

Marking and configuration

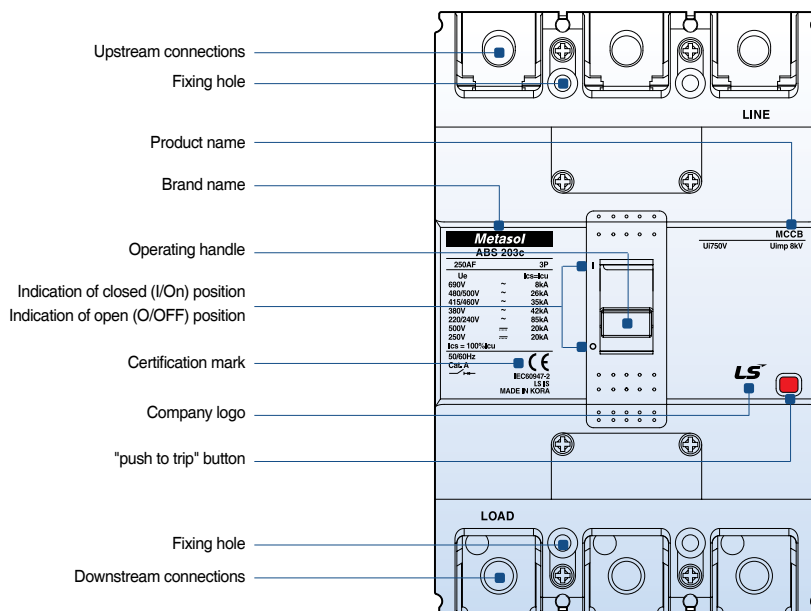
MCCB

- MCCB model**
- ABN: Economic type
 - ABS: Standard type
 - ABH: High capacity type
- Standardized characteristics**
- Ui: Rated insulation voltage
 - Uimp: Impulse withstand voltage
 - Ue: Rated operational voltage
 - Icu: Ultimate breaking capacity
 - Ics: Service breaking capacity



- Rated frequency
- Utilization category
- Manufacturer
- Standard
- Symbol indicating suitability for isolation as defined by IEC 947-2

MCCB



ELCB



ELCB model

- EBN: Economic type
- EBS: Standard type
- EBH: High capacity type

Rated frequency

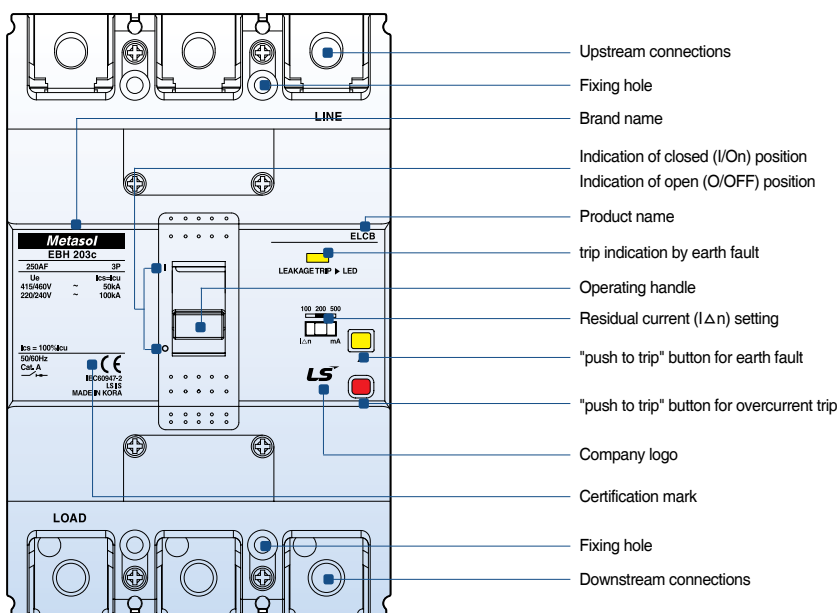
Standard

Manufacturer

Utilization category

Symbol indicating suitability for isolation as defined by IEC 947-2

ELCB



External configuration

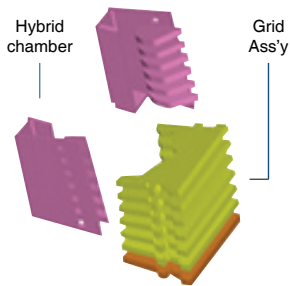
MCCB

① Handle

- Function of indications
- "On" "Off" "Trip"
- Resetting
- When the handle indicates "Tripped" position it must first be reset by moving the handle to the "Off" position and then closing is possible
- trip-Free even if the handle is held at "On", the Breaker will trip if an over current flows
- Suitable for Verification of the main contact position under abnormal conditions because the handle doesn't indicate open position

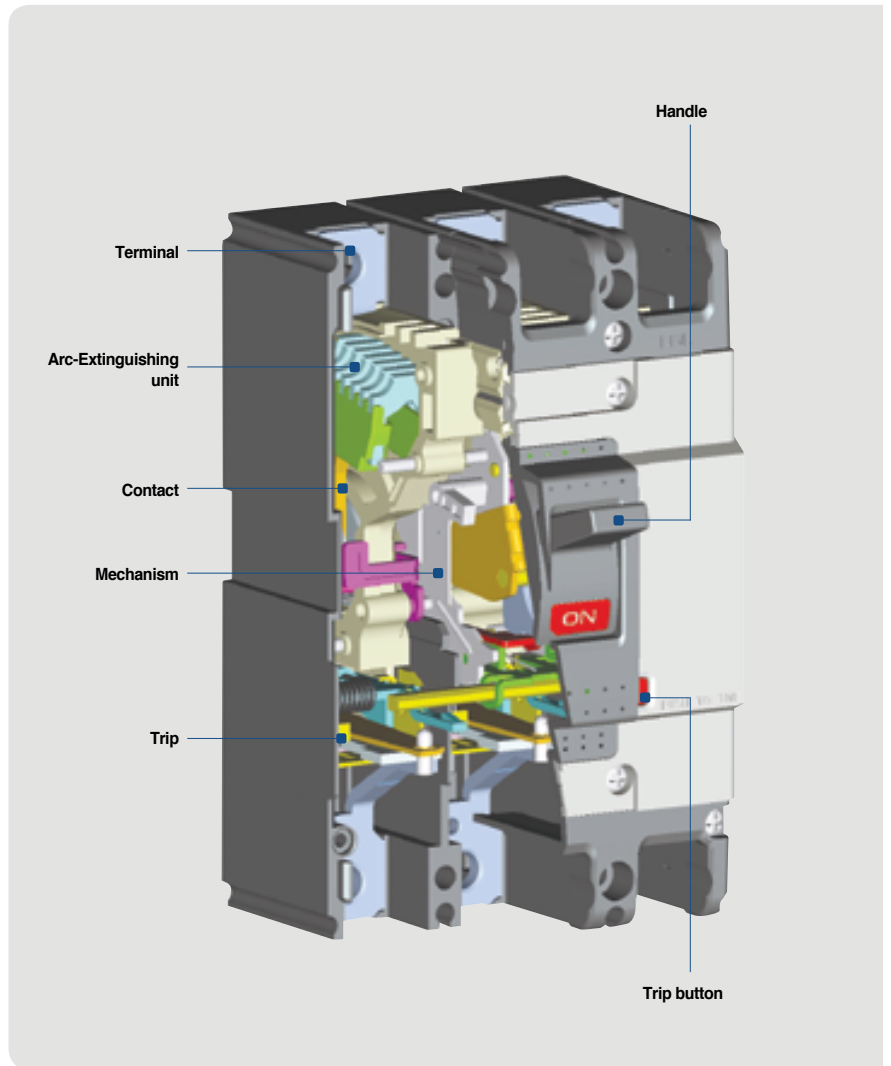
② Arc-Extinguishing unit

- LS patent technique PASQ
- Arc-Extinguishing unit
- PASQ : Puffer Assisted Self-Quenching
- Reduction of arc voltage for a short time

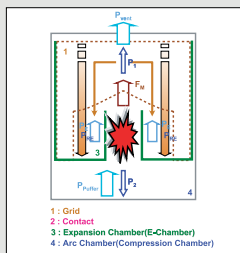


③ Trip button (Push to trip)

- Enables tripping mechanically from outside, for confirming the operation of the accessory switches and the manual resetting function.



A application of PASQ arc extinguishing



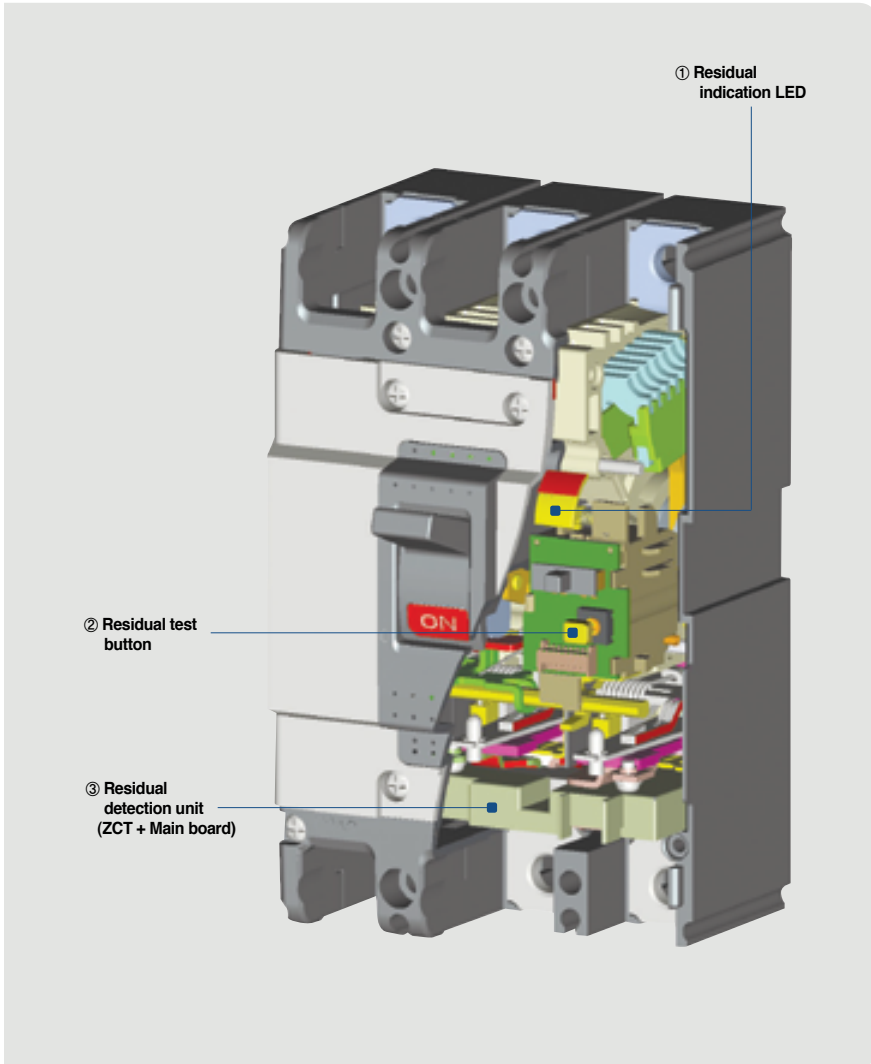
- The reduction of breaking time by applying PASQ arc extinguishing for inhibition of arc voltage for a short time.

A application of current limiting structure

- Current limiting repulsion structure (U fixed structure)
- Toggle structure
- When the operating unit repulses by short circuit current, repulsion structure at bigger angle.



ELCB



① Residual indication LED

- Normal situation is yellow, trio situation is red

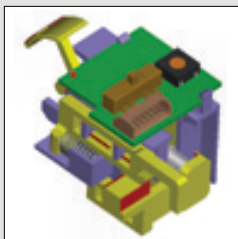
② Residual test button

- Special design for upgrade to prohibit resistance accident

③ Residual detection unit (ZCT + Main board)

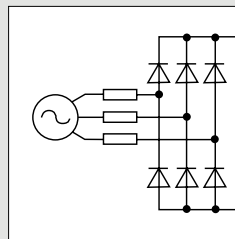
- For upgrade the design is selected the 3 phase input power method and in case of Voltage problem, it can break residual current safely.

Upgrade coil operation by special design



- Sliding structure application of trip lever
- Trip special design by applying design Button method.
- Upgrade the testing unit

3 phase power supply method



- In case of 1 phase loss residual operation upgrade
- New IEC standard

Quick selection table

Molded Case Circuit Breakers

Metasol



MCCBs

AF		30AF		50AF			60AF	
Type		E-type	S-type	N-type	S-type	H-type	N-type	S-type
Type and pole	2-pole	ABE32b	ABS32c	ABN52c	ABS52c	ABH52c	ABN62c	ABS62c
	3-pole	ABE33b	ABS33c	ABN53c	ABS53c	ABH53c	ABN63c	ABS63c
	4-pole	-	ABS34c	ABN54c	ABS54c	ABH54c	ABN64c	ABS64c
Rated current, I _n	A	(3, 5, 10) ^{Note 1} , 15, 20, 30		15, 20, 30, 40, 50			15, 20, 30, 40, 50, 60	
Rated operational voltage, U _e	AC (V)	460	690	690	690	690	690	690
	DC (V)	-	500	500	500	500	500	500
Rated insulation voltage, U _i	V	460	1,000	1,000	1,000	1,000	1,000	1,000
Rated impulse withstand voltage, U _{imp}	kV	6	8	8	8	8	8	8

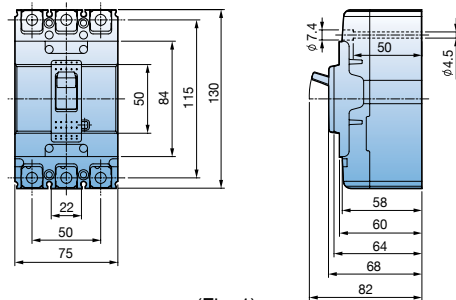
Rated short-circuit breaking capacity (I_{cu}) kA (Sym) , IEC 60947-2

AC	690V	-	2.5	2.5	5	10	2.5	5
	480/500V	-	7.5 (5)	7.5	10	35	7.5	10
	415/460V	2.5	14 (10)	14	18	50	14	18
	380V	2.5	18 (14)	18	22	50	18	22
	220/250V	5	30 (25)	30	35	100	30	35
DC	500V (3P)	-	5	5	10	30	5	10
	250V (2P)	-	5	5	10	30	5	10
I _{cs} =% × I _{cu}		50	100	100	100	100	100	100
Dimensions (mm)	W × H × D (3-pole)	75 × 96 × 60mm	75 × 130 × 60mm (Fig 1)	75 × 130 × 60mm (Fig 1)	90 × 155 × 60mm (Fig 2)	90 × 155 × 60mm (Fig 2)	75 × 130 × 60mm (Fig. 1)	75 × 130 × 60mm (Fig. 1)
	More info.							
More info.	Ratings	34 page	36 page	38 page	38 page	38 page	40 page	40 page
	Curves	101 page	101 page	101 page	102 page	102 page	101 page	101 page
	Drawings	108 page	109 page	109 page	110 page	110 page	109 page	109 page

Note) 1. The short-circuit breaking capacities of ABS30AF type in () are applied to the rated current in (3, 5, 10A)
 2. MCCBs can be applied to both 50 and 60Hz.

3. Standard type is designed on the basis of 40°C of ambient temperature.
 4. There are certain products for hot areas, (30-250AF on the basis of 55°C, 400-800AF on the basis of 50°C)
 5. The I_{cs}(service breaking capacity) of ABN100e, ABL125/250AF are in ()

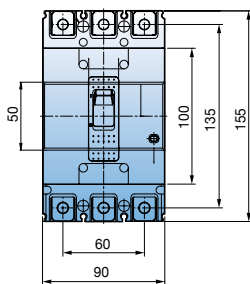
Metasol MCCB						
AF Type	30AF	50AF	60AF	100AF	125AF	250AF
ABN		ABN50c 14kA	ABN60c 14kA	ABN100c 18kA ABN100e 31kA		ABN250c 26kA
ABS	ABS30c 14kA	ABS50c 18kA	ABS60c 18kA		ABS125c 37kA	ABS250c 37kA
ABH		ABH50c 50kA			ABH125c 50kA	ABH250c 50kA
ABL					ABL125c 60kA	ABL250c 60kA



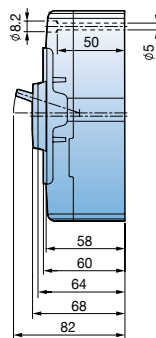
(Fig. 1)



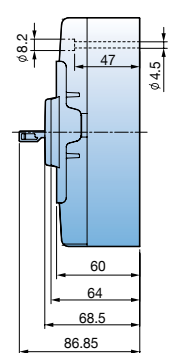
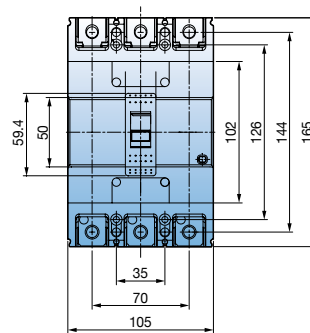
100AF		125AF			250AF			
N-type		S-type	H-type	L-type	N-type	S-type	H-type	L-type
ABN102c	ABN102e	ABS102c	ABH102c	ABL102c	ABN202c	ABS202c	ABH202c	ABL202c
ABN103c	ABN103e	ABS103c	ABH103c	ABL103c	ABN203c	ABS203c	ABH203c	ABL203c
ABN104c	ABN104e	ABS104c	ABH104c	ABL104c	ABN204c	ABS204c	ABH204c	ABL204c
15, 20, 30, 40, 50, 60, 75, 100		15, 20, 30, 40, 50, 60, 75, 100, 125			100, 125, 150, 175, 200, 225, 250			
690	690	690	690	690	690	690	690	690
500	500	500	500	500	500	500	500	500
1,000	1,000	1,000	1,000	1,000	750	1,000	1,000	1,000
8	8	8	8	8	8	8	8	8
5	7.5 (5)	8	10	10 (10)	8	8	10	10 (10)
10	14 (10)	26	35	35 (35)	18	26	35	35 (35)
18	31 (18)	37	50	60 (50)	26	37	50	60 (50)
22	31 (22)	42	50	60 (50)	30	42	50	60 (50)
35	50 (35)	85	100	100 (100)	65	85	100	100 (100)
10	15 (10)	20	30	30 (30)	10	20	30	30 (30)
10	15 (10)	20	30	30 (30)	10	20	30	30 (30)
100	()	100	100	()	100	100	100	()
75 × 130 × 60mm (Fig. 1)		90 × 155 × 60mm (Fig. 2)			105 × 165 × 60mm (Fig. 3)			
42 page		44 page			46 page			
101 page		102 page			103 page			
109 page		110 page			111 page			



(Fig. 2)



(Fig. 3)



Quick selection table

Molded Case Circuit Breakers

Metasol

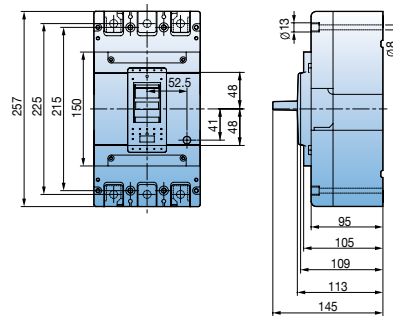


MCCBs

AF		400AF			
Type		N-Type	S-Type	H-Type	L-Type
Type and pole	2-pole	ABN402c	ABS402c	ABH402c	ABL402c
	3-pole	ABN403c	ABS403c	ABH403c	ABL403c
	4-pole	ABN404c	ABS404c	ABH404c	ABL404c
Rated current, In	A	250, 300, 350, 400			
Rated operational voltage, Ue	AC (V)	690	690	690	690
	DC (V)	500	500	500	500
Rated insulation voltage, Ui	V	1,000	1,000	1,000	1,000
Rated impulse withstand voltage, Uimp	kV	8	8	8	8
Rated short-circuit breaking capacity (Icu) kA (Sym) , IEC 60947-2					
AC	690V	5	8	10	14
	480/500V	18	35	50	65
	415/460V	37	50	65	85
	380V	42	65	70	100
	220/250V	50	75	85	125
DC	500V (3P)	10	20	40	40
	250V (2P)	10	20	40	40
Ics=% × Icu		100	100	100	75
Dimensions (mm)	W × H × D (3-pole)	140 × 257 × 109mm (Fig 4)			
More info.	Ratings	48 page			
	Curves	104 page			
	Drawings	112 page			

Note) 1.The short-circuit breaking capacities in () are applied to the rated current in (3, 5, 10A) 2.Standard type is designed on the basis of 40°C of ambient temperature. 3.There are certain products for hot areas. (30-250AF on the basis of 55°C, 400-800AF on the basis of 50°C)

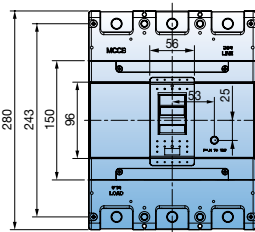
Type	AF	400AF	800AF	1000AF	1200AF
ABN		ABN400c 37kA	ABN800c 37kA		
ABS		ABS400c 50kA	ABS800c 65kA	ABS1000b 65kA	ABS1200b 65kA
ABH		ABH400c 65kA			
ABL		ABL400c 85kA	ABL800c 85kA	ABL1000b 85kA	ABL1200b 85kA



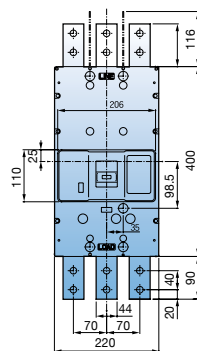
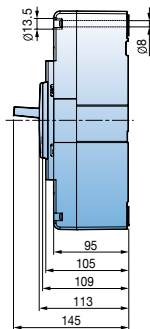
(Fig. 4)



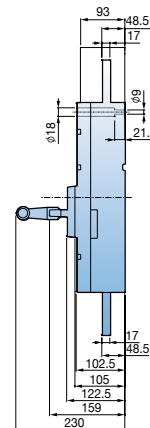
800AF			1000AF		1200AF		
N-Type	S-Type	L-Type	S-Type	L-Type	S-Type		L-Type
ABN802c	ABS802c	ABL802c	-	-	-	-	-
ABN803c	ABS803c	ABL803c	ABS1003b	ABL1003b	ABS1203b	ABS1203bE	ABL1203b
ABN804c	ABS804c	ABL804c	ABS1004b	ABL1004b	ABS1204b	-	ABL1204b
700, 800			1,000		1200		
690	690	690	600	600	600	600	600
500	500	500	-	-	-	-	-
1,000	1,000	1,000	690	690	690	690	690
8	8	8	6	6	6	6	6
8	10	14	-	-	-	-	-
25	45	65	50	75	50	50	75
37	65	85	65	85	65	65	85
45	75	100	65	85	65	65	85
50	85	125	100	125	100	100	125
10	20	40	-	-	-	-	-
10	20	40	-	-	-	-	-
100	100	75	50	50	50	50	50
210×280×109mm (Fig 5)			220×400×105mm (Fig 6)		220×400×105mm (Fig 6)		
50 page			52 page		52page	54page	52page
104 page			105 page		105page	105page	105page
113 page			114 page		114page	115page	114page



(Fig. 5)



(Fig. 6)



Quick selection table

Motor protection Molded Case Circuit Breakers

Metasol

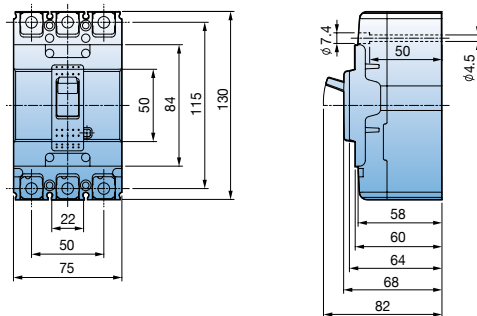


MCCBs

AF		30AF	50AF			60AF	
Type		S-type	N-type	S-type	H-type	N-type	S-type
Type and pole	3-pole	ABS33cM	ABN53cM	ABS53cM	ABH53cM	ABN63cM	ABS63cM
Rated current, I _n	A	16, 24	16, 24, 32, 45			60	
Rated operational voltage, U _e	AC (V)	690	690	690	690	690	690
	DC (V)	500	500	500	500	500	500
Rated insulation voltage, U _i	V	750	750	750	750	750	750
Rated impulse withstand voltage, U _{imp}	kV	8	8	8	8	8	8
Rated short-circuit breaking capacity (I_{cu}) kA (Sym) , IEC 60947-2							
AC	690V	2.5	2.5	5	10	2.5	5
	480/500V	7.5	7.5	10	35	7.5	10
	415/460V	14	14	18	50	14	18
	380V	18	18	22	50	18	22
	220/250V	30	30	35	100	30	35
DC	500V (3P)	5	5	10	30	5	10
	I _{cs} =% × I _{cu}	100	100	100	100	100	100
Dimensions (mm)	W × H × D	75 × 130 × 60mm	75 × 130 × 60mm		90 × 155 × 60mm	75 × 130 × 60mm	
	(3-pole)	(Fig 1)	(Fig 1)		(Fig 2)	(Fig. 1)	
More info.	Ratings	36 page	38 page		38 page	40 page	
	Curves	106 page	106 page		107 page	106 page	
	Drawings	109 page	109 page		110 page	109 page	

Note) 1. Same electrical and physical specification with MCCB.
 2. Accessory : Same application with MCCB
 3. MCCBs can be applied to both 50 and 60Hz.

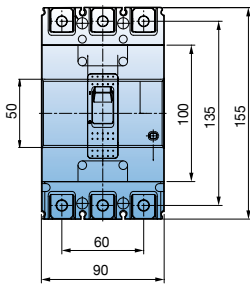
AF Type	30AF	50AF	60AF	100AF	125AF	250AF
ABN		ABN50cM 14kA	ABN60cM 14kA	ABN100cM 18kA		
ABS	ABS30cM 14kA	ABS50cM 18kA	ABS60cM 18kA		ABS125cM 37kA	ABS250cM 37kA
ABH		ABH50cM 50kA			ABH125cM 50kA	ABH250cM 50kA



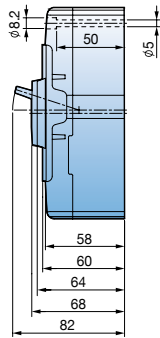
(Fig. 1)



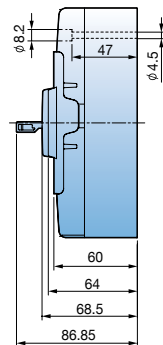
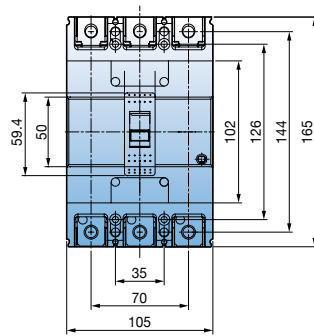
	100AF	125AF		250AF	
	N-type	S-type	H-type	S-type	H-type
	ABN103c	ABS103cM	ABS33cM	ABS203cM	ABH203cM
	60, 75, 90	60, 75, 90		125, 150, 175, 225	
	690	690	690	690	690
	500	500	500	500	500
	750	750	750	750	750
	8	8	8	8	8
	5	8	10	8	10
	10	26	35	26	35
	18	37	50	37	50
	22	42	50	42	50
	35	85	100	85	100
	10	20	30	20	30
	100	100	100	100	100
	75×130×60mm (Fig. 1)	90×155×60mm (Fig. 2)		105×165×60mm (Fig. 3)	
	42 page	44 page		46 page	
	106 page	107 page		107 page	
	109 page	110 page		111 page	



(Fig. 2)



(Fig. 3)



Quick selection table

ZCT Molded Case Circuit Breakers

Metasol



MCCBs

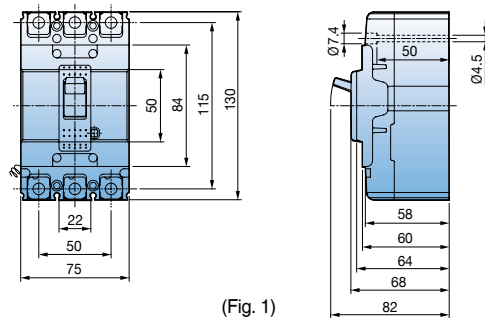
AF		30AF	50AF			60AF	
Type		S-type	N-type	S-type	H-type	N-type	S-type
	2-pole	-	-	-	ABH52cZ	-	-
Type and pole	3-pole	ABS33cZ	ABN53cZ	ABS53cZ	ABH53cZ	ABN63cZ	ABS63cZ
	4-pole	ABS34cZ	ABN54cZ	ABS54cZ	ABH54cZ	ABN64cZ	ABS64cZ
Rated current, I _n	A	15, 20, 30	15, 20, 30, 40, 50			15, 20, 30, 40, 50, 60	
Rated operational	AC (V)	690	690	690	690	690	690
Rated insulation voltage, U _i	V	1,000	1,000	1,000	1,000	1,000	1,000
Rated impulse withstand voltage, U _{imp}	kV	8	8	8	8	8	8

Rated short-circuit breaking capacity (I_{cu}) kA (Sym) , IEC 60947-2

AC	690V	2.5	2.5	5	10	2.5	5
	480/500V	7.5	7.5	10	35	7.5	10
	415/460V	14	14	18	50	14	18
	380V	18	18	22	50	18	22
	220/250V	30	30	35	100	30	35
I _{cs} =% × I _{cu}		100	100	100	100	100	100
Dimensions (mm)	W×H×D (3-pole)	75×130×60mm (Fig 1)	75×130×60mm (Fig 1)		90×155×60mm (Fig 2)	75×130×60mm (Fig. 1)	
More info.	Ratings	36 page	38 page		38 page	40 page	
	Curves	101 page	101 page		102 page	101 page	
	Drawings	109 page	109 page		110 page	109 page	

- Note) 1. Same electrical and physical specification with MCCB.
 2. Accessory : Same application with MCCB
 3. MCCBs can be applied to both 50 and 60Hz.
 4. Marking ZCT on the Aux. cover right side
 5. Dimension of ABH52c, ABS102c and ABH102, which have a built-in ZCT, is 60 (W) X 155 (H) X 60 (D) mm
 6. 4-pole product's ampacity on neutral conductor is equal to or less than 50% of the rated current.

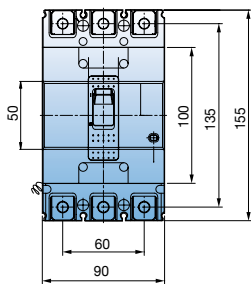
AF Type	30AF	50AF	60AF	100AF	125AF	250AF
ABN		ABN50cM 14kA	ABN60cM 14kA	ABN100cM 18kA		
ABS	ABS30cM 14kA	ABS50cM 16kA	ABS60cM 16kA		ABS125cM 37kA	ABS250cM 37kA
ABH		ABH50cM 50kA			ABH125cM 50kA	ABH250cM 50kA



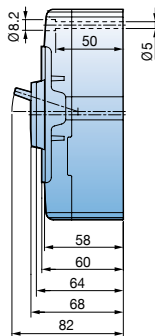
(Fig. 1)



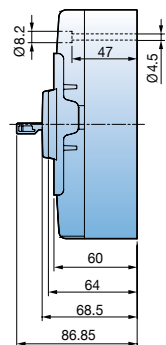
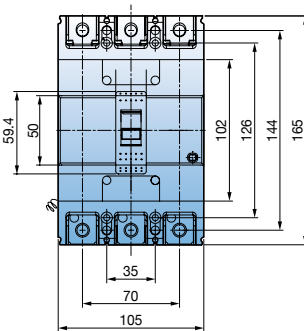
	100AF			125AF			250AF		
	N-type	S-type	H-type	N-type	S-type	H-type	N-type	S-type	H-type
	-	ABS102cZ	ABH102cZ	-	-	-	-	-	-
	ABN103cZ	ABS103cZ	ABH103cZ	ABN203cZ	ABS203cZ	ABH203cZ	ABN203cZ	ABS203cZ	ABH203cZ
	ABN104cZ	ABS104cZ	ABH104cZ	ABN204cZ	ABS204cZ	ABH204cZ	ABN204cZ	ABS204cZ	ABH204cZ
	15, 20, 30, 40, 50 60, 75, 100	15, 20, 30, 40, 50, 60, 75, 100, 125			100, 125, 150, 175, 200, 225, 250				
	690	690	690	690	690	690	690	690	690
	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
	5	8	10	8	8	10	8	8	10
	10	26	35	18	26	35	18	26	35
	18	37	50	26	37	50	26	37	50
	22	42	50	30	42	50	30	42	50
	35	85	100	65	85	100	65	85	100
	100	100	100	100	100	100	100	100	100
	75 × 130 × 60mm (Fig. 1)	90 × 155 × 60mm (Fig. 2)			105 × 165 × 60mm (Fig. 3)				
	42 page	44 page			46 page				
	101 page	102 page			103 page				
	109 page	110 page			111 page				



(Fig. 2)



(Fig. 3)



Quick selection table

ZCT Molded Case Circuit Breakers

Metasol



MCCBs

AF		400AF			
Type		N-type	S-type	H-type	L-type
Type and pole	2-pole	-	-	-	-
	3-pole	ABN403cZ	ABS403cZ	ABH403cZ	ABL403cZ
	4-pole	ABN404cZ	ABS404cZ	ABH404cZ	ABL404cZ
Rated current, I _n	A	250, 300, 350, 400			
Rated operational voltage, U _e	AC (V)	690	690	690	690
Rated insulation voltage, U _i	V	1,000	1,000	1,000	1,000
Rated impulse withstand voltage, U _{imp}	kV	8	8	8	8
Rated short-circuit breaking capacity (I_{cu}) kA (Sym) , IEC 60947-2					
AC	690V	5	8	10	14
	480/500V	18	35	50	65
	415/460V	37	50	65	85
	380V	42	65	70	100
	220/250V	50	75	85	125
I _{cs} =% × I _{cu}		100	100	100	75
Dimensions (mm)	W × H × D (3-pole)	140 × 257 × 109mm (Fig 4)			
More info.	Ratings	48 page			
	Curves	104 page			
	Drawings	112 page			

- Note) 1. Same electrical and physical specification with MCCB.
 2. Accessory : Same application with MCCB
 3. MCCBs can be applied to both 50 and 60Hz.
 4. Marking ZCT on the Aux. cover right side
 5. 4-pole product's ampacity on neutral conductor is equal to or less than 50% of the rated current.

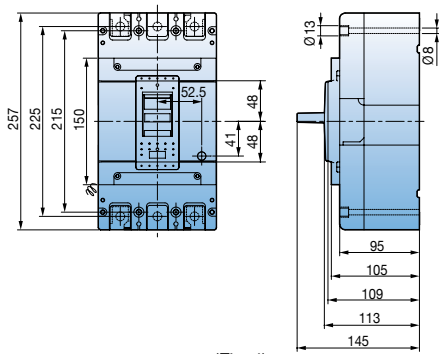
Type	AF	400AF	800AF
ABN		ABN400c 37kA	ABN800c 37kA
ABS		ABS400c 50kA	ABS800c 65kA
ABH		ABH400c 65kA	
ABL		ABL400c 85kA	ABL800c 85kA



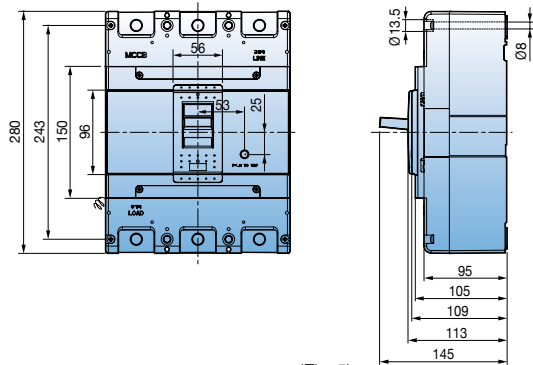


800AF

800AF		
N-type	S-type	L-type
-	-	-
ABN803cZ	ABS803cZ	ABL803cZ
-	-	-
500, 630, 700, 800		
690	690	690
1,000	1,000	1,000
8	8	8
8	10	14
25	45	65
37	65	85
45	75	100
50	85	125
100	100	75
210×280×109mm (Fig 5)		
50 page		
104 page		
113 page		



(Fig. 4)



(Fig. 5)

30AF MCCB ABE30b

Metasol



ABE32b



ABE33b

Ratings

Frame size		30AF	
Type and pole		E-type	
	2-pole	ABE32b	
	3-pole	ABE33b	
	4-pole	-	
Rated current, I _n		3-5-10-15-20-30A	
Rated operational voltage, U _e		AC : 460V	
		-	
Rated insulation voltage, U _i		AC : 460V	
Rated impulse withstand voltage, U _{imp}		6kV	
Rated short-circuit breaking capacity, I_{cu}		E-type	
AC	690V	-	
IEC 60947-2 (I _{cu})	480/500V	-	
	460V	2.5kA	
	415V	2.5kA	
	380V	2.5kA	
	220/250V	5kA	
DC	500V (3P)	-	
	250V (2P)	-	
I _{cs} =%×I _{cu}		50%	
Protective function		Overload, Short-circuit	
Type of trip unit		Hydraulic-Magnetic	
Magnetic trip range		12I _n	
Endurance	Mechanical	8,500 operations	
	Electrical	1,500 operations	
Connection	Standard	Front connection	
	Optional	-	
Mounting		Standard Screw fixing	
Dimensions (mm)			
	Pole	2p	3p
	a	50	75
	b	96	96
	c1 <small>Note)</small>	60	60
	c2 <small>Note)</small>	-	-
	d	80	80
Weight, kg	Standard	0.5	0.7
Certification			
Pole	2p	3p	
CE marking	☐	○	○

Note) Depth by door cut size : c1 for large cut, c2 for small cut

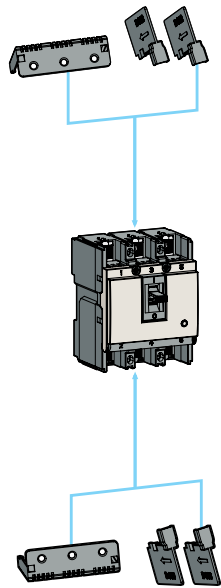
For more information

- Drawings ▶ 108 page
- Trip curves ▶ 101 page
- Accessories ▶ 74 page
- Connection and mounting ▶ 127 page

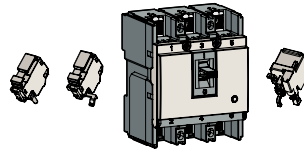
Ordering types

Breaker types

ABE type (2.5kA/460V)		
Rated current, In	2-pole	3-pole
3 A	ABE32b/3	ABE33b/3
5 A	ABE32b/5	ABE33b/5
10 A	ABE32b/10	ABE33b/10
15 A	ABE32b/15	ABE33b/15
20 A	ABE32b/20	ABE33b/20
30 A	ABE32b/30	ABE33b/30

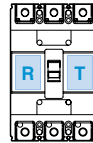


Accessories



Electrical auxiliaries

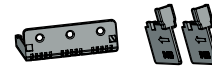
AX	Auxiliary switch
AL	Alarm switch
SHT	Shunt trip



Maximum possibilities

T-position	One of above auxiliaries
R-position	Option of AX or AL

Note) For more detail see 74 page



External accessories

ABE30b	Name
B-03B	Insulation barrier
TBS23	Short type

Note) For more detail see 82 page

30AF MCCB ABS30c

Metasol



ABS32c



ABS33c

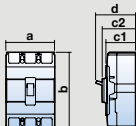


ABS34c

For more information

- Drawings ▶ 106 page
- Trip curves ▶ 101 page
- Accessories ▶ 74 page
- Connection and mounting ▶ 127 page

Ratings

Frame size		30AF			
Type and pole		E-type			
	2-pole	ABS32c			
	3-pole	ABS33c			
	4-pole	ABS34c			
Rated current, I _n		(3-5-10) -15-20-30A			
Rated operational voltage, U _e		AC: 690V			
		DC: 500V			
Rated insulation voltage, U _i		AC: 1,000V			
Rated impulse withstand voltage, U _{imp}		8kV			
Rated short-circuit breaking capacity, I_{cu}		S-type			
IEC 60947-2 (I _{cu})	AC	690V	2.5kA		
		480/500V	7.5(5)kA		
		460V	14(10)kA		
		415V	14(10)kA		
		380V	18(14)kA		
		220/250V	30(25)kA		
	DC	500V (3P)	5kA		
	250V (2P)	5kA			
I _{cs} =%×I _{cu}		100%			
Protective function		Overload, Short-circuit			
Type of trip unit		Thermal-Magnetic			
Magnetic trip range		400A			
Endurance	Mechanical	25,000 operations			
	Electrical	10,000 operations			
Connection	Standard	Front connection			
	Optional	Rear connection			
Mounting		Plug-in			
Standard		Screw fixing			
Dimensions (mm)		Pole	2p	3p	4p
	a	50	75	100	
	b	130	130	130	
	c1 <small>Note</small>	60	60	60	
	c2 <small>Note</small>	64	64	64	
	d	82	82	82	
	Weight, kg	Standard	0.5	0.7	0.9
Certification		Pole	2p	3p	4p
CE marking		CE	○	○	○

Note 1. The short-circuit breaking capacities in () are applied to the rated current in (3, 5, 10A)

Note 2. Depth by door cut size : c1 for large cut, c2 for small cut

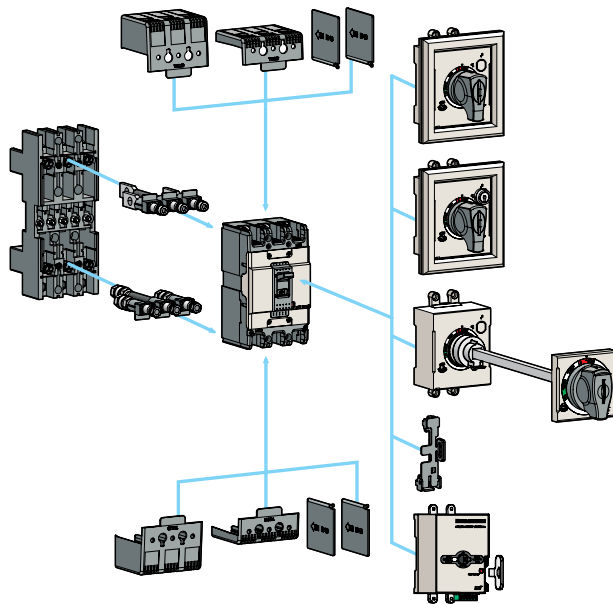
Note 3. 4-pole product's ampacity on neutral conductor is equal to or less than 50% of the rated current.

Ordering types

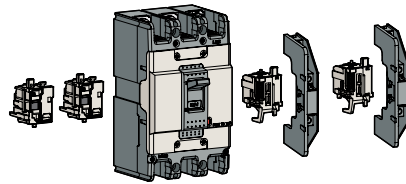
Breaker types

ABS type (10kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
3 A	ABS32c/3	ABS33c/3	ABS34c/3
5 A	ABS32c/5	ABS33c/5	ABS34c/5
10 A	ABS32c/10	ABS33c/10	ABS34c/10

ABS type (14kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
15 A	ABS32c/15	ABS33c/15	ABS34c/15
20 A	ABS32c/20	ABS33c/20	ABS34c/20
30 A	ABS32c/30	ABS33c/30	ABS34c/30



Accessories



Electrical auxiliaries

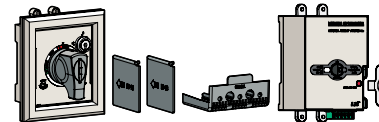
AX	Auxiliary switch
AL	Alarm switch
AX+AL	Combination switch
SHT	Shunt trip
UVT	Undervoltage trip



Maximum possibilities

T-position	One of above auxiliaries
R-position	Option of AX or AL or AX+AL

Note) For more detail see 74 page



External accessories

ABS30c	Name
IB13	Insulation barrier
TCL13	Terminal cover (Long) - Inde type, D-handle type, N-handle type
TCS13	Terminal cover (Short) - Inde type, D-handle type, N-handle type
DH100	Rotary handle (Direct)
DHK100	Rotary handle (Direct, Key lock)
EH100	Rotary handle (Extended)
RTR1	Rear terminal (Round)
PB-A3	Plug-in kit
Handle lock	
MOP-M1	Remote operation

Note) For more detail see 82 page

- Inde type: This cover is used without auxiliary handle.
- D-handle type: This cover is used with D-handle.
- N-handle type: This cover is used with N-handle.

50AF MCCB

ABN50c, ABS50c, ABH50c

Metasol



ABS52c



ABS53c



ABS54c

For more information

- Drawings ▶ 106, 107 page
- Trip curves ▶ 101, 102 page
- Accessories ▶ 74 page
- Connection and mounting ▶ 127 page

Ratings

Frame size		50AF													
Type and pole				N-type			S-type			H-type					
		2-pole		ABN52c			ABS52c			ABH52c					
		3-pole		ABN53c			ABS53c			ABH53c					
		4-pole		ABN54c			ABS54c			ABH54c					
Rated current, I _n		15-20-30-40-50A													
Rated operational voltage, U _e		AC: 690V DC: 500V													
Rated insulation voltage, U _i		AC: 1,000V													
Rated impulse withstand voltage, U _{imp}		8kV													
Rated short-circuit breaking capacity, I_{cu}				N-type			S-type			H-type					
AC		690V		2.5kA			5kA			10kA					
IEC 60947-2 (I _{cu})		480/500V		7.5kA			10kA			35kA					
		460V		14kA			18kA			50kA					
		415V		14kA			18kA			50kA					
		380V		18kA			22kA			50kA					
		220/250V		30kA			35kA			100kA					
DC		500V (3P)		5kA			10kA			30kA					
		250V (2P)		5kA			10kA			30kA					
I _{cs} =%×I _{cu}				100%			100%			100%					
Protective function		Overload, Short-circuit													
Type of trip unit		Thermal-Magnetic													
Magnetic trip range		12×I _n (30A and under: 400A)													
Endurance		Mechanical		25,000 operations											
		Electrical		10,000 operations											
Connection		Standard		Front connection											
		Optional		Rear connection											
Mounting		Standard		Plug-in											
				Screw fixing											
Dimensions (mm)		Pole		2p		3p		4p		2p		3p		4p	
		a		50		75		100		50		75		100	
		b				130				130				155	
		c1 <small>Note</small>				60				60				60	
		c2 <small>Note</small>				64				64				64	
		d				82				82				82	
Weight, kg		Standard		0.5		0.7		0.9		0.5		0.7		0.9	
2p		3p		4p		2p		3p		4p		2p		3p	
Certification		Pole		2p		3p		4p		2p		3p		4p	
CE marking		CE		○		○		○		○		○		○	

Note 1. Depth by door cut size : c1 for large cut, c2 for small cut
 2. 4-pole product's ampacity on neutral conductor is equal to or less than 50% of the rated current.

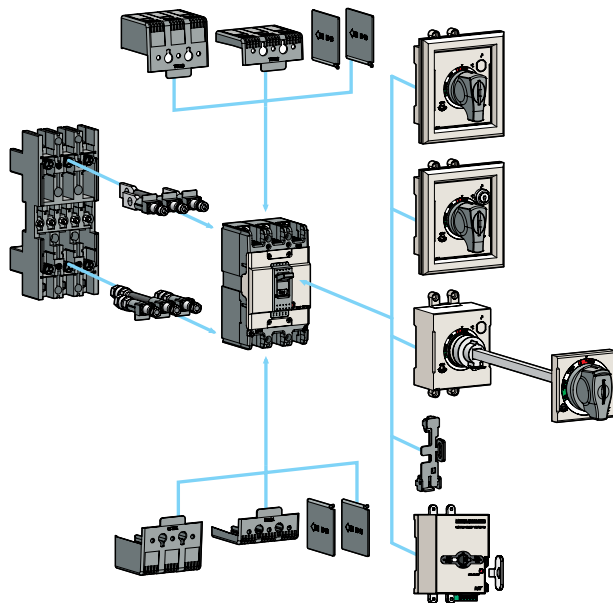
Ordering types

Breaker types

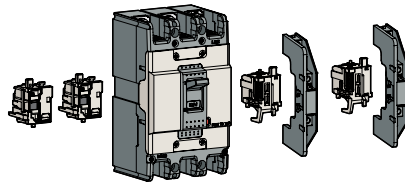
ABN type (14kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
15 A	ABN52c/15	ABN53c/15	ABN54c/15
20 A	ABN52c/20	ABN53c/20	ABN54c/20
30 A	ABN52c/30	ABN53c/30	ABN54c/30
40 A	ABN52c/40	ABN53c/40	ABN54c/40
50 A	ABN52c/50	ABN53c/50	ABN54c/50

ABS type (18kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
15 A	ABS52c/15	ABS53c/15	ABS54c/15
20 A	ABS52c/20	ABS53c/20	ABS54c/20
30 A	ABS52c/30	ABS53c/30	ABS54c/30
40 A	ABS52c/40	ABS53c/40	ABS54c/40
50 A	ABS52c/50	ABS53c/50	ABS54c/50

ABH type (50kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
15 A	ABH52c/15	ABH53c/15	ABH54c/15
20 A	ABH52c/20	ABH53c/20	ABH54c/20
30 A	ABH52c/30	ABH53c/30	ABH54c/30
40 A	ABH52c/40	ABH53c/40	ABH54c/40
50 A	ABH52c/50	ABH53c/50	ABH54c/50

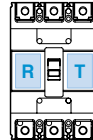


Accessories



Electrical auxiliaries

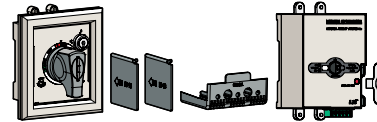
AX	Auxiliary switch
AL	Alarm switch
AX+AL	Combination switch
SHT	Shunt trip
UVT	Undervoltage trip



Maximum possibilities

T-position	One of above auxiliaries
R-position	Option of AX or AL or AX+AL

Note) For more detail see 74 page



External accessories

ABN50c ABS50c	ABH50c	Name
IB13	IB23	Insulation barrier
TCL13	TCL23	Terminal cover (Long) - Inde type, D-handle type, N-handle type
TCS13	TCS23	Terminal cover (Short) - Inde type, D-handle type, N-handle type
DH100	DH125	Rotary handle (Direct)
DHK100	DHK125	Rotary handle (Direct, Key lock)
EH100	EH125	Rotary handle (Extended)
-	RTB2	Rear terminal (Bar)
RTR1	RTR2	Rear terminal (Round)
PB-A3	PB-C3	Plug-in kit
Handle lock		
MOP-M1	MOP-M2	Remote operation

Note) For more detail see 82 page

- Inde type: This cover is used without auxiliary handle.
- D-handle type: This cover is used with D-handle.
- N-handle type: This cover is used with N-handle.

60AF MCCB

ABN60c, ABS60c

Metasol



ABS62c



ABS63c



ABS64c

For more information

- Drawings ▶ 109 page
- Trip curves ▶ 101 page
- Accessories ▶ 74 page
- Connection and mounting ▶ 127 page

Ratings

Frame size		60AF						
Type and pole		N-type			S-type			
	2-pole	ABN62c			ABS62c			
	3-pole	ABN63c			ABS63c			
	4-pole	ABN64c			ABS64c			
Rated current, I _n		15-20-30-40-50-60A						
Rated operational voltage, U _e		AC: 690V						
		DC: 500V						
Rated insulation voltage, U _i		AC: 1,000V						
Rated impulse withstand voltage, U _{imp}		8kV						
Rated short-circuit breaking capacity, I_{cu}		N-type			S-type			
IEC 60947-2 (I _{cu})	AC	690V	2.5kA			5kA		
		480/500V	7.5kA			10kA		
		460V	14kA			18kA		
		415V	14kA			18kA		
		380V	18kA			22kA		
		220/250V	30kA			35kA		
	DC	500V (3P)	5kA			10kA		
	250V (2P)	5kA			10kA			
I _{cs} =%×I _{cu}		100%			100%			
Protective function		Overload, Short-circuit						
Type of trip unit		Thermal-Magnetic						
Magnetic trip range		12×I _n (30A and under: 400A)						
Endurance	Mechanical	25,000 operations						
	Electrical	10,000 operations						
Connection	Standard	Front connection						
	Optional	Rear connection						
Mounting		Screw fixing						
Dimensions (mm)		Pole	2p	3p	4p	2p	3p	4p
		a	50	75	100	50	75	100
		b	130			130		
		c1 <i>Note</i>	60			60		
		c2 <i>Note</i>	64			64		
		d	82			82		
		Weight, kg	Standard	0.5	0.7	0.9	0.5	0.7
Certification		Pole	2p			3p		
CE marking		CE	○			○		

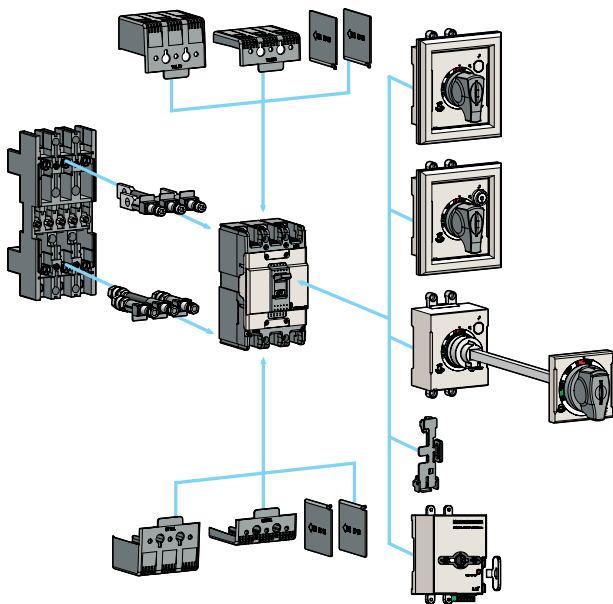
Note) 1. Depth by door cut size : c1 for large cut, c2 for small cut
 2. 4-pole product's ampacity on neutral conductor is equal to or less than 50% of the rated current.

Ordering types

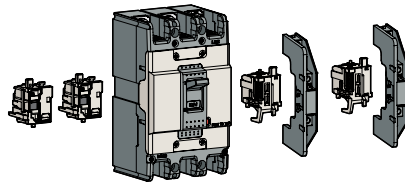
Breaker types

ABN type (14kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
15 A	ABN62c/15	ABN63c/15	ABN64c/15
20 A	ABN62c/20	ABN63c/20	ABN64c/20
30 A	ABN62c/30	ABN63c/30	ABN64c/30
40 A	ABN62c/40	ABN63c/40	ABN64c/40
50 A	ABN62c/50	ABN63c/50	ABN64c/50
60 A	ABN62c/60	ABN63c/60	ABN64c/60

ABS type (18kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
15 A	ABS62c/15	ABS63c/15	ABS64c/15
20 A	ABS62c/20	ABS63c/20	ABS64c/20
30 A	ABS62c/30	ABS63c/30	ABS64c/30
40 A	ABS62c/40	ABS63c/40	ABS64c/40
50 A	ABS62c/50	ABS63c/50	ABS64c/50
60 A	ABS62c/60	ABS63c/60	ABS64c/60

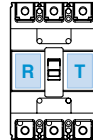


Accessories



Electrical auxiliaries

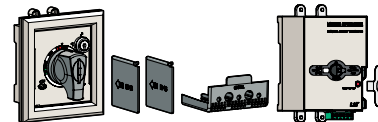
AX	Auxiliary switch
AL	Alarm switch
AX+AL	Combination switch
SHT	Shunt trip
UVT	Undervoltage trip



Maximum possibilities

T-position	One of above auxiliaries
R-position	Option of AX or AL or AX+AL

Note) For more detail see 74 page



External accessories

ABN50c ABS50c	Name
IB13	Insulation barrier
TCL13	Terminal cover (Long) - Inde type, D-handle type, N-handle type
TCS13	Terminal cover (Short) - Inde type, D-handle type, N-handle type
DH100	Rotary handle (Direct)
DHK100	Rotary handle (Direct, Key lock)
EH100	Rotary handle (Extended)
RTB1	Rear terminal (Bar)
RTR1	Rear terminal (Round)
PB-A3	Plug-in kit
handle lock	
MOP-M1	Remote operation

Note) For more detail see 82 page

- Inde type: This cover is used without auxiliary handle.
- D-handle type: This cover is used with D-handle.
- N-handle type: This cover is used with N-handle.

100AF MCCB

ABN100c, ABN100e

Metasol



ABN102c



ABN103c



ABN104c

For more information

- Drawings ▶ 109 page
- Trip curves ▶ 101 page
- Accessories ▶ 74 page
- Connection and mounting ▶ 127 page

Ratings

Frame size		100AF			
Type and pole		N-type			
	2-pole	ABN102c		ABN102e	
	3-pole	ABN103c		ABN103e	
	4-pole	ABN104c		ABN104e	
Rated current, I _n		15-20-30-40-50-60-75-100A			
Rated operational voltage, U _e		AC: 690V			
		DC: 500V			
Rated insulation voltage, U _i		AC: 1,000V			
Rated impulse withstand voltage, U _{imp}		8kV			
Rated short-circuit breaking capacity, I_{cu}		N-type			
IEC 60947-2 (I _{cu})	AC	690V	5kA	7.5(5)kA	
		480/500V	10kA	14(10)kA	
		460V	18kA	31(18)kA	
		415V	18kA	31(18)kA	
		380V	22kA	31(22)kA	
		220/250V	35kA	50(35)kA	
	DC	500V (3P)	10kA	15(10)kA	
	250V (2P)	10kA	15(10)kA		
I _{cs} =%×I _{cu}			100%	()	
Protective function		Overload, Short-circuit			
Type of trip unit		Thermal-Magnetic			
Magnetic trip range		400A			
Endurance	Mechanical	25,000 operations			
	Electrical	10,000 operations			
Connection	Standard	Front connection			
	Optional	Rear connection			
Mounting		Plug-in			
	Standard	Screw fixing			
Dimensions (mm)		Pole	2p	3p	4p
	a		50	75	100
	b		130	130	130
	c1 <small>Note</small>		60	60	60
	c2 <small>Note</small>		64	64	64
	d		82	82	82
Weight, kg		Standard	0.5	0.7	0.9
Certification		Pole	2p	3p	4p
CE marking		CE	○	○	○

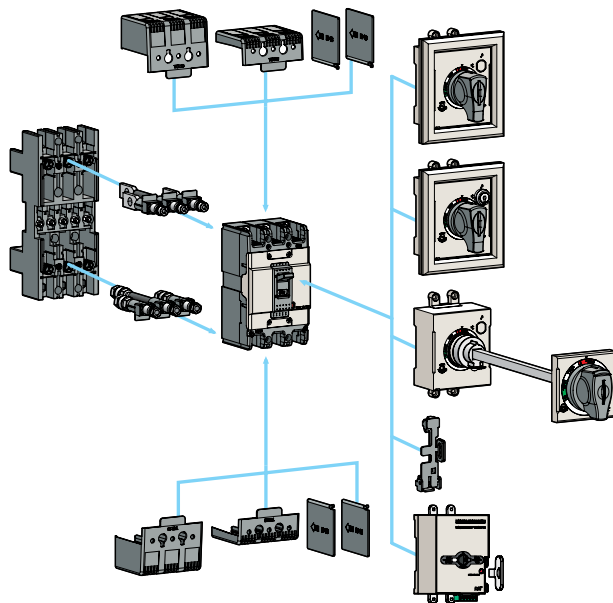
Note) 1. Depth by door cut size : c1 for large cut, c2 for small cut
 2. 4-pole product's ampacity on neutral conductor is equal to or less than 50% of the rated current.
 3. The I_{cs}(service breaking capacity) of ABN100e are in ()

Ordering types

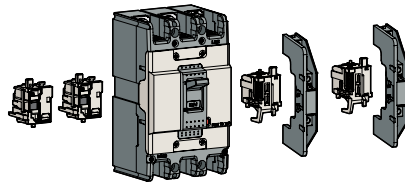
Breaker types

ABN-c type (18kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
15 A	ABN102c/15	ABN103c/15	ABN104c/15
20 A	ABN102c/20	ABN103c/20	ABN104c/20
30 A	ABN102c/30	ABN103c/30	ABN104c/30
40 A	ABN102c/40	ABN103c/40	ABN104c/40
50 A	ABN102c/50	ABN103c/50	ABN104c/50
60 A	ABN102c/60	ABN103c/60	ABN104c/60
75 A	ABN102c/75	ABN103c/75	ABN104c/75
100 A	ABN102c/100	ABN103c/100	ABN104c/100

ABN-e type (31kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
15 A	ABN102e/15	ABN103e/15	ABN104e/15
20 A	ABN102e/20	ABN103e/20	ABN104e/20
30 A	ABN102e/30	ABN103e/30	ABN104e/30
40 A	ABN102e/40	ABN103e/40	ABN104e/40
50 A	ABN102e/50	ABN103e/50	ABN104e/50
60 A	ABN102e/60	ABN103e/60	ABN104e/60
75 A	ABN102e/75	ABN103e/75	ABN104e/75
100 A	ABN102e/100	ABN103e/100	ABN104e/100

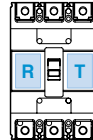


Accessories



Electrical auxiliaries

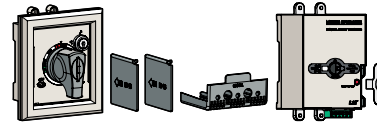
AX	Auxiliary switch
AL	Alarm switch
AX+AL	Combination switch
SHT	Shunt trip
UVT	Undervoltage trip



Maximum possibilities

T-position	One of above auxiliaries
R-position	Option of AX or AL or AX+AL

Note) For more detail see 74 page



External accessories

ABN100c	Name
IB13	Insulation barrier
TCL13	Terminal cover (Long) - Inde type, D-handle type, N-handle type
TCS13	Terminal cover (Short) - Inde type, D-handle type, N-handle type
DH100	Rotary handle (Direct)
DHK100	Rotary handle (Direct, Key lock)
EH100	Rotary handle (Extended)
RTB1	Rear terminal (Bar)
RTR1	Rear terminal (Round)
PB-A3	Plug-in kit
Handle lock	
MOP-M1	Remote operation

Note) For more detail see 82 page

- Inde type: This cover is used without auxiliary handle.
- D-handle type: This cover is used with D-handle.
- N-handle type: This cover is used with N-handle.

125AF MCCB

ABS125c, ABH125c, ABL125c

Metasol



ABS102c



ABS103c



ABS104c

For more information

- Drawings ▶ 110 page
- Trip curves ▶ 102 page
- Accessories ▶ 74 page
- Connection and mounting ▶ 127 page

Ratings

Frame size		125AF											
Type and pole				N-type			H-type			L-type			
		2-pole		ABS102c			ABH102c			ABL102c			
		3-pole		ABS103c			ABH103c			ABL103c			
		4-pole		ABS104c			ABH104c			ABL104c			
Rated current, I _n		15-20-30-40-50-60-75-100-125A											
Rated operational voltage, U _e		AC: 690V DC: 500V											
Rated insulation voltage, U _i		AC: 1,000V											
Rated impulse withstand voltage, U _{imp}		8kV											
Rated short-circuit breaking capacity, I _{cu}				N-type			H-type			L-type			
IEC 60947-2 (I _{cu})		AC	690V	8kA			10kA			10(10)kA			
			480/500V	26kA			35kA			35(35)kA			
			460V	37kA			50kA			60(50)kA			
			415V	37kA			50kA			60(50)kA			
			380V	42kA			50kA			60(50)kA			
			220/250V	85kA			100kA			100(100)kA			
		DC	500V (3P)	20kA			30kA			30(30)kA			
			250V (2P)	20kA			30kA			30(30)kA			
I _{cs} =%×I _{cu}				100%			100%			()			
Protective function		Overload, Short-circuit											
Type of trip unit		Thermal-Magnetic											
Magnetic trip range		12 × I _n (30A and under: 400A)											
Endurance		Mechanical		25,000 operations									
		Electrical		10,000 operations									
Connection		Standard		Front connection									
		Optional		Rear connection									
Mounting				Plug-in									
		Standard		Screw fixing									
Dimensions (mm)		Pole	2p	3p	4p	2p	3p	4p	2p	3p	4p		
		a	60	90	120	60	90	120	60	90	120		
		b	155			155			155				
		c1 <small>Note</small>	60			60			60				
		c2 <small>Note</small>	64			64			64				
		d	82			82			84				
Weight, kg		Standard	0.7	1	1.2	0.7	1	1.2	0.7	1	1.2		
Certification		Pole	2p	3p	4p	2p	3p	4p	2p	3p	4p		
CE marking		CE	○			○			○				

Note) 1. Depth by door cut size : c1 for large cut, c2 for small cut
 2. 4-pole product's ampacity on neutral conductor is equal to or less than 50% of the rated current.
 3. The I_{cs}(service breaking capacity) of ABL125AF are in ()

Ordering types

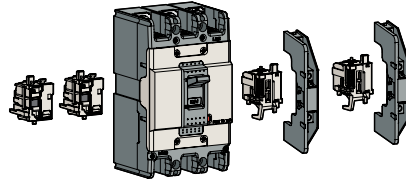
Breaker types

ABS type (37kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
15 A	ABS102c/15	ABS103c/15	ABS104c/15
20 A	ABS102c/20	ABS103c/20	ABS104c/20
30 A	ABS102c/30	ABS103c/30	ABS104c/30
40 A	ABS102c/40	ABS103c/40	ABS104c/40
50 A	ABS102c/50	ABS103c/50	ABS104c/50
60 A	ABS102c/60	ABS103c/60	ABS104c/60
75 A	ABS102c/75	ABS103c/75	ABS104c/75
100 A	ABS102c/100	ABS103c/100	ABS104c/100
125 A	ABS102c/125	ABS103c/125	ABS104c/125

ABH type (50kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
15 A	ABH102c/15	ABH103c/15	ABH104c/15
20 A	ABH102c/20	ABH103c/20	ABH104c/20
30 A	ABH102c/30	ABH103c/30	ABH104c/30
40 A	ABH102c/40	ABH103c/40	ABH104c/40
50 A	ABH102c/50	ABH103c/50	ABH104c/50
60 A	ABH102c/60	ABH103c/60	ABH104c/60
75 A	ABH102c/75	ABH103c/75	ABH104c/75
100 A	ABH102c/100	ABH103c/100	ABH104c/100
125 A	ABH102c/125	ABH103c/125	ABH104c/125

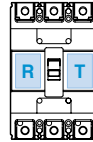
ABL type (60kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
15 A	ABL102c/15	ABL103c/15	ABL104c/15
20 A	ABL102c/20	ABL103c/20	ABL104c/20
30 A	ABL102c/30	ABL103c/30	ABL104c/30
40 A	ABL102c/40	ABL103c/40	ABL104c/40
50 A	ABL102c/50	ABL103c/50	ABL104c/50
60 A	ABL102c/60	ABL103c/60	ABL104c/60
75 A	ABL102c/75	ABL103c/75	ABL104c/75
100 A	ABL102c/100	ABL103c/100	ABL104c/100
125 A	ABL102c/125	ABL103c/125	ABL104c/125

Accessories



Electrical auxiliaries

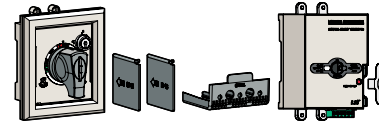
AX	Auxiliary switch
AL	Alarm switch
AX+AL	Combination switch
SHT	Shunt trip
UVT	Undervoltage trip



Maximum possibilities

T-position	One of above auxiliaries
R-position	Option of AX or AL or AX+AL

Note) For more detail see 74 page



External accessories

ABS125c ABH125c	Name
IB13	Insulation barrier
TCL23	Terminal cover (Long) - Inde type, D-handle type, N-handle type
TCS23	Terminal cover (Short) - Inde type, D-handle type, N-handle type
DH125	Rotary handle (Direct)
DHK125	Rotary handle (Direct, Key lock)
EH125	Rotary handle (Extended)
RTB2	Rear terminal (Bar)
RTR2	Rear terminal (Round)
PB-C3	Plug-in kit
Handle lock	
MOP-M2	Remote operation

Note) For more detail see 82 page

- Inde type: This cover is used without auxiliary handle.
- D-handle type: This cover is used with D-handle.
- N-handle type: This cover is used with N-handle.

250AF MCCB

ABN250c, ABS250c, ABH250c, ABL250c

Metasol



ABS202c



ABS203c



ABS204c

For more information

- Drawings ▶ 111 page
- Trip curves ▶ 103 page
- Accessories ▶ 74 page
- Connection and mounting ▶ 127 page

Ratings

Frame size		250AF													
Type and pole		N-type			S-type			H-type			L-type				
2-pole		ABN202c			ABS202c			ABH202c			ABL202c				
3-pole		ABN203c			ABS203c			ABH203c			ABL203c				
4-pole		ABN204c			ABS204c			ABH204c			ABL204c				
Rated current, In		15-20-30-40-50-60-75-100-125A													
Rated operational voltage, Ue		AC: 690V													
		DC: 500V													
Rated insulation voltage, Ui		AC: 1,000V													
Rated impulse withstand voltage, Uimp		8kV													
Rated short-circuit breaking capacity, Icu		N-type			S-type			H-type			L-type				
AC		690V			8kA			8kA			10kA				
IEC 60947-2 (Icu)		480/500V			18kA			26kA			35kA				
		460V			26kA			37kA			50kA				
		415V			26kA			37kA			50kA				
		380V			30kA			42kA			50kA				
		220/250V			65kA			85kA			100kA				
DC		500V (3P)			10kA			20kA			30kA				
		250V (2P)			10kA			20kA			30kA				
Ics=%xIcu		100%			100%			100%			()				
Protective function		Overload, Short-circuit													
Type of trip unit		Thermal-Magnetic													
Magnetic trip range		12xIn													
Endurance		Mechanical			25,000 operations										
		Electrical			10,000 operations										
Connection		Standard			Front connection										
		Optional			Rear connection										
		Plug-in													
Mounting		Standard			Screw fixing										
Dimensions (mm)		Pole		2p		3p		4p		2p		3p		4p	
		a		60		90		120		690		120		140	
		b				155				155				165	
		c1 <i>Note</i>				60				60				60	
		c2 <i>Note</i>				64				64				64	
		d				82				82				87	
Weight, kg		Standard		0.7		1		1.2		0.7		1		1.2	
				1.1		1.2		1.1		1.2		1.6		1.1	
				1.2		1.6								1.6	
Certification		Pole		2p		3p		4p		2p		3p		4p	
CE marking		CE		o		o		o		o		o		o	

Note) 1. Depth by door cut size : c1 for large cut, c2 for small cut
 2. 4-pole product's ampacity on neutral conductor is equal to or less than 50% of the rated current.
 3. The Ics(service breaking capacity) of ABL250AF are in ()

Ordering types

Breaker types

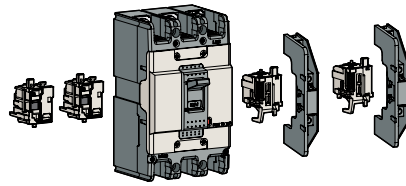
ABN type (26kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
100 A	ABN202c/100	ABN203c/100	ABN204c/100
125 A	ABN202c/125	ABN203c/125	ABN204c/125
150 A	ABN202c/150	ABN203c/150	ABN204c/150
175 A	ABN202c/175	ABN203c/175	ABN204c/175
200 A	ABN202c/200	ABN203c/200	ABN204c/200
225 A	ABN202c/225	ABN203c/225	ABN204c/225
250 A	ABN202c/250	ABN203c/250	ABN204c/250

ABS type (37kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
100 A	ABS202c/100	ABS203c/100	ABS204c/100
125 A	ABS202c/125	ABS203c/125	ABS204c/125
150 A	ABS202c/150	ABS203c/150	ABS204c/150
175 A	ABS202c/175	ABS203c/175	ABS204c/175
200 A	ABS202c/200	ABS203c/200	ABS204c/200
225 A	ABS202c/225	ABS203c/225	ABS204c/225
250 A	ABS202c/250	ABS203c/250	ABS204c/250

ABH type (50kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
100 A	ABH202c/100	ABH203c/100	ABH204c/100
125 A	ABH202c/125	ABH203c/125	ABH204c/125
150 A	ABH202c/150	ABH203c/150	ABH204c/150
175 A	ABH202c/175	ABH203c/175	ABH204c/175
200 A	ABH202c/200	ABH203c/200	ABH204c/200
225 A	ABH202c/225	ABH203c/225	ABH204c/225
250 A	ABH202c/250	ABH203c/250	ABH204c/250

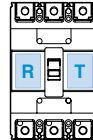
ABL type (60kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
100 A	ABL202c/100	ABL203c/100	ABL204c/100
125 A	ABL202c/125	ABL203c/125	ABL204c/125
150 A	ABL202c/150	ABL203c/150	ABL204c/150
175 A	ABL202c/175	ABL203c/175	ABL204c/175
200 A	ABL202c/200	ABL203c/200	ABL204c/200
225 A	ABL202c/225	ABL203c/225	ABL204c/225
250 A	ABL202c/250	ABL203c/250	ABL204c/250

Accessories



Electrical auxiliaries

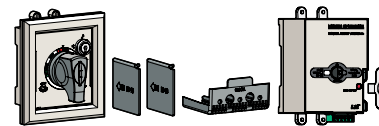
AX	Auxiliary switch
AL	Alarm switch
AX+AL	Combination switch
SHT	Shunt trip
UVT	Undervoltage trip



Maximum possibilities

T-position	One of above auxiliaries
R-position	Option of AX or AL or AX+AL

Note) For more detail see 74 page



External accessories

ABH250c	Name
B33	Insulation barrier
TCL33	Terminal cover (Long) - Inde type, D-handle type, N-handle type
TCS33	Terminal cover (Short) - Inde type, D-handle type, N-handle type
DH250	Rotary handle (Direct)
DHK250	Rotary handle (Direct, Key lock)
EH250	Rotary handle (Extended)
RTB3	Rear terminal (Bar)
RTR3	Rear terminal (Round)
PBA250C	Plug-in kit
Handle lock	
MOP-M3	Remote operation

Note) For more detail see 82 page

- Inde type: This cover is used without auxiliary handle.
- D-handle type: This cover is used with D-handle.
- N-handle type: This cover is used with N-handle.

400AF MCCB

ABN400c, ABS400c, ABH400c, ABL400c

Metasol



ABS403c



ABL404c

Ratings

Frame size		250AF												
Type and pole		N-type			S-type			L-type			L-type			
	2-pole	ABN402c			ABS402c			ABH402c			ABL402c			
	3-pole	ABN403c			ABS403c			ABH403c			ABL403c			
	4-pole	ABN404c			ABS404c			ABH404c			ABL404c			
Rated current, I _n		250-300-350-400A												
Rated operational voltage, U _e		AC : 690V												
		DC : 500V												
Rated insulation voltage, U _i		AC : 1,000V												
Rated impulse withstand voltage, U _{imp}		8kV												
Rated short-circuit breaking capacity, I _{cu}		N-type			S-type			H-type			L-type			
IEC 60947-2 (I _{cu})	AC	690V	5kA			8kA			10kA			14kA		
	480/500V		18kA			35kA			50kA			65kA		
	460V		37kA			50kA			65kA			85kA		
	415V		42kA			65kA			70kA			100kA		
	380V		50kA			75kA			85kA			125kA		
	220/250V		10kA			20kA			40kA			40kA		
	DC	500V (3P)	10kA			20kA			40kA			40kA		
	250V (2P)	100%			100%			100%			75%			
I _{cs} =%×I _{cu}		100%			100%			100%			()			
Protective function		Overload, Short-circuit												
Type of trip unit		Thermal-Magnetic												
Magnetic trip range		8~12I _n												
Endurance	Mechanical	4,000 operations												
	Electrical	1,000 operations												
Connection	Standard	Front connection												
	Optional	Plug-in												
		Screw fixing												
Mounting		Standard Screw fixing												
Dimensions (mm)		Pole	2p	3p	4p	2p	3p	4p	2p	3p	4p	2p	3p	4p
		a	140	140	184	140	140	184	140	140	184	140	140	184
		b	257			257			257			257		
		c1 <small>Note</small>	109			109			109			109		
		c2 <small>Note</small>	113			113			113			113		
		d	145			145			145			145		
		Weight, kg		Standard	5.2	6.2	7.8	5.2	6.2	7.8	5.2	6.2	7.8	5.2
Certification		Pole	2p	3p	4p	2p	3p	4p	2p	3p	4p	2p	3p	4p
CE marking		CE	○			○			○			○		

For more information

- Drawings ▶ 112 page
- Trip curves ▶ 104 page
- Accessories ▶ 75 page
- Connection and mounting ▶ 128 page

Note) 1. Depth by door cut size : c1 for large cut, c2 for small cut
2. 4-pole product's ampacity on neutral conductor is equal to or less than 50% of the rated current.

Ordering types

Breaker types

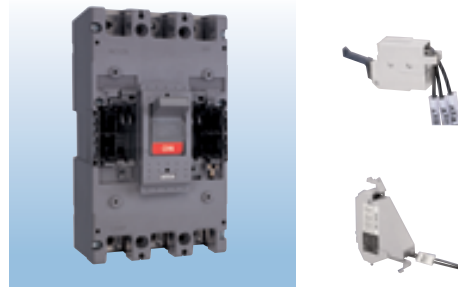
ABN type (37kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
250 A	ABN402c/250	ABN403c/250	ABN404c/250
300 A	ABN402c/300	ABN403c/300	ABN404c/300
350 A	ABN402c/350	ABN403c/350	ABN404c/350
400 A	ABN402c/400	ABN403c/400	ABN404c/400

ABS type (50kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
250 A	ABS402c/250	ABS403c/250	ABS404c/250
300 A	ABS402c/300	ABS403c/300	ABS404c/300
350 A	ABS402c/350	ABS403c/350	ABS404c/350
400 A	ABS402c/400	ABS403c/400	ABS404c/400

ABH type (65kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
250 A	ABH402c/250	ABH403c/250	ABH404c/250
300 A	ABH402c/300	ABH403c/300	ABH404c/300
350 A	ABH402c/350	ABH403c/350	ABH404c/350
400 A	ABH402c/400	ABH403c/400	ABH404c/400

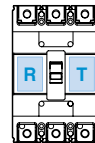
ABL type (85kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
250 A	ABL402c/250	ABL403c/250	ABL404c/250
300 A	ABL402c/300	ABL403c/300	ABL404c/300
350 A	ABL402c/350	ABL403c/350	ABL404c/350
400 A	ABL402c/400	ABL403c/400	ABL404c/400

Accessories



Electrical auxiliaries

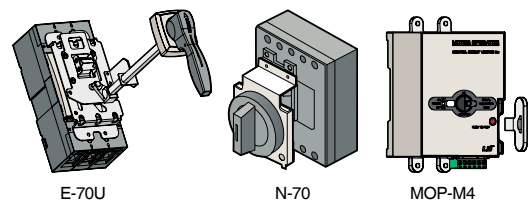
AX	Auxiliary switch
AL	Alarm switch
AX+AL	Combination switch
SHT	Shunt trip
UVT	Undervoltage trip



Maximum possibilities

T-position	One of above auxiliaries
R-position	Option of AX or AL or AX+AL

Note) For more detail see 75 page



External accessories

IBL400	Insulation barrier
T1-43A	Terminal cover (Long) - 2, 3pole
T1-44A	Terminal cover (Long) - 4pole
N-70	Rotary handle (Direct)
E-70U	Rotary handle (Extended)
MI-43	Mechanical interlock - 2, 3pole
MI-44	Mechanical interlock - 4pole
PB-I3-FR	Plug-in kit
MOP-M4	Remote operation

Note) For more detail see 82 page

800AF MCCB

ABN800c, ABS800c, ABL800c

Metasol



ABS803c



ABL804c

Ratings

Frame size		800AF												
Type and pole				N-type			S-type			L-type				
		2-pole		ABN802c			ABS802c			ABL802c				
		3-pole		ABN803c			ABS803c			ABL803c				
		4-pole		ABN804c			ABS804c			ABL804c				
Rated current, In		500-630-700-800A												
Rated operational voltage, Ue		AC: 690V DC: 500V												
Rated insulation voltage, Ui		AC: 1,000V												
Rated impulse withstand voltage, Uimp		8kV												
Rated short-circuit breaking capacity, Icu				N-type			H-type			L-type				
		AC 690V		8kA			10kA			14kA				
		IEC 60947-2 (Icu)		480/500V			25kA			45kA			65kA	
				415/460V			37kA			65kA			85kA	
				380V			45kA			75kA			100kA	
				220/250V			50kA			85kA			125kA	
				DC 500V (3P)			10kA			20kA			40kA	
		250V (2P)			10kA			20kA			40kA			
Ics=%xIcu					100%			100%			75%			
Protective function		Overload, Short-circuit												
Type of trip unit		Thermal-Magnetic												
Magnetic trip range		8~12In												
Endurance		Mechanical		2,500 operations										
		Electrical		500 operations										
Connection		Standard		Front connection										
		Optional		Plug-in										
Mounting		Standard		Screw fixing										
Dimensions (mm)		Pole		2p	3p	4p	2p	3p	4p	2p	3p	4p		
		a		210	210	280	210	210	280	210	210	280		
		b		280			280			280				
		c1 <small>Note)</small>		109			109			109				
		c2 <small>Note)</small>		113			113			113				
		d		145			145			145				
		Weight, kg		Standard	11	11.5	18.2	11	11.5	18.2	11	11.5	18.2	
Certification		Pole		2p	3p	4p	2p	3p	4p	2p	3p	4p		
		CE marking		☐			☐			☐				

Note) 1. Depth by door cut size : c1 for large cut, c2 for small cut
2. 4-pole product's ampacity on neutral conductor is equal to or less than 50% of the rated current.

For more information

- Drawings ▶ 113 page
- Trip curves ▶ 104 page
- Accessories ▶ 75 page
- Connection and mounting ▶ 128 page

Ordering types

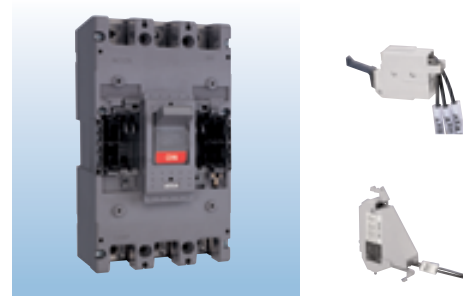
Breaker types

ABN type (37kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
500 A	ABN802c/500	ABN803c/500	ABN804c/500
630 A	ABN802c/630	ABN803c/630	ABN804c/630
700 A	ABN802c/700	ABN803c/700	ABN804c/700
800 A	ABN802c/800	ABN803c/800	ABN804c/800

ABS type (65kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
500 A	ABS802c/500	ABS803c/500	ABS804c/500
630 A	ABS802c/630	ABS803c/630	ABS804c/630
700 A	ABS802c/700	ABS803c/700	ABS804c/700
800 A	ABS802c/800	ABS803c/800	ABS804c/800

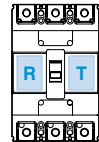
ABL type (85kA/460V)			
Rated current, In	2-pole	3-pole	4-pole
500 A	ABL802c/500	ABL803c/500	ABL804c/500
630 A	ABL802c/630	ABL803c/630	ABL804c/630
700 A	ABL802c/700	ABL803c/700	ABL804c/700
800 A	ABL802c/800	ABL803c/800	ABL804c/800

Accessories



Electrical auxiliaries

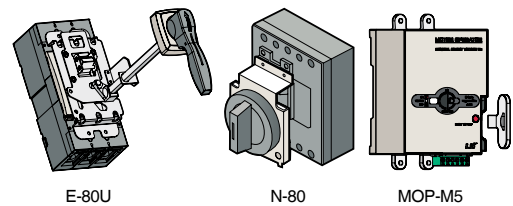
AX	Auxiliary switch
AL	Alarm switch
SHT	Shunt trip
UVT	Undervoltage trip



Maximum possibilities

T-position	Option of 2AX, 2AL and SHT or UVT
R-position	Option of 2AX, 2AL and SHT or UVT

Note) For more detail see 75 page



External accessories

IBL800	Insulation barrier
T1-63A	Terminal cover (Long) - 2, 3pole
T1-64A	Terminal cover (Long) - 4pole
N-80	Rotary handle (Direct)
E-80U	Rotary handle (Extended)
MI-83S	Mechanical interlock - 2, 3pole
MI-84S	Mechanical interlock - 4pole
PB-J3-FR	Plug-in kit
MOP-M5	Remote operation

Note) For more detail see 82 page

1000/1200AF MCCB

ABS1000b/1200b, ABL1000b/1200b

Metasol



① Adjustable instantaneous for each phase

Ratings

Frame size		1000AF		1200AF		
Type and pole		S-type	L-type	S-type	L-type	
2-pole		-	-	-	-	
3-pole		ABS1003b	ABL1003b	ABS1203b	ABL1203b	
4-pole		ABS1004b	ABL1004b	ABS1204b	ABL1204b	
Rated current, In		1,000A		1,200A		
Rated operational voltage, Ue		AC : 600V				
Rated insulation voltage, Ui		690V				
Rated impulse withstand voltage, Uimp		6kV				
Rated short-circuit breaking capacity, Icu		S-type	L-type	S-type	L-type	
AC 690V		45kA	65kA	45kA	65kA	
IEC 60947-2 (Icu)		50kA	75kA	50kA	75kA	
480/500V		50kA	75kA	50kA	75kA	
460V/415V		65kA	85kA	65kA	85kA	
380V		65kA	85kA	65kA	85kA	
220/250V		100kA	125kA	100kA	125kA	
Ics=%xIcu		50%	50%	50%	50%	
Protective function		Overload, Short-circuit				
Type of trip unit		Thermal-Magnetic				
Magnetic trip range		3~6xIn ...①				
Endurance		2,500 operations				
Mechanical		2,500 operations				
Electrical		500 operations				
Connection		Front connection				
Standard		Screw fixing				
Dimensions (mm)		Pole	3p	4p	3p	4p
		a	220	290	220	290
		b	400	400	400	400
		c	105	105	105	105
		d	159	159	159	159
Weight, kg		Standard	19.6	25.7	19.6	25.7
Certification		Pole	3p	4p	3p	4p
CE marking			ABS1003b	ABS1004b	ABS1203b	ABS1204b
			○	×	○	×
			ABL1003b	ABL1004b	ABL1203b	ABL1204b
			×	×	×	×

For more information

- Drawings ▶ 114 page
- Trip curves ▶ 105 page

Note) 1. Please specify the frequency when ordering.
 2. 4-pole product's ampacity on neutral conductor is equal to or less than 50% of the rated current.

Ordering types

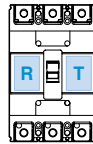
Breaker types

ABS type (65kA/460V)		
Rated current, In	3-pole	4-pole
1,000 A	ABS1003b/1,000	ABS1004b/1,000
1,200 A	ABS1203b/1,200	ABS1204b/1,200

ABL type (85kA/460V)		
Rated current, In	3-pole	4-pole
1,000 A	ABL1003b/1,000	ABL1004b/1,000
1,200 A	ABL1203b/1,200	ABL1204b/1,200

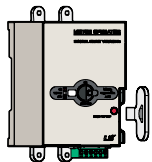
Option of below items for T-position

AX1	Auxiliary switch (1c)
AX2	Auxiliary switch (2c)
AL1	Alarm switch (1c)
AL2	Alarm switch (2c)
AX1+AL	Auxiliary (1c) + Alarm (1c) switch
AX2+AL	Auxiliary (2c) + Alarm (1c) switch



Option of below items for R-position

SHT	Shunt trip
UVT	Undervoltage trip



MOP-M6

External accessories

MOP-M6	Remote operation
--------	------------------

Note) For more detail see 82 page

Contact operation for auxiliary and alarm switches

MCCB	On	Off	Trip
AX			
AL			

Contact rating for auxiliary and alarm switches

Voltage (V)	AC		DC		
	Resistive load	Inductive load	Resistive load	Inductive load	
125	20	20	30	6	5
250	20	20	125	0.4	0.05
500	10	5	250	0.2	0.03

Rating for shunt trip (SHT)

Control voltage	Time rating	Operational voltage
AC 100~110V 125V 200~220V 380~440V 480~550V	Continuous	85~110% of control voltage
DC 24V 48V 100~110V 125V 200~220V		75~125% of control voltage

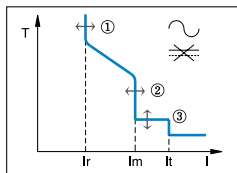
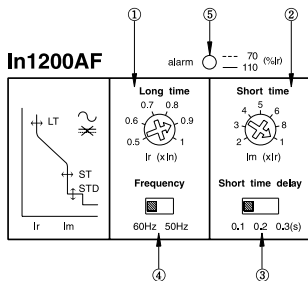
Rating for undervoltage release (UVT)

Control voltage	Time rating	Operational voltage	Trip voltage
AC 100~110V 125V 200~220V 380~440V	Continuous	85~110% of control voltage	20~70% of control voltage

1200AF Electronic MCCB

ABS1203bE

Metasol



For more information

- Drawings ▶ 114 page
- Trip curves ▶ 105 page

Ratings

Frame size		1200AF	
Type and pole		S-type	
	2-pole	-	
	3-pole	ABS1203bE	
	4-pole	-	
Rated current, I_n		1,200A	
Rated operational voltage, U_e		AC: 600V	
Rated insulation voltage, U_i		AC: 690V	
Rated impulse withstand voltage, U_{imp}		6kV	
Type	Long time	Current, I_R	(0.5-0.6-0.7-0.8-0.9-1.0) $\times I_n$, adjustable... ^①
	pick-up	time	5sec \pm 20% at $6 \times I_R$, fixed
	Short time	Current, I_m	(2-3-4-5-6-8-10) $\times I_n$, adjustable... ^②
	pick-up	time	0.1-0.2-0.3 sec, adjustable... ^③
	Instantaneous	Current, I_t	11 $\times I_n$, fixed
	pick-up	time	within 0.03 sec, fixed
⑤ LED	Pre-Alarm		between 70 to 110% of set current I_R : LED flickering over 110% of set current I_R : stays on
	④ Rated frequency		50-60Hz selectable by the switch of the trip unit
Rated short-circuit breaking capacity, I_{cu}		Overload, Short-circuit	
	AC 690V	45kA	
	480/500V	50kA	
	415/460V	65kA	
	380V	65kA	
	220/250V	100kA	
$I_{cs} = \% \times I_{cu}$		50%	
Protective function		Overload, Short-circuit	
Type of trip unit		Electronic type	
Endurance	Mechanical	2, 500 operations	
	Electrical	500 operations	
Connection	Standard	Front connection	
Mounting	Standard	Screw fixing	
Certification		Pole	3p
	a	220	
	b	400	
	c	105	
	d	159	
Weight, kg	Standard	21	

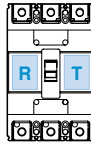
Ordering types

Breaker types

ABS type (65kA/460V)	
Rated current, In	3-pole
1200 A	ABS1203bE

Option of below items for T-position

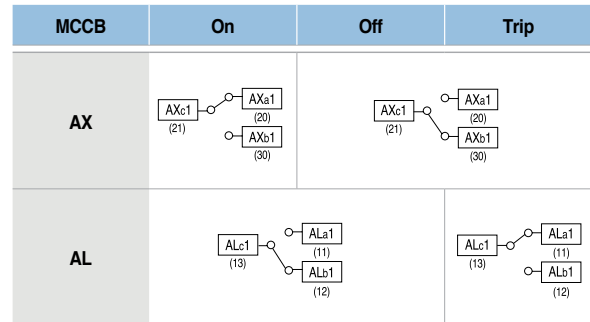
AX1	Auxiliary switch (1c)
AX2	Auxiliary switch (2c)
AL1	Alarm switch (1c)
AL2	Alarm switch (2c)
AX1+AL	Auxiliary (1c) + Alarm (1c) switch
AX2+AL	Auxiliary (2c) + Alarm (1c) switch



Option of below items for R-position

SHT	Shunt trip
UVT	Undervoltage trip

Contact operation for auxiliary and alarm switches



Contact rating for auxiliary and alarm switches

Voltage (V)	AC		DC	
	Resistive load	Inductive load	Resistive load	Inductive load
125	20	20	30	5
250	20	20	125	0.05
500	10	5	250	0.03

Rating for shunt trip (SHT)

Control voltage	Time rating	Operational voltage
AC 100~110V 125V 200~220V 380~440V 480~550V	Continuous	85~110% of control voltage
DC 24V 48V 100~110V 125V 200~220V		75~125% of control voltage

Rating for undervoltage release (UVT)

Control voltage	Time rating	Operational voltage	trip voltage
AC 100~110V 125V 200~220V 380~440V	Continuous	85~110% of control voltage	20~70% of control voltage

Accessories

Electrical auxiliaries of 100~250AF

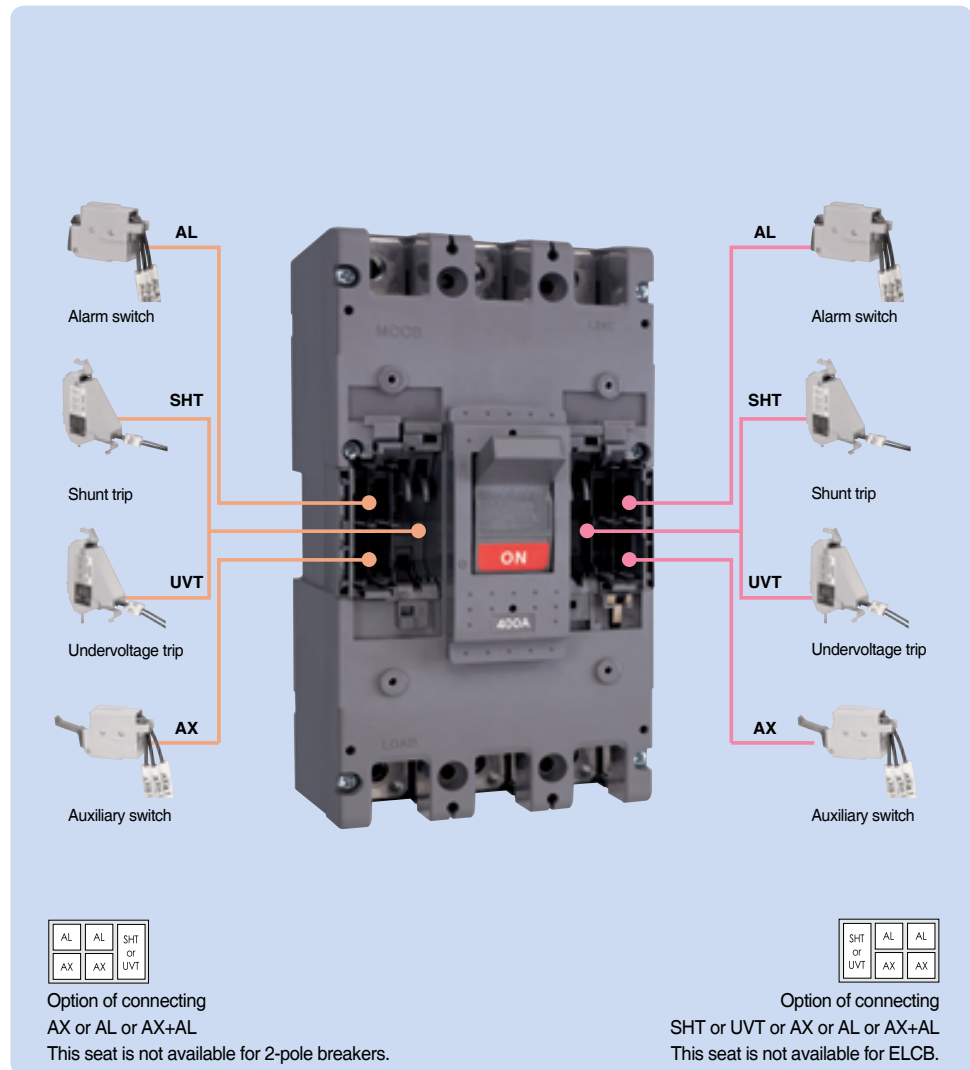
Option of connecting AX or AL or AX+AL
This seat is not available for 2-pole MCCB.

Option of connecting SHT or UVT or AX or AL or AX+AL
This seat is not available for ELCB.

Maximum possibilities

Position	Type	ABN100c		ABH125c		ABH250c	EBN100c	EBH125c	EBH250c
		2p	3/4p	2p	3/4p	2/3/4p	2/3/4p	3/4p	2/3/4p
Left-hand seat	AX	-	1	-	1	1	1	1	1
	AL	-	1	-	1	1	1	1	1
	AX+AL	-	1	-	1	1	1	1	1
Right-hand seat	AX	1	1	1	1	1	-	-	-
	AL	1	1	1	1	1	-	-	-
	AX+AL	1	1	1	1	1	-	-	-
	SHT/UVT	1	1	1	1	1	-	-	-

Electrical auxiliaries of 400~800AF

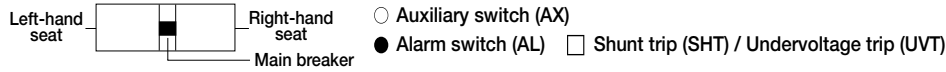


Maximum possibilities

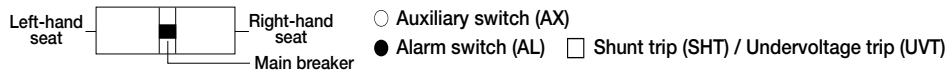
Position	Type	MCCB	ELCB
		(400~800AF)	(400~800AF)
Left-hand seat	AX	2	2
	AL	2	2
	SHT/UVT	1	1
Right-hand seat	AX	2	-
	AL	2	-
	SHT/UVT	1	-

Accessories

Combinations of accessories



Series	MCCB (30-250AF)				MCCB (400-800AF)	MCCB (1,000-1200AF)	
Type	N-type	ABE 32b	ABE 33b	ABN 52c ABN 62c ABN 102c/102d/102e	ABN 53c/54c ABN 63c/64c ABN 103c/104c, ABN 103e/104e ABN 202c/203c/204c	ABN 402c/403c/404c ABN 802c/803c/804c	-
	S-type	-	-	ABS 32c ABS 52c ABS 62c ABS 102c	ABS 33c/34c ABS 53c/54c ABS 63c/64c ABS 103c/104c ABS 202c/203c/204c	ABS 402c/403c/404c ABS 802c/803c/804c	ABS 1003b ABS 1004b ABS 1203b ABS 1204b ABS 1203bE
	H-type	-	-	ABH 52c ABH 102c	ABH 53c/54c ABH 103c/104c ABH202c/203c/204c	ABH 402c/403c/404c	-
	L-type	-	-	ABL 102c	ABL 103c/104c ABL 202c/203c/204c	ABL 402c/403c/404c ABL 802c/803c/804c	ABL 1003b ABL 1004b ABL 1203b ABL 1204b
Pole	2 pole	3 pole	2 pole	2, 3, 4 pole		2, 3, 4 pole	3, 4 pole
AX							
AX2							
AX3 (4)							
AL							
AL2							
AL3 (4)							
SHT (UVT)							
SHT (UVT) 2							
AX+AL							
AX+AL2							
AX+AL3 (4)							
AX2+AL							
AX2+AL2							
AX2+AL3 (4)							
AX3 (4) +AL							
AX3 (4) +AL2							
AX3 (4) +AL3 (4)							
AX+SHT (UVT)							



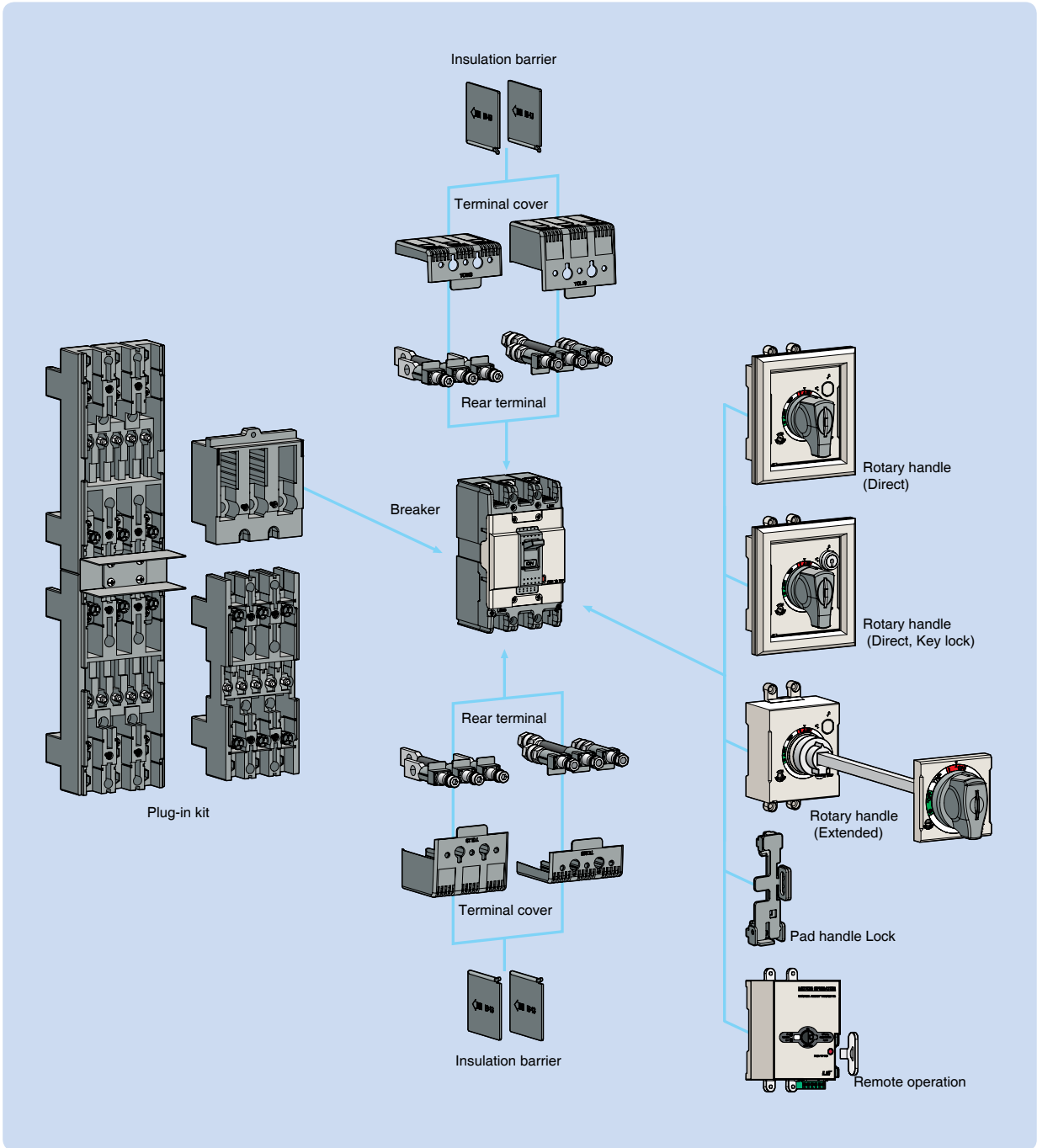
Series		MCCB (30~250AF)				MCCB (400~800AF)	MCCB (1,000~1200AF)
Type	N-type	ABE 32b	ABE 33b	ABN 52c ABN 62c ABN 102c/102d/102e	ABN 53c/54c ABN 63c/64c ABN 103c/104c, ABN 103e/104e ABN 202c/203c/204c	ABN 402c/403c/404c ABN 802c/803c/804c	-
	S-type	-	-	ABS 32c ABS 52c ABS 62c ABS 102c	ABS 33c/34c ABS 53c/54c ABS 63c/64c ABS 103c/104c ABS 202c/203c/204c	ABS 402c/403c/404c ABS 802c/803c/804c	ABS 1003b ABS 1004b ABS 1203b ABS 1204b ABS 1203bE
	H-type	-	-	ABH 52c ABH 102c	ABH 53c/54c ABH 103c/104c ABH202c/203c/204c	ABH 402c/403c/404c	-
	L-type	-	-	ABL 102c	ABL 103c/104c ABL 202c/203c/204c	ABL 402c/403c/404c ABL 802c/803c/804c	ABL 1003b ABL 1004b ABL 1203b ABL 1204b
Pole		2 pole	3 pole	2 pole	2, 3, 4 pole	2, 3, 4 pole	3, 4 pole
AX+SHT (UVT) 2							
AX2+SHT (UVT)							
AX2+SHT (UVT) 2							
AX3 (4) +SHT (UVT)							
AX3 (4) +SHT (UVT) 2							
AL+SHT (UVT)							
AL+SHT (UVT) 2							
AL2+SHT (UVT)							
AL2+SHT (UVT) 2							
AL3 (4) +SHT (UVT)							
AL3 (4) +SHT (UVT) 2							
AX+AL+SHT (UVT)							
AX+AL+SHT (UVT) 2							
AX2+AL2+SHT (UVT)							
AX2+AL2+SHT (UVT) 2							
AX3 (4) +AL3 (4) +SHT (UVT)							
AX3 (4) +AL3 (4) +SHT (UVT) 2							

Accessories

Metasol

External accessories

Wide range of external accessories provides user-friendly solution for mounting, cable connection, insulation, safety lock and remote control.



Rotary handles

The rotary handle operating mechanism is available in either the direct version or in the extended version on the compartment door. It is always fitted with a compartment door lock and on a request it can be supplied with a key lock in the open position.

Direct type , D-handle and N-handle

-D-handle : Directly mountable to a circuit breaker. Trip button is built as standard. Key lock type is optional.

-N-handle : Directly mountable to a circuit breaker. Door is locked in the Off state. handle size is greater than D-handle.

Extended type, E-handle

It is used in case direct type handle can not be applied because of the longer distance between the breaker and the panel door.

Direct type



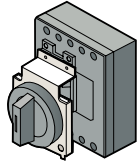
Direct type
(DH 30~250AF)



Key lock
(DH 30~250AF)

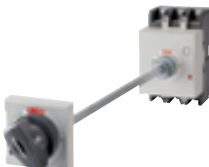


(N 30~250AF)

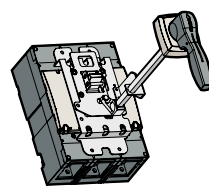


(N 400~800AF)

Extended type



(30~250AF)



(400~800AF)

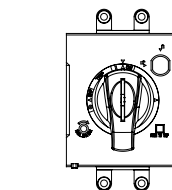
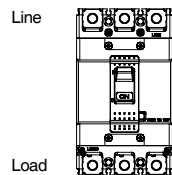
Type

Direct type	Direct type (Key lock)	Extended type	Breaker type	
			MCCB	ELCB
N-30c	-	-	ABN50c/60c/100c/100e	EBN50c/60c/100c
DH100	DHK100	EH100	ABS30c/50c/60c	EBS30c/50c/60c
N-40c	-	-	ABS125c ABH50c/125c ABL125c	EBS125c
DH125	DHK125	EH125		EBH50c/125c
N-50c	-	-		
DH250	DHK250	EH250	ABN/S/H/L250c	EBN/S/H250c
N-70	-	E-70U	ABN/S/H/L400c	EBN/S/H/L400c
N-80	-	E-80U	ABN/S/L800c	EBN/S/L800c

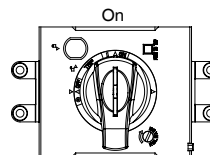
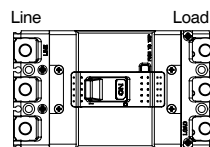
Note: Padlock type for N-handle
 - On or OFF state type - Only OFF state type

Type suffix according to the mounting position

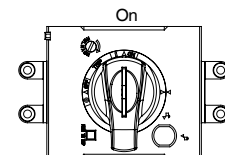
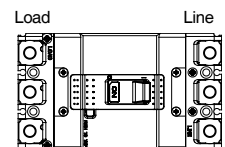
S-type



L-type



R-type

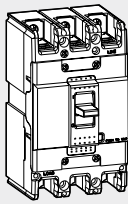
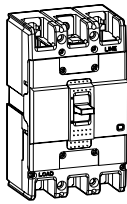
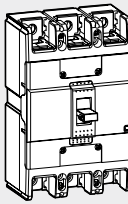


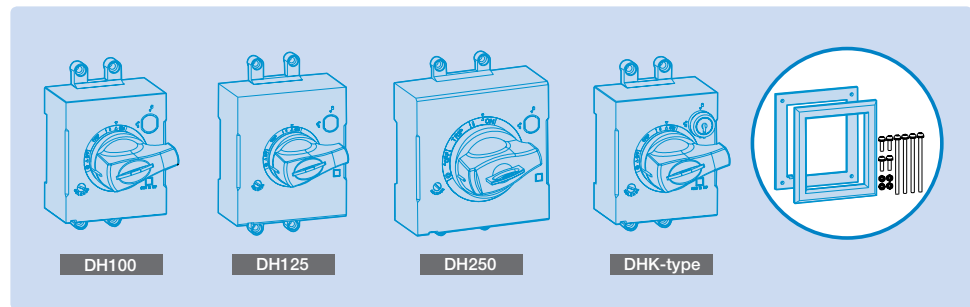
Accessories

Metasol

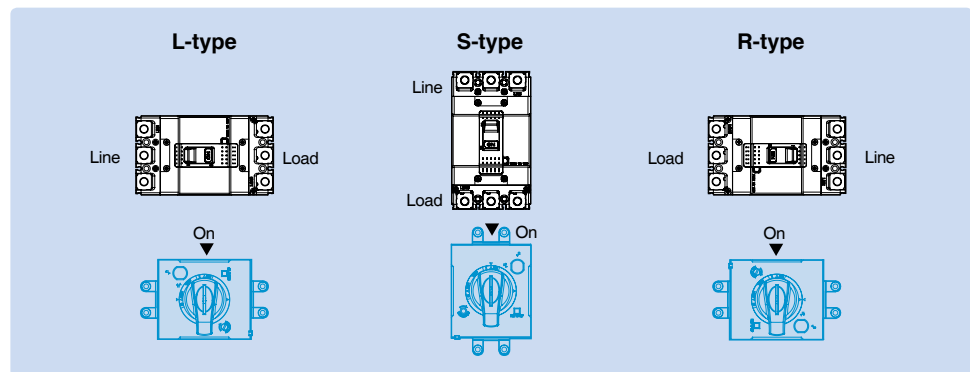
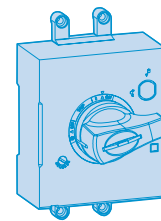
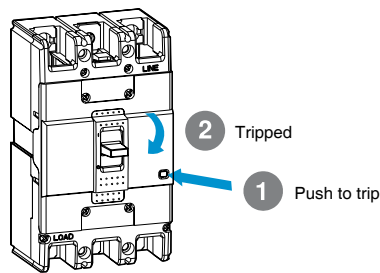
D-handle

MCCB and D-handle

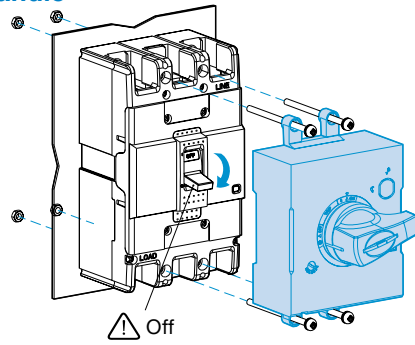
ABN100c	ABH125c	ABH250c
		



Tripping MCCB & Install type

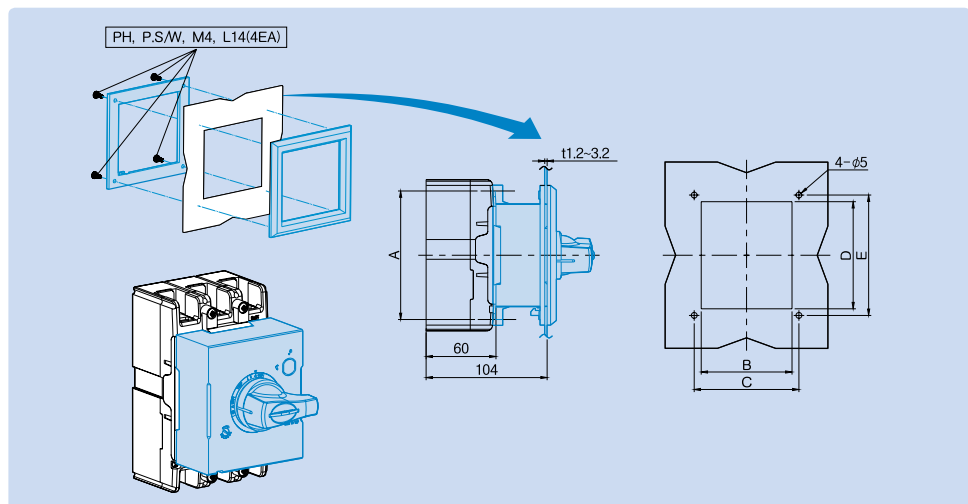


Installing the D-handle



ABN100c, EBN100c	ABH125c, EBH125c	ABH250c, EBH250c

Cutting panel



Direct type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Breaker
DH100	110.5	78	90	92	103.4	100AF
DH125	132	94	105	108	120	125AF
DH250	126	108	121	110	122	250AF

Accessories

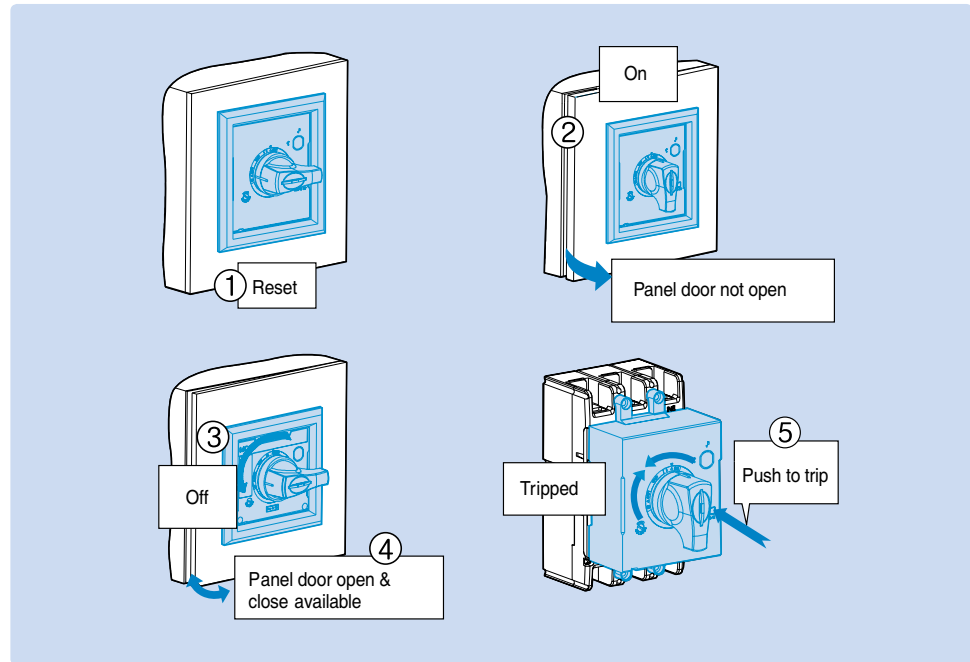
D-handle

Operating test

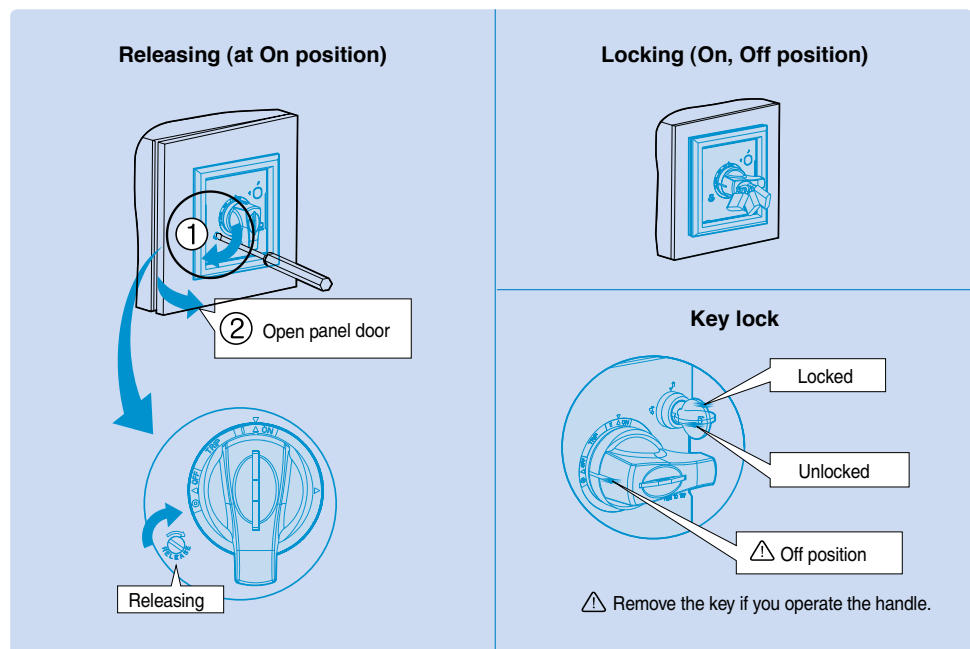
CAUTION

If the door is opened with much pressure when the position of handle is On or Trip, the handle lock lever will be damaged.

Trip position : Panel door can't be opened

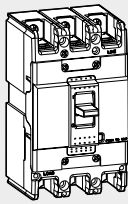
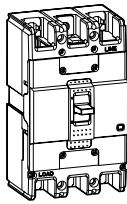
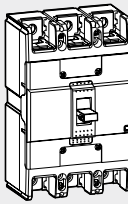


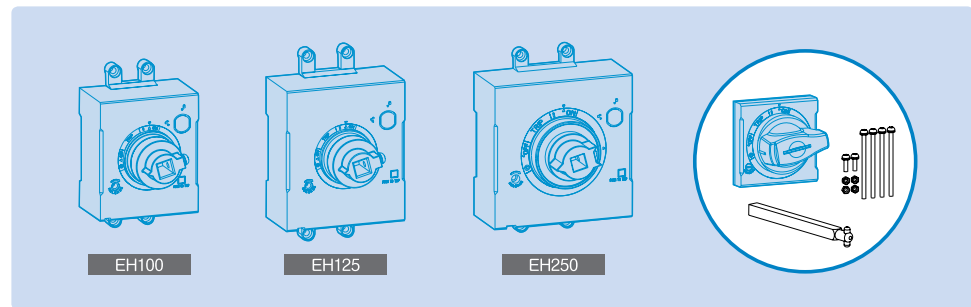
Locking system



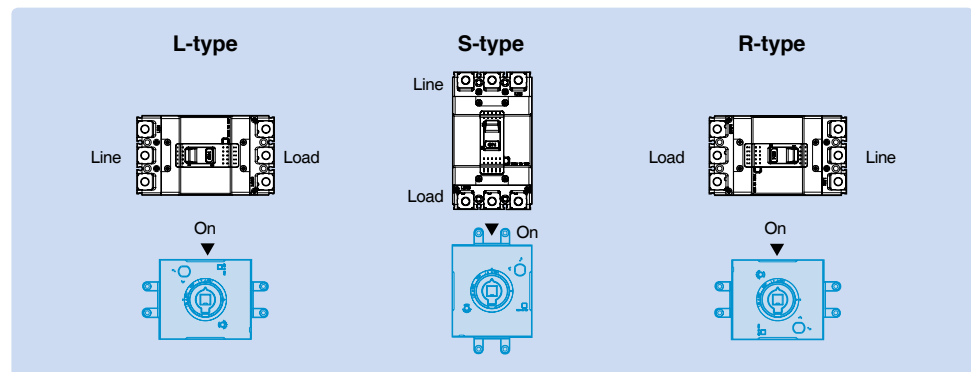
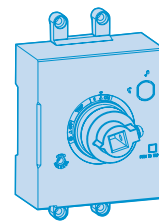
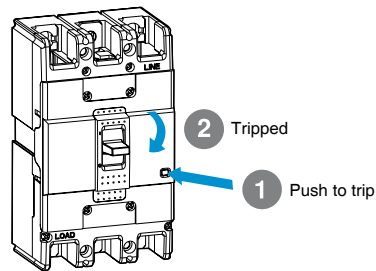
E-handle

MCCB and E-handle

ABN100c	ABH125c	ABH250c
		



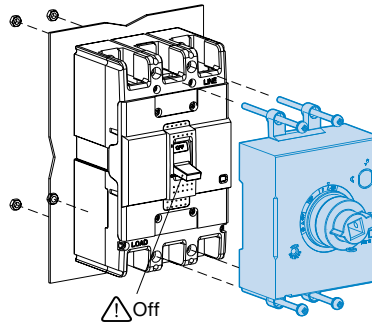
Tripping MCCB & Install type



Accessories

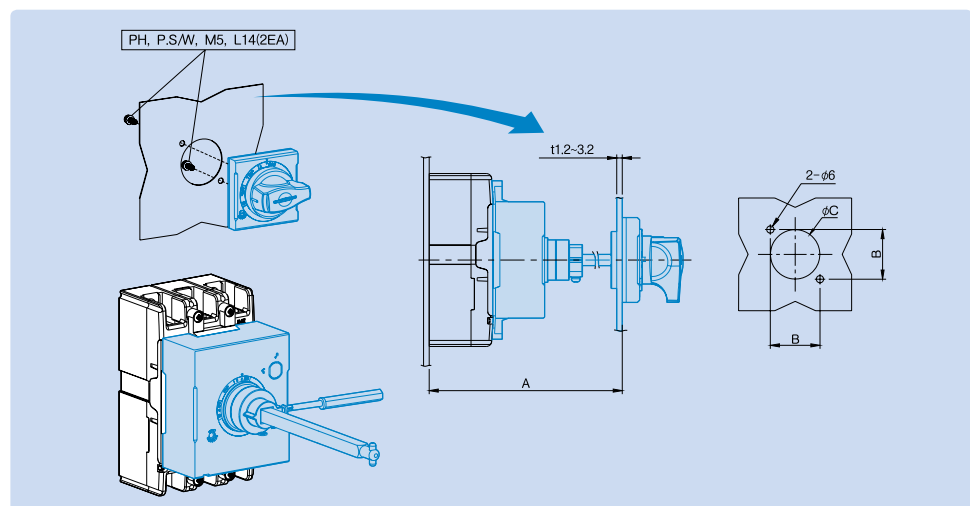
E-handle

Installing the E-handle



ABN100c, EBN100c	ABH125c, EBH125c	ABH250c, EBH250c

Cutting panel



E-handle	A (mm)	B (mm)	C (mm)	Breaker
EH100	min 150, max 573.5 (Shaft469mm)	47	Ø53	100AF
EH125	min 150, max 573.5 (Shaft469mm)	47	Ø53	125AF
EH250	min 150, max 571.5 (Shaft469mm)	47	Ø53	250AF

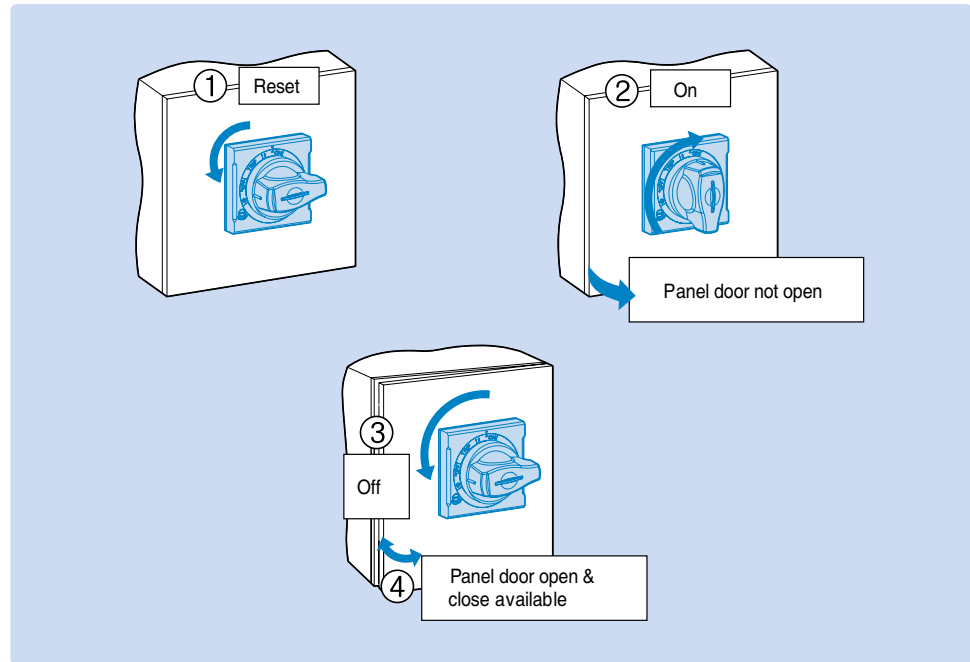
Note: An extension shaft that must be adjusted to the distance between back of circuit breaker and door

Operating test

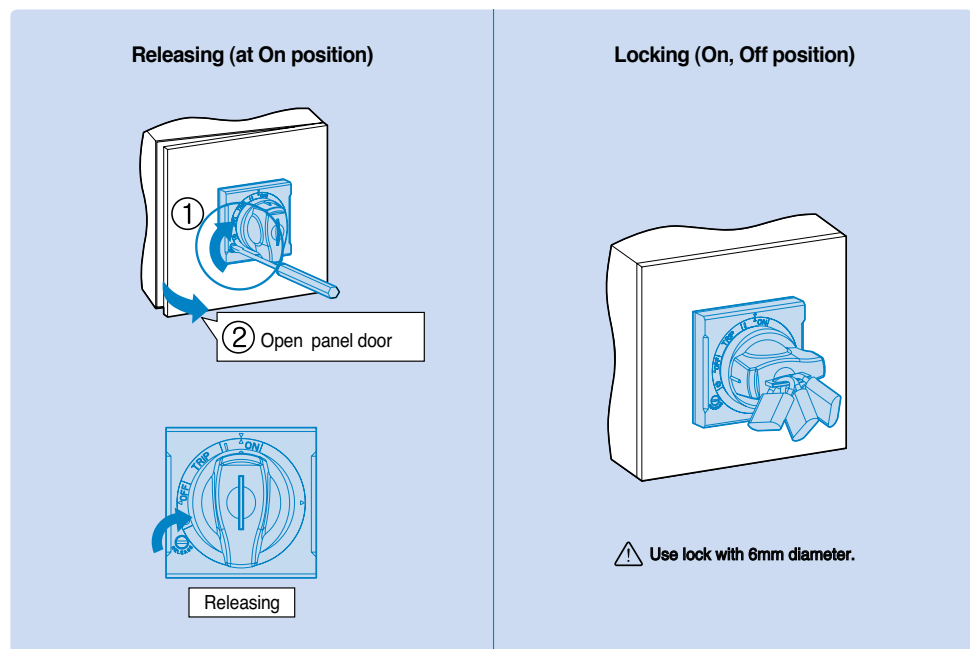
CAUTION

If the door is opened with much pressure when the position of handle is On or Trip, the handle lock lever will be damaged.

Trip position : Panel door can't be opened



Locking system



Note : In case of EH100/125/250 Semi Type, it is possible to lock E-handle only in the condition of OFF.

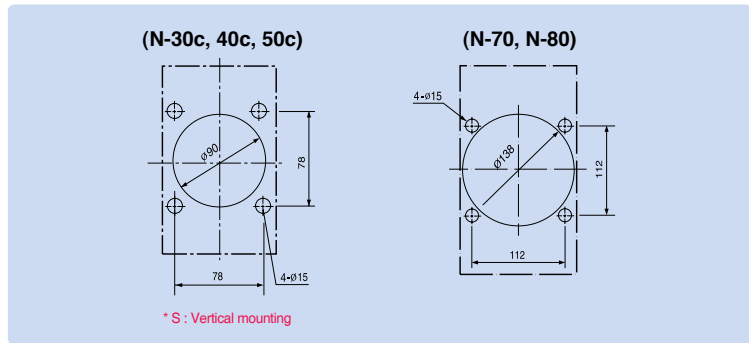
Accessories

N-handle

How to mount

1) Drilling on the panel door

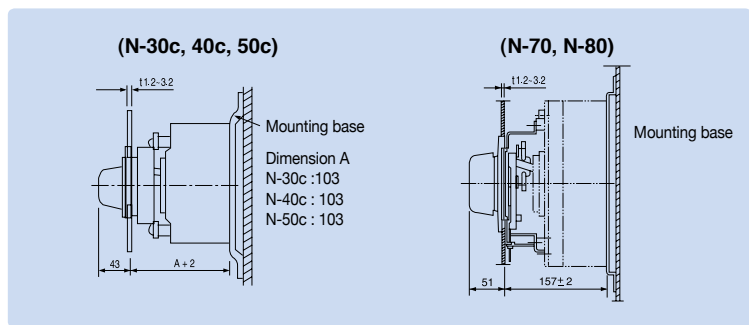
- ① All the N handles require the same size of mounting hole.
- ② Drill the holes according to the Fig. 1



<Fig 1>

(2) Mounting base

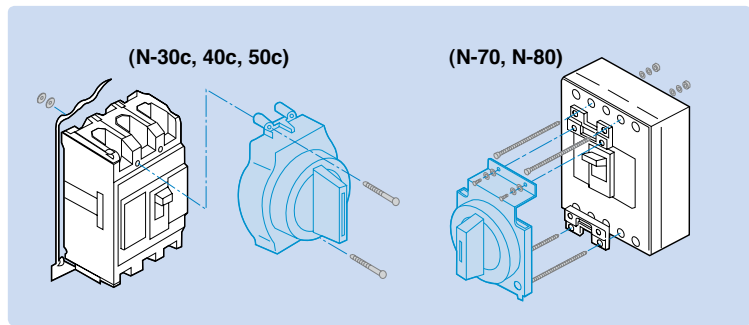
- ① Prepare a mounting base according to the Fig. 2. The distance between the door panel and the mounting base should be A+2. Dimension A is shown in the Fig.
- ② In the case of horizontal mounting turn the breaker mounting holes by 90 degrees



<Fig 2>

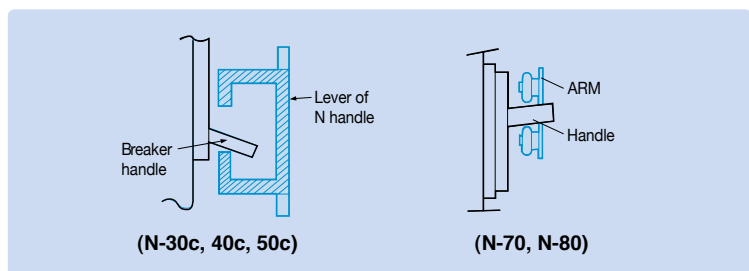
(3) Fixing

- ① Fixing a breaker and a handle at the same time.
 - a) As shown in the Fig. 3 a breaker and a handle can be fixed at the same time on a mounting base with the 4 (long) screws enclosed.



<Fig 3>

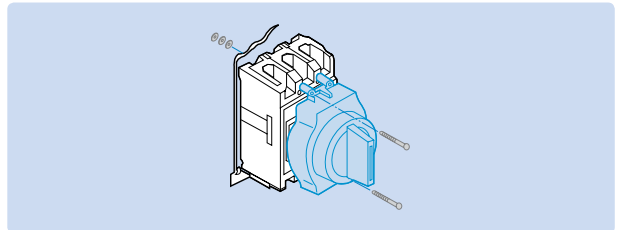
- b) Have the breaker handle and the lever of N handle be located in the position shown in Fig. 4.



<Fig 4>

② Fixing a handle and a breaker step by step

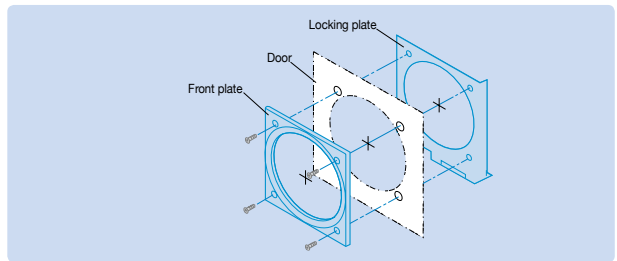
- a) Check if there is any thin membrane in the mounting hole of the breaker cover and remove it, if exists.
- b) Have the breaker handle and the lever of N handle be located in the position shown in Fig. 4.
- c) Fix the N handle on the breaker with the 2 (short) screws enclosed.
- d) Fix the breaker on a mounting base with the 2 (long) screws



<Fig 5>

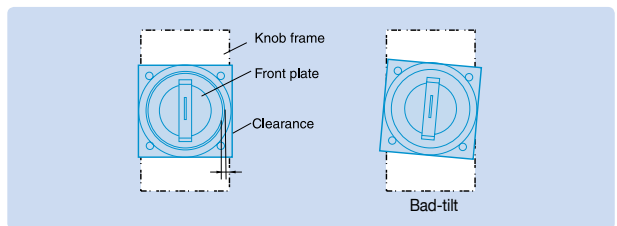
(4) Fixing front plate and lock plate

- ① Set the front plate and the locking plate on the door as shown in Fig. 6 fix them with screws.



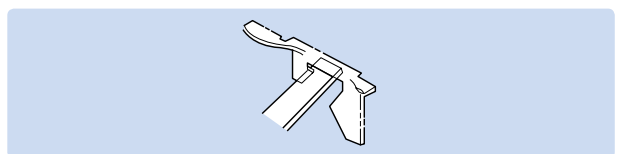
<Fig 6>

- ② Adjust if front plate or handle is at tilt against the breaker .



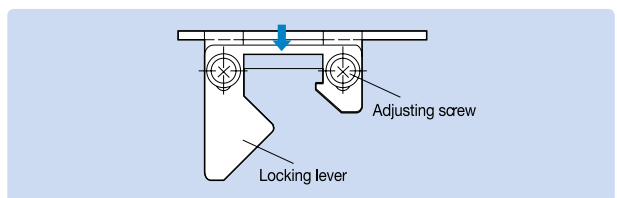
<Fig 7>

- ③ Verify that locking plate and locking lever interact on each other properly when the panel door is closed.
If necessary adjust them by following instructions.



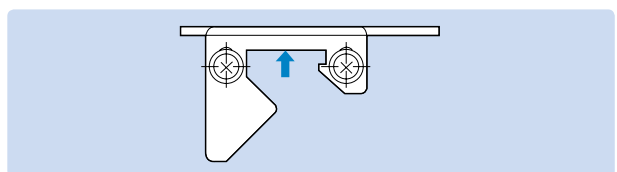
<Fig 8>

- a) In the event the panel door is not fully closed
This happens if the distance between the door panel and the mounting base the panels of the door is short.
Loosen the adjusting screw in the lock plate and move the plate in the direction of the arrow as shown in Fig. 9.



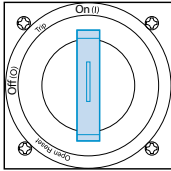
<Fig 9>

- b) In the event the door does not lock after closing the door
This happens if the distance between the door panel and the mounting base the panels of the door is long.
Loosen the adjusting screw in the lock plate and move the plate in the direction of the arrow as shown in Fig. 10.

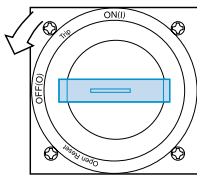


<Fig 10>

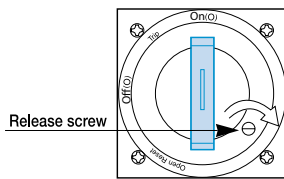
N-handle



<Fig 11>



<Fig 12>



<Fig 13>

(1) Operation in the door closed

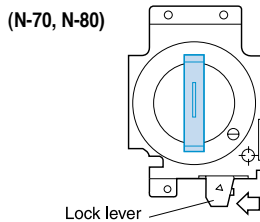
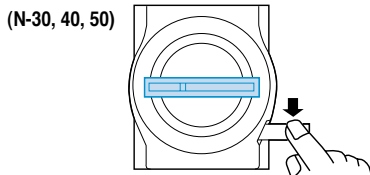
- ① To have the breaker On turn the handle to be vertical. <Fig. 11>
- ② To have the breaker Off turn the handle to be horizontal. <Fig. 12>
- ③ If the breaker is tripped, the handle points to the Trip position.
- ④ To reset the breaker turn the handle to Reset position.

(2) Unlocking the panel door

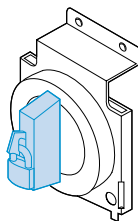
- ① The door is locked and will not open at On, Off and Trip status.
- ② To unlock the door from Off or Trip status turn the handle toward OPEN direction. (Unlocked after taking the hand off the handle.)
- ③ To unlock the door from on state turn the Release screw clockwise <Fig. 13>

(3) Operation of the breaker in the door open

- ① When the door is open the breaker will not be on as the lock lever operates.
- ② To release the locking pull the lock lever to be nearly horizontal position. Then the breaker can be closed. <Fig. 14>
- ③ If the door is closed the lock lever will be reset automatically.



<Fig 14>



<Fig 15>

Padlocking

- ① Lockable at On or Off state with a padlock. (Padlock is not supplied)
 - Lockable at Off state with a padlock is an optional spec.
- ② Pull the lock plate on the front of the handle and fasten the lock. <Fig. 15>
- ③ If the breaker is tripped after padlocking at on state, the handle will point to the Trip.
- ④ Padlock diameter should be 3.5 ~ 6mm

Note: Terminal covers for 400AF and 800AF MCCBs are in acrylic.

Terminal covers

The terminal covers are applied to the circuit-breaker to prevent accidental contact with live parts and thereby guarantee protection against direct contacts.

Two types by length are available and provide IP20 degree of protection.

Also, covers are classified in to 2 different type: Independent, Attachable and detachable with D or N handle

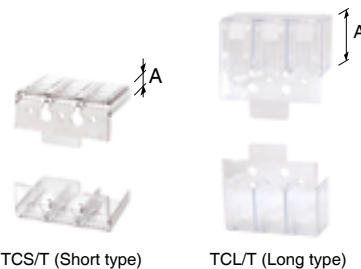
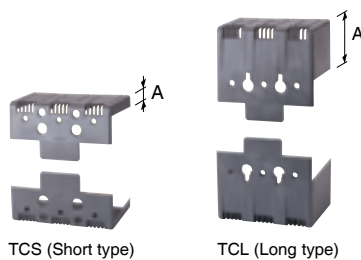
• **Short type covers, TCS:**

For fixed circuit-breakers with rear terminals and for moving parts of plug-in.

• **Long type covers, TCL:**

For fixed circuit-breakers with front, front extended, front for cables terminals.

Terminal covers						Pole	Applied breaker		Size extended (A) , mm	
Short type			Long type				MCCB	ELCB	Short type	Long type
Inde	D-handle	N-handle	Inde	D-handle	N-handle					
TBS22	-	-	-	-	-	2P	ABE30b	-	10	-
TBS23	-	-	-	-	-	3P				
TCS12	-	-	TCL12	-	-	2P	ABN50c/60c/100c/100e ABS30c/50c/60c	EBN50c/60c/100c EBS30c/50c/60c	5.5	30
TCS/T-12	-	-	TCL/T-12	-	-	3P				
TCS13	TCS13	TCS13	TCL13	TCL13	TCL13	4P				
TCS/T-13	TCS/T-13	TCS/T-13	TCL/T-13	TCL/T-13	TCL/T-13	2P				
TCS14	TCS14	TCS14	TCL14	TCS14	TCS14	3P				
TCS/T-14	TCS/T-14	TCS/T-14	TCL/T-14	TCL/T-14	TCL/T-14	4P				
TCS22	-	-	TCL22	-	-	2P	ABS125c ABH50c/125c ABL125c	EBS125c EBH50c/125c	5.5	40
TCS/T-22	-	-	TCL/T-22	-	-	3P				
TCS23	TCS23	TCS23	TCL23	TCL23	TCL23	4P				
TCS/T-23	TCS/T-23	TCS/T-23	TCL/T-23	TCL/T-23	TCL/T-23	2, 3P				
TCS24	TCS24	TCS24	TCL24	TCL24	TCL24	4P	ABN250c, ABS250c ABH250c, ABL250c	EBN250c, EBS250c EBH250c	5.5	50
TCS/T-24	TCS/T-24	TCS/T-24	TCL/T-24	TCL/T-24	TCL/T-24	2, 3P				
TCS33	TCS33	TCS33	TCL33	TCL33	TCL33	4P				
TCS/T-33	TCS/T-33	TCS/T-33	TCL/T-33	TCL/T-33	TCL/T-33	2, 3P				
TCS34	TCS34	TCS34	TCL34	TCL34	TCL34	4P	ABN/S/H/L400c ABN/S/L630c/800c	EBN/S/H/L400c EBN/S/L630c/800c	-	120
TCS/T-34	TCS/T-34	TCS/T-34	TCL/T-34	TCL/T-34	TCL/T-34	2, 3P				
-	-	-	T1-43A	-	-	4P				
-	-	-	T1-44A	-	-	2, 3P				
-	-	-	T1-63A	-	-	4P	-	-	-	141
-	-	-	T1-63A	-	-	2, 3P				



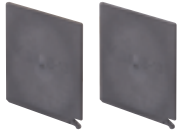
Short type construction

Long type construction

Accessories

Metasol

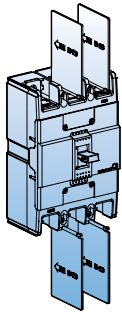
Insulation barriers



Insulation barrier allows the insulation characteristics between the phases at the connections to be increased. They are mounted from the front, even with the circuit-breaker already installed, inserting them into the corresponding slots.

They are incompatible with both the insulating terminal covers.

It is possible to mount the phase separating partitions between two circuit-breakers side by side.



Type	Breaker	
	MCCB	ELCB
IB-13	ABN50c/60c/100c/100e ABS30c/50c/60c	EBN50c/60c/100c EBS30c/50c/60c
IB-23	ABS125c ABH50c/125c ABN250c, ABS250c ABH250c ABL125c, ABL250c	EBS125c EBH50c/125c EBN250c, EBS250c EBH250c
IBL400	ABN/S/H/L400c	EBN/S/H/L400c
IBL800	ABN/S/L800c	EBN/S/L800c



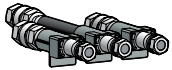
Insulation barriers for line side are provided as standard.

Rear connection terminals

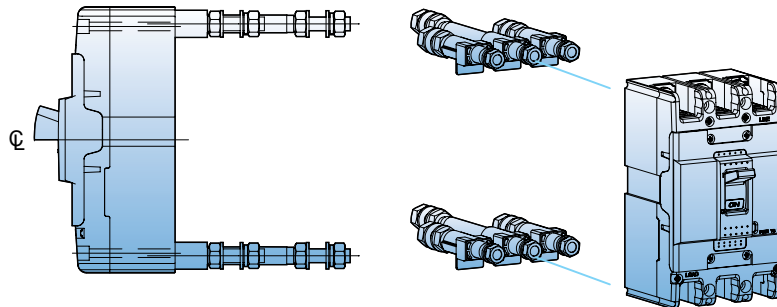
Rear connection terminals are used to adapt the circuit breakers to switchboards or other applications that require rear connection. There are two kinds of rear connection terminals.

- Flat type
- Round type

Round type terminals



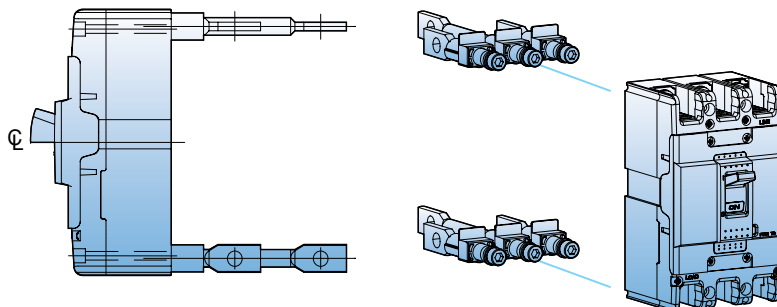
Breaker	For 2-pole	For 3-pole	For 4-pole
ABN100c 50AF	RTR1-52	RTR1-53	-
ABN100c 100AF	RTR1-102	RTR1-103	RTR1-104
ABH125c	RTR2-102	RTR2-103	RTR2-104
ABH250c	RTR3-202	RTR3-203	RTR3-204



Flat type terminals



Breaker	For 2-pole	For 3-pole	For 4-pole
ABN100c	RTB1-102	RTB1-103	RTB1-104
ABH125c	RTB2-102	RTB2-103	RTB2-104
ABH250c	RTB3-202	RTB3-203	RTB3-204



Accessories

Mechanical interlock

The mechanical interlock is installed on the front of two breakers mounted side by side, in either the 3-pole or 4-pole version and prevents simultaneous closing of the two breakers. So it is suitable for consisting of manual sourcechangeover system.

Type numbering system

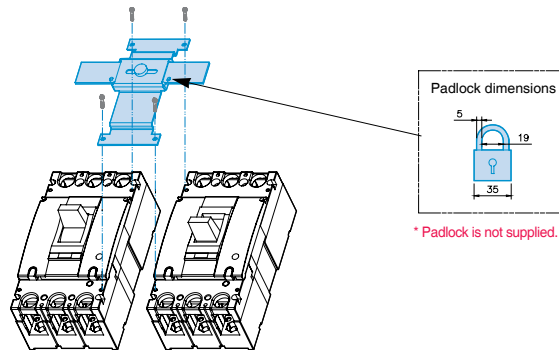
MI	—	4	3														
Type		AF	Pole														
Mechanical interlock		<table border="1"> <tr><td>1</td><td>100AF</td></tr> <tr><td>2</td><td>125AF</td></tr> <tr><td>3</td><td>250AF</td></tr> <tr><td>4</td><td>400AF</td></tr> <tr><td>8</td><td>800AF</td></tr> </table>	1	100AF	2	125AF	3	250AF	4	400AF	8	800AF	<table border="1"> <tr><td>3</td><td>3P</td></tr> <tr><td>4</td><td>4P</td></tr> </table>	3	3P	4	4P
1	100AF																
2	125AF																
3	250AF																
4	400AF																
8	800AF																
3	3P																
4	4P																

Types and applicable breakers

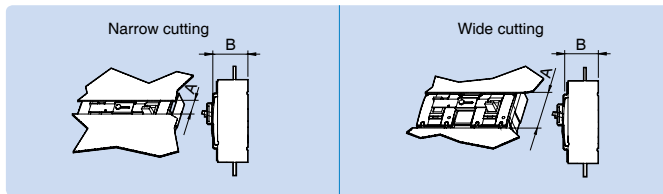
Type	MCCB	ELCB
MI-13, 14	ABS30c, ABS50c, ABS60c, ABN50c, ABN60c, ABN100c, ABN100e	EBS30c, EBS50c, EBS60c, EBN50c, EBN60c, EBN100c
MI-23, 24	ABS125c, ABH50c, ABH125c, ABL125c	EBS125c, EBH50c, EBH125c
MI-33, 34	ABN/S/H/L250c	EBN/S/H250c
MI-43, 44	ABN/S/H/L400c	EBN/S/H/L400c
MI-83, 84	ABN/S/L800c	EBN/S/L800c

Note) MI is not applicable to 2-pole version breakers of 100AF and 125AF.

Layout



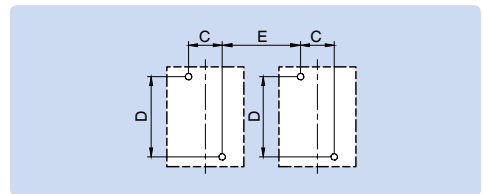
MCCB panel cutting



(Unit in: mm)

Cutting	MI-13, 14		MI-23, 24		MI-33, 34		MI-43, 44		MI-83, 84	
	A	B	A	B	A	B	A	B	A	B
Narrow	52	66	52	66	52	66	100	111	100	111
Wide	86	62	102	62	104	62	152	97	152	97

MCCB panel drilling



(Unit in: mm)

Breaker	C		D		E	
	3P	4P	3P	4P	3P	4P
100AF	25	25	110.5	110.5	70	95
125AF	30	30	132	132	84	114
250AF	35	35	126	126	99	134
400AF	44	44	215	215	166	210
800AF	70	70	243	243	210	280



Plug-in base

Plug-in devices

Plug-in device makes it possible to extract and/or rapidly replace the circuit breaker without having to touch connections for ship and important installations.

The plug-in base is the fixed part of the plug-in version of the circuit-breaker.

It will be installed directly on the back plate of panel.

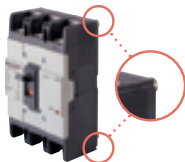
The circuit-breaker is racked out by unscrewing the top and bottom fixing screws.

Normal type plug-in MCCB

- MCCB current rating upto 250A
- Generally used in switchgears

Double-row type plug-in MCCB

- For 125AF MCCB
- Generally used in branch circuits



Plug-in type MCCB
(Plug-in terminal built)



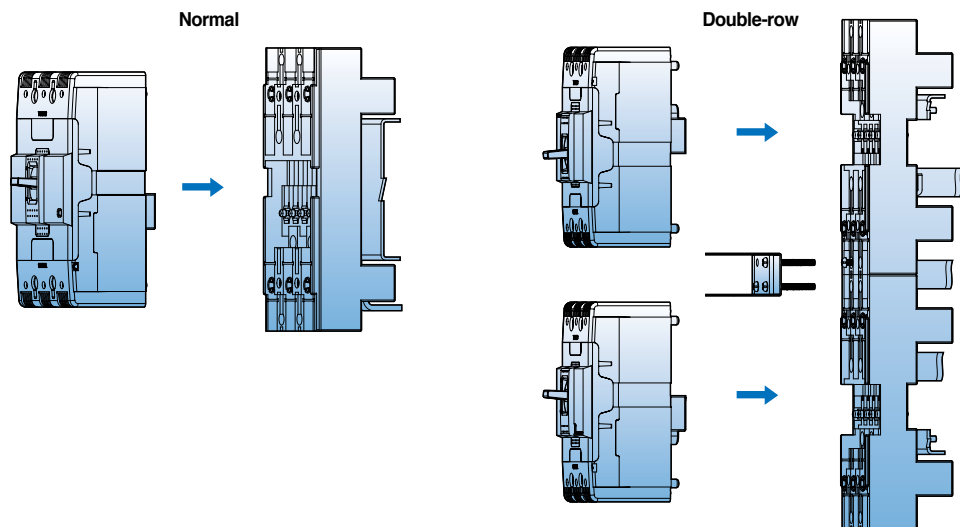
ABH103c plug-in type



ABH203c plug-in type

Type names of blocks

Breaker	Arrangement	Plug-in block	Remark
ABN100c	Normal	PB-A3-FR	
	Single-row	PB-A3-1DB	
	Double-row	PB-A3-2DB	
	Line-only	PB-A3-FRL	
ABH125c	Normal	PB-C3-FR	
	Single-row	PB-C3-1DB	
	Double-row	PB-C3-2DB	
	Line-only	PB-C3-FRL	
ABH250c	Normal	PB-D3-FR	
400AF	Normal/Line-only	PB-I3-FR/PB-I3-FRL	
800AF	Normal	PB-J3-FR	



Accessories

Metasol



Remote operation

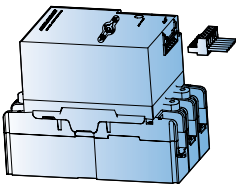
Motor operator

Motor operators can also be operated by manual. The motor drives a mechanism which switches TD & TS toggle handle to the "On" and "Off/Reset" positions.

- The manual actuator handle is located on the front of the cover.
- Manual or Automatic operation can be selected.
- Applicable to 2, 3 and 4-pole breakers.

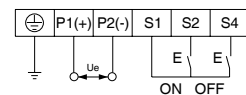
MCCB			Type	Control voltage	Actuation current (A)	Response time (ms)		Mechanical service life (operations)	No. of operations per hour
2P	3P	4P				Closing	Opening		
-	ABN53c, ABN63c, ABN103c, ABN103d, ABN103e, ABS33c, ABS53c, ABS63c	ABN54c, ABN64c, ABN104c, ABN104d, ABN104e, ABS34c, ABS54c, ABS64c	MOP-M1	① DC24V ② AC110V-DC110V ③ AC230V/DC220V	≤3A (DC24V) ≤0.5A (AC)	700	700	10,000	120
-	ABS103c, ABH53c, ABH103c, ABL103c	ABS104c, ABH54c, ABH104c, ABL104c	MOP-M2	① DC24V ② AC110V-DC110V ③ AC230V/DC220V	≤3A (DC24V) ≤0.5A (AC)	840	840	10,000	120
ABN202c, ABS202c, ABH202c, ABL202c	ABN203c, ABS203c, ABH203c, ABL203c	ABN204c, ABS204c, ABH204c, ABL204c	MOP-M3	① DC24V ② AC110V-DC110V ③ AC230V/DC220V	≤3A (DC24V) ≤0.5A (AC)	840	840	10,000	120
ABN402c, ABS402c, ABH402c, ABL402c	ABN403c, ABS403c, ABH403c, ABL403c	ABN404c, ABS404c, ABH404c, ABL404c	MOP-M4	① DC24V ② AC110-DC110V ③ AC230V/DC220V	≤6A (DC24V) ≤0.8A (AC)	1,200	1,200	4,000	60
ABN802c, ABS802c, ABL802c	ABN803c, ABS803c, ABL803c	ABN804c, ABS804c, ABL804c	MOP-M5	① DC24V ② AC110-DC110V ③ AC230V/DC220V	≤6A (DC24V) ≤0.8A (AC)	1,200	1,200	2,500	60
-	ABS1003b, ABS1203b, ABL1003b, ABL1203b	ABS1004b, ABS1204b, ABL1004b, ABL1204b	MOP-M6	① AC230V/DC220V	≤6A (DC24V) ≤0.8A (AC)	1,500	1,500	2,500	20

Remote operation



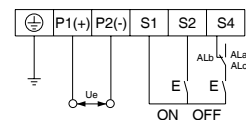
Standard connection

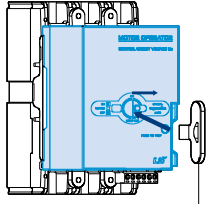
- 1) Remote On and Off of MCCB and manual operation
- 2) Be careful not to change the polarity at DC24V



Connection with alarm switch (AL)

- 1) The connection diagram is the method of using an alarm switch (AL) without shunt or undervoltage trip. A trip due to a fault or trip button prevent a remote reset.
- 2) The fault must be cleared surely and reset it with manual operation.





Manual handle

Manual operation

- 1) Insert the manual handle into the slot of Motor operator surface and rotate it clockwise.
- 2) It must be rotated just 180° clockwise for safe operation of micro switch in the motor operator.
- 3) Return the manual handle after the manual operation
- 4) Turn the slide switch back to the position of Auto.

CAUTION: When the circuit breaker is tripped by trip button in the Off status, it is impossible to operate motor operator automatically. It must be reset by manual operation.

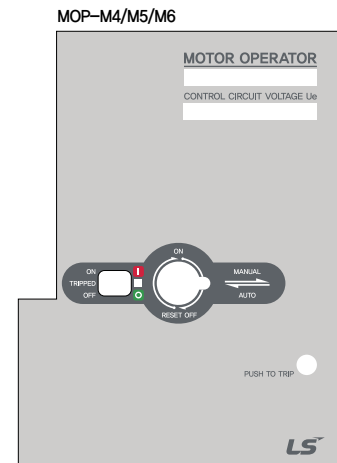
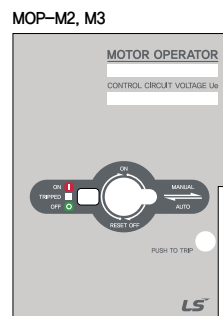
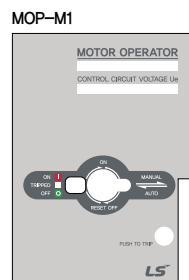
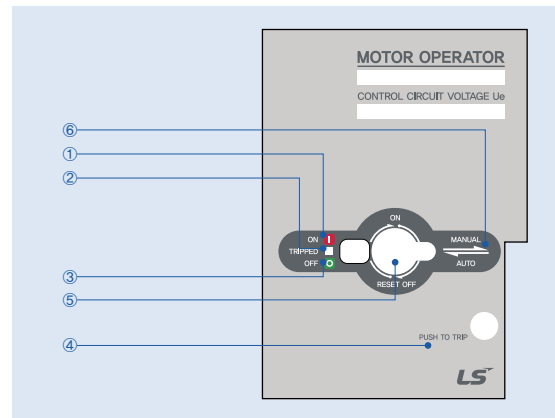
Automatic operation

- 1) Set the slide switch to Auto, then internal power is closed automatically.
- 2) Operating frequency should be less than these below regulated values.
MOP-M1~M3, M7 (120 operations per hour) , MOP-M4 (60 operations per hour) ,
MOP-M5, M6 (20 operations per hour)
- 3) Use the On/Off switch in the range of regulated values.
- 4) It may interfere near communication equipments because of internal switching power supply.
It's recommended that a noise filter be installed to power supply.
- 5) Please do not input On/Off signals at the same time during the automatic operation.
- 6) If the circuit breaker has a UVT attached inside, charge a UVT on the rated voltage before performing Motor operator.

Motor operator

Feature

- ① On position indication (Red color)
- ② Trip position indication (White color)
- ③ Off position indication (Green color)
- ④ Button for push to trip
- ⑤ On/Off/Reset selection lever
- ⑥ Manual/Auto selection lever



Type numbering system

Metasol

MCCB

AB	S	10	3	C	M	100A	AX	T	SHT=220V	
MCCB	Type	Ampere frame		Pole	Series	Application	Rated current	Position & Type		Control voltage of accessory
N	N-type	3	30AF	2	2-pole	-	General purpose	T LWT Right Side Mounting	Lead Wire type	SHT
S	S-type	5	50AF	3	3-pole					
H	H-type	6	60AF	4	4-pole	M	Motor protection	R LWT Left Side Mounting		AC/DC 24V
L	L-type	10	100/125AF					T TBT Right side mounting	Terminal Block type	AC/DC 60V
		20	225/250AF					R TBT Left side mounting		AC/DC 100V-130V
		40	400AF							200V-250V
		80	800AF							AC 380V-450V
		100	1,000AF							AC 440V-500V
		120	1200AF							UVT
										AC/DC 24V
										AC/DC 48V
										AC/DC 100V-110V
										AC/DC 200V-220V
										AC 380V-440V
										AC 440V-480V

Rated current		Accessory	
3A	150A	AX	Auxiliary switch
5A	175A	AL	Alarm switch
10A	200A	SHT	Shunt trip
15A	225A	UVT	Undervoltage trip
20A	250A	DH	Rotary handle (Direct)
30A	300A	EH	Rotary handle (Extended)
40A	350A	RTR	Rear terminal
50A	400A	RTB	Rear terminal
60A	500A		
75A	630A		
100A	700A		
125A	800A		
150A	1200A		

* Warning: Mounting accessories is not available at the left side of 2pole MCCB (Up to 125AF)

ELCB

EB	S	10	3	C	100A	30mA	AX	R
ELCB	Type	Ampere		Pole	Series	Rated residual current	Accessory	
N	N-type	3	30AF	2	2-pole	30mA	AX	Auxiliary switch
S	S-type	5	50AF	3	3-pole	100/200/500mA	AL	Alarm switch
H	H-type	6	60AF	4	4-pole		DH	Rotary handle (Direct)
L	L-type	10	100/125AF				EH	Rotary handle (Extended)
		20	225/250AF				RTR	Rear terminal
		40	400AF				RTB	Rear terminal
		80	800AF					
		100	1000AF					
		120	1200AF					

Rated current	
15A	225A
20A	250A
30A	300A
40A	350A
50A	400A
60A	500A
75A	630A
100A	700A
125A	800A
150A	1000A
175A	1200A
200A	

Position & Type		
R LWT	Left Side Mounting	Lead Wire type
R TBT	Left Side Mounting	Terminal Block type

* Warning: Mounting accessories is not available at the right side ELCB (Up to 250AF)