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							

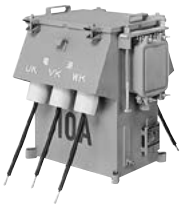
3. Earthed Voltage Transformers (EVT)

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)

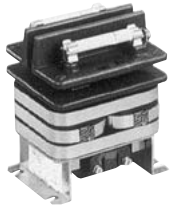
Circuit voltage	Location of use	Use		Type		Window diameter (mm)	Rated primary current (A)	Applicable standards	Page
≤600V	Indoor	For detection of leakage current (combined with Mitsubishi Electric leakage current measuring/ monitoring device)	Separated	CZ Series	CZ-22S	22	–	EN61010 -2-032	85
					CZ-30S	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

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.

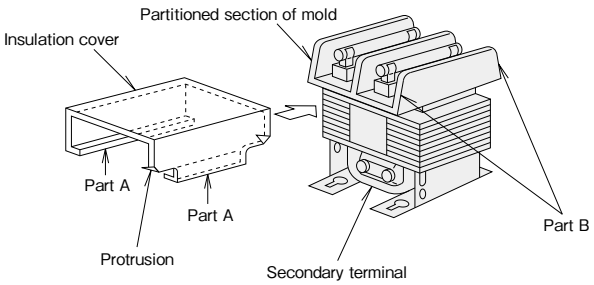
*2 If the limiting load is 200VA, the error is less than or equal to minus 5%.

*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 $\frac{480}{\sqrt{3}}$	

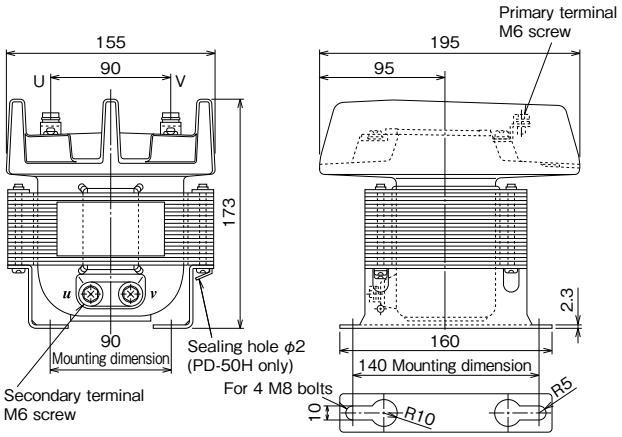
Notes

*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.)

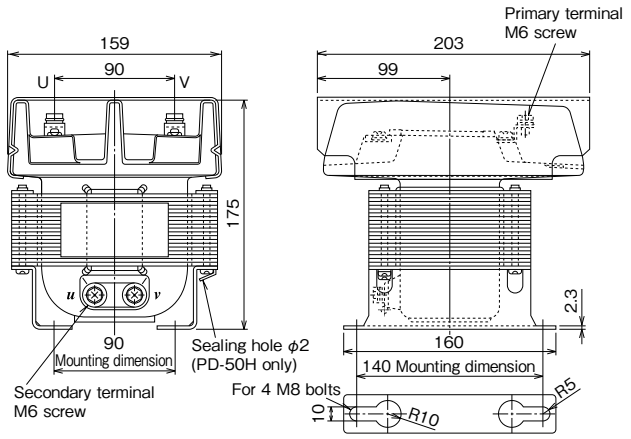
*2 For the withstand voltage values of special transformation ratio, refer to Guidelines for Selecting Voltage Transformers on page 12.

■External Dimensions

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

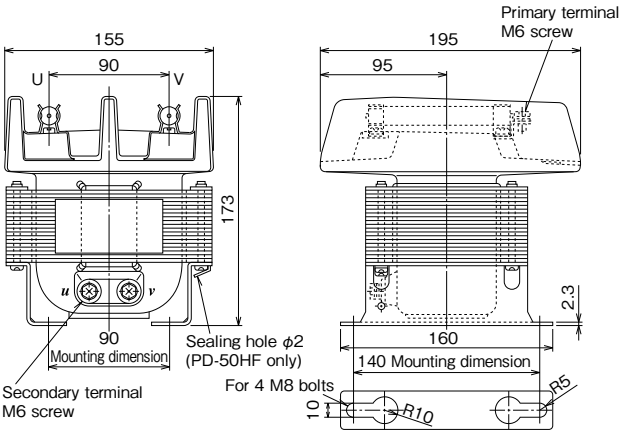


Insulation cover mounted

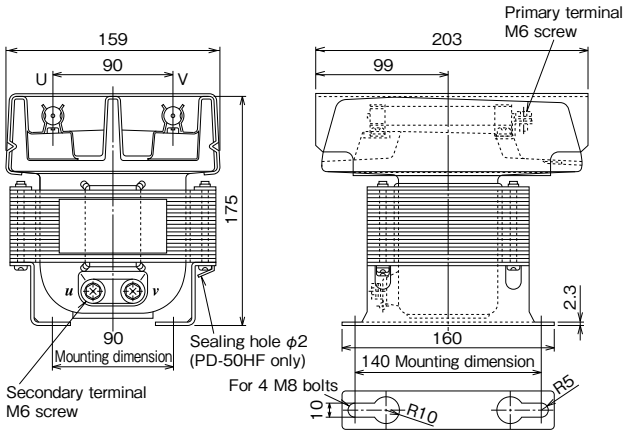


Insulation cover: IS-C (for PD)

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



Insulation cover mounted



Insulation cover: IS-C (for PD)

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.