

Programmable Logic Controller
MELSEC-Q Series

QE84WH/QE83WH4W

Energy Measuring Module Multi-Circuit Model

**New Product
News**

August, 2012

A113

Overview

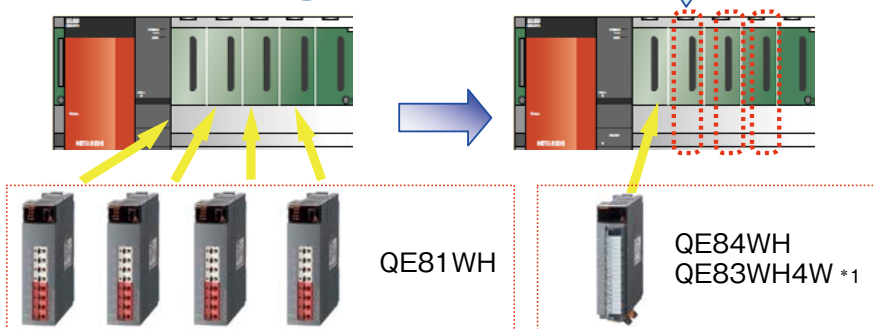
Mitsubishi Energy Measuring Module can be slotted directly into MELSEC-Q Series PLC to enable easy measurement of various energy data. The latest new additions to the line-up are multi-circuit models.

Features

● **Measurement on more than one circuit can be realized with one slot and in a small space.**

The model for three-phase three-wire (QE84WH) can measure on up to 4 circuits, and that for three-phase four-wire (QE83WH4W) can measure on up to 3 circuits. These models can realize energy management in a smaller space and at a lower cost than the single-circuit models (QE81WH and QE81WH4W). One module can measure energy values on tiny circuits in a control panel.

◆ **Installation image**



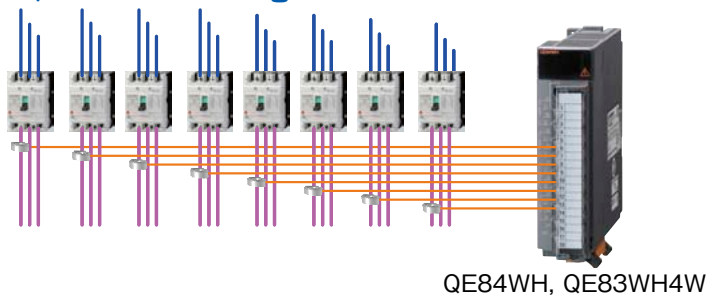
Appearance



● **In the current measurement mode, the module can measure the current on 8 circuits.*2**

When used to measure only the current, the module can measure on up to 8 circuits at 100ms intervals. It requires a small space and is suitable for current value management linked with production equipment.

◆ **Installation image**



- More space can be saved
- Measurement on up to 8 circuits
- Upper and lower limits can be monitored
- Data updating cycle of 100 ms

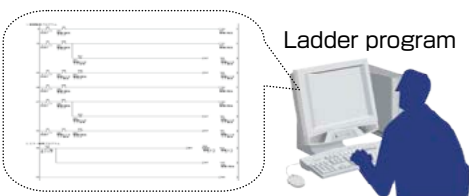
1. Abnormal current values can be detected at short measurement intervals, and defective products can be found. (Ex.: Semiconductor, precision instrument and LCD panel manufacturing lines)
2. Abnormal current values can be detected, and the conditions of equipment can be monitored. Equipment troubles can be prevented.

*2 In the current measurement mode, items other than current cannot be measured.

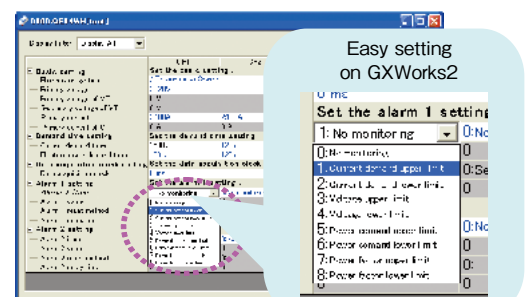
● **Applicable to GXWorks2 ensuring easy setting *3**

The multi-circuit models are applicable to GXWorks2, and the parameters and switches can be set on GXWorks2. The use of GXWorks2 eliminates the necessity of ladder programming and realizes easy setting and further reduction of engineering time.

*3 Compatible with GXWorks2 Ver. 1.9.0U or later



Using GXWorks2,
ladder programming is not required.



Examples of use of energy measuring module

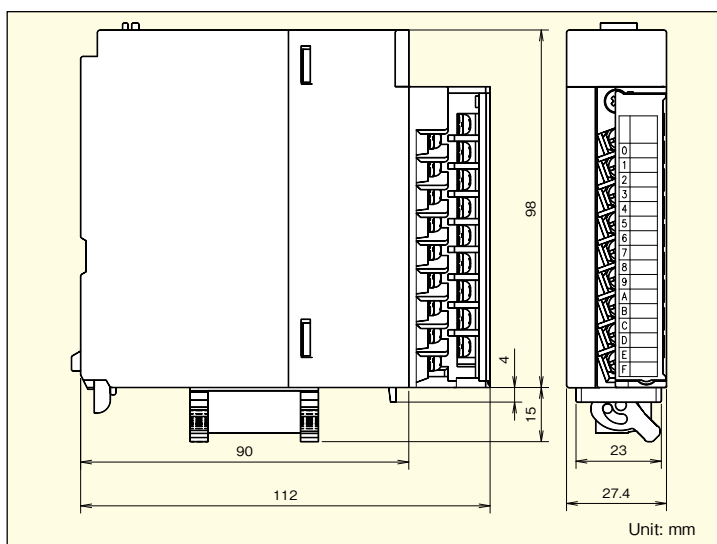
Energy Savings		Preventative maintenance/Quality control	
<p>(1) Monitor energy used by each device The energy usage of each device can be monitored, making detailed monitoring simple. If the time-based energy measuring function is used, it is possible to determine the amount of energy used during periods of both production and non-production, as well as standby energy usage, allowing further progress of energy-saving activities.</p>		<p>(3) Preventing sudden accidents Production loss due to equipment stoppages in the event of a sudden failure can be reduced through constant monitoring of voltage and current. Examples: Lubricant supply for devices Replacement of cutter blades</p>	
<p>(2) Higher productivity through specific energy consumption management Specific energy consumption can be displayed by combining production and energy data from the PLC. Displaying the data on a GOT helps to optimize onsite management.</p>		<p>(4) Prevent output of defective products Constant monitoring of current and voltage enables manufactured products to be managed when there are abnormalities with production equipment, which prevents output of defective products and allows countermeasures to be implemented. Examples: Detect heater disconnection Product quality assurance is possible through management of voltage, current and frequency.</p>	

Energy measuring module Specifications

Item		QE84WH	QE83WH4W
Inst- rument ratings	Voltage circuit	single-phase two-wire/ three-phase three-wire (*1)	100V~220VAC (if the voltage exceeds 220 VAC, an external voltage transformer is required.)
		single-phase three-wire	110 VAC (between wires 1 and 2 and between wires 2 and 3), 220 VAC (between wires 1 and 3)
		Three-phase four-wire (*2) (*3)	63.5/110~277/480VAC (When the voltage exceeds 277/480 V AC, a voltage transformer is required. The primary voltage values of the voltage transducer (QE8WH4VT) are shown.)
	Current circuit (*4)	50, 100, 250, 400, 600AAC (use of special split current sensor; all values indicate current values for primary side of current sensor) 5AAC (use of special 5A current sensor; 5A current sensor can be used in combination with current transformer in a two-level configuration, and primary-side current value can be set to a maximum of 6,000A)	—
Frequency		50 to 60Hz (frequency determined automatically)	
Main unit tolerances (excluding current sensor)	Normal operation mode	Current, demand current (*5)	: ± 1.0% (relative to 100% of rated value)
		Voltage	: ± 1.0% (relative to 100% of rated value)
		Energy, demand energy (*5)	: ± 1.0% (relative to 100% of rated value)
		Reactive power	: ± 1.0% (relative to 100% of rated value)
		Apparent power	: ± 1.0% (relative to 100% of rated value)
		Frequency	: ± 1.0% (in 45 to 65Hz range)
		Power factor	: ± 3.0% (relative to electrical angle of 90°)
		Energy use	: ± 2.0% (in 5 to 100% range of rated value, power factor=1)
		Reactive energy use	: ± 2.5% (in 10 to 100% range of rated value, power factor=0)
		Current measurement mode	Current, demand current (*5)
No. of measurement circuits	Normal operation mode	4 circuits in a same voltage system (4 channels)	3 circuits in a same voltage system (3 channels)
	Current measurement mode	8 circuits (8 channels)	—
Data update cycle	Normal operation mode	500ms (*6)	—
	Current measurement mode	100ms	—
Response time		2s or less	
Power interruption backup		Backup in non-volatile memory (stored items: setting values, max./min. values and time and date they occurred, energy use (regenerative, consumption), reactive energy use, time-based energy use)	
Number of required slots		1	
No. of input/output points		32 (I/O allocation: Intelligent, 32 points)	
DC consumption current		0.46A	0.39A
Weight		0.19kg	
Appli- cable wires	Voltage input terminal	Solid wire	AWG24-AWG16
		Stranded wire	AWG20-AWG16
	Current input terminal	Stranded wire	AWG20-AWG18 Applicable crimp-style terminal: R1.25-3 (crimp-style terminal with sleeve is not allowed.)
Applicable standards (*7)		CE Marking (EN61131-2, EN61010-1, EN61326-1) UL Standard (ULS08) c-UL Standard (CSA C22.2No.14) KC Marking	

- *1: The module can be connected directly to 100 to 220 V circuits. When the voltage exceeds 220 V AC, an external voltage transformer (VT) is required.
(It is possible to arbitrarily set the primary voltage of VT to up to 6,600 V and the secondary voltage to up to 220 V.)
- *2: For voltage input, a voltage converter (QE8WH4VT) is required.
When the primary voltage of the voltage transducer exceeds 277/480 V AC, an external voltage transformer (VT) is required.
(It is possible to arbitrarily set the primary voltage of VT to up to 6,600 V as phase voltage.)
- *3: The ratio error of the voltage converter is ± 1.0% (of the rated primary voltage).
- *4: The ratio error of the current sensor is ± 1% (5 to 100% of the rating).
- *5: The demand values are moving average deviations within the specified time limit.
- *6: The energy use and reactive energy use are constantly measured. Load variation in a short cycle of 500 ms or less is followed.
- *7: QE83WH4W is applicable to the standards when combined with voltage converter (QE8WH4VT).

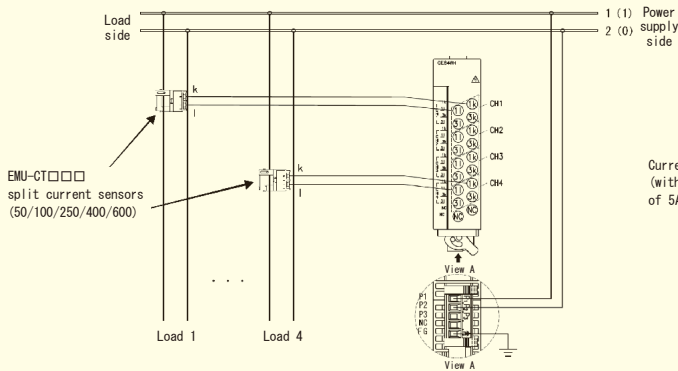
Dimensions (common to QE84WH and QE83WH4W)



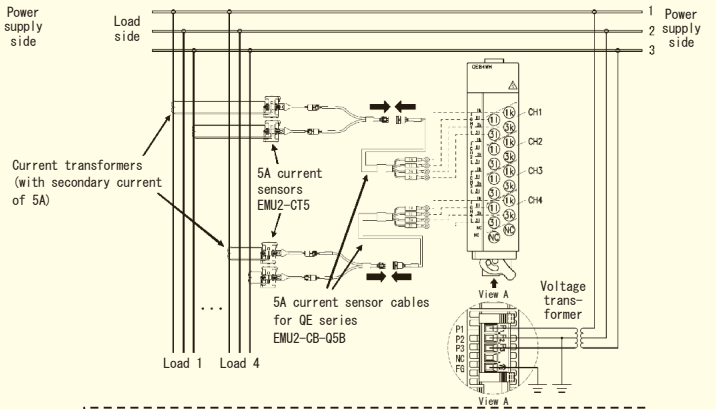
(1) Normal operation mode

<QE84WH>

① On single-phase two-wire system (low-voltage circuit)



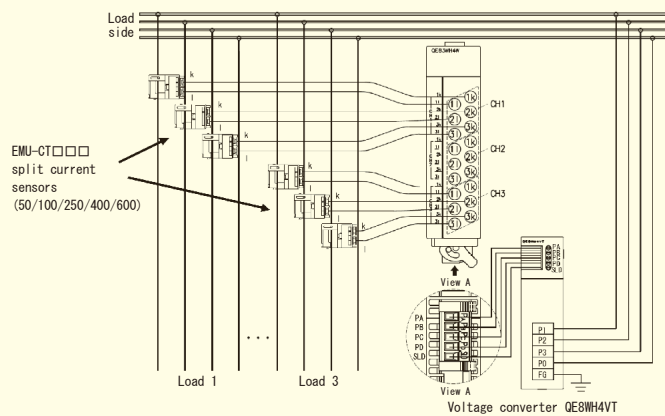
② Three-phase three-wire system (high-voltage circuit)



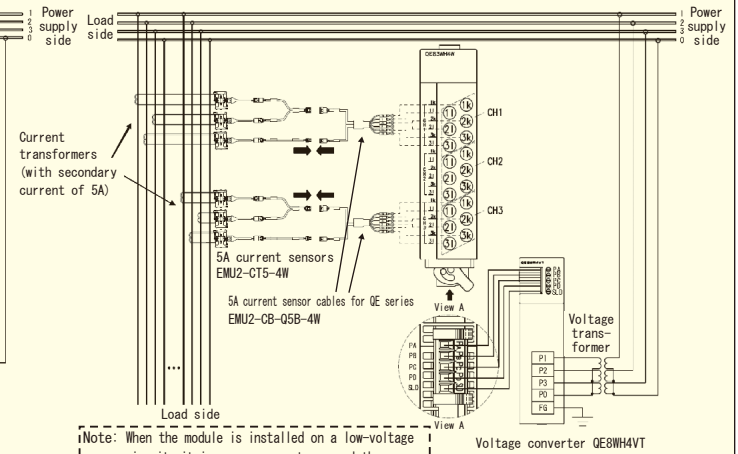
Note: When the module is installed on a low-voltage circuit, it is unnecessary to ground the secondary circuit of the voltage transformer.

<QE83WH4W>

① On three-phase four-wire system (low-voltage circuit)



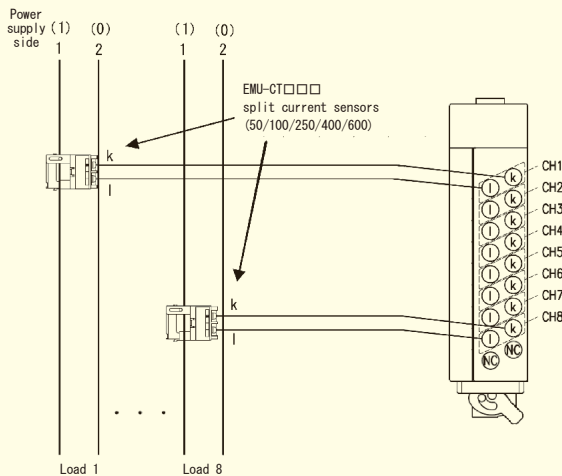
② On three-phase four-wire system (high-voltage circuit)



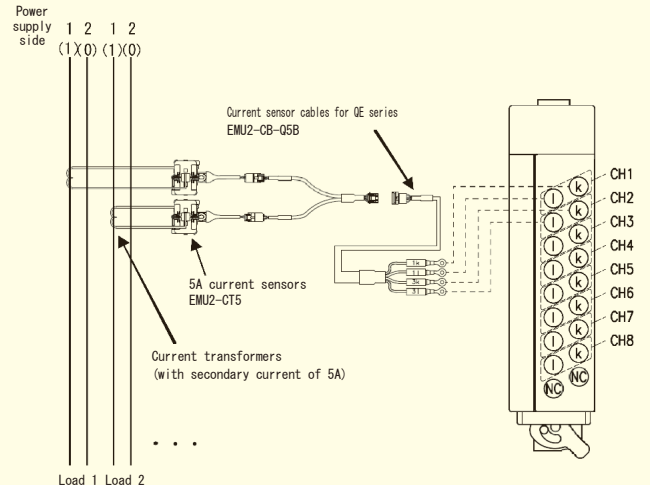
Note: When the module is installed on a low-voltage circuit, it is unnecessary to ground the secondary circuit of the voltage transformer.

(2) Current measurement mode <Common to QE84WH and QE83WH4W>




① On low-voltage circuit




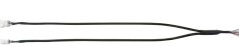
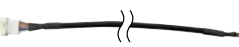



② On high-voltage circuit



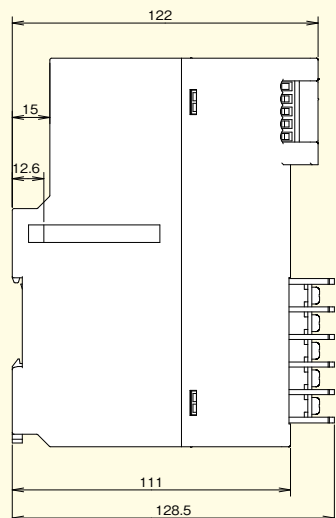
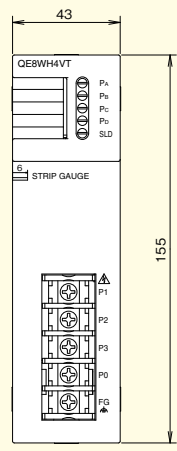
Options

Product name	Model name	Exterior appearance	Sales unit
Voltage converter	QE8WH4VT		1
Product name	Model name	Exterior appearance	Sales unit
Split current sensor	EMU-CT50 EMU-CT100 EMU-CT250		1
	EMU-CT400 EMU-CT600		1

Product name	Model name	Exterior appearance	Sales unit
5A current sensor	EMU2-CT5 (For QE84WH)		1
	EMU2-CT5-4W (For QE83WH4W)		2
5A current sensor cable (exclusive to QE Series)	EMU2-CB-Q5B (For QE84WH)		1
	EMU2-CB-Q5B-4W (For QE83WH4W)		1
Standard extension cable	EMU2-CB-T1M (1m) EMU2-CB-T5M (5m) EMU2-CB-T10M (10m)		1
Separate extension cable	EMU2-CB-T1MS (1m) EMU2-CB-T5MS (5m) EMU2-CB-T10MS (10m)		2

Specifications & Dimensions of Voltage Converter QE8WH4VT

Item	Specifications	
Model	QE8WH4VT	
Phase/Wire	Three-phase/Four-wire	
Input voltage range	63.5/110V to 277/480VAC (cannot operate at less than 55/95VAC)	
Frequency	50/60Hz	
Voltage output permissible tolerance	± 1.0% (relative to rated primary voltage)	
No. of connected units (max.)	5	
Consumption VA	P1 to P0: 2VA; P2 to P0: 0.3VA; P3 to P0: 0.3VA (for 277/480VAC input)	
Consumption current	30mA	
Secondary-side cable length	Max. 5m	
Mounting method	IEC rail mounted, screw mounted	
Weight	0.3kg	
Accessories	Unit panel mounting screws (M3 × 16), operations manual	
Applicable wires (usable wires)	Voltage input terminal	Solid wire: AWG 12 to 22
		Stranded wire: AWG 12 to 22
Tightening torque	Module panel mounting screw M3 × 16	0.61 to 0.82N · m

Dimensions


Unit: mm

Service Network

Country/Region	Sales office	Tel/Fax	Country/Region	Sales office	Tel/Fax
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Note on safety

- To use the product properly and with safety, be sure to read the "Instruction Manual" before use.
- To ensure safety, connection of the product must be done by an expert engineer of electric work or electric wiring.

MITSUBISHI ELECTRIC CORPORATION

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