

VT and CT
3.45/6.9/11.5/23/34.5kV
Up to 5000 Amps

■ Description

Fuji epoxy resin molded type CT and VT feature excellent water- and damp-proof characteristics. There is no danger of insulation deterioration. Their good thermal and mechanical performance make them suitable for a wide range of applications, while the initial cost of VT and CT are very reasonable.

■ Features

- Accuracy: Class 1.0
- No corona is produced.
- FUJI's advanced manufacturing techniques eliminate cracking of molded enclosure.
- VT is provided with a current-limiting fuse to give a large interrupting capacity.

■ Selection note

1. Primary current of CT must be 150% of the load current of measuring.
2. Rated overcurrent constant must be considered when used for circuit protection.
3. Accuracy class, rated burden and maximum voltage.
4. When determining VA, add secondary wiring or cabling burden.

■ General specifications

Current transformer (CT)

- Accuracy class: 1.0
- Maximum voltage: Up to 34.5kV
- Rated frequency: 50/60Hz
- Secondary current: 5A

Voltage transformer (VT)

- Accuracy class: 1.0
- Maximum voltage: Up to 33kV
- Rated frequency: 50/60Hz
- Secondary voltage: 110V

■ Current transformers



RC15-6C



N33-142-12

RC3-10

■ Voltage transformers



CP-624



N33-142-12

NPE12-6FA

PE4-30

● Epoxy resin molded CT

NCE, CEC, CEA and CE types

NCE, CEC and CEA are used in distribution circuits of up to 6.9kV. Only the primary and secondary windings are molded in epoxy resin. CE type is designed for use in circuits between 11.5 – 34.5kV. Iron core windings, terminal stand and insulation are all integrated into one body and encapsulated with epoxy resin in a vacuum. The iron core is fabricated from silicon steel plate which ensures an excellent electrical performance. The corona and insulating characteristics are excellent so assuring a long service life. There is no fear of the epoxy resin cracking. The transformer is compact in design and takes up little space on installation.

RC15 type: 5/5–750/5 Amps, 6.9kV
NCE type: 10/5–400/5 Amps, 6.9kV
CEC type: 10/5–200/5 Amps, 6.9kV
CEA type: 300/5–2000/5 Amps, 6.9kV
CE type: 50/5–5000/5 Amps,
11.5–34.5kV

■ **Types and ratings:** See pages 11/38 and 11/39.

■ **Dimensions:** See pages 11/40 to 11/42.

● Epoxy resin molded VT

NPE, PEC and PE types

These types have both primary and secondary windings molded in epoxy resin. The insulating resin is also strong against chemical attack which makes the transformer suitable for use in chemical plants and other similar locations.

PE type has windings, core and terminals incorporated into one body. It can be used for measuring voltages in the 11kV–33kV range.

■ **Types and ratings:** See pages 11/38.

■ **Dimensions:** See pages 11/43.

H.V. Distribution Equipment

Instrument transformers

General information

■ Selection table/CT

Maximum voltage	3.45/6.9kV	11.5kV	23kV	34.5kV
Type	RC15-6C (5–750A) NCE2-6B (10–400A) CEC1-6M (10–200A) CEA1-6M (300–2000A)	CE3-10 (50–1200A) CE5-10 (1500–2000A) CE2-10 (1500–4000A) CE6-10 (5000A)	CE1-20 (50–1200A) CE5-20 (1500–2000A) CE2-20 (1500–4000A) CE6-20 (5000A)	CE4-30 (50–1200A)

■ Selection table/VT

Voltage class	3kV	6kV	10kV	15kV	20kV	30kV
Type	NPE12-3FA (50VA) NPE12-3FA (100VA) PEC2-3FA (200VA)	NPE12-6FA (50VA) NPE12-6FA (100VA) PEC2-6FA (200VA)	PE10-10 PE11-10	PE10-15	PE12-20	PE4-30

■ Ordering information

Current transformer (CT)

Specify the following:

1. Type number
2. Rated voltage
3. Rated primary current
4. Rated secondary current
5. Rated frequency
6. Rated burden
7. Accuracy class

Voltage transformer (VT)

Specify the following:

1. Type number
2. Rated primary voltage
3. Rated secondary voltage
4. Rated frequency
5. Rated burden
6. Accuracy class

■ Type number nomenclature

● Current transformer

Up to 6.9kV

CEC1-6M/100

Primary current
5 to 2000A

Series name
B, C, M

Rated voltage
6 : 3.45/6.9kV

Basic type
NCE2, RC15
CEC1, CEA1

● Voltage transformer

Up to 6.6kV

NPE12-3FA/50

Rated burden
50: 50VA
100: 100VA
200: 200VA

Rated primary voltage
3: 3.3kV
6: 6.6kV

Basic type
NPE12
PEC1
PEC2

11.5 to 34.5kV

CE3-10

Rated voltage
10: 11.5kV
20: 23kV
30: 34.5kV

Basic type
CE1, CE4
CE2, CE5
CE3, CE6

11 to 33kV

PE4-10

Rated primary voltage
10: 11kV
15: 13.2kV
20: 22kV
30: 33kV

Basic type
PE4, PE10
PE11, PE12

■ Types and ratings
CT 3.45/6.9kV

Illustration	Max. voltage (kV)	Primary/Secondary current (A)	Type	Withstand current (kA/1s)	Mass (kg)	Technical information
 RC15-6C	6.9 (3.45 common use)	5/5 10/5 15/5 20/5 30/5 40/5 50/5 60/5 75/5 100/5 150/5 200/5 300/5 400/5 500/5 600/5 750/5	RC15-6C/5 RC15-6C/10 RC15-6C/15 RC15-6C/20 RC15-6C/30 RC15-6C/40 RC15-6C/50 RC15-6C/60 RC15-6C/75 RC15-6C/100 RC15-6C/150 RC15-6C/200 RC15-6C/300 RC15-6C/400 RC15-6C/500 RC15-6C/600 RC15-6C/750	0.2 0.4 0.6 0.8 1.2 1.6 2 2.4 3 4 6 8 12 16 20 24 30	4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5 4.5	<ul style="list-style-type: none"> Rated overcurrent constant (n): n > 10 (at burden 10VA) n > 5 (at burden 20VA) Rated burden: 40VA Accuracy class: 1.0 <p>Insulation level Withstand voltage (AC 1min.) Primary: 22kV, Secondary: 2kV Basic-impulse insulation level: 60kV (full wave)</p>
 SH-1045 CEC1-6M	6.9 (3.45 common use)	10/5 15/5 20/5 30/5 40/5 50/5 75/5 100/5 150/5 200/5 300/5 400/5	NCE2-6B/10 NCE2-6B/15 NCE2-6B/20 NCE2-6B/30 NCE2-6B/40 NCE2-6B/50 NCE2-6B/75 NCE2-6B/100 NCE2-6B/150 NCE2-6B/200 NCE2-6B/300 NCE2-6B/400	0.4 0.6 0.8 1.2 1.6 2 3 4 6 8 12 16	7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	<ul style="list-style-type: none"> Rated overcurrent constant (n): n > 10 Rated burden: 40VA Accuracy class: 1.0 <p>Insulation level Withstand voltage (AC 1min.) Primary: 22kV, Secondary: 2kV Basic-impulse insulation level: 60kV (full wave)</p>
 SH-1046 CEA1-6M	6.9 (3.45 common use)	10/5 15/5 20/5 30/5 40/5 50/5 75/5 100/5 150/5 200/5 300/5 400/5 500/5 600/5 750/5 1000/5 1200/5 1500/5 2000/5	CEC1-6M/10 CEC1-6M/15 CEC1-6M/20 CEC1-6M/30 CEC1-6M/40 CEC1-6M/50 CEC1-6M/75 CEC1-6M/100 CEC1-6M/150 CEC1-6M/200 CEA1-6M/300 CEA1-6M/400 CEA1-6M/500 CEA1-6M/600 CEA1-6M/750 CEA1-6M/1000 CEA1-6M/1200 CEA1-6M/1500 CEA1-6M/2000	2.5 3.75 5 7.5 10 12.5 18.75 25 25 25 25 25 25 25 25 25 25 25 25 25 25 25 25	12 12 12 12 12 12 12 12 12 12 10 10 10 10 10 10 10 10 10 10 10 10	<ul style="list-style-type: none"> Rated overcurrent constant (n): n > 10 Rated burden: 25VA Accuracy class: 1.0 Insulation level Withstand voltage (AC 1min.) Primary: 22kV, Secondary: 2kV Basic-impulse insulation level: 60kV (full wave)

H.V. Distribution Equipment

Instrument transformers

■ Types and ratings

VT 3300V – 33000V

Illustration	Primary/Secondary voltage (V)	Rated burden (VA)	Type	Interrupting capacity of fuse	Mass (kg)	Technical information
	3300/110	50	NPE12-3FA/50	40kA ^{*1}	8.5	• Accuracy class: 1.0 • Insulation level NPE12-3FA } BIL 45kV ^{*2} , 16kV AC PEC2-3FA }
	6600/110	50	NPE12-6FA/50	40kA ^{*1}	8.5	
	3300/110	100	NPE12-3FA/100	40kA ^{*1}	8.5	NPE12-6FA } BIL 60kV, 22kV AC PEC2-6FA }
	6600/110	100	NPE12-6FA/100	40kA ^{*1}	8.5	
	3300/110	200	PEC2-3FA/200	40kA ^{*1}	14	PE11-10 } BIL 90kV, 28kV AC PE10-10 }
	6600/110	200	PEC2-6FA/200	40kA ^{*1}	14	
	11000/110	200	PE11-10	40kA ^{*3}	25	PE10-15 } BIL 95kV, 34kV AC PE12-20 }
	11000/110	200 ^{*6}	PE10-10	40kA ^{*3}	38	
	13200/110	200 ^{*6}	PE10-15	31.5kA ^{*4}	38	BIL 125kV, 50kV AC BIL 170kV, 70kV AC
	22000/110	200	PE12-20	40kA ^{*5}	41	
	33000/110	200	PE4-30	—	68	

Note: *1 Type PTFA-6, rated current 2A (provided with VT as standard)

*2 BIL: Basic-impulse insulation level (full wave)

*3 Type JR-10/5 (optional), rated current 5A

*4 Type JR-10N/5 (optional), rated current 5A

*5 Type JR-20/5 (optional), rated current 5A

*6 400VA available

■ Types and ratings
CT 11.5kV – 34.5kV

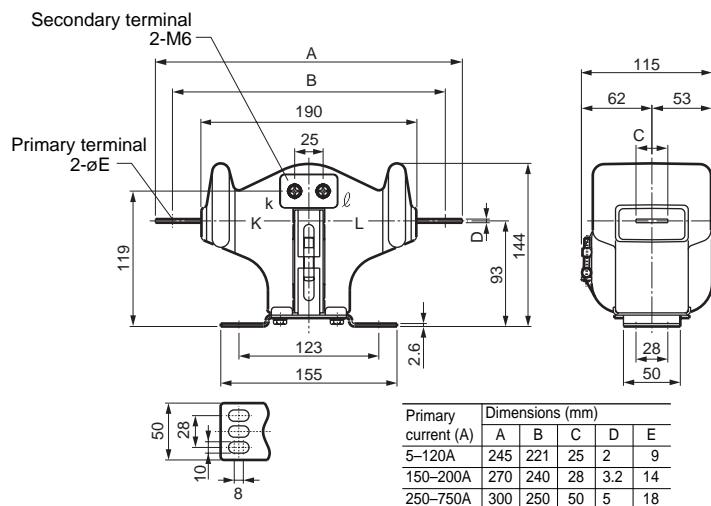
Illustration	Max. voltage (kV)	Primary current (A) Single ratio	Primary current (A) Double ratio	Secondary current (A)	Type	Withstand current (kA/1s)	Mass (kg)	Technical information
 CE3-10 N33-142-12	11.5	50/5	—	5	CE3-10	25	19 to 26	<ul style="list-style-type: none"> • Accuracy class: 1.0 • Rated overcurrent constant (n): n > 10 • Rated burden: 15VA (Primary current 50A) 25VA (Primary current 75A) 40VA (Primary current over 100A) • Insulation level Dielectric strength: 28kV Basic-impulse insulation level: 90kV (full wave)
		75/5	—					
		100/5	200-100					
		150/5	300-150					
		200/5	400-200					
		300/5	600-300					
		400/5	800-400					
		500/5	1000-500					
		600/5	1200-600					
		750/5	—					
 CE2-10 CE2-20 N33-142-12	23	1000/5	—	5	CE5-10	25*	62	<ul style="list-style-type: none"> • Accuracy class: 1.0 • Rated overcurrent constant (n): n > 10 • Rated burden: 60VA • Insulation level: Dielectric strength: 28kV Basic-impulse insulation level: 90kV (full wave)
		1200/5	—					
		1500/5	—		CE2-10	50	41 to 66	
		2000/5	2000-1000					
		3000/5	3000-1500					
		4000/5	4000-2000					
		5000/5	5000-2500		CE6-10	50	41 to 66	
		750/5	—					
		1000/5	—					
		1200/5	—					
 CE1-20 N33-142-12	23	1500/5	—	5	CE1-20	25*	26 to 35	<ul style="list-style-type: none"> • Accuracy class: 1.0 • Rated overcurrent constant (n): n > 10 • Rated burden: 15VA (Primary current 50A) 25VA (Primary current 75A) 40VA (Primary current over 100A) • Insulation level Dielectric strength : 50kV Basic-impulse insulation level: 125kV (full wave)
		2000/5	2000-1000					
		3000/5	3000-1500		CE2-20	50	41 to 66	
		4000/5	4000-2000					
		5000/5	5000-2500		CE6-20	50	41 to 66	
		750/5	—					
		1000/5	—					
		1200/5	—					
 CE4-30 N33-142-12	34.5	1500/5	—	5	CE4-30	25	36 to 50	<ul style="list-style-type: none"> • Accuracy class:1.0 • Rated overcurrent constant (n): n > 10 • Rated burden: 15VA (Primary current 50A) 25VA (Primary current 75A) 40VA (Primary current over 100A) • Insulation level Dielectric level: 70kV Basic-impulse insulation level: 170kV (full wave)
		2000/5	—					
		3000/5	600-300					
		400/5	800-400					
		500/5	1000-500					
		600/5	1200-600					
		750/5	—					
		1000/5	—					
		1200/5	—					

Note: * Withstand current of 25kA/2s type is also available

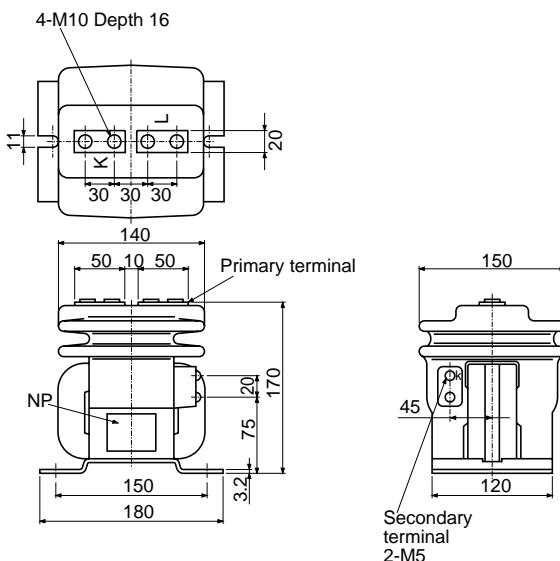
H.V. Distribution Equipment Instrument transformers

■ Dimensions, mm/CT

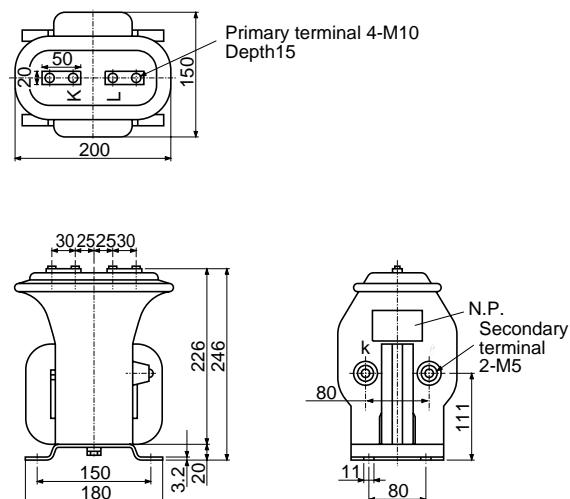
RC15-6C



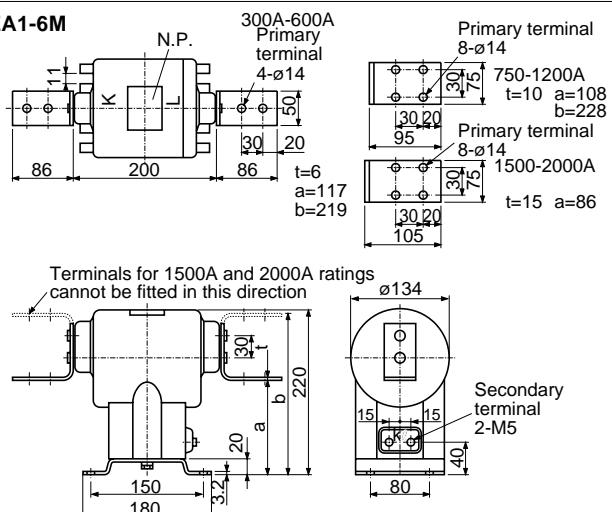
NCE2-6B



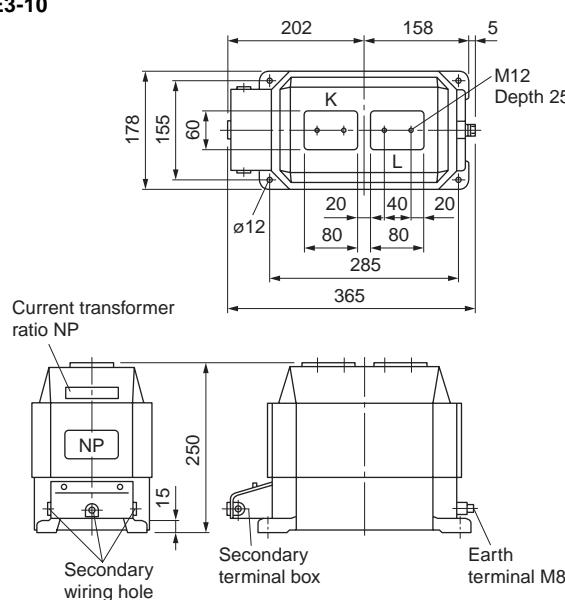
CEC1-6M



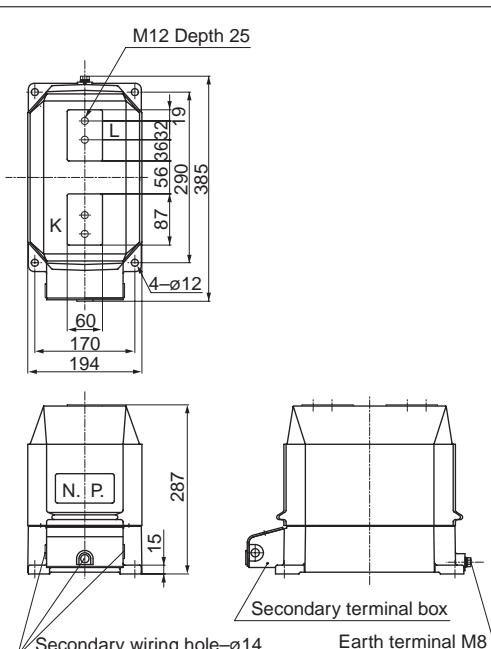
CEA1-6M



CE3-10

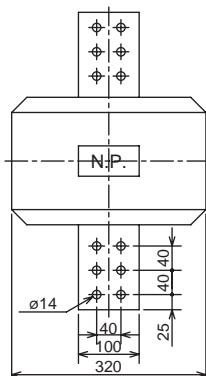


CE1-20



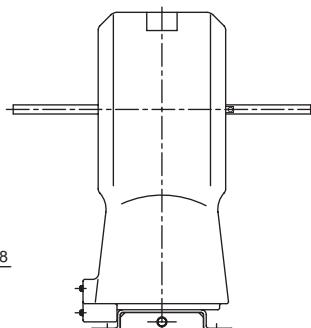
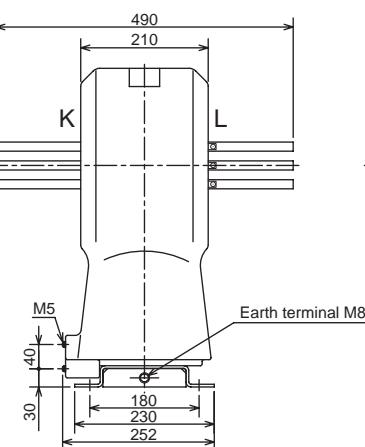
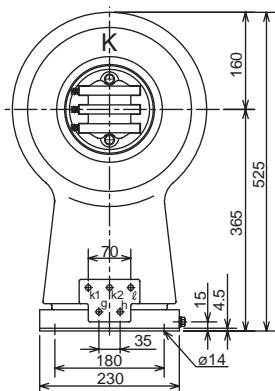
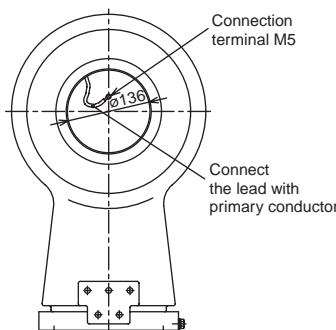
■ Dimensions, mm/CT

CE2-10, CE2-20

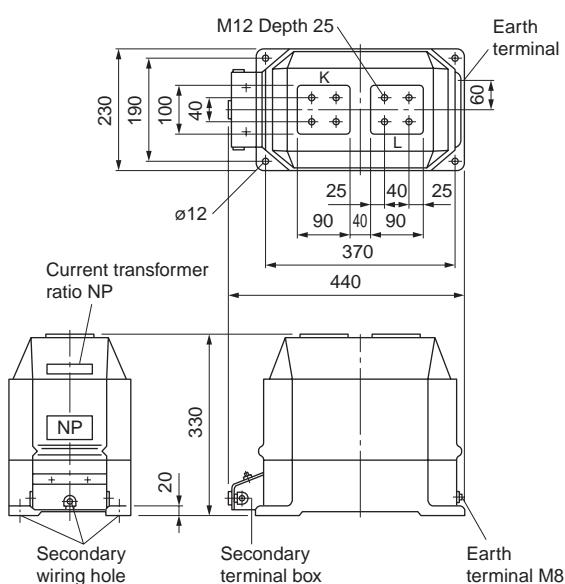


Primary current	Thickness of conductor T	No. of primary conductors
1500A	10	1
2000A, 2000-1000A	15	1
3000A, 3000-1500A	10	3
4000A, 4000-2000A	15	3

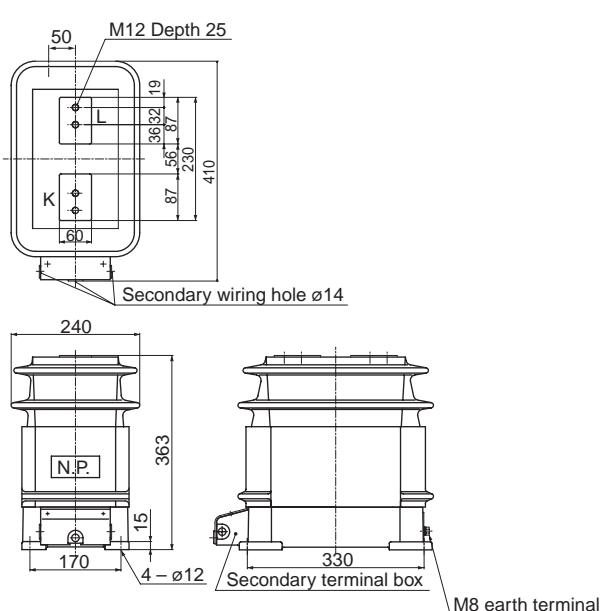
Standard	Terminal symbol		
	Primary	Secondary	Terminal
		Single ratio	Double ratio
IEC BS	P1, P2	S1, S2	S1-S2-S3 1S1-1S2, 2S1-2S2
ANSI	H1, H2	X1, X2	X1-X2-X3 X1-X2, Y1-Y2
JEC	K, L	k, l	k1-k2-l 1k-1l, 2k-2l



CE5-10, CE5-20



CE4-30

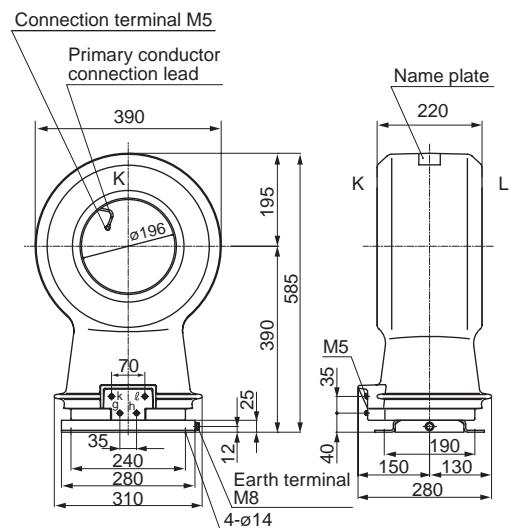


H.V. Distribution Equipment Instrument transformers

■ Dimensions, mm/CT

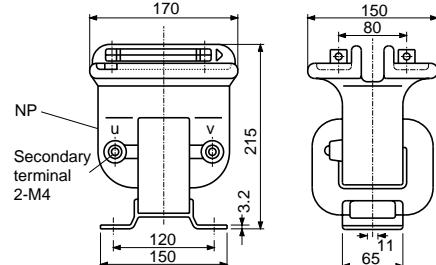
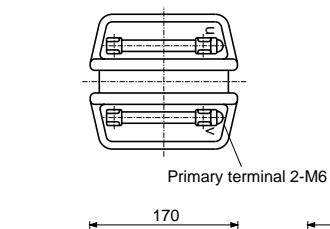
CE6-10

CE6-20

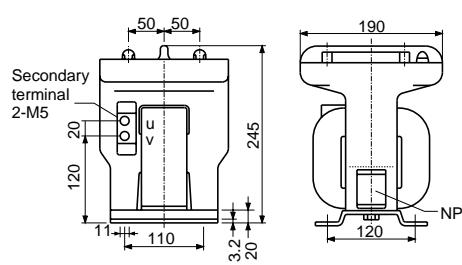
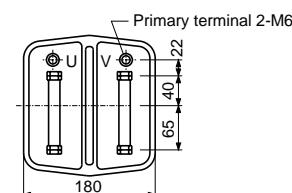


■ Dimensions, mm/VT (with fuse links)

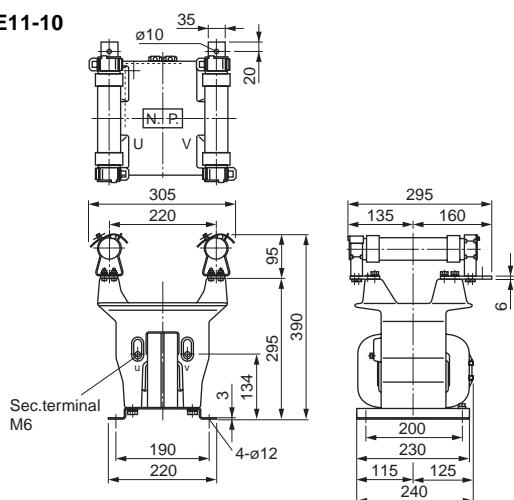
NPE12-3FA
NPE12-6FA



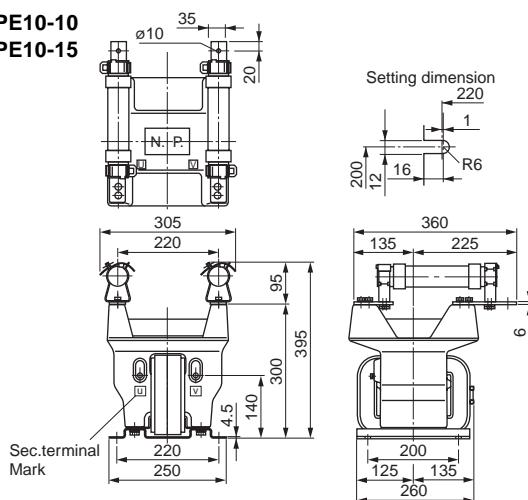
PEC2-3FA
PEC2-6FA



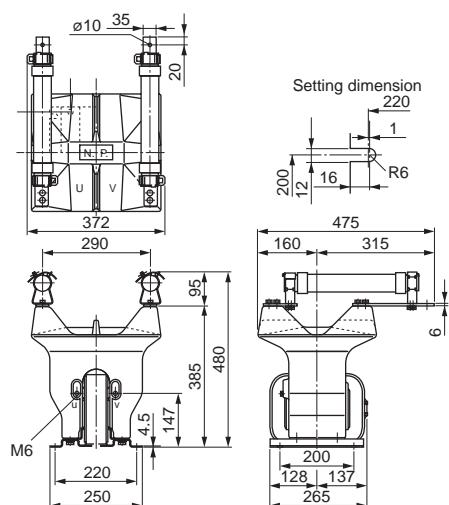
PE11-10



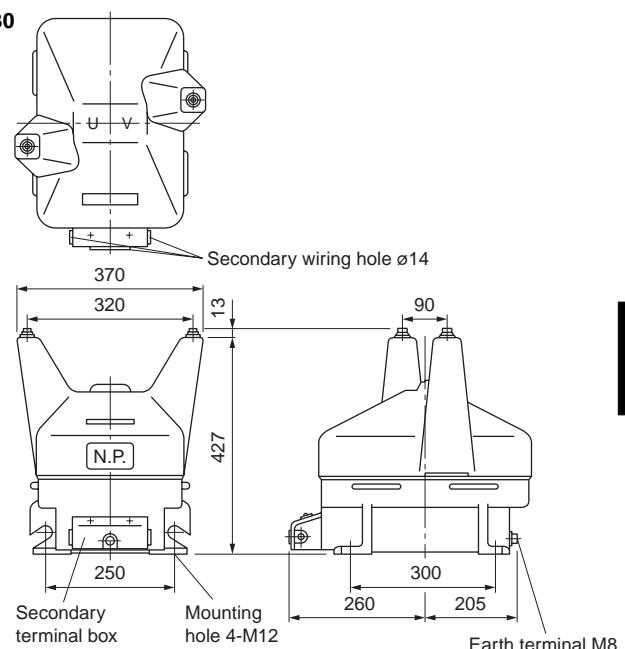
PE10-10
PE10-15



PE12-20



PE4-30



H.V. Distribution Equipment

Instrument transformers

ZCT, EVT and special purpose CT

■ Description

FUJI can supply special purpose CTs, ZCTs (Zero-phase current transformers) and EVTs (Earthing voltage transformers) as well as standard FUJI instrument transformers. Some of the versions are described below.

CED and ZCED

The CED and ZCED are split-construction types. They can be mounted in position without disconnecting the cables.

CED: Epoxy-molded split-toroidal type CT
 ZCED: Epoxy-molded split-toroidal type ZCT

ZCE

ZCE type is toroidal-type ZCTs and molded in epoxy resin.

GVE and GPE

GVE and GPE series are 3-phase earthing voltage transformers.

GVE: Epoxy-molded type (3.3kV, 6.6kV)

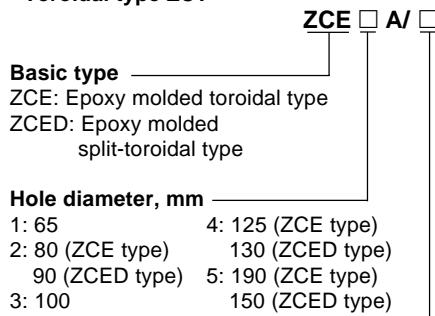
GPE: Epoxy-molded type (11 to 33kV)

Note: All types are for indoor use only.

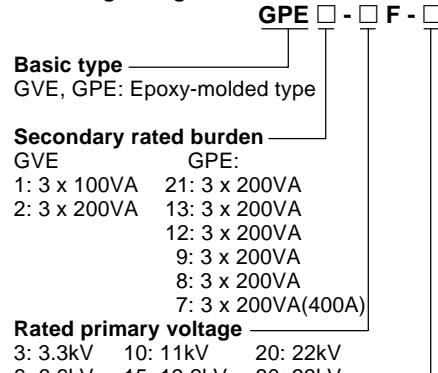


■ Type number nomenclature

• Toroidal type ZCT

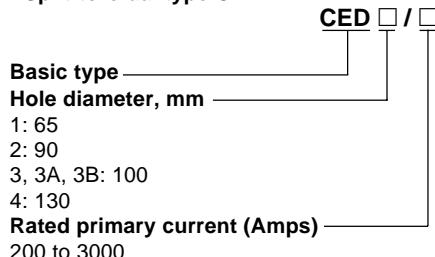


• Earthing voltage transformer EVT



() Available on request

• Split-toroidal type CT



■ Toroidal type ZCT

Description	Hole diameter (mm)	Primary current (A)	Rated zero-phase current (mA)	Burden Primary	Secondary	Rated constant (Ω)	Overcurrent (n_0)	Type
Indoor use Epoxy molded toroidal type	65	0-200	200	1.5		10	$n_0 > 2000$	ZCE1A/200
	80	0-400						ZCE2A/400
	100	0-750						ZCE3A/750
	125	0-1200						ZCE4A/1200
	190	0-3000						ZCE5A/3000
Indoor use Epoxy molded split-toroidal type	65	0-200	200	1.5		10	$n_0 > 2000$	ZCED1/200
	90	0-400						ZCED2/400
	100	0-600						ZCED3/600
	130	0-750						ZCED4/750
	150	0-1500						ZCED5/1500

■ Split-toroidal type CT

Hole diameter (mm)	Primary current (A) Single ratio	Secondary current (A)	Rated burden (VA)	Overcurrent constant (n)	Type	
65	200	5	15	n > 10	CED1/200	
	300		15		CED1/300	
	400		25		CED1/400	
	500		25		CED1/500	
	600		40		CED1/600	
	750		40		CED1/750	
90	200	5	15	n > 10	CED2/200	
	300		25		CED2/300	
	400		40		CED2/400	
	500		40		CED2/500	
	600		40		CED2/600	
	750		40		CED2/750	
100	1000	5	40	n > 20	CED2/1000	
	1200		40		CED2/1200	
	1500		40		CED2/1500	
	300	5	25	n > 10	CED3/300	
	400		40		CED3/400	
	500		40		CED3/500	
130	600		40		CED3/600	
	750	5	40	n > 20	CED3/750	
	1000		40		CED3/1000	
	1200		40		CED3/1200	
	1500		40		CED3/1500	
	2000		40		CED3/2000	
130	3000		40		CED3/3000	
	300	300–150	5	25	n > 20	CED3A/300
	400	400–200	5	40		CED3A/400
	500	—	5	40		CED3A/500
	600	600–300	5	40		CED3A/600
	300	300–150	5	40	n > 20	CED3B/300
130	400	400–200	5	40	n > 10	CED4/400
	500	—	5	40		CED4/500
	600	600–300	5	40		CED4/600
	750	—	5	40	n > 20	CED4/750
	—	800–400	5	40		CED4/800
	1000	1000–500	5	40		CED4/1000
130	1200	1200–600	5	40		CED4/1200
	1500	1500–750	5	40		CED4/1500
	2000	2000–1000	5	40		CED4/2000
	3000	3000–1500	5	40		CED4/3000

H.V. Distribution Equipment Instrument transformers

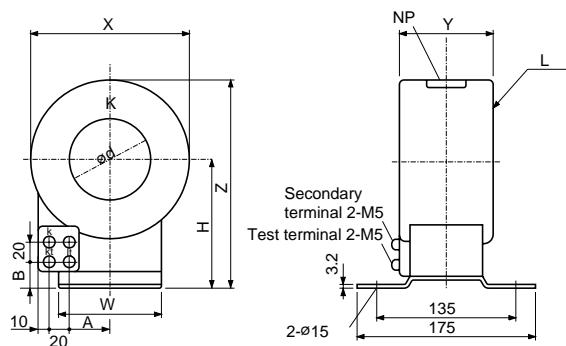
■ Earthing voltage transformer EVT

Rated voltage (V)			Rated burden (VA)		Dielectric strength (kV, 1 minute)		Impulse ^{*1} (kV)	Type	Fuse
Primary	Secondary	Tertiary	Secondary	Tertiary	Primary	Secondary			
3300	110	<u>110</u> 3	3 × 100 3 × 200	3 × 500 3 × 500	2 2	2 2	45 45	GVE1-3FA-110/5G GVE2-3FA-110/5G	PTFA-6 ^{*2}
6600	110	<u>110</u> 3	3 × 100 3 × 200	3 × 500 3 × 500	2 2	2 2	60 60	GVE1-6FA-110/5G GVE2-6FA-110/5G	
11000	110	<u>110</u> 3	3 × 200 3 × 200 3 × 200	3 × 200 3 × 200 3 × 200	2 2 2	2 2 2	90 75 90	GPE9-10 GPE8-10 GPE7-10	JR-10/5 ^{*3} JR-10/5 ^{*3} JR-10/5 ^{*3}
13200	110	<u>110</u> 3	3 × 200	3 × 200	2	2	95	GPE7-15	JR-10N/5 ^{*3}
22000	110	<u>110</u> 3	3 × 200	3 × 200	2	2	125	GPE12-20	JR-20/5 ^{*3}
22000	110	<u>110</u> 3	3 × 200	3 × 200	2	2	150	GPE13-20	JR-20/5 ^{*3}
33000	110	<u>110</u> 3	3 × 200	3 × 200	2	2	170	GPE21-30	—

Note: *1: $1.2 \times 50\mu s$ *2: Provided *3: Optional

■ Dimensions, mm

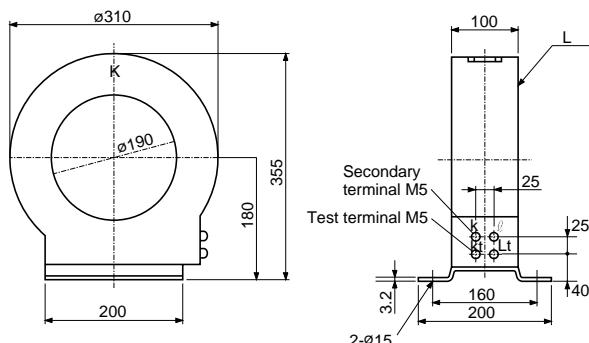
● Toroidal-type ZCT ZCE1A, 2A, 3A, 4A



Type	d	X	Y	Z	H	W	A	B	Mass (kg)
ZCE1A/200	65	140	75	180	110	90	40	25	4.0
ZCE2A/400	80	160	90	210	130	90	40	25	5.6
ZCE3A/750	100	185	105	248	155	120	60	35	8.4
ZCE4A/1200	125	214	120	287	180	120	60	35	12.0

Dimensions for reference only. Please confirm before construction begins.

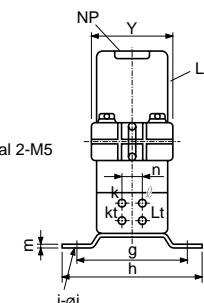
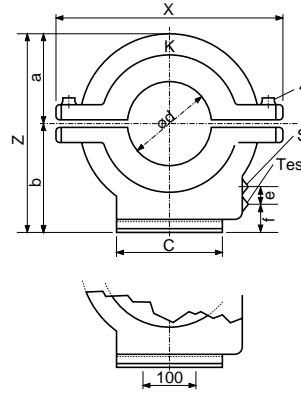
ZCE5A/3000



Mass: 14kg

■ Dimensions, mm

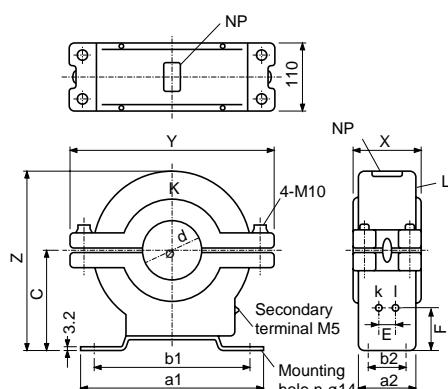
● Split-toroidal type CT/ZCED



Type	X	Y	Z	a	b	c	d	e	f	g	h	i	j	k	m	n	Mass (kg)
ZCED1	260	95	225	100	125	130	65	27	30	135	175	2	14	M10	3.2	27	15
ZCED2	310	110	270	120	150	150	90	27	40	135	175	2	14	M10	4.5	27	20
ZCED3	340	110	295	130	165	150	100	30	40	135	175	2	14	M10	4.5	27	25
ZCED4	380	140	350	155	195	200	130	30	55	200	250	4	18	M10	6	30	30
ZCED5	460	150	405	185	220	200	150	30	55	200	250	4	18	M12	6	30	52

Dimensions for reference only. Please confirm before construction begins.

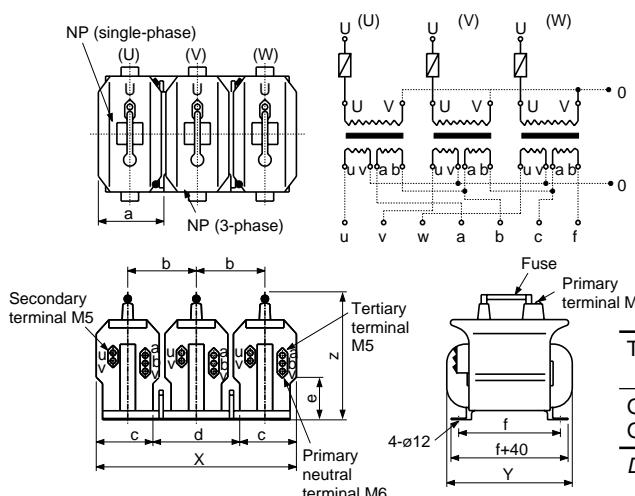
● Split-toroidal type CT/CED



Type	X	Y	Z	d	a ₁	a ₂	b ₁	b ₂	c	E	F	n
CED1	95	260	225	65	260	80	220	—	125	27	57	2
CED2	110	310	285	90	300	90	260	—	165	27	82	2
CED3	110	340	295	100	300	95	260	—	165	27	67	2
CED3A	200	340	295	100	300	190	260	120	165	50	65	4
CED3B	250	340	295	100	300	240	260	120	165	50	65	4
CED4	125	350	305	130	300	110	260	70	165	50	50	4

Dimensions for reference only. Please confirm before construction begins.

● Earth voltage transformer VT/GVE1, GVE2



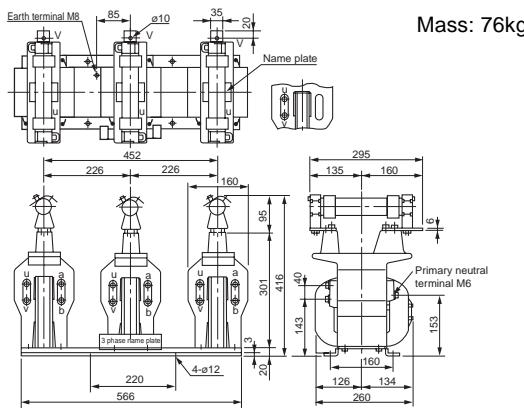
Type	X	Y	Z	a	b	c	d	e	f	Mass (kg)
GVE1	428	265	284	136	146	104	220	90	220	59
GVE2	476	305	300	152	162	128	220	100	220	82

Dimensions for reference only. Please confirm before construction begins.

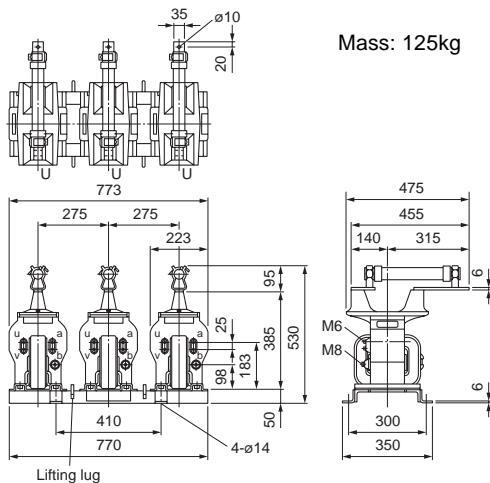
H.V. Distribution Equipment Instrument transformers

■ Dimensions, mm

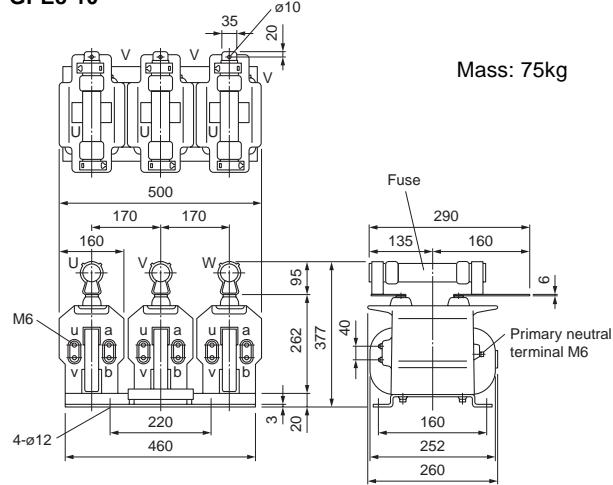
- Earthing voltage transformer VT (with fuse links)
GPE9-10



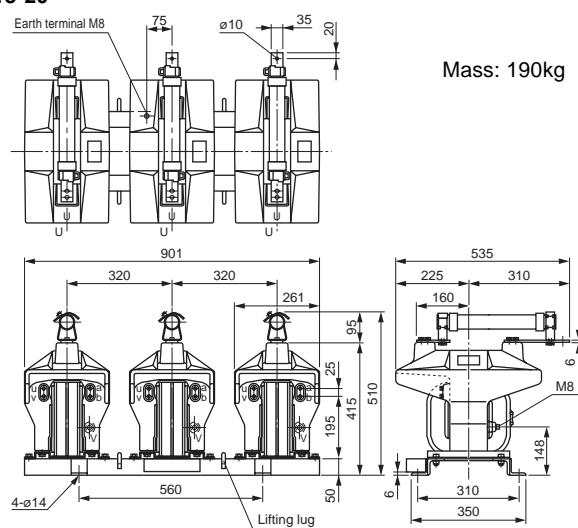
GPE12-20



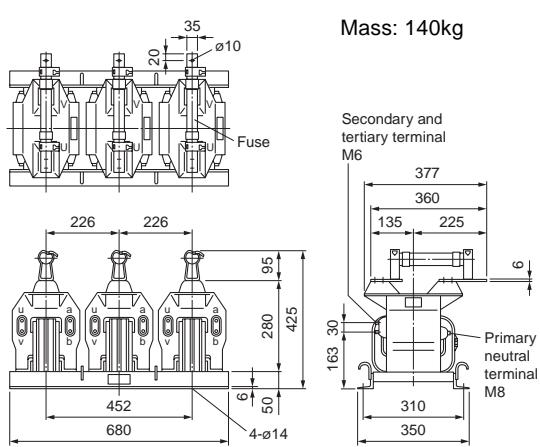
GPE8-10



GPE13-20



GPE7-10, GPE7-15



GPE21-30

