

TE1100 AC&DC EVSE Tester



(This image is for reference only and may differ from the actual delivery.)

1. Overview

TE1100-AC/DC-EU is an integrated AC/DC EV charger tester designed for the verification of EV chargers. It provides both AC and DC energy measurement with an accuracy of Class 0.05 and Class 0.1, enabling operating error testing of AC and DC EV chargers.

The device supports European-standard CCS2 DC charging interfaces and Type 2 AC charging interfaces. Testing can be performed using an electric vehicle as the load or with a resistive load. By combining wide dynamic range measurement technology with millisecond-level energy measurement refresh, the system achieves accurate accumulated energy measurement throughout the entire charging process.

Compared with conventional steady-state verification at preset test points, it provides a more realistic evaluation of EV charger performance.

Applications

- Verification of EV charger output energy accuracy;
- Verification and calibration of European-standard DC EV chargers with CCS2 interfaces;
- Verification and calibration of European-standard AC EV chargers with Type 2 interfaces;

2.Features

Features

- **Integrated AC&DC EV Charger tester**

DC measurement capability: 1200 V / 300 A, power/energy Class 0.05 / 0.1.

Three-phase AC measurement capability: 300 V / 80 A (per phase), power/energy Class 0.05 / 0.1.

- **Integrated AC&DC Interfaces**

Built-in European-standard CCS2 DC interface and IEC Type 2 AC interface.

Integrated vehicle control pilot circuits, battery voltage simulator, and BMS simulator. Vehicle simulation can be performed in combination with loads.

- **Multiple Load Options**

Supports both dedicated resistive loads and EV loads.

Rated power: three-phase AC resistive load 45 kW; DC resistive load 60 kW per unit.

- **AC&DC Energy Standard Meter**

Supports two energy verification methods: pulse method and accumulated energy method.

With the pulse method, energy error is displayed automatically with a resolution of 0.000 1%.

With the accumulated energy method, the minimum display resolution reaches 0.000 001 kWh.

- **Accessories**

Optional GPS module for time error testing.

Optional temperature and humidity measurement module for ambient environmental monitoring.

3.Benefits

Benefits

- **Wide dynamic range measurement:** avoids measurement risks caused by load fluctuations during dynamic EV charging measurement.
- **Millisecond-level energy refresh rate:** reduces errors introduced by voltage and current variations under dynamic loads and improves accumulated energy accuracy.
- **Multiple operation modes:** PC software and large touch display, providing intuitive display and convenient operation.
- **Traceability calibration:** dedicated calibration terminals for easy traceability calibration.
- **Multiple power supply options:** supports power supply via charging connector, built-in lithium battery, or mains power. For on-site use, the device can be powered directly from the charging connector without connecting to mains power. The lithium battery is removable for air transport.
- **Multiple auxiliary test terminals:** enable real-time measurement of each pin of the charging connector.
- **Bidirectional measurement:** supports both forward and reverse energy measurement, suitable for V2G applications.

4.Applications



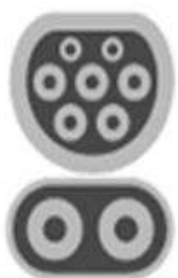
Figure 1 EV charger verification schematic (using an EV as the load)



Figure 2 EV charger verification schematic (using dedicated resistive loads)

5. Reference Standards

- IEC 62196-2
- IEC 62196-3
- JJG 1148–2022 *Verification Regulations to AC Charge Spots for Electric Vehicles*
- JJG 1149–2022 *Verification Regulations to Off-board Chargers for Electrical Vehicles*
- Charger connectors can be tested:

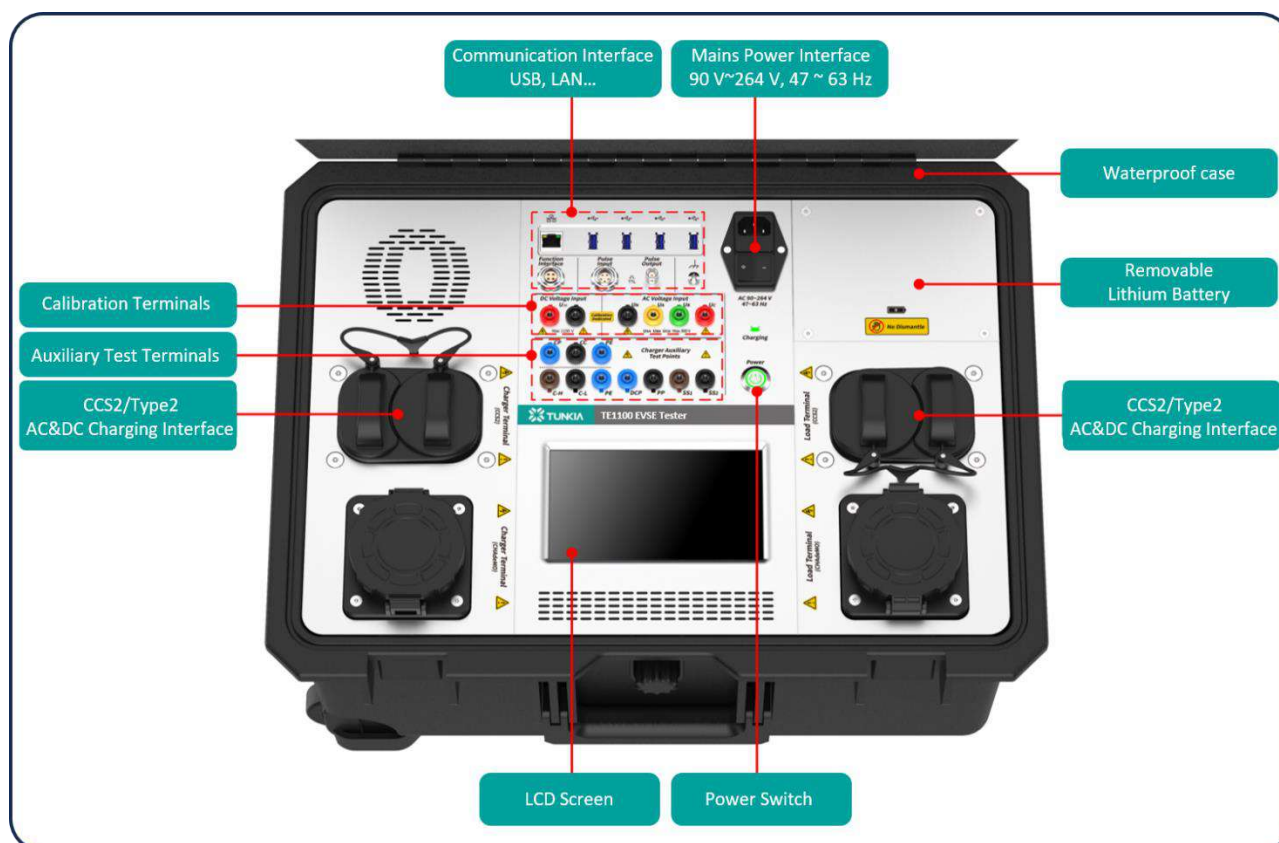


European Standard-CCS2



European Standard-Type2

6. Appearance



7. Specifications

7.1 DC Voltage (DCV) Measurement

Range	Measurement Range	Minimum Resolution	Absolute Measurement Uncertainty ($k=2$) Tcal $\pm 5^{\circ}\text{C}$ 1-year		Temperature Coefficient / $^{\circ}\text{C}$ @ (-25~55) $^{\circ}\text{C}$
			Class 0.05	Class 0.1	
			$\pm(\mu\text{V/V of reading})$		
100V	$\pm (30.000\ 0 \sim 120.000\ 0)\ \text{V}$	0.1 mV	250	500	—
1000V	$\pm (100.000 \sim 1\ 200.000)\ \text{V}$	1 mV	250	500	10
- Automatic or manual range switching - Display digits: 6-digit / 7-digit - Supports ripple measurement; ripple measurement bandwidth: 1 Hz ~ 1 kHz - Ripple measurement uncertainty ($k=2$): 0.1%*RG@(50 Hz ~ 1 kHz), RMS					

7.2 DC Current (DCI) Measurement

Range	Measurement Range	Minimum Resolution	Absolute Measurement Uncertainty ^[1] (<i>k</i> =2) Tcal±5°C, 1-year		Temperature Coefficient /°C @ (-25~55) °C
			Class 0.05	Class 0.1	
			±(μA/A of reading)		
5 A	± (1.000 00 ~ 5.000 00) A	10 μA	500	1000	—
300 A	± (5.000 0 ~ 300.000 0) A	0.1 mA	250	500	10
- Automatic or manual range switching - Display digits: 6-digit / 7-digit - Supports ripple measurement; ripple measurement bandwidth: 1 Hz ~ 1 kHz - Ripple measurement uncertainty (<i>k</i>=2): 0.1%*RG@(50 Hz ~ 1 kHz), RMS					
Note [1]: The parameters are data after self-calibration. Self-calibration must be performed before measurement.					

7.3 AC Voltage (ACV) Measurement

Range	Measurement Range	Minimum Resolution	Absolute Measurement Uncertainty (<i>k</i> =2) Tcal±5°C, 1-year		Temperature Coefficient /°C @ (-25~55) °C
			Class 0.05	Class 0.1	
			±(μV/V of reading) @(45~65)Hz		
240 V	60.000 0 ~ 300.000 0 V	0.1 mV	250	500	10
Display digits: 6-digit / 7-digit Supports harmonic measurement; harmonic order: 2nd ~ 63rd Harmonic measurement uncertainty (<i>k</i>=2): 0.1%*RG, RMS					

7.4 AC Current (ACI) Measurement

Range	Measurement Range	Minimum Resolution	Absolute Measurement Uncertainty ^[2] (<i>k</i> =2) Tcal±5°C, 1-year		Temperature Coefficient /°C @ (-25~55) °C
			Class 0.05	Class 0.1	
			±(μA/A of reading) @(45~65)Hz		
1 A	0.100 000 ~ 1.000 000 A	1 μA	500	1000	—
80 A	1.000 00 ~ 80.000 00 A	10 μA	250	500	10
- Automatic or manual range switching - Display digits: 6-digit / 7-digit - Supports harmonic measurement; harmonic order: 2nd ~ 63rd - Harmonic measurement uncertainty (<i>k</i>=2): 0.1%*RG, RMS					
Note [2]: The parameters are data after self-calibration. Self-calibration must be performed before measurement.					

7.5 AC Frequency / Phase / Power Factor

Frequency	Measurement Range	45.000 Hz ~ 65.000 Hz
	Minimum Resolution	0.001 Hz
	Measurement Uncertainty ($k=2$)	0.01 Hz
Phase	Measurement Range	0.000 $^{\circ}$ ~ 359.999 $^{\circ}$
	Minimum Resolution	0.001 $^{\circ}$
	Measurement Uncertainty ($k=2$)	0.025 $^{\circ}$

Power Factor	Measurement Range	-1.000000 ~ 0 ~ 1.000000
	Measurement Uncertainty (k=2)	0.1% of reading @ 0.8L~1~0.8C

7.6 DC Power and Energy

Voltage U	Current Range I	Absolute Measurement Uncertainty (k=2) @ (15~35) °C, 1-year		Temperature Coefficient / °C @ (-25~55) °C
		Class 0.05	Class 0.1	
		$\pm(\mu\text{W}/\text{W of reading})$		
$30\text{ V} \leq U \leq 1200\text{ V}$	$1\text{ A} \leq I \leq 5\text{ A}$	1000	2000	—
	$5\text{ A} < I \leq 300\text{ A}$	500	1000	20
- Supports two test methods: pulse method and accumulated energy method. - Standard electric energy pulse output: high-frequency full-scale value corresponds to 60 kHz, low-frequency full-scale value corresponds to 6 Hz. - Standard electric energy pulse input: frequency $\leq 200\text{ kHz}$, voltage: $0 \cdots 3.3\text{ V} \cdots 24\text{ V}$. - Using the pulse method, the electric energy error can be automatically displayed with a resolution of 0.000 1%. - The accumulated electric energy display has a minimum resolution of 0.000 001 kWh.				

7.7 AC Power and Energy [1]

Voltage U	Current Range I	Absolute Measurement Uncertainty (k=2) @ (15~35) °C, 1-year		Temperature Coefficient / °C @ (-25~55) °C
		Class 0.05	Class 0.1	
		$\pm(\mu\text{W}/\text{VA of reading}) @ (45 \sim 65)\text{ Hz}$		
$60\text{ V} \leq U \leq 300\text{ V}$	$0.1\text{ A} \leq I \leq 1\text{ A}$	1000	2000	—
	$1\text{ A} < I \leq 80\text{ A}$	500	1000	20
- Supports two test methods: pulse method and accumulated energy method. - Standard electric energy pulse output: high-frequency full-scale value corresponds to 60 kHz, low-frequency full-scale value corresponds to 6 Hz. - Standard electric energy pulse input: frequency $\leq 200\text{ kHz}$, voltage: $0 \cdots 3.3\text{ V} \cdots 24\text{ V}$. - Using the pulse method, the electric energy error can be automatically displayed with a resolution of 0.000 1%. - The accumulated electric energy display has a minimum resolution of 0.000 001 kWh.				
Note [1]: AC electric energy accuracy specifications are guaranteed only when the power factor is within the range of 0.8L to 1 to 0.8C.				

7.8 Temperature Measurement (Optional)

Temperature	Measurement Range	-30°C ~ 60°C
	Maximum Allowable Error	0.5°C

7.9 Clock (Optional)

Clock Function	Time Synchronization Method	Satellite time synchronization
	Measurement Uncertainty (k=2)	±1s

7.10 Dedicated Loads

Model	TE1100R-AC-EU	TE1100R-DC-EU
Picture		
Rated Power	three-phase 45 kW	60 kW @1000V/500V
Operating Range	ACV: 0 ~ 248 V ACI: 0.1 A ~ 80 A	DCI: 0.1 A ~ 120 A @ 0 ~ 500 V, DCI: 0.1 A ~ 60 A @ 501 V ~ 1000 V,
Minimum Current Step	0.1 A	
Resistance Adjustment Range	3.1 Ω ~ 2500 Ω (per phase)	4.17 Ω ~ 5 kΩ @ 0 ~ 500 V 16.67 Ω ~ 10 kΩ @ 501 V ~ 1000 V
Heat Dissipation	Forced air cooling	
Protection	Overvoltage protection, short-circuit protection, and airflow fault protection	
Alarm	Equipped with alarm indicators and an emergency stop switch	
Dimensions	440 mm (W) × 480 mm (D) × 620 mm (H) (including casters and handle)	
Weight	Approx. 35kg	Approx. 45kg

8. General Specifications

Power Supply	Mains power	90 V ~ 264 V , 47 Hz ~ 63 Hz
	Power supply via charging connector	bus-powered during measurement
	Built-in lithium battery	(6900 mAh 95 Wh) × 2
Maximum Power Consumption	Maximum power consumption ~100 VA	
Warm-up Time	30 minutes	
Temperature Performance	Operating temperature: -25°C ~ 55°C; Storage temperature: -30°C ~ 70°C Calibration temperature (Tcal = 23 ± 2 °C)	
Humidity Performance	Operating humidity: < 80% @ 30°C, < 70% @ 40°C, < 40% @ 50°C. Storage humidity: <80% R·H, non-condensing.	
Altitude	< 3000 m	
Communication Interface	LAN x1, USB x1 (Supports external modules for communication via Bluetooth or WIFI)	
Weight	Approx. 26 kg	
Dimensions	540 mm(W) × 410 mm(D) × 270 mm(H)	
		

9. Configuration Lists

TE1100 Standard Accessories

Picture	Description	Specifications	Qty	Serial No.
	TE1100 EVSE Tester	Class 0.05/0.1; DC 1.2kV/300A; AC three-phase 300V/80A; European standard CCS2 DC; European standard Type2 AC	1	S010101867
	Fuse	3.15A, 250V, disposable, 17.3mΩ, 5×20mm	3	A050100008
	Power Cord	CN 10A three-prong power cord; gray; flat plug; right-angle tail; 1.5m	1	Q070100031
	Ethernet Cable	UGREEN Cat.7 double-shielded SFTP; male-to-male; 5m	1	Q070100050
	Power Plug Adapter	German standard male plug to Chinese standard 5-hole 10A socket; 250V@10A	1	N050100073
	Pulse Photoelectric Input Cable	LEMO connector to optical head; black; 4.0m	1	H020300686
	Pulse Input Cable	LEMO connector to red/black alligator clips; black; 4.0m	1	H020300687
	Pulse Output Cable	Frequency test lead, BNC male to red/black alligator clips; 1.5m	1	Q070200025
	Calibration Software	EVSE Verification System (USB drive)	1	P050100008

TE1100 Optional Accessories

Picture	Description	Specifications	Qty	Serial No.
	GPS Receiver	Supports GPS and BeiDou; USB2.0 interface, 4-core cable without connector, 5m; clock pulse: 0.25Hz–1kHz; power supply 5V@30mA; 58×47×16mm	1	C090100034
	Temperature and Humidity Probe	USB connector to probe, cable length 1.5m	1	H020200159
	AC Charging Cable	European standard; rated voltage 380–480V, rated current 63A; operating temperature –30 to 50°C; insulation resistance >100MΩ; operating temperature rise <50K	1	N070100086
	DC Charging Cable	European standard DC double-ended gun with 2.5m black cable (main cable 2×50mm², straight-through); 1000V, 300A	1	N070100082

TE1100 Optional Accessories

Picture	Description	Specifications	Qty	Serial No.
	TE1100R-DC-EU	DC resistive load, CCS2 interface, 60kW/unit	1	H011400131
	TE1100R-AC-EU	AC resistive load, Type 2 interface, three-phase 45kW	1	H011400121