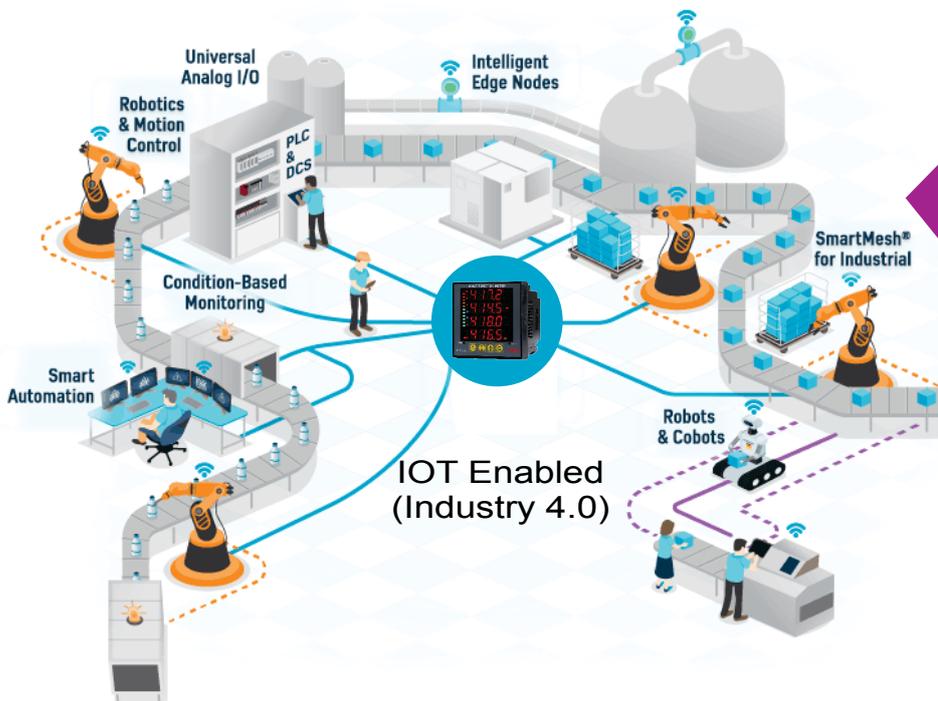




MULTI FUNCTION POWER AND ENERGY METER

MFM 9013 / MFM 9015 – NEXT GEN MFM SERIES



Product Features

- Universal Metering for LT & HT System
- Field Programmable CT/PT Ratio, no constants required
- IOT capability communication options supporting Industry 4.0 norms
- Load bar graph and phase indication in vibrant LED presentation
- Suitable for three phase and single phase load, Four wire / Three wire / Single wire selection.
- True RMS measurements 82 samples/Cycle simultaneous considering voltage and current values
- Accuracy Class 1 as per IEC 62053-21/ Class 0.5, Optional 0.2 S as per standards IEC 62053-22.
- Displays Basic, Power, Energy, THD & Demand parameters
- Run Hour & Idle Hour Cumulative counts
- Power Interruption counts
- Measure and displays both True PF and Displacement PF
- THD of Voltage & Current in percentage (%)
- Display update for every 1 Second of time interval
- Impulse LED output for calibration
- Default RS485 Port- MODBUS RTU Serial communication with programmable communication parameters available
- New generation monolithic seven segment having big character LED block and illuminated units of parameters shown
- Wide operating Auxiliary supply, 85-270V AC/DC.

Optional Communication and Controlling Features

- Digital Input:4 -Potential free contacts
- Digital Output:2 - Relay contacts
The relay function can be operated for selected parameters
- Dual source measurement for utility & generator.
- Ethernet Interface RJ45 MODBUS TCP IP protocol- IOT Supportive
- Wi-Fi Communication – IOT Supportive
- GPRS Communication – IOT Supportive
- 4 Quadrant Measurements: For Import/Export Power/Energy

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, compressor and individual machineries.

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

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Technical Specifications

Measurement- True RMS simultaneous sampling 4096 samples per sec

A.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

B.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

C.Measurement Accuracy

Basic Parametric

- Voltage, Current, Power - $\pm 0.5\%$
- Frequency - ± 0.05
- Power Factor - $\pm 0.01\%$
- Real Energy (Wh) - Class 0.5S (LT) or HT (0.2S), Class 1.0 as per IEC standards 62052-22 & 62053-21
- Reactive Energy - Class 1.0 and Class 2.0 class 0.5S & 1.0 as per IEC above standards
- THD of Three phase Voltage & Current - Class 2.0 as per Standard

Auxiliary Supply

- Operating Range - 85V - 270V AC, 50/60 Hz
- Burden - 4 VA at 240 VAC
- Wiring configuration - Three phase 3 wire / Three phase 4 wire / Single phase 2 wire Configurable at site
- PT & CT Ratio Setting - Primary Value of PT & CT - User selectable
CT Secondary- 5A / 1A
PT Secondary- 415 / 110 VAC

Communication

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

Optional Communication - IOT Connectivity

- Ethernet - RJ45 Jack, Modbus TCP-IP protocol
- GPRS - 4G
Worldwide LTE and GSM/GPRS/EDGE coverage
- Wi-Fi - Frequency Band : 2300 to 2400 Mhz
Wireless Standard:802.11 b/g/n, Frequency range: 2.412GHz-2.484GHz Antenna: External type with 2400~2483.5MHz Frequency range, 83.5 MHzBandwidth, 3dB Gain antenna

Protocol: MODBUS-TCP/JSON/XML/HTTPS can connect to various cloud system

Display

- Type :7 Segment LED (66x69x5 mm) 4 digits x 4 rows
- LEDs Light up the shown parameters
- 4 Digit for parameters
- 8 Digit for Energy
- Display Update - 1 Sec (full parameters)
- Character Size - 12.5 x 7 mm



Product Model Features / Selection Guide

Parameters	Resolution	Range	MFM 9013	MFM 9015
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 9999A	✓	✓
Frequency	0.01 Hz	45 – 65 Hz	✓	✓
Power Parameters (Auto Scroll)				
W1, W2, W3, W	0.1 Kilo / 0.01Mega W	0-9999KW / MW	✓	✓
VA1, VA2, VA3, VA	0.1 Kilo / 0.01Mega VA	0-9999 KVA / MVA	✓	✓
VAR1, VAR2, VAR3, VAR	0.1 Kilo / 0.01Mega VAR	0-9999 KVAR / MVAR	✓	✓
Power Quality				
THD of Voltage & Current in %	0.1		✓	✓
True PF and Displacement PF	0.01		✓	✓
Individual harmonic upto 15th harmonic over communication only	0.1%		NA	Optional
Integrated parameters				
Wh	0.1 Kwh	99999999	Selectable	✓
Vah	0.1 kVAh	99999999	Selectable	✓
VARh Lead, VARh Lag	0.1 kVARh	99999999	NA	✓
Load Hour 99999.99 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	✓

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

Optional Logic Inputs

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

Optional Relay Output

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

Enclosure

Material	: Poly Carbonate Confirming Flame proof 2 mm \pm 0.2 thickness
Dimension	: 96 x 96 mm Bezel 92 x 92 mm cut out
Depth	: 65 mm
Depth with Optional Features	: Max 90 mm
Mounting	: Panel with 2 Corner Brackets
Weight	: Approximately 340 grams

Environmental Specifications

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



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