TD4100 Portable Tester for Three-phase and DC Meters

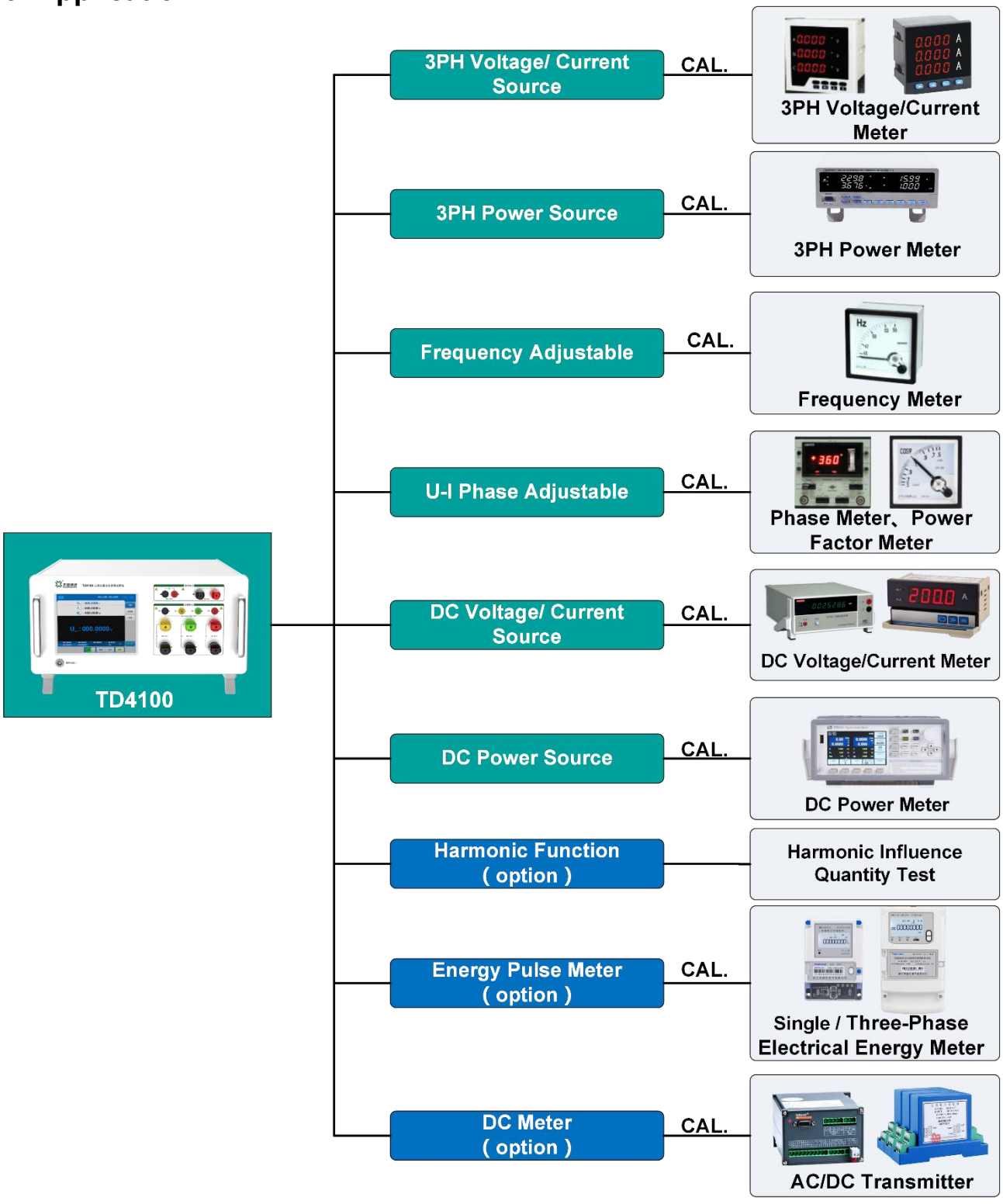
1. Summary

TD4100 is a multi-function 3PH power source. It integrates AC/DC power output function, harmonic function, transmitter test function, AC energy meter test function. Can be used to calibrate AC/DC voltmeter, AC/DC ammeter, AC/DC power meter, electric energy meter and transmitter, etc.

2. Features

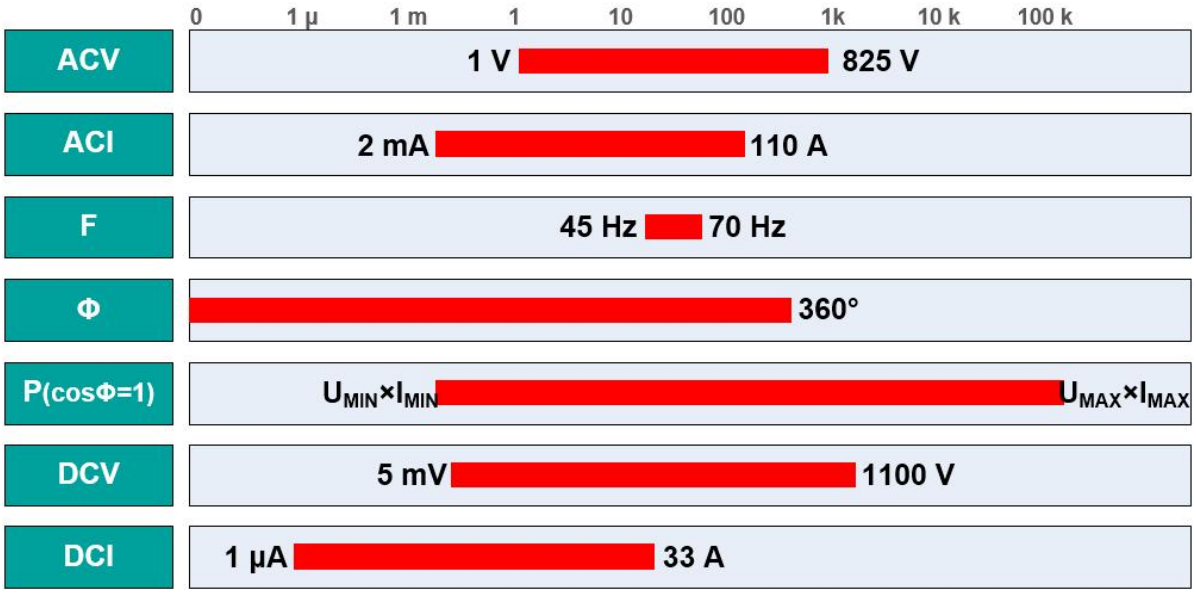
- 3PH AC voltage output：1 V～825 V
- 3PH AC current output：2 mA～110 A
- Frequency：45 Hz～70 Hz
- U-I phase：0°～360°
- DC voltage output：5 mV～1100 V
- DC current output：1 μA～33 A
- Accuracy class: 0.02, 0.05.
- 2^{nd}~21^{st} harmonic output (option)
- Transmitter test function (option）
- AC energy meter test function（option）
- Test software（option）

3. Application



4. Characteristics

☆ Wide Output



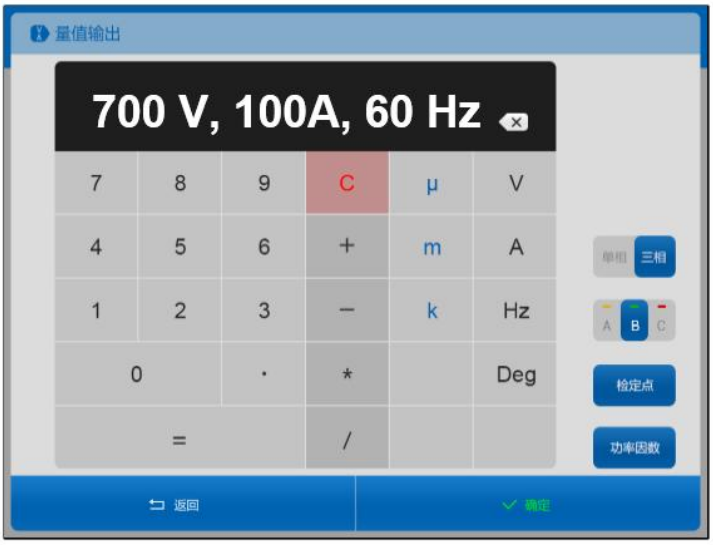
- It can meet most single-phase / three-phase meters or DC meters.

☆ Convenient Operation

- Color LCD touch-screen.
- Support connect operation keypad with physical keys.

☆ Multiple Output Mode

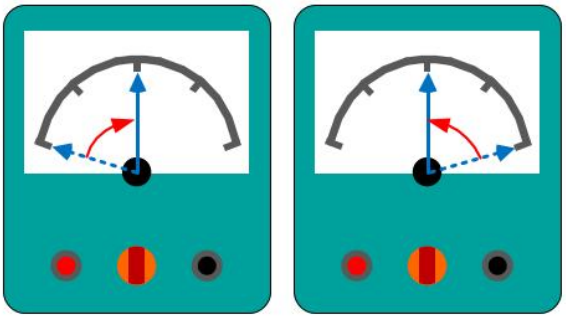
Keypad



Touch Screen Output

- "**Direct output**"mode，User can set output value by physical key or touch screen.
- Three-phase unit adjustment or single phase adjustment.

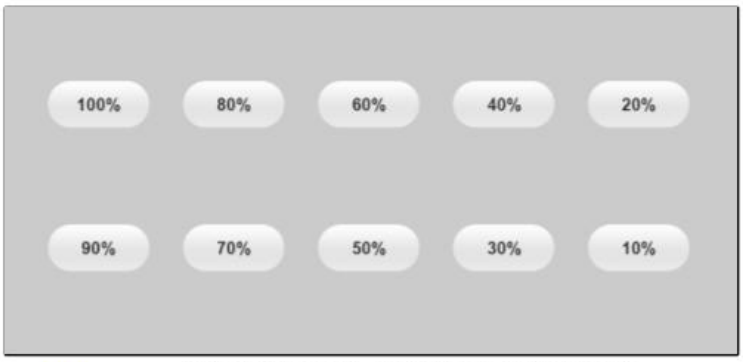
Remote Control Box
(option)

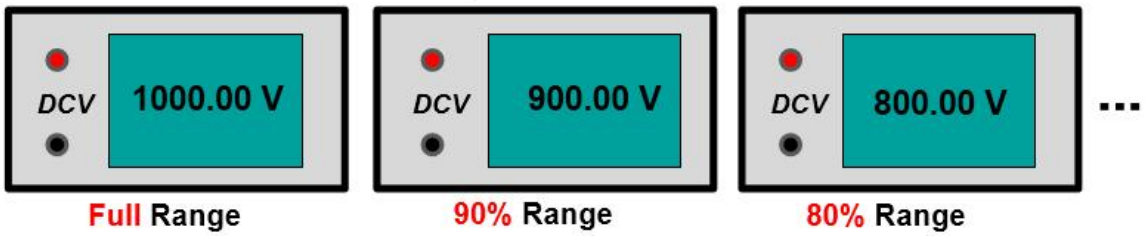


Calibrate for Analog Meter

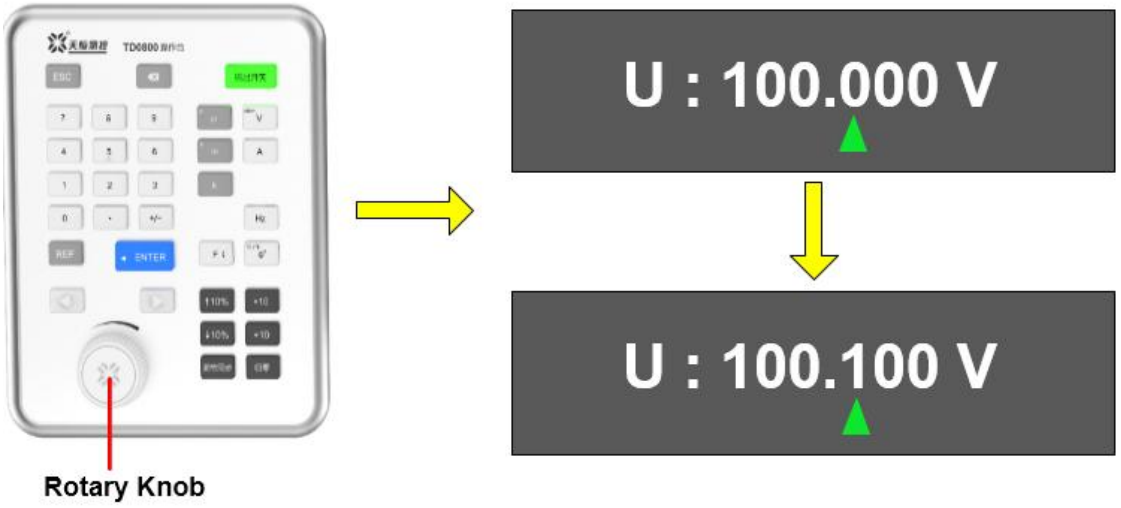
- "**Remote Control Box（option）**"，by operation of coarse tuning—fine tuning，can calibrate analog meter.

☆ Multiple Output Mode





- Touch "**Calibration point**"of screen for "% setting".

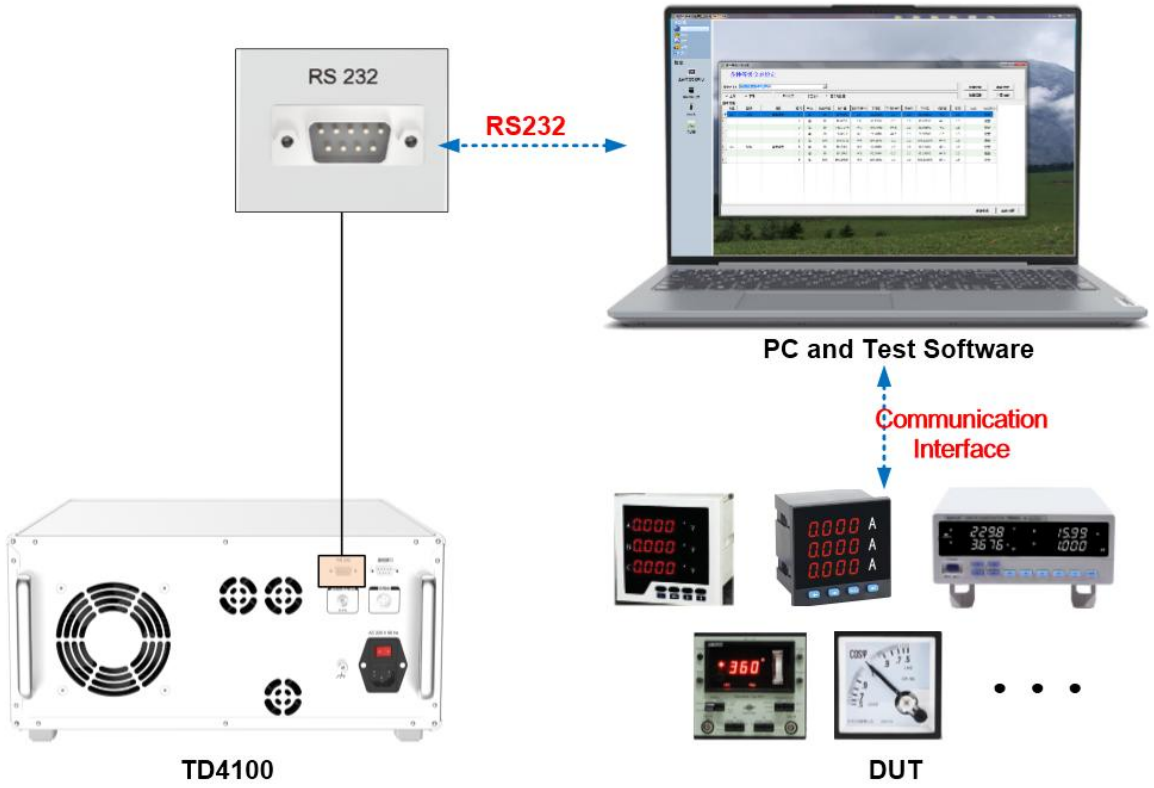


- "**Rotary Knob**"mode，User can setting in clockwise direction or anticlockwise direction.

☆ Harmonics Function

S/N	Function declaration
1	Set amplitude of harmonic.
2	Set phase of harmonic（fundamental wave）。
3	Choose 2nd～21st harmonics channel output.
4	Oscilloscope function, user can observe voltage and current waves.
5	Display frequency spectrum of harmonic by histogram.(fundament wave is 100%)

☆ Testing Software（Option）



- RS232 communication interface，software customizable.

5. Specifications

5.1 Three-Phase Voltage Output

Voltage Range	Resolution	Stability (%/min)		Accuracy ±(ppm of reading + ppm of range) [1]		Max Burden (mA)
		Class 0.05	Class 0.02	Class 0.05	Class 0.02	
15 V	0.1 mV	0.01	0.005	300 + 200	120 + 80	500
57.7 V	0.1 mV	0.01	0.005	300 + 200	120 + 80	500
100 V	1 mV	0.01	0.005	300 + 200	120 + 80	300
220 V	1 mV	0.01	0.005	300 + 200	120 + 80	140
380 V	1 mV	0.01	0.005	300 + 200	120 + 80	80
600 V	1 mV	0.01	0.005	300 + 200	120 + 80	50
750 V	10 mV	0.01	0.005	300 + 200	120 + 80	30
Note [1] : (ppm = parts per million) (e.g.，10ppm = 0.001%).						

- Three-phase voltage output：1 V～825 V；
- Degree of distortion：<0.2%
- Short circuit and overload protection

5.2 Three-Phase Current Output

Current Range	Resolution	Stability (%/min)		Accuracy ±(ppm of reading + ppm of range) [1]		Max Burden (V)
		Class 0.05	Class 0.02	Class 0.05	Class 0.02	
20 mA	0.1 μA	0.01	0.005	300 + 200	120 + 80	60
50 mA	0.1 μA	0.01	0.005	300 + 200	120 + 80	60
100 mA	1 μA	0.01	0.005	300 + 200	120 + 80	60
200 mA	1 μA	0.01	0.005	300 + 200	120 + 80	30
500 mA	1 μA	0.01	0.005	300 + 200	120 + 80	30
1 A	10 μA	0.01	0.005	300 + 200	120 + 80	30
2 A	10 μA	0.01	0.005	300 + 200	120 + 80	6
5 A	10 μA	0.01	0.005	300 + 200	120 + 80	6

10 A	100 μA	0.01	0.005	300 + 200	120 + 80	2.5
20 A	100 μA	0.01	0.005	300 + 200	120 + 80	1.2
50 A	100 μA	0.01	0.005	300 + 200	120 + 80	0.8
100 A	1 mA	0.01	0.005	300 + 200	120 + 80	0.8

- Three-phase current output：2 mA～110 A；
- Degree of distortion：<0.2%
- Current open-circuit and overload protection

5.3 Frequency / Phase / Harmonic

Symmetry	Voltage superior to 0.2%；Current superior to 0.5%；Phase superior to 0.5°
Frequency	Range：45 Hz～70 Hz；Adjustment fineness：0.001 Hz； **Accuracy**：±0.02 Hz (class 0.05), ±0.01 Hz(class 0.02)
Phase	Range：0.000 0°～359.999 9°；Adjustment fineness：0.001°； **Accuracy**：±0.02° (class 0.05), ±0.01°(class 0.02)
Harmonic（optional）	2^{nd}～21^{st} harmonic； Amplitude 0～25% adjustable；Phase 0～359.99°adjustable

5.4 Three-Phase Power Output

Current Range	Stability (%/min)		Accuracy (± %*FS)[2]	
	Class 0.05	Class 0.02	Class 0.05	Class 0.02
Active power $\lvert cos\varphi\rvert \geq 0.5$	0.01	0.005	0.05	0.02
Reactive power $\lvert sin\varphi\rvert \geq 0.5$	0.02	0.01	0.1	0.05
Apparent power	0.02	0.01	0.1	0.05
Power factor	0.02	0.01	0.1	0.05
Note [2] :FS= voltage range ×current range				

- Power factor range：-1.000 000…0.000 000…1.000 000

5.5 DC Voltage Output

Voltage Range	Resolution	Stability (%/min)		Accuracy ±(ppm of reading + ppm of range) [1]		Max Burden (mA)
		Class 0.05	Class 0.02	Class 0.05	Class 0.02	
75 mV	0.1 μV	0.01	0.005	300 + 200	120 + 120	10
100 mV	1 μV	0.01	0.005	300 + 200	120 + 80	10
300 mV	1 μV	0.005	0.005	300 + 200	120 + 80	10
1 V	10 μV	0.005	0.005	300 + 200	120 + 80	10
3 V	10 μV	0.005	0.005	300 + 200	120 + 80	10
10 V	100 μV	0.005	0.005	300 + 200	120 + 80	10
30 V	100 μV	0.005	0.005	300 + 200	120 + 80	500
60 V	100 μV	0.005	0.005	300 + 200	120 + 80	150
100 V	1 mV	0.005	0.005	300 + 200	120 + 80	150
300 V	1 mV	0.005	0.005	300 + 200	120 + 80	50
600 V	1 mV	0.005	0.005	300 + 200	120 + 80	25
1000 V	10 mV	0.005	0.005	300 + 200	120 + 80	15

- DC voltage output range：5 mV～1100 V,
- Ripple factor：< 1%
- Short circuit and overload protection

5.6 DC Current Output

Current Range	Resolution	Stability (%/min)		Accuracy ±(ppm of reading + ppm of range) [1]		Max Burden (V)
		Class 0.05	Class 0.02	Class 0.05	Class 0.02	
10 μA	0.1 nA	0.01	0.005	300 + 200	120 + 80	10
30 μA	0.1 nA	0.01	0.005	300 + 200	120 + 80	10
100 μA	1 nA	0.01	0.005	300 + 200	120 + 80	10
300 μA	1 nA	0.01	0.005	300 + 200	120 + 80	10
1 mA	10 nA	0.01	0.005	300 + 200	120 + 80	10

3 mA	10 nA	0.01	0.005	300 + 200	120 + 80	10
10 mA	100 nA	0.01	0.005	300 + 200	120 + 80	10
30 mA	100 nA	0.01	0.005	300 + 200	120 + 80	10
100 mA	1 μA	0.01	0.005	300 + 200	120 + 80	10
300 mA	1 μA	0.01	0.005	300 + 200	120 + 80	4
1 A	10 μA	0.01	0.005	300 + 200	120 + 80	4
3 A	10 μA	0.01	0.005	300 + 200	120 + 80	4
10 A	100 μA	0.01	0.005	300 + 200	120 + 80	3
30 A	100 μA	0.01	0.005	300 + 200	120 + 80	2.5

- DC current output range：1 μA～33 A,
- Ripple factor：< 1%
- Current open-circuit and overload protection

5.7 DC Meter（option）

Range	Measurement Range	Accuracy	Measurement Range of Ripple	Accuracy of Ripple
1 V	± (0～1.2) V	± 0.01%*range	0～30 mV	± 1 mV
10 V	± (0～12) V	± 0.01%* range	0～300 mV	± 10 mV
2 mA	±(0～2.4) mA	± 0.01%* range	0～60 μA	± 2 μA
20 mA	± (0～24) mA	± 0.01%* range	0～600 μA	± 20 μA
Note：This DC Meter is used to test second signal of Transmitter				

5.8 AC Energy Testing（option）

Type	Accuracy	
	Class 0.05	Class 0.02
Active electrical energy	± 0.1%*reading	± 0.05%*reading
Reactive electrical energy	± 0.2%*reading	± 0.1%*reading

- Energy pulse output：full range for 60 kHz
- Energy pulse input：max frequency is 200 kHz，pulse level：3 V～12 V
- Constant setting of Electrical energy meter：1…1000000 imp./kwh or 1…1000000 imp./ws

6. General Specifications

Power Supply	AC (220 ± 22) V，(50 ± 2) Hz
Temperature Performance	Working temperature：0°C~45°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，actnon-condensing
Interface	RS232

7. Ordering Information

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Class	
Code	**Note**
200	**Class 0.02**
500	**Class 0.05**

Harmonic	
Code	**Note**
Empty	-
H	√

Energy Test	
Code	**Note**
Empty	-
E	√

Transmitter Test	
Code	**Note**
Empty	-
T	√

e.g. : *TD4100-500-H-E-T* note for class 0.05, with harmonic function, energy test function and transmitter test function.