KPM - THREE PHASE ENERGY METER REFERENCE (MT 3000B)

Details

The portable three phase kWh Meter on-site Calibrator is used to calibrate three phase, single phase, active or reactive energy meter under work, and also it can be used as voltage, current and power meter to measure AC parameter of three phase power line, also it can measure wave distortion factor and 2 to 63 time harmonic wave .

It has following characteristics:

- Adopt 32 bit ARM processor, multi-channel 16 bit precision A/D convertor, high resolution TFT LCD.
- Inner equipped with 0.01% wide-range current transformer and can be equipped with various type current clamps, wide range of measurement and high veracity.
- Low consumption circuit design, high energy Li batter supply, intellectual power management software, which make the instrument can continuously work up to 10 hours

Functions

- Three phase active or reactive electricity energy meter;
- Calibrate three phase, single phase, active or reactive meter;
- Measure U(voltage) of three phase or single phase;
- Measure I(current) of three phase or single phase;
- Measure active power of three phase or single phase;
- Measure reactive power of three phase or single phase;
- Measure apparent power of three phase or single phase;
- Measure power factor of three phase or single phase;
- Measure phase angle between voltage and current;
- Measure frequency of power line;
- Display vector diagram;
- Display waveform of U and I;
- Analyze and display content of harmonic of U and I;
- Judge the mistake of the cable connection according to relationship of the voltage and current;
- Store and look measured data;
- Measure the ratio or lag-angle of low-voltage transformer;
- Print the testing results.

KPM MT3000B is a Three phase energy meter at site available in 5 below configurations .

KPM MT 3000B	**0.05% with direct measurement of 20A**
KPM MT 3000B	**0.1% with direct measurement of 20A**
KPM MT 3000B	**0.2% with direct measurement of 20A**
KPM MT 3000B+	**0.02% with direct measurement of 120A**
KPM MT 3000B+	**0.05% with direct measurement of 120A**

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Key Parameter Monitoring

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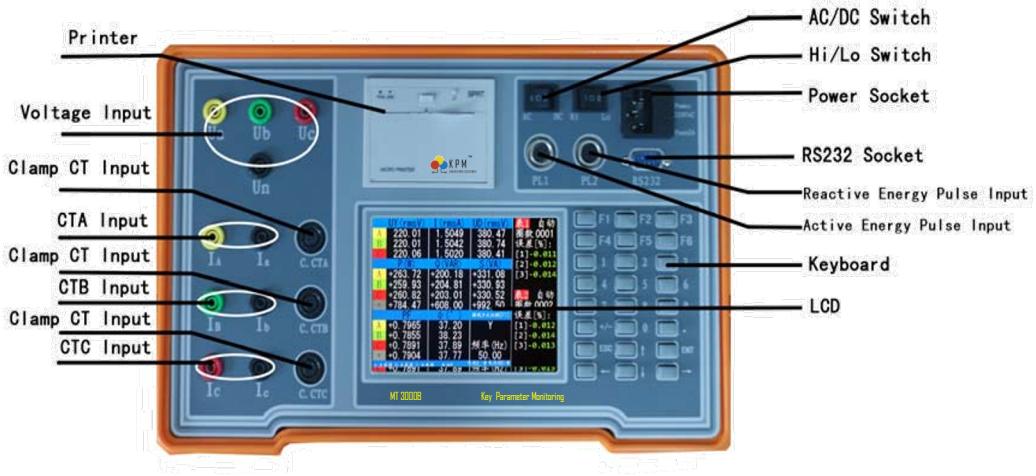

The calibrator is having a ABS plastic case, LCD display window and operation keys are located on the front of the calibrator, while power module is installed on the rear of it. There are 16 ports on the top of this calibrator:

1. 4 Voltage Ports : Ua, Ub, Uc and UN;
2. 3 CT Ports: IA-C.CTA(Clamp CT A), IB-C.CTB(Clamp CT B), IC-C.CTC(Clamp CT C);
3. 3 pairs of CT Ports: Ia-CT (yellow), Ia-CT (black), Ib-CT (green), Ib-CT(black), Ic-CT(red), Ic-CT(black);
4. PL1: active energy pulse input Port.
5. PL2: reactive energy pulse input Port.

Soft plastic shell with handle is equipped for shockproof and the rear support board is convenient for use on the table.

Accessories

This meter is equipped with following 4 kinds of accessories:

(1). Cables

- Voltage cable: 1 yellow cable, 1 green cable,1 red cable, 1 black cable, they are used to import test voltage signal to the meter;
- Current cable: 1 yellow & black cable, 1 green & black cable, 1 red & black cable, they are used to import test current signal to the meter. Note: Voltage cables and current cables look very similar, but the difference is that the diameter of voltage cable is thinner, while the diameter of current cable is thicker.
- Electricity energy pulse output cable: It is used to output electricity energy pulse generated by the meter,
- Electricity energy pulse input cable: It is used to input electricity energy pulse generated by meter under test to the meter

(2).Clamp CT (CCT):

It is used to catch current indirectly, Using CCT to test current is more convenient and safe, but the accuracy is less than directly testing by CT. These two methods couldn't use simultaneously. Every set of calibrator is equipped with 3 sets of CCT (5A), which have been calibrated one by one and can only be plugged to its own socket.
Note: The CCTs, which are equipped to the same set of meter or different sets of meter, couldn't be exchanged; otherwise, the veracity will be badly affected.

(3).Electricity Energy Pulse Sampler:

Multi-purpose Pulse Energy Sampler:

Scanning LED/IrLED/Turning plate energy pulse of meter under test or as a Manual Pulse Remote switch.

(4).Power Module:

AC Power Module（AC Switch）: power is supplied from voltage input terminals: UN/Ua/Ub/Uc or any 2 or 3 of them.

External Power Module (AC Switch）: power is supplied from the external AC 220V 50Hz/60Hz Power.

Battery power supply (DC Switch）
There is battery equipped for the condition without AC power source. And the instrument can continuous working 10 hours with full battery.

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Technical Specifications

Item	Measurement Range	Effective resolution	Accuracy 1	Accuracy 2	others
voltage	5~450V	0．001V	0．05%	0．02%	2 ranges (1:4)
Current CT	0．005~20A	0．0002A	0．05%	0．02%	3 ranges (1:10)
Current clamp	0．01~100A	0．001A	0．15%	0．15%	3 ranges (1:10)
Frequency	45~65Hz	0．001Hz	0．01Hz	0．01Hz	
Active power	0~±Umax X Imax	0．0001W	0．1%	0．05%	
Reactive power	0~±Umax X Imax	0．0001Var	0．2%	0．1%	
Apparent power	0~±Umax X Imax	0．0001VA	0．2%	0．1%	
Active energy			0．1%	0．05%	
Reactive energy			0．2%	0．1%	
Energy constant	180000imp/kWh、1800imp/kWh、18imp/kWh*				
Power factor	0~±0．9999		0．0001	±0．01	
Phase angle	0~359．999º		0．001 º	±0．01 º	
Environment	-10~+55℃，15~85%RHD，altitude：-10~3500m				
Temperature Influence	≤25ppm/℃（U/I，≤15ppm/℃（others）				
Frequency Influence	≤25ppm/Hz				
Pulse interface	Input（2channel, PLi1、PLi2）：Low level≤2V, High level≥5V Output（2channel，P5Lo-1,Active power，PLo-3reactive power）： Low level≤0.5V，High level≥11.5V				
Communication	RS232，9600bps，1N8				
Power supply 1	3p3w：90~450V（line voltage）/≯35VA；3p4w：50~265V（phase voltage）/≯35VA；Single phase（from Ua、Ub、Uc、Un）：90~450V；				From the tested circuit
Power supply 2	90~450V/≯35VA				From AC power source
Power supply 3	Li-polymer battery, size: 110×51×16mm Nominal output voltage: 7.2V，Capacity: 5000mAh.				Inner installed battery
Dimension (instrument)	390 mm x200 mm x160mm				
Dimension (carry case)	450 mm x320 mm x185mm				
Instrument weight	4.2kg				
Total weight	15kg				

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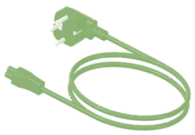
Accessories

Item / Description / Picture	Application / Character	No.	Notes
1. Main instrument 	Measure, display and operate	1	standard
2. Auxiliary power supply cable 	AC power supply to the instrument. Type: European standard Cable length: 1.5m Section of the cable: 0.5mm²	1	standard
3. 20A Current clamp 	Non-direct connect to test current Measurement range: 0.01~20A Cable length: 1.5m Diameter of the clamp: 18mm Accuracy class: better than 0.2%	3	standard
4. 100A Current clamp 	Non-direct connect to test current Measurement range: 0.01~100A Cable length: 1.5m Diameter of the clamp: 18mm Accuracy class: better than 0.2%	3	**Optional**
5. 500A Current clamp 	Non-direct connect to test current Measurement range: 0.05~500A Cable length: 1.5m Diameter of the clamp: 50mm Accuracy class: better than 0.3%	1	**Optional**
6. Sampler and bracket 	Sampling energy pulse Voltage: 5V Pulse frequency ≤1kHz; Detect distance: 5~10mm。	1	standard
7. Voltage test cable 	Import tested voltage signal Length: 2m, diameter:3mm Cable section: 1mm² Fuse: 3A	Red:3 Black:1	standard
8. Adapter of the voltage cable 	Connect the voltage cable to the tested terminals. Length: 58mm, mouth size:13mm Hole diameter: 4mm, depth:20mm.	Red:3 Black:1	standard
9. Adapter of the voltage cable 	Connect the voltage cable to the tested terminals (flex) Length: 115mm, mouth size:19mm Hole diameter: 4mm, depth:20mm.	Red:3 Black:1	**Optional**
10. Current test cable 	Import tested current signal Length: 2m, diameter: 4mm, Cable section: 2.5mm², Plug: diameter 4mm, Color: red, black.	Red:3 Black:3	standard
11. Adapter of the current cable 	Connect the current cable to the tested terminals. Length: 56mm, Mouth size: 8.5/6/4mm, Hole: diameter 4mm, depth 20mm	Red:3 Black:3	standard
12. Adapter of the current cable 	Connect the current cable to the tested terminals. Length: 37mm, Mouth size: 4/2mm, Hole: diameter 4mm, depth 20mm	Red:3 Black:3	standard
13. Pulse input cable 	Import energy pulse to instrument Length: 1.5m, Plug: 5 pin Clip: Green-signal (pull up to 5V) Black- GND	2	standard
14. Pulse output cable 	Output energy pulse Length: 1.5m, Plug: 5 pin, Clip: red-active energy pulse Yellow-reactive energy pulse Black - GND	1	standard
15. Communication cable 	Connect PC and instrument Length: 1.5m Plug: to the instrument -DB9M to the PC - DB9F	1	standard
16. Li-polymer battery	Li-polymer battery, size: 110X51X16mm Nominal output voltage: 7.2V , Capacity: 5000mAh.	1	**Optional**
17. Battery charger of the instrument 	Charge batter inside the instrument Input: 220VAC; Output: 8.5~9.5VDC/1A Type: 2 unit Li-polymer battery	1	**Optional**
18. Carry case 	Load all the spare parts and instrument. Material: Aluminum alloy Size: 475×310×155mm	1	standard

Cautions:

- *Kindly read the operation manual carefully before field usage*
- *During measurement never remove the wiring or directly switch off the device*
- *Always connect body earth terminal to healthy earth*

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