

TD1570 Indirect Connected DC Energy Meters Verification Device



* This is for your reference only, the configuration and details may vary depending on the application scenarios

1. summary

TD1570 is a device dedicated to the verification of indirect connected DC energy meters, which is composed of DC standard voltage source, DC small-signal voltage standard source, multi meter location verification platform, verification software, etc. Support the automatic verification of indirect connected DC energy meters.

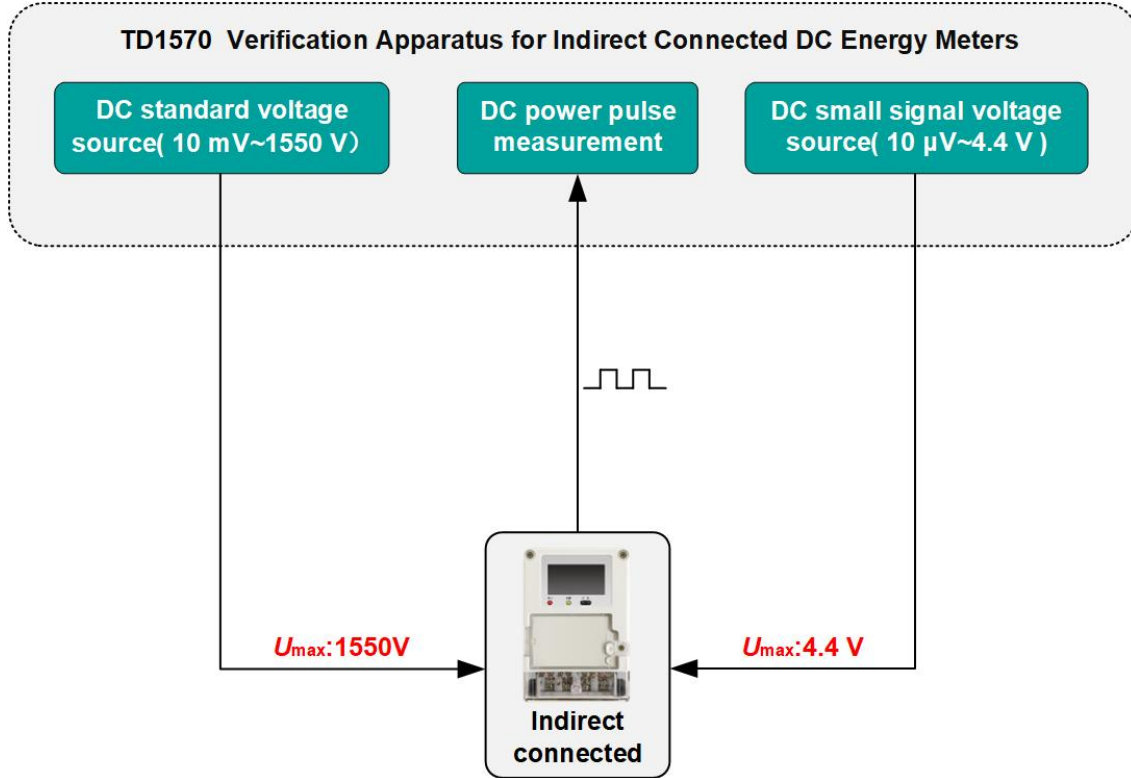
2. Features

- Power/energy measurement: class 0.05.
- DC standard voltage source: 10 mV~1150 V / 1550 V (option)
- DC small-signal voltage source(four-line): 10 μ V~4.4 V
- Optional 6/12/16 meter position indirect connected DC energy meters verification platform.
- Standard energy pulse input/output, used to detect the working error of energy meter
- Auxiliary power supply is used to supply power for electronic meters for measuring DC electrical energy(type A).

- Standard second pulse measurement is used to detect the daily timing error of the energy meter
- Mobile measurement and control station, which can observe or control the output through the LCD touch screen

3. Applications

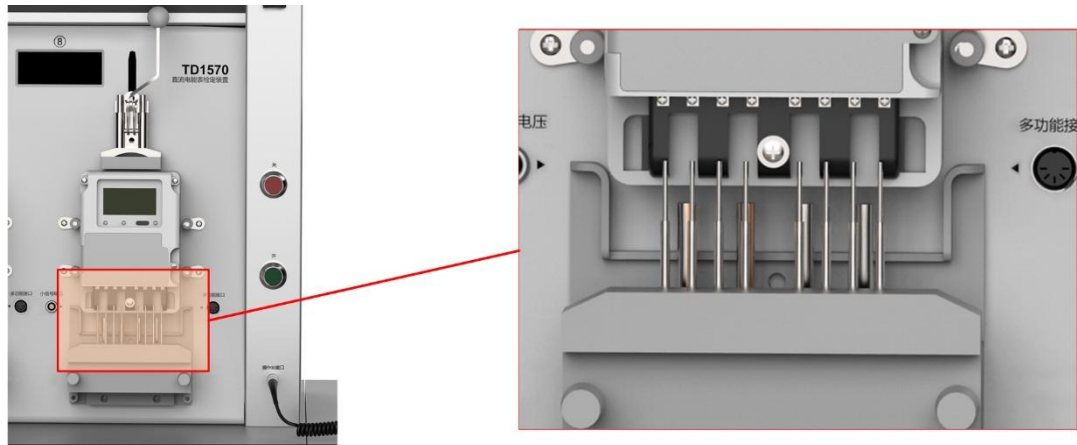
☆ Verification of DC Energy Meter



- **Application Scenario :** The instrument has 10 μV~4.4 V four wire small-signal voltage source, with 1550 V DC voltage source and energy pulse measurement function, can carry out relevant testing work of indirect connected DC energy meters .

4. Characteristics

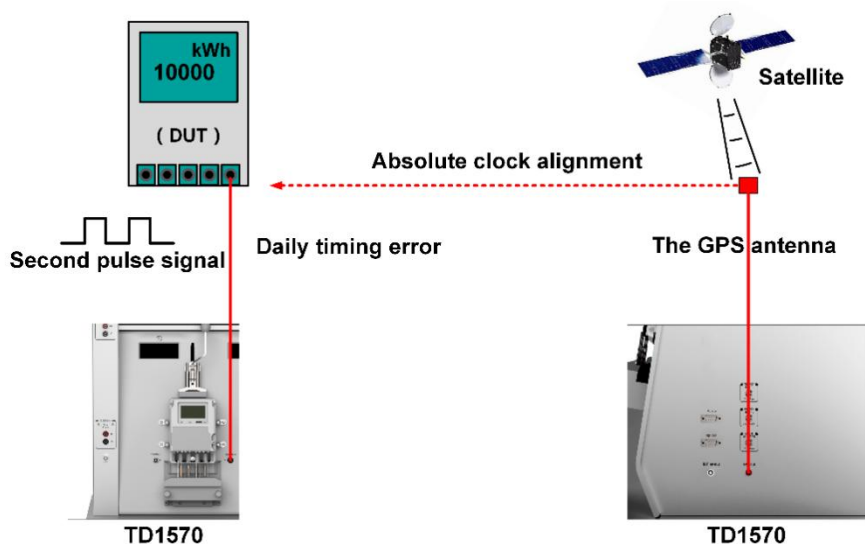
☆ DC Energy Meter Press Bracket



Indirect Connected DC Energy Meters Press Bracket

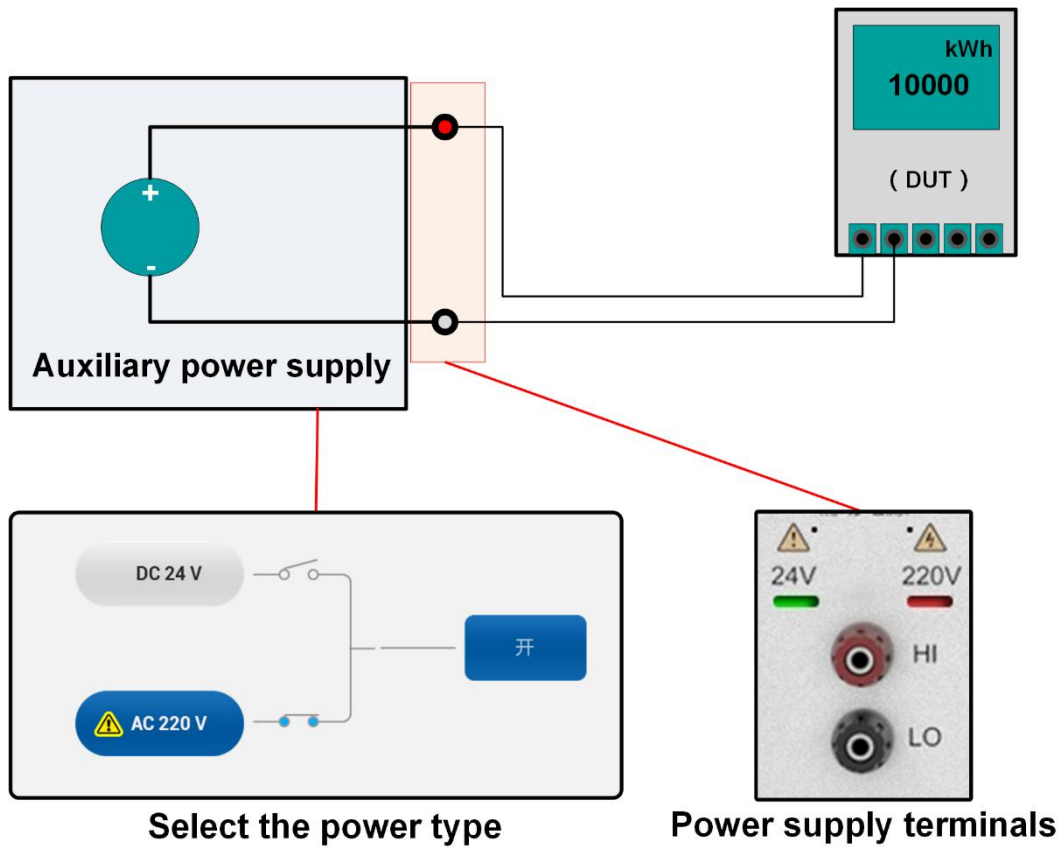
- **Indirect connected DC energy meters press bracket:** a metal terminal corresponding to the wiring hole of the DC energy meter is installed under the fixed meter position, and the wiring operation can be completed by pressing the handle.

☆ Clock Check Function



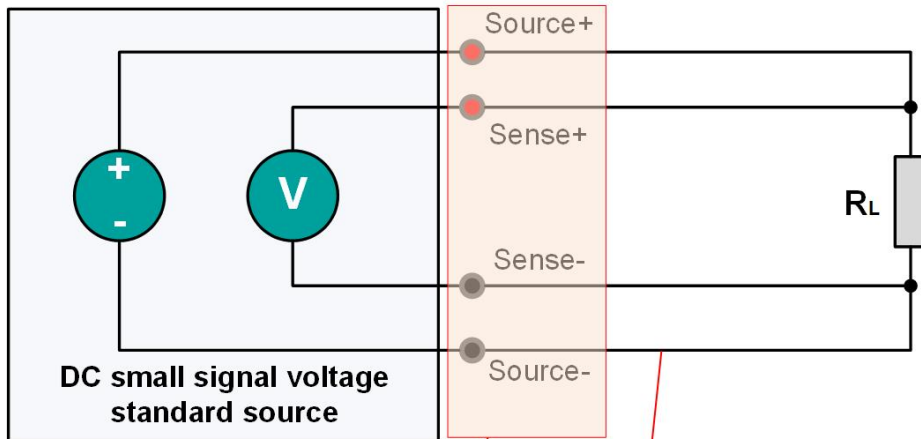
- Built in clock module with precision up to 0.2 ppm, which can measure the second pulse signal for daily timing error test
- Built in GPS module and antenna can receive GPS standard clock signal.

☆ Auxiliary Power Supply



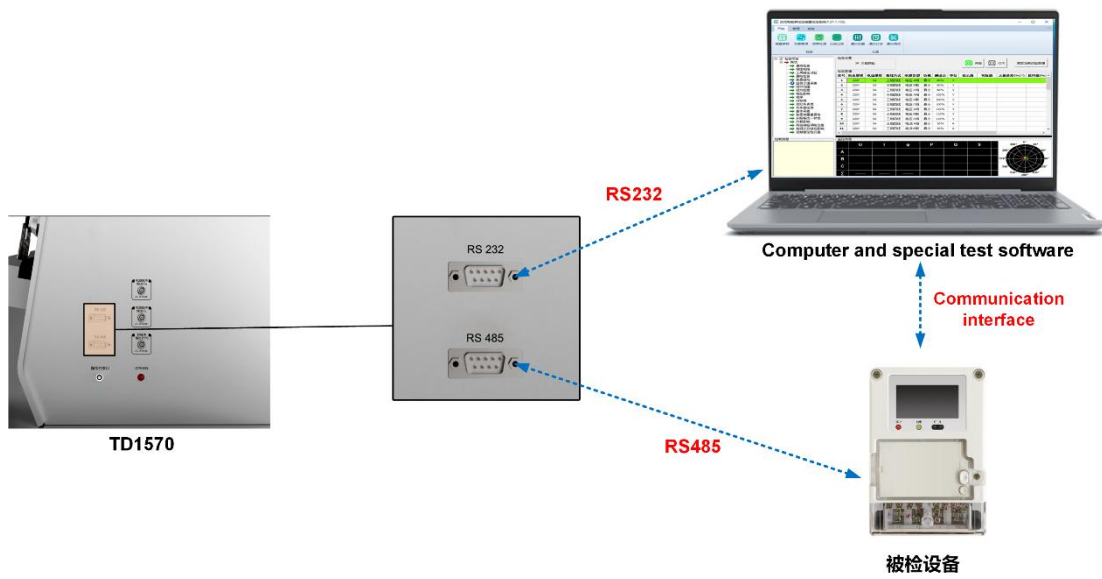
- Each meter position has built-in auxiliary power supply, which can provide DC 24 V or AC 220 V power supply for electronic meters for measuring DC electrical energy(type A).

☆ Four Wire Small-signal Voltage Source



- **Four Wire small-signal Voltage Source:** Precise output $\pm (10 \mu V \sim 4.4 V)$ small-signal voltage signal is used as the current input of indirect connected DC energy meters (the specification of shunt can be set and displayed according to its primary current).

☆ Professional Test Software



- With RS232 communication interface, software functions can be customized according to customer needs

5. Specifications

5.1 DC Voltage Output

Range	Resolution	Short Term Stability (% / min)	Accuracy (k=2) (ppm of reading + ppm of range) ^[1]	Maximum Burden Current (mA)	Ripple (%)
100 mV	1 μ V	0.005	120 + 80	300	< 0.2
300 mV	1 μ V	0.005	120 + 80	300	< 0.2
1 V	10 μ V	0.005	120 + 80	300	< 0.2
3 V	10 μ V	0.005	120 + 80	300	< 0.2
10 V	0.1 mV	0.005	120 + 80	300	< 0.2
30 V	0.1 mV	0.005	120 + 80	300	< 0.2
100 V	1 mV	0.005	120 + 80	300	< 0.2
300 V	1 mV	0.005	120 + 80	150	< 0.2
600 V	1 mV	0.005	120 + 80	50	< 0.2
1000 V	10 mV	0.005	120 + 80	50	< 0.2
1500 V ^[2]	10 mV	0.005	120 + 80	20	< 0.2

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

[2]: 1500V range is an option.

- Output range: 10 mV~1150 V, 6-bit display
- 1500 V voltage output option can be selected to expand the voltage output range to 10 mV ~ 1550 V
- Protection function: Short circuit protection, overload protection

5.2 DC small-signal Voltage Output ^[3]

Range	Resolution	Short Term Stability (% / min)	Accuracy (k=2) (ppm of reading + ppm of range)	Maximum Burden Current (mA)	Ripple (%)
1 mV	10 nV	0.1 μ Vrms	120 + 0.3 μ V	—	< 0.2
3 mV	10 nV	0.3 μ Vrms	120 + 1 μ V	—	< 0.2
10 mV	0.1 μ V	1 μ Vrms	120 + 3 μ V	—	< 0.2
30 mV	0.1 μ V	0.002	120 + 80	—	< 0.2
100 mV	1 μ V	0.002	120 + 80	—	< 0.2
300 mV	1 μ V	0.002	120 + 80	≤ 10	< 0.2
1 V	10 μ V	0.002	120 + 80	≤ 10	< 0.2
4 V	10 μ V	0.002	120 + 80	≤ 10	< 0.2

Note: [3] When the indirect connected DC energy meters is verified separately, it can be used as its current input (corresponding to the shunt voltage)

- Output range: $\pm (10 \mu\text{V} \sim 4.4 \text{ V})$, 6-bit display
- The specification and current voltage ratio of the shunt can be set, and the output value can be displayed according to the voltage or current converted by the shunts.

5.3 Daily Timing Error

- Annual measurement uncertainty of device standard clock: 2×10^{-7}
- Daily timing error supports two error display modes: s/d and ppm/ppb

5.4 DC Energy Index

DC Power/Energy	Range	Combination of DC voltage and DC current (or DC small-signal voltage)
	Accuracy	Uncertainty of voltage measurement+uncertainty of current measurement (or uncertainty of DC small-signal voltage measurement)
Energy Pulse	Standard Energy Pulse Output	High frequency full range value corresponds to 60 kHz; Low frequency full range value corresponds to 6 Hz;
	Pulse Output Frequency	Output frequency jitter time<10 μ s
	Standard Energy Pulse Input	Signal amplitude is 5V, TTL level; Able to receive high-frequency pulses ≤ 150 kHz; FH=60 kHz × Power value ÷ voltage range value ÷ current range value FL=60 kHz × Power value ÷ voltage range value ÷ current range value ÷ 10000
	Energy Error Display	Automatic display, resolution 0.0001%
Difference at Different Meter Position		< ± 0.025%

5.5 Auxiliary Power Supply

DC Power Output	Output Voltage	24 V
	Maximum Burden Current	120 mA / meter position
	Protection Function	Replaceable fuse protection
AC Power Output	Output Voltage	220 V
	Maximum Burden Current	20 mA / meter position
	Protection Function	Replaceable fuse protection

Note: Other types of power supply can be customized.

6. General Specifications

Power Supply	AC (220±22) V, (50±2) Hz
Temperature Performance	Working temperature: 0°C~45°C; Calibration temperature: 18°C~28°C; Storage temperature: -20°C~70°C
Humidity Performance	Working humidity: < 80% @ 30°C, < 70% @ 40°C, < 40% @ 50°C Storage humidity: (20%~80%) R·H, No condensation
Interface	RS232

7. Ordering Information

