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Intelligence beyond vision

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MAXGE ELECTRIC

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MAXGE ELECTRIC
TECHNOLOGY
CO.,LTD.

MAXGE
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Intelligent Moulded
Case Circuit Breaker

Integrated test function

Life span

Measurement

Compatibility

Communication

Safety above standards

Communication onboard

TECHNICAL INSTRUCTIONS

MAXGE ELECTRIC TECHNOLOGY CO.,LTD.

BASIC ELEMENTS OF AN ELECTRONIC MCCB

Electronic circuit breakers have the same purpose as normal thermal–magnetic protections, and the difference lies in how they accomplish their function. there are three basic elements:

❶ Current transformers (CT) are used to measure line current in the circuit being protected.
A separate CT is provided for each phase in the circuit.

❷ A microprocessor compares the measured current with the required trip response.
The current magnitude determines if the unit must trip or not, as well as the time delay required.

❸ A trip coil is controlled by the microprocessor. If the current falls above the threshold for tripping the breaker,
and the corresponding time delay has passed, the microprocessor sends an instruction for the trip coil to disconnect the breaker.

In simple terms, the CT measures the current, the microprocessor analyses it, and the trip coil opens the circuit if instructed by the microprocessor.The main advantage of an electronic trip circuit breaker is that response can be configured with high precision. Conventional thermal–magnetic breakers have internal physical components that cannot be adjusted, while the operating parame–ters of a microprocessor can be reprogrammed at any time. If you need to change the load, you can simply reconfigure an electronic breaker, but a conventional breaker will probably need a replacement.Another advantage of electronic trip circuit breakers is integration with monitoring and data logging systems. A normal breaker keeps no record of current values and faults, but an elec–tronic breaker can be connected to a database or monitoring system. If a fault occurs, the system can send an automatic notifica–tion to the maintenance department.Electronic breakers with CTs are exclusive for AC circuit protection.

1.OUTLINE

Intelligent moulded case controller is the core control component of intelligent molded case circuit breaker. It is suitable for low-voltage distribution lines with AC 50/60Hz and rated working current of 160A~800A, so that the line and power supply equipment are protected from overload and short circuit.It has overload long delay, short circuit short delay, short circuit instantaneous, pre-alarm & groud fault function.

2.MODEL NO AND CLASSIFICATION

2.1Model and meaning

Knob type

LCD type

Product Code	SGM1E	SGM3E	SGM6E
Frame size	100A	160A,250A	400A,630A, 800A,1250A
Rated current	16A-1250A		
Number of poles	3P,4P		
Function	OVERLOAD & SHORT CIRCUIT		

Product Code	iSGM6E
Frame size	400A,630A,800A
Rated current	100-800A
Number of poles	3P,4P
Function	OVERLOAD & SHORT CIRCUIT

2.2 Product function introduction

PRODUCT FUNCTION TABLE

Model No	Knob type	LCD type
Protective function	☑ overload pre-alarm ☑ overload long delay ☑ short circuit short delay ☑ short circuit instantaneous ☑ ground fault (for 4P)	☑ overload pre-alarm ☑ overload long delay ☑ short circuit short delay ☑ short circuit instantaneous ☑ ground fault (for 4P)
Auxiliary performance	☑ test function (hardware) ☑ Pre-trip alarm (for 3P) ☑ Communication interface through RS485, MODBUS-RTU protocol	☑ test function (hardware) ☑ Pre-trip alarm(for 3P) ☑ Phase current indication ☑ Recording of Overload &SC current ☑ Communication interface through RS485, MODBUS-RTU protocol

2.3 400A/630A/800A Electronic MCCB with LCD display

Electronic LCD MCCB has the different features like protection & metering communication interface & ground fault detection. In 4P the protection features long delay time , short time pickup, instantaneous fault & pre–trip alarm. The user interface is provided with operating keys and LCD display. The communication interface allows the end user to adjust all settings from a remote terminal. The different parameters are stored in non–volatile memory.

FEATURES :

❶ RS485 interface, MODBUS–RTU protocol

❷ With MODBUS module equipped, customers can choose options as below,

A.Remote signal: Switching ON/OFF, tripping, alarm & malfuncational signal indication.

B. Remote control: Switching ON/OFF, reset.

C. Remote Test: 3–phase current & N–pole current.

❸ Tripping unit memory recording function.

3.TECHNICAL PERFORMANCE

3.1 Applicable environment

WORKING TEMPERATURE:
–10℃～＋55℃(The average value within 24 h does not exceed + 35 ℃)

POLLUTION LEVEL: 3
when assembled with a molded case circuit breaker

INSTALLATION CATEGORY: III
when assembled with a molded case circuit breaker

4.OPERATING INSTRUCTIONS

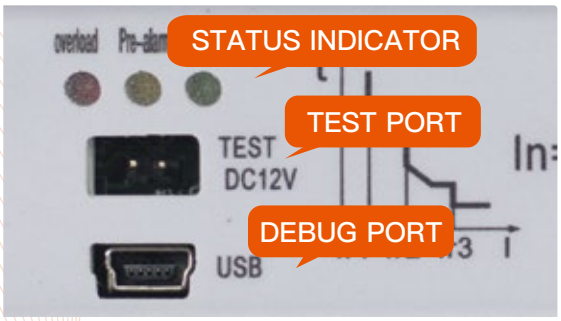
4.1 Button type product operation instructions

The controller uses a knob to set the protection parameters.

Note: The screwdriver used should be a small flat head screwdriver.
Do not stay in the middle of the two scale values when you move;

4.2 LCD type Product Operation Instructions

The controller uses the LCD plus button to set the protection parameters.



Button	Edit status	Non-editing state
Back	Cancel current edit	Return to the previous menu
Up	Increase current editing parameters	Scroll up menu
Down	Reduce current editing parameters	Scroll down menu
Ok	Protect current parameters	Go to the next level menu

4.3 Operation interface

Run State

Press ok button

MAIN MENU
⇨ PROTECT SETTING
FAULT MESSAGE
COMM. SETTING

Press Enter button

PROTECT SETTING
IR = 400A
TR = 12SI
SD= 2400A

Press Down button

MAIN MENU
PROTECT SETTING
⇨ FAULT MESSAGE
COMM. SETTING

Press Enter button

FAULT MESSAGE
TYPE: OVERLOAD
VALUE: 800A L1
TIME: 12S

Press Down button

MAIN MENU
PROTECT SETTING
FAULT MESSAGE
⇨ COMM. SETTING

Press Enter button

COMM. SETTING
ADDRESS 3
BAUDRATE 9600
CHECKBIT NULL

Press Down button

MAIN MENU
FAULT MESSAGE
COMM. SETTING
⇨ PRODUCT INFO.

Press Enter button

PRODUCT INFO.
FRAME 400A
IN = 400A

Press Down button

MAIN MENU
COMM. SETTING
PRODUCT INFO.
⇨ MESURE ADJUST

Press Enter button

MESURE ADJUST
IA: 400A 1024
IB: 400A 1024
IC: 400A 1024

Press Down button

MAIN MENU
PRODUCT INFO.
MESURE ADJUST
⇨ FACTORY SETTING

Press Enter button

FACTORY SETTING
REPAIR ON
IN 400A/400A
POLE 3P

5.KNOB TYPE(SGM3E)

Frame size	100A		160A		250A		400A			
Model	SGM1E-160		SGM3E-160		SGM3E-250		SGM6E-400			
Rated current In(A)	32,63,100		32,63,160		250		250		400	
Number of poles	3 , 4		3 , 4		3 , 4		3 , 4		3 , 4	
Standard	IEC60947-2									
Reference temperature	40℃/55℃									
Rated Operational Voltage(V AC)	380 / 400 / 415									
Rated insulation voltage Ui(V AC)	800		800		800		1000		1000	
Rated impluse withstand voltage Uimp(kv)	8									
Breaking capacity level	M	H	M	H	M	H	M	H	M	H
Rated ultimate short-circuit breaking capacity Icu(KA)	50	80	50	80	50	85	50	85	85	100
Rated service short-circuit breaking capacity Ics(KA)	35	50	35	50	35	50	35	50	60	75
Mechanical Endurance Electrical Endurance	8500 1500		8500 1500		7000 1000		7000 1000		4000 1000	
Dimensions mm (L x W x H) 3P	92x150x92		92x150x92		107x165x90		107x165x90		150x257x109	
Dimensions mm (L x W x H) 4P	122x150x92		122x150x92		142x165x90		142x165x90		198x257x109	

5.KNOB TYPE(SGM3E)

Frame size	630A			800A		1250A
Model	SGM6E-630			SGM6E-800		SGM1E-1250
Rated current In(A)	250	400	630	630	800	1250
Number of poles	3 , 4	3 , 4	3 , 4	3 , 4	3 , 4	3
Standard	IEC60947-2					
Reference temperature	40℃/55℃					
Rated Operational Voltage(V AC)	380 / 400 / 415					
Rated insulation voltage Ui(V AC)	1000	1000		1000		800
Rated impluse withstand voltage Uimp(kv)	8					

Breaking capacity level	M	H	M	H	M	H	M	H	M	H	M
Rated ultimate short-circuit breaking capacity Icu(KA)	50	80	85	100	85	100	85	100	85	100	85
Rated service short-circuit breaking capacity Ics(KA)	35	50	60	75	60	75	60	75	60	75	50
Mechanical Endurance Electrical Endurance	7000 1000		4000 1000		4000 1000		4000 1000		2500 500		2500 500
Dimensions mm (L x W x H) 3P	107x165x90		150x257x109		150x257x109		150x257x109		210x280x117		341x211x139
Dimensions mm (L x W x H) 4P	142x165x90		198x257x109		198x257x109		198x257x109		280x280x117		

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5.KNOB TYPE

SETTING PARAMETERS:

Frame size	100A	160A	250A	400A	
Rated current In(A)	32,63,100	32,63,160	250	250	400
Ir (A) = Long delay current setting	For 32A: 16–20–25–32 For 63A: 32–36–40–45 50–55–60–63 For 100A: 63–65–70 75–80–85 90–95–100	63–80–90–100 110–120–130–140 150–160A	100–120–140–160 175–190–210–215 225–250A	100–112–125–140 150–160–180–200 225–250A	160–190–225–250 275–300–325–350 375–400A
tr (S) = Long delay time	12–60–100–150 sec + OFF	12–60–100–150 sec + OFF	12–60–100–150 sec + OFF	12–60–100–150 sec + OFF	12–60–100–150 sec + OFF
Isd (A) = Short circuit protection of low level faults.	2–2.5–3–4–5 6–7–8–10–12 x Ir(A)	2–2.5–3–4–5 6–7–8–10–12 x Ir(A)	2–2.5–3–4–5 6–7–8–10–12 x Ir(A)	2–2.5–3–4–5 6–7–8–10–12 x Ir(A)	2–2.5–3–4–5 6–7–8–10–12 x Ir(A)
tsd (S) = short time	0.06–0.1–0.2 0.3–0.4–0.5– 1.0 sec + OFF	0.06–0.1–0.2 0.3–0.4–0.5–1.0 sec + OFF	0.06–0.1–0.2 0.3– 0.4–0.5–1.0 sec + OFF	0.06–0.1–0.2 0.3– 0.4–0.5–1.0 sec + OFF	0.06–0.1–0.2 0.3 sec + OFF
Ii(A) = Short circuit protection of high level faults (analogous to the instantaneous magnetic trip of a thermal/magnetic breaker)	4–6–7–8–9 10–11–12–14 x Ir(A) + OFF	4–6–7–8–9 10–11–12–14 x Ir(A) + OFF	4–6–7–8–9 10–11–12–14 x Ir(A) + OFF	4–5–6–7–8–9 10–11– 12 x Ir(A) + OFF	4–5–6–7–8–9 10–11– 12 x Ir(A) + OFF
Ip(A) = Pre trip alarm setting multiple	0.7–0.75–0.8– 0.85–0.9–0.95– 1.0 x Ir(A)	0.7–0.75–0.8– 0.85–0.9–0.95– 1.0 x Ir(A)	0.7–0.75–0.8– 0.85–0.9–0.95– 1.0 x Ir(A)	0.7–0.75–0.8– 0.85–0.9–0.95– 1.0 x Ir(A)	0.7–0.75–0.8– 0.85–0.9–0.95– 1.0 x Ir(A)
For 4P Ig(A)= Ground fault pickup current	0.2–0.3–0.4–0.5 –0.6–0.7–0.8–0.9 –1.0 x In+ OFF	0.2–0.3–0.4–0.5 –0.6–0.7–0.8–0.9 –1.0 x In+ OFF	0.2–0.3–0.4–0.5 –0.6–0.7–0.8–0.9 –1.0 x In+ OFF	0.2–0.3–0.4–0.5 –0.6–0.7–0.8–0.9 –1.0 x In+ OFF	0.2–0.3–0.4–0.5 –0.6–0.7–0.8–0.9 –1.0 x In+ OFF
For 4P tg (S) = Ground fault pickup time	Fixed for 0. 4sec	Fixed for 0. 4sec	Fixed for 0. 4sec	Fixed for 0. 4sec	Fixed for 0. 4sec

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5.KNOB TYPE

SETTING PARAMETERS:

Frame size	630A			800A		1250A
Rated current In(A)	250	400	630	630	800	1250
Ir (A) = Long delay current setting	100–112–125 140–150–160 180–200–225 250A	160–190–225 250–275–300 325–350–375 400A	252–300–350 400–435–475 515–550–595 630A	252–300–350 400–435–475 515–550–595 630A	320–435–550 630–660–690 715–745–770 800A	800–850–900 950–1000–1050 1100–1250A
tr (S) = Long delay time	12–60–100–150 sec + OFF	12–60–100–150 sec + OFF	12–60–100–150 sec + OFF	12–60–100–150 sec + OFF	12–60–100–150 sec + OFF	12–60–100–150 sec + OFF
Isd (A) = Short circuit protection of low level faults.	2–2.5–3–4–5 6–7–8–10–12 x Ir1(A)	2–2.5–3–4–5 6–7–8–10–12 x Ir1(A)	2–2.5–3–4–5 6–7–8–10–12 x Ir1(A)	2–2.5–3–4–5 6–7–8–10–12 x Ir1(A)	2–2.5–3–4–5 6–7–8–10–12 x Ir1(A)	2–2.5–3–4–5 6–7–8–10–12 x Ir1(A)
tsd (S) = short time	0.06–0.1–0.2 0.3–0.4–0.5– 1.0 sec + OFF	0.06–0.1–0.2 0.3–0.4–0.5–1.0 sec + OFF	0.06–0.1–0.2 0.3–0.4–0.5–1.0 sec + OFF	0.06–0.1–0.2 0.3– 0.4–0.5–1.0 sec + OFF	0.06–0.1–0.2 0.3– 0.4–0.5–1.0 sec + OFF	0.06–0.1–0.2 0.3 sec + OFF
Ii(A) = Short circuit protection of high level faults (analogous to the instantaneous magnetic trip of a thermal/magnetic breaker)	4–6–7–8–9 10–11–12–14 x Ir(A) + OFF	4–6–7–8–9 10–11–12–14 x Ir(A) + OFF	4–6–7–8–9 10–11–12–14 x Ir(A) + OFF	4–6–7–8–9 10–11–12–14 x Ir(A) + OFF	4–5–6–7–8–9 10–11– 12 x Ir(A) + OFF	4–5–6–7–8–9 10–11– 12 x Ir(A) + OFF
Ip(A) = Pre trip alarm setting multiple	0.7–0.75–0.8– 0.85–0.9–0.95– 1.0 x Ir(A)	0.7–0.75–0.8– 0.85–0.9–0.95– 1.0 x Ir(A)	0.7–0.75–0.8– 0.85–0.9–0.95– 1.0 x Ir(A)	0.7–0.75–0.8– 0.85–0.9–0.95– 1.0 x Ir(A)	0.7–0.75–0.8– 0.85–0.9–0.95– 1.0 x Ir(A)	0.7–0.75–0.8– 0.85–0.9–0.95– 1.0 x Ir(A)
For 4P Ig(A)= Ground fault pickup current	0.2–0.3–0.4–0.5 –0.6–0.7–0.8–0.9 –1.0 x In+ OFF	0.2–0.3–0.4–0.5 –0.6–0.7–0.8–0.9 –1.0 x In+ OFF	0.2–0.3–0.4–0.5 –0.6–0.7–0.8–0.9 –1.0 x In+ OFF	0.2–0.3–0.4–0.5 –0.6–0.7–0.8–0.9 –1.0 x In+ OFF	0.2–0.3–0.4–0.5 –0.6–0.7–0.8–0.9 –1.0 x In+ OFF	
For 4P tg (S) = Ground fault pickup time	Fixed for 0. 4sec	Fixed for 0. 4sec	Fixed for 0. 4sec	Fixed for 0. 4sec	Fixed for 0. 4sec	

6.ELECTRONIC (LCD TYPE)

SETTING PARAMETERS:

Frame size	400A		630A		800A	
Model	iSGM6E-400		iSGM6E-630		iSGM6E-800	
Number of poles	3 , 4		3 , 4		3 , 4	
Standard	IEC60947-2					
Reference temperature	40℃/55℃					
Rated Operational Voltage(V AC)	380 / 400 / 415					
Rated insulation voltage Ui(V AC)	1000					
Rated impluse withstand voltage Uimp(kv)	8					
Breaking capacity level	M	H	M	H	M	H
Rated ultimate short-circuit breaking capacity Icu(KA)	85	100	85	100	85	100
Rated service short-circuit breaking capacity Ics(KA)	60	75	60	75	60	75
Mechanical Endurance Electrical Endurance	4000 1000		4000 1000		2500 500	
Dimensions mm (L x W x H) 3P	150x257x109		150x257x109		21x280x117	
Dimensions mm (L x W x H) 4P	198x257x109		198x257x109		280x280x117	

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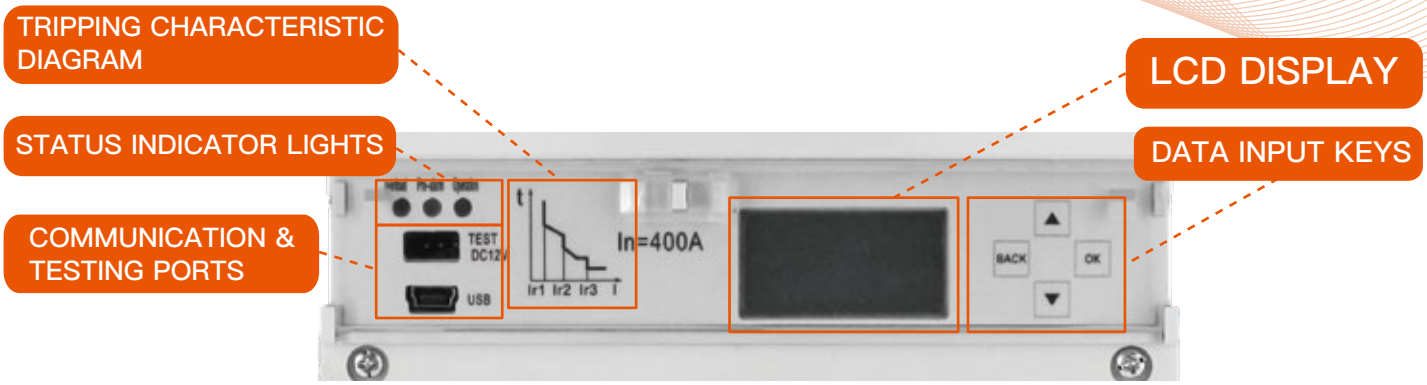

SETTING PARAMETERS:

Frame size	400A		630A		
Rated current In(A)	250	400	250	400	630
Ir (A) = Long delay current setting	100–250A with increment by 1A	252–630A in steps of 1A	100–250A with increment by 1A	252–630A in steps of 1A	320–800A in steps of 1A
tr (S) = Long delay time	12–150 sec with increment by 1 sec + OFF	12–150 sec in steps of 1 sec + OFF	12–150 sec with increment by 1 sec + OFF	12–150 sec in steps of 1 sec + OFF	12–150 sec in steps of 1 sec + OFF
Isd (A) = Short circuit protection of low level faults.	200–3000A with increment by 1A	500–7560A in steps of 1A	200–3000A with increment by 1A	500–7560A in steps of 1A	650–9600A in steps of 1A
tsd (S) = short time	0.06–1sec with increment by 0.02 sec + OFF	0.06–1sec in steps of 0.02 sec + OFF	0.06–1sec with increment by 0.02 sec + OFF	0.06–1sec in steps of 0.02 sec + OFF	0.06–1sec in steps of 0.02 sec + OFF
Ii(A) = Short circuit protection of high level faults (analogous to the instantaneous magnetic trip of a thermal/magnetic breaker)	400–3500A with increment by 1A + OFF	1000– 8820A in steps of 1A + OFF	400–3500A with increment by 1A + OFF	1000– 8820A in steps of 1A + OFF	1300– 9600A in steps of 1A + OFF
Ip(A) = Pre trip alarm setting multiple	70–250A with increment by 1A	175–630A in steps of 1A	70–250A with increment by 1A	175–630A in steps of 1A	228–800A in steps of 1A
For 4P Ig(A)= Ground fault pickup current	50–250A with increment by 1A + OFF	126–630A in steps of 1A + OFF	50–250A with increment by 1A + OFF	126–630A in steps of 1A + OFF	160–800A in steps of 2A + OFF
For 4P tg (S) = Ground fault pickup time	0.4s	0.4s	0.4s	0.4s	0.4s

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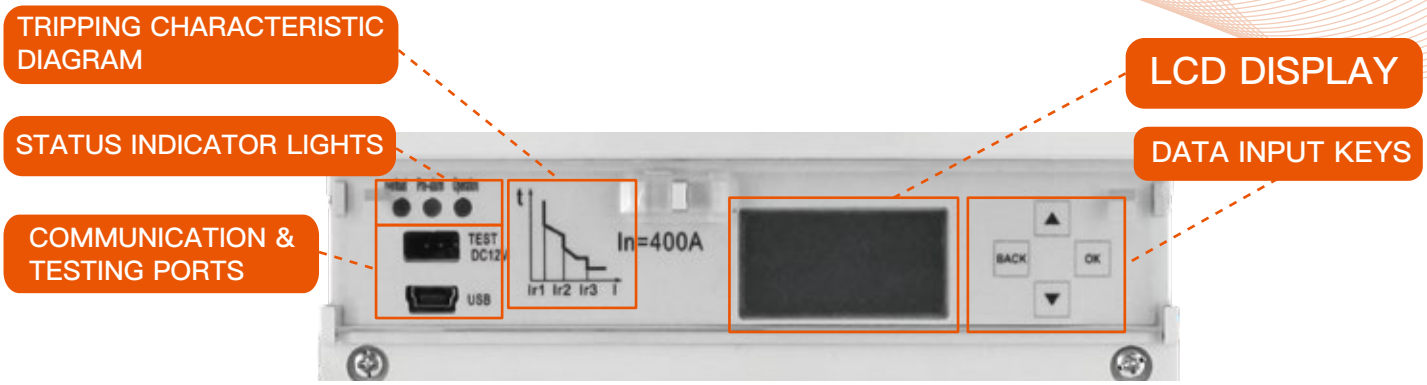
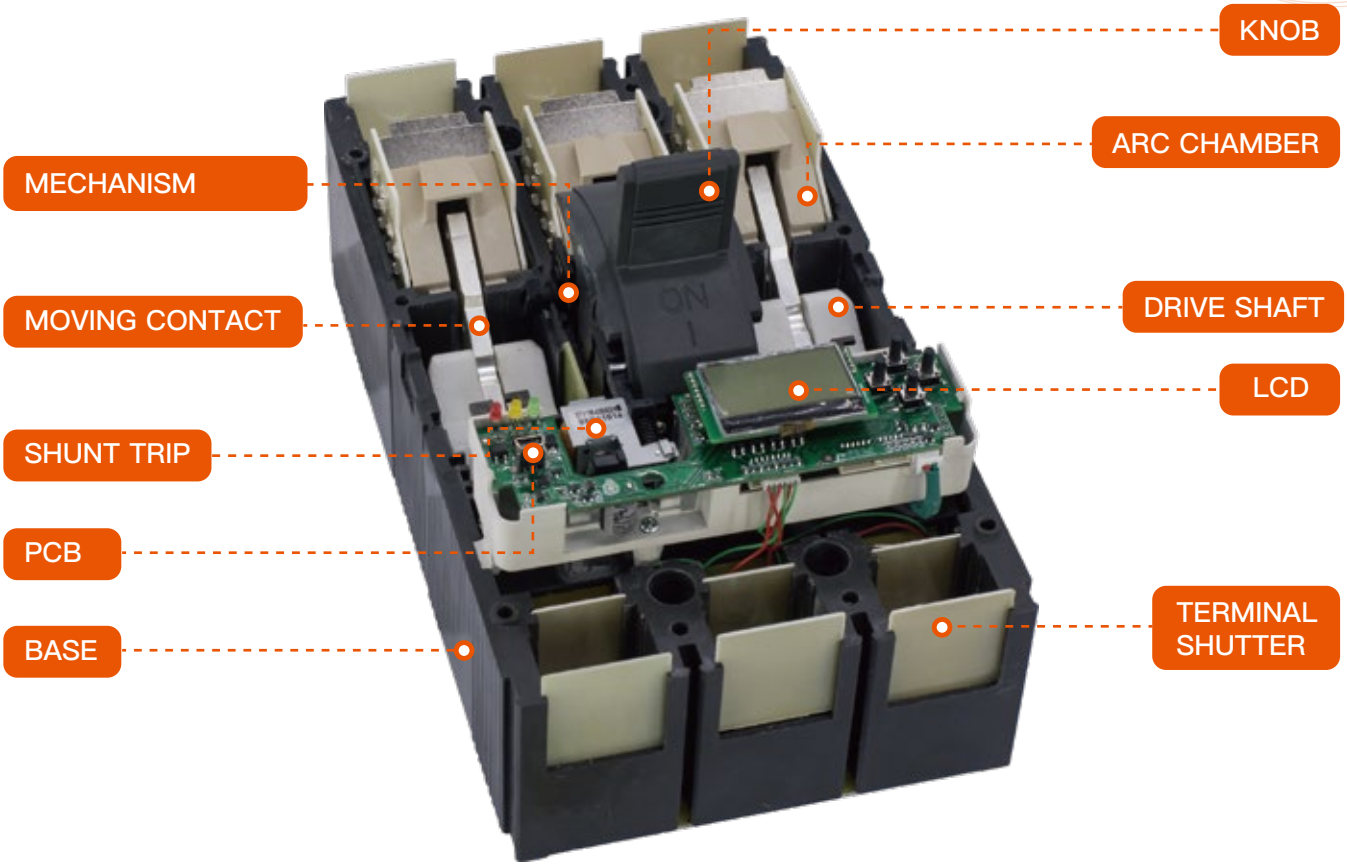


SETTING PARAMETERS:

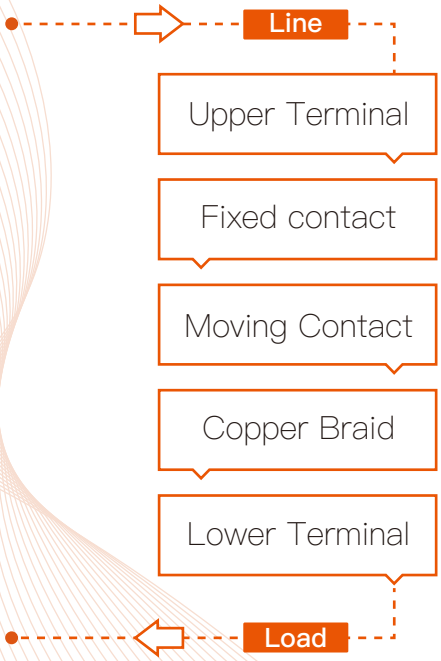
Frame size	800A	
Rated current In(A)	630	800
Ir (A) = Long delay current setting	320–800A in steps of 1A	320–800A in steps of 1A
tr (S) = Long delay time	12–150 sec in steps of 1 sec + OFF	12–150 sec in steps of 1 sec + OFF
Isd (A) = Short circuit protection of low level faults.	650–9600A in steps of 1A	650–9600A in steps of 1A
tsd (S) = short time	0.06–1sec in steps of 0.02 sec + OFF	0.06–1sec in steps of 0.02 sec + OFF
Ii(A) = Short circuit protection of high level faults (analogous to the instantaneous magnetic trip of a thermal/magnetic breaker)	1300– 9600A in steps of 1A + OFF	1300– 9600A in steps of 1A + OFF
Ip(A) = Pre trip alarm setting multiple	228–800A in steps of 1A	228–800A in steps of 1A
For 4P Ig(A)= Ground fault pickup current	160–800A in steps of 2A + OFF	160–800A in steps of 2A + OFF
For 4P tg (S) = Ground fault pickup time	0.4s	0.4s

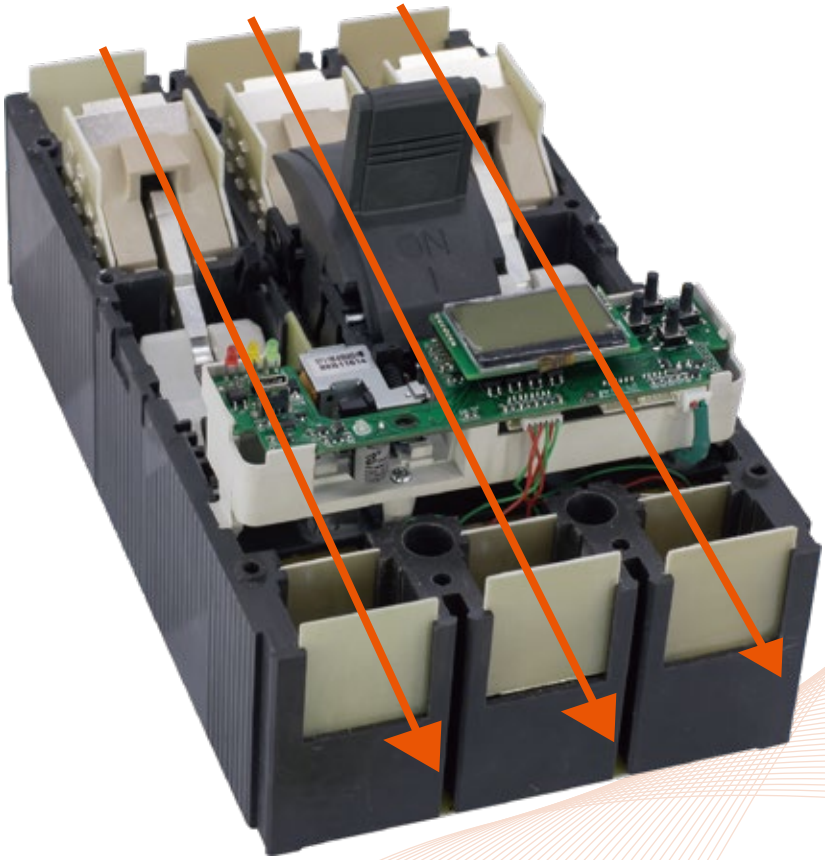
7.MCCB INTERNAL PARTS



7.1 MCCB Current Path

The current carrying path is optimally designed to achieve low watt loss.





8.FEATURES AND BENIFITS

Fixed Contact
Silver Tungsten Carbide
AgWC12C3

Anti weld contact tips

Moving Contact
Silver Tungsten
AgW50

Anti weld contact tips

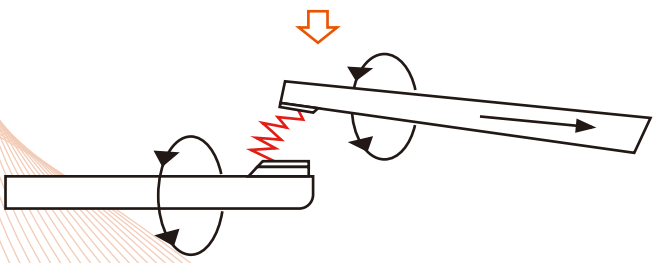
- Highest Electrical Life
- Maximum Safety against Contact welding
- Low contact resistance.

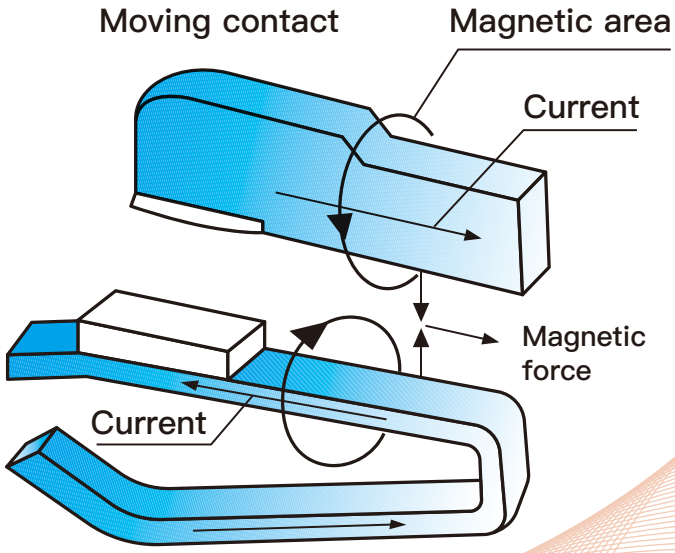
U type Fixed Contact

MCCB with U type fixed contact helps to reverse the direction of current and form reverse magnetic force to push the moving contact quickly during down stream fault.

MCCB without U shape FC have slow contact opening velocity

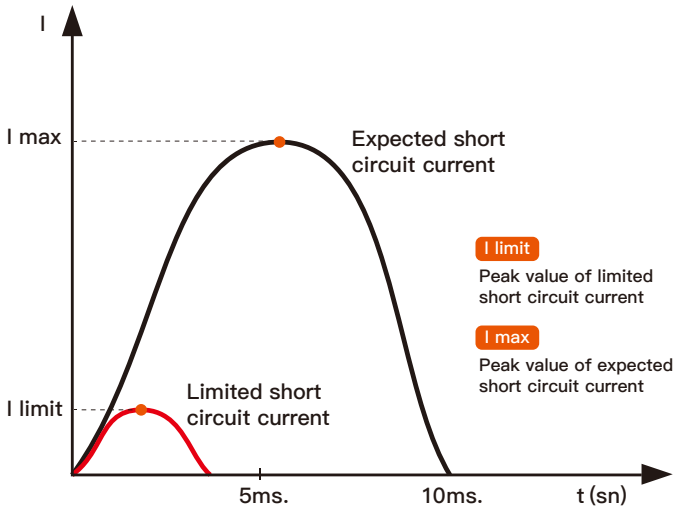
MCCB WITHOUT U SHAPE FC

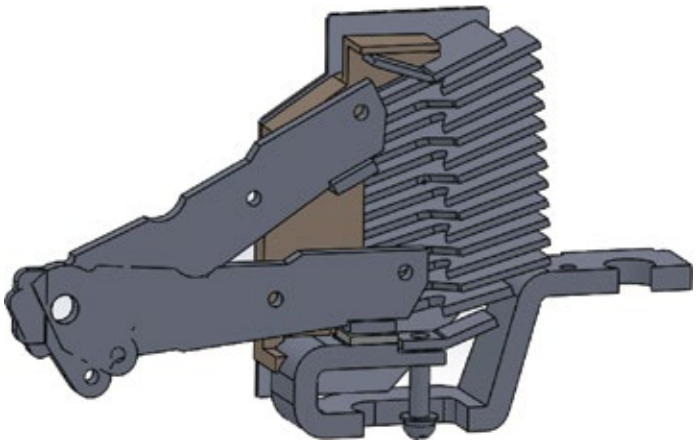




MCCB WITH U SHAPE FC

8.1 Current Limiting Charateristic

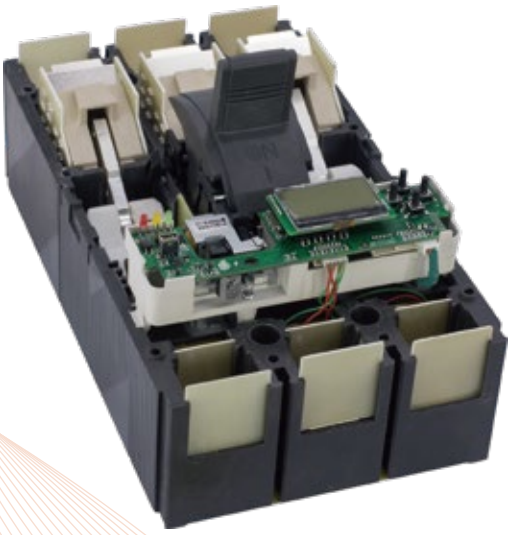




The unique speed contact system with current limiting feature accelerates the opening of contacts during short circuit, resulting in very low let through energy.

Arc chamber

- High breaking capacity is acheived through efficient and faster arc quenching.
- Reduction of safety parameter to nearly zero
  (no or very few ionized gas goes outside the arc chamber)
- Increases life of installation and equipement.



8.2 Line Load Reversability

It is recommonded to connect Line on top side to get short circuit performance Icu = 75% Ics

8.3 Electronic MCCB 400A ~ 800A

❶ Overload / Short circuit release throgh microprocessor based electronic circuit.

❷ User freindly LCD display.

❸ Communication interface through, RS485, MODBUS–RTU protocol.

❹ Accurate tripping.

❺ R,Y,B phase current indicator.

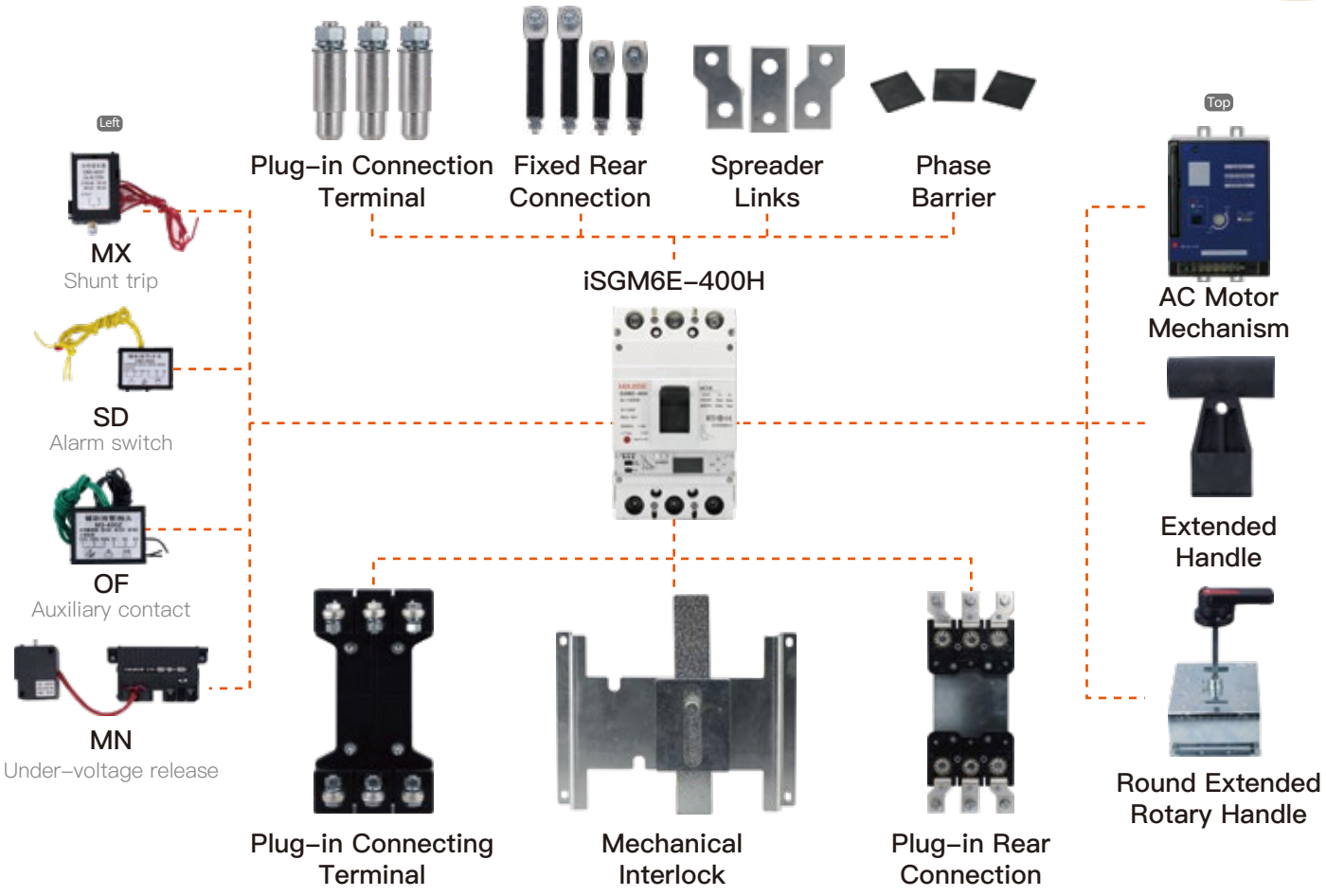
❻ Remote signaling & control for ON / OFF / TRIP / Reset.

❼ Recording of Overload & SC current.

❽ Pre trip alarm.

❾ Ground fault detection

8.4 Full range of Internal and External accessories



Internal accessories

- Shunt release.
- Undervoltage release.
- Auxillary contact.
- Trip alarm contact.

External accessories

- Extended rotary handle.
- AC motor mechanism
- Plug-In front connection.
- Plug-In rear connection.
- Mechanical interlock.
- Spreader terminal.
- Phase barrier.
- Extension handle

9.ACCESSORIES

	160A	250A	400A	630A	800A
Under Voltage Release (MN)	□	□	□	□	□
Shunt trip Release (MX)	□	□	□	□	□
Auxiliary contact (OF)	□	□	□	□	□
Trip alarm contact (SD)	□	□	□	□	□
AC Motor mechanism	□	□	□	□	□
Extended rotary handle	□	□	□	□	□
Spreader links	□	□	□	□	□
Terminal cover	□	□	□	□	□
Phase separator	■	■	■	■	■
Plug in connection Front	□	□	□	□	□
Plug in connection Rear	□	□	□	□	□
Mechanism Interlock	□	□	□	□	□
Extension handle	NA	NA	□	□	□

■ Standard □ Upon request

INTERNAL MOUNTED ACCESSORIES

MCCB 3 pole { SGM1E / SGM3E
iSGM6E / SGM6E

OF（Auxiliary contact）

SD（Alarm switch）

MX（Shunt trip）

MN（Under-voltage release）

Handle

◆ Left mounting — Right mounting　□ SD　■ OF　○ MN　● MX　△ SD+OF　▲ TWO SETS OF　→ Lead direction

Item	Accessories	160A 3P	250A 3P	400A 3P	630A 3P	800A 3P
SGM1E SGM3E SGM6E iSGM6E L R	SD	□□□	□□□	□□□	□□□	□□□
	MX	●●●	●●●	●●●	●●●	●●●
	OF	■■■	■■■	■■■	■■■	■■■
	MN	○○○	○○○	○○○	○○○	○○○
	SD+OF	△△△	△△△	△△△	△△△	△△△
	TWO OF	▲▲▲	▲▲▲	▲▲▲	▲▲▲	▲▲▲
	MX,OF	●●■	●●■	●●■	●●■	●●■
	MX,SD	●●□	●●□	●●□	●●□	●●□
	MX,SD+OF	●●△	●●△	●●△	●●△	●●△
	MX,TWO OF	●●▲	●●▲	●●▲	●●▲	●●▲
	MX,MN	—	—	●●○	●●○	●●○
	MN,MX	○○●	○○●	○○●	○○●	○○●
	MN,OF	○○■	○○■	○○■	○○■	○○■
	MN,SD	○○□	○○□	○○□	○○□	○○□
	MN,SD+OF	○○△	○○△	○○△	○○△	○○△
	MN,TWO OF	○○▲	○○▲	○○▲	○○▲	○○▲
	OF,SD	■■□	■■□	■■□	■■□	■■□
	OF,MX	■■●	■■●	■■●	■■●	■■●
	OF,SD+OF	■■△	■■△	■■△	■■△	■■△
	OF,TWO OF	■■▲	■■▲	■■▲	■■▲	■■▲
	OF,MN	—	—	■■○	■■○	■■○
	SD,OF	□□■	□□■	□□■	□□■	□□■
	SD,MX	□□●	□□●	□□●	□□●	□□●
	SD,SD+OF	□□△	□□△	□□△	□□△	□□△
	SD,TWO OF	□□▲	□□▲	□□▲	□□▲	□□▲
	SD,MN	—	—	□□○	□□○	□□○
	SD+OF,OF	△△■	△△■	△△■	△△■	△△■
	SD+OF,SD	△△□	△△□	△△□	△△□	△△□
	SD+OF,MX	△△●	△△●	△△●	△△●	△△●
	SD+OF,TWO OF	△△▲	△△▲	△△▲	△△▲	△△▲
	SD+OF,MN	—	—	△△○	△△○	△△○
	TWO OF,OF	▲▲■	▲▲■	▲▲■	▲▲■	▲▲■
	TWO OF,SD	▲▲□	▲▲□	▲▲□	▲▲□	▲▲□
	TWO OF,MX	▲▲●	▲▲●	▲▲●	▲▲●	▲▲●
	TWO OF,SD+OF	▲▲△	▲▲△	▲▲△	▲▲△	▲▲△
	TWO OF,MN	—	—	▲▲○	▲▲○	▲▲○

INTERNAL MOUNTED ACCESSORIES

MCCB
4 pole
SGM1E / SGM3E
iSGM6E / SGM6E

OF（Auxiliary contact）

SD（Alarm switch）

MX（Shunt trip）

MN（Under-voltage release）

◆ Left mounting — Handle — Right mounting　□ SD　■ OF　○ MN　● MX　△ SD+OF　▲ TWO SETS OF　→ Lead direction

Item	Accessories	160A 4P	250A 4P	400A 4P	630A 4P	800A 4P
SGM1E SGM3E SGM6E iSGM6E L R1 R2 Note:R2 can be installed with OF,TWO OF	SD					
	MX					
	OF					
	MN					
	SD+OF					
	TWO OF					
	MX,OF					
	MX,SD					
	MX,SD+OF					
	MX,TWO OF					
	MX,MN	—	—			
	MN,MX					
	MN,OF					
	MN,SD					
	MN,SD+OF					
	MN,TWO OF					
	OF,SD					
	OF,MX					
	OF,SD+OF					
	OF,TWO OF					
	OF,MN	—	—			
	SD,OF					
	SD,MX					
	SD,SD+OF					
	SD,TWO OF					
	SD,MN					
	SD+OF,OF					
	SD+OF,SD					
	SD+OF,MX					
	SD+OF,TWO OF					
	SD+OF,MN	—	—			
	TWO OF,OF					
	TWO OF,SD					
	TWO OF,MX					
	TWO OF,SD+OF					
	TWO OF,MN					

Intelligence beyond vision

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