

TE1000-DC-EU Charger Energy Standard



(The image is for reference only. The actual product may differ.)

1 Overview

TE1000-DC-EU is a standard instrument designed for real-time electrical energy measurement during EV charger operation, with power and energy accuracy of Class 0.05 / 0.1.

This device, used with an EV as the load, performs metrological verification and energy checks on European-standard off-board chargers with CCS2 interfaces (per IEC 62196-3 Configuration EE). Compared with conventional solutions, it offers superior portability, ease of use, and higher testing efficiency.

Benefits

- Ultra-lightweight and portable design, enabling single-operator verification and significantly improving testing efficiency
- Wide dynamic measurement range, minimizing measurement risks caused by load fluctuations during dynamic EV charging
- Millisecond-level energy refresh rate, reducing errors introduced by voltage and current fluctuations under dynamic load conditions and improving accumulated energy accuracy
- Powered directly from the charging connector, no external power supply required during testing
- Reliable sampling: voltage sampling point located close to the charging connector to minimize errors caused by line losses
- IP54 protection rating with professional environmental adaptability, ensuring reliable operation in complex working conditions
- Built-in encryption chip for full-process data encryption

2 Features

Features

- **DC Electrical Parameter Measurement (DC version only)**

DCV measurement range: 200 V~1000 V

DCI measurement range: 0.1 A~400 A

Best measurement uncertainty ($k=2$): 0.025%*RD (Class 0.05) / 0.05%*RD (Class 0.1)

- **Standard Electrical Energy Measurement**

Power and energy accuracy: Class 0.05 / Class 0.1

Supports two energy verification methods: Pulse method / Accumulated energy method

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

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

Millisecond-level energy refresh rate, meeting metering requirements under fluctuating loads during EV charging

Minimum accumulated energy required to ensure specified accuracy: 0.1 kWh

Supports forward energy, reverse energy, and total energy measurement, compatible with V2G mode

- **Multiple Communication Interfaces**

Built-in Bluetooth, and satellite time synchronization modules, equipped with a Type-C interface for versatile communication

Supports real-time upload of U / I / P / E / time / latitude and longitude data

- **Compact and Easy to Use**

Weight: approx. 2.8 kg

Convenient mobile app operation, suitable for single-operator use

- **Various Accessories**

Optional precision real-time clock and temperature & humidity meter

Supports clock timing error testing and ambient temperature and humidity measurement

3 Applications

Applications

- Used with new energy vehicles to efficiently perform on-site verification of EV chargers
- Conducts operate error testing during charging, with remote automatic upload and encrypted transmission of test data
- Supports handling public complaints, on-site law enforcement inspections, and resolution of metering disputes
- Assists in EV charger operation and maintenance testing to ensure compliant metering performance
- Performs metering performance testing and verification during EV charger R&D and development processes

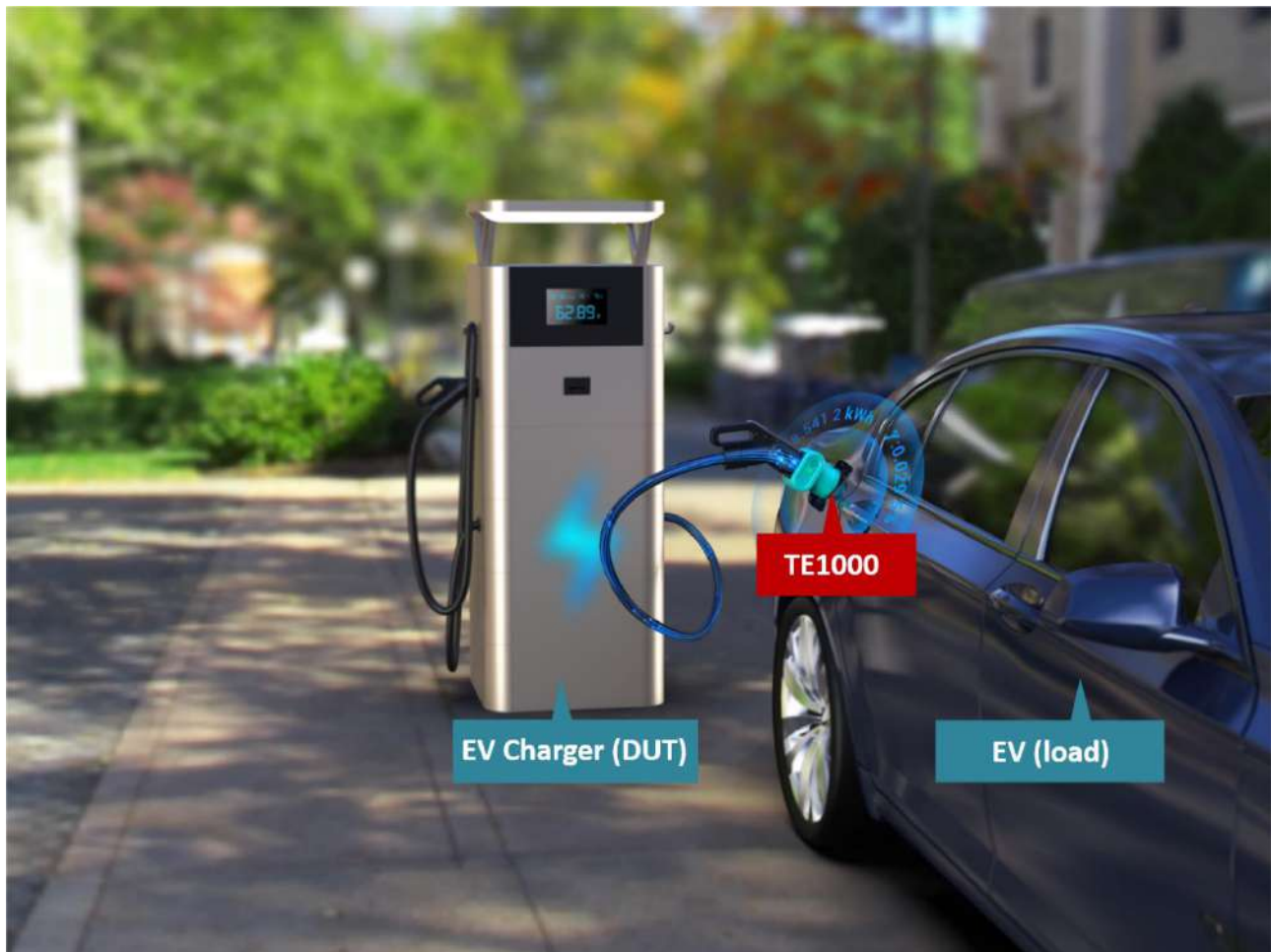
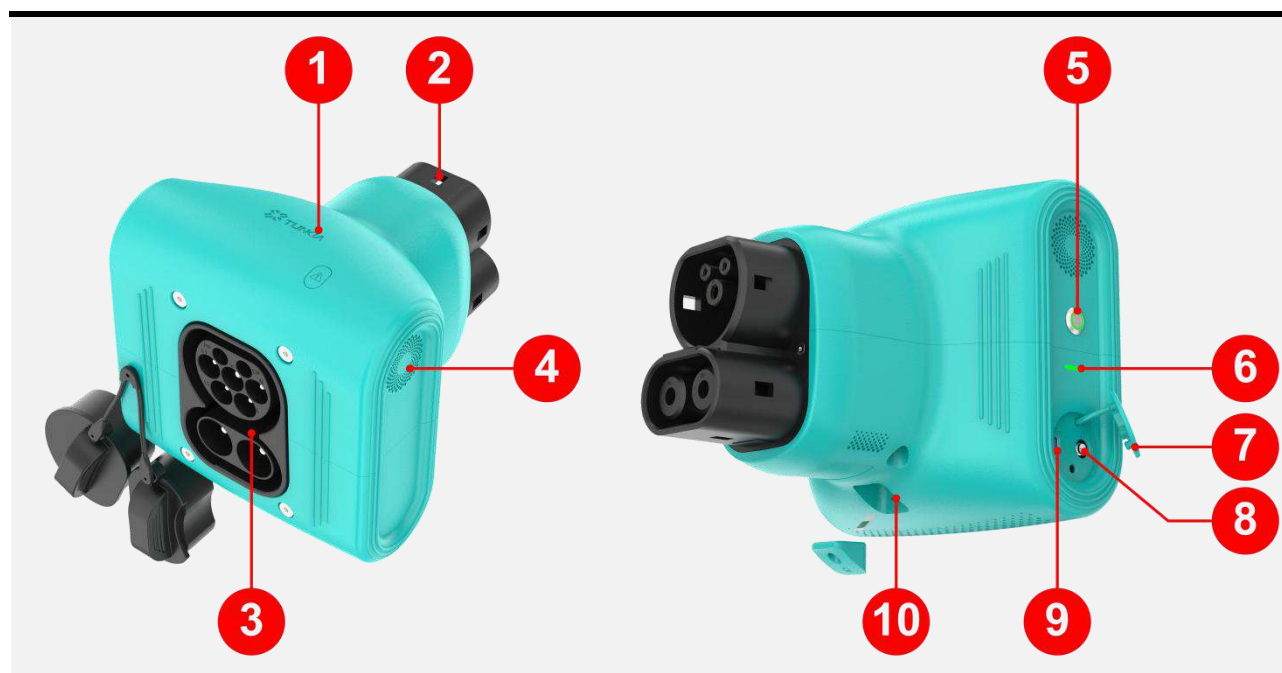


Figure 1. Schematic diagram of TE1000 application scenarios

4 Appearance



No.	Name	Description
1	Housing	Instrument enclosure
2	Charging Connector	CCS2 vehicle connector – connects to the EV
3	Charging Socket	CCS2 vehicle socket – connects to the charger under test
4	Cooling Vent	Fan outlet for dissipating heat generated during operation
5	Power Switch	Power switch with indicator light
6	Status Indicator Lights	Assist in determining the various operating states of the instrument
7	Dust and Rain Cover	Prevents foreign objects and water splashes from entering the instrument interfaces
8	Pulse Interface	BNC interface for pulse input and output
9	Type-C Port	Used for device charging and data transfer
10	4G Card Slot	Reserved function

5 Specifications

5.1 DC Voltage Measurement (DCV)

Range	Minimum Resolution	Absolute Measurement Uncertainty (k=2) @ (15~35) °C, 1 year		Temperature Coefficient /°C @ (-25~55) °C
		Class 0.05	Class 0.1	
		±(μV/V of reading)		
± (200.000 ~ 1 000.000) V	1 mV	250	500	10

5.2 DC Current Measurement (DCI)

Range ^[1]	Minimum Resolution	Absolute Measurement Uncertainty (<i>k</i> =2) ^[2] @ (15~35) °C, 1 year		Temperature Coefficient /°C @ (-25~55) °C
		Class 0.05	Class 0.1	
		±(μA/A of reading)		
± (0.100 00 ~ 1.000 00) A	10 μA	±0.5 mA ^[3]	±1 mA	— —
± (1.000 00 ~ 5.000 00) A	10 μA	500	1000	— —
± (5.000 0 ~ 400.000 0) A	0.1 mA	250	500	10

Note [1]: Automatic range switching

Note [2]: The parameters are derived from data after self-calibration. Self-calibration is required prior to measurement.

Note [3]: Measurements below 1 A are affected by a fixed range error.

5.3 DC Power and Energy

Voltage <i>U</i>	Current <i>I</i>	Absolute Measurement Uncertainty (<i>k</i> =2) @ (15~35) °C, 1 year		Temperature Coefficient /°C @ (-25~55) °C
		Class 0.05	Class 0.1	
		±(μW/W of reading)		
200 V ≤ <i>U</i> ≤ 1000 V	0.1 A ≤ <i>I</i> ≤ 1 A	1000 × 1 A / <i>I</i> ^[4]	2000 × 1 A / <i>I</i>	—
	1 A ≤ <i>I</i> ≤ 5 A	1000	2000	—
	5 A < <i>I</i> ≤ 400 A	500	1000	20
● Supports testing using both pulse method and accumulated energy method ● Standard energy pulse output: High-frequency full-scale corresponds to 60 kHz; low-frequency full-scale corresponds to 6 Hz ● Standard energy pulse input: Frequency ≤ 200 kHz, voltage: 0...3.3 V...24 V ● Pulse method: Automatically displays energy error with a resolution of 0.000 1% ● Accumulated energy display: Minimum resolution reaches 0.000 001 kWh				
Note [4]: 1 A / <i>I</i> denotes the ratio of 1 ampere to the measured current.				

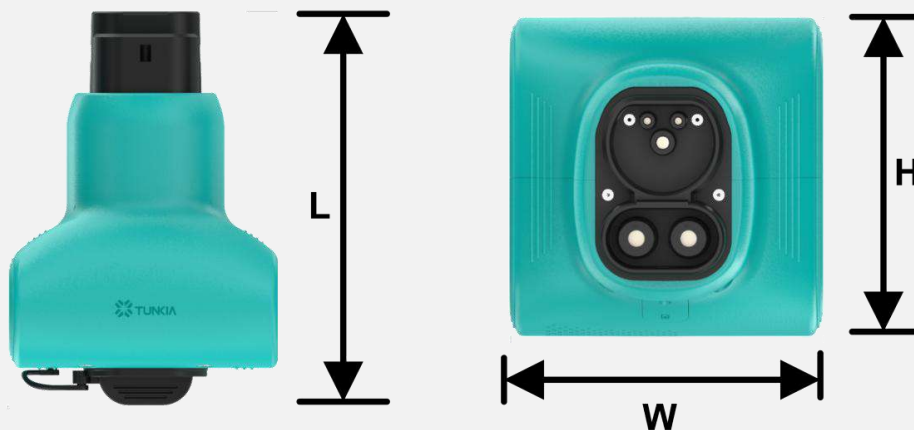
5.4 Temperature Measurement (Optional)

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

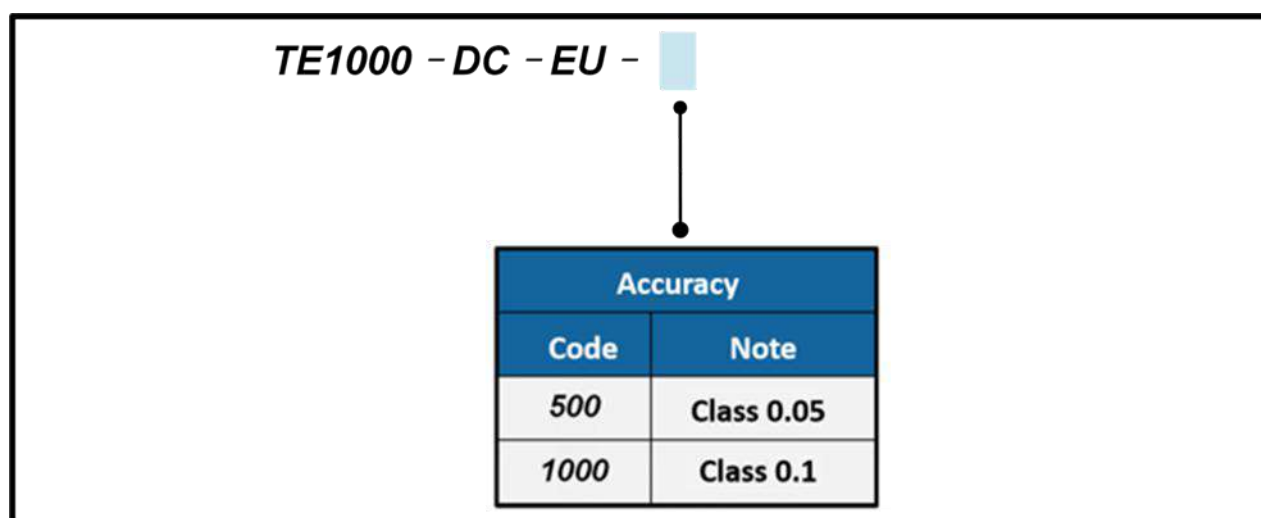
5.5 Clock (Optional)

Clock Function	Time Synchronization Method	Satellite timing
	Measurement Uncertainty ($k=2$)	$\pm 1\text{ s}$

6 General Specification

Power Supply	Primarily powered via the charging connector, supporting offline operation; can be charged via Type-C when not in use
Power Source	Connector power supply: Uses different standard charging connectors depending on the version Wired charging: DC 5 ~ 20 V via Type-C
Communication Interface	Wireless: Bluetooth Wired: Type-C x 1
Temperature Performance	Operating temperature: -25 °C — 55 °C; Storage temperature: -30 °C — 60 °C; Calibration temperature: (Tcal = 23 ± 2 °C)
Humidity Performance	Operating humidity: < 100% RH; Storage humidity: < 80% R H, non-condensing.
Altitude	< 3000 m
Dimension L×W×H (mm)	237mm(L) × 162 mm(W) × 165 mm(H) 
Weight	Approx. 2.8 kg

7 Ordering Information



8 Configuration List

S/N	Type	Name	Specification	Qty	Note
1	Equipment List	TE1000	Main device	1	Standard Accessory
2		Verification APP	Quick operation of the device via mobile app	1	Standard Accessory
3		Portable Shoulder Bag	For carrying a single device	1	Standard Accessory
4		Portable Instrument Case	For carrying multiple devices and accessories	1	Optional Accessory
5		Auxiliary Test Leads	Electrical pulse lines, optical pulse lines, and other test cables	1	Optional Accessory
6	Accessories List	TP2000 Bluetooth Temperature & Humidity Meter	Measures ambient temperature and humidity to verify testing conditions	1	Optional Accessory
7		TH5000 Precision Real-Time Clock	For clock timing error testing	1	Optional Accessory
8		Insulation Resistance Tester	Third-party device for measuring insulation resistance	1	Optional Accessory
9		Mobile Phone	Used to install the verification APP	1	Optional Accessory
10		Custom Data Platform Integration	Connects device data to the customer's cloud platform with custom development and technical support	1	Optional Accessory