MULTI FUNCTION METER

Measure & Manage Power

POWER GENIUS

CE

MFM 9500 / MFM 9502 FEATURES

METERING

- Voltage VR, VY, VB, VLN AVG, VRY, VYB, VBR, VLL AVG
- Current IR, IY, IB, IN, IAVG
- Active Power P1, P2, P3, PSUM
- Reactive Power Q1, Q2, Q3, QSUM
- Apparent Power S1, S2, S3, Ssum
- Power Factor PF1, PF2, PF3, PFTOTAL, PFAVG
- Frequency
- Active Energy kWh_Import, kWh_Export
- Reactive Energy kVArh_Import Lag, kVArh_Import Lead, kVArh_Export Lag, kVArh_Export Lead
- Apparent Energy kVAh_Import, kVAh_Export
- Demand kVA, kW, kVAr and Average Current

MONITORING

- Voltage Harmonics 2nd to 31st and THD
- Current Harmonics 2nd to 31st and THD
- Voltage, Current Unbalance factor
- Voltage crest factor, Current k factor
- Maximum and Minimum statistics with time stamp

DISPLAY

- Custom made clear and large LCD screen with white / orange / blue backlit
- Supports graphics like Load percentage, 4 quadrant power, Load nature, I/O status and Communication status

COMMUNICATION

- Isolated RS485 with industry standard MODBUS-RTU Protocol
- Ethernet module available as option
- Wi-Fi module available as option
- GPRS-4G module available as option
- Profibus-DP module available as option
- Dual communication ports option

ALARMS

- Over / under limits can be set for up to 24 indicated parameters along with a specified time delay. If any of the indicated parameter is over or under its setting limit and remains over the specified time interval, the event will trigger an alarm output and also recorded with time stamp. The history of last occurred 10 alarms are retained.

DATA LOGGING:

- Power genius offers 1 MB of on board data logging memory for the recording of majority of the metering parameters with date and time stamp. The time interval for recording can be selected up to 60 minutes in steps of 5 minutes. The recorded data's can be transferred to a PC and viewed in a Excel format by a user friendly menu driven software supplied by ICD along with the meter.

I/O MODULE OPTIONS

- Digital Input, Relay Output, Digital Output, Pulse Output, Analog Input and Analog Output are provided as I/O option modules to extend the utility of the Power Genius. The extension module allows easy expansion of the I/O functions. Maximum of 3 modules can be provided in a single meter.

USER PROGRAMMABLE FEATURES

- Primary Value of PT and CT
- PT Secondary 415V / 110V AC
- CT Secondary 5A / 1A
- Three phase delta or Three Phase Star measurement
- Favourite display page selection
- Communication Settings

APPLICATIONS

- Medium and Low Voltage Systems
- Panel Metering of distribution feeders, Generators, Transformers and Motors
- Power Quality Analysis and Data Logging
- Metering for Industries and utilities

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
Burden	:	0.2VA at 240V AC

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
Burden	:	0.1VA at 5A AC
Accuracy	:	Class 0.5, **Class 0.2(Optional)**

COMMUNICATION

Rs485 (Standard)	:	MODBUS-RTU Protocol, 2 Wire Connection up to 38400 Baud rate
Ethernet (Optional)	:	MODBUS-TCP Protocol, RJ45 Jack, 10 / 100 Mbps self adaptable
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	:	4 No's, 24V DC Self Excited
Relay Output	:	2 No's, 5A at 240V AC
Digital Output	:	2 No's Open Collector Transistor Output
Pulse Output	:	1 No, Pulse frequency 25 Hz, 50% duty Cycle
Analog Input	:	2 No's, 4 - 20mA / 0 - 1V, 0.2% OFS Accuracy, 1KV Isolation
Analog Output	:	1 No, 4 - 20mA, 0.5% OFS Accuracy, 1KV Isolation

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 55 mm

STANDARDS APPLICABLE

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

PRODUCT SELECTION GUIDE

FUNCTION	PARAMETER	MODELS 9500	MODELS 9502*
REAL TIME METERING	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_N, I_{AVG}	★	★
	Active Power P_1, P_2, P_3, P_{SUM}	★	★
	Reactive Power Q_1, Q_2, Q_3, Q_{SUM}	★	★
	Apparent Power S_1, S_2, S_3, S_{SUM}	★	★
	Power Factor PF_1, PF_2, PF_3, PF_{TOTAL}, PF_{AVG}, Frequency	★	★
ENERGY AND DEMAND	Active Energy kWh_Import, kWh_Export	★	★
	Reactive Energy kVArh_Import Lag, kVArh_Import Lead,	★	★
	kVArh_Export Lag, kVArh_Export Lead	★	★
	Apparent Energy kVAh_Import, kVAh_Export	★	★
	Demand kVA, kW, kVAr & Avg. Current	★	★
POWER QUALITY	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}	★	★
	Harmonics Individual 2nd to 31st		★
	Voltage & Current Unbalance Factor		★
	Voltage crest Factor, Current k Factor		★
	Phase Angle between Phase Voltages, Voltage & Current		★
TIME	Real time clock - Date, Month, Year, Hour, Minute, Second	★	★
COMMUNICATION	Rs485 Port MODBUS-RTU Protocol, Baud rate configurable up to 38.4 kbps	★	★
	Ethernet 10 / 100 Mbps, self adaptable, RJ45 Jack MODBUS-TCP Protocol	◉	◉
	Wi-Fi Module, 802.11 b/g/n standard, 2.4 GHz MODBUS-TCP Protocol	◉	◉
	GPRS-2G/3G/4G/LTE, TCP/FTP/HTTP/MQTT Protocol	◉	◉
	Rs485 Port Profibus-DPV0 Protocol, Slave mode, Baud rate self adaptable up to 12 Mbps	◉	◉

* Statistics, Alarm and Data logging functions are available in MFM 9502

★ Available ◉ Optional