

Voltage transform unit for the energy measuring unit of Mitsubishi general-purpose sequencer MELSEC-Q series
Model QE8WH4VT



User's Manual

- This product is a voltage transform unit specially designed for the three-phase 4-wire energy measuring unit of the MELSEC-Q series.
- Read carefully this manual and the manual for the energy measuring unit used in combination with this product before use, and use this product properly.
- After reading this manual, please keep it in a safe, handy place for ready reference, and read it as necessary.
- Ensure that this manual is delivered to the end user.

Before Use

The warning signs used in this manual and their meanings are shown as follows.

The following signs are used to categorize and describe the degrees of risk associated with the improper use of the product.

 Danger	Risk that may result in death, serious injury or other severe consequences if the product is used improperly	 Caution	Risk that may result in injury or damage to buildings/properties if the product is used improperly
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1. Safety Precautions

1.1 Precautions concerning the operating environment and usage conditions

Do not use the product in the following places or manners. Doing so may result in a malfunction or a reduced life of the product.

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| <ul style="list-style-type: none"> • Where the ambient temperature exceeds the operating temperature range (0°C to +55°C). • Where the humidity exceeds the operating humidity range (5% to 95% RH) or condensation occurs. • Where dust, corrosive gas, saline, or oil smoke exists. • Under strong electromagnetic field or noise. • Where metal pieces or conductive materials are scattered. | <ul style="list-style-type: none"> • Where the product is exposed to direct sunlight. • Where the product is exposed to rain fall or water drop. • Where frequent vibration or impact exists. • On other than the control board. • Where the altitude exceeds 2000 m. |
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1.2 Precautions concerning the preparation before use


Make sure that your installation site meets the requirements for the operation environment and usage conditions.

Before supplying voltage, check that the circuit voltage you use falls within the rated primary voltage range of the product.


1.3 Precautions for safety

For safety reasons, the product should be installed and wired by a technician who has expertise in electric work. Read this instruction manual before installation and wiring.


 Danger	<ul style="list-style-type: none"> • Before installation and wiring works, shut off the power source of all phases externally. Failure to do so may cause an electric shock or product damage.
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 Caution	<ul style="list-style-type: none"> • Screws should be tightened to the specified torque. Loose screws may cause a fall, short circuit, or malfunction. Over-tightening the screws may cause breakage of the screws or the unit, resulting in a fall, short circuit, or malfunction. • Do not touch directly the conductive parts and electric parts of the product. Doing so may cause an electric shock, failure, or malfunction. • Ground the FG terminal according to the D-type grounding (Type 3) or a higher-level type. Otherwise, an electric shock or malfunction of the unit may be resulted. • To comply with UL/c-UL standards, use the wires meeting the following requirements and the UL-listed solderless terminals. Input terminals: AWG 12 to 22 (single/stranded), Output terminals: AWG 12 to 24 (single/stranded) <ul style="list-style-type: none"> • The rated temperature of the copper conductor should be 60°C/75°C. • Use the product within the ratings shown in this manual. When using it outside the ratings, use a commercial instrument transformer. Use outside the ratings may result in not only a malfunction or failure but also a fire or burnout. • Wires to be connected to this product should be placed in a duct or secured together by clamps. Failure to do so may cause the wires to become loose, move, or be accidentally pulled, resulting in breakage of the product or wires or a malfunction due to contact failures of the wires. • Use electric wires of appropriate size. Wires of inappropriate size may cause heat generation, resulting in a fire. • When using stranded wires, use solderless terminals or strip off the wire tips to prevent the thin wires from loosening. Use solderless terminals of appropriate size that fit the wires. If an inappropriate solderless terminal is used, wire breakage or a contact failure may occur, resulting in a device malfunction, failure, burnout, or fire. • Upon completion of wiring, make sure to check for any missing/incomplete or incorrect wiring. Incomplete or incorrect wiring may cause a device malfunction, fire, or electric shock. • When performing an insulation resistance test or a commercial frequency withstand voltage test, ensure that the specified voltage is not exceeded. • To protect persons who do not have adequate knowledge of electric equipment from electric shocks, any of the following measures should be taken for the panel. <ol style="list-style-type: none"> (a) To lock the panel so that only trained persons having adequate knowledge of electric equipment can open it. (b) To design the structure so that the power is automatically interrupted upon opening of the panel. The protection class of the panel should be IP2X or higher.
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1.4 Precautions for maintenance

 Danger	<ul style="list-style-type: none"> • Before cleaning or further tightening screws on the product, shut off the input power source of all phases externally. Failure to do so may cause a failure or malfunction of the product. • Use a soft dry cloth to clean off dirt of the product surface. Do not leave a chemical cloth on the surface for a long time nor wipe the surface with thinner or benzene.
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1.5 Precautions for maintenance

 Danger	<ul style="list-style-type: none"> Make sure periodic inspection is performed with the electricity off. Failure to do so may cause an electric shock or malfunction. Perform the following inspections to use the product for a longer time. <ul style="list-style-type: none"> [Daily inspection] (1) Check for any damage to this product. (2) Check for any abnormal noise, odor, or heat generation. [Periodic inspection] (1) Check for any loose installation or terminal connection (every six months to one year).
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1.6 Storage precautions

When storing this product, shut down the inputs, disconnect the wires, and put it in a plastic bag. For long-time storage, avoid the following places. Failure to do so may result in a failure or a reduced life of the product.

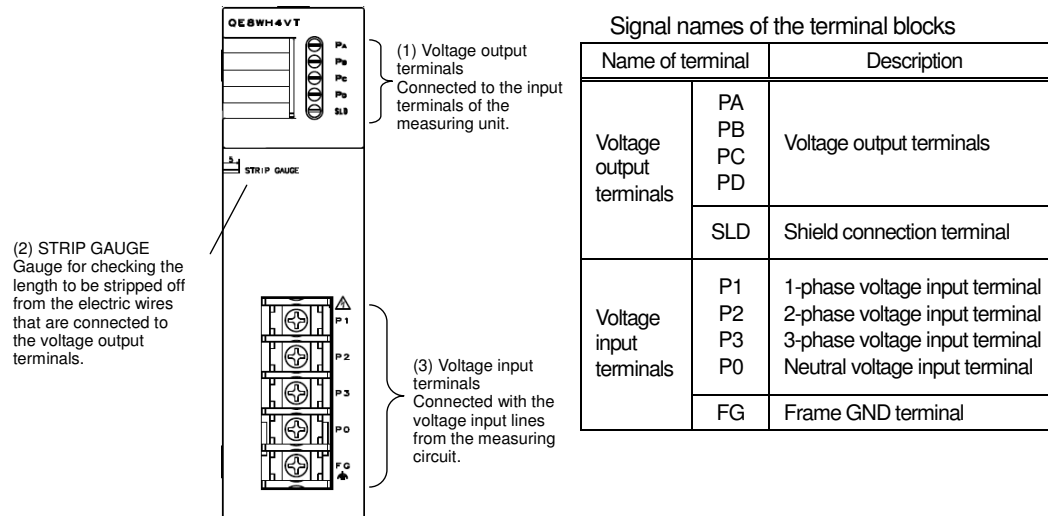
- Where the ambient temperature exceeds -25°C to +75°C (or the average daily temperature exceeds 35°C).
- Where the relative humidity exceeds 5% to 95% or condensation occurs.
- Where dust, corrosive gas, saline, or oil smoke exists.
- Where frequent vibration or impact exists.
- Where the product is exposed to rain fall, water drop, or direct sunlight.
- Where metal pieces or conductive materials are scattered.

1.7 Precautions for disposal

This product should be disposed of properly in compliance with the Wastes Disposal and Public Cleansing Act.

2. Name and Function of Each Part

2.1 Name of each part of voltage transform unit (QE8WH4VT)



- ✓ **Additional information**
To measure the length to be stripped off, align the connecting wire onto the groove of the STRIP GAUGE.

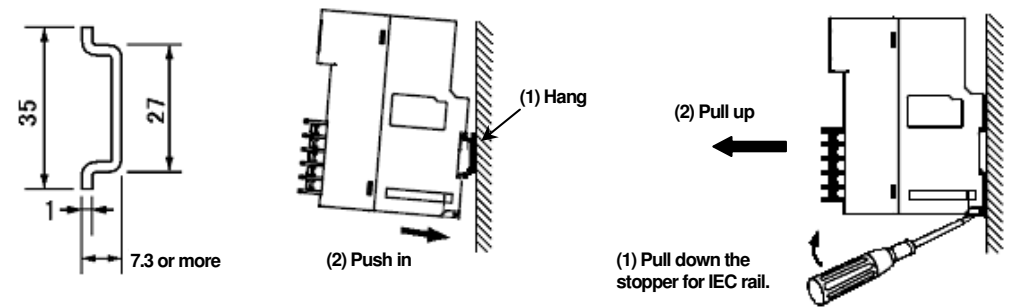
3. Installation Method

3.1 Installation on IEC rail

• Applicable IEC rail (35 mm)

• Installation

• Removal



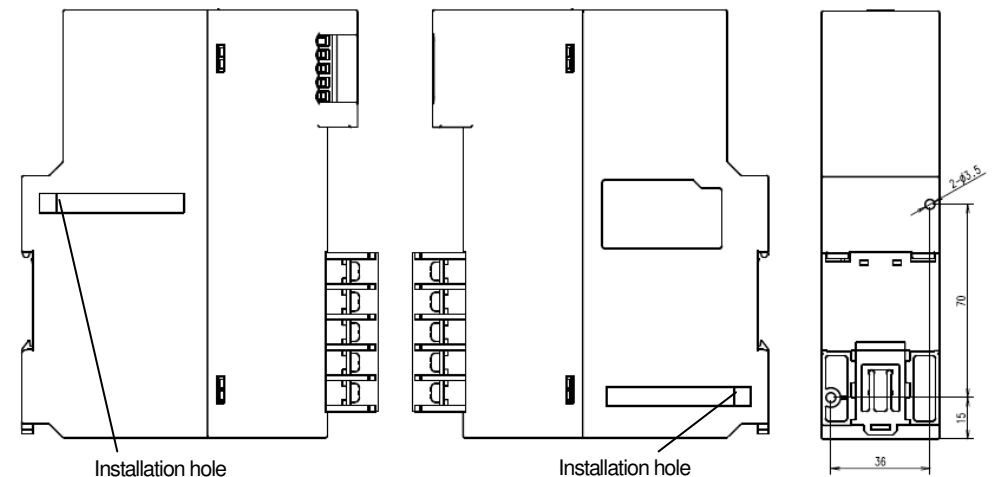
To install IEC rails, secure them using M4 or M5 screws at intervals of 25 to 100 mm. When installing IEC rails in series, secure each end of the IEC rails with sideslip prevention clamps. When reinstalling the product onto an IEC rail after removal, install it with the IEC rail stopper pushed in upward.

3.2 Installation with screws

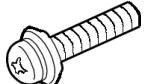
Tighten M3 screw accessories with a torque of 0.61 to 0.82 N·m in the two installation holes on both sides of the product.

Left side

Right side



• Screw accessories

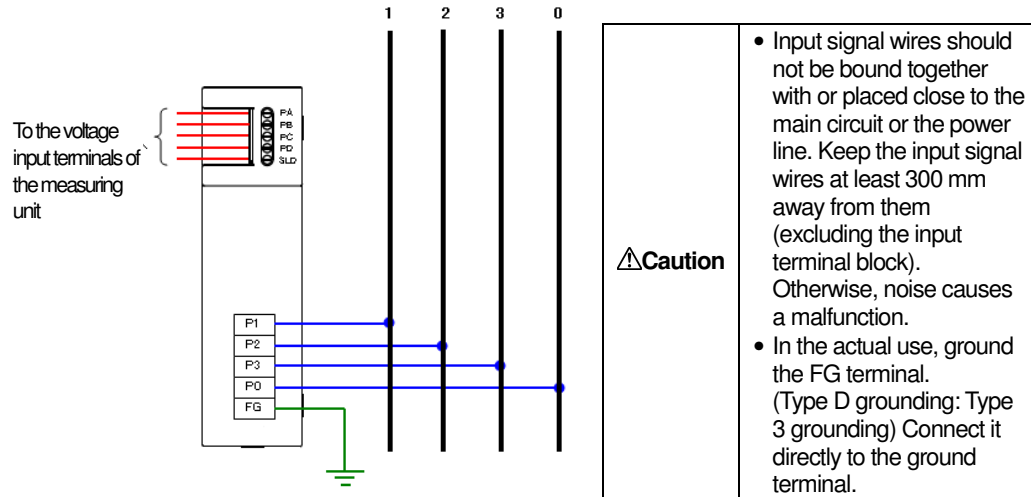
	Screw
	M3 × 16mm
	× 2

4. Wiring Method

4.1 Wiring

Install the wiring according to the following wiring diagram.

This product is specially designed for the three-phase 4-wire system. It does not support circuits using any other phase wire systems.



- The rated voltage of the voltage transform unit is 63.5/110 to 277/480 V AC. Do not use it for any circuits exceeding 277/480 V AC.
- Up to five energy measuring units can be connected to one voltage transform unit.
- For more information on the wiring, refer to the wiring diagrams contained in the user's manual of the energy measuring unit used in combination with this product.

4.2 How to connect wires

- Use the electric wires and solderless terminals shown in the table below, and tighten them to the tightening torque indicated in the table below.
- The strip length of the sheaths of the electric wires used on the output side should be 6 to 7 mm. Measure the length of the electric wire sheaths to be stripped using the strip gauge on this product.
- After connecting wires, check to see if they are properly connected, and then install the terminal cover of the input terminal block.
- The output signal wires drawn from the output terminal block should be shielded.

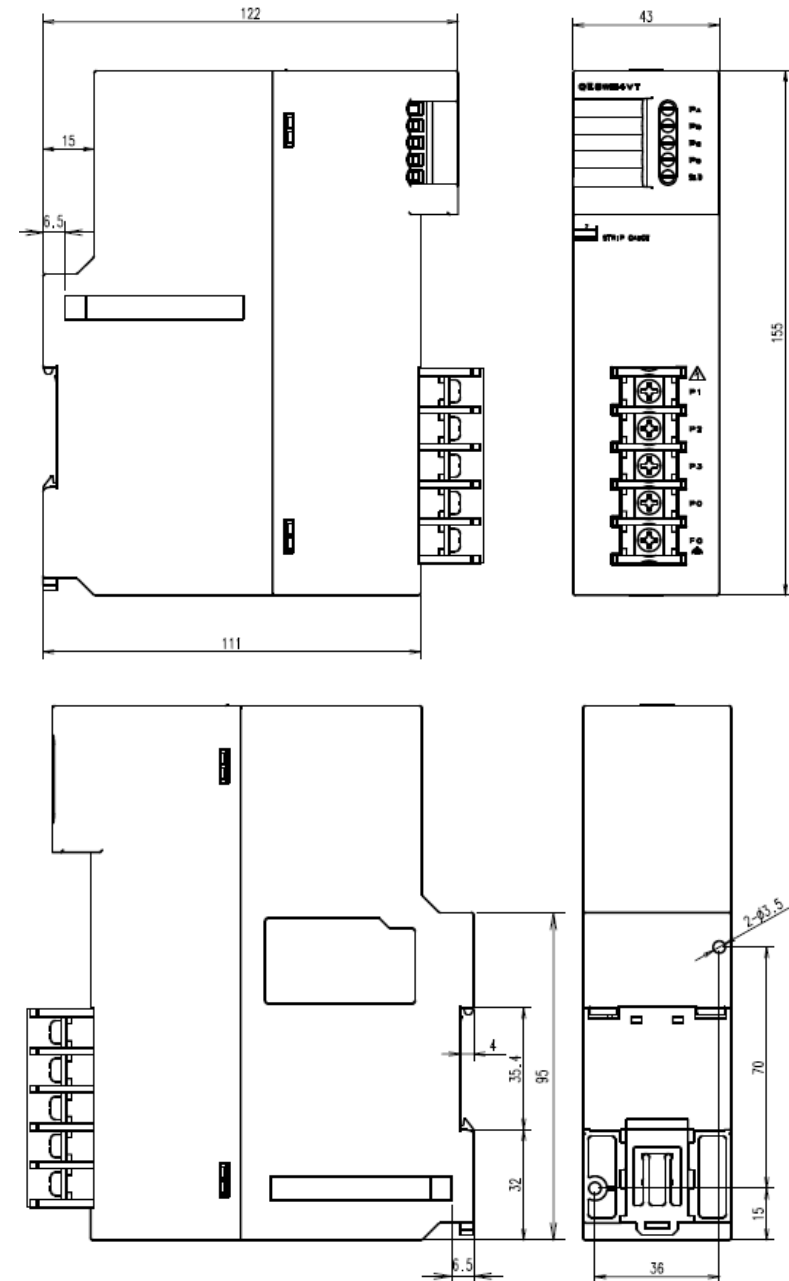
		Input terminal block	Output terminal block
Wire	Single wire	AWG 12 to 22	AWG 12 to 24
	Stranded wire		
Solderless terminal		For M4 screw having an external dimension of 8.5 mm or less	-
Tightening torque		1.4 N•m	0.5 N•m

- UL/c-UL listed corresponds, use the wires according to the following conditions.

Input terminals: AWG12-22 (Single wire / Stranded wire) Output terminals: AWG12-24 (Single wire / Stranded wire)
60/75°C copper conductor only.

5. External Dimensions

Unit: mm



6. Specifications

Item	Specification	
Model	QE8WH4VT	
Phase wire system	Three-phase 4-wire	
Input voltage range	63.5/110 to 277/480 V AC (The product does not operate on the voltage below 55/95 V AC.)	
Frequency	50 Hz/60 Hz	
Voltage output tolerance	±1.0% (against the rated primary voltage)	
Measurement category	CATIII	
Pollution degree	II	
Maximum number of connections	5 units	
Operating condition	Operating temperature	0°C to +55°C (Average daily temperature 35°C or below)
	Operating humidity	5% to 95% RH (without condensation)
	Storage temperature	-25°C to +75°C
	Altitude	2000 m or lower
Commercial frequency withstand voltage	Between voltage input terminals (P1, P2, P3, P0) and FG terminal: 2210 V AC for 3 seconds Between voltage input terminals (P1, P2, P3, P0) and secondary output terminals (PA, PB, PC, PD) (except for SLD terminal) 2210 V AC for 3 seconds	
Insulation resistance	10 MΩ or more (500 V DC) at the same locations as above	
Consumption VA	P1-P0: 2 VA, P2-P0: 0.3 VA, P3-P0: 0.3 VA (when inputting 277/480 V AC)	
Current consumption	30 mA	
Installation location	Inside the control panel	
Secondary wire length	5 m	
Installation method	Installation on IEC rails, installation with screws	
Weight	0.3kg	
Product life expectancy	10 years (used under the operating conditions above.)	
CE marking compliance	EN 61131-2, EN 61010-1, EN 61326-1	
Combined device for CE marking compliance	Compliant with CE when combined with the energy measuring unit of Mitsubishi general-purpose sequencer MELSEC-Q series.	
Combined device for UL/c-UL compliance	Compliant with UL/c-UL when combined with the energy measuring unit of Mitsubishi general-purpose sequencer MELSEC-Q series.	



<Usage as a CE-marked product> Follow the instructions below.

- The measurement category and pollution degree should be III and II respectively.
- Connect the product to the secondary side of the circuit breaker.
- Be sure to install the product inside the panel.

7. After-sales Service

If you have any question or technical troubles in using the product, contact your nearest branch of Mitsubishi Electric Corporation.

- The charge-free warranty period for the product shall be 36 months from the date of your purchase or the date of delivery to your specified location. However, the maximum limit of the charge-free warranty period shall be 42 months from the time of manufacture considering that the distribution period of the product is six months at the longest after shipment from our manufacturing factory. Also, the charge-free warranty period for the replacement product shall not be extended exceeding the charge-free warranty period for the original product.
- Our company shall not be liable to compensate for any loss arising from events not attributable to us, opportunity loss and lost earning of the customer due to a failure of the product, and loss, secondary loss, accident compensation, damage to other products besides our products and other operations caused by a special reason regardless of our predictability in both within and beyond the charge-free warranty period.



When the product emits abnormal noise, odor, smoke, or heat, turn off the power immediately and stop using it.

8. Customer Service

Please contact us at the following locations.

1 - 8 Midori-cho, Fukuyama-shi, Hiroshima, 720 - 8647, Japan

Phone (084) 926 - 8142

When exported from Japan, this manual does not require application to the Ministry of Economy, Trade and Industry for service transaction permission.

Specifications subject to change without notice.