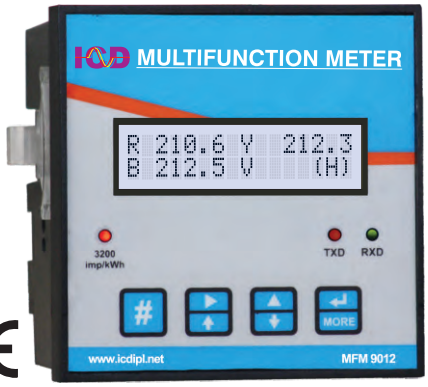
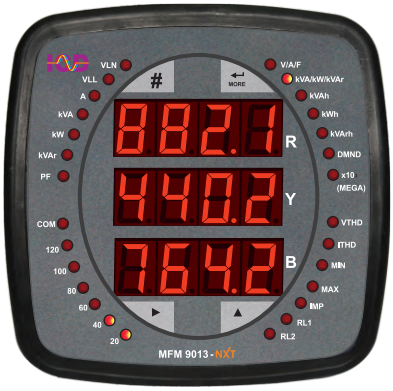
MULTI FUNCTION METER

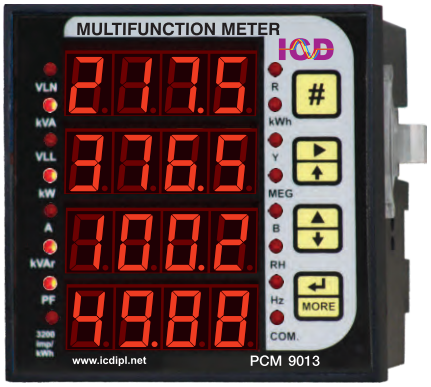
Single Meter suitable for all load conditions LT / HT, 5A / 1A, 4Wire / 3Wire



MFM 9012



MFM 9013-NXT



MFM 9015

FEATURES

- True RMS Measurement
- Simultaneous sampling of voltage and current
- Confirms IS14697 for Accuracy Class 1 and Class 0.5
- Direct reading without multiplication factor
- Accurate on Harmonic Conditions
- 10 year back up for integrated energy data
- Available in both LCD and LED Model
- Measures 4 quadrant power and 2 quadrant energy
- Run hour Indication
- Built in phase analyzer for proper connection
- Low PT, CT burden (Less than 0.2 VA)
- Digital Calibration ensures drift free operation for long time
- High reliability and user friendly to configure and operate
- Sealed dust proof Poly Carbonate Enclosure
- Touch safe terminals
- Wide range of Auxiliary supply (90 to 270V AC or DC)

DISPLAY FEATURES

LCD

- 2 Row 16 Character LCD with Backlit
- Character Size 4.35 (H) x 2.95 (W) mm
- LCD Power save mode provided. When no key is pressed for 3 minutes, the LCD Backlit is switched OFF to save power and enhance the life of LCD. The LCD is switched ON when any key is Pressed

LED

- 16 Digit 0.56" Hi bright Red LED Display
- Facility to view 4 parameters at a time

USER PROGRAMMABLE FEATURES

- Primary value of PT and CT
- CT Secondary 5A / 1A
- PT Secondary 415 / 110V AC
- Single phase, 3 phase Delta and 3 phase Star measurement
- Favourite display page selection
- Communication settings like baud rate, parity and stop bit

OPTIONAL FEATURES (Value Line)

- Optically isolated RS485 Communication output with MODBUS - RTU protocol
- Accuracy Class 0.5 (IS14697)

OPTIONAL FEATURES (Power Line)

- Optically isolated RS485 Communication output with MODBUS - RTU protocol
- Optically isolated RS485 Communicaton output with PROFIBUS - DP Slave protocol
- RJ45 Ethernet port with MODBUS - TCP protocol
- Wi-Fi module MODBUS - TCP protocol
- Accuracy Class 0.5 / 0.2 (IS14697)
- Separate energy register for export energy recording
- 2 number digital input for user defined function
- 1 number digital output for user defined function
- Current day and previous day energy and Run hour register

STANDARDS APPROVED

- Type test approved as per IS14697 Class 1 and Class 0.5
- Confirms EMI, EMC Regulations as per IS14697 standards

MONITORING FEATURES (Value Line)

MFM9112, MFM9113

- Voltage, Current, Frequency, kVA or kW, kVAh or kWh, PF, Run hour, Idle hour

MFM9012NXT, MFM9013NXT

- Voltage, Current, Frequency, kVA, kW, kVAr, PF, kVAh or kWh, Run hour, Idle hour, Vthd, Ithd

MONITORING FEATURES (Power Line)

MFM9014NXT, MFM9015NXT

- Voltage, Current, Frequency, kVA, kW, kVAr, PF, kVAh, kWh, Lag kVArh, Lead kVArh, Run hour, Idle hour, Vthd, Ithd, Demand kW, Demand kVA, MD kVA,

APPLICATIONS

- Energy management systems and Energy billing systems
- Panel metering in sub stations, Distribution panels and Genset Panels
- Pumps, Motors, Compressors and Individual Equipments
- Original equipment manufacturers
- Control panels and Test benches

DUAL SOURCE METER

EM9024
MFM9022-NXT
MFM9023-NXT

Voltage, Current, Frequency, kW, PF, kWh, Run hour

Separate kWh and run hour, Idle hour, register are provided for EB/DG

EB/DG Indication by LED

240V AC supply or potential free contact for EB/DG Selection

Suitable to generate separate billing for EB/DG Energy

MULTI FUNCTION METER

TECHNICAL SPECIFICATION

RATINGS

Voltage Inputs (Each channel)

Full Scale Voltage	:	300V AC L-N, 520V AC L-L
Frequency Range	:	30 - 70 Hz
Starting Voltage	:	25V AC L-N

Current Inputs (Each channel)

Full Scale Current	:	6A AC
Withstand Capability	:	10A RMS Continuous, 100A RMS for 1 second Non-Recurring
Starting Current	:	0.2% of Full Scale

COMMUNICATION

RS485 (Optional)	:	MODBUS-RTU Protocol, 2 Wire Connection up to 38400 Baud rate
Ethernet (Optional)	:	MODBUS-TCP Protocol, RJ45 Jack, 10 / 100 Mbps self adaptable
Wi-Fi (Optional)	:	Wi-Fi Module, 802.11 b/g/n standard, 2.4 GHz MODBUS-TCP Protocol
Profibus (Optional)	:	Profibus-DPV0 Slave protocol, 2 Wire connection, Baud rate adaptable up to 12 Mbps, Profibus standard according to EN50170

AUXILIARY SUPPLY

Operating Range	:	90 - 270V AC, 50 / 60 Hz 100 - 300V DC
Burden	:	4VA at 240V AC

I/O OPTION

Digital Input	:	2 No's, 24V DC Self Excited
Relay Output	:	2 No's 5A at 240V AC
Pulse Output	:	1 No', Pulse output for energy (Open Collector)

OUTPUT

Calibration LED Output	:	3200 lmp/kWh

OPERATING ENVIRONMENT

Operating Temperature	:	-10°C to +55°C
Storage Temperature	:	-25°C to +75°C
Relative Humidity	:	5% to 95% non-condensing

CASE AND DIMENSIONS

Enclosure	:	Polycarbonate
Dimension	:	96 x 96 x 60 mm
Cut out	:	92 x 92 mm

STANDARDS APPLICABLE

Measurement Standard	:	IEC 62053-22, IS 14697
EMI / EMC standard	:	IEC 61000-4 / -2-3-4-5-6-11, CISPR22
Safety Standard	:	IEC 61010-1
Environmental Standard	:	IEC 60068-2
Outlines Standard	:	DIN 43700

PRODUCT SELECTION GUIDE

PARAMETER	Value Line Series				Power Line Series	
	9112	9113	9012	9013	9014	9015
DISPLAY	LCD	LED	LCD	LED	LCD	LED
Phase Voltage V_R, V_Y, V_B, V_{LNAVG}	★	★	★	★	★	★
Line Voltage V_{RY}, V_{YB}, V_{BR}, V_{LLAVG}	★	★	★	★	★	★
Current I_R, I_Y, I_B, I_{AVG}	★	★	★	★	★	★
Active Power P1, P2, P3, P_{SUM}	■	■	★	★	★	★
Reactive Power Q1, Q2, Q3, Q_{SUM}			★	★	★	★
Apparent Power S1, S2, S3, S_{SUM}	■	■	★	★	★	★
Power Factor PF1, PF2, PF3, PF_{TOTAL}, Frequency	★	★	★	★	★	★
Active Energy kWh	■	■	■	■	★	★
Reactive Energy kVArh Lag, kVArh Lead					★	★
Apparent Energy kVAh	■	■	■	■	★	★
Run Hour, Idle Hour	★	★	★	★	★	★
Number of Power Interuptions			★	★	★	★
Voltage THD - THD V_R, THD V_Y, THD V_B, THD V_{AVG}			★	★	★	★
Current THD - THD I_R, THD I_Y, THD I_B, THD I_{AVG}			★	★	★	★
Demand kVA, kW					★	★
MD kVA, kW					★	★
RTC - Date, Month, Year, Hour, Min., Sec.					★	★
RS485 Port MODBUS-RTU Protocol, Baud rate configurable up to 19.2 kbps	◉	◉	◉	◉	◉	◉
Ethernet / Wi-Fi Communication MODBUS-TCP Protocol	◉	◉	◉	◉	◉	◉
Digital Input Self Excited with 24V DC (2 No's)	◉	◉	◉	◉	◉	◉
Relay Output - 5A at 240V AC (2 No's)	◉	◉	◉	◉	◉	◉
Export Energy Recording					◉	◉

★ Available ■ User Selectable kVAh / kWh ◉ Optional