



3510PHW-AUTO

Features

- Check 3 ϕ Phase Sequence
- 4 Digit LCD, 9999 Count, Autoranging
- Data Hold, Auto Power Off
- Dual Display KW+HP, KW+PF, KW+KVAR, KVA+ ϕ , V+A, A+Hz, V+Hz
- Cable of Diameter upto 43mm / Busbar upto 65mm x 16mm

Applications

- 1 ϕ & 3 ϕ (3 ϕ 3W / 3 ϕ 4W) Power Analyzer
- Ideal for Electrical Audit of Heating, Ventilation & Aircon Systems (HVAC)
- Check Current drawn in Motors and Compressors
- Test Run / Start Capacitors
- Check for Energized Circuits & Balance Loads
- Capture Motor In-Rush Current Readings
- Determine Peak Power Demand Periods
- Analyze Temperature Data with the Aid of the Time Stamp
- Resistance upto 100M Ω
- Use MAX / MIN / REC in Temperature Mode to Assess Efficiency
- Evaluate Electrical Contacts
- Verify the Stability of Voltage
- Check Motor Run / Start Capacitor Values
- To Identify Low Voltage Control Signal
- To Identify Power Sources

1 ϕ /3 ϕ TRUE Power (KW) : (PF>0.5 or θ <60°) (1hp=0.7457KW)			
Range	Resolution	Accuracy $\pm$ (%rdg+dgts)	Overload Protection
99.99KW	0.01KW	$\pm$ (5% + 30)	600VAC/
600.0KW	0.1KW	(50, 60Hz)	1000AAC

1 ϕ /3 ϕ HP (1HP=745.7W) : (PF>0.5 or θ <60°)			
Range	Resolution	Accuracy $\pm$ (%rdg+dgts)	Overload Protection
99.99HP	0.01HP	$\pm$ (5% + 30)	600VAC/
800.0HP	0.1HP	(50, 60Hz)	1000AAC

1 ϕ /3 ϕ Apparent Power (KVA)			
Range	Resolution	Accuracy $\pm$ (%rdg+dgts)	Overload Protection
99.99KVA	0.01KVA	$\pm$ (2.5% + 30)	600VAC/
600.0KVA	0.1KVA		1000AAC

1 ϕ & 3 ϕ Reactive Power (KVAR) : (PF>0.5 or θ <60°)			
Range	Resolution	Accuracy $\pm$ (%rdg+dgts)	Overload Protection
99.99KVAR	0.01KVAR	$\pm$ (5% + 30dgts)	600V AC/
600.0KVAR	0.1KVAR	(50, 60Hz)	1000A AC

3 ϕ Phase Sequence Indication		
Range	Frequency Response	Overload Protection
80V to 480V	(50Hz / 60Hz)	600V

ACA Inrush Current				
Range	Resolution	Sensitivity	Measurement Time	Overload Protection
99.99A	0.01A	>5A	100ms	1000A AC
999.9A	0.1A	>50A		

1 ϕ / 3 ϕ PF & Phase Angle [50Hz, 60Hz]			
Range	Resolution	Accuracy	Sensitivity
-60°/0°/+60°	0.1°	$\pm$ 6.0°	ACV>100V, ACA>10A
-0.5/1/+0.5			

Frequency			
Range	Resolution	Accuracy $\pm$ (%rdg+dgts)	Sensitivity
40Hz/1KHz	0.1Hz	$\pm$ (0.5% + 2)	ACV>1.2V, ACA>6A

AC Current (50Hz to 400Hz) : TRMS				
Range	Resolution	Accuracy $\pm$ (%rdg+dgts)	Sensitivity	Overload Protection
99.99A	0.01A	$\pm$ (2% + 30) [50,60Hz]	0.10A	1000A
999.9A	0.1A	$\pm$ (4% + 30) (40-400Hz)	1.0A	

μ A TRMS : (AC + DC) (Burden Voltage : 5mV/ μ A) (50Hz to 400Hz)				
Range	Resolution	Accuracy $\pm$ (%rdg+dgts)	Sensitivity	Overload Protection
99.99 μ A	0.01 μ A	$\pm$ (1% + 30)	0.20 μ A	600V
999.9 μ A	0.1 μ A		2.0 μ A	

AC Voltage (50Hz to 400Hz) : TRMS				
Range	Resolution	Accuracy $\pm$ (%rdg+dgts)	Sensitivity	Overload Protection
999.9mV	0.1mV	$\pm$ (1% + 30) [50, 60Hz] $\pm$ (2% + 30) (40-400Hz)	2.0mV	600V
9.999V	0.001V		0.020V	
99.99V	0.01V		0.20V	
600.0V	0.1V		2V	

Input Impedance : 3M Ω

DC Voltage				
Range	Resolution	Accuracy $\pm$ (%rdg+dgts)	Sensitivity	Overload Protection
999.9mV	0.1mV	$\pm$ (1% + 30)	2.0mV	600V
9.999V	0.001V		0.020V	
99.99V	0.01V		0.20V	
600.0V	0.1V		2V	

Input Impedance : 3M Ω

Resistance (Continuity < 40 Ω on the 999.9 Ω range)			
Range	Resolution	Accuracy $\pm$ (%rdg+dgts)	Overload Protection
999.9 Ω	0.1 Ω	$\pm$ (1% + 10)	600V
9.999K Ω	0.001K Ω		
99.99K Ω	0.01K Ω		
999.9K Ω	0.1K Ω		

M Ω (Auto Ranging)			
Range	Resolution	Accuracy $\pm$ (%rdg+dgts)	Overload Protection
9.999M Ω	0.001M Ω	$\pm$ (5% + 10)	600V
99.99M Ω	0.01M Ω		

Clamp-On TRMS Power Meter with Automatic Computation of 1 ϕ and 3 ϕ (3 ϕ 3W / 3 ϕ 4W) Parameters

Capacitance

Range	Resolution	Accuracy $\pm$ (%rdg+dgts)	Overload Protection
10.000 μ F	0.001 μ F	$\pm(1.5\% + 5)$	600V
100.00 μ F	0.01 μ F		
1000.0 μ F	0.1 μ F		
7000 μ F	1 μ F	$\pm(2.5\% + 15)$	

Diode (Continuity < 40mV)

Range	Resolution	Accuracy $\pm$ (%rdg+dgts)	Overload Protection
2.000V	0.001V	$\pm(2\% + 1)$	600V

Temperature (K-Type Thermocouple)

Range	Resolution	Accuracy $\pm$ (%rdg+dgts)	Overload Protection
-50 $^{\circ}$ C to 900 $^{\circ}$ C	0.1 $^{\circ}$ C	$\pm(2\% + 1^{\circ}$ C)	30VAC or 60VDC
-58 $^{\circ}$ F to 1000 $^{\circ}$ F	0.1 $^{\circ}$ F	$\pm(2\% + 2^{\circ}$ F)	

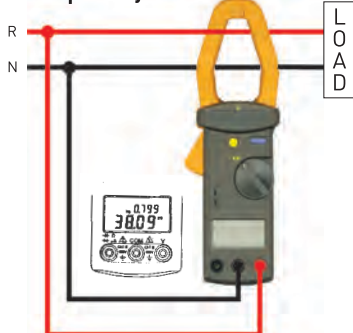
Note : TPK-B K Type Bead Probe (Upto 260 $^{\circ}$ C) Supplied with the Meter

General Specifications

Numerical Dual Display	: 4 Digit 9999 Count LCD
Low Battery Indication	:  is displayed
Power Source	: 9V Battery x 1
Battery Life	: 32 hours approx.
Sampling Rate	: 2.5 times/sec. (Digital Display) 1 times/6 sec. (on KW, KVA)
Operating Temperature	: 0 $^{\circ}$ C to 50 $^{\circ}$ C (32 $^{\circ}$ F to 122 $^{\circ}$ F)
and Humidity	: RH < 80% non-condensing
Storage Temperature	: -10 $^{\circ}$ C to 60 $^{\circ}$ C (14 $^{\circ}$ F to 140 $^{\circ}$ F)
and Humidity	: RH < 70% non-condensing
Dimensions	: 247 x 90 x 40mm
Weight	: 425gms Including Battery (approx.)
Jaw Opening	: Cable Dia 43mm (max.) Bus Bar 16mm x 65mm
Accessories	: Carrying Case, Battery (installed), One Alligator Clip, Test Leads, K Type Thermocouple (Upto 260 $^{\circ}$ C), Instruction Manual
Auto Power off Time	: Approx. 30 minutes
Temperature Coefficient	: 0.1 x (specified accuracy) / $^{\circ}$ C (<18 or >28 $^{\circ}$ C, <64 or >82 $^{\circ}$ F)

Usage

1 ϕ 2W System



Press "RANGE" Key to Select KW+HP, KW+PF, KW+KVAR, KVA+ θ or A+V

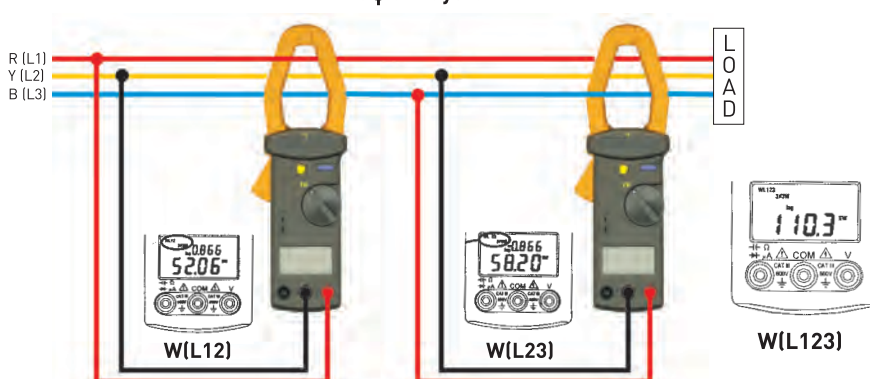
$$PF = \frac{KW}{KVA} = \cos\theta$$

$$HP = 746 \text{ watts}$$

$$KVA = (V \times A) / 1000$$

$$KVAR = KVA \times \sin\theta$$

3 ϕ 3W System



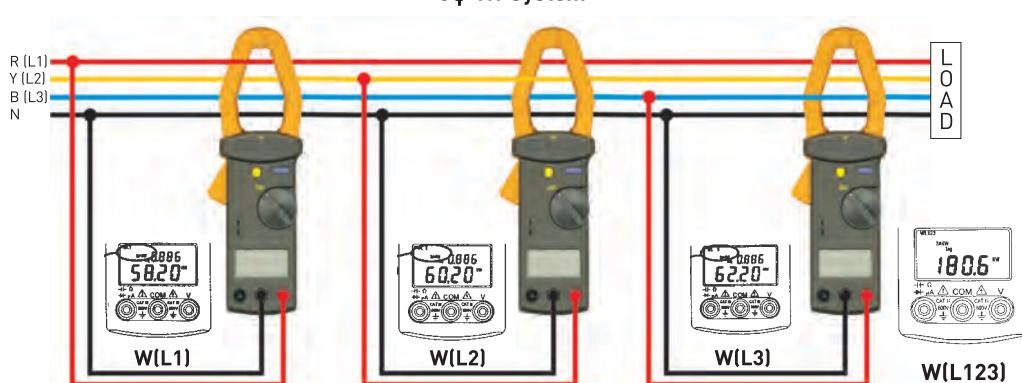
To read the details of individual data recorded, press "HOLD" key to select desired WL₁₂, WL₂₃ or WL₁₂₃ display. Then press "RANGE" key to select KW+HP, KW+PF, KW+KVAR, KVA+ θ for (L₁₂, L₂₃) & KVA+PF for (L₁₂₃) or A+V

$$W_{3\phi 3W} = W_{RY (L1L2)} + W_{BY (L3L2)}$$

$$KVA_{3\phi 3W} = \sqrt{KW^2_{3\phi 3W} + KVAR^2_{3\phi 3W}}$$

$$PF_{3\phi 3W} = \frac{KW_{3\phi 3W}}{KVA_{3\phi 3W}}$$

3 ϕ 4W System



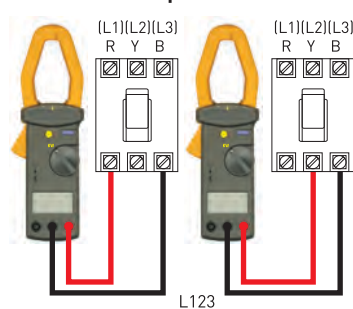
To read the details of individual data recorded, press "HOLD" key to select desired WL₁, WL₂, WL₃ or WL₁₂₃ display. Then press "RANGE" key to select KW+HP, KW+PF, KW+KVAR, KVA+ θ for (L₁, L₂, L₃) & KVA+PF for (L₁₂₃) or A+V

$$W_{3\phi 4W} = W_{R (L1)} + W_{Y (L2)} + W_{B (L3)}$$

$$KVA_{3\phi 4W} = \sqrt{KW^2_{3\phi 4W} + KVAR^2_{3\phi 4W}}$$

$$PF_{3\phi 4W} = \frac{KW_{3\phi 4W}}{KVA_{3\phi 4W}}$$

3 ϕ Phase Sequence Indication



Normal Phase

Reverse Phase

L123
OK

L123
ER

L1
L3 L2

L1
L3 L2

R Y B

B Y R

R:L1, Y:L2, B:L3