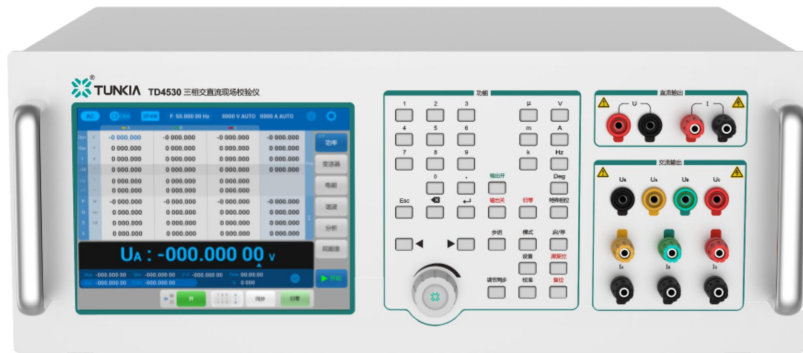


TD4530 Three-Phase and DC Field Calibrator



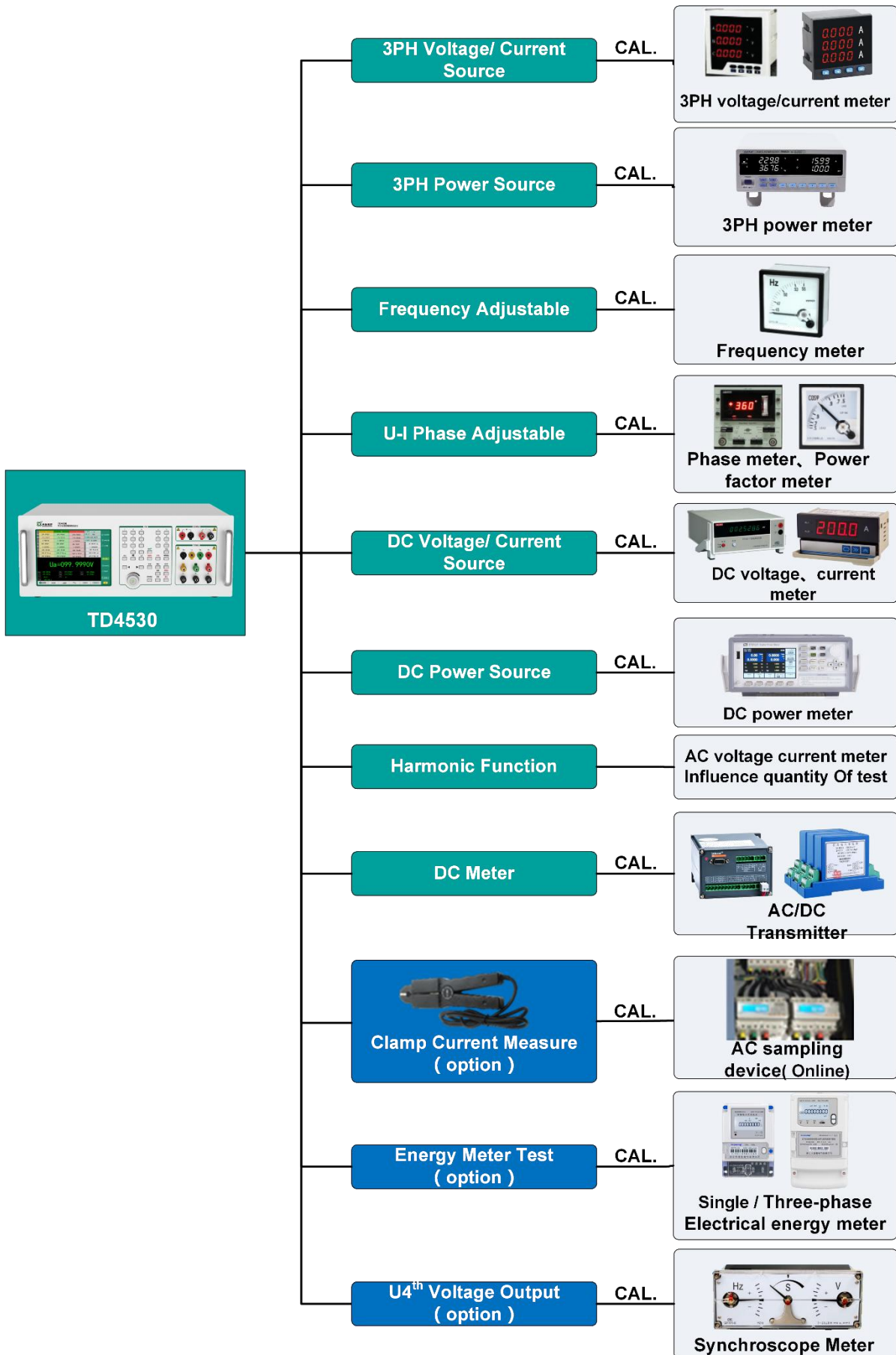
1. Summary

TD4530 is a multi-function 3PH power calibrator. Class 0.02 / class 0.05 available. It integrates AC/DC power output function, 3PH measuring function, harmonic function, transmitter test function, U4th voltage output 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.

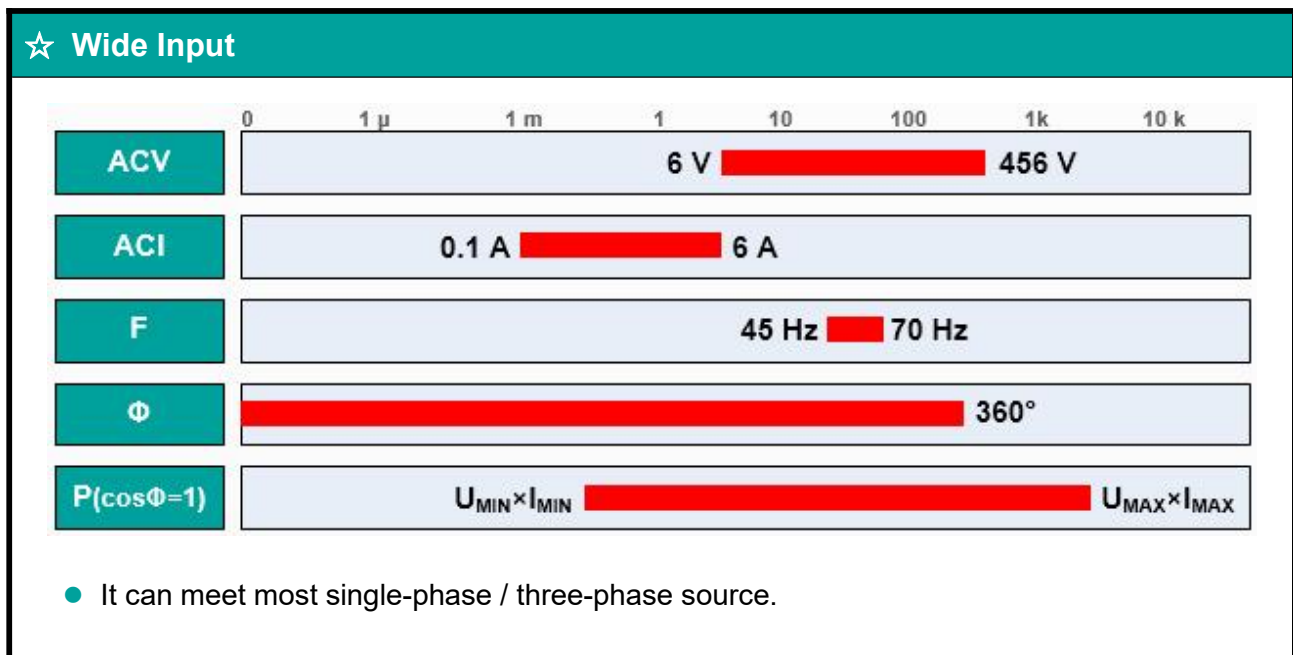
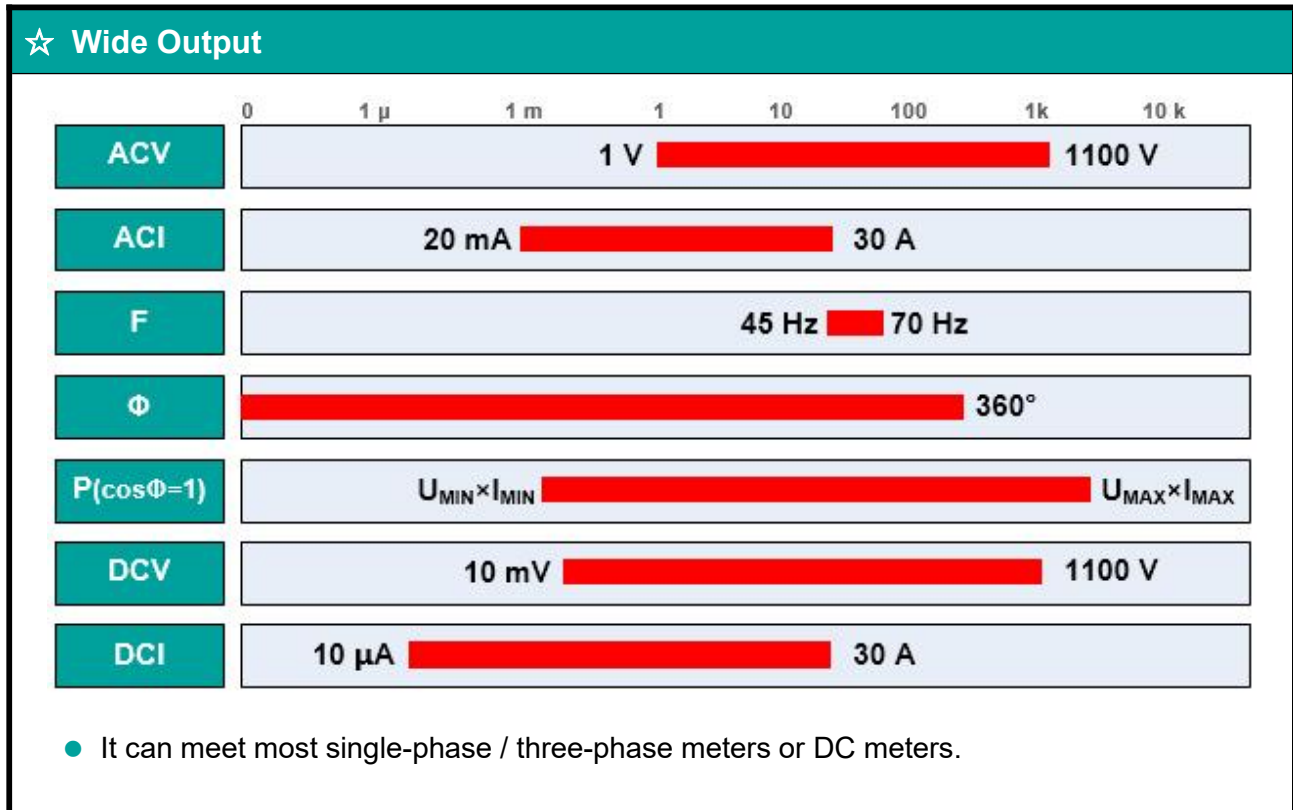
2. Features

- 3PH AC voltage output: 1 V~660 V (U_{AB} Max 1100 V)
- 3PH AC current output: 20 mA~30 A
- 3PH voltage meter: 6 V~456 V;
- 3PH current meter: 0.1 A~6 A
- Frequency: 45 Hz~70 Hz
- U-I phase: 0°~360°
- DC voltage output: 10 mV~1100 V
- DC current output: 0.1 mA~30 A
- Accuracy class: 0.02, 0.05.
- 2nd~21st harmonic output
- Transmitter test function
- U4th AC voltage output function (option)
- Energy meter test function (option)
- Test software (option)

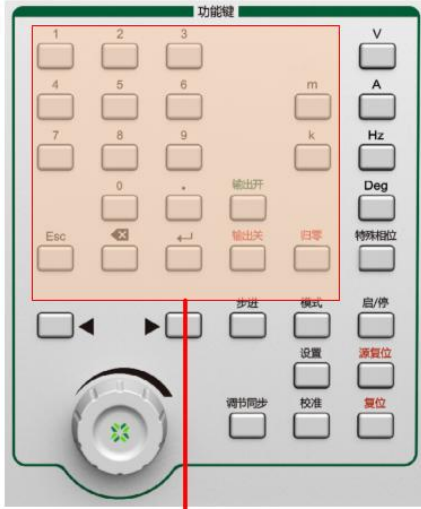
3. Application



4. Characteristics



★ Multiple Output Mode

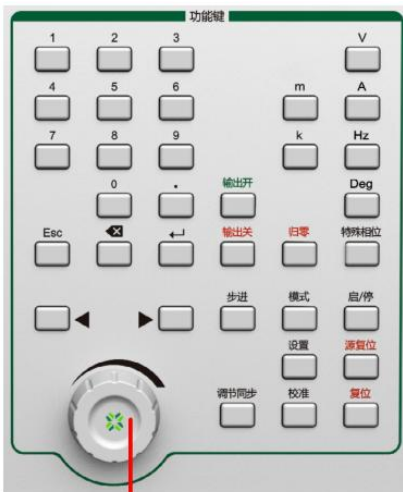


Keypad

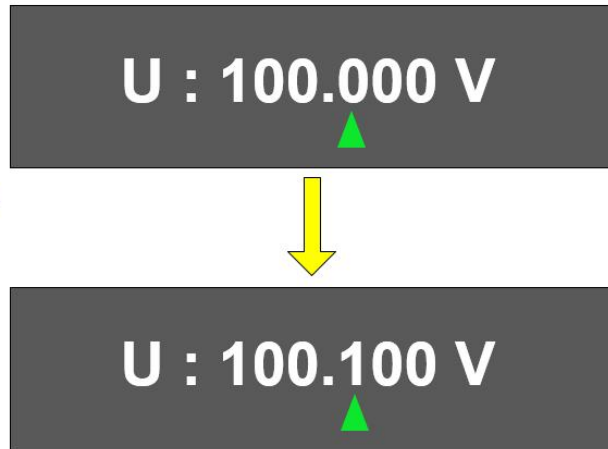


Touch Screen Output

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

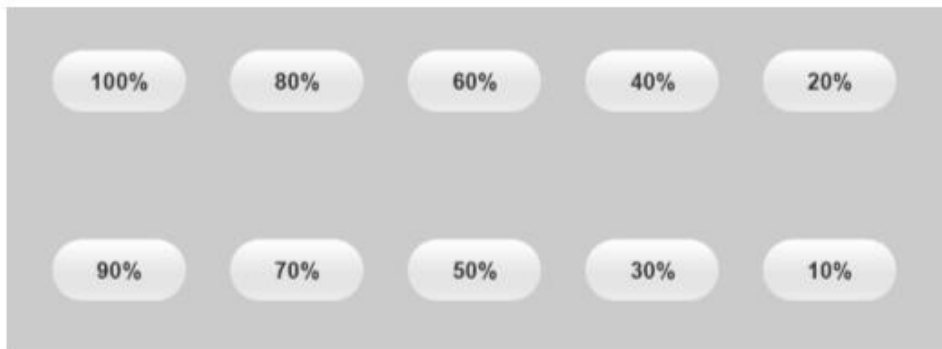


Rotary Knob

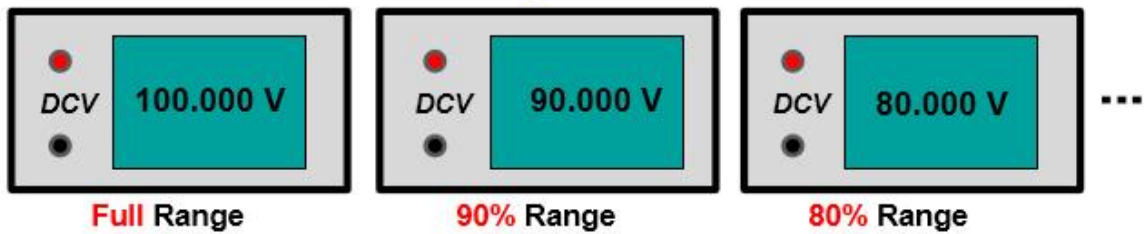
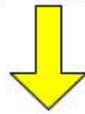


- “**Rotary Knob**” mode, User can setting in clockwise direction or anticlockwise direction.

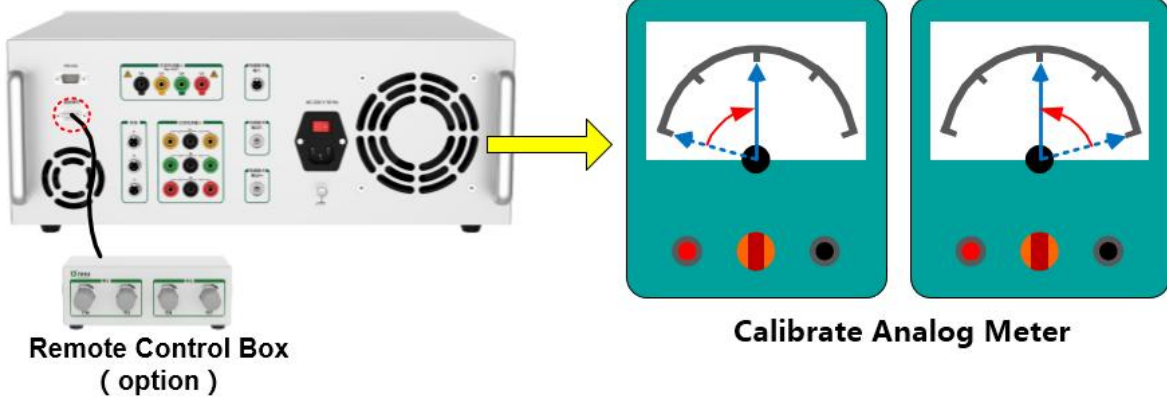
☆ Multiple Output Mode



Touch Screen "Calibration Points"

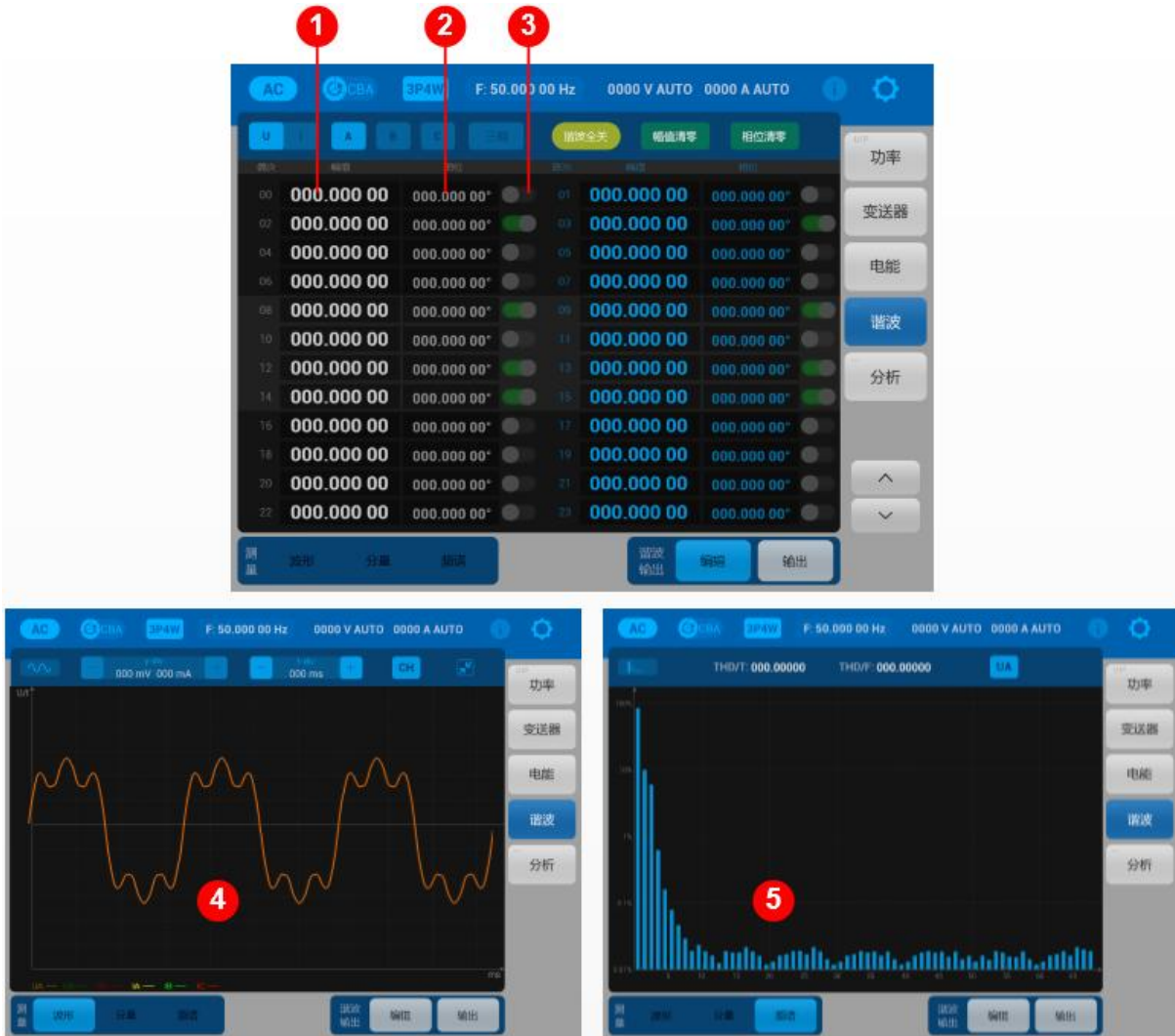


- Touch "Calibration point" of screen for "% setting".



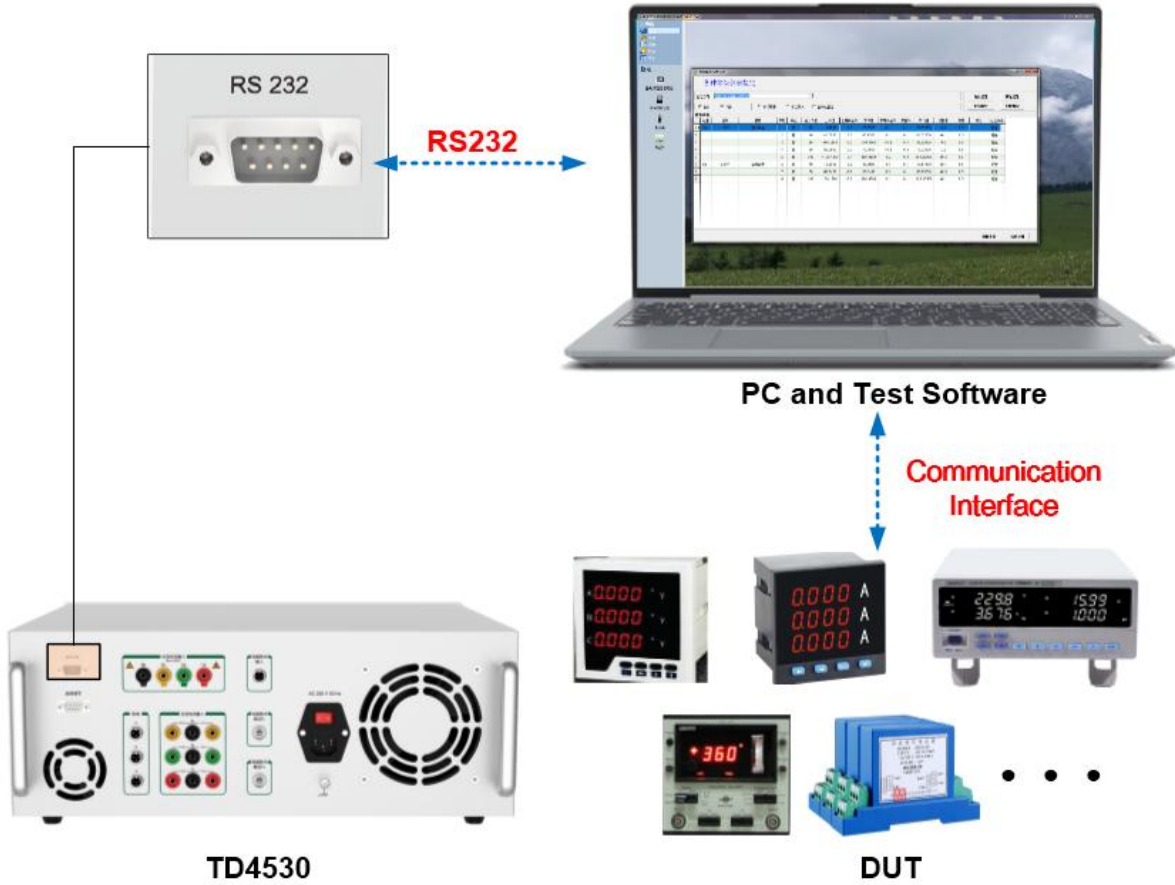
- "Remote Control Box (option)", by operation of coarse tuning—fine tuning, can calibrate analog meter.

☆ Harmonics Function



S/N	Function declaration
1	Set amplitude of harmonic.
2	Set phase of harmonic (fundamental wave)。
3	Choose 2 nd ~21 st 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%)

☆ Test software (option)



- RS232 communication interface, software customizable.

5. Specifications

5.1 Three-Phase Voltage / Current Output

Voltage Range	Resolution	Stability (%/min)		Accuracy \pm (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
30 V	0.1 mV	0.01	0.005	300 + 200	120 + 80	500
60 V	0.1 mV	0.01	0.005	300 + 200	120 + 80	150
75 V	0.1 mV	0.01	0.005	300 + 200	120 + 80	150
150 V	1 mV	0.01	0.005	300 + 200	120 + 80	50
300 V	1 mV	0.01	0.005	300 + 200	120 + 80	50
600 V	1 mV	0.01	0.005	300 + 200	120 + 80	25
750 V ^[2]	1 mV	0.01	0.005	300 + 200	120 + 80	25
1000 V ^[2]	10 mV	0.01	0.005	300 + 200	120 + 80	25

Note [1] : (ppm = parts per million) (e.g., 10ppm = 0.001%). Note [2]: 750 V、1000 V as U_{AB} .

Current Range	Resolution	Stability (%/min)		Accuracy \pm (ppm of reading + ppm of range) ^[1]		Max Burden (V)
		Class 0.05	Class 0.02	Class 0.05	Class 0.02	
200 mA	1 μ A	0.01	0.005	300 + 200	120 + 80	50
500 mA	1 μ A	0.01	0.005	300 + 200	120 + 80	20
1 A	10 μ A	0.01	0.005	300 + 200	120 + 80	20
2 A	10 μ A	0.01	0.005	300 + 200	120 + 80	5
5 A	10 μ A	0.01	0.005	300 + 200	120 + 80	5
10 A	0.1 mA	0.01	0.005	300 + 200	120 + 80	1
25 A	0.1 mA	0.01	0.005	300 + 200	120 + 80	1

- Three-phase voltage output: 1 V~660 V (U_{AB} Max 1100 V) , Degree of distortion:< 0.5%
- Three-phase current output: 20 mA~30 A, Degree of distortion: < 0.2%;
- Voltage short circuit, current open-circuit and overload protection

5.2 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	2 nd ~21 st harmonic; Amplitude 0~25% adjustable; Phase 0~359.99°adjustable

5.3 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 $ \cos\phi \geq 0.5$	0.01	0.005	0.05	0.02
Reactive power $ \sin\phi \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 setting range: -1.000 000...0.000 000...1.000 000

5.4 Three-Phase Voltage / Current Input

Type	Range	Resolution	Accuracy ±(ppm of reading + ppm of range) ^[1]	
			Direct Input	Clamp Current Input ^[3]
AC Voltage ACV	57.7 V	0.1 mV	300 + 200	—
	100 V	1 mV	300 + 200	—
	220 V	1 mV	300 + 200	—
	380 V	1 mV	300 + 200	—
AC Current ACI	1 A	10 µA	300 + 200	—
	5 A	10 µA	300 + 200	0.2%*RG

Note [3]: Clamp is option, if it be need, it must remark in order contract, **Same as below**.

- Voltage input: 6 V~456 V, Current input: 0.1 A~6 A
- Frequency: 45 Hz~70 Hz, Accuracy: ± 0.01 Hz
- Phase: 0.000°~359.999°, Accuracy: ± 0.02°

5.5 Three-Phase Power Input

Type	Accuracy	
	Direct Input	Clamp Current Input
Active power	± 0.05%*FS	± 0.2%*FS
Reactive power	± 0.1%*FS	± 0.5%*FS
Apparent power	± 0.1%*FS	± 0.5%*FS
Power factor	± 0.1%	± 0.5%

5.6 DC Voltage / Current Output

Voltage Range	Resolution	Stability (%/min)		Accuracy \pm (ppm of reading + ppm of range) ^[1]		Max Burden (mA)
		Class 0.05	Class 0.02	Class 0.05	Class 0.02	
100 mV	1 μ V	0.005	0.005	300 + 200	120 + 120	10
1 V	10 μ V	0.005	0.005	300 + 200	120 + 80	10
10 V	0.1 mV	0.005	0.005	300 + 200	120 + 80	10
30 V	0.1 mV	0.005	0.005	300 + 200	120 + 80	500
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	10 mV	0.005	0.005	300 + 200	120 + 80	25
1000 V	10 mV	0.005	0.005	300 + 200	120 + 80	15

Current Range	Resolution	Stability (%/min)		Accuracy \pm (ppm of reading + ppm of range) ^[1]		Max Burden (V)
		Class 0.05	Class 0.02	Class 0.05	Class 0.02	
100 μ A	1 nA	0.01	0.005	300 + 200	120 + 80	10
1 mA	10 nA	0.01	0.005	300 + 200	120 + 80	10
10 mA	0.1 μ A	0.01	0.005	300 + 200	120 + 80	10
100 mA	1 μ A	0.01	0.005	300 + 200	120 + 80	10
1A	10 μ A	0.01	0.005	300 + 200	120 + 80	10
3A	10 μ A	0.01	0.005	300 + 200	120 + 80	10
10A	100 μ A	0.01	0.005	300 + 200	120 + 80	10
25A	100 μ A	0.01	0.005	300 + 200	120 + 80	10

- DC voltage output: 10 mV~1100 V, ripple factor: < 1%;
- DC current output: 0.1 mA~30 A, ripple factor: < 1%
- Voltage short circuit, current open-circuit and overload protection

5.7 DC Meter (Transmitter)

Range	Measurement Range	Accuracy	Measurement Range of Ripple	Accuracy of Ripple
1 V	$\pm (0 \sim 1.2) \text{ V}$	$\pm 0.01\% \cdot \text{RG}$	0~30 mV	$\pm 1 \text{ mV}$
10 V	$\pm (0 \sim 12) \text{ V}$	$\pm 0.01\% \cdot \text{RG}$	0~300 mV	$\pm 10 \text{ mV}$
2 mA	$\pm (0 \sim 2.4) \text{ mA}$	$\pm 0.01\% \cdot \text{RG}$	0~60 μA	$\pm 2 \mu\text{A}$
20 mA	$\pm (0 \sim 24) \text{ mA}$	$\pm 0.01\% \cdot \text{RG}$	0~600 μA	$\pm 20 \mu\text{A}$

- Response time: measurement range: 0~1000 ms, accuracy: $\pm 40 \text{ ms}$

5.8 Test Energy Meter (option)

Type	Accuracy	
	Class 0.05	Class 0.02
Active electrical energy	$\pm 0.1\% \cdot \text{reading}$	$\pm 0.05\% \cdot \text{reading}$
Reactive electrical energy	$\pm 0.2\% \cdot \text{reading}$	$\pm 0.1\% \cdot \text{reading}$

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

5.9 U4th Voltage Output (option)

- Voltage range: 100 V、380 V
- Output range: $(0 \sim 110)\% \cdot \text{RG}$
- Accuracy: $\pm 0.05\% \cdot \text{RG}$
- Max output power: 10 VA
- Frequency range: 45 Hz~55 Hz
- The function is used to test Synchrometer.

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, non-condensing
Interface	RS232

7. Ordering Information

