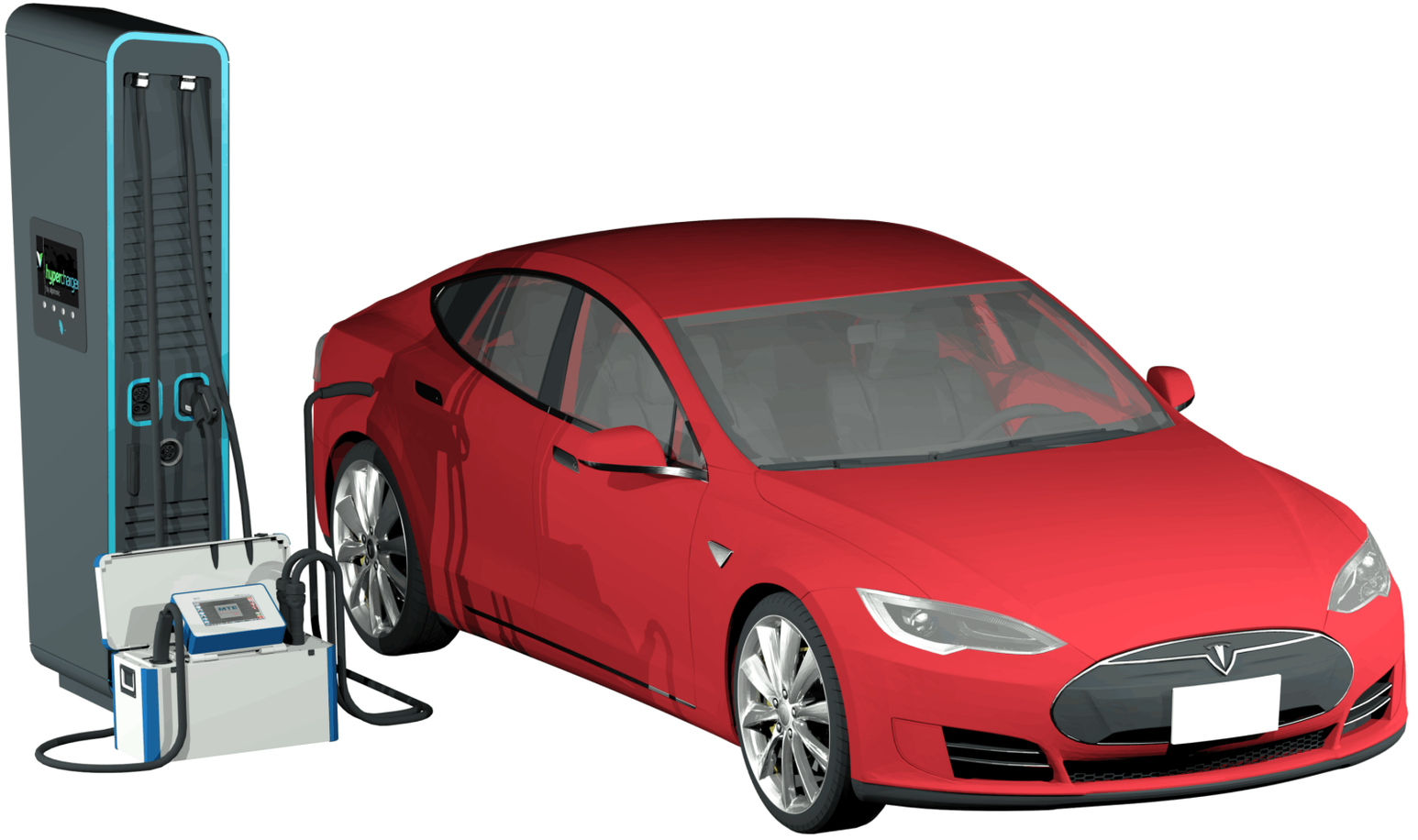


E-Mobility Testing

eMOB I-500.1 AC/DC

North American Model

- ❑ eMOB I-500.1 AC/DC for CCS 1/NACS and SAE J1772 (EN 62196 Type 1)



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E-Mobility Testing

eMOB I-500.1 AC/DC

North American Model

- eMOB I-500.1 AC/DC for CCS 1/NACS and SAE J1772 (EN 62196 Type 1)

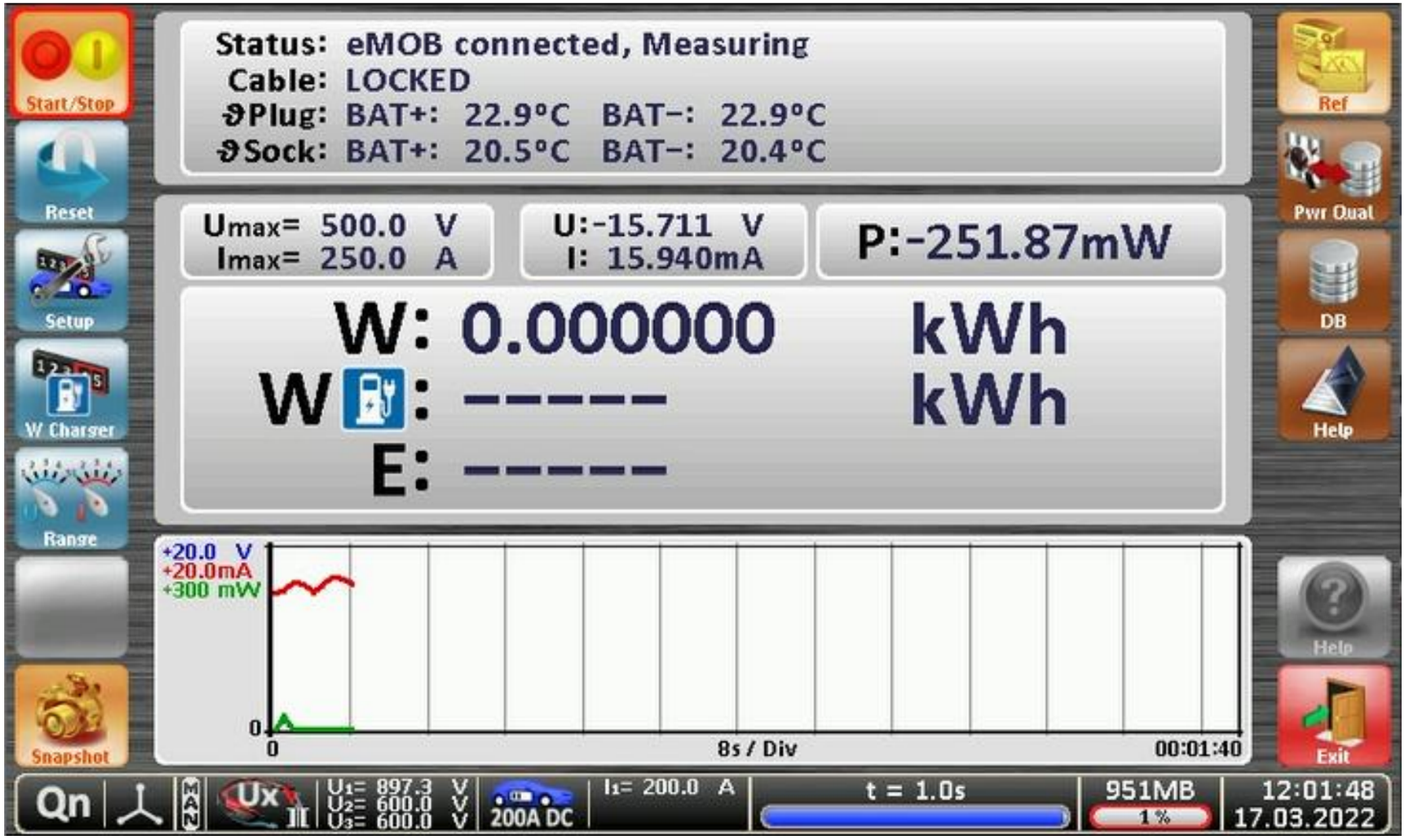
Dissipative Load
400VDC | 250A | 100 kW
800VDC | 125A | 100 kW

Weight 75kg / 165lbs

E-Mobility Testing

eMOB I-500.1 AC/DC

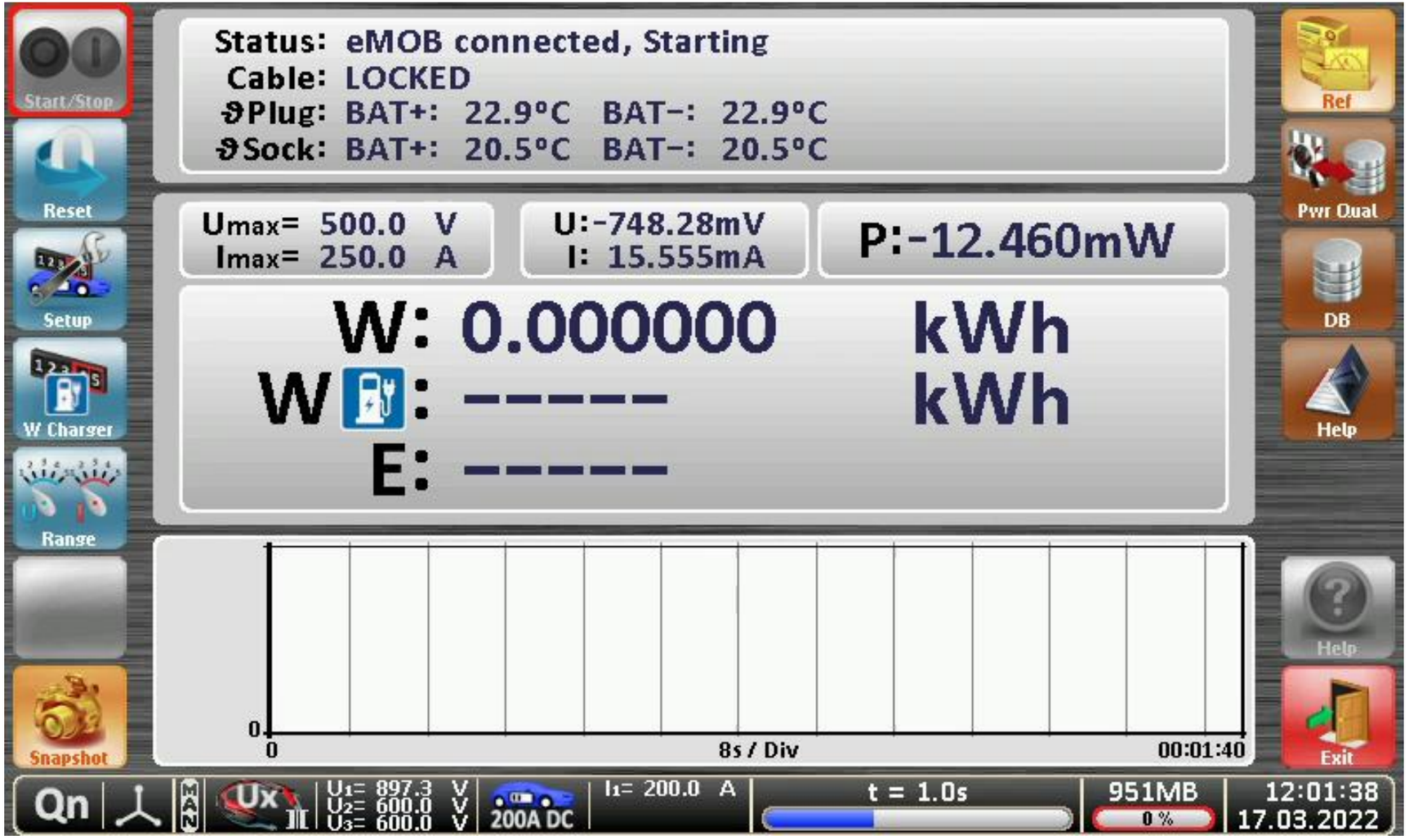
- Procedure
  - Start of energy measurement on PWS 3.3 *genX* firmware



E-Mobility Testing

eMOB I-500.1 AC/DC

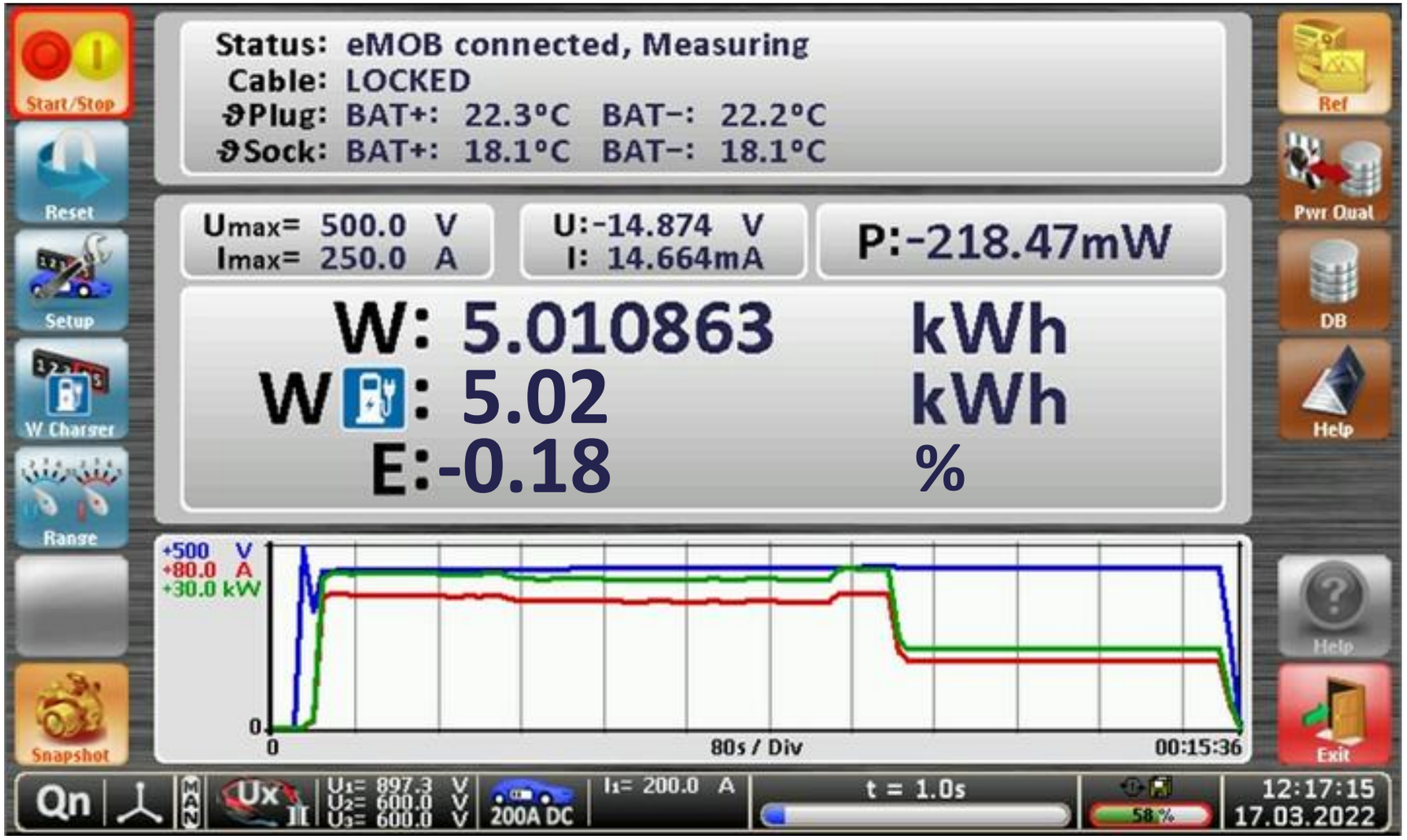
- Procedure
  - Charging of electric vehicle



E-Mobility Testing

eMOB I-500.1 AC/DC

- Procedure
  - Error calculation by PWS 3.3 *genX* firmware



E-Mobility Testing

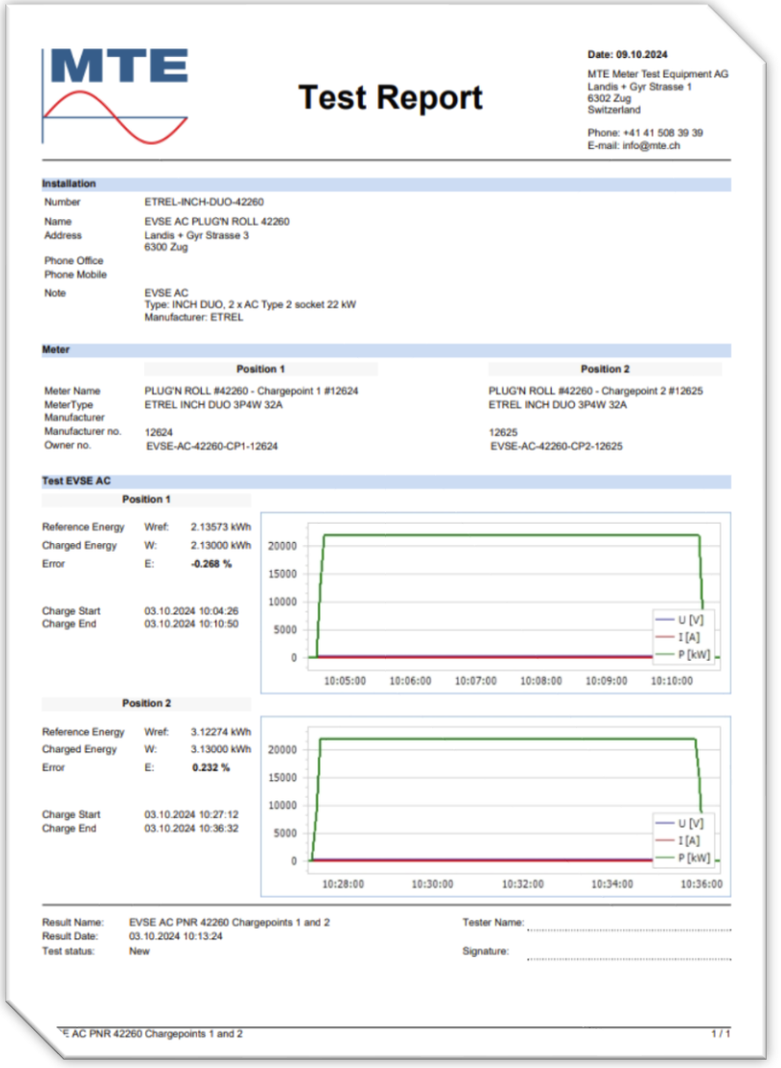
CAL*egration*

Universal EVSE Calibration Documentation Software

❑ Data Readout

- ❑ minimum required Microsoft 7
- ❑ supported up to Microsoft 11
- ❑ SQL Server Express (at least Version 2008 R2)

❑ Report Generator



MTE

Test Report

Date: 09.10.2024

MTE Meter Test Equipment AG
Landis + Gyr Strasse 1
6302 Zug
Switzerland

Phone: +41 41 508 39 39
E-mail: info@mte.ch

Installation

Number	ETREL-INCH-DUO-42260
Name	EVSE AC PLUG'N ROLL 42260
Address	Landis + Gyr Strasse 3 6300 Zug
Phone Office	
Phone Mobile	
Note	EVSE AC Type: INCH DUO, 2 x AC Type 2 socket 22 kW Manufacturer: ETREL

Meter

	Position 1	Position 2
Meter Name	PLUG'N ROLL #42260 - Chargepoint 1 #12624	PLUG'N ROLL #42260 - Chargepoint 2 #12625
MeterType	ETREL INCH DUO 3P4W 32A	ETREL INCH DUO 3P4W 32A
Manufacturer		
Manufacturer no.	12624	12625
Owner no.	EVSE-AC-42260-CP1-12624	EVSE-AC-42260-CP2-12625

Test EVSE AC

Position 1

Reference Energy	Wref:	2.13573 kWh
Charged Energy	W:	2.13000 kWh
Error	E:	**-0.268 %**
Charge Start		03.10.2024 10:04:26
Charge End		03.10.2024 10:10:50

Position 2

Reference Energy	Wref:	3.12274 kWh
Charged Energy	W:	3.13000 kWh
Error	E:	**0.232 %**
Charge Start		03.10.2024 10:27:12
Charge End		03.10.2024 10:36:32

Result Name: EVSE AC PNR 42260 Chargepoints 1 and 2
Result Date: 03.10.2024 10:13:24
Test status: New

Tester Name: .....
Signature: .....

E AC PNR 42260 Chargepoints 1 and 2 1 / 1