

Read this manual carefully, and use this instrument properly.

- Read this manual thoroughly before using the equipment for proper handling.
- This manual should be retained for the future reference.
- Be sure that the manual is delivered to the end users.

<The model which can be combined with this ZCT>

- Mitsubishi Electronic Multi-Measuring Instrument:ME110NSFL, ME110SSFL
- Mitsubishi Programmable Controller MELSEC-Q
Insulation Monitoring Module:QE82LG
- Energy Measuring Unit
Insulation Monitoring Model:EMU4-LG1-MB

※Don't use this ZCT in state connected besides the model mentioned above.

1. Safety Precautions

1.1 Precautions concerning working environment and conditions

Do not use the unit in any of the following places. Doing so may cause malfunctions or a reduction in service life.

- Places where the ambient temperature exceeds the working temperature range (-20°C to +50°C)
(Places where the daily average temperature exceeds +35°C)
- Places where the relative humidity is 85%RH or more or where condensation occurs
- Places with a lot of dust, corrosive gas, salt or oily smoke
- Places with a lot of vibration or impacts
- Places where the unit may be exposed to rain or drops of water, and direct sunlight
- Places where the circuit with many harmonics.
- Places with strong electromagnetic field or noise
- Places where the out of the cabinet.
- Place where the altitude exceeds 2000m

1.2 Precautions concerning preparations before using the equipment

- Use the unit in the specified usage environment and conditions.
- Check the current ratings of the equipment.

- Don't give this product vibration, a shock at the time of the transportation as much as possible.

1.3 Precautions concerning installation and connection

For safety, the unit must be installed and connected by experts in electrical work.

⚠ Danger	<ul style="list-style-type: none"> • Perform installation, disassembly, the wiring work after intercepting a power supply by all means. There might be the damage of an electric shock or the product.
⚠ Caution	<p><Precautions concerning installation and connection></p> <ul style="list-style-type: none"> • Carry out the damping of the crimp-type terminal lugs by prescribed torque (refer to figure 1). The excessive clamping becomes the ruination of a terminal and the screw. • After tightening, be sure to check that all screws have been tightened. Failure to tighten any screw can cause unit malfunctions, fires, and electric shocks. • Connect the wires carefully, checking the wiring diagram. Incorrect wiring can cause unit failures, fires, and electric shocks. • Use an electric wire of the size of penetrating this ZERO PHASE CURRENT TRANSFORMER (ZCT) for primary side cable, do not use a non-insulation electric wire or a metal for a primary cable • Lay the connection of the second terminal so that vibration / a shock does not depend on the terminal part directly. • Use an electric wire of the size of penetrating this ZCT for a primary side cable, do not use a non-insulation electric wire or a metal for a primary cable • Use the M4 screws crimp type terminals appropriate for for which is suitable for electric wire size (1.2 to 2.0mm²). The use of the infelicity causes malfunction of the machinery, trouble, a damage by a fire, the fire by outbreak of the poor disconnection and contact. • To avoid the influence of external magnetic fields, the installation shall be at least 45cm away from large current bus bars with several 1000A. • Read the manual of measuring units which is used with this ZCT, and is used well, and follow it • Use this ZCT in cabinet certainly. • Arrange an electric wire so that the weight of the electric wire does not depend on ZCT. <p><To avoid getting shock></p> <ul style="list-style-type: none"> • As for the panel, it be assumed that it was given the following matters • It is necessary to attach a key to the cabinet. • The structure that a power supply is intercepted automatically is necessary when opening a cabinet. • Degrees of protection (IP code) needs to higher than IP2X level.

⚠ Caution	<p><Precautions concerning usage></p> <ul style="list-style-type: none"> • Dust or rust on the split part can degrade the performance of the ZCT. Wipe the dirt from the surface with soft dry cloth. • Use this ZCT within the rated range stated here. Using the unit out of the rated range may cause not only malfunctions or unit failure, but also fires or burnout. • Do not open the secondary side of the ZCT while the primary current is running. When the secondary side of the ZCT is open, the primary current runs while the secondary current does not, which induces high voltage on the secondary side and increases the temperature. This may cause an insulation breakdown of the secondary winding and results in burnout.
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1.4 Precautions concerning maintenance

⚠ Caution	<ul style="list-style-type: none"> • Protect the unit from a power failure. Failure to do so can cause unit failures, fires, or electric shocks. • Wipe off the surface dirt with tender cloth. Don't let chemical cloths touch it for a long time, and do not wipe it with benzine or thinner. • Wipe off the separate surface on cores with tender cloth. Don't use wet cloth.
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1.5 Precautions concerning inspection

⚠ Caution	<ul style="list-style-type: none"> • Perform the care for ZCT at the time of a periodic inspection with the blackout. • When there is the loosen screws in a joint, fasten it again.
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1.6 Precautions concerning storage

When storing the ZCT, disconnect cables and wires, and put them in vinyl bags or the like.

When storing the ZCT for a long time, avoid keeping it in the places shown below.

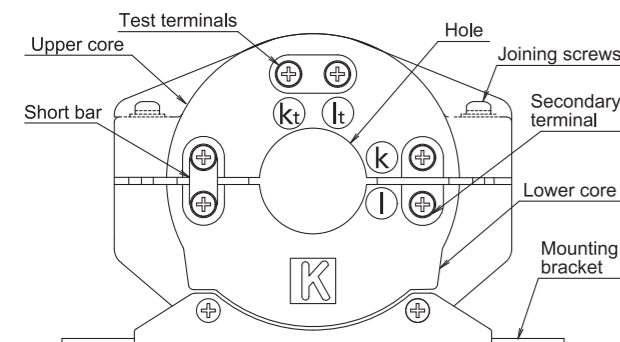
- Places where the ambient temperature is out of the range from -30°C to +60°C
(Places where the daily average temperature exceeds +35°C)
- Places where the relative humidity is 90%RH or more or where condensation occurs.
- Places with a lot of dust, corrosive gas, salt or oily smoke.
- Places with a lot of vibration or impacts.
- Places where the unit is exposed directly to rain, water droplets.

1.7 Precautions concerning disposal

Dispose this product appropriately in accordance with the national or community rule. mounting bracket can be recycled as iron. (Refer to 5. WEEE Directive.)

2. Installation

2.1 The name of each part



2.2 Installation points

- 1) Unscrew the short bar and take off the one side of the short bar.
- 2) Loosen a joining screw of ZCT in right and left side alternation equality and take off upper core.
- 3) Put a primary wire through lower core.
- 4) Install lower core in the setting position and tighten screws with mounting bracket. Please prepare the screws for mounting bracket in the table below.
- 5) After confirming in dust not sticking to the separate surface on cores, put upper core and lower core together and assembling joining screws. Tighten a joining screw in right and left equality.
- 6) Tighten up short bar
- 7) Wiring secondary terminal (k, l). Wiring the test terminals (kt, lt) if necessary.

2.3 Torque

• Tighten the screw by the following prescribed torque Tightening too much or the lack of unpleasant clamping influences damage and the characteristic of the instrument.

Model	Joining screws		Secondary Terminals Test terminals Short bar		Screws for mounting bracket	
	Size	Torque[N·m]	Size	Torque[N·m]	Size	Quantity
CZ-22S	M4	0.54~0.66	M4	0.98~1.35	M5	2
CZ-30S		0.59~0.72				
CZ-55S	M5	0.95~1.16			M6	2
CZ-77S	M6	1.32~1.62				4
CZ-112S						

2.4 Instructions for use

- ZCT is a highly precise magnetic material. Don't give a shock.
- Dust or rust on the split part can degrade the performance of the ZCT. Wipe the dirt from the surface with soft dry cloth.
- Be sure to attach the short circuit plate. If you forget to install the short circuit plate, you will not be able to detect leaks correctly.

2.5 Instructions for wiring

• Refer to the wiring diagram of the instruction manual of the measurement units combine with the ZCT.

• The electric wire diameter which go through hole is as follows. (Nominal cross-sectional area of conductor IV:Indoor PVC, CV:Cross linked polyethylene PVC) Because there is the case that I cannot penetrate by a finish external form, the transformation (curves) of the electric wire, Confirm dimensions.)

The biggest electric wire diameter and the tolerance current

Phase system	wires	Cable	Nominal cross-sectional area of conductor [mm ²](Current tolerance[A])				
			CZ-22S	CZ-30S	CZ-55S	CZ-77S	CZ-112S
Single phase 2 wire	2	IV	22(115)	60(217)	250(556)	500(842)	—
		CV	22(130)	38(190)	200(545)	500(920)	1000(1470)
Single phase 3 wire	3	IV	22(115)	38(162)	200(469)	500(842)	—
		CV	14(100)	22(130)	150(455)	325(725)	800(1285)
Three phase 4 wire	4	IV	14(88)	38(162)	150(395)	325(650)	—
		CV	8(72)	22(130)	150(455)	325(725)	600(1005)

- About the connection of the polarity (K, L) of ZCT, confirm it by the wiring diagram of the instruction manual of the measurement units put it together, and to use.
- Test terminals (kt, lt) are terminals for movement test with the measurement units. It is convenience at the time of the maintenance check, if it draws wiring to the surface of the cabinet with a terminal symbol.
- Do not be made to short-circuit at test terminals, the grounding is unnecessary, too. (ZCT cannot detect a leakage current definitely when it is grounding.)

● Instructions for penetrating wiring through ZCT

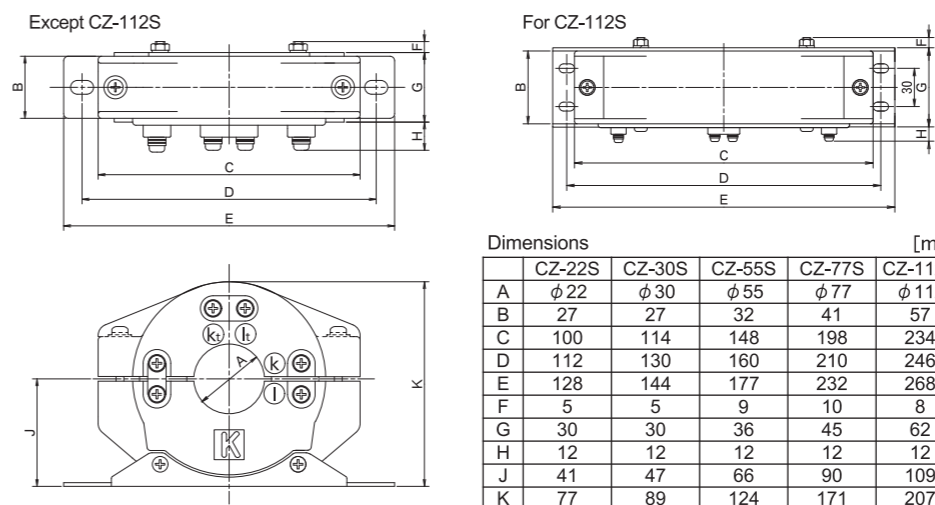
<p>1. In the case of single-phase 3 wire system or three phase 4 wire system, let wiring including neutral wire by all means be through ZCT hole.</p> <p style="text-align: center;">Neutral wire through the ZCT</p>	<p>2. Do not let penetrate the grounding wire when there is a grounding dedicated line in the electric circuit, go through ZCT hole. Do not let penetrate the electric wire which is not aimed at to turn on a load electric current, through ZCT hole.</p> <p style="text-align: center;">Do not pass the grounding wire</p>	<p>3. Because it may give ZCT mechanical stress when a severe electric current flows by short circuit accidents, the electric wire penetrating ZCT bundles it up and tie it up by bands.</p>
<p>4. Do not bend an electric wire penetrating ZCT in a closely of ZCT. When it let ZCT penetrate primary wiring over 300A, keep wiring straight in line more than one side 30cm.</p>	<p>5. The secondary wiring of ZCT do not be grounding.</p>	

3. Specification

Model	CZ-22S	CZ-30S	CZ-55S	CZ-77S	CZ-112S
Hole dimensions (mm)	φ22	φ30	φ55	φ77	φ112
Rating primary current	50A AC	100A AC	300A AC	600A AC	1000A AC
Maximum voltage	600V AC				
Frequency	50-60Hz				
Rated short time current (Peak value)	50kA(100kA)				
Measurement (installation) category	CAT III				
Pollution degree	2				
CE marking and UKCA marking conformity standard	EN61010-2-032				
CE marking and UKCA marking conformity combination unit	This ZCT conform to CE standard and UKCA standard in a condition use with QE82LG (Mitsubishi MELSEC-Q series programmable controllers Insulation Monitoring Module) This ZCT conform CE standard and UKCA standard in a condition use with EMU4-LG1-MB (Energy Measuring Unit Insulation Monitoring Model)				
Mass	0.5kg	0.6kg	1.8kg	2.8kg	6.0kg

⚠ Caution	<p><Usage as the CE marking and UKCA marking conformity article></p> <ul style="list-style-type: none"> • As for the Maximum voltage 600V AC, measurement category III, pollution degree 2. • Install the ZCT to the secondary of the circuit breaker. • Install the current sensor in the cabinet • Use the PVC insulation electric wire (less than heat-resistant temperature +70°C.)
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4. Dimensions



5. WEEE Directive

This symbol mark is for EU countries only. This symbol mark is according to the directive 2012/19/ EU Article 14 Information for users and Annex IX. This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste.

6. UKCA marking



7. Customer Service

MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE: TOKYO BUILDING, 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, Japan
Please refer to "catalog" for more detail.

When exported from Japan, this manual dose not require application to the Ministry of Economy, Trade and Industry for service transaction permission. Specifications subject to change without notice.