



Instrument
Division

New MFM
for Substation
Applications

Multifunction Meter AE 1440



1. Product Perspective

AE -1440 is developed specific for Utility Substation applications. AE - 1440 computes -Display, Monitor, stores, and communicate up to 67 major electrical parameters, including true RMS Voltage, Current, PF, Frequency, Active power, Reactive power, Apparent power, Active energy, Reactive energy, Apparent energy, Total harmonic distortion (THD) and Maximum demand. The meter offers simple user-friendly Programming of Voltage, current, and power Measurement parameters using a menu driven interface. Status of all parameters can be viewed through 30 main Screens on the 3 line, 4 digits LED display. The AE -1440 has digital RS485 Communication outputs for MODBUS and is ideal for Energy Management System at Electrical Substation.

2. Operation

AE - 1440 offers high functionality and uncomplicated operation. AE- 1440 measures all the values needed to monitor power and Energy. A five-button interface on the front panel gives simple access to the measuring, display and configuration screens. With the help of "▲" (navigation key) buttons, we can access total 67 major electrical parameters. The parameters to be viewed through display screens.

3. Product Features

- ▶ Fully programmable CT and PT ratio (Primary / Secondary).
- ▶ Fully programmable selection of three phase 3 wire or 4 wire configuration.
- ▶ Programmable Single & Three phase system configuration.
- ▶ The true RMS measurement.
- ▶ Display and communication of up to 67 parameters through 30 screens / pages.
- ▶ KVA & KW Demand Measurements. Demand interval can be set from 5 to 30 minutes.
- ▶ Password protection.
- ▶ Simultaneously three parameters can be view
- ▶ Total Voltage or Current % THD measurement.
- ▶ Phase angle & Phasor angle measurement.
- ▶ Separate registers for Import and Export energy measurement.
- ▶ Energy summation (Import + Export) for Active, Reactive & Apparent Energy.
- ▶ Display Previous Energies (before the energies were reset).

- ▶ Neutral Current Measurement.
- ▶ RS 485 interface for configuration, communication and Data downloading purpose.
- ▶ Conform to IP54 (front face)
- ▶ Run Hr. & ON Hr display.
- ▶ LED and Memory test facility.
- ▶ High quality LED display.
- ▶ Simple menu driven.
- ▶ EMS Software available (optional).
- ▶ Real Time Clock
- ▶ Universal Auxiliary Power Supply.
- ▶ Display of Min/ Max Current & Voltage values.

4. Monitors

- ▶ Voltage- Line – Line, Line - Neutral & System voltage.
- ▶ Current- Individual Phase, Average & Neutral
- ▶ Frequency
- ▶ Power (Active, Reactive and Apparent)
- ▶ Energy (Active, Reactive and Apparent)
- ▶ Power Factor(per phase & average along with phase & Phasor angle)
- ▶ Maximum demand – (Active & Apparent)
- ▶ Minimum / Maximum Voltage & Current Values.

5. Display Parameters

- ▶ Volts L1 - N
- ▶ Volts L2 - N
- ▶ Volts L3 - N
- ▶ Volts L1 - L2
- ▶ Volts L2 - L3
- ▶ Volts L3 - L1
- ▶ System Volts
- ▶ Current L1
- ▶ Current L2
- ▶ Current L3
- ▶ System Current
- ▶ Neutral Current
- ▶ Average Frequency
- ▶ Power Factor – Per phase & Average
- ▶ Phase & Phasor Angle
- ▶ System kW
- ▶ Total & Per Phase Power – Active, Reactive & Apparent.
- ▶ Active Energy kWh (8 digit resolution)
- ▶ Reactive Energy kVAh (8 digit resolution)
- ▶ Apparent Energy kVAh (8 digit resolution)
- ▶ Separate Import & Export Energy – Active, Reactive & Apparent.
- ▶ Previous Energy Register - Active, Reactive & Apparent. (Import & Export).
- ▶ Energy summation (Import + Export) for Active, Reactive & Apparent Energy
- ▶ KW & KVA Maximum Demand
- ▶ System Volts THD %
- ▶ System Current THD %
- ▶ Run Hr.
- ▶ ON Hr.
- ▶ Date & Time (RTC).
- ▶ Maximum & Minimum Voltage values.
- ▶ Maximum & Minimum Current values.

5. System Input:

Designed for all low, medium and high voltage switchgear and distribution systems, and the AE-1440 has customer programmable PT and CT ratio capability. Both primary & secondary are configurable. The standard nominal inputs Voltage are 440 or 110 V AC (L-L) & Current – 1A or 5 A AC.

7. Typical Applications:

- ▶ Energy Generation & Distribution Systems
- ▶ Industrial & Commercial Generator sets.
- ▶ Energy Management System.
- ▶ Control & Monitoring Systems.



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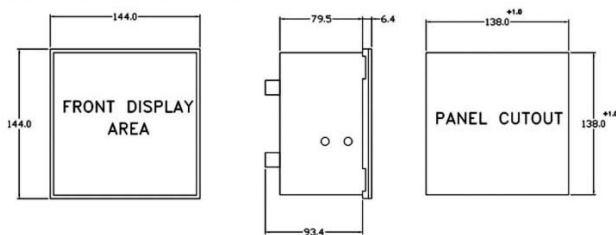
8. Specifications

Type	3-Phase-3-wire/ 4wire (Programmable through front panel).
Input voltage V AC	110V or 440 V (L-L)
Voltage Overload	1.5 time for 10 sec
Input Current A AC	1A or 5A
Current Overload	50A max for 3 sec
Auxiliary supply	AC / DC: 85 V - 300 V.
Burden	For Voltage / Current - 0.2 VA max per Volt/Amp input, Auxiliary - 3VA max.
Frequency	45 Hz - 55Hz
Resolution	RMS 4 digit, Integral 8 digit
Accuracy Class	1.0 (optional: 0.5S).
RS485 communication	Two wire half duplex Baud rates - 4800, 9600, 19200, 38400.
Isolation	2k VAC isolation for 1min. Between communication and other circuit.
Demand Interval	Programmable from 5 to 30 Minutes.(In steps of 1 Minute)
Environmental	Operating Temp. -10 to +70 °C. Storage temp.-20 to +85°C, Humidity [95% RH non condensing.
Mechanical Size	Bezel : 144 x 144 mm Depth : 94mm behind Bezel
Protection	IP54 for front Display.
Conform to	IS 1248 - Part1, IS13875, IEC- 61000-4-2, IEC61000-4-5, IEC61000-4-6, EMI/EMC- IS14697;CL 12.8.5. For Energy Accuracy - Class 1 - IS13779 / IEC 62052-11 & 62053-21 & Class 0.5S - IS14697.
Casing	ABS
Keypad	5 Functional keys
LED Indication	31 individual LED's for parameter information

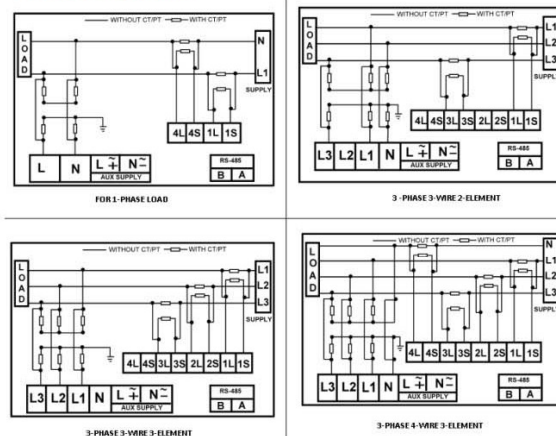
9. Digital Communication

An RS485 communication Port is available for direct connection to SCADA systems (EMS / BMS) using the Modbus RTU protocol. Remote monitoring enables the user to record the systems parameters in real time basis.

Mechanical Specifications



Wiring Diagram:



Registered Office & Marketing Division:
Rectifier House, 570, Naigaum Cross Road, Wadala, Mumbai 400 031, India
Tel.: 91-22-24131849 / 24151794 / 24162261, Fax: 91-22-24112582
E-mail :sales@aelindia.com, For Technical know-how : development@aelindia.com



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