

Energy Meter (Model 2110)



Masibus Model 2110 single phase Energy Meter is a solid state design, which is a complete LT/HT line measurement solution for the monitoring of single phase AC supply including all types of energies. The 2110 Power Meter is based on ASIC and Micro controller, with a high degree of programmability.

The meter meets the accuracy requirements of IS 13779/IEC 61036, and has been certified by the ERDA. This model is available for class 1.

The meter can be programmed to operate as an intelligent electronic device (IED) for measurement and storage device with serial communication making it an ideal data source for EMS, SCADA, PLCs and BMS system.

The meter is supplied pre-programmed for operation and ready for use. Model 2110 power meter stores all its energy data and programming parameter into non-volatile memory using EEPROM. This power meter measures electrical parameters of 1 phase AC line and displays it, which is selectable from front keys.

Model 2110 has auto scaling facility while measuring energy from Kilo to Mega to Giga. Instrument can be self or auxiliary powered with very low burden. Calibration can be done using front keys or through PC software.

Model 2110 has digital input and output facility. Programmable pulse output can be used for KWH (import-export), KVARH (lag-lead) and KVAH. Programmable pulse input can be used to totalize 3rd party energy device.

The CT & PT ratio (primary) can be programmed at site using front membrane key. Model 2110 is supplied in panel mount.

Features

- Accuracy class 1.0 as per IS13779/ IEC 61036.
- True RMS sensing on both channels.
- Self/Aux powered
- 2 X 16 back-lit LCD display
- 14 Parameters of 1Ø AC Line using 14 display screens
- AUTO-SCALING from Kilo to Mega to Giga watt
- Programmable pulse input & output
- Calibration using front keys/ PC
- Isolated RS 485 (MODBUS-RTU protocol)

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TECHNICAL SPECIFICATIONS 2110

Nominal Voltage Input

| | |
|---------------------------|--------------------------------------|
| Direct connection voltage | Between 57.8V and 275V |
| Standard Voltage offered | 240 V |
| Accuracy Range | 50 – 115% of nominal voltage |
| Burden | < 2.5 VA per phase |
| Overload | 1.2x nominal (continuous) |
| PT Ratio | 1 to 9999.999 programmable (primary) |
| Input wire gauge | 12 AWG |

Nominal Input Current

| | |
|------------------|--------------------------------------|
| | 1,5 or 10 Amp. |
| Accuracy Range | 5 – 120% nominal |
| Burden | < 0.5 VA per phase |
| Overload | 20 Amp. max (continuous) |
| CT Ratio | 1 to 9999.999 programmable (primary) |
| Starting current | 0.4% of nominal Current. (Class 1.0) |
| Input wire gauge | 12 AWG |

Frequency 50Hz / 60Hz range \pm 5.0Hz

Measured Parameters

| | |
|------------------------|--|
| Voltage | single phase |
| Amps | single phase |
| Frequency | System Frequency |
| Power Factor | PF |
| Active Power | Watts (W, kW & MW) |
| Reactive Power | VAR (VAR, kVAR, MVAR) |
| Apparent Power | VA (VA, kVA & MVA) |
| Active Energy | Total Active Energy for Import & Export.(separate) |
| Reactive Energy | Total Reactive Energy For lagging & leading. (separate) (VARh, kVARh, MVARh & GVARh) |
| Apparent Energy | Total Apparent Energy (VAh, kVAh , MVAh & GVAh) |
| Auxiliary Power | No External power is required. (Draws power from the voltage signal inputs) |
| System | Single Phase |

Accuracy

| | |
|-----------------|--|
| Volt | 1% rdg \pm 1 dgts. |
| Current | 1% rdg \pm 2 dgts. |
| Frequency | 0.1Hz \pm 1 dgts. |
| Power Factor | 1% rdg \pm 2 dgts.(For 0.5 Lag - 1.0 - 0.8 Lead) |
| Active Power | 1% rdg \pm 2 dgts. |
| Reactive Power | 2% rdg \pm 2 dgts. |
| Apparent Power | 1% rdg \pm 2 dgts. |
| Active Energy | Class 1.0 (IS 13779/IEC 1036) |
| Reactive Energy | Class 2.0 (IEC 1268) |
| Apparent Energy | Class 1.0 |

TECHNICAL SPECIFICATIONS 2110

Output Relay

| | |
|------------------|------------------------------------|
| | W/VAR/VA - SPNO |
| AC rating | 250 V, 2A (AC) |
| DC rating | \pm 30 V, 2A (DC) |
| Pulse O/p | |
| AC rating | 175V,170mA Resistive |
| DC rating | \pm 250V, 70 mA Resistive |
| Pulse Rate | 1 to 9999 pulses per selected type |
| Pulse duration | 80 mS \pm 10% |

Communication Output

| | |
|--------------|-----------------------------|
| Serial port. | RS485 Multidrop |
| Baud rate | Selectable. 4800/9600/19200 |
| Start bit | 1 |
| Stop bit | 1 |
| Protocol | MODBUS - RTU |
| Isolation | 2 KV |

Environmental

| | |
|--------------------|----------------------------|
| Working temp. | 0 to 55 °C. |
| Storage temp. | -10 to 70 °C. |
| Temperature Coeff. | IS-13779 |
| Relative humidity | 30 - 95% RH-non-condensive |
| Warm up time | 5 min |

Enclosure

| | |
|-----------|--|
| Mounting | Panel mounting |
| Enclosure | 96 x 96 x 74.4 mm |
| Material | ABS |
| Terminals | Barrier(Feed through) type Screw Terminals |
| Accessory | 2 Panel mount clamps |
| Weight | 300 gms |

Display

| | |
|-----------------------|--|
| | 2x16 Backlite LCD module with 5.56 mm character height |
| Burden | <5 VA |
| Sensing Method | True RMS sensing on both channels |
| Update Rate | 320ms |

ORDERING CODE

| Model 2110 | | Auxiliary Output | | |
|------------|-----|------------------|-------|--------|
| CT Ratio | | | | |
| X | X | X | X | X |
| 1 | 1A | Pulse | Relay | RS 485 |
| 2 | 5A | N | N | N |
| 3 | 10A | N | N | Y |
| | | N | Y | N |
| | | N | Y | Y |
| | | Y | N | N |
| | | Y | N | Y |
| | | Y | Y | N |
| | | Y | Y | Y |

X - Specify from table