Industrial Controls and Drives
India Pvt. Ltd. (ICDIPL)

MULTI FUNCTION POWER AND ENERGY METER

MFM 9600 / MFM 9601 - NEXT GEN MFM SERIES

Introducing the MFM 9600 / MFM 9601: Revolutionizing Power Monitoring

Experience the pinnacle of power monitoring technology with our Universal Metering solution designed for both Low-Tension (LT) and High-Tension (HT) systems. Here's why the MFM 9600 series MFM stands out:

Product Features

- **Field Programmable CT/PT Ratio:** Say goodbye to tedious constant adjustments. Our innovative system allows for easy ratio programming without the need for constants.
- **IIOT Capability:** Seamlessly integrates with Industry 4.0 standards thanks to our IIOT capability, offering a range of communication options for enhanced connectivity.
- **Load Bar Graph and Phase Indication:** Visualize load dynamics effortlessly with our intuitive load bar graph and phase indication features.
- **Versatility:** Whether it's three-phase, single-phase, four-wire, three-wire, or single-wire, our meter accommodates diverse load configurations.
- **True RMS Measurements:** Enjoy accurate measurements with 80 samples per cycle simultaneously considering voltage and current values.
- **Precision:** Compliant with Accuracy Class 1 standards (IEC 62053-21), with an optional upgrade to Class 0.5 or 0.2 S (IEC 62053-22) for enhanced precision.
- **Comprehensive Display:** Monitor Basic, Power, Energy, THD, Demand parameters, Run Hour, Idle Hour Cumulative, Power Interruption counts, and more at a glance.
- **Power Factor Measurement:** Measure and display both True and Displacement Power Factors for comprehensive power analysis.
- **THD Analysis:** Easily assess the Total Harmonic Distortion of Voltage & Current in percentage (%).
- **Real-Time Updates:** Enjoy real-time display updates every second for accurate monitoring.
- **Calibration Convenience:** Facilitates calibration with an Impulse LED output.
- **Communication Flexibility:** Equipped with a default RS485 Port supporting MODBUS RTU Serial communication, with programmable parameters for enhanced versatility.
- **Enhanced Visualization:** Our new generation LCD screen offers superior parameter visualization for an enriched user experience.
- **Wide Operating Range:** Operates seamlessly on a wide range of auxiliary supply voltages, from 85V to 270V AC/DC.

Superior Quality | Dominant reliability | Trusted for Decade

Contact Us
044 2378 0053

Visit Us
www.icdipl.net

Optional Communication and Controlling Features

- **Digital Input:** Benefit from 4 potential-free contacts, allowing for seamless integration with external devices or systems.
- **Digital Output:** Control your operations effectively with 2 relay contacts, programmable for selected parameters to trigger actions as needed.
- **Dual Source Measurement:** Ensure continuous monitoring of both utility and generator sources, providing comprehensive insight into your power supply.
- **Ethernet Interface:** With an RJ45 port supporting MODBUS TCP IP protocol, the SmartMeter Pro offers IoT support, enabling seamless integration into your network infrastructure for remote monitoring and management.
- **Wi-Fi Communication:** Enjoy the convenience of Wi-Fi connectivity, enabling IoT support for wireless communication, and facilitating remote access and control of your power monitoring system.
- **LORAWAN Communication:** Embrace the future of IoT with LORAWAN communication support, ensuring long-range, low-power connectivity for efficient data transmission and remote monitoring capabilities.
- **4 Quadrant Measurements:** Experience comprehensive power and energy monitoring with support for both import and export power/energy measurements across all four quadrants, providing a complete view of your energy usage and generation.

Typical Application

- Panel metering in Substations, Distribution panels & Generator set panels.
- Energy Management System and IOT application.
- OEM Application.
- Monitoring Industrial Heavy Loads like motors, pumps, compressors, and individual machinery.

Standards Approved

Type test approval as per:
IEC-62053-21 class 1 and class 0.5 (IEC-62053-22)
Confirms EMI/EMC Regulations as per standards

Auxiliary Supply

- Operating Range - 90V - 270V AC, 50/60 Hz
  100 - 300VAC
  Three phase 4 wire
  Single phase 2 wire PT & CT Ratio Setting
  - Primary Value of
  PT & CT -User selectable
  CT Secondary - 5A / 1A
  PT Secondary - 415 / 110 VAC
- Character Size - 25 VAC

Technical Specifications

Measurement- True RMS simultaneous sampling 4096 samples per sec

I. Voltage Input (3 Phase R, Y, B)

- Full-Scale Range - L -N 300VAC, L-L 520VAC
- Operating Frequency - 40-65 Hz
- Starting Voltage - 25 VAC
- VA Burden - < 0.2 VA at 240 VAC

II. Current Input (3 Phase R, Y, B)

Full-Scale Current input 6A

- Withstanding Capacity - 10A RMS continuous
  100 A RMS for one sec Non-Recurring
- Starting Current - 0.2% of full-scale
- Burden - < 0.1 VA at 6A
- Impedance - <0.2 M Ω

III. Measurement Accuracy

Basic Parametric

- Volt, Current, Power - ±0.5%
- Frequency - ±0.05%
- Burden - 4 VA at 240 VAC
- Display Update - 1 Sec (full parameters)
- Wiring configuration - Three phase 3 wire Configurable at site
- Power Factor - ±0.01%
- Real Energy (Wh) - Class 0.5S (LT or HT 0.2S),
  Class 1.0 S as per IEC standards 62052-22 & 62053-21
- Reactive Energy - Class 1.0 and Class 2.0 for Wh
  class 0.54 & 1.0 as per IEC above standards
- THD of Three-phase Voltage & Current - Class 5.0 as per Standard

Setting & Selection

- 4 Keys function: Index , Shift, Increment, Enter

MFM 9600 / MFM 9601 - NEXT GEN MFM SERIES

Product Model Features / Selection

Parameters	Resolution	Range	MFM 9600	MFM 9601
Accuracy class			1.0 / 0.5 S	1.0 / 0.5 S
Programmable (Auto Scroll)				
Vr,Vy,Vb (Vavg) –Phase to Neutral	0.1 V LT, 0.01 KV HT	300 VAC	✓	✓
Vry, Vyb, Vbr – Phase to Phase	0.1 V LT, 0.01 KV HT	520 VAC	✓	✓
Ir,Iy,Ib (Iavg)	0.1 A, 1A	0 TO 9999 A	✓	✓
Frequency	0.01 Hz	45 – 65 Hz	✓	✓
Power Parameters (Auto Scroll)				
W1, W2, W3, W	0.1 Kilo / 0.01 Mega W	0-9999 KW / MW	✓	✓
VA1, VA2, VA3, VA	0.1 Kilo / 0.01 Mega VA	0-9999 KVA / MVA	✓	✓
VAR1, VAR2, VAR3, VAR	0.1 Kilo / 0.01 Mega VAR	0-9999 KVAR / MVAR	✓	✓
Power Quality				
THD of Voltage & Current in %	0.1		✓	✓
True PF and Displacement PF	0.01		✓	✓
Individual harmonic upto15th harmonic over communication only	0.1%		NA	✓
Integrated parameters				
Wh	0.1 KWh	99999999	SELECTABLE	✓
Vah	0.1 kVAh	99999999	SELECTABLE	✓
VARh Lead, VARh Lag	0.1 kVARh	99999999	NA	✓
Load Hour99999.99 Hr	0.01 Hr	999999	✓	✓
Idle Hour 99999.99 Hr	0.01 Hr	999999	✓	✓
Interruption counts	1	9999	✓	✓
Demand Parameters				
kVA / kW demand	0.1 kVA		NA	✓
15 min/ 30 min integration			NA	Selectable
Block Window / Sliding Window			NA	Selectable
Communication				
RS485 Serial MODBUS	Default		✓	✓
Ethernet MODBUS			Optional	Optional
Wi-Fi Communication			Optional	Optional
4G GPRS communication			Optional	Optional
Add-On-Module				
External Logic output	4 Nos		Optional	Optional
External Relay Output	2 Nos		Optional	Optional
Four Quadrant measurements			NA	Optional
Dual Source measurements			Optional	Optional
Real Time Calendar/ Clock			NA	✓

Display

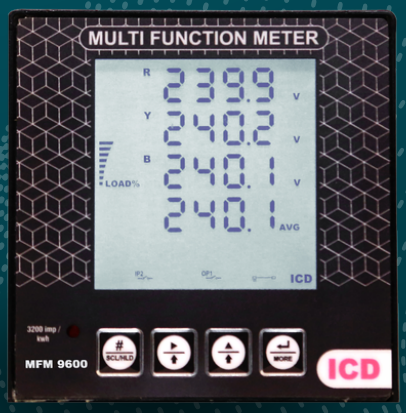
- Type: New Generation LCD (55x60x5 mm) 4 digits x 4 rows
- Custom-built engineering unit character to show the parameters
- 4 Digit for parameters
- 8 Digit for Energy

CAL - LED Pulse

- Meter Constant pulse output for Wh energy
- Communication - Bicolour Lead shows Activity

Communication

- Type - RS485, 2 Wire, MODBUS RTC protocol
- Device ID - 1 to 255
- Settings - Parity (Odd, Even, None)
  Rating (9600/19200 Baud Rate)
- Isolation - 2KVAC isolation for 1 min
  Between Circuit & Common Line



MFM 9600 / MFM 9601 - NEXT GEN MFM SERIES

Industrial Controls and Drives
India Pvt. Ltd. (ICDIPL)

33, Mettukppan Road, Maduravaoyl,
Chennai - 600 095, Tamil Nadu India

+91 44 42934324

sales@icdipl.net

www.icdipl.net

Optional Communication

Ethernet, GPRS, Wi-Fi

- Ethernet - RJ45 Jack, Modbus TCP-IP protocol
- Character Size - 4G
  Worldwide LTE and GSM/GPRS/EDGE coverage
  Protocol: TCP
  Frequency Band: 2300 to 2400 Mhz
- Wi-Fi - Wireless Standard: 802.11 b/g/n,
  Frequency range: 2.412GHz -2.484GHz
  Antenna: External type with 2400~2483.5MHz
  Frequency range, 83.5 MHz Bandwidth, 3 dBi Gain
- LORAWAN - High-performance industrial-grade CPU and wireless module
  Low power consumption, High receive sensitivity
  Flexible transmit power up to 22 dBm,
  Communication range : 1~2km

Optional Logic Inputs

- 4 Potential Free Logic input - External input activates start of designed control action.

Optional Relay Output

- Quantity - 2 Numbers. The Relay will be activated on the selected parameter.

Enclosure

- Quantity : Poly Carbonate
  Confirming Flame proof 2 mm thickness
- Dimension : 96 x 96 mm Bezel
  92 x 92 mm cut out
  Depth: 62mm
- Mounting : Panel with Corner Brackets 2
- Weight : Approximately340 grams

Environmental Specifications

- Working Temperature : -5°C to 60 °C
- Humidity : 5 to 95 RH at 50°C

Electromagnetic Compatibility (As per IEC 62052-11)

- Electrostatic Discharge : IEC61000-4-2
- Immunity to EM Radiation : IEC61000-4-3
- Immunity to Fast transients : IEC61000-4-4
- Immunity to Impulses : IEC61000-4-5
- Immunity to conducted Emission : IEC61000-4-6
- Immunity to Magnetic Field : IEC61000-4-7
- Immunity to Voltage : IEC61000-4-11