

TD1330 Portable Tester for EV AC Charging Station



1. Summary

The TD1330 is a portable instrument dedicated to on-site testing of EV AC charging station, with three-phase AC voltage measurements up to 300 V, three-phase AC current measurements up to 78 A, and AC electrical energy measurement available in class 0.05 / 0.1. The instrument can be combined with TK4720 AC adjustable resistive load to complete the metrology characteristics test and interoperability test of AC charging station.

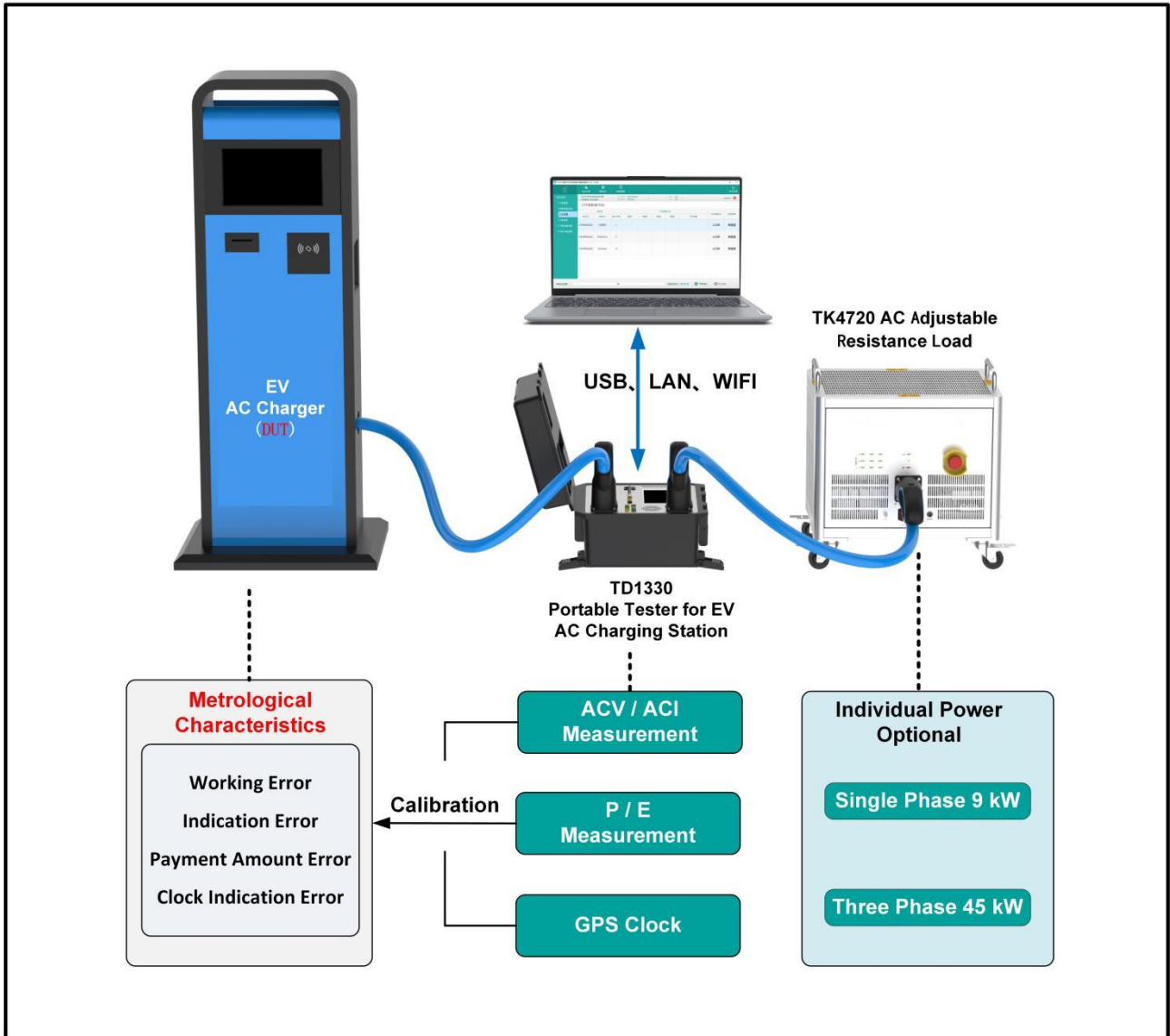
2. Features

- **AC harmonic measurement:** Harmonics order of 2 to 64 can be detected.
- **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 measurement module, charge control guidance circuit, waveform acquisition and other modules, can complete all interoperability test items of AC charging spots.
- **Built-in vehicle control guidance circuit:** AC charging spot interoperability test can be completed, built-in L1, L2, L3, N, PE, CP, CC circuit on-off switch and CP ground short circuit switch, can realize the vehicle AC charging interface circuit fault simulation function. Built-in

vehicle-side R2 resistance, R3 resistance simulation equivalent resistance simulation function, R2 resistance has adjustment range of 500 Ω ~ 6800 Ω , with resistance value online continuously adjustable with adjustment fineness of 1 Ω ; R3 equivalent resistance has nominal value of 500 Ω ~ 13000 Ω , with resistance value online continuously adjustable with adjustment fineness of 1 Ω . Each contact point has an on-off switch, which can simulate the on-off state of the contact point.

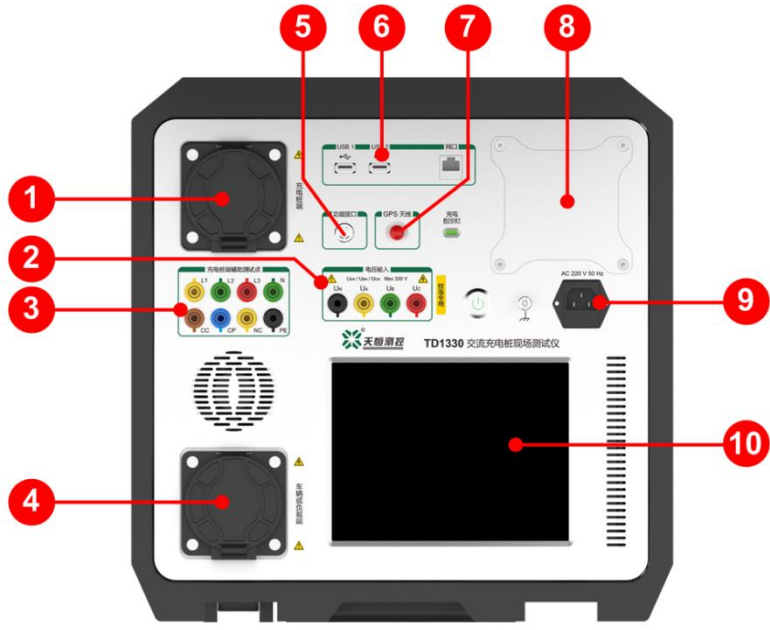

- **Waveform acquisition:** Built-in 4-channel high-speed waveform acquisition module to ensure long-term operation and zero data loss.
- **PWM signal measurement:** Measure the frequency and duty factor of the PWM signal on the CP line in the control guidance circuit and display it in real time.
- **High reliability:** 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 TK4965 AC 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 | AC charging socket, using a dedicated charging connector to connect the inspected AC charging spot. |
| 2 | A dedicated interface for voltage calibration. |
| 3 | Auxiliary test point to transfer the AC charging socket to a conventional instrument terminal. |
| 4 | AC charging socket, use a dedicated charging connector to connect the load or electric car. |
| 5 | Multi-function interface: support photoelectric head, pulse input, pulse output, temperature sensor and other functions. |
| 6 | Communication interface: including USB and LAN ports |
| 7 | A GPS antenna that receives a standard clock signal to correct the time of the AC charging spot under test. |
| 8 | Built-in large-capacity lithium battery. |
| 9 | AC 220V power interface to power the instrument via commercial power |

| | |
|-----------|--|
| 10 | LCD touch color screen, multi-power intuitive display, full touch operation. |
| 11 | Instrument box lever, easy for user to carry the mobile tester. |

5. Specifications

5.1 Three-phase ACV Measurement

| Range | Resolution | Accuracy (\pm ppm of reading + ppm of range) [1] | | Temp. Coefficient, \pm ppm*RD / $^{\circ}$ C @-25 $^{\circ}$ C~55 $^{\circ}$ C | |
|-------|------------|---|------------|---|------------|
| | | Class 0.1 | Class 0.05 | Class 0.1 | Class 0.05 |
| 240 V | 0.1 mV | 400 + 100 | 200 + 50 | 30 | 20 |

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

- Range: Manual/auto shift
- Measurement range: 30 V ~ 300 V
- Harmonic Measurement Uncertainty (k = 2): 0.05% * RG, RMS

5.2 Three-phase ACI measurement

| Range | Resolution | Accuracy (\pm ppm of reading + ppm of range) | | Temp. Coefficient, \pm ppm*RD / $^{\circ}$ C @-25 $^{\circ}$ C~55 $^{\circ}$ C | |
|--------|-------------|--|------------|---|------------|
| | | Class 0.1 | Class 0.05 | Class 0.1 | Class 0.05 |
| 100 mA | 0.1 μ A | 400 + 100 | 200 + 50 | 50 | 20 |
| 200 mA | 0.1 μ A | 400 + 100 | 200 + 50 | 50 | 20 |
| 500 mA | 0.1 μ A | 400 + 100 | 200 + 50 | 50 | 20 |
| 1 A | 1 μ A | 400 + 100 | 200 + 50 | 50 | 20 |
| 2 A | 1 μ A | 400 + 100 | 200 + 50 | 50 | 20 |
| 5 A | 1 μ A | 400 + 100 | 200 + 50 | 30 | 20 |
| 10 A | 10 μ A | 400 + 100 | 200 + 50 | 30 | 20 |
| 30 A | 10 μ A | 400 + 100 | 200 + 50 | 30 | 20 |
| 60 A | 10 μ A | 400 + 100 | 200 + 50 | 30 | 20 |

- Range: Manual/auto shift
- Measurement range: 10 mA ~ 78 A
- Harmonic measurement uncertainty (k = 2): 0.05% * RG, RMS

5.3 Frequency and Phase

- Frequency range: 45.000 Hz to 65.000 Hz.
Resolution: 0.001 Hz, uncertainty (k=2): 0.01 Hz.
- Phase range: 0.000°~359.999°
Resolution: 0.001°, uncertainty (k=2) : 0.025°.

5.4 P/E Energy Measurement

| Electrical Energy under Test | Accuracy | |
|--|-----------|------------|
| | Class 0.1 | Class 0.05 |
| Active Power/Electrical Energy $ \cos\Phi \geq 0.5;$ | 0.1%*RD | 0.05%*RD |

- Measuring range of power/energy: Combination of AC voltage and AC current range;
- Power factor measurement range: -1.000000...0.000000...1.000000
- 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

5.5 Temperature Clock

| | | |
|----------------------|-------------|------------------|
| DC Power / Energy | Range | -30°C~60°C |
| | Accuracy | 0.3°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 ± 22) V, (50 ± 2) Hz |
| Max. Power | 80 VA |
| Communication Interface | USB, LAN, WIFI |
| 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 13 kg |
| Dimensions | <p>390 mm (W) × 400 mm (D) × 260 mm (H)</p>  |

7. Ordering Information

