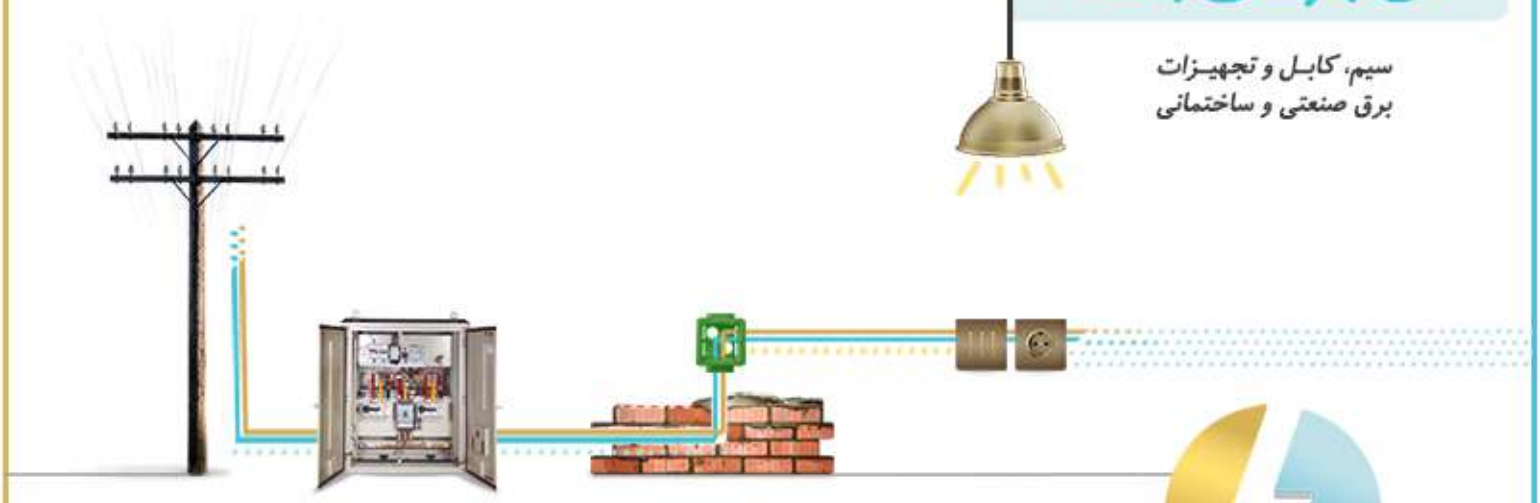
برق و صنعت سروین

کل جریان با ما

سیم، کابل و تجهیزات
برق صنعتی و ساختمانی



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MOLDED CASE CIRCUIT BREAKERS
EARTH LEAKAGE CIRCUIT BREAKERS
MINIATURE CIRCUIT BREAKERS
CONTACTORS AND OVERLOAD RELAYS
AIR CIRCUIT BREAKERS
VACUUM CIRCUIT BREAKERS
MONITORING AND PROTECTION RELAYS

LV & MV Circuit Breakers and Contactors

HYUNDAI ELECTRIC

Essential for Today, Potential for Tomorrow

Hyundai Electric solely pursues the growth of our customers' business. From power generation to power distribution, we focus on developing and commercializing products and solutions aimed at increasing the efficiency of energy equipment as well as at proactively monitoring and controlling assets in an integrated manner to improve our customers' productivity and management efficiency. We are well aware that our efforts add to the driving force behind our customers' growth and contribute to the creation and maintenance of a more dynamic world. We focus on achieving innovation and strive to evolve continuously to shape a better tomorrow based on today's technological advancement

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Solution

INTEGRICT

Energy Solution

Energy solution business refers to the business of designing, procuring and establishing a system that enables the efficient use of power energy through integrated management of the production, consumption, sales and operation of power energy.

Asset Management Solution

Asset management solution is a business that maximizes the overall business efficiency by systematically managing the performance, risk, maintenance cost and others as well as by providing an asset management solution suitable to the customer's circumstance depending on the product lifecycle (PLC) of various products.

Marine

Electrical Marine Equipment

- Production of high quality marine devices satisfying the regulations and standards of key marine associations (LRS, ABS, DNV, GL, BV, NK etc.) and world's renowned institutes
- High quality safety secured through the latest equipment and stringent quality control system
- Realization of optimal high efficiency by converging SWGR, Generator, Motor, Telecom, Automation and others

Marine Switchgear | **Marine Motor**

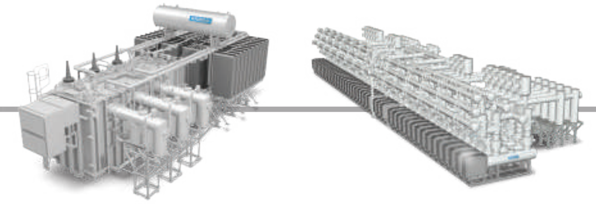
Generation

Power Plants

Utility

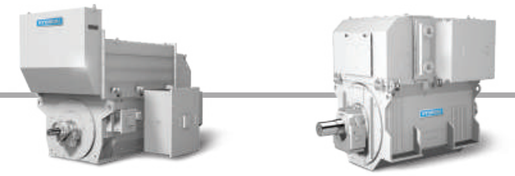
Primary Substation

- Supplied more than 1.2 million MVA in total to 70 countries around the world for the past 40 over years since 1978
- Satisfies the various demands of customers through the acquisition of quality certifications from international accredited institute
- Participates in the world's key technical committee such as CIGRE and others, pioneering the establishment of technology standard related to power network



Power Transformer
· up to 800 kV, 1,500 MVA

Gas Insulated Switchgear
· up to 800 kV



Generators

Generators
· 2-3 pole

Transmission

Secondary Substation

- Can be installed in spaces smaller than the open type of substation by using SF6 gas with outstanding insulation and arc extinguishing characteristics
- Secures advanced reliability by producing products that are resistant to external environment and climate effects through the sealing at the charge part
- Extensive project experiences around the world
- Reduces installation period and cost due to simple installation and transportation, convenient maintenance
- Design considering the safety of the workers as priority

Gas Insulated Switchgear
· GIS for 245 ~ 550 kV

Power Transformer
· 800 kV, 1,500 MVA

Gas Insulated Switchgear
· GIS for 170 kV

- Enhanced reliability and secured safety with production of products based on the world's best equipment and stringent quality system
- Realized high efficiency by selecting slot based on FEM
- Realized small and lightweight with optimal design based on FEM analysis method
- Satisfies the quality standards of international accredited institutes (IEC, IEEE, CSA, NEMA, API etc.)

Synchronous Generator
· 100 ~ 50,000 kVA
· 220 ~ 22,000 V, 50/60 Hz
· over 4 pole

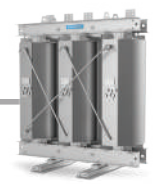
Wind Turbine Generator
· up to 5 MW

H+C Series Motor
· 150-1,300 HP
· 2,000 ~ 7,200 V, 50/60 Hz
· 2-8 pole

Distribution

Cubicle GIS
· up to 38 kV

- Produces high quality products using angle-less type
- Multi-functional digital protection relay (HiMAP) applied
- High reliability secured, provides various operation information such as protection, measurement and control
- Firm external box, size and compact, making it safe
- Maintains high quality through stringent quality control system and continuous research and development



Cast Resin Transformer
· up to 36 kV, 20 MVA

Metal Clad Switchgear
· up to 38 kV
· IEC, ANSI

Low Voltage Switchgear & Motor Control Center
· H8PU : 660 V, 3,000 A, 80 kA
· H5600 : 660 V, 3,000 A, 100 kA
· HiMCC : 1,000 V, 5,000 A, 100 kA

Vacuum Circuit Breaker
· IEC, ANSI, UL
· up to 36/38 kV, 50 kA, 4,000 A

Air Circuit Breaker
· up to 150 kA, 6,300 A

Molded Case Circuit Breaker
· AC : up to 150 kA, 1,600 A
· DC : up to 100 kA, 800 A

Earth Leakage Circuit Breaker
· up to 85 kA, 800 A, 1,000 mA

Miniature Circuit Breaker
· up to 10 kA, 125 A

Contactor and Overload Relay
· up to 800 A

Vacuum Contactor
· up to 12 kV, 400 A

Surge Protection Device
· up to 200 kA
· AC, DC

Residual Current Circuit Breaker
· MCB : up to 10 kA, 125 A
· RCCB : up to 100 A, 500 mA

Installation Contactor
· up to 63 A

Manual Motor Starter
· up to 100 kA, 80 A

Fuse
· up to 1,250 A

- Wide range of breaking capacities and frames to meet all customer requirements
- Optimized design providing high performance
- Compact and reliable products type-tested by DEKRA and KERI

Power System Monitoring and Protection Relay
· HGMAP Type
· HGCAM Type

Digital Motor Protection Relay
· up to 60 A

High Voltage AC Drive
· 220 ~ 440 V, ~ 132 kW

- Realizes powerful control performance through Sensor-less Vector Control and Auto Tuning
- High speed response due to Digital Signal Processor and High Speed My Com
- Compact design, enabling application in various environments
- Invertor manufactured using accumulated technology and know-how (outstanding technology of developing inverter for high-speed rail)

Medium & High Voltage Induction Motor
· 150-30,000 HP
· 2-30 pole

Inverter Shield Motor
· 1-250 HP
· 2-6 pole

NEMA Premium Efficiency Motor
· 1-500 HP
· 2-6 pole

Explosion-Proof (Class 1 Div.1) Motor
· 1-500 HP
· 2-6 pole
· Hazardous Locations

Molded Case Circuit Breaker

HGM Type

Thermal Magnetic Type

Rated Insulation Voltage [Ui]	1,000 V	**Protection Function**	Overload, instantaneous, short-circuit protection	**Utilization Category**	A
Rated Operational Voltage [Ue]	690 V			**Pollution Degree**	3
Rated Impulse Withstand Voltage [Uimp]	8 kV	**Suitablilty for Isolation**	Yes	**Reference Standard**	IEC 60947-2

Model Name				**HGM30**		**HGM50**				**HGM60**				**HGM100**			
Number of Poles			**(P)**	2, 3, 4 [1]		2, 3, 4 [1]				2, 3, 4 [1]				2, 3, 4 [1]			
Rated Current, at 40 °C			**(A)**	16, 20, 25, 32		16, 20, 25, 32, 40, 50				16, 20, 25, 32, 40, 50, 63				16, 20, 25, 32, 40, 50, 63, 75, 80, 100			
Rated Frequency			**(Hz)**	50/60		50/60				50/60				50/60			
Rated Short-Circuit Breaking Capacity [Icu] (kA rms)	**Short-Circuit Breaking Category Code**			E	S	E	S	H	L	E	S	H	L	E	S	H	L
	AC 660/690 V			2.5	5	2.5	5	8	10	2.5	5	7.5	8	2.5	5	7.5	8
	AC 480/500 V			7.5	10	7.5	10	26	35	7.5	10	14	26	7.5	10	14	26
	AC 440/460 V			16	20	16	20	38	55	16	20	26	30	16	20	26	30
	AC 415 V			16	20	16	20	38	55	16	20	26	30	16	20	26	30
	AC 380 V			18	22	18	22	42	55	18	22	30	31	18	22	30	31
	AC 220/240 V			35	50	35	50	85	100	35	50	50	50	35	50	50	50
	DC 250 V (2P)			5	10	5	10	20	30	5	10	15	15	5	10	15	15
Service Breaking Capacity [Ics = % Icu]				100	100	100	100	100	100	100	100	75	50	100	100	75	50
Endurance [times] (Durability)	**Mechanical**			30,000		30,000				30,000				30,000			
	Electrical (at 460 V)			10,000		10,000				10,000				10,000			
Trip Device	**Thermal Magnetic**	**Long Time [LT]**	**Fixed**	(1.0)×In		(1.0)×In				(1.0)×In				(1.0)×In			
			Adjustable	(0.8-0.9-1.0)×In		(0.8-0.9-1.0)×In				(0.8-0.9-1.0)×In				(0.8-0.9-1.0)×In			
		Instantaneous [INST]		400 A		16 ~ 32 A : 400 A, 40 ~ 50 A : 10×In				16 ~ 32 A : 400 A, 40 ~ 63 A : 10×In				16 ~ 32 A : 400 A, 40 ~ 100 A : 10×In			
Dimension (mm)		**a (2/3/4P)**		50/75/100		50/75/100		60/90/120		50/75/100				50/75/100			
		b		130		130		155		130				130			
		c		68		68		68		68				68			

※ 1) 4 Pole Arrangement : Basic specification of R-S-T-N (N-R-S-T is optional.)
2) As for 2P products, only the neutral pole in the 3P product has been eliminated so the dimension is equivalent to the 3P product.
3) As for adjustable type, applicable to above 300 A.

	HGM125				HGM160				HGM250				HGM400				HGM630				HGM800		
	2, 3, 4 [1]				2 [2], 3, 4 [1]				2 [2], 3, 4 [1]				2 [2], 3, 4 [1]				2 [2], 3, 4 [1]				2 [2], 3, 4 [1]		
	16, 20, 25, 32, 40, 50, 63, 75, 80, 100, 125				100, 125, 150, 160				100, 125, 150, 160, 175, 200, 225, 250				250, 300, 350, 400				500, 630				700, 800		
	50/60				50/60				50/60				50/60				50/60				50/60		
E	S	H	L	E	S	H	L	E	S	H	L	E	S	H	L	E	S	H	L	S	H	L
5	7.5	8	10	7.5	8	8	10	7.5	8	8	10	5	8	10	14	5	8	10	14	8	10	14
10	14	26	35	14	20	26	35	14	20	26	35	18	35	50	65	25	45	50	65	45	50	65
20	26	38	55	20	26	38	55	20	26	38	55	38	50	70	85	38	50	70	85	50	70	85
20	26	38	55	20	26	38	55	20	26	38	55	45	65	85	100	45	65	85	100	65	85	100
22	30	42	55	22	30	42	55	22	30	42	55	45	65	85	100	45	65	85	100	65	85	100
50	65	85	100	50	65	85	100	50	65	85	100	50	75	100	125	50	75	100	125	75	100	125
10	15	20	30	10	15	20	30	10	15	20	30	20	25	40	40	20	25	40	40	25	40	40
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	30,000				25,000				25,000				4,000				2,500				2,500		
	10,000				10,000				10,000				1,000				500				500		
	(1.0)×In				(1.0)×In				(1.0)×In				(1.0)×In				(1.0)×In				(1.0)×In		
	(0.8-0.9-1.0)×In				(0.8-0.9-1.0)×In				(0.8-0.9-1.0)×In				(0.63-0.8-1.0)×In [3]				(0.63-0.8-1.0)×In				(0.63-0.8-1.0)×In		
	16 ~ 32 A : 400 A, 40 ~ 125 A : 10×In				10×In				10×In				10×In				10×In				10×In		
	60/90/120				105/105/140				105/105/140				140/140/184				210/210/280				210/210/280		
	155				165				165				257				280				280		
	68				68				68				110				110				110		

Molded Case Circuit Breaker

UCB Type

Electronic Type

Rated Insulation Voltage [Ui]	750 V	**Protection Function**	Overload, short-circuit and instantaneous protection	**Utilization Category**	A
Rated Operational Voltage [Ue]	690 V			**Pollution Degree**	3
Rated Impulse Withstand Voltage [Uimp]	8 kV	**Suitablilty for Isolation**	Yes	**Reference Standard**	IEC 60947-2

Model Name			**UCB1000**		**UCB1250**		**UCB1600**
Number of Poles		**(P)**	3, 4		3, 4		3
Rated Frequency		**(Hz)**	50/60		50/60		50/60
Rated Short-Circuit Breaking Capacity [Icu] (kA rms)		**Short-Circuit Breaking Category Code**	S	L	S	L	S
		AC 600/660 V	40	60	40	60	25
		AC 480/500 V	75	100	75	100	35
		AC 440/460 V	75	100	75	100	45
		AC 380/415 V	100	130	100	130	65
		AC 220/240 V	100	150	100	150	100
		DC 250 V	-	-	-	-	-
Service Breaking Capacity [Ics = % Icu] (kA rms)			50	50	50	50	50
Endurance [times] (Durability)		**Mechanical**	10,000		10,000		10,000
		In @ 440 V	3,000		3,000		3,000
Trip Device	**Electronic**	**Rated Current, at 40 °C (A)**	-		-		-
		Long Time [LTD]	(0.63-0.8-1)×(0.8-0.85-0.9-0.95-1)×In		(0.63-0.8-1)×(0.8-0.85-0.9-0.95-1)×In		(0.4-0.5-0.6-0.7-0.8-0.9-0.95-1)×In
		Short Time [STD]	(2-4-6-8-10)×Ir		(2-4-6-8-10)×Ir		-
		Instantaneous [INST]	(3-6-8-10-11)×In		(3-6-8-10-11)×In		(2-3-4-5-6-7-8-10)×In
		Ground Fault Protection [GFT]	(0.2-0.3-0.4)×In		(0.2-0.3-0.4)×In		-
		Pre Trip Alarm [PTA]	0.9×Ir		0.9×Ir		-
		I2T Lamp	●		●		-
		Pick-up LED	●		●		●
Dimensions (mm)		**a (3/4P)**	210/280	210/280	210/280	210/280	210
		b	370	370	370	370	371
		c	110	200	110	200	151

HGM Type

Motor Protection Type

Rated Insulation Voltage [Ui]	1,000 V	**Protection Function**	Instantaneous, short-circuit protection	**Utilization Category**	A
Rated Operational Voltage [Ue]	690 V			**Pollution Degree**	3
Rated Impulse Withstand Voltage [Uimp]	8 kV	**Suitablilty for Isolation**	Yes	**Reference Standard**	IEC 60947-2

Model Name			**HGM50**				**HGM60**				**HGM100**				**HGM125**			
Number of Poles	**(P)**		3				3				3				3			
Rated Current, at 40 °C	**(A)**		40, 50				40, 50, 63				40, 50, 63, 75, 80, 100				40, 50, 63, 75, 80, 100, 125			
Rated Frequency	**(Hz)**		50/60				50/60				50/60				50/60			
Rated Short-Circuit Breaking Capacity [Icu] (kA rms)	**Short-Circuit Breaking Category Code**		E	S	H	L	E	S	H	L	E	S	H	L	E	S	H	L
	AC 660/690 V		2.5	5	8	10	2.5	5	7.5	8	2.5	5	7.5	8	5	7.5	8	10
	AC 480/500 V		7.5	10	26	35	7.5	10	14	26	7.5	10	14	26	10	14	26	35
	AC 440/460 V		16	20	38	55	16	20	26	30	16	20	26	30	20	26	38	55
	AC 415 V		16	20	38	55	16	20	26	30	16	20	26	30	20	26	38	55
	AC 380 V		18	22	42	55	18	22	30	31	18	22	30	31	22	30	42	55
	AC 220/240 V		35	50	85	100	35	50	50	50	35	50	50	50	50	65	85	100
	DC 250 V (2P)		5	10	20	30	5	10	15	15	5	10	15	15	10	15	20	30
Service Breaking Capacity [Ics = % Icu]			100	100	100	100	100	100	75	50	100	100	75	50	100	100	100	100
Endurance [times] (Durability)	**Mechanical**		30,000				30,000				30,000				30,000			
	Electrical (at 460 V)		10,000				10,000				10,000				10,000			
Trip Device	**Magnetic**	**Instantaneous [INST]**	10×In				10×In				10×In				10×In			

Model Name			**HGM160**				**HGM250**				**HGM400**				**HGM630**				**HGM800**		
Number of Poles	**(P)**		3				3				3				3				3		
Rated Current, at 40 °C	**(A)**		100, 125, 150, 160				100, 125, 150, 160, 175, 200, 225, 250				250, 300, 350, 400				500, 630				700, 800		
Rated Frequency	**(Hz)**		50/60				50/60				50/60				50/60				50/60		
Rated Short-Circuit Breaking Capacity [Icu] (kA rms)	**Short-Circuit Breaking Category Code**		E	S	H	L	E	S	H	L	E	S	H	L	E	S	H	L	S	H	L
	AC 660/690 V		7.5	8	8	10	7.5	8	8	10	5	8	10	14	5	8	10	14	8	10	14
	AC 480/500 V		14	20	26	35	14	20	26	35	18	35	50	65	25	45	50	65	45	50	65
	AC 440/460 V		20	26	38	55	20	26	38	55	38	50	70	85	38	50	70	85	50	70	85
	AC 415 V		20	26	38	55	20	26	38	55	45	65	85	100	45	65	85	100	65	85	100
	AC 380 V		22	30	42	55	22	30	42	55	45	65	85	100	45	65	85	100	65	85	100
	AC 220/240 V		50	65	85	100	50	65	85	100	50	75	100	125	50	75	100	125	75	100	125
	DC 250 V (2P)		10	15	20	30	10	15	20	30	20	25	40	40	20	25	40	40	25	40	40
Service Breaking Capacity [Ics = % Icu]			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Endurance [times] (Durability)	**Mechanical**		25,000				25,000				4,000				2,500				2,500		
	Electrical (at 460 V)		10,000				10,000				1,000				500				500		
Trip Device	**Magnetic**	**Instantaneous [INST]**	10×In				10×In				10×In				10×In				10×In		

Molded Case Circuit Breaker

HGM Type

ZCT Embedded Type

Rated Insulation Voltage [Ui]	1,000 V	**Protection Function**	Overload, instantaneous, short-circuit protection	**Utilization Category**	A
Rated Operational Voltage [Ue]	690 V			**Pollution Degree**	3
Rated Impulse Withstand Voltage [Uimp]	8 kV	**Suitablilty for Isolation**	Yes	**Reference Standard**	IEC 60947-2

Model Name			**HGM30**		**HGM50**				**HGM60**				**HGM100**				**HGM125**			
Number of Poles	**(P)**		2 [1], 3, 4 [2]		2 [1], 3, 4 [2]				2 [1], 3, 4 [2]				2 [1], 3, 4 [2]				2 [1], 3, 4 [2]			
Rated Current, at 40 °C	**(A)**		16, 20, 25, 32		16, 20, 25, 32, 40, 50				16, 20, 25, 32, 40, 50, 63				16, 20, 25, 32, 40, 50, 63, 75, 80, 100				16, 20, 25, 32, 40, 50, 63, 75, 80, 100, 125			
Rated Frequency	**(Hz)**		50/60		50/60				50/60				50/60				50/60			
Rated Short-Circuit Breaking Capacity [Icu] (kA rms)	**Short-Circuit Breaking Category Code**		E	S	E	S	H	L	E	S	H	L	E	S	H	L	E	S	H	L
	AC 660/690 V		2.5	5	2.5	5	8	10	2.5	5	7.5	8	2.5	5	7.5	8	5	7.5	8	10
	AC 480/500 V		7.5	10	7.5	10	26	35	7.5	10	14	26	7.5	10	14	26	10	14	26	35
	AC 440/460 V		16	20	16	20	38	55	16	20	26	30	16	20	26	30	20	26	38	55
	AC 415 V		16	20	16	20	38	55	16	20	26	30	16	20	26	30	20	26	38	55
	AC 380 V		18	22	18	22	42	55	18	22	30	31	18	22	30	31	22	30	42	55
	AC 220/240 V		35	50	35	50	85	100	35	50	50	50	35	50	50	50	50	65	85	100
Service Breaking Capacity [Ics = % Icu]			100	100	100	100	100	100	100	100	75	50	100	100	75	50	100	100	100	100
Endurance [times] (Durability)	**Mechanical**		30,000		30,000				30,000				30,000				30,000			
	Electrical (at 460 V)		10,000		10,000				10,000				10,000				10,000			
ZCT Output Characteristics			200 mA/100 mV		200 mA/100 mV				200 mA/100 mV				200 mA/100 mV				200 mA/100 mV			
Trip Device	**Thermal Magnetic**	**Long Time [LT]**	(1.0)×In		(1.0)×In				(1.0)×In				(1.0)×In				(1.0)×In			
		Instantaneous [INST]	400 A		16 ~ 32 A : 400 A, 40 ~ 50 A : 10×In				16 ~ 32 A : 400 A, 40 ~ 63 A : 10×In				16 ~ 32 A : 400 A, 40 ~ 100 A : 10×In				16 ~ 32 A : 400 A, 40 ~ 125 A : 10×In			

Model Name			**HGM160**				**HGM250**				**HGM400**				**HGM630**				**HGM800**		
Number of Poles	**(P)**		2 [1], 3, 4 [2]				2 [1], 3, 4 [2]				2 [1], 3, 4 [2]				2 [1], 3				2 [1], 3		
Rated Current, at 40 °C	**(A)**		100, 125, 150, 160				100, 125, 150, 160, 175, 200, 225, 250				250, 300, 350, 400				500, 630				700, 800		
Rated Frequency	**(Hz)**		50/60				50/60				50/60				50/60				50/60		
Rated Short-Circuit Breaking Capacity [Icu] (kA rms)	**Short-Circuit Breaking Category Code**		E	S	H	L	E	S	H	L	E	S	H	L	E	S	H	L	S	H	L
	AC 660/690 V		7.5	8	8	10	7.5	8	8	10	5	8	10	14	5	8	10	14	8	10	14
	AC 480/500 V		14	20	26	35	14	20	26	35	18	35	50	65	25	45	50	65	45	50	65
	AC 440/460 V		20	26	38	55	20	26	38	55	38	50	70	85	38	50	70	85	50	70	85
	AC 415 V		20	26	38	55	20	26	38	55	45	65	85	100	45	65	85	100	65	85	100
	AC 380 V		22	30	42	55	22	30	42	55	45	65	85	100	45	65	85	100	65	85	100
	AC 220/240 V		50	65	85	100	50	65	85	100	50	75	100	125	50	75	100	125	75	100	125
Service Breaking Capacity [Ics = % Icu]			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Endurance [times] (Durability)	**Mechanical**		25,000				25,000				4,000				2,500				2,500		
	Electrical (at 460 V)		10,000				10,000				1,000				500				500		
ZCT Output Characteristics			200 mA/100 mV				200 mA/100 mV				200 mA/100 mV				200 mA/100 mV				200 mA/100 mV		
Trip Device	**Thermal Magnetic**	**Long Time [LT]**	(1.0)×In				(1.0)×In				(1.0)×In				(1.0)×In				(1.0)×In		
		Instantaneous [INST]	10×In				10×In				10×In				10×In				10×In		

※ 1) As for 2P products, only the neutral pole in the 3P product has been eliminated so the dimension is equivalent to the 3P product.
2) 4 Pole Arrangement : Basic specification of R-S-T-N

Switch Disconnector

HGM Type

Switch Disconnector

Rated Insulation Voltage [Ui]	1,000 V	**Suitablilty for Isolation**	Yes	**Pollution Degree**	3
Rated Operational Voltage [Ue]	690 V	**Utilization Category**	AC 22 A/AC 23 A DC 22 A/DC 23 A	**Reference Standard**	IEC 60947-3
Rated Impulse Withstand Voltage [Uimp]	8 kV				

Model Name			**HGM50NA**	**HGM100NA**	**HGM125NA**	**HGM160NA**
Number of Poles		**(P)**	3, 4 [1)]	3, 4 [1)]	3, 4 [1)]	3, 4 [1)]
Conventional Free Air Thermal Current, Ith at 60 °C		**(A)**	50	100	125	160
Rated Operational Current [Ie]	**AC 440/480 V (50/60 Hz)**		50	100	125	160
	DC 250 V (1 Pole Connection)		50	100	125	160
	DC 250 V (2 Pole Connection)		50	100	125	160
Rated Short Circuit Making Current [Icm] (kA Peak @ AC 460)			0.8	1.7	2.1	2.7
Rated Short Time Withstand Current [Icw] (kA rms)			1	1	1	2
Endurance [times] (Durability)	**Mechanical**		30,000	30,000	30,000	25,000
	In @ 440 V		10,000	10,000	10,000	10,000

Model Name			**HGM250NA**	**HGM400NA**	**HGM630NA**	**HGM800NA**
Number of Poles		**(P)**	3, 4 [1)]	3, 4 [1)]	3, 4 [1)]	3, 4 [1)]
Conventional Free Air Thermal Current, Ith at 60 °C		**(A)**	250	400	630	800
Rated Operational Current [Ie]	**AC 440/480 V (50/60 Hz)**		250	400	630	800
	DC 250 V (1 Pole Connection)		250	400	630	800
	DC 250 V (2 Pole Connection)		250	400	630	800
Rated Short Circuit Making Current [Icm] (kA Peak @ AC 460)			4.2	6.8	10.7	13.6
Rated Short Time Withstand Current [Icw] (kA rms)			2	4	6.3	8
Endurance [times] (Durability)	**Mechanical**		25,000	4,000	2,500	2,500
	In @ 440 V		10,000	1,000	500	500

※ 1) 4 Pole Arrangement : Basic specification of R-S-T-N (N-R-S-T is optional.)

Molded Case Circuit Breaker

HGP Type

Thermal Magnetic / Electronic Type

Rated Insulation Voltage [Ui]	1,000 V	**Protection Function**	Overload, short-circuit and instantaneous protection	**Utilization Category**	A
Rated Operational Voltage [Ue]	690 V			**Pollution Degree**	3
Rated Impulse Withstand Voltage [Uimp]	8 kV	**Suitablilty for Isolation**	Yes	**Reference Standard**	IEC 60947-2

Model Name				**HGP50D**				**HGP125D**				**HGP160D**			
Number of Poles			**(P)**	3, 4 [1]				3, 4 [1]				3, 4 [1]			
Rated Frequency			**(Hz)**	50/60				50/60				50/60			
Rated Short-Circuit Breaking Capacity [Icu] (kA rms)	**Short-Circuit Breaking Category Code**			F [2]	S	H	X	F [2]	S	H	X	F [2]	S	H	X
	AC 660/690 V			6	8	8	10	6	8	8	10	6	8	8	10
	AC 480/500 V			25	50	65	100	25	50	65	100	25	50	65	100
	AC 440/460 V			36	65	85	150	36	65	85	150	36	65	85	150
	AC 380/415 V			50	85	100	150	50	85	100	150	50	85	100	150
	AC 220/240 V			65	100	130	200	65	100	130	200	65	100	130	200
	DC 250 V [3]			36	65	85	100	36	65	85	100	36	65	85	100
Service Breaking Capacity [Ics = % Icu] (kA rms)				100	100	100	100	100	100	100	100	100	100	100	100
Endurance [times] (Durability)	**Mechanical**			25,000				25,000				25,000			
	Electrical			10,000				10,000				10,000			
Trip Device	**Thermal Magnetic**			●				●				●			
		Rated Current, at 40 °C (A)		16, 20, 25, 32, 40, 50				16, 20, 25, 32, 40, 50, 63, 75, 80, 100, 125				100, 125, 160			
		Long Time [LT]	**Fixed(FF)**	1.0 In				1.0 In				1.0 In			
			Adjustable(JF, JJ)	(0.8-0.9-1.0)×In				(0.8-0.9-1.0)×In				(0.8-0.9-1.0)×In			
		Instantaneous [INST]	**Fixed(JF)**	16 ~ 32 A : 400 A, 40 ~ 50 A : 10×In				16 ~ 32 A : 400 A, 40 ~ 50 A : 10×In				10×In			
			Adjustable(JJ)	-				-				-			
	Electronic			-				-				-			
		Rated Current, at 40 °C (A)		-				-				-			
		Long Time [LT]	**Ir (A)**	**N, D, A, E**	-			-				-			
			Tr (s)	**N**	-			-				-			
				D, A, E	-			-				-			
		Short Time [STD]	**Isd (A)**	**N, D, A, E**	-			-				-			
			Tsd (s)	**N**	-			-				-			
				D, A, E	-			-				-			
		Instantaneous [INST]	**Ii (A)**	**N**	-			-				-			
				D, A, E	-			-				-			
			Break Time (s)	**N, D, A, E**	-			-				-			
		Ground Fault Protection [GFT]	**Ig (A)**	**N**	-			-				-			
				D, A, E	-			-				-			
			Tg (ms)	**N**	-			-				-			
				D, A, E	-			-				-			
		N Pole Protection (L, S) (A)		**N, D, A, E**	-			-				-			
Dimensions (mm)	**a (3/4P)**			90/120				90/120				90/120			
	b			140				140				140			
	c			86				86				86			

※ 1) 4 Pole Arrangement : Basic specification is R-S-T-N
2) Only applicable to oversea products/ship products

HGP100				HGP160				HGP250				HGP400				HGP630				HGP800			
3, 4 [1]				3, 4 [1]				3, 4 [1]				3, 4 [1]				3, 4 [1]				3, 4 [1]			
50/60				50/60				50/60				50/60				50/60				50/60			
F [2]	S	H	X	F [2]	S	H	X	F [2]	S	H	X	F [2]	S	H	X	F [2]	S	H	X	F [2]	S	H	X
6	8	8	10	6	8	8	10	6	8	8	10	10	10	20	35	10	10	20	35	10	10	20	35
25	50	65	100	25	50	65	100	25	50	65	100	25	50	70	100	25	50	70	100	25	50	70	100
36	65	85	150	36	65	85	150	36	65	85	150	36	70	85	150	36	70	85	150	36	70	85	150
50	85	100	150	50	85	100	150	50	85	100	150	50	85	100	150	50	85	100	150	50	85	100	150
65	100	130	200	65	100	130	200	65	100	130	200	65	100	130	200	65	100	130	200	65	100	130	200
36	65	85	100	36	65	85	100	36	65	85	100	36	65	85	100	36	65	85	100	36	65	85	100
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
25,000				25,000				25,000				20,000				20,000				20,000			
10,000				10,000				10,000				6,000				4,000				3,000			
●				●				●				●				●				●			
40, 50, 63, 80, 100				100, 125, 150, 160				125, 150, 160, 175, 200, 225, 250				300, 350, 400				500, 630				700, 800			
1.0 In				1.0 In				1.0 In				1.0 In				1.0 In				1.0 In			
(0.7-0.8-0.9-1.0)×In				(0.7-0.8-0.9-1.0)×In				(0.7-0.8-0.9-1.0)×In				(0.8-0.9-1.0)×In				(0.8-0.9-1.0)×In				(0.8-0.9-1.0)×In			
10×In				10×In				10×In				10×In				10×In				10×In			
-				(5-6-7-8-9-10)×In				(5-6-7-8-9-10)×In				(5-6-7-8-9-10)×In				(5-6-7-8-9-10)×In				(5-6-7-8-9-10)×In			
●				●				●				●				●				●			
40, 100				100, 160				160, 250				250, 400				630				800			
0.4-0.45-0.5-0.56-0.63-0.7-0.8-0.9-1×In				0.4-0.45-0.5-0.56-0.63-0.7-0.8-0.9-1×In				0.4-0.45-0.5-0.56-0.63-0.7-0.8-0.9-1×In				0.4-0.45-0.5-0.56-0.63-0.7-0.8-0.9-1×In				0.4-0.45-0.5-0.56-0.63-0.7-0.8-0.9-1×In				0.4-0.45-0.5-0.56-0.63-0.7-0.8-0.9-1×In			
16 @ 6 Ir				16 @ 6 Ir				16 @ 6 Ir				16 @ 6 Ir				16 @ 6 Ir				16 @ 6 Ir			
0.5-1-2-4-6-8-16 @ 6×Ir				0.5-1-2-4-6-8-16 @ 6×Ir				0.5-1-2-4-6-8-16 @ 6×Ir				0.5-1-2-4-6-8-16 @ 6×Ir				0.5-1-2-4-6-8-16 @ 6×Ir				0.5-1-2-4-6-8-16 @ 6×Ir			
1.5-2-3-4-5-6-7-8-10×In				1.5-2-3-4-5-6-7-8-10×In				1.5-2-3-4-5-6-7-8-10×In				1.5-2-3-4-5-6-7-8-10×In				1.5-2-3-4-5-6-7-8-10×In				1.5-2-3-4-5-6-7-8-10×In			
0.1				0.1				0.1				0.1				0.1				0.1			
0.1-0.2-0.3-0.4(I^2 Off/On)				0.1-0.2-0.3-0.4(I^2 Off/On)				0.1-0.2-0.3-0.4(I^2 Off/On)				0.1-0.2-0.3-0.4(I^2 Off/On)				0.1-0.2-0.3-0.4(I^2 Off/On)				0.1-0.2-0.3-0.4(I^2 Off/On)			
1,500				1,500 @ 100 A, 2,400 @ 160 A				2,400 @ 160 A, 3,000 A @ 250 A				3,000 @ 250 A, 4,800 @ 400 A				6,900				8,800			
1.5-2-4-6-8-10-11-12-13-14-15×In				1.5-2-4-6-8-10-11-12-13-14-15×In				1.5-2-4-6-8-10-11×In				1.5-2-4-6-8-10-11×In				1.5-2-4-6-8-10-11×In				1.5-2-4-6-8-10-11×In			
0.05				0.05				0.05				0.05				0.05				0.05			
NA				NA				NA				NA				NA				NA			
OFF-0.2-0.3-0.4-0.5-0.6-0.7-0.8-1×In				OFF-0.2-0.3-0.4-0.5-0.6-0.7-0.8-1×In				OFF-0.2-0.3-0.4-0.5-0.6-0.7-0.8-1×In				OFF-0.2-0.3-0.4-0.5-0.6-0.7-0.8-1×In				OFF-0.2-0.3-0.4-0.5-0.6-0.7-0.8-1×In				OFF-0.2-0.3-0.4-0.5-0.6-0.7-0.8-1×In			
NA				NA				NA				NA				NA				NA			
0.1-0.2-0.3-0.4				0.1-0.2-0.3-0.4				0.1-0.2-0.3-0.4				0.1-0.2-0.3-0.4				0.1-0.2-0.3-0.4				0.1-0.2-0.3-0.4			
OFF-0.5-1-1.6 [4]×In				OFF-0.5-1-1.6 [4]×In				OFF-0.5-1-1.6 [4]×In				OFF-0.5-1-1.6 [4]×In				OFF-0.5-1-1.6 [4]×In				OFF-0.5-1-1.6 [4]×In			
105/140				105/140				105/140				140/186.5				140/186.5				210/280			
165				165				165				260				260				320			
86.5				86.5				86.5				110				110				135			

※ 3) DC is only applicable to thermal magnetic
4) Only applicable if Ir < 0.63 ("1" is applicable if Ir ≥ 0.63)

Molded Case Circuit Breaker

HGP Type

DC Type

Rated Insulation Voltage [Ui]	1,000 V	**Protection Function**	Overload, short-circuit and instantaneous protection	**Utilization Category**	A
Rated Impulse Withstand Voltage [Uimp]	8 kV			**Pollution Degree**	3
		Suitablilty for Isolation	Yes	**Reference Standard**	IEC 60947-2

Model Name				**HGP100**				**HGP160**				**HGP250**			
Number of Poles			**(P)**	3, 4 [1)]				3, 4 [1)]				3, 4 [1)]			
Rated Current, at 40 °C			**(A)**	40, 50, 63, 80, 100				100, 125, 150, 160				125, 150, 160, 175, 200, 225, 250			
Rated Short-Circuit Breaking Capacity [Icu] (kA rms)		**Short-Circuit Breaking Category Code**		F	S	H	X	F	S	H	X	F	S	H	X
		DC 750 V for 3P		10	55	85	100	10	55	85	100	10	55	85	100
		DC 1,000 V for 4P		10	55	85	100	10	55	85	100	10	55	85	100
Service Breaking Capacity [Ics = % Icu]			**(kA)**	100	100	100	100	100	100	100	100	100	100	100	100
Trip Device	**Thermal Magnetic**	**Long Time [LT]**		(0.7-0.8-0.9-1.0)×In				(0.7-0.8-0.9-1.0)×In				(0.7-0.8-0.9-1.0)×In			
		Instantaneous [INST]		10×In				(5-6-7-8-9-10)×In				(5-6-7-8-9-10)×In			

Model Name				**HGP400**				**HGP630**				**HGP800**			
Number of Poles			**(P)**	3, 4 [1)]				3, 4 [1)]				3, 4 [1)]			
Rated Current, at 40 °C			**(A)**	300, 350, 400				500, 630				700, 800			
Rated Short-Circuit Breaking Capacity [Icu] (kA rms)		**Short-Circuit Breaking Category Code**		F	S	H	X	F	S	H	X	F	S	H	X
		DC 750 V for 3P		10	55	85	100	10	55	85	100	10	55	85	100
		DC 1,000 V for 4P		10	55	85	100	10	55	85	100	10	55	85	100
Service Breaking Capacity [Ics = % Icu]			**(kA)**	100	100	100	100	100	100	100	100	100	100	100	100
Trip Device	**Thermal Magnetic**	**Long Time [LT]**		(0.8-0.9-1.0)×In				(0.8-0.9-1.0)×In				(0.8-0.9-1.0)×In			
		Instantaneous [INST]		(5-6-7-8-9-10)×In				(5-6-7-8-9-10)×In				(5-6-7-8-9-10)×In			

※ 1) 4 Pole Arrangement : Basic specification is R-S-T-N

HGP Type

Motor Protection Type

Rated Insulation Voltage [Ui]	1,000 V	**Protection Function**	Instantaneous, short-circuit protection	**Utilization Category**	A
Rated Operational Voltage [Ue]	690 V			**Pollution Degree**	3
Rated Impulse Withstand Voltage [Uimp]	8 kV	**Suitablilty for Isolation**	Yes	**Reference Standard**	IEC 60947-2

Model Name			**HGP100**				**HGP250**			
Number of Poles		**(P)**	3				3			
Rated Current, at 40 °C		**(A)**	2.5, 3.2, 6.3, 12.5, 20, 32, 50, 63, 80, 100				125, 150, 175, 200, 225			
Rated Frequency		**(Hz)**	50/60				50/60			
Rated Short-Circuit Breaking Capacity [Icu] (kA rms)	**Short-Circuit Breaking Category Code**		F [1]	S	H	X	F [1]	S	H	X
	AC 660/690 V		6	8	8	10	6	8	8	10
	AC 480/500 V		25	50	65	100	25	50	65	100
	AC 440/460 V		36	65	85	150	36	65	85	150
	AC 380/415 V		50	85	100	150	50	85	100	150
	AC 220/240 V		65	100	130	200	65	100	130	200
Service Breaking Capacity [Ics = % Icu]			100	100	100	100	100	100	100	100
Endurance [times] (Durability)	**Mechanical**		25,000				25,000			
	In @ 440 V		10,000				10,000			
Trip Device	**Magnetic**	**Instantaneous [INST]**	(6-7-8-9-10-11-12-13-14)×In				(5-6-7-8-9-10)×In			

Model Name			**HGP400**				**HGP630**				**HGP800**			
Number of Poles		**(P)**	3				3				3			
Rated Current, at 40 °C		**(A)**	350, 400				500, 630				700, 800			
Rated Frequency		**(Hz)**	50/60				50/60				50/60			
Rated Short-Circuit Breaking Capacity [Icu] (kA rms)	**Short-Circuit Breaking Category Code**		F [1]	S	H	X	F [1]	S	H	X	F [1]	S	H	X
	AC 660/690 V		10	10	20	35	10	10	20	35	10	10	20	35
	AC 480/500 V		25	50	65	100	25	50	70	100	25	50	70	100
	AC 440/460 V		36	70	85	150	36	70	85	150	36	70	85	150
	AC 380/415 V		50	85	100	150	50	85	100	150	50	85	100	150
	AC 220/240 V		65	100	130	200	65	100	130	200	65	100	130	200
Service Breaking Capacity [Ics = % Icu]			100	100	100	100	100	100	100	100	100	100	100	100
Endurance [times] (Durability)	**Mechanical**		20,000				20,000				10,000			
	In @ 440 V		6,000				4,000				3,000			
Trip Device	**Magnetic**	**Instantaneous [INST]**	(5-6-7-8-9-10)×In				(5-6-7-8-9-10)×In				(5-6-7-8-9-10)×In			

※ 1) Only applicable to oversea products/ship products

Switch Disconnector

HGP Type

Switch Disconnector

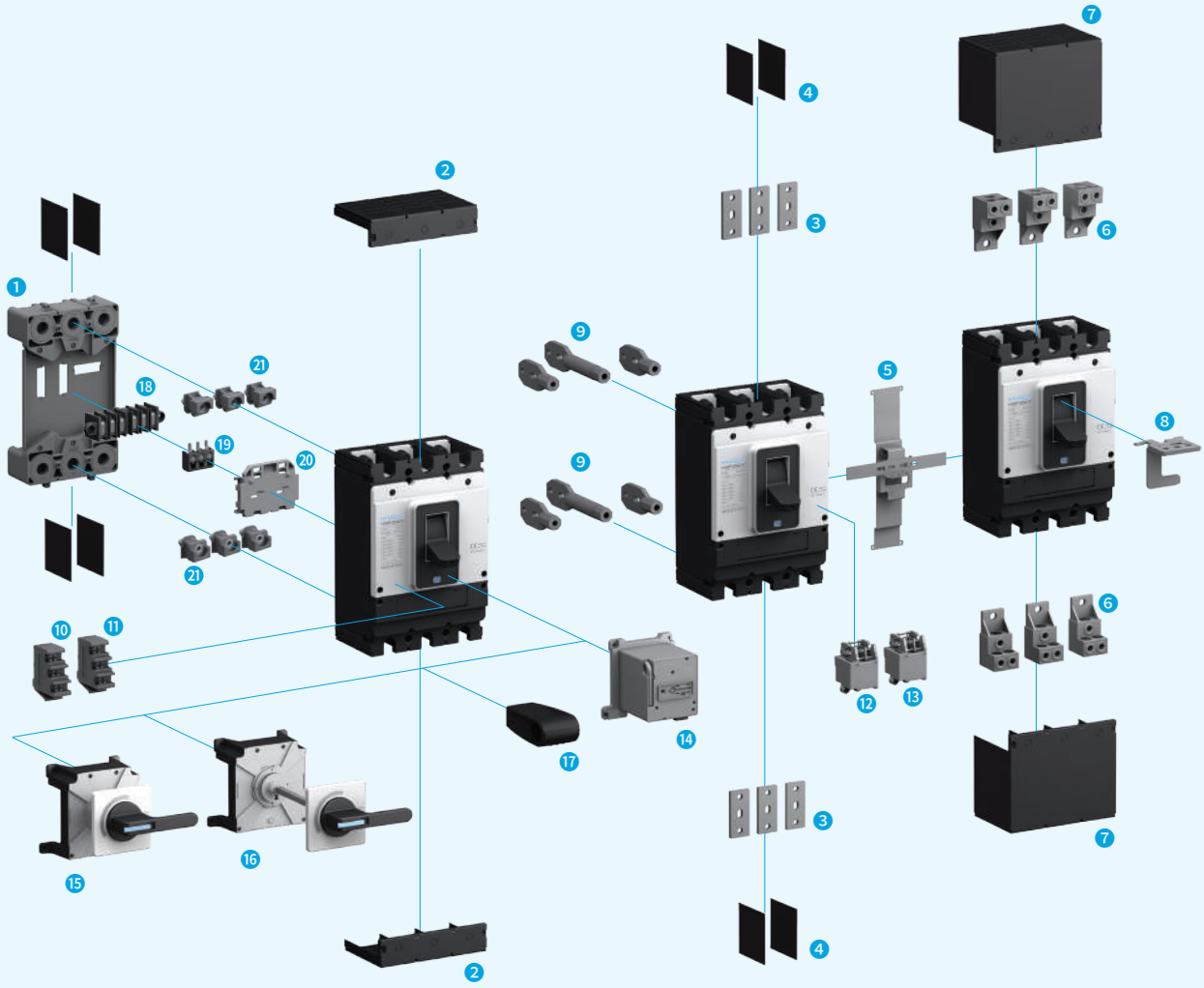
Rated Insulation Voltage [Ui]	1,000 V	**Suitablilty for Isolation**	Yes	**Pollution Degree**	3
Rated Operational Voltage [Ue]	690 V	**Utilization Category**	AC 22 A/AC 23 A DC 22 A/DC 23 A	**Reference Standard**	IEC 60947-2
Rated Impulse Withstand Voltage [Uimp]	8 kV				

Model Name			**HGP50DNA**	**HGP125DNA**	**HGP160DNA**
Number of Poles		**(P)**	3, 4 [1)]	3, 4 [1)]	3, 4 [1)]
Conventional Thermal Current, Ith at 60 °C		**(A)**	50	125	160
Rated Operational Current [Ie]	**AC 440/480 V (50/60 Hz)**		50	125	160
	DC 250 V (1 Pole)		50	125	160
	DC 250 V (2 Pole in Series)		50	125	160
Rated Short-Time Withstand Current [Icw]	**1 s**	**(A rms)**	1,800	2,200	2,200
	3 s	**(A rms)**	1,800	2,200	2,200
	20 s	**(A rms)**	690	960	960
Endurance [times] (Durability)	**Mechanical**	**(A rms)**	25,000	25,000	25,000
	In @ 440 V	**(A rms)**	10,000	10,000	10,000

Model Name			**HGP250NA**	**HGP400NA**	**HGP630NA**	**HGP800NA**
Number of Poles		**(P)**	3, 4 [1)]	3, 4 [1)]	3, 4 [1)]	3, 4 [1)]
Conventional Thermal Current, Ith at 60 °C		**(A)**	250	400	630	800
Rated Operational Current [Ie]	**AC 440/480 V (50/60 Hz)**		250	400	630	800
	DC 250 V (1 Pole)		250	400	630	800
	DC 250 V (2 Pole in Series)		250	400	630	800
Rated Short-Time Withstand Current [Icw]	**1 s**	**(A rms)**	3,500	5,000	6,300	8,000
	3 s	**(A rms)**	3,500	5,000	6,300	8,000
	20 s	**(A rms)**	1,350	1,920	2,320	2,560
Endurance [times] (Durability)	**Mechanical**	**(A rms)**	25,000	20,000	20,000	10,000
	In @ 440 V	**(A rms)**	10,000	6,000	4,000	3,000

※ 1) 4 Pole Arrangement : Basic specification of R-S-T-N

Accessories for HGP (High Breaking Capacity Type)



HGP Type MCCB

1. Plug-in Device (TDM)
2. Terminal Cover (For Plug-in) (TCF Short Type)
3. Bus Bar (TBB)
4. Insulation Barrier (TQQ)
5. Mechanical Interlock (MIF)
6. Lug Terminal (CTB)
7. Terminal Cover (General-Type) (TCF Long Type)
8. Padlock (PLD)
9. Rear Connection Terminal (RCT)
10. Auxiliary Switch (AUX)
11. Trip Alarm Switch (ALT)
12. Shunt Trip Switch (SHT)
13. Under-Voltage Trip Switch (UVT)
14. Motor Operator (MOT)
15. Direct Rotary Handle (TFG)
16. Extended Rotary Handle (TFH)
17. Auxiliary Handle (THA)
18. Plug-in Terminal Block (CBM)
19. Plug-in Terminal Block (CBB BLOCK UNIT)
20. Plug-in Terminal Block (CBB PLATE)
21. Plug-in Terminal (PC MALE)

Earth Leakage Circuit Breaker

HGE Type

HGE Type

Rated Operational Voltage [Ue]	1,000 V	**Protection Function**	Earth leakage, overload, instantaneous, short-circuit protection	**Utilization Category**	A
Usable Voltage Range	690 V			**Pollution Degree**	3
Rated Impulse Withstand Voltage [Uimp]	8 kV	**Suitablilty for Isolation**	Yes	**Reference Standard**	IEC 60947-2

Model Name				**HGE30**		**HGE50**				**HGE60**				**HGE100**			
Number of Poles			**(P)**	2 [1], 3, 4 [2]		2 [1], 3, 4 [2]				2 [1], 3, 4 [2]				2 [1], 3, 4 [2]			
Rated Current, at 40 °C			**(A)**	16, 20, 25, 32		16, 20, 25, 32, 40, 50				16, 20, 25, 32, 40, 50, 63				16, 20, 25, 32, 40, 50, 63, 75, 80, 100			
Rated Frequency			**(Hz)**	50/60		50/60				50/60				50/60			
High Speed Type	**Adjustable Residual Current**		**(mA)**	30		30				30				30			
	Max. Operational Time		**(s)**	0.1		0.1				0.1				0.1			
Time Delay Type	**Adjustable Residual Current**		**(mA)**	100-300-500-1,000 Adjustable		100-300-500-1,000 Adjustable				100-300-500-1,000 Adjustable				100-300-500-1,000 Adjustable			
	Maximum Operational Time		**(s)**	0.1-0.4-1.0-2.0		0.1-0.4-1.0-2.0				0.1-0.4-1.0-2.0				0.1-0.4-1.0-2.0			
	Inertial Delay Time		**(ms)**	0-200-500-1,000 Adjustable		0-200-500-1,000 Adjustable				0-200-500-1,000 Adjustable				0-200-500-1,000 Adjustable			
Rated Short-Circuit Breaking Capacity [Icu] (kA rms)	**Short-Circuit Breaking Category Code**			E	S	E	S	H	L	E	S	H	L	E	S	H	L
	AC 440/460 V			16	20	16	20	38	55	16	20	26	30	16	20	26	30
	AC 415 V			16	20	16	20	38	55	16	20	26	30	16	20	26	30
	AC 380 V			18	22	18	22	42	55	18	22	30	31	18	22	30	31
	AC 220/240 V			35	50	35	50	85	100	35	50	50	50	30	50	50	50
Service Breaking Capacity [Ics = % Icu]				100	100	100	100	100	100	100	100	75	50	100	100	75	50
Endurance [times] (Durability)	**Mechanical**			30,000		30,000				30,000				30,000			
	Electrical (at 460 V)			10,000		10,000				10,000				10,000			
Trip Device	**Thermal Magnetic**	**Long Time [LT]**		(1.0)×In		(1.0)×In				(1.0)×In				(1.0)×In			
		Instantaneous [INST]		400A		16 ~ 32 A : 400 A, 40, 50 A : 10×In				16 ~ 32 A : 400 A, 40 ~ 63 A : 10×In				16 ~ 32 A : 400 A, 40 ~ 100 A : 10×In			
Dimension (mm)		**a (2/3/4P)**		75/75/100		75/75/100		90/90/120		75/75/100				75/75/100			
		b		130		130		155		130				130			
		c		68		68		68		68				68			

※ 1) As for 2P products, only the neutral pole in the 3P product has been eliminated so the dimension is equivalent to the 3P product.
2) 4 Pole Arrangement : Basic specification of R-S-T-N

HGE125				HGE160				HGE250				HGE400				HGE630				HGE800		
2 [1], 3, 4 [2]				2 [1], 3, 4 [2]				2 [1], 3, 4 [2]				2 [1], 3, 4 [2]				2 [1], 3				2 [1], 3		
16, 20, 25, 32, 40, 50, 63, 75, 80, 100, 125				100, 125, 150, 160				100, 125, 150, 160, 175, 200, 225, 250				250, 300, 350, 400				500, 630				700, 800		
50/60				50/60				50/60				50/60				50/60				50/60		
30				30				30				30				30				30		
0.1				0.1				0.1				0.1				0.1				0.1		
100-300-500-1,000 Adjustable				100-300-500-1,000 Adjustable				100-300-500-1,000 Adjustable				100-300-500-1,000 Adjustable				100-300-500-1,000 Adjustable				100-300-500-1,000 Adjustable		
0.1-0.4-1.0-2.0				0.1-0.4-1.0-2.0				0.1-0.4-1.0-2.0				0.1-0.4-1.0-2.0				0.1-0.4-1.0-2.0				0.1-0.4-1.0-2.0		
0-200-500-1,000 Adjustable				0-200-500-1,000 Adjustable				0-200-500-1,000 Adjustable				0-200-500-1,000 Adjustable				0-200-500-1,000 Adjustable				0-200-500-1,000 Adjustable		
E	S	H	L	E	S	H	L	E	S	H	L	E	S	H	L	E	S	H	L	S	H	L
20	26	38	55	20	26	38	55	20	26	38	55	38	50	70	85	38	50	70	85	50	70	85
20	26	38	55	20	26	38	55	20	26	38	55	45	65	85	100	45	65	85	100	65	85	100
22	30	42	55	22	30	42	55	22	30	42	55	45	65	85	100	45	65	85	100	65	85	100
50	65	85	100	50	65	85	100	50	65	85	100	50	75	100	125	50	75	100	125	75	100	125
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
30,000				25,000				25,000				4,000				2,500				2,500		
10,000				10,000				10,000				1,000				500				500		
(1.0)×In				(1.0)×In				(1.0)×In				(1.0)×In				(1.0)×In				(1.0)×In		
16 ~ 32 A : 400 A, 40 ~ 125 A : 10×In				10×In				10×In				10×In				10×In				10×In		
90/90/120				105/105/140				105/105/140				140/140/184				210/210				210/210		
155				165				165				257				280				280		
68				68				68				110				110				110		

Miniature Circuit Breaker

Deluxe HGD Type

Model		HGD63N, 63 AF, 6 kA	HGD63H, 63 AF, 10 kA	HGD125, 125 AF, 10 kA
Reference Standard		IEC/EN 60898-1	IEC/EN 60898-1 ; IEC/EN 60947-2	IEC/EN 60947-2
Number of Poles		1P, 1P+N, 2P, 3P, 3P+N, 4P	1P, 1P+N, 2P, 3P, 3P+N, 4P	1P, 1P+N, 2P, 3P, 3P+N, 4P
Rated Current	(In)	0.5, 1, 2, 3, 4, 5, 6, 10, 16, 20, 25, 32, 40, 50, 63 A	0.5, 1, 2, 3 4, 5, 6, 10, 16, 20, 25, 32, 40, 50, 63 A	80 A, 100 A, 125 A
Rated Voltage	(Ue)	AC 240/415 V	AC 240/415 V	AC 240/415 V
Rated Frequency	(Hz)	50/60	50/60	50/60
Rated Short Circuit Current	(Icn)	6 kA (Ics = 100 % Icn)	10 kA (Ics = 75 % Icn)	10 kA (Ics = 75 % Icu)
Rated Insulation Voltage	(Ui)	500 V	500 V	690 V
Rated Impulse Voltage	(Uimp)	4 kV	4 kV	4 kV
Magnetic Release Setting		(3-5) In - B Curve (5-10) In - C Curve (10-20) In - D Curve	(3-5) In - B Curve (5-10) In - C Curve (10-20) In - D Curve	(3-5) In - B Curve (6-9) In - C Curve (8-12) In - D Curve
Dielectric Strength		2.5 kV	2.5 kV	2.5 kV
Electrical/Mechanical Endurance (no. of operations) Minimum		10,000/20,000	10,000/20,000	10,000/20,000
Busbar Connections Top/Bottom Side		Pin/Fork Type (Bottom)	Pin/Fork Type (Bottom)	-
AUX/ALT/SHT/UVT/OVT		○	○	×

Standard HGD Type

Model		HGD63E, 63 AF, 3 kA	HGD63S, 63 AF, 4.5 kA	HGD63M, 63 AF, 6 kA	HGD63P, 63 AF, 10 kA	HGD100S, 100 AF, 10 kA
Reference Standard		IEC/EN 60898-1	IEC/EN 60898-1	IEC/EN 60898-1	IEC/EN 60898-1	IEC/EN 60947-2
Number of Poles		1P, 1P+N, 2P, 3P, 3P+N, 4P	1P, 1P+N, 2P, 3P, 3P+N, 4P	1P, 1P+N, 2P, 3P, 3P+N, 4P	1P, 1P+N, 2P, 3P, 3P+N, 4P	1P, 1P+N, 2P, 3P, 3P+N, 4P
Rated Current	(In)	1, 2, 3, 4, 5, 6, 10, 16, 20, 25, 32, 40, 50, 63 A	1, 2, 3, 4, 5, 6, 10, 16, 20, 25, 32, 40, 50, 63 A	1, 2, 3, 4, 5, 6, 10, 16, 20, 25, 32, 40, 50, 63 A	1, 2, 3, 4, 5, 6, 10, 16, 20, 25, 32, 40, 50, 63 A	63, 80, 100 A
Rated Voltage	(Ue)	AC 240/415 V	AC 240/415 V	AC 240/415 V	AC 240/415 V	AC 240/415 V
Rated Frequency	(Hz)	50/60	50/60	50/60	50/60	50/60
Rated Short Circuit Current	(Icn)	3 kA (Ics = 100 % Icn)	4.5 kA (Ics = 100 % Icn)	6 kA (Ics = 100 % Icn)	10 kA (Ics = 75 % Icn)	10 kA (Ics = 75 % Icu)
Rated Insulation Voltage	(Ui)	500 V	500 V	500 V	500 V	500 V
Rated Impulse Voltage	(Uimp)	4 kV	4 kV	4 kV	4 kV	4 kV
Magnetic Release Setting		(3-5)In - B Curve (5-10)In - C Curve (10-20)In - D Curve	(3-5)In - B Curve (5-10)In - C Curve (10-20)In - D Curve	(3-5)In - B Curve (5-10)In - C Curve (10-20)In - D Curve	(3-5)In - B Curve (5-10)In - C Curve (10-20)In - D Curve	(3-5)In - B Curve (6-9)In - C Curve (8-12)In - D Curve
Dielectric Strength		2.5 kV	2.5 kV	2.5 kV	2.5 kV	2.5 kV
Electrical/Mechanical Endurance (no. of operations) Minimum		10,000/20,000	10,000/20,000	10,000/20,000	10,000/20,000	10,000/20,000
Busbar Connections Top/Bottom Side		-	-	Pin/Fork Type	Pin/Fork Type	-
AUX/ALT/SHT/UVT		×	×	○	○	×

Electronic Type

Model	HEC20
Rated Current	2 A-20 A (Setting 0.1 A interval)
Rated Voltage	AC 240 V
Rated Operational Voltage	AC 140 V-AC 290 V
Rated Frequency	50 Hz
Current Setting Time Delay	10 sec.
Overloading Cut-Off Delay	10 sec.
Operating Temperature	10-55 °C
Rated Impulse Voltage Withstand	4 kV
Weight	180 g

Miniature Switch Disconnector

Deluxe HSD Type

Model		HSD63, 63 AF	HSD125, 125 AF
Reference Standard		IEC/EN 60947-3	IEC/EN 60947-3
Number of Poles		1P, 2P, 3P, 4P	1P, 2P, 3P, 4P
Utilization Category		AC-22 A	AC-22 A
Rated Current	(In)	16, 25, 32, 40, 63 A	80, 100, 125 A
Rated Voltage	(Ue)	AC 240/415 V	AC 240/415 V
Rated Frequency	(Hz)	50/60	50/60
Rated Insulation Voltage	(Ui)	500 V	500 V
Rated Impulse Voltage	(Uimp)	4 kV	4 kV
Dielectric Strength		2.5 kV	2.5 kV
Electrical/Mechanical Endurance (no. of operations) Minimum		10,000/20,000	10,000/20,000
Busbar Connections		Pin/Fork Type (Bottom)	Pin/Fork Type (Bottom)

Standard HSD Type

Model		HSD100S, 100 AF
Reference Standard		IEC/EN 60947-3
Number of Poles		1P, 2P, 3P, 4P
Utilization Category		AC-22 A
Rated Current	(In)	6, 10, 16, 20, 25, 32, 40, 50, 63, 70, 80, 100 A
Rated Voltage	(Ue)	AC 240/415 V
Rated Frequency	(Hz)	50/60
Rated Insulation Voltage	(Ui)	690 V
Rated Impulse Voltage	(Uimp)	6 kV
Dielectric Strength		2.5 kV
Electrical/Mechanical Endurance (no. of operations) Minimum		10,000/20,000
Busbar Connections		Pin/Fork Type

Residual Current Circuit Breaker

Deluxe HRC Type

Model		HRC63, 63 AF	HRC100, 100 AF
Reference Standard		IEC/EN 61008-1	IEC/EN 61008-1
Number of Poles		2P (1P+N), 4P (3P+N)	2P (1P+N), 4P (3P+N)
Rated Current	(In)	16, 25, 40, 50, 63 A	80, 100 A
Rated Voltage	(Ue)	AC 240/415 V	AC 240/415 V
Rated Frequency	(Hz)	50/60	50/60
Rated Conditional Short Circuit Current	(Inc)	10 kA	10 kA
Rated Residual Operating Current	(IΔn)	30, 100, 300	30, 100, 300
Rated Making Breaking Capacity	(Im)	630 A or 10 In whichever is greater	630 A or 10 In whichever is greater
Rated Insulation Voltage	(Ui)	500 V	500 V
Rated Impulse Voltage	(Uimp)	4 kV	4 kV
Operating Characteristics in Presence of Residual Current with d.c Components		'A' Type & 'AC' Type	'A' Type & 'AC' Type
Trip Time		1 IΔn < 300 ms, 5 IΔn < 40 ms	1 IΔn < 300 ms, 5 IΔn < 40 ms
Dielectric Strength		2.5 kV	2.5 kV
Electrical/Mechanical Endurance (no. of operations) Minimum		10,000/20,000	10,000/20,000
Busbar Connections		Pin/Fork Type	Pin/Fork Type
Auxiliary Contacts		○	×

Standard HRC Type

Model		HRC63S, 63 AF	HRC100S, 100 AF
Reference Standard		IEC/EN 61008-1	IEC/EN 61008-1
Number of Poles		2P (N+1P), 4P (N+3P)	2P (N+1P), 4P (N+3P)
Rated Current	(In)	16, 25, 32, 40, 50, 63 A	80, 100 A
Rated Voltage	(Ue)	AC 240/415 V	AC 240/415 V
Rated Frequency	(Hz)	50/60	50/60
Rated Conditional Short Circuit Current	(Inc)	6 kA	6 kA
Rated Residual Operating Current	(IΔn)	30, 100, 300, 500 mA	30, 100, 300, 500 mA
Rated Making Breaking Capacity	(Im)	500 A or 10 In whichever is greater	500 A or 10 In whichever is greater
Rated Insulation Voltage	(Ui)	690 V	690 V
Rated Impulse Voltage	(Uimp)	4 kV	4 kV
Operating Characteristics in Presence of Residual Current with d.c Components		'A' Type & 'AC' Type	'A' Type & 'AC' Type
Trip Time		1 IΔn < 300 ms, 5 IΔn < 40 ms	1 IΔn < 300 ms, 5 IΔn < 40 ms
Dielectric Strength		2.5 kV	2.5 kV
Electrical/Mechanical Endurance (no. of operations) Minimum		10,000/20,000	10,000/20,000
Busbar Connections		Pin/Fork Type	Pin/Fork Type
Auxiliary Contacts		×	×

Residual Current Circuit Breaker with Overcurrent Protection

RCD Type

Model		HRO63S, 63 AF, 4.5 kA	HRO63M, 63 AF, 6 kA	HRO63P, 63 AF, 10 kA
Reference Standard		IEC/EN 61009-1	IEC/EN 61009-1	IEC/EN 61009-1
Number of Poles		1P+N	1P+N, 2P ,3P, 3P+N, 4P	1P+N, 2P ,3P, 3P+N, 4P
N Phase Position		Right	Right	Right
Rated Current	(In)	1, 2, 3, 4, 5, 6, 10, 16, 20, 25, 32, 40, 50, 63 A	1, 2, 3, 4, 5, 6, 10, 16, 20, 25, 32, 40, 50, 63 A	1, 2, 3, 4, 5, 6, 10, 16, 20, 25, 32, 40, 50, 63 A
Rated Voltage	(Ue)	AC 240 V	AC 240/415 V	AC 240/415 V
Rated Frequency	(Hz)	50/60	50/60	50/60
Rated Short Circuit Current	(Icn)	4.5 kA (Ics = 100 % Icn)	6 kA (Ics = 100 % Icn)	10 kA (Ics = 75 % Icn)
Rated Residual Operating Current	(IΔn)	10, 30, 100, 300, 500 mA	10, 30, 100, 300, 500 mA	10, 30, 100, 300, 500 mA
Rated Residual Making Breaking Capacity	(IΔm)	3 kA	3 kA	3 kA
Rated Insulation Voltage	(Ui)	500 V	500 V	500 V
Rated Impulse Voltage	(Uimp)	4 kV	4 kV	4 kV
Magnetic Release Setting		(3-5)In - B Curve (5-10)In - C Curve (10-20)In - D Curve	(3-5)In - B Curve (5-10)In - C Curve (10-20)In - D Curve	(3-5)In - B Curve (5-10)In - C Curve (10-20)In - D Curve
Operating Characteristics in Presence of Residual Current with d.c Components		'A' Type & 'AC' Type	'A' Type & 'AC' Type	'A' Type & 'AC' Type
Trip Time		1 IΔn < 300 ms, 5 IΔn < 40 ms	1 IΔn < 300 ms, 5 IΔn < 40 ms	1 IΔn < 300 ms, 5 IΔn < 40 ms
Dielectric Strength		2.5 kV	2.5 kV	2.5 kV
Electrical/Mechanical Endurance (no. of operations) Minimum		10,000/20,000	10,000/20,000	10,000/20,000
Busbar Connections		-	-	-
AUX/ALT/SHT/UVT		○	○	○

Residual Current Circuit Breaker with Overcurrent Protection

Standard HRO Type

Model		HRO40M, 40 AF, 6 kA	HRO40P, 40 AF, 10 kA	HRO40ML, 40 AF, 6 kA (with Cable)	HRO40PL, 40 AF, 10 kA (with Cable)
Reference Standard		IEC/EN 61009-1	IEC/EN 61009-1	IEC/EN 61009-1	IEC/EN 61009-1
Number of Poles		N+1P (1 module)	N+1P (1 module)	N+1P (1 module)	N+1P (1 module)
N Phase Position		Left	Left	Left	Left
Rated Current	(In)	6, 10, 13, 16, 20, 25, 32, 40 A	6, 10, 13, 16, 20, 25, 32, 40 A	6, 10, 13, 16, 20, 25, 32, 40 A	6, 10, 13, 16, 20, 25, 32, 40 A
Rated Voltage	(Ue)	AC 240 V	AC 240 V	AC 240 V	AC 240 V
Rated Frequency	(Hz)	50/60	50/60	50/60	50/60
Rated Short Circuit Current	(Icn)	6 kA (Ics = 100 % Icn)	10 kA (Ics = 75 % Icn)	6 kA (Ics = 100 % Icn)	10 kA (Ics = 75 % Icn)
Rated Residual Operating Current	(IΔn)	10, 30, 100, 300 mA	10, 30, 100, 300 mA	10, 30, 100, 300 mA	10, 30, 100, 300 mA
Rated Residual Making Breaking Capacity	(IΔm)	3 kA	3 kA	3 kA	3 kA
Rated Insulation Voltage	(Ui)	500 V	500 V	500 V	500 V
Rated Impulse Voltage	(Uimp)	4 kV	4 kV	4 kV	4 kV
Magnetic Release Setting		(3-5)In - B Curve (5-10)In - C Curve	(3-5)In - B Curve (5-10)In - C Curve	(3-5)In - B Curve (5-10)In - C Curve	(3-5)In - B Curve (5-10)In - C Curve
Operating Characteristics in Presence of Residual Current with d.c Components		'A' Type & 'AC' Type	'A' Type & 'AC' Type	'A' Type & 'AC' Type	'A' Type & 'AC' Type
Trip Time		1 IΔn < 300 ms, 5 IΔn < 40 ms	1 IΔn < 300 ms, 5 IΔn < 40 ms	1 IΔn < 300 ms, 5 IΔn < 40 ms	1 IΔn < 300 ms, 5 IΔn < 40 ms
Dielectric Strength		2.5 kV	2.5 kV	2.5 kV	2.5 kV
Electrical/Mechanical Endurance (no. of operations) Minimum		10,000/20,000	10,000/20,000	10,000/20,000	10,000/20,000
Busbar Connections		-	-	Pin/Fork Type	Pin/Fork Type
AUX/ALT/SHT/UVT		×	×	×	×

Model		HiRO40L, 40 AF, 6 kA (with Cable)	HiRO40T, 40 AF, 6 kA (with Cable)	HiRO40hT, 40 AF, 10 kA (with Cable)
Reference Standard		IEC/EN 61009-1	IEC/EN 61009-1	IEC/EN 61009-1
Number of Poles		1P+N (1 module)	1P+N (1 module)	1P+N (1 module)
N Phase Position		-	-	-
Rated Current	(In)	6, 10, 16, 20, 25, 32, 40 A	6, 10, 16, 20, 25, 32, 40 A	6, 10, 16, 20, 25, 32, 40 A
Rated Voltage	(Ue)	AC 240 V	AC 240 V	AC 240 V
Rated Frequency	(Hz)	50/60	50/60	50/60
Rated Short Circuit Current	(Icn)	6 kA (Ics = 100 % Icn)	6 kA (Ics = 100 % Icn)	10 kA (Ics = 75 % Icn)
Rated Residual Operating Current	(IΔn)	10, 30, 100, 300 mA	10, 30, 100, 300 mA	10, 30, 100, 300 mA
Rated Residual Making Breaking Capacity	(IΔm)	500 A	500 A	500 A
Rated Insulation Voltage	(Ui)	500 V	500 V	500 V
Rated Impulse Voltage	(Uimp)	4 kV	4 kV	4 kV
Magnetic Release Setting		(3-5)In - B Curve (5-10)In - C Curve	(3-5)In - B Curve (5-10)In - C Curve	(3-5)In - B Curve (5-10)In - C Curve
Operating Characteristics in Presence of Residual Current with d.c Components		'A' Type & 'AC' Type	'A' Type & 'AC' Type	'A' Type & 'AC' Type
Trip Time		1 IΔn < 300 ms, 5 IΔn < 40 ms	1 IΔn < 300 ms, 5 IΔn < 40 ms	1 IΔn < 300 ms, 5 IΔn < 40 ms
Dielectric Strength		2.5 kV	2.5 kV	2.5 kV
Electrical/Mechanical Endurance (no. of operations) Minimum		10,000/20,000	10,000/20,000	10,000/20,000
Busbar Connections		Pin/Fork Type	Pin/Fork Type	Pin/Fork Type
AUX/ALT/SHT/UVT		×	×	×

Manual Motor Starter

HMMS Type

Model Name			HMMS32K										HMMS32R										MMS80K									
Operation Type			Push-button										Rotary-handle										Push-button									
Number of Poles			3										3										3									
Rated Current		(In)	0.1 ~ 32 A										0.1 ~ 32 A										25 ~ 80 A									
Rated Operational Voltage		(Ue)	up to 690 V										up to 690 V										up to 690 V									
Rated Frequency		(Hz)	50/60										50/60										50/60									
Rated Insulation Voltage		(Ui)	690 V										690 V										690 V									
Rated Impulse Voltage		(Uimp)	6 kV										6 kV										6 kV									
Utilization Category	IEC 60947-2 (Breaker)		Cat. A										Cat. A										Cat. A									
	IEC 60947-4 (Motor Starter)		AC 3										AC 3										AC 3									
Electrical/Mechanical Endurance (min.)			100,000 / 100,000 times										100,000 / 100,000 times										30,000 / 50,000 times									
Operating Frequency per Hour (max.)			25										25										25									
Instantaneous Short Circuit Release			13×Ie max.										13×Ie max.										13×Ie max.									
Function	Overload Protection		O										O										O									
	Phase Failure Protection		O										O										O									
	Test Button		O										O										O									
Mounting			Clip in DIN Rail (35×7.5 mm)										Clip in DIN Rail (35×7.5 mm)										Clip in DIN Rail (35×7.5 mm)									
Installation Position			Vertical / Horizontal										Vertical / Horizontal										Vertical / Horizontal									
Options			AUX/AXT/SHT/UVT/ Enclosure										AUX/AXT/SHT/UVT/ Handle										AUX									
Rated Breaking Capacity (kA)	Rated Operational Current (Ie)	Setting Range (A)	AC 220 V AC 230 V AC 240 V		AC 400 V AC 415 V		AC 440 V AC 460 V		AC 500 V AC 525 V		AC 600 V AC 690 V		AC 220 V AC 230 V AC 240 V		AC 400 V AC 415 V		AC 440 V AC 460 V		AC 500 V AC 525 V		AC 600 V AC 690 V											
			Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics										
	0.16	0.1-0.16	100	100	100	100	100	100	100	100	100	100	-	-	-	-	-	-	-	-	-	-										
	0.25	0.16-0.25	100	100	100	100	100	100	100	100	100	100	-	-	-	-	-	-	-	-	-	-										
	0.4	0.25-0.4	100	100	100	100	100	100	100	100	100	100	-	-	-	-	-	-	-	-	-	-										
	0.63	0.4-0.63	100	100	100	100	100	100	100	100	100	100	-	-	-	-	-	-	-	-	-	-										
	1	0.63-1	100	100	100	100	100	100	100	100	100	100	-	-	-	-	-	-	-	-	-	-										
	1.6	1-1.6	100	100	100	100	100	100	100	100	100	100	-	-	-	-	-	-	-	-	-	-										
	2.5	1.6-2.5	100	100	100	100	100	100	100	100	3	2.25	-	-	-	-	-	-	-	-	-	-										
	4	2.5-4	100	100	100	100	100	100	100	100	3	2.25	-	-	-	-	-	-	-	-	-	-										
	6.3	4-6.3	100	100	100	100	50	50	50	50	3	2.25	-	-	-	-	-	-	-	-	-	-										
	10	6-10	100	100	100	100	15	15	10	10	3	2.25	-	-	-	-	-	-	-	-	-	-										
	14	9-14	100	100	15	7.5	8	4	6	4.5	3	2.25	-	-	-	-	-	-	-	-	-	-										
	18	13-18	100	100	15	7.5	8	4	6	4.5	3	2.25	-	-	-	-	-	-	-	-	-	-										
	23	17-23	50	50	15	6	6	3	4	3	3	2.25	-	-	-	-	-	-	-	-	-	-										
	25	20-25	50	50	15	6	6	3	4	3	3	2.25	-	-	-	-	-	-	-	-	-	-										
	32	24-32	50	50	10	5	6	3	4	3	3	2.25	-	-	-	-	-	-	-	-	-	-										
	40	25-40	-	-	-	-	-	-	-	-	-	-	100	100	50	25	50	25	10	5	5	3										
	63	40-63	-	-	-	-	-	-	-	-	-	-	100	100	50	25	50	25	10	5	5	3										
	80	56-80	-	-	-	-	-	-	-	-	-	-	100	100	15	7.5	10	6	4	4	2	2										

Contactor and Overload Relay

Standard HGC Type

Model Name					HGC9	HGC12	HGC18	HGC25	HGC32	HGC40	HGC50	HGC65	HGC75	HGC85	HGC100
IEC 60947-4	Rated Insulation Voltage [Ui]			V	800	800	800	800	800	800	1,000	1,000	1,000	1,000	1,000
	Rated Operational Voltage [Ue]			V	690	690	690	690	690	690	690	690	690	690	690
	Rated Impulse Withstand Voltage [Uimp]			kV	6	6	6	6	6	6	8	8	8	8	8
	Rated Thermal Current Ith (AC1)			A	25	30	40	45	55	60	70	85	115	125	145
	Rated Frequency			Hz											50/60
	AC3	200 ~ 240 V		kW/A	2.5/9	3.5/12	4.5/18	5.5/25	7.5/32	11/40	15/50	18.5/65	22/75	25/85	30/100
		380 ~ 440 V			4/9	5.5/12	7.5/18	11/25	15/32	18.5/40	22/50	30/65	37/75	45/85	55/100
		500 ~ 550 V			4/7	7.5/12	8.5/13	15/22	18.5/28	22/32	30/43	33/60	37/64	50/75	55/85
		660 ~ 690 V			4/6	7.5/9	7.5/9	15/17	18.5/20	22/23	30/28	33/35	37/42	45/45	50/65
		1,000 V			-	-	-	-	-	-	-	-	-	-	-
		Lifespan	Electrical	10,000 times	250	250	250	250	200	200	200	200	200	200	200
			Mechanical		1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,000	1,000	1,000
	AC4	200 ~ 240 V		kW/A	1.5/8	2.2/11	3.7/16	3.7/18	4.5/22	5.5/25	7.5/35	11/50	13/55	15/65	17/72
		380 ~ 440 V			2.2/6	4/9	4/11	5.5/13	7.5/17	11/24	15/32	22/47	25/52	30/62	33/68
		Electrical Lifespan		10,000 times	3	3	3	3	3	3	3	3	3	3	3
Mounting Method															Screw & Rail Mounting
Auxiliary Contact	Standard	AC							1NO1NC or 2NO2NC						2NO2NC
		DC							1NO1NC or 2NO2NC						2NO1NC
	Additional	AC							2NO2NC						2NO2NC
		DC							2NO2NC						1NO1NC
Dimensions (W×H×D)	AC			mm			45×94.2×91.1		45×99.6×96.6		55×123.6×129			70×146×153	
	DC						45×94.2×124		45×99.6×129.5		55×123.6×129			70×146×153	

Standard HGT Type

Model Name (Basic)		HGT18	HGT40	HGT65
3-Pole, 2 Element		HGT18H	HGT40H	HGT65H
3-Pole, 3 Element (Loss Phase Protection)		HGT18K	HGT40K	HGT65K
Setting Current (Min. ~ Max.)	A	0.12 ~ 0.18	7 ~ 40	7 ~ 65
Auxiliary Contact		1NO1NC	1NO1NC	1NO1NC
Reset Method		Manual/Auto	Manual/Auto	Manual/Auto
Dimensions (W×H×D)	mm	45×78.2×82.7	45×80.7×95.5	55×89.3×110.7

HGC115	HGC130	HGC150	HGC185	HGC225	HGC265	HGC300	HGC400	HGC500	HGC630	HGC800
1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
8	8	8	8	8	8	8	8	8	8	8
160	180	210	275	315	350	400	500	550	750	900
										50/60
37/115	40/130	45/150	55/185	75/225	80/265	90/300	125/400	140/500	190/630	220/800
60/115	65/130	75/150	90/185	132/225	147/265	160/300	220/400	250/500	330/630	440/800
59/100	70/120	90/140	110/180	132/200	150/225	200/273	250/300	300/426	330/500	500/720
55/65	75/82	90/120	110/120	132/150	160/173	200/220	250/300	335/360	400/412	500/630
65/50	75/54	90/66	110/78	132/96	160/113	200/141	250/178	275/192	300/213	400/284
100	100	100	100	100	100	100	100	50	50	50
500	500	500	500	500	500	500	500	500	500	500
19/80	22/93	30/125	37/150	45/185	50/200	55/220	75/300	90/350	110/400	160/630
37/75	45/90	55/110	75/150	90/185	102/200	110/220	150/300	175/350	200/400	300/630
3	3	3	3	3	3	3	3	3	3	3
										Screw Mounting
			2NO2NC		2NO2NC		2NO2NC		2NO2NC	
			2NO2NC		2NO2NC		2NO2NC		2NO2NC	
			103×155×145.1		138×204×174.2		163×243×203		276×314×255.3	

HGT100	HGT150	HGT265	HGT500	HGT800
HGT100H	HGT150H	HGT265H	HGT500H	HGT800H
HGT100K	HGT150K	HGT265K	HGT500K	HGT800K
17 ~ 100	48 ~ 150	48 ~ 265	90 ~ 150	378 ~ 800
1NO1NC	1NO1NC	1NO1NC	1NO1NC	1NO1NC
Manual/Auto	Manual/Auto	Manual/Auto	Manual/Auto	Manual/Auto
70×105×128.1	180×159×179.3	180×185×179.3	180×205.2×179.3	245×197×209.9

Contactor and Overload Relay

Compact HGC Type

Model Name					HGC9B	HGC12B	HGC18B	HGC25B	HGC32B	HGC40B	HGC50B	HGC65B	HGC75B	HGC85B	HGC100B
IEC 60947-4	Rated Insulation Voltage [Ui]			V	800	800	800	800	800	800	1,000	1,000	1,000	1,000	1,000
	Rated Operational Voltage [Ue]			V	690	690	690	690	690	690	690	690	690	690	690
	Rated Impulse Withstand Voltage [Uimp]			kV	6	6	6	6	6	6	8	8	8	8	8
	Rated Thermal Current Ith (AC1)			A	25	30	40	45	55	60	70	85	115	125	145
	Rated Frequency			Hz											50/60
	AC3	200 ~ 240 V		kW/A	2.5/9	3.5/12	4.5/18	5.5/25	7.5/32	11/40	15/50	18.5/65	22/75	25/85	30/100
		380 ~ 440 V			4/9	5.5/12	7.5/18	11/25	15/32	18.5/40	22/50	30/65	37/75	45/85	55/100
		500 ~ 550 V			4/7	7.5/12	8.5/13	15/22	18.5/28	22/32	30/43	33/60	37/64	50/75	55/85
		660 ~ 690 V			4/6	7.5/9	7.5/9	15/17	18.5/20	22/23	30/28	33/35	37/42	45/45	50/65
		1,000 V			-	-	-	-	-	-	-	-	-	-	-
		Lifespan	Electrical	10,000 times	140	140	140	120	120	120	200	200	200	200	200
			Mechanical		1,000	1,000	1,000	800	800	800	1,500	1,500	1,000	1,000	1,000
	AC4	200 ~ 240 V		kW/A	1.5/8	2.2/11	3.7/16	3.7/18	4.5/22	5.5/25	7.5/35	11/50	13/55	15/65	17/72
		380 ~ 440 V			2.2/6	4/9	4/11	5.5/13	7.5/17	11/24	15/32	22/47	25/52	30/62	33/68
		Electrical Lifespan		10,000 times	3	3	3	3	3	3	3	3	3	3	3
Mounting Method															Screw & Rail Mounting
Auxiliary Contact	Standard	AC								1NO					2NO2NC
		DC								-					2NO1NC
	Additional	AC								2NO2NC					-
		DC								-					-
Dimensions (W×H×D)	AC (B Type)			mm				45×75×86		54×84×92		80×124×101		95×146×129	
	DC							-		-		80×124×101		95×146×129	

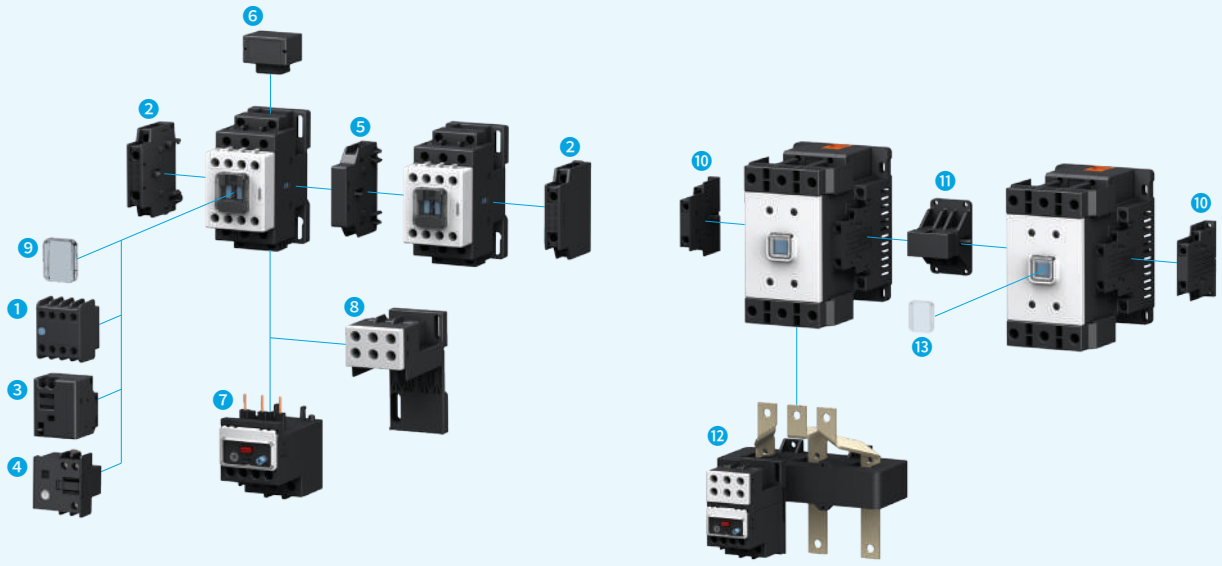
Compact HGT Type

Model Name (Basic)		HGT18B	HGT40B	HGT65	HGT100
3-Pole, 2 Element		HGT18HB	HGT40HB	HGT65H	HGT100H
3-Pole, 3 Element (Loss Phase Protection)		HGT18KB	HGT40KB	HGT65K	HGT100K
Setting Current (Min. ~ Max.)	A	0.12 ~ 0.18	7 ~ 40	7 ~ 65	17 ~ 100
Auxiliary Contact		1NO1NC	1NO1NC	1NO1NC	1NO1NC
Reset Method		Manual/Auto	Manual/Auto	Manual/Auto	Manual/Auto
Dimensions (W×H×D)	mm	45×78.2×82.7	45×80.7×95.5	55×89.3×110.7	70×105×128.1

Capacitor HGC Type

Model Name			HGC9C	HGC12C	HGC18C	HGC25C	HGC32C	HGC40C	HGC50C	HGC65C	HGC75C	HGC85C	HGC100C
Permitted Switching Frequency		times/h											240
Electrical Lifespan (AC-6b)	Ue ≤ 440 Vac	times											100,000
	500 Vac ≤ Ue ≤ 690 Vac	times											100,000
Mechanical Lifespan		times											500,000
Capacity (KVAR) Ambient Temperature 55 °C, 50/60 Hz	220 V		5	6.7	8.5	10	13	15	19	23.5	28	32	35
	220/230 V		5	6.7	8.5	10	13	15	19	23.5	28	32	35
	400/415 V		9.7	12	16.7	20	25	29	40	43.5	52	56	62
	440 V		9.7	12	16.7	20	25	29	40	43.5	52	56	62
	500/550 V		14	15	24	26	30	35	45	54	60	70	80
	690 V		14	15	24	26	30	35	45	54	60	70	80

Accessories of Magnetic Contactor



9 ~ 100 AF

1. Auxiliary Contact Block (Front) HGC TB
2. Auxiliary Contact Block (Side) HGC SB
3. Mechanical Latching Block HGC LB 100
4. Timer HGC ET
5. Interlock Unit HGC IU
6. Surge Absorber HGC RC/CD
7. Thermal Overload Relay HGT
8. Installation Unit HGTMB
9. Front Protection Cover HGCFC 100

115 ~ 800 AF

10. Auxiliary Contact Block HGC SB
11. Interlock Unit HGC IU
12. Thermal Overload Relay HGT
13. Front Protection Cover HGCFC

Installation Contactor

HIC Type

Model		HIC25	HIC40	HIC63
Reference Standard		IEC/EN 61095	IEC/EN 61095	IEC/EN 61095
Number of Poles		2P, 4P	2P, 4P	2P, 4P
Rated Current	**(In)**	25 A	40 A	63 A
Rated Voltage	**(Ue)**	2P : 230 V, 4P : 400 V	2P : 230 V, 4P : 400 V	2P : 230 V, 4P : 400 V
Rated Voltage	**(Ui)**	500 V	500 V	500 V
Rated Control Voltage	**(Uc)**	24 V, 48 V, 230 V	24 V, 48 V, 230 V	24 V, 48 V, 230 V
Rated Frequency	**(Hz)**	50/60	50/60	50/60
Using Category		AC-1 AC-7a AC-7b	AC-1 AC-7a AC-7b	AC-1 AC-7a AC-7b
Electrical Endurance		100,000 cycles	100,000 cycles	100,000 cycles
Mechanical Endurance		1,000,000 cycles	1,000,000 cycles	1,000,000 cycles
Rated Power		2P - 5 kW (AC-7a) - 1.2 kW (AC-7b) 4P 4NO/3NO+1NC/4NC : - 14 kW (AC-7a) - 4 kW (AC-7b) 2NO+2NC - 5 kW (AC-7a) - 1.2 kW (AC-7b)	2P - 7.6 kW (AC-7a) - 2.5 kW (AC-7b) 4P 4NO/3NO+1NC/4NC : - 26.5 kW (AC-7a) - 6.5 kW (AC-7b) 2NO+2NC - 7.6 kW (AC-7a) - 2.5 kW (AC-7b)	2P - 12 kW (AC-7a) - 4 kW (AC-7b) 4P 4NO/3NO+1NC/4NC : - 40 kW (AC-7a) - 14 kW (AC-7b) 2NO+2NC - 12 kW (AC-7a) - 4 kW (AC-7b)
Rated Operation Current	**(Ie)**	25 A (AC-1/AC-7a) 9 A (AC-7b)	40 A (AC-1/AC-7a) 15 A (AC-7b)	63 A (AC-1/AC-7a) 32 A (AC-7b)

Digital Motor Protection Relay

HGMP Type

Model Name			HGMP N60Z	HGMP N60I	HGMP A60
Installation	Panel Installation Type			Separated/Integrated	Separated
	Connection Type			Screw type/Tunnel type	
	Rated Current			60 : 0.5 ~ 60 A (Min. measured current 0.35 A)	
	Current Configuration Range			Minimum rated current ~ maximum rated current	
	Control Power			A/DC 100 ~ 240 V, 50/60 Hz	
	Insulation Resistance			over 100 MΩ / 500 VDC	
	Standard			IEC 60947-4-1	
	ZCT Input			200 mA/100 mV	
	Cable Spec.			1.5 m, 2 m, 3 m	
	Power Consumption			Below 2 W	
Withstand Voltage	Between Main Circuit and Enclosure			2,000 VAC/1 min	
	Between Main Circuits			2,000 VAC/1 min	
	Between Contacts			1,000 VAC/1 min	
Protection Functions	Overcurrent		●	●	●
	Undercurrent		●	●	●
	Phase Failure		●	●	●
	Phase Imbalance		●	●	●
	Rotor	Stall	●	●	●
		Lock	●	●	●
	Reverse Phase		●	●	●
	Earth Leakage		●	-	●
	Ground Fault		●	●	●
	Instantaneous		-	●	●
Display Information	Real-Time Load Current		●	●	●
	Real-Time Load Rate		●	●	●
	Check Parameters during Operation		●	●	●
	Check Total Running Hours		●	●	●
Comm. Protocol	RS-485/Modbus		-	-	●
Contact Configuration	Main Contact (1a1b, 2a, 2b)		95-96, 97-98	95-96, 97-98, 07-08	95-96, 97-98, 07-08
	Auxiliary Contact (1a-Ground Fault/Warning/ Instantaneous)				

Air Circuit Breaker

HGN/HGS Type

Model Name					HGS		HGN			
Item					A Frame	B Frame	A Frame	B Frame	C Frame	D Frame
Rated Current [In max]		Based on 40 ℃		A	06 : 630	20 : 2,000	06 : 630	06 : 630	32 : 3,200	40 : 4,000
					08 : 800	25 : 2,500	08 : 800	08 : 800	40 : 4,000	50 : 5,000
					10 : 1,000	32 : 3,200	10 : 1,000	10 : 1,000	50 : 5,000	63 : 6,300
					12 : 1,250		12 : 1,250	12 : 1,250		
					16 : 1,600		16 : 1,600	16 : 1,600		
							20 : 2,000	20 : 2,000		
								25 : 2,500		
								32 : 3,200		
								40 : 4,000		
Rated Operational Voltage [Ue]				V	690		690			
Rated Insulation Voltage [Ui]				V	1,000		1,000			
Rated Frequency				Hz	50/60		50/60			
Number of Poles				P	3, 4		3, 4			
Rated Breaking Capacity [Icu] [Sym]	IEC 60947-2 Category "B" KS C 4620	AC	690/600/550 V	kA	50	70 [1] (KS : 65)	65	85	85	100
			500/480/460 V		65	85	85	100	100	150
			415/380/230/220 V		65	85	85	100	100	150
Rated Service Short-Circuit Breaking Capacity [Ics] ...%×Icu				kA	100 %	100 %	100 %	100 %	100 %	100 %
Rated Short-Time Withstand Voltage [Icw] (Without Inst) 1 s				kA	50	70	65	85	85	100
Rated Impulse Withstand Voltage [Uimp]				kV	12		12			
Dimensions (W×H×D)	3 Pole	Draw-Out Type		mm	328×460×368.4	399×460×368.4	328×460×368.4	399×460×368.4	624×460×368.4	766×460×368.4
		Fixed Type			337.4×404.4×295.8	408.4×404.4×295.8	337.4×404.4×295.8	408.4×404.4×295.8	633.4×404.4×295.8	775.4×404.4×295.8
	4 Pole	Draw-Out Type			413×460×368.4	514×460×368.4	413×460×368.4	514×460×368.4	794×460×368.4	996×460×368.4
		Fixed Type			422.4×404.4×295.8	523.4×404.4×295.8	422.4×404.4×295.8	523.4×404.4×295.8	803.4×404.4×295.8	1,005×404.4×295.8

※ 1) 70 kA is DEKRA certified

OCR

Model Name		N Type	A Type		P Type	H Type	N Type	A Type	P Type
		GPR-LN	GPR-LA	GPR-LAG	GPR-LP	GPR-LH	GPR-SN	GPR-SA	GPR-SP
Function						General Feeder		Generator (Marine Type)	
Rated Frequency	50 Hz	50	51	52	54	55	57	58	59
	60 Hz	60	61	62	64	65	67	68	69
Control Power	External Power	-	●	●	●	●	-	●	●
	Self-Power	●	●	●	●	●	●	●	●
Protection Function	LTD (Long Time)	●	●	●	●	●	●	●	●
	STD (Short Time)	●	●	●	●	●	●	●	●
	INST (Instantaneous)	●	●	●	●	●	●	●	●
	Pre-Trip Alarm	-	●	●	●	●	-	●	●
	Ground Fault Trip	●	●	-	●	●	-	-	-
	ELT Function	-	-	● Outer CT Ground [1] (Ground fault at more than 30 A)	-	-	-	-	-
	Thermal Function	●	●	●	●	●	●	●	●
	Field Test	-	●	●	●	●	-	●	●
	Fail Safe	●	●	●	●	●	●	●	●
Indication	True RMS Detection Method	●	●	●	●	●	●	●	●
	LED Indication per Trip Type	-	●	●	●	●	-	●	●
	Fault LED	L [2]	PTA, L, S/I, G	PTA, L, S/I, leakage	PTA, L, S/I, G	PTA, L, S/I, G	L [2]	PTA, L, S/I	PTA, L, S/I
	Real-Time LCD Indication of Load Rate per Phase	-	●	●	●	●	-	●	●
	Measurement LCD	-	●	●	●	●	-	●	●
Output Contact	Integrated Instantaneous Contact (1a)	●	-	-	-	-		-	-
	Individual Continuous Contact (4a)	-	●	●	●	●	-	● [3]	● [3]
Operation	MCR	-	○	○	○	○	-	○	○
	Communication	NFC	Modbus-RTU	Modbus-RTU	Modbus-RTU	Modbus-RTU	NFC	Modbus-RTU	Modbus-RTU
	Event/Fault Recording	●	●	●	●	●	●	●	●

※ ● : Standard, ○ : Option
1) ZCT designated by the customer is used.
2) Indicates reserve before operation during long time delay.
3) As for marine type, individual continuous contact is 3a.

Vacuum Circuit Breaker

Compact HGV Type

7.2/12 kV

Type			HGV1099	HGV1011	HGV113□ [1]		HGV114□ [1]		HGV213□ [1]		HGV214□ [1]	
Rated Voltage		kV	7.2	7.2	7.2		7.2		12		12	
Rated Breaking Current		kA	8	12.5	20		25		20		25	
Breaking Capacity		MVA	100	160	260		310		416		520	
Rated Current		A	400	630	630	1,250	630	1,250	630	1,250	630	1,250
Rated Frequency		Hz	50/60	50/60	50/60		50/60		50/60		50/60	
Inter-Phase × Inter-Pole Distance (mm)	130×155		◆	◆								
	140×155				◉	◉	◉	◉				
	130×220		◇	◇								
	140×223				▽	▽	▽	▽				
	150×205								●	●	●	●
Installation Method [2]	XA		◆	◆	◉	◉	◉	◉	◉	◉	◉	◉
	ES		◆	◆	◉	◉	◉	◉				
	FS		◆	◆	◉	◉	◉	◉				
	GS		◇	◇	▽	▽	▽	▽				

Standard HGV Type

7.2 kV

Type			HGV114□ [1]			HGV115□ [1]					HGV116□ [1]					HGV117□ [1]				
Rated Voltage		kV	7.2			7.2					7.2					7.2				
Rated Breaking Current		kA	25			31.5					40					50				
Breaking Capacity		MVA	312			393					499					624				
Rated Current		A	630	1,250	2,000	1,250	2,000	2,500	3,150	4,000	1,250	2,000	2,500	3,150	4,000	1,250	2,000	2,500	3,150	4,000
Rated Frequency		Hz	50/60			50/60					50/60					50/60				
Inter-Phase × Inter-Pole Distance (mm)	150×205		●	●																
	150×210		■	■																
	165×310					★					★									
	210×310		△	△	△	△	△				△	△				△	△			
	275×310							◆	◆	◆			◆	◆	◆			◆	◆	◆
Installation Method [2]	Fixed	XA	●	●	△	★△	△	◆	◆	◆	★△	△	◆	◆	◆	△	△	◆	◆	◆
	Draw-Out	ES	■	■																
		FS	■	■																
		GS, GE	●△	●△	△	★△	△	◆	◆	◆	★△	△	◆	◆	◆	△	△	◆	◆	◆
		MS, ME	●	●	△	★△	△	◆	◆	◆	★△	△	◆	◆	◆	△	△	◆	◆	◆

12 kV

Type			HGV214□ [1]			HGV215□ [1]					HGV216□ [1]					HGV217□ [1]				
Rated Voltage		kV	12			12					12					12				
Rated Breaking Current		kA	25			31.5					40					50				
Breaking Capacity		MVA	520			655					831					1,039				
Rated Current		A	630	1,250	2,000	1,250	2,000	2,500	3,150	4,000	1,250	2,000	2,500	3,150	4,000	1,250	2,000	2,500	3,150	4,000
Rated Frequency		Hz	50/60			50/60					50/60					50/60				
Inter-Phase × Inter-Pole Distance (mm)	150×205		●	●																
	150×210		■	■																
	165×310					★					★									
	210×310		△	△	△	△	△				△	△				△	△			
	275×310							◆	◆	◆			◆	◆	◆			◆	◆	◆
Installation Method [2]	Fixed	XA	●	●	△	★△	△	◆	◆	◆	★△	△	◆	◆	◆	△	△	◆	◆	◆
	Draw-Out	ES	■	■																
		FS	■	■																
		GS, GE	●△	●△	△	★△	△	◆	◆	◆	★△	△	◆	◆	◆	△	△	◆	◆	◆
		MS, ME	●	●	△	★△	△	◆	◆	◆	★△	△	◆	◆	◆	△	△	◆	◆	◆

Standard HGV Type

17.5 kV

Type			HGV314□ [1]			HGV315□ [1]					HGV316□ [1]					HGV317□ [1]				
Rated Voltage		kV	17.5			17.5					17.5					17.5				
Rated Breaking Current		kA	25			31.5					40					50				
Breaking Capacity		MVA	758			955					1,212					1,516				
Rated Current		A	630	1,250	2,000	1,250	2,000	2,500	3,150	4,000	1,250	2,000	2,500	3,150	4,000	1,250	2,000	2,500	3,150	4,000
Rated Frequency		Hz	50/60			50/60					50/60					50/60				
Inter-Phase × Inter-Pole Distance (mm)	150×205		●	●																
	150×210		■	■																
	165×310					★					★									
	210×310		△	△	△	△	△				△	△				△	△			
	275×310							◆	◆	◆			◆	◆	◆			◆	◆	◆
Installation Method [2]	Fixed	XA	●	●	△	★△	△	◆	◆	◆	★△	△	◆	◆	◆	△	△	◆	◆	◆
	Draw-Out	ES	■	■																
		FS	■	■																
		GS, GE	●△	●△	△	★△	△	◆	◆	◆	★△	△	◆	◆	◆	△	△	◆	◆	◆
		MS, ME	●	●	△	★△	△	◆	◆	◆	★△	△	◆	◆	◆	△	△	◆	◆	◆

24/25.8 kV

Type			HGV611□ [1]			HGV614□ [1]		
Rated Voltage		kV	24/25.8			24/25.8		
Rated Breaking Current		kA	12.5			25		
Breaking Capacity		MVA	520			1,039		
Rated Current		A	630	1,250	2,000	630	1,250	2,000
Rated Frequency		Hz	50/60			50/60		
Inter-Phase × Inter-Pole Distance (mm)	210×310		△	△	△	△	△	△
Installation Method [2]	Fixed	XA	△	△		△	△	△
	Draw-Out	ES	△	△		△	△	△
		FS	△	△		△	△	△
		GS, GE	△	△	△	△	△	△
		MS, ME	△	△	△	△	△	△

HVF Type

24/25.8 kV, 36 kV

Type			HVF614□ [1]		HVF616□ [1]				HVF714□ [1]		HVF705□ [1]				HVF706□ [1]			
Rated Voltage		kV	24/25.8		24				36		36				36			
Rated Breaking Current		kA	25		40				25		31.5				40			
Breaking Capacity		MVA	1,040/1,120		1,663				1,600		1,964				2,494			
Rated Current		A	2,500	3,150	1,250	2,000	2,500	3,150	1,250	2,000	1250	2,000	2,500	3,150	1,250	2,000	2,500	3,150
Rated Frequency		Hz	50/60		50/60				50/60		50/60				50/60			
Inter-Phase × Inter-Pole Distance (mm)	210×310				△	△												
	275×310		◆	◆			◆	◆										
	275×403								☆	☆								
	275×438										◎	◎	◎	◎	◎	◎	◎	◎
Installation Type	Fixed	XA	◆	◆	△	△	◆	◆	☆	☆	◎	◎	◎	◎	◎	◎	◎	◎
	Draw-Out	GS, GE	◆	◆	△	△	◆	◆	☆	☆	◎	◎	◎	◎	◎	◎	◎	◎

※ 1) □ : Rated Current (1 : 630 A / 2 : 1,250 A / 4 : 2,000 A / 6 : 2,500 A / 7 : 3,150 A / 8 : 4,000 A)

2) First, chose ratings of VCB and fine out which Installation Type has the symbol at the same column.(do not across the line.)

- For example, HGV1141(7.2 kV 25 kA 630 A) VCB is available for ES and FS type with 150×210 mm dimension. By the same way if you chose GS of HGV1141, dimension is 150×205 mm.

(◆ : 130×155, ◇ : 130×220, ◉ : 140×155, ▽ : 140×223, ● : 150×205, ■ : 150×210, ★ : 165×310, △ : 210×310, ◈ : 275×310, ☆ : 275×403, ◎ : 275×438)

Vacuum Circuit Breaker

ANSI Type

4.76 kV / UL Recognized

Type			HVF142□ 1)			HVF144□ 1)			HVF145□ 1)				HVF146□ 1)				HVF147□ 1)			
Rated Voltage		kV	4.76			4.76			4.76				4.76				4.76			
Rated Breaking Current		kA	16			25			31.5				40				50			
Breaking Capacity		MVA	132			206			260				330				412			
Rated Current		A	630	1,200	2,000	630	1,200	2,000	630	1,200	2,000	3,000	630	1,200	2,000	3,000	1,200	2,000	3,000	4,000
Rated Frequency		Hz	50/60			50/60			50/60				50/60				50/60			
Inter-Phase × Inter-Pole Distance mm(inch)	254(10)×275(10.8)		O	O	O	O	O	O	O	O	O		O	O	O		O	O		
	254(10)×310(12.2)											O				O			O	O
Installation Method	Fixed	XA	O			O			O				O				O			
	Draw-Out	GA, GS	O			O			O				O				O			
		MA, MS	O			O			O				O				O			

8.25 kV / UL Recognized

Type			HVF242□ 1)			HVF244□ 1)			HVF245□ 1)				HVF246□ 1)			
Rated Voltage		kV	8.25			8.25			8.25				8.25			
Rated Breaking Current		kA	16			25			31.5				40			
Breaking Capacity		MVA	229			357			450				572			
Rated Current		A	630	1,200	2,000	630	1,200	2,000	630	1,200	2,000	3,000	630	1,200	2,000	3,000
Rated Frequency		Hz	50/60			50/60			50/60				50/60			
Inter-Phase × Inter-Pole Distance mm(inch)	254(10)×275(10.8)		O	O	O	O	O	O	O	O	O		O	O	O	
	254(10)×310(12.2)											O				O
Installation Method	Fixed	XA	O			O			O				O			
	Draw-Out	GA, GS	O			O			O				O			
		MA, MS	O			O			O				O			

15 kV / UL Recognized

Type			HVF342□ 1)			HVF344□ 1)			HVF345□ 1)				HVF346□ 1)			
Rated Voltage		kV	15			15			15				15			
Rated Breaking Current		kA	16			25			31.5				40			
Breaking Capacity		MVA	416			650			818				1,039			
Rated Current		A	630	1,200	2,000	630	1,200	2,000	630	1,200	2,000	3,000	630	1,200	2,000	3,000
Rated Frequency		Hz	50/60			50/60			50/60				50/60			
Inter-Phase × Inter-Pole Distance mm(inch)	254(10)×275(10.8)		O	O	O	O	O	O	O	O	O		O	O	O	
	254(10)×310(12.2)											O				O
Installation Method	Fixed	XA	O			O			O				O			
	Draw-Out	GA, GS	O			O			O				O			
		MA, MS	O			O			O				O			

38 kV

Type			HVF705□ 1)			HVF706□ 1)		
Rated Voltage		kV	38			38		
Rated Breaking Current		kA	31.5			40/44		
Breaking Capacity		MVA	2,073			2,633/2,896		
Rated Current		A	1,200	2,000	3,000	1,200	2,000	3,000
Rated Frequency		Hz	50/60			50/60		
Inter-Phase × Inter-Pole Distance mm(inch)	275(10.8)×438(17.2)		O	O	O	O	O	O
Installation Method	Fixed	XA	O			O		
	Draw-Out	GA, GS	O			O		
		MA, MS	O			O		

※ 1) □ : Rated Current (1 : 630 A / 2 : 1,250 A / 4 : 2,000 A / 6 : 2,500 A / 7 : 3,150 A / 8 : 4,000 A)

Vacuum Contactors

UVC Type

Ratings \ Structure			Fixed Type: X1 Without Fuse; A1 A2 A3 With Single Fuse				Draw-Out Type: B1 B2 Without Fuse; D1 D2 D3 D4 D5 D6 With Single Fuse			
Operating Method	Continuously Energized		32C ☐	34C ☐	62C ☐	64C ☐	32C ☐	34C ☐	62C ☐	64C ☐
	Latched		32L ☐	34L ☐	62L ☐	64L ☐	32L ☐	34L ☐	62L ☐	64L ☐
Rated Insulation Voltage		kV	3.6		7.2		3.6		7.2	
Rated Operation Voltage		kV	3.3		6.6		3.3		6.6	
Rated Frequency		Hz	50/60							
Rated Current		A	200	400	200	400	200	400	200	400
Power Frequency		kV/min	20				20			
Impulse		kV	60				60			
Control Dielectric Strength		kV/min	2				2			
Utilization Category			AC3				AC3			
Breaking Capacity (O-3 min-CO-3 min-CO)		kA	4 (50 MVA at 7.2 kV)							
Short-Time Current	1 sec	kA	6.3				6.3			
	30 sec		3				3			
Mechanical Lifetime	Continuously Energized	1,000 times	1,000				1,000			
	Latched	1,000 times	300				300			
Electrical Lifetime		1,000 times	300							
Control Voltage		V	AC/DC 100 - 125, AC/DC 200 - 230							
Auxiliary Contact			3a2b				3a2b			
Applicable Load Capacity	Motor	kW	750	1,500	1,500	3,000	750	1,500	1,500	3,000
	Transformer	kVA	1,000	2,000	2,000	4,000	1,000	2,000	2,000	4,000
	Condensor	kVAR	750	1,200	1,500	2,000	750	1,200	1,500	2,000
Weight		kg	X1 19 A1 A2 28 A3 33				B1 B2 35 D1 D2 D3 D5 38 D4 D6 43			

※ For VCS of rated voltage 12 kV, contact our sales team.

Digital Monitoring & Protection Relay

HGMAP Type

Model Name			HGMAP-S
General Specification	Measurement		Voltage, Current, Power, Energy, Angle, Power Factor, Frequency, Thermal Q [1]
	Measurement (TN)		TR Primary(W1)/Secondary(W2), Differential, Restraint Current, Harmonics Distortion (2nd)
	Display		128×96 graphic LCD
			Status & Alarm LEDs×16
	Data Records		Event Record×256, Fault Record×64
			Fault Wave Record (64 cycles, 32 samples/cycle)×10 (IEEE37.111 Comtrade format)
Protection Relays	Type	Feeder, Grounded (FN)	OCR(50/51), OCGR(50/51N), DGR(67N), NSOCR(46)
			OVR(59), UVR(27), OVGR(64), POR(47P)
		Feeder, Ungrounded (FZ)	OCR(50/51), SGR(67G), NSOCR(46)
			OVR(59), UVR(27), OVGR(64), POR(47P)
		Motor, Grounded (MN)	OCR(50/51), OCGR(50/51N), DGR(67N), NSOCR(46), THR(49), UCR(37)
			OVR(59), UVR(27), OVGR(64), NSOVR(47N), Stall/Lock (48/51L), NCH(66)
		Motor, Ungrounded (MZ)	OCR(50/51), SGR(67G), NSOCR(46), THR(49), UCR(37)
			OVR(59), UVR(27), OVGR(64), NSOVR(47N), Stall/Lock (48/51L), NCH(66)
		Renewable Energy (EN)	OCR(50/51), OCGR(50/51N), DOCR(67P), DOCGR(67N), APR(32P), RPR(32Q), UPR(37P)
			OVR(59), UVR(27), OVGR(64), OFR(81O), UFR(81U), FROC(81R)
		Transformer (TN)	OCR(50/51)W1, OCGR(50/51N)W1, OCR(50/51)W2, OCGR(50/51N)W2
			DFR-T(87T), DFRN1(87N1), DFRN2(87N2)
Rated Input/ Output	Control Power	Rated Input	110 Vdc
		Input Voltage Range	88 ~ 132 Vdc
		Instantaneous Power Failure Duration	100 msec (at 110 Vdc)
		Power Consumption	Below 10 W, Maximum Below 15 W when activating
	CT Input (4ch) [2]	CT Primary Rating Range	5 ~ 9,000 A
		CT Secondary Rating	5 A (= 1 In)
		Maximum Burden	Below 1.0 VA at 1 In
		Rating Frequency	60 Hz
	PT Input (4ch) [3]	PT Primary Rating Range	110 ~ 345,000 V
		PT Secondary Rating	110 V or 110/√3 V (= 1 Vn)
		Maximum Burden	Below 0.5 VA at 1 Vn
		Rating Frequency	60 Hz
	Binary Input (6ch)	Input Rating	110 Vdc
		Threshold Voltage	Turn-on : 80 Vdc, Turn-off : 70 Vdc
		Maximum Burden	2 mA at 110 Vdc
	Digital Output (Control) (2ch)	Contact Type	Dry contact
		Contact Capacity	Reisistive Load : 10 A at 250 Vac/30 Vdc
			Inductive Load : 5 A at 250 Vac/30 Vdc
	Digital Output (Signal) (8ch)	Contact Type	Dry contact
		Contact Capacity	Resistive Load : 5 A at 250 Vac/30 Vdc
			Inductive Load : 2 A at 250 Vac/30 Vdc
	Communication	RS-485	Wiring : 2 Wire(D+, D-), 4 Wire(Rx+, Rx-, Tx-, Tx+)
			Baud Rate : 9600, 19200, 38400, 57600 bps
			Protocol : Modbus/RTU
		Manager Software	Media : mini USB-B port
			Protocol : Reserved
Certification	CoC	South Korea	KEMC1120-0579 : 2018

※ 1) Only for MN, MZ
2) TN : 8 ch
3) TN : N/A

Digital Power Meter

HGCAM Type

Model Name				HGCAM-S
General Specification	Measurements			Voltage, Current, Power, Energy, Power Factor, Frequency
	Display			7 Segment LED(FND)
				Setting, Status & Alarm LEDs×30
Measurements	Measurement	Voltage (3ch)	V_{Phase}	10 ~ 380 V, Accuracy 0.2 %
			$V_{Line-Line}$	10 ~ 660 V, Accuracy 0.2 %
		Current (3ch)	I_{Line}	0.05 ~ 10 A, Accuracy 0.2 %
			Load Factor	Everage current load factor, Load level LEDs (40 % ~ 110 % for rating current)
		Power	Active Power	kW, Accuracy 0.5 Class
			Reative Power	kvar, Accuracy 0.5 Class
			Apparent Power	kVA, Accuracy 0.5 Class
		Rated Frequency		45.0 ~ 65.0 Hz, Accuracy 0.02 Hz
		Power Factor	Total Power Factor	PF (From phase error)
Rated Input/ Output	Wiring System			Single-phase two-wire, Single-phase three-wire, Three-phase three-wire, Three-phase four-wire
	Analog Input (PT/CT)	Current		1 A or 5 A (0.05 ~ 10 A), Burden : 0.02 VA (220 V)
		Voltage		110 V or 190 V (10 ~ 380 V), Burden : 0.05 VA (10 A) (Line to Line)
		Rated Frequency		50 Hz or 60 Hz
	Control Power	Rated Input		AC/DC 90 ~ 265 V, 50/60 Hz
		Power Consumption		Below 2 W when activating
	Binary Input (3ch)	Input Rating		110 Vdc/220 Vac
		DI 1, DI 2		CB On(52a), CB Off(52b)
		DI 3		DI 3 : Local / Remote Control Select Mode Available
	Digital Output (2ch)	Contact Type		Dry contact
		Contact Capacity		5 A at 250 Vac/30 Vdc (Using aux. relay for CB control)
		DO1, DO2		CB On(CB Close), CB Off(CB Open)
	Communication	RS-485		Wiring : 2 Wire(D+, D-), Multi Drop
				Baud Rate : 9600, 19200, 38400, 57600 bps
				Protocol : Modbus/RTU
	Monitoring & Control	Wiring Error Check		Preventing wiring error of VT(Votage Transformer)
		Demand Control		Relay output by Demand Active Power, Relay output by Demand Load Current.
Certifications	CoC	South Korea		KC(EMC registered), KTC(Measuring accuracy certified)
	Standards	Measuring Accuracy		IEC 62053-22, 23 (Class 0.5S)
		EMC		IEC 61000-4, IEC 60255-26
		Environment		IEC 60068-2

Surge Protection Device

Din-Rail Type

Option		AC			DC							
Model Name		HSP20	HSD13	HSD25	HSP20							
Standard		IEC 61643-11			UL 1449							
Class		II	I		II							
Number of Poles	**Pole**	2P : 1P2W 3P : 3P3W 4P : 3P4W			2P			3P, 5P				
Rated Voltage	**Un**	2P : ~ 275 V 3P : 480 V 4P : 480/277 V			48 Vdc	500 Vdc	600 Vdc	600 Vdc	800 Vdc	1,000 Vdc	1,200 Vdc	1,500 Vdc
Maximum Continuous Operating Voltage	**Uc**	320 Vac										
Maximum Permitted DC Voltage	**Vpvdc**	-			85 Vdc	560 Vdc	670 Vdc	700 Vdc	920 Vdc	1,120 Vdc	1,340 Vdc	1,500 Vdc
Impulse Discharge Current	**Iimp (10/350 µs)**	-	2P, 4P L-N : 12.5 kA/Mode N-PE : 50 kA/Mode 3P L-PE : 12.5 kA/Mode	2P L-N : 12.5 kA/Mode N-PE : 50 kA/Mode 3P L-PE : 25 kA/Mode 4P L-N : 25 kA/Mode N-PE : 100 kA/Mode	-	-	-	-	-	-	-	-
Maximum Discharge Current	**Imax (8/20µs)**	40 kA/ Mode	-		50 kA/Mode			50 kA/Mode				
Nominal Discharge Current	**In (8/20µs)**	20 kA/ Mode	-		20 kA/Mode			20 kA/Mode				
Short-Circuit Current Rating	**Isccr**	5 kA	25 kA	50 kA	30 kA	100 kA	50 kA	50 kA				
Voltage Protection Level	**Up**	1.5 kV	2P, 4P L-N : 1.2 kV N-PE : 1.8 kV 3P L-PE : 1.2 kV	2P L-N : 1.3 kV N-PE : 1.8 kV 3P L-PE : 1.3 kV 4P L-N : 1.3 kV N-PE : 2.0 kV	-	-	-	-	-	-	-	-
	"+/-" - PE	-	-	-	< 0.4 kV	< 1.5 kV	< 1.5 kV	< 0.9 kV	< 1.2 kV	< 1.5 kV	< 1.5 kV	< 1.8 kV
	"+" - "-"	-	-	-	< 0.8 kV	< 3.0 kV	< 3.0 kV	< 1.8 kV	< 2.5 kV	< 2.5 kV	< 3.0 kV	< 4.0 kV
Response Time	**tA**	5 ns			-	-	-	-	-	-	-	-
Protection Mode		2P, 4P : L-N, N-PE 3P : L-PE			-	-	-	-	-	-	-	-

Box Type

Option		Standard Type				Standard Type with Surge Counter		Deluxe Type			Deluxe Type with Surge Counter	
Model Name		HSP40S	HSP80S	HSP120S	HSP200S	HSP40CS	HSP200CS	HSP40H	HSP160H	HSP320H	HSP40CH	HSP160CH
Standard		IEC 61643-11				IEC 61643-11		IEC 61643-11			IEC 61643-11	
Class		II		I		II	I	II	I		II	I
Number of Poles	**Pole**	S : 2W+G T : 3W+G Y : 4W+G				S : 2W+G T : 3W+G Y : 4W+G		S : 2W+G T : 3W+G Y : 4W+G	S : 2W+G T : 3W+G Y : 4W+G		S : 2W+G T : 3W+G Y : 4W+G	
Rated Voltage	**Un**	S : 220 V T : 380 V Y : 380/220 V				S : 220 V T : 380 V Y : 380/220 V		S : 220 V T : 380 V Y : 380/ 220 V	S : ~ 275 V T : 480 V Y : 480/277 V		S : 220 V T : 380 V Y : 380/ 220 V	S : ~ 275 V T : 480 V Y : 480/ 277 V
Maximum Continuous Operating Voltage	**Uc**	275 ~ 385 Vac				275 ~ 385 Vac		275 ~ 320 Vac			275 ~ 320 Vac	
Impulse Discharge Current	**Iimp (10/350 µs)**	-		6.5 kA/ Mode	12.5 kA/ Mode	-	12.5 kA/ Mode	-	S L-N : 12.5 kA/Mode N-PE : 25 kA/Mode T L-PE : 12.5 kA/ Mode Y L-N : 12.5 kA/Mode N-PE : 50 kA/Mode	S L-N : 25 kA/Mode N-PE : 50 kA/Mode T L-PE : 25 kA/ Mode Y L-N : 25 kA/Mode N-PE : 100 kA/Mode	-	S L-N : 12.5 kA/Mode N-PE : 25 kA/Mode T L-PE : 12.5 kA/ Mode Y L-N : 12.5 kA/Mode N-PE : 50 kA/Mode
Maximum Discharge Current	**Imax (8/20µs)**	40 kA/ Mode	80 kA/ Mode	120 kA/ Mode	200 kA/ Mode	40 kA/ Mode	200 kA/ Mode	40 kA/ Mode	S : 80 kA/ Mode T, Y : -	-	40 kA/ Mode	-
Nominal Discharge Current	**In (8/20µs)**	20 kA/ Mode	40 kA/ Mode	-	-	20 kA/ Mode	-	20 kA/ Mode	S : 40 kA/ Mode T, Y : -	-	20 kA/ Mode	-
Short-Circuit Current Rating	**Isccr**	-	-	-	-	-	-	5 kA	25 kA	50 kA	5 kA	25 kA
Voltage Protection Level	**Up**	2.5 kV	3 kV	2 kV		2.5 kV	2 kV	1.5 kV	S L-N : 1.2 kV N-PE : 1.8 kV T L-N : 1.8 kV L-PE : 2.0 kV Y L-N : 1.8 kV N-PE : 2.0 kV	S L-N : 1.3 kV N-PE : 2.0 kV T L-N : 1.8 kV L-PE : 2.0 kV Y L-N : 1.8 kV N-PE : 2.0 kV	1.5 kV	S L-N : 1.2 kV N-PE : 1.8 kV T L-N : 1.8 kV L-PE : 2.0 kV Y L-N : 1.8 kV N-PE : 2.0 kV
Response Time	**tA**	5 ns				5 ns		5 ns			5 ns	
Protection Mode		S, Y : L-N, N-PE T : L-PE				S, Y : L-N, N-PE T : L-PE		S, Y : L-N, N-PE T : L-PE			S, Y : L-N, N-PE T : L-PE	

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