

Accessory

Internal	Auxiliary switch (AUX), Alarm switch (ALT), Shunt trip (SHT), Undervoltage trip (UVT)
External	Rotary handle - Front Contact Type (TFG)/Extension Type (TFH), Motor operator (MOT), Mechanical interlock (MIF), Locking device (PLD), Cage terminal block (CTB), Insulation terminal cover (TCF), Insulation barrier (TQQ) ※ Plug-in TDM is only for 3 pole and can be selected by LINE/LODE(P3), LINE Only(F3). Terminal extensions (TBB) excludes HGP50D, 125D and 160D types.

HGP160				HGP250				HGP400				HGP630				HGP800			
160 3, 4 ¹⁾				250 3, 4 ¹⁾				400 3, 4 ¹⁾				630 3, 4 ¹⁾				800 3, 4 ¹⁾			
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	10	10	20	35	10	10	20	35	10	10	20	35
25	50	65	100	25	50	65	100	25	50	70	100	25	50	70	100	25	50	70	100
36	65	85	150	36	65	85	150	36	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
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
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
9	14	14	17	9	14	14	17	17	17	40	74	17	17	40	74	17	17	40	74
53	105	143	220	53	105	143	220	53	105	154	220	53	105	154	220	53	105	154	220
76	143	187	330	76	143	187	330	76	154	187	330	76	154	187	330	76	154	187	330
105	187	220	330	105	187	220	330	105	187	220	330	105	187	220	330	105	187	220	330
143	220	286	440	143	220	286	440	143	220	286	440	143	220	286	440	143	220	286	440
25,000				25,000				20,000				20,000				20,000			
10,000				10,000				6,000				4,000				3,000			
●				●				●				●				●			
100, 125, 150, 160				125, 150, 160, 175, 200, 225, 250				300, 350, 400				500, 630				700, 800			
(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			
(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			
●				●				●				●				●			
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			
16 @ 6lr				16 @ 6lr				16 @ 6lr				16 @ 6lr				16 @ 6lr			
0.5-1-2-4-6-8-16@6×lr				0.5-1-2-4-6-8-16@6×lr				0.5-1-2-4-6-8-16@6×lr				0.5-1-2-4-6-8-16@6×lr				0.5-1-2-4-6-8-16@6×lr			
10-15-20-25-30-35-40-45-50-60 @1.2×lr				10-15-20-25-30-35-40-45-50-60 @1.2×lr				10-15-20-25-30-35-40-45-50-60 @1.2×lr				10-15-20-25-30-35-40-45-50-60 @1.2×lr				10-15-20-25-30-35-40-45-50-60 @1.2×lr			
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			
0.1-0.2-0.3-0.4				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			
2,400				3,000				4,800				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×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			
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			
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			
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			
Terminal Screw, Terminal Bus Bar				Terminal Screw, Terminal Bus Bar				Terminal Screw, Terminal Bus Bar				Terminal Screw, Terminal Bus Bar				Terminal Screw, Terminal Bus Bar			
Horizontal/Vertical Cable				Horizontal/Vertical Cable				Horizontal/Vertical Cable				Horizontal/Vertical Cable				Horizontal/Vertical Cable			
Switchgear (Line & Load, Line Only)				Switchgear (Line & Load, Line Only)				Switchgear (Line & Load, Line Only)				Switchgear (Line & Load, Line Only)				Switchgear (Line & Load, Line Only)			
105/140				105/140				140/186.5				140/186.5				210/280			
165				165				260				260				320			
86.5				86.5				110				110				135			



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HGP Series Generator Type Molded Case Circuit Breakers

Model Selection Table

Common Ratings			
Rated Insulation Voltage, Ui	1,000 V	Suitability for Isolation	Yes
Rated Operational Voltage, Ue	690 V	Utilization Category	A
Rated Impulse Withstand Voltage, Uimp	8 kV	Pollution Degree	3
Protection Function	Overload, Instantaneous, Short-Circuit Protection	Reference Standard	IEC 60947-2

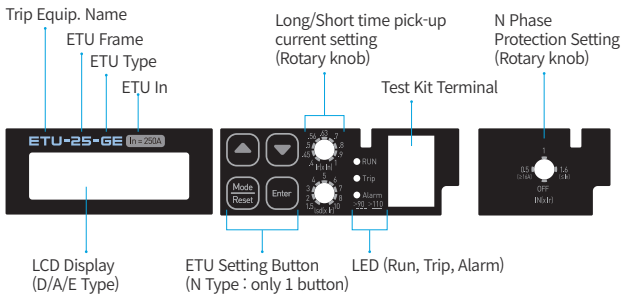
Model Name		HGP50D				HGP125D				HGP160D				HGP100					
Frame	(AF)	50				125				160				100					
Number of Poles	(P)	3, 4 ¹⁾				3, 4 ¹⁾				3, 4 ¹⁾				3, 4 ¹⁾					
Rated Ultimate Short-Circuit Breaking Category Code		F* ²⁾	S	H	X	F* ²⁾	S	H	X	F* ²⁾	S	H	X	F* ²⁾	S	H	X		
AC 660/690 V		6	8	8	10	6	8	8	10	6	8	8	10	6	8	8	10		
AC 480/500 V		25	50	65	100	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	36	65	85	150		
AC 380/415 V		50	85	100	150	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	65	100	130	200		
DC 250 V ³⁾		36	65	85	100	36	65	85	100	36	65	85	100	36	65	85	100		
Service Breaking Capacity [Ics = % Icu]		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		
AC 660/690 V		9	14	14	17	9	14	14	17	9	14	14	17	9	14	14	17		
AC 480/500 V		53	105	143	220	53	105	143	220	53	105	143	220	53	105	143	220		
AC 440/460 V		76	143	187	330	76	143	187	330	76	143	187	330	76	143	187	330		
AC 380/415 V		105	187	220	330	105	187	220	330	105	187	220	330	105	187	220	330		
AC 220/240 V		143	220	286	440	143	220	286	440	143	220	286	440	143	220	286	440		
Endurance [times] (Durability)	Mechanical	25,000				25,000				25,000				25,000					
	In @ 440V	10,000				10,000				10,000				10,000					
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				40, 50, 63, 80, 100					
	Long Time [LTD]	(0.8-0.9-1.0)×In				(0.8-0.9-1.0)×In				(0.8-0.9-1.0)×In				(0.7-0.8-0.9-1.0)×In					
	Instantaneous [INST]	16~32A : 400A, 40~50A : 10×In				16~32A : 400A, 40~50A : 10×In				10×In				10×In					
Trip Device	Rated Current, at 40 °C (A)	-				-				-				● 40, 100					
	Long Time [LT]	I _r (A)	N, D, A, E				-				-				0.4-0.45-0.5-0.56-0.63-0.7-0.8-0.9-1×In				
		N	-				-				-				16 @ 6lr				
		Tr(s)	D, A, E				-				-				0.5-1-2-4-6-8-16@6×Ir				
	Short Time [STD]	I _{sd} (A)	N, D, A, E, GD, GE				-				-				10-15-20-25-30-35-40-45-50-60 @1.2×Ir				
		T _{sd} (s)	N, D, A, E, GD, GE				-				-				15-2-3-4-5-6-7-8-10×In				
	Electronic	N	-				-				-				0.1				
		I _i (A)	D, A, E, GD, GE				-				-				0.1-0.2-0.3-0.4				
		Instantaneous [INST]	N, D, A, E, GD, GE				-				-				1,500				
	Ground Fault Protection [GFT]	Break time(s)	N, D, A, E, GD, GE				-				-				0.05				
N		-				-				-				NA					
I _g (A)		D, A, E				-				-				OFF-0.2-0.3-0.4-0.5-0.6-0.7-0.8-1×In					
N Pole Protection (L, S)	T _g (ms)	N, D, A, E				-				-				NA					
	(A)	N, D, A, E				-				-				0.1-0.2-0.3-0.4					
Installation and Dimensions	Front Connection		Terminal Screw				Terminal Screw				Terminal Screw				Terminal Screw, Terminal Bus Bar				
	Rear Connection		Horizontal/Vertical Cable				Horizontal/Vertical Cable				Horizontal/Vertical Cable				Horizontal/Vertical Cable				
	Plug-in		Switchgear (Line & Load, Line Only)				Switchgear (Line & Load, Line Only)				Switchgear (Line & Load, Line Only)				Switchgear (Line & Load, Line Only)				
	Dimension (mm)	a (3/4P)		90/120				90/120				90/120				105/140			
		b		140				140				140				165			
c		86				86				86				86.5					

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

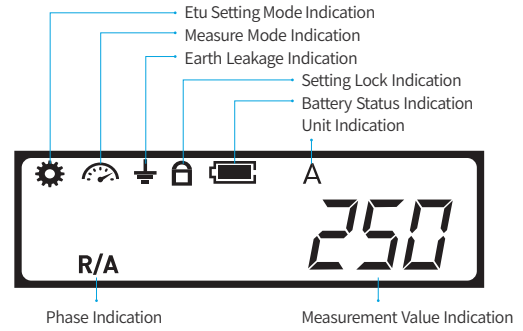
3) DC is only applicable to thermal magnetic
4) Only applicable if Ir < 0.63 ("1" is applicable if Ir ≥ 0.63)

Overview

ETU Part Name



LCD Display / ICON (N type is not applicable)



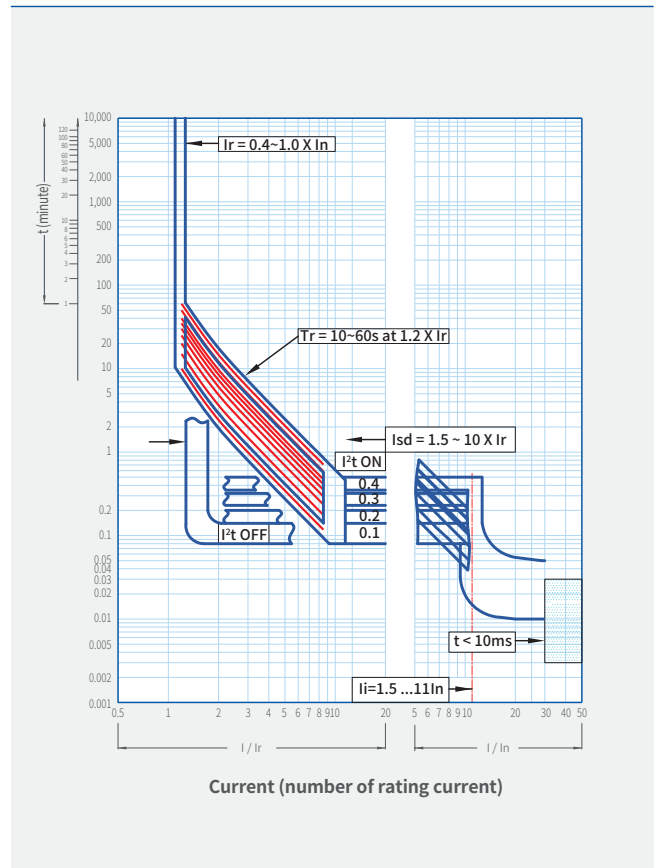
ETU Type / AF

Type	Model (AF)	Trip Unit							
	Rated Current (A)	40	100	160	250	250	400	630	800
Display Type		ETU-25-GD				ETU-63-GD		ETU-63-GD	ETU-80-GD
Energy-meter Type		ETU-25-GE				ETU-63-GE		ETU-63-GE	ETU-80-GE

Overview of Trip Unit Function

	GD	GE	Remark
HMI	<ul style="list-style-type: none"> Dial 2 ea, Key button 4 ea Segment LCD 	<ul style="list-style-type: none"> Dial 2 ea, Key button 4 ea Segment LCD 	Dial setting (I _r , I _{sd})
Protection	<ul style="list-style-type: none"> L (Dial, Key button) S (Dial, Key button) I (Key button) RP (Key button) 	<ul style="list-style-type: none"> L (Dial, Key button) S (Dial, Key button) I (Key button) RP (Key button) 	
Measurement	<ul style="list-style-type: none"> IR, IS, IT 	<ul style="list-style-type: none"> IR, IS, IT, I_{unbalance} (per phase) I_{avg}, I_{max}, I_{min} V, phase to neutral, phase to phase P, total/per phase, power factor Q, total/per phase S, total/per phase Active(kW), reactive(kVAR), apparent(kVA) F, THD (I, V, per phase, VLN, VLL) Harmonic (15th), Demand I, P 	
History / Event	<ul style="list-style-type: none"> Trip event: 20 ea (phase, type, time) 	<ul style="list-style-type: none"> Trip event: 20 ea (phase, type, time) System event: 32 ea 	External power supply (DC 24 V)
Power	<ul style="list-style-type: none"> Self-power 	<ul style="list-style-type: none"> Self-power External power (DC 24 V) 	<ul style="list-style-type: none"> ETU Self power running current - 250 A or less : over 30 % I_n - Etc. : over 15 % I_n
Battery	●	●	
Add-on function	<ul style="list-style-type: none"> Test terminal 	<ul style="list-style-type: none"> Test terminal ZSI OUT : 250 AF ZSI IN/OUT : 630 AF, 800 AF Trip / alarm counter Run time counter over 50 % I_n, every 24 h 	External power supply (DC 24 V)
Communication		<ul style="list-style-type: none"> RS-485 MODBUS-RTU 	External power supply (DC 24 V)
Indication	<ul style="list-style-type: none"> LED 3 ea Run LED / Trip LED / Alarm LED (90 % blinking, 110 % keeping) 	<ul style="list-style-type: none"> LED 3 ea Run LED / Trip LED / Alarm LED (90 % blinking, 110 % keeping) 	

Characteristic Curve



Trip Unit – GD/GE Type

Protection

Overload : Long time protection (Ir)

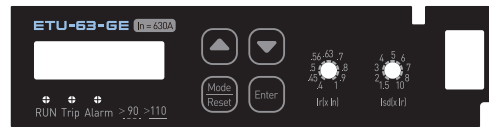
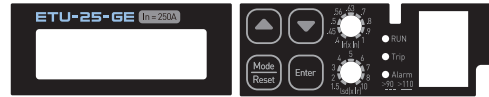
Protect the overload with the adjustable time delay and pick-up range.

Short Circuit : Short time protection (Isd)

Protect the short-circuit with the adjustable time delay and pick-up range.

Short Circuit : Instantaneous protection (Ii)

Protect the short-circuit with the adjustable pick-up range.



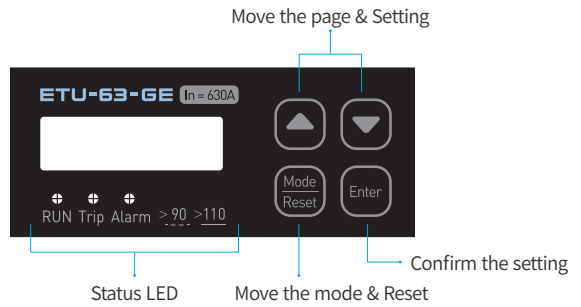
Display

Status LED

- Run LED : Lighting when the circuit breaker is under load.
- Trip LED : Lighting when the circuit breaker is tripped.
- Alarm LED : Flashing in $I > 0.9 \times I_r$, Lighting in $I > 1.1 \times I_r$

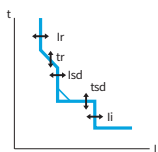
Button

- Change the trip unit settings & move the page on the display.
- There are 4-button.(Up/Down/Menu/Reset)

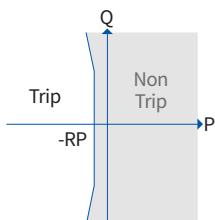


Protection Setting Range

GD/GE Type



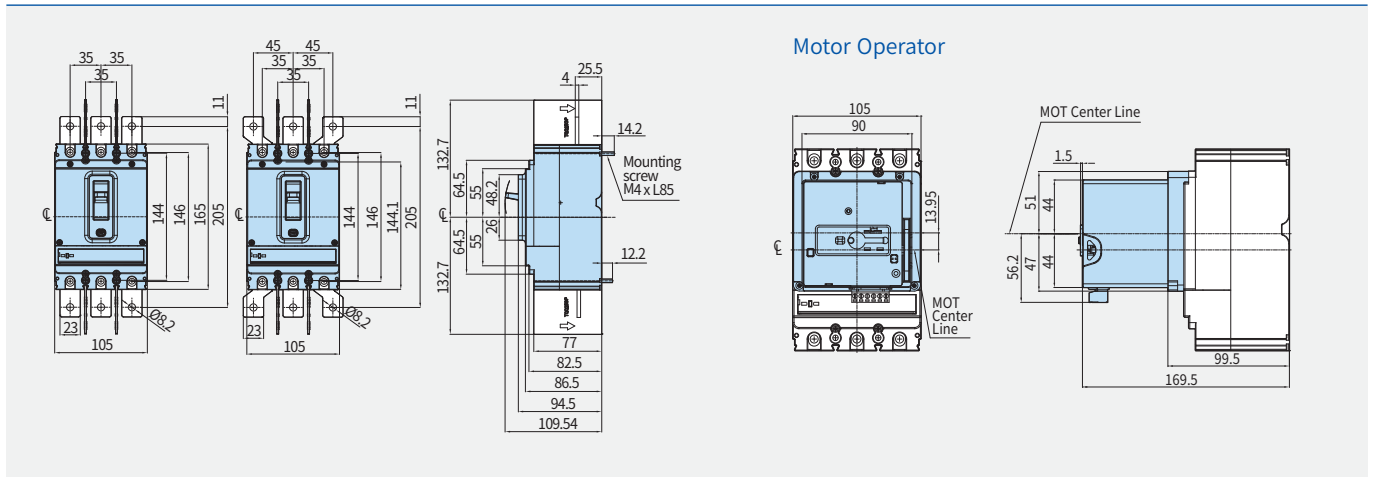
L Long-time Protection			0.4	0.45	0.5	0.56	0.63	0.7	0.8	0.9	1		
Pick-up [A]	$I_r = \times I_n$	Dial setting	0.9 ~ 1.25 배, 1A 단위로 설정(최소 설정, In=40 A인 경우 16 A)										
Time delay [s]	$t_r =$	Button setting	10	15	20	25	30	35	40	50	60		
accuracy $\pm 20\%$		$1.2 \times I_r$	10	15	20	25	30	35	40	50	60		
Thermal memory			20 minutes										
S Short-time Protection			1.5	2	3	4	5	6	7	8	10		
Pick-up [A]	$I_{sd} = I_r \times$	dial setting											
accuracy $\pm 15\%$		Button setting	0.1	0.2	0.3	0.4							
Time delay [s]	$t_{sd} =$	I^2 OFF setting	0.1	0.2	0.3	0.4							
		Non tripping time	0.08	0.14	0.23	0.35							
		Maximum time	0.14	0.2	0.32	0.5							
I Instantaneous Protection			1.5	2	4	6	8	10	11	12	13	14	15
Pick-up [A]	$I_i =$	Button setting											
accuracy $\pm 15\%$		$I_n = 40 A$											
		$100 A$											
		$160 A$											
		$I_n \geq 250 A$	1.5	2	4	6	8	10	11				
Time delay [s]		Maximum time	≤ 0.05										
RP Reverse Power			1 ~ 1,000 kW, step 1										
Pick-up [A]		Button setting											
Time delay [s]		Button setting	1 ~ 40 sec, step 0.1										
accuracy $\pm 15\%$													



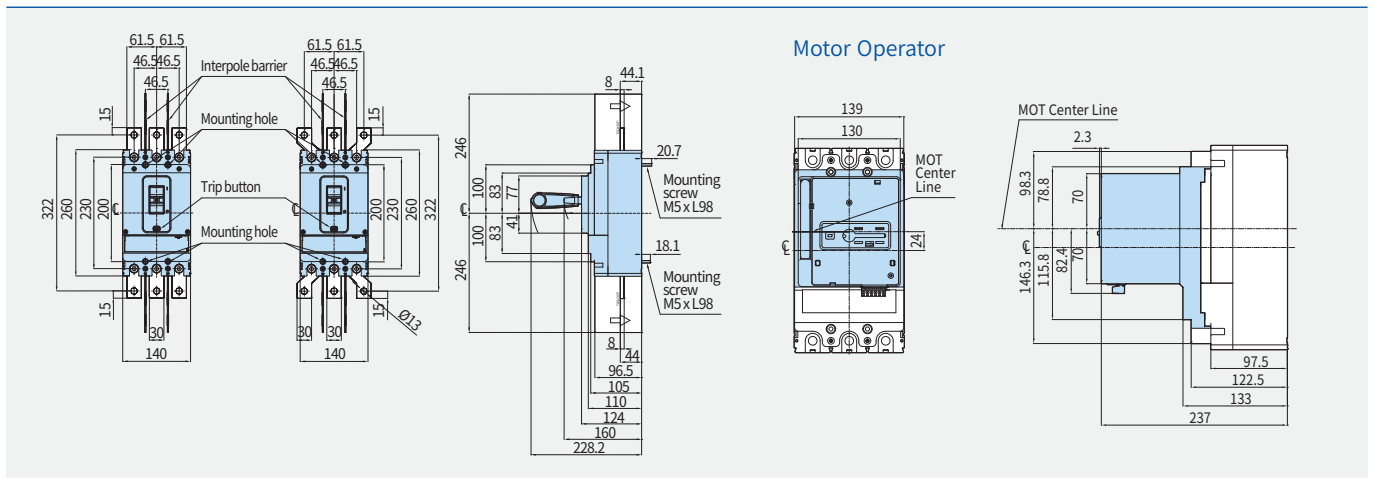
- ※ The default setting of Thermal function is disable.
- ※ RP Protection function is available to GE type.
- ※ RP Protection trip in the case of phase difference, corresponding to $103^\circ \leq \phi \leq 257^\circ$

Dimensions

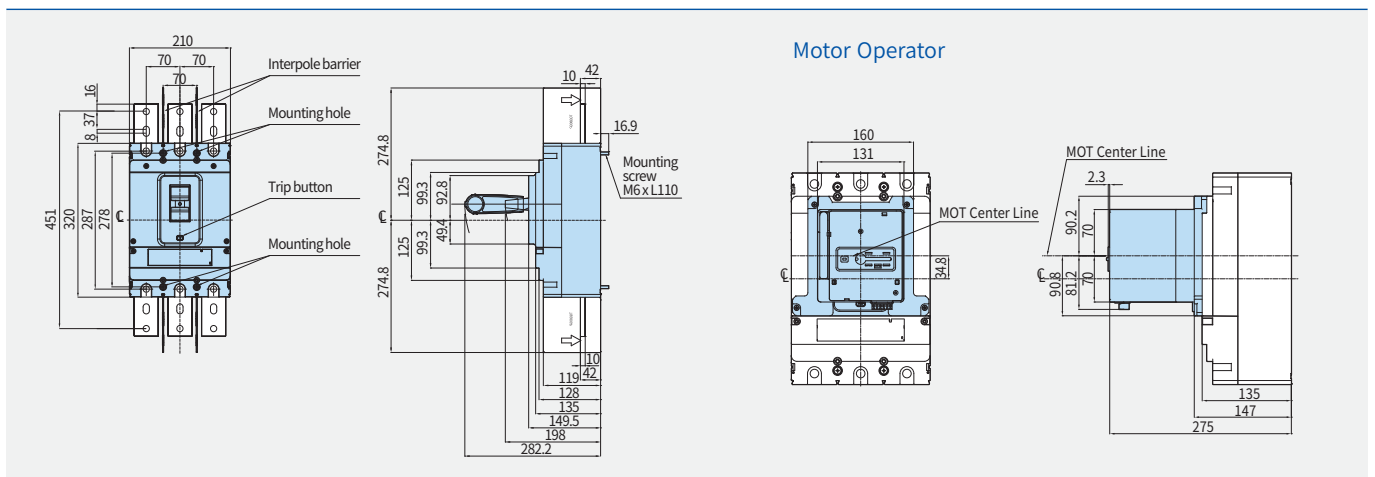
HGP100, 160, 250



HGP400, 630



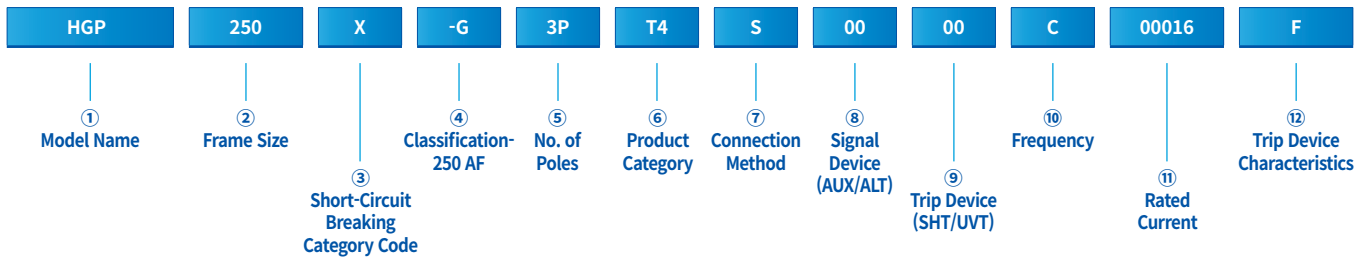
HGP800



※ Dimensions for mounting body / Terminal connections bus / Panel cover cutting : Refer to HGP catalog on homepage
 ※ When installing the product in close contact, please consider tolerances for external dimensions.

Order Information

Order Code



① Model Name	
HGP	Molded Case Circuit Breaker / Earth Leakage Circuit Breaker

④ Classification-250 AF	
-	Terminal Height (24-26 mm) ¹⁰⁾
-G ²⁾	New Type Terminal Height (21.5 mm)

⑦ Connection Method	
S	Front Connection
BS ⁴⁾	Straight Type of Bus Bar Packaging
BE ¹¹⁾	Spreader Type of Bus Bar Packaging
P	Plug-in PC/CBM Attached
F	Line Side : Plug-in Load Side : Front Connection
X	Plug-in PC/CBM Not Attached

⑩ Frequency	
C	50/60 Hz
Z	DC

② Frame Size	
50D	50 AF
125D	125 AF
160D	160 AF
100	100 AF
160	160 AF
250	250 AF
400	400 AF
630	630 AF
800	800 AF

⑤ No. of Poles	
3P	AC 3 pole
4P	AC 4 pole
D3	DC 3 pole
D4	DC 4 pole

⑧ Signal Device (AUX/ALT)	
00	Not Attached
10	AUX 1C
20	AUX 2C
01	ALT 1C
11	AUX 1C + ALT 1C
21	AUX 2C + ALT 1C
31 ⁵⁾	AUX 3C + ALT 1C
32 ⁵⁾	AUX 3C + ALT 2C

⑪ Rated Current	
002.5	2.5 A
006.3	6.3 A
⋮	⋮
00800	800 A

③ Short-Circuit Breaking Category Code ¹⁾	
AC	
F ⁸⁾	36 kA
S	65 ⁶⁾ / 70 ⁷⁾ kA
H	85 kA
X	150 kA
NA	Switch-Disconnecter
DC	
F	10 kA
S	55 kA
H	85 kA
X	100 kA

⑥ Product Category	
Molded Case Circuit Breaker	
T4 ⁹⁾	Ambient Temperature of 40 °C
T5	Ambient Temperature of 50 °C
Electronic ³⁾	
EN	Normal
ED	Display
EA	Ammeter
EE	Energy Meter
Electronic for Generator ¹²⁾	
GD	Display
GE	Energy Meter
Motor Protection	
MP	For Motor Protection
Switch-Disconnecter	
DS	Switch-Disconnecter

⑨ Trip Device (SHT/UVT)	
00	Not Attached
S1	SHT AC 100 - 120 V
S2	SHT AC 200 - 230 V
S3	SHT AC 380 - 415 V
S4	SHT AC 440 - 480 V
S5	SHT DC 24 V
S6	SHT DC 100 - 110 V
U1	UVT AC 100 - 120 V
U2	UVT AC 200 - 230 V
U3	UVT AC 380 - 415 V
U4	UVT AC 440 - 480 V
U5	UVT DC 24 V
U6	UVT DC 100 - 110 V

⑫ Trip Device Characteristics	
For Protecting Overload Short-Circuit	
-	Thermal Fixed/Instantaneous Fixed (MTM - FF)
F	Thermal Adjustable/Instantaneous Fixed (MTM - JF)
H	Thermal Adjustable/Instantaneous Adjustable (MTM - JJ)
N	Thermal Fixed/Instantaneous Fixed (MTM - FF) + 4P N Phase Protection
FN	Thermal Adjustable/Instantaneous Fixed (MTM - JF) + 4P N Phase Protection
HN	Thermal Adjustable/Instantaneous Adjustable (MTM - JJ) + 4P N Phase Protection
Electronic	
-	Not Applicable (ETU)
Motor Protection	
-	No Thermal/Instantaneous Adjustable (MCP - OJ)
Switch-Disconnecter	
-	No Protection Function (DSU)

※ 1) Based on AC 440/460 V
 2) Only applicable to mechanical type of HGP100, 160, 250 AC, DC (Can't be applicable to 50D, 125D, 160D, 250 of motor protection, etc)
 3) 50D, 125D, 160D : Electronic type N/A
 4) Applicable to both Line part / Load part, HGP400~800
 5) Applicable to HGP400 ~ 800
 6) HGP50D, 125D, 160D, 100, 160, 250 AF
 7) HGP400, 630, 800 AF

8) F type is for overseas and ship.
 9) For DC products, only T4 is applicable.
 10) Discontinued March 2020
 11) Applicable to both Line part / Load part, HGP400
 12) Applicable to 3P only