

TD1320 Portable Tester for DC EV Chargers



1. Summary

TD1320 is a portable instrument dedicated to on-site testing of DC EV (electric vehicles) chargers with DCV measurements up to 1150 V, DCI measurements up to 300A, and DC electrical energy available in class 0.05 / 0.1. The instrument can be combined with TK4710 DC resistive load to complete the metrology characteristic test.

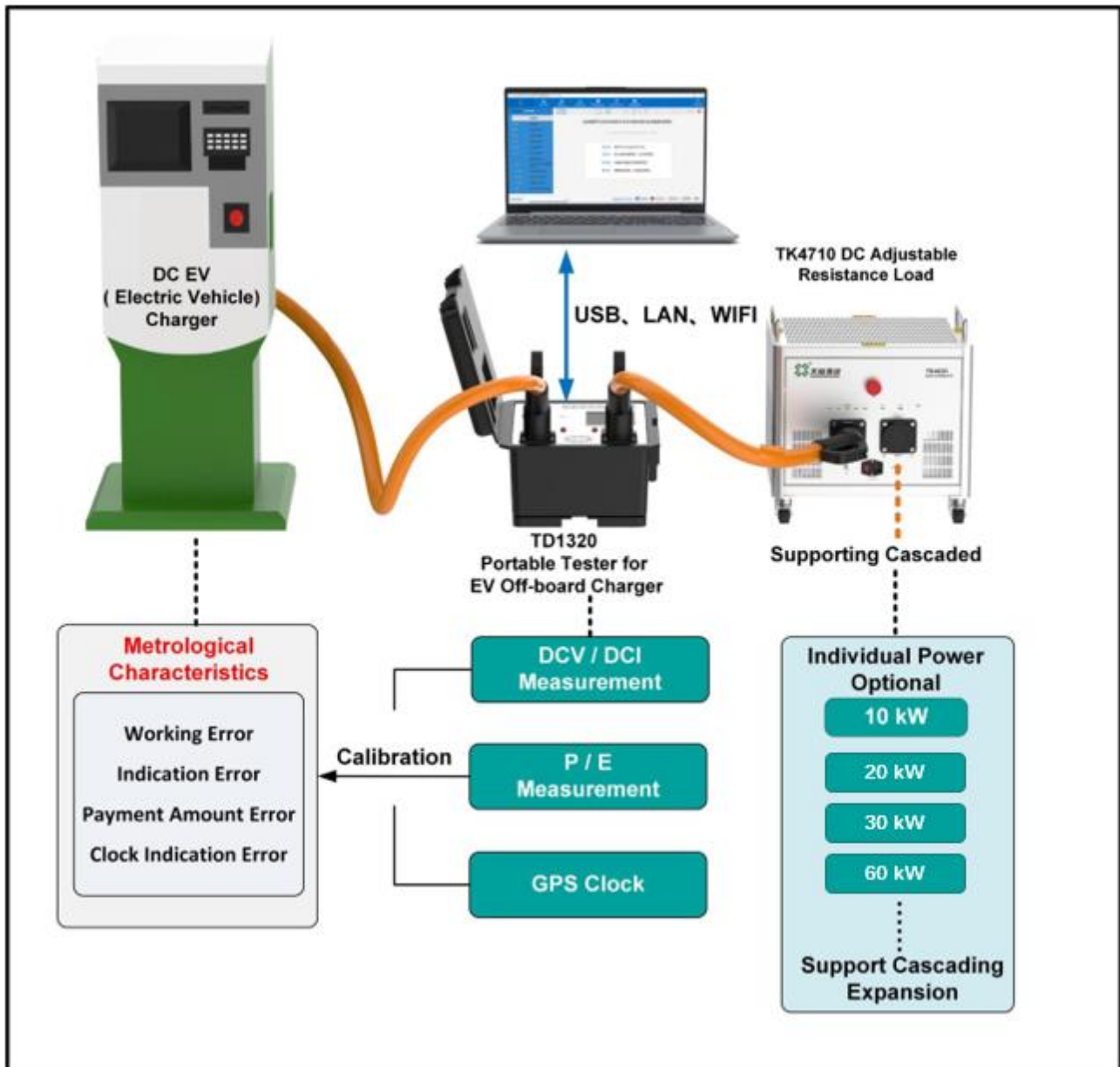
2. Features

- **High Accuracy:** Using wideband AC/DC direct-current-comparator, compared with the shunt, the thermoelectric potential influence is extremely small and the accuracy is high.
- **Dc Ripple Measurement:** Detect AC ripple below 1 kHz.
- **Power Waveform Display:** Real-time charging curve $U(t)$, $I(t)$, $P(t)$, $E(t)$ display and record, etc.
- **Ambient Temperature Measurement:** Built-in temperature sensor for measuring the ambient temperature of the site to correct the working error.
- **Clock Verification Function:** Built-in GPS clock module, real-time clock display, and correct the Beijing time of the charging spot.
- **Integration:** Built-in charge control guidance circuit, battery voltage simulator, BMS simulator, CAN message acquisition, waveform acquisition and other modules, no need for additional connection equipment.
- **Data Acquisition:** Built-in 8-channel high-speed data acquisition module, which can collect parameters and waveforms such as charging spot output voltage, charging current, vehicle

battery voltage, CC1, auxiliary power supply, etc., and unify the time base with CAN messages to ensure long-term operation and zero data loss. Built-in CAN communication message acquisition module, can realize CAN bus message acquisition record, and synchronize time with the acquisition of voltage and current and other parameters, to achieve synchronous acquisition of messages and data waveforms;

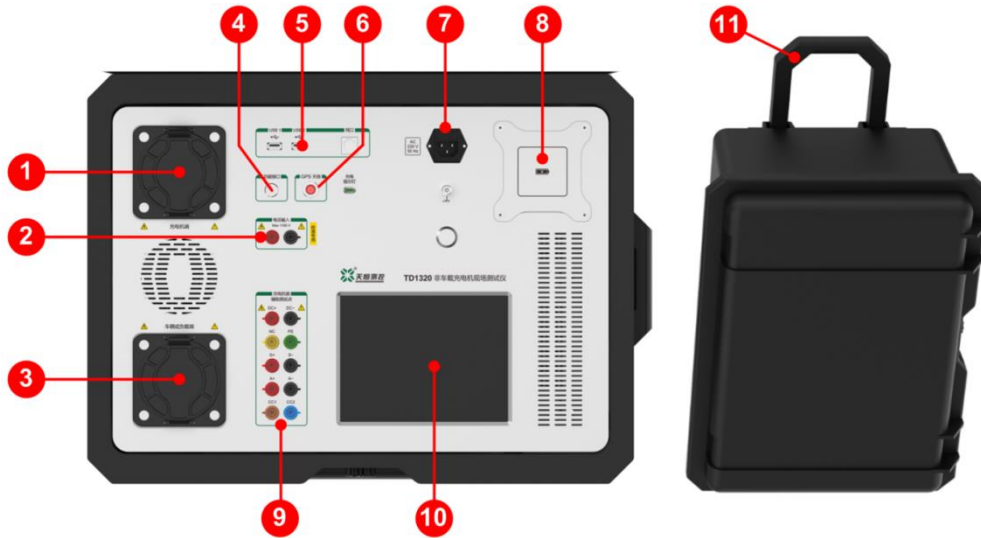
- **Built-in Vehicle Control Guidance Circuit:** with DC+, DC-, PE, S+, S-, CC1, CC2, A+, A- and other loop connection lines on-off function and standard BNC interface, to achieve vehicle DC charging interface circuit fault simulation. Built-in R4 resistance simulation module, with resistance adjustment range of $420\ \Omega \sim 6800\ \Omega$ and step of $1\ \Omega$. Each contact is equipped with an on-off switch, which can simulate the on-off state of the contact
- **Insulation Resistance Simulation:** The insulation state simulation of the charger can be completed, the input voltage range is $0\ \text{V} \sim 800\ \text{V}$, the resistance adjustment range is $10\ \text{k}\Omega \sim 1\ \text{M}\Omega$, and the step is $1\ \text{k}\Omega$, which is used to simulate the positive and negative insulation faults of the charging spot.
- **Battery Simulator:** Output voltage $0\ \text{V} \sim 1000\ \text{V}$, to achieve electric vehicle BMS simulation.
- **High Reliability:** There are no switches, relays and other mechanical contacts in the current loop, can be overloaded at 2 times the rated current for 5 s.
- **Calibration and Verification:** With dedicated calibration terminals, the device can be calibrated or verified by two methods, and the TK4960 DC charging electrical energy calibration adapter is optional.
- High-definition LCD touch color screen.
- Ethernet, WIFI, USB, CAN-BUS interface and host computer software.
- Support input of commercial power, built-in lithium battery and EV charger power supply.
- Equipped with portable instrument box, high seismic and electrical protection level.

3. Application



4. Instrument Appearance

☆ Instrument Front Panel



S/N	Function
1	DC charging socket, using a dedicated charging connector to connect the inspected charging spot.
2	A dedicated interface for voltage calibration.
3	Auxiliary test point to transfer the DC charging socket to a conventional instrument terminal.
4	Multi-function interface: support photoelectric head, pulse input, pulse output, temperature sensor and other functions.
5	Communication interface: including USB and LAN ports.
6	A GPS antenna that receives a standard clock signal to correct the time of the AC charging spot under test.
7	AC 220V power interface to power the instrument via commercial power
8	Built-in large-capacity lithium battery.
9	Auxiliary test point to transfer the DC charging socket to a conventional instrument terminal.
10	LCD touch color screen, multi-power intuitive display, full touch operation

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Instrument box lever, easy for user to carry the mobile tester.

5. Specifications

5.1 DCV Measurement

Range	Resolution	Accuracy(k=2) (ppm of reading + ppm of range) [1]		Temp. Coefficient, $\pm\text{ppm} \cdot \text{RD} / ^\circ\text{C}$ @-30°C~55°C	
		Class 0.1	Class 0.05	Class 0.1	Class 0.05
300 V	0.1 mV	400+ 50	200+ 25	< 50	< 20
750 V	0.1 mV	400+ 50	200+ 25	< 50	< 20
1000 V	1 mV	400+ 50	200+ 25	< 50	< 20

Note [1] : (ppm = parts per million) (e.g., 10ppm = 0.001%).

- Range: Manual/auto shift
- Measurement range: 30V~1150 V
- Ripple uncertainty (k = 2): 0.05%*RG,RMS; bandwidth: ≤ 1 kHz

5.2 DCI Measurement

Range	Resolution	Accuracy(k=2) (ppm of reading + ppm of range)		Temp. Coefficient, $\pm\text{ppm} \cdot \text{RD} / ^\circ\text{C}$ @-30°C~55°C	
		Class 0.1	Class 0.05	Class 0.1	Class 0.05
5 A	1 μA	200+ 300	100+ 150	150	100
10 A	10 μA	400+ 100	200+ 50	80	50
20 A	10 μA	400+ 100	200+ 50	50	30
50 A	10 μA	400+ 100	200+ 50	30	20
100 A	0.1 mA	400+ 100	200+ 50	20	10
250 A	0.1 mA	400+ 100	200+ 50	20	10

- Range: Manual/auto shift
- Measurement range: 0.5 A ~ 300 A
- Ripple uncertainty (k = 2): 0.05%*RG,RMS; bandwidth: ≤ 1 kHz

5.3 P/E Energy Measurement

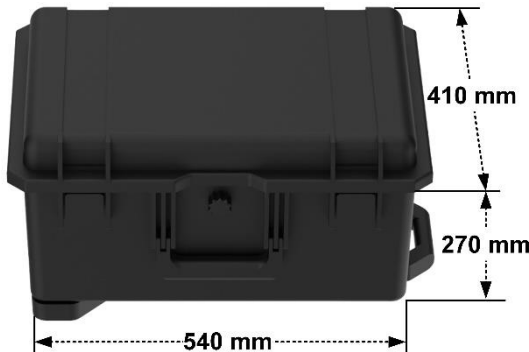
Electrical Energy Under Test	Accuracy(k=2)	
	Class 0.1	Class 0.05
Power/Electrical Energy	0.1%*RD	0.05%*RD

- Measuring range of power/energy: Combination of AC voltage and AC current range;
- Standard electrical energy pulse output: maximum frequency is 60 kHz
Supports active and passive pulses, load capacity: greater than 20 mA
- Standard electrical energy pulse input: maximum frequency is 100 kHz, level: 0 ~ 5V
- Electrical energy error display: 7-digits decimal display

5.4 Temperature/Clock

Temperature Measurement	Range	-30°C~60°C
	Accuracy	0.5°C
Clock function	Timing mode	GPS clock timing
	Accuracy	1s/d

6. General Specifications

Power Supply Mode	EV charger, built-in lithium battery, 220V commercial power
Power Supply	AC (220 $\pm$ 22) V, (50 $\pm$ 2) Hz
Max. Power	100 VA
Communication Interface	Communicate with the computer: USB, LAN, WIFI; Communicate with the charger and load: CAN-BUS
Temperature Performance	Operating temperature: -25°C~55°C; Storage temperature: -30°C~70°C
Humidity Performance	Operating humidity: < 80% @ 30°C, < 70% @ 40°C, < 40% @ 50°C Storage humidity: <80% R·H, non-condensing。
Altitude	< 3000 m
Weight	About 21 kg
Dimensions	540 mm(W) $\times$ 410 mm(D) $\times$ 270 mm(H) 

7. Ordering Information

TD1320 –



Class	
Code	Note
1000	Class 0.1
500	Class 0.05

e.g.: **TD1320-500** note for Class 0.05.

8. Accessory List

8.1 Standard Accessory

S/N	Pic	Code	Name	Specification	Qty	Note
1		Q0701000 31	Standard Cable Assemblies	10A Three-pin Power Cord (GB/T Standard); Gray; Flat Plug; Right-angle Connector; 1.5m Length	1	/
2		Q0702000 27	Custom Cable Assemblies	10-core 1-to-2 plug assembly	1	/
3		Q0701000 50	Standard Cable Assemblies	Ethernet Cable; UGREEN Cat 7 Double Shielded; Male-to-Male; 5m Length	1	/
4		P0101000 27	10A Test Lead	Yellow-Green Cable; 2.1mm ² × 2.5m; A/B End Φ4 Probe Style; Model ET-54	1	/
5		C0901000 07	Universal Communication Module	GPS Antenna; 5m Length	1	/
6		C0901000 31	Universal Communication Module	WiFi + Bluetooth Dual-function Transceiver		/
7		W0103000 05	Pulse Output Cable	A End: ET-23 Alligator Clips (Black, Red, Yellow) Set B End: Lemo 5-pin Connector MAG.1P.C05.SLAC52GZ	1	/
8		W0103000 06	Pulse Input Cable	A End: ET-23 Alligator Clips (Black/Red) Set B End: Lemo 5-pin Connector MAG.1P.C05.SLAC52GZ	1	/
9		K0301000 29	Wired Network Card	USB 3.0 to RJ45 Ethernet Adapter; Black	1	/
10		A0501000 07	Fusing Fuse	2A; 250V; One-time Use; 29.3mΩ; 5×20mm	3	/
11		H0209000 01	CAN-BUS Communication Module	/	1	/
12		H0202000 02	Temperature Probe	Cable Length: 2 meters	1	/

S/N	Pic	Code	Name	Specification	Qty	Note
13		H0203000 36	TD1320 Pulse Optoelectronic Input Cable	A End: TP-17C Photoelectric Sensor B End: Lemo MAG.1P.C05.CPAC52GZ Connector	1	/
14		H0203002 71	TK403A Emergency Stop Signal Input Cable_V11		1	/
15		H0203002 70	TK403A Door Open Signal Input Cable_V11		1	/
16		H0203001 60	TK403A DC Front-end Voltage Input Cable_V10		1	/
17		R0103000 04	Certificate of Conformity		1	/
18		K0301000 37	USB (including Manual/Software)		1	/

8.2 Optional Accessory

S/N	Pic	Code	Name	Specification	Qty	Note
1		N070100003	Vehicle Charging Connector	Dual DC Charging Plug + 2m Cable	1	Optional accessory for the main unit (sold separately)
2		K030100065	Test Laptop	- i5, Quad-core, 16GB RAM, 512GB Storage - Runs automated testing software	1	Optional
3		F010700134	TK4950 DC Charging Socket-Terminal Adapter	- Primarily used for interconnecting instruments with DC charging interfaces, such as DC chargers and testing equipment, with instruments that have conventional terminal connections. - Rated Operating Voltage: 750V DC - Rated Operating Current: 250A	1	Optional
4		F010700148	TK4960 DC Charging-power Calibration Adapter	- Primarily used for calibrating the TD1320 with a standard power energy device. - Rated Operating Voltage: 750V DC - Rated Operating Current: 250A	1	Optional
5	-	N070100040	Vehicle Charging Connector	DC European Standard CCS2 to GB/T, 1000V, 200A	1	Optional

S/N	Pic	Code	Name	Specification	Qty	Note
6	-	N070100042	Vehicle	● DC Japanese Standard	1	Optional
			Charging Connector	CHAdeMO 1.0 to GB/T, 500V, 125A		
7	-	N070100078	Vehicle	● DC American Standard	1	Optional
			Charging Connector	CCS1 to GB/T, 1000V, 250A		

Note: The above accessories need to be purchased separately and must be specified in the order contract.