for a greener tomorrow

MITSUBISHI ELECTRIC
Changes for the Better

FACTORY AUTOMATION

Instrument Transformers

High Reliability and Wide-ranging Variations to Meet Diversified Needs

18A

GLOBAL IMPACT OF MITSUBISHI ELECTRIC

Through Mitsubishi Electric's vision, "Changes for the Better" are possible for a brighter future.

Changes for the Better

We bring together the best minds to create the best technologies. At Mitsubishi Electric, we understand that technology is the driving force of change in our lives. By bringing greater comfort to daily life, maximizing the efficiency of businesses and keeping things running across society, we integrate technology and innovation to bring changes for the better.

Mitsubishi Electric is involved in many areas including the following

Energy and Electric Systems
A wide range of power and electrical products from generators to large-scale displays.

Electronic Devices
A wide portfolio of cutting-edge semiconductor devices for systems and products.

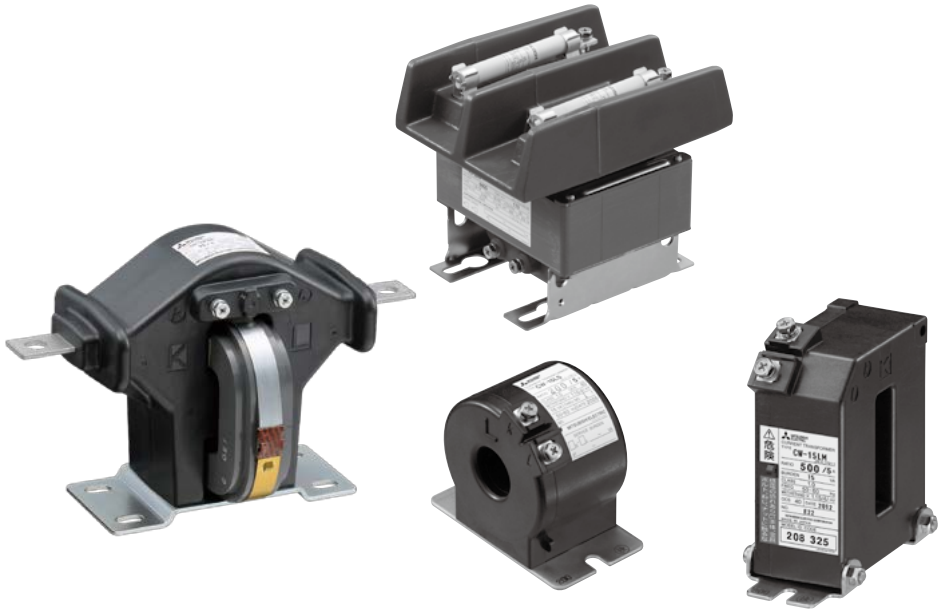
Home Appliance
Dependable consumer products like air conditioners and home entertainment systems.

Information and Communication Systems
Commercial and consumer-centric equipment, products and systems.

Industrial Automation Systems
Maximizing productivity and efficiency with cutting-edge automation technology.

The deciding factor for voltage and current transformers is insulation performance.

The instrument transformers are current or voltage transformers to be used in combination with electric meters and measuring devices.
They are used as sensors on electric circuits and play an important role to prevent the spread of damage due to accidents in electric equipment, and therefore they are required to have high reliability.
Mitsubishi Electric instrument transformers developed based on its technologies accumulated over many years and manufactured with excellent insulating materials have high reliability.



INDEX

1. Overview and Features of Instrument Transformers 2
2. Be Certain to Observe the Following Precautions to Ensure Safety 4
3. Model List 8
4. Selection 11
5. Specifications and External Dimensions by Model 14
5-1 Current transformers 14
5-2 Voltage Transformers (Unearthed Type) 68
5-3 Earthed Voltage Transformers 77
5-4 Zero-phase Current Transformers 80
5-5 Voltage&Current Transformers 82
6. Special Applications 83
7. Foreign Standard Applications 87
8. Transformer Characteristics 88
9. Handling and Maintenance 92
10. Transition of transformer models 94
11. How to Order 96

1 Overview and Features of Instrument Transformers

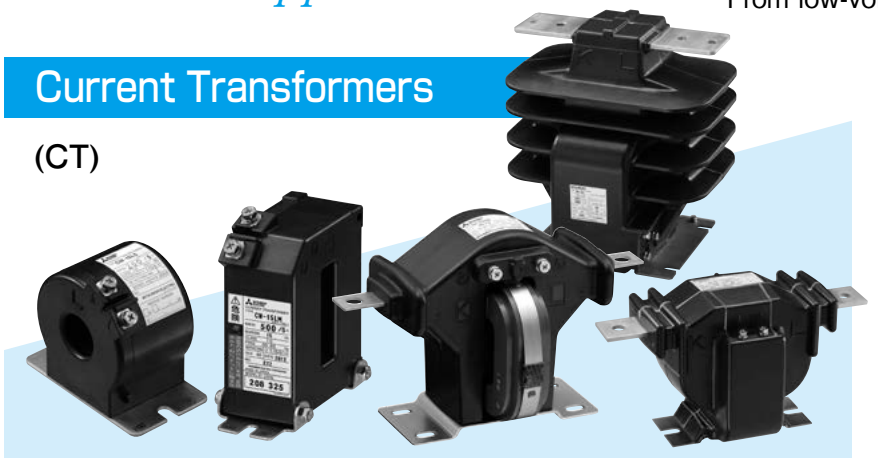
Mitsubishi Electric Instrument Transformers are highly reliable owing to the use of advanced technologies and superior insulating materials.
Choose from a wide range of models to best match your application needs.

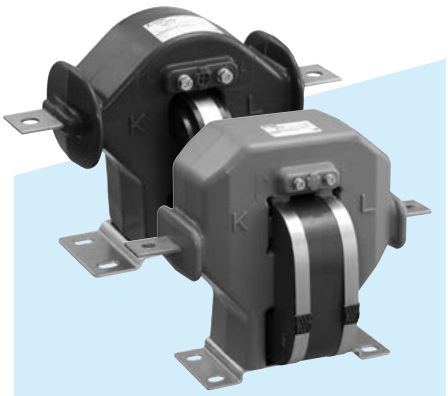
Vast model line-up in answer to diversified application needs

From low-voltage to 33kV

Current Transformers

(CT)





Low-voltage 22000V

CW Low-voltage Series
- Primary winding
- Round window through-type
- Rectangular window through type
- Emergency heat-resistant
- Class 2 verification
- Separated

CD High-voltage Series
- Overcurrent intensity: 40x to 300x
- Class 2 verification, Class 1 verification

BS Series
- Through-type

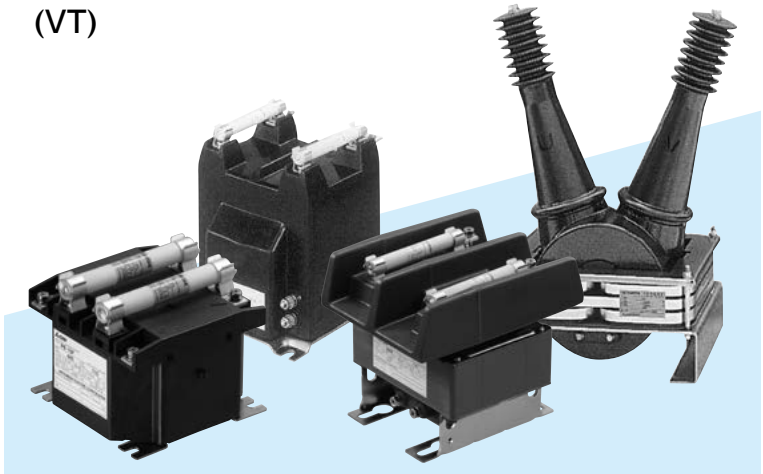
EC/BN High-voltage, Extra-high-voltage Series
- Full-mold, high overcurrent intensity
- Class 2 verification, Class 1 verification

For cubicle-type high-voltage power receiving equipment

AN/CN JIS C 4620 Appendix Series
- 12.5kA/0.125sec
- 12.5kA/0.25sec

Voltage Transformers

(VT)



Low-voltage 33000V

PE Low-voltage Series
- 15VA and 50VA
- Class 2 verification

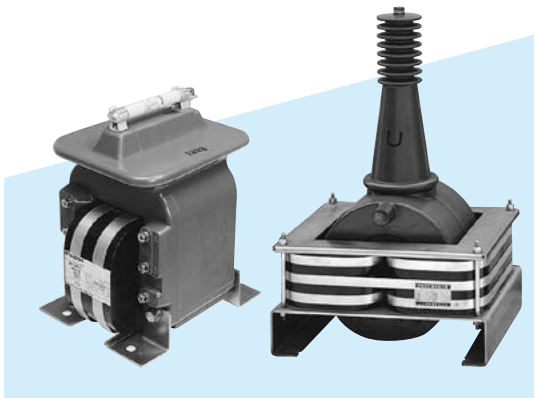
PD Low-voltage, High-voltage Series
- 50VA, 100VA and 200VA
- Class 2 verification, Class 1 verification

EP High-voltage
- 50VA and 100VA
- Full-mold

EV Extra-high-voltage Series
- 100VA and 200VA

Earthed Voltage Transformers

(EVT)



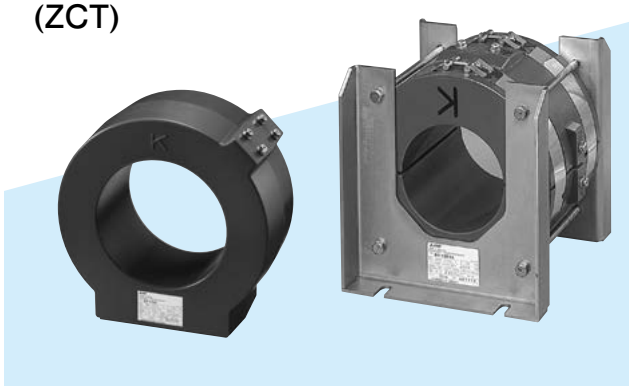
Low-voltage 33000V

EF High-voltage Series
- 100VA and 200VA
- 3-phase models available

EV Low-voltage to Extra-high-voltage Series
- 50VA, 100VA and 200VA

Zero-phase Current Transformers

(ZCT)

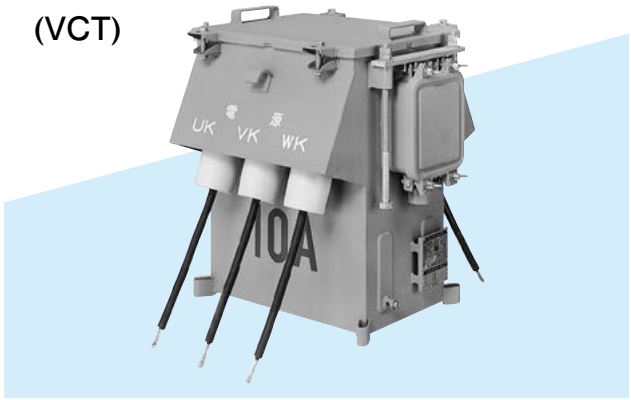


BZ Series

- Cable through-type
- Separated design also available

Voltage&Current Transformers

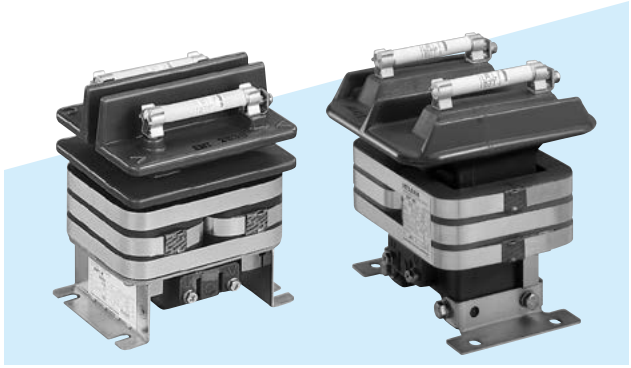
(VCT)



PO High-voltage

- Outdoor/for power supply and demand
- Class 2 verification, Class 1 verification

Transformer for control circuits



EMT

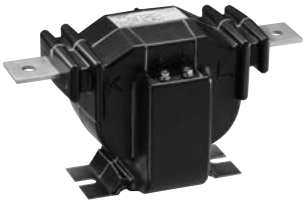
- For operating power supplies of high-voltage circuit breakers

Excellent Insulation Performance

The use of superior insulation materials such as epoxy resins and Melquid rubber for these instrument transformers ensures excellent insulation performance.

- The heat-resistant resin of the CW Series uses a flame retardant material compliant with the UL 94 V-O (self-extinguishing) standard.
  However, CW-5LS3 and CW-5LMS3 cases use a flame retardant PBT resin material compliant with the UL 94 V-O (selfextinguishing) standard.

● Fully molded cases manufactured using Melquid rubber (EC/BN Series)



- Melquid rubber, which has excellent electric and mechanical characteristics, is used for these fully molded units.
- Small in size, lightweight and highly reliable.

Pursuing Compact Size and Operation Ease

- The CW Series of low-voltage current transformers offers units that are compact in size and lightweight. Available in a wide range of models (e.g., cable or busbar wiring and small currents), wiring of this product is simple and easy. The direction of the mounting plate can be turned 90°.
- For zero-phase current transformers, there is also a separated design that can be easily attached using existing cables.

2 Be Certain to Observe the Following Precautions to Ensure Safety

In order to get the best service life out of Mitsubishi Electric Instrument Transformers, be certain to observe the following items when using these products.

1 Usage Environment and Usage Conditions

(1) Do not use instrument transformers in the following places. It may lead to dielectric breakdown and shorter service life.

- Places where the ambient temperature is outside the range of -20 to 50℃
- Places where the daily mean temperature exceeds 35℃
- Places where the relative humidity is equal to or more than 85%, or places where condensation forms
- Places where the altitude exceeds 1000m
- Places where there is much dust, corrosive gas, salt-laddened wind (high salt content), or oily smoke
- Places where vibrations and/or jolting occurs frequently
- Places exposed to rain, water drops or sunlight (for indoor products)
- Near circuits with high harmonics
- Places where small animals such as mice and snakes may Infiltrate

(2) If using a transformer in a location subject to hightemperature/humidity, corrosive gas, high altitude, pollution/humidity, high-temperature or cool-temperature environments, refer to Special Environments on page 86.

(3) Select the model carefully when using a transformer for the following purpose.

- If combining an small-load electronic meter with a voltage transformer, choose a transformer with a load rating of less than or equal to 50VA. If a transformer with a high load rating is chosen, there will be a large margin of error.

(4) When using in combination with a voltmeter for verification, use the instrument transformer within the working load range indicated on it.

2 Installation

Be certain to observe the following regarding installation. To ensure safety, the electrical works required when installing transformers should only be performed by an experienced electrician.

- Install the transformer so it is not exposed to rainwater, oil or other matter such as dust and coarse particulates (for indoor products).
- Install the transformer horizontally or vertically. Do not install in any place where vibration or impact may be applied to it.
- The primary winding is insulated by molding. However, the mold surface may have a high electrical potential. Ensure proper insulation distance from surrounding objects.

3 Connections

Be certain to observe the following when connecting wiring.

⚠ Caution

- To ensure the safety, the wiring work shall be performed by electrical engineering technicians.

● Be certain to tighten terminal screws using the following torques.

Model	Type	Primary terminal (N·m)	Screw size	Secondary terminal (Tertiary terminal) (N·m)	Screw size
CT	CW Series	M5 : 2.84 to 3.72 M6 : 4.71 to 6.37 M8 : 11.7 to 15.3 M10 : 23.5 to 30.2	M5 M6 M8 M10	2.84 to 3.72	M5
				0.98 to 1.35	M4
	CD Series	M8 : 11.7 to 15.3 M10 : 23.5 to 30.2 M12 : 40.2 to 52.4 M16 : 99.0 to 130.3	M8 M10 M12 M16	2.35 to 3.04	M6
	EC/BN Series			2.35 to 3.04	M6
	AN/CN Series			2.35 to 3.04	M6
	BS Series	—	—	2.35 to 3.04	M6
	TM Series	1.37 to 1.76	M5	1.37 to 1.76	M5
VT	PE Series	1.37 to 1.76	M5	1.37 to 1.76	M5
	PD Series	2.35 to 3.04	M6	2.35 to 3.04	M6
	EP Series	1.37 to 1.76	M5	2.35 to 3.04	M6
	EV Series	10.98 to 14.50	M10	2.35 to 3.04	M6
EVT	EV/EF Series (except for the following models)	2.35 to 3.04	M6	2.35 to 3.04	M6
	EF-03XFC	2.35 to 3.04	M6	0.98 to 1.35	M4
	EV-1	10.98 to 14.50	M10	2.35 to 3.04	M6
	EV-1X	Earth side 2.35 to 3.04	M6		
	EV-2, EV-2X EV-3, EV-3X	10.98 to 14.50	M10	2.35 to 3.04	M6
ZCT	BZ Series	—	—	(including test terminals, connection terminals) 2.35 to 3.04	M6
VCT	PO-2HB PO-6HB	—	—	0.98 to 1.35	M4
Transformer for control circuits	EMT-K EMT-BB	2.35 to 3.04	M6	2.35 to 3.04	M6

● Be certain to tighten screws provided with brackets directly mounted on busbars for square window through-type current transformers.
Target models: Brackets directly mounted on busbars for CW-15LM, CW-40LM and CW-15LMS.

Applicable type/Rated primary current	Screw name	Tightening torque
CW-15LM 200 to 750A CW-40LM 300 to 2000A CW-15LMS 200 to 2000A	CT mounting screw (steel screw)	M5 screw: 1.37 to 1.76N·m
	Busbar mounting screw (brass screw)	M6 screw: 2.35 to 3.04N·m
CW-40LM 2500,3000A CW-15LMS 2500,3000A	CT mounting screw (steel screw)	M6 screw: 4.48 to 5.50N·m
	Busbar mounting screw (brass screw)	M8 screw: 6.67 to 8.92N·m

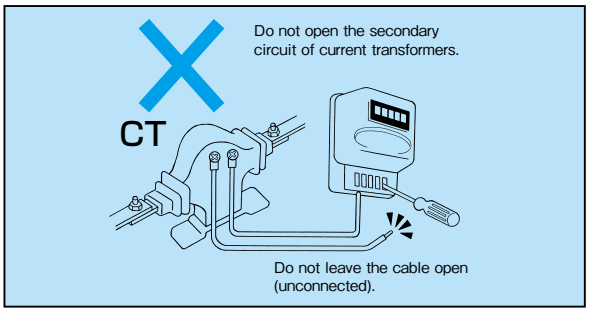
⚠ Caution

- Tightening screws too tight may damage the terminals.
- Tightening screws loosely may cause malfunction or the body to catch on fire.
- Do not perform connection work with live wires. This may cause electrical shock, equipment failure, burnout or a fire.
- Be certain to use electric cables made of materials and wire diameters suitable for the circuit voltage and rated current.
- Be certain to use crimp-type terminals suitable for the cable size. Using inappropriate crimp-type terminals may cause burnout or a fire.
- Be certain to connect cables to the primary and secondary terminals so that the terminal areas are not exposed to vibration or impact.

⚠ Caution

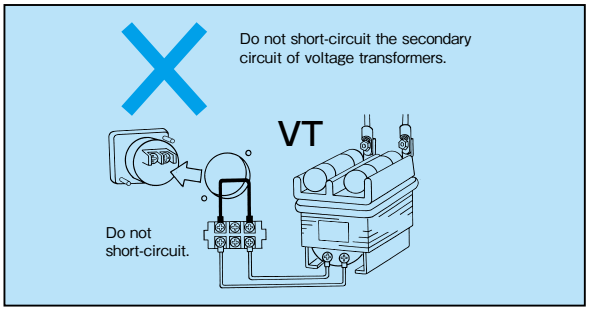
(1) Do Not Open Circuit on Secondary Side of Current Transformer

Opening the circuit on the secondary side of a current transformer when the primary current is flowing is prohibited. If the circuit on the secondary side is open, the primary current flows but the secondary current does not. Therefore, this induces high voltage on the secondary side, causing the temperature to rise. For this reason, dielectric breakdown occurs in the secondary winding and it could result in burnout.



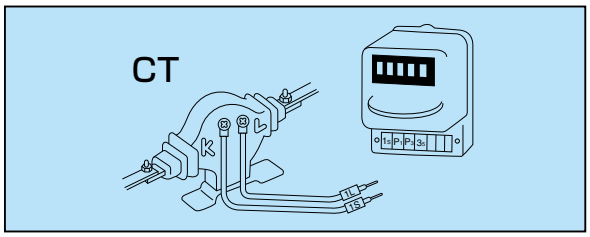
(2) Do Not Short-circuit Voltage

Transformers on the Secondary Side Short-circuiting voltage transformers on the secondary side or short-circuiting them with low impedance is prohibited. If the secondary side of the transformer is short-circuited or short-circuiting occurs due to low impedance, excessive current flows to the secondary winding and the winding will be damaged. Additionally, secondary winding burnout may result in dielectric breakdown of the primary winding, and this could lead to phase-to-phase short-circuiting.



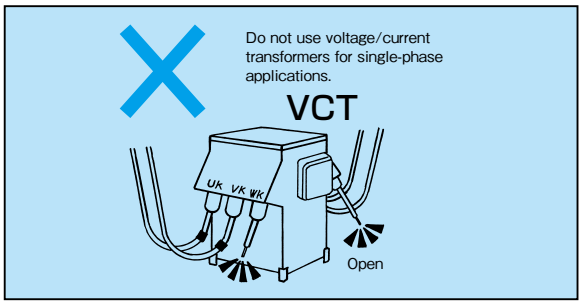
(3) Prevent Improper Connections

Be careful to make sure wires are connected properly. Improperly connected wiring may lead to faulty measurements and dangerous conditions.
Be certain to carefully check terminal markings when making connections.
For meters associated with power factoring such as voltmeters and watt-hour meters, be certain to pay careful attention to polarity when making connections.



(4) Do Not Use Voltage/Current Transformers for Single-phase Applications

Using voltage/current transformers (for 3-phase, 3-wire systems) for single-phase applications is prohibited. If you use a voltage/current transformer set to single-phase connected in a three-phase circuit, a wire in the unused phase is open. At this time, series resonance occurs in the voltage transformer caused by the grounding electrostatic capacity in the cable and voltage transformer winding reactance, and excess voltage may be generated. This excess voltage (approximately 1.3 to 2 times) could lead to burnout.



(5) Do Not Use Voltage Transformers on the Secondary Side of Inverter Circuits

Since the voltage waveform on the secondary side of the inverter circuit is a square wave (rectangular wave), the secondary output waveform of the voltage transformer becomes pulse-shaped and normal voltage is not output. The magnetic saturation of the core may lead to burnout.

(6) Do Not Use Voltage Transformers on the Secondary Side of Thyristor Circuits

Every time a thyristor circuit input operation occurs, an excitation current flows to the primary side of the voltage transformer. Heat generated from that current may lead to burnout.

(7) Grounding

Be certain to ground the secondary sides, frames, and outer case (or core if there is no case) of voltage, current and voltage/current transformers (except for low-voltage units). It is instructed in the technical standards for electrical equipment to ensure grounding to prevent harm to humans caused by mistaken contact on the primary side and to safeguard meters.

- Grounding work for the secondary side wiring of meter transformers

Type of meter transformer	Grounding work
Instrument transformers for etrahigh-voltage measurement devices	Class A grounding
Instrument transformers for high-voltage measurement devices	Class D grounding
Instrument transformers for low-voltage measurement devices	No grounding (For details, refer to Article 13 of the Interpretation of Technical Standards for Electrical Equipment).
Transformer for control circuits	Class B grounding

● Grounding work of devices with iron racks or outer cases
(If the transformer or instrument transformers does not have an outer case, the core is applicable.)

Classification of working voltage of devices		Grounding work
low-voltage	less than or equal to 300V	Class D grounding
	over 300V	Class C grounding
high-voltage or extra-high-voltage		Class A grounding

However, some equipment may not comply to the rules in the above table.
For details, refer to Article 29 of the Interpretation of Technical Standards for Electrical Equipment.
For CW, BZ and EP types without exposed iron cores, it is unnecessary to ground the mounting feet.

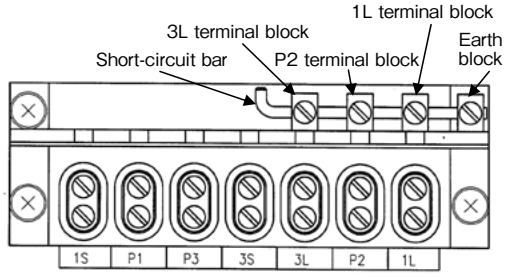
● Be certain to ground the earthed voltage transformer primary ground-side terminal before use.

(8) Connecting Terminals

Pay careful attention to connect wires to terminals properly, without leaving any open-wire gaps. Otherwise, overheating, measurement error, equipment burnout or a fire may occur. Additionally, improperly attaching the neutral wire in a 1-phase, 3-wire circuit may cause the load side of a device to burnout when 200V is applied.

(9) Confirm Grounding of the Voltage/Current Transformer Secondary Terminal Box

As the secondary terminals (1L, P2 and 3L) of voltage/current transformers must be grounded, check to confirm that the short-circuit bar described in the following figure is fastened to the 1L, P2 and 3L terminal blocks and the earth block.
Otherwise, the 1L, P2 and 3L terminals will not be grounded.



Secondary terminal box

⚠ Danger

● **Do Not Work with Live Wires**
Performing connection work when wires are live (i.e., electricity is supplied to the unit) is absolutely prohibited. This could lead to not only electrical shock, electrical burn injury and equipment burnout or a fire, but also loss of human life.

4 Preparations before Use

Be certain to carefully review the following items before use. If an abnormality exists, refer to Section 6 Matters Regarding Repairs at Time of Malfunction and Handling Abnormalities.

(1) Transportation

Carelessness at the time of transportation is a major cause of damage to transformers. Be certain to prevent subjecting the transformer to vibration and jolting as much as possible when moving it.

(2) Checking transformer upon arrival

Be certain to do the following inspections immediately after arriving at the final destination, and check to ensure that there are no abnormalities.

● Check for cargo damage due to accidents or handling during transportation, including packaging.
● For molded models, check for changes in shape, damage, blemishes, etc.

(3) Check ratings

Before using the transformer, be certain to check it ratings (e.g., voltage transformation ratio, current transformation ratio, rated load).

5 Usage Methods

Be certain to observe the following items when using a transformer.

⚠ Caution

(1) Be certain to use products within the range of ratings specified.

Be certain to use a transformer within the range of ratings specified for that model.
Otherwise, not only measurement error, but also burnout or a fire caused by overheating may occur.
Refer to 4 Selection on page 11 for selecting models.

(2) Precaution regarding usage period

Each transformer is subjected to a verification process for transactions and authorization during a period of validity, otherwise it is a violation of the Measurement Law (i.e., violation of Article 172 of the Measurement Law is punishable by up to six months in jail, a fine of up to 500,000 yen, or both). The period of validity is shown on the verification plate. Be certain to closely check the period of validity and use the transformer only within that period. When updating verification due to expiration, special verification where only combination meters are submitted is possible if updating is conducted within 14 years from the first transformer verification test.

(3) Recommended timing of renewal

Be certain to consider renewing molded transformers (including other dry versions) approximately 15 years after the purchase date. Using a transformer for more than 15 years may cause an accident due to dielectric breakdown.

(4) Precaution regarding installing transformers as part of other equipment

Due to specification requirements, transformers are not to be installed in (i.e., built into) other equipment. Installing them for use in other equipment, may result in failure due to, for example, the generation of dielectric breakdown.

(5) Using current transformers on the secondary side of inverter circuits

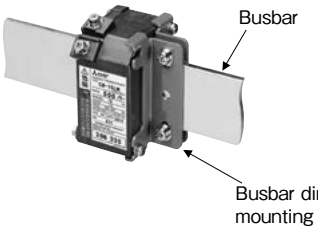
Because of errors due to higher harmonic components and an increase in the excitation current in the lowfrequency range, the error becomes large. Therefore, select a rated load ten times larger than the usage load. Consider values in the low-frequency range that are less than or equal to 25Hz as reference values.

(6) Vertical/horizontal installation of square window through-type CT

Locate the busbar in the center of the through hole, so that it is not in contact with the inside of the through hole. If it is in contact with the inside, the CT may be deformed by the heat of the busbar, or its insulation may break down.

(7) Direct mounting of busbar of square window through-type CT

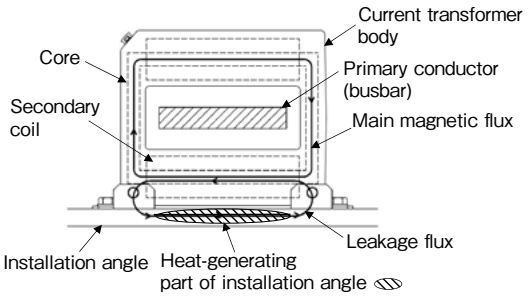
● When using the busbar direct mounting brackets, be sure to remove the mounting feet from the CT body. Failure to do so may cause ground fault, burnout and fire.



- Avoid a structure in which the busbar is supported by the busbar direct mounting brackets or one busbar mounting bracket is fitted to the busbar and the CT is secured on the board with the mounting feet. Such a structure may cause burnout and fire.
- Install the CT as specified in the installation manual supplied with the product. Failure to do so may cause burnout and fire.
- The busbar direct mounting brackets, screws and nuts are live parts. Ensure insulation distance from other devices in the board and the angle. Failure to do so may cause insulation breakdown.
- Locate the busbar in the center of the through hole, so that it is not in contact with the inside of the through hole. If it is in contact with the inside, the CT may be deformed by the heat of the busbar, or its insulation may break down.
- Do not use any parts or screws other than those supplied with the product. Doing so may cause increase in temperature of the product and damage it.

(8) Heat generated when square window through-type CT is installed horizontally

(Applicable to: CW-40LM, CW-15LMS and CW-15LM with rating of 2500 to 6000 A)
The iron angle on which the CT is installed may generate heat due to leakage flux from the CT secondary coil. (Temperature rise: approx. 30K at rating of 2500A, approx. 70K at rating of 6000A)
The heat generation does not affect the operation of the CT, but heat-sensitive devices and wires must be kept out of contact with the angle.
If the heat generation cause any problem, use an angle made of a material (SUS304, etc.) through which magnetic flux does not easily pass.



(9) Protecting the peripheral equipment of voltage transformers

If using a voltage transformer in combination with other equipment such as a protective relay, a voltage transformerrelated accident due to an overload or lightning surge may cause a power outage.
If using a voltage transformer for equipment to which a power outage may inflict heavy damage, be certain to take measures to protect the system so that any transformer-related accident will not have a critical influence on peripheral meters/equipment.

(10) Pulling out and fitting the VT primary fuse

When pulling out the fuse, hold one side of the fuse with fingers, and pull it out from the clip. Then, pull out the other side. If the center of the fuse is picked up to pull out both sides simultaneously from the clips, the fuse may be damaged.
When fitting the fuse, push the ends into the clips one by one.
The end of each clip has a fuse retainer. Take care not to place the fuse on the retainer.

6 Repairs at Time of Malfunction and Handling Abnormalities

If the transformer begins to operate abnormally, ask your electrical facilities manager to contact Mitsubishi Electric System & Service Co., Ltd. or the Mitsubishi Electric branch office in charge.

7 Maintenance & Inspections

Be certain to observe the following regarding maintenance and inspections. To ensure safety, maintenance and inspections should only be performed by an experienced electrician such as the chief electrical engineer. For details, refer to 4 Maintenance & Inspection on page 92.

⚠ Danger

(1) Connecting earthing wires

To ensure safety, be certain that earthing wires are connected to the terminals. If it is assumed that the power has been cut and forget to check whether or not the power supply is turned off, it may lead to electrical shock, electrical burn injury or death. If there is a need to touch the body of a transformer, make sure to check whether or not the transformer is disconnected from the circuit. To do this, use a circuit breaker or switch and then use a detector for the appropriate voltage to ensure that there is no voltage in the circuit.

(2) Do not touch a transformer when there is a live current

If an electrical current exists when wanting to do maintenance or an inspection, do not touch the transformer body, terminal or other any other component. It could lead to not only electrical shock, electrical burn injury, equipment burnout or a fire, but also death.

8 Storage

If there is a need to a store a transformer for a long period of time, avoid the following places, as it may lead to degradation of insulation and shorten service life.

- Places where the ambient temperature is outside the range of -30 to 60℃
- Places where the daily mean temperature exceeds 35℃
- Places where the relative humidity is equal to or more than 90%, or places where condensation forms
- Places where there is much dust, corrosive gas, salt-laddened wind (high salt content), or oily smoke
- Places where vibrations and/or jolting occurs frequently
- Places exposed to rain, water drops or sunlight

⚠ Danger

● Cutting power supply for removal

When removing a transformer in preparation of storage, be certain that the power supply to the circuit to which the transformer is connected is turned off. (Refer to 7 Section (1)).
To ensure safety, removal should only be performed by an experienced electrician such as the chief electrical engineer.
If removal is attempted at the time wires are live, this could lead to not only electrical shock, electrical burn injury, equipment burnout or a fire, but also death.

9 Transformer Disposal

Be certain to dispose of transformers treating them as general industrial waste.
For removable installation racks, those that are iron can be recycled.

10 Warranty

(1) The duration of the warrantee is one year from the date of purchase or 18 months after manufacturing, whichever comes first. For equipment failures caused by carelessness or negligence of the user, repair services are charged at cost even within the warrantee period.
(2) Mitsubishi Electric shall not be liable for compensation of damage arising from reasons not attributable to Mitsubishi Electric, including loss in opportunities and/or lost profits incurred to users due to the failure of a Mitsubishi Electric product, as well as special damage and/or secondary damage, whether foreseeable or not, accidents, damage to products other than Mitsubishi Electric products, nor other business.

3 Model List

1. Current Transformers (CT)

Circuit voltage	Location of use	Type		Rated burden (VA)	Current transformation ratio (A)	Accuracy (class)	Overcurrent strength (times)	Overcurrent constant	Use			Remarks	Page
									General instrument	Relay	Verification		
≤1100V	Indoor	CW Series	CW-5L	5	60 to 750/5	1.0	40	—	○	—	—	Cable wiring Round window through-type	14
					60 to 750/1								
			CW-15L	15	100 to 750/5				○	—	—		
					100 to 750/1								
			CW-40L	40	150 to 750/5				○	—	—		
					150 to 400/1								
			CW-5LP	5	1 to 50/5				○	—	—	Small current Primary winding	17
					1 to 50/1								
			CW-15LP	15	1 to 50/5				○	—	—		
					1 to 50/1								
			CW-40LP	40	1 to 50/5				○	—	—		
					1 to 50/1								
			CW-15LM	15	150 to 750/5				○	—	—	Busbar wiring Square window through-type	18
					150 to 750/1								
			CW-40LM	40	200 to 6000/5				○	—	—		
					200 to 2000/1								
			CW-15LS	15	5 to 750/5				○	—	○	Cable wiring	22
			CW-15LMS	15	200 to 6000/5				○	—	○	Busbar wiring	23
			CW-5LS3	2×5	150 to 250/5				○	—	○	Busbar/cable wiring	27
			CW-5LMS3	2×5	250 to 400/5				○	—	○		
			CW-5T	5	100 to 150/5				○	—	—	Cable wiring	30
			CW-5L	5	100 to 400/5				○	—	—		
			CW-15LM	15	200 to 400/5				○	—	—	Busbar wiring	
			CW-15LM	15	1500 to 4000/5	1PS		n>10	—	○	—		32
≤440V	Indoor		CW-5S	5	300 to 500/5	1.0	40	—	○	—	—	Cable wiring Separated	33
					300 to 500/1								
			CW-2SL	2	150 to 250/1				○	—	—		
			CW-5SL	5	300 to 800/5				○	—	—		
					300 to 800/1								
≤6600V	Indoor	CD Series	CD-25NB	25	5 to 500/5	1.0·1PS	40	n>10	○	○	○	Coil molded	36
			CD-25NB(H)	25	5 to 500/5				○	○	○		37
			CD-25NB(V)	25	5 to 500/5				○	○	○		
			CD-25ENB	25	5 to 400/5		75	n>10	○	○	○		39
			CD-40GNA	40	5 to 200/5		150	n>10	○	○	○		41
			CD-40LN	40	5 to 100/5		300	n>10	○	○	○		42
			CD-40H	40	600 to 1000/5		40	n>10	○	○	○		43
					1200 to 2000/5		40kA	n>10	○	○	○		
			CD-10ANB	10	20 to 200/5	1PS	12.5kA 0.125sec	n>10	○	○	—	Coil molded	44
			CD-25ANB	25	50 to 200/5				○	○	—		
			CD-25ANA	25	20 to 40/5				○	○	—		48
			CD-10CNB	10	20 to 200/5		12.5kA 0.25sec	n>10	○	○	—		44
			CD-25CNB	25	60 to 200/5				○	○	—		
			CD-25CNA	25	20 to 50/5				○	○	—		48
			CD-25KB	25	5 to 750/5	1.0	40	—	○	—	○	Coil molded	52
			CD-15CB	15	5 to 400/5	0.5	40	—	○	—	○		54
		EC/ BN Series	EC-0 (LA)	40	5 to 300/5	1.0·1PS	40	n>5	○	○	○	Fully molded	56
			BN-0 (LA)	40	10 to 1500/5		40 to 300	n>10	○	○	○		58
				15	10 to 1500/5	0.5		—	○	—	○		59
		BS Series	BS-MD	40	200 to 1500/5	1PS	40kA	n>10	○	○	—	Through type for bare conductor	64
					300-150 to 4000-2000/5				○	○	—		
			BS-MC	40	400 to 4000/5				○	○	—		
11000V	Indoor	BN Series	BN-1 (LA)	40	10 to 1500/5	1.0·1PS	40 to 150	n>10	○	○	○	Fully molded	60
				15	10 to 1500/5	0.5W	40	—	○	—	○		
22000V			BN-2A	40	10 to 1200/5	1.0·1PS	40 to 300	n>10	○	○	—	Fully molded	62
—	Indoor	BS	BS-SA	15 to 100	200 to 2000/5	1PS	40	n>10 n>20	○	○	—	Separate type for insulated conductor	66
≤1150V	Indoor	TM Series	TM-15	15	5+5/5 5+5+5/5 5+5+5+5/5	1.0 or 0.5	40	—	○	—	—	Special varnish insulation	84
			TM-40	40									

2. Voltage Transformers (VT)

Circuit voltage	Location of use	Type		Rated burden (VA)	Voltage transformation ratio (V)	Accuracy (class)	Use			Remarks	Page
							General instrument	Relay	Verification		
≤440V	Indoor	PE Series	PE-15F (with fuse)	15	220/110 440/110	1.0·1P	○	○	○	Fully molded	68
			PE-15				○	○	○		
			PE-50F (with fuse)	50		3.0·3P	○	○	—		
			PE-50				○	○	—		
≤6600V	Indoor	PD Series	PD-50H	50	220/110, 440/110	1.0·1P	○	○	○	Coil molded	70
			PD-50HF (with fuse)		220/110, 440/110 3300/110, 6600/110		○	○	○		
			PD-100H	100	220/110, 440/110		○	○	—		
			PD-100HF (with fuse)		220/110, 440/110 3300/110, 6600/110		○	○	—		
			PD-200K	200	440/110		○	○	—		72
			PD-200KFH (with fuse)		440/110 3300/110, 6600/110		○	○	—		
			PD-50KFH (with fuse)	50	6600-3300/110		○	○	—		73
			PD-100KFH (with fuse)	100		3.0·3P	○	○	—		
			PD-15KFH (with fuse)	15	3300/110 6600/110	0.5	○	○	○		74
			PD-25KFH (with fuse)	25			○	○	○		
			PD-100KFH (with fuse)	100		1.0·1P	○	○	○		
		EP	EP-0FH (with fuse)	50	3300/110 6600/110	1.0·1P	○	○	○	Fully molded	75
				100			○	○	—		
				50	6600-3300/110		○	○	—		
11000V	Indoor	EV Series	EV-1	100	11000/110	1.0·1P	○	○	—	Coil molded	76
				200							
				15		0.5W	○	○	○		
				25							
22000V			EV-2	100	22000/110	1.0·1P	○	○	—		
				200							
33000V			EV-3	100	33000/110		○	○	—		
				200							

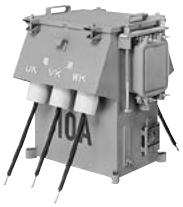
3. Earthed Voltage Transformers (EVT)

Circuit voltage	Location of use	Type		Rated burden (VA)	Voltage transformation ratio (V)	Accuracy (class)	Use			Remarks	Page
							General instrument	Relay	Verification		
≤440V	Indoor	EV EF Series	EV-L	50	$\frac{220}{\sqrt{3}}$ / $\frac{110}{\sqrt{3}}$ / $\frac{440}{\sqrt{3}}$ / $\frac{110}{\sqrt{3}}$	1P	○	○	—	Coil molded	77
				100							
			EV-LX	50/50	$\frac{220}{\sqrt{3}}$ / $\frac{110}{\sqrt{3}}$ / $\frac{190}{3}$ $\left(\frac{110}{3}\right)$	1P/3G	○	○	—		
				100/100	$\frac{440}{\sqrt{3}}$ / $\frac{110}{\sqrt{3}}$ / $\frac{190}{3}$ $\left(\frac{110}{3}\right)$						
≤6600V	Indoor		EF-0FC (with fuse)	100	$\frac{3300}{\sqrt{3}}$ / $\frac{110}{\sqrt{3}}$ / $\frac{6600}{\sqrt{3}}$ / $\frac{110}{\sqrt{3}}$	1P	○	○	—	Coil molded	78
				200							
			EF-0XFC (with fuse)	100/100	$\frac{3300}{\sqrt{3}}$ / $\frac{110}{\sqrt{3}}$ / $\frac{190}{3}$ $\left(\frac{110}{3}\right)$	1P/3G	○	○	—		
				200/200	$\frac{6600}{\sqrt{3}}$ / $\frac{110}{\sqrt{3}}$ / $\frac{190}{3}$ $\left(\frac{110}{3}\right)$						
			EF-03XFC (with fuse) for 3-phase	3×100/ 3×100	3300/ 110 / $\frac{190}{3}$ $\left(\frac{110}{3}\right)$		○	○	—		
				3×200/ 3×200	6600/ 110 / $\frac{190}{3}$ $\left(\frac{110}{3}\right)$						
11000V	Indoor		EV-1	100	$\frac{11000}{\sqrt{3}}$ / $\frac{110}{\sqrt{3}}$	1P	○	○	—	Coil molded	79
				200							
			EV-1X	100/100	$\frac{11000}{\sqrt{3}}$ / $\frac{110}{\sqrt{3}}$ / $\frac{110}{3}$ $\left(\frac{190}{3}\right)$	1P/3G	○	○	—		
				200/200							
22000V			EV-2	100	$\frac{22000}{\sqrt{3}}$ / $\frac{110}{\sqrt{3}}$	1P	○	○	—		
				200							
			EV-2X	100/100	$\frac{22000}{\sqrt{3}}$ / $\frac{110}{\sqrt{3}}$ / $\frac{110}{3}$ $\left(\frac{190}{3}\right)$	1P/3G	○	○	—		
				200/200							
33000V			EV-3	100	$\frac{33000}{\sqrt{3}}$ / $\frac{110}{\sqrt{3}}$	1P	○	○	—		
				200							
			EV-3X	100/100	$\frac{33000}{\sqrt{3}}$ / $\frac{110}{\sqrt{3}}$ / $\frac{110}{3}$ $\left(\frac{190}{3}\right)$	1P/3G	○	○	—		
				200/200							

4. Zero-phase Current Transformers (ZCT)

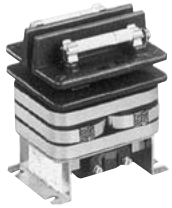
Circuit voltage	Location of use	Use		Type		Window diameter (mm)	Rated primary current (A)	Applicable standards	Page
≤600V	Indoor	For detection of leakage current (combined with Mitsubishi Electric leakage current measuring/ monitoring device)	Separated	CZ Series	CZ-22S	22	–	EN61010 -2-032	85
					CZ-30S	30			
					CZ-55S	55			
					CZ-77S	77			
					CZ-112S	112			
– (By cable insulation)	Indoor	Ground relays	Through -type	BZ Series	BZ-60A	60	300	JEC-1201 -2007	80
					BZ-90A	90	600		
					BZ-110A	110	1000		
					BZ-170A	170	1200		
			Separated		BZ-120SA	120	1000		81

5. Voltage/Current Transformers (VCT)



Circuit voltage	Location of use	Use	Overcurrent strength (Times)	Type	Rating				Page
					Voltage Transformer		Current Transformer		
					Voltage transformation ratio (V)	Load (VA)	Current transformation ratio (A)	Load (VA)	
≤6600V	Outdoor	Electric power supply and demand	40	PO-2HB	3300/110 6600/110	2×15	10 to 400/5	2×15	82
			150	PO-6HB	6600/110	2×15	20, 50/5	2×15	

6. Transformer for control circuits



Circuit voltage	Location of use	Use	Type	Capacity (VA)	Voltage transformation ratio (V)	Applicable standards	Page
≤6600V	Indoor	Operation of high-voltage circuit breakers	EMT-K (with fuse)	300	3300/110	JEC-2200	83
			EMT-BB (with fuse)	600	6600/110		

■Type Composition

Current Transformer

CW - 40 LM

- Type symbol (Series)
  - CW·····Low-voltage current transformer
  - CD·····High-voltage current transformer
  - EC·····High-voltage current transformer
  - BN·····High-voltage and extra-highvoltage current transformers
  - BS·····Through-type current transformer
- Rated burden (CW and CD type)
  - 5·····5VA
  - 10·····10VA
  - 15·····15VA
  - 25·····25VA
  - 40·····40VA
  - 100·····100VA
- Circuit voltage (EC and BN type)
  - 0·····≤6600V
  - 1·····11000V
  - 2·····22000V
- Use/Structure

Series	Symbol	Use/Structure
CW Series	L	Round window through-type
	LP	Primary winding
	LM	Square window through-type
	LS, LMS	Dedicated verification class
	T	Class 1 heat-resistant
	S, SL	Separated
CD Series	NB, NA	Overcurrent strength 40Times
	H	Overcurrent intensity 600 to 1000A: 40x 1200 to 2000A: 40kA
	ENB, ENA	Overcurrent strength 75Times
	GNA	Overcurrent strength 150Times
	LN	Overcurrent strength 300Times
	ANA, ANB CNA, CNB	Cubicle-type high-voltage power receiving equipment
	KB, K	General instruments
	CB, BB	Dedicated verification
BS Series	MD, MC	Round window through-type
	SA	Separated

Voltage Transformers/Earthed Voltage Transformers

PD - 50 HF

- Type symbol (Series)
  - PE·····Low-voltage transformer
  - PD·····Medium voltage transformer
  - EP·····High-voltage transformer
  - EF·····Earthed high-voltage transformer
  - EV·····Extra-high-voltage transformer Earthed voltage transformer
- Rated burden (PE and PD type)
  - 15·····15VA
  - 25·····25VA
  - 50·····50VA
  - 100·····100VA
  - 200·····200VA
- Circuit voltage (EP, EF and EV type)
  - L·····Low-voltage
  - 0·····High-voltage
  - 1·····11000V
  - 2·····22000V
  - 3·····33000V
- Use

Series	Symbol	Use/Structure
PE, PD and EF Series	F	with currentlimiting fuse
	HF, KFH	
	X	Including tertiary winding

Zero-phase Current Transformers

BZ - 110 A

- Type symbol BZ···Zero-phase current transformer
- Window diameter 60···60mm 90···90mm 110···110mm 120···120mm 170···170mm
- Use/Structure A···Through-type SA···Separated

Voltage/Current Transformers

PO - 2HB

- Type symbol PO···Voltage/Current transformer (outdoor)
- Overcurrent intensity 2HB···Overcurrent strength 40Times 6HB···Overcurrent strength 150Times

4 Selection

In order to configure an economic and reliable measurement/protection system, when selecting a model, be certain to thoroughly review the items listed below while considering the circuit conditions that apply, type of use and ambient conditions.

1. Guidelines for Selecting Current Transformers

Item		Selection guidelines
1	Use	General meters, relays, verification devices, and cubicle-type high-voltage power receiving equipment.
2	Rated primary current	Generally, approximately 1.5-times the load current selected from values specified in JIS or JEC standards.
3	Rated secondary current	The standard value is 5A. For remote measurements, using 1A leads to the mitigation of CT load and lower wiring costs. However, 1A applies only to the low-voltage CW Series current transformers.
4	Highest voltage/ withstand voltage	Select a value for the insulation coordination of circuit voltage and system circuitry. Mitsubishi Electric regards the contents of the table at the right as standard. In-house standard withstand voltage values: Highest voltage (kV) 0.46 / 1.15 / 3.45 / 6.9 / 11.5 / 23; Withstand voltage 3/— / 4/— / 22/60 / 28/90 / 50/125. * Withstand voltage indicates commercial frequency withstand voltage/lightning impulse withstand voltage.
5	Accuracy Class	Select a class according to the accuracy required for usage and meter and relay connected. Use / Accuracy (Class): JIS C 1731-1 / JEC-1201-2007. Precision meters: 0.5 / —. General-use meters/relays: 1.0 (*1P, 1PS) / 1P, 1PS. Distribution boards/relays: 3.0 / 3P, 3PS. * Standard specified in JIS C 4620 Appendix - Current Transformers Used for Cubicle-type High voltage Power Receiving Equipment.
6	Rated burden	*1 Rated load must be more than the total combined load VA of the meter, relay and wires that are connected to the current transformer.
7	Overcurrent strength (rated overcurrent)	Select a current transformer with a short-circuit current in the distribution system. Be certain to use the AN or CN series for cubicle-type high-voltage power receiving equipment. For the withstand current of each model, refer to 8.1 Current Transformer Characteristics on pages 88 to 90.
8	Overcurrent constant	If using a current transformer for general-use meters, the constant is not required. The constant is required if you use a current transformer for relays. Select a current transformer that has an overcurrent constant that can be coordinated with a relay. Calculate the overcurrent constant (n') at the usage load using the following formula. When the usage load is reduced, the overcurrent constant at the usage load becomes larger than the rated overcurrent constant. $n' = \text{Overcurrent constant n (Rated value or Performance value)} \times \frac{\text{Rated load of current transformer + Secondary leakage VA}}{\text{Usage load + Secondary leakage VA}}$ For secondary VA, refer to 8.1 Current Transformer Characteristics on pages 88 to 90.
9	Use environment	For special environments of high-temperature/humidity (anti-fungus/moisture-proof treatment), corrosive gas (corrosion-resistant), high altitudes, pollution/humidity, high temperatures or cool temperatures, refer to 6.4 Special Environments on page 86.

Note: *1 For load VA values of connection wires, refer to the following values.

Connection wire load (VA)

Lead-wire nominal crosssectional area (mm^2)	Wire length (m)		
	5	10	15
2.0	1.16	2.31	3.47
3.5	0.65	1.30	1.95
5.5	0.42	0.83	1.25

Conductor resistance of connection wires

Wire nominal cross-sectional area (mm^2)	Conductor resistance (Ω/km)
2.0	9.24
3.5	5.20
5.5	3.33
8.0	2.31

Remarks:
1) Wiring is 600V vinyl-insulated wire (IV wire).
2) Load value of each wire is the value at an ambient temperature of 20℃ and rated current of 5A.
3) The wire length is the total length of the secondary circuit, and the load value is the value for the total length.
4) If the wire length is longer than 15m, calculate the value using the following formula.
Example: If the wire length round-trip is 100m ($2.0mm^2$):

$$VA = I^2R \cdots\cdots 5A^2 \times 9.24\Omega/km \text{ (upper-right table)} \times \frac{100m}{1000m} = 23.1VA$$

2. Guidelines for Selecting Voltage Transformers

<table>
<tr><th colspan="2">Item</th><th>Selection guidelines</th></tr>
<tr><td>1</td><td>Use</td><td>General-use meters, relays verification devices and power supply.</td></tr>
<tr><td>2</td><td>Rated voltage</td><td>Determine the voltage according to the circuit voltage.
For grounded circuits, select from Earthed Voltage Transformers (EVT).</td></tr>
<tr><td>3</td><td>Withstand voltage</td><td>Select a value for the insulation coordination of circuit voltage.
Mitsubishi Electric regards the contents of the table to the right as standard.
Notes:
*1 The withstand voltage of the voltage transformer indicates commercial frequency withstand voltage value/lightning impulse withstand voltage value.
The withstand voltage of earthed voltage transformers indicates commercial frequency withstand voltage value/lightning impulse withstand voltage value.
*2 EP/0FH VTs have the value of 22/60kV, even though these are for 3.3kV.

Mitsubishi Electric's standard withstand voltage values
<table><tr><th colspan="2">Circuit voltage (kV)</th><th>0.44</th><th>3.3</th><th>6.6</th><th>11</th><th>22</th><th>33</th></tr><tr><td rowspan="2">Withstand voltage (kV)</td><td>Voltage transformer</td><td>3/—</td><td>16/45</td><td>22/60</td><td>28/90</td><td>50/125</td><td>70/170</td></tr><tr><td>Earthed voltage transformer</td><td>0.88/—</td><td>6.6/45</td><td>13.2/60</td><td>22/90</td><td>44/125</td><td>66/170</td></tr></table>
Withstand voltage value for special transformation ratios
<table><tr><th>Primary voltage (V)</th><th>Withstand voltage (kV)</th></tr><tr><td>≤220</td><td>2/—</td></tr><tr><td>221 to 440</td><td>3/—</td></tr><tr><td>441 to 1100</td><td>4/—</td></tr><tr><td>1101 to 2999</td><td>16/—</td></tr><tr><td>3000 to 3999</td><td>16/45</td></tr><tr><td>4000 to 5999</td><td>22/45</td></tr><tr><td>6000 to 6600</td><td>22/60</td></tr></table></td></tr>
<tr><td>4</td><td>Accuracy (class)</td><td>Select the class according to the accuracy required for usage, and meter and relay connected.
<table><tr><th rowspan="2">Use</th><th colspan="2">Accuracy (class)</th></tr><tr><th>JIS C 1731-2</th><th>JEC-1201-2007</th></tr><tr><td>Precision meters</td><td>0.5</td><td>—</td></tr><tr><td>General-use meters/relays</td><td>1.0</td><td>1P</td></tr><tr><td>Distribution board/relays</td><td>3.0</td><td>3P</td></tr><tr><td>Earthed voltage transformers (EVT)</td><td>—</td><td>3G</td></tr></table></td></tr>
<tr><td>5</td><td>Rated burden</td><td>The rated load must be more than the total combined load VA of the meter, relay and wires that are connected to the current transformer.
However, when combining a voltage transformer and electronic meter that has a lower load, use a voltage transformer with a rated load of less than or equal to 50VA.
The rated load is out of range of the guaranteed voltage transformer loads, but there is no problem with error characteristics.</td></tr>
<tr><td>6</td><td>Limit output</td><td>If using a voltage transformer for testing or as a control source, rising temperature becomes more problematic than the error characteristics.
Limiting load means the load where the rise in temperature reaches the full limit specified in the standard.
For the limiting load of each voltage transformer and its error, see 8.2 Voltage Transformer Characteristics on page 91.</td></tr>
<tr><td>7</td><td>Selection of primary side fuse-equipped voltage transformers</td><td>The primary-side fuse of voltage transformers cuts off the voltage transformer circuit at the time of an accident before dielectric breakdown of the transformer occurs, leading to short-circuiting of the main circuit and minimizing the accident instead of protecting the transformer itself. Select a voltage transformer model equipped with a fuse on the primary side.
Mitsubishi Electric voltage transformers for measuring equipment use the following fuses.
<table><tr><th>Circuit voltage</th><th>Type</th><th>Rating</th><th>Size</th></tr><tr><td>600V or less</td><td>PL-G</td><td>0.6kV T2A 100kA</td><td>ϕ15×107ℓ</td></tr><tr><td>3300V</td><td rowspan="2">PL-G</td><td rowspan="2">7.2/3.6kV T1A 40kA</td><td rowspan="2">ϕ15×107ℓ</td></tr><tr><td>6600V</td></tr></table>
Voltage transformers for 11 to 33kV measuring equipment are not equipped with fuses; therefore, the following fuses can be used by mounting separately.
<table><tr><th>Circuit voltage</th><th>Type</th><th>Rating</th><th>Size</th></tr><tr><td>11000V</td><td>PL-J</td><td>12kV T1A 40kA</td><td>ϕ50×260ℓ</td></tr><tr><td>22000V</td><td>PL-J</td><td>24kV T1A 40kA</td><td>ϕ50×325ℓ</td></tr><tr><td>33000V</td><td>PL-J</td><td>36kV T1A 25kA</td><td>ϕ50×445ℓ</td></tr></table></td></tr>
<tr><td>8</td><td>Use environment</td><td>For special environments of high-temperature/humidity (anti-fungus/moisture-proof treatment), corrosive gas (corrosion-resistant), high altitudes, pollution/humidity, high temperatures or cool temperatures, refer to 6.4 Special Environments on page 86.</td></tr>
</table>

Remark: Additionally, select an earthed voltage transformer model according to the same guidelines as the above table.

5 Specifications and External Dimensions by Model

5-1 Current transformers

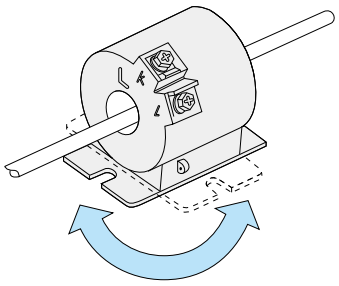
CW Series Low-voltage Current Transformers (less than or equal to 1100V)

CW-5L/CW-15L/CW-40L Cable wiring/Round window through-type

Use

- General-use meters

Features



- The direction of the mounting plate can be turned 90°.
- 600V vinyl wiring can be used for the primary conductor.
- Secondary terminal insulation cap (page 34) is available as an option.

Specifications

Applicable standard: JIS C 1731-1

Type	Rated primary current (A)		Rated burden	Accuracy	Overcurrent strength	Highest voltage/ withstand voltage	Frequency	External dimensions	Mass
	Secondary current 5A	Secondary current 1A	(VA)	(class)	(times)	(kV)	(Hz)		(kg)
CW-5L	60	60	5	1.0	40	1.15/ 4/—	Both 50/60	Fig. 5	1.9
	75	75							
	100	100						Fig. 1	0.6
	120	120							
	150	150							
	160	160							
	180	180							
	200	200							
	240	240						Fig. 2	0.5
	250	250							
	300	300							
	400	400							
	500	500						Fig. 3	0.5
	600	600							
	750	750							0.6
CW-15L	100	100	15	1.0	40	1.15/ 4/—	Both 50/60	Fig. 5	2.0
	120	120							
	150	150						Fig. 4	1.0
	160	160							
	180	180							
	200	200							
	240	240						Fig. 2	0.6
	250	250							
	300	300							
	400	400							
	500	500						Fig. 3	0.8
	600	600							
	750	750							0.6
CW-40L	150	150	40	1.0	40	1.15/ 4/—	Both 50/60	Fig. 5	2.0
	160	160							
	180	180							
	200	200							
	240	240						Fig. 6	1.2
	250	250							
	300	300							
	400	400							
	500	—						Fig. 3	0.8
	600	—							
	750	—							

Notes

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

*2 Product weight may vary due to changes in core characteristics.

Regarding Rated Primary Current (current transformation ratio)

Through-type current transformers can be used for several rated primary currents by changing the through number of the primary conductor, and are therefore flexible and economical. (When ordering, be certain to specify the current transformation ratio □□□/□A, which is the primary conductor through number per one turn).

Example: If the current transformation ratio is 200/5A:

Through number 1 turn …Rated primary current 200A
Through number 2 turns…Rated primary current 100A
Through number 4 turns…Rated primary current 50A
} These circuits can be used with this current transformer.

Refer to page 16 for proper use of through number in the primary conductor, rated primary current (current transformation ratio) and through-type enabled primary conductor size.

External Dimensions

Fig. 1

CW-5L	100, 120, 150, 160, 180, 200A

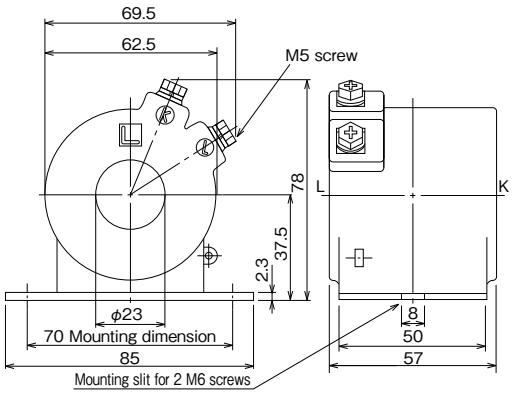


Fig. 2

CW-5L	240, 250, 300, 400A
CW-15L	240, 250, 300, 400A

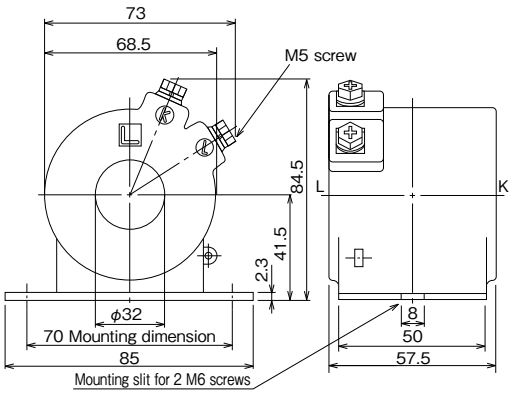


Fig. 3

CW-5L	500, 600, 750A
CW-15L	500, 600, 750A
CW-40L	500, 600, 750A

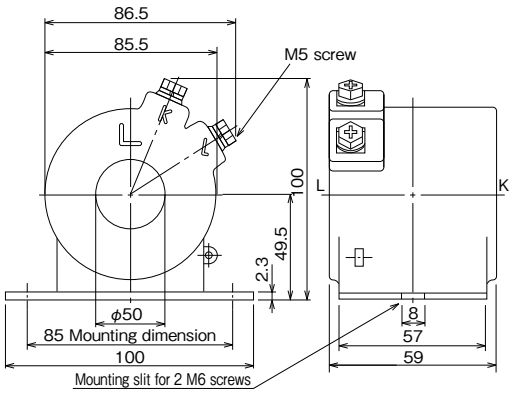


Fig. 4

CW-15L	150, 160, 180, 200A

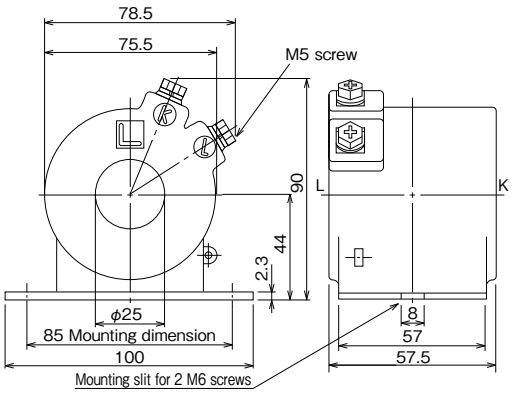


Fig. 5

CW-5L	60, 75A
CW-15L	100, 120A
CW-40L	150, 160, 180, 200A

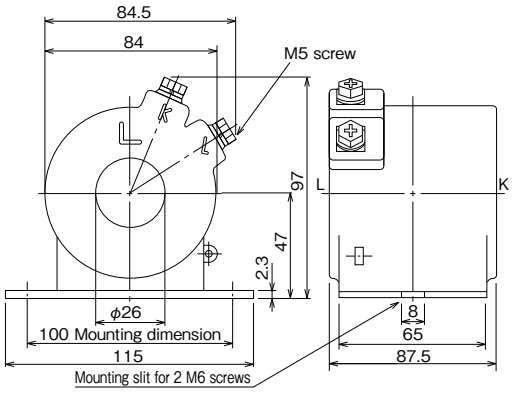
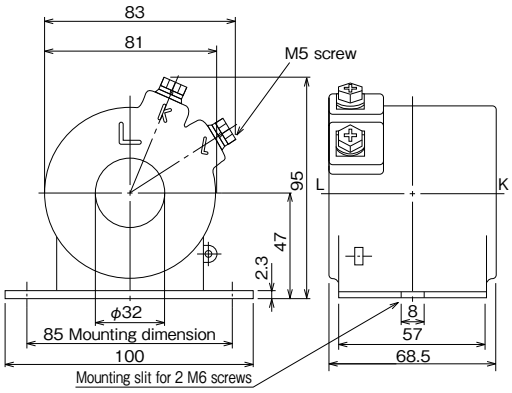


Fig. 6

CW-40L	240, 250, 300, 400A



■ Using Primary Conductor Through Number and Rated Primary Current (current transformation ratio)

The following table specifies rated primary currents, through number in the conductor, and nominal cross-sectional areas of through enabled 600V vinyl wiring (600V IV wiring) (ϕ indicates a single-wire diameter).
The following table covers the allowable current of 600V vinyl wiring at the ambient temperature of 40℃.

5VA CW-5L				5VA CW-5L				5VA CW-5L			
Rated primary current (A)	Primary current (A)	Through No. (turns)	Primary conductor size (mm^2)	Rated primary current (A)	Primary current (A)	Through No. (turns)	Primary conductor size (mm^2)	Rated primary current (A)	Primary current (A)	Through No. (turns)	Primary conductor size (mm^2)
60	10	6	5.5	100	10	10	5.5	150	10	15	3.5
	15	4	14		20	5	14		15	10	5.5
	20	3	22		25	4	22		25	6	14
	30	2	22		50	2	38		30	5	14
	60	1	150		100	1	200		50	3	22
75	15	5	8	120	15	8	8		75	2	38
	25	3	22		20	6	14		150	1	200
	75	1	150		30	4	22	160	20	8	8
100	10	10	ϕ2		40	3	22		40	4	22
	20	5	8		60	2	38		80	2	38
	25	4	14		120	1	200		160	1	200
	50	2	22	150	10	15	3.5	180	20	9	5.5
	100	1	150		15	10	5.5		30	6	14
120	15	8	5.5		25	6	8		60	3	22
	20	6	8		30	5	14		90	2	38
	30	4	14		50	3	22		180	1	200
	40	3	22		75	2	38	200	25	8	8
	60	2	22		150	1	200		40	5	14
	120	1	150	160	20	8	8		50	4	22
150	15	10	ϕ2		40	4	22		100	2	38
	25	6	8		80	2	38		200	1	200
	30	5	8		160	1	200	240	40	6	14
	50	3	22	180	20	9	5.5		60	4	22
	75	2	22		30	6	8		80	3	38
	150	1	150		60	3	22		120	2	60
160	20	8	5.5		90	2	38		240	1	325
	40	4	14		180	1	200	250	25	10	8
	80	2	22	200	20	10	5.5		50	5	22
	160	1	150		25	8	8		125	2	60
180	20	9	ϕ2		40	5	14		250	1	325
	30	6	8		50	4	22	300	30	10	8
	60	3	22		100	2	38		50	6	14
	180	1	150		200	1	200		60	5	22
200	20	10	ϕ2	240	30	8	8		75	4	38
	25	8	5.5		40	6	14		100	3	60
	40	5	8		60	4	38		150	2	60
	50	4	14		80	3	60		300	1	325
	200	1	150		120	2	60	400	40	10	8
240	40	6	14		240	1	325		50	8	14
	60	4	38	250	25	10	8		100	4	38
	80	3	60		50	5	22		400	1	325
	120	2	60		125	2	60	500	50	10	22
	240	1	325		250	1	325		100	5	60
250	25	10	8	300	30	10	8		125	4	100
	50	5	22		50	6	14		250	2	200
	125	2	60		60	5	22		500	1	500
	250	1	325		75	4	38	600	60	10	22
300	30	10	8		100	3	60		75	8	38
	50	6	14		150	2	60		100	6	60
	60	5	22		300	1	325		150	4	100
	75	4	38	400	40	10	8		200	3	150
	100	3	60		50	8	14		300	2	200
	150	2	60		100	4	38		600	1	500
	300	1	325		400	1	325	750	75	10	22
400	40	10	8	500	50	10	22		150	5	60
	50	8	14		100	5	60		750	1	200 × 2 conductors
	100	4	38		125	4	100				
	400	1	325		250	2	200				
500	50	10	22		500	1	500				
	100	5	60	600	60	10	22				
	125	4	100		75	8	38				
	250	2	200		100	6	60				
	500	1	500		150	4	100				
600	60	10	22		200	3	150				
	75	8	38		300	2	200				
	100	6	60		600	1	500				
	150	4	100	750	75	10	22				
	200	3	150		150	5	60				
	300	2	200		750	1	200 × 2 conductors				
	600	1	500								
750	75	10	22								
	150	5	60								
	750	1	200 × 2 conductors								

Note: Rated primary current is expressed as primary conductor through numbers per turn.

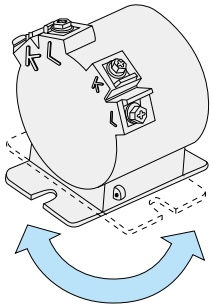
CW Series Low-voltage Current Transformers (less than or equal to 1100V)

CW-5LP/CW-15LP/CW-40LP Small current/Primary winding

Use

● General-use meters

Features



● The direction of the mounting plate can be turned 90°.
● Secondary terminal insulation cap (page 34) is available as an option.

Self-burden (VA)

	CW-5LP	CW-15LP	CW-40LP
Self-burden (VA)	3.5(≤30A) 5.0(40,50A)	5.0	6.5

Specifications

Applicable standard: JIS C 1731-1

Type	Rated primary current (A) Secondary current 5A	Rated primary current (A) Secondary current 1A	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Highest voltage/ withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
CW-5LP	1	1	5	1.0	40	1.15/ 4/—	Both 50/60	Fig. 1	0.7
	2	2							
	3	3							
	5	5							
	7.5	7.5							
	10	10							
	15	15							
	20	20							
	25	25							
	30	30							
	40	40						Fig. 2	1.1
	50	50							
CW-15LP	1	1	15	1.0	40	1.15/ 4/—	Both 50/60	Fig. 2	1.1
	2	2							
	3	3							
	5	5							
	7.5	7.5							
	10	10							
	15	15							
	20	20							
	25	25							
	30	30							
	40	40							
	50	50							
CW-40LP	1	1	40	1.0	40	1.15/ 4/—	Both 50/60	Fig. 2	1.1
	2	2							
	3	3							
	5	5							
	7.5	7.5							
	10	10							
	15	15							
	20	20							
	25	25							
	30	30							
	40	40							1.2
	50	50							

Notes
*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.
*2 Product weight may vary due to changes in core characteristics.

External Dimensions

Fig. 1 CW-5LP (1 to 30A)

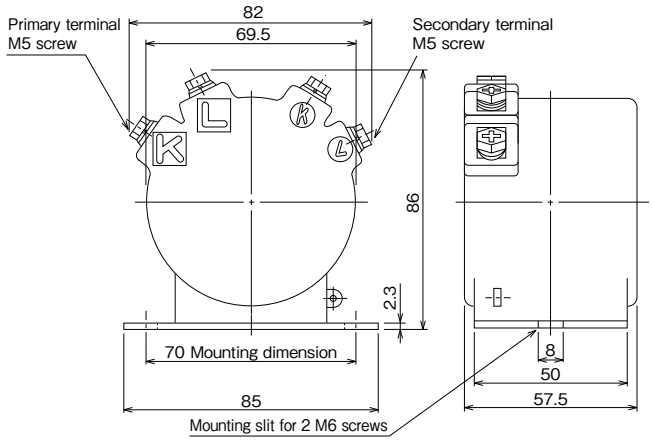
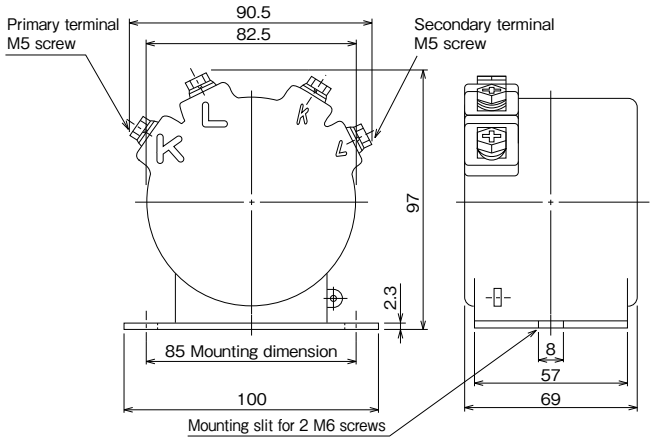


Fig. 2 CW-5LP (40, 50A), CW-15LP and CW-40LP



CW Series Low-voltage Current Transformers (less than or equal to 1100V)

CW-15LM/CW-40LM

Busbar wiring/Rectangular window through type

5000/5A
6000/5A

Use

- General-use meters

Features

- These current transformers allow the selection of various installation configurations such as vertical or horizontal mounting, or direct mounting on the busbar.
- Secondary terminal insulation cap (page 34) is available as an option. (less than or equal to 4000/5A)

Specifications

Applicable standard: JIS C 1731-1

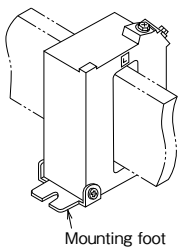
Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Highest voltage/ withstand voltage (kV)	Frequency (Hz)	External dimensions/Mounting dimensions *1				Square window dimensions (mm)	Mass (kg)
								Vertical mount	Horizontal mount	Direct mounting on busbar *2			
										1 busbar	2 busbars		
CW-15LM	150	5 or 1	15	1.0	40	1.15/ 4/—	Both 50/60	Fig. 5	Fig. 6	—	—	14×55	2.1
	200							Fig. 1	Fig. 2	Page 26 Fig. 1	—		1.1
	250												
	300												
	400							Fig. 3	Fig. 4		—		0.6
	500												
	600												0.5
	750												
CW-40LM	200	5 or 1	40	1.0	40	1.15/ 4/—	Both 50/60	Fig. 5	Fig. 6	—	—	14×55	2.3
	250												
	300							Fig. 1	Fig. 2	Page 26 Fig. 1	—		1.1
	400												
	500												
	600		40 (double as 15VA) *6					Fig. 7	Fig. 8		—	14×80	1.1
	750												
	800												0.9
	1000							Fig. 9	Fig. 10		Page26 Fig. 2	28×105	1.2
	1200												
	1500												1.1
	2000												1.2
	2500	5						Fig. 11	Fig. 12	—		48×160	4.8
	3000												
	4000										—		6.3
	*3 5000							Fig. 13	Fig. 14	—	—	88×217	14
	*3 6000												

Notes
*1 Standard products must be mounted vertically.
*2 Busbar direct mounting brackets are sold separately.
When ordering, specify the desired body type and rated primary current.
For rated primary currents of 1000 to 2000A, also specify the number of busbars.
*3 An epoxy resin mold is used to insulate rated primary currents of 5000A and 6000A.
*4 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.
*5 Product weight may vary due to changes in core characteristics.
*6 Mitsubishi Electric also guarantees the performance for rated loads of 15A.

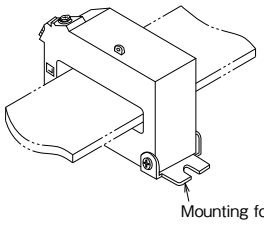
Mounting Method

- Vertical or horizontal mounting
  These current transformers can be mounted vertically or horizontally, easily changing the direction to fit the board space.
- Direct mounting on busbar
  Angles are not necessary, and making holes in busbars is not required. Freely change the mounting position as required.

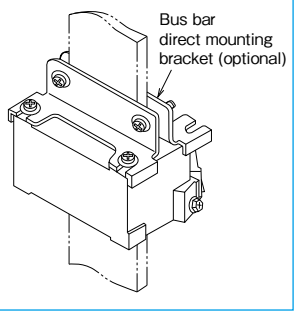
Vertical mount



Horizontal mount



Direct mounting on busbar



Note: When mounting the bus bar, locate it in the center of the through hole, so that it is not in contact with the inside of the through hole.

External Dimensions

Vertical mount	Horizontal mount

CW-15LM 200 to 300A / CW-40LM 300 to 500A

Fig. 1

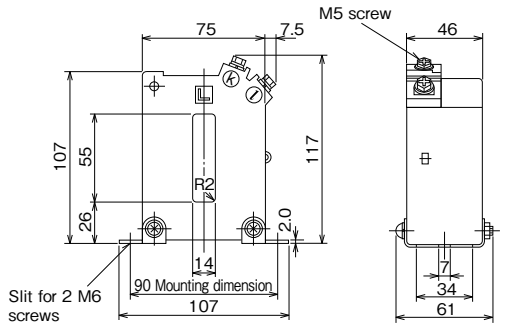
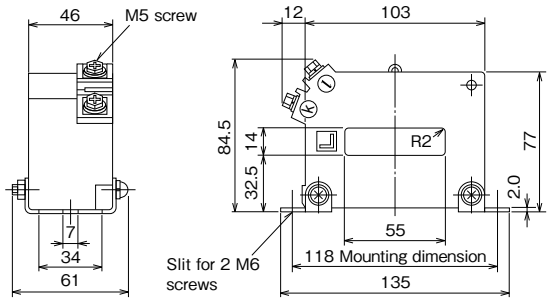


Fig. 2



CW-15LM 400 to 750A

Fig. 3

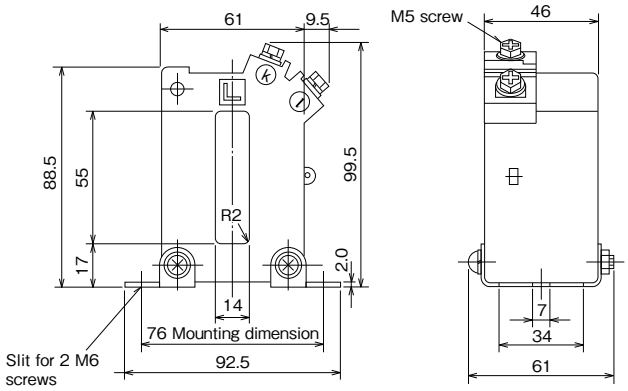
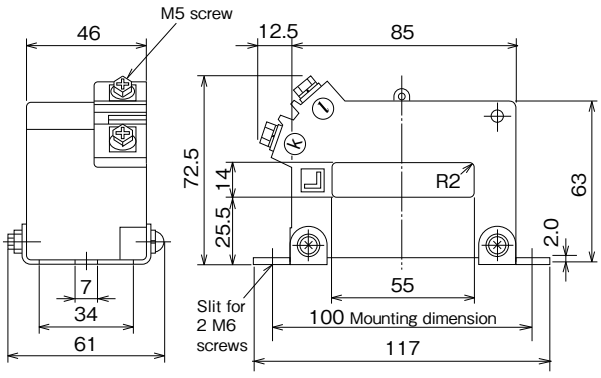


Fig. 4



CW-15LM 150A / CW-40LM 200 / 250A

Fig. 5

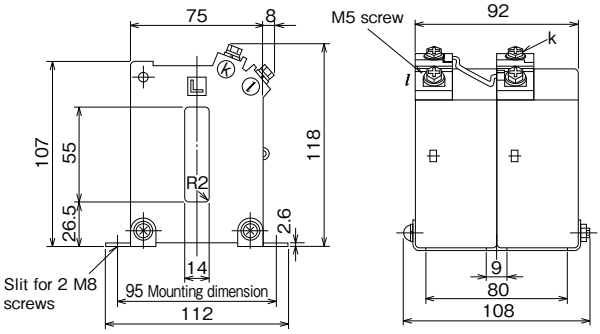
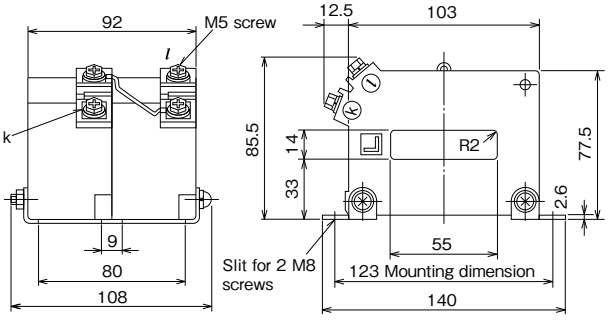


Fig. 6



Vertical mount	Horizontal mount

CW-40LM 600 to 800A

Fig. 7

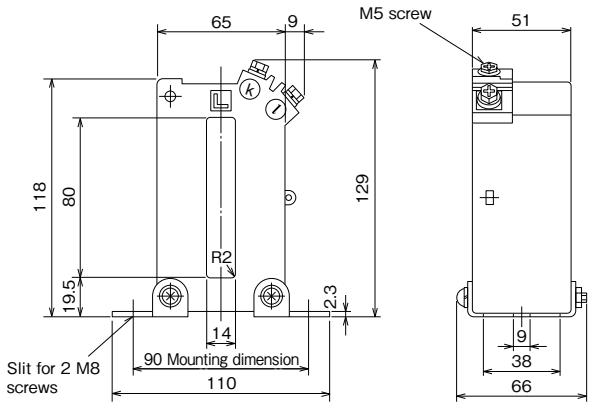
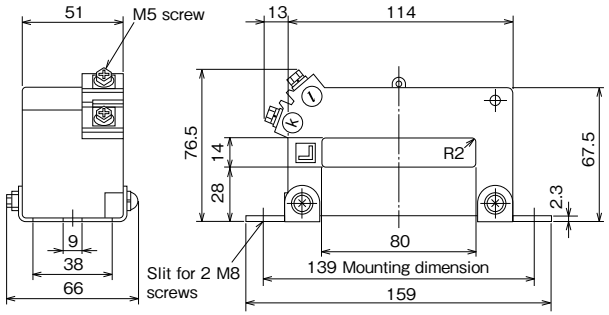


Fig. 8



CW-40LM 1000 to 2000A

Fig. 9

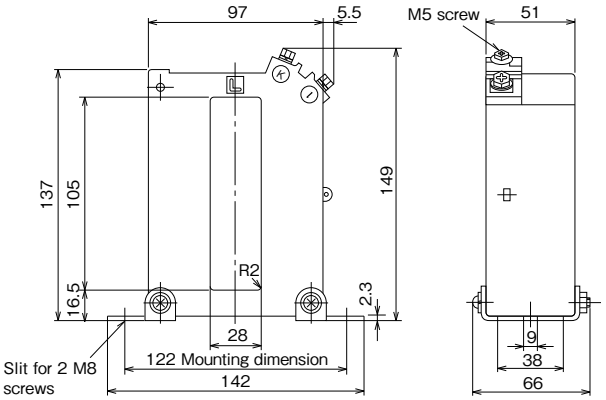
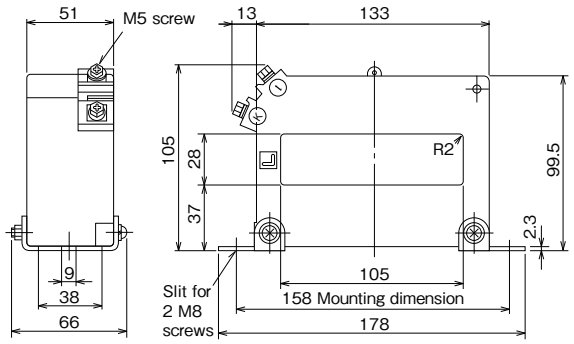


Fig. 10



CW-40LM 2500 to 4000A

Fig. 11

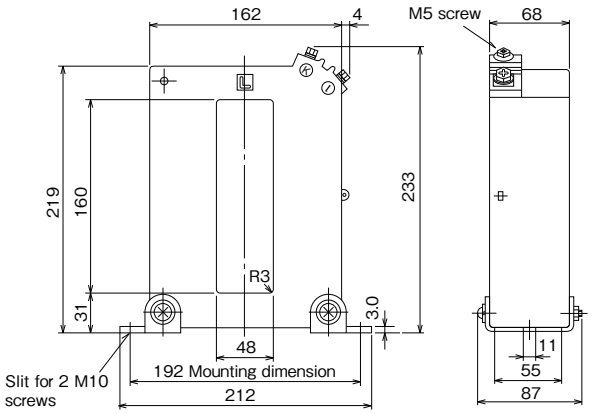
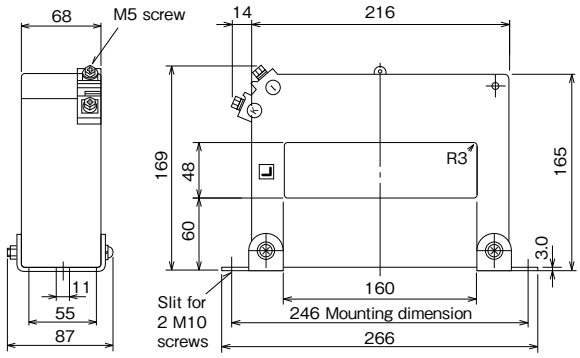
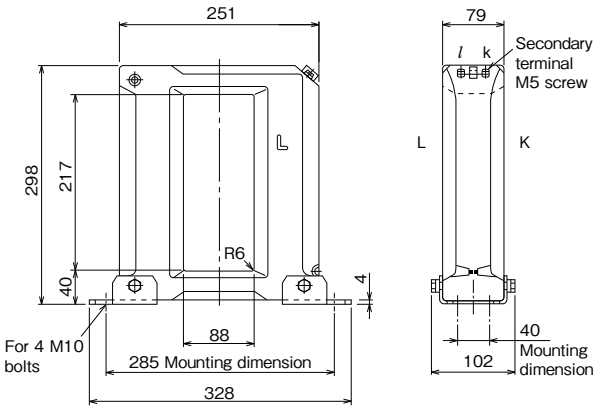
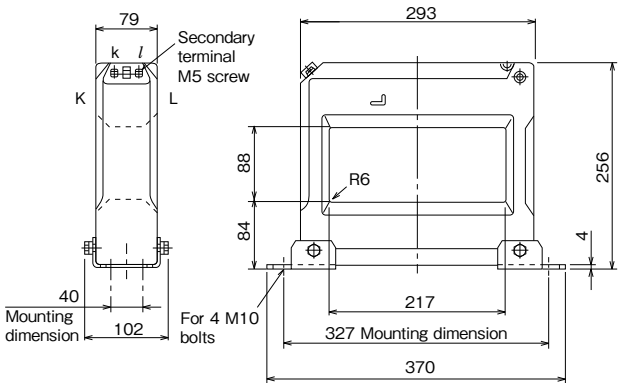


Fig. 12



Vertical mount	Horizontal mount
CW-40LM 5000 / 6000A	
Fig. 13	Fig. 14
	

CW Series Low-voltage Current Transformers (less than or equal to 1100V)

CW-15LS Cable wiring

With primary conductor

Without primary conductor

Use

- General-use meters
- Secondary terminal insulation cap (page 34) is available as an option.

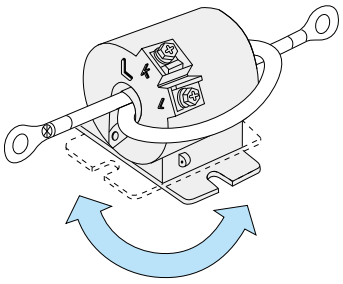
Specifications

Applicable standard: JIS C 1731-1

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Highest voltage/ withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)	Structure
CW-15LS	5	5	15	1.0	40	1.15/ 4/—	50 or 60	Fig. 1	1.1	Primary winding
	10									
	15									
	20									
	30									
	40	5	15	1.0	40	1.15/ 4/—	50 or 60	Fig. 2-1	1.2	With primary conductor
	50							Fig. 2-2		
	60									
	75							Fig. 2-3		
	100							Fig. 2-4		
	120							Fig. 2-5	0.9	
	150	5	15	1.0	40	1.15/ 4/—	50 or 60	Fig. 3-1	1.0	Without primary conductor
	200									
	250							Fig. 3-2	0.6	
	300									
	400									
	500							Fig. 3-3	0.8	
	600									
	750									

Note: Withstand voltage value indicates commercial power frequency withstand voltage/ lightning impulse withstand voltage.

Features



- The direction of the mounting plate can be turned 90°, even after the verification seal has been affixed.

External Dimensions

Fig. 1 5 to 30A

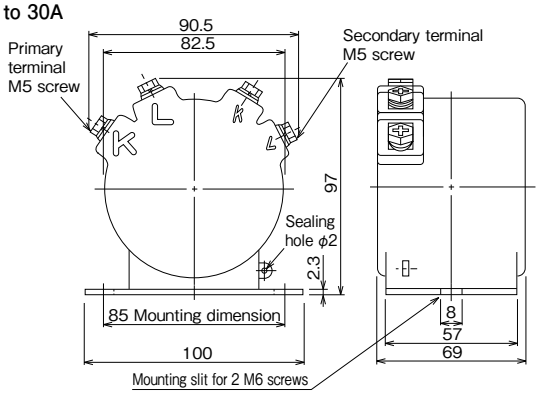
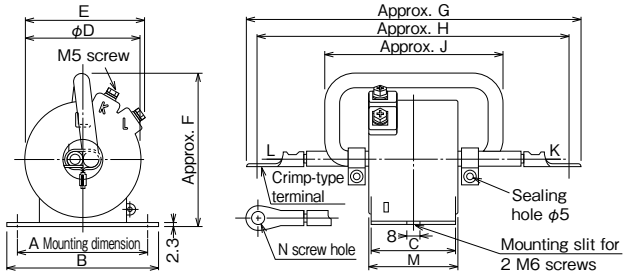


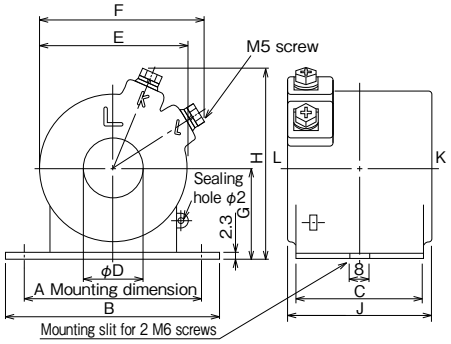
Fig. 2 40 to 120A (The figures shown below are examples of 10 to 120A.)



Item	Rated primary current (A)	Primary winding (T)	Primary wire cross-sectional area (mm²)	Dimensions A	B	C	D	E	F	G	H	J	M	N
1	40	4	14	85	100	57	75.5	78.5	105	215	203	105	57.5	M6
2	50	3	22	85	100	57	75.5	78.5	105	220	203	105	57.5	M6
	60	3	22											
3	75	2	38	85	100	57	75.5	78.5	105	230	208	105	57.5	M8
4	100	2	38	85	100	57	75.5	78.5	105	240	218	105	57.5	M10
5	120	2	60	70	85	50	68.5	73	105	255	233	105	57.5	M10

Note: The primary cable is coiled and secured. The number of coils must not be changed.

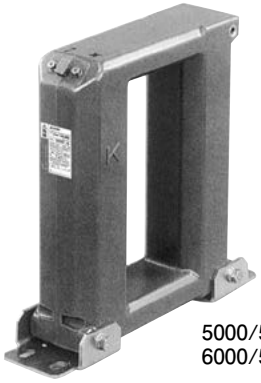
Fig. 3 150 to 750A



Item	Rated primary current (A)	Dimensions A	B	C	D	E	F	G	H	J
1	150,200	85	100	57	25	75.5	78.5	44	90	57.5
2	250,300,400	70	85	50	32	68.5	73	41.5	84.5	57.5
3	500,600,750	85	100	57	50	85.5	86.5	49.5	100	59

CW Series Low-voltage Current Transformers (less than or equal to 1100V)

CW-15LMS Busbar wiring/Rectangular window through type



5000/5A
6000/5A

Use

- General-use meters

Features

- Secondary terminal insulation cap (page 34) is available as an option. (less than or equal to 4000/5A)

Specifications

Applicable standard: JIS C 1731-1

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Highest voltage/ withstand voltage (kV)	Frequency (Hz)	External dimensions/Mounting dimensions *1				Square window dimensions (mm)	Mass (kg)
								Vertical mount	Horizontal mount	Direct mounting on busbar *2			
										1 busbar	2 busbars		
CW-15LMS	200	5	15	1.0	40	1.15/ 4/—	50 or 60	Fig. 1	Fig. 2	Page 26 Fig. 1	—	14×55	1.1
	250												
	300												
	400							Fig. 3	Fig. 4		—		0.6
	500												
	600							Fig. 5	Fig. 6		—	14×80	1.1
	750												
	800												0.9
	1000							Fig. 7	Fig. 8		Page 26 Fig. 2	28×105	1.2
	1200												
	1500												1.1
	2000												1.2
	2500							Fig. 9	Fig. 10	—		48×160	4.8
	3000												
	4000										—		6.3
	*3 5000							Fig. 11	Fig. 12	—	—	88×217	14
	*3 6000												

Notes
*1 Standard products must be mounted vertically.
*2 Busbar direct mounting brackets are sold separately.
When ordering, specify the desired body type and rated primary current.
For rated primary currents of 1000 to 2000A, also specify the number of busbars.
*3 An epoxy resin mold is used to insulate rated primary currents of 5000A and 6000A.
*4 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.
*5 Product weight may vary due to changes in core characteristics.
*6 When mounting the bus bar, locate it in the center of the through hole, so that it is not in contact with the inside of the through hole.

External Dimensions

Vertical mount	Horizontal mount

CW-15LMS 200 to 300A

Fig. 1

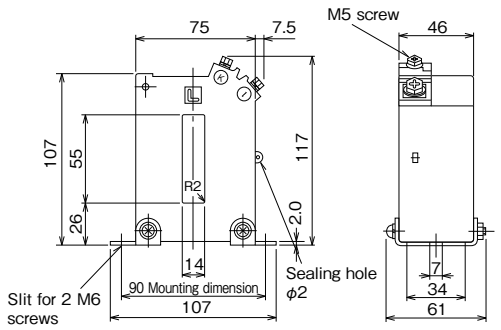
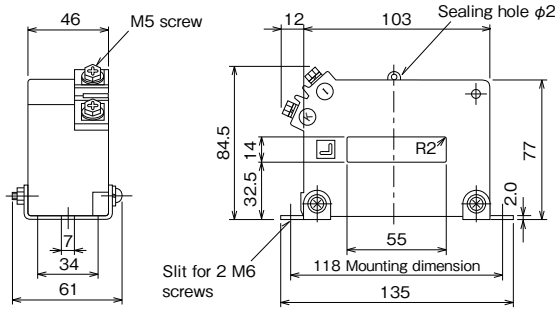


Fig. 2



CW-15LMS 400 / 500A

Fig. 3

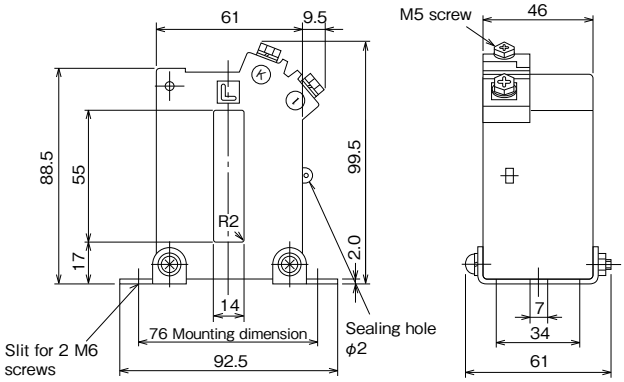
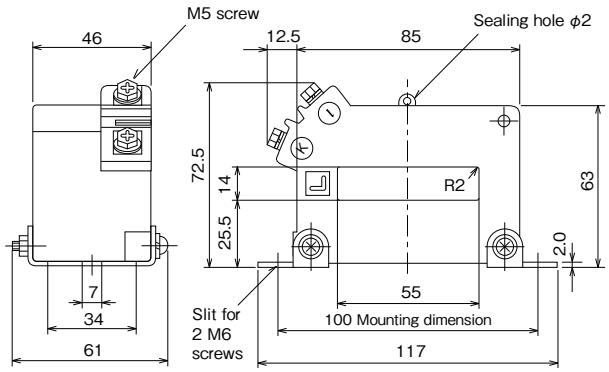


Fig. 4



CW-15LMS 600 to 800A

Fig. 5

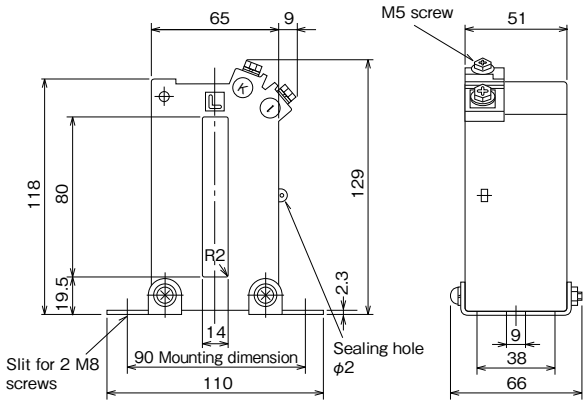
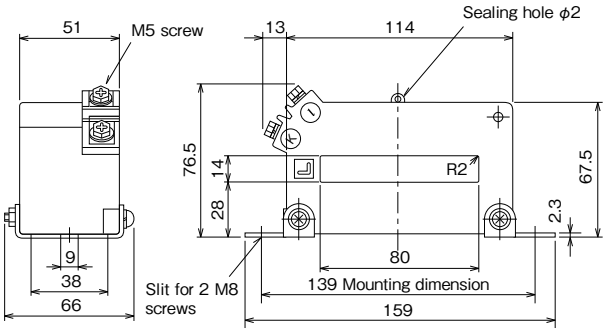


Fig. 6



Vertical mount	Horizontal mount

CW-15LMS 1000 to 2000A

Fig. 7

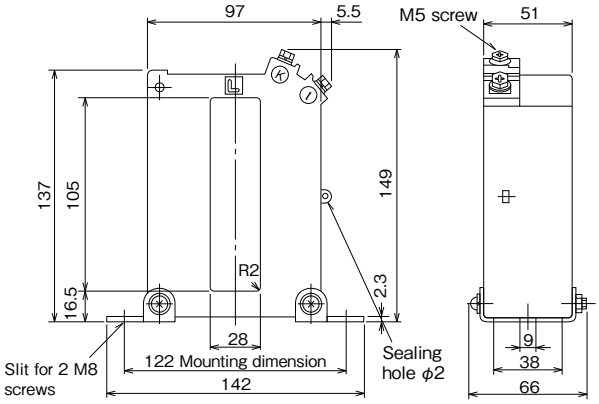
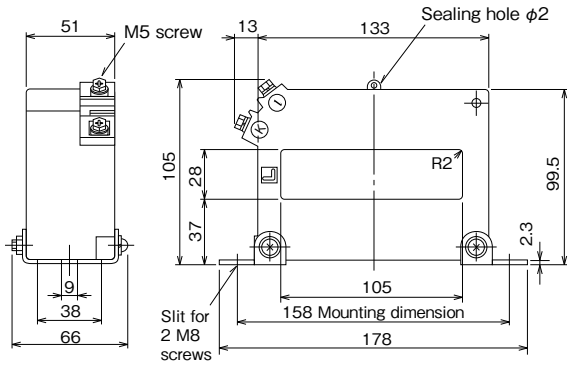


Fig. 8



CW-15LMS 2500 to 4000A

Fig. 9

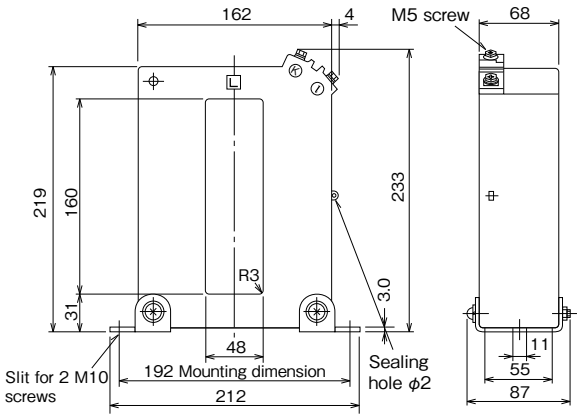
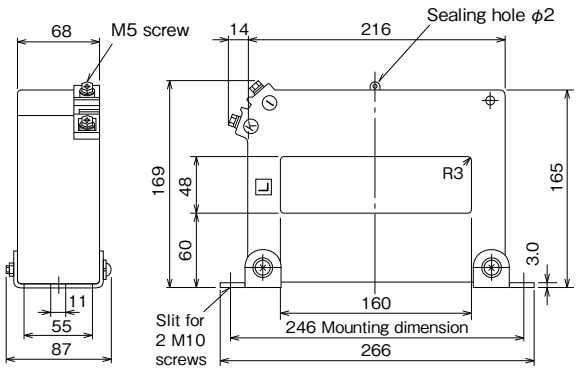


Fig. 10



CW-15LMS 5000 / 6000A

Fig. 11

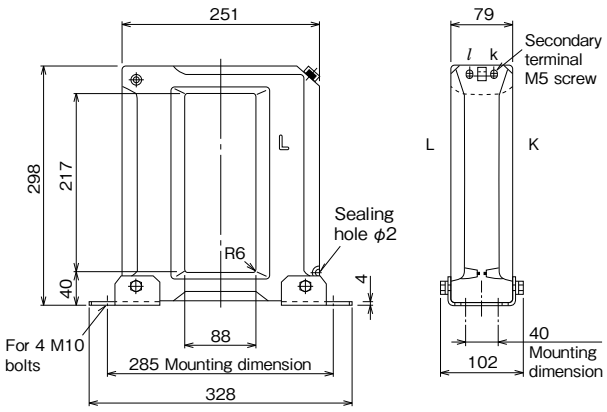
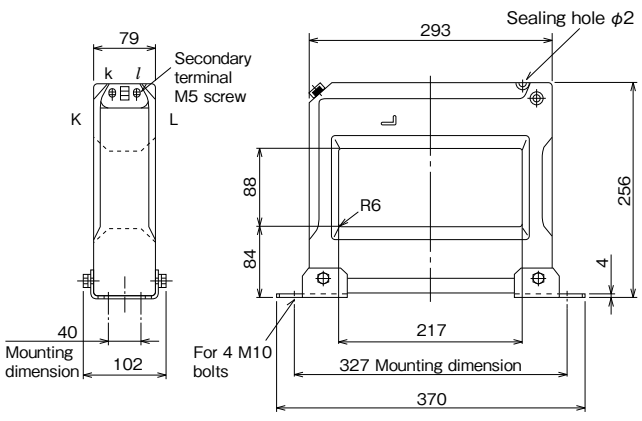


Fig. 12

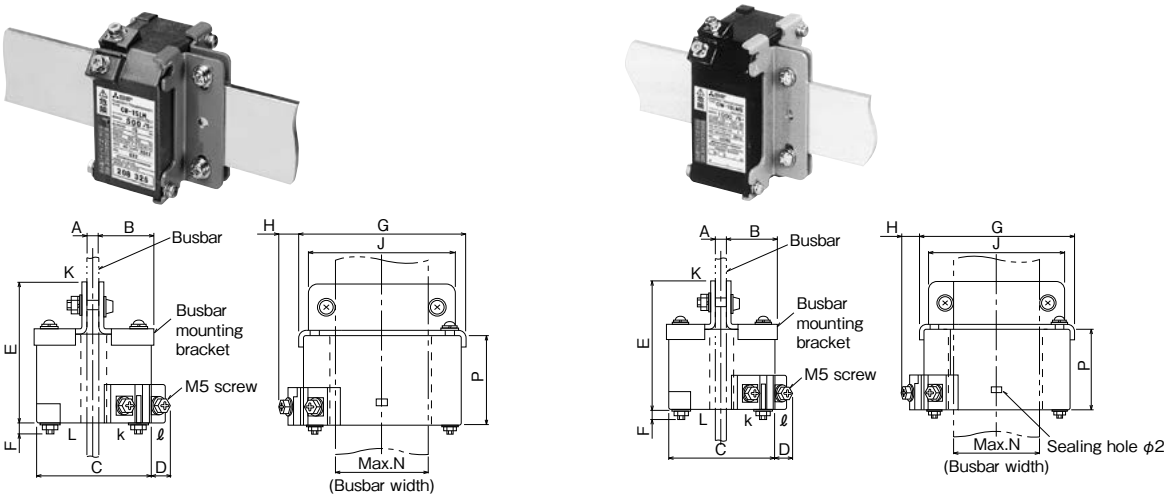


Busbar Direct-mount Brackets for CW-15LM, CW-40LM and CW-15LMS

Notes:
*1 For CW-15LM (150A), CW-40LM (200A, 250A and 4000 to 6000A) and CW-15LMS (4000 to 6000A), direct mounting on the busbar is not possible as the respective CTs are too heavy for the busbar cross-sectional dimensions.
*2 Be certain to mount busbars at the center of the through hole so that these is no contact with the inner surface of the hole.
*3 Remove the mounting feet without fail. (It is not allowed to use both the mounting feet and the busbar direct mounting brackets.)
*4 Use a pair of busbar direct mounting brackets. Use the supplied screws and nuts.

busbar mounting

Fig. 1



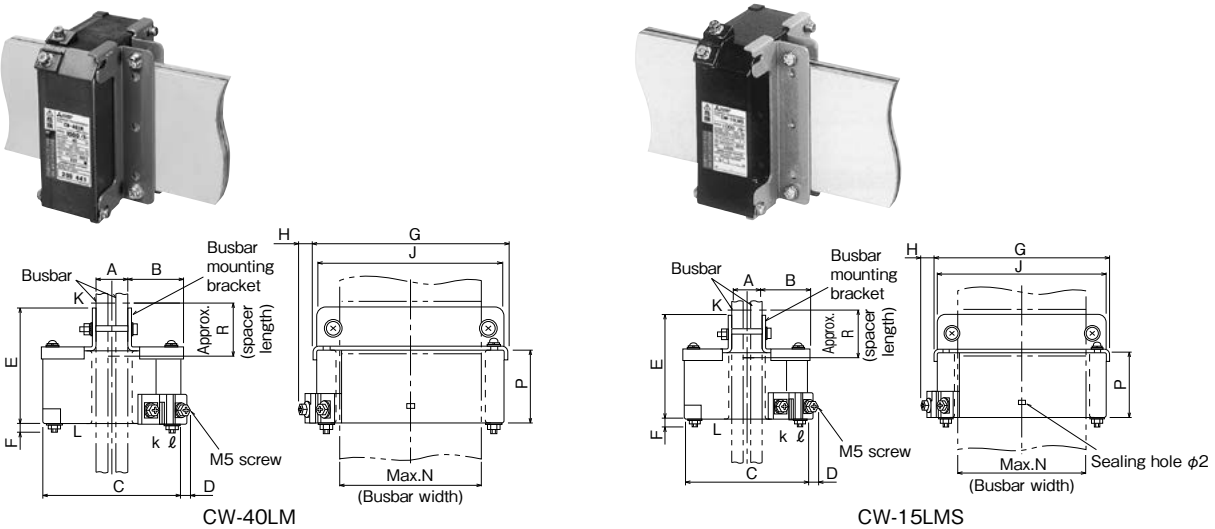
CW-15LM, CW-40LM　　CW-15LMS

Model name	Rating	A	B	C	D	E	F	G	H	J	N	P	R	External dimensions
CW-15LM CW-40LM CW-15LMS	200 to 300A 300 to 500A 200 to 300A	5 to 10	33.5	75	7.5	74	10	110	8.5	90	50	46	–	Fig. 1
CW-15LM CW-15LMS	400 to 750A 400 / 500A	5 to 10	26.5	61	9.5	73.5	9	90.5	9.5	81	50	46	–	
CW-40LM CW-15LMS	600 to 800A 600 to 800A	5 to 10	27.5	65	9	79	9	121	9	107	75	51	–	
CW-40LM CW-15LMS	1000 to 2000A 1000 to 2000A	6 to 12	43.5	97	5.5	80.5	10	139	10	129	100	51	–	

Note: *1 Busbar mounting bracket are made of nonmagnetic material for CM-40LM and CW-15LMS (1000 to 2000A) current transformers.

2-busbar mounting

Fig. 2



CW-40LM　　CW-15LMS

Model name	Rating	A	B	C	D	E	F	G	H	J	N	P	R	External dimensions
CW-40LM CW-15LMS	1000 to 2000A 1000 to 2000A	15 to 24	39	97	5.5	80.5	10	139	10	129	100	51	40	Fig. 2
CW-40LM CW-15LMS	2500 to 3000A 2500 to 3000A	15 to 45	72	162	4	102	10	223	11	210	150	68	60	

Note: *1 Busbar brackets are made of nonmagnetic material for two-busbar mounting configurations.

CW Series Low-voltage Current Transformers (less than or equal to 1100V)

CW-5LS3/CW-5LMS3 Distribution boards Busbar/Cable wiring

■Use

●General-use meters and distribution boards

■Features

●As the result of an integrated three-wire current transformer structure and direct pass through enables the busbar to be connected directly to the main breaker "250A (225A) to 400A frame" terminal, space savings and simplified wiring work are realized.
If mounting the current transformer on the power supply-side of the breaker, be certain to secure appropriate arc space.

●A primary conductor and mounting adapter are available as an option (for CW-5LS3).

■Specifications

Applicable standard: JIS C 1731-1

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Highest voltage/ withstand voltage (kV) *1	Frequency (Hz)	Applicable circuit	Mass (kg)
CW-5LS3	150	5	2×5	1.0	40	1.15/ 4/—	50 or 60	1-phase, 3-wire 3-phase, 3-wire	1.0
	200								
	250								
CW-5LMS3	250	5	2×5	1.0	40	1.15/ 4/—	50 or 60	1-phase, 3-wire 3-phase, 3-wire	1.6
	300								
	400								

Notes

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

*2 Product weight may vary due to changes in core characteristics.

External Dimensions

Fig. 1 CW-5LS3 150 to 250A

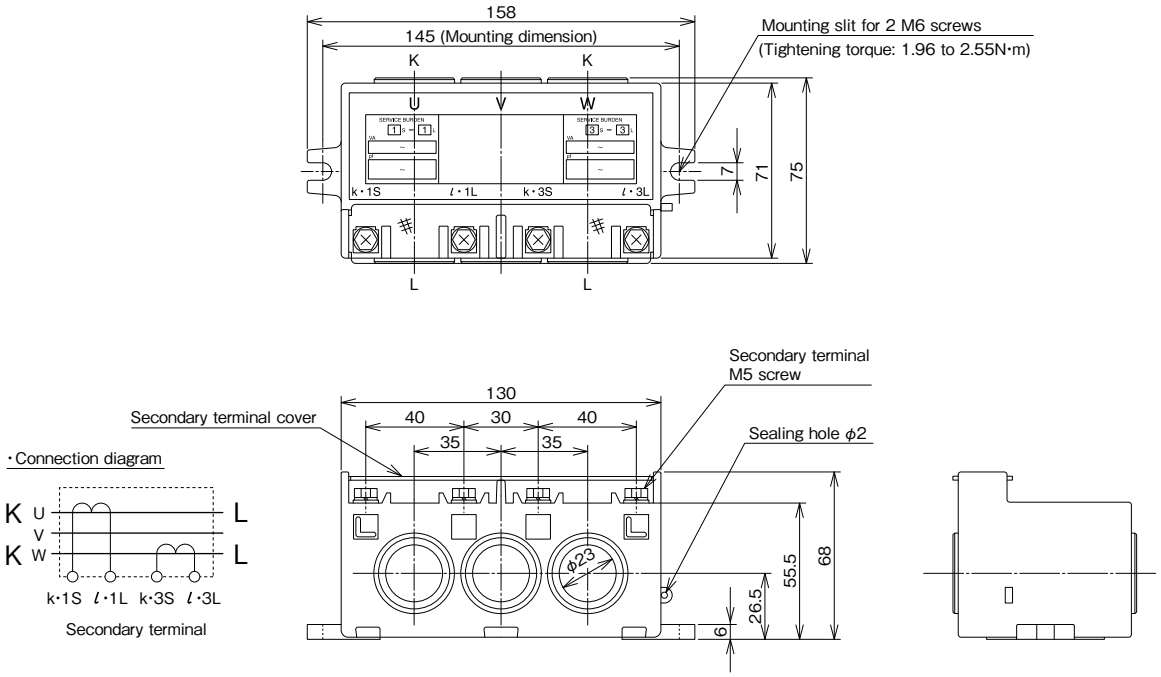
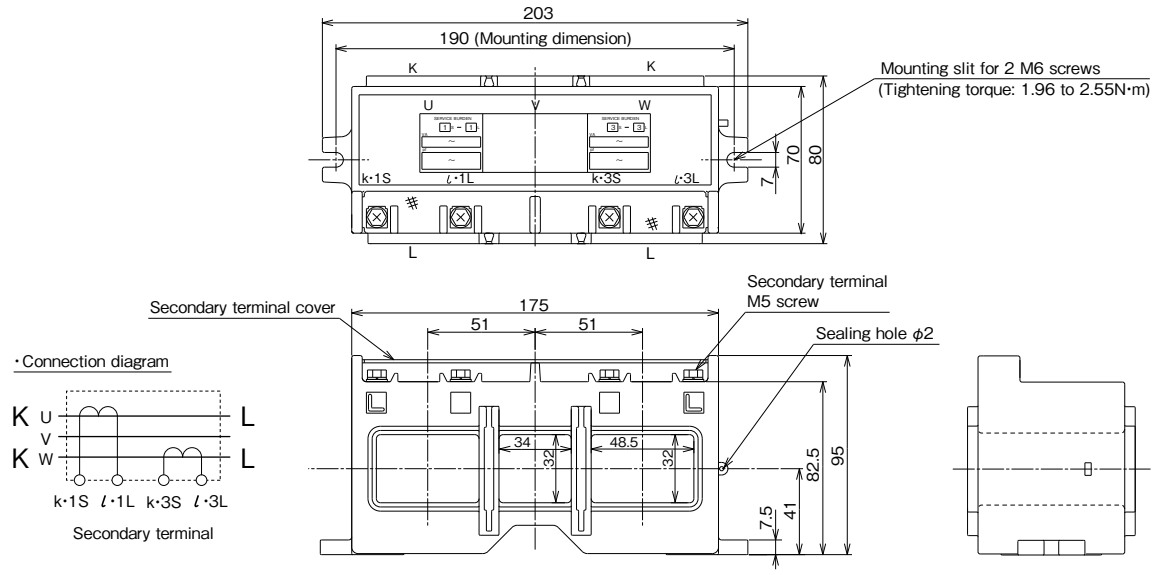


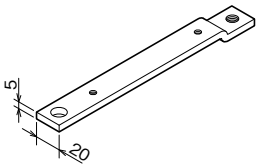
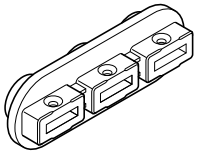
Fig. 2 CW-5LMS3 250 to 400A



■Optional Parts

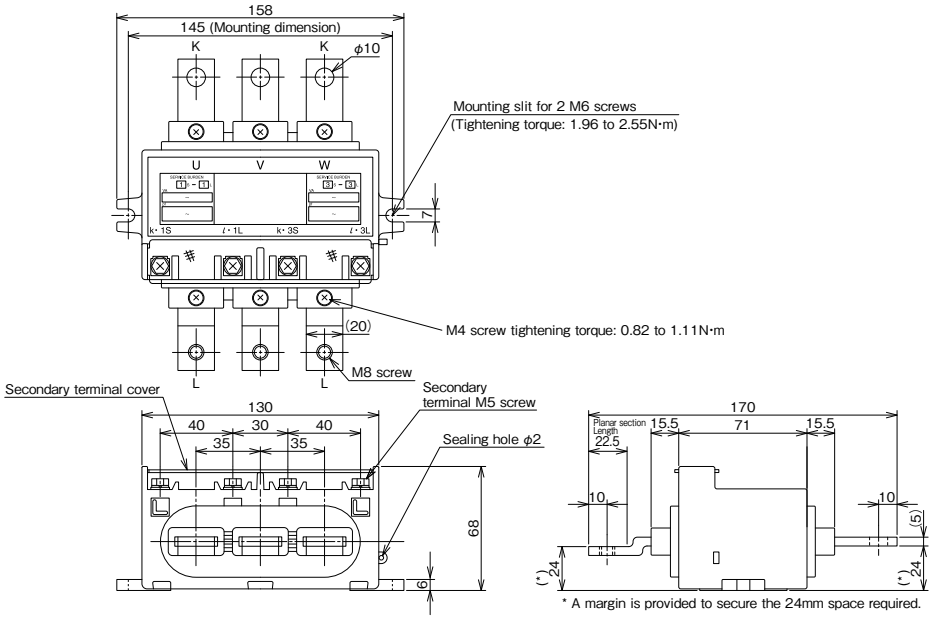
Primary conductor and primary conductor mounting adapter for CW-5LS3

● The primary conductor and primary conductor mounting adapter are provided.

Product name	Primary conductor	Primary conductor mounting adapter	●Example of primary conductor and mounting adapter assembled
Model name	**CW-B205**	**CW-AD205**	
Appearance		 3 screws included	
No. in package	**30 pieces**	**20 pieces**	

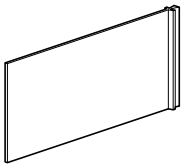
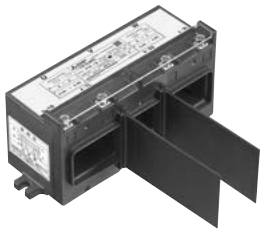
Note: * The primary conductor and primary conductor mounting adapter are used for low-voltage circuits.

■External Dimensions (example of with primary conductor and mounting adapter assembled)

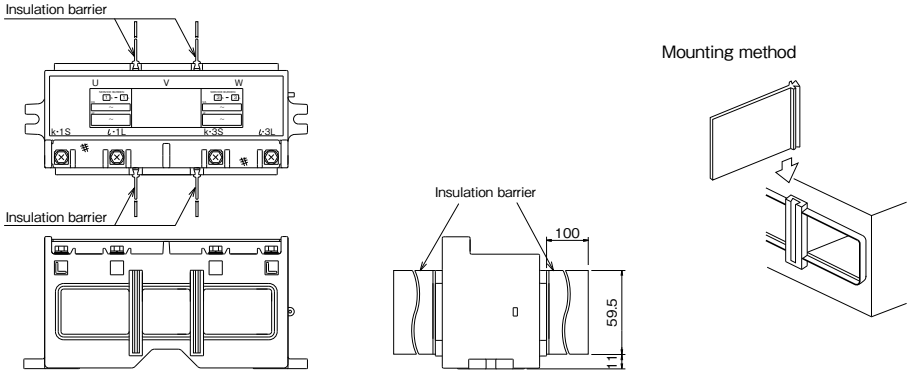


Insulation barrier for CW-5LMS3

● The CW-5LMS3 is built to allow mounting of the Mitsubishi Electric NF250-CV insulation barrier.

Product name	Insulation barrier	●Example of insulation barrier attached
Model name	**BAF-2SV**	
Appearance		
No. in package	**1 piece**	* Possible to mount on both the power supply-side and load side.

■External Dimensions (example with insulation barrier attached)



CW Series Low-voltage Current Transformers (less than or equal to 1100V)

CW-5T/CW-5L/CW-15LM

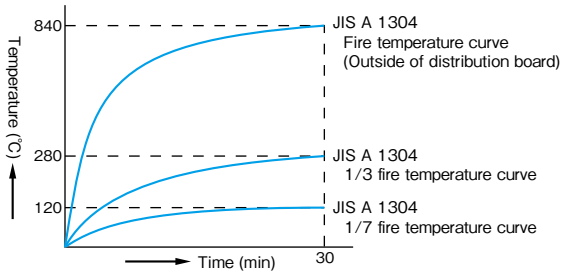
Class 1 and 2 heat-resistant models for emergency power sources

Devices to be mounted on heat-resistant switch boards and distribution boards must have heat resistance performance that ensures continuous power supply to firefighting equipment in case of fire.
Mitsubishi Electric's heat-resistance current transformers are certified Class 1 and Class 2 equipment compliant with the above-mentioned standards, and have obtained the approval of the "Committee for the Certification of Distribution Boards, etc. for Emergency Use."

㊨ 20210331

CW-5T (Class 1 heat-resistant) | CW-5L (Class 2 heat-resistant) | CW-15LM

Heat-resistant Power Distribution Performance



Allowable temperature curve

Class 1 heat-resistance

When a current transformer is heated for 30min according to the 1/3 fire temperature curve, heat-resistant rated current passes without trouble. Be certain to use heat-resistant wiring for the primary conductor.

Class 2 heat-resistance

When a current transformer is heated for 30min according to the 1/7 fire temperature curve, heat-resistant rated current passes through without trouble. Be certain to use 600V Class 2 wiring that is heat-resistant and insulated by vinyl (HIV) for the primary conductor of the CW-5L.

Regarding heat-resistant rated current

Be certain to use the load current within the heat-resistant rated current (70% of the primary current). Additionally, select a wire gauge based on the primary current.

Specifications

Applicable standard: JIS C 1731-1

Class	Type	Rated primary current (A)	Primary current (A)	Through No. (turns)	Primary conductor size (mm^2)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Highest voltage/ withstand voltage (kV)	Frequency (Hz)	Insulation method	External dimensions	Mass (kg)
Class 1 Heat-resistant	CW-5T	100	20	5	5.5	5	5	1.0	40	1.15/ 4/—	Both 50/60	Epoxy resin mold	Fig. 1	1.0
			25	4	8									
			50	2	22									
			100	1	150									
		120	30	4	8									
			40	3	14									
			60	2	22									
			120	1	150									
		150	75	2	22									
			150	1	150									
Class 2 Heat-resistant	CW-5L	100	10	10	ϕ2	5	5	1.0	40	1.15/ 4/—	Both 50/60	Double mold	Fig. 2	0.6
			20	5	8									
			25	4	14									
			50	2	22									
			100	1	150									
		120	15	8	5.5									
			30	4	14									
			40	3	22									
			60	2	22									
			120	1	150									
		150	75	2	22									
			150	1	150									
		200	200	1	150									
		250	250	1	325								Fig. 3	0.5
		300	300	1	325									
		400	400	1	325									
	CW-15LM	200	200	—	*14×55	5	15	1.0	40	1.15/ 4/—	Both 50/60	Double mold	Fig. 4	1.1
		250	250											
		300	300											
		400	400										Fig. 5	0.6

Notes
*1 Square window dimensions are listed because it is for busbar wiring.
*2 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.
Remarks:
1) For primary conductor sizes, nominal cross-sectional areas of through-type enabled wiring are listed. (ϕ indicates single-wire diameter)
2) Primary conductor sizes of Class 1 heat-resistant CTs are described as smaller than the maximum conductor size, because heat-resistant wiring is hard and is not easy to wind.

Heat-resistant current transformer indicator

Heat-resistance classes are indicated by the following labels:

Class 1 heat-resistant	Class 2 heat-resistant
一種 耐熱 登録機器	二種 耐熱 登録機器
Red label	Blue label

External Dimensions

Fig. 1 | CW-5T | 100, 120, 150A

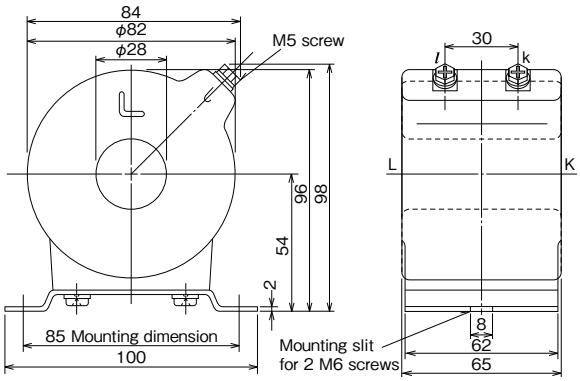


Fig. 2 | CW-5L | 100, 120, 150, 200A

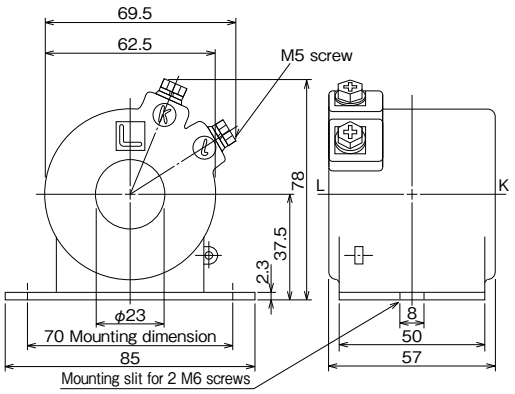


Fig. 3 | CW-5L | 250, 300, 400A

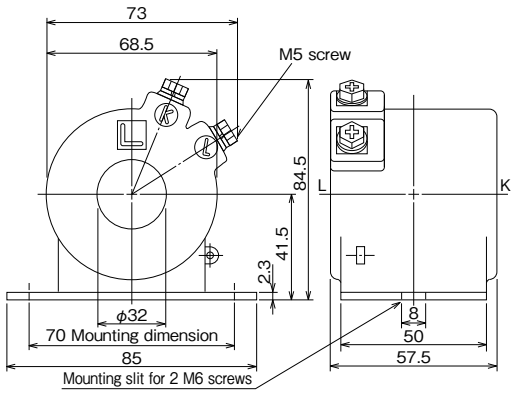


Fig. 4 | CW-15LM | 200, 250, 300A

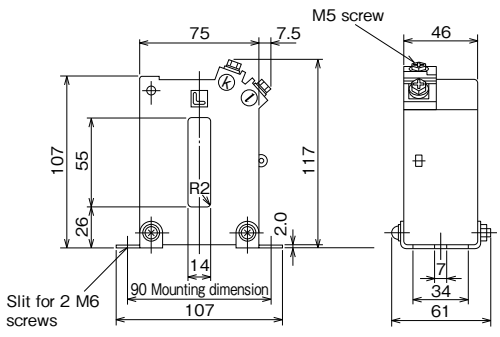
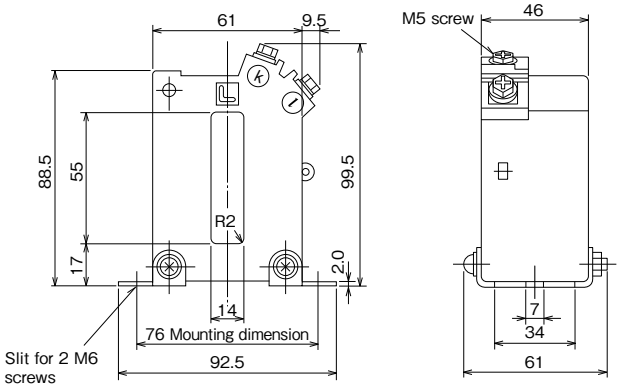


Fig. 5 | CW-15LM | 400A



CW-15LM Low-voltage current transformer for protective relays

Use

- This current transformer is used in combination with overcurrent protective relays of low-voltage switchboards.

Features

- Protection relay current transformer compliant with JEC standard
- With accuracy class of 1PS and usable for measurement
- Compact and lightweight, enabling mounting vertically, horizontally and even directly on the busbar.

  Note: Ratings for direct mounting on busbar are 1500 to 3000A. To mount directly on a busbar, select the brackets used for CW-40LM 2500 to 3000A.
- Main body case is made of heat-resistant ABS resin with a superior UL94 flame resistance rating of V-0.
- The square window through-type design enables easy connection of the primary conductor by passing the wiring through the window.
- Secondary terminal insulation cap (page 34) is available as an option.

Specifications

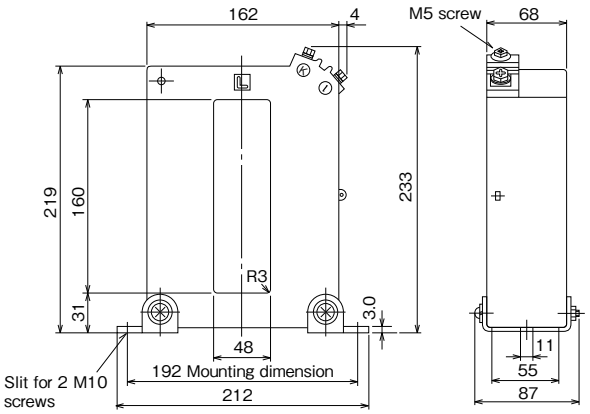
Applicable standard: JEC 1201-2007

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Withstand voltage (kV)	Overcurrent constant	Frequency (Hz)	Mass (kg)
CW-15LM	1500	5	15	1PS	40	1.15/4/–	n>10	50 or 60	4.7
	2000								4.8
	2500								4.6
	3000								4.9
	3500								5.3
	4000								6.3

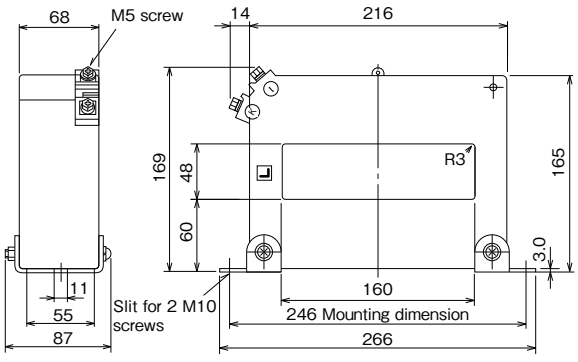
Note: * Insulation level (withstand voltage) indicates values for peak voltage/short-time commercial power frequency withstand voltage/lightning impulse withstand voltage.

External Dimensions

Vertical mount



Horizontal mount



CW-5S/CW-2SL/CW-5SL Separated/Cable wiring

CW-5S

CW-2SL
CW-5SL

Secondary Terminal Cover Included as Standard Equipment

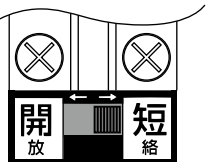
A secondary terminal cover is included as standard equipment.

Equipped with Secondary Side Short-circuit Switch

These transformers are equipped with a short-circuit switch to prevent the terminals on the secondary side from opening.

If the transformer is not connected, short-circuiting between the terminals is possible.

Secondary side short-circuit switch



- When using meter : Set to「開放」"Open"
- When not using meter : Set to「短絡」"Short circuit"

Features

Removal of existing cables is not required.

These transformers can be mounted without removing existing cables, simplifying mounting work.

Specifications

Applicable standard: JIS C 1731-1

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Highest voltage/ withstand voltage (kV)	Overcurrent strength (times)	Frequency (Hz)	Mass (kg)	Mountable wire size (be certain to use a wire size compatible with the load current)
CW-5S	300 400 500	5 or 1	5	1.0	0.46/ 3/—	40	Both 50/60	0.4	ϕ11 ot ϕ28 600V IV wire 38 to 250mm^2 CV wire 38 to 200mm^2
CW-2SL	150 200 250	1	2	1.0	0.46/ 3/—	40	Both 50/60	1.0	600V IV wire and CV wire 38mm^2 to 500mm^2 (if cables are too small to attach, use the rubber spacers supplied)
CW-5SL	300 400 500 600 800	5 or 1	5	1.0	0.46/ 3/—	40	Both 50/60	1.0	600V IV wire and CV wire 250mm^2 to 500mm^2 × 1 piece 200mm^2 to 325mm^2 × 2 pieces (To use two cables, replace the cable tightening screw with the supplied screw M4×65.)

Notes

*1 If dust collects on the separated surface of the core or rust begins to form, current transformer performance will drop and measurement errors may occur.
Be certain to clean the separated surfaces before use.

*2 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

*3 **This product is intended for use only in Japan (has specifications not intended for use in foreign countries) and cannot be used in other countries.**

External Dimensions

Fig. 1 CW-5S

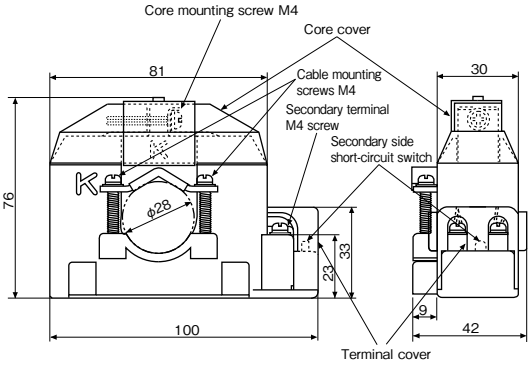
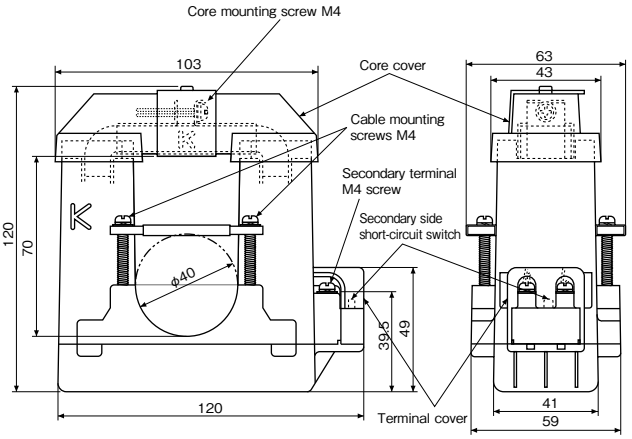
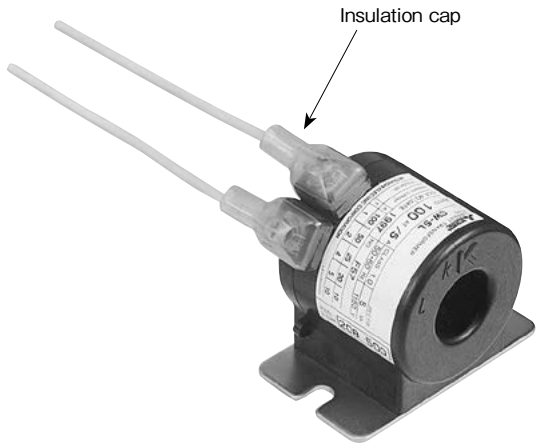


Fig. 2 CW-2SL and CW-5SL



Insulation Cap for CW Low-voltage Current Transformers

CW-M1/CW-M2/CW-M3



Features

- Cap can be installed without removing the crimp-type terminal.
- Cap covers the entire terminal, preventing any live part from being exposed.
- Insulation cap is specially designed to fit, so product height is virtually unchanged even after mounting.
- Cap is half transparent, allowing terminal tightness can be checked without removing it.

Type

Type	Applicable model	Order Qty.
CW-M1	Secondary terminals of CW-L, LP, LM, LS and LMS CTs (less than or equal to 2000A)	100 pieces
CW-M2	Primary terminals of CW-LP and LS CTs	100 pieces
CW-M3	Secondary terminals of CW-40LM and 15LMS (2500 to 4000A)	100 pieces

How to Order

Type	Quantity
CW-M1	500

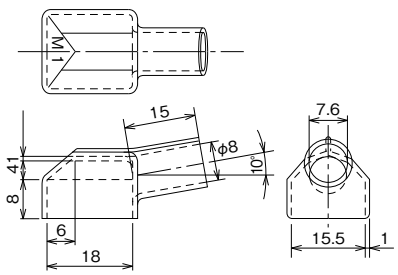
Orders must be in units of 100 pieces.

List of Applicable Models

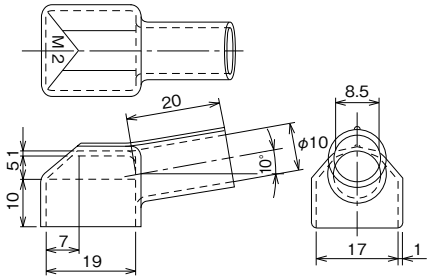
Current transformer name	Rating	Insulation cap			Remarks
		CW-M1	CW-M2	CW-M3	
CW-5L	60 to 750A	2 pieces	–	–	For secondary terminal
CW-15L	100 to 750A	2 pieces	–	–	For secondary terminal
CW-40L	150 to 750A	2 pieces	–	–	For secondary terminal
CW-5LP	1 to 50A	2 pieces	2 pieces	–	For primary and secondary terminals
CW-15LP	1 to 50A	2 pieces	2 pieces	–	For primary and secondary terminals
CW-40LP	1 to 50A	2 pieces	2 pieces	–	For primary and secondary terminals
CW-15LM	150 to 750A	2 pieces	–	–	For secondary terminal
CW-40LM, 15LMS	200 to 2000A	2 pieces	–	–	For secondary terminal
CW-40LM, 15LMS	2500 to 4000A	–	–	2 pieces	For secondary terminal
CW-15LM	1500 to 4000A	–	–	2 pieces	For secondary terminal
CW-15LS	5 to 30A	2 pieces	2 pieces	–	For primary and secondary terminals
CW-15LS	40 to 750A	2 pieces	–	–	For secondary terminal

External Dimensions

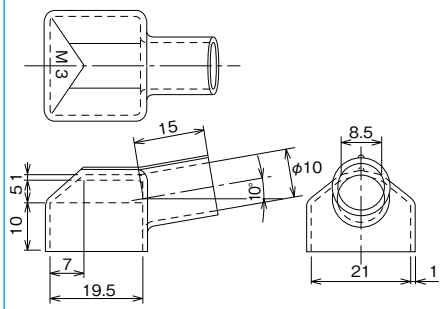
CW-M1



CW-M2



CW-M3



CD Series High-voltage Current Transformers (less than or equal to 6600V)

CD-25NB 25VA / 40times / n>10

Epoxy resin mold

Use

● General-use meters/Relays

Specifications

Applicable standards: JIS C 1731-1/JEC-1201-2007

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Overcurrent constant	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
CD-25NB	5	5	25	1.0・1PS	40	n>10	6900	22/60	Both 50/60	Fig. 1	7.0
	10										
	15										
	20										
	25										
	30										
	40										
	50										
	60										
	75										
	80										
	100										
	120										
	150										
	200										
	250									Fig. 2	9.5
	300										
	400										
	500										

Note

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

External Dimensions

Fig. 1

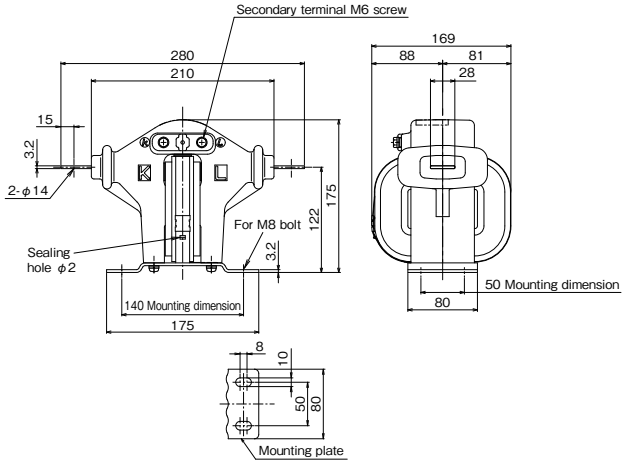
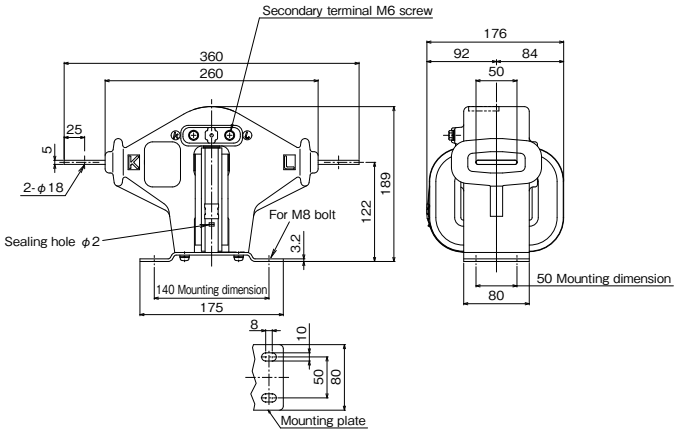


Fig. 2



CD Series High-voltage Current Transformers (less than or equal to 6600V)

CD-25NB(H)/CD-25NB(V)　25VA / 40times / n>10

Epoxy resin mold

■Use

- CD-25NB mountable with mounting holes for CD-40K
- General-use meters/Relays

■Specifications

Applicable standards: JIS C 1731-1/JEC-1201-2007

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Overcurrent constant	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
CD-25NB (H)	5	5	25	1.0・1PS	40	n>10	6900	22/60	Both 50/60	Fig. 1	7.3
	10										
	15										
	20										
	25										
	30										
	40										
	50										
	60										
	75										
	80										
	100										
	120										
	150										
	200										
	250									Fig. 2	9.8
	300										
	400										
	500										
CD-25NB (V)	5	5	25	1.0・1PS	40	n>10	6900	22/60	Both 50/60	Fig. 3	7.3
	10										
	15										
	20										
	25										
	30										
	40										
	50										
	60										
	75										
	80										
	100										
	120										
	150										
	200										
	250									Fig. 4	9.8
	300										
	400										
	500										

Note

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

■External Dimensions

Fig. 1

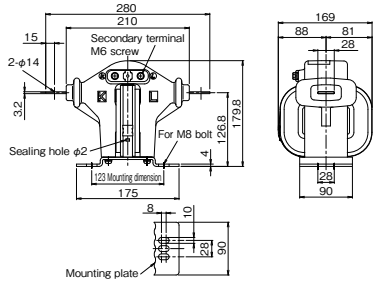


Fig. 2

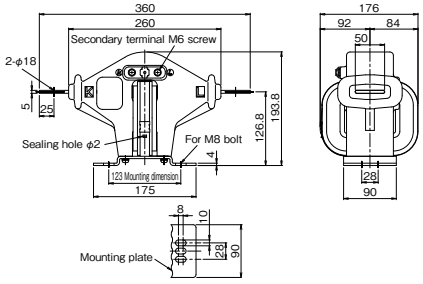


Fig. 3

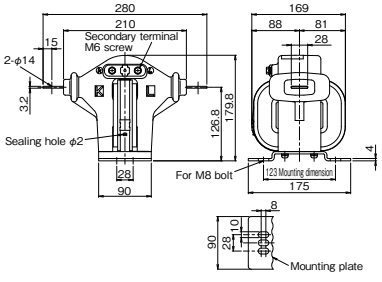
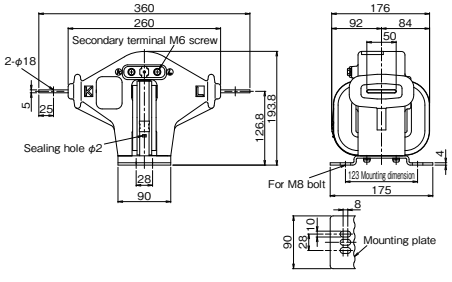


Fig. 4



CD Series High-voltage Current Transformers (less than or equal to 6600V)

CD-25ENB　25VA / 75times / n>10

Epoxy resin mold

■Use

●General-use meters/Relays

■Specifications

Applicable standards: JIS C 1731-1/JEC-1201-2007

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Overcurrent constant	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
CD-25ENB	5	5	25	1.0・1PS	75	n>10	6900	22/60	Both 50/60	Fig. 1	8.6
	10										
	15										
	20										
	25										
	30										
	40										
	50										
	60										
	75										
	80										
	100										
	120										
	150										
	200										
	250									Fig. 2	9.5
	300										
	400										

Note

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

■External Dimensions

Fig. 1

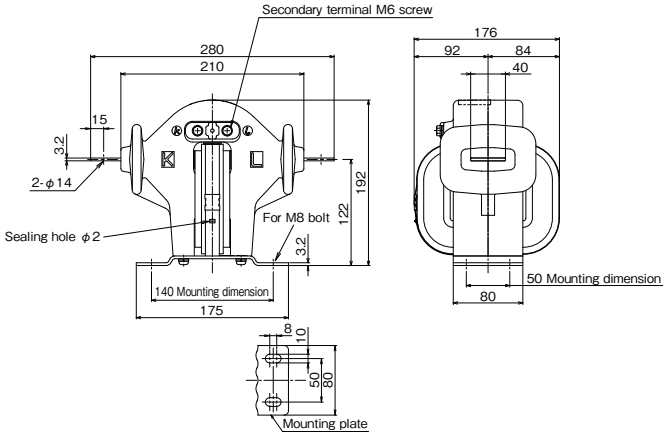
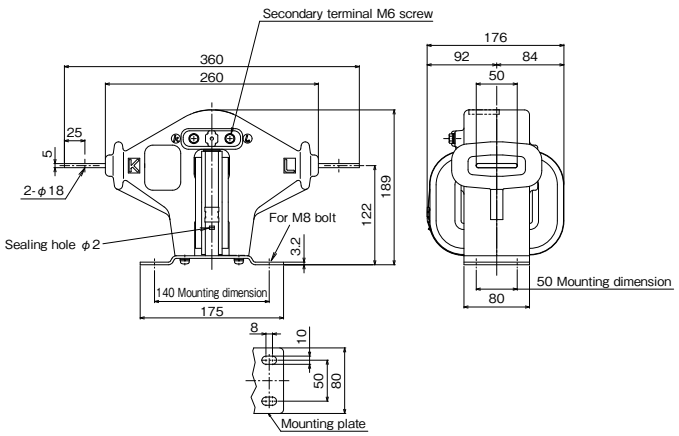


Fig. 2



CD Series High-voltage Current Transformers (less than or equal to 6600V)

CD-40GNA　40VA / 150times / n>10

Epoxy resin mold

■Use

●General-use meters/Relays

■Specifications

Applicable standards: JIS C 1731-1/JEC-1201-2007

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Overcurrent constant	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
CD-40GNA	5	5	40	1.0・1PS	150	n>10	6900	22/60	Both 50/60	Fig. 1	16
	10										
	15										
	20										
	25										
	30										
	40										
	50										
	60										
	75										
	80										
	100										
	150										
	200										

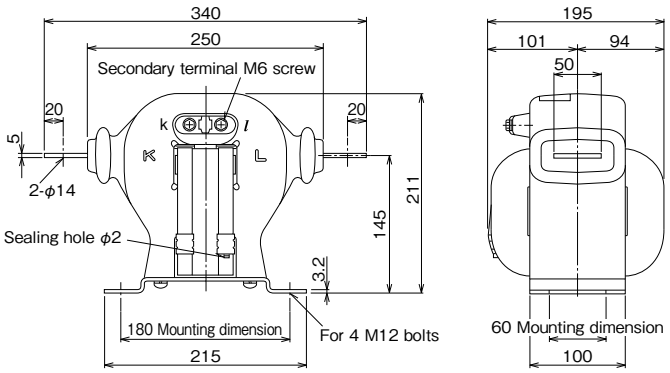
Notes

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

*2 An overcurrent intensity value is guaranteed if 25% of the rated load is connected to the secondary side.

■External Dimensions

Fig. 1 5 to 200A



CD Series High-voltage Current Transformers (less than or equal to 6600V)

CD-40LN　40VA / 300times / n>10

Epoxy resin mold

■Use

●General-use meters/Relays

■Specifications

Applicable standards: JIS C 1731-1/JEC-1201-2007

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Overcurrent constant	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
CD-40LN	5	5	40	1.0・1PS	300	n>10	6900	22/60	Both 50/60	Fig. 1	25
	10										
	15										
	20										
	25										
	30										
	40										
	50										
	60										
	75										
	80										
	100										

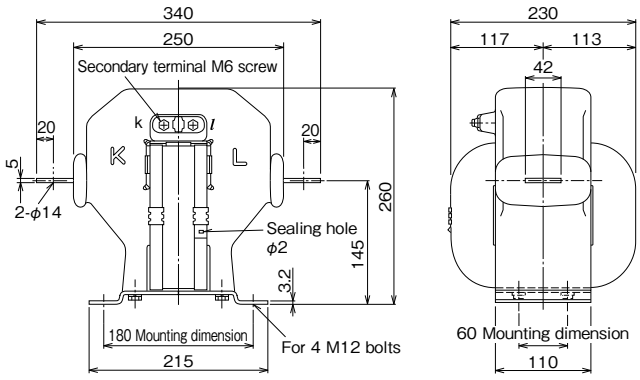
Notes

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

*2 An overcurrent intensity value is guaranteed if 25% of the rated load is connected to the secondary side.

■External Dimensions

Fig. 1 5 to 100A



CD Series High-voltage Current Transformers (less than or equal to 6600V)

CD-40H 40VA / $\frac{40\text{times}}{40\text{kA}}$ / n>10

Epoxy resin mold

■Specifications

Applicable standards: JIS C 1731-1/JEC-1201-2007

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength/ Withstand current	Overcurrent constant	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
CD-40H	600	5	40	1.0・1PS	40 times	n>10	6900	22/60	Both 50/60	Fig. 1	14
	750										15
	800										
	1000										
	1200				40kA					Fig. 2	
	1500										
	2000										17

Note

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

■Use

●General-use meters/Relays

■External Dimensions

Fig. 1 600 to 1000A

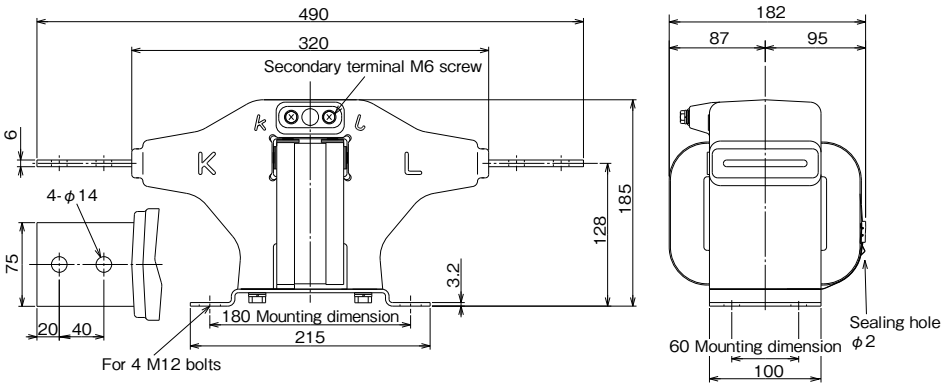
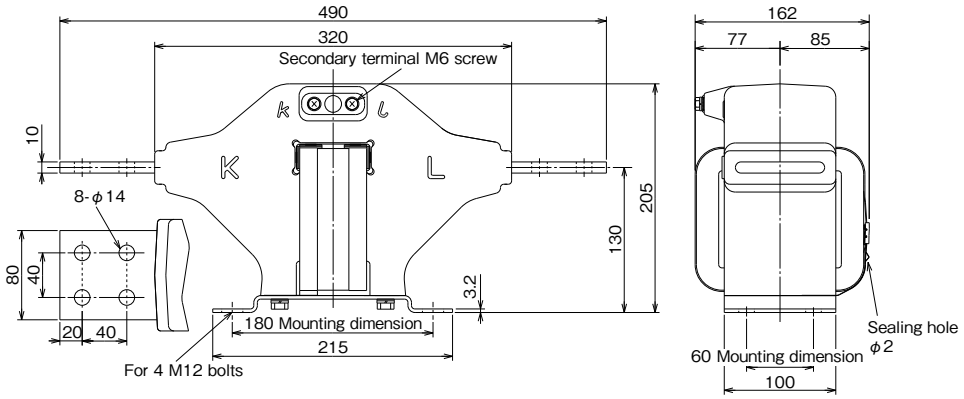


Fig. 2 1200 to 2000A



AN/CN Series Current Transformers for Cubicle Type High-Voltage Power Receiving Units

CD-10ANB and CD-25ANB
CD-10CNB and CD-25CNB

Withstand current 12.5kA/0.125sec
Withstand current 12.5kA/0.25sec

Epoxy resin mold

■ Use

- General-use meters/Relays
- These current transformers are used for cubicle type high-voltage power receiving equipment compliant with JIS standards.

AN/CN Series molded current transformers used for cubicle type high-voltage power receiving equipment (JIS C 4620) have undergone verification testing in combination with various devices, such as overcurrent relays and high-voltage circuit breakers, and their performance has been confirmed, thus confirming they can be used to configure reliable and economical cubicles.

■ Specifications

Applicable standard: JIS C 4620 (Appendix)

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Rated withstand current (kA/s)	Overcurrent constant	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
CD-10ANB	20	5	10	1PS	12.5・0.125	n>10	6900	22/60	Both 50/60	Fig. 1	8.6
	30										
	40										
	50									Fig. 2	7.0
	60										
	75										
	100									Fig. 3	3.6
	150										
	200										
CD-25ANB	50		25							Fig. 1	8.6
	60										
	75										
	100									Fig. 2	7.0
	150										
	200										
CD-10CNB	20	5	10	1PS	12.5・0.25	n>10	6900	22/60	Both 50/60	Fig. 1	8.6
	30										
	40										
	50									Fig. 2	7.0
	60										
	75										
	100										
	150										
	200									Fig. 3	3.6
CD-25CNB	60		25							Fig. 1	8.6
	75										
	100										
	150									Fig. 2	7.0
	200										

Note
*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

■Models to be Combined and Applicable Conditions

(1) Overcurrent trip system (current transformer secondary current trip system)

Table 1 shows the models of circuit breakers, overcurrent relays and current transformers that can be combined by the overcurrent trip system and the applicable load (sum of loads from relays, instruments and cables) of the current transformers.

If the relay trip system of a circuit breaker is a current transformer secondary current trip system, when a fault current is detected by the instantaneous element of the relay and is cut off, the large current in the secondary circuit of the current transformer will be cut off at contact point b of the relay and contact point b may be damaged.

The risk of damage will be high; especially if the primary current of the current transformer is low or the current transformer is being used at a load much lower than the rated load.

Therefore, if the cubicle is both a circuit breaker system and overcurrent trip system, be certain to use these current transformers according to the combination conditions shown in Table 1.

Table 1 Device combinations and applicable load of current transformers (overcurrent trip system)

Device combinations (Mitsubishi Electric products)					Current transformer applicable burden (VA) *2
Circuit breaker	Overcurrent trip relay	Current transformer			
		Rated burden	Type	Rated primary current *1	
VF-8□H-D/DG VF-13□H-D/DG (equipped with overcurrent trip equipment)	Static type Model MOC-A1T-R	10VA	CD-10ANB CD-10CNB	20A	9 to 10
			CD-10ANB CD-10CNB	30A	7 to 10
			CD-10ANB CD-10CNB	40 to 200A	5 to 10
		25VA	CD-25ANB	50 to 200A	10 to 25
			CD-25CNB	60 to 200A	

Notes

*1 When the primary current of current transformer is 40A or less, the voltage trip system (capacitor trip system) is recommended.

*2 If the load used is less than the rated load, please use the T-100L load regulator (the load used can be adjusted to 2, 4, 6, or 8VA).

(2) Voltage trip system (capacitor trip system)

The reliability of the overcurrent relay can be improved by using the voltage trip system (capacitor trip system) for the circuit breaker.

The applicable load of the current transformers in combination with our products is 5 to 10VA for current transformers with rating of 10VA and 10 to 25VA for those with rating of 25VA.

Table 2 shows the models of circuit breakers, overcurrent relays and current transformers that can be combined by the voltage trip system and the applicable load (sum of loads from relays, instruments and cables) of the current transformers.

Table 2 Device combinations and applicable load of current transformers (voltage trip system)

Device combinations (Mitsubishi Electric products)		Current transformer specifications			Current transformer applicable burden (VA) *4
Circuit breaker *3	Relay	Rated burden	Type	Rated primary current	
VF-8□H-D/DG VF-8□M-D/DG VF-13□H-D/DG VF-13□M-D/DG (equipped with voltage trip equipment)	Static type Model MOC-A1V-R	10VA	CD-10ANB CD-10CNB	20 to 200A	5 to 10
		25VA	CD-25ANB	50 to 200A	10 to 25
			CD-25CNB	60 to 200A	

Notes

*3 The part of the name shown by □ depends on the mounting method.

*4 If the load used is less than the rated load, please use the T-100L load regulator (the load used can be adjusted to 2, 4, 6, or 8VA).

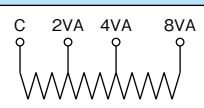
■T-100L Load Regulator

This load regulator should be used if the load for connected to the secondary circuit of the current transformer is below the range of applicable load required for the transformer (refer to Tables 1 and 2). Be certain to use the load regulator for each phase (phase the current transformer is set for) and adjust the usage load to a value that is as close as possible to the rated load.

● Specifications

Rated current	5A
Load value adjustment	2, 4, 6 or 8VA (power factor 0.8)
Short-time current	800A/0.125sec
Withstand voltage	AC2000V 1min
External dimensions	Fig. 4

● Load and Connection Terminals

Adjusted load value	Connection terminal	Internal connection
2VA	C terminal - 2VA terminal	
4VA	C terminal - 4VA terminal	
6VA	2VA terminal - 8VA terminal	
8VA	C terminal - 8VA terminal	

External Dimensions

Fig. 1

Type	Rated current	Withstand current
CD-10ANB	20/5 to 40/5A	12.5kA/0.125sec
CD-25ANB	50/5 to 75/5A	
CD-10CNB	20/5 to 40/5A	12.5kA/0.25sec
CD-25CNB	60/5 to 100/5A	

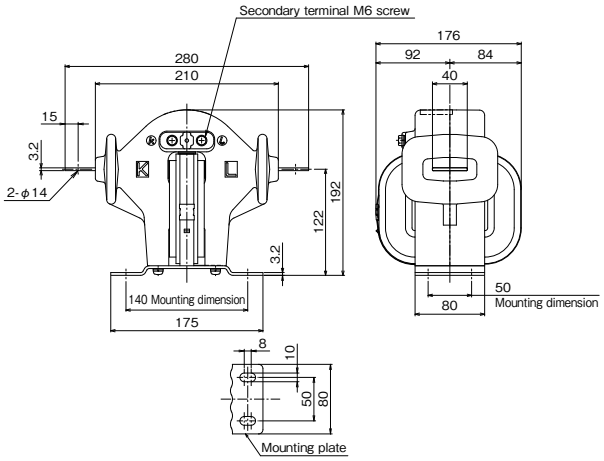


Fig. 2

Type	Rated current	Withstand current
CD-10ANB	50/5 to 75/5A	12.5kA/0.125sec
CD-25ANB	100/5 to 200/5A	
CD-10CNB	50/5 to 150/5A	12.5kA/0.25sec
CD-25CNB	150/5, 200/5A	

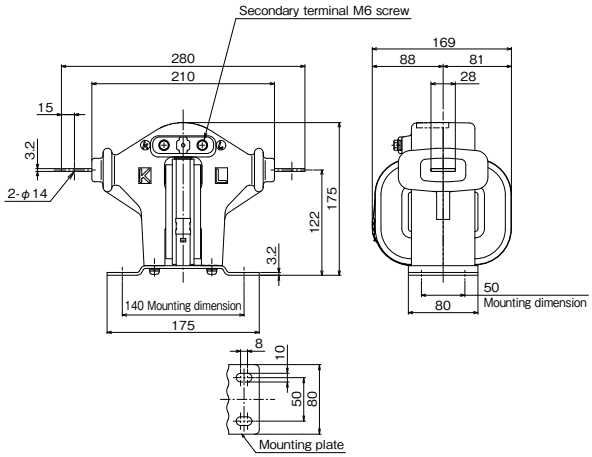


Fig. 3

Type	Rated current	Withstand current
CD-10ANB	100/5 to 200/5A	12.5kA/0.125sec
CD-10CNB	200/5A	12.5kA/0.25sec

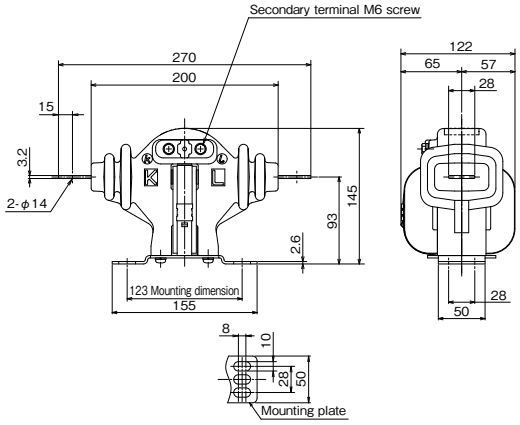
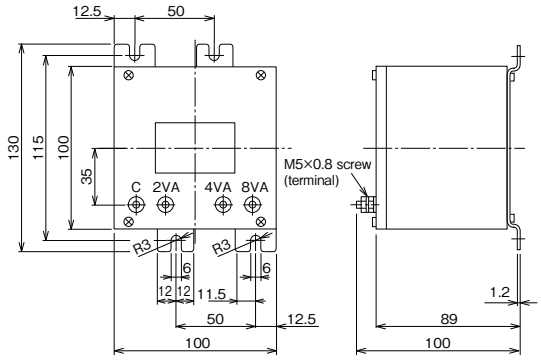


Fig. 4 T-100L load regulator



Various characteristics of AN/CN Series current transformers for cubicle type high-voltage power receiving equipment

Type	Rated primary current (A)	Rated withstand current (kA/s)	Mechanical withstand current (peak value) (kA)	Secondary leakage impedance (VA)
CD-10ANB	20	12.5/0.125	31.25	1.5
	30			1.6
	40			1.6
	50			2.5
	60			2.4
	75			2.2
	100			5.9
	150			9.5
	200			9.5

Type	Rated primary current (A)	Rated withstand current (kA/s)	Mechanical withstand current (peak value) (kA)	Secondary leakage impedance (VA)
CD-25ANB	50	12.5/0.125	31.25	6.5
	60			7.1
	75			6.9
	100			6.4
	150			8.0
	200			8.0

Type	Rated primary current (A)	Rated withstand current (kA/s)	Mechanical withstand current (peak value) (kA)	Secondary leakage impedance (VA)
CD-10CNB	20	12.5/0.25	31.25	1.2
	30			1.6
	40			1.6
	50			2.5
	60			2.4
	75			2.2
	100			3.0
	150			3.0
	200			9.5

Type	Rated primary current (A)	Rated withstand current (kA/s)	Mechanical withstand current (peak value) (kA)	Secondary leakage impedance (VA)
CD-25CNB	60	12.5/0.25	31.25	7.1
	75			6.9
	100			6.5
	150			8.0
	200			8.0

AN/CN Series Current Transformers for Cubicle Type High-Voltage Power Receiving Units

CD-25ANA Withstand current 12.5kA/0.125sec
CD-25CNA Withstand current 12.5kA/0.25sec

Epoxy resin mold

Use

- General-use meters/Relays
- These current transformers are used for cubicle type high-voltage power receiving equipment compliant with JIS standards.

AN/CN Series molded current transformers used for cubicle-type high-voltage power receiving equipment (JIS C 4620) have undergone verification testing in combination with various devices, such as overcurrent relays and high-voltage circuit breakers, and their performance has been confirmed, thus confirming they can be used to configure reliable and economical cubicles.

Specifications

Applicable standard: JIS C 4620 (Appendix)

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Rated withstand current (kA/s)	Overcurrent constant	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
CD-25ANA	20, 30, 40	5	25	1PS	12.5/0.125 [8/0.125 8/0.16 8/0.25 shared use]	n>10	6900	22/60	Both 50/60	Fig. 1	16
CD-25CNA	20, 30, 40, 50	5	25	1PS	12.5/0.25 [12.5/0.16 shared use]	n>10	6900	22/60	Both 50/60	Fig. 1	16

Note

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

■Models to be Combined and Applicable Conditions

(1) Overcurrent trip system (current transformer secondary current trip system)

Table 1 shows the models of circuit breakers, overcurrent relays and current transformers that can be combined by the overcurrent trip system and the applicable load (sum of loads from relays, instruments and cables) of the current transformers.

If the relay trip system of a circuit breaker is an overcurrent trip system (secondary current trip system of the current transformer), when a fault current is detected by the instantaneous element of the relay and is cut off, the large current in the secondary circuit of the current transformer will be cut off at contact point b of the relay and contact point b may be damaged.

The risk of damage will be high; especially if the primary current of the current transformer is low or the current transformer is being used at a load much lower than the rated load.

Therefore, if the cubicle is both a circuit breaker system and overcurrent trip system, be certain to use these current transformers according to the combination conditions shown in Table 1.

Table 1 Device combinations and applicable load of current transformers (overcurrent trip system)

Device combinations (Mitsubishi Electric products)					Current transformer applicable burden (VA) *2
Circuit breaker	Overcurrent trip Relay	Current transformer			
		Rated burden	Type	Rated primary current *1	
VF-8□H-D/DG VF-13□H-D/DG (equipped with overcurrent trip equipment)	Static type Model MOC-A1T-R	25VA	CD-25ANA CD-25CNA	20A	22 to 25
			CD-25ANA CD-25CNA	30, 40A	18 to 25

Notes

*1 When the primary current of current transformer is 40A or less, the voltage trip system (capacitor trip system) is recommended.

*2 If the load used is less than the rated load, please use the T-100L load regulator (the load used can be adjusted to 2, 4, 6, or 8VA).

(2) Voltage trip system (capacitor trip system)

The reliability of the overcurrent relay can be improved by using the voltage trip system (capacitor trip system) for the circuit breaker.

The applicable load of the current transformers in combination with our products is 5 to 10VA for current transformers with rating of 10VA and 10 to 25VA for those with rating of 25VA.

Table 2 shows the models of circuit breakers, overcurrent relays and current transformers that can be combined by the voltage trip system and the applicable load (sum of loads from relays, instruments and cables) of the current transformers.

Table 2 Device combinations and applicable load of current transformers (voltage trip system)

Device combinations (Mitsubishi Electric products)		Current transformer specifications			Current transformer applicable burden (VA) *4
Circuit breaker *3	Relay	Rated burden	Type	Rated primary current	
VF-8□H-D/DG VF-8□M-D/DG VF-13□H-D/DG VF-13□M-D/DG (equipped with voltage trip equipment)	Static type Model MOC-A1V-R	25VA	CD-25ANA	20 to 40A	10 to 25
			CD-25CNA	20 to 50A	

Notes

*3 The part of the name shown by □ depends on the mounting method.

*4 If the load used is less than the rated load, please use the T-100L load regulator (the load used can be adjusted to 2, 4, 6, or 8VA).

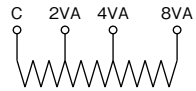
■T-100L Load Regulator

This load regulator should be used if the load for connected to the secondary circuit of the current transformer is below the range of applicable load required for the transformer (refer to Tables 1 and 2). Be certain to use the load regulator for each phase (phase the current transformer is set for) and adjust the usage load to a value that is as close as possible to the rated load.

● Specifications

Rated current	5A
Load value adjustment	2, 4, 6 or 8VA (power factor 0.8)
Short-time current	800A/0.125sec
Withstand voltage	AC2000V 1min
External dimensions	Fig. 2

● Load and Connection Terminals

Adjusted load value	Connection terminal	Internal connection
2VA	C terminal - 2VA terminal	
4VA	C terminal - 4VA terminal	
6VA	2VA terminal - 8VA terminal	
8VA	C terminal - 8VA terminal	

External Dimensions

Fig. 1

Type	Rated current	Withstand current
CD-25ANA	20/5 to 40/5A	12.5kA/0.125sec
CD-25CNA	20/5 to 50/5A	12.5kA/0.25sec

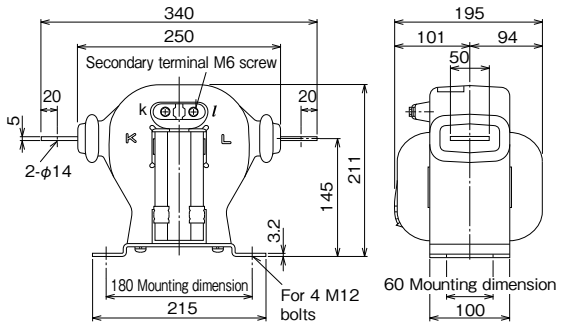
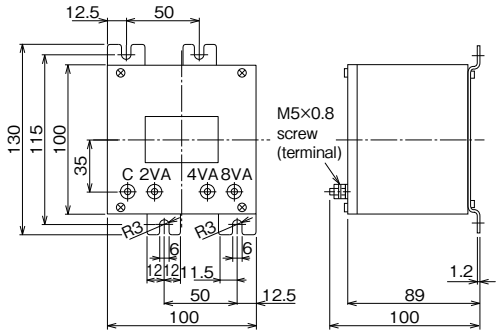


Fig. 2 T-100L load regulator



Various characteristics of AN/CN Series current transformers for cubicle-type high-voltage power receiving equipment

Type	Rated primary current (A)	Rated withstand current (kA/s)	Mechanical withstand current (peak value) (kA)	Secondary leakage impedance (VA)
CD-25ANA	20	12.5/0.125	31.25	2.0
	30			2.1
	40			2.2

Type	Rated primary current (A)	Rated withstand current (kA/s)	Mechanical withstand current (peak value) (kA)	Secondary leakage impedance (VA)
CD-25CNA	20	12.5/0.25	31.25	2.0
	30			2.3
	40			2.4
	50			2.6

CD Series High-voltage Current Transformers (less than or equal to 6600V)

CD-25KB　25VA / 40times

Epoxy resin mold

Use

● General-use meters

Specifications

Applicable standards: JIS C 1731-1

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
CD-25KB	5	5	25	1.0	40	6900	22/60	Both 50/60	Fig. 1	3.5
	10									
	15									
	20									
	25									
	30									
	40									
	50									
	60									
	75									
	80									
	100									
	120									
	150								Fig. 2	3.6
	200									
	250								Fig. 3	4.8
	300									
	400									
	500									
	600									
	750									

Note

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

External Dimensions

Fig. 1

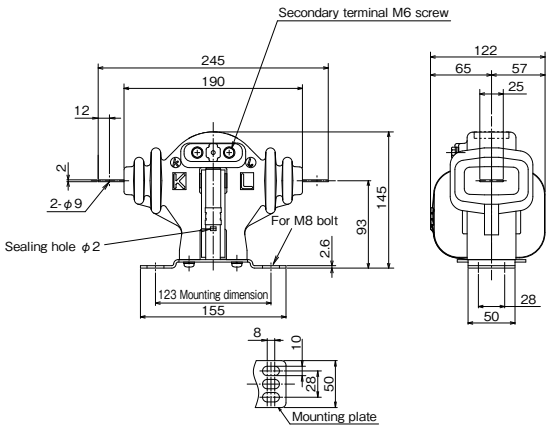


Fig. 2

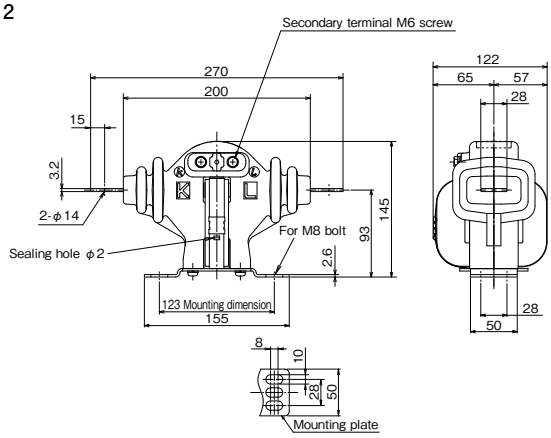
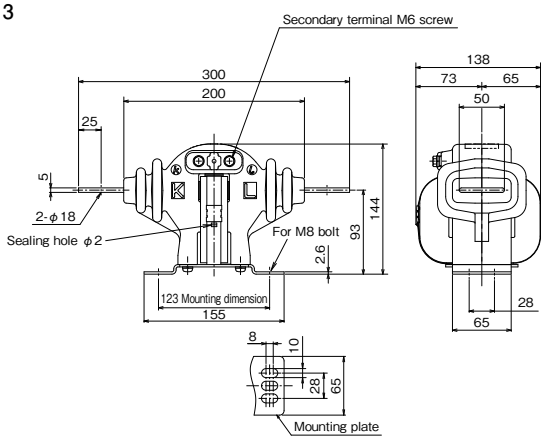


Fig. 3



CD Series High-voltage Current Transformers (less than or equal to 6600V)

CD-15CB For precision measurement 15VA / 40times / Class 0.5 Epoxy resin mold

■Use

●General-use meters

■Specifications

Applicable standards: JIS C 1731-1

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
CD-15CB	5	5	15	0.5	40	6900	22/60	50 or 60	Fig. 1	7.0
	10									
	15									
	20									
	25									
	30									
	40									
	50									
	60									
	75									
	80									
	100									
	120									
	150									
	200									
	250								Fig. 2	9.5
	300									
	400									

Note

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

■External Dimensions

Fig. 1

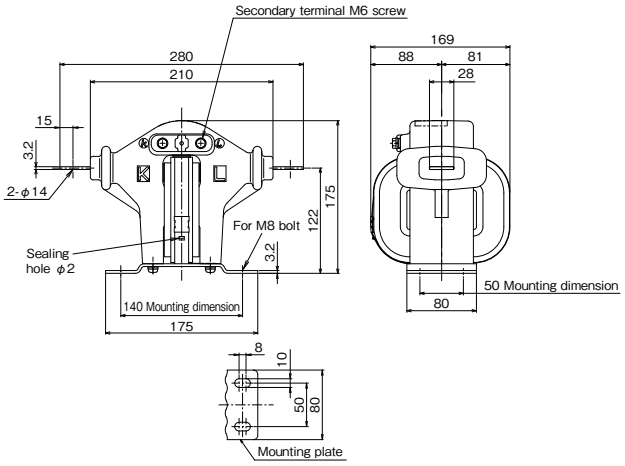
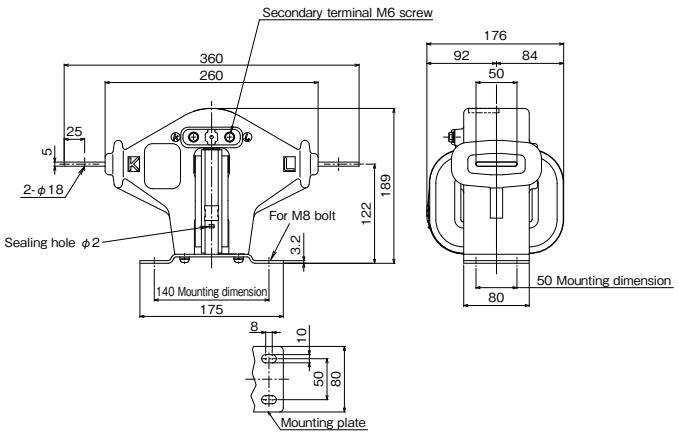


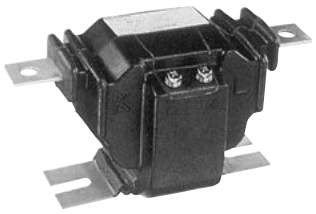
Fig. 2



EC Series High-voltage Current Transformers (less than or equal to 6600V)

EC-0 (Style LA) 40VA / 40times / n>5

Melquid rubber mold



Use

● General-use meters/Relays

Specifications

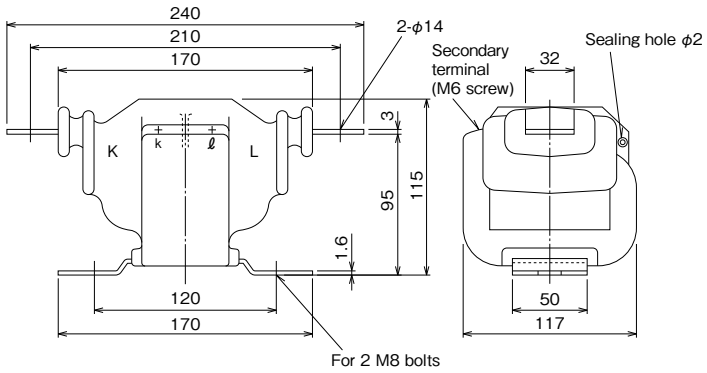
Applicable standards: JIS C 1731-1/JEC-1201-2007

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Overcurrent constant	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	Mass (kg)
EC-0 (Style LA)	5	5	40	1.0• 1PS	40	n>5	6900	22/60	Both 50/60	3.8
	10									
	15									
	20									
	30									
	40									
	50									
	60									
	75									
	100									
	120									
	150									
	200									
	300									

Note

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

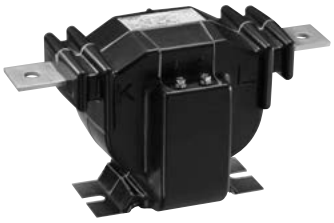
External Dimensions



BN Series High-voltage Current Transformers (less than or equal to 6600V)

BN-0 (Style LA) 40VA / 40 to 300times / n>10 / 15VA / 40 to 75times / Class 0.5

Melquid rubber mold



Use

● General-use meters/Relays

Specifications

<Single ratio>

Applicable standards: JIS C 1731-1/JEC-1201-2007

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)			Overcurrent constant	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	Mass (kg)
					External dimensions (Fig. 1)	External dimensions (Fig. 2)	External dimensions (Fig. 3)					
BN-0 (Style LA)	10	5	40	1.0•1PS	40,75,150			n>10	6900	22/60	Both 50/60	Fig. 1 10
	15				40,75,150	300						
	20				40,75,150	300						
	25				40,75,150							
	30				40,75,150	300						
	40				40,75,150	300						
	50				40,75,150	300						
	60				40,75,150	300						
	75				40,75,150	300						
	80					40,75,150						Fig. 2 15
	100				40,75,150	300						
	120				40,75,150	300						
	150				40,75,150	40kA						
	200				40,75,150	40kA						
	250					40,75,150						Fig. 3 30
	300				40,75	40kA						
	400				40,75	40kA						
	500					40kA						
	600					40kA						
	750					40kA						
	800					40kA						
	1000					40kA						
	1200					40kA						
	1500						40kA					

Notes

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

*2 An overcurrent intensity value of more than 150 times is guaranteed if 25% of the rated load is connected to the secondary side.

<For precision measurement>

Applicable standard: JIS C 1731-1

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times) External dimensions (Fig. 2)	Overcurrent strength (times) External dimensions (Fig. 3)	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	Mass (kg)
BN-0 (Style LA)	10	5	15	0.5	40, 75		6900	22/60	50 or 60	Fig. 2 15 Fig. 3 30
	15				40					
	20				40, 75					
	25				40, 75					
	30				40					
	40				40, 75					
	50				40, 75					
	60				40, 75					
	75				40, 75					
	100				40, 75					
	120				40, 75					
	150				40, 75					
	200				40, 75					
	250				40, 75					
	300				40, 75					
	400				40, 75					
	500				40kA					
	600				40kA					
	750				40kA					
	800				40kA					
	1000				40kA					
	1200				40kA					
	1500					40kA				

Note

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightningimpulse withstand voltage.

■External Dimensions

Fig. 1

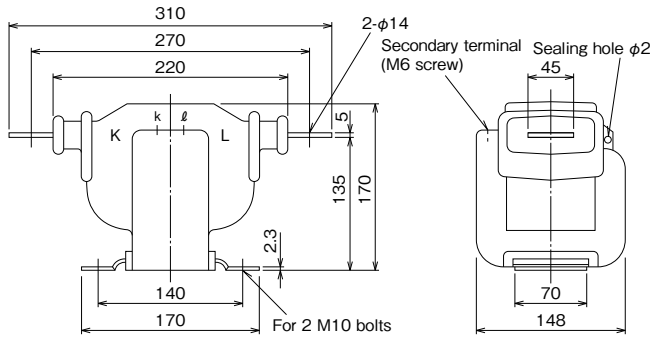


Fig. 2

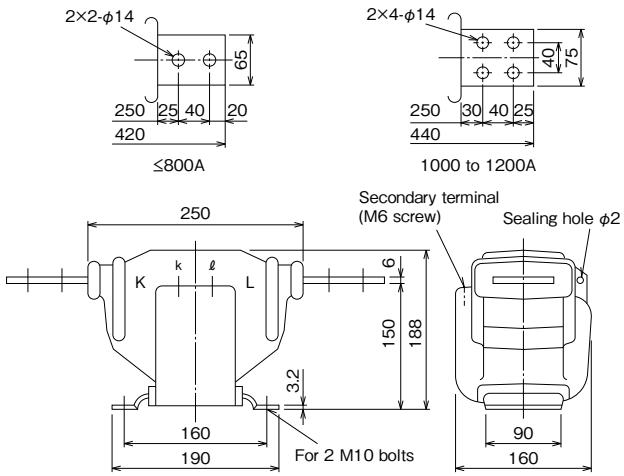
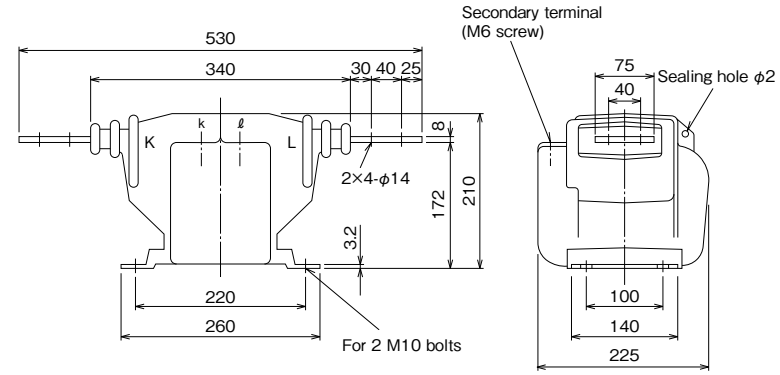


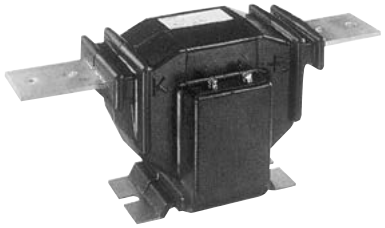
Fig. 3



BN Series Extra-high-voltage Current Transformers (11000V)

BN-1 (Style LA) 40VA / 40 to 150times / n>10 / 15VA / 40times / Class 0.5

Melquid rubber mold



■Use

●General-use meters/Relays/Power supply anddemand

■Specifications

<Single ratio>

Applicable standards: JIS C 1731-1/JEC-1201-2007

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Overcurrent constant	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
BN-1 (Style LA)	10	5	40	1.0･1PS	40, 75	n>10	11500	28/90	50 or 60	Fig. 1	15
	15				40, 75, 150						
	20				40, 75, 150						
	25				40, 75, 150						
	30				40, 75, 150						
	40				40, 75						
	50				40, 75, 150						
	60				40, 75, 150						
	75				40, 75, 150						
	80				40, 75, 150						
	100				40, 75, 150						
	120				40, 75, 150						
	150				40, 75, 150						
	200				40, 75, 150						
	250				40, 75						
	300				40, 75						
	400				40, 75						
	500				40						
	600				40, 75						
	750				40, 75						
	800				40						
	1000				40						
	1200				40						
	1500				40					Fig. 2	30

Notes

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightningimpulse withstand voltage.

*2 An overcurrent intensity value of more than 150 times is guaranteed if 25% of the rated load is connected to the secondary side.

<For power demand and supply>

Applicable standards: JIS C 1736

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
BN-1 (Style LA)	10	5	15	0.5W	40	11500	28/90	50 or 60	Fig. 2	30
	15									
	20									
	25									
	30									
	40									
	50									
	60									
	75									
	100									
	120									
	150									
	200									
	250									
	300									
	400									
	500									
	600									
	750									
	800									
	1000									
	1200									
	1500									

Note

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

■External Dimensions

Fig. 1

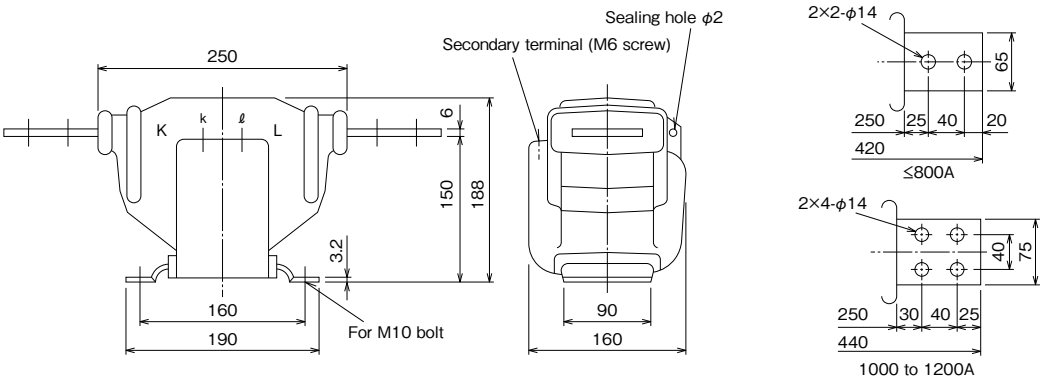
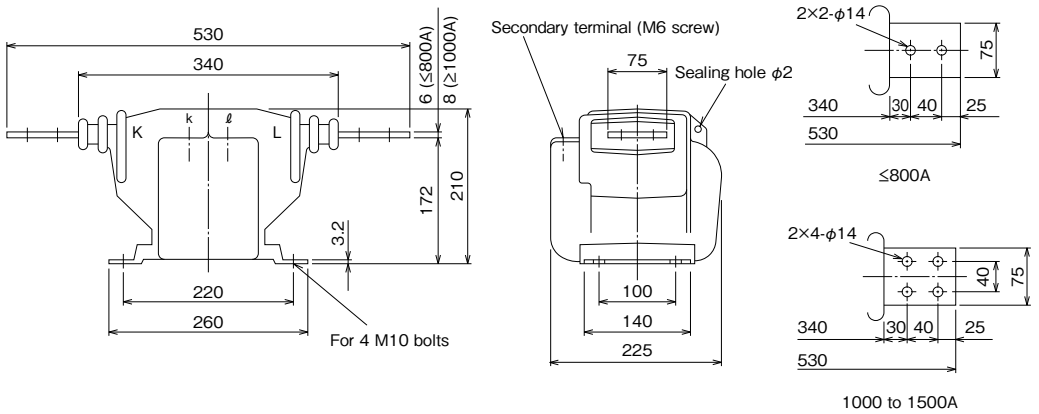


Fig. 2



BN Series Extra-high-voltage Current Transformers (22000V)

BN-2A 40VA / 40 to 300times / n>10

Melquid rubber mold

Use

● General-use meters/Relays

Specifications

<Single ratio>

Applicable standards: JIS C 1731-1/JEC-1201-2007

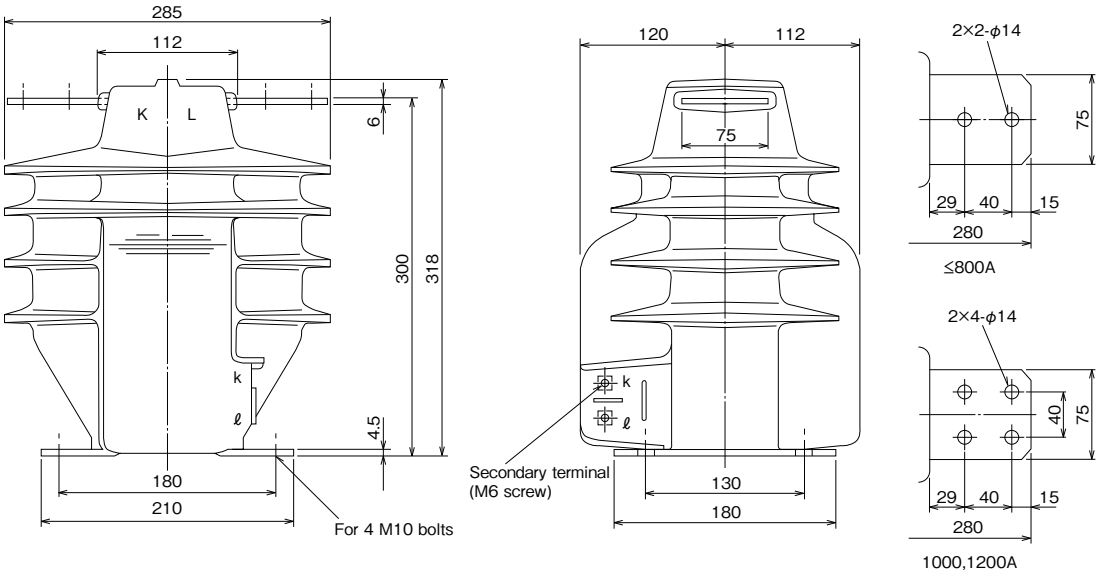
Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent strength (times)	Overcurrent constant	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	Mass (kg)
BN-2A	10	5	25	1.0•1PS	40, 75, 150, 300	n>10	23000	50/125	50 or 60	30
	15		40		40, 75, 150, 300					
	20				40, 75, 150					
	25				40, 75, 150, 300					
	30				40, 75, 150, 300					
	40				40, 75, 150, 300					
	50				40, 75, 150					
	60				40, 75, 150, 300					
	75				40, 75, 150, 300					
	80				40, 75, 150					
	100				40, 75, 150					
	120				40, 75, 150					
	150				40, 75, 150, 40kA					
	200				40, 75, 150, 40kA					
	250				40, 75, 150, 40kA					
	300				40, 75, 40kA					
	400				40, 75, 50kA					
	500				40, 75, 50kA					
	600				40, 75, 50kA					
	750				40, 50kA					
	800				40, 50kA					
	1000				40, 50kA					
	1200				40, 50kA					

Notes

*1 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

*2 An overcurrent intensity value of more than 150 times is guaranteed if 25% of the rated load is connected to the secondary side.

External Dimensions



BS Series Through-type Current Transformers

BS-MD/BS-MC Bare conductor through-type 40VA / 40kA / n>10 Epoxy resin mold

BS-MD

Use

- General-use meters/Relays
- Using a bare conductor as the primary conductor provides an insulation withstand voltage of 22/60kV. However, the gap between the bare conductor and internal diameter of the current transformer must be 10mm or more.
- Using insulated conductors like cables as the primary conductor, this current transformer can be used regardless of the circuit voltage.

Specifications

<Single ratio>

Applicable standards: JEC-1201-1996

Type	Window diameter (mm)	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Rated overcurrent (kA)	Overcurrent constant	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
BS-MD	60	200	5	40	1PS	40	n>10	6900	22/60	50 or 60	Fig. 3	25
		300									Fig. 4	15
		400										
	90	500									Fig. 5	15
		600										
		750										
		800										
		1000										
		1200										
		1500									Fig. 6	10
BS-MC	145	400	5	40	1PS	40	n>10	6900	22/60	50 or 60	Fig. 1	22
		500										
		600										
		750										
		800										
		1000									Fig. 2	11
		1200										
		1500										
		2000										
		2500										
		3000										
		4000										

Note: Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

External Dimensions

Fig. 1 BS-MC 400 to 800A

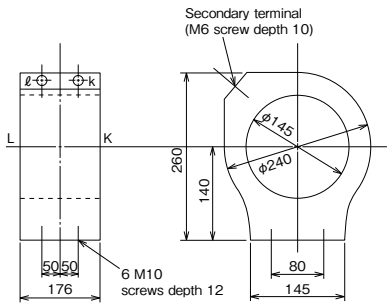


Fig. 2. BS-MC 1000 to 4000A

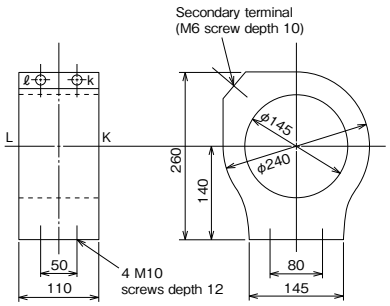


Fig. 3. BS-MD 200A

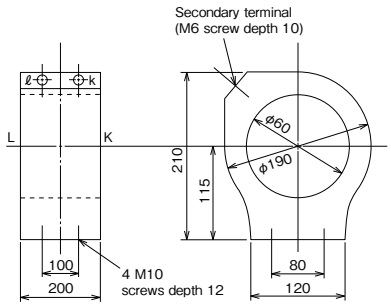


Fig. 4. BS-MD 300,400A

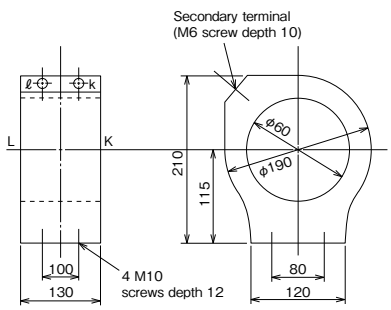


Fig. 5. BS-MD 500 to 1200A

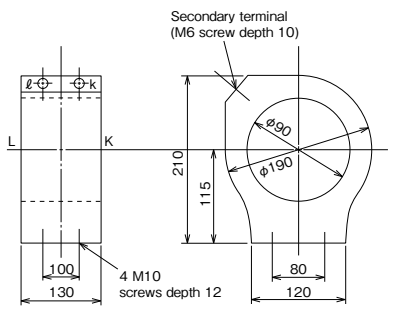
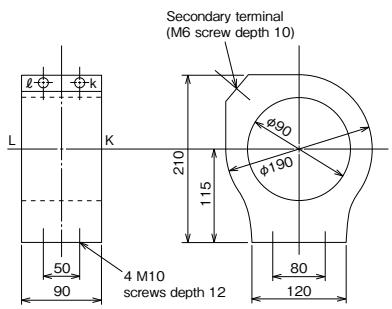


Fig. 6. BS-MD 1500A



<Double ratio>

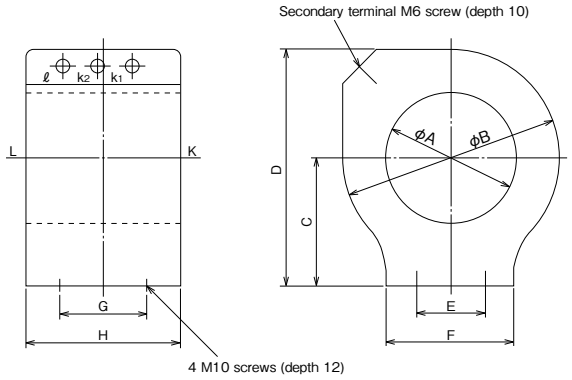
Applicable standards: JEC-1201-1996

Type	Window diameter (mm)	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Rated overcurrent (kA)	Overcurrent constant	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)	Connection diagram	Terminal layout
BS-MD	60	300-150	5	40	1PS	40	n>10	6900	22/60	50 or 60	Fig. 7-1	2×18	Fig. 8	Fig. 11
		400-200									Fig. 7-2	30	Fig. 9	Fig. 12
	90	600-300									Fig. 7-3	25	Fig. 10	Fig. 13
		800-400									Fig. 7-4	20		
		1000-500												
		1200-600												
		1500-750									Fig. 7-5	15		
BS-MC	145	2000-1000									Fig. 7-6			
		3000-1500									Fig. 7-7			
		4000-2000									Fig. 7-8			

Note: Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

■External Dimensions

Fig. 7 Double ratio



Item	Rated primary current (A)	Dimensions (mm)							
		A	B	C	D	E	F	G	H
1	300- 150*	60	190	115	210	80	120	100	2×150
2	400- 200								240
3	600- 300	90							
4	800- 400								200
	1000- 500								
	1200- 600								
5	1500- 750								130
6	2000-1000	145	240	140	260		145	50	110
7	3000-1500		260	150	280				
8	4000-2000							100	130

Note: * For the current transformer ratio rating of 300-150/5A, two coils shown in the figure to the left make one set.

Connection diagram

Fig. 8

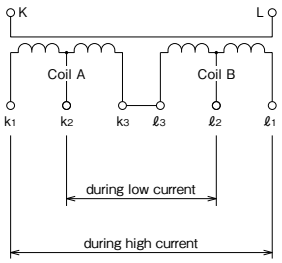


Fig. 9

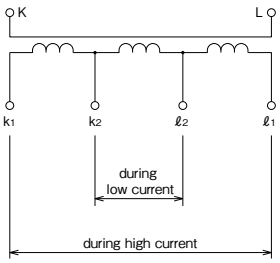
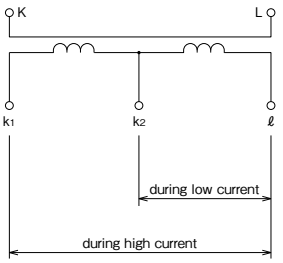


Fig. 10



Terminal layout drawing

Fig. 11

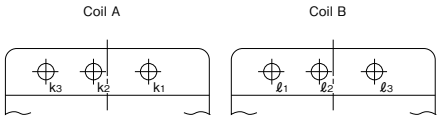


Fig. 12

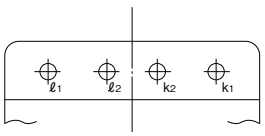
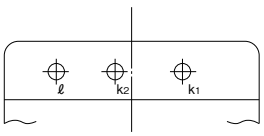


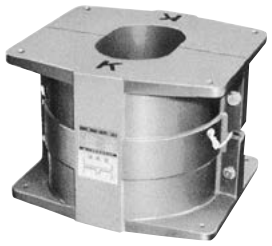
Fig. 13



Manufacturer: Toyo Electric Co., Ltd.

BS Series Through-type Current Transformers

BS-SA Insulated conductor/Separated $\frac{40VA}{100VA}$ / 40times / n>10 / n>20 Epoxy resin mold



■Use

- General-use meters/Relays
- Using insulated conductors like cables as the primary conductor, this current transformer can be used regardless of the circuit voltage.
- Existing cables can be used, making mounting easy.

■Specifications

Applicable standard: JEC-1201-1996

Type	Rated primary current (A)	Secondary current (A)	Rated burden (VA)	Accuracy (class)	Overcurrent constant	External dimensions	Overcurrent strength (times)	Highest voltage (V)	Withstand voltage (kV)	Frequency (Hz)
BS-SA	200	5	15	3P	n>10	Fig. 1	40	Depends on primary conductor	Depends on primary conductor	50 or 60
			40			Fig. 2				
			15			Fig. 3				
			40			Fig. 4				
	300		15	3P	n>10	Fig. 1				
			40			Fig. 2				
			15			Fig. 3				
			40			Fig. 4				
	400		40	1PS	n>10	Fig. 1				
			100	3P		Fig. 2				
			40	1PS	n>20					
			100	3P	n>10	Fig. 3				
						Fig. 4				
	500		40	1PS	n>20					
			40		n>10	Fig. 1				
			100			Fig. 2				
			40			Fig. 3				
			100			Fig. 4				
	600		40	1PS	n>10	Fig. 1				
			100			Fig. 2				
			40		n>20					
			100		n>10	Fig. 3				
						Fig. 4				
			40		n>20					
	750		40	1PS	n>10	Fig. 1				
			100			Fig. 2				
			40			Fig. 3				
			100			Fig. 4				
	800		40	1PS	n>10	Fig. 1				
			100		n>20	Fig. 2				
			40		n>10	Fig. 3				
			100		n>20	Fig. 4				
	1000		40	1PS	n>20	Fig. 1				
			100			Fig. 2				
			40			Fig. 3				
			100			Fig. 4				
	1200		40	1PS	n>20	Fig. 1				
			100			Fig. 2				
			40			Fig. 3				
			100			Fig. 4				
	1500		40	1PS	n>20	Fig. 3				
			100			Fig. 4				
	2000		100	1PS	n>20	Fig. 3				

■External Dimensions

Fig. 1

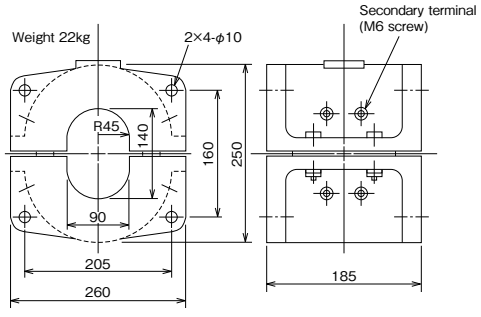


Fig. 2

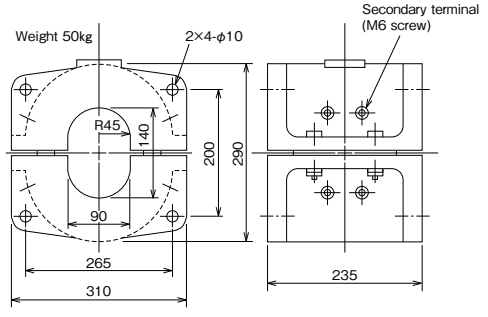


Fig. 3

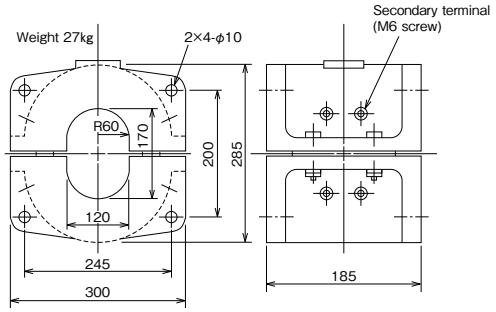
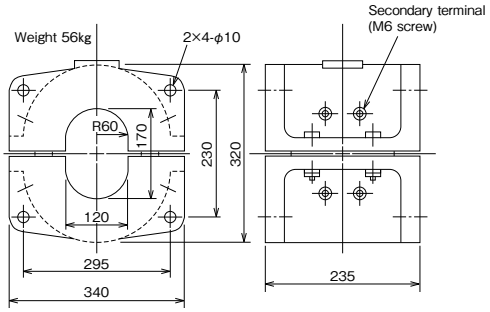


Fig. 4



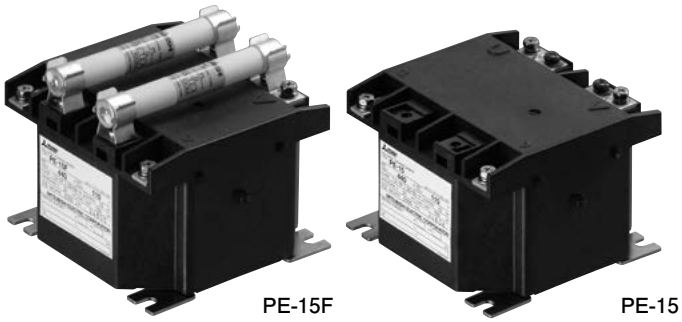
Manufacturer: Toyo Electric Co., Ltd.

5-2 Voltage Transformers (Unearthed Type)

PE Series Voltage Transformers (less than or equal to 440V)

PE-15F/PE-15/PE-50F/PE-50 15VA/Class 1.0/Class 1P 50VA/Class 3.0/Class 3P

Double mold



PE-15F PE-15

■ Use

● General-use meters/Relays

■ Specifications

Applicable standards: JIS C 1731-2/JEC-1201-2007

Type	Voltage transformation ratio (V)	Rated burden (VA)	Accuracy (class)	Withstand voltage (kV)	VT fuse		Frequency (Hz)	Limit output (VA) *1	External dimensions	Mass (kg)
					Model name	Rating				
PE-15F (with fuse)	220/110	15	1.0•1P	2/—	PL-G	0.6kV T2A 100kA	Both 50/60	100	Fig. 1	3.5
	440/110			3/—						
PE-15	220/110	15	1.0•1P	2/—	—	—			Fig. 2	3.5
	440/110			3/—						
PE-50F (with fuse)	220/110	50	3.0•3P	2/—	PL-G	0.6kV T2A 100kA			Fig. 1	3.5
	440/110			3/—						
PE-50	220/110	50	3.0•3P	2/—	—	—			Fig. 2	3.5
	440/110			3/—						

Notes

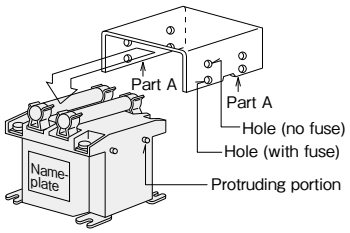
*1 If the limiting load is 100A, the error is less than or equal to minus 5%.

*2 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

Remark: A transparent insulation cover (model name: IS-C (for PE)) can be attached to cover the terminal and fuse sections (option: to be purchased separately).

● Insulation cover mounting instructions

Spread part A of the insulation cover outward slightly and place the mounting hole of the insulation cover over the protruding portion of thetransformer.



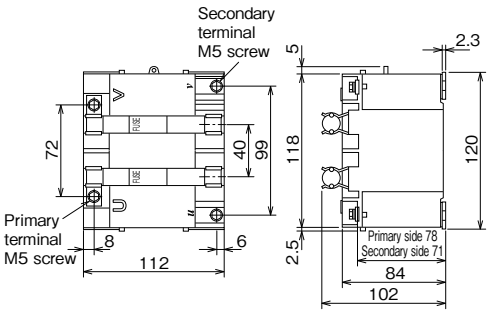
● Special transformation ratio range manufactured

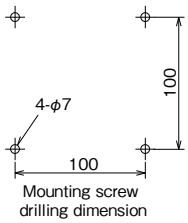
Type	Voltage range manufactured (V)	
	Primary voltage	Secondary voltage
PE-15F PE-50F	190 to 550 $\frac{380}{\sqrt{3}}$ to $\frac{480}{\sqrt{3}}$	100 to 220 $\frac{100}{\sqrt{3}}$ to $\frac{120}{\sqrt{3}}$
PE-15 PE-50	63.5 to 550 $\frac{100}{\sqrt{3}}$ to $\frac{480}{\sqrt{3}}$	

Note: For withstand voltage values of specialty transformation ratios, refer to Guidelines for Selecting Voltage Transformers on page 12.

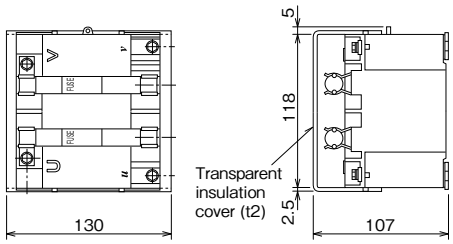
■External Dimensions

Fig. 1 PE-15F and PE-50F



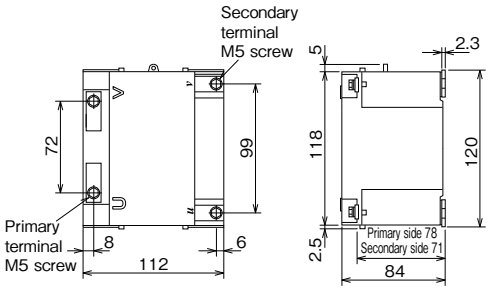


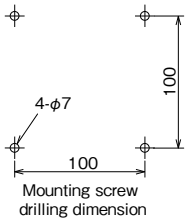
Insulation cover mounted



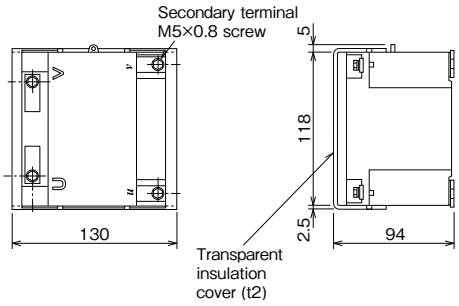
Insulation cover: IS-C (for PE)

Fig. 2 PE-15 and PE-50





Insulation cover mounted



Insulation cover: IS-C (for PE)

PD Series Voltage Transformers (less than or equal to 6600V)

PD-50H/PD-50HF 50VA/Class 1.0/Class 1P
PD-100H/PD-100HF 100VA/Class 1.0/Class 1P

Epoxy resin mold

■Use

●General-use meters/Relays

■Specifications

Applicable standards: JIS C 1731-2/JEC-1201-2007

Type	Voltage transformation ratio (V)	Rated burden (VA)	Accuracy (class)	Withstand voltage (kV)	VT fuse		Frequency (Hz)	Limit output (VA) *2	External dimensions	Mass (kg)
					Model name	Rating				
PD-50H	220/110	50	1.0・1P	2/—	—	—	Both 50/60	200	Fig.1	8.5
	440/110			3/—						
PD-50HF (with fuse)	220/110			2/—	PL-G	0.6kV T2A 100kA			Fig.2	8.5
	440/110			3/—						
	3300/110			16/45	PL-G	7.2/3.6kV T1A 40kA				
	6600/110			22/60						
PD-100H	220/110	100	1.0・1P	2/—	—	—	Both 50/60	200	Fig.1	8.5
	440/110			3/—						
PD-100HF (with fuse)	220/110			2/—	PL-G	0.6kV T2A 100kA			Fig.2	8.5
	440/110			3/—						
	3300/110			16/45	PL-G	7.2/3.6kV T1A 40kA				
	6600/110			22/60						

Notes

*1 Mitsubishi Electric does not manufacture no-fuse voltage transformers with voltage transformation ratios of 3300/110V or 6600/110V.

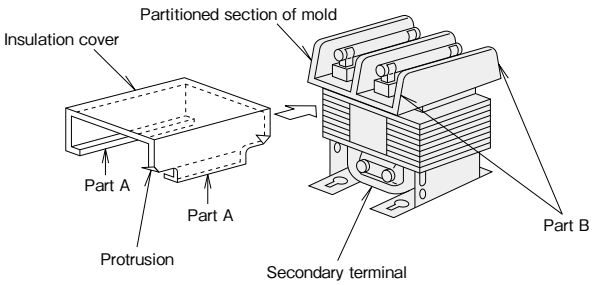
*2 If the limiting load is 200VA, the error is less than or equal to minus 5%.

*3 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

Remark: A transparent insulation cover (model name: IS-C (for PD)) can be attached to cover the terminal and fuse sections (option: to be purchased separately).

●Insulation cover mounting instructions

Spread part A of the insulation cover outward slightly and insert it into the partitioned section of the mold from the secondary terminal side. The protruding section that attaches to part B prevents the cover from coming off the voltage transformer.



●Special transformation ratio range manufactured

Type	Voltage range manufactured (V)	
	Primary voltage	Secondary voltage
PD-50H PD-100H	100 to 600 $\frac{200}{\sqrt{3}}$ to $\frac{480}{\sqrt{3}}$	100 to 220 $\frac{380}{\sqrt{3}}$ to $\frac{480}{\sqrt{3}}$
PD-50HF PD-100HF	200 to 6600 $\frac{380}{\sqrt{3}}$ to $\frac{480}{\sqrt{3}}$	

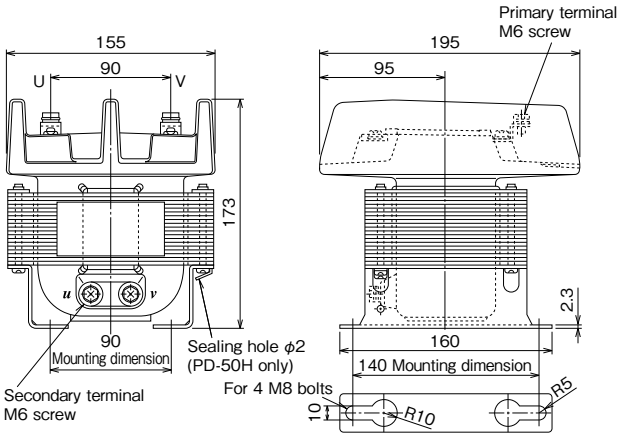
Notes

*1 PD-50H and PD-50HF have ratings of $\frac{440}{\sqrt{3}}$V and $\frac{110}{\sqrt{3}}$V, respectively, with a verification value of 15VA. (The verifiable usage load is 1 to 12VA.)

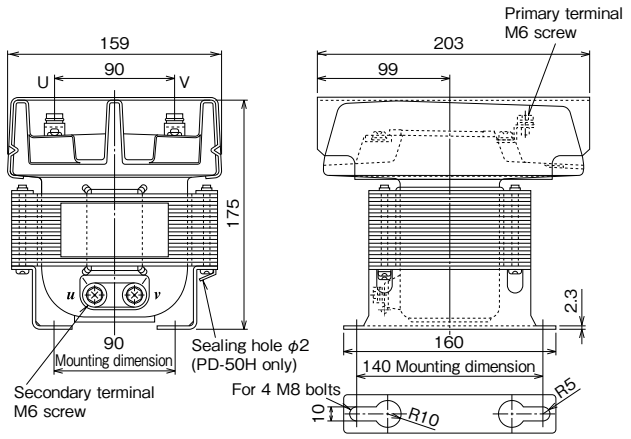
*2 For the withstand voltage values of special transformation ratio, refer to Guidelines for Selecting Voltage Transformers on page 12.

■External Dimensions

Fig. 1 PD-50H and PD-100H

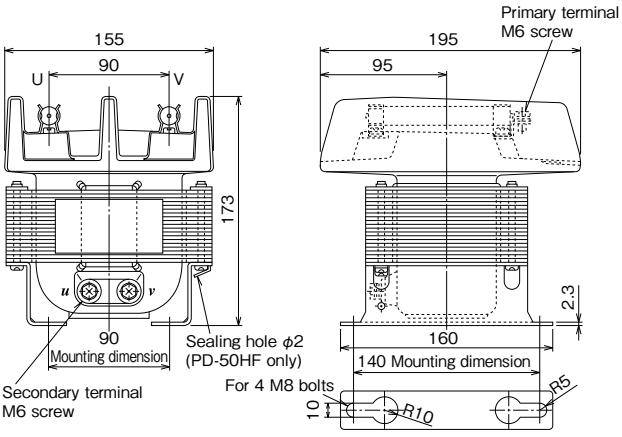


Insulation cover mounted

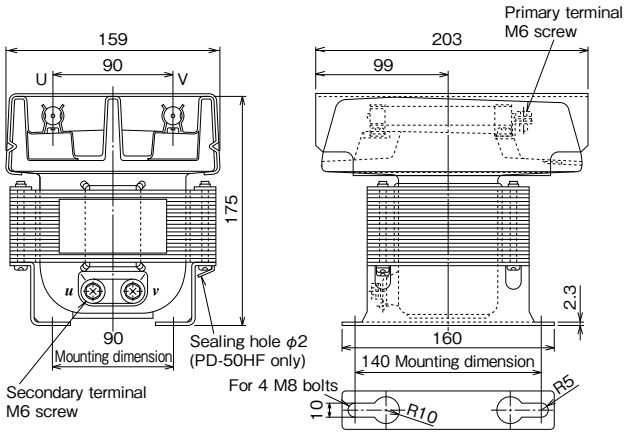


Insulation cover: IS-C (for PD)

Fig. 2 PD-50HF and PD-100HF



Insulation cover mounted



Insulation cover: IS-C (for PD)

PD Series Voltage Transformers (less than or equal to 6600V)

PD-200K/PD-200KFH 200VA/Class 1.0/Class 1P

Epoxy resin mold

Use

● General-use meters/Relays

Specifications

Applicable standards: JIS C 1731-2/JEC-1201-2007

Type	Voltage transformation ratio (V)	Rated burden (VA)	Accuracy (class)	Withstand voltage (kV)	VT fuse		Frequency (Hz)	Limit output (VA) *2	External dimensions	Mass (kg)
					Model name	Rating				
PD-200K	440/110	200	1.0•1P	3/—			Both 50/60	500	Fig. 1	9.5
PD-200KFH (with fuse)	440/110			3/—	PL-G	0.6kV T2A 100kA			Fig. 2	9.5
	3300/110			16/45	PL-G	7.2/3.6kV T1A 40kA				
	6600/110			22/60						

Notes

*1 Mitsubishi Electric does not manufacture no-fuse voltage transformers with transformation ratios 3300/110V or 6600/110V.

*2 If the limiting load is 500VA, the error is less than or equal to minus 5%.

*3 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

● Special transformation ratio range manufactured

Type	Voltage range manufactured (V)	
	Primary voltage	Secondary voltage
PD-200K	380 to 480	100 to 220
PD-200KFH	380 to 6600	

Note: For withstand voltage values of special voltage ratios, refer to "Guidelines for Selecting Voltage Transformers" on page 12.

External Dimensions

Fig. 1 PD-200K

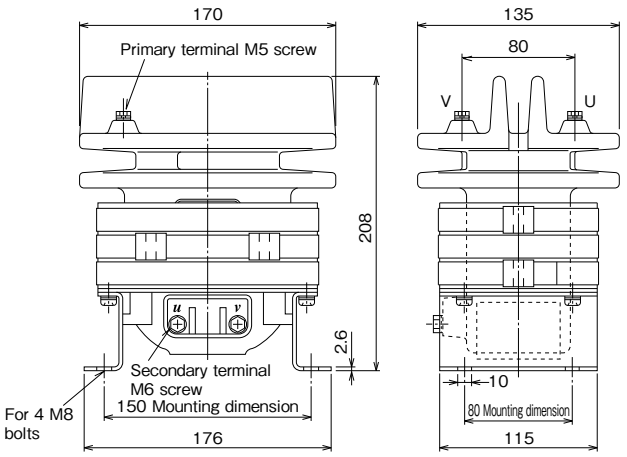
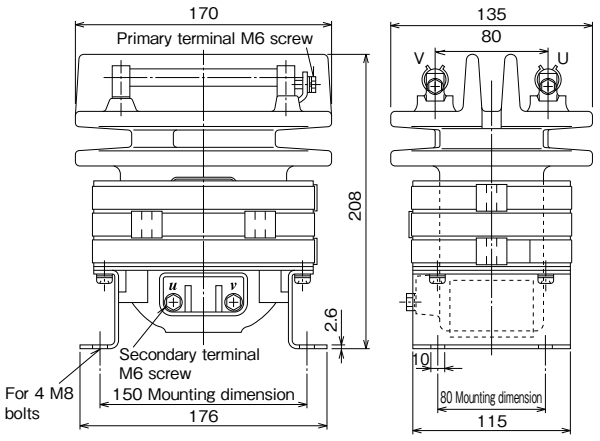


Fig. 2. PD-200KFH



PD Series Voltage Transformers (less than or equal to 6600V)

PD-50KFH/PD-100KFH

Double ratio 50VA/Class 1.0/Class 1P
100VA/Class 3.0/Class 3P

Epoxy resin mold

■Use

●General-use meters/Relays

■Specifications

Applicable standards: JIS C 1731-2/JEC-1201-2007

Type	Voltage transformation ratio (V)	Rated burden (VA)	Accuracy (class)	Withstand voltage (kV)	VT fuse		Frequency (Hz)	Limit output (VA) *2	Mass (kg)
					Model name	Rating			
PD-50KFH (with fuse)	6600-3300/110	50	1.0•1P	22/60	PL-G	7.2/3.6kV T1A 40kA	Both 50/60	300	9.5
PD-100KFH (with fuse)	6600-3300/110	100	3.0•3P						

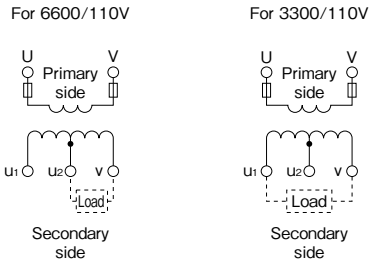
Notes

*1 Mitsubishi Electric does not manufacture no-fuse voltage transformers.

*2 If the limiting load is 300VA, the error for 6600/110V is less than or equal to minus 5%, and the error for 3300/110V is less than or equal to minus 10%.

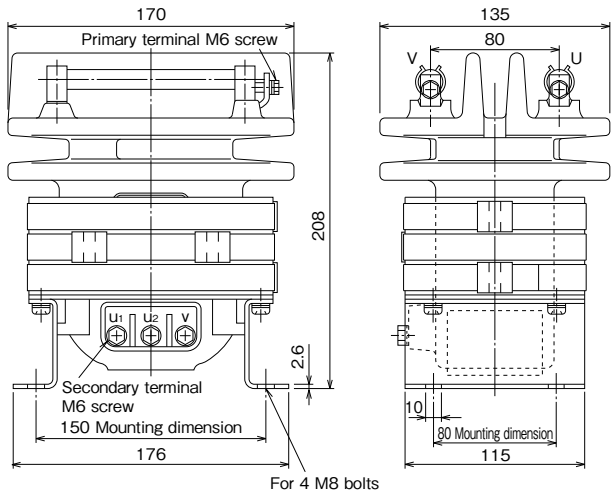
*3 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

Instructions for switching secondary side



■External Dimensions

PD-50KFH and PD-100KFH

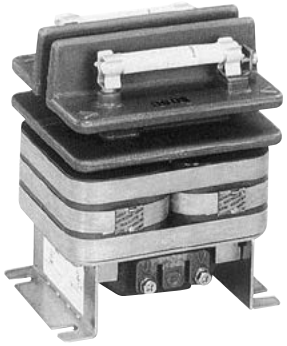


PD Series Voltage Transformers (less than or equal to 6600V)

PD-15KFH/PD-25KFH Dedicated verification $\frac{15VA}{25VA}$ / Class 0.5

Epoxy resin mold

PD-100KFH Dedicated verification 100VA/Class 1.0/Class 1P



Use

● General-use meters/Relays

Specifications

Applicable standards: JIS C 1731-2/JEC-1201-2007

Type	Voltage transformation ratio (V)	Rated burden (VA)	Accuracy (class)	Withstand voltage (kV)	VT fuse		Frequency (Hz)	Mass (kg)
					Model name	Rating		
PD-15KFH (with fuse)	3300/110	15	0.5	16/45	PL-G	7.2/3.6kV T1A 40kA	50 or 60	9.5
	6600/110			22/60				
PD-25KFH (with fuse)	3300/110	25	0.5	16/45	PL-G	7.2/3.6kV T1A 40kA	50 or 60	9.5
	6600/110			22/60				
PD-100KFH (with fuse)	3300/110	100	1.0•1P	16/45	PL-G	7.2/3.6kV T1A 40kA	50 or 60	9.5
	6600/110			22/60				

Notes

*1 Mitsubishi Electric does not manufacture no-fuse voltage transformers.

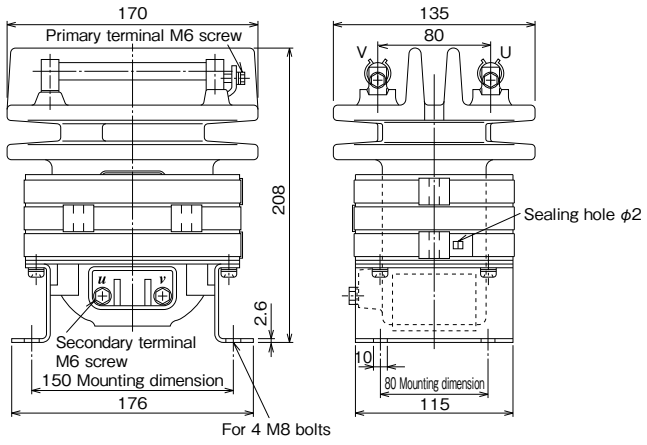
*2 The production specifications for PD-100KFH are determined based the on characteristics of the current transformer it is combined with as well as the loads and power factors of other meters such as watt-hour meters. Please explain the specification details of the current transformer it is to be combined with, as well as the secondary loads of the voltage transformers and current transformers.

*3 PD -15KFH and PD-25KFH conform to JIS standard C 1731-2.

*4 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

External Dimensions

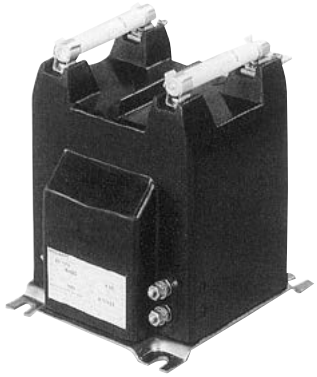
PD-15KFH, PD-25KFH and PD-100KFH



Voltage Transformers (less than or equal to 6600V)

EP-0FH $\frac{50VA}{100VA}$ /Class 1.0/Class 1P

Epoxy resin mold (encased in EPT rubber case)



■Use

●General-use meters/Relays

■Specifications

Applicable standards: JIS C 1731-2/JEC-1201-2007

Type	Voltage transformation ratio (V)	Rated burden (VA)	Accuracy (class)	Withstand voltage (kV)	VT fuse		Frequency (Hz)	Limit output (VA) *2	Mass (kg)
					Model name	Rating			
EP-0FH (with fuse)	3300/110	50	1.0•1P	22/60	PL-G	7.2/3.6kV T1A 40kA	Both 50/60	300	12
		100							
	6600/110	50							
		100							
	6600-3300/110	50							

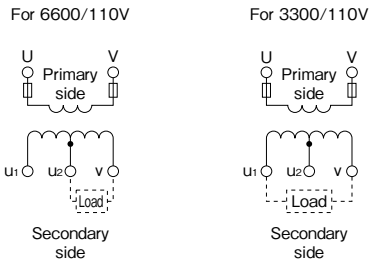
Notes

*1 Mitsubishi Electric does not manufacture no-fuse voltage transformers.

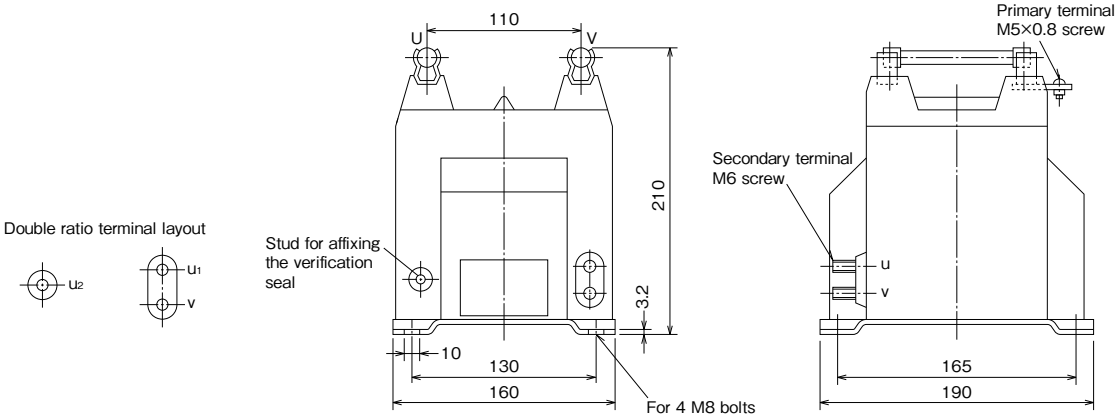
*2 If the limiting load is 300VA, the error is less than or equal to minus 5%.

*3 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

Instructions for switching secondary side



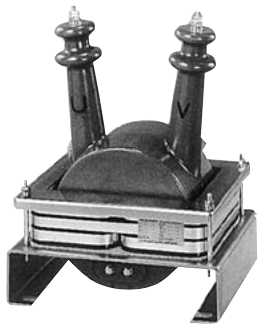
■External Dimensions



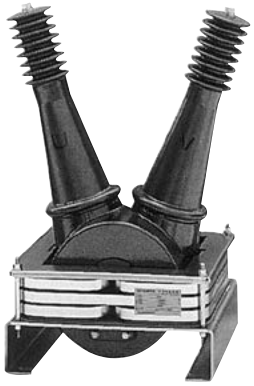
EV Series Voltage Transformers (11000 to 33000V)

EV-1/EV-2/EV-3 $\frac{100VA}{200VA}$ /Class 1.0/Class 1P

Epoxy resin mold



EV-1



EV-2

Use

- General-use meters/Relays/Power supply and demand

Specifications

Applicable standards: JIS C 1731-2/JEC-1201-2007

Phase	Type	Voltage transformation ratio (V)	Rated burden (VA)	Accuracy (class)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
1-phase	EV-1	11000/110	100	1.0•1P	28/90	50 or 60	Fig. 1	38
			200					
			15	0.5W *3	28/90			
			25					
	EV-2	22000/110	100	1.0•1P	50/125	50 or 60	Fig. 2	55
			200					
	EV-3	33000/110	100	1.0•1P	70/170	50 or 60	Fig. 2	55
			200					

Notes

*1 For ratings other than those listed above (voltage transformation ratio, rated load and accuracy class), please contact a Mitsubishi Electric representative.
*2 The current transformer to be combined is the 0.5W-class BN-1 (No. LA) (refer to page 61).
*3 The applicable standard is JIS C1736.
*4 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

External Dimensions

Fig. 1 EV-1

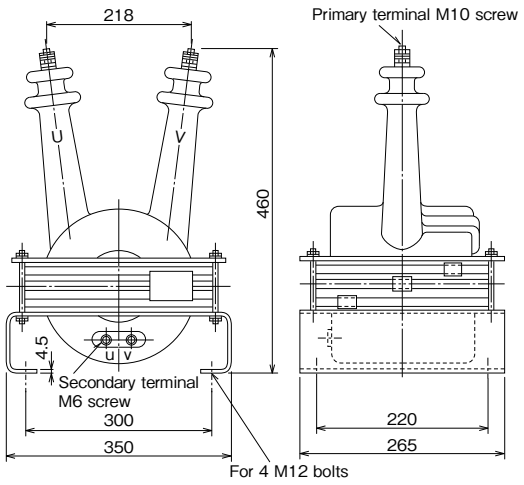
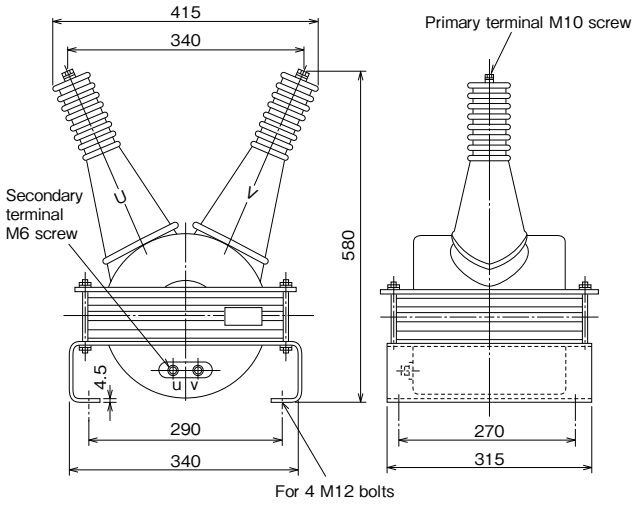


Fig. 2 EV-2 and EV-3



5-3 Earthed Voltage Transformers

EV Series Voltage Transformers for Grounded Meters (less than or equal to 440V)

EV-L/EV-LX 50 and 100VA / 50/50 and 100/100VA

Epoxy resin mold

EV-L

■Use

●General-use meters/Relays

■Specifications

Applicable standard: JEC-1201-2007

Phase	Type	Voltage transformation ratio (V)	Rated burden (VA)	Accuracy class (class)	Withstand voltage (kV)	Frequency (Hz)	External dimensions	Mass (kg)
1-phase	EV-L	$\frac{220}{\sqrt{3}} / \frac{110}{\sqrt{3}}$	50	1P	0.44/—	Both 50/60	Fig. 1	11
			100					
		$\frac{440}{\sqrt{3}} / \frac{110}{\sqrt{3}}$	50		0.88/—			
			100					
	EV-LX	$\frac{220}{\sqrt{3}} / \frac{110}{\sqrt{3}} / \frac{190}{\sqrt{3}}$	50/50	1P/3G	0.44/—	Both 50/60	Fig. 2	11
			100/100					
		$\frac{220}{\sqrt{3}} / \frac{110}{\sqrt{3}} / \frac{110}{\sqrt{3}}$	50/50		0.44/—			
			100/100					
		$\frac{440}{\sqrt{3}} / \frac{110}{\sqrt{3}} / \frac{190}{\sqrt{3}}$	50/50		0.88/—			
			100/100					
		$\frac{440}{\sqrt{3}} / \frac{110}{\sqrt{3}} / \frac{110}{\sqrt{3}}$	50/50		0.88/—			
			100/100					

Note: Withstand voltage value indicates commercial power frequency withstand voltage/lightning Delivery time impulse withstand voltage.

●Special transformation ratio range manufactured

Type	Voltage range manufactured (V)		
	Primary voltage	Secondary voltage	Tertiary voltage
EV-L	$\frac{200}{\sqrt{3}}$ to $\frac{480}{\sqrt{3}}$	100 to 120	—
		$\frac{100}{\sqrt{3}}$ to $\frac{120}{\sqrt{3}}$	
EV-LX		$\frac{100}{\sqrt{3}}$ to $\frac{120}{\sqrt{3}}$	$\frac{100}{3}$ to $\frac{120}{3}$ $\frac{190}{3}$ to $\frac{210}{3}$

Note: For the withstand voltage values for the special voltage transformation ratios, please contact us.

●These grounded voltage transformers comply with the regulations of Article 16, Paragraph 6, Item 4 of Interpretation of Technical Standards for Electrical Equipment. Therefore, disconnect any of the transformers from the circuit when performing the power-frequency withstand voltage test of the board.

●Be certain to ground the primary ground-side terminal before using the transformer.

■External Dimensions

Fig. 1 EV-L

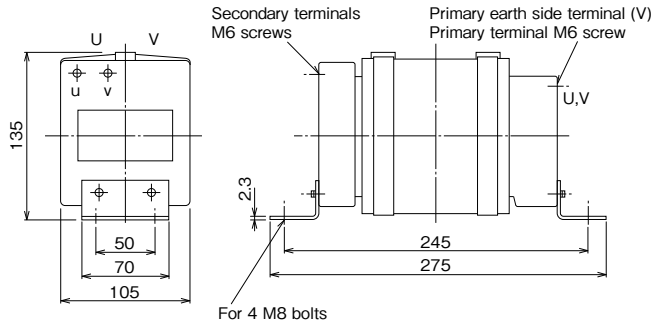
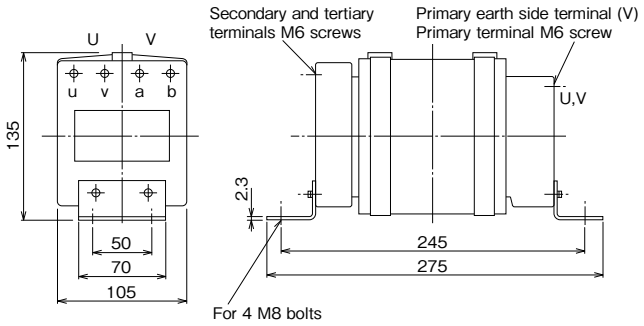


Fig. 2 EV-LX

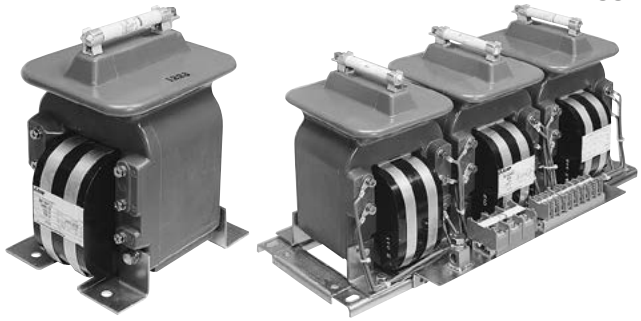


EF Series Voltage Transformers for Grounded Meters (less than or equal to 6600V)

EF-0FC/EF-0XFC/EF-03XFC

100 and 200VA
100/100 and 200/200VA

Epoxy resin mold



Use

- General-use meters/Relays
- These voltage transformers for grounded meters are used for high-voltage circuits of extra-high-voltage circuits. Before using them, be certain to refer to (5) of 9.3 Precautions when Using Transformers on page 92.

Specifications

Applicable standard: JEC-1201-2007

Phase	Type	Voltage transformation ratio (V)	Rated burden (VA)	Accuracy (class)	Withstand voltage (kV) *2	VT fuse		Frequency (Hz)	External dimensions	Mass (kg)
						Model name	Rating			
1-phase	EF-0FC (with fuse)	$\frac{3300}{\sqrt{3}} / \frac{110}{\sqrt{3}}$	100	1P	6.6/45	PL-G	7.2/3.6kV T1A 40kA	Both 50/60	Fig. 1	18
			200							
		$\frac{6600}{\sqrt{3}} / \frac{110}{\sqrt{3}}$	100		13.2/60					
			200							
	EF-0XFC (with fuse)	$\frac{3300}{\sqrt{3}} / \frac{110}{\sqrt{3}} / \frac{190}{3}$	100/100	1P/3G	6.6/45	PL-G	7.2/3.6kV T1A 40kA	Both 50/60	Fig. 1	18
			200/200							
		$\frac{3300}{\sqrt{3}} / \frac{110}{\sqrt{3}} / \frac{110}{3}$	100/100							
			200/200							
		$\frac{6600}{\sqrt{3}} / \frac{110}{\sqrt{3}} / \frac{190}{3}$	100/100		13.2/60					
			200/200							
		$\frac{6600}{\sqrt{3}} / \frac{110}{\sqrt{3}} / \frac{110}{3}$	100/100							
			200/200							
3-phase	EF-03XFC (with fuse)	$3300 / 110 / \frac{190}{3}$	3×100 / 3×100	1P/3G	6.6/45	PL-G	7.2/3.6kV T1A 40kA	Both 50/60	Fig. 2	18
			3×200 / 3×200							
		$3300 / 110 / \frac{110}{3}$	3×100 / 3×100							
			3×200 / 3×200							
		$6600 / 110 / \frac{190}{3}$	3×100 / 3×100		13.2/60					
			3×200 / 3×200							
		$6600 / 110 / \frac{110}{3}$	3×100 / 3×100							
			3×200 / 3×200							

Notes
*1 Mitsubishi Electric does not manufacture no-fuse voltage transformers.
*2 Withstand voltage is induced withstand voltage/lightning impulse withstand voltage.

- These grounded voltage transformers comply with the regulations of Article 16, Paragraph 6, Item 4 of Interpretation of Technical Standards for Electrical Equipment. Therefore, disconnect any of the transformers from the circuit when performing the power-frequency withstand voltage test of the board.
- Be certain to ground the primary ground-side terminal before using the transformer.

Special transformation ratio range manufactured

Type	Voltage range manufactured (V)		
	Primary voltage	Secondary voltage	Tertiary voltage
EF-0FC	$\frac{2400}{\sqrt{3}}$ to $\frac{6900}{\sqrt{3}}$	100 to 120	–
		$\frac{100}{\sqrt{3}}$ to $\frac{120}{\sqrt{3}}$	
EF-0XFC		$\frac{100}{\sqrt{3}}$ to $\frac{120}{\sqrt{3}}$	$\frac{100}{3}$ to $\frac{120}{3}$
			$\frac{190}{3}$ to $\frac{210}{3}$
EF-03XFC	2400 to 6900	100 to 120	

Note: For the withstand voltage values for the special voltage transformation ratios, please contact us.

External Dimensions

Fig. 1 EF-0FC and EF-0XFC

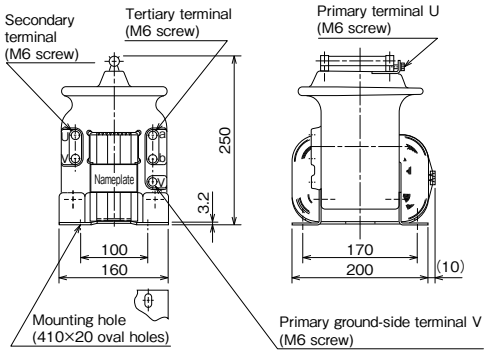
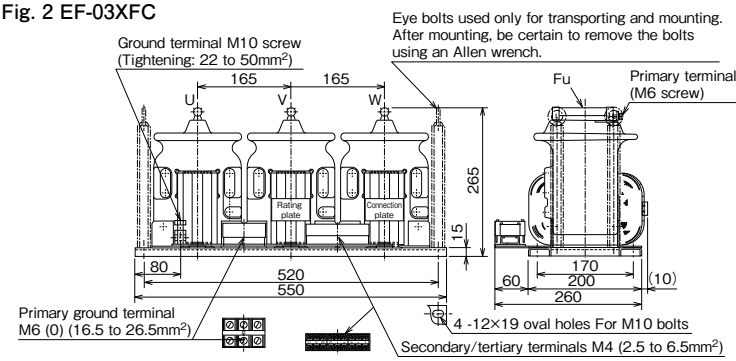
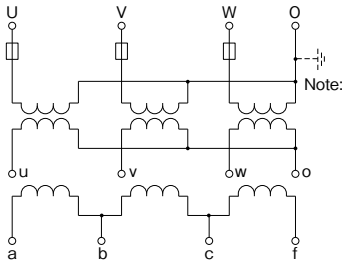


Fig. 2 EF-03XFC



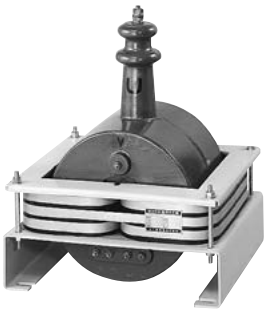


Note: The equipment side is not grounded.

Connection diagram

EV Series Voltage Transformers for Grounded Meters (11000-33000V)

EV-1/EV-1X/EV-2/EV-2X/EV-3/EV-3X 100 and 200VA / 100/100 and 200/200VA Epoxy resin mold


EV-1X


EV-2X

Use

● General-use meters/Relays

Specifications

Applicable standard: JEC-1201-2007

Phase	Type	Voltage transformation ratio (V)	Rated burden (VA)	Accuracy (class)	Withstand voltage (kV) *2	Frequency (Hz)	External dimensions	Mass (kg)
1-phase	EV-1	$\frac{11000}{\sqrt{3}} / \frac{110}{\sqrt{3}}$	100	1P	22/90	50 or 60	Fig. 1	57
			200					
	EV-1X	$\frac{11000}{\sqrt{3}} / \frac{110}{\sqrt{3}} / \frac{110}{3}$	100/100	1P/3G				
			200/200					
		$\frac{11000}{\sqrt{3}} / \frac{110}{\sqrt{3}} / \frac{190}{3}$	100/100					
			200/200					
	EV-2	$\frac{22000}{\sqrt{3}} / \frac{110}{\sqrt{3}}$	100	1P	44/125	50 or 60	Fig. 2-1	64
			200					
	EV-2X	$\frac{22000}{\sqrt{3}} / \frac{110}{\sqrt{3}} / \frac{110}{3}$	100/100	1P/3G				
			200/200					
		$\frac{22000}{\sqrt{3}} / \frac{110}{\sqrt{3}} / \frac{190}{3}$	100/100					
			200/200					
	EV-3	$\frac{33000}{\sqrt{3}} / \frac{110}{\sqrt{3}}$	100	1P	66/170	50 or 60	Fig. 2-2	80
			200					
	EV-3X	$\frac{33000}{\sqrt{3}} / \frac{110}{\sqrt{3}} / \frac{110}{3}$	100/100	1P/3G				
			200/200					
		$\frac{33000}{\sqrt{3}} / \frac{110}{\sqrt{3}} / \frac{190}{3}$	100/100					
			200/200					

Notes

*1 For ratings other than those listed above (voltage transformation ratio, rated load and accuracy class), please contact a Mitsubishi Electric representative.

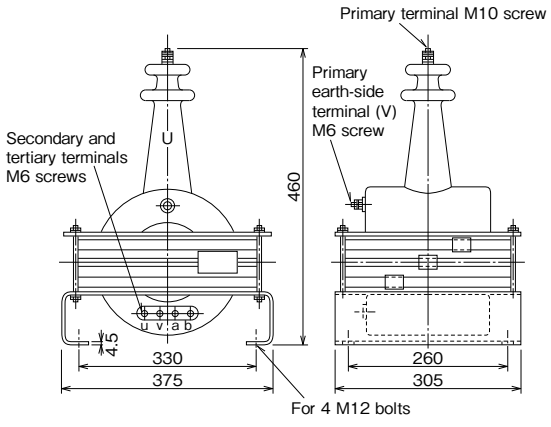
*2 Withstand voltage is induced withstand voltage/lightning impulse withstand voltage.

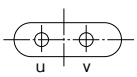
● These grounded voltage transformers comply with the regulations of Article 16, Paragraph 6, Item 4 of Interpretation of Technical Standards for Electrical Equipment. Therefore, disconnect any of the transformers from the circuit when performing the power-frequency withstand voltage test of the board.

● Be certain to ground the primary ground-side terminal before using the transformer.

External Dimensions

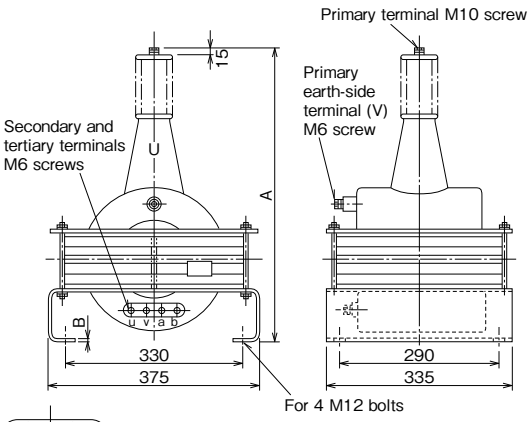
Fig. 1 EV-1 and EV-1X

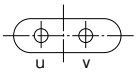




EV-1 secondary terminal layout

Fig. 2 EV-2, EV-2X, EV-3 and EV-3X





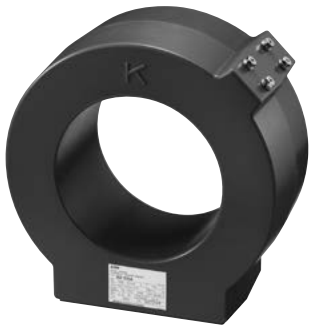
EV-2 and EV-3 secondary terminal layout

Item	Type	A	B
1	EV-2, EV-2X	580	3.2
2	EV-3, EV-3X	595	4.5

5-4 Zero-phase Current Transformers

BZ Series Zero-phase Current Transformers

BZ-60A/BZ-90A/BZ-110A/BZ-170A Cable through-type Epoxy resin mold



BZ-170A

■Specifications

Applicable standard: JEC-1201-2007

Type	BZ-60A	BZ-90A	BZ-110A	BZ-170A
Window diameter (ϕmm)	60	90	110	170
Rated primary current (A)	300	600	1000	1200
Rated zero-phase primary current	200mA			
Rated zero-phase secondary current	1.5mA			
Rated burden	10Ω			
Frequency	Both 50/60Hz			
Accuracy	L			
Overcurrent factor	>2000			
Excitation impedance	>10Ω			>5Ω
Mass (kg)	5	7	10	20

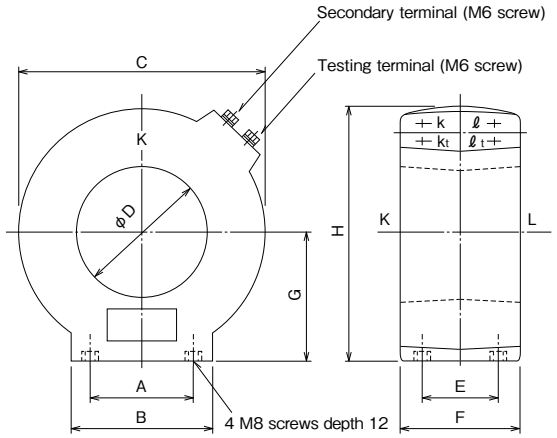
Note: Each rated primary current indicates the maximum current value that is applicable to the corresponding window diameter.

■Use

- Grounding relays
- Test winding (kt, ℓt) included

For the primary conductor, use a shielded cable.
A shielded cable having insulation performance suitable for the circuit voltage can be used for the primary conductor in the circuit.

■External Dimensions



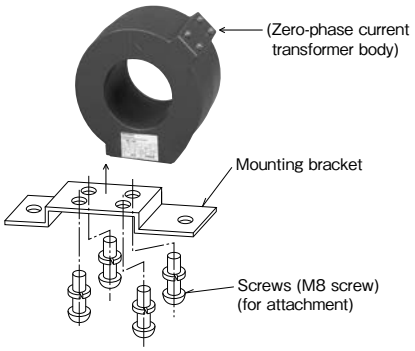
Dimension variations table

Type	Window diameter D	A	B	C	E	F	G	H
BZ-60A	60	50	80	155	40	70	85	163
BZ-90A	90	80	115	195	40	70	100	197
BZ-110A	110	80	120	215	60	100	110	218
BZ-170A	170	140	190	285	70	125	145	288

■Optional Part (mounting bracket)

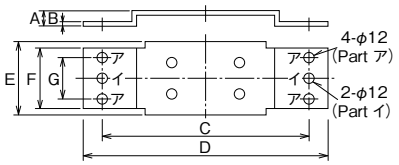
When ordering, be certain to specify the model name, product and quantity required.
(Example: 1 mounting bracket for a BZ-90A)

<Structural drawing of mounting>

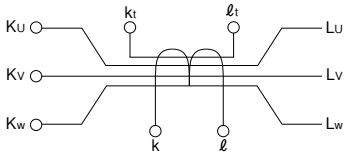


<Mounting bracket dimension table>

Type of appropriatezero phase current transformer	Dimension variations (mm)							Mounting hole
	A	B	C	D	E	F	G	
BZ-60A	15	3.2	110	140	60	60	—	Part イ
BZ-90A	15	3.2	150	190	60	60	—	
BZ-110A	12	3.2	160	200	80	70	—	
BZ-170A	20	4.5	240	280	100	100	70	Part ア



■Connection diagram



BZ Series Zero-phase Current Transformers

BZ-120SA Cable through-type/Separated

Epoxy resin mold

BZ-120SA

■Specifications

Applicable standard: JEC-1201-2007

Type	BZ-120SA
Window diameter (ϕmm)	120
Rated primary current (A)	1000
Rated zero-phase primary current	200mA
Rated zero-phase secondary current	1.5mA
Rated burden	10Ω
Frequency	Both 50/60Hz
Accuracy	L
Overcurrent factor	>2000
Excitation impedance	>5Ω
Mass (kg)	23

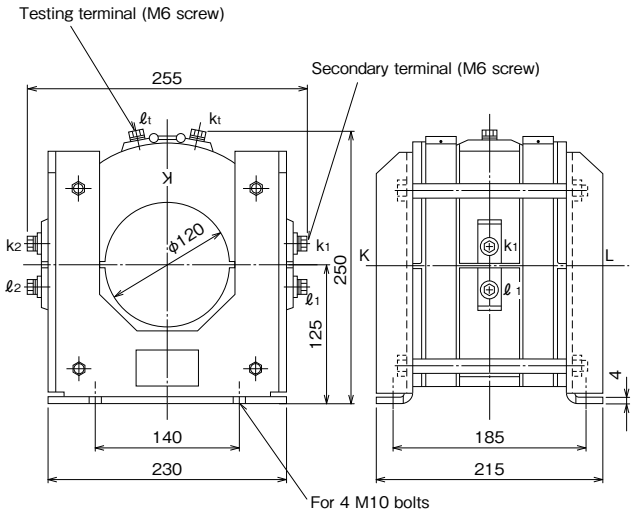
Note: Rated primary current indicates the applicable maximum current value.

■Use

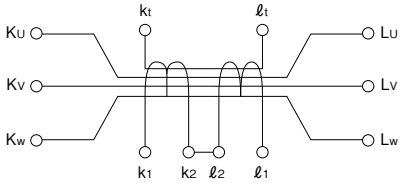
- Grounding relays
- Can be connected using existing cables.
- Test winding (terminal kt, ℓt) included.

For the primary conductor, use a shielded cable.
A shielded cable having insulation performance suitable for the circuit voltage can be used for the primary conductor in the circuit.

■External Dimensions



■Connection diagram



5-5 Voltage&Current Transformers

PO-2HB/PO-6HB Outdoor-use 15VA • Class 1.0W / Class 0.5W Epoxy resin mold

■Use

●Power supply and demand

■Specifications

Applicable standard: JIS C 1736

Type	Phase wiring system *5	Meter voltage transformer		Current Transformer		Accuracy (class) *2	Overcurrent strength (times)	Withstand voltage (kV)	Frequency (Hz) *1	Mass (kg)
		Voltage transformation ratio (V)	Rated burden (VA)	Current transformation ratio (A)	Rated burden (VA)					
PO-2HB	3-phase, 3-wire	3300/110	2×15	10/5, 15/5, 20/5, 30/5, 40/5, 50/5, 60/5, 75/5, 100/5, 150/5, 200/5	2×15	1.0W or 0.5W	40 *4	16/45	50 or 60	72
		6600/110	2×25 *3					22/60		
				250/5, 300/5, 400/5						74
PO-6HB	3-phase, 3-wire	6600/110	2×15	20/5, 50/5	2×15	1.0W or 0.5W	150	22/60	50 or 60	72

Notes
*1 When ordering, be certain to specify the frequency.
*2 Be certain to specify the accuracy class. If it is not specified, Class 1.0W used applied.
*3 Mitsubishi Electric manufactures voltage transformers with a rated load of 2×25VA upon requested.
*4 For ratings less than or equal to 100/5A, Mitsubishi Electric manufactures devices with an overcurrent strength times of 75.
*5 Do not use combination voltage/current transformers in single phase as the internal voltage transformer can burn out (refer to page 5 for details).
*6 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

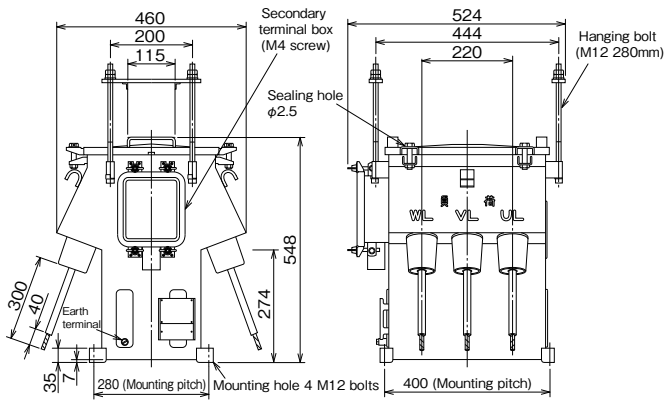
●Primary-side cable size

Type	Primary current (A)	Cable size	Type	Primary current (A)	Cable size
PO-2HB	10 to 50	22mm²	PO-6HB	20	22mm²
	60 to 100	60mm²		50	60mm²
	150, 200	80mm²			
	250 to 400	125mm²			

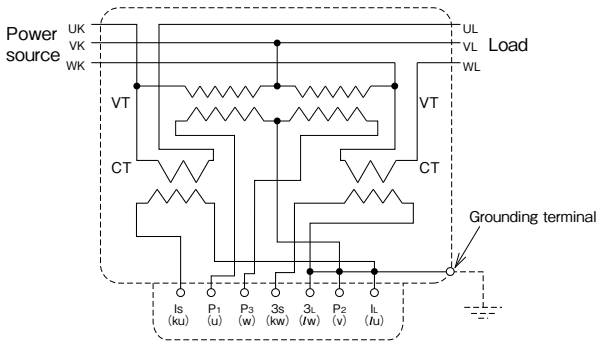
●Size of wires connectable to secondary terminal

Wire size	2 to 14mm²

■External Dimensions



■Connection Diagram



1. Transformer for control circuits

EMT-K/EMT-BB 300 and 600VA

Epoxy resin mold

EMT-K

EMT-BB

■Use

●Operating power supplies of high-voltage circuit breakers

■Specifications

Applicable standard: JEC-2200

Type	Voltage transformation ratio (V)	Capacity (VA)		Withstand voltage (kV) *2	VT fuse		Frequency (Hz)	External dimensions	Mass (kg)
		Continuous	2sec rating *1		Model name	Rating			
EMT-K (with fuse)	3300/110	300	1500	16/45	PL-G	7.2/3.6kV T1A 40kA	Both 50/60	Fig. 1	9.5
	6600/110			22/60					
EMT-BB (with fuse)	3300/110	600	4000	16/45	PL-G	7.2/3.6kV T1A 40kA	Both 50/60	Fig. 2	13
	6600/110			22/60					

Notes

*1 Considering a 10-cycle duty with 0.2-sec current and 1.8-sec interval.

*2 Withstand voltage value indicates commercial power frequency withstand voltage/lightning impulse withstand voltage.

●Special transformation ratio rangemanufactured

Type	Voltage range manufactured (V)	
	Primary voltage	Secondary voltage
EMT-K	3000 to 6600	100 to 220
EMT-BB		

■External Dimensions

Fig. 1 EMT-K

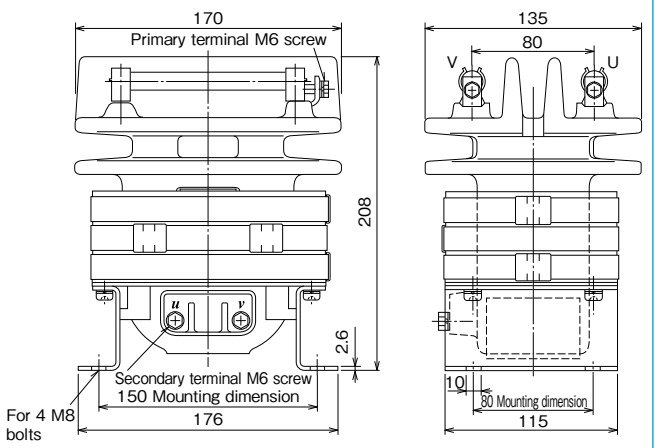
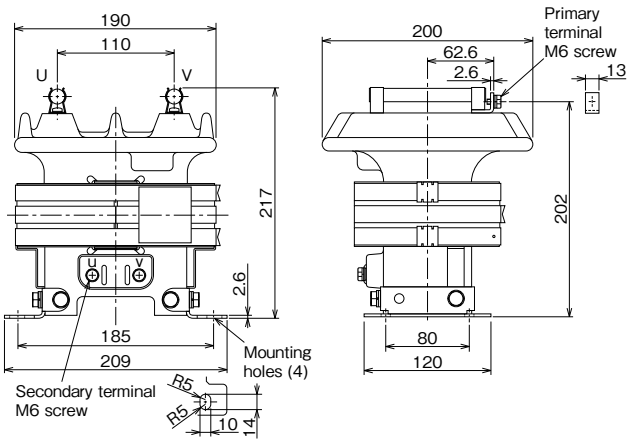
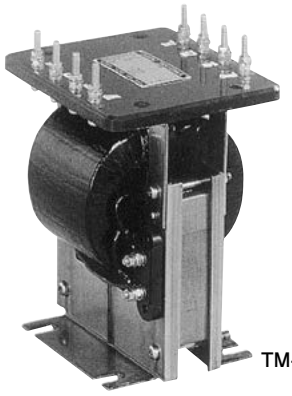


Fig. 2 EMT-BB



2. Totalizing current transformers

To measure the sum of currents through multiple circuits, the outputs from the primary current transformers are input to the totalizing current transformer, which determines the vectorial sum of the currents.
These totalizing current transformers are intended for primary current transformers with the same transformation ratio. They cannot be used if the primary current transformers differ in transformation ratio.



TM-40 (4-circuit model)

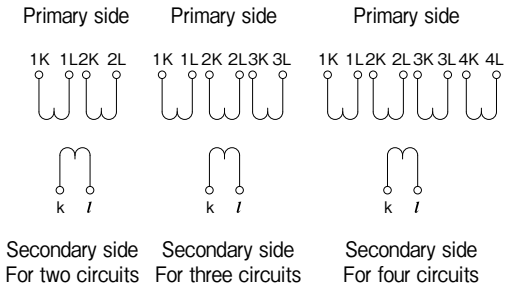
Specifications (5+5A system)

Applicable standard: JIS C 1731-1

Type	TM-15			TM-40		
No. of synthetic circuits	2	3	4	2	3	4
Rated primary current (A)	5+5	5+5+5	5+5+5+5	5+5	5+5+5	5+5+5+5
Rated secondary current (A)	5			5		
Rated burden (VA)	15			40		
Accuracy	1.0 or 0.5 *1			1.0		
Frequency (Hz)	Both 50/60			Both 50/60		
Highest voltage/ withstand voltage (kV)*4	0.23/2/— or 1.15/4/— *2			0.23/2/— or 1.15/4/— *2		
Overcurrent strength (times)	40			40		
Insulation method	Special varnishing process			Special varnishing process		
External dimensions	Fig. 1	Fig. 2	Fig. 3	Fig. 1	Fig. 2	Fig. 3
Mass (kg)	7			7		

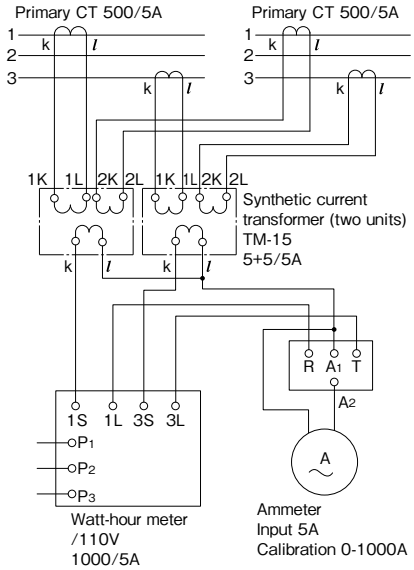
Notes
*1 If the accuracy class is Class 0.5, be certain to specify it.
*2 If the peak in voltage is 1150V, be certain to specify it.
*3 5A system (5+5/10A) (only for two circuits) can also be manufactured.
*4 Withstand voltage value indicates commercial power frequency withstand voltage/ lightning impulse withstand voltage.
*5 They can be used to totalize the current through the secondary feeder of one voltage transformer. The current through the secondary feeder of another voltage transformer cannot be measured correctly because there is a difference in voltage phase between the feeders.
Remarks:
5+5A system: This synthesizes each of circuit current and outputs a 5A current to the secondary side of the synthetic current transformer.
5A system: This uses only one of two circuits and outputs a 5A current to the secondary side of the synthetic current transformer. Therefore, if two circuits are used at the same time, the current transformer can be used only when the current synthesized from the two circuits is 5A or less.

Connection diagram

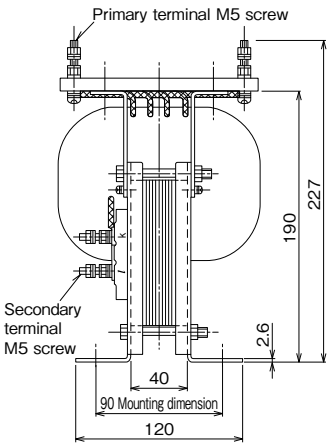


Example use of synthetic currenttransformer

In the case of synthesizing 3-phase, 3-wire and two circuits, and measuring the electric energy and current. (low-voltage circuit)



External Dimensions



Self-load VA

5+5A system	10VA per circuit
5A system	15VA per circuit

Fig. 1 2-circuit synthesis

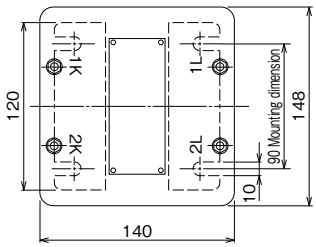


Fig. 2 3-circuit synthesis

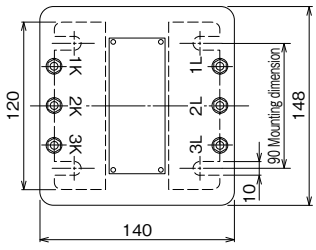
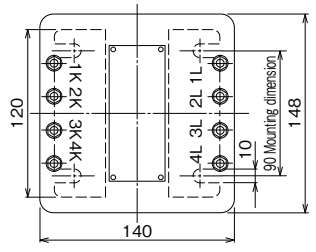


Fig. 3 4-circuit synthesis



3. Split type zero-phase current transformers

Outline

Split type zero-phase current transformers for low-voltage circuits.
These transformers detect current leakage from equipment. In combination with Mitsubishi Electric leakage current measuring/monitoring devices, they can measure the leakage current (lo) and resistive leakage current (Ior).

Features

●Can be installed on existing equipment.

The split type transformers can be installed easily without removal of cables of existing equipment.

●With testing terminal

The wiring and input/output can be checked by using the testing terminal before shipment of board.

Specification

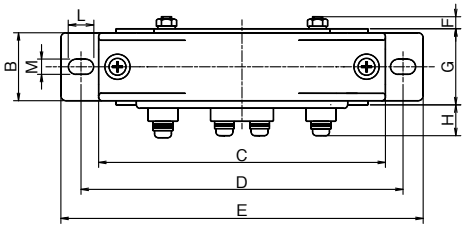
Model name		CZ-22S	CZ-30S	CZ-55S	CZ-77S	CZ-112S
Hole diameter (mm)		ϕ22	ϕ30	ϕ55	ϕ77	ϕ112
Max. working voltage		600 VAC (for low-voltage circuit)				
Rated frequency		50 to 60Hz				
Rated short-time current (peak value)		50kA (100kA)				
CE Marking	Measurement category	CAT Ⅲ				
	Pollution degree	Ⅱ				
	Applicable standard	EN61010-2-032				
	Combined device	Conforming to CE Marking when used in combination with insulation monitoring module (model name: QE82LG) in Mitsubishi general-purpose PLC MELSEC-Q Series.				
Weight		0.5kg	0.6kg	1.8kg	2.8kg	6.0kg

Compatible devices (reference)

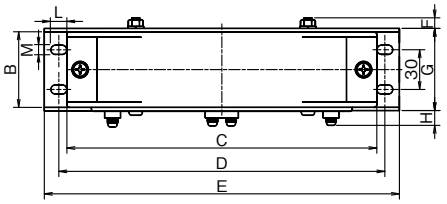
Device name	Model name
Insulation monitoring module in Mitsubishi general-purpose PLC MELSEC Q Series	QE82LG
Mitsubishi assembled-type leakage monitoring device	LG-5F, LG-5F-* LG-10F, LG-10F-*
Mitsubishi leakage current transducer	T-51LG, T-51LGF (required to designate the model to be combined when placing an order)
Mitsubishi electronic indicating instrument Multi indicating instrument with leakage current meter	ME110SSFL, ME110SSFL-**
Mitsubishi energy measuring module with insulation monitor	EMU4-LG1-MB

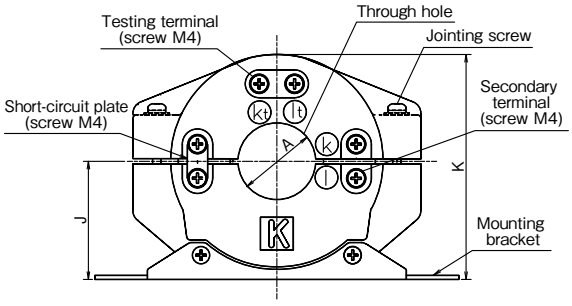
External Dimensions

CZ-22S, 30S, 55S and 77S



CZ-112S





<Example of control panel and equipment>

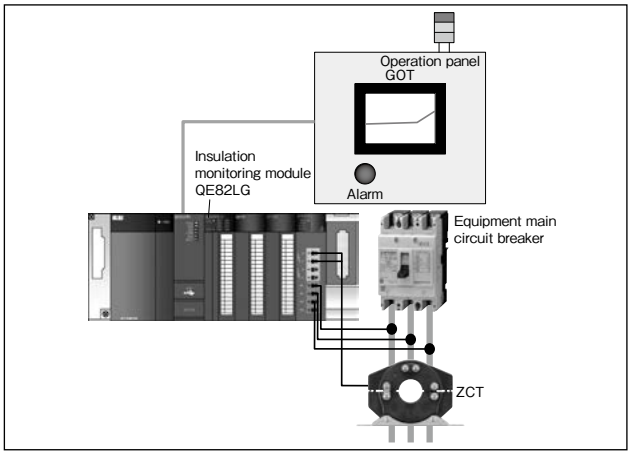


Table of variable dimensions

Unit: (mm)

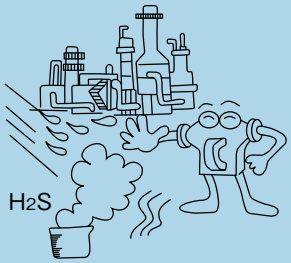
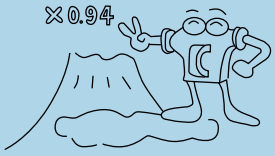
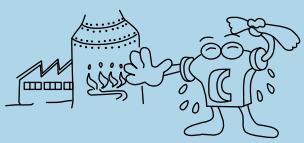
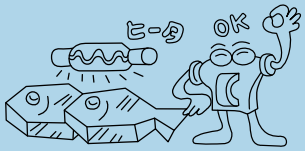
	CZ-22S	CZ-30S	CZ-55S	CZ-77S	CZ-112S
A	ϕ22	ϕ30	ϕ55	ϕ77	ϕ112
B	27	27	32	41	57
C	100	114	148	198	234
D	112	130	160	210	246
E	128	144	177	232	268
F	5	5	9	10	8
G	30	30	36	45	62
H	12	12	12	12	12
J	41	47	66	90	109
K	77	89	124	171	207
L	10	10	12	12	12
M	5.5	5.5	7	7	7

4. Special Environments

Meter transformers are used extensively and in various environments. Mitsubishi Electric meter transformers are manufactured based on the standard operating conditions shown in the box to the right. If a transformer is to be used in environmental conditions other than specified, be certain to take the following issues into account.

Standard Operating Conditions (JIS and JEC standard values)

- Ambient temperature: -20 to 40℃
- Humidity: Plus average 24hr temperature of 35℃ or less.
- Altitude: No humidity (condensation)
- Environmental conditions: 1000m or less
- Minimal dust, corrosive gas or salt-laddened wind

Special Environment	Specifications	Applicable type
High-temperature/humidity 	Anti-fungus/moisture-proof treatment High humidity may lead to degradation in performance, such as weakening dielectric strength. To avoid this, meter transformers are treated with a special antifungus/ moisture-proof coating and corrosion-resistant plating.	Current transformers ●CW Series (5000A, 6000A, excluding heat-resistant, distribution board and separated design) ●CD-40K, CD-40NA, CD-40ENA Voltage transformers ●PE Series ●PD-50HF, PD-100HF, PD-200KFH
Corrosive gases 	Supplemental corrosion resistance If meter transformers are to be used where there is much corrosive gas, they are generally encased in a protective corrosion resistant case. However, places where there is minimal corrosive gas, for convenience, corrosion-resistant plating can be used for meeting corrosion-resistant specifications. The metallic portions of meter transformers are treated with corrosion-resistant plating.	Current transformers ●CD Series ●EC-0 (LA) ●BN-0 (LA) Earthed voltage transformers ●EF-0FC, EF-0XFC Standard specifications can be applied to the following models. (Except those for verification) Current transformers ●CW Series (Except separate type) Voltage transformers ●PE Series ●PD-50HF, PD-100HF, PD-200KFH
High altitudes 	If a meter transformer will be used at an altitude of more than 1000m above sea level, it must be used at reduced withstand voltage and current. The ANSI standard specifies applying the withstand voltage value and rated current value of the current transformer multiplied by the corresponding constants in the table to the right.	
Pollution/humidity 	The mold materials use for voltage and current transformers have unique organic material tracking phenomenon, and are not to be used in places that are polluted or the humidity (condensation) is 85% or higher. A space heater must be installed for use in humid (condensation) environments subject to generating condensation.	
High temperatures 	If a meter transformer is to be used in a place where the temperature is higher than the ambient temperature range stated in the standard operating conditions, be certain to select one of the following: Current transformer ●Select a transformer that has a current transformation ratio higher than the predefined value. ●Select a transformer that has an overcurrent intensity larger than the predefined value. Voltage transformer ●Reduce the use load.	
Low temperatures 	If a meter transformer is to be used in a place where the temperature is lower than the ambient temperature range stated in the standard operating conditions, be certain to use a double mold, epoxy resin mold or Melkid rubber mold model. If a transformer is to be used in a place where the temperature may be below -20℃ , be certain to use a space heater so that the temperature is maintained at -20℃ or above.	

Altitude (m)	Correction value	
	Withstand voltage	CT rated current
1000	1.00	1.00
1500	0.95	0.985
3000	0.80	0.94

7 Foreign Standard Applications

Products can be manufactured to meet foreign standards (IEC or ANSI) as requested.
If ordering a product that must comply to foreign standards, be certain to specify the applicable standard, ratings (current transformation ratio and voltage transformation ratio), accuracy class and load (VA). Mitsubishi Electric's standard specifications are shown in the following table.

Applicable standard

	Current transformer	Inductive voltage transformer
IEC standards	IEC 60044-1	IEC 60044-2
ANSI standards	ANSI C57.13	

■Standard Specifications List

Type	Standard: Circuit / Type		IEC standards: Accuracy class	IEC standards: Rated output (VA)	IEC standards: Ins. class (kV)*1	ANSI standards: Accuracy class-Output	ANSI standards: Ins. class (kV)
Current transformer CT	Low-voltage	CW-5LP	1	5	0.72/3/—	1.2B—0.2	BIL10
		CW-15LP		15		1.2B—0.5	
		CW-40LP		30		1.2B—0.9	
		CW-5L		5		1.2B—0.2	—
		CW-15L		15		1.2B—0.5	
		CW-40L		30		1.2B—0.9	
		CW-15LM		15		1.2B—0.5	
		CW-40LM		30		1.2B—0.9	
		CW-15LM	10P10/1	15		—	
	High-voltage	BN-0 (LA)	1	40	7.2/20/60	1.2B—0.9	BIL60
		BS-MD					
		BS-MC					
	Extra-high-voltage	BN-1 (LA)	1	40	12/28/75	1.2B—0.9	—
		BN-2A			24/50/125		BIL150
Inductive voltage transformer VT	Low-voltage	PE-15	1.0	15	3/—	1.2W	BIL10
		PE-15F					
		PE-50	3.0	50		—	
		PE-50F					
		PD-50HF	1.0	50		1.2X	
		PD-100HF		75		1.2X	
		PD-200KFH		100/150		1.2Y	
	High-voltage	PD-50HF	1.0	50	3.6/10/40 7.2/20/60	1.2X	BIL45 BIL60
		PD-100HF		75		1.2X	
		PD-200KFH		100/150		1.2Y	
	Extra-high-voltage	EV-1	1.0	100 200	12/28/75	1.2Y 1.2Z	BIL95
		EV-2			24/50/125		BIL150
		EV-3			36/70/170		BIL170
Earthed voltage transformer EVT	Low-voltage	EV-L	1.0	50 100	0.72/3/—	1.2X 1.2Y	BIL10
		EV-LX	1.0/3P	50/50 100/100		—	—
	High-voltage	EF-0FC	1.0	100 200	3.6/10/40 7.2/20/60	1.2Y 1.2Z	BIL60
		EF-0XFC	1.0/3P	100/100 200/200		—	—
	Extra-high-voltage	EV-1	1.0	100 200	12/28/75	1.2Y 1.2Z	BIL95
		EV-1X	1.0/3P	100/100 200/200		—	—
		EV-2	1.0	100 200	24/50/125	1.2Y 1.2Z	BIL150
		EV-2X	1.0/3P	100/100 200/100		—	—

Notes
*1 Insulation class indicates peak voltage/commercial power frequency withstand voltage/lightning impulse withstand voltage.
*2 For specifications other than those listed above, please contact a Mitsubishi Electric representative.

Compliance with foreign standards

Item	IEC standards: CT (IEC 60044-1)	IEC standards: VT/EVT (IEC 60044-2)	ANSI standards: CT (ANSI C57.13)	ANSI standards: VT/EVT (ANSI C57.13)
Withstand current	△	—	△	—
Temperature rise	○	○	○	○
Short-circuit performance	—	○	—	○
Lightning impulse withstand voltage	△	△	△	△
Terminal symbol	○	○	○	○
Power-frequency withstand voltage	○	○	○	○
Partial discharge	△	△	—	—
Induced withstand voltage	—	○	—	○
Power-frequency withstand voltage between sections	—	○	—	○
Withstand voltage between winding terminals	○	—	○	—
Error	○	○	○	○
Composite error	△	—	—	—
Polarity	—	—	○	○

○: Complying
△: Complying with JIS C 1731 or JEC-1201 (* Not complying with the foreign standard)
—: No applicable items in the standard

1. Current Transformer Characteristics

Type	Rated primary current (A)	Short-time current: Thermal kA (effective value) Energizing time (sec) 1.00	0.20	0.13	Mechanical kA (peak value)	Secondary leakage impedance (VA) *1
CD-25NB n>10	5	0.25	0.56	0.59	1.5	8.0
	10	0.50	1.10	1.17	3.0	
	15	0.75	1.70	1.75	4.5	
	20	1.00	2.20	2.34	6.0	
	25	1.25	2.80	2.92	7.5	
	30	1.50	3.40	3.51	9.0	
	40	2.00	4.50	4.68	12.0	
	50	2.50	5.60	5.85	15.0	
	60	3.00	6.80	7.02	18.0	
	75	3.80	8.40	8.80	22.5	
	80	4.00	8.96	9.36	24.0	8.6
	100	5.00	11.20	11.70	30.0	8.0
	120	6.00	13.40	14.04	36.0	
	150	7.50	16.80	17.50	45.0	
	200	10.00	22.40	23.40	60.0	
	250	12.50	28.00	29.25	75.0	4.1
	300	15.00	33.50	35.10	90.0	7.1
	400	20.00	○	○	◎	10.3
	500	25.00	○	○	◎	4.1
CD-25ENB n>10	5	0.43	0.95	1.01	2.6	7.8
	10	0.85	1.90	2.03	5.2	
	15	1.30	2.90	3.04	7.9	
	20	1.70	3.80	4.06	10.5	
	25	2.20	4.90	5.07	13.1	
	30	2.60	5.70	6.09	15.8	
	40	3.40	7.60	8.10	21.0	
	50	4.30	9.50	10.10	26.3	
	60	5.20	11.40	12.18	31.6	
	75	6.40	14.30	15.20	39.4	
	80	6.80	15.20	16.24	42.0	8.6
	100	8.50	19.00	20.30	52.5	7.8
	120	10.20	22.80	24.30	63.0	
	150	12.80	28.50	30.40	78.8	
	200	17.00	38.00	○	◎	
	250	21.25	○	○	◎	4.1
	300	25.50	○	○	◎	5.9
	400	34.00	○	○	◎	11.4

Type	Rated primary current (A)	Short-time current: Thermal kA (effective value) Energizing time (sec) 1.00	0.20	0.13	Mechanical kA (peak value)	Secondary leakage impedance (VA) *1
CD-40H n>10	600	○	○	○	◎	9.0
	750	○	○	○	◎	13.1
	800	○	○	○	◎	14.3
	1000	○	○	○	◎	20.6
	1200	○	○	○	◎	–
	1500	○	○	○	◎	–
	2000	○	○	○	◎	–
CD-40GNA n>10	5	0.85	1.90	1.98	5.1	3.7
	10	1.70	3.80	3.97	10.1	
	15	2.60	5.70	5.95	15.2	3.8
	20	3.40	7.60	7.94	20.3	3.7
	25	4.20	9.30	9.81	25.3	
	30	5.10	11.40	11.91	30.4	3.8
	40	6.80	15.20	15.88	40.5	3.7
	50	8.50	19.00	19.80	50.6	
	60	10.20	22.80	23.82	60.8	3.8
	75	12.80	28.50	29.70	75.9	4.4
	80	13.60	30.40	31.76	80.9	3.7
	100	17.00	38.00	39.70	◎	
	150	25.50	○	○	◎	4.4
	200	34.00	○	○	◎	3.7
CD-40LN n>10	5	1.70	3.80	4.15	11.2	4.8
	10	3.50	7.80	8.54	22.5	
	15	5.20	11.60	12.70	33.7	
	20	7.00	15.60	17.10	45.0	
	25	8.70	19.40	21.20	56.2	
	30	10.50	23.50	25.60	67.5	
	40	14.00	31.30	34.20	90.0	
	50	17.50	39.10	○	◎	
	60	21.00	○	○	◎	
	75	26.20	○	○	◎	
	80	28.00	○	○	◎	
	100	35.00	○	○	◎	

Notes

*1 This is the value for 60Hz, and the value for 50Hz is much the same.
*2 ○ indicates 40kA and ◎ indicates 100kA.
*3 The Short-time current value is the value if 25% of the rated load is connected to the secondary side.
*4 The withstand current values may vary depending on the situation. These values are given for reference.

Type	Rated primary current (A)	Short-time current			
		Thermal kA (effective value) Energizing time (sec)			Mechanical kA (peak value)
		1.00	0.20	0.13	
CD-25KB	5	0.23	0.50	0.57	1.5
	10	0.45	1.00	1.14	3.0
	15	0.68	1.50	1.71	4.5
	20	0.90	2.00	2.28	6.0
	25	1.20	2.60	2.93	7.5
	30	1.40	3.00	3.42	9.0
	40	1.80	4.00	4.56	12.0
	50	2.30	5.00	5.70	15.0
	60	2.70	6.00	6.84	18.0
	75	3.40	7.60	8.55	22.5
	80	3.60	8.00	9.12	24.0
	100	4.50	10.10	11.40	30.0
	120	5.40	12.00	13.68	36.0
	150	6.80	15.10	17.10	45.0
	200	9.00	20.10	22.80	60.0
	250	11.30	25.20	28.50	75.0
	300	13.50	30.20	34.20	90.0
	400	18.00	○	○	◎
	500	22.50	○	○	◎
	600	27.00	○	○	◎
	750	32.00	○	○	◎
CD-15CB	5	0.25	0.56	0.59	1.5
	10	0.50	1.10	1.17	3.0
	15	0.75	1.70	1.75	4.5
	20	1.00	2.20	2.34	6.0
	25	1.25	2.80	2.92	7.5
	30	1.50	3.40	3.51	9.0
	40	2.00	4.50	4.68	12.0
	50	2.50	5.60	5.85	15.0
	60	3.00	6.80	7.02	18.0
	75	3.80	8.40	8.80	22.5
	80	4.00	8.96	9.36	24.0
	100	5.00	11.20	11.70	30.0
	120	6.00	13.40	14.04	36.0
	150	7.50	16.80	17.50	45.0
	200	10.00	22.40	23.40	60.0
	250	12.50	28.00	29.25	75.0
	300	15.00	33.50	35.10	90.0
	400	20.00	○	○	◎

Notes

*1 ○ indicates 40kA and ◎ indicates 100kA.

*2 The Short-time current value is the value if 25% of the rated load is connected to thesecondary side.

*3 The withstand current values may vary depending on the situation. These values are given for reference.

Type	Rated primary current (A)	Rated overcurrent intensity (times)	Short-time current				Secondary leakage impedance (VA) *1
			Thermal kA (effective value) Energizing time (sec)			Mechanical kA (peak value)	
			1.00	0.20	0.13		
EC-0 (Style LA) n>5	5	40	0.27	0.60	0.60	1.5	7.5
	10		0.54	1.20	1.20	3.0	
	15		0.84	1.80	1.80	4.5	
	20		0.93	2.07	2.40	6.0	
	30		1.68	3.60	3.60	9.0	
	40		2.69	4.80	4.80	12.0	
	50		3.36	6.00	6.00	15.0	
	60		3.36	7.20	7.20	18.0	
	75		3.36	7.51	9.00	22.5	
	100		6.72	12.00	12.00	30.0	
	120		6.72	14.40	14.40	36.0	
	150		6.72	15.02	18.00	45.0	
	200		10.08	22.53	24.00	60.0	
	300		16.81	36.00	36.00	90.0	
BN-0 (Style LA) n>10	10	40	0.69	1.54	1.91	5.0	7.3
		75	0.82	1.83	2.24	5.6	
		150	1.56	3.36	3.36	8.4	
	15	40	1.03	2.30	2.85	7.5	7.3
		75	1.23	2.75	3.36	8.4	
		150	2.50	5.04	5.04	12.6	
		300	4.80	8.00	8.00	20.0	8.5
	20	40	1.38	3.08	3.82	10.0	7.2
		75	1.64	3.66	4.48	11.2	
		150	3.10	6.72	6.72	16.8	
		300	6.40	10.68	10.68	26.7	8.5
	25	40	1.72	3.84	4.77	12.7	7.2
		75	2.05	4.58	5.60	14.0	
		150	3.90	8.40	8.40	21.0	
	30	40	2.07	4.62	5.74	15.0	7.2
		75	2.46	5.50	6.72	16.8	
		150	4.60	10.08	10.08	25.2	
		300	9.40	16.00	16.00	40.0	8.4
	40	40	2.76	6.17	7.65	20.0	7.1
		75	3.28	7.33	9.00	22.5	
		150	6.20	13.44	13.44	33.6	8.4
		300	12.80	21.36	21.36	53.4	
	50	40	3.45	7.71	9.56	25.0	7.1
		75	4.10	9.16	11.24	28.1	
		150	7.80	16.80	16.80	42.0	
		300	16.00	26.68	26.68	66.7	8.4
	60	40	4.14	9.25	11.48	30.0	7.2
		75	4.92	11.00	13.48	33.7	
		150	9.36	20.16	20.16	50.4	
		300	19.20	32.04	32.04	80.1	8.4
	75	40	5.17	11.56	14.33	37.5	7.1
		75	6.15	13.75	16.84	42.1	
		150	11.70	25.20	25.20	63.0	
		300	24.00	○	○	◎	8.4
	80	40	5.44	12.16	15.09	37.7	7.8
		75	6.54	14.62	18.13	45.3	
		150	12.03	27.01	27.01	67.5	
	100	40	6.90	15.42	19.13	50.0	7.1
		75	8.20	18.33	22.48	56.2	
		150	15.60	33.60	33.60	84.0	
		300	32.00	○	○	◎	8.4
	120	40	8.28	18.51	22.96	60.0	7.1
		75	9.84	22.00	27.00	67.5	
		150	19.50	○	○	◎	
		300	38.40	○	○	◎	8.2

Remark:

1) Various characteristics of the AN and CN series current transformers for cubicle high-voltage power receiving equipment are described on page 47 and 51.

Notes

*1 This is the value for 60Hz, and the value for 50Hz is much the same.

*2 ○ indicates 40kA and ◎ indicates 100kA.

*3 The Short-time current value is the value if 25% of the rated load is connected to the secondary side.

*4 The withstand current values may vary depending on the situation. These values are given for reference.

Type	Rated primary current (A)	Rated overcurrent intensity (times)	Short-time current				Secondary leakage impedance (VA) *1
			Thermal kA (effective value) Energizing time (sec)			Mechanical kA (peak value)	
			1.00	0.20	0.13		
BN-0 (Style LA) n>10	150	40	10.35	23.14	28.70	75.0	7.0
		75	12.30	27.50	33.72	84.3	
		150	23.40	○	○	◎	
		40kA	○	○	○	◎	8.1
	200	40	13.80	30.85	38.27	◎	7.0
		75	16.40	36.67	○	◎	
		150	31.20	○	○	◎	
		40kA	○	○	○	◎	8.0
	250	40	17.00	38.00	○	◎	12.1
		75	20.43	○	○	◎	
		150	37.64	○	○	◎	
	300	40	20.70	○	○	◎	8.4
		75	24.60	○	○	◎	
		40kA	○	○	○	◎	7.9
	400	40	27.60	○	○	◎	12.7
		75	31.75	○	○	◎	
		40kA	○	○	○	◎	12.9
	500	40kA	○	○	○	◎	17.7
	600	40kA	○	○	○	◎	9.2
	750	40kA	○	○	○	◎	13.0
	800	40kA	○	○	○	◎	10.4
	1000	40kA	○	○	○	◎	20.5
	1200	40kA	○	○	○	◎	26.5
	1500	40kA	○	○	○	◎	34.5

Notes

*1 This is the value for 60Hz, and the value for 50Hz is much the same.

*2 ○ indicates 40kA and ◎ indicates 100kA.

*3 The Short-time current value is the value if 25% of the rated load is connected to the secondary side.

*4 The withstand current values may vary depending on the situation. These values are given for reference.

2. Voltage Transformer Characteristics

Type		PE-15F		PE-50F		PD-50HF			PD-100HF			PD-200KFH			EP-0FH[*1]	
Rated voltage (V)		220	440	220	440	440	3300	6600	440	3300	6600	440	3300	6600	3300	6600
Limiting load Limit output (VA)	Continuous rating	100		100		200			200			200			300	
	2sec rating	200		200		500			500			500			700	
Limit output error (%)	Continuous rating	-5		-5		-5			-5			-5			-5	
	2sec rating	-10		-10		-10			-10			-10			-10	
Primary fuse	Rated current (A)	T2		T2		T2	T1		T2	T1		T2	T1		T1	
	Breaking current (kA)	100		100		100	40		100	40		100	40		40	
Impedance voltage (%)	Resistance voltage (%)	0.80		2.66		0.93			1.99			1.59			0.77	0.71
	Reactance voltage (%)	0.32		1.06		0.21			0.49			1.01			0.17	0.19
	Impedance voltage (%)	0.86		2.86		0.95			2.05			1.88			0.79	0.73

Notes

*1 The impedance voltage for EP-0FH is the same as that for 50VA.

*2 The 2-sec rating is the value considering a 10-cycle duty with 0.2-sec current and 1.8-sec interval.

9 Handling and Maintenance

1. Cleaning

Be certain to handle transformers carefully at the time of the routine inspection, which is to be performed when all power to the device is turned off.

(1) Dust removal

Carefully remove dust that has collected on the transformer, doing so as follows:
Do not use running water, cleansers or chemical-treated wipes because they contain surface-active agents that could cause degradation of the insulation.
① Mold surface: Clean with a gauze soaked with deionized water.
② Metallic sections (cores, terminals, attached brackets, screws, etc.): Clean with a dry duster, compressed-air blower or similar method.
③ Name plate section: Clean with a dry duster, compressed-air blower or similar method.

(2) If any of the connections have become loose or appear loss, retighten them.

2. Storage

When placing transformers in storage, be certain to use the following procedure:

(1) Removing the transformer

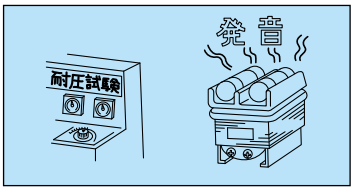
① Turn off the power sources of circuits connected to the transformer. Check to ensure that all voltage in the system has been removed.
② Using a screwdriver, loosen the terminal screws of the secondary conductor wiring and disconnect the wires.
③ Remove the primary conductor (conducting wire).
④ Remove the mounting screws and nuts holding the transformer, and then remove the transformer itself.

(2) Storage

For storage conditions, refer to Section 8 on page 7.

3. Precautions when Using Transformers

(1) Noise generated during withstand voltage testing



When conducting a withstand voltage test for coil-mold transformers, high-voltage electricity is shared in the air space between the coil-mold section and core, causing discharge noise to be generated. During general use, the voltage of the electricity passing through this space is low and discharge noise is not generated. Do not become alarmed and continue to use the transformer as normal even if discharge noise is generated during the withstand voltage test.

(2) Disconnect earthed voltage transformers from the primary-side circuit during commercial frequency withstand voltage testing of boards.

If not disconnected, burnout will occur.
(This happens because Mitsubishi Electric earthed voltage transformers comply with the standard of Article 16-6-4 of the Interpretation of Technical Standards for Electrical Equipment.)
Additionally, if the earthed voltage transformer is not disconnected from the primary-side circuit and disconnected from the secondary-side circuit only and a commercial frequency withstand voltage test is conducted with the transformer isolated from the circuit, dielectric breakdown between the primary and secondary coils may occur.

(3) Voltage transformer primary-side fuse meltdown

Dielectric breakdown may occur in voltage transformers as the result of circuit burn out due to improper connection or overload, or insulation may deteriorate due to extremely abnormal phenomenon. Primary-side fuses will melt as the result of the phase-to-phase short-circuiting current at the time of dielectric breakdown.
If the fuses meltdown, be certain to carefully check the insulation performance of the voltage transformer as abnormalities may exist (refer to items to be checked in Table 2 on page 93). If an abnormality is found, the voltage transformer may need to be replaced.
If no abnormalities are found in insulation performance, replace the melted fuses with new ones as they have been subjected to excitation rush current, thereby degrading them. (Replace all of the fuses with new ones even if only one fuse has melted). After replacing all of the fuses, if fuse meltdown occurs again within a short period, replace the voltage transformer with a new one as dielectric breakdown may have occurred in the current transformer.

(4) Influence on current transformer secondary circuit devices at the time of a short-circuiting incident

When short-circuiting occurs, large current flows into the secondary circuit of the current transformer. When resuming use of the meters, relays and other devices that are connected to the secondary circuit after the incident, carefully check to ensure that all are operating properly. Additionally, if the high-voltage circuit breaker is an overcurrent trip system and a static relay is used, be certain to check the b contact point of the relay.

(5) Selecting an Earthed Voltage Transformer

The EF Series transformers described on page 78 are used for extra-high-voltage circuits. Because high-voltage systems are generally isolated neutral systems, earthed voltage transformers cannot be used at the power-receiving point of high-voltage customers. This is because when a high-voltage customer uses an earthed voltage transformer that point becomes a direct-current grounding point, thereby causing problems such as insufficient insulation when a utilities company conducts an insulation resistance test on distribution lines.

4. Maintenance and Inspection

As transformer accidents lead to power-supply failure and have a negative effect on productivity, it is best to proactively work to prevent power loss accidents by being very careful and precise when conducting maintenance and inspections. It is recommended that maintenance inspections be conducted based on a technical information announcement, Notice No. 164 Guidelines for Meter Transformer Maintenance, published by the Japan Electrical Manufacturers' Association in September 1988.
An abstract of the technical information from Notice No.164 is shown in Table 1 to 4.
Please observe the following issues regarding maintenance and inspections. To ensure safety, maintenance and inspections should only be performed by an experienced electrician such as the chief electrical engineer.

Danger

(1) Connecting earthing wires

To ensure safety, be certain to connect all required earthing wires to terminals before beginning any maintenance or inspections. If it is believed all power sources to the transformer have been turned off and this is not confirmed, it may lead to electrical shock, electrical burn injury or death.

If a person must touch the main body of a transformer, be certain to check whether or not the transformer is disconnected from all circuits. Confirm this using circuit breakers or switches, and then use a detection meter suitable for the circuit voltage to confirm that the circuit no longer carries a charge before beginning maintenance or inspections.

(2) Contact with a transformer while a current is applied is prohibited

If electricity is turned on during maintenance or inspections, be certain to prevent anyone from touching the main body of the transformer, terminals or any other part thereof. It could lead to not only electrical shock, electrical burn injury, equipment burnout or a fire, but also death.

Table 1 Mounting Inspection for Molded Meter Transformers

No.	Inspection item	Contents	Basic criteria	Remarks
1	Mounting bolt	Tightness	Sufficiently tight	—
2	Grounding	Ground wire connections and tightness	Sufficiently tight	Some transformers are grounded via the mounting bracket
3	High-voltage terminal	Tightness	Sufficiently tight	—
			No overload on the terminal	—
4	Low-voltage terminal	Tightness	Sufficiently tight	—
5	Paint	Condition of paint/coating	No problem with paint/coating	—
6	Measure insulation resistance (main body of meter transformer)	Between high/low-voltage winding and ground Between low-voltage winding and the ground	Insulation resistance test of 1000MΩor more and 1000V	—
		Between low-voltage windings	Insulation resistance test of 10MΩ or more and 500V	
7	Polarity test	Use direct-current kick method	Polarity is negative	—
8	Low-voltage circuit wiring	Wiring condition	Current transformer should low-voltage circuit closed	—
			Voltage transformer should have low-voltage circuit not shorted	—
9	Molded portion appearance	Damage, cracks, pollution	No damage, cracks or pollution exist	—
10	Withstand voltage test	Conforming to Article 16 of the Interpretation of Technical Standards for Electrical Equipment	No trouble exists	Disconnect the earthed voltage transformer from the circuit

Table 2 Patrol inspection and regular inspection of mold type instrument transformers

No.	Inspected part/inspection item		Inspection procedure	Execution (○: Executed)	
				Patrol inspection	General inspection
1	Operating condition	Abnormal noise	Check for discharge sound.	○	—
			Check for chattering or howling.	○	—
		Odor	Check for abnormal odor.	○	—
2	Casing	Tank, case and cover	Check for damage.	○	○
			Check for contamination, coating film deterioration, discoloration and rusting.	○	○
		Base and mounting (fitting) area	Check for looseness, damage and rusting.	—	○
3	Terminal area	Main circuit terminal tightening area	Check for change in color of Thermo Label.	○	○
			Check for discoloration due to overheating.	—	○
			Check for looseness.	—	○
		Ground wire connection	Check for looseness.	○	○
			Check for disconnection.	○	○
4	Insulated block	Insulators, busbar supporting parts, fixing parts and other insulators	Check for discharge craters.	○	—
			Check for damage.	○	○
			Check for cracking.	○	○
			Check for moisture absorption.	—	○
			Check for contamination.	○	○
5	Control block	Terminal, connector and wiring connections	Check for looseness.	—	○
			Check for damage.	—	○
			Check for deformation.	—	○
			Check for dust on them.	—	○
6	Accessories and auxiliaries	Primary fuse (VT)	Check for discoloration.	—	○
			Check for meltdown.	—	○
7	Testing	Measurement of insulation resistance	Measure the insulation resistance of the main circuit, low-voltage circuit and control circuit, and check them.	—	○

- Patrol inspection

  Routine activities to collect information performed by maintenance personnel. The personnel routinely visits the specified points while the equipment is running to check the operating condition or temperature, etc. through the five senses, record them and monitor and predict abnormalities. Generally, the inspection is performed every day, week and month. It is necessary to perform the inspection just after a typhoon, earthquake or flood

- Regular inspection

  The equipment is stopped, and minor recovery operations, such as cleaning and lubrication, are performed without overhauling, and the condition of the major equipment functions and the operations are checked through the five senses and operation test or measurement and recorded to monitor and predict abnormalities. The inspection is performed to obtain more detailed information that could not be obtained in the patrol inspection. Generally, the inspection is performed every 1 to 3 years.

5. Recommended Renewal Timing

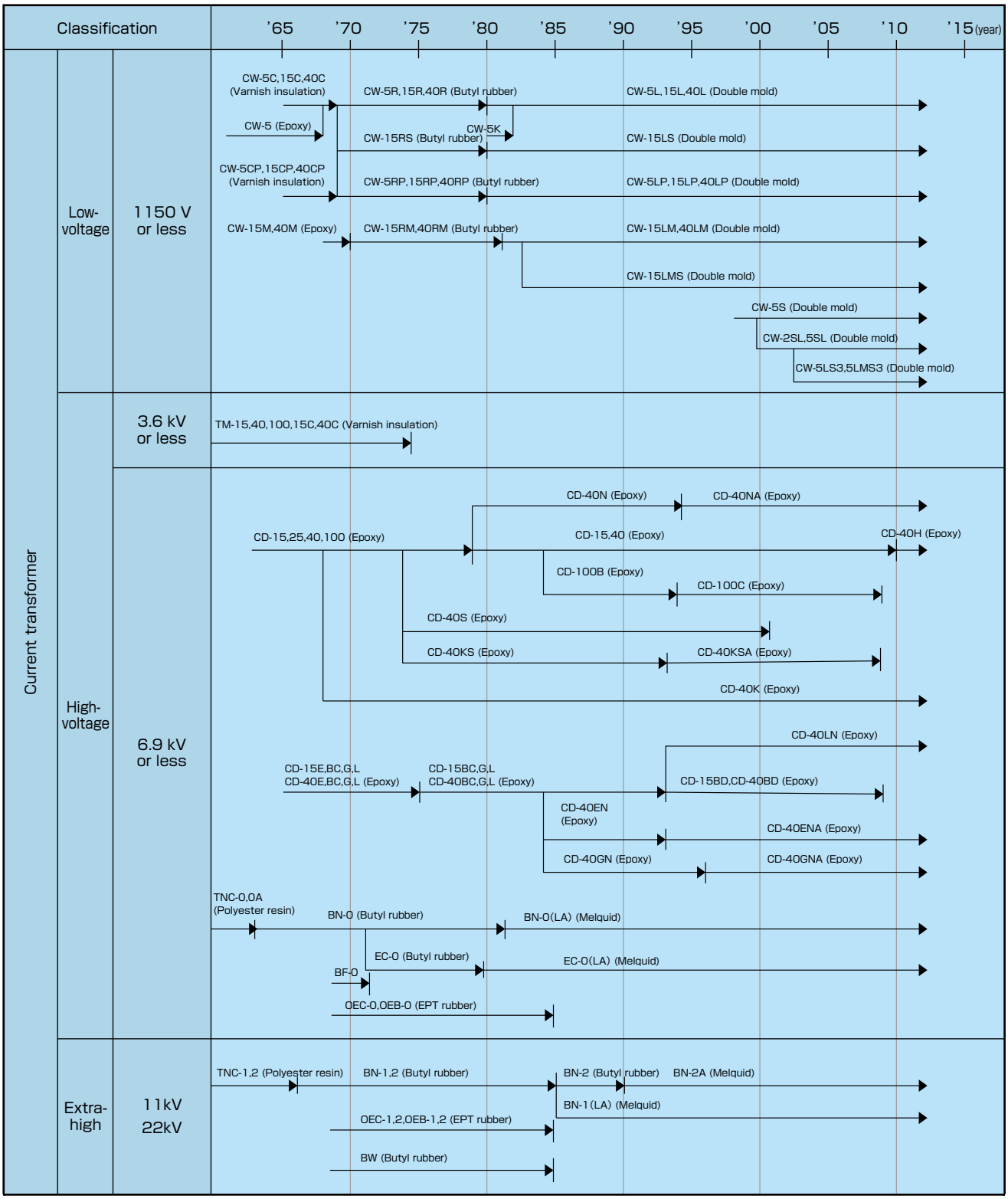
In technical information announcement, Notice No.164, published by the Japan Electrical Manufacturers' Association, a recommended timing for renewal has been established. It is recommend that meter transformers be renewed based on the information in that announcement.

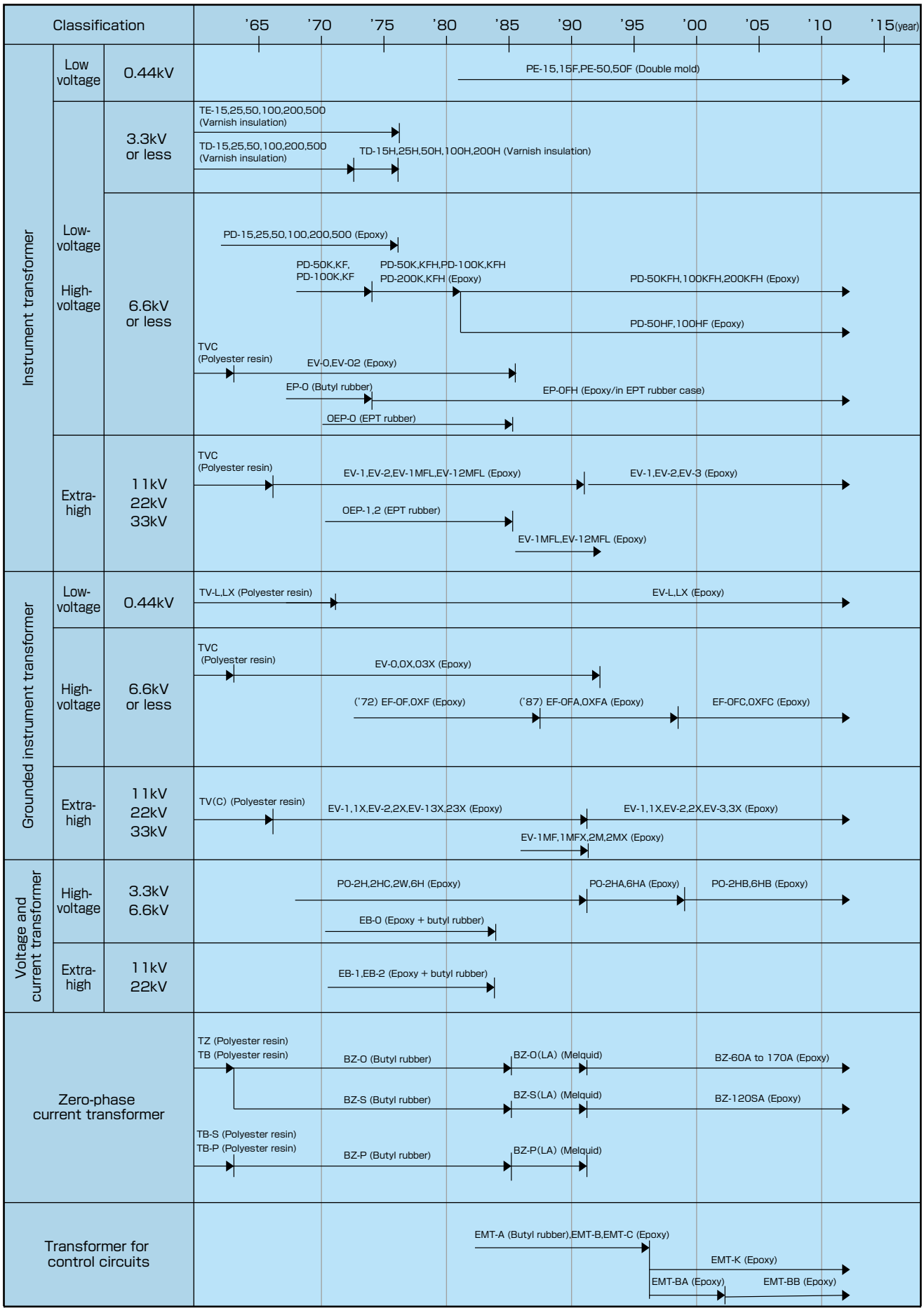
However, the recommended renewal time is not a guaranteed value for product service life. The recommended timing for renewal shown in the chart at the right is determined assuming that daily and periodic inspections are conducted on a continuing basis.

Recommended renewal time for meter transformers (years of use)

Molded transformers (including other dry models)	15 years

10 Transition of transformer models




Classification
'65
'70
'75
'80
'85
'90
'95
'00
'05
'10
'15(year)
Instrument transformer
Low voltage
0.44kV
PE-15,15F,PE-50,50F (Double mold)
3.3kV or less
TE-15,25,50,100,200,500 (Varnish insulation)
TD-15,25,50,100,200,500 (Varnish insulation)
TD-15H,25H,50H,100H,200H (Varnish insulation)
Low-voltage
High-voltage
6.6kV or less
PD-15,25,50,100,200,500 (Epoxy)
PD-50K,KF, PD-100K,KF
PD-50K,KFH,PD-100K,KFH PD-200K,KFH (Epoxy)
PD-50KFH,100KFH,200KFH (Epoxy)
PD-50HF,100HF (Epoxy)
TVC (Polyester resin)
EV-0,EV-02 (Epoxy)
EP-0 (Butyl rubber)
EP-0FH (Epoxy/in EPT rubber case)
OEP-0 (EPT rubber)
Extra-high
11kV 22kV 33kV
TVC (Polyester resin)
EV-1,EV-2,EV-1MFL,EV-12MFL (Epoxy)
EV-1,EV-2,EV-3 (Epoxy)
OEP-1,2 (EPT rubber)
EV-1MFL,EV-12MFL (Epoxy)
Grounded instrument transformer
Low-voltage
0.44kV
TV-L,LX (Polyester resin)
EV-L,LX (Epoxy)
High-voltage
6.6kV or less
TVC (Polyester resin)
EV-0,0X,03X (Epoxy)
('72) EF-0F,0XF (Epoxy)
('87) EF-0FA,0XFA (Epoxy)
EF-0FC,0XFC (Epoxy)
Extra-high
11kV 22kV 33kV
TV(C) (Polyester resin)
EV-1,1X,EV-2,2X,EV-13X,23X (Epoxy)
EV-1,1X,EV-2,2X,EV-3,3X (Epoxy)
EV-1MF,1MFX,2M,2MX (Epoxy)
Voltage and current transformer
High-voltage
3.3kV 6.6kV
PO-2H,2HC,2W,6H (Epoxy)
PO-2HA,6HA (Epoxy)
PO-2HB,6HB (Epoxy)
EB-0 (Epoxy + butyl rubber)
Extra-high
11kV 22kV
EB-1,EB-2 (Epoxy + butyl rubber)
Zero-phase current transformer
TZ (Polyester resin)
TB (Polyester resin)
BZ-0 (Butyl rubber)
BZ-0(LA) (Melquid)
BZ-60A to 170A (Epoxy)
BZ-S (Butyl rubber)
BZ-S(LA) (Melquid)
BZ-120SA (Epoxy)
TB-S (Polyester resin)
TB-P (Polyester resin)
BZ-P (Butyl rubber)
BZ-P(LA) (Melquid)
Transformer for control circuits
EMT-A (Butyl rubber),EMT-B,EMT-C (Epoxy)
EMT-K (Epoxy)
EMT-BA (Epoxy)
EMT-BB (Epoxy)

11 How to Order

When placing an order, be certain to specify the following items.

: This information is required. Be certain to specify it.
: This is manufactured according to customer specifications. If not specification is provided, the product will be manufactured according to the standard specification of Mitsubishi Electric transformers.

Current Transformers (CT)

●Low-voltage Current Transformers (≤440V) Separated

CW-5S, 2SL, 5SL (Separated/Cable wiring)

Type	Current transformation Ratio	No. of Units
CW-5S	300/5A	10

●CW Series Low-voltage Current Transformers (≤1100V)

CW-L (Cable wiring/Round window through-type)

Type	Current transformation Ratio	Special Specifications	No. of Units
CW-40L	200/5A	Foreign standards, Anti-fungus/ Moistureproof treatment, Etc. Class 2 heat-resistant	10

●Current transformation ratio ··· Specify current transformation ratio calculated as primary conductor through number per 1 turn.

CW-LP (Small current/Primary winding)

Type	Current transformation Ratio	Special Specifications	No. of Units
CW-15LP	20/5A	Foreign standards, Anti-fungus/ Moisture-proof treatment, Etc.	10

CW-LM (Busbar wiring/Square window through-type)

Type	Current transformation Ratio	Special Specifications	No. of Units
CW-40LM	500/5A	Foreign standards, Anti-fungus/ Moistureproof treatment, Etc. Class 2 heat-resistant	10

CW-LS, CW-LMS, CW-LS3 and CW-LMS3

Type	Current transformation Ratio	Frequency	Models Combined for Verification	No. of Units
CW-15LS	100/5A	50Hz	Combine with M2LHM-V and PE-15F	2

●If ordering "For verification", be certain to specify the accuracy class, frequency and model to be combined for verification.

●CD/BN Series High-voltage Current Transformers (≤6600V)

CD Current Transformers

Type	Current transformation Ratio	Special Specifications	No. of Units
CD-25KB	100/5A	Foreign standards, Models Combined for Verification, Etc.	10

●If ordering "For verification", be certain to specify the accuracy class, frequency and model to be combined for verification.
Example: CD-25KB — 100/5A — 50Hz — Combine with M2LHM-K5V and PD-50HF

CD-15CB (Dedicated verification)

Type	Current transformation Ratio	Frequency	Models Combined for Verification	No. of Units
CD-15CB	50/5A	60Hz	Combine with WP3P-K30VR and PD-15KFH	2

●If ordering "For verification", be certain to specify the accuracy class, frequency and model to be combined for verification.

BN Current Transformers

Type	Current transformation Ratio	Rated Burden	Overcurrent Intensity	Accuracy Class	Frequency	Special Specifications	No. of Units
BN-0(LA)	100/5A	40VA	150 times	1.0•1PS	50Hz	Foreign standards, Models Combined for Verification, Etc.	2

●Overcurrent Intensity····· If the withstand current (effective value) needs to be indicated in the nameplate, be certain to specify the withstand current value (kA).
●Accuracy Class····· Be certain to specify the desired class if it is other than the standard specification (1.0/Class 1PS).
●Frequency····· The standard specification is both (50/60). If a single frequency needs to be indicated in the nameplate, be certain to specify the desired frequency.
●If ordering "For verification", be certain to specify the accuracy class, frequency and model to be combined for verification.

●AN/CN Series Current Transformers for Cubicle-type High-voltage Power Receiving Equipment

Type	Current transformation Ratio	No. of Units
CD-10ANB	30/5A	4

●Extra-high-voltage Current Transformers (≥11000V)

Type	Current transformation Ratio	Rated Burden	Overcurrent Intensity	Accuracy Class	Frequency	No. of Units
BN-2A	100/5A	40VA	40 times	1.0•1PS	60Hz	2

●Overcurrent Intensity····· If the withstand current (effective value) needs to be indicated in the nameplate, be certain to specify the withstand current value (kA).
●Accuracy Class····· Be certain to specify the desired class if it is other than the standard specification (1.0/Class 1PS).

■Meter Voltage Transformers (VT)

●PE Series Low-voltage Voltage Transformers (≤440V)

Type	Voltage transformation Ratio	Special Specifications	No. of Units
PE-15F	440/110V	Foreign standards, Models to be combined for verification, Etc.	10

●If ordering "For verification", be certain to specify the frequency and model to be combined for verification.

●PD Series High-voltage Voltage Transformers (≤6600V)

PD Voltage Transformers

Type	Voltage transformation Ratio	Special Specifications	No. of Units
PD-50HF	6600/110V	Foreign standards, Models to be combined for verification, Etc.	10

●If ordering "For verification", be certain to specify the frequency and model to be combined for verification.

PD-15KFH, PD-25KFH and PD-100KFH

Type	Voltage transformation Ratio	Frequency	Models Combined for Verification	No. of Units
PD-15KFH	6600/110V	50Hz	Combine with WP3P-K30VR and CD-15BB	2

●If ordering "For verification", be certain to specify the frequency and model to be combined for verification.

●EV Series Voltage Transformers (≥11000V)

Type	Voltage transformation Ratio	Rated Burden	Accuracy Class	Frequency	Special Specifications	No. of Units
EV-1	11000/110V	200VA	1.0•1P	50Hz	Foreign standards, Base color, Etc.	2

●Accuracy Class ··· Be certain to specify the desired class if it is other than the standard specification (1.0/Class 1P).
●If ordering "For verification", be certain to specify the accuracy class, frequency and model to be combined for verification.

■Earthed Voltage Transformers (EVT)

EF/EV Earthed Voltage Transformers (単相・三次巻線なし)

Type	Voltage transformation Ratio	Rated Burden	Accuracy Class	Frequency	Special Specifications	No. of Units
EV-2	$\frac{22000}{\sqrt{3}}/\frac{110}{\sqrt{3}}$ V	200VA	1P	60Hz	Foreign standards, Base color, Etc.	3

●Accuracy Class ··· Be certain to specify the desired class if it is other than the standard specification (Class 1P).
●Frequency ····· If the desired frequency is higher than or equal to 11000V, be certain to specify it.

EF/EV Earthed Voltage Transformers (Single-phase/Tertiary winding included)

Type	Voltage transformation Ratio	Rated Burden	Accuracy Class	Frequency	No. of Units
EF-0XFC	$\frac{6600}{\sqrt{3}}/\frac{110}{\sqrt{3}}/\frac{190}{3}$ V	200/200VA	1P/3G	50Hz	3

●Accuracy Class ··· Be certain to specify the desired class if it is other than the standard specification (Class 1P/3G).
●Frequency ····· If the desired frequency is higher than or equal to 11000V, be certain to specify it.

EF-03XFC Earthed Voltage Transformers (Three-phase/Tertiary winding included)

Type	Voltage transformation Ratio	Rated Burden	Accuracy Class	Frequency	No. of Units
EF-03XFC	$6600/110/\frac{190}{3}$ V	200/200VA	1P/3G	60Hz	1

■Zero-phase Current Transformers (ZCT)

Type	Rated Primary Current	No. of Units
BZ-90A	600A	5

●Rated Primary Current ··· If a rated primary current other than that specified in the standard specification needs to be indicated in the name plate, be certain to specify the desired current.

Example: BZ-90A — 300A

■Combined Voltage/Current Transformers (VCT)

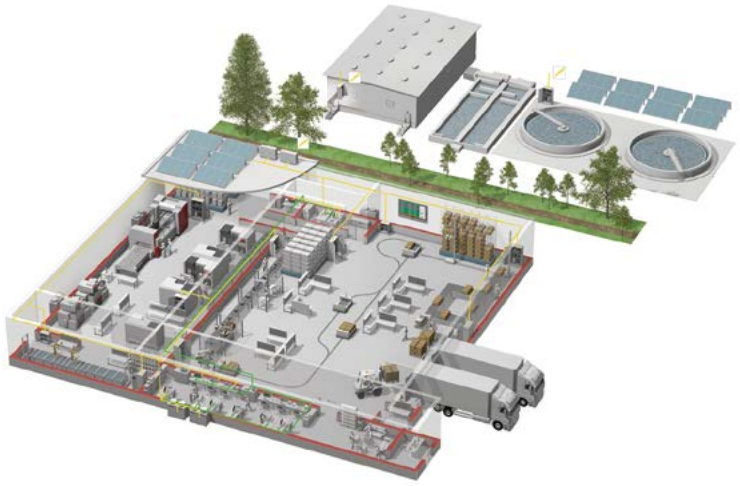
Type	Voltage transformation Ratio	Current transformation Ratio	Accuracy Class	Frequency	Voltage Transformer Load	Models Combined for Verification	No. of Units
PO-2HB	6600/110V	50/5A	1.0W	50Hz	VT25VA	Combine with M2LHM-K5V	1

●Accuracy Class····· If the accuracy class is Class 0.5W, be certain to specify it.
●Voltage Transformer Load···· If the load is 25VA, be certain to specify it.
●If ordering "For verification", be certain to specify the model to be combined for verification.
●Overcurrent Intensity····· If the intensity is 75 times, be certain to specify it.

■Service Network

Country/Region	Corporation Name	Address	Telephone
Australia	Mitsubishi Electric Australia Pty. Ltd.	348 Victoria Road, Rydalmere, N.S.W. 2116, Australia	+61-2-9684-7777
Bangladesh	PROGRESSIVE TRADING CORPORATION	HAQUE TOWER, 2ND FLOOR, 610/11, JUBILEE ROAD, CHITTAGONG, BANGLADESH	+880-31-624307
	ELECTRO MECH AUTOMATION & ENGINEERING LTD.	SHATABDI CENTER, 12TH FLOOR, SUITES：12-B, 292, INNER CIRCULAR ROAD, FAKIRA POOL, MOTIJHEEL, DHAKA-1000, BANGLADESH	+88-02-7192826
Belarus	Tehnikon	Oktyabrskaya 19, Off. 705, BY-220030 Minsk, Belarus	+375 (0)17 / 210 46 26
Belgium	Koning & Hartman B.V.	Woluwelaan 31, BE-1800 Vilvoorde, Belgium	+32 (0)2 / 2570240
Brazil	Mitsubishi Electric Do Brasil Comercio E Servicos Ltda.	Av. Adelino Cardana, 293 -21 and. - Bethaville, 06401-147, Barueri/SP - Brasil	+55-11-4689-3000
Cambodia	DHINIMEX CO.,LTD	#245, St. Tep Phan, Phnom Penh, Cambodia	+855-23-997-725
Chile	Rhona S.A.	Vte. Agua Santa 4211 Casilla 30-D (P.O. Box) Vina del Mar, Chile	+56-32-2-320-600
China	Mitsubishi Electric Automation (China) Ltd.	Mitsubishi Electric Automation Building, No.1386 Hongqiao Road, Shanghai, 200336	+86-21-2322-3030
	Mitsubishi Electric Automation (China) Ltd. North China Branch	9/F, Office Tower1 Henderson Centre 18 Jianguomennei Dajie DongCheng district BeiJing 100005	+86-10-6518-8830
	Mitsubishi Electric Automation (China) Ltd. NorthEast China Branch	Room2302, President Building Tower C, No.69 Heping North Avenue, Heping District, Shenyang, 110003	+86-24-2259-8830
	Mitsubishi Electric Automation (China) Ltd. South China Branch	Room 2512--2516, Great China International Exchange Square, Jintian Rd.S., Futian District, Shenzhen, 518034	+86-755-2399-8272
	Mitsubishi Electric Automation (China) Ltd. South China Branch	Room 1609, North Tower, The Hub Center, No.1068, Xing Gang East Road, Haizhu District, GuangZhou, China 510335	+86-20-8923-6730
	Mitsubishi Electric Automation (China) Ltd. SouthWest China Branch	1501, 1502, 1503, 15F, Guang-hua Centre, Block C, NO.98 Guang Hua North 3th Road Chengdu, 610000	+86-28-8446-8030
	Mitsubishi Electric Automation (Hong Kong) Ltd.	20/F, Cityplaza One, 1111 king's Road, Taikoo shing, Hong Kong	+852-2510-0555
Colombia	Proelectrico Representaciones S.A.	Carrera 42 # 75-367 Bod 109 Itagui Colombia	+57-4-4441284
Czech Republic	AUTOCONT CONTROL SYSTEMS S.R.O	Technologická 374/6, CZ-708 00 Ostrava - Pustkovec	+420 595 691 150
Denmark	BEIJER ELECTRONICS A/S	LYKKEGARDSVEJ 17, DK-4000 ROSKILDE	+45 (0)46/ 75 76 66
Egypt	Cairo Electrical Group	9, Rostoum St. Garden City P.O. Box 165-11516 Maglis El-Shaab, Cairo - Egypt	+20-2-27961337
France	Mitsubishi Electric Europe B.V.	25, Boulevard des Bouvets, F-92741 Nanterre Cedex	+33 (0) 1 / 55 68 55 68
Germany	Mitsubishi Electric Europe B.V.	Mitsubishi-Electric-Platz 1, 40882 Ratingen, Germany	+49 (2102) 4860
Greece	KALAMARAKIS - SAPOUNAS S.A.	IONIAS & NEROMILOU STR., CHAMOMILOS ACHARNES, ATHENS, 13678 Greece	+30-2102 406000
	UTECO	5, MAVROGENOUS STR., 18542 PIRAEUS, Greece	+30-211-1206-900
Hungary	Meltrade Ltd.	Fertõ utca 14. HU-1107 Budapest, Hungary	+36 (0)1-431-9726
India	Mitsubishi Electric India Private Limited	2nd Floor, Tower A&B, Cyber Greens, DLF Cyber City, DLF Phase-III, Gurgaon - 122 022 Haryana, India	+91-124-4630300
Indonesia	PT.Mitsubishi Electric Indonesia	Gedung Jaya 8th floor, JL. MH. Thamrin No.12 Jakarta Pusat 10340, Indonesia	+62-21-3192-6461
	P. T. Sahabat Indonesia	P.O.Box 5045 Kawasan Industri Pergudangan, Jakarta, Indonesia	+62-(0)21-6610651-9
Ireland	Mitsubishi Electric Europe B.V.	Westgate Business Park, Ballymount, IRL-Dublin 24, Ireland	+353 (0)1-4198800
Israel	Gino Industries Ltd.	26, Ophir Street IL-32235 Haifa, Israel	+972 (0)4-867-0656
Italy	Mitsubishi Electric Europe B.V.	Viale Colleoni 7, I-20041 Agrate Brianza (MI), Italy	+39 039-60531
Kazakhstan	Kazpromavtomatika	ul. Zhambyla 28, KAZ - 100017 Karaganda	+7-7212-501000
Korea	Mitsubishi Electric Automation Korea Co., Ltd	9F Gangseo Hangang xi-tower, 401 Yangcheon-ro, Gangseo-gu, Seoul 07528 Korea	+82-2-3660-9572
Laos	AROUNKIT CORPORATION IMPORT- EXPORT SOLE CO.,LTD	SAPHANMO VILLAGE. SAYSETHA DISTRICT, VIENTIANE CAPITAL, LAOS	+856-20-415899
Lebanon	Comptoir d'Electricite Generale-Liban	Cebaco Center - Block A Autostrade Dora, P.O. Box 11-2597 Beirut - Lebanon	+961-1-240445
Lithuania	Rifas UAB	Tinklu 29A, LT-5300 Panevezys, Lithuania	+370 (0)45-582-728
Malaysia	Mittric Sdn Bhd	No. 5 Jalan Pemberita U1/49, Temasya Industrial Park, Glenmarie 40150 Shah Alam, Selangor, Malaysia	+603-5569-3748
Malta	ALFATRADE LTD	99 PAOLA HILL, PAOLA PLA 1702, Malta	+356 (0)21-697-816
Maroco	SCHIELE MAROC	KM 7, 2 NOUVELLE ROUTE DE RABAT AIN SEBAA, 20600 Casablanca, Maroco	+212 661 45 15 96
Mexico	Mitsubishi Electric Automation, Inc.	Mariano Escobedo 69, Col. Zona Industrial, Tlalnepantla, MEX - 54030 - MX	+55-3067-7500
Myanmar	Peace Myanmar Electric Co.,Ltd.	NO137/139 Botahtaung Pagoda Road, Botahtaung Town Ship 11161, Yangon, Myanmar	+95-(0)1-202589
Nepal	Watt&Volt House	KHA 2-65, Volt House Dillibazar Post Box:2108, Kathmandu, Nepal	+977-1-4411330
Netherlands	Imtech Marine & Offshore B.V.	Sluisjesdijk 155, NL-3087 AG Rotterdam, Netherlands	+31 (0)10-487-19 11
North America	Mitsubishi Electric Automation, Inc.	500 Corporate Woods Parkway, Vernon Hills, IL 60061 USA	+847-478-2100
Norway	Scanelec AS	Leirvikasen 43B, NO-5179 Godvik, Norway	+47 (0)55-506000
Middle East Arab Countries & Cyprus	Comptoir d'Electricite Generale-International-S.A.L.	Cebaco Center - Block A Autostrade Dora P.O. Box 11-1314 Beirut - Lebanon	+961-1-240430
Pakistan	Prince Electric Co.	2-P GULBERG II, LAHORE, 54600, PAKISTAN	+92-42-575232, 5753373
	AL-KAMAL GROUP	OFFICE NO.7&8, 1ST FLOOR, BARKAT ALI KHAN CENTER, 101, CIRCULAR ROAD, LAHORE. PAKISTAN	+92-42-37631632
Philippines	Edison Electric Integrated, Inc.	24th Fl. Galleria Corporate Center, Edsa Cr. Ortigas Ave., Quezon City Metro Manila, Philippines	+63-(0)2-634-8691
Poland	Mitsubishi Electric Europe B.V. Polish Branch	Krakowska 50, 32-083 Balice, Poland	+48 (0) 12 630 47 00
Republic of Moldova	Intehsis SRL	bld. Traian 23/1, MD-2060 Kishinev, Moldova	+373 (0)22-66-4242
Romania	Sirius Trading & Services SRL	RO-060841 Bucuresti, Sector 6 Aleea Lacul Morii Nr. 3	+40-(0)21-430-40-06
Russia	Mitsubishi Electric Europe B.V. Moscow Branch	52, bld. 3 Kosmodamianskaya Nab. 115054, Moscow, Russia	+7 495 721-2070
Saudi Arabia	Center of Electrical Goods	Al-Shuwayer St. Side way of Salahuddin Al-Ayoubi St. P.O. Box 15955 Riyadh 11454 - Saudi Arabia	+966-1-4770149
Singapore	Mitsubishi Electric Asia Pte. Ltd.	307 Alexandra Road, Mitsubishi Electric Building, Singapore 159943	+65-6473-2308
Slovakia	PROCONT, Presov	Kupelna 1/, SK - 08001 Presov, Slovakia	+421 (0)51 - 7580 611
	SIMAP	Jana Derku 1671, SK - 91101 Trencin, Slovakia	+421 (0)32 743 04 72
Slovenia	Inea RBT d.o.o.	Stegne 11, SI-1000 Ljubljana, Slovenia	+386 (0)1-513-8116
South Africa	CBI-electric: low voltage	Private Bag 2016, ZA-1600 Isando Gauteng, South Africa	+27-(0)11-9282000
Spain	Mitsubishi Electric Europe B.V. Spanish Branch	Carretera de Rubí 76-80, E-08190 Sant Cugat del Vallés (Barcelona), Spain	+34 (0)93-565-3131
Sweden	Euro Energy Components AB	Järnvägsgatan 36, S-434 24 Kungsbacka, Sweden	+46 (0)300-690040
Switzerland	TriElec AG	Muehlentalstrasse 136, CH-8201 Schaffhausen	+41-(0)52-6258425
Taiwan	Setsuyo Enterprise Co., Ltd	5th Fl., No.105, Wu Kung 3rd, Wu-Ku Hsiang, Taipei, Taiwan, R.O.C.	+886-(0)2-2298-8889
Thailand	United Trading & Import Co., Ltd.	77/12 Bamrungmuang Road, Klong Mahanak Pomprab Bangkok Thailand	+66-223-4220-3
Tunisia	MOTRA Electric	3, Résidence Imen, Avenue des Martyrs Mourouj III, 2074 - El Mourouj III Ben Arous, Tunisia	+216-71 474 599
Turkey	GTS	Bayraktar Bulvarı Nutuk Sok. No:5, Posta Kutusu34384, TR-34775 Yukan Dudullu-Uemraniye, Istanbul, Turkey	+90 (0)216 526 3990
United Kingdom	Mitsubishi Electric Europe B.V.	Travellers Lane, UK-Hatfield, Herts. AL10 8XB, United Kingdom	+44 (0)1707-276100
Uruguay	Fierro Vignoli S.A.	Avda. Uruguay 1274 Montevideo Uruguay	+598-2-902-0808
Venezuela	Adesco S.A.	Calle 7 La Urbina Edificio Los Robles Locales C y D Planta Baja, Caracas - Venezuela	+58-212-241-9952
Vietnam	Mitsubishi Electric Vietnam Co.,Ltd. Head Office	Unit01-04, 10th Floor, Vincom Center, 72 Le Thanh Ton Street, District 1, Ho Chi Minh City, Vietnam	+84-8-3910-5945
	Mitsubishi Electric Vietnam Co.,Ltd. Hanoi Branch	6th Floor, Detech Tower, 8 Ton That Thuyet Street, My Dinh 2 Ward, Nam Tu Liem District, Hanoi City, Vietnam	+84-4-3937-8075

YOUR SOLUTION PARTNER



Mitsubishi Electric offers a wide range of automation equipment from PLCs and HMIs to CNC and EDM machines.

A NAME TO TRUST

Since its beginnings in 1870, some 45 companies use the Mitsubishi name, covering a spectrum of finance, commerce and industry.

The Mitsubishi brand name is recognized around the world as a symbol of premium quality.

Mitsubishi Electric Corporation is active in space development, transportation, semi-conductors, energy systems, communications and information processing, audio visual equipment and home electronics, building and energy management and automation systems, and has 237 factories and laboratories worldwide in over 121 countries.

This is why you can rely on Mitsubishi Electric automation solution - because we know first hand about the need for reliable, efficient, easy-to-use automation and control in our own factories.

As one of the world's leading companies with a global turnover of over 4 trillion Yen (over $40 billion), employing over 100,000 people, Mitsubishi Electric has the resource and the commitment to deliver the ultimate in service and support as well as the best products.

Low voltage: MCCB, MCB, ACB

Medium voltage: VCB, VCC

Power monitoring, energy management

Compact and Modular Controllers

Inverters, Servos and Motors

Visualisation: HMIs

Numerical Control (NC)

Robots: SCARA, Articulated arm

Processing machines: EDM, Lasers, IDS

Transformers, Air conditioning, Photovoltaic systems

* Not all products are available in all countries.

For Safety : Please read the instruction manual carefully before using the products in this catalog. Wiring and connection must be done by the person who has specialized knowledge of electric construction and wirings.

eco Changes for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.

MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE: TOKYO BUILDING, 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

Y-0712A 1803 〈IP〉

New publication effective Mar. 2018.
Specifications are subject to change without notice.