MITSUBISHI ELECTRIC
Changes for the Better

Automating the World

FACTORY AUTOMATION

Mitsubishi MELSEC iQ-R Series

Energy Measuring Module MELSEC iQ-R series

Smarter energy and quality management for production equipment
Supports diverse on-site needs with space-saving design and reduced wiring



<RE81WH>



Feature 1 Space-saving and reduced wiring

By utilizing available slots in the PLC base module, the product can be installed without affecting the equipment layout inside the control panel.
Split-type current sensors allow easy installation on existing cables, enabling immediate start of power measurement.
In addition, no communication program is required, reducing engineering workload and contributing to improved productivity.

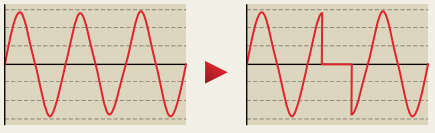


Feature 2 More accurate management of energy intensity by product type and process

By managing equipment production information together with power consumption, detailed energy intensity management by product type and process becomes possible.
Visualizing areas where energy intensity deteriorates helps identify issues occurring on-site and facilitates focused implementation of operational improvements.
It also enables identification of unnecessary standby power during non-production periods, providing new perspectives for energy-saving initiatives.

Feature 3 Supporting equipment condition monitoring and quality control

By accelerating the measurement data update cycle (10 ms), the system enables detection of equipment deterioration trends and early signs of abnormalities for allowing maintenance timing to be identified in advance.
Also, waveform data for current and voltage can be acquired, enabling its use for product traceability. For example, the module includes a voltage sag monitoring(*1) function for enabling clear differentiation between equipment faults and external causes.
It also supports harmonic measurement (voltage and current), addressing end-user needs related to harmonic issues.



Normal operation ▶ Momentary voltage sag

*1: Not compliant with SEMI F47.

Mitsubishi MELSEC iQ-R Series Energy Measuring Module

Energy measuring module specifications

Item		RE81WH
Measuring circuit count		1 circuit
Phase-wire system		Single-phase 2-wire, Single-phase 3-wire, Three-phase 3-wire
Rating		
Current circuit	[A]	5, 50, 100, 250, 400, 600 AC (Using a dedicated split-type current sensor. All values indicate the primary-side current of the current sensor.) 5 AC (Using a dedicated 5 A current sensor. The 5 A current sensor is used in a two-stage configuration combined with a current transformer (CT), allowing the primary current to be set up to 6000 A.)
Frequency	[Hz]	50/60 (automatic frequency detection)
Voltage circuit [V]		
Single-phase 2-wire		110/220 AC (common)
Three-phase 3-wire		
Single-phase 3-wire		110 AC (between lines 1–2 and 2–3), 220 AC (between lines 1–3)
Measurement specifications		
Data update cycle	[ms]	10 to 10,000 (settable in 10 ms increments)
Measurement items / Main unit tolerance (Tolerance does not include the current sensor.)		Current*1, Current demand : ±1.0% (of rated value 100%), Voltage*1 : ±1.0% (of rated value 100%) Power, Power demand : ±1.0% (of rated value 100%), Reactive power : ±1.0% (of rated value 100%) Apparent power : ±1.0% (of rated value 100%) Harmonic current : ±2.5% (of rated value 100%) Harmonic voltage : ±2.5% (of rated value 100%) Frequency : ±1.0% (within 45–65 Hz range) Power factor : ±3.0% (at electrical angle 90°) Electric energy : ±2.0% (within 5–100% of rated value, power factor = 1) Reactive energy : ±2.5% (within 10–100% of rated value, power factor = 0)
Transient overvoltage		Measurement circuit: CAT III
Power-frequency withstand voltage		Between voltage/current input terminals - sequencer power source and GND terminals 2210 V AC 5 sec
Applicable standards*2		EMC : EN 61131-2:2007, EN 61326-1:2013 Safety standards : EN 61131-2:2007, EN 61010-1:2010 UL 61010-1 : 3rd Edition
Power failure compensation		Backed up in non-volatile memory (Stored items: setting values, maximum/minimum values and date/time of occurrence, electric energy (regenerative, consumption), reactive energy, period energy)
Number of occupied inputs/outputs		32
Applicable software package		GX Works3 Version 1 SW1DND-GXW3-J 1.040S or later
Operating environment		
Operating temperature range		0 to +55°C (daily average temperature + 35°C or less)
Operating humidity range		5 to 95% RH (No condensation)
Storage temperature range		–25 to +75°C
Altitude	[m]	2000 or less

*1. Waveform data for current and voltage can also be acquired. For details, refer to the User's Manual (Detailed Edition).

*2. For details on safety certification compliance conditions, refer to the User's Manual (Detailed Edition).

Split-type current sensor

Model	Rated primary current	UL/CE compliance
Split-type current sensor		
EMU-CT5-A*3	5A	–
EMU-CT50-A	50A	–
EMU-CT100-A	100A	–
EMU-CT250-A	250A	–
EMU-CT400-A	400A	●
EMU-CT600-A	600A	●
EMU-CT50	50A	●
EMU-CT100	100A	●
EMU-CT250	250A	●
5 A split-type current sensor		
EMU2-CT5*3	5A	●

Products related to 5 A split-type current sensor

Model	Cable length	UL/CE compliance
5 A split-type current sensor cable*4		
EMU2-CB-Q5A	0.5m	●
Extension cable (standard type)*5		
EMU2-CB-T1M	1m	●
EMU2-CB-T5M	5m	●
EMU2-CB-T10M	10m	●
Extension cable (separate type)*5		
EMU2-CB-T1MS	1m	●
EMU2-CB-T5MS	5m	●
EMU2-CB-T10MS	10m	●

3. When measuring a high-voltage circuit or when using an existing CT, a two-stage configuration is used in which a 5 A split-type current sensor is connected to the secondary side of the CT (/5 A).

*4. Must be used when EMU2-CT5 is used.

*5. Used when extending EMU2-CT5.

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