

# Power & Energy Meters

## Multifunction Meter



<b>Model</b>	<b>AVH-14</b>
<b>Dimension (HxWxD)mm</b>	96 x 96 x 54
<b>Panel Cutout mm</b>	92 x 92
<b>INPUT</b>	
<b>Signal</b>	3Ø4 Wire / 3Ø3 Wire / 1Ø2 Wire
<b>Voltage</b>	Primary : 100V to 520kv (Programmable), Secondary : 100V to 520V (L-L) (Programmable)
<b>Current</b>	Current : 5A to 6000A (Programmable), Secondary : 5A/1A (Programmable)
<b>PARAMETER</b>	
<b>KW Total</b>	0.000 - 9999 KW
<b>KW Per Phase</b>	0.000 - 9999 KW
<b>WH Total</b>	0.000 - 999999 MWH
<b>Power Factor Average (PF)</b>	0.100 - 1.000
<b>Power Factor Per Phase (PF)</b>	0.100 - 1.000
<b>KVA Total</b>	0.000 - 9999 KVA
<b>VAH Total</b>	0.000 - 999999 MVAH
<b>Frequency (Hz)</b>	45 - 60Hz
<b>KVAr Total</b>	0.000 - 9999 KVAr
<b>Varh Total</b>	000.000 - 999999 MVarh
<b>Load Hours</b>	9999.59 Hrs/Min.
<b>NO Load Hours</b>	9999.59 Hrs/Min.
<b>RPM</b>	3600 RPM @ 60Hz & 2 Pole
<b>COMMUNICATION</b>	
	RS-485 Modbus (Optional) Pulse Output
<b>Accuracy</b>	Class 0.5
<b>Supply</b>	100 to 270V AC (SMPS) , 50/60Hz, Approx 4VA



**AUXILIARY SUPPLY :**

Supply voltage	100 to 270V AC, 50/60Hz
Power consumption (VA RATING)	Approx 4 VA @ 230V AC MAX

**ACCURACY:**

Class 0.5 (Standard)	
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**ENVIRONMENT CONDITION:**

Operating Temp.	0 °C to 55 °C
Relative Humidity	UP to 95% RH (non-condensing)
Protection Level (AS Per Request)	IP-65 (Front side) As per IS/IEC 60529 : 2001

**KEY OPERATION**

FUNCTION	PRESS KEY
<b>OPERATOR MODE</b>	
To view different pages	⬆ OR ⬇
To Enter into enter setting	SET/ENT Long Press
To Reset parameter	RESET Long Press
To Scroll or Hold	⬆ + ⬇ Long Press
<b>PARAMETER SETTING MODE</b>	
To Set Parameter Value	SET/ENT
To Increment parameter value	⬆
To Decrement parameter value	⬇
To Exit from parameter setting	SET/ENT

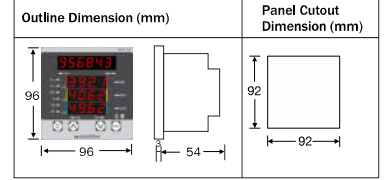
- MECHANICAL INSTALLATION GUIDELINES**
1. Prepare the panel cutout with proper dimensions as shown above.
  2. Fit the unit into the panel with the help of clamp given.
  3. The equipment in its installed state must not come in close proximity to any heating source, caustic vapors, oils steam, or other unwanted process byproducts.
  4. Use the specified size of crimp terminal (M3.5 screws) to wire the terminal block. Tightening the screws on the terminal block using the tightening torque of the range of 1.2 N.m.
  5. Do not connect anything to unused terminals.

**TECHNICAL SPECIFICATION**

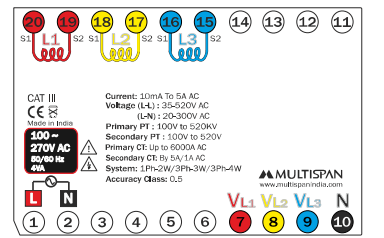
**PARAMETER SPECIFICATION**

Input Signal	3Ø 3 Wire / 3Ø 4Wire / 1Ø 2Wire
CT Primary	up to 6000A (Programmable)
CT Secondary	5 Amp/1 Amp selectable
PT Primary	100V to 520kV (Programmable)
PT Secondary	100V to 520V (Programmable)
PF Avg. & Per Phase	0.100 - 1.000
Frequency (Hz)	45.00 - 60.00 Hz
Load hours	9999.59 Hrs/Min.
No load hours	9999.59 Hrs/Min.
RPM	3600 RPM @ 60 Hz & 2 pole
<b>POWER</b>	
KW Total	0.000 - 9999 kW
KW Per Phase	0.000 - 9999 kW
kVA Total	0.000 - 9999 kVA
kVA Per Phase	0.000 - 9999 kVA
kVAr Total	0.000 - 9999 kVAr
kVAr Per Phase	0.000 - 9999 kVAr
<b>ENERGY</b>	
WH Total	000.000 - 99999999 MWh
Vah Total	000.000 - 99999999 MVAh
Varh Total	000.000 - 99999999 MVArh

**MECHANICAL INSTALLATION**



**TERMINAL CONNECTION**



**INSTALLATION GUIDELINES**

1. This equipment, being built-in-type, normally becomes a part of main control panel and in such case the terminals do not remain accessible to the end user after installation and internal wiring.
2. Do not allow pieces of metal, wire clippings, or fine metallic fillings from installation to enter the product or else it may lead to a safety hazard that may in turn endanger life or cause electrical shock to the operator.
3. Circuit breaker or mains switch must be installed between power source and supply terminal to facilitate power 'ON' or 'OFF' function. However this mains switch or circuit breaker must be installed at convenient place normally accessible to the operator.
4. Use and store the instrument within the specified ambient temperature and humidity ranges as mentioned in this manual.

**MAINTENANCE**

1. The equipment should be cleaned regularly to avoid blockage of ventilating parts.
2. Clean the equipment with a clean soft cloth. Do not use isopropyl alcohol or any other cleaning agent.
3. Fusible resistor must not be replaced by operator.

**SAFETY PRECAUTION**

All safety related codifications, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating personnel as well as the instrument.

If all the equipment is not handled in a manner specified by the manufacturer, it might impair the protection provided by the equipment.

- Read complete instructions prior to installation and operation of the unit.
- WARNING :** Risk of electric shock.

**WARNING GUIDELINES**

- WARNING :** Risk of electric shock.
- 1. To prevent the risk of electric shock, power supply to the equipment must be kept OFF while doing the wiring arrangement. Do not touch the terminals while power is being supplied.
- 2. To reduce electro magnetic interference, use wire with adequate rating and twists of the same of equal size shall be made with shortest connection.
- 3. Cable used for connection to power source, must have a cross section of 1mm or greater. These wires should have insulations capacity made of at least 1.5kV.
- 4. A better anti-noise effect can be expected by using standard power supply cable for the instrument.

**DISPLAY & KEY :**

Display	Upper 6 Digit, 7 Seg 0.40", RED LED
	Lower 4 Digit, 3 Line 7 Seg 0.39", RED
Key	SET/ENT, INC, DEC, RESET

**DIMENSION :**

Size	96 (H) x 96 (W) x 54 (D) mm
Panel Cutout	92 (H) x 92 (W) mm

**PARAMETER SETTING**

**Basic Parameter Setting :**  
 Network, CT/PT Selection.

**Enter Password 10**  
 Long Press **SET/ENT** key  
 To Enter into parameter

**Network Selection**  
 (3P-4W/3P-3W/1P-2W)

**CT Primary**  
 (5 Amp to 6000 Amp selectable)

**CT Secondary**  
 (5 Amp/1 Amp selectable)

**PT Primary**  
 (100V to 500kV selectable)

**PT Secondary**  
 (100V to 520V selectable)

Press **SET/ENT** key to save & exit from parameter setting

**Advance Parameter Setting :**  
 Load Hour %, No Load Hour, RPM.

**Enter Password 25**  
 Long Press **SET/ENT** key  
 To Enter into parameter

**Load Hour**

**Enable / Disable**

**Load Hour Percentage**  
 (5 to 50%)

**RPM**

**Enable / Disable**

**Pole**  
 (1 to 128)

Press **SET/ENT** key to save & exit from parameter setting

**Reset Parameter :** kWh, kVAh, kvarh, Load Hour, No Load Hour, Max kW, Max kVA, Max kVAr, Max Voltage, Min Voltage

**Enter Password 15**  
 Long Press **SET/ENT** key  
 To Enter into parameter

**Reset No Load Hour (Yes/No)**

**Reset All Parameter (Yes/No)**

**Reset kWh (Yes/No)**

**Reset kVAh (Yes/No)**

**Reset Max kVAr (Yes/No)**

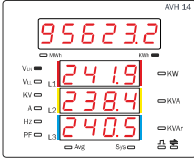
**Reset Max Volt (Yes/No)**

**Reset Min Volt (Yes/No)**

Continue

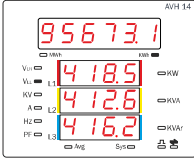
Press **SET/ENT** key to save & exit from parameter setting

1) Voltage L-N



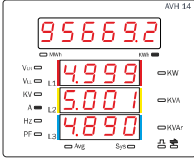
	3P-3W	3P-4W
KWH Value		
Display Line 1	NA	VRN
Display Line 2	NA	VYN
Display Line 3	NA	VBN

2) Voltage L-L



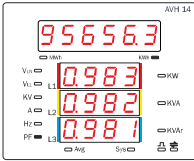
	3P-3W	3P-4W
KWH Value		
Display Line 1	Vry	Vry
Display Line 2	Vyb	Vyb
Display Line 3	Vbr	Vbr

3) Current



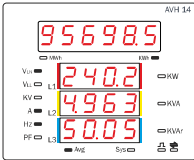
	3P-3W	3P-4W
KWH Value		
Display Line 1	IL1	IL1
Display Line 2	IL2	IL2
Display Line 3	IL3	IL3

4) PF L1,L2,L3



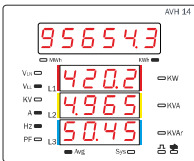
	3P-3W	3P-4W
KWH Value		
Display Line 1	-	L1 PF
Display Line 2	-	L2 PF
Display Line 3	-	L3 PF

5) AVG V(L-N)-A-F



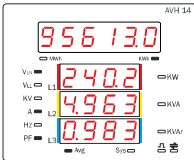
	3P-3W	3P-4W
KWH Value		
Display Line 1	-	VLN AVG
Display Line 2	-	I AVG
Display Line 3	-	sys freq

6) AVG V(L-L)-A-F



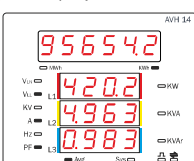
	3P-3W	3P-4W
KWH Value		
Display Line 1	VLL AVG	VLL AVG
Display Line 2	I AVG	I AVG
Display Line 3	sys freq	sys freq

7) AVG V(L-N)-A-PF



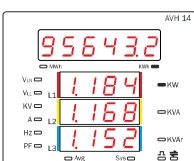
	3P-3W	3P-4W
KWH Value		
Display Line 1	-	VLN AVG
Display Line 2	-	I AVG
Display Line 3	-	sys PF

8) AVG V(L-L)-A-PF



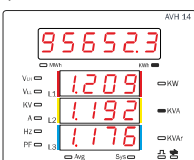
	3P-3W	3P-4W
KWH Value		
Display Line 1	VLL AVG	VLL AVG
Display Line 2	I AVG	I AVG
Display Line 3	sys PF	sys PF

9) kW PER PHASE



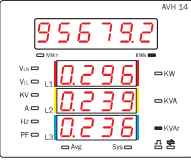
	3P-3W	3P-4W
KWH Value		
Display Line 1		L1 KW
Display Line 2		L2 KW
Display Line 3		L3 KW

10) KVA PER PHASE



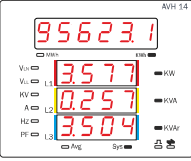
	3P-3W	3P-4W
KWH Value		
Display Line 1		L1 KVA
Display Line 2		L2 KVA
Display Line 3		L3 KVA

11) kvar PER PHASE



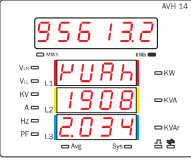
	3P-3W	3P-4W
KWH Value		
Display Line 1		L1 KVAR
Display Line 2		L2 KVAR
Display Line 3		L3 KVAR

12) Total kW,kVA,kvar



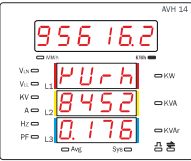
	3P-3W	3P-4W
KWH Value		
Display Line 1	Total KW	Total KW
Display Line 2	Total KVA	Total KVA
Display Line 3	Total KVAR	Total KVAR

13) Total kVAh



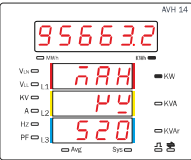
	3P-3W	3P-4W
KWH Value		
Display Line 1	Total kVAh	Total kVAh
Display Line 2		
Display Line 3		

14) Total kvarh



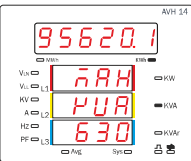
	3P-3W	3P-4W
KWH Value		
Display Line 1	Total kvarh	Total kvarh
Display Line 2		
Display Line 3		

15) Max kW



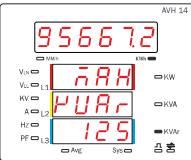
	3P-3W	3P-4W
KWH Value		
Display Line 1	Max	Max
Display Line 2	KW	KW
Display Line 3	VALUE	VALUE

16) Max kVA



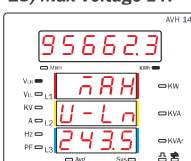
	3P-3W	3P-4W
KWH Value		
Display Line 1	Max	Max
Display Line 2	KVA	KVA
Display Line 3	VALUE	VALUE

17) Max kVAh



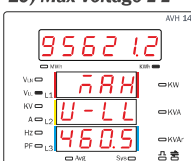
	3P-3W	3P-4W
KWH Value		
Display Line 1	Max	Max
Display Line 2	KVAR	KVAR
Display Line 3	VALUE	VALUE

18) Max Voltage L-N



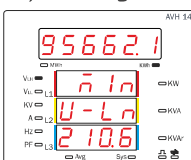
	3P-3W	3P-4W
KWH Value		
Display Line 1		Max
Display Line 2		V LN
Display Line 3		VALUE

19) Max Voltage L-L



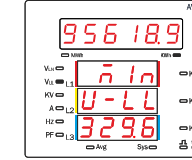
	3P-3W	3P-4W
KWH Value		
Display Line 1		Max
Display Line 2		V LL
Display Line 3		VALUE

20) Min Voltage L-N



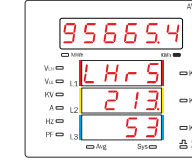
	3P-3W	3P-4W
KWH Value		
Display Line 1		MIN
Display Line 2		V LN
Display Line 3		VALUE

21) Min Voltage L-L



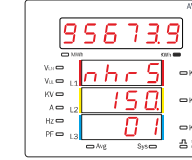
	3P-3W	3P-4W
KWH Value		
Display Line 1	MIN	MIN
Display Line 2	V LL	V LL
Display Line 3	VALUE	VALUE

22) Load Hour



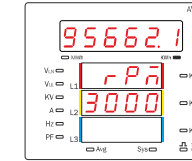
	3P-3W	3P-4W
KWH Value		
Display Line 1	Load Hour	Load Hour
Display Line 2	Value	Value
Display Line 3		

23) No Load Hour



	3P-3W	3P-4W
KWH Value		
Display Line 1	no Load Hour	no Load Hour
Display Line 2	Value	Value
Display Line 3		

24) RPM



	3P-3W	3P-4W
KWH Value		
Display Line 1	RPM	RPM
Display Line 2	Value	Value
Display Line 3		