

**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 /**

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

Generation

Power Plants

Utility

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

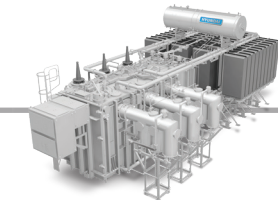
Transmission

Secondary Substation

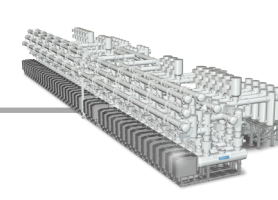
Distribution

Primary Substation

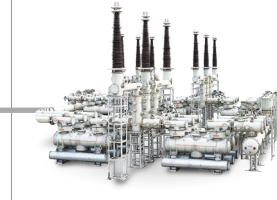
- Supplied more than 1.2 million MVA in total to 70 countries around the world for the past 40 over years since 1978
- Satisfies the various demands of customers through the acquisition of quality certifications from international accredited institute
- Participates in the world's key technical committee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



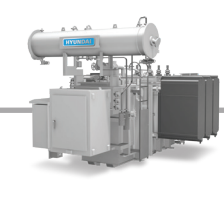
Power Transformer
· up to 800 kV, 1,500 MVA



Gas Insulated Switchgear
· up to 800 kV



Gas Insulated Switchgear
· GIS for 245 ~ 550 kV



Power Transformer
· 800 kV, 1,500 MVA

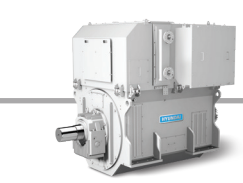


Gas Insulated Switchgear
· GIS for 170 kV

- 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.)



Generators



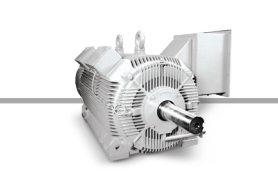
Generators
· 2-3 pole



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

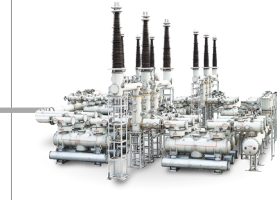


Wind Turbine Generator
· up to 5 MW

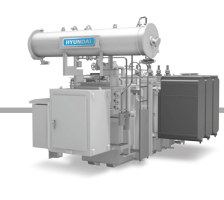


H+C Series Motor
· 150-1,300 HP
· 2,000 ~ 7,200 V, 50/60 Hz
· 2-8 pole

- 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



Cubicle GIS
· up to 38 kV

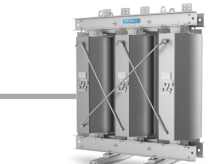


Metal Clad Switchgear
· up to 38 kV
· IEC, ANSI



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

- 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



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

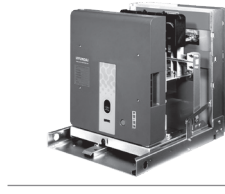
- Realizes powerful control performance through Sensor-less Vector Control and Auto Tuning
- High speed response due to Digital Signal Processor and High Speed My Com
- Compact design, enabling application in various environments
- Inverter manufactured using accumulated technology and know-how (outstanding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



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



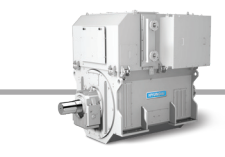
Air Circuit Breaker
· up to 150 kA, 6,300 A



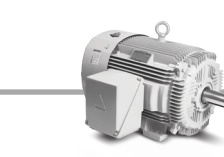
Vacuum Contactor
· up to 12 kV, 400 A



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



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



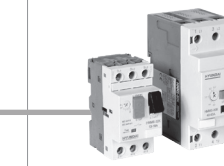
Inverter Shield Motor
· 1-250 HP
· 2-6 pole



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



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



Manual Motor Starter
· up to 100 kA, 80 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



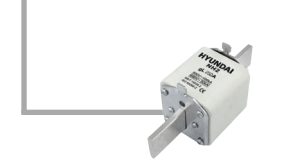
Earth Leakage Circuit Breaker
· up to 85 kA, 800 A, 1,000 mA



Miniature Circuit Breaker
· up to 10 kA, 125 A



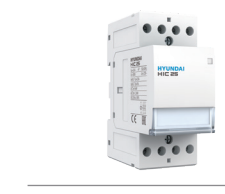
Residual Current Circuit Breaker
· MCB : up to 10 kA, 125 A
· RCCB : up to 100 A, 500 mA



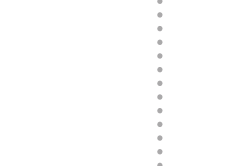
Fuse
· up to 1,250 A



Contactor and Overload Relay
· up to 800 A



Installation Contactor
· up to 63 A



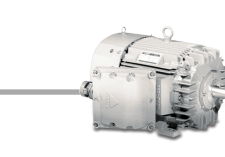
Digital Motor Protection Relay
· up to 60 A



Digital Motor Protection Relay
· up to 60 A



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	Suitability 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	Suitability 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	Suitability 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	Suitability 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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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

HGM Type

Switch Disconnecter

Rated Insulation Voltage [Ui]	1,000 V	Suitability 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	Suitability 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		-				-					
		Short Time [STD]	Isd (A)	N, D, A, E		-				-					
				D, A, E		-				-					
			Tsd (s)	N		-				-					
		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		-				-							
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	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	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	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	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	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	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	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
		Suitability 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)		(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)		(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	Suitability 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			

※ 1) Only applicable to oversea products/ship products

Switch Disconnecter

HGP Type

Switch Disconnecter

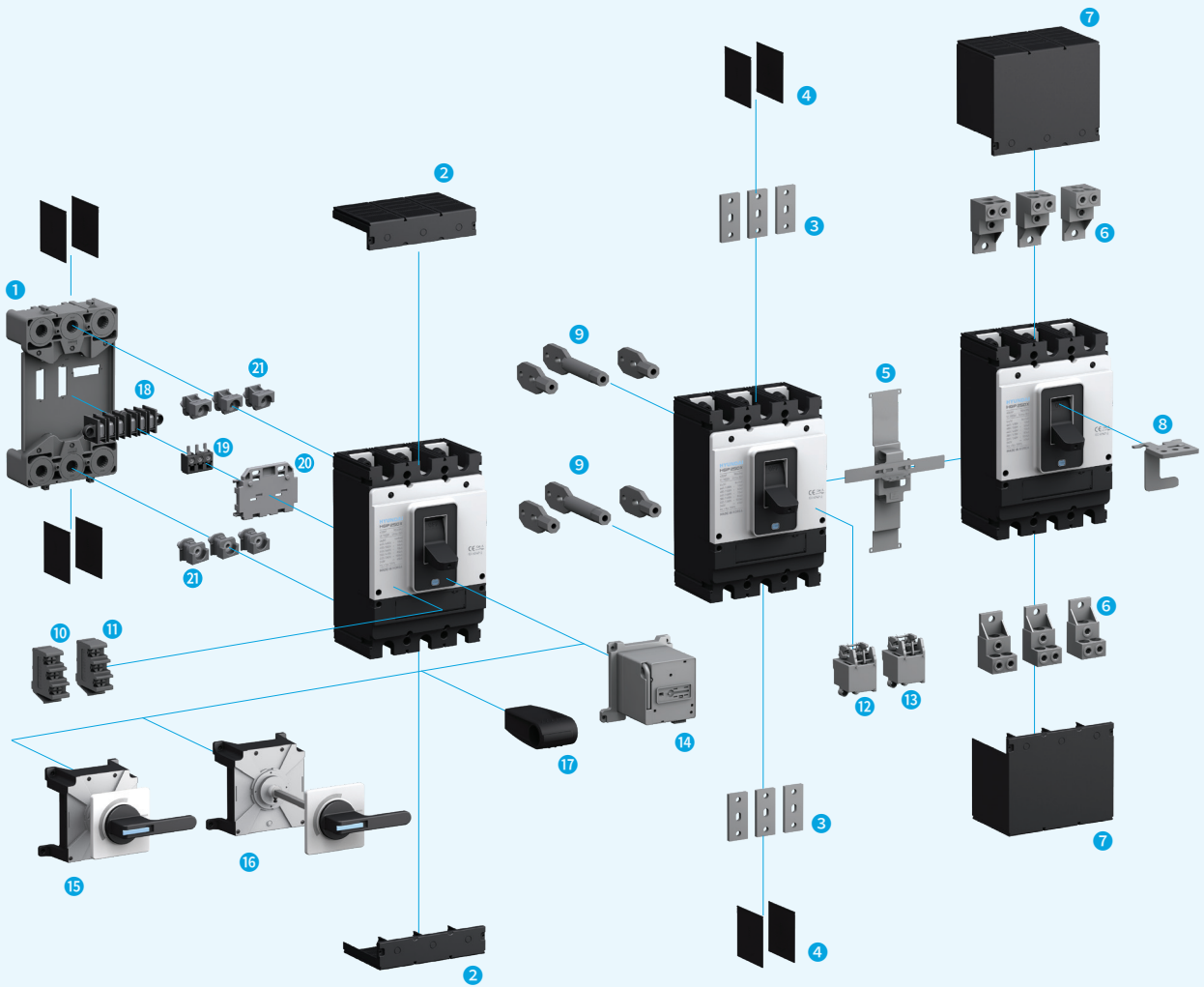
Rated Insulation Voltage [Ui]	1,000 V	Suitability for Isolation	Yes	Pollution Degree	3
Rated Operational Voltage [Ue]	690 V	Utilization Category	AC 22 A/AC 23 A DC 22 A/DC 23 A	Reference Standard	IEC 60947-2
Rated Impulse Withstand Voltage [Uimp]	8 kV				

Model Name			HGP50DNA	HGP125DNA	HGP160DNA
Number of Poles	(P)		3, 4 ¹⁾	3, 4 ¹⁾	3, 4 ¹⁾
Conventional Thermal Current, I _{th} at 60 °C	(A)		50	125	160
Rated Operational Current [I _e]	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 [I _{cw}]	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, I _{th} at 60 °C	(A)		250	400	630	800
Rated Operational Current [I _e]	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 [I _{cw}]	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) | 8 Padlock (PLD) | 15 Direct Rotary Handle (TFG) |
| 2 Terminal Cover (For Plug-in) (TCF Short Type) | 9 Rear Connection Terminal (RCT) | 16 Extended Rotary Handle (TFH) |
| 3 Bus Bar (TBB) | 10 Auxiliary Switch (AUX) | 17 Auxiliary Handle (THA) |
| 4 Insulation Barrier (TQQ) | 11 Trip Alarm Switch (ALT) | 18 Plug-in Terminal Block (CBM) |
| 5 Mechanical Interlock (MIF) | 12 Shunt Trip Switch (SHT) | 19 Plug-in Terminal Block (CBB BLOCK UNIT) |
| 6 Lug Terminal (CTB) | 13 Under-Voltage Trip Switch (UVT) | 20 Plug-in Terminal Block (CBB PLATE) |
| 7 Terminal Cover (General-Type) (TCF Long Type) | 14 Motor Operator (MOT) | 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	Suitability 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	E S H L	
	AC 440/460 V		16 20 16 20 38 55	16 20 26 30	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	16 20 26 30	
	AC 380 V		18 22 18 22 42 55	18 22 30 31	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	30 50 50 50	
Service Breaking Capacity [Ics = % Icu]		100 100 100 100 100 100	100 100 75 50	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	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	100	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	125	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	125	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	150	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	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 Disconnecter



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		×	×	×



HMMS Type

Model Name			HMMS32K						HMMS32R						MMS80K									
Operation Type			Push-button						Rotary-handle						Push-button									
Number of Poles									3						3									
Rated Current		(In)							0.1 ~ 32 A						25 ~ 80 A									
Rated Operational Voltage		(Ue)							up to 690 V						up to 690 V									
Rated Frequency		(Hz)							50/60						50/60									
Rated Insulation Voltage		(Ui)							690 V						690 V									
Rated Impulse Voltage		(Uimp)							6 kV						6 kV									
Utilization Category	IEC 60947-2 (Breaker)								Cat. A						Cat. A									
	IEC 60947-4 (Motor Starter)								AC 3						AC 3									
Electrical/Mechanical Endurance (min.)									100,000 / 100,000 times						30,000 / 50,000 times									
Operating Frequency per Hour (max.)									25						25									
Instantaneous Short Circuit Release									13×Ie max.						13×Ie max.									
Function	Overload Protection								O						O									
	Phase Failure Protection								O						O									
	Test Button								O						O									
Mounting									Clip in DIN Rail (35×7.5 mm)						Clip in DIN Rail (35×7.5 mm)									
Installation Position									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

Contactors 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

Contactors 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		
	Rated Operational Voltage [Ue]		V	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		
	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
	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		

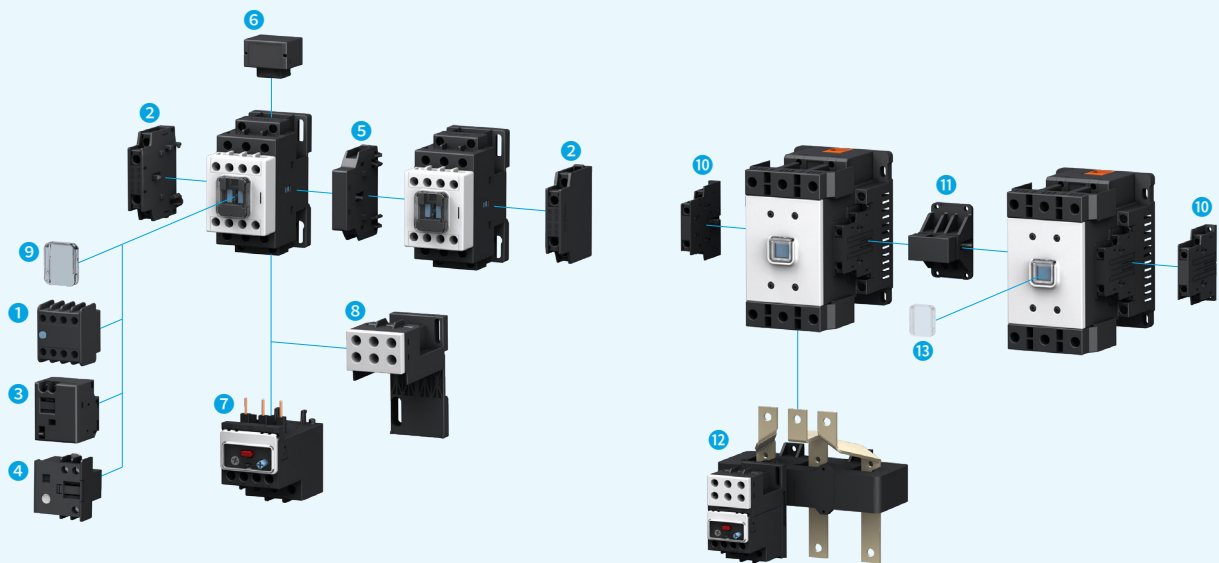
Compact HGT Type

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)	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	
Ambient Temperature 55 °C, 50/60 Hz	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



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 °C	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 AC Category "B" KS C 4620	690/600/550 V	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	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	
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						
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						
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										
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	1,250	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)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	254(10)×310(12.2)																		○	
Installation Method	Fixed	XA	○			○			○				○				○			
	Draw-Out	GA, GS	○			○			○				○				○			
		MA, MS	○			○			○				○				○			

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	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)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	254(10)×310(12.2)																○
Installation Method	Fixed	XA	○			○			○				○				
	Draw-Out	GA, GS	○			○			○				○				
		MA, MS	○			○			○				○				

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	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)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	254(10)×310(12.2)															○
Installation Method	Fixed	XA	○			○			○				○			
	Draw-Out	GA, GS	○			○			○				○			
		MA, MS	○			○			○				○			

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	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)	○	○	○	○	○	○	○	○	○
Installation Method	Fixed	XA	○				○			
	Draw-Out	GA, GS	○				○			
		MA, MS	○				○			

※ 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)

UVC Type

Structure		Fixed Type				Draw-Out Type				
		A1 A2 A3		X1 Without Fuse With Single Fuse		D1 D2 D3 D4 D5 D6		B1 B2 Without Fuse 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 (0-3 min-CO-3 min-CO)	kA	4 (50 MVA at 7.2 kV)								
Short-Time Current	1 sec	6.3				6.3				
	30 sec	3				3				
Mechanical Lifetime	Continuously Energized	1,000 times				1,000				
	Latched	1,000 times				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		A1 A2 A3		X1 19			B1 B2 35		
					A2 28			D1 D2 D3 D5 38		
					A3 33			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 (2 nd)
	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
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	Resistive 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



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 Average current load factor, Load level LEDs (40 % ~ 110 % for rating current)
	Power	Active Power	kW, Accuracy 0.5 Class
		Reactive 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	
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(Voltage 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	2P L-N : 12.5 kA/Mode N-PE : 50 kA/Mode	-	-	-	-	-	-	-	-
			3P L-PE : 12.5 kA/Mode	3P L-PE : 25 kA/Mode								
				4P L-N : 25 kA/Mode N-PE : 100 kA/Mode								
Maximum Discharge Current	I_{max} (8/20µs)	40 kA/ Mode	-			50 kA/Mode			50 kA/Mode			
Nominal Discharge Current	I_n (8/20µs)	20 kA/ Mode	-			20 kA/Mode			20 kA/Mode			
Short-Circuit Current Rating	I_{scrr}	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	2P L-N : 1.3 kV N-PE : 1.8 kV	-	-	-	-	-	-	-	-
			3P L-PE : 1.2 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	t_A	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				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		Iscrr		-	-	-	-	-	-	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			
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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