Susol Super Solution

DC Switch-Disconnectors up to 1500Vdc

LSIS

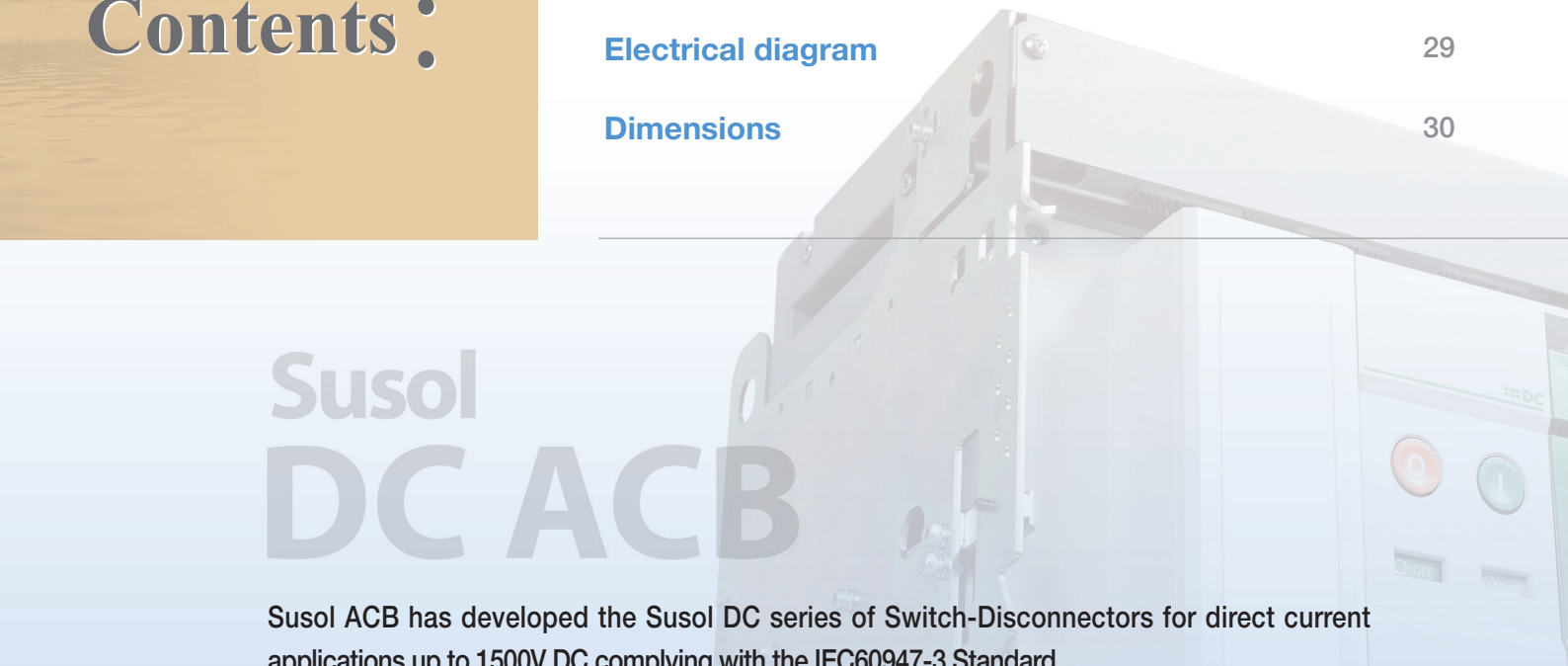
Susol ACB

LSIS Made It!

Susol/Metasol Air Circuit Breakers

Super Solution

Contents :



Susol DC ACB

Susol ACB has developed the Susol DC series of Switch-Disconnectors for direct current applications up to 1500V DC complying with the IEC60947-3 Standard.

These circuit-breakers are particularly suitable for use as bus-ties or main switch-disconnectors in direct current plants, such as applications in the field of conversion into other forms of electrical energy (photovoltaic plants, above all where accumulator batteries are used), electric traction.
The range makes it possible to cover any installation requirement up to 1500V DC / 4000A.

The circuit-breakers are available in the fixed or withdrawable version and in the three-pole or four-pole version.

With connection of three poles in series, the rated voltage which can be reached is up to 1000V DC, whereas with four poles in series this rises up to 1500V DC.

The Susol DC series of switch-disconnectors range keep all the overall dimensions and fixing points of the circuit-breakers of the standard range unchanged.

External configuration

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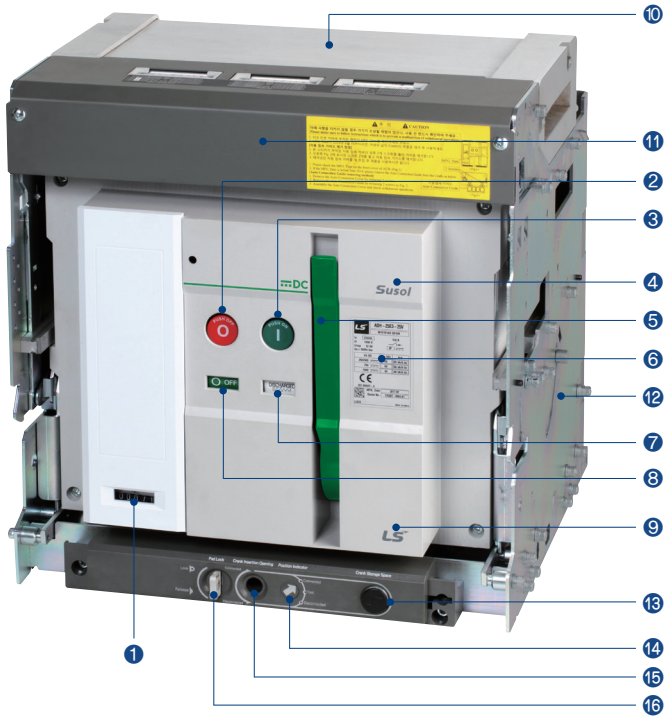
Fixed type ACB

Draw-out ACB (Cradle)



Terms

1. Counter
2. OFF button
3. ON button
4. Series name
5. Charge handle
6. Rated name plate
7. Charge/Discharge indicator
8. ON/OFF indicator
9. Corporation logo
10. Arc cover (Zero Arc Space)
11. Safety control cover
12. Cradle
13. Draw-out handle
14. Position indicator
15. Handle inserting hole
16. Pad lock button
17. Arc chute
18. Front cover
19. Fixed type bracket

Internal configuration

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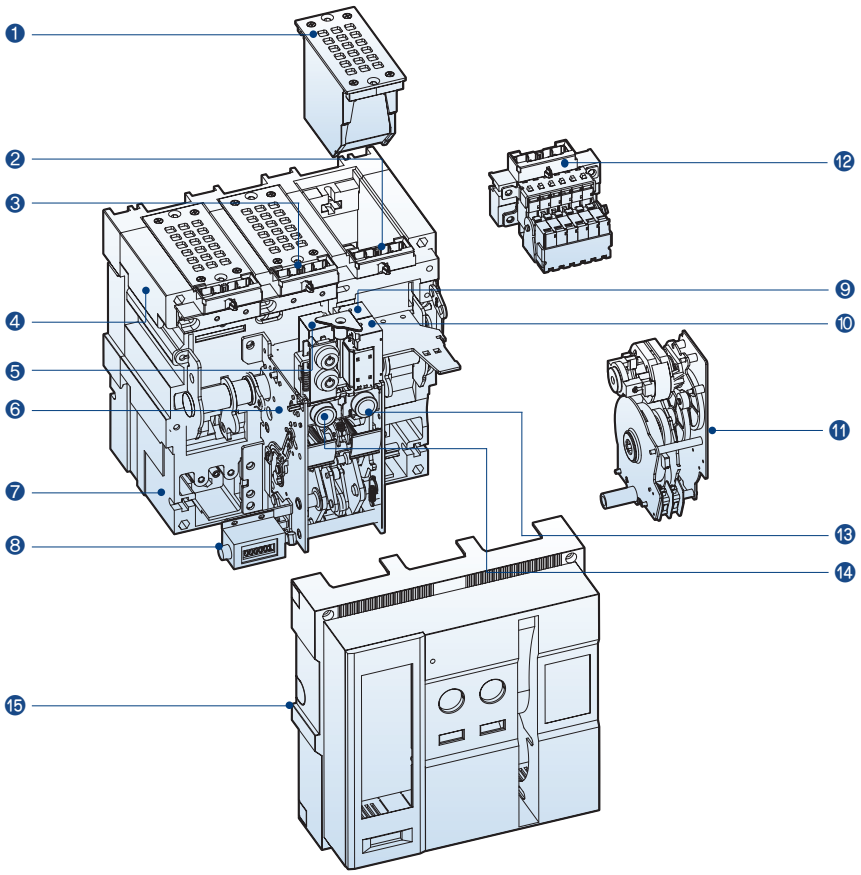
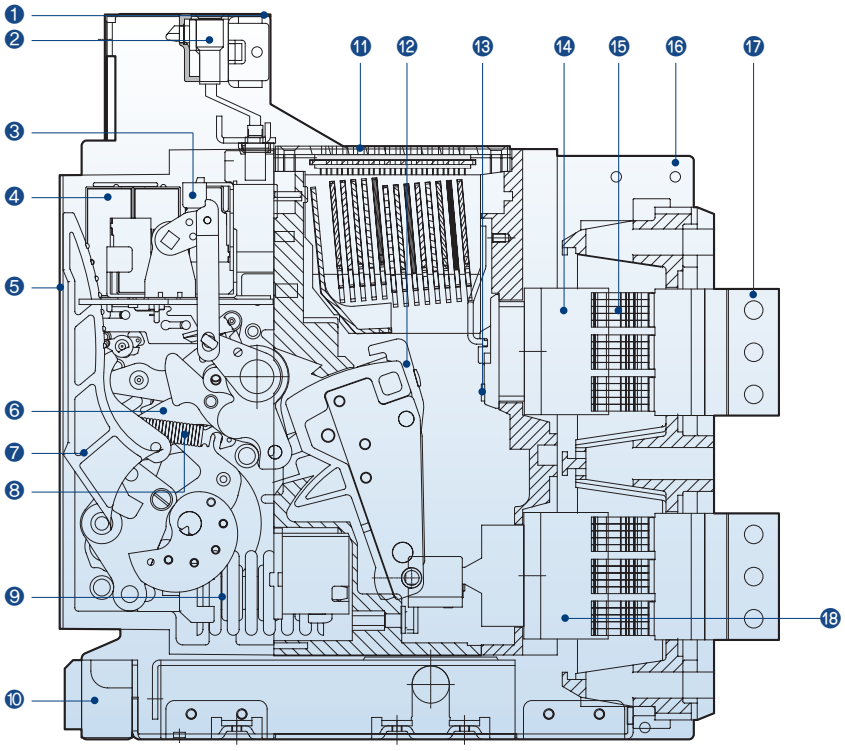


Terms

1. Arc chute
2. Aux. switch control terminal
3. Control power supply terminal
4. Carrying grip
5. Shunt, UVT coil
6. Mechanism
7. Main body
8. Counter
9. Shunt coil
10. Closing coil
11. Motor Ass'y
12. Aux. switch
13. ON button
14. OFF button
15. Front cover



Terms

1. Control circuit terminal block
2. Control terminal
3. Auxiliary switches
4. Closing, Shunt, UVT coil
5. Trip relay
5. Front cover
6. Mechanism
7. Charge handle
8. Trip spring
9. Closing spring
10. Draw-in/out device
11. DC Arc chute
12. Moving contact
13. Fixed contact
14. Upper Adaptor
15. Cradle finger
16. Cradle
17. Connecting terminal
18. Lower Adaptor

Switch-Disconnectors up to 1500V DC

Characteristics				
Rated operational voltage (Ue)			(V)	DC 750V (3P) , DC 1200V (4P)
Rated insulation voltage (Ui)			(V)	1500
Rated impulse withstand voltage (Uimp)			(kV)	12
Number of poles			(P)	3, 4
Version				Fixed / Withdrawable
Certification				CB certification according to IEC 60947-3 (by DEKRA)

Type				DDH				
				DDH-08E	DDH-10E	DDH-13E	DDH-16E	DDH-20E
Frame size	(AF)			800AF	1000AF	1250AF	1600AF	2000AF
Rated making capacity (Icm)	(kA peak)	IEC 60947-3 DC		100				
Rated short-time withstand current (Icw)	(kA)	IEC 60947-3 DC	1sec	100				
Operation time	(ms)		Openning	max. 40				
			Closing	max. 80				
Utilization category (according to IEC 60947-3)				DC-22A				
Connections		Drawout	Horizontal	○				
			Vertical	● (Default)				
		Fixed	Horizontal	○				
			Vertical	● (Default)				

Mechanical and Electrical Life cycle					
Endurance (times) (Without maintenance)	Mechanical			15,000	
	Electrical	Time constant	7.5ms	1,500	1,000
		Time constant	2ms	3,000	2,000

Demension and Weight				
Weight (3P/4P)	(kg)	Drawout	Without cradle	43/53
			With cradle	87/103
		Fixed		44/55
External Dimensions (W×H×D)	(mm)	Drawout		527×430×375
		Fixed		493×300×295

DC 750V (3P) , DC 1200V (4P)			DC 1000V (3P) , DC 1500V (4P)								
1500			1500								
12			12								
3, 4			3, 4								
Fixed / Withdrawable			Fixed / Withdrawable								
CB certification according to IEC 60947-3 (by DEKRA)			CB certification according to IEC 60947-3 (by DEKRA)								
DDH			DDV								
DDH-25E	DDH-32E	DDH-40E	DDV-08E	DDV-10E	DDV-13E	DDV-16E	DDV-20E	DDV-25E	DDV-32E	DDV-40E	
2500AF	3200AF	4000AF	800AF	1000AF	1250AF	1600AF	2000AF	2500AF	3200AF	4000AF	
100			100								
100			100								
max. 40			max. 40								
max. 80			max. 80								
DC-22A			DC-23A								
○		-	○							-	
● (Default)		● (Default)	● (Default)							● (Default)	
○		-	○							-	
● (Default)		● (Default)	● (Default)							● (Default)	
15,000			15,000								
1,000	500	500	5,000				4,000	2,500	1,500	1,000	
2,000	1,000	1,000	10,000				8,000	5,000	3,000	2,000	
43/53		43/53	43/53							43/53	
87/103		107/139	87/103							107/139	
44/55		61/81	44/55							61/81	
527×430×375			527×430×375								
493×300×295			493×300×295								

Ordering

Susol

Main Body

DDH — **40** **E** **4** **00** **A**

DC Switch Disconnectors	
DDH	Susol 1200Vdc
DDV	Susol 1500Vdc

Ampere Frame	
08	800AF
10	1000AF
13	1250AF
16	1600AF
20	2000AF
25	2500AF
32	3200AF
40	4000AF

Frame size
E : 800 ~ 4000AF

Number of poles	
3	3Pole DDH (up to 750 V dc) DDV (up to 1000 V dc)
4	4Pole DDH (up to 1200 V dc) DDV (up to 1500 V dc)

Rated current (CT ratio)	
00	Without OCR & CT

Connections	
	Draw-out type
J	Manual connection
A	Automatic connection
	Fixed type
H	Horizontal type note 1)
V	Vertical type note 1)
M	Upper-Horizontal note 1) Lower-Vertical
N	Upper-Vertical, note 1) Lower-Horizontal
P	Front Connected type note 1)

Note1) 4000AF only provide with vertical type

DDH-40E4-00A — **M1** **D1** **D1** **AX** **000** **U1** **AL**

Motor rated voltage	
MA	Without Motor
M1	AC/DC 100V~130V
M2	AC/DC 200V~250V
M3	DC 125V
M4	DC 24V~30V
M5	DC 48V~60V
M6	AC 380V ~ 415V
M7	AC 440V ~ 480V
M8	AC 48V

Closing coil rated voltage	
D0	Without Closing Coil
D1	AC/DC 100V~130V
D2	AC/DC 200V~250V
D3	DC 125V
D4	DC 24V~30V
D5	DC 48V~60V
D6	AC 380V ~ 480V
D7	AC 48V

Shunt coil rated voltage	
D0	Without Shunt coil
D1	AC/DC 100V~130V
D2	AC/DC 200V~250V
D3	DC 125V
D4	DC 24V~30V
D5	DC 48V~60V
D6	AC 380V ~ 480V
D7	AC 48V

Aux. contact & charging types	
AX	Standard OFF-Charge 3a3b
AC	Standard ON-Charge 3a3b
BX	Standard OFF-Charge 5a5b
BC	Standard ON-Charge 5a5b
HX	High capacity OFF-Charge 5a5b
AC	High capacity ON-Charge 5a5b
CC	Standard ON-Charge 6a6b
JC	High capacity ON-Charge 6a6b
GX	High capacity OFF-Charge 3a3b
GC	High capacity ON-Charge 3a3b
TX	TCS OFF-Charge 4a4b
TC	TCS ON-Charge 5a5b

Note) TCS: Trip Circuit Supervision The terminal supervising trip circuit and monitering disconnection or disable of trip

Trip relay	
000	Without Trip relay

UVT coil rated voltage	
U0	Without UVT Coil
U1	AC/DC 100V~130V
U2	AC/DC 200V~250V
U3	DC 125V
U4	DC 24V~30V
U5	DC 48V~60V
U6	AC 380V ~ 480V
U7	AC 48V

* UVT Delay module is available over AC/DC 48V

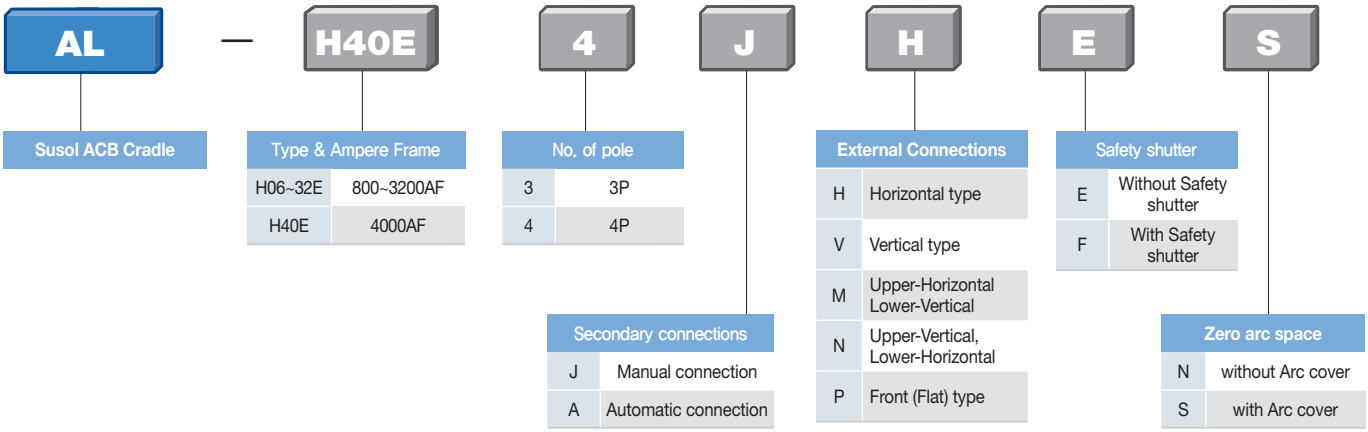
Option Table					
Character	Option name		Character	Option name	
S	CS2	Charge switch communication	H1	SHT2	AC/DC 100V~130V
B	B	On/Off Button lock	H2		AC/DC 200V~250V
M	MI	Mechanical interlock	H3		DC 125V
D	DI or MOC	Door Interlock or MOC (Mechanism operated cell switch)	H4		DC 24V~30V
			H5		DC 48V~60V
K	K1	Key Lock	H6		AC 380V~480V
K2	K2	Key Interlock Set	H7		AC 48V
K3	K3	Key Interlock Double	P1	Lower Supply (Only Fixed type applied)	
R	RCS	Ready to Close switch	P2	Upper Supply (Only Fixed type applied)	
T	TM	Temperature Monitoring			

Sencondary shunt coil

Note) Counter is installed default

Cradle

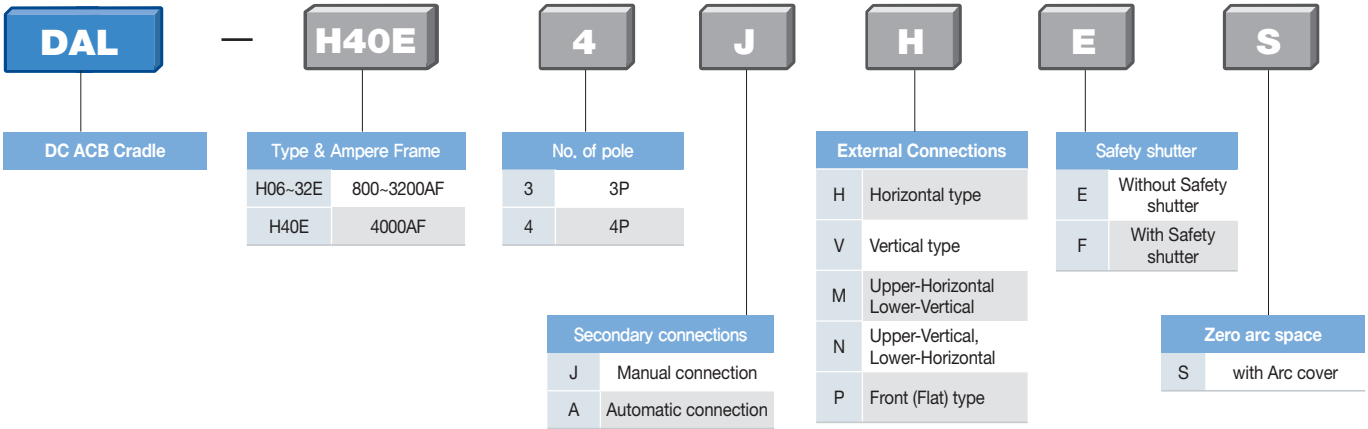
Case 1. DDH type & DDV type (Time constant of loads ≤ 2ms)



Note1. H40E types is equipped with only vertical terminals.

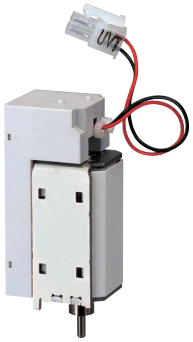
Case 2. DDV type (Time constant of loads > 2ms)

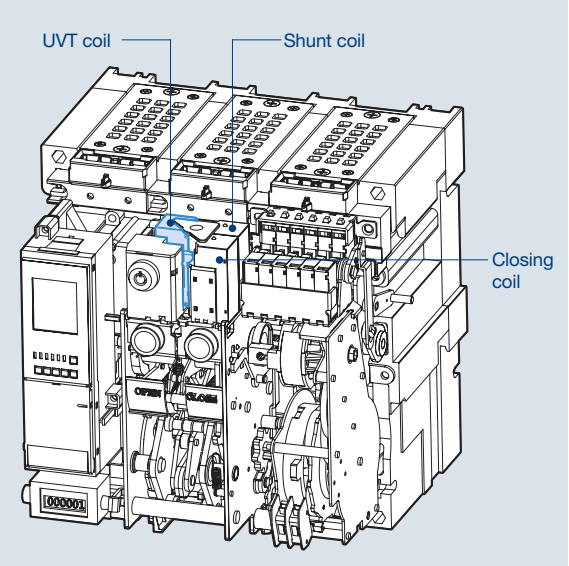
* Application : Switching of highly indutive loads (e.q. series motors)



Note1. H40E types is equipped with only vertical terminals.

Under Voltage Trip device [UVT]





- If the voltage of the main or the control power is under voltage, UVT which is installed inside of the breaker breaks the circuit automatically.
  Please connect with UVT time-delay device in order to present the time-delay function because UVT is technically instantaneous type.
- The closing of a circuit breaker is impossible mechanically or electrically if control power not supplied to UVT.
  To close the circuit breaker, 65~85% of rated voltage should be applied to both terminals of UVT coil (D1, D2).
- When using UVT coil, the double trip coil can not be used, and the location of trip coil is changed.

1. Rated voltage and characteristics of UVT coil

Rated voltage [Vn]		Operating voltage range [V]		Power consumption (VA or W)		Trip time [ms]
DC [V]	AC [V]	Pick up	Drop out	Inrush	Steady-state	
24~30	-	0.65~0.85 Vn	0.4~0.6 Vn	200	5	Less than 50ms
48~60	48					
100~130	100~130					
200~250	200~250					
-	380~480					

Note) Operating voltage range is the min. rated standard for each rated voltage (Vh).

2. Specification of the wire

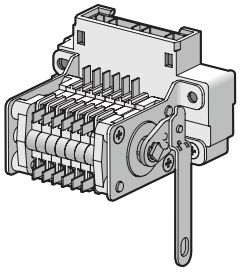
- Refer to the below table regarding the length and specification of wire when using trip coil with DC 24~30[V] or DC/AC 48~60[V] of rated voltage.

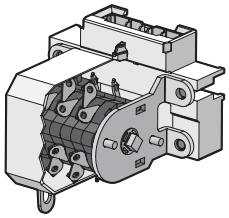
The maximum wire length

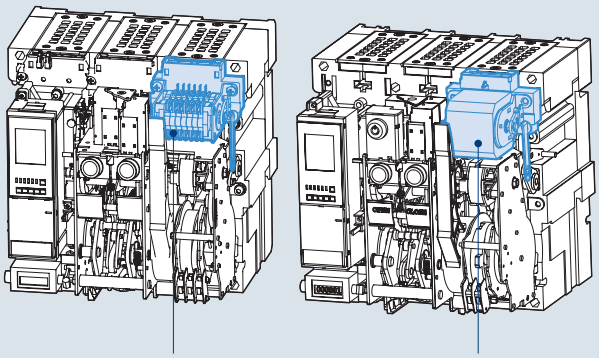
		Rated voltage [Vn]			
		DC 24~30 [V]		DC/AC 48 [V]	
Wire type		#14 AWG ($2.08mm^2$)	#16 AWG ($1.31mm^2$)	#14 AWG ($2.08mm^2$)	#16 AWG ($1.31mm^2$)
Operating voltage	100%	48.5m	30.5m	233.2m	143.9m
	85%	13.4m	8.8m	62.5m	39.3m

Note) In case of using UVT coil, the location of Shunt coil is changed.

Auxiliary switch [AX]





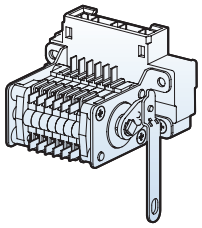


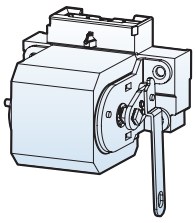
- It is a contact used to monitor ON/OFF position of ACB from remote place.

AUX. contact & charging types	
AX	Standard OFF charge 3a3b
AC	Standard ON charge 3a3b
BX	Standard OFF charge 5a5b
BC	Standard ON charge 5a5b
HX	High capacity OFF charge 5a5b
HC	High capacity ON charge 5a5b
CC	Standard ON charge 6a6b
JC	High capacity ON Charge 6a6b
GX	High capacity OFF charge 3a3b
GC	High capacity ON charge 3a3b

Standard classification

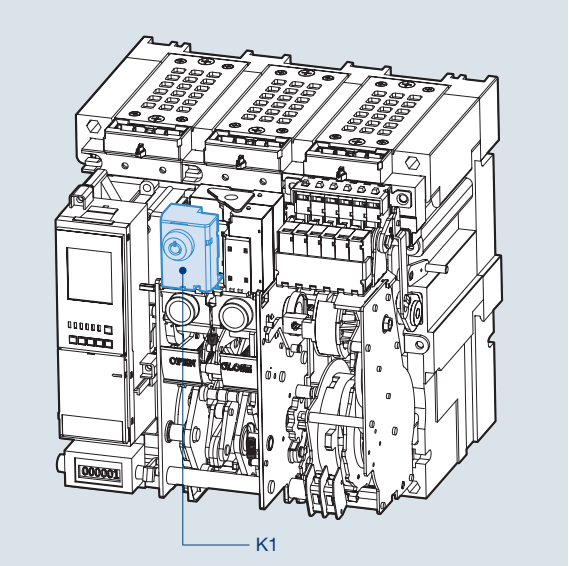
Standard		High capacity	
2000, 5000AF	4000, 6300AF	2000, 5000AF	4000, 6300AF





Classification			Standard		High capacity		Remark
			Resistive load	Inductive load	Resistive load	Inductive load	
Minimum current			DC24V, 5mA		DC5V, 1mA		
Contact capacity	AC	490V	5A	2A	5A	2.5A	
		250V	10A	6A	10A	10A	
		125V	10A	6A	10A	10A	
	DC	250V	0.3A	0.3A	3A	1.5A	
		125V	0.6A	0.6A	10A	6A	
		30V	10A	6A	10A	10A	
No. of Contact that can be used		AX	3a3b	-	-	-	Standard charging type
		BX	5a5b	-	-	-	
		HX	-	-	5a5b	-	
		GX	-	-	3a3b	-	
		AC	3a3b	-	-	-	Rapid auto-reclosing charging type
		BC	5a5b	-	-	-	
		CC	6a6b	-	-	-	
		HC	-	-	5a5b	-	
		JC	-	-	6a6b	-	
		GC	-	-	3a3b	-	

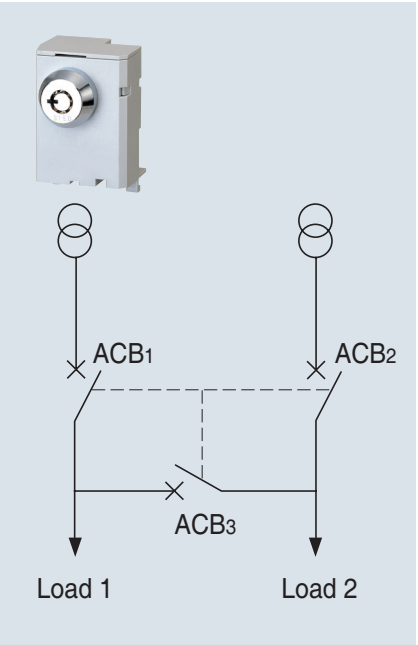
Key Lock [K1]



- It is a device for locking which prevents a certain circuit breaker from being operated by user's discretion when two or more circuit breakers are used at the same time.
- K1: Preventing mechanical closing

Key Interlock Set [K2]

Wiring

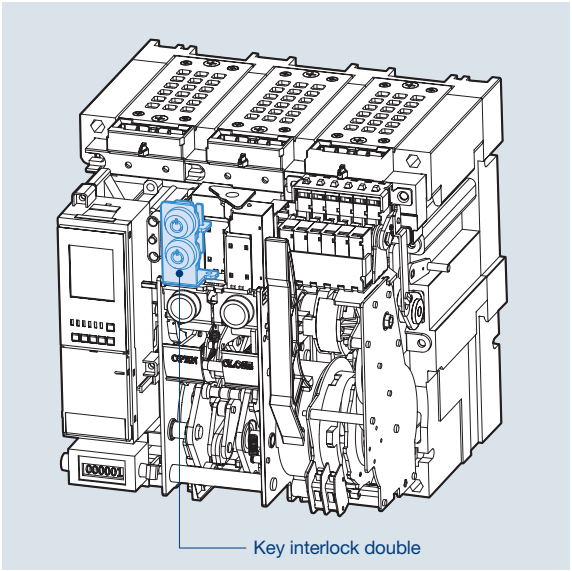


- 3 circuit breakers can be arranged for the continuous power supply to the load side and be interlocked mutually by using Key Lock embedded in each circuit breaker.

ACB-1	ACB-2	ACB-3	Status	
			LOAD1	LOAD2
●	●	●	OFF	OFF
●	○	○	ON	ON
○	●	○	ON	ON
○	○	●	ON	ON
●	●	○	OFF	OFF
●	○	●	OFF	ON
○	●	●	ON	OFF

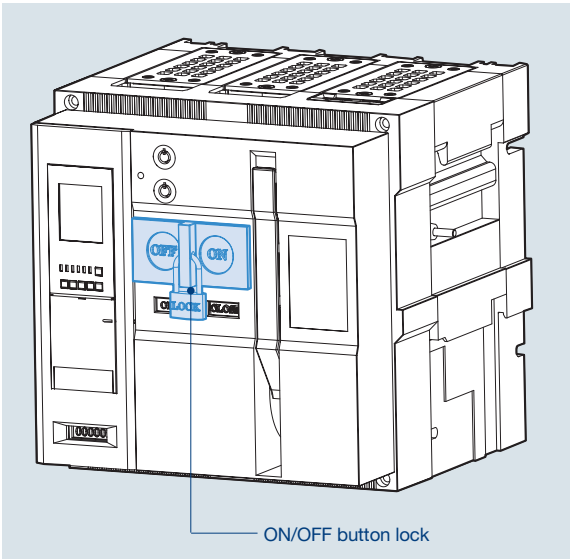
○: Release ●: Lock

Double Key Lock [K3]



- When only two keys are released at the same time, circuit breakers operate. Handling method is same as K1.

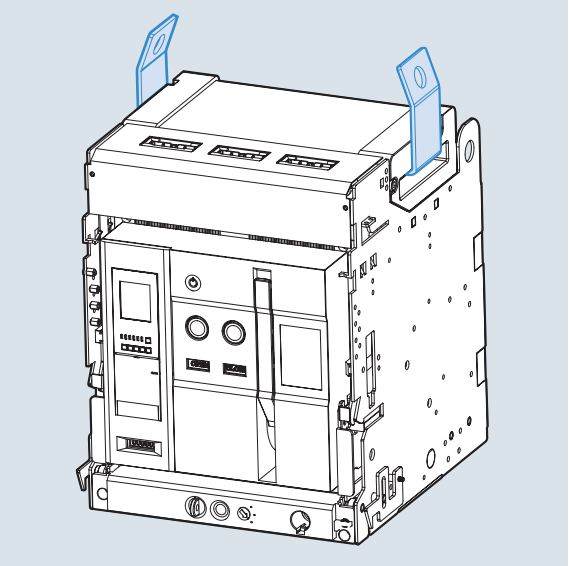
ON/OFF Button Lock [B]



- It is to prevent manual operation of ACB's closing/tripping button due to user's wrong handling.
- It is not possible to handle ON/OFF operation under the "Button lock" status.

Note) Padlocks(Ø5 ~ Ø6) are not supplied.

Lifting Hook [LH]



- It is a device to make an ACB easy to shift.
- Please hang it to both handles of the arc cover.

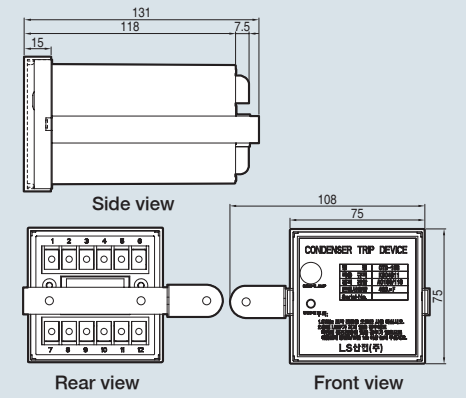
Condenser Trip Device [CTD]

- It gets a circuit breaker tripped electrically within regular time when control power supply is broken down and is used with Shunt coil, SHT. In case there is no DC power, It can be used as the rectifier which supplies DC power to a circuit breaker by rectifying AC power.

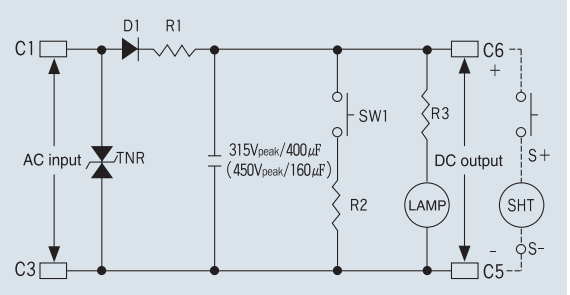
Ratings

Ratings	Specification	
Model	CTD-100	CTD-200
Rated input voltage (V)	AC 100/110	AC 200/220
Frequency (㎐)	50/60	50/60
Rated charge voltage (V)	140/155	280/310
Charging time	Within 5S	Within 5S
Trip possible time	Over 3 min	Over 2 min
Range of Input voltage (%)	85~110	85~111
Condenser capacity	400㎌	160㎌

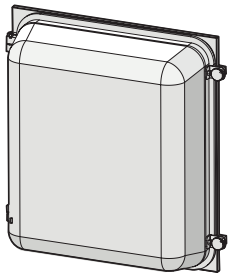
External dimension

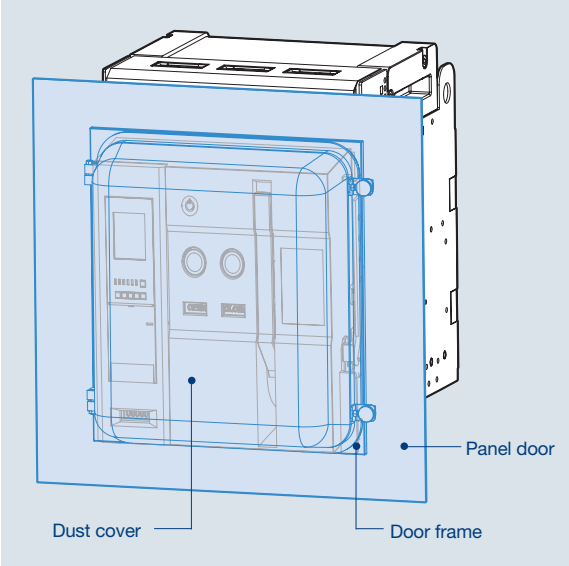


Circuit diagram



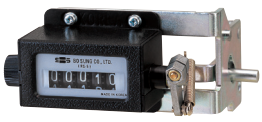
Dust Cover [DC]

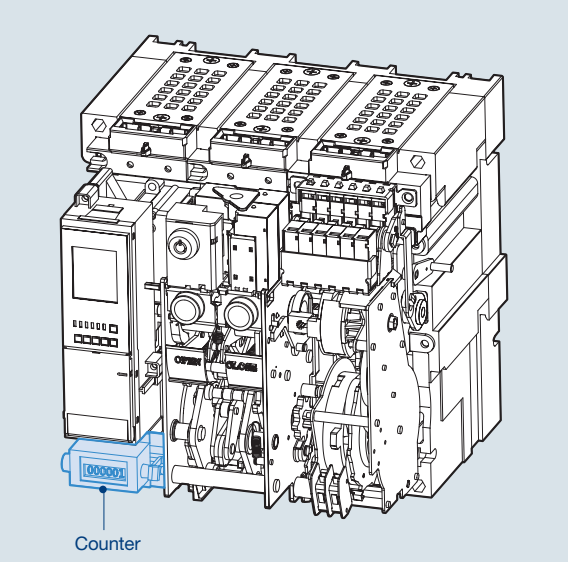




- Attach it to the door frame.
- It protects the product dust and moisture that may affect the operation of the instrument at the same time(IP54) which may cause fault operation and enhances the sealing degree by being mounted to protrude type of panel.
- It is transparent so that the front side of ACB is visible and the Cover can be opened/closed even if ACB is drawn out to until TEST position.

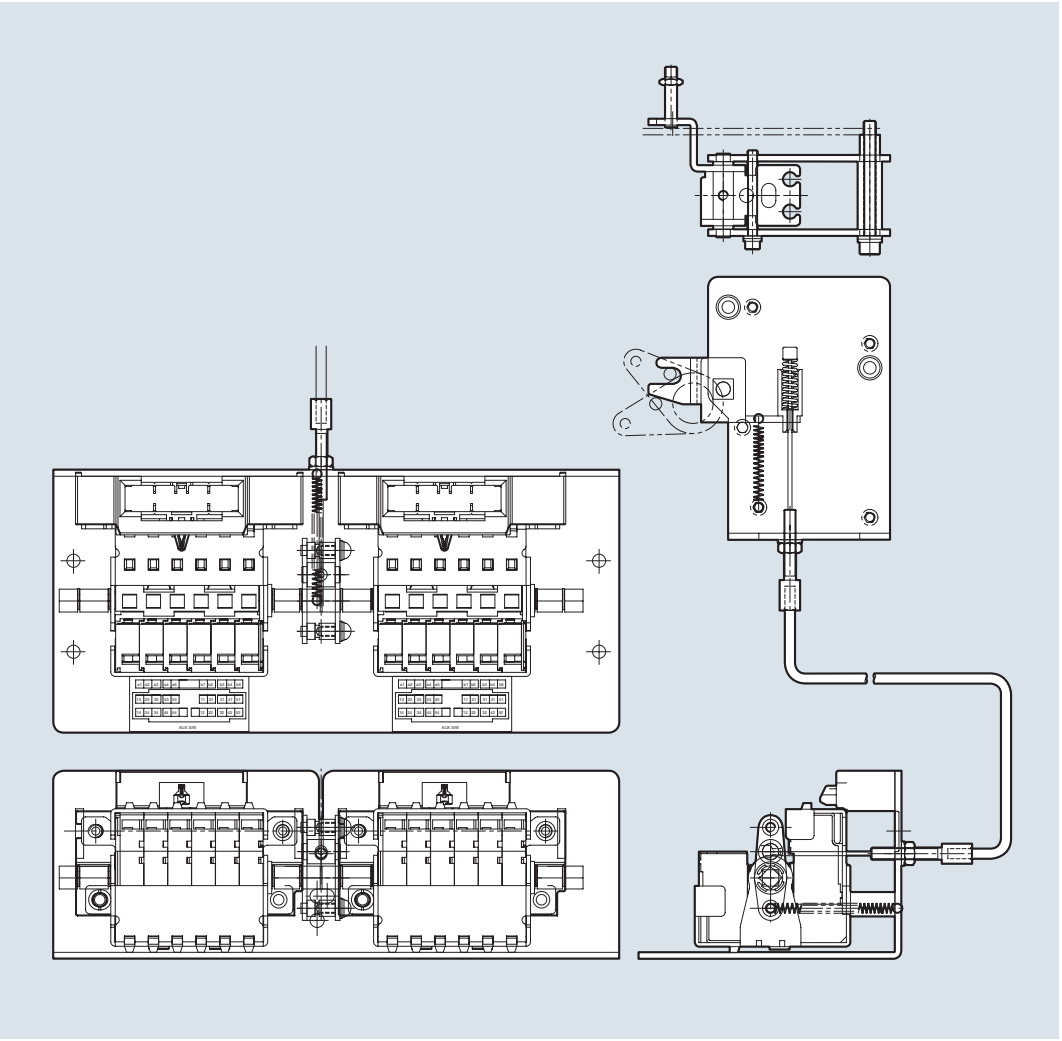
Counter [C]





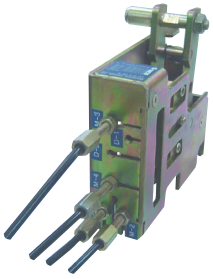
- It displays the total number of ON/OFF operation of ACB.

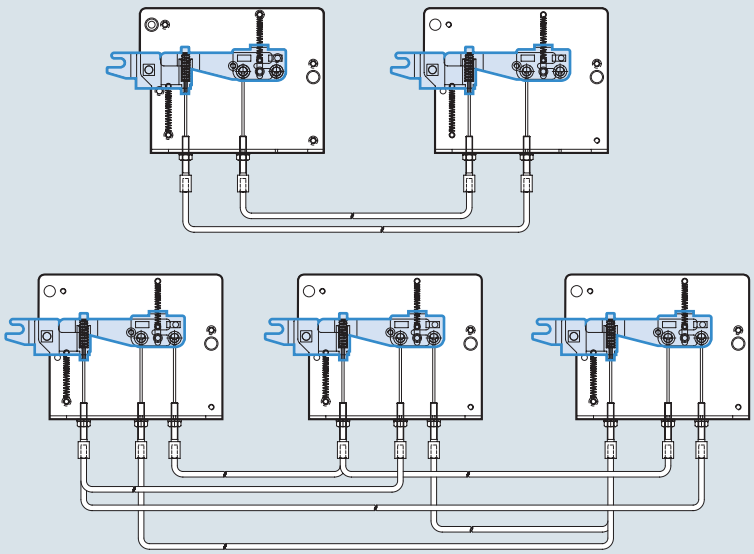
Mechanical Operated Cell Switch [MOC]



- It is the contact (10a10b) which displays the ON/OFF condition of ACB.
  It mechanically operates only when the breaker is “CONNECTED” position.
  A standard type and a high capacity type is available.
- The contact capacity is as same as the ratings of aux. contacts.
- When MOC link is installed to cradle, MOC can be equipped with the inside of panel.

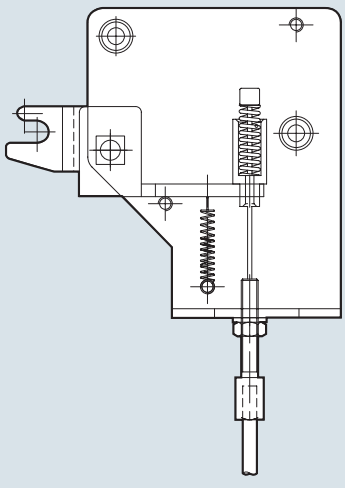
Mechanical Interlock [MI]



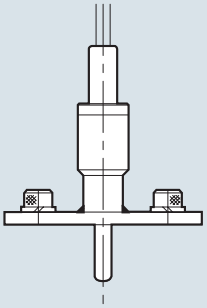


- It is used to interlock closing and trip between two or three breakers mechanically so as to prevent unintended operation at the same time.
- Wire type interlock can be applied upto 3 breakers

Door Interlock [DI]



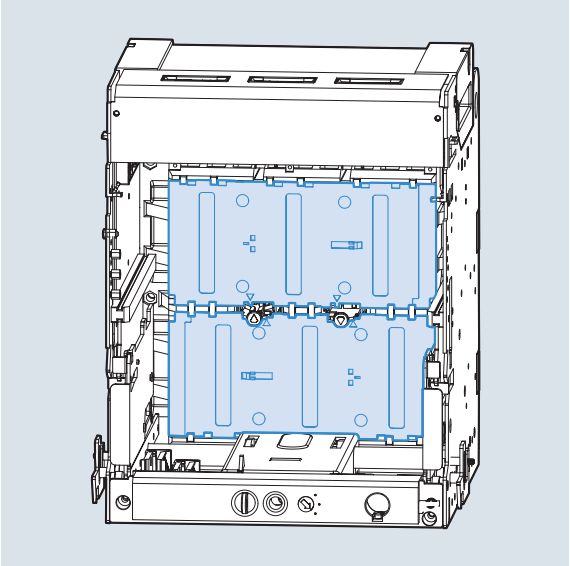
Install on the side plate of ACB cradle



Install on the door of panel

- It is a safety device which does not allow the panel door to open when a circuit breaker is in the “ON” position.

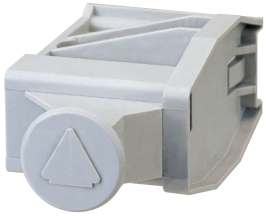
Safety Shutter [ST]

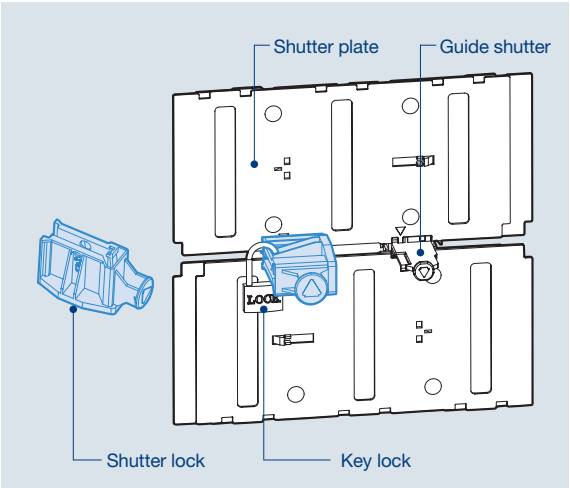


- It is the automatic safety device to protect the connectors of main circuit by cutting off dangerous contact from outside while the breaker is drawn out. When the ACB is drawn in, the shutter is automatically opened.
- There are 4 types of Safety Shutter and they are divided as shown in figure below.

The types of safety shutter plate	
2000/5000AF, 3P	4000/6300AF, 3P
	
2000/5000AF, 4P	4000/6300AF, 4P
	

Safety Shutter Lock [STL]





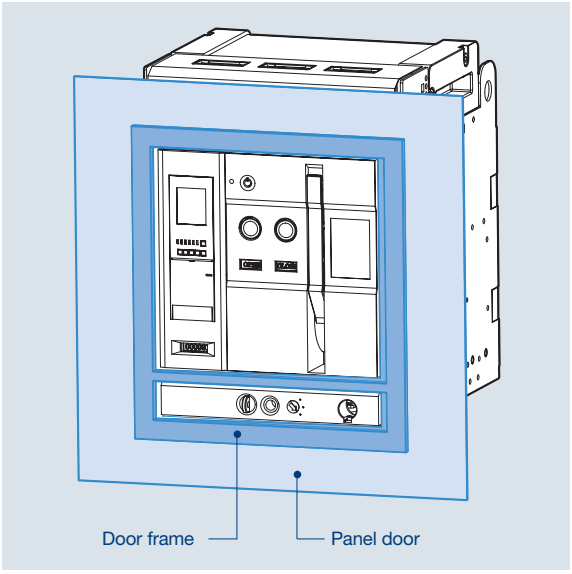
- It is a locking device which prevents safety shutter from being opened when it is closed.
  → If shutter lock is connected with guide shutter, the guide shutter can not be pushed structurally. Thus, it is not available to open the safety shutter.

Note) Padlocks(Ø5 ~ Ø6) are not supplied.

Door Frame [DF]

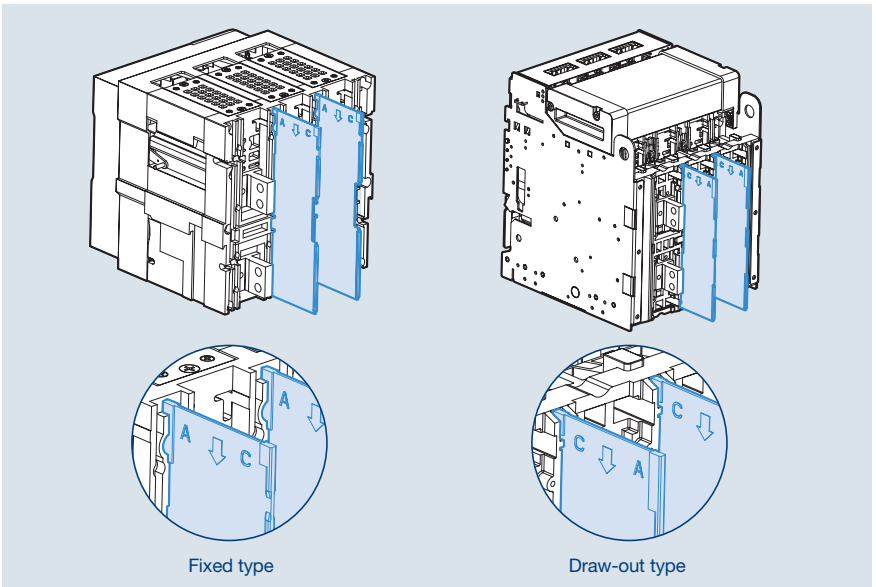
Fixed type

Draw-out type



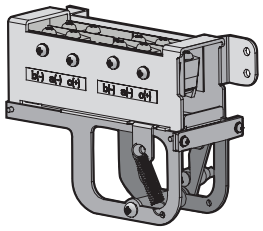
- When structuring the embedded type of ACB panel, it protects the protrude front of ACB and the cutting side of panel door by attaching it to the panel door.

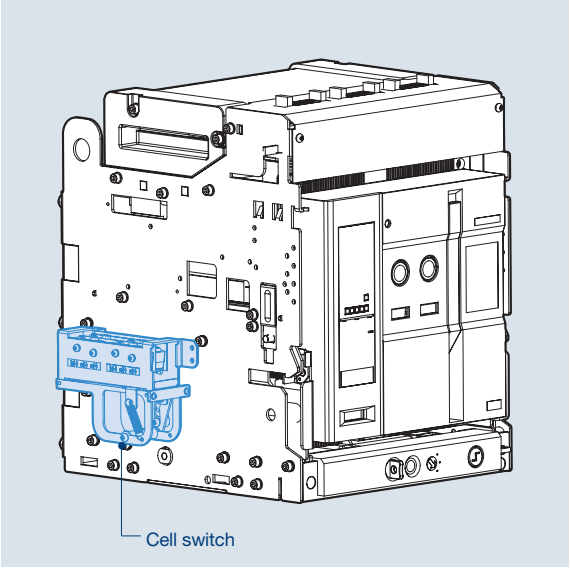
Interphase Barrier [IB]



- Interphase barrier prevents the arc which may arise and result in short-circuit between phases in advance
- As “C” stands for “CRADLE”, install the Interphase barrier in the direction of “C” in case of Draw-out type.
- As “A” stands for “ACB main frame”, install the Interphase barrier in the direction of “A” in case of Fixed type.

Cell Switch [CEL]





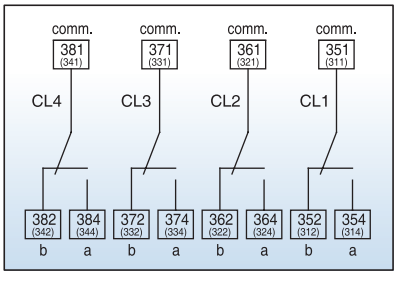
- It is a contact which indicates the present position of ACB.(CONNECTED, TEST, DISCONNECTED)

<Contact configuration>
4C: 1Disconnected +1Test +2Connected
8C: 2Disconnected +2Test +4Connected

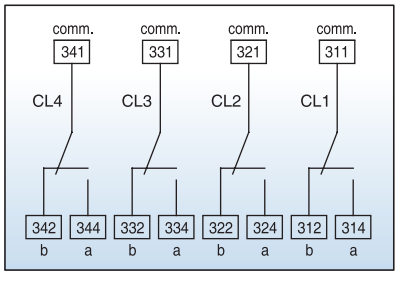
※ Contact configuration can be changeable if necessary.

ACB position			DISCONNECTED		CONNECTED
Draw-in and draw-out position			DISCONNECTED	TEST	CONNECTED
Contact operation	CL-C (Connected)		OFF		ON
	CL-T (Test)		OFF	ON	
	CL-D (Disconnected)		ON	OFF	
Contact capacity	Voltage(V)		Resistive load		Inductive load
	AC	460V	5		2.5
		250V	10		10
		125V			
	DC	250V	3		1.5
		125V	10		10
		30V	10		10
Contact number			4C		

Terminal (4C, 8C)

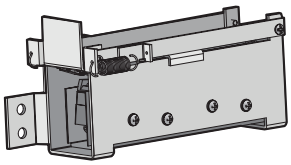


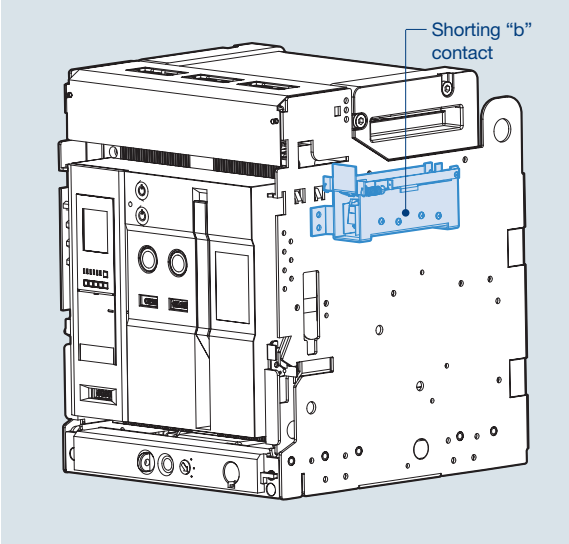
4C attached to the right side of cradle



4C attached to the left side of cradle

Shorting “b” Contact [SBC]



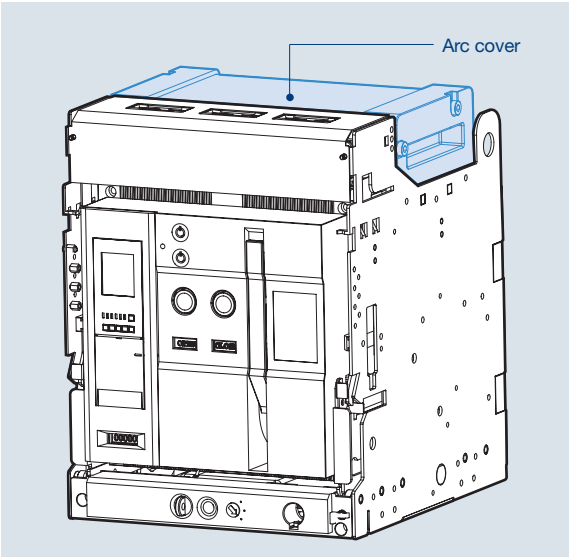


- It is the contact which keeps the external control circuit in normal by Aux. contact which disconnects “Axb” when ACB is moved from CONNECTED position to TEST position. The number of “shorting b-contact” corresponds to the number of “Axb” (4b)

Contact condition (Link between Axb and shorting “b” contact)

ACB position \ ACB condition	Close position [Auxiliary contact(Axb):OFF]	Open position [Auxiliary contact(Axb):ON]
Connected position (Shorting b contact : OFF)	OFF Axb SBC	ON Axb SBC
Test position (Shorting b contact : ON)	OFF Axb SBC	ON Axb SBC

Zero Arc Space [ZAS]

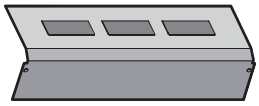


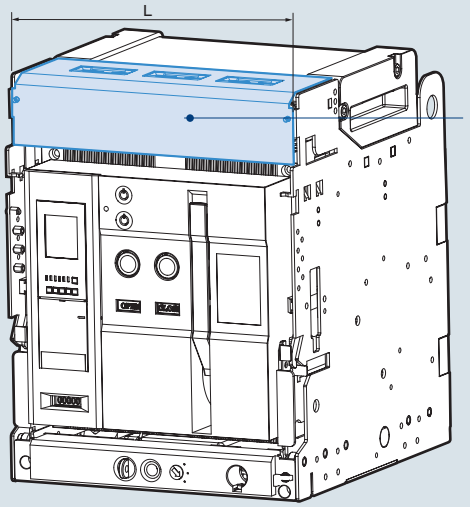
- Arc which may arise while breaking fault current is extinguished first by Arc chute in main body of circuit breaker and then completely extinguished by Arc cover.
  By preventing arc from exposing to the outside, it protects itself from all kinds of accidents.

- It is categorized into 8 types by ratings and poles.

Ampere frame	Cover length (mm)
2000AF 3P	281.4
2000AF 4P	366.4
4000AF 3P	359.4
4000AF 4P	474.4
5000AF 3P	576.4
5000AF 4P	746.4
6300AF 3P	732.4
6300AF 4P	962.4

Safety Control Cover [SC]



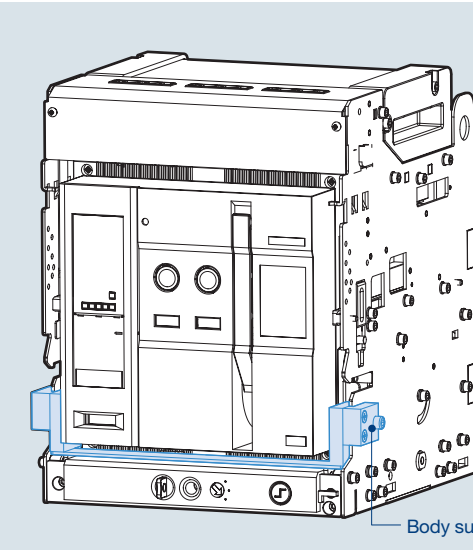


- It protects control terminals which exposes to the outside, and prevents the damages resulted from foreign substances.
- It is categorized into 8 types by ratings and poles.

Ampere frame	Cover length (mm)
2000AF 3P	334
2000AF 4P	419
4000AF 3P	412
4000AF 4P	527
5000AF 3P	629
5000AF 4P	799
6300AF 3P	785
6300AF 4P	1015

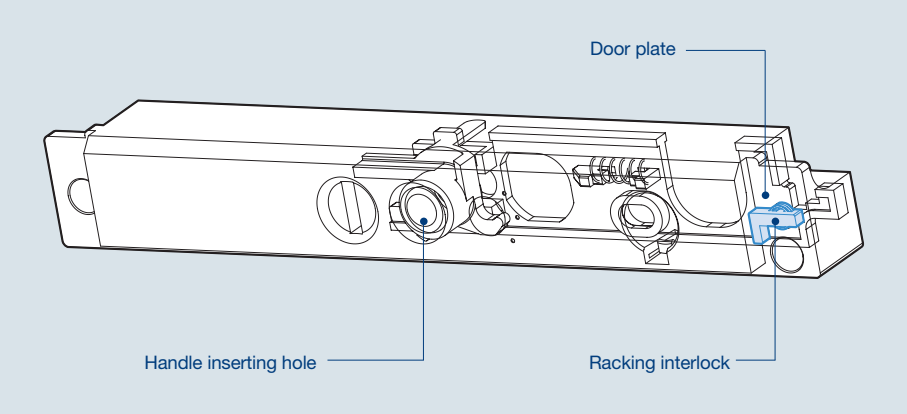
- It is available only when the control block is in the mode of auto-connection.

Body Supporter [BSP]



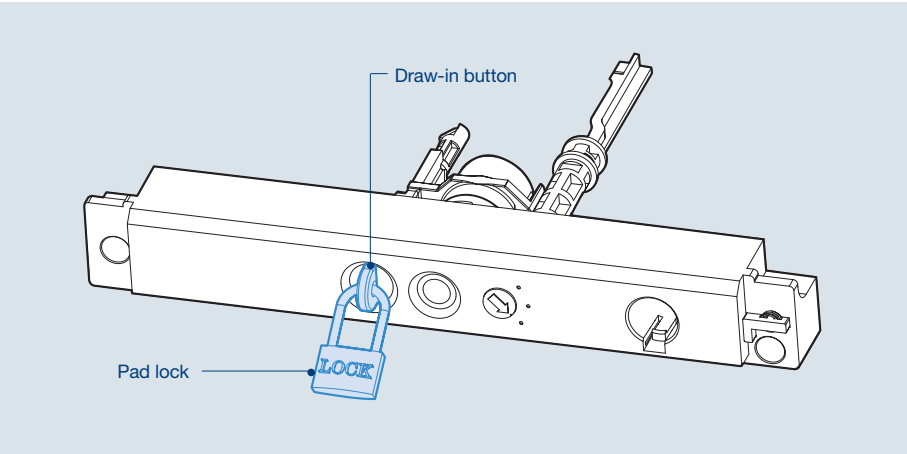
- It interlocks the main body of circuit breaker and cradle mechanically to fix the former in connected position. Therefore, all draw-in/outs are not available.

Racking Interlock [RI]



- When panel door is opened, Draw in/out handle doesn't be inserted. Thus, panel handle can be inserted only when panel door is closed.

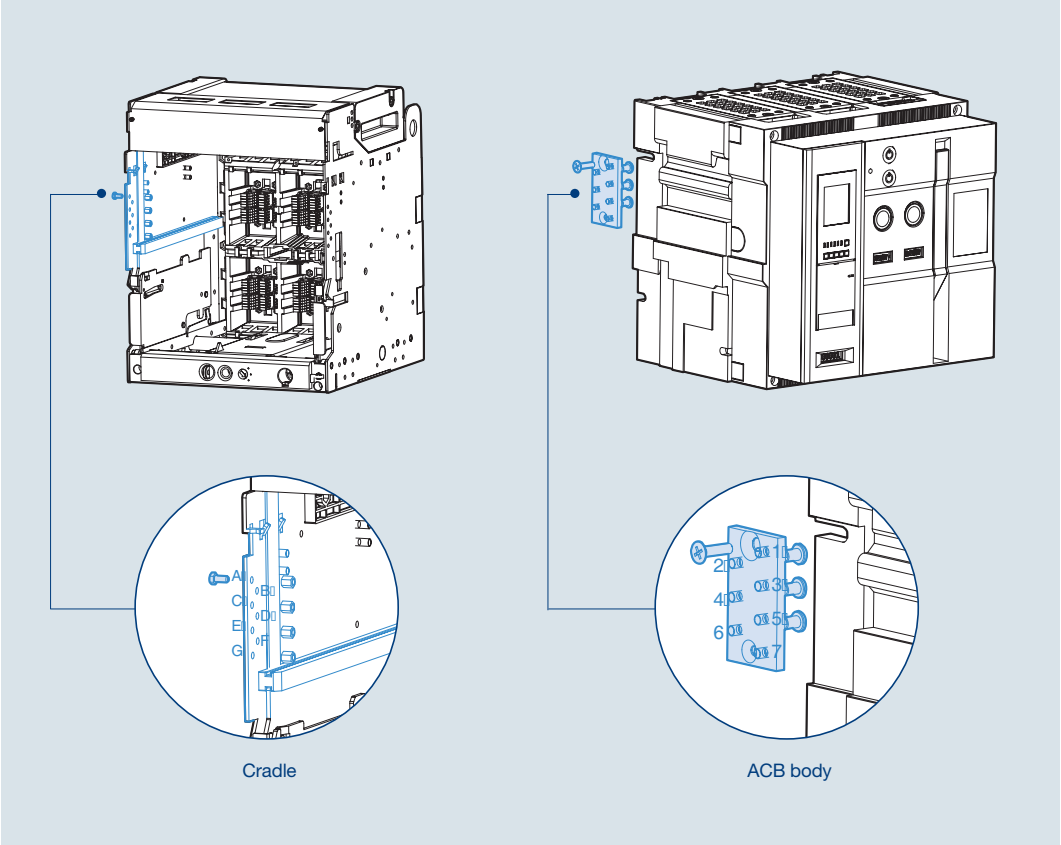
Pad Lock / Position Lock [PL]



ACB is subject to restriction regarding moving in connected, test, disconnected when drawing in or out. If main body of ACB is placed in 3 positions, it is locked and stopped when drawing in or out.

- As shown in the figure, if draw-in/out button pops out, it means locking is operating.
- To continue Draw-in/out operation, release lock by pushing Draw-in/out button
- In case it is locked as shown in the figure above, main body of ACB can not be drawn in or out into the cradle.
- For the lock device, user has to purchase it. (Ø5 ~ Ø6)

Miss Insertion Prevent Device [MIP]



- When the main body of ACB is inserted to the cradle, if the ratings of ACB does not match with cradle, it mechanically prevents ACB from being inserted into cradle of ACB.
- The installation method is variable according to ratings.

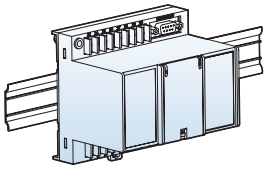
Cradle	ACB
ABCD	567
ABCE	467
ABCF	457
ABCG	456
ABDE	367
ABDF	357
ABDG	356
ABEF	347

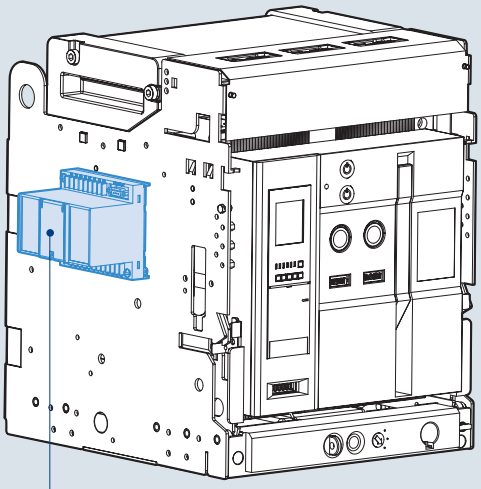
Cradle	ACB
ADEF	237
ADEG	236
ADFG	235
AEFG	234
BCDE	167
BCDF	157
BCDG	156
BCEF	147

Cradle	ACB
ABEG	346
ABFG	345
ACDE	267
ACDF	257
ACDG	256
ACEF	247
ACEG	246
ACFG	245

Cradle	ACB
BCEG	146
BDEF	137
BDEG	136
BDFG	135
CDEF	127
CDEG	126
CEFG	124
DEFG	123

UVT Time Delay Controller [UDC]





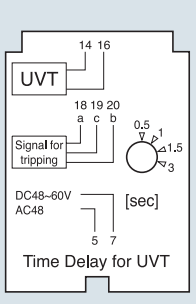
- UVT is a device which makes ACB tripped automatically to prevent the accident on load side due to under voltage or power breakdown.
  There are two types, Instantaneous type and time delay type.
- It can be installed on the rail or to the cradle.
- Instantaneous type: only available with UVT coil.
- Time delay type: available by connecting UVT coil and UVT time delay controller.
- Common use for the all types.

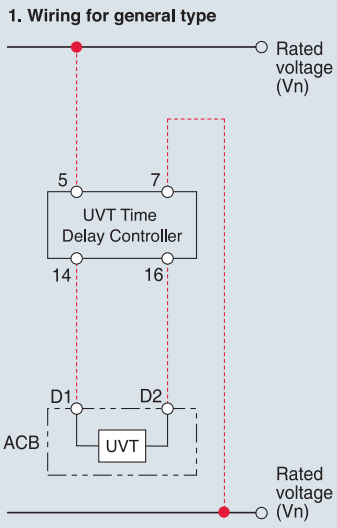
1. The rated voltage and characteristic of UVT time delay controller

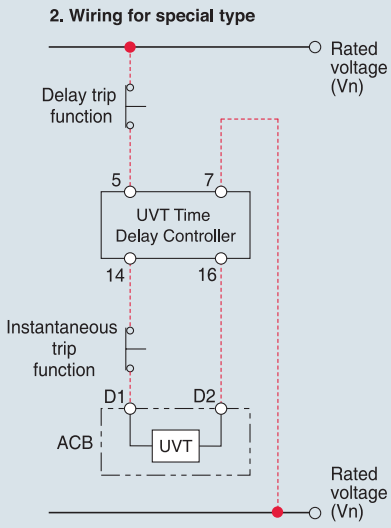
Rated voltage [Vn]		Operating voltage range [V]		Power consumption (VA or W)		Trip time[s]
DC [V]	AC [V]	Pick up	Drop out	Inrush	Steady-state	
48~60	48	0.65~0.85 Vn	0.4~0.6 5Vn	200	5	0.5, 1, 1.5, 3
100~130	100~130					
200~250	200~250					
-	380~480					

Note) Operating voltage range is the min. rated standard for each rated voltage (Vh).

2. Wiring

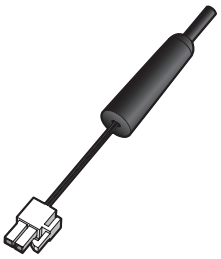


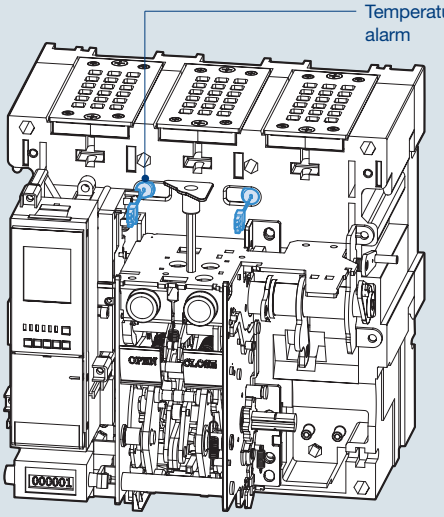




* The wiring presented with red color should be set by uesers.

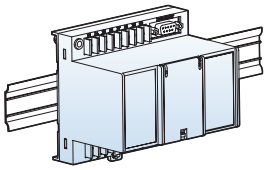
Temperature Alarm [TM]

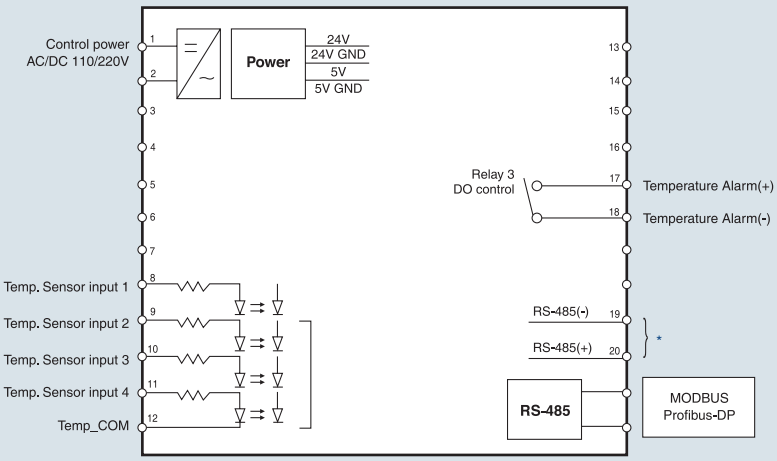




- Temperature Alarm Unit is a device to show the temperature through a sensor inside of ACB.
- The temperature sensor can be installed up to 2 and the output is connected to control terminal blocks.
- It displays the maximum temperature of them and transmits through a network.
- If the temperature is higher than a standard, an alarm can occur.
- Temperature alarm unit communicates with Modbus / RS-485 basically, Profibus-DP need to be purchased separately.
- Temperature alarm unit is installed on the cradle or the inside of panel.

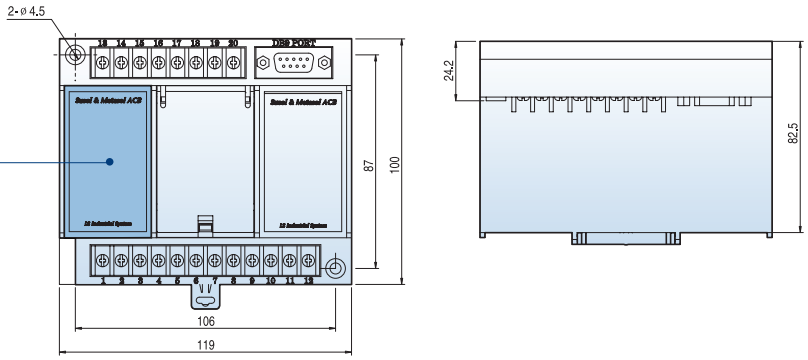
Temperature alarm





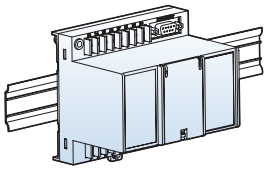
*In case of using Profibus-DP communication, it needs to communicate with ACB trip relay.

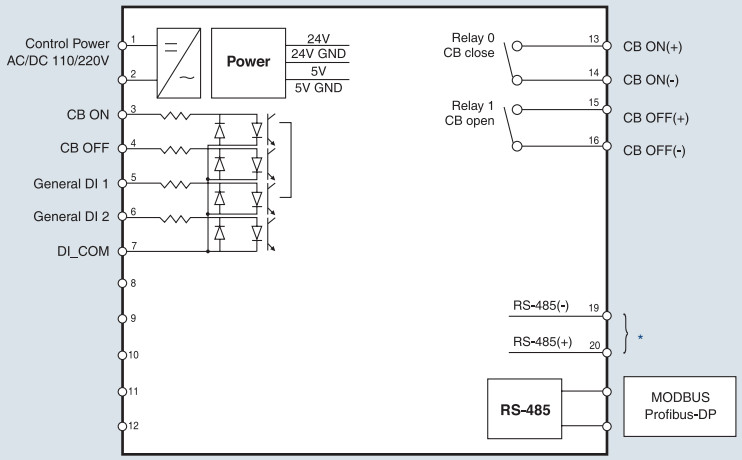
Temperature LED(℃): 10 ~150℃, Warning
(Indicates the maximum value)



Remote I/O Unit [RCO]

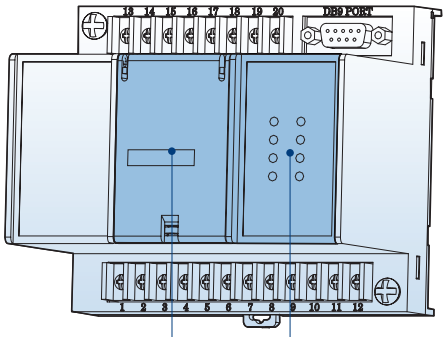
Remote I/O Unit





*In case of using Profibus-DP communication, it needs to communicate with ACB trip relay.

Classification		Applied range	Remarks
CB control	Contact switching capacity	AC230V 16A / DC30V 16A	
	Max. switching capacity	3680VA, 480W	
Alarm	Contact switching capacity	AC230V 6A / DC25V 6A	Induction load (cosØ=0.4, L/R=7ms)
	Max. switching capacity	1880VA, 150W	



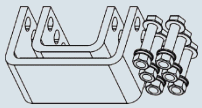
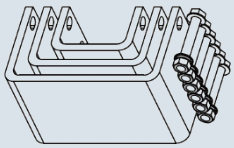
- Baud rate setting
- Comm. address setting
- Temperature setting

- Remote I/O unit has the I/O contact which can trip or close the ACB from the remote site by communication.
- For the General DO, the output of DI1 or DI2 is selectable.
- Remote I/O Unit communicates with Modbus / RS-485 communication basically, Profibus-DP need to be purchased separately.
- It supports SBO (Select Before Operation) function and guarantees the control reliability.
- Remote I/O Unit can be installed on the cradle of ACB or the inside of panel.

LED		Status
1	DI1	Indicates digital Input #1condition
2	DI2	Indicates digital Input #2condition
3	DO ON	Indicates temperature alarm output is ON
4	DO OFF	Indicates temperature alarm output is OFF
5	CB ON	Indicates circuit break close condition
6	CB OFF	Indicates circuit break open condition
7	RUN LED	Indicates unit run condition
8	CB ERROR	Indicates circuit break terminal Disconnection / control Err condition

Short busbars

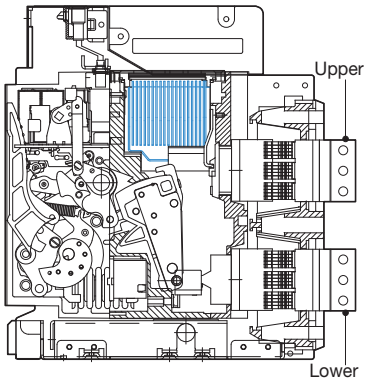
1. Short busbars can be ordered as shown in the table below, or customer have to make short busbars in accordance with the specified busbars in section 2.

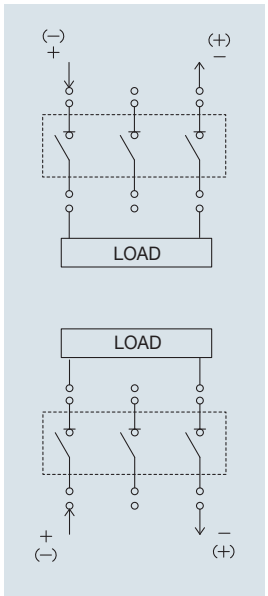
Related Ampere Frame	Ordering code	Contents	Order quantity	Weight (kg/set)
800~3200AF	70223464603	Short busbar : 2ea/unit Bolt and etc. : 6set/unit 	3P : 1 unit 4P : 2 unit	4kg
4000AF	70223464604	Short busbar: 3ea/unit Bolt and etc.: 6set/unit 	3P : 1 unit 4P : 2 unit	11kg

2. Short busbars are configured as below according to the rated operational current.
   - 3200A below : Width 75mm x 10T x 2ea
   - 4000A : Width 125mm x 10T x 3ea

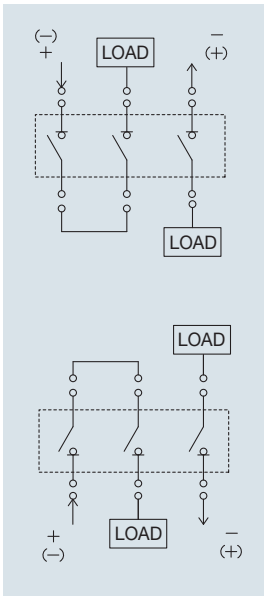
3. The tightening torque for assembling short busbars is 40 ~ 50N.m

4. Various installation methods for DC use

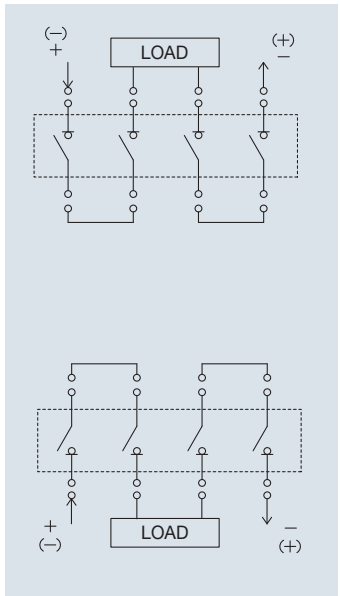




~ 500 Vdc



~ 750 Vdc
~ 1000 Vdc

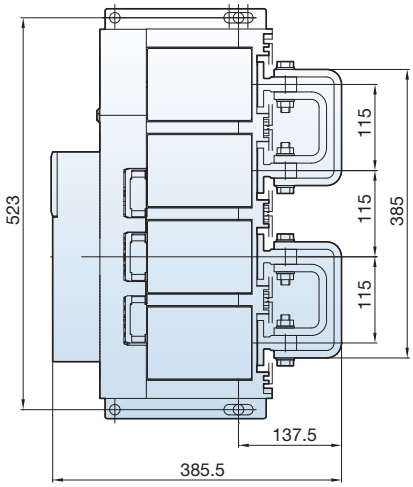


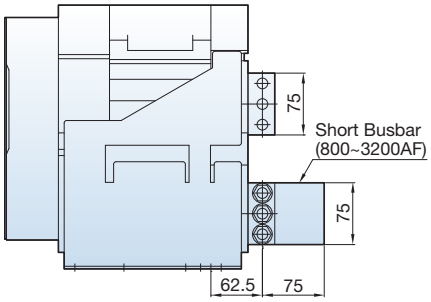
~ 1200 Vdc
~ 1500 Vdc

5. Dimension after assembling short busbars

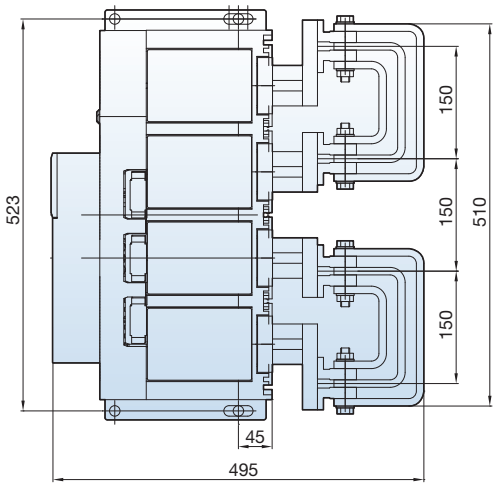
(Unit : mm)

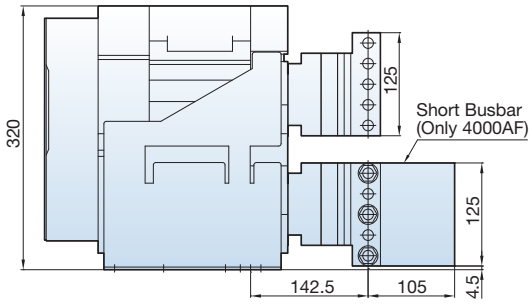
800~3200AF





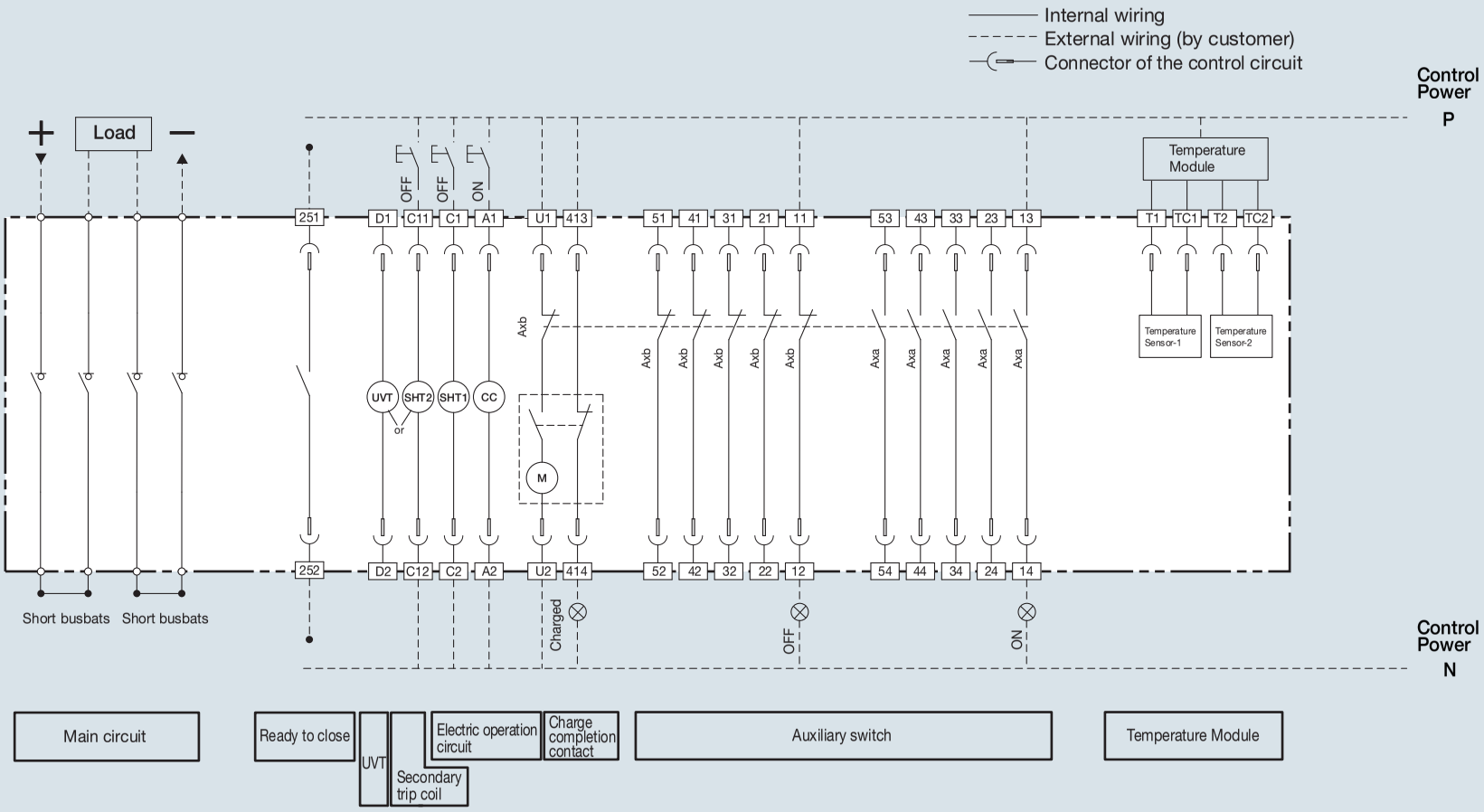
4000AF





* These drawings are shown with 4pole fixed type.

Electrical diagram



Terminal code description

13 14 ~ 63 64	Auxiliary switch “a”
11 12 ~ 61 62	Auxiliary switch “b”
413 414	Charge completion signal
U1 U2	Motor charging
A1 A2	Closing coil
C1 C2	Shunt trip
C11 C12	2nd shunt trip
D1 D2	Terminal of UVT
251 252	Ready to close switch

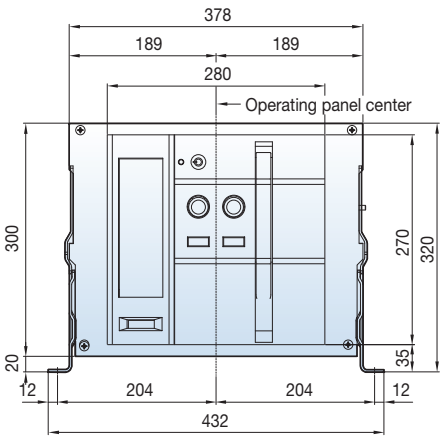
Accessory code description

Axa, Axb	Auxiliary switch
(M)	Charging motor
(CC)	Closing coil
(SHT1)	1st Shunt trip coil
(SHT2)	2nd Shunt trip coil
(UVT)	UVT coil

Note) 1. The diagram is shown with circuits de-energized, all devices open, connected and charged and relays in normal position.
2. Charging type is "OFF-Charging"
3. The standard of auxiliary contact is 3a3b.
The auxiliary switch in above diagram is composed of 5a5b.
4. Option
- Ready to close contact, UVT coil, Charge completion contact, Secondary trip coil
- Cell switch, Temperature module, Remote close-open module
5. Refer to the catalog for the connection of UVT.
6. UVT and SHT2 are alternative.
7. Temperature module and CC/JC(6a6b) are alternative.
8. Contact configuration for Cell Switch can be changeable if necessary

Fixed type 800~3200AF
(800~3200A: H06~32E)

(Unit : mm)



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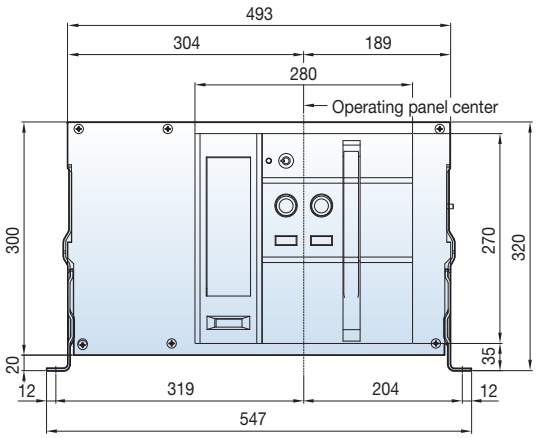

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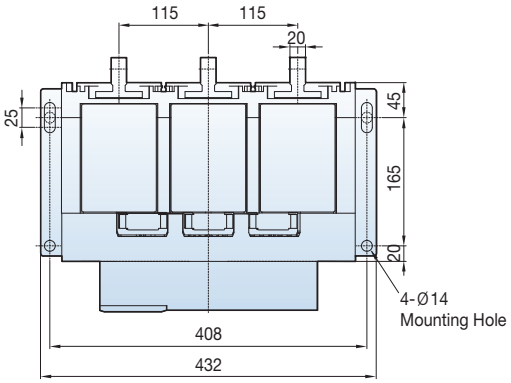

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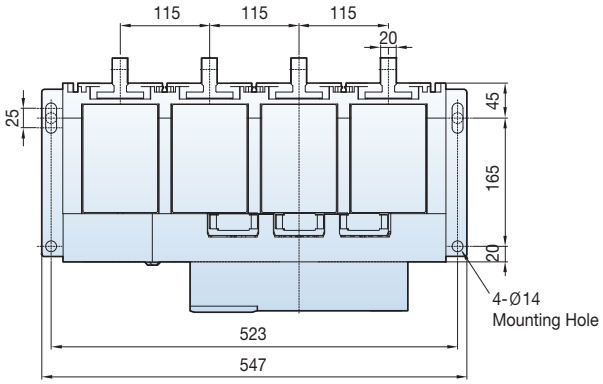

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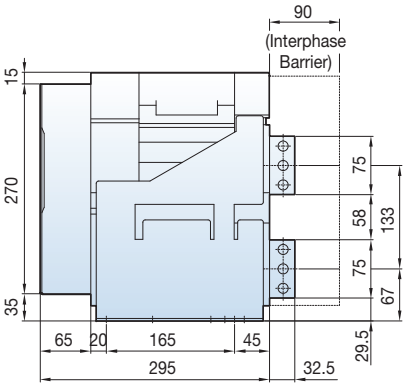
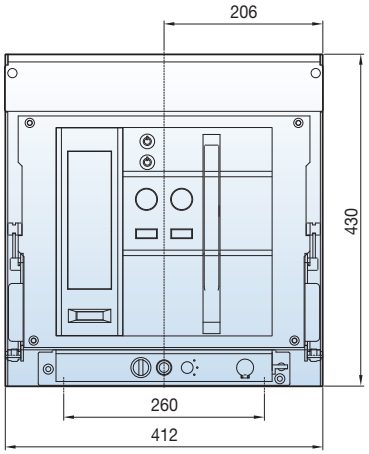


Draw-out type 800~3200AF
(800~3200A: H06~32E)

(Unit : mm)



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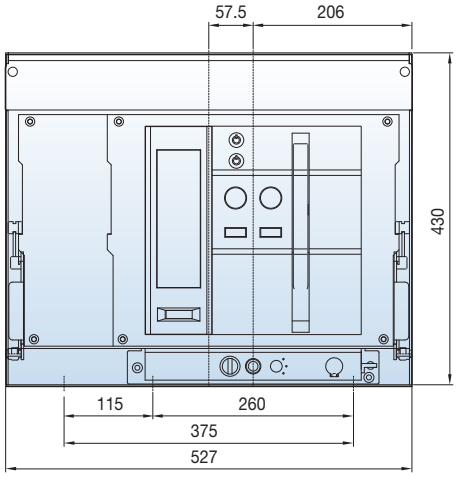

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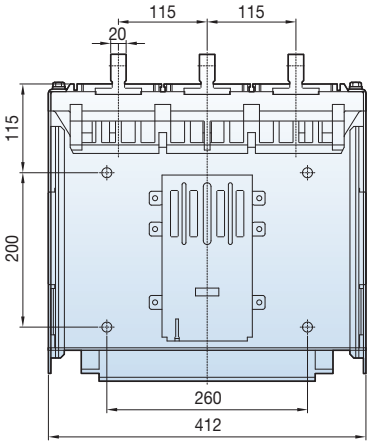

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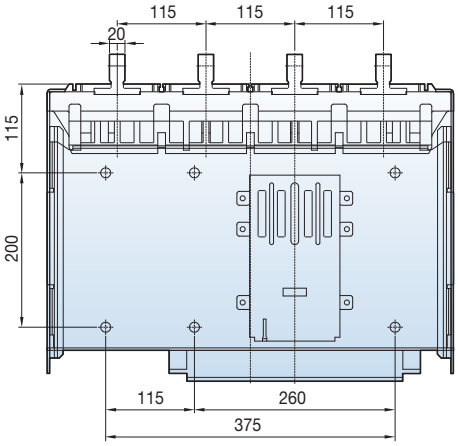

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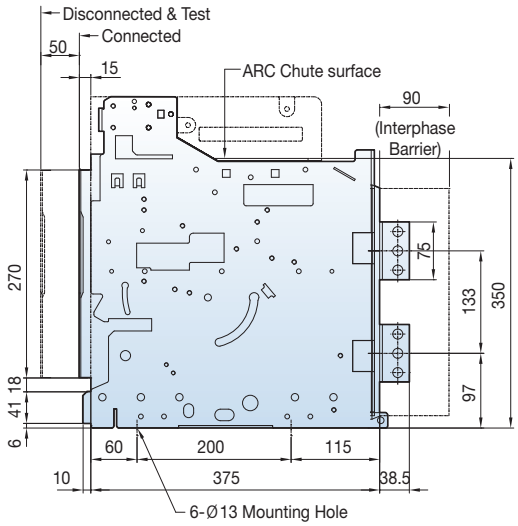
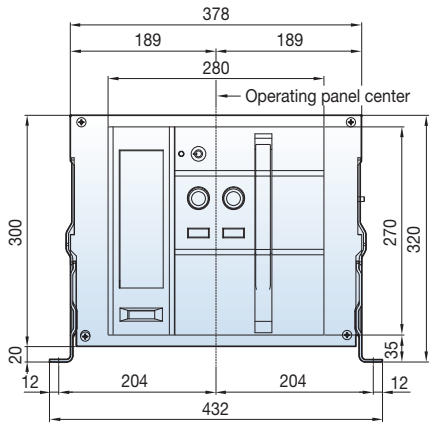


Fixed type 4000AF (4000A: H40E)

(Unit : mm)



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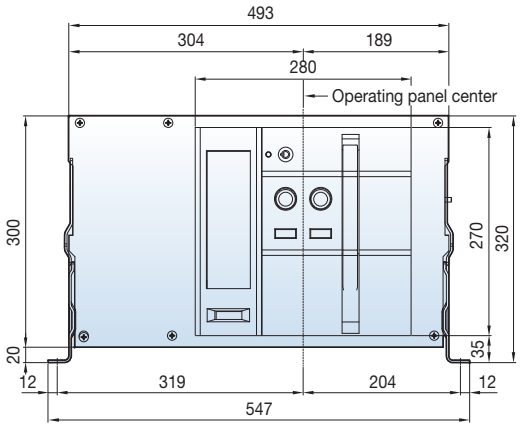

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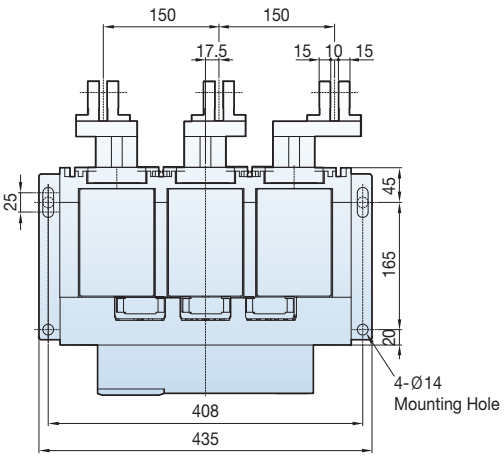

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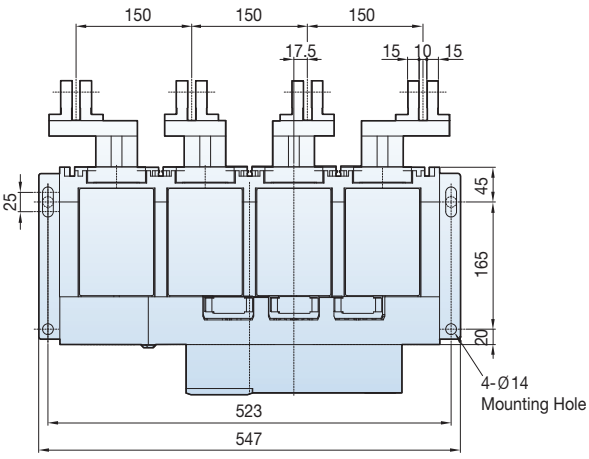

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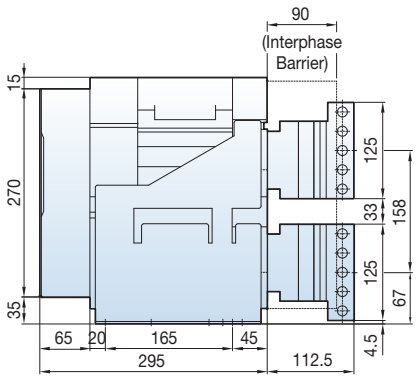
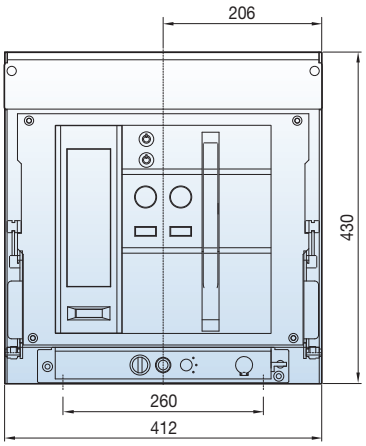


Draw-out type 4000AF (4000A: H40E)

(Unit : mm)



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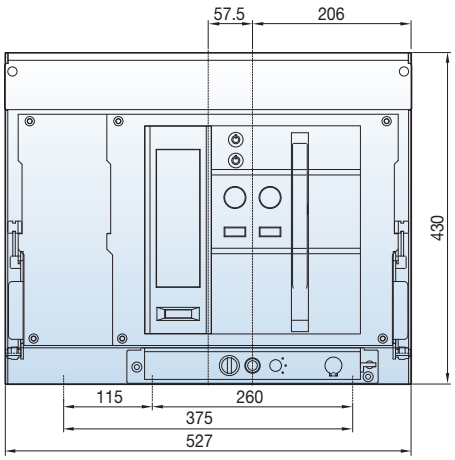

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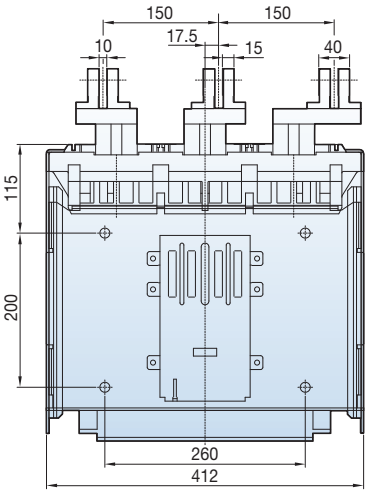

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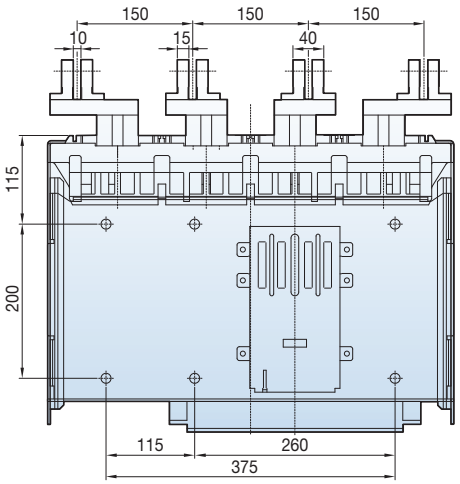

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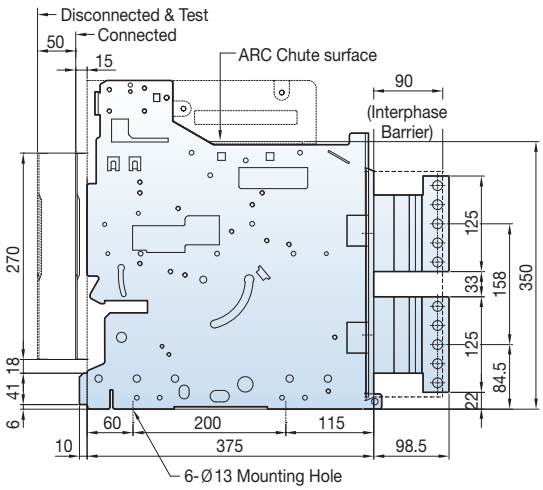

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We open up a brighter future through
efficient and convenient energy solutions.

Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance.
  Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise concerned.

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2017. 04

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