

HG-SERIES

Molded Case Circuit Breakers & Earth Leakage Circuit Breakers



LV & MV Circuit Breakers

MOLDED CASE CIRCUIT BREAKERS & EARTH LEAKAGE CIRCUIT BREAKERS

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HG-SERIES

Globalization of Technology

HG-SERIES

Molded Case Circuit Breakers & Earth Leakage Circuit Breakers

Maximized Selectivity and Safety with Various Products Range & Breaking Capacity!

Various Product Range 30 - 800 AF

Reinforced Breaking Capacity 16 - 85 kA (at 460 V)

$I_{cs} = 100\% I_{cu}$

Rated Insulation Voltage (U_i) 1,000 V





HYUNDAI

HGM 100H

100AF 50/60Hz 40°C

U_i 1000V U_{imp} 8kV

U_e(V) I_{cu}(kA)

660 / 690V - 8kA

480 / 500V - 14kA

440 / 460V - 26kA

380 / 415V - 35kA

220 / 240V - 65kA

I_{cs} = I_{cu} 75%

MADE IN KOREA

ON

100A

CE Cat. A
IEC 60947-2

PUSH TO TRIP

1.0 + 0.8
0.9 I_r(x I_n)

LOAD

HG-SERIES

Adjustable Ratings Design

Optimized Protection Based on the Load Conditions!

Adjustable Rated Currents (Molded Case Circuit Breakers)

30 - 250 AF (0.8 - 0.9 - 1 X In), 400 - 800 AF (0.63 - 0.8 - 1 X In)

Adjustable Rated Residual Currents (Earth Leakage Circuit Breakers)

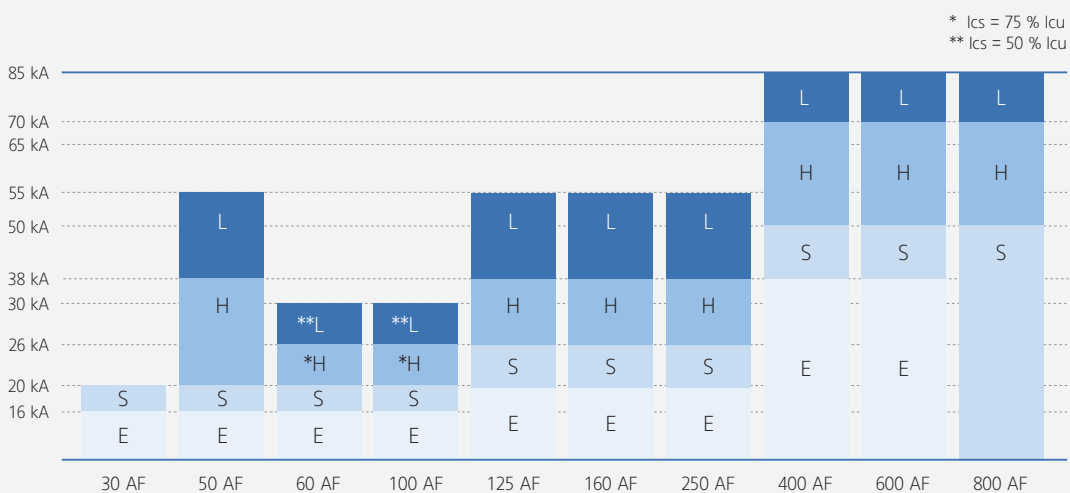
100 - 300 - 500 - 1,000 (mA)

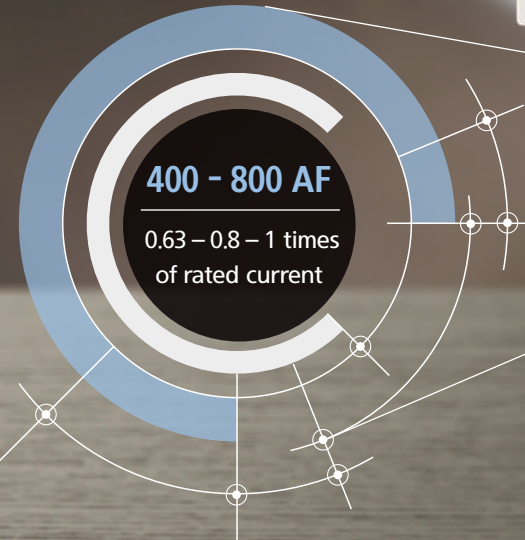
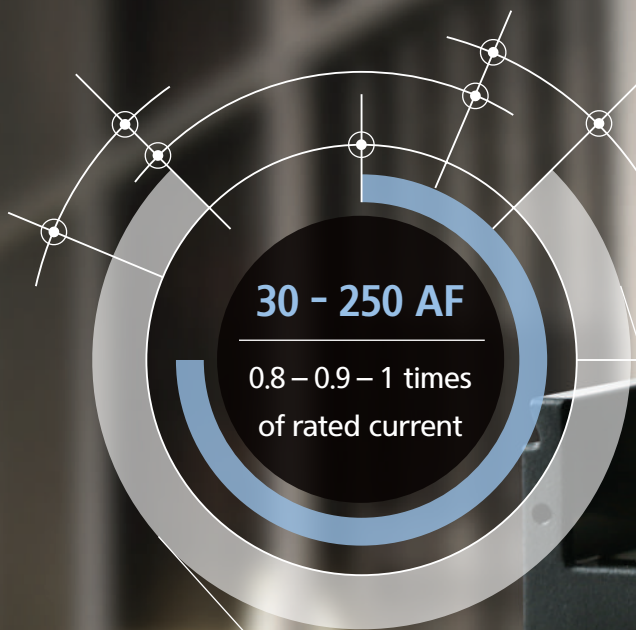
Adjustable Residual Current Off-Time (Earth Leakage Circuit Breakers)

0 - 200 - 500 - 1,000 (ms)

Reinforcement of Protective Coordination

Rated Short-Circuit Current by AF, (Ics = 100 % Icu, at 440/460 V)





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Advanced Breaking Performance and Various Selectivity

- Various Product Range: 30 - 800 AF, 10 Frames
- Standardized Size of Accessories, Compatible with MCCB and ELCB
- Standardized Height of Products by Frame: 30 - 250 AF (68 mm), 400 - 800 AF (110 mm)

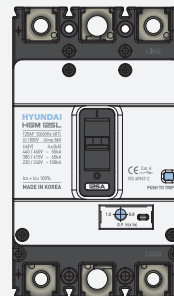
30, 50, 60, 100 AF

50, 125 AF

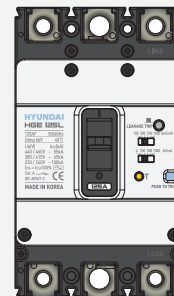
160, 250 AF



Size
Compatibility
Public Using
Accessories



MCCB



ELCB

(unit: mm)

400 AF

630, 800 AF



HG-SERIES

HGM Type Molded Case Circuit Breakers

Ui: 1,000 V Uimp: 8 kV Ics = 100 % Icu

Maximized Insulation Performance

- Rated insulation voltage, Ui: 1,000 V
- Rated impulse withstand voltage, Uimp: 8 kV

High Breaking Capacity

- 16 - 30 kA at 460 V (100 AF)
- 16 - 55 kA at 460 V (125 - 250 AF)
- 38 - 85 kA at 460 V (400 - 800 AF)

Cable Insulation Performance Suitability

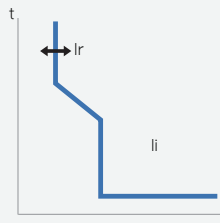
In case of continuing abnormal conditions such as welding of main contact after trip, handle is not available to move 'OFF position' in accordance with IEC 60947-2 cable insulation performance. Also, it is possible to maintain easily by checking a contact condition by the handle.

Adjustable Rated Current

As applying to adjustable rated current design, it is possible to protect circuit optimally according to the load factor. Adjustable range of rated currents.

(Molded case circuit breakers)

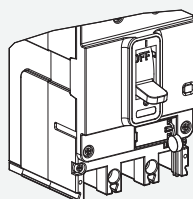
- 30 - 250 AF: 80 % - 90 % - 100 % of rated current
- 400 - 800 AF: 63 % - 80 % - 100 % of rated current



Characteristic Curve
(I - t Curve)

Dial Sealing Device (Option)

Prevent removal of the protection cover from body and any operating of current setting value.

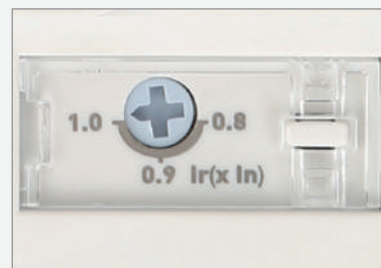


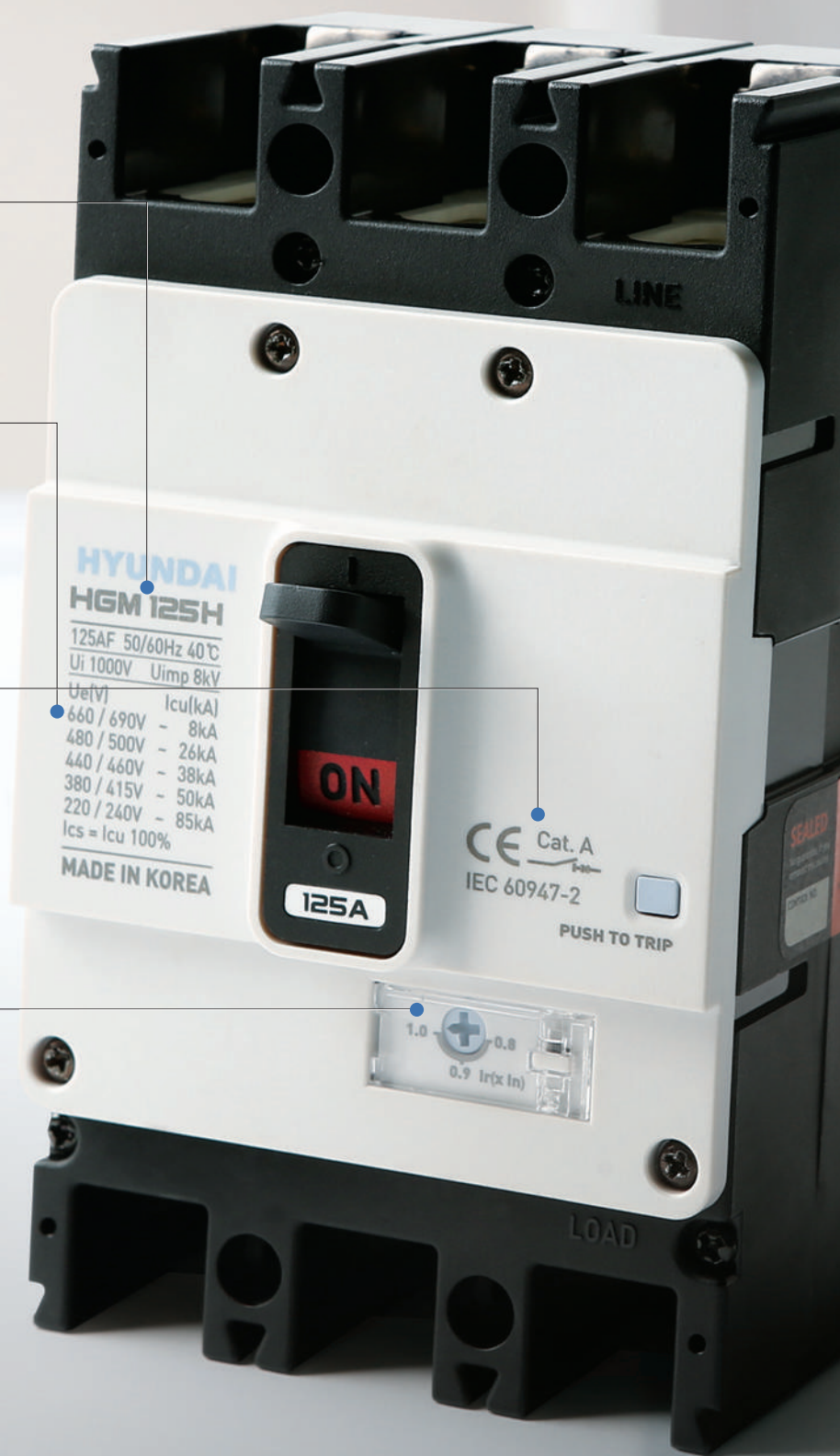
HGM 125H

125AF 50/60Hz 40 °C
Ui 1000V Uimp 8kV

Ue(V)	Icu(kA)
660 / 690V	~ 8kA
480 / 500V	~ 26kA
440 / 460V	~ 38kA
380 / 415V	~ 50kA
220 / 240V	~ 85kA
Ics = Icu 100%	

CE Cat. A
IEC 60947-2
PUSH TO TRIP





HG-SERIES

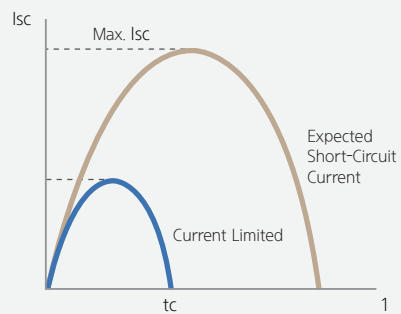
HGM Type Molded Case Circuit Breakers

- High Performance & Coordination

Service Breaking Capacity ($I_{cs} = 100\% \times I_{cu}$)

Service breaking capacity, '100 % X I_{cu} ' is realized by enlarging breaking capacity with internal limit current device.

- 30 - 800 AF
- 16 - 55 kA @ 460 Vac (Up to 250 AF)
- 38 - 85 kA @ 460 Vac (400 - 800 AF)
(HGM100 AF H Type $I_{cs} = 75\% I_{cu}$, HGM100 AF L Type $I_{cs} = 50\% I_{cu}$)



Current Limiting Characteristics

Available to Various Low Voltage System Protections

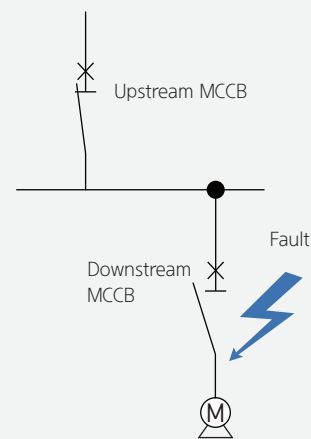
It is available to adapt various low voltage system protections such as 'Discrimination' and 'Cascading' with limit current characteristic and high breaking capacity.

Discrimination

It is a low voltage system protection to selectively separate fault point from system to minimize influence of fault. In this protection type, only circuit breaker installed at a fault point is operated while the other feeder can be used continuously.

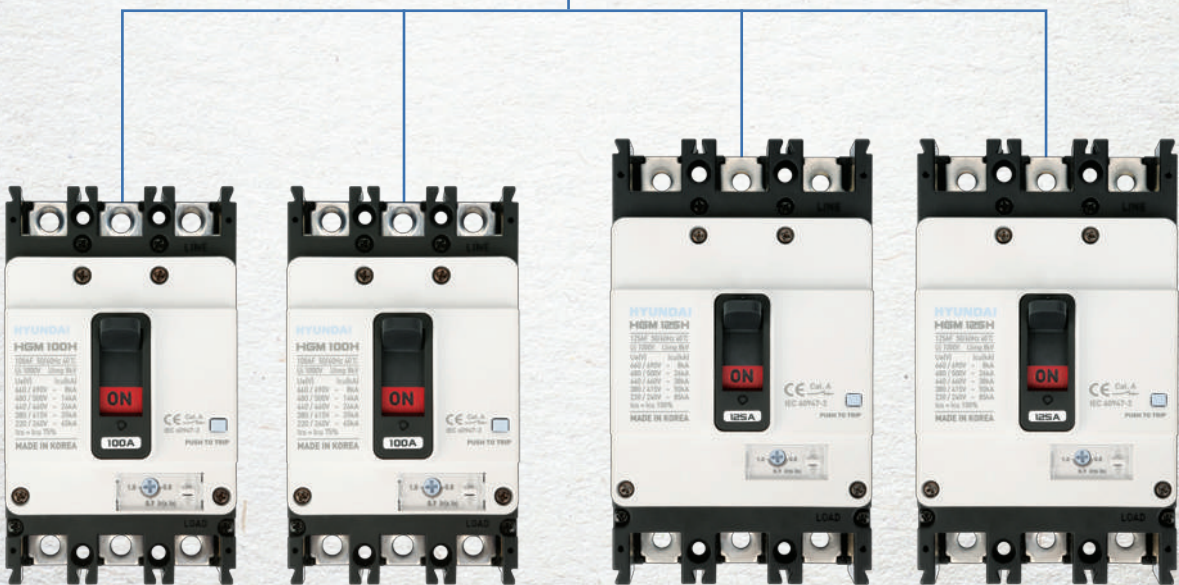
Cascading

In this protection type, upstream circuit breakers can be tripped earlier than downstream circuit breaker for back up protection. So, it is applied to the smaller breaking capacity than the calculated value at down stream circuit.





Various Low Voltage System Protections



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HGM Type Earth Leakage Circuit Breakers

$I_{cs} = 100 \% I_{cu}$ $U_{imp} = 6 \text{ kV}$

- Standardized Size of Accessories, Compatible with MCCB
- Adjustable Residual Current and Current Cut-Off Time
- Application of 3 Phase Power Supply System, Enabling Normal Operation Under One Phase Loss Fault Adopt to EN Standards

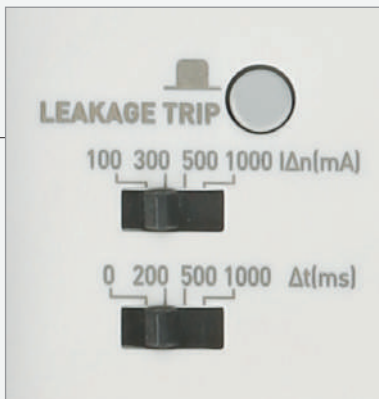


Dimensions and Specifications Compatibility with MCCB

- Service breaking capacity, $I_{cs} = 100\% I_{cu}$
- Rated impulse withstand voltage, $U_{imp}: 6\text{ kV}$

Residual Current Protection Characteristics

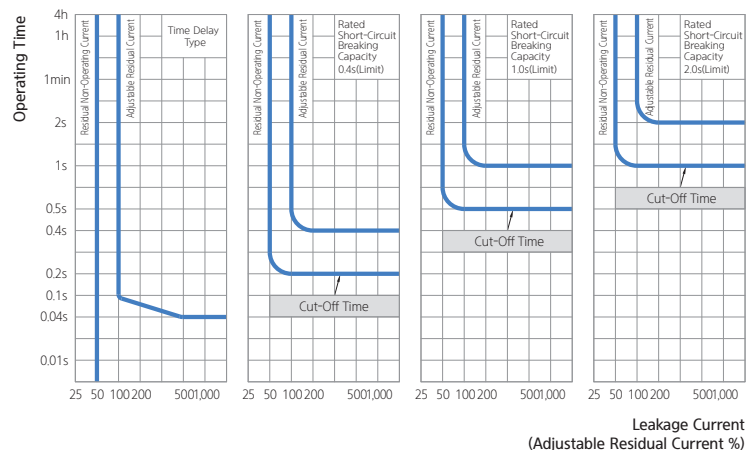
- Prevent damage from reverse connection: It is possible to prevent circuit damage under reverse connection condition.
- Prevent unnecessary malfunction on temporary leakage condition.
- Adjustable residual current and cut-off time.
- 3 Phase power supply system: Enables normal operation under one phase loss condition by adapting 3 phase power supply system.
- Protecting an inverter load safely from ground fault by adapting IC filter.



Adjustable Residual Current and Cut-Off Time

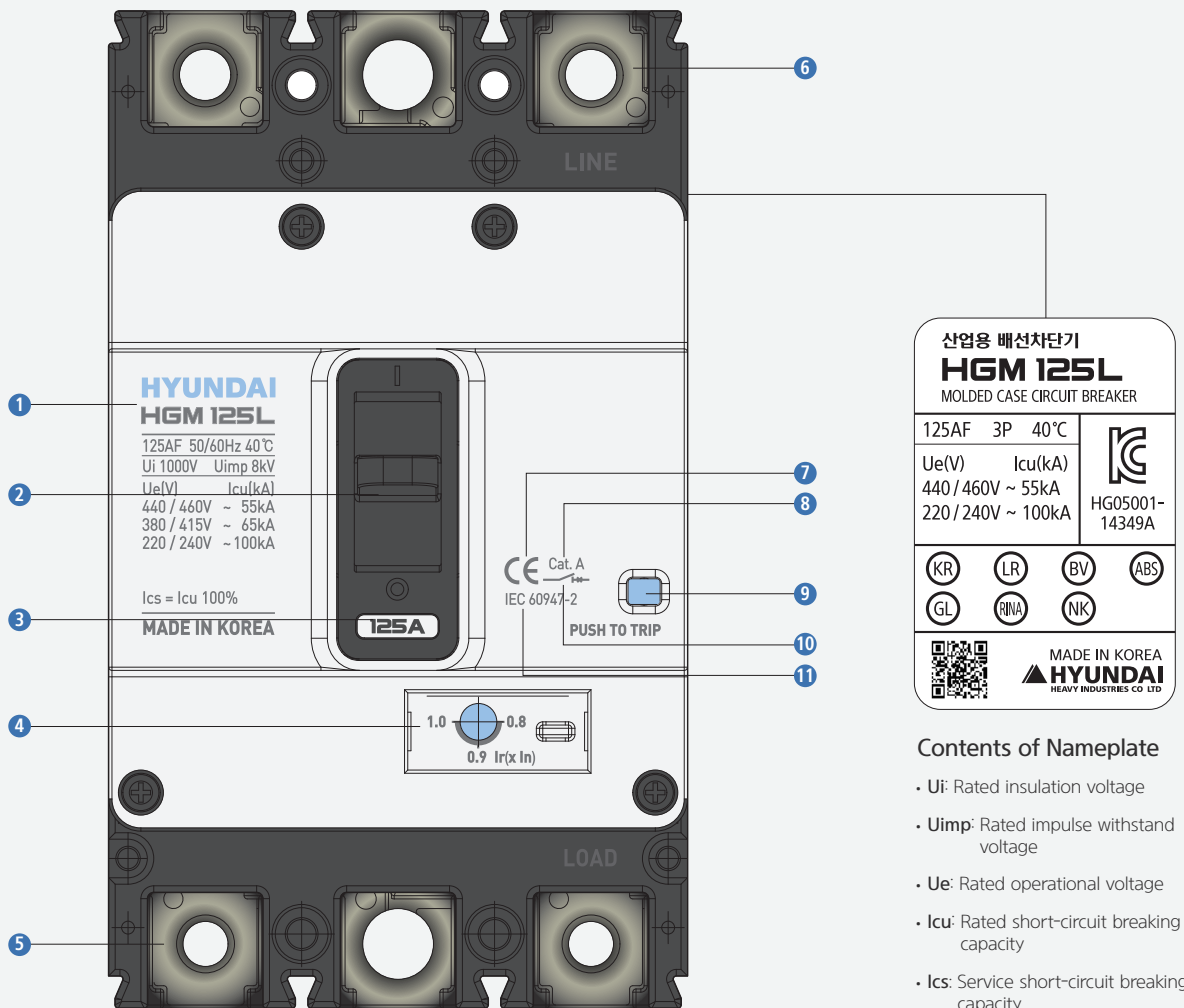
Part	Adjustable Residual Current					Cut-Off Time			
	30 mA	100 mA	300 mA	500 mA	1,000 mA	0 ms	200 ms	500 ms	1,000 ms
Previous ELCB	Fixed	3 steps			-	Fixed	-	-	-
HG-ELCB	Fixed	4 steps				4 steps			

- Adjustable residual current and cut-off time in 4 steps.
- Coordination protection between upstream and downstream circuit breakers by adjusting residual current and cut-off line.



External Structure and Contents of Nameplate

Molded Case Circuit Breakers



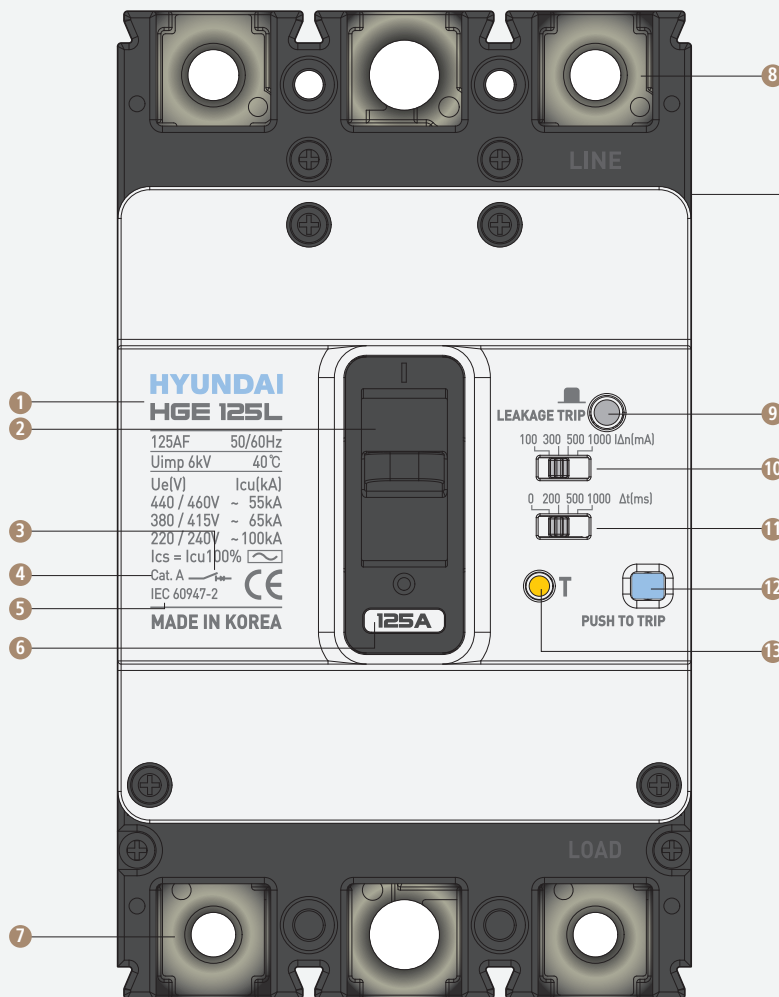
Contents of Nameplate




- **U_i**: Rated insulation voltage
- **U_{imp}**: Rated impulse withstand voltage
- **U_e**: Rated operational voltage
- **I_{cu}**: Rated short-circuit breaking capacity
- **I_{cs}**: Service short-circuit breaking capacity

Molded Case Circuit Breakers (MCCB)

- | | | |
|--------------------|------------------------|--|
| ① Model Name | ⑤ Load Side Terminal | ⑨ Trip Button |
| ② Operating Handle | ⑥ Line Side Terminal | ⑩ Cable Insulation Performance Suitability |
| ③ Rated Current | ⑦ CE Marking | ⑪ Standards |
| ④ Adjusting Knob | ⑧ Utilization Category | |

Earth Leakage Circuit Breakers



산업용 누전차단기			
HGE 125L EARTH LEAKAGE CIRCUIT BREAKER			
125A	3P	40°C	HG05001-14347A
Ue(V)	Icu(kA)		
440 / 460V ~ 55kA	440 / 415V ~ 65kA		
220 / 240V ~ 100kA			
			
MADE IN KOREA 			

Contents of Nameplate

- **U_i**: Rated insulation voltage
- **U_{imp}**: Rated impulse withstand voltage
- **U_e**: Rated operational voltage
- **I_{cu}**: Rated short-circuit breaking capacity
- **I_{cs}**: Service short-circuit breaking capacity

Earth Leakage Circuit Breakers (ELCB)

- | | | |
|--|--------------------------|--|
| ① Model Name | ⑤ CE Marking | ⑩ Rated Residual Current Setting Switch |
| ② Operating Handle | ⑥ Rated Current | ⑪ Rated Residual Current Cut-Off Time Setting Switch |
| ③ Cable Insulation Performance Suitability | ⑦ Load Side Terminal | ⑫ Trip Test Button |
| ④ Utilization Category | ⑧ Line Side Terminal | ⑬ Leakage Trip Test Button |
| | ⑨ Leakage Trip Indicator | |

Standards and Certifications

Standards

Standards

KS C 8321

Molded case circuit breakers for industrial uses

KS C 4613

Circuit breaker incorporating residual current protection for industrial Uses (CBR)

International Standards

IEC 60947-1

Low voltage switchgear and controlgear, part 1 (General rules)

IEC 60947-2

Low voltage switchgear and controlgear, part 2 (Circuit breakers)



Approvals and Certifications

HG-Series MCCB has acquired the certification from the TEST agency registered in STL.

- CB certification (DEKRA)
- Safety certification scheme for electrical applications
- KS (Korean industrial standards)
- Marine approvals (8's classifications)



Vibration/Shock Withstand Test Certification Acquisition

HG Series MCCB has acquired the vibration/shock withstand test certification in accordance with IEC 60068-2-6 standard which is the required level of IACS, international vessel inspection institute.

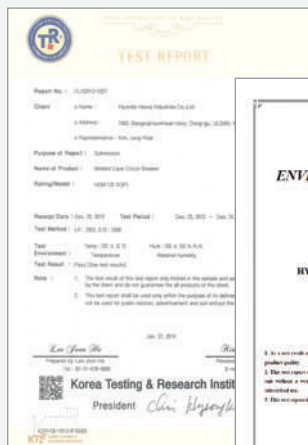
- Vibration resistant: 2 - 13.2 Hz - ± 1 mm
- Shock resistant: 13.2 - 100 Hz - ± 0.7 g



Our services

Testing, inspections, certification

DEKRA provides certification of management systems as well as technical support, testing and certification of a wide range of products throughout the life cycle.



Products Selection Table

Molded Case Circuit Breakers (HGM Type)	20
ZCT Molded Case Circuit Breakers (ZCT / HGM□Z Type)	24
Earth Leakage Circuit Breakers (HGE Type)	28


Model Selection Table

MCCB (HGM Type): 30 - 250 AF

Things in Common

Rated Insulation Voltage, U_i	1,000 V
Rated Operational Voltage, U_e	690 V
Impulse Withstand Voltage, U_{imp}	8 kV
Protective Function	Overload, short-circuit and instantaneous protection

Suitability for Isolation	Yes
Utilization Category	A
Polution Degree	3
Reference Standard	IEC 60947-2

Model	HGM30		HGM50				HGM60						
Frame (AF)	30		50				63						
Pole (P)	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						
Rated short-circuit breaking capacity [Icu] (kA rms)	Recognition code for order		E	S	E	S	H	L	E	S	H	L	
	AC660/690 V		2.5	5	2.5	5	8	10	2.5	5	7.5	8	
	AC480/500 V		7.5	10	7.5	10	26	35	7.5	10	14	26	
	AC440/460 V		16	20	16	20	38	55	16	20	26	30	
	AC380/415 V		16	20	16	20	38	55	16	20	26	30	
Service breaking capacity [Ics = % Icu]	AC220/240 V		35	50	35	50	85	100	35	50	50	50	
	DC250 V (2P)		5	10	5	10	20	30	5	10	15	15	
Endurance (Durability)	Mechanical		30,000		30,000				30,000				
	Electrical		10,000		10,000				10,000				
Trip Device													
Thermal magnetic	Long time [LT]	Fixed	(1.0) x In		(1.0) x In				(1.0) x In				
		Adjustable	(0.8 - 0.9 - 1.0) x In		(0.8 - 0.9 - 1.0) x In				(0.8 - 0.9 - 1.0) x In				
	Instantaneous [INST]		400 A		16 - 32 A: 400 A, 40 - 50 A: 10 x In				16 - 32 A: 400 A, 40 - 63 A: 10 x In				
Accessory													
Internal	Auxiliary switch AUX		●		●				●				
	Alarm switch ALT		●		●				●				
	Shunt trip SHT		●		●				●				
	Undervoltage trip UVT		●		●				●				
External	Rotary handle	Front contact TFG	●		●				●				
		Extended TFH	●		●				●				
	Motor operator MOT		●		●				●				
	Mechanical interlock MIF		●		●				●				
	Locking device PLD		●		●				●				
	Plug-in	TDM (LINE/LOAD)		● (3P Only)		● (3P Only)		● (3P Only)		● (3P Only)			
		TDM (LINE only)		● (3P Only)		● (3P Only)		● (3P Only)		● (3P Only)			
		TDF (LINE only)		● (3P Only)		● (3P Only)		● (3P Only)		● (3P Only)			
		TDA (1 row)		● (3P Only)		● (3P Only)		● (3P Only)		● (3P Only)			
		TDA (2 row)		● (2, 3P Only)		● (2, 3P Only)		● (3P Only)		● (2, 3P Only)			
Cage terminal block CTB		●		●				●					
Insulation terminal cover TCF		●		●				●					
Insulation barrier TQQ		●		●				●					
Terminal extensions TBB		-		-				-					
Installation and Dimensions													
Connection/Installation	Front connection		Terminal screw										
	Rear connection		Horizontal/Vertical										
	Plug-in		Switchboard type (Line & Load, Line only), Distribution board type ²⁾										
	DIN rail installation		Possible for using DIN rail adapter			-			Possible for using DIN rail adapter				
Dimensions (mm)		a (2/3/4P)		50/75/100	50/75/100	60/90/120	50/75/100						
		b		130	130	155	130						
		c		68	68	68	68						
Weight (kg)	2/3/4P		0.6/0.8/1.0	0.6/0.8/1.0	0.8/1.0/1.3	0.6/0.8/1.0							
Detailed rating and select			122 Page		122 Page		122 Page						
Characteristics curve and outside view			70 - 80 Page		70 - 80 Page		70 - 80 Page						

※ ¹⁾ 4 pole arrangement: Basic specification is R-S-T-N (N-R-S-T is optional).

²⁾ Plug-in: Applicable only 3P.

³⁾ 2P product is just removed versus central pole of 3P product. So, 2P product's dimension is equal to 3P product's dimension.



HGM100				HGM125				HGM160				HGM250			
100				125				160				250			
2, 3, 4 ¹⁾				2, 3, 4 ¹⁾				2 ³⁾ , 3, 4 ¹⁾				2 ³⁾ , 3, 4 ¹⁾			
16, 20, 25, 32, 40, 50, 63, 75, 80, 100				16, 20, 25, 32, 40, 50, 63, 75, 80, 100, 125				100, 125, 150, 160				100, 125, 150, 160, 175, 200, 225, 250			
E	S	H	L	E	S	H	L	E	S	H	L	E	S	H	L
2.5	5	7.5	8	5	7.5	8	10	7.5	8	8	10	7.5	8	8	10
7.5	10	14	26	10	14	26	35	14	20	26	35	14	20	26	35
16	20	26	30	20	26	38	55	20	26	38	55	20	26	38	55
16	20	26	30	20	26	38	55	20	26	38	55	20	26	38	55
35	50	50	50	50	65	85	100	50	65	85	100	50	65	85	100
5	10	15	15	10	15	20	30	10	15	20	30	10	15	20	30
100	100	75	50	100	100	100	100	100	100	100	100	100	100	100	100
30,000				30,000				25,000				25,000			
10,000				10,000				10,000				10,000			
(1.0) x In				(1.0) x In				(1.0) x In				(1.0) x In			
(0.8 - 0.9 - 1.0) x In				(0.8 - 0.9 - 1.0) x In				(0.8 - 0.9 - 1.0) x In				(0.8 - 0.9 - 1.0) x In			
16 - 32 A: 400 A, 40 - 100 A: 10 x In				16 - 32 A: 400 A, 40 - 125 A: 10 x In				10 x In				10 x In			
●				●				●				●			
●				●				●				●			
●				●				●				●			
●				●				●				●			
●				●				●				●			
●				●				●				●			
●				●				●				●			
●				●				●				●			
●				●				●				●			
●				●				●				●			
● (3P Only)				● (3P Only)				● (3P Only)				● (3P Only)			
● (3P Only)				● (3P Only)				● (3P Only)				● (3P Only)			
● (3P Only)				● (3P Only)				-				-			
● (3P Only)				● (3P Only)				-				-			
● (2, 3P Only)				● (3P Only)				-				-			
●				●				●				●			
●				●				●				●			
●				●				●				●			
-				-				●				●			
Terminal screw				Terminal screw				Terminal screw, Terminal busbar				Terminal screw, Terminal busbar			
Horizontal/Vertical				Horizontal/Vertical				Horizontal/Vertical				Horizontal/Vertical			
Switchboard type (Line & Load, Line only), Distribution board type ²⁾				Switchboard type (Line & Load, Line only), Distribution board type ²⁾				Switchboard type (Line & Load, Line only) ²⁾				Switchboard type (Line & Load, Line only) ²⁾			
Possible for using DIN rail adapter				-				-				-			
50/75/100				60/90/120				105/105/140				105/105/140			
130				155				165				165			
68				68				68				68			
0.6/0.8/1.0				0.8/1.0/1.3				1.1/1.3/1.7				1.1/1.3/1.7			
122 Page				122 Page				122 Page				122 Page			
70 - 80 Page				70 - 80 Page				70 - 80 Page				70 - 80 Page			


Model Selection Table

MCCB (HGM Type): 400 - 800 AF

Things in Common

Rated Insulation Voltage, U_i	1,000 V
Rated Operational Voltage, U_e	690 V
Impulse Withstand Voltage, U_{imp}	8 kV
Protective Function	Overload, short-circuit and instantaneous protection

Suitability for Isolation	Yes
Utilization Category	A
Pollution Degree	3
Reference Standard	IEC 60947-2

Model		HGM400				HGM630				HGM800					
Frame	(AF)	400				630				800					
Pole	(P)	2, 3, 4 ¹⁾				2, 3, 4 ¹⁾				2, 3, 4 ¹⁾					
Rated current, at 40 °C	(A)	250, 300, 350, 400				500, 630				700, 800					
Rated short-circuit breaking capacity [Icu] (kA rms)	Recognition code for order	E	S	H	L	E	S	H	L	S	H	L			
	AC660/690 V	5	8	10	14	5	8	10	14	8	10	14			
	AC480/500 V	18	35	50	65	25	45	50	65	45	50	65			
	AC440/460 V	38	50	70	85	38	50	70	85	50	70	85			
	AC380/415 V	45	65	85	100	45	65	85	100	65	85	100			
	AC220/240 V	50	75	100	125	50	75	100	125	75	100	125			
	DC250 V (2P)	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			
Endurance (Durability)	Mechanical	4,000				2,500				2,500					
	Electrical	1,000				500				500					
Trip Device															
Thermal magnetic	Long time [LT]	Fixed	(1.0) x I _n				(1.0) x I _n				(1.0) x I _n				
		Adjustable	(0.63 - 0.8 - 1.0) x I _n				(0.63 - 0.8 - 1.0) x I _n				(0.63 - 0.8 - 1.0) x I _n				
	Instantaneous [INST]	10 x I _n				10 x I _n				10 x I _n					
Accessory															
Internal	Auxiliary switch	AUX	●				●				●				
	Alarm switch	ALT	●				●				●				
	Shunt trip	SHT	●				●				●				
	Undervoltage trip	UVT	●				●				●				
External	Rotary handle	Front contact	TFG	●				●				●			
		Extended	TFH	●				●				●			
	Motor operator	MOT	●				●				●				
	Mechanical interlock	MIF	●				●				●				
	Locking device	PLD	●				●				●				
	Plug-in	TDM (LINE/LOAD)		● (3P Only)				● (3P Only)				● (3P Only)			
		TDM (LINE only)		● (3P Only)				● (3P Only)				● (3P Only)			
		TDF (LINE only)		-				-				-			
		TDA (1 row)		-				-				-			
		TDA (2 row)		-				-				-			
Cage terminal block	CTB	●				●				●					
Insulation terminal cover	TCF	●				●				●					
Insulation barrier	TQQ	●				●				●					
Terminal extensions	TBB	●				●				●					
Installation and Dimensions															
Connection/Installation	Front connection	Terminal screw				Terminal screw, Terminal busbar									
	Rear connection	Horizontal/Vertical wiring				Horizontal/Vertical wiring									
	Plug-in	Switchboard type (Line & Load, Line only) ²⁾				Switchboard type (Line & Load, Line only) ²⁾									
Dimensions (mm)		a (2/3/4P)	140/140/184				210/210/280				210/210/280				
		b	257				280				280				
		c	110				110				110				
Weight (kg)	2/3/4P	4/4.5/5.4				8.7/9.5/12.5				8.7/9.5/12.5					
Detailed rating and select		122 Page				122 Page				122 Page					
Characteristics curve and outside view		70 - 80 Page				70 - 80 Page				70 - 80 Page					

※ ¹⁾ 4 pole arrangement: Basic specification is R-S-T-N (N-R-S-T is optional).

²⁾ Plug-in: Applicable only 3P.