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CMM-MOD

Modular Power Monitoring System for Electrical Installations

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Modular Power Monitoring
System for Electrical Installations

Optimize energy management and improve the performance of your electrical installations with CMM-MOD, an innovative modular solution that's quick to deploy and easy to integrate.

Designed to deliver accurate, reliable measurements, CMM-MOD stands out for its flexibility, ease of installation and advanced communication capabilities.

CMM-MOD allows you to expand your system by up to 32 modules, for complete, scalable coverage of your installations.

Quick and easy installation

With CMM-MOD, installation is simplified and accelerated thanks to an internal bus that enables the various modules to be easily connected, without the need for additional cables or tools. This feature optimizes wiring and reduces set-up time, a major advantage in industrial or commercial environments where time is of the essence.

- Connection without cables or tools: The internal bus system enables fast, safe assembly.
- Optimized wiring: the module measures the voltage of the electrical panel's busbar.

CMM-MODVA or CMM-MODC* modules share volta ge signal with the other CMM-MOD modules. This configuration reduces wiring requirements, simplifying installation and maintenance.

Flexible Current Sensors

The CMM-MOD system is compatible with a wide range of current transducers, enabling you to adapt the solution to different types of electrical installation. The transducers feature RJ-12 plugs for easy, fast and secure installation. Compatible transducers include:

- Rogowski Tores: Available in a range of diameters from 16 mm to 200 mm, they are ideal for installations where access is limited.
- Split core TC with voltage output (VCT): Econominal solution for environments not requiring measurements on wider conductors.
- Optimized-size fixed CTs: economical solution for new installations, with RJ12 port integrated into each measurement CT.

CTS24/36

RCM 16/24/36/100/150/200

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Advanced connectivity for optimized supervision

CMM-MOD-CA module enable the communication with the front panel Dispaly and offers in the same time an Ethernet and an RS-485 Modbus communication ports, ensuring easy integration with SCADA systems and other energy management solutions.

- Smooth, secure communication: Modbus and Ethernet interfaces ensure reliable data transmission to a centralized system.
- Simplified integration: easily add CMM-MODCA to your existing infrastructures for complete, real-time management of your electrical installations.
- Predictive maintenance: Quickly identify anomalies and reduce the risk of downtime.

Data Collection with Datalogger Module

The Datalogger module CMM-MODCM, which integrates a 32GB internal memory enables continuous electrical data collection and archiving. It can also be used as a communication gateway, instead of CMM-MODCA module, providing an all-in-one solution for facility management:

- Long-term recording: Collect and store essential data for proactive energy management.

CMM-D display features

The CMM-D display is a key module in your CMM-MOD solution, offering an intuitive user interface and optimum visibility of measured parameters. Designed to meet the demands of industrial environments, this display offers numerous advantages:

☑ **Dimensions :** 96x96 mm, suitable for compact installations.

☑ **Color TFT technology :** High-resolution display for clear, precise visualization of measured data.

☑ **IP66 Protection :** The display's front panel features IP66 protection, guaranteeing optimum protection against dust and water splashes.
This makes it ideally suited to harsh industrial environments, where durability and resistance to external conditions are essential.

☑ **Capacitive touch buttons :** Equipped with 4 highly sensitive capacitive touch buttons, the display offers a responsive and precise interface, even under severe operating conditions.
These buttons are also designed to be durable, wear-resistant and guarantee a long service life.

☑ **View measurements from 32 modules :** A single display allows you to view and parameterize measurements from up to 32 different modules, simplifying the management and monitoring of your plant.

☑ **Low sensitivity to polluted environments :** Thanks to capacitive technology and the robustness of the screen, the display has very low sensitivity to dirty or dusty environments, ensuring constant, reliable performance.

The CMM-D display stands out for its robustness, ease of use and ability to adapt to the most demanding environments.

Key benefits of the CMM-MOD solution

- Quick to install: Thanks to simple connectivity and shared voltage measurement, installation is quick and considerably reduces wiring requirements.

- Flexibility and scalability: Choose from different modules to adapt the system to your specific needs. Add additional modules as your installations grow, up to 32 modules.

- Enhanced security: The system is designed for secure installation with RJ-12 connections and centralized management.

- Easy integration into existing installations: CMM-MOD can be seamlessly integrated into existing infrastructures, reducing installation costs and downtime.

Applications and Sectors of Use

CMM-MOD is designed to meet the needs of the following sectors:

Industry : Optimization of energy consumption and real-time monitoring of electrical installations at industrial sites.

Datacenters : Supervision of electrical installations in data centers, where reliability and energy management are essential to guarantee service continuity.

Commercial and tertiary buildings : Efficient energy management in complex facilities such as offices or shopping centers.

Energy management systems : Monitoring and optimization of electrical equipment in various environments.

Technical specifications

1-Display

Description	
Display mounting type	Recessed front panel
Display screen	3.5 "TFT LCD, 320×240 resolution, 16700 colors
Keyboard	4 capacitive keys, backlit
Connection	RJ12 port for connection to CMM-MODVA module
IP degree of protection	Display: IP67 (front panel)
Dimensions	Overall dimensions: H*W*D 9.6*9.6*0.38 cm Front panel thickness: 18 mm

2-Measurement and data acquisition modules

Description	
Module mounting	Din Rail
Weight	CMM-MODVA: 122g Other modules: 59g
IP degree of protection	Modules: IP20
Dimensions	CMM-MODVA: H*W*D 9.3*8.0*3.6 cm; Other modules: H*W*D 9.3*8.0*1.81cm; Display: H*W*D 9.6*9.6*0.38 cm Display: front panel thickness: 18 mm

Measurement module wiring system (CMM-MODVA and CMM-MODA)	
Wiring system	3P4W_3CT, 3P3W_3CT, 3P3W_2CT, 1P3W, 1P2W
Current measurement inputs (CMM-MODVA and CMM-MODA)	
Rogowski coil	NRC-16 (100A) – NRC-24 (300A) – NRC-36 (600A) – NRC-100 (1000A) – NRC 150 (3000A) – NRC-200 (6000A)
Voltage output current transformer (VCT)	0~99999A
Voltage measurement inputs (CMM-MODVA)	
Measurement range	0~600VAC
Maximum voltage	720VAC
Inputs/Outputs	
Relay output (CMM-MODVA, CMM-MODA, CMM-MODIO)	1-circuit electromagnetic relay output, contact rating: 3A 30V DC, 3A/ 250V AC
Digital input (CMM-MODVA, CMM-MODA, CMM-MODID)	Galvanic isolation by optocoupler（5kVrms）
Analog inputs (CMM-MODIA)	Inputs 0...20mA or 4...20mA software configurable
Communication	
RS485 port (CMM-MODVA, CMM-MODCA et CMM-MODCM)	RS485 communication port - two wires - Half-duplex Transmission speed: 400bps~38400bps Protocol: Modbus-RTU
Ethernet port CMM-MODCA et CMM-MODCM)	Ethernet communication port Transmission speed:10/100 Mbit/s Protocol: Modbus-TCP
Power supply	
Power supply	85~265VAC/110~370VDC, 45~60Hz (24V DC power supply version available on request)
Maximum power consumption per module	≤3.5VA

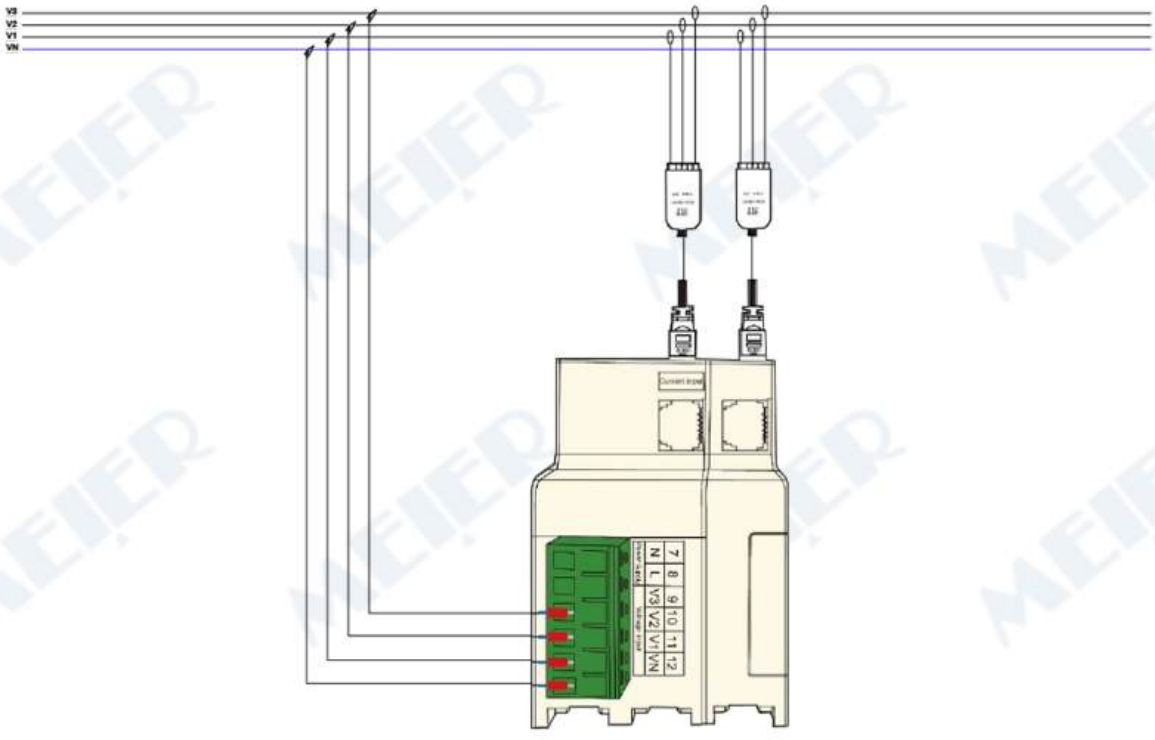
3-Measured parameters (CMM-MODVA and CMM-MODA)

Instantaneous values	
Single voltage	U1, U2, U3, AVG, U0 (Homopolar voltage)
Compound voltage	U12, U23, U31, AVG
Current	I1, I2, I3, AVG, In
Network frequency	F1, F2, F3, Σ
Power factor PF	PF1, PF2, PF3, Σ
Cos phi (DPF)	DPF1, DPF2, DPF3, Σ
Active power	P1, P2, P3, Σ
Reactive power	Q1, Q2, Q3, Σ
Apparent power	S1, S2, S3, Σ
Energy	
Active energy Imported	EP1, EP2, EP3, Σ
Active energy Exported	EP1, EP2, EP3, Σ
Imported reactive energy	EQ1, EQ2, EQ3, Σ
Reactive energy Export	EQ1, EQ2, EQ3, Σ
Apparent energy	ES1, ES2, ES3, Σ
Energy by Rate	ET1, ET2, ET3, ET4, ET5, ET6

Harmonics	
Voltage harmonic distortion in %	THDU total（U1,U2,U3） THDU total odd rows（U1,U2,U3） THDU total even rows（U1,U2,U3） Harmonics per rank 1-50e（U1,U2,U3）
Harmonic current distortion in %	THDI total（I1, I2, I3) 3） THDI total odd rows（I1,I2,I3） THDI total even rows（I1,I2,I3） K factor（I1, I2, I3） Harmonics per rank 1-50e（I1, I2, I3）
Voltage harmonic value (V)	Total Harmonics（U1, U2, U3） Harmonics per rank 1-50e（U1, U2, U3）
Current harmonic value (A)	Total Harmonics（I1, I2, I3） Harmonics per rank 1-50e（I1, I2, I3）
Phase shifting	
Phase sequence	Voltage, current
Tension angle	U1, U2, U3
Current angle	I1, I2, I3
Voltage-current angle	UI1, UI2, UI3
Demand (Maximeter)	
Demand	Total active power, total reactive power, total apparent power
Maximum total active power demand	Maximum demand and duration
Maximum total reactive power demand	Maximum demand and duration
Maximum total apparent power demand	Maximum demand and duration
Unbalance	
Voltage unbalance	Negative component, homopolar component
Current unbalance	Negative component, homopolar component
Max. & Min.	
Single voltage	Each phase and average
Compound voltage	Each phase and average
Courant	Each phase and average
Active power	Each phase and the total
Reactive power	Each phase and the total
Apparent power	Each phase and the total

Precision and Standards

Measurement accuracy	
Current measurement accuracy	0.1%+ Current sensor accuracy
Voltage measurement accuracy	±0.2%(60V~600V AC)
Network frequency	±0.01%(45~65Hz)
Power factor	±0.005
Active and apparent power	IEC62053-22 class 0.5S
Reactive power	IEC62053-21 class 1S
Active energy	IEC62053-22 class 0.5S
Reactive energy	IEC62053-21 class 1S
Environmental parameters	
Operating temperature	-25℃~+60℃
Storage temperature	-40℃~+85℃
Humidity range	5~95% RH, 50℃ (non-condensing)
Pollution class	2
Surge capacity	Class III, applicable to power distribution systems below 277/480VAC
Insulation resistance	IEC61010-1
Altitude	3000m Max
Degree of protection	IP20 (according to IEC 60629)
EMC (electromagnetic compatibility)	
Electrostatic discharge	Level IV(IEC61000-4-2)
Radiation immunity	Level III (IEC61000-4-3)
EFT Electrical Fast Burst Immunity	Level IV (IEC61000-4-4)
Surge immunity	Level IV (IEC61000-4-5)
Immunity to conducted disturbances	Level III (IEC61000-4-6)
Immunity to high-frequency magnetic fields	0.5mT (IEC61000-4-8)
Conduction and radiation	Class B (EN55022)
Standard	
EN 62052-11，EN61557-12，EN 62053-21，EN 62053-22，EN 62053-23，EN 50470-1，EN 50470-3， EN 61010-1， EN 61010-2， EN 61010-031	



CMM-MOD

List of CMM-MOD System Modules

CMM-MOD is a modular system made up of several complementary modules, each designed to meet specific needs. The modules are listed below:

CMM-MODVA	Power Analyzer module. This module measures the busbar voltage and shares this information with the other current measurement modules. It is used when the CMM-MODCA or CMM-MODCM are not used (no need of display). It is also provided with an RS-485 Modbus port for integration to Scada system.
CMM-MODA	Power Analyzer module, which measures only the current in the various feeders, while receiving the voltage measurement from CMM-MODVA, CMM-MODCA or CMM-MODCM modules.
CMM-MODT	Temperature measurement module with 4 x PT100 inputs, 2 or 3-wire, for monitoring equipment temperature.
CMM-MODIA	Module with 6 analog inputs, completely configurable (0..20mA, 4..20mA, 0-10V) for collecting data from external analog sensors.
CMM-MODID	Module with 6 digital inputs, for connecting sensors or devices with digital outputs.
CMM-MODOD	Module with 6 relay outputs, for ON-OFF control of equipment or for alarm signalling.
CMM-MODCA	Communication module, with two RS-485 and Ethernet ports for sending measurements from the various modules to a supervision system (SCADA, BMS, etc.). It is also needed to add the CMM-D display to the system.
CMM-MODCM	Communication and Datalogger module. It has exactly the same features of the CMM-MODCA module, in addition of a with built-in SD memory up to 32GB, for local measured data storage.
CMM-MODBR	Bridge module. This module is used to extend the system to other rows by extending the voltage measurement signals and internal communication bus. It can also be used as head of the system, instead of CMM-MODC module, since it can measure the busbar voltage directly. It is used when the CMM-MODCA or CMM-MODCM are not used (no need of display). It is also provided with an RS-485 Modbus port for integration to Scada system.
CMM-D	96x96 color TFT display - Allows measurements from up to 32 modules to be displayed. It is also used to configure each module and the whole system.

Thanks to its modularity, rapid implementation and advanced connectivity, CMM-MOD is the ideal solution for any company looking to optimize its energy management. Its modular architecture and ability to easily integrate existing sensors and systems make it a flexible, high-performance choice for all your electrical applications.
With the option of connecting up to 32 modules and displaying all measurements on a color TFT display, CMM-MOD offers a complete, scalable solution for your electrical installations.

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