



CDW3 series Air Circuit Breaker User's Manual



Standards compliant: GB/T 14048.2
IEC60947-2

■ Please read this user manual carefully
before installing and using the product,
and keep properly for future use.

Safety notice:

This use manual is specially made for electrician.
Make sure the end user has this user manual.
Read and strictly abide this use manual before use.

Sign



Danger



Notice



Forbidden



Notice

Delixi provide “three guarantee service” within 36 months warranty from manufacture date for the manufacture defect under normal storage, maintenance and storage condition.

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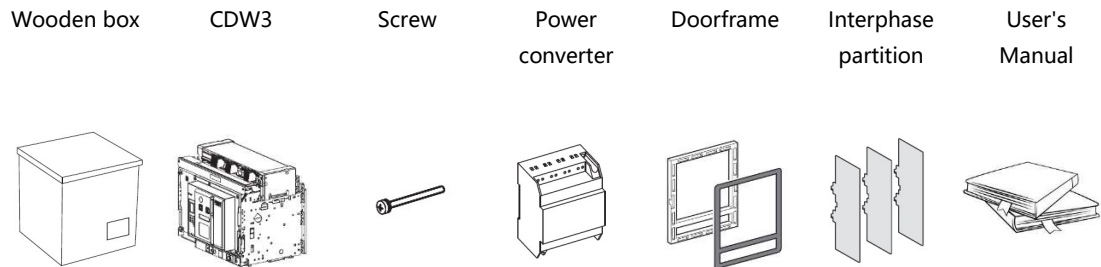
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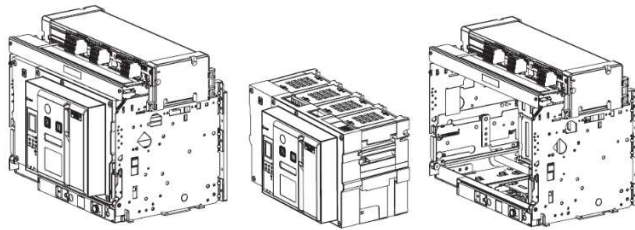
About CDW3

Open

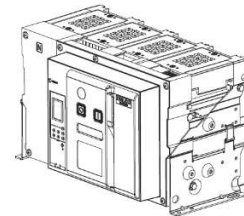


About breaker

Draw-out



Fixed



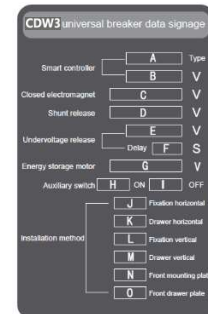
Know the nameplate



Please read the nameplate and data plate information carefully before installation



1	Rated current	9	Applicability (quarantine)
2	Rated insulation voltage	10	date of manufacture
3	Rated impulse withstand voltage	11	Rated voltage
4	Rated frequency	12	Ultimate short circuit breaking capacity
5	Maximum short circuit delay time	13	Operating short circuit breaking capacity
6	Category	14	Rated short-time withstand current
7	Applicability(IT)	15	Certification mark
8	Factory code		



Size and weight

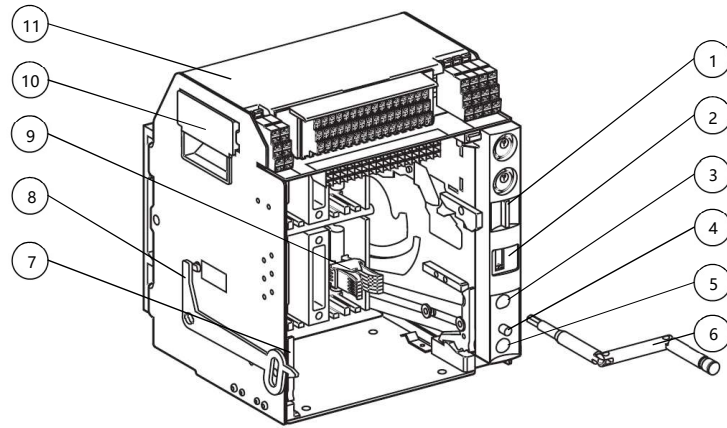
Type	1600N&H		2000N&H		2500N&H		3200N&H		4000N&H		6300N	
	3P	4P	3P	4P	3P	4P	3P	4P	3P	4P	3P	4P
Draw-out	322*288*	322*358*	436*405*	436*500*	436*465*	436*580*	436*465*	436*580*	439*441*	439*556*	436*843*	436*958*
Size(mm)	330	330	425	425	425	425	425	425	428.6	428.6	498	498
Draw-out	33.5&34	40&41	73&73.6	85&85.5	84&84.3	102.9&103.3	93&93.8	114&115	77&78	94&95	233	271.8
Weight(kg)												
Fixed	301*276*	301*346*	397*364*	397*459*	397*428*	397*543*	397*428*	397*543*	352*422*	352*537*	/	/
Size(mm)	229	229	327	327	327	327	327	327	329.5	329.5		
Fixed	13.6&14	16.5&17	41&41.4	51.5&52	48.6&48.9	59.7&60.1	53&53.4	67&68	41&42	51&52	/	/
Weight(kg)												

* Dimension relationship: height * width * depth

*6300N-3P size is use with 5000A, 3P-6300A size is 6300N-4P size, and 4P-6300A has no such product

Breaker structure

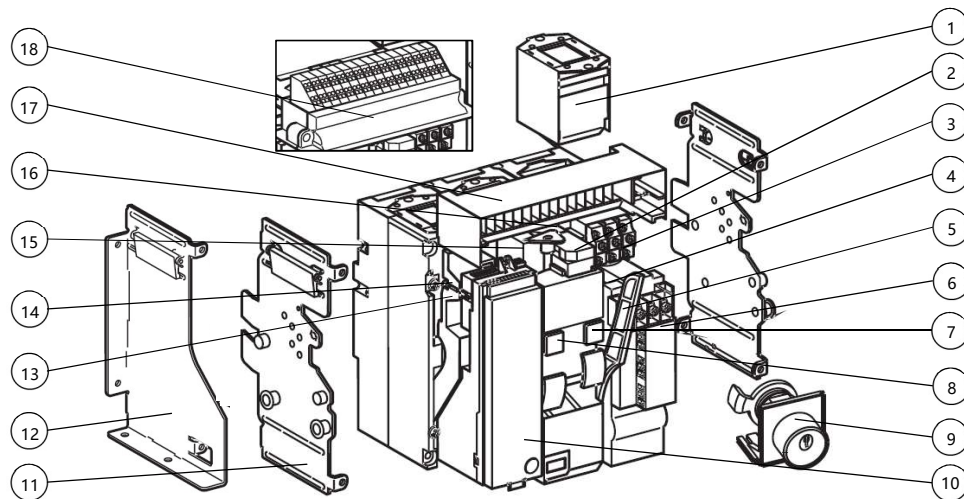
Drawer seat (schematic diagram, subject to the configuration table)



1	Padlock lock handle	5	Rocker storage	9	Bundle collet
2	Separation, test and connection position indication	6	Rocker	10	Handling handle
3	Rocker socket	7	Pull out the handle	11	Arc chute cover
4	Three position locking device unlocking button	8	Door interlock		

* The picture shows that 1600AF drawer shaking mechanism is placed vertically on the right side, 2000AF-6300AF drawer shaking mechanism is placed horizontally on the front bottom

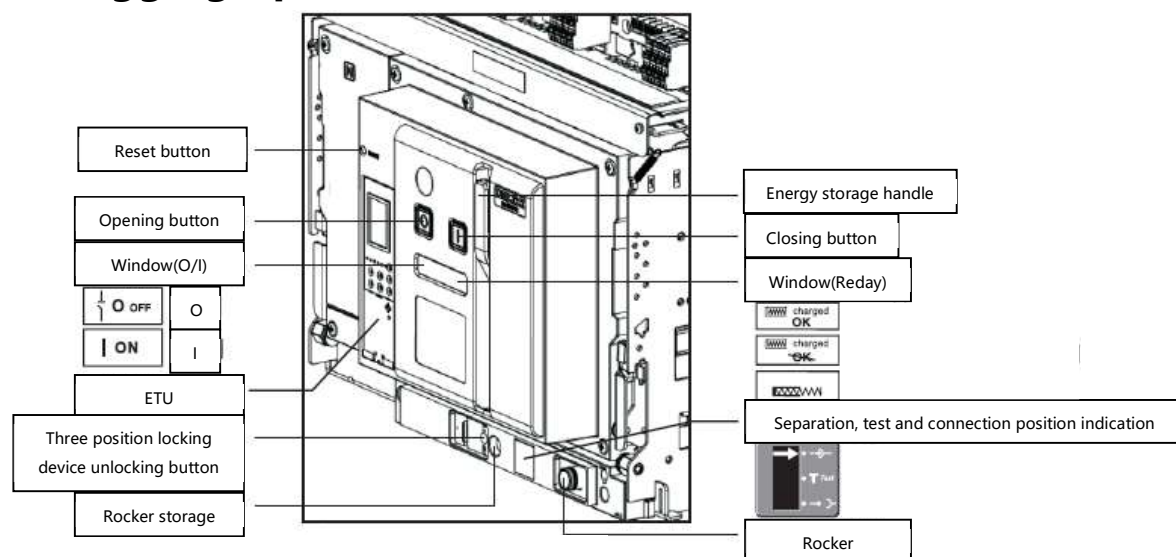
Circuit breaker body (schematic diagram, subject to the configuration table)



1	Arc chute	7	Closing button	13	SWT Fault trip contact
2	XF Closing coil	8	Opening button	14	SWT/2 Fault trip contact or Remote reset
3	OF Auxiliary contact	9	L Opening lock	15	MN Under-voltage release
4	PF Prepare closing contact	10	ITR Electronic trip unit	16	MX Release
5	Energy storage handle	11	D-Side plate	17	D-Secondary terminal box
6	MCH Electric operating mechanism	12	F-Side plate	18	F-Secondary terminal box

About CDW3

Debugging operation



Opening and closing operation of circuit breaker



1. **注意** If there is undervoltage release, it must be powered first
2. First watch the indication window to determine whether the circuit breaker is in the opening state. If it is closed, press the opening button directly
3. Shake the energy storage handle downward for 7-8 times to store energy, hear the "click" sound, and watch whether the "energy storage" indicator window is in the "energy storage" state
4. Press the closing button to close the circuit breaker
5. Press the opening button to open the circuit breaker
6. If it is necessary to switch on again, "energy storage" is required "

Drawer seat operation

1. When the circuit breaker is in the connection position, the indicator indicates "connection", pull out the rocker from the rocker storage and insert it into the rocker slot
2. Rotate the rocker anticlockwise to move the circuit breaker from the "connection" position to the "test" position, and the indicator indicates "test", and the unlocking button of the three position locking device pops up, and the rocker cannot be shaken again
3. Press the unlocking button of the three position locking device, continue to shake the rocker anticlockwise to "separation" position, indicator indication "separation", the unlocking button of the three position locking device pops up, and the rocker cannot be shaken again
4. Pull out the draw out handle of drawer seat and draw out the circuit breaker body
5. When installing the circuit breaker body, first pull out the draw out handle of the drawer base, place the circuit breaker body on the draw out handle, push the circuit breaker body into the drawer base, and push the draw out handle into the drawer base for locking
6. Press the unlocking button of the three position locking device, rotate the rocker clockwise to "test" position, indicator indication "test", the unlocking button of the three position locking device pops up, and the rocker cannot be shaken again
7. Press the unlocking button of the three position locking device, continue to shake the rocker clockwise to "connect" position, indicator indicates "connect", the unlocking button of the three position locking device pops up, and the rocker cannot be shaken again

Carry CDW3

Carry requirement



Severe collision shall be avoided as far as possible

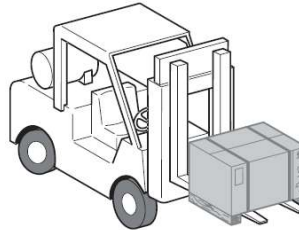
Do not reverse or roll the circuit breaker

Handle with care

Heavy bus terminal of circuit breaker

Please carry it as shown in the right figure

Transportation environment temperature: $-25^{\circ}\text{C} \sim 55^{\circ}\text{C}$, relative humidity: no more than 90% (at 25°C)



Carry way



When carrying the drawer type circuit breaker body together, pay attention to check the drawer type circuit breaker body

The circuit breaker can be handled only when it is in the "connected" position with the drawer base

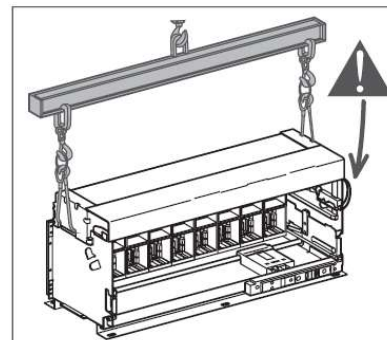
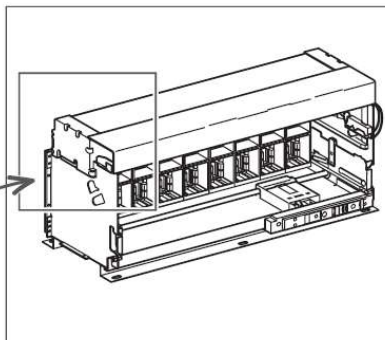
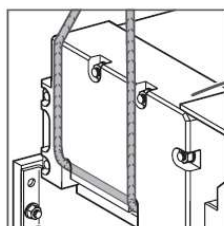
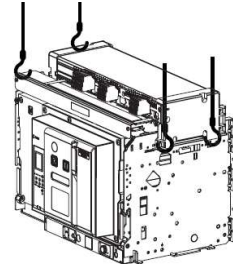
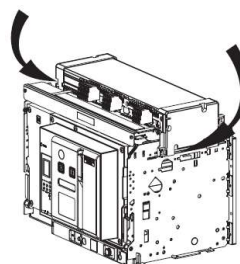
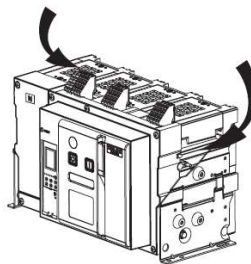
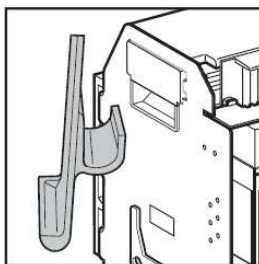
Pay attention to check whether the circuit breaker is in "off" state before handling the circuit breaker

The handling of fixed circuit breaker is the same as that of drawer circuit breaker



Carrying drawer seat

Insert the pull hook into the handle of the drawer seat of the circuit breaker as shown in the figure, and then lift the drawer seat

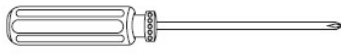


Installation CDW3

Tool



Screwdriver(-)



Screwdriver(+)



Wrench

Installation requirements



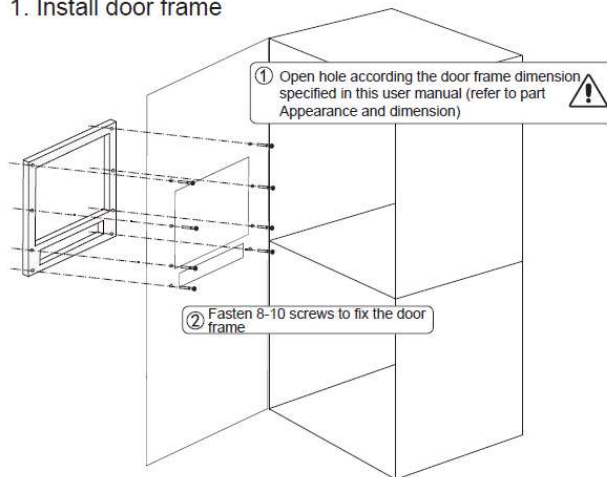
注意

The installation position shall be vertical, and the inclination in each direction shall not exceed 5 °

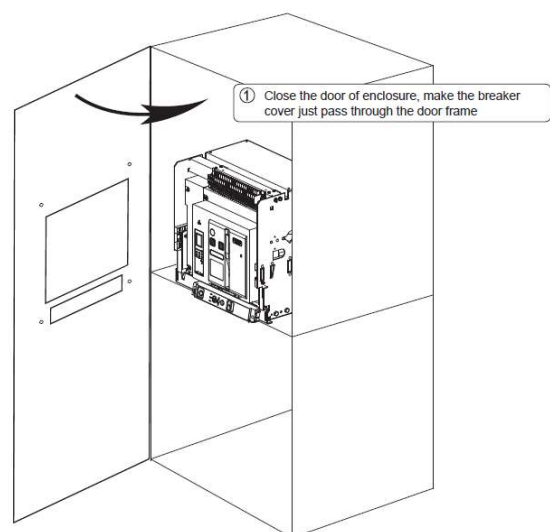
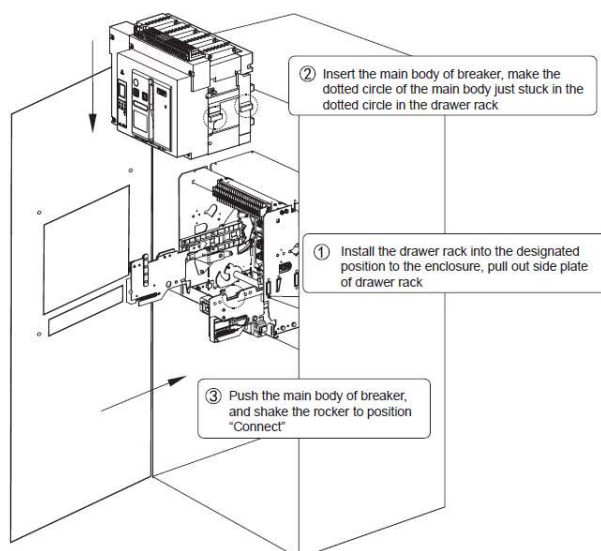
The main circuit, undervoltage release and primary coil of power transformer of the circuit breaker are class IV, and the auxiliary circuit and control circuit are class III

Installation way

1. Install door frame



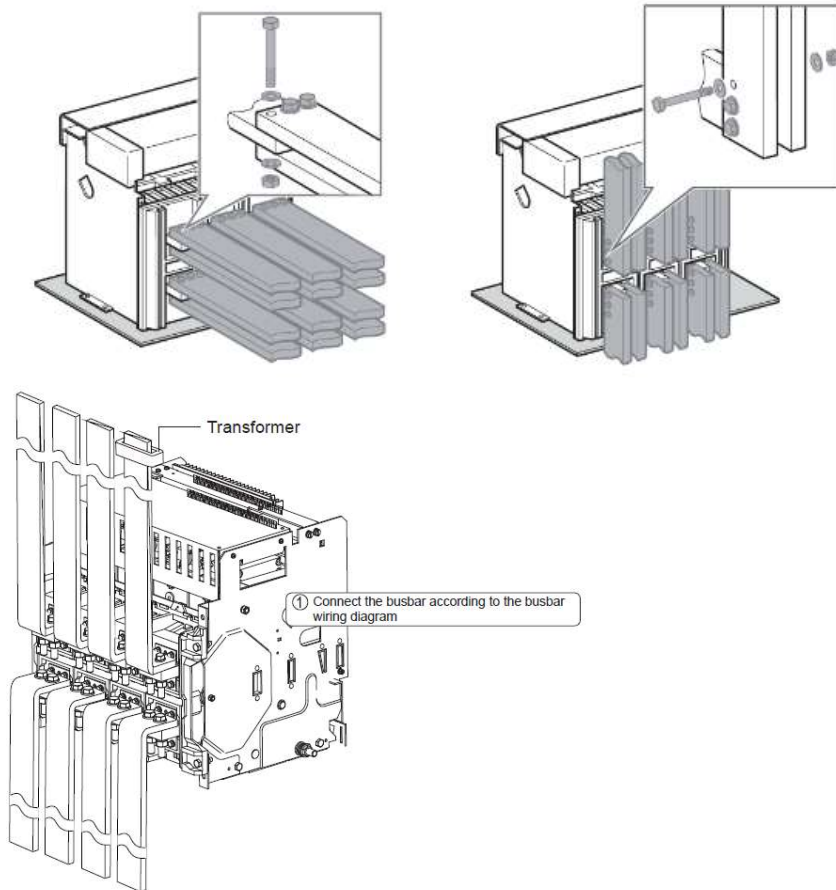
2. Install drawer base and body



Installation CDW3

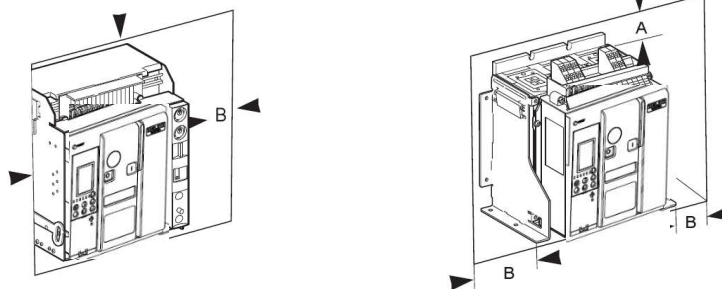
3. Bus installation

- ❖ Drawer type, fixed type is the same



Note: vertical wiring is limited to 1600AF/4000AF

4. Safe distance



Safe distance (mm)	Draw-out		Fixed	
	A	B	A	B
Insulation	0	10	0	0
Metal	0	10	0	0
Live conductor	30	60	100	60

Installation CDW3

Recommend Size of user busbar

Reference table of wiring busbar specifications under different temperatures

Allowable maximum temperature of busbar: 100 °C

Busbar material is bare copper

Frame (AF)	Rated current (A)	Ambient temperature +40°C				Ambient temperature +50°C				Ambient temperature +60°C			
		5mm busbar		10mm busbar		5mm busbar		10mm busbar		5mm busbar		10mm busbar	
		Pieces	Size	Pieces	Size	Pieces	Size	Pieces	Size	Pieces	Size	Pieces	Size
1600	400	2	30*5	1	30*10	2	30*5	1	30*10	2	30*5	1	30*10
	630	2	40*5	1	40*10	2	40*5	1	40*10	2	40*5	1	40*10
	800	2	50*5	1	50*10	2	50*5	1	50*10	2	50*5	1	50*10
	1000	3	50*5	2	40*10	3	50*5	2	40*10	3	50*5	2	40*10
	1250	4	40*5	2	40*10	4	50*5	2	50*10	4	50*5	2	50*10
	1600	4	50*5	2	50*10	4	50*5	2	50*10	4	50*5	2	50*10
2000	630	2	40*5	1	40*10	2	50*5	1	50*10	2	60*5	1	60*10
	800	2	50*5	1	50*10	2	50*5	1	50*10	2	60*5	1	60*10
	1000	3	50*5	2	40*10	3	50*5	2	40*10	3	60*5	2	50*10
	1250	3	60*5	2	50*10	3	60*5	2	50*10	3	60*5	2	50*10
	1600	4	60*5	2	60*10	4	60*5	2	60*10	4	60*5	2	60*10
	2000	6	60*5	3	60*10	6	60*5	3	60*10	6	60*5	3	60*10
2500	630	2	40*5	1	40*10	2	50*5	1	50*10	2	60*5	1	60*10
	800	2	50*5	1	50*10	2	50*5	1	50*10	2	60*5	1	60*10
	1000	2	60*5	1	60*10	3	60*5	2	50*10	3	60*5	2	50*10
	1250	2	80*5	2	40*10	3	60*5	2	50*10	3	60*5	2	50*10
	1600	2	100*5	1	100*10	2	100*5	1	100*10	2	100*5	1	100*10
	2000	4	100*5	2	100*10	4	100*5	2	100*10	4	100*5	2	100*10
3200	2500	4	100*5	2	100*10	4	100*5	2	100*10	4	100*5	2	100*10
	2000	4	100*5	2	100*10	4	100*5	2	100*10	4	100*5	2	100*10
	3200	8	100*5	4	100*10	8	100*5	4	100*10	8	100*5	4	100*10
4000	630	2	40*5	1	40*10	2	50*5	1	50*10	2	60*5	1	60*10
	800	2	50*5	1	50*10	2	50*5	1	50*10	2	60*5	1	60*10
	1000	2	60*5	1	60*10	3	60*5	2	50*10	3	60*5	2	50*10
	1250	2	80*5	2	40*10	3	60*5	2	50*10	3	60*5	2	50*10
	1600	2	100*5	1	100*10	2	100*5	1	100*10	2	100*5	1	100*10
	2000	4	100*5	2	100*10	4	100*5	2	100*10	4	100*5	2	100*10
	2500	4	100*5	2	100*10	4	100*5	2	100*10	4	100*5	2	100*10
	3200	8	100*5	4	100*10	8	100*5	4	100*10	8	100*5	4	100*10
6300	4000			5	100*10			5	100*10			6	100*10
	5000			7	100*10			7	100*10			8	100*10
	6300			8	100*10			8	100*10				

Note 1: the data in the above table are obtained from test and theoretical calculation, but as a guide, it can not replace industrial practical experience or temperature rise test

Note 2: it is recommended that the cross-sectional area of busbar specification selected by the user is not less than the cross-sectional area in the table. 50 mm wide busbar is recommended for 400A of 1600AF

Bolt configuration

	1600N&H	2000N&H	2500N&H	3200N&H	4000N&H	6300N
Bolt size	M10	M12	M12	M12	M10	M12
Recommended torque	50N·m	95N·m	95N·m	95N·m	50N·m	95N·m

Drilling size and installation torque of busbar

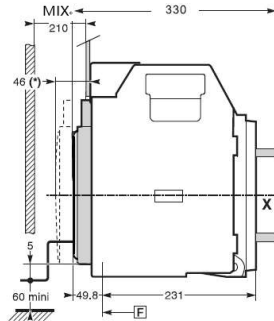
	1600N&H	2000N&H	2500N&H	3200N&H	4000N&H	6300N
Drilling size of busbar	φ11	φ13	φ13	φ13	φ11	φ13
Recommended torque	50N·m	95N·m	95N·m	95N·m	50N·m	95N·m

Installation CDW3

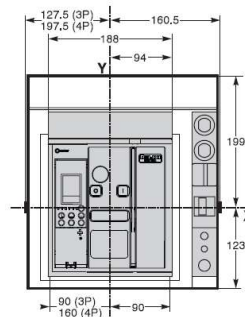
Size for 1600N&H

1600N&H Draw-out 3P&4P

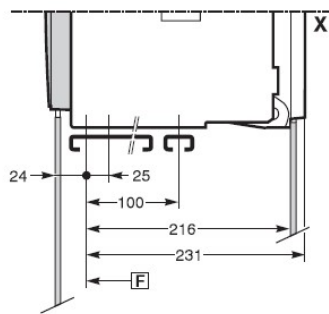
F Datum point



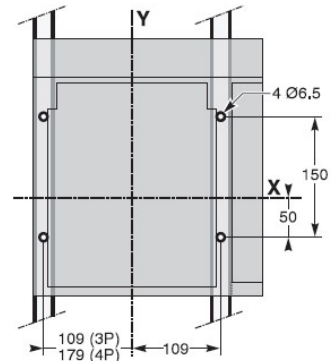
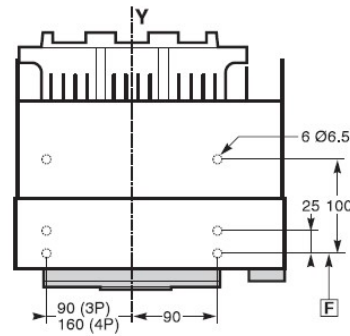
(*) Open position



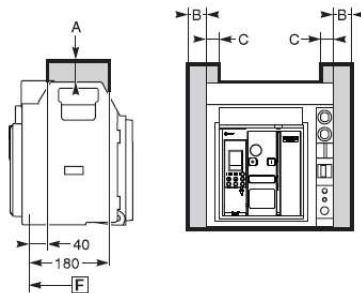
Horizontal fixation (on base plate or track)



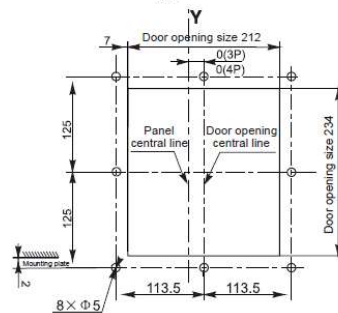
Vertical fixation (on backplane or rack)



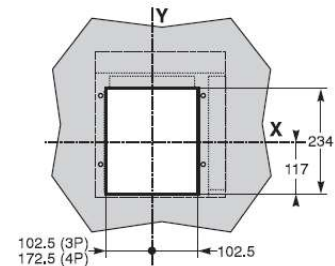
Safe spacing



Door opening size



Rear panel opening size



Safe distance (mm)	Draw-out		
	A	B	C
Insulation	0	10	0
Metal	0	10	0
Live conductor	30	60	30

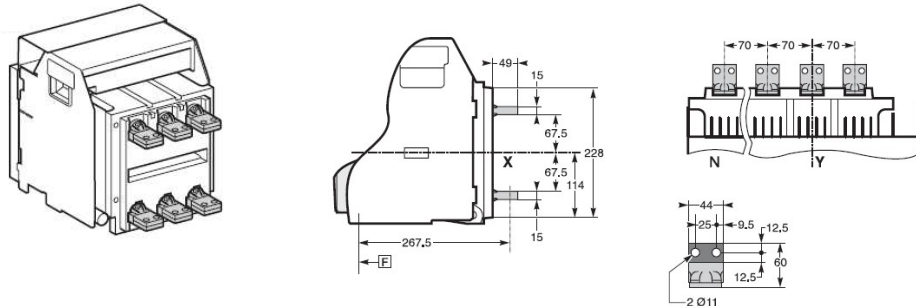
Note 1: the schematic diagram of safety distance is schematic diagram, and the circuit breaker shall be subject to the real object

Note 2: the x-axis and Y-axis of the 3-pole circuit breaker are symmetrical to the front cover of the circuit breaker body

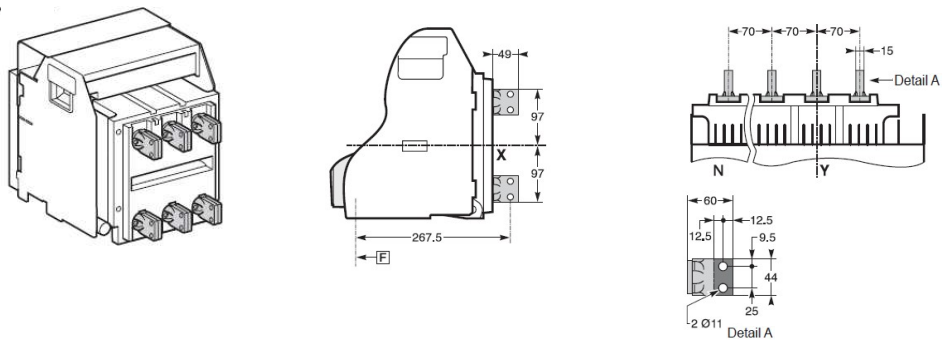
Installation CDW3

1600N&H Draw-out back connection  Datum point

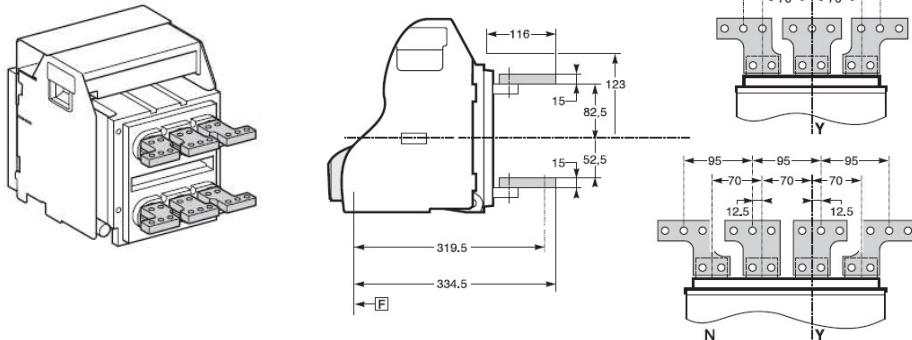
Horizontal back connection



Vertical back connection

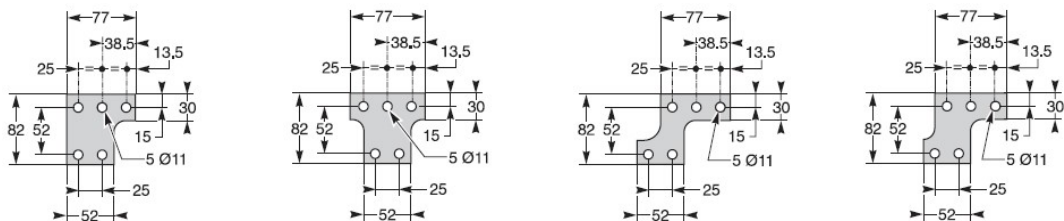


Rear connection with extension terminal



Refer to "rear connection with extension terminal" for installation

1.4-pole center left or right extension terminal 2.3-pole intermediate expansion terminal 3.4-pole left or right extension terminal
4.3-pole left or right extension terminal

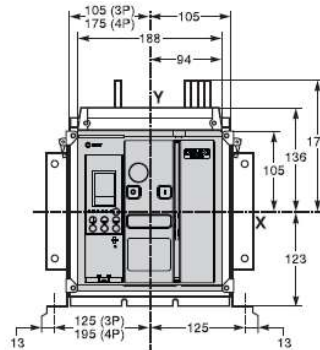
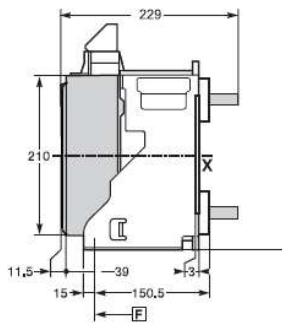


Note: the x-axis and Y-axis of the 3-pole circuit breaker are symmetrical to the front cover of the circuit breaker body

Installation CDW3

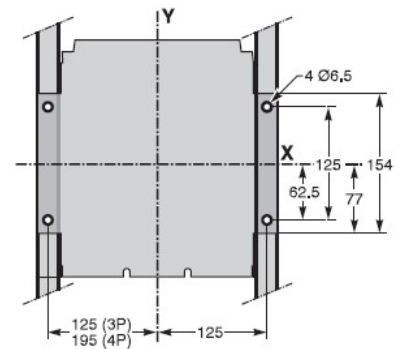
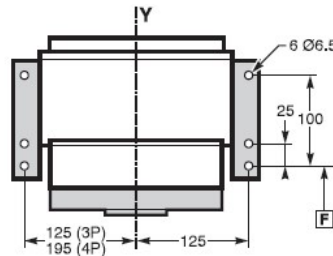
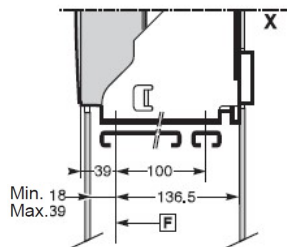
1600N&H Fixed 3P&4P

F Datum point



Horizontal fixation (on base plate or track)

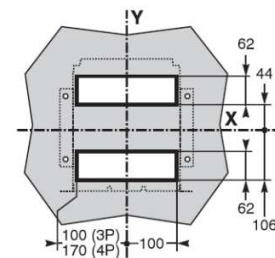
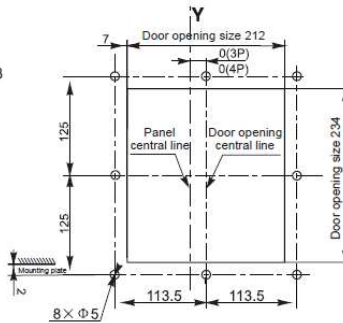
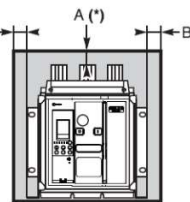
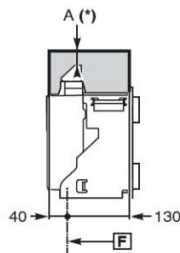
Vertical fixation (on backplane or rack)



Safe spacing

Door opening size

Rear panel opening size



Safe distance (mm)	Fixed	
	A	B
Insulation	0	0
Metal	0	0
Live conductor	100	60

Note 1: the schematic diagram of safety distance is schematic diagram, and the circuit breaker shall be subject to the real object

Note 2: the x-axis and Y-axis of the 3-pole circuit breaker are symmetrical to the front cover of the circuit breaker body

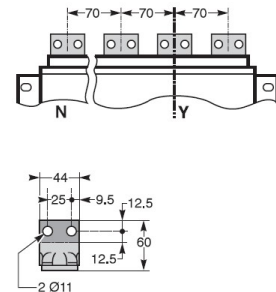
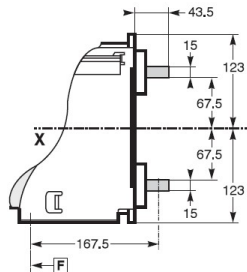
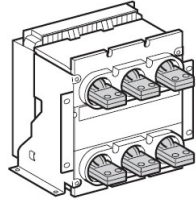
Note 3: (*) the safety distance shall be considered to be 50mm when removing the arc extinguishing cover and 20mm when removing the terminal block

Installation CDW3

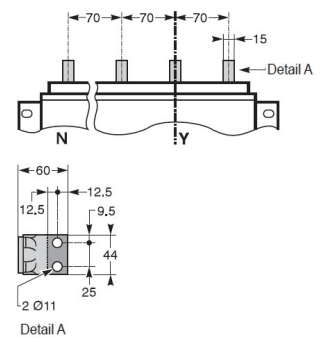
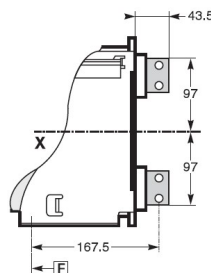
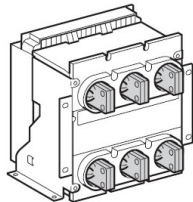
1600N&H Fixed back connection

F Datum point

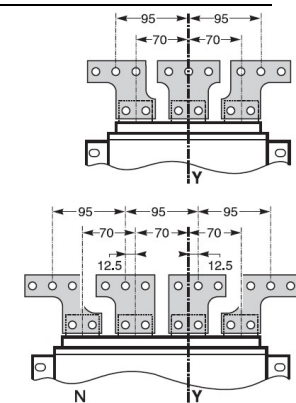
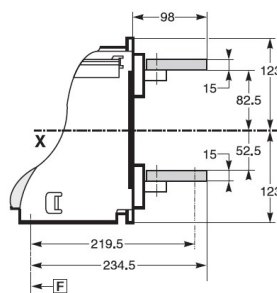
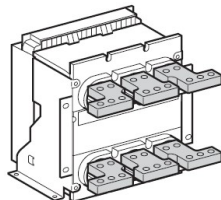
Horizontal back connection



Vertical back connection

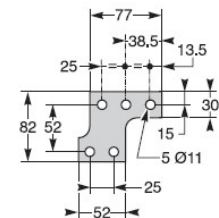
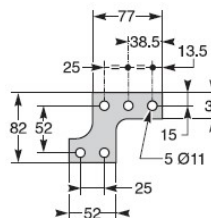
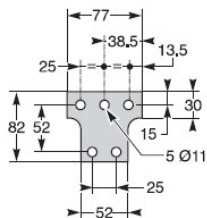
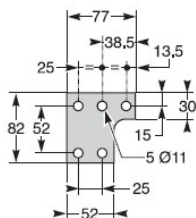


Rear connection with extension terminal



Refer to "rear connection with extension terminal" for installation

1.4-pole center left or right extension terminal 2.3-pole intermediate expansion terminal 3.4-pole left or right extension terminal
4.3-pole left or right extension terminal

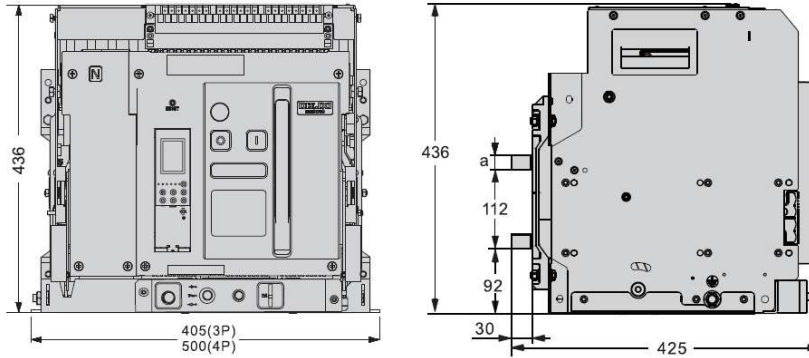


Note: the x-axis and Y-axis of the 3-pole circuit breaker are symmetrical to the front cover of the circuit breaker body

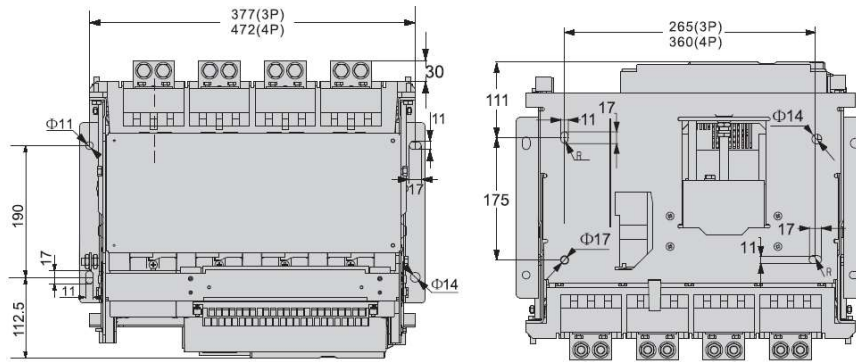
Installation CDW3

Size for 2000N&H

2000N&H Draw-out 3P&4P



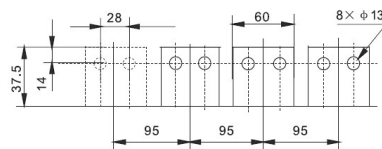
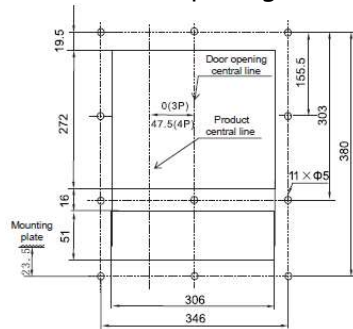
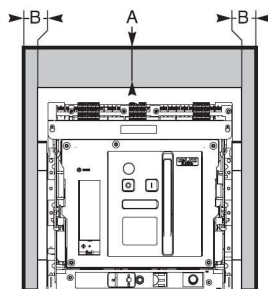
Fixed horizontally (on the base plate or track) * the distance of the mask protruding from the door frame is 5mm



Safe spacing

Door opening size

Bus size



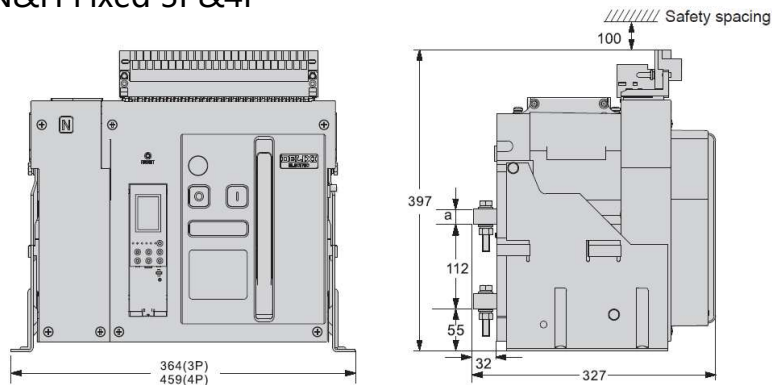
Safe distance (mm)	Draw-out	
	A	B
Insulation	0	0
Metal	0	0
Live conductor	100	60

In (A)	a (mm)
630-800	10
1000-1600	15
2000	20

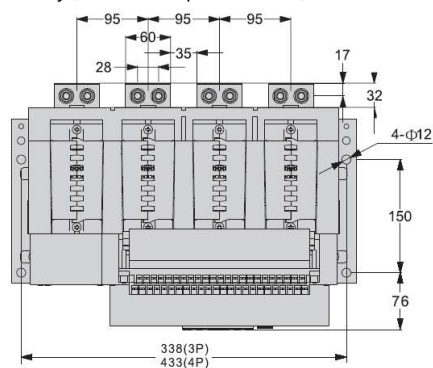
Note 1: the schematic diagram of safety distance is schematic diagram, and the circuit breaker shall be subject to the real object

Installation CDW3

2000N&H Fixed 3P&4P



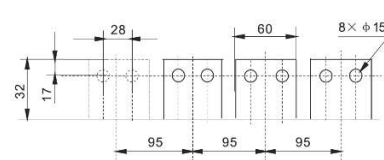
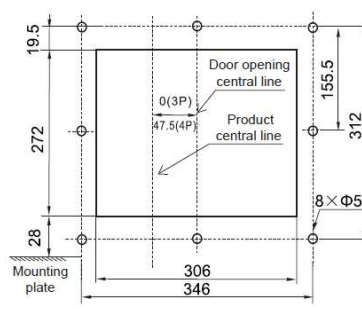
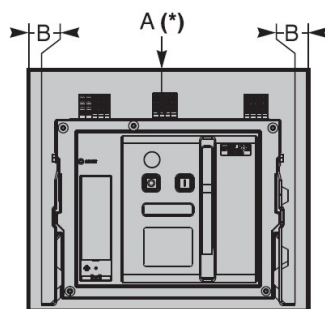
Fixed horizontally (on the base plate or track) * the distance of the mask protruding from the door frame is 5mm



Safe spacing

Door opening size

Bus size



Safe distance (mm)	Fixed	
	A	B
Insulation	0	0
Metal	0	0
Live conductor	100	60

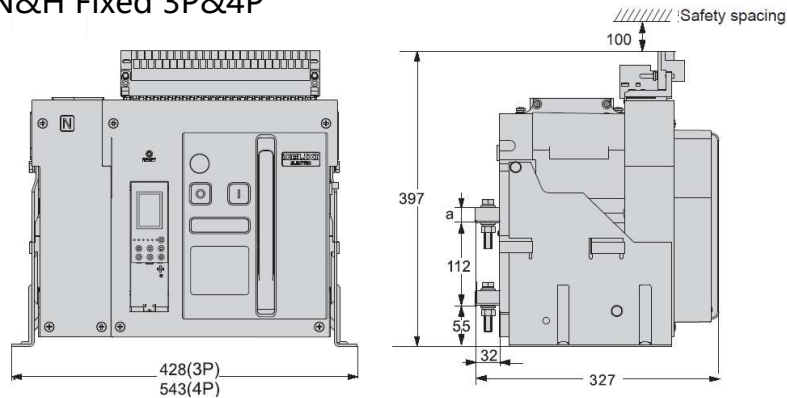
In (A)	a (mm)
630-800	10
1000-1600	15
2000	20

Note 1: the schematic diagram of safety distance is schematic diagram, and the circuit breaker shall be subject to the real object

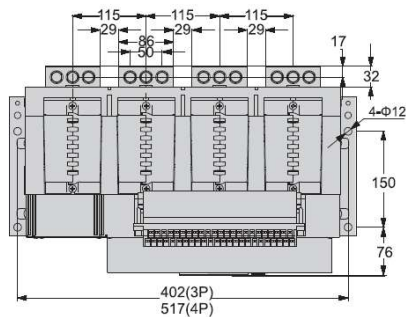
Note 2: (*) the safety distance shall be 110mm when removing the arc extinguishing cover and 20mm when removing the terminal block

Installation CDW3

2500N&H Fixed 3P&4P



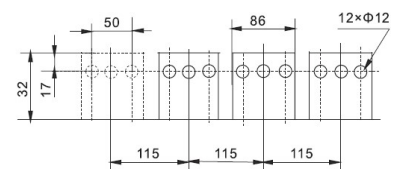
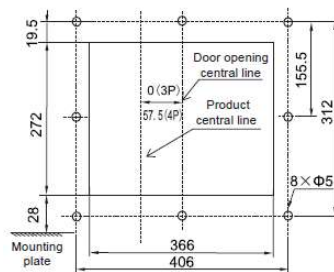
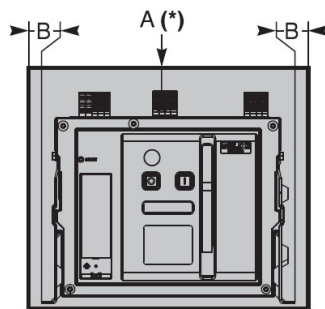
Fixed horizontally (on the base plate or track) * the distance of the mask protruding from the door frame is 5mm



Safe spacing

Door opening size

Bus size



Safe distance (mm)	Fixed	
	A	B
Insulation	0	0
Metal	0	0
Live conductor	100	60

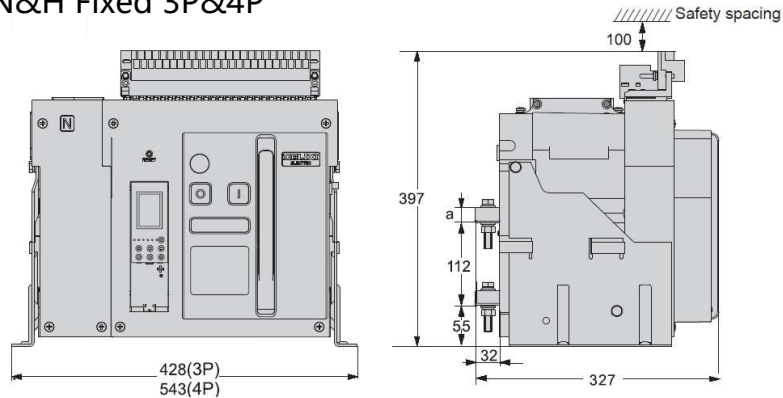
In (A)	a (mm)
630-2000	20

Note 1: the schematic diagram of safety distance is schematic diagram, and the circuit breaker shall be subject to the real object

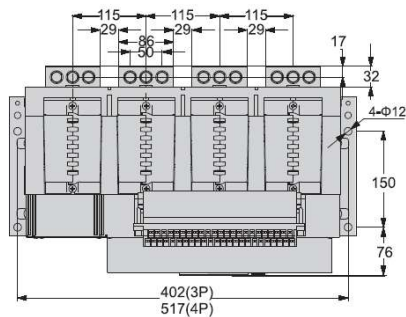
Note 2: (*) the safety distance shall be 110mm when removing the arc extinguishing cover and 20mm when removing the terminal block

Installation CDW3

3200N&H Fixed 3P&4P



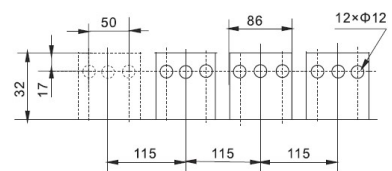
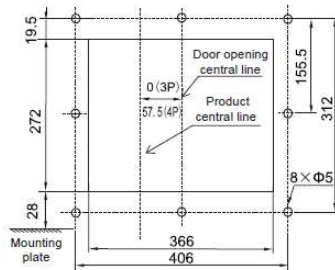
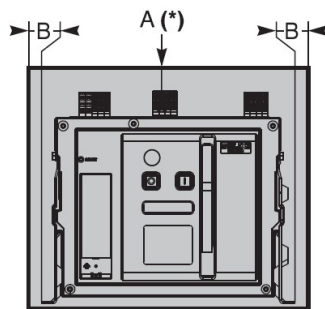
Fixed horizontally (on the base plate or track) * the distance of the mask protruding from the door frame is 5mm



Safe spacing

Door opening size

Bus size



Safe distance (mm)	Fixed	
	A	B
Insulation	0	0
Metal	0	0
Live conductor	100	60

In (A)	a (mm)
2000-2500	20
3200	30

Note 1: the schematic diagram of safety distance is schematic diagram, and the circuit breaker shall be subject to the real object

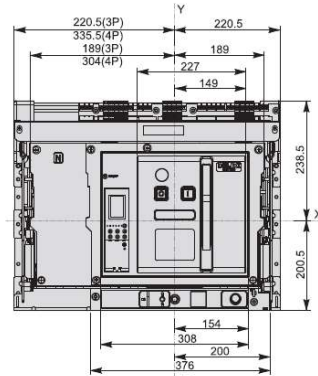
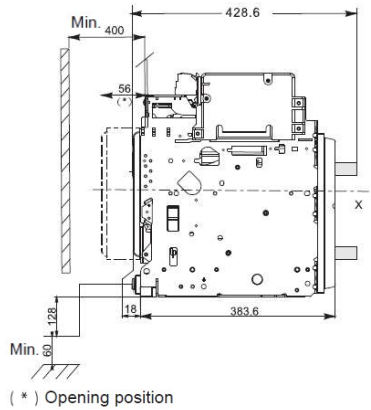
Note 2: (*) the safety distance shall be 110mm when removing the arc extinguishing cover and 20mm when removing the terminal block

Installation CDW3

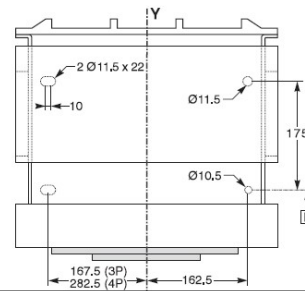
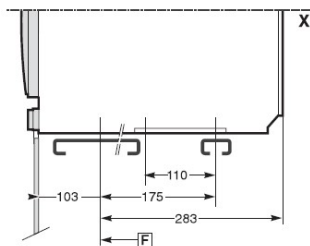
Size for 4000N&H

4000N&H Draw-out 3P&4P

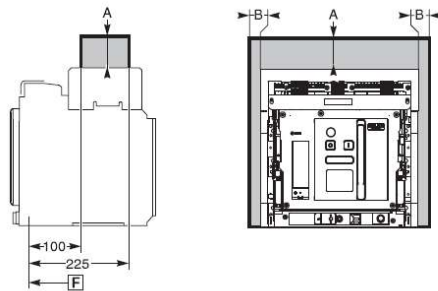
F Datum point



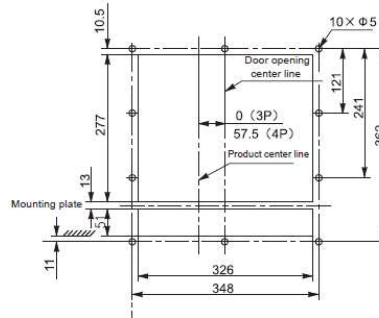
Horizontal fixation (on base plate or track)



Safe spacing



Door opening size



Safe distance (mm)	Draw-out	
	A	B
Insulation	0	0
Metal	0	0
Live conductor	100	60

Note 1: the schematic diagram of safety distance is schematic diagram, and the circuit breaker shall be subject to the real object

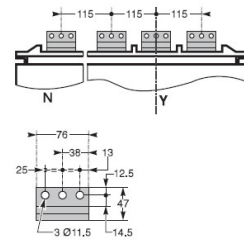
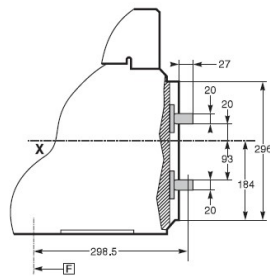
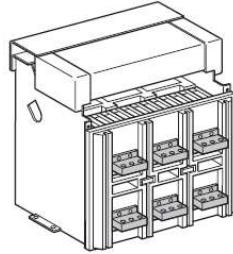
Note 2: the x-axis and Y-axis of the 3-pole circuit breaker are symmetrical to the front cover of the circuit breaker body

Installation CDW3

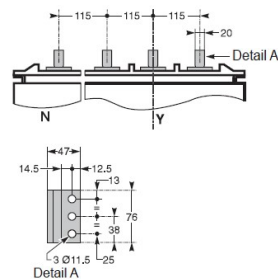
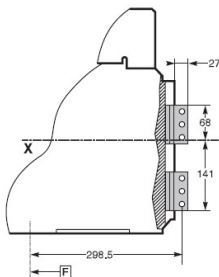
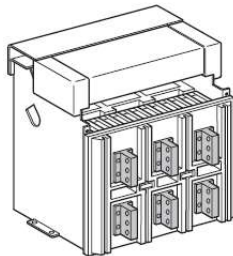
4000N&H Draw-out back connection Datum point

630A-3200A

Horizontal back connection

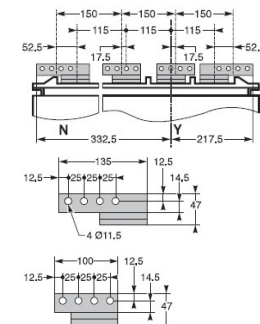
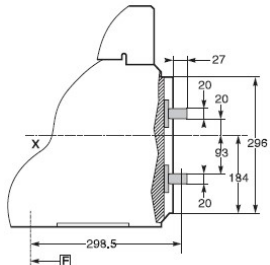
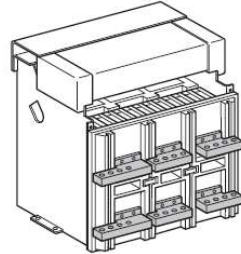


Vertical back connection

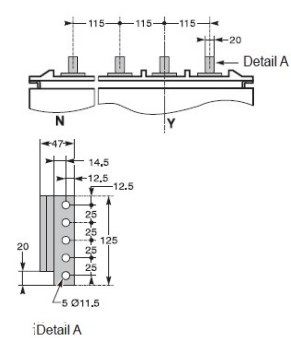
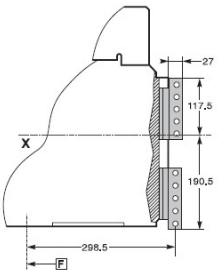
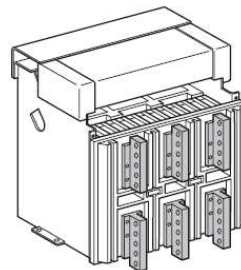


4000A

Horizontal back connection



Vertical back connection

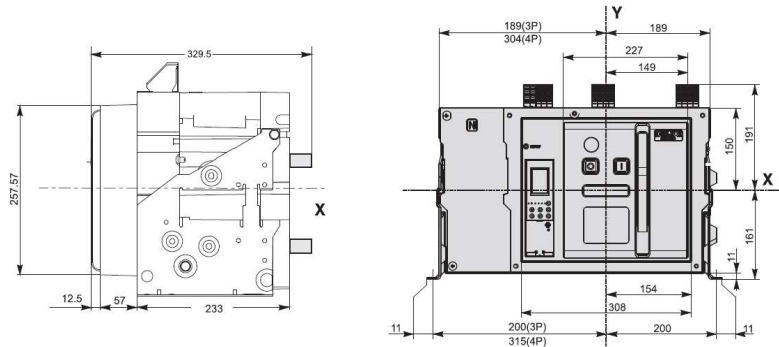


Note : the x-axis and Y-axis of the 3-pole circuit breaker are symmetrical to the front cover of the circuit breaker body

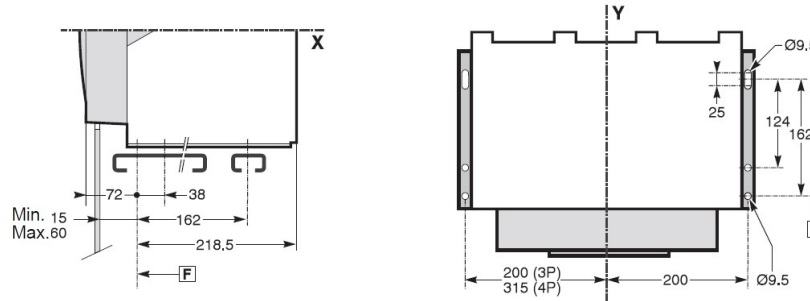
Installation CDW3

4000N&H Fixed 3P&4P

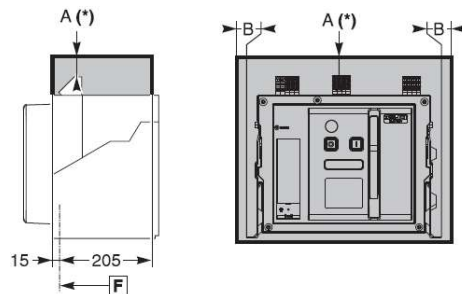
F Datum point



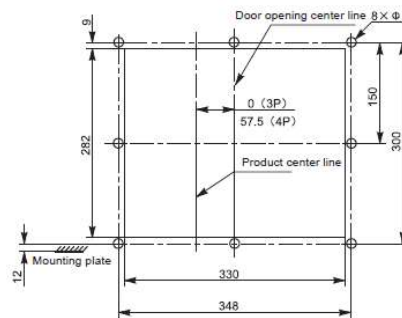
Horizontal fixation (on base plate or track)



Safe spacing



Door opening size



Safe distance (mm)	Fixed	
	A	B
Insulation	0	0
Metal	0	0
Live conductor	100	60

Note 1: the schematic diagram of safety distance is schematic diagram, and the circuit breaker shall be subject to the real object

Note 2: the x-axis and Y-axis of the 3-pole circuit breaker are symmetrical to the front cover of the circuit breaker body

Note 3: (*) the safety distance shall be considered to be 50mm when removing the arc extinguishing cover and 20mm when removing the terminal block

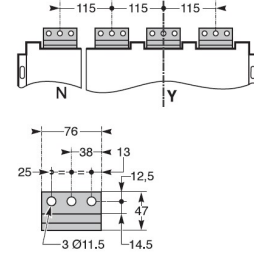
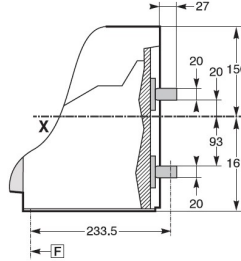
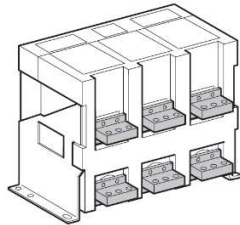
Installation CDW3

4000N&H Fixed back connection

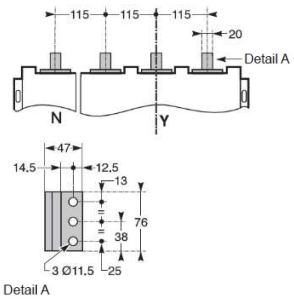
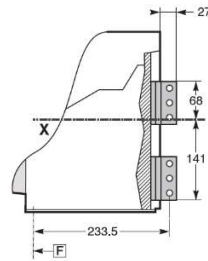
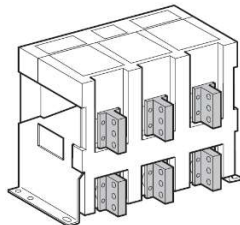
F Datum point

630A-3200A

Horizontal back connection



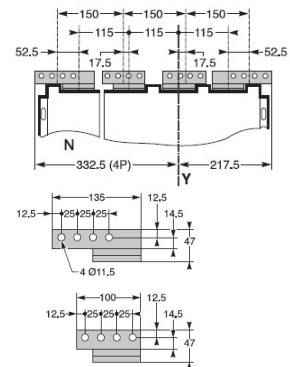
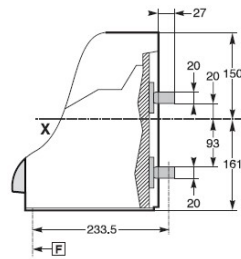
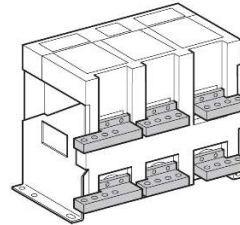
Vertical back connection



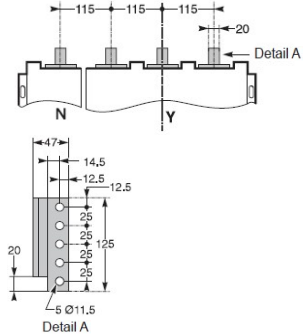
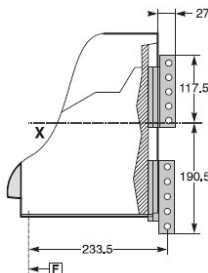
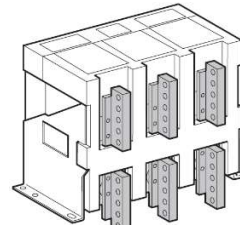
Detail A

4000A

Horizontal back connection



Vertical back connection



Detail A

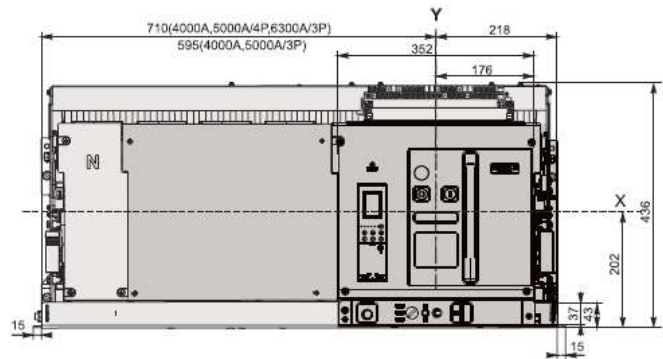
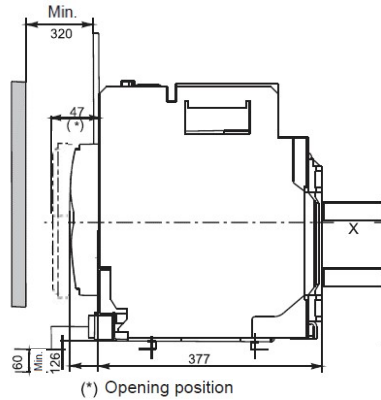
Note : the x-axis and Y-axis of the 3-pole circuit breaker are symmetrical to the front cover of the circuit breaker body

Installation CDW3

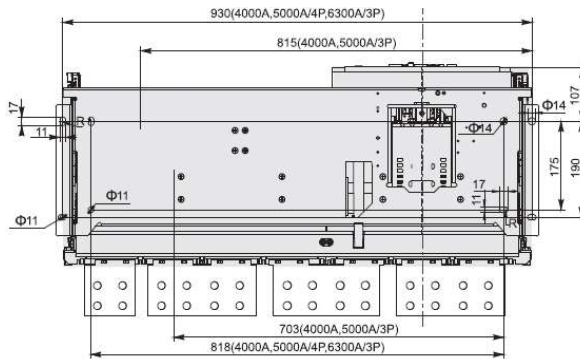
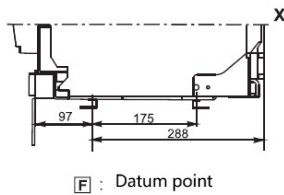
Size for 6300N

6300N Draw-out 3P&4P

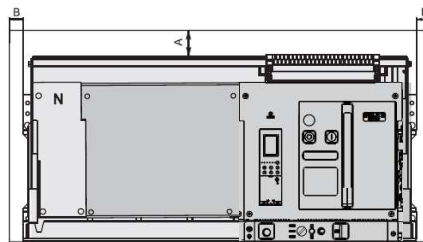
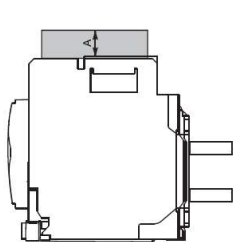
F Datum point



Fixed horizontally (on the base plate or track) * the distance of the mask protruding from the door frame is 5mm

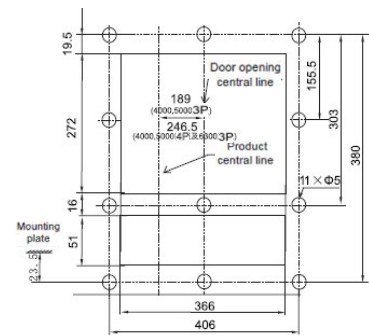


Safe spacing



Safe distance (mm)	Draw-out	
	A	B
Insulation	0	0
Metal	0	0
Live conductor	100	60

Door opening size



Note 1: the schematic diagram of safety distance is schematic diagram, and the circuit breaker shall be subject to the real object

Note 2: the x-axis and Y-axis of the 3-pole circuit breaker are symmetrical to the front cover of the circuit breaker body

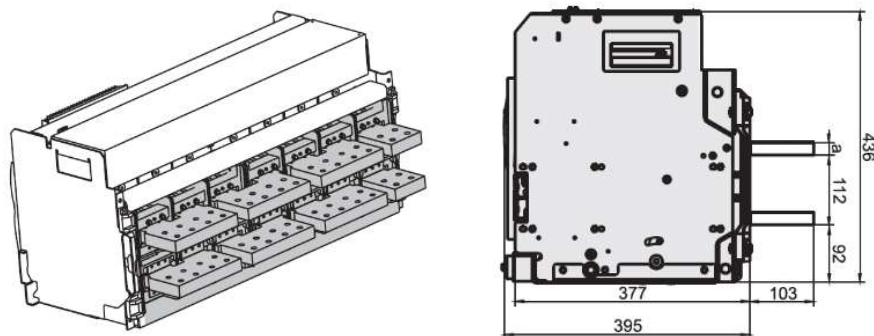
Installation CDW3

4000N Draw-out back connection

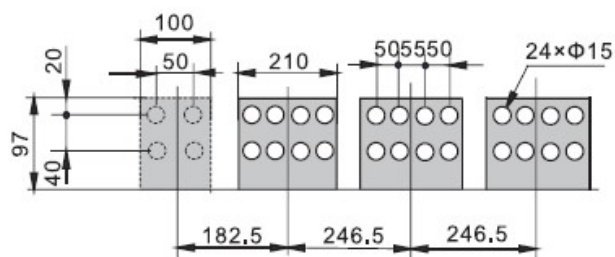
F Datum point

4000A-6300A

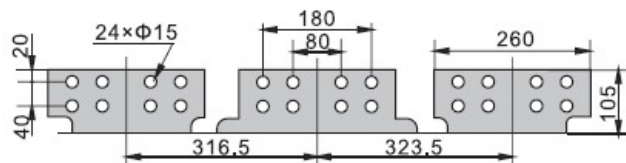
Horizontal back connection



$I_n=4000A/5000A$



$I_n=6300A$



I_n (A)	a (mm)
4000	20
5000	30
6300	30

Note: the x-axis and Y-axis of the 3-pole circuit breaker are symmetrical to the front cover of the circuit breaker body

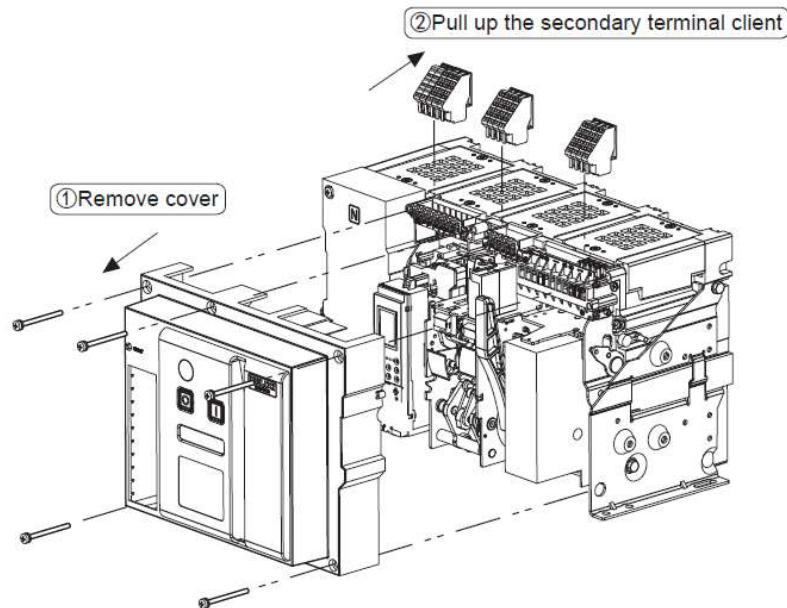
Installation CDW3

Accessory installation

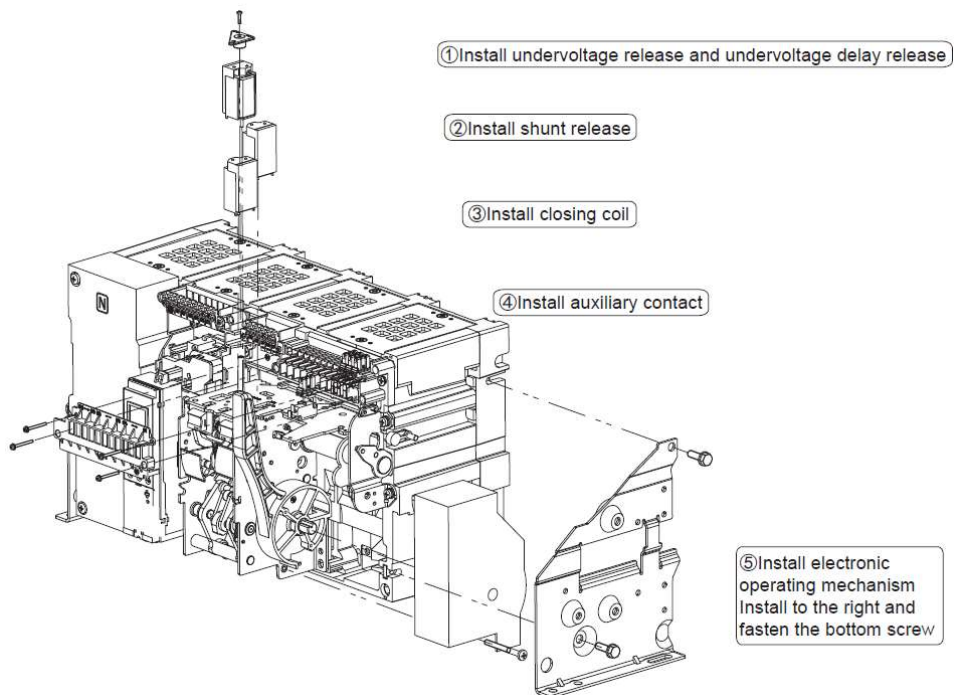
 Danger: power must be cut off before installation!!! The drawer type must have the circuit breaker in the off position

Circuit breaker accessories (the figure below is only a schematic diagram, subject to the actual object)

Open the mask and remove the secondary terminal



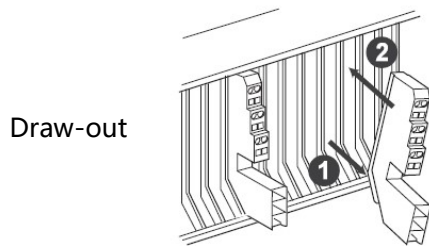
Install undervoltage release, shunt release, closing electromagnet, auxiliary contact, electric operating mechanism



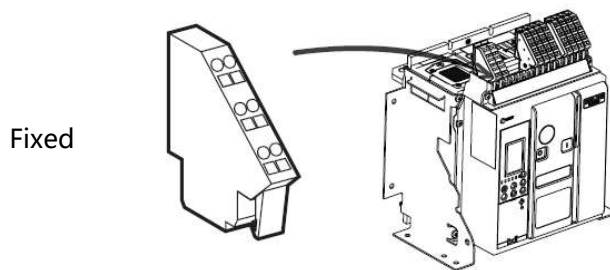
Installation CDW3

Installing the secondary circuit

1) 1600N&H

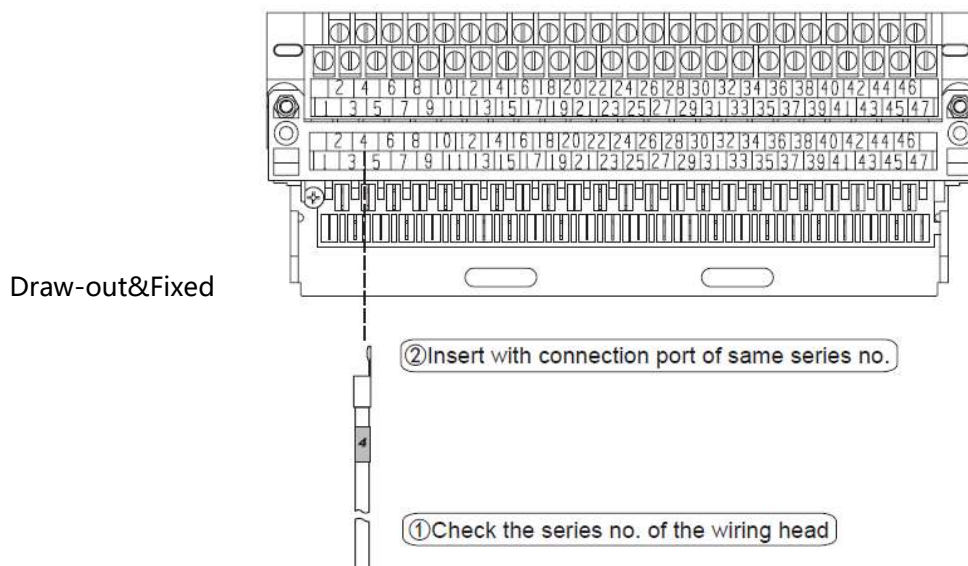


1. Fix the lower end of the secondary terminal first
2. Insert the upper end of the secondary wiring terminal into the groove of the secondary wiring terminal box, and hear the "click" sound, indicating that the secondary wiring terminal is fixed



1. The secondary wiring terminal is directly inserted into the groove of the secondary wiring terminal box

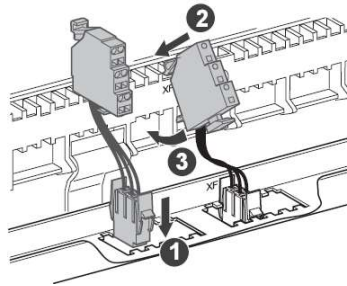
2) 2000N&H 2500N&H 3200N&H 6300N



Installation CDW3

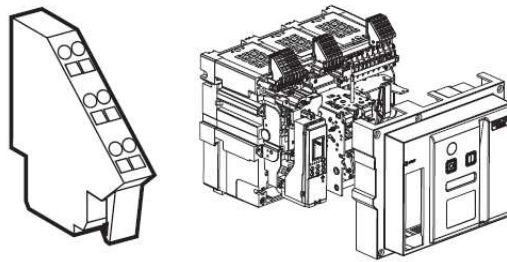
3) 4000N&H

Draw-out



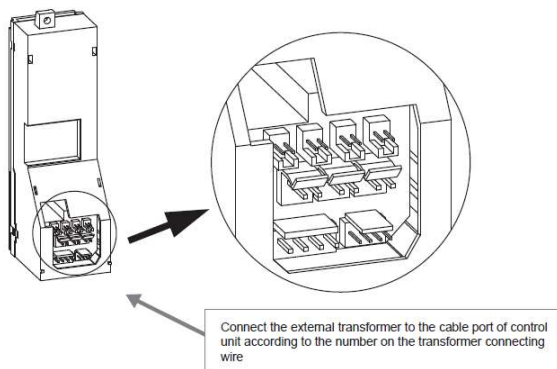
1. Hold the collets at both ends of the secondary wiring terminal at the lower half and insert them into the slot of the drawer base crossbeam
2. Fix the secondary wiring terminal of the upper half and insert the upper part of the collet into the groove of the circuit breaker
3. Press the secondary wiring terminal inwards and hear "click", indicating that the secondary wiring terminal is fixed

Fixed



The secondary wiring terminal is directly inserted into the groove of the secondary wiring terminal box

Installation of leakage transformer, n-phase external transformer, grounding transformer



注意

The internal connection of leakage transformer, n-phase external transformer (the controller needs to be adjusted to $3P + n$), and grounding transformer (ground current return type) circuit breaker is completed in the factory, and the user only needs to connect the secondary circuit terminal block

Install the grounding transformer as shown in the figure (the controller is equipped with residual current difference type as standard)

For the installation dimension of transformer, please refer to the dimension page of accessories



注意

Note: for the installation of cable interlocking and lever interlocking, please refer to the website (www.delixi-electric.com)

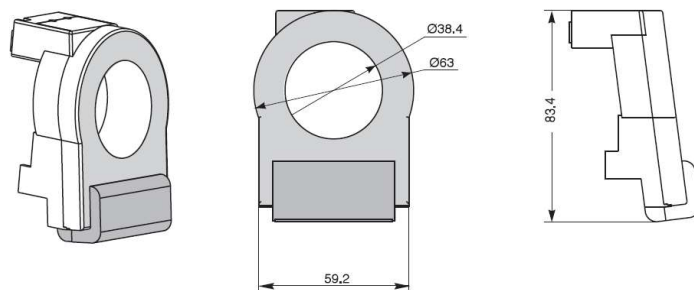
Product center > power distribution > ACB > CDW3

Installation CDW3

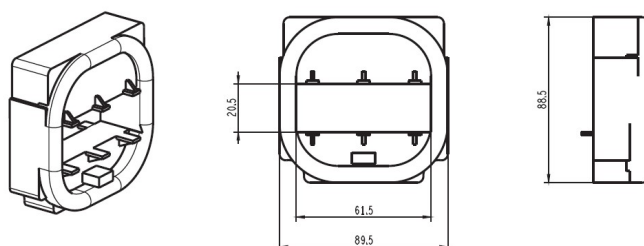
Accessory size

N-phase external transformer

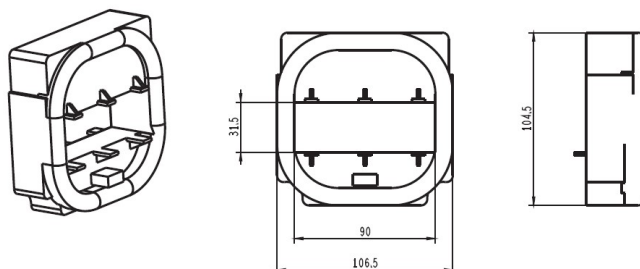
1) 1600N&H



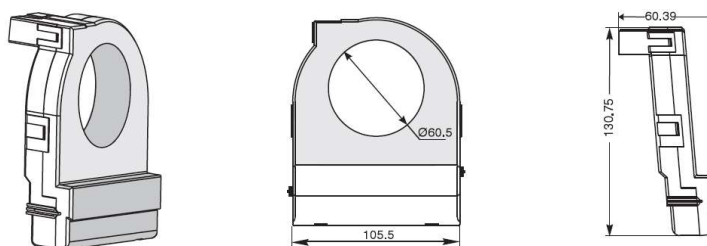
2) 2000N&H



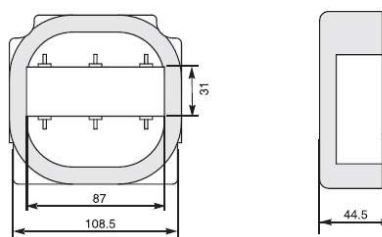
3) 2500N&H 3200N&H



4) 4000N&H



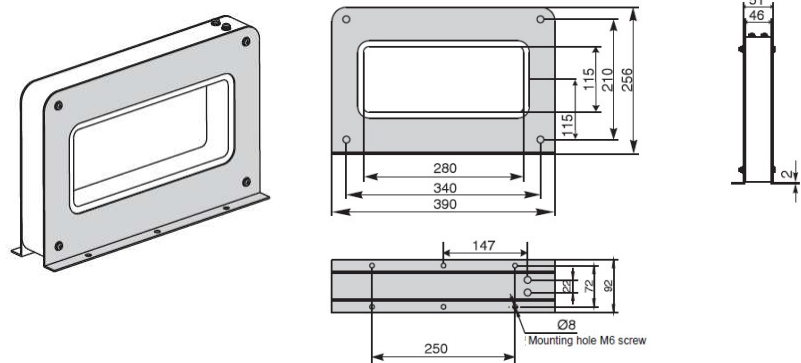
5) 6300N



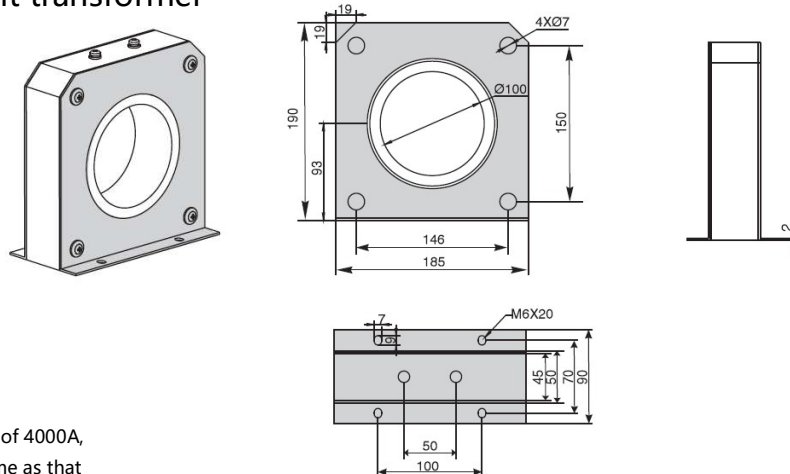
Note: if the width of the customer's wiring bank is larger than the installation hole of the n-phase external transformer, the customer is requested to process a section of the bank through the transformer according to the width of the transformer.

Installation CDW3

Leakage transformer

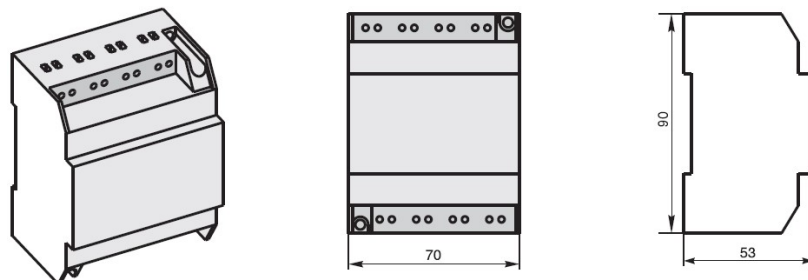


Grounded current transformer

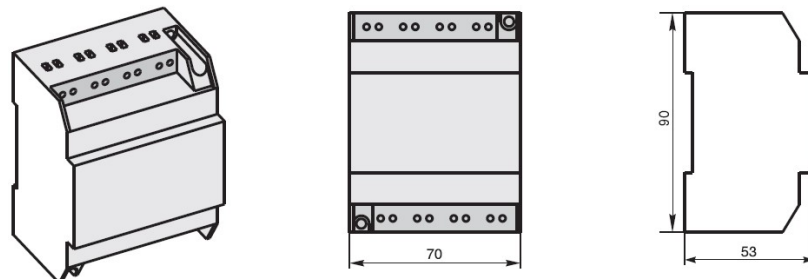


Note: the overall dimensions of 4000A, 5000A and 6300A are the same as that of leakage transformer

Power converter



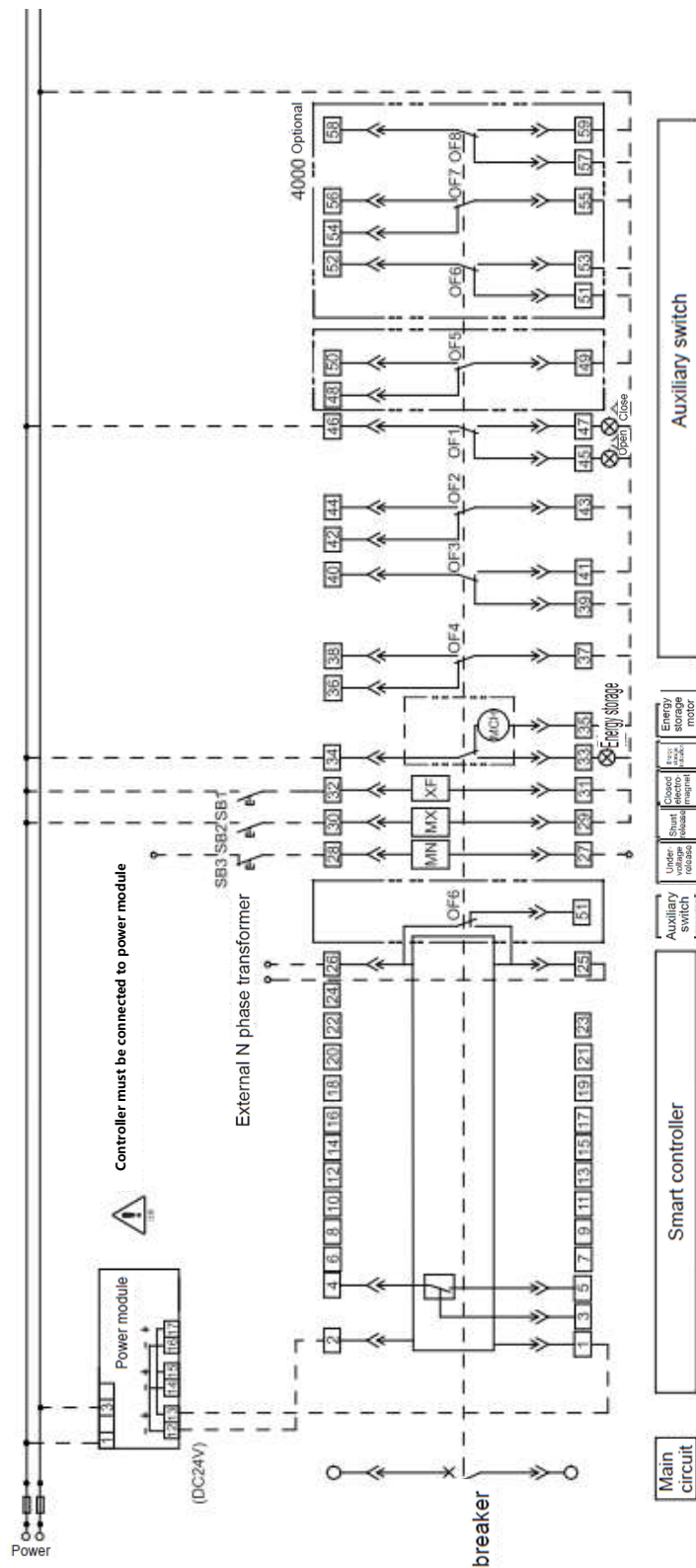
Signal conversion module



Installation CDW3

Secondary circuit wiring diagram

Secondary circuit wiring diagram of intelligent controller of iTR326 and iTR326A



Controller wiring notes:

- UM: input of voltage test signal
- 21 # UN, 22 # UA, 23 # UB and 24 # UC are the input terminals of N, A, B and C phase voltages
- POW: DC24V power input, connected to special power module of controller
- 1 # V1 +, 2 # V2 -, DC24V power input, 1 # V1 + is positive when DC, for power supply of controller
- SWT: fault trip contact output
- 3 # S2, 4 # S1, 5 # S3: fault trip contact output (4 # S1 is common end), contact capacity: AC400V, 5A
- CT: external transformer
- 25 # -26 # for input of external transformer
- PF: closing preparation indication contact
- CD, CT: Ce: separation, test, connection position indication contact

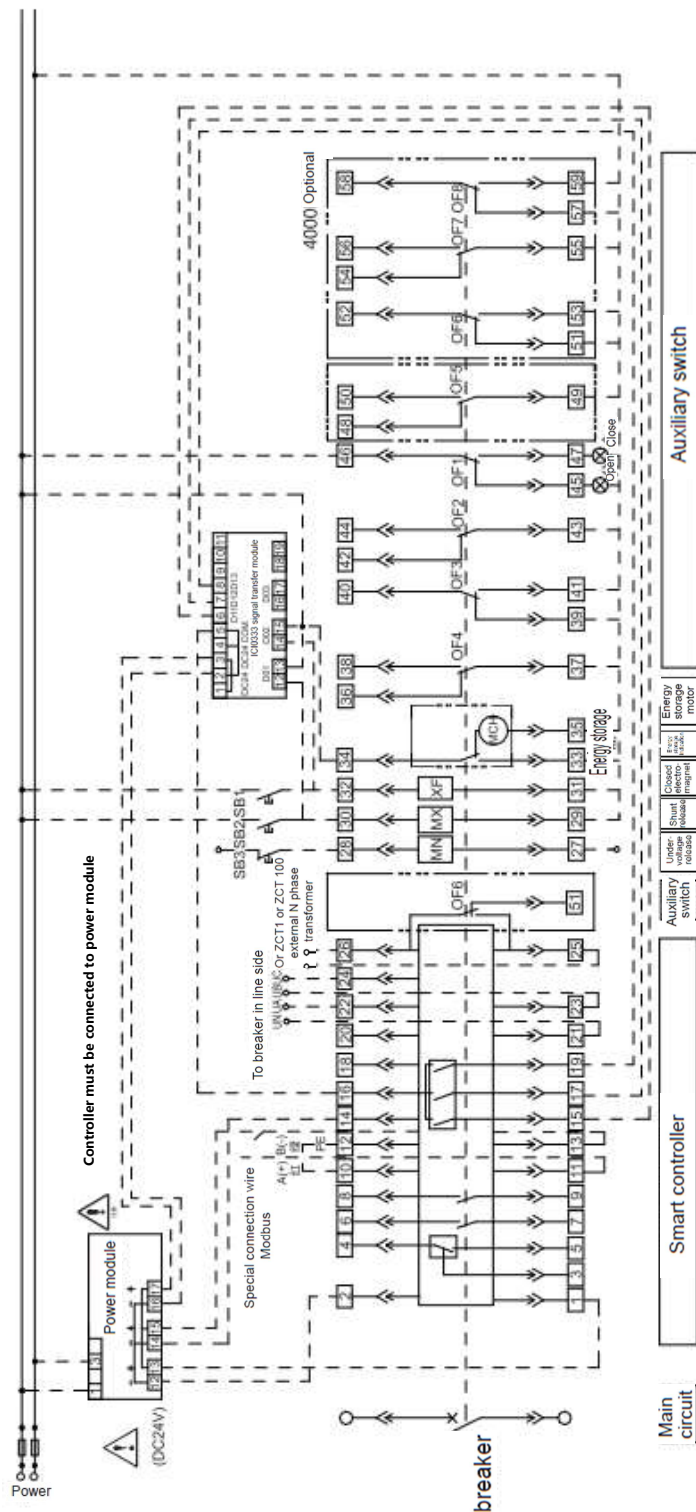
- Element: Mx undervoltage release
- MCH electric operating mechanism
- S82-opening button
- MX shunt release
- OF1-OF8-auxiliary switch
- S83-emergency disconnect button
- XF closing electromagnet
- S81-closing button

- Note 1: Under voltage release 27#, 28#, connected to the main circuit. For wiring with undervoltage delay unit: 1600/4000AF 27# and 28# are connected to 3# and 6# of delay unit, 10# and 12# of the delay unit are connected to the main circuit. See p42-figure 1 for wiring diagram; b2000/2500/3200/6300AF Under voltage delay release 27# and 28# connected to the main circuit. See p42-figure 2 for wiring diagram
- Note 2: if the control power supply voltage of Mn, MX, XF and MCH is different, different power supplies can be connected separately
- Note 3: only 444b can be provided for 1600n auxiliary switch; 444b and 646b can be provided for 2000N & H, 3200n and 6300n; 444b, 646b and 848b can be provided for 4000N auxiliary switch; 444b is standard configuration, and others need to be purchased by users separately
- Note 4: terminal 35# can be directly connected to the power supply (automatic pre stored energy), or connected to the power supply (manual pre stored energy) after the normally open button in series
- Note 5: the controller must be connected to the power module
- When the power supply voltage is AC220V ~ 400V, ipau334 power module is used
- When the power supply voltage is dc110V / 220V, ipau332d power module is used
- Note 6: when 2000N & H, 3200n and 6300n are 47 loops, the auxiliary switch is 444b
- When 2000N & H, 3200n and 6300n are 51 loops, the auxiliary switch is 646b (646b) after 25# 26# 51# normally open and normally closed contacts are formed, no external transformer can be connected
- Note 7: the dotted line in the figure is connected by the user
- Note 8: refer to figure 3, figure 4, figure 5, Figure 6 on page 45 for the wiring diagram of closing preparation indicating contact PF and three position indicating contact

The intelligent controller 1# and 2# must be connected to the DC24V terminal of the special power module of the controller, otherwise the controller will fail or be damaged



Secondary circuit wiring diagram of intelligent controller of iTR326H



Controller wiring notes:

- UN: input of voltage test signal
 21 # UN, 22 # UA, 23 # UB and 24 # UC are the input terminals of N, A, B and C phase voltages
 POW: DC24V power input, connected to special power module of controller
 1 # V1 +, 2 # V2 - DC24V power input, 1 # V1 + is positive when DC, for power supply of controller
 SWT: fault trip contact output
 3 # S2, 4 # S1, 5 # S3: fault trip contact output (4 # S1 is common end), contact capacity: AC400V, 5A
 CT: external transformer, including external n-phase transformer or zt100 or zct1 (one out of three), wherein
 25# - 26#: input for external grounding transformer
 25# - 26#: input for external grounding transformer zt100
 25# - 26#: for the input of external leakage transformer zct1
 ZSI: regional selective interlocking
 13# Z +, 14# Z - are the input DC24V of regional interlocking protection
 16# Z1, 15# Z1, 17# Z2 and 19# Z3 are 3Do output, and optocoupler output is adopted, of which 16# Z1 is common terminal
 COM: communication output
 10# and 11# are respectively rs485a (485 +), rs485b (485 -) communication outgoing lines, 12# are PE lines and shielding ground wires
 PF: closing preparation indication contact
 CD, CT, Ce: separation, test, connection position indication contact
- Note 1: Under voltage release 27#, 28#, connected to the main circuit. For wiring with undervoltage delay unit, 1600/4000AF 27# and 28# are connected to 3# and 6# of delay unit, 10# and 12# of the delay unit are connected to the main circuit. See p42-figure 1 for wiring diagram; b.2000/2500/3200/6300AF Under voltage delay release 27# and 28# connected to the main circuit. See p42-figure 2 for wiring diagram
 Note 2: if the control power supply voltage of Mn, MX, XF and MCH is different, different power supplies can be connected separately
 Note 3: only 4a4b can be provided for 1600n auxiliary switch; 4a4b and 6a6b can be provided for 2000N & H, 3200n and 6300n; 4a4b, 6a6b and 8a8b can be provided for 4000N auxiliary switch; 4a4b is standard configuration, and others need to be purchased by users separately
 Note 4: terminal 35# can be directly connected to the power supply (automatic pre stored energy), or connected to the power supply (manual pre stored energy) after the normally open button in series
 Note 5: Δ the controller must be connected to the power module
 When the supply voltage is AC220V ~ 400V, ipau334 power module is used
 When the power supply voltage is dc110v / 220V, ipau332d power module is used
 Note 6: when 2000N & H, 3200n and 6300n are 47 loops, the auxiliary switch is 4a4b
 When 2000N & H, 3200n and 6300n are 51 loops, the auxiliary switch is 6a6b (5a5b); after 25# 26# 51# normally open and normally closed contacts are formed, no external transformer can be connected
 Note 7: during remote control, icio333 signal conversion module shall be added with contact capacity of AC240V, 10a
 Note 8: the communication protocol is MODBUS. If PROFIBUS or DeviceNet protocol is used, icau486 or icau485 module should be ordered. The module uses DC24V power supply. The input end is connected to 10# 485 + and 11# 485 - terminals of the secondary circuit, and the output end is connected to the corresponding protocol bus
 Note 9: the dotted line in the figure is connected by the user
 Note 10: refer to figure 3, figure 4, figure 5, figure 6 on page 45 for the wiring diagram of closing preparation indicating contact PF and three position indicating contact

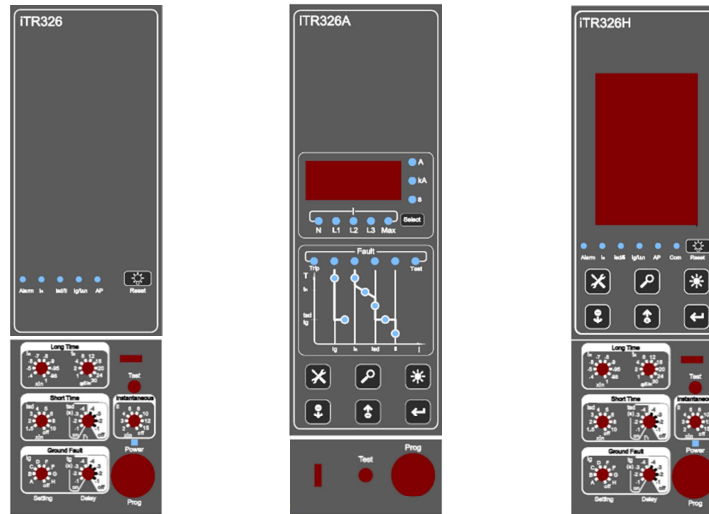


The intelligent controller 1# and 2# must be connected to the DC24V terminal of the special power module of the controller, otherwise the controller will fail or be damaged

Debugging CDW3

iTR326 Series Electronic trip unit

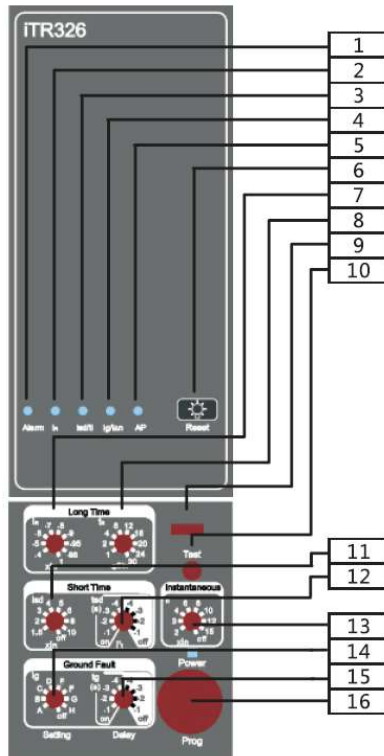
Appearance and function



Type	iTR326 (L)	iTR326A (M)	iTR326H (H)
Protection function	Long time delay protection L	Long time delay protection L	Long time delay protection L
	Short time delay protection S	Short time delay protection S	Short time delay protection S
	Instantaneous protection I	Instantaneous protection I	Instantaneous protection I
	Earth protection G	Earth protection G	Earth protection G
	MCR protection	MCR protection	MCR protection
	HSISC protection	HSISC protection	HSISC protection
			Low voltage protection / alarm
			Over voltage protection / alarm
			Voltage unbalance protection / alarm
			Phase sequence protection / alarm
			Low frequency protection / alarm
			High frequency protection / alarm
			Reverse power protection / alarm
Measurement function		Current measurement	Current measurement
			Voltage measurement
			power measurement
			frequency measurement
			Harmonic measurement
Auxiliary functions	Forecaster	Forecaster	Forecaster
	Fault history	Self diagnosis function	Self diagnosis function
	Test function	Fault history	Fault history
		Test function	Test function
Display function		LED digital tube display	LCD display
Special functions			Load monitoring
			Regional interlocking
Communication function			Modbus

Debugging CDW3

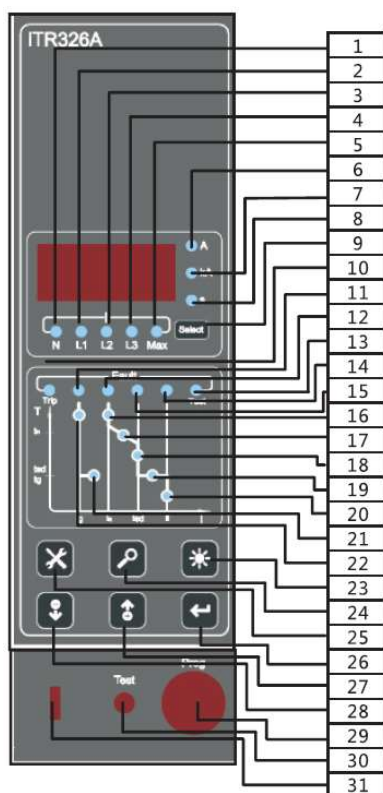
Description of indicator light and key -iTR326



iTR326		Signal indication		Panel operation instructions
Basic type (L)	1	Alarm indication	6	Reset button
	2	Long time delay trip indication	7	Multiple setting of long time delay current IR
	3	Short time delay or instantaneous trip indication	8	Long delay time setting tR
	4	Earth or leakage fault trip indication	9	Padlock position
	5	Advanced protection	10	Test button
			11	Multiple setting of short delay current Isd
			12	Short delay time setting tsd
			13	Instantaneous current multiple setting li
			14	Earth fault setting Ig
			15	Earth fault time setting tg
			16	Test connection

Debugging CDW3

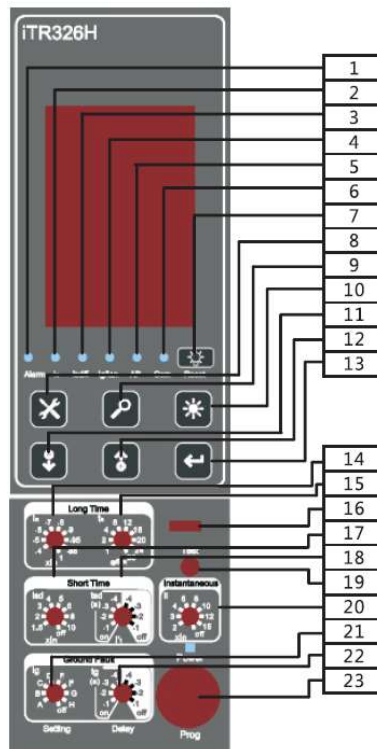
Description of indicator light and key -iTR326A



iTR326A		Signal indication		
Standard type (M)	1	N-phase current	12	Long time delay protection indication
	2	A-phase current	13	Short time delay protection indication
	3	B-phase current	14	Test action status
	4	C-phase current	15	Instantaneous protection indication
	5	Maximum current	16	Multiple setting of long time delay current IR
	6	Current unit A	17	Long delay time setting tR
	7	Current unit kA	18	Multiple setting of short delay current Isd
	8	Time unit S	19	Short delay time setting tsd
	10	Trip indication	20	Instantaneous current multiple setting li
	11	Earth protection indication	21	Earth fault time setting tg
			22	Earth fault setting Ig
		Panel operation instructions		
	9	toggle key	27	+ /Page up key
	23	Back / clear key	28	- /Page down key
	24	Query key	29	Test connection
	25	Set key	30	Test button
	26	OK key	31	Padlock position

Debugging CDW3

Description of indicator light and key -iTR326H



iTR326H		Signal indication		
Advanced type (H) Non high and low temperature type	1	Alarm indication		
	2	Long time delay trip indication		
	3	Short time delay or instantaneous trip indication		
	4	Earth or leakage fault trip indication		
	5	Advanced protection		
	6	Communication function		
		Panel operation instructions		
	7	Reset button	16	Padlock position
	8	Set key	17	Multiple setting of short delay current Isd
	9	Query key	18	Short delay time setting tsd
	10	Back / clear key	19	Test button
	11	+/-Page up key	20	Instantaneous current multiple setting li
	12	-/Page down key	21	Earth fault setting Ig
	13	OK key	22	Earth fault time setting tg
	14	Multiple setting of long time delay current IR	23	Test connection
	15	Long delay time setting tR		

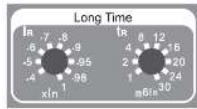
Debugging CDW3

Protection characteristics(general)

Protection characteristics of Electronic trip unit

The protection features of the intelligent controller include inverse time limit and timing limit. When the fault current exceeds the inverse time limit setting value, the controller sets the time delay protection according to the fixed time limit

Inverse time curve conforms to characteristic curve I^2t



Overload long time delay protection characteristics

Action threshold of overload long time delay protection

$<1.05I_R$: $>2h$ No action

$>1.2I_R$: $<1h$ action

$\geq 1.2I_R$: Delay action

I_R Current setting range: $0.4I_n$, $0.5I_n$, $0.6I_n$, $0.7I_n$, $0.8I_n$, $0.9I_n$, $0.95I_n$, $0.98I_n$, $1.0I_n$,

Inverse time action characteristic I^2t : $t = (6/N)^2 \cdot t_R$

Setting current multiple	Action time s								
$1.5I_R$	16	32	64	128	192	256	320	384	480
$2I_R$	9	18	36	72	108	144	180	216	270
$6I_R$	1	2	4	8	12	16	20	24	30

Note: N : Fault current divided by multiple of set current I/I_R

t : Fault action delay time

t_R : Long delay time setting

Allowable error of action time $\pm 10\%$



Short circuit short time delay protection characteristics

Action threshold of short circuit short time delay protection

$<0.9I_{sd}$: No action

$>1.1I_{sd}$: action

$\geq 1.1I_{sd}$: Delay action

I_{sd} Current setting range: $1.5I_R$, $2I_R$, $3I_R$, $4I_R$, $5I_R$, $6I_R$, $8I_R$, $10I_R$ +OFF

current	Action time					
$I_{sd} < I \leq 8I_R$	Inverse time limit	Action characteristics	$I^2t = (8I_R)^2 t_{sd}$			
		Setting time s	0.1	0.2	0.3	0.4
$I \geq 1.1I_{sd}$	Timing limit, minimum time is return time	Setting time s	0.1	0.2	0.3	0.4
		Minimum s	0.08	0.14	0.23	0.35
		Maximum s	0.14	0.2	0.32	0.5

Note: I_{sd} : Short delay current setting

I : Fault current value

I_R : Long delay set point

t : Fault action delay time

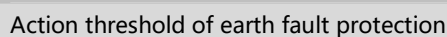
t_{sd} : Short time delay inverse time limit setting value

Allowable error of action time $\pm 20\%$

(off of time period means I^2t off, i.e. inverse time limit is closed, which is fixed time limit; use off of current gear to close short time delay protection function)



Note: Allowable error of action time $\leq 50\text{ms}$



$\geq 1.1 I_g$: Delay action

current	Action time
---------	-------------

Setting value of grounding protection, When $I_n \geq 1250A$, $I_f = 1200A$; When

tg: Setting value of inverse time limit of grounding

use off of current gear to close short time delay protection function)

Product center > power distribution > ACB > CDW3

Debugging CDW3

Menu

iTR326		
	Reset key	In case of failure, reset; in case of non failure, long press to check the last failure
	Test key	Test button, momentary action
iTR326A		
	Select key	For power meter display parameter switching
	Set key	Used to enter parameter setting mode
	Query key	Used to view fault record information
	Return key	Used to return to the previous menu or clear the fault record
	-/Page down	Used to set parameter value minus 1 (i.e. reduce 1 step)
	+ /Page up	Used to set parameter value plus 1 (i.e. increase 1 step)
	OK key	Used to confirm parameter modification and store
	Test key	For access to test procedures
iTR326H		
	Set key	Enter "protection parameter setting" interface and return to
	Query key	Enter the "measurement" interface and return to Edit by bit down: move right
	Return key	Switch in "system parameter setting", "history and maintenance" interface Edit by bit down: move left
	-/Page down	In normal state: move down In editing status:-
	+ /Page up	In normal state: move up In editing status:+
	OK key	Used to confirm parameter modification and store
	Reset key	Default interface: reset Under other interfaces: Return
	Test key	Test button, momentary action

Debugging CDW3

iTR326A operation

❖ operation display

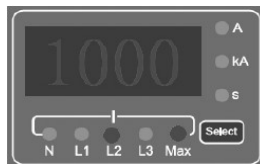
The ETU needs to display various operation parameters, setting parameters and other values on the panel

Use LED digital tube to display the value, and use LED indicator to indicate the type of value displayed

❖ ammeter maximum current display

By default, the intelligent controller enters the maximum current display mode of the ammeter to display the maximum phase current

When the operation display is not the maximum current display mode, there is no key operation within 10 minutes, and the maximum current display mode will be returned automatically



Indicates that the displayed data unit is A

Indicates that the displayed data unit is kA

❖ iTR326A Ammeter maximum current display mode and ammeter display mode display

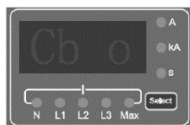
No.	display	LED indicator	remarks
1	L1 Phase current	LED_L1、LED_A/LED_kA	
2	L2 Phase current	LED_L2、LED_A/LED_kA	
3	L3 Phase current	LED_L3、LED_A/LED_kA	
4	N Phase current	LED_N、LED_A/LED_kA	LED_N flash (4P or 3P+N only)
5	Maximum current	L1 Phase	LED_L1、LED_MAX、LED_A/LED_kA
		L2 Phase	LED_L2、LED_MAX、LED_A/LED_kA
		L3 Phase	LED_L3、LED_MAX、LED_A/LED_kA
6	Earth current	LED_N、LED_A/LED_kA	LED_N always on

❖ ammeter display mode

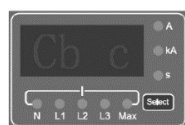
Under normal operation mode, browse the current value and breaker status through the current

selection key , and the display sequence is breaker status, L1, L2, L3, n-phase current (LED_N flashing (4P only)), ground current, maximum phase current.

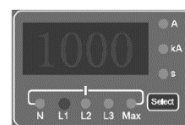
Without any key operation within 10 minutes, it will automatically return to the maximum current display mode



Breaker opening status



Closing state of circuit breaker



Display L1 phase current

❖ parameter setting and display mode

Parameters (user parameters) that users can set on site can be realized through key operation and LED digital tube and indicator light display

❖ setting and display of protection parameters

The protection parameters can be set by the user on site. The parameter setting is realized by four

buttons (i.e. , , , ). The main operation steps are as follows:

Debugging CDW3

❖ iTR326A User set parameters

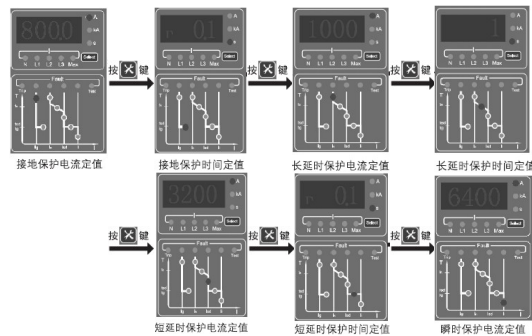
No.	parameter	LED indicator	remarks
1	Setting of grounding protection current	LED_Ig、LED_A	
2	Time setting of grounding protection	LED_Tg、LED_s	
3	Current setting of long time delay protection	LED_I _R 、LED_A	
4	Long time delay protection time setting	LED_T _R 、LED_s	
5	Short time delay protection current setting	LED_Isd、LED_A/LED_kA	
6	Setting of short delay protection time	LED_tsd、LED_s	
7	Instantaneous protection current setting	LED_Ii、LED_A/LED_kA	

1) Set parameter view:

- In the normal operation mode, press  to enter the parameter query mode, the LED nixie tube of the ammeter displays the first set parameter value, and the corresponding LED indicator indicates the data type
- Then press  to browse and set parameters (when browsing to the last parameter, the first parameter will be returned automatically)

2) Parameter setting operation:

- In the normal operation mode, press  to enter the parameter query mode, and browse to the parameter to be set through 
 - Enter the parameter setting mode by pressing , and adjust the parameter value to the required setting value by pressing  and 
 - If you confirm the set parameter value, press  to save the set value; if you discard the parameter modification, press  to return
 - After saving the setting parameters, you can browse other setting parameters by pressing , and repeat the above steps; after setting all parameters, press the  to return to normal operation mode
 - When the protection current setting is set to off, the corresponding protection function is closed
- See the figure below for query and change of protection parameters:



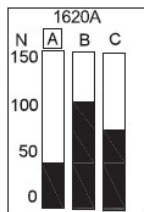
3) matters needing attention:

- The modification / query of the controller protection parameters must be in the controller non alarm / fault interface. If the circuit breaker fails to be eliminated, it cannot be queried or modified
- After all parameters are set, use the controller to power off and reset once, and check once after power on again to ensure the correctness of modification. After checking, press  once to make the controller enter the normal operation state, or after 10 minutes, no operation controller will automatically return to the normal operation state

Debugging CDW3

iTR326H operation

- default interface



- Display the default interface when the ETU is powered on
- press the button  or the corresponding topic key under each topic menu to return to the default interface
- If there is no key operation within 5 minutes, the box cursor will automatically indicate the current maximum phase
- under the non fault pop-up interface, if there is no key operation within 20 minutes, it will automatically return to the default interface

- measurement menu

Press  to enter the measurement main menu

Current I Voltage U Frequency F Energy E Power P Harmonic wave H	Press  or  to return to the default interface In other non fault and non edit interfaces, press  to jump to the "measurement" menu
--	--

- system parameter setting menu

Press  to enter the system parameter setting menu

Clock setting Measurement table setting Test & lock Language setting Communication setting I/O setting	Press  to return to the default interface In other non fault and non edit interfaces, press  to jump to "system parameter setting" menu and "history and maintenance" menu
--	---

Debugging CDW3

- Protection parameter setting menu

Current protection Load monitoring Voltage protection Other protection	Press  or  to return to the default interface In other non fault and non edit interfaces, press  to jump to "protection parameter setting" menu
--	---

- history and maintenance menu

Current alarm Operation times Contact wear Position change record Trip record Alarm record Fault recording	Press  to return to the default interface In other non fault and non edit interfaces, press  to jump to "system parameter setting" menu and "history and maintenance" menu
---	---

Functions

Technical parameter



common characteristic	
poles	3、4
Rated working voltage Ue	1: AC220V/230V/240V/380V/400V/415V 2: AC440V/480V/500V/525V/550V/660V/690V
Rated insulation voltage Ui	1000V
Rated impulse withstand voltage Uimp	12kV
Rated frequency Hz	50/60
Suitable for isolation	
Applicable standards	GB/T14048.2、IEC 60947-2

Current/Frame	1600N		1600H		2000N		2000H		2500N		2500H		3200N		3200H		4000N		4000H		6300N		
In(A)																							
400	•		•																				
630	•		•		•		•		•		•						•		•				
800	•		•		•		•		•		•						•		•				
1000	•		•		•		•		•		•						•		•				
1250	•		•		•		•		•		•						•		•				
1600	•		•		•		•		•		•						•		•				
2000					•		•		•		•		•		•		•		•				
2500									•		•		•		•		•		•				
3200													•		•		•		•				
4000																	•		•		•		
5000																					•		
6300																					•		
Breaking capacity (Ue)	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	*1	*2	
Icu(kA)	50	36	66	42	80	50	80	55	80	65	100	70	80	65	100	70	100	65	100	75	120	85	
Ics(kA)	50	36	55	42	80	50	80	55	65	65	85	70	80	65	85	70	85	65	100	75	100	75	
Icw(1s)(kA)	42	36	42	36	50	50	65	55	65	65	85	70	65	65	85	70	85	65	85	75	85	75	
Icm(kA)	105	75.6	145.2	88.2	176	105	176	121	176	143	220	154	176	143	220	154	220	143	220	165	264	187	
Breaking time																							
Full break time (ms)	≤25																						
Closing time (ms)	≤70																						
service life																							
Mechanical life (with maintenance)	30000				30000				20000				20000				20000				5000		
Mechanical life (no maintenance)	15000				15000				10000				10000				10000				2500		
Electrical life	8000				8000				7000				7000				6000				800		
Wiring mode																							
horizontal	•				•				•				•				•				•		
vertical	•																•						
Mixed mode	•																•						
L-type wiring					•																		

Note: * 6300N voltage is only AC400V / 415V, AC660V / 690V

Functions



Frame		1600N&H	2000N&H	2500N&H	3200N&H	4000N&H	6300N	
Size (H × W × D)(mm)								
Draw-out	3P	322×288×330	436×405×425	436×465×425	436×465×425	439×441×428.6	436×843×498	
	4P	322×358×330	436×500×425	436×580×425	436×580×425	439×556×428.6	436×958×498	
Fixed	3P	301×276×229	397×364×327	397×428×327	397×428×327	352×422×329.5	/	
	4P	301×346×229	397×459×327	397×543×327	397×543×327	352×537×329.5	/	
Weight(KG)								
Draw-out	3P	33.5&34	73&73.6	84&84.3	93&93.8	77&78	233	
	4P	40&41	85&85.5	102.9&103.3	114&115	94&95	271.8	
Fixed	3P	13.6&14	41&41.4	48.6&48.9	53&53.4	41&42	/	
	4P	16.5&17	51.5&52	59.7&60.1	67&68	51&52	/	
Recommended altitude capacity reduction use: when the altitude is higher than 2000m, the product performance (resistance, cooling capacity) will change								
altitude (m)		2000	2500	3000	3500	4000	4500	5000
Insulation voltage (V)		1000	910	910	830	830	770	770
Impulse withstand voltage (kV)		12	10.5	10.5	9.5	9.5	9	9
Maximum working voltage (V)		690	690	690	660	600	600	550
40℃ Ambient current value (In)		1In	0.98In	0.93In	0.91In	0.87In	0.84In	0.81In
Note: if the altitude is higher than 4000m, it is necessary to contact with the factory. ①: 1600n & H is 0.8 × in, 3200n & H is 0.7 × in. For details, communicate with Delixi Electrical Technology Department								
Note: in the plateau environment, the breaking capacity shall be reduced according to the corresponding rated working voltage, generally between 75% and 50%, which is inversely proportional to the altitude								
Note: reference GB / T 20645 technical requirements for plateau voltage electrical appliances under special environmental conditions								
Recommended for temperature derating:								
frame		Current/ temperature	-5℃~+40℃	+45℃	+50℃	+55℃	+60℃	
1600N&H		400	400	400	400	400	400	
		630	630	630	630	630	550	
		800	800	800	800	800	700	
		1000	1000	1000	1000	950	900	
		1250	1250	1200	1200	1150	1050	
		1600	1600	1550	1500	1450	1350	
2000N&H		630	630	630	630	630	630	
		800	800	800	800	800	700	
		1000	1000	1000	1000	1000	1000	
		1250	1250	1250	1250	1250	1150	
		1600	1600	1600	1500	1500	1300	
		2000	2000	1900	1900	1800	1700	
2500N&H		630	630	630	630	630	630	
		800	800	800	800	800	800	
		1000	1000	1000	1000	1000	1000	
		1250	1250	1250	1250	1250	1250	
		1600	1600	1600	1600	1600	1600	
		2000	2000	2000	2000	2000	2000	
3200N&H		2500	2500	2400	2300	2200	2200	
		3200	3200	3000	3000	2800	2800	
		630	630	630	630	630	630	
4000N&H		800	800	800	800	800	800	
		1000	1000	1000	1000	1000	1000	
		1250	1250	1250	1250	1250	1250	
		1600	1600	1600	1600	1600	1600	
		2000	2000	2000	2000	2000	2000	
		2500	2500	2500	2500	2500	2200	
		3200	3200	3200	3200	3000	2500	
		4000	4000	4000	3600	3400	3200	
6300N		4000	4000	4000	4000	4000	4000	
		5000	5000	5000	5000	4800	4800	
		6300	6300	6000	5600	5400	5200	
Note: the technical parameters in the capacity reduction coefficient table are obtained from the test and theoretical calculation, and are only used as the general selection guidance								

Functions

Know the accessory

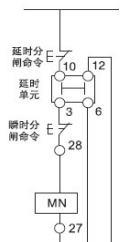
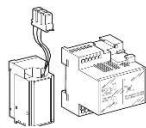
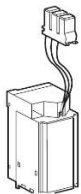
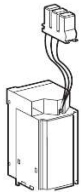
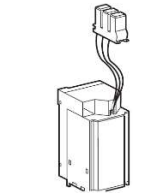


图1 欠压延时脱扣器接线

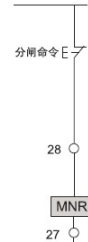
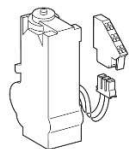


图2 欠压延时脱扣器接线



Remote operation: (1600AF/4000AF on the left, 2000AF/2500AF/3200AF/6300AF on the right)

Release MX:

- After the circuit breaker is stored with energy, the shunt coil can disconnect the circuit breaker instantaneously under the specified power supply voltage, which can be operated remotely
- Rated control power supply voltage AC220 / AC230V / AC380V / AC400V / DC110V / DC220V
- Action voltage (0.7-1.1) us
- breaking time: 50±10ms

Closing coil XF:

- After the circuit breaker is stored with energy, the closing coil can close the circuit breaker under the specified power supply voltage, which can be operated remotely
- Rated control power supply voltage AC220 / AC230V / AC380V / AC400V / DC110V / DC220V
- Action voltage (0.85-1.1) Us
- closing time: 55±10ms

Undervoltage release MN:

- Undervoltage coil can be divided into two types: undervoltage instantaneous and undervoltage delay
- After the circuit breaker is closed, when the voltage of the circuit breaker drops to 70% - 35% of the rated voltage, it can act to make the circuit breaker open. The circuit breaker can only be closed again after the supply voltage of the undervoltage coil recovers to 85% of the rated voltage
- Rated control power supply voltage AC220 / AC230V / AC380V / AC400V
- Action voltage: (0.35-0.7) Ue
- Reliable closing voltage: (0.85-1.1) Ue
- no closing voltage: ≤0.35Ue
- delay time: 0.5s, 1s, 1.5s, 3s after disconnection (1600AF/4000AF support)
- delay time: 1s, 3s, 5s after disconnection (2000AF/2500AF/3200AF/6300AF support)
- The maximum delay time is 7.5s, which can be set according to the actual situation

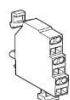
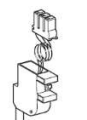
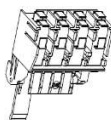
Undervoltage delay coil MNR:

- 延时时间: 0.5s、1s、1.5s、3s 后断开 (1600AF/4000AF 支持)
- 延时时间: 1s、3s、5s 后断开 (2000AF/2500AF/3200AF/6300AF 支持)

Motor operating mechanism MCH:

- The motor operating mechanism can automatically store energy to the circuit breaker when the circuit breaker is disconnected and provided with power supply, so as to open or close the circuit breaker under the action of shunt coil, undervoltage coil and closing coil
- When there is no power supply, the manual handle can be used to store energy for the circuit breaker
- Rated control power supply voltage AC220 / AC230V / AC380V / AC400V / DC110V / DC220V
- Action voltage (0.85-1.1) Us
- power consumption: 75W/180W(1600AF)、85W(2000AF)、110W(2500AF、3200AF)、180W(4000AF)、150W(6300AF)
- energy storage time: <5s
- category: AC15、DC13

Functions



Indicating contact: (1600AF/4000AF on the left, 2000AF/2500AF/3200AF/6300AF on the right)

Auxiliary switch OF:

- It is used to monitor the status of the circuit breaker, such as connecting the position signal light of the circuit breaker, disconnecting the indicator light, etc
- default 4 on 4 off
- 2000AF / 2500AF / 3200AF / 6300AF can provide 6 open 6 closed
- 4000AF can provide 6 on 6 off, 8 on 8 off, 12 on 12 off
- rated working current:
1600AF/4000AF: AC-12 AC250V 6A, AC-15 AC380V 1A, DC-12 DC250V 0.3A
2000AF/2500AF/3200AF/6300AF: AC-15 AC230V 1.5A, AC400V 0.9A, DC-13 DC110V 0.55A, DC220V 0.27A

Closing preparation indicating contact PF:

- It is composed of a mechanical indicating contact and a conversion contact, which can send the closing signal and indicate the conditions:
 - The circuit breaker is disconnected;
 - The circuit breaker has stored energy;
 - No continuous opening command
 The wiring diagram is shown in Figure 4 (1600-4000 frame), figure 5 (2000-2500-3200-6300 frame), and the dotted part is connected by the user
- rated working current: AC-12 AC400V 3A, DC-12 DC220V 0.15A (1600&4000AF)
- rated working current: AC-12 AC250V 3A (2000&2500&3200&6300AF)

SWT1 Fault trip indication contact: (Only support 1600AF/4000AF)

- Provide a set of fault signal output in case of electrical failure
- second SWT2 can be installed

Res Remote reset contact: (Only support 1600AF/4000AF)

- in case of electrical failure and the breaker is disconnected, the device can reset the breaker fault locking device remotely
- this contact is not compatible with the SWT2 fault trip contact

Connection (CE), separation (CD), test (CT) three position indicating contact:

- Drawer type optional accessories: 1600 shell frame can provide 2 separation indication contacts (CD), 1 test indication contact (CT), 3 connection (CE) indication contacts; 4000 shell frame can provide 3 CDs, 3 CTS, 3 CE; but it needs to be ordered separately, each number is shown in Figure 6
- Three position indicating contact is installed on the draw frame to indicate the position of the circuit breaker in the drawer seat
- When the circuit breaker is in the connection position, the wiring diagram is shown in Figure 5 (the dotted line part is self connected by the user); the three position indication signals of multiple groups are shown in Figure 6

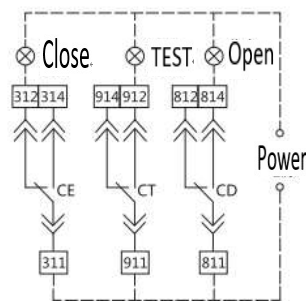


Figure 5
wiring diagram of three position indication signal

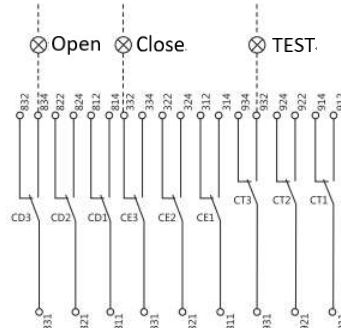
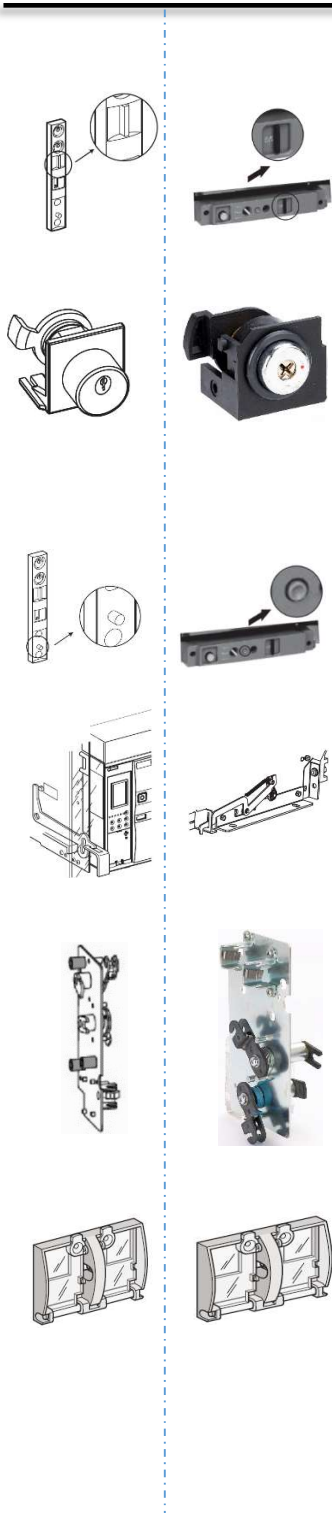


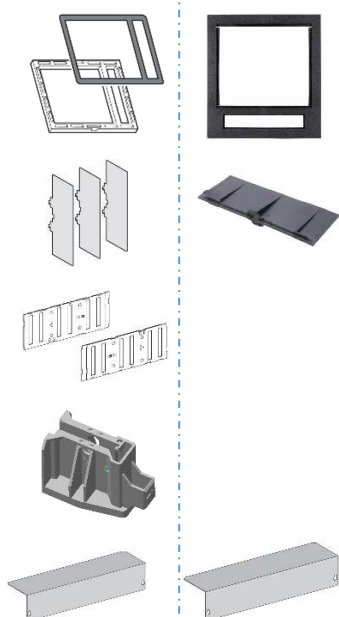
Figure 6
wiring diagram of multiple groups of three position indication signals (1600AF and 4000AF only)

Functions



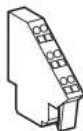
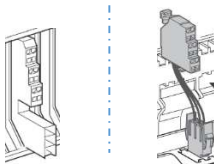
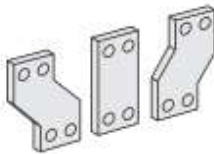
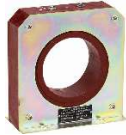
lock: (1600AF on the left, 2000AF/2500AF/3200AF/4000AF/6300AF on the right)	
Draw frame padlock:	
- If the padlock is selected, when the circuit breaker is in the "separate" position, pull out the padlock piece. After locking, the rocker cannot be inserted - padlock by user	
Opening lock	
- the opening lock can lock the circuit breaker in the off position. The circuit breaker can only be closed when the lock is opened by the key and the key is not pulled out - There are three kinds of commonly used opening locks (two locks and three locks are used in the distribution system of two incoming lines and one connection) - One lock and one key - Two locks and one key - Three locks and two keys - lockable straddle frame	
Drawer position locking mechanism:	
In the drawer type circuit breaker, the locking device of the "connection", "test" and "separation" positions of the circuit breaker. The three positions of the circuit breaker are displayed through the indicating window, the forward / backward handle is locked in the exact position, and the locking can be released through the reset button	
Door interlock:	
- In the drawer type circuit breaker, it is installed on the side of the circuit breaker, and the door of the linked distribution cabinet can not be opened when the circuit breaker is in the "connection" or "test" position, and the cabinet door can be opened when the circuit breaker is in the "open" position, which can prevent the circuit breaker from sliding and other situations, causing damage - The left door interlock or right door interlock can be provided, but after the right door interlock is selected for 2000-2500-3200-6300 shell frame, three position indication contacts cannot be selected	
Mechanical interlock:	
- There are lever interlock and cable interlock - Use lever interlock, two or three circuit breakers can only be installed vertically, use cable interlock, circuit breaker can be installed horizontally and vertically - used in the distribution system with two incoming lines and one connection - two circuit breakers can be connected to make them linked. When any one of them is closed, the linkage will make the other open - interlocking between different shell frames - lockable straddle frame	
Button lock:	
- It can prevent wrong operation of closing or opening button - The padlock is provided by the user, and the diameter of the locking rod is $\Phi 5 \sim \Phi 8\text{mm}$	

Functions



Protection:(1600AF on the left, 2000AF/2500AF/3200AF/4000AF/6300AF on the right)	
Door frame:	
- door frame mounted on the door of distribution cabinet - IP protection level increased from IP20 to IP40 - Drawer type and fixed type are applicable	
Interphase partition:	
- insulating board installed in the middle of breaker busbar - Increase creepage distance and insulation capacity	
Safety baffle: (standard)	
It is installed in the drawer type circuit breaker draw frame. When the body is in the "separation" or "test" position, the contact connection row is protected. When the body is moved from the draw frame, the live part is prevented from contacting	
Safety damper lock: (1600AF / 4000AF only)	
- for customer service or maintenance. The 1600 shell shelf has a baffle lock hole on the drawer baffle, and the 4000 shell shelf needs to be ordered separately - The baffle lock shall be provided by the customer, and the diameter of the lock rod is $\Phi 5-\Phi 8\text{mm}$	
Protective cover of secondary wiring terminal :	
- prevent foreign matters or dust from falling on the secondary terminal after customer wiring - draw-out only	

Functions



Controller accessories:(1600AF on the left, 2000AF/2500AF/3200AF/4000AF/6300AF on the right)

N-phase external transformer:

- In the 3P + n grounding mode, the external transformer used to measure the neutral phase current is sheathed on the wiring busbar by the user
- One out of three with grounding transformer and leakage transformer

Grounding transformer:

- The special external transformer used to measure the neutral phase current can protect the upper and lower grounding faults of the circuit breaker at the same time
- The grounding mode is current return type
- iTR326H ETU only
- One of three options: outward connected transformer and leakage transformer with N

Leakage transformer:

- When the grounding protection is leakage type, a special rectangular transformer is added
- iTR326H ETU only
- One of three options: outward connected transformer and leakage transformer with N

Power converter:

- It can provide auxiliary power for intelligent controller in AC220V / AC230V / AC380V / AC400V / DC110V / DC220V circuit
- Input: AC220V / AC230V / AC380V / AC400V / DC110V / DC220V, input fluctuation range $\pm 20\%$
- Output is DC24V, output fluctuation range $\pm 5\%$
- Output 3 sets of DC24V: total power 7W
- Before power on test of each switch, check whether it is connected to the power module to avoid damage to the intelligent controller after power on

Signal conversion module:

- The output signal unit is used for communication functions, such as regional interlocking, signal processing of four remote functions, or fault alarm or indication, etc
- iTR326H ETU only

Connecting accessories:

Extension terminal: 1600AF only

-

L adapter: 2000AF only

-

Configuration accessories: (1600AF on the left, 4000AF on the right)

Secondary terminal connector

- wiring between the internal accessories of the circuit breaker and the external power supply
- 1600AF / 4000AF only
- Drawer type: 1600AF and 4000AF are not common (such as left and right pictures)
- Fixed type: 1600AF and 4000AF are common (as shown below)

Maintenance

Working conditions

ambient temperature	-5 °C ~ + 40 °C, daily average value ≤ 35 °C
	Note: the circuit breaker used when the ambient air temperature is higher than + 40 °C or lower than - 5 °C shall be negotiated with the manufacturer
altitude	≤2000m
ambient humidity	The relative humidity of the atmosphere shall not exceed 50% at the highest ambient temperature + 40 °C; higher relative humidity is allowed at lower temperature (for example, 90% at 20 °C), taking into account the frost on the product surface due to temperature change
electromagnetic interference	Applicable to environment A
Degree of protection	The circuit breaker is installed in the cabinet chamber and equipped with door frame, with the protection level up to IP40

Maintenance procedures

Regular inspection required

Interval time	Operation mode
annually	Turn on and off local and remote devices, and use various auxiliaries successively Test operator column Small test suite for control unit test
Every two years or when the maintenance index of the controller unit reaches 100	Check the arc extinguishing chamber Check contact system Check the tightness of the connection

Parts need to be replaced according to the number of business cycles

The following parts must be replaced regularly to extend the service life of the equipment (the maximum value of the business cycle)

accessory	Intervening entity
Arc extinguishing chamber	user
Electric operating mechanism	user
Mechanical interlock	user
link spring	user
Shunt coil / closing coil / undervoltage coil	user

Maintenance operations

- 1 Each rotating part shall be regularly filled with lubricating oil during use
- 2 Regular maintenance shall be carried out to remove dust so as to maintain the insulation level of the circuit breaker
- 3 The contact system shall be inspected regularly, especially after each short circuit breaking. The inspection contents are as follows:
 - The flame marks on the two walls of the arc extinguishing chamber are clear, whether the arc extinguishing wall is broken or not, and whether the arc extinguishing grid is seriously burned, which needs to be replaced in time according to the situation
 - Whether the contact is in good contact and the contact thickness is ≤ 1 mm, it needs to be sent to the manufacturer for replacement
 - Whether the connecting parts are loose
 - After the breaker fault is broken, the controller can light up to indicate the cause of the fault. After the power is cut off, it still has the memory function. After the power is turned on again, press the "fault check" key on the control panel to indicate the information of the last fault trip. If a new fault occurs, clear the past fault memory and keep the new fault memory

Note: the simulated power-off of the test state is not memorized. Press the "reset" key once after the inspection to make the controller enter the normal state

Maintenance

Troubleshooting

Fault phenomenon	Cause analysis	Exclusion scheme	remarks
Motor cannot store energy or abnormal	The voltage specification is inconsistent with the circuit breaker	Check whether the data label on the circuit breaker conforms to the ordering requirements, or it will be replaced	The external power supply must meet the requirements and the wiring is correct
	Wrong wiring of circuit breaker or external line	Check the circuit with the universal meter against the wiring diagram	
	Motor burned out	Replace the motor	
	After energy storage, the motor continues to operate	The travel switch in the mechanism is broken. Replace the travel switch	
The circuit breaker cannot be closed	Undervoltage coil not engaged	Supply power to undervoltage coil, replace if burnt out	
	Load short circuit or controller reset button not reset	Reset the reset button of the controller after eliminating the short circuit fault	
	Shunt coil energized for a long time	The shunt coil cannot be energized or checked for a long time. If it is burnt out, replace it	
The circuit breaker cannot be opened	No action of shunt coil and undervoltage coil	Supply power to shunt coil, replace if burnt out	
		Make the undervoltage coil lose power, and replace the undervoltage coil if it does not act	
	No action of flux converter	If there is no signal from the ETU, replace the ETU Adjust the position of the flux converter	
Frequent tripping of circuit breaker	Controller red reset button pops up	Check what protection indicator is on and eliminate the cause of the fault	
		If there is no fault in the circuit, the controller shall be replaced	
	Undervoltage coil protection function start	Check if the grid voltage fluctuates	
		Check whether the power supply of undervoltage coil is loose	
		Can the fault be eliminated after the undervoltage coil is removed	

Order replacement parts

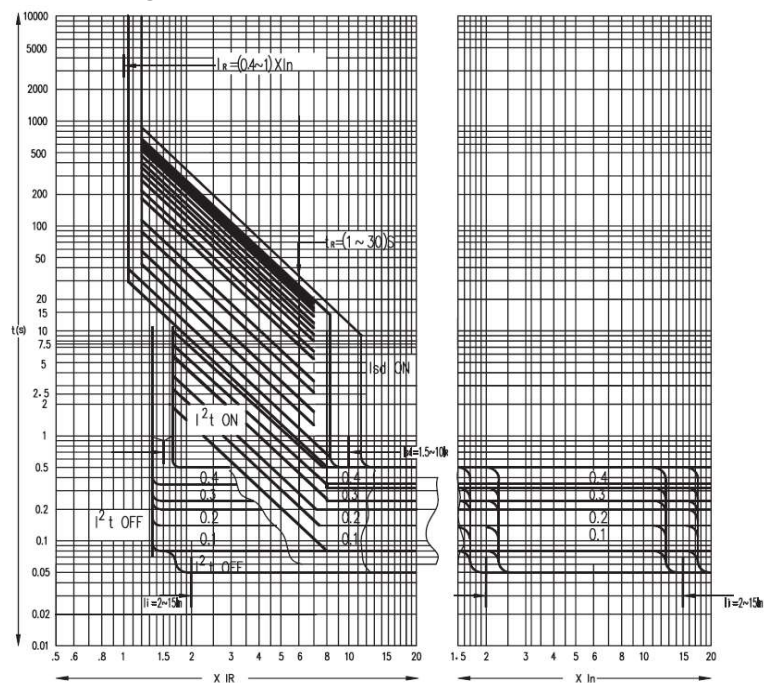
In electrical accessories, the following may need to be replaced:

- Electric operation mechanism
- shunt coil
- closing coil
- undervoltage coil
- auxiliary contacts
- Installation of ETU accessories
- key lock

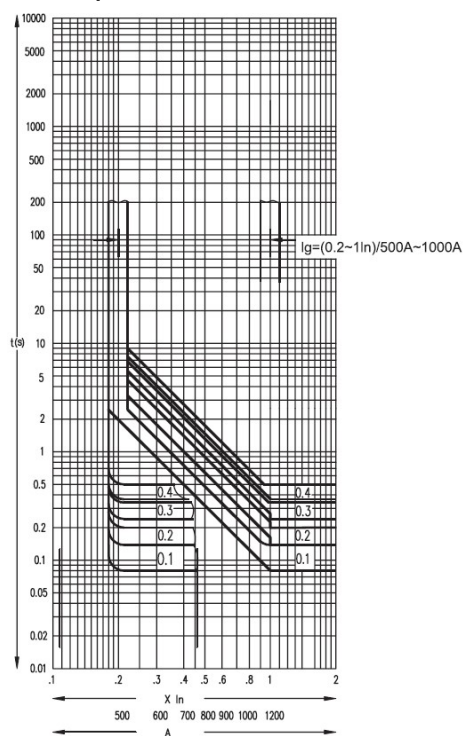
Appendix

Trip curve

Three stage protection



Earth protection



Appendix-Model selection table

Number _____													
Circuit breaker body (required)													
frame	1600AF	☐	2000AF	☐	2500AF	☐	3200AF	☐	4000AF	☐	6300AF	☐	
Breaking capacity	N	☐	H	☐	Note: 6300AF have not H								
Rated current	400A	☐	630A	☐	630A	☐	2000A	☐	630A	☐	4000A	☐	
	630A	☐	800A	☐	800A	☐	2500A	☐	800A	☐	5000A	☐	
	800A	☐	1000A	☐	1000A	☐	3200A	☐	1000A	☐	6300A	☐	
	1000A	☐	1250A	☐	1250A	☐			1250A	☐			
	1250A	☐	1600A	☐	1600A	☐			1600A	☐			
	1600A	☐	2000A	☐	2000A	☐			2000A	☐			
					2500A	☐			2500A	☐			
									3200A	☐			
									4000A	☐			
poles	3P	☐	4P	☐									
frequency	50Hz	☐	60Hz	☐									
Installation method	Draw-out vertical			☐	Draw-out vertical			☐	Fixed horizontal		☐	Fixed vertical	☐
Note: vertical wiring is only limited to 1600N & H and 4000N & H					Note: 6300AF have not fixed								
ETU	iTR326	☐	iTR26A	(standar d)	☐	iTR326H	☐	Note: 6300AF have not iTR326					
Communication protocol (iTR326H only)			Modbus	(default)	☐	Profibus	☐	Devicene t	☐				
Remote operation													
Shunt coil	AC230V		☐	AC400V		☐	DC110V		☐	DC220V		☐	
Closing coil	AC230V		☐	AC400V		☐	DC110V		☐	DC220V		☐	
Electric operating mechanism	AC230V		☐	AC400V		☐	DC110V		☐	DC220V		☐	
Undervoltage coil	No		☐	AC230V		☐	AC400V		☐				
Provide delay seconds (for 1600AF/4000AF)				0.5s	☐	1s	☐	1.5s	☐	3s	☐		
Provide delay seconds (for 2000AF/2500AF/3200AF/6300AF)				1s	☐	3s	☐	5s	☐	7.5 s	☐		
Indicating contact													
Auxiliary switch	frame		Auxiliary switch										
	1600N&H		4 on 4 off		☐								
	2000N&H		4 on 4 off		☐	6 on 6 off		☐					
	2500N&H		4 on 4 off		☐	6 on 6 off		☐					
	3200N&H		4 on 4 off		☐	6 on 6 off		☐					
	4000N&H		4 on 4 off		☐	6 on 6 off		☐	8 on 8 off	☐	12 on 12 off	☐	
The default configuration is 4 on 4 off	6300N		4 on 4 off		☐	6 on 6 off		☐					
	Three position indicating contact		☐	Closing preparation indicating contact			☐	Note:	Please contact the manufacturer for 12 on 12 off				
Common accessories - lock													
Opening lock:	One lock one key		☐	Mechanical interlock:	Cable interlock		☐	Mechanical interlocking of cross frame:		☐			
	Two locks and one key		☐		Lever interlock		☐	Drawer door interlock:		☐			
	Three locks and two keys		☐		2 sets		☐	On off button lock:		☐			
	Key combination lock		☐		3 sets		☐	Safety damper lock:		☐ (4000AF only)			
Note: 1600AF without cable interlock (3 sets) and lever interlock (3 sets)				Note: key lock or mechanical interlock shall be selected. If combined lock is selected, the product shall be matched with the previously selected key lock or mechanical interlock									
Common accessories - ETU accessories													
External transformer:	Power converter			☐	Grounding transformer			☐	N-phase external transformer				☐
	Signal conversion module			☐	Leakage transformer			☐					
Note: Power converter is standard accessory	Note: N-phase external transformer is only applicable to 3P+N				Note: leakage transformer, grounding transformer and signal conversion module are only applicable to iTR326H ETU								
Common accessories - protection and connection accessories													
Interphase partition (standard)		☐	(4000A in 4000af without interphase partition)		Vertical l adapter		☐	(2000AF only)		Secondary terminal guard		☐	
Door frame (standard)		☐			Extension terminal		☐	(1600AF only)		(only draw-out)			
instructions													
Power module installation instructions		☐	Installation instruction of undervoltage delay unit				☐	Installation manual of mechanical interlock					☐
Note:	In general application, the following standard configuration can be used: shunt coil, closing coil, electric operation mechanism, interphase partition, door frame, power module, auxiliary switch 4 on 4 off, iTR326A ETU												
	If you need other special application accessories, please check in the selection table and configuration table												

Appendix- Configuration table

No.	Standard configuration	1600AF		2000AF		2500AF		3200AF		4000AF		6300AF	
		Draw-out	Fixed	Draw-out	Fixed	Draw-out	Fixed	Draw-out	Fixed	Draw-out	Fixed	Draw-out	Fixed
1	Circuit breaker body	■	■	■	■	■	■	■	■	■	■	■	
2	Drawer seat	■		■		■		■		■		■	
3	iTR326A ETU	■	■	■	■	■	■	■	■	■	■	■	
4	Shunt coil MX	■	■	■	■	■	■	■	■	■	■	■	
5	Closing coil XF	■	■	■	■	■	■	■	■	■	■	■	
6	Electric operating mechanism MCH	■	■	■	■	■	■	■	■	■	■	■	
7	Auxiliary switch 4 on 4 off	■	■	■	■	■	■	■	■	■	■	■	
8	Fault indication contact SWT1	■	■	■	■	■	■	■	■	■	■	■	
9	AC power module AP	■	■	■	■	■	■	■	■	■	■	■	
10	Drawer position locking mechanism	■		■		■		■		■		■	
11	Doorframe CDP	■	■	■	■	■	■	■	■	■	■	■	
12	Interphase partition DD/PD	■	■	■	■	■	■	■	■	■	■	■	
13	Horizontal installation H	■	■	■	■	■	■	■	■	■	■	■	
14	Safety damper	■		■		■		■		■		■	
No.	Optional configuration	1600AF		2000AF		2500AF		3200AF		4000AF		6300AF	
		Draw-out	Fixed	Draw-out	Fixed	Draw-out	Fixed	Draw-out	Fixed	Draw-out	Fixed	Draw-out	Fixed
1	iTR326 ETU	■	■	■	■	■	■	■	■	■	■		
2	iTR326H ETU	■	■	■	■	■	■	■	■	■	■	■	
3	Undervoltage coil MN	■	■	■	■	■	■	■	■	■	■	■	
4	Undervoltage delay coil MNR	■	■	■	■	■	■	■	■	■	■	■	
5	Auxiliary switch 6 on 6 off			■	■	■	■	■	■	■	■	■	
6	Auxiliary switch 8 on 8 off									■	■		
7	Auxiliary switch 12 on 12 off									■	■		
8	Closing preparation indicating contact PF(1*)	■	■	■	■	■	■	■	■	■	■	■	
9	Three position indicating contact CE/CD/CT(1*)	■		■		■		■		■		■	
10	Fault indication contact SWT2	■	■							■	■		
11	Remote reset contact Res	■	■							■	■		
12	Drawbench padlock (1*)	■		■		■		■		■		■	
13	Safety damper lock (1*)	■								■			
14	On off button lock (1*)	■	■	■	■	■	■	■	■	■	■	■	
15	Opening lock L1	■	■	■	■	■	■	■	■	■	■	■	
16	Door interlock (1*)	■		■		■		■		■		■	
17	Mechanical interlock (1*)	■	■	■	■	■	■	■	■	■	■	■	
18	Protective cover of secondary wiring terminal (2*)	■		■		■		■		■		■	
19	DC power module DP	■	■	■	■	■	■	■	■	■	■	■	
20	N-phase external transformer NCT	■	■	■	■	■	■	■	■	■	■	■	
21	Grounding transformer ZT100	■	■	■	■	■	■	■	■	■	■	■	
22	Leakage transformer ZCT1	■	■	■	■	■	■	■	■	■	■	■	
23	Signal conversion module TR	■	■	■	■	■	■	■	■	■	■	■	
24	Dual power supply - two in one out (1*)	■	■	■	■	■	■	■	■	■	■	■	
25	Dual power supply - Two in one bus (1*)	■	■	■	■	■	■	■	■	■	■	■	
26	Dual power supply - three in one (1*)	■	■	■	■	■	■	■	■	■	■	■	
27	Expansion row behind board - HorizontalS3/4	■	■										
28	Secondary terminal connector	■	■							■	■		
29	Vertical installation V	■	■							■	■		

Note (1 *): when purchasing optional accessories, please contact the manufacturer for communication

Note (2 *): the protective cover of 2000af / 2500af / 3200af / 6300af secondary wiring terminal is used with 47 circuit of secondary terminal block. If it is used for 51 circuit, please contact the manufacturer.