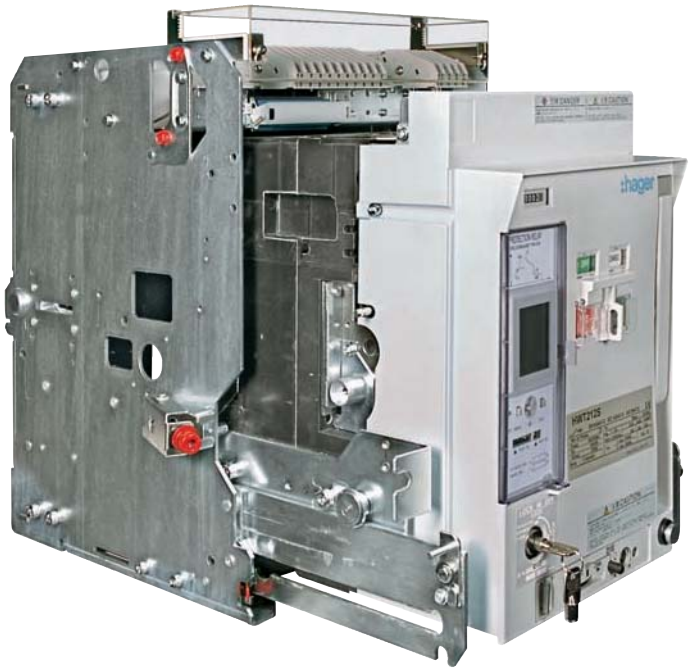
Air circuit breakers
Safety & high performance

Air circuit breakers

High level safety

Hager h3 Air Circuit Breakers feature a high level of perfomance in a reduced volume. With a depth of 290mm (for fixed version) and 345 mm (for draw-out version), this range is one of the most compact in the market, but with the cutting edge technology of double break contacts, offer the highest performance. The versatile OCR trip units offer technical parameters for the user to choose and manage standard to critical applications.



Your benefits

- **3 frames sizes.**
- **Compact size.**
- **Double break contact ensures fast interruption of short-circuit**
- **Accessibility of auxiliaries from the front.**
- **Easy maintenance.**

Technical characteristics

- Rating from 800 to 6300 A.
- Breaking capacity from 65 kA
- Fixed and draw-out type.
- Wide range of protection function Over Current Release.
- Comply with IEC 60947-2 category B.
- Icu = Ics = Icw

Expert tips

1

ON/OFF button cover

ON/OFF button cover prevents inadvertent or unauthorized operation.

2

Position padlock lever

Position padlock prevents the breaker body from inadvertently being drawn-out. The lever locks the breaker body in the position:
- connected,
- test,
- isolated.

3

Wide range of trip unit selection

4

Main circuit terminals

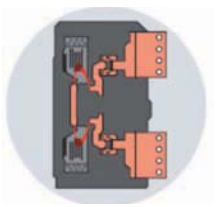
3 types of main circuit terminal :
- vertical terminals
- horizontal terminals
- front connection

5

Accessibility of auxiliaries

Connection to the control circuit is easy to access from the front.

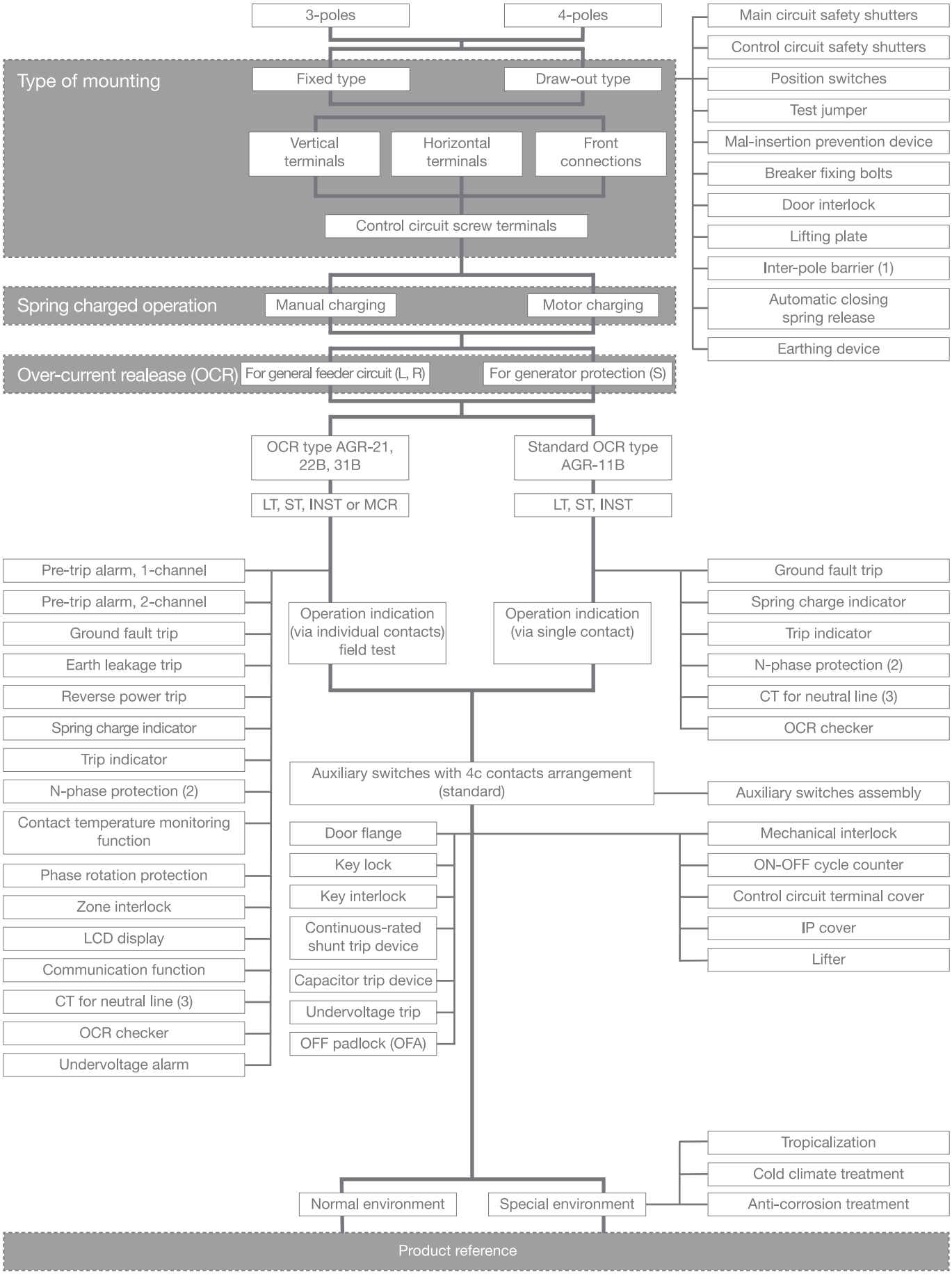
6



Double break system

The “double break” main contact system ensures fast interruption of short-circuit currents and substantially reduces main contact wear, which exceed the requirement of IEC 60947-2.

Specifications



(1) : not applicable to ACBs equipped with front connections.
(2) : applicable to 4-pole ACBs.
(3) required for ground fault protection for 3-poles ACB on 3-phase, 4-wire systems.

The range

- 3 frames from 800 to 6300A
- frame HWT2xxx from 800 to 2000A
- frame HWT3xxx from 2000 to 4000 A
- frame HWT6xxx from 5000 to 6300 A
- breaking capacity from 65 to 120 kA
- same depth for all fixed frames
- same depth for all draw out frames
- uniform panel cut-out size
- Standard: IEC 60947-2
  EN 60942-2

		HWT2		HWT3			HWT6
Type		**S**	**H**	**S**	**H**	**SB**	**S**
In Rated current (A)		800/1250/ 1600/2000	1250/1600/ 2000	2500/3200	1600/2000/ 2500/3200	4000	5000/6300
In Neutral rating (%)		100	100	100	100	100	100
Reference		HWT208S/ HWT212S/ HWT216S/ HWT220S	HWT212H/ HWT216H/ HWT220H	HWT325S/ HWT332S	HWT316H/ HWT320H/ HWT325H/ HWT332H	HWT440SB	HWT650S/ HWT663S
Rated operational voltage							
Ue (50/60Hz) (V)		690	690	690	690	690	690
Rated insulation voltage							
Ui (50/60Hz) (V)		1000	1000	1000	1000	1000	1000
Rated impulse withstand voltage							
Uimp (kV)		12	12	12	12	12	12
Icu							
kA eff.)	400/415V	65	80	85	100	100	120
	440V	65	80	85	100	100	120
	690V	50	55	65	85	85	85
Ics							
(kA eff.)	400/415V	65	80	85	100	100	120
	440V	65	80	85	100	100	120
	690V	50	55	65	85	85	85
Icm							
(kA peak)	690V	105	121	143	187	187	187
	440V	143	176	187	220	220	264
	400/415V	143	176	187	220	220	264
Icw							
(kA^2s)	1 second	65	80	85	100	100	120
	3 seconds	50	55	65	75	85	85
No. of operating cycles							
mechanical life (with maintenance)		30000	30000	20000	20000	15000	10000
mechanical life (without maintenance)		15000	15000	10000	10000	8000	5000
electrical life (with maintenance)		12000	12000	7000	7000	3000	1000
electrical life (without maintenance)		10000	10000	5000	5000	2500	500
Time							
total breaking time (s)		0.03	0.03	0.03	0.03	0.03	0.03
spring charging time (s) max.		10	10	10	10	10	10
close time (s) max.		0.08	0.08	0.08	0.08	0.08	0.08
Dimensions							
fixed type (mm)	width 3-poles	360	360	466	466	-	-
	width 4-poles	445	445	586	586	-	-
	height	460	460	460	460	-	-
	depth	290	290	290	290	-	-
draw-out type (mm)	width 3-poles	354	354	460	460	460	799
	width 4-poles	439	439	580	580	580	1034
	height	460	460	460	460	460	460
	depth	345	345	345	345	345	380

Main circuit terminals
Three types of main circuit terminal arrangements are available:
vertical terminals, horizontal terminals, and front connections. Different types of terminal arrangements can be specified for the line and load sides.

Note: The max. rated current [In] may be reduced depending on the main circuit terminal arrangement.

Designation

Vertical terminals

Horizontal terminals

Front connections

Type	Terminal arrangement		
	horizontal terminals	vertical terminals	front connections
HWT208S	800 A	800 A	800 A
HWT212S	1250 A	1250 A	1250 A
HWT216S	1600 A	1600 A	1600 A
HWT220S	2000 A	2000 A	2000 A
HWT325S	2430 A	2500 A	2500 A
HWT332S	2790 A	3200 A	3150 A
HWT440SB	-	4000 A	-
HWT650S	-	5000 A	-
HWT663S	-	6300 A	-
HWT212H	1250 A	1250 A	-
HWT216H	1600 A	1600 A	-
HWT220H	2000 A	2000 A	-
HWT316H	1600 A	1600 A	-
HWT320H	2000 A	2000 A	-
HWT325H	2430 A	2500 A	-
HWT332H	2790 A	3200 A	-

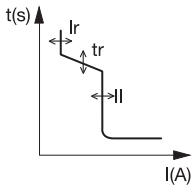
Over Current Release
L : long delay
S : short delay
I : instantaneous
(G : earth protection)

Nota :
• Optional protection functions of the OCR include those against ground fault, earth leakage, undervoltage and reverse power. Pre-trip alarm function can also be installed.

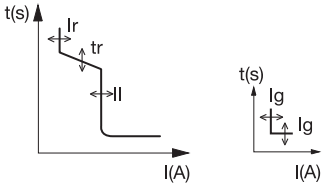
Désignation

OCR11, standard OCR with adjustment dial

- LSI

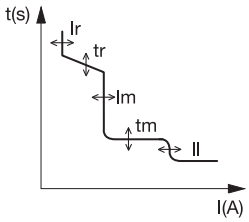


- LSIG

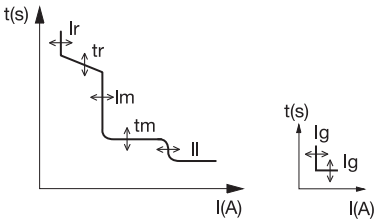


OCR21, standard OCR with LCD-ammeter

- LSI

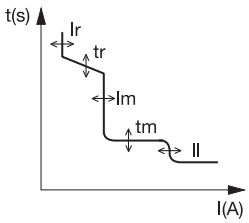


- LSIG

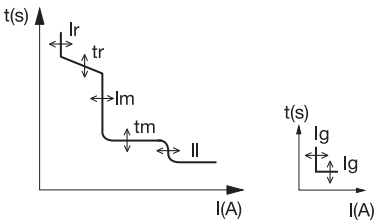


OCR31, enhanced OCR with backlit LCD-analyser (phase current, current, line voltage, active power, communication)

- LSI



- LSIG

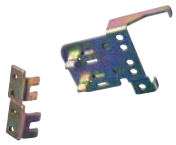
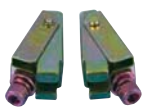


Designation	Cat. ref. 3P	4P
ACB fixed type 65 kA Icu/Ics/Icu 65 kA at 400/415 V - Over Current Release OCR-11BL-AI (LSI) - horizontal connection		
ACB 800A 65kA, fixed type	**HW083NSFB4**	**HW086NSFB4**
ACB1250A 65kA, fixed type	**HW123NSFB4**	**HW126NSFB4**
ACB 1600A 65kA, fixed type	**HW163NSFB4**	**HW166NSFB4**
ACB 2000A 65kA, fixed type	**HW203NSFB4**	**HW206NSFB4**
ACB fixed type 65 kA Icu/Ics/Icu 65 kA at 400/415 V - Over Current Release OCR-11BL-GL (LSIG) - horizontal connection		
ACB 800A 65kA, fixed type	**HW083NSFC4**	**HW086NSFC4**
ACB1250A 65kA, fixed type	**HW123NSFC4**	**HW126NSFC4**
ACB 1600A 65kA, fixed type	**HW163NSFC4**	**HW166NSFC4**
ACB 2000A 65kA, fixed type	**HW203NSFC4**	**HW206NSFC4**
ACB fixed type 85 kA Icu/Ics/Icu 85 kA at 400/415 V - Over Current Release OCR-11BL-AI (LSI) - horizontal connection		
ACB 2500A 85kA, fixed type	**HW253HUFB4**	**HW256HUFB4**
ACB 3200A 85kA, fixed type	**HW323HUFB4**	**HW326HUFB4**
ACB fixed type 85 kA Icu/Ics/Icu 85 kA at 400/415 V - Over Current Release OCR-11BL-GL (LSIG) - horizontal connection		
ACB 2500A 85kA, fixed type	**HW253HUFC4**	**HW256HUFC4**
ACB 3200A 85kA, fixed type	**HW323HUFC4**	**HW326HUFC4**

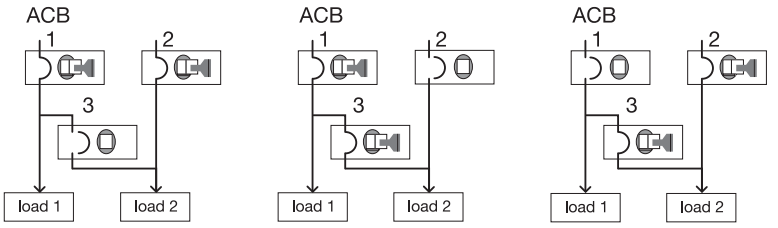
Designation	Cat. ref. 3P	4P
ACB draw-out type 65 kA Icu/Ics/Icu 65 kA at 400/415 V - Over Current Release OCR-11BL-AI (LSI) - horizontal connection		
ACB 800A 65kA, draw-out type	**HW083NSDB4**	**HW086NSDB4**
ACB1250A 65kA, draw-out type	**HW123NSDB4**	**HW126NSDB4**
ACB 1600A 65kA, draw-out type	**HW163NSDB4**	**HW166NSDB4**
ACB 2000A 65kA, draw-out type	**HW203NSDB4**	**HW206NSDB4**
ACB draw-out type 65 kA Icu/Ics/Icu 65 kA at 400/415 V - Over Current Release OCR-11BL-GL (LSIG) - horizontal connection		
ACB 800A 65kA, draw-out type	**HW083NSDC4**	**HW086NSDC4**
ACB1250A 65kA, draw-out type	**HW123NSDC4**	**HW126NSDC4**
ACB 1600A 65kA, draw-out type	**HW163NSDC4**	**HW166NSDC4**
ACB 2000A 65kA, draw-out type	**HW203NSDC4**	**HW206NSDC4**
ACB draw-out type 85 kA Icu/Ics/Icu 85 kA at 400/415 V - Over Current Release OCR-11BL-AI (LSI) - horizontal connection		
ACB 2500A 85kA, draw-out type	**HW253HUDB4**	**HW256HUDB4**
ACB 3200A 85kA, draw-out type	**HW323HUDB4**	**HW326HUDB4**
ACB draw-out type 85 kA Icu/Ics/Icu 85 kA at 400/415 V - Over Current Release OCR-11BL-GL (LSIG) - horizontal connection		
ACB 2500A 85kA, draw-out type	**HW253HUDC4**	**HW256HUDC4**
ACB 3200A 85kA, draw-out type	**HW323HUDC4**	**HW326HUDC4**

Designation	Cat. ref. 3P	4P
ACB draw-out type 100 kA Icu/Ics/Icu 100 kA at 400/415 V - Over Current Release OCR-11BL-AI (LSI) - vertical connection		
ACB 4000A 100kA, draw-out type	**HW403PVDB7**	**HW404PVDB7**
ACB draw-out type 100 kA Icu/Ics/Icu 100 kA at 400/415 V - Over Current Release OCR-11BL-GL (LSIG) - vertical connection		
ACB 4000A 100kA, draw-out type	**HW403PVDC7**	**HW404PVDC7**
Switch, fixed type 65kA - rated short time withstand Icw, 1 sec: 65kA - horizontal connection		
Switch 800A 65kA, fixed type	**HW083NSFA4**	**HW086NSFA4**
Switch 1250A 65kA, fixed type	**HW123NSFA4**	**HW126NSFA4**
Switch 1600A 65kA, fixed type	**HW163NSFA4**	**HW166NSFA4**
Switch 2000A 65kA, fixed type	**HW203NSFA4**	**HW206NSFA4**
Switch, draw-out type 65kA - rated short time withstand Icw, 1 sec: 65kA - horizontal connection		
Switch 800A 65kA, draw-out type	**HW083NSDA4**	**HW086NSDA4**
Switch 1250A 65kA, draw-out type	**HW123NSDA4**	**HW126NSDA4**
Switch 1600A 65kA, draw-out type	**HW163NSDA4**	**HW166NSDA4**
Switch 2000A 65kA, draw-out type	**HW203NSDA4**	**HW206NSDA4**

Designation	Characteristics	Cat. ref.
		
Auxiliary switches		
The auxiliary switches operate during the ACB ON/OFF operation. Connections to the switches are made via screw terminals.	4c (standard)	**HXAXS004AB**
The auxiliary switches for draw-out type ACBs operate in the CONNECTED and TEST positions.	7c	**HXAXS007AB**
The auxiliary switches for ACBs conforming to classification society's rules operate in the CONNECTED position only.	10c	**HXAXS010AB**
The auxiliary switches have change-over contacts		
		
Position switches		**HXPOS001AB**
The position switch operates to give an indication of the breaker position: CONNECTED, TEST, ISOLATED, and INSERT. There are two contact arrangements: 2c and 4c. Connections to the switches are made via screw type terminals.		
Shunt trip (SH)		
The continuous-rated shunt trip device allows the ACB to be opened when an external protection relay against overcurrent or reverse power is activated.	AC110V AC240V DC24V DC48V	**HXSHT110AC** **HXSHT240AC** **HXSHT024DC** **HXSHT048DC**
		
Undervoltage trip (UVT)		
The undervoltage trip device (UVT) trips the ACB when the control voltage drops below the opening voltage. When the control voltage is restored to the pick-up voltage, the ACB can be closed. The pick-up voltage is fixed to 85% of the rated voltage.	AC110V AC240V AC415V DC24V DC48V	**HXUVT110AC** **HXUVT240AC** **HXUVT415AC** **HXUVT024DC** **HXUVT048DC**
Motor operator		
For this type of ACB, the closing springs are charged by means of a motor. ON/OFF operation of the ACB can be performed remotely. A manual charging mechanism is also fitted to facilitate inspection or maintenance work.	AC110V AC240V DC24V DC48V	**HXMOP110AC** **HXMOP240AC** **HXMOP024DC** **HXMOP048DC**

Designation	Characteristics	Cat. Ref.
 **Open / close cycle counter** The open / close cycle counter is a mechanical 5-digit readout that shows the number of ON-OFF cycles of the ACB. Counter readings serve as a guide for maintenance or inspection.		**HXCOC000XX**
 **Door flange** A door flange can be used as a decoration panel that covers the cu-tout on the switchboard panel, and provides IP20 protection. For IP31 protection please specify the door flange with a gasket (for quadro kit).	IP31	**HXDFL031IP**
 **IP cover** An IP cover provides an IP55 grade of protection as defined in IEC 60529. Even if the breaker body is on the ISOLATED position, IP cover can still be fitted on the ACB.	IP55	**HXCOV055IP**
 **Lifting plate** Lifting plates are detachable tools that can be used to lift a breaker body out of a draw-out cradle.		**HXLFT000XX**
Draw-out handle Storage of draw-out handle directly in front face of ACB.		**HXHAN000XX**
Mal-insertion prevention device Interchangeability exists within the ACBs h3. Because of this feature, there is a possibility for an ACB of a different ratings being placed into the draw-out cradle. Using the mal-insertion prevention device eliminates such a possibility.		**HXIPD000XX**
 **Main safety shutter** The main circuit safety shutters automatically conceal the main circuit contacts on the draw-out cradle when the ACB is drawn out. • The top and bottom shutters operate independently and can be separately padlocked in the closed position. • Up to three padlocks (with ø6 hasp) can be installed on each side using padlocking unit. (Padlock not supplied) • In the closed position, the shutters are locked to the extent that they cannot be easily unlocked by hand. They can be unlocked and held open if required for the purpose of inspection or maintenance.	08-12,3P 1/2 set 08-12,4P 1/2 set 16-20,3P 1/2 set 16-20,4P 1/2 set 25-32,3P 1/2 set 25-32,4P 1/2 set 40,3P 1/2 set 40,4P 1/2 set	**HXMSS123PF** **HXMSS124PF** **HXMSS203PF** **HXMSS204PF** **HXMSS323PF** **HXMSS324PF** **HXMSS403PF** **HXMSS404PF**
Safety shutter padlock device • Up to three padlocks (with ø6 hasp) can be installed on each side using padlocking unit. (Padlock not supplied) • In the closed position, the shutters are locked to the extent that they cannot be easily unlocked by hand. They can be unlocked and held open if required for the purpose of inspection or maintenance.		**HXFBC000XX**
 **Control circuit safety shutter** The control circuit safety shutter covers the control circuit contacts.		**HXSHU001XX**
 **Fixing bolts** The breaker fixing bolts hold the breaker body securely to the draw-out cradle in position. Use them if the ACB is subject to strong vibration.		**HXFBC000XX**
 **OCR tester** The OCR checker allows easy checking of the long time-delay trip, short time-delay trip, instantaneous trip, ground fault trip functions and the pretrip alarm function of the OCR in the field.		**HXOCR000XX**

Interlocking device for 2 feedings (Castell)

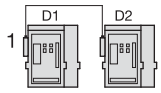
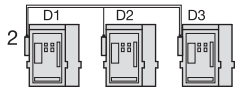
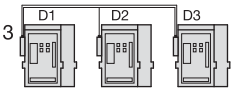
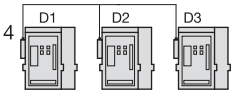


ACB3 cannot be closed

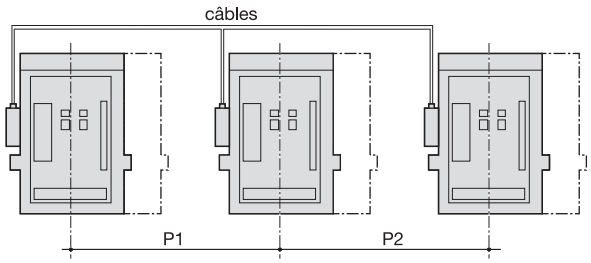
ACB2 cannot be closed

ACB1 cannot be closed

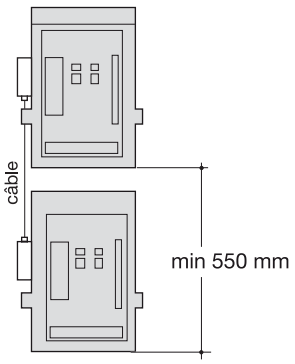
Interlock with cables

Example	Operation			Remark
	D1	D2	D3	
1 	ON	OFF	-	one of the two breakers can be turned on
	OFF	ON	-	
	OFF	OFF	-	
2 	ON	ON	OFF	one or two of the three breakers can be turned on
	ON	OFF	ON	
	OFF	ON	ON	
	ON	OFF	OFF	
	OFF	ON	OFF	
	OFF	OFF	ON	
	OFF	OFF	OFF	
3 	ON	OFF	OFF	one of the three breakers can be turned on
	ON	ON	OFF	
	OFF	OFF	ON	
	OFF	OFF	OFF	
4 	ON	OFF	ON	breaker 2 is interlocked with both breaker 1 and breaker 3
	ON	OFF	OFF	
	OFF	ON	OFF	
	OFF	OFF	ON	
	OFF	OFF	OFF	

Horizontal mounting



Vertical mounting



Setting range of protection functions

Protection function	Setting range
Adjustable long-time delay trip characteristics **LT**	
Pick up current Ir (A)	$[I_n]$ x (0,8 – 0,85 – 0,9 – 0,95 – 1,0 – NON) ; 6 graduations Non-tripping when load current ≤ ($[I_R]$x1.05). Tripping when ($[I_R]$x1.05) < load current ≤ ($[I_R]$x1.2)
Time-delay tr (s)	(0,5 – 1,25 – 2,5 – 5 – 10 – 15 – 20 – 25 – 30) at 600% $[I_R]$; 9 graduations
Time-delay setting tolerance (%)	± 15% + 150 ms – 0 ms
Adjustable short-time delay trip characteristics **ST**	
Pick up current Isd (A)	$[I_n]$ x (1 – 1,5 – 2 – 2,5 – 3 – 4 – 6 – 8 – 10 – NON) ; 10 graduations
Current setting tolerance (%)	± 15%
Time delay tsd (ms) Relay time Resettable time (ms) Max. total clearing time (ms)	[50] [100] [200] [400] [600] [800] ; 6 graduations 25 75 175 375 575 775 120 170 270 470 670 870
Adjustable instantaneous trip characteristics **INST or MCR** (INST only for OCR-11)	
Pick up current Ii (A)	$[I_n]$ x (2 – 4 – 6 – 8 – 10 – 12 – 14 – 16 – NON) ; 9 graduations
Current setting tolerance (%)	± 20%
Adjustable pre-trip alarm characteristics **PTA**	
Pick up current Ip1 (A)	$[I_n]$ x (0,75 – 0,8 – 0,85 – 0,9 – 0,95 – 1,0) ; 6 graduations
Current setting tolerance (%)	± 7.5%
Time-delay tp1 (s)	(5 – 10 – 15 – 20 – 40 – 60 – 80 – 120 – 160 – 200) at [IP1] or more ; 10 graduations
Time-delay setting tolerance (%)	± 15% + 100 ms – 0 ms
Adjustable ground fault trip characteristics **GF**	
Pick up current Ig (A)	$[I_{CT}]$ x (0,1 – 0,2 – 0,3 – 0,4 – 0,6 – 0,8 – 1,0 – NON) ; 8 graduations
Current setting tolerance (%)	± 20%
Time delay tg (s) Relay time Resettable time (ms) Max. total clearing time (ms)	[100] [200] [300] [500] [1000] [2000] ; 6 graduations 75 175 275 475 975 1975 170 270 370 570 1070 2070
Ground fault trip characteristics on line side **REF** (OCR-21, 31 only)	
Pick up current IRef (A)	$[I_{CT}]$ x (0,1 – 0,2 – 0,3 – 0,4 – 0,6 – 0,8 – 1,0 – NON) ; 8 graduations
Current setting tolerance (%)	± 20%
Time-delay (s)	Inst
N-phase protection characteristics **NP**	
Pick up current Ins (A)	$[I_{CT}]$ x (0,4 – 0,5 – 0,63 – 0,8 – 1,0); factory set to a user-specified value for AGR-11BL.
Time-delay tns (s)	Tripping at 600% of $[I_N]$ with LT time delay $[t_R]$
Time-delay setting tolerance (%)	± 15% + 150 ms – 0 ms
Phase rotation protection characteristics **NS** (OCR-21, 31 only)	
Pick up current $[I_{NS}]$ (A)	$[I_n]$ x (0,2 – 0,3 – 0,4 – 0,5 – 0,6 – 0,7 – 0,8 – 0,9 – 1,0 – NON) ; 9 graduations
Current setting tolerance (%)	± 10%
Time-delay $[t_{NS}]$ (s)	0,4 – 0,8 – 1,2 – 1,6 – 2 – 2,4 – 2,8 – 3,2 – 3,6 – 4 ; 10 graduations
Time-delay setting tolerance (%)	± 20% + 150 ms – 0 ms
Adjustable earth leakage trip characteristics **ELT** (OCR-31 only)	
Pick up current IΔr (A)	0,2 – 0,3 – 0,5 – 1 (medium sensitivity) ou 3 – 5 (low sensitivity)
Current setting tolerance (%)	Non operate below 70% d'$[I_R]$, operate between 70% et 100% of $[I_R]$
Time-delay tΔr (ms) Relay time	[100] [200] [300] [500] [1000] [2000] ; 6 graduations
Resettable time (ms)	50 150 250 450 950 1950
Max. total clearing time (ms)	250 350 450 600 1150 2150
Undervoltage alarm characteristics **UV** (OCR-31 only)	
Recovery setting voltage (V)	$[V_n]$ x (0,8 – 0,85 – 0,9 – 0,95) ; 4 graduations
Recovery voltage setting tolerance (%)	± 5%
Setting voltage (V)	$[V_n]$ x (0,4 – 0,6 – 0,8) ; 3 graduations
Voltage setting tolerance (%)	± 5%
Time-delay (s)	0,1 – 0,5 – 1 – 2 – 5 – 10 – 15 – 20 – 30 – 36 ; 10 graduations
Time-delay setting tolerance (%)	± 15% +100 ms - 0m
Control power	AC 100–120 V DC 100–125 V DC 24 V AC 200–240 V DC 200–250 V DC 48 V
Power consumption	5 VA : default setting

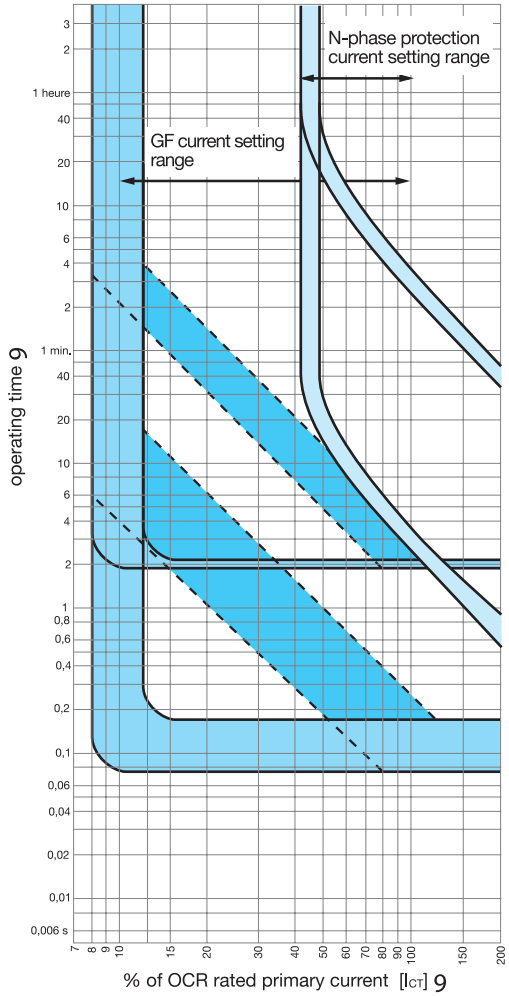
Values [ICT] and [In]

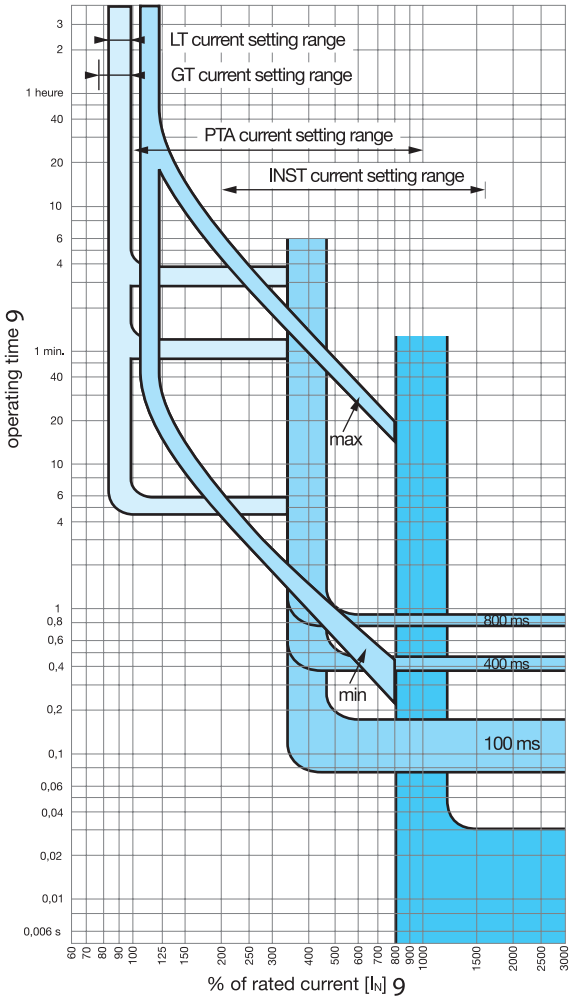
Type	Applicable [I_{CT}] (A)	Rated current			
		[I_{CT}] x 0.5	[I_{CT}] x 0,63	[I_{CT}] x 0,8	[I_{CT}] x 1,0
HWT208S	200	100	125	160	200
	400	200	250	320	400
	800	400	500	630	800
HWT212S	400	200	250	320	400
	800	400	500	630	800
	1250	630	800	1000	1250
HWT216S	400	200	250	320	400
	800	400	500	630	800
	1250	630	800	1000	1250
	1600	800	1000	1250	1600

Type	Applicable [I_{CT}] (A)	Rated current			
		[I_{CT}] x 0.5	[I_{CT}] x 0,63	[I_{CT}] x 0,8	[I_{CT}] x 1,0
HWT220S	400	200	250	320	400
	800	400	500	630	800
	1250	630	800	1000	1250
	1600	800	1000	1250	1600
	2000	1000	1250	1600	2000
HWT325S	2500	1250	1600	2000	2500

Type	Applicable [I_{CT}] (A)	Rated current			
		[I_{CT}] x 0.5	[I_{CT}] x 0,63	[I_{CT}] x 0,8	[I_{CT}] x 1,0
HWT212H	200	100	125	160	200
	400	200	250	320	400
	800	400	500	630	800
	1250	630	800	1000	1250
HWT216H	1600	800	1000	1250	1600
HWT220H	2000	1000	1250	1600	2000
HWT316H	200	100	125	160	200
	400	200	250	320	400
	800	400	500	630	800
	1250	630	800	1000	1250
	1600	800	1000	1250	1600
HWT320H	2000	1000	1250	1600	2000
HWT325H	2500	1250	1600	2000	2500

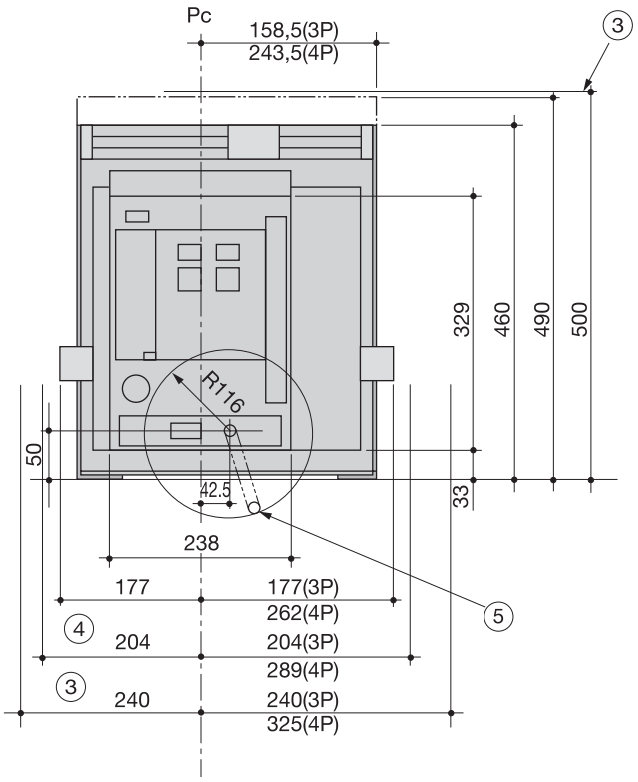
Protection characteristics

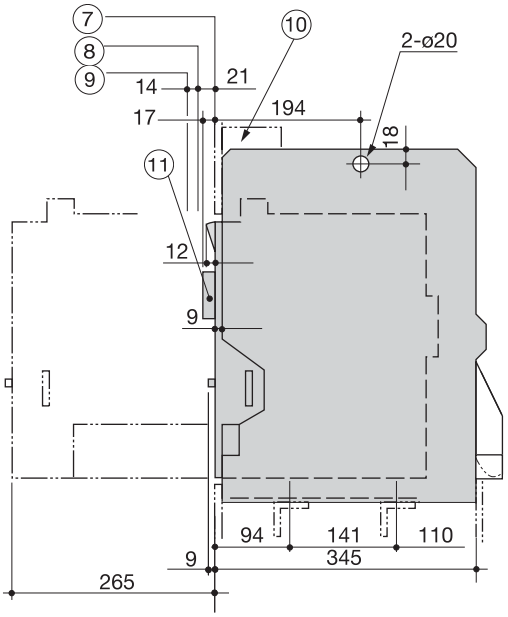




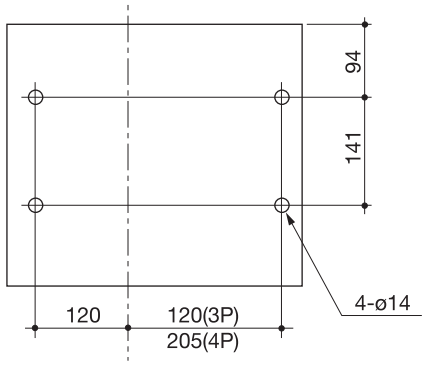
The ST trip characteristic shown in the figure applies when the ramp characteristic select switch is in the OFF position.

Dimensions





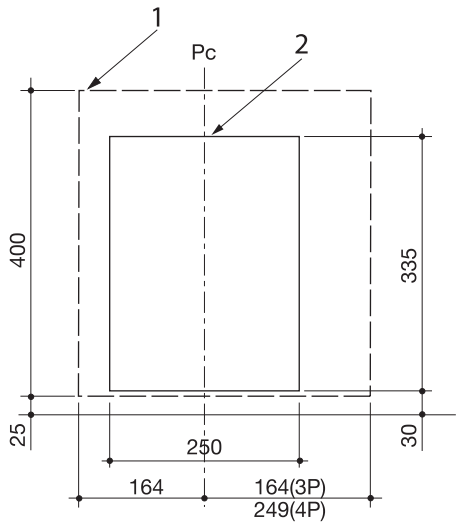
Mounting holes



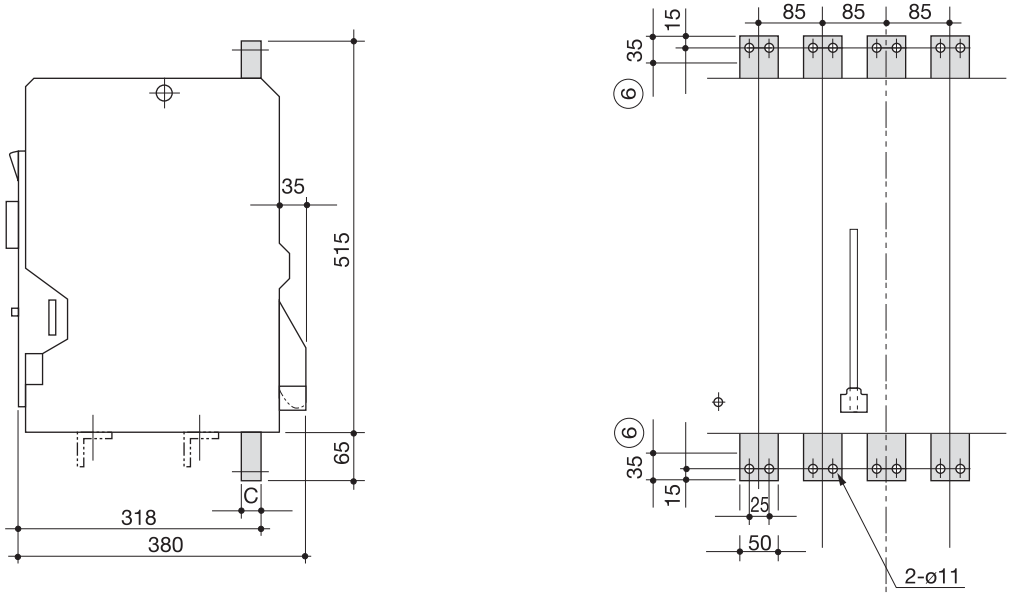
Legend :

1 rear panel cut
2 front panel cut
3 maintenance space
4 For fitted with breaker fixing bolts
5 draw-out handle
6 conductor overlap max.
7 CONNECTED position
8 TEST position
9 ISOLATED position
: control circuit terminal cover
; ON-OFF button cover
< M8 screw earth terminal
= draw-out arm
Pc : ACB front cover center line

Panel cut-out

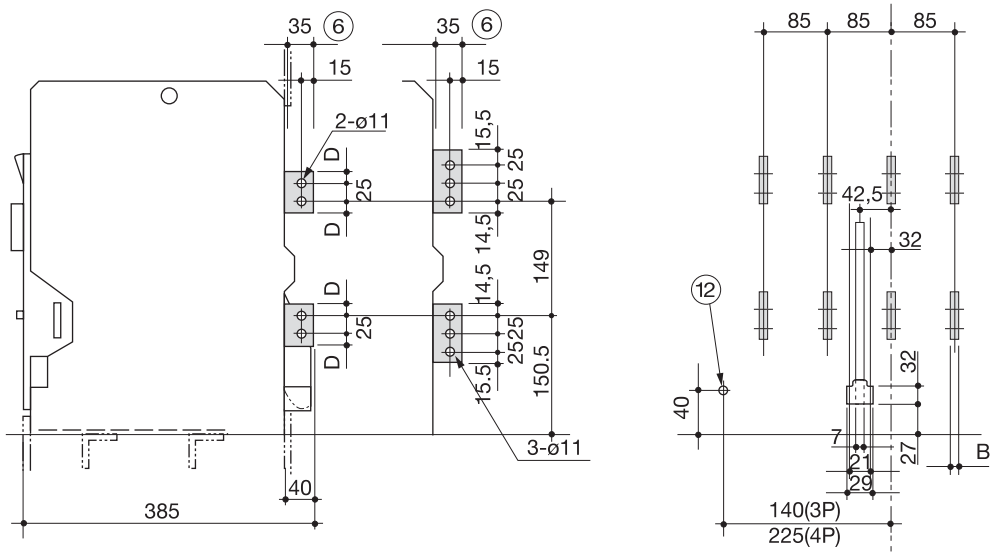


Front connections



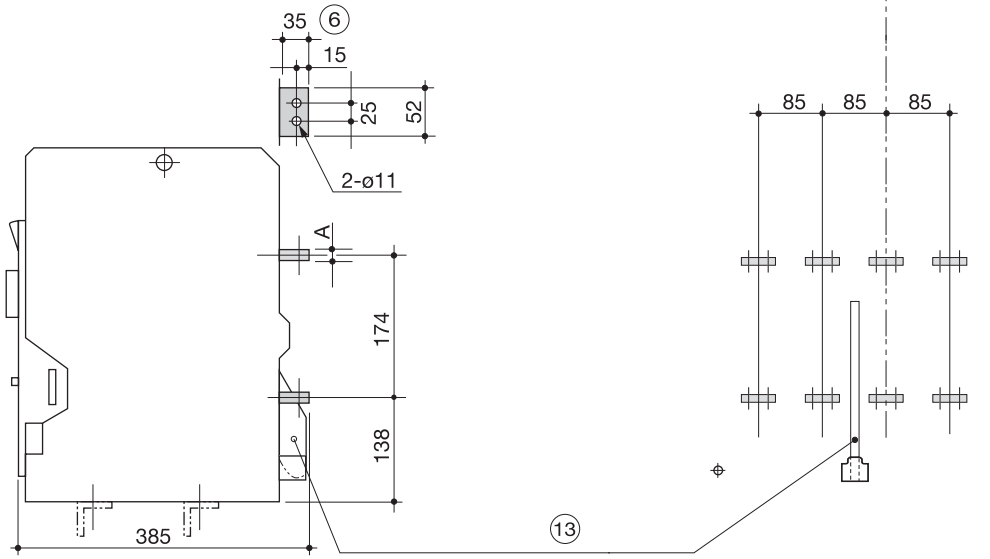
Dimensions of terminal		
Type	In (A)	C
HWT208S	800	15
HWT212S	1250	15
HWT216S	1600	25
HWT220S	2000	25

Vertical terminals



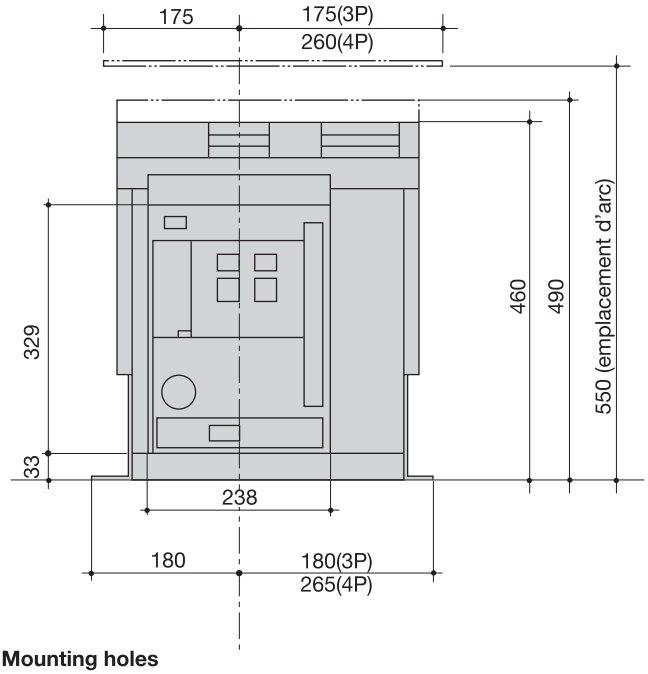
Dimensions of terminal			
Type	In (A)	B	D
HWT208S	800	10	17,5
HWT212S	1250	10	17,5
HWT216S	1600	15	22,5
HWT220S	2000	15	-

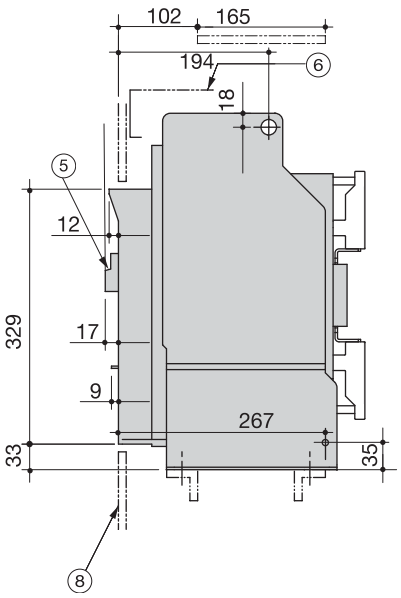
Horizontal terminals



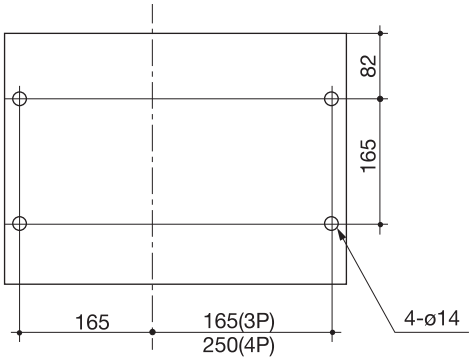
Dimensions of terminal		
Type	In (A)	A
HWT208S	800	10
HWT212S	1250	10
HWT216S	1600	20
HWT220S	2000	20

Dimensions





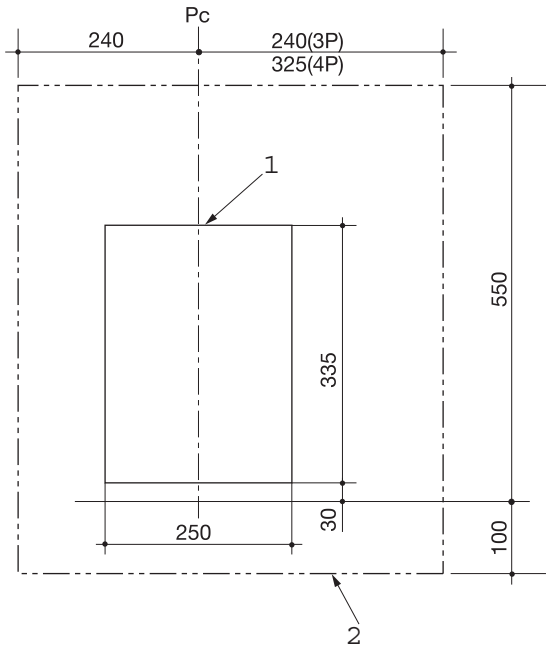
Mounting holes



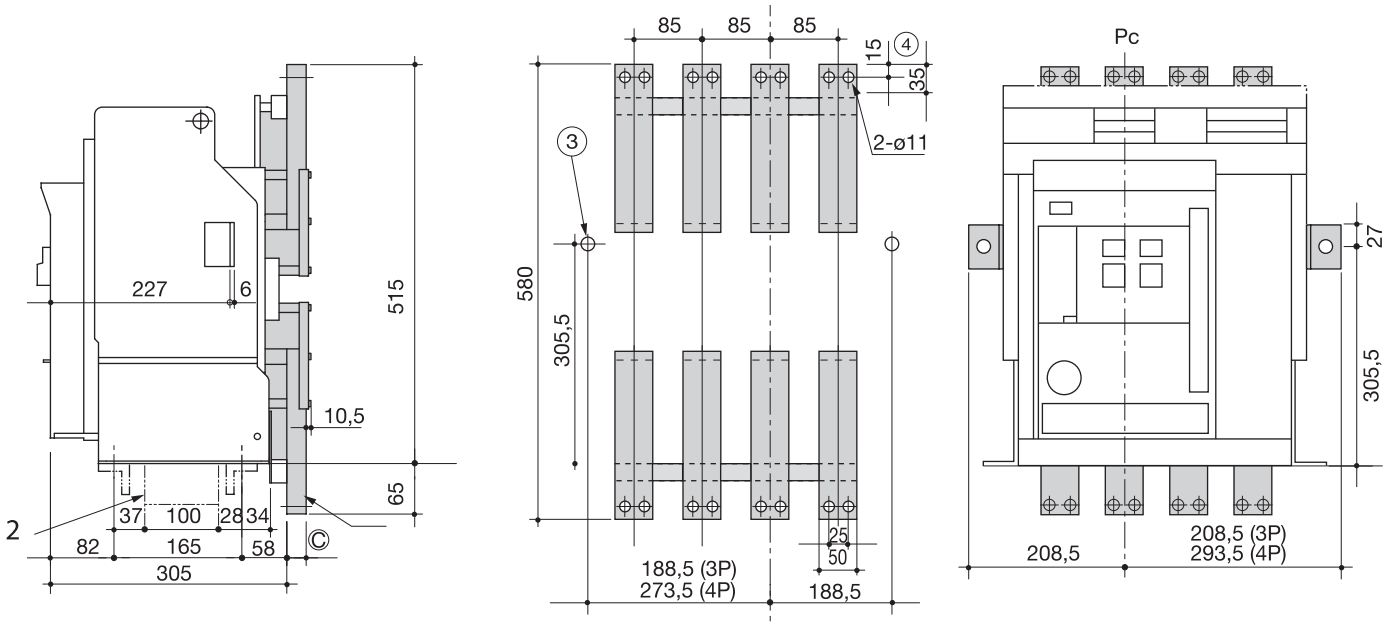
Legend :

1 front panel cut
2 maitenance space
3 mounting holes
4 conductor overlap, max.
5 ON-OFF button cover
6 control circuit terminal cover
7 M8 screw earth terminal
8 panel
Pc : ACB front cover center line

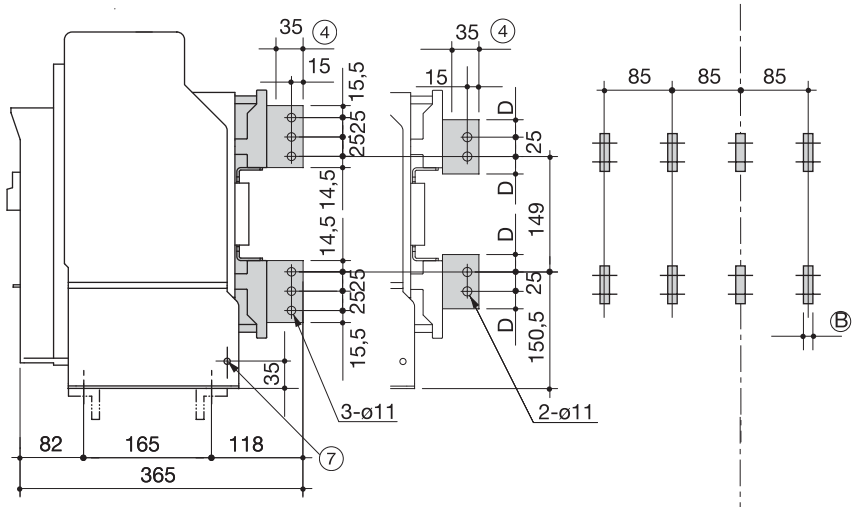
Panel cut-out



Front connections

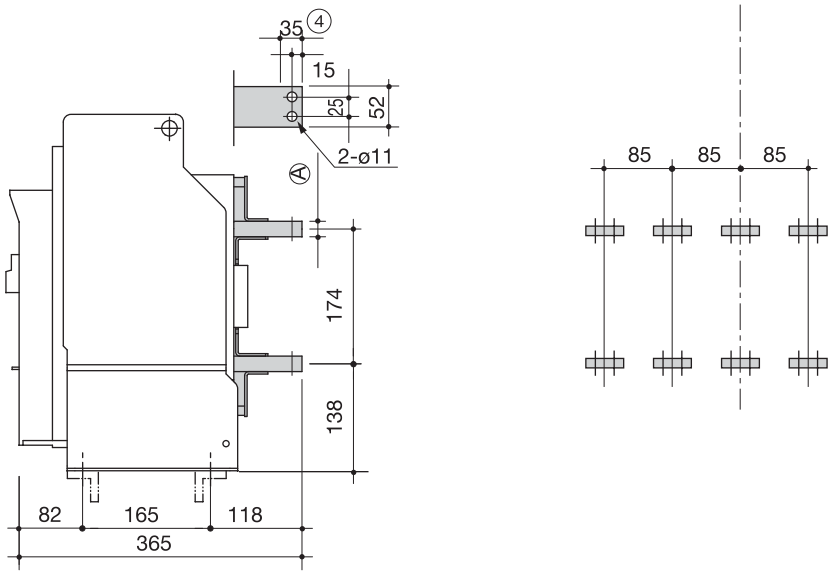


Vertical terminals

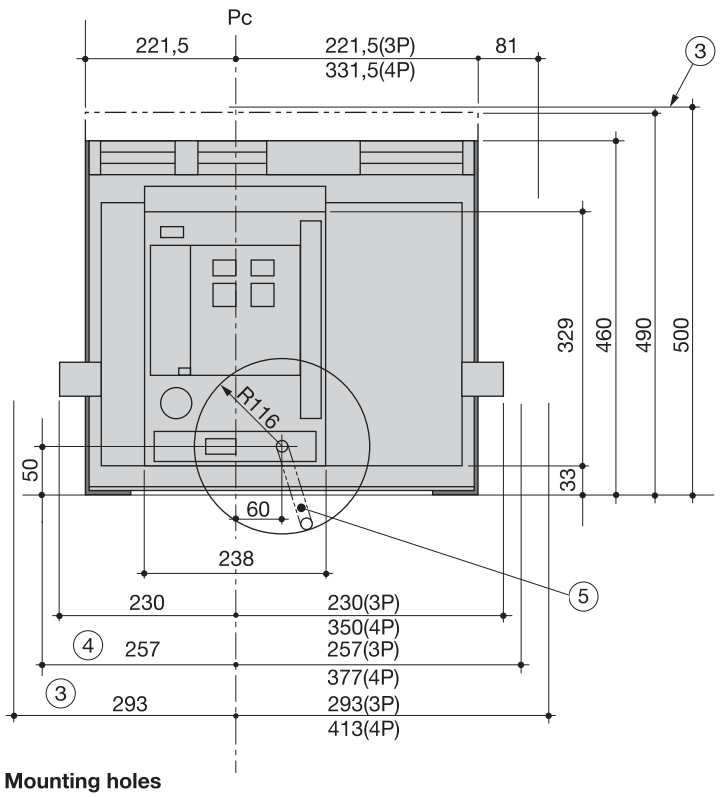


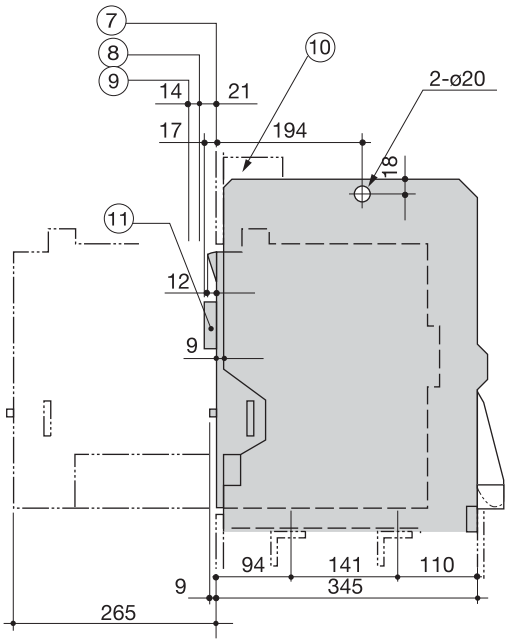
Dimensions of terminal				
Type	A	B	C	D
HWT208S	10	10	15	17,5
HWT212S	10	10	15	17,5
HWT216S	20	15	25	22,5
HWT220S	20	15	25	-

Horizontal terminals

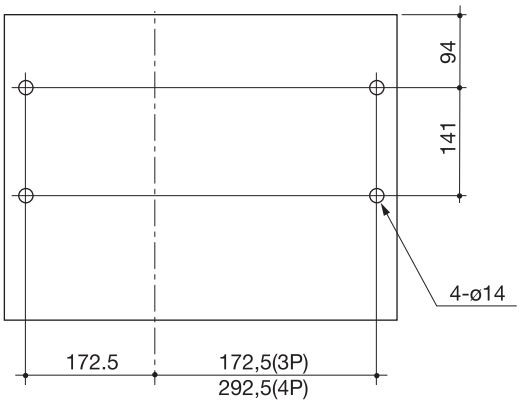


Dimensions





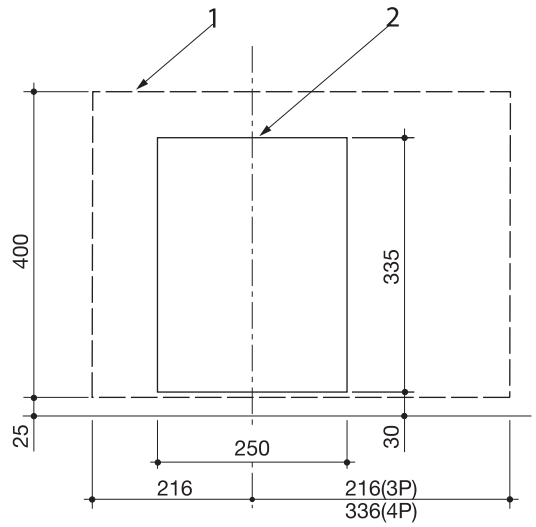
Mounting holes



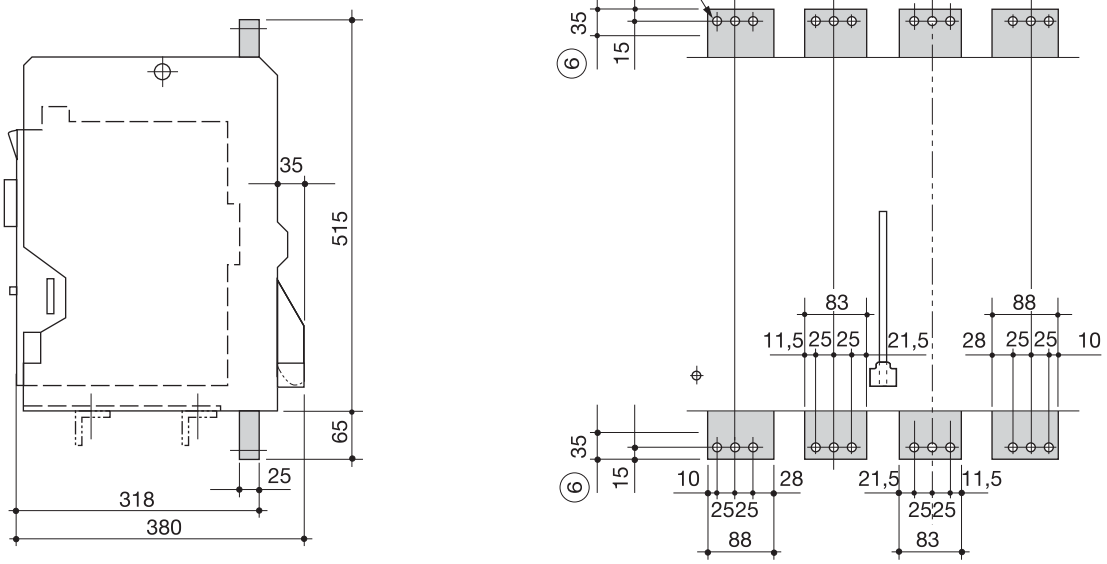
Legend :

1 rear panel cut
2 front panel cut
3 maintenance space
4 For fitted with breaker fixing bolts
5 draw-out handle
6 conductor overlap max.
7 CONNECTED position
8 TEST position
9 ISOLATED position
: control circuit terminal cover
; ON-OFF button cover
< M8 screw earth terminal
= draw-out arm
Pc : ACB front cover center line

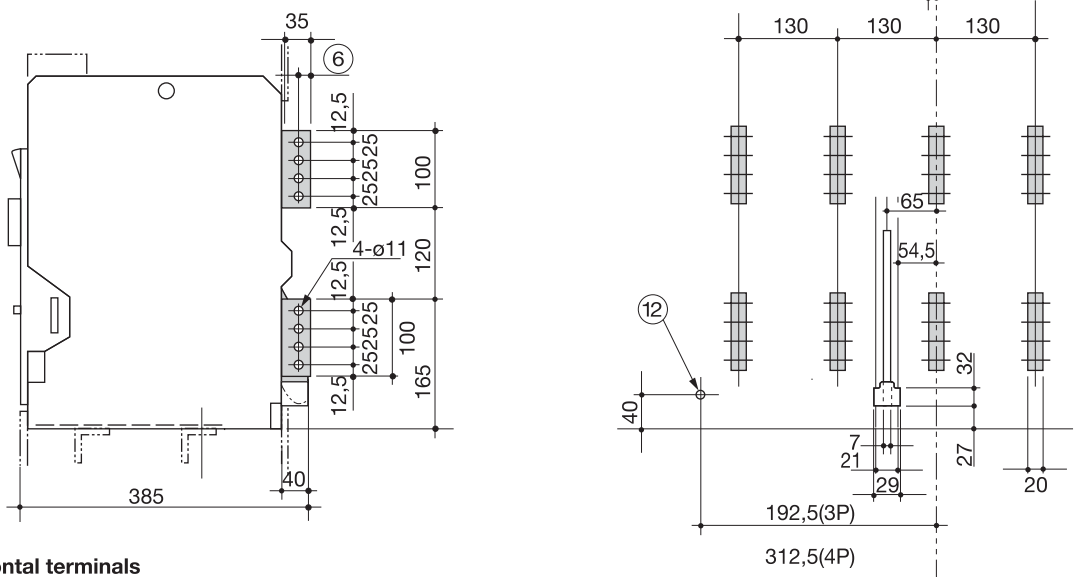
Panel cut-out



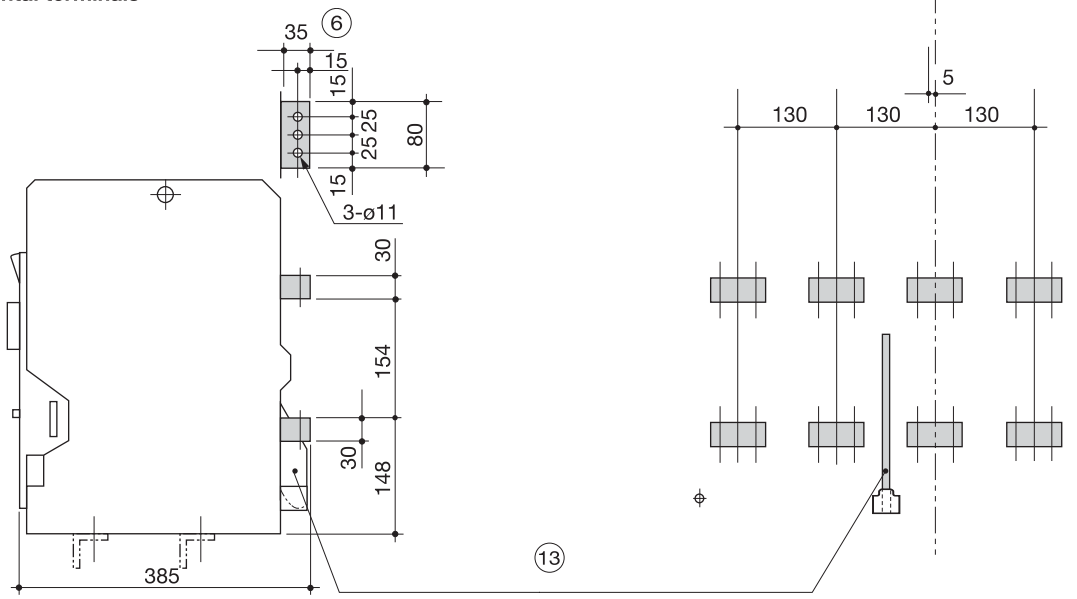
Front connections



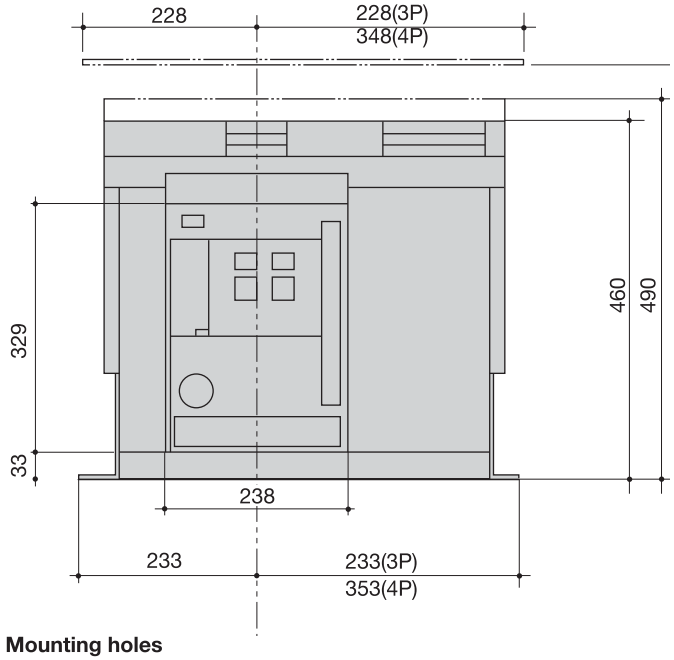
Vertical terminals

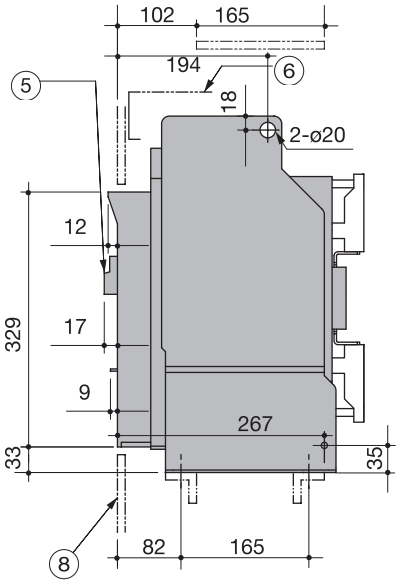


Horizontal terminals

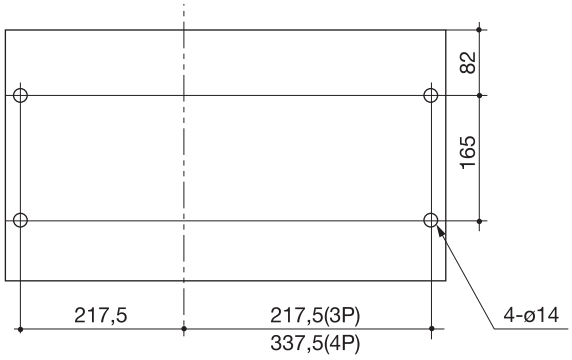


Dimensions





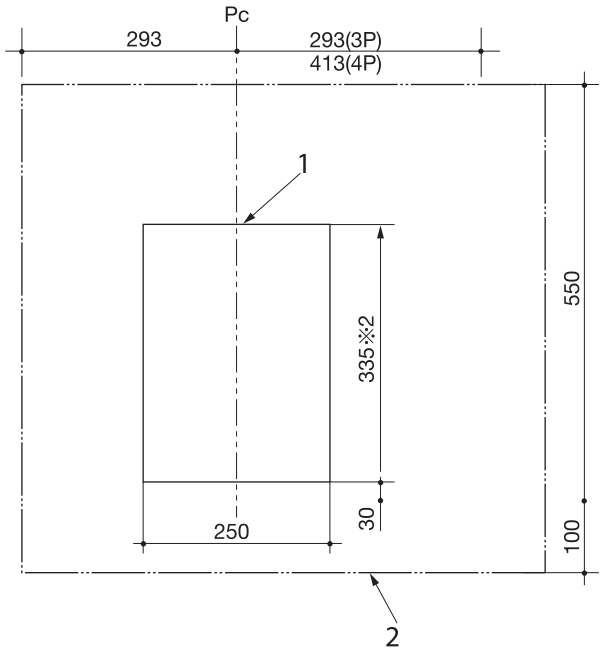
Mounting holes



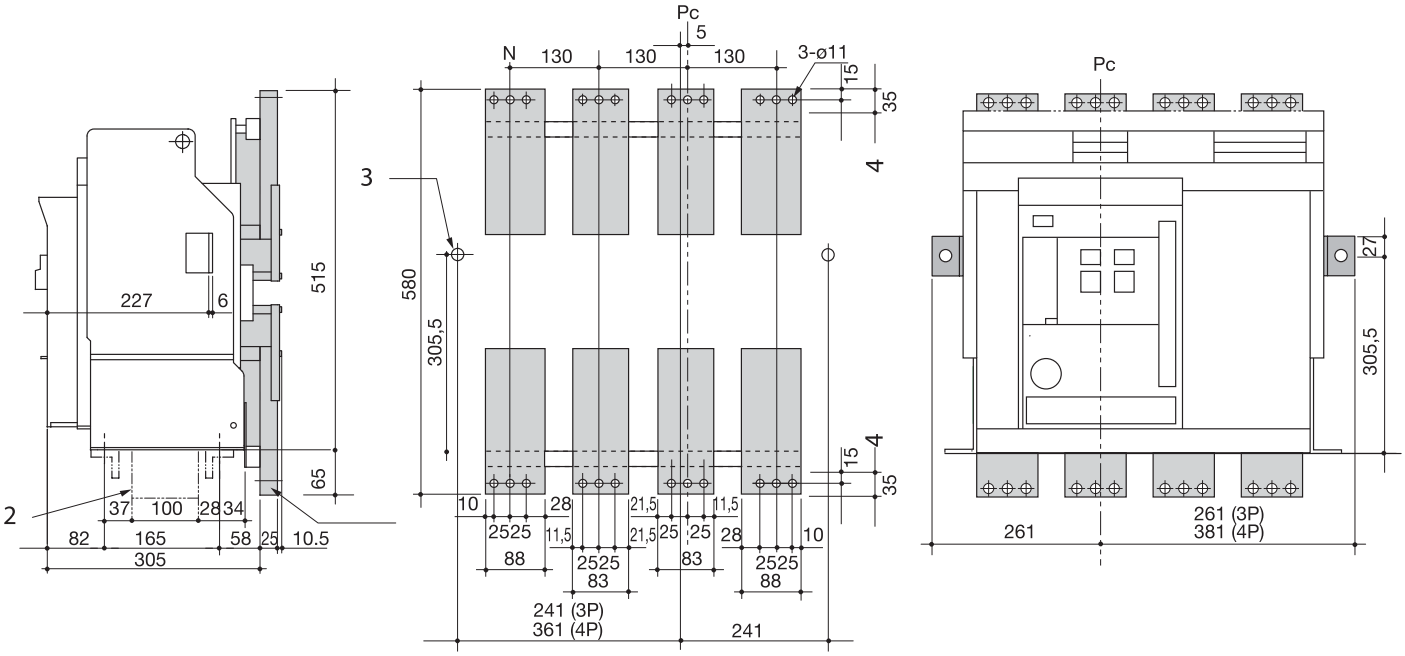
Legend :

1 front panel cut
2 maitenance space
3 mounting holes
4 conductor overlap, max.
5 ON-OFF button cover
6 control circuit terminal cover
7 M8 screw earth terminal
8 panel
Pc : ACB front cover center line

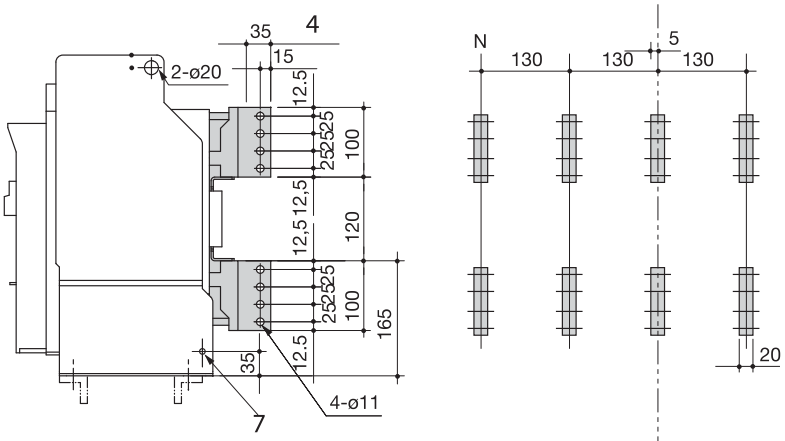
Panel cut-out



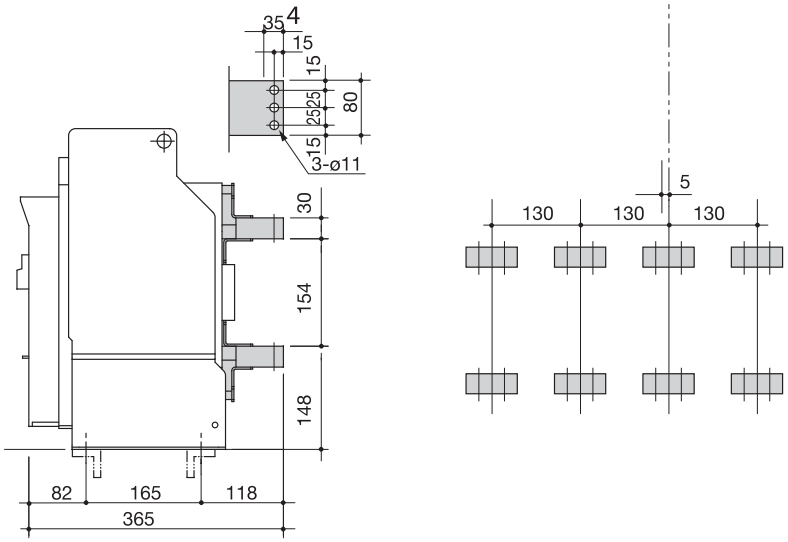
Front connections



Vertical terminals

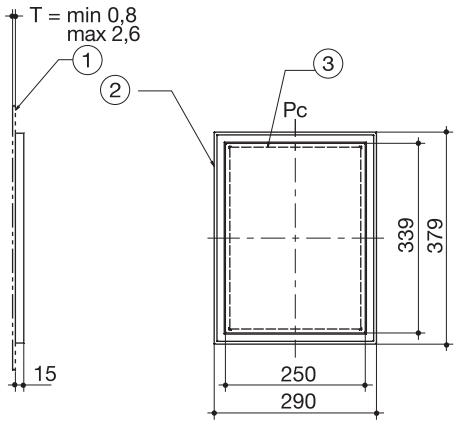


Horizontal terminals

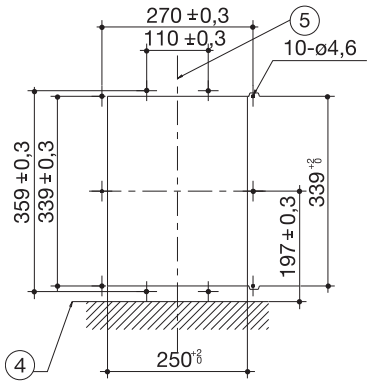


Technical characteristics

Door flange



Panel cut-out

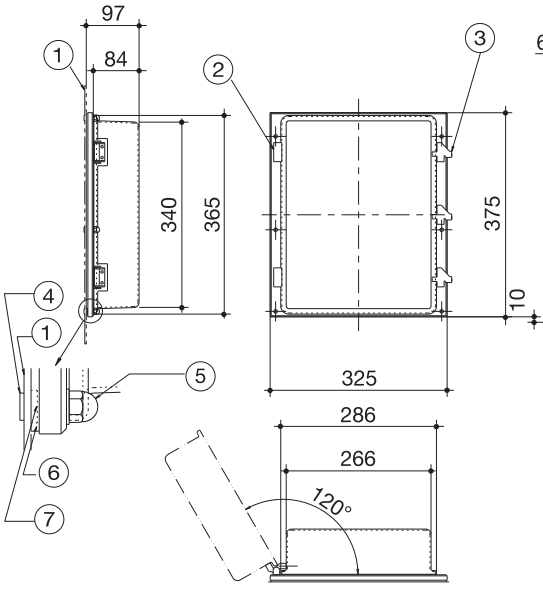


Legend :

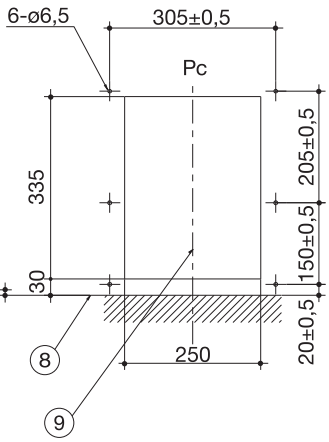
1. panel
2. door flange
3. rubber shield
4. floor level for ACB
5. ACB front cover center line (Pc)

Protection IP
standard : IP20
with rubber shield : IP31

IP55 cover



Panel cut-out

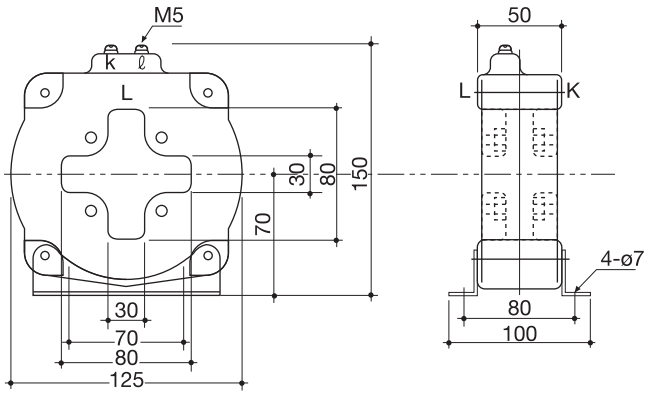


Legend :

1. panel
2. hinge
3. hook (Ø 6 mm padlocking)
4. hexagon socket head bolt
5. domedcap nut
6. gasket
7. bushing
8. floor level for ACB
9. ACB front cover center line (Pc)

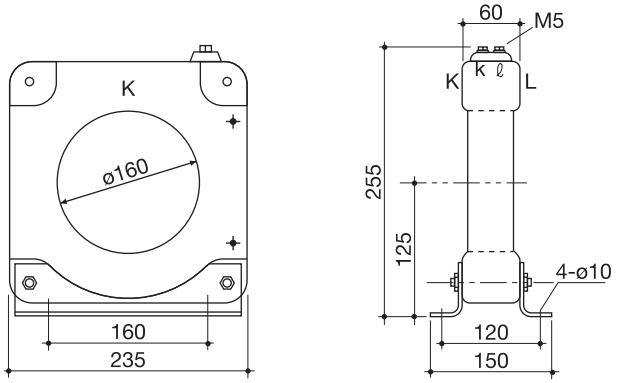
Technical characteristics

Dimensions of CT for neutral line



rated primary current (A)	200, 400, 800, 1250, 1600
rated secondary current (A)	5

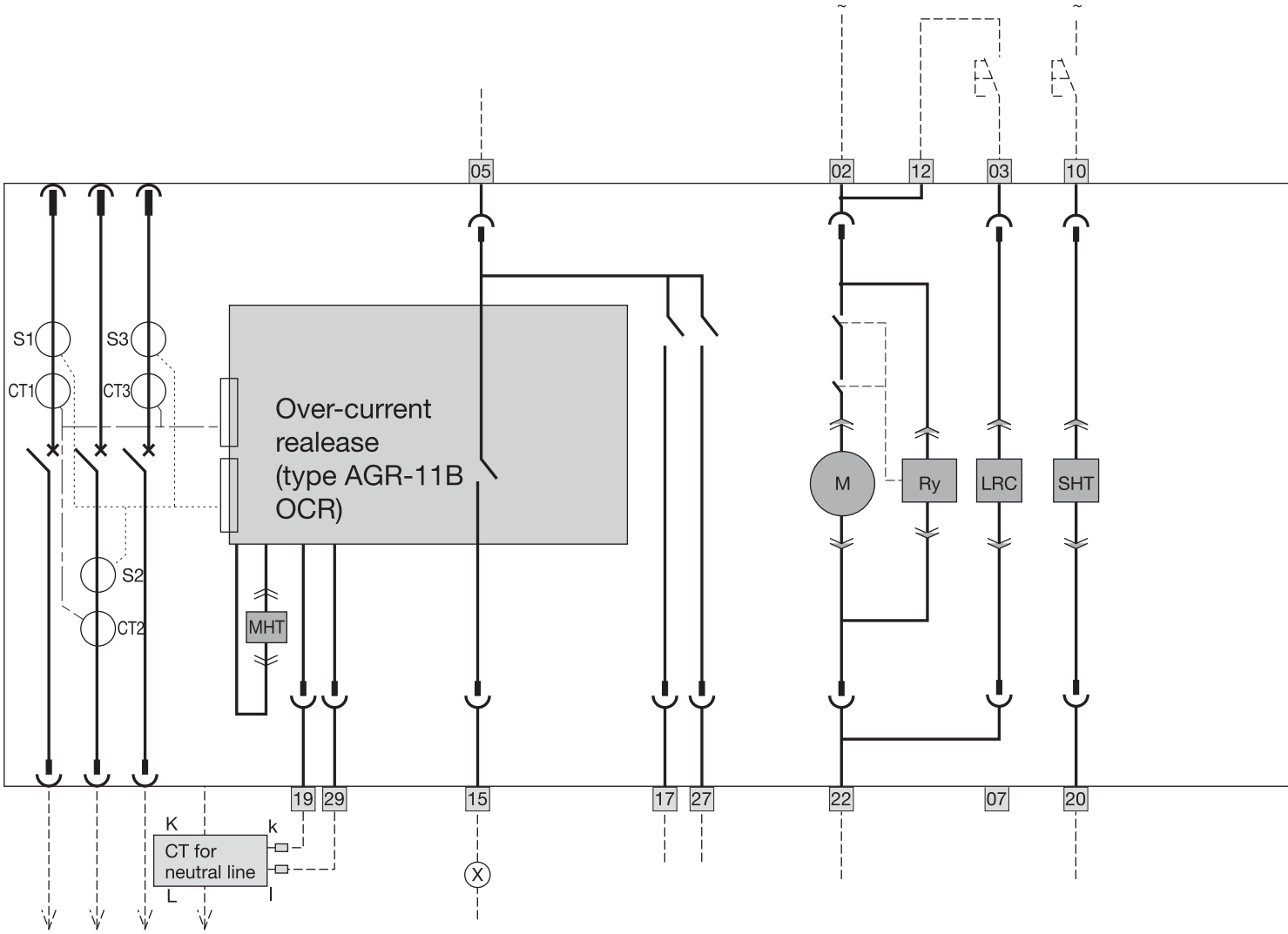
For HWT208S, HWT212S, HWT216S, HWT212H, HWT216H, HWT316H.



rated primary current (A)	2000, 2500
rated secondary current (A)	5

For other HWT type ACBs (from 2000A).

Technical characteristics



Terminal description

- 02 22 control power supply AC100 - 240V, DC100 - 250V, DC24V, DC48V
- 12 operation switch, common
- 03 ON switch
- 05 operation indication terminal, common
- 15 OCR trip indication or single-contact trip indication (40ms signal)
- 17 trip indication (not ready indication)
- 27 spring charge indicator
- 10 20 continuously-rated shunt trip
- 19 separate CT for neutral line (k)
- 29 separate CT for neutral line (l)
- 08 18 28 UVT power supply
- 09 UVT power supply common

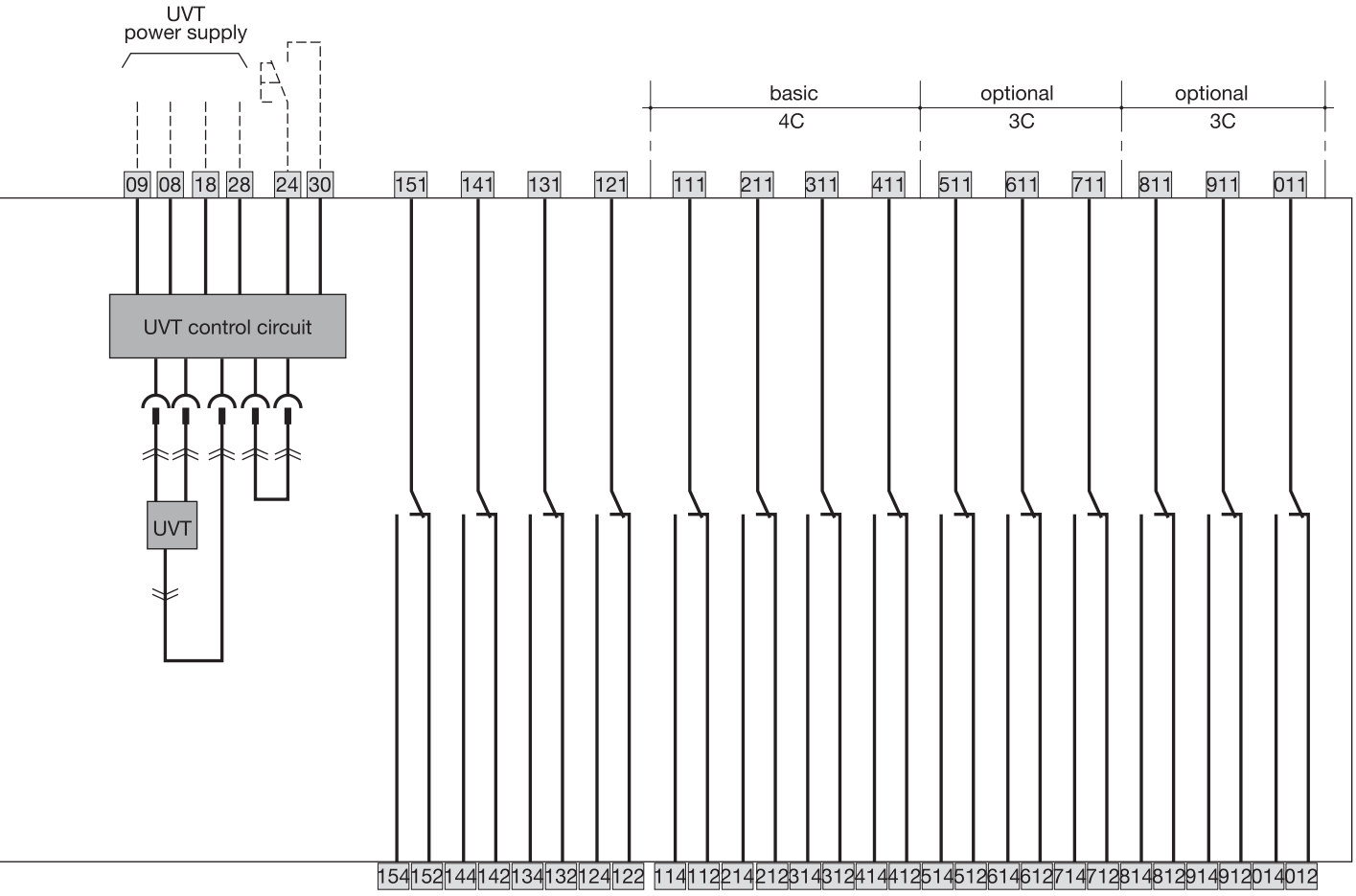
Do not exceed specified voltages

Symbols for accessories

CT1–CT3 : power CTs
S1–S3 : current sensors
M : charging motor
LRC : latch release coil
MHT : magnetic hold trigger
— — — : User wiring

UVT power supply

Terminal n°	AC 100 V unit	AC 200 V unit	AC 400 V unit
08 — 09	100 V	200 V	380 V
18 — 09	110 V	220 V	415 V
28 — 09	120 V	240 V	440 V



Position switches

Top	151	141	131	121
Middle	154	144	134	124
Bottom	152	142	132	122

Operation/ control circuits

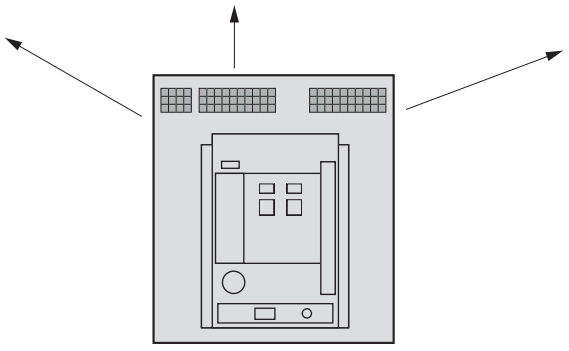
01	02	03	04	05	06	07	08	09	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

Auxiliary switches

111	211	311	411	511	611	711	811	911	011
114	214	314	414	514	614	714	814	914	014
112	212	312	412	512	612	712	812	912	012

(4c + optional 6c arrangement)

Top	131	121
Middle	134	124
Bottom	132	122



111	211	311	411
114	214	314	414
112	212	312	412

(4c arrangement)

Designation of terminals for auxiliary and position switches

***

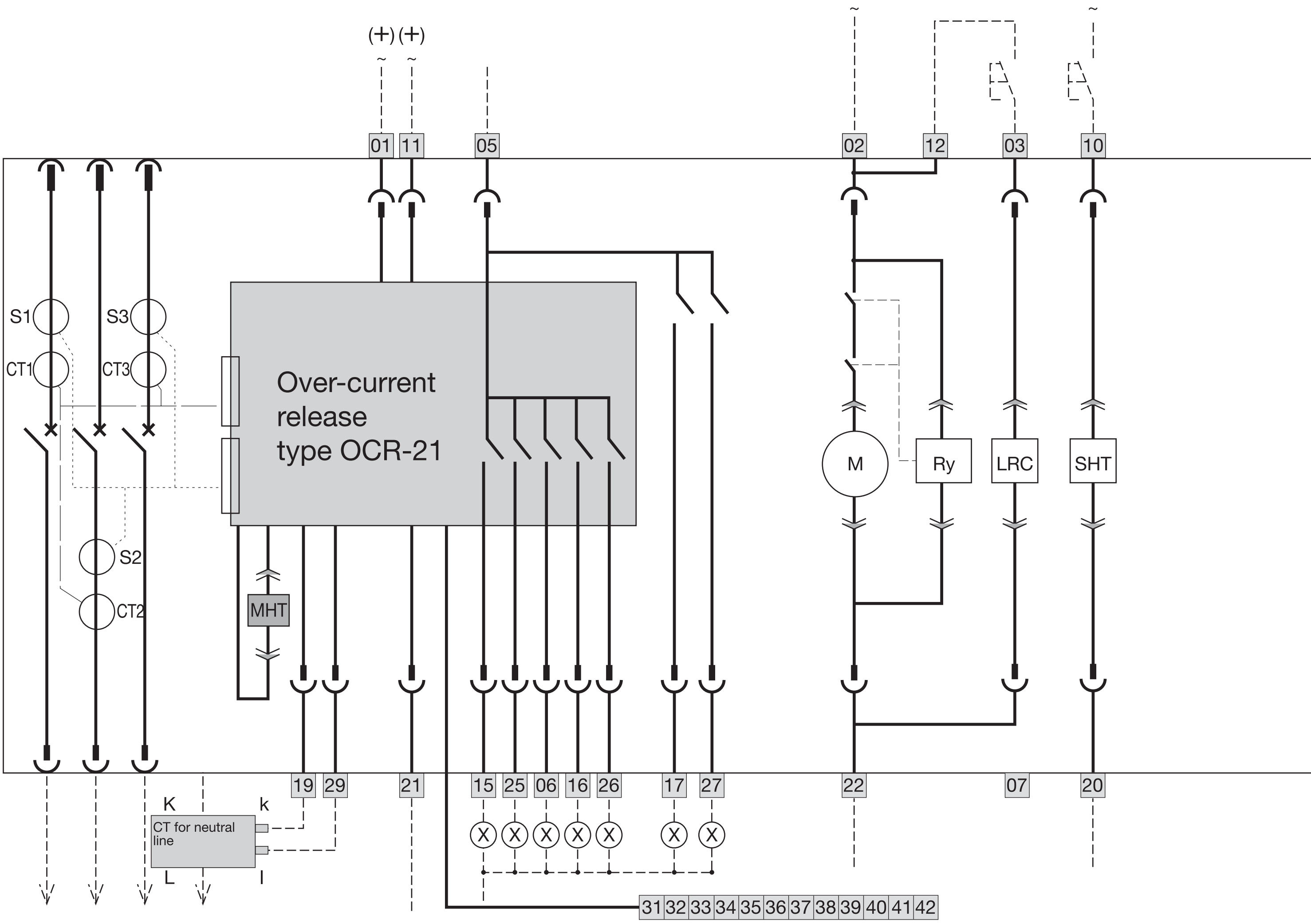
1 : common
2 : b-contact
3 : a-contact

1 : auxiliary switch
2 : position switch (for CONNECTED)
3 : position switch (for TEST)
4 : position switch (for ISOLATED)
5 : position switch (for INSERT)

1 – 0 : Switch numbers
A,B,C : Auxiliary switches for microload

CONNECTED position: 121 – 124 ON
121 – 122 OFF
TEST position : 131 – 134 ON
131 – 132 OFF
ISOLATED position : 141 – 144 ON
141 – 142 OFF
INSERT position : 151 – 154 ON
151 – 152 OFF

Technical characteristics



Terminal description

- 01 21 control power supply 200-240 V AC, 200-250 V DC, 48 V DC
- 01 11 control power supply 100-120 V AC
- 11 21 control power supply 100-125 V DC, 24 V DC
- 02 22 control power supply 100-240 V AC, DC 100-250 V, DC 24 V, DC 48 V
- 12 operation switch, common
- 03 ON switch
- 05 operation indication terminal, common
- 15 LT trip indication
- 25 ST, INST trip indication
- 06 PTA indication
- 16 GF trip indication
- 26 system alarm indication
- 17 REF, NS or trip indication
- 27 spring charge indication
- 10 20 continuously-rated shunt trip
- 19 separate CT for neutral line (k)
- 29 separate CT for neutral line (l)
- 08 18 28 UVT power supply
- 09 UVT power supply common
- 35 separate CT for REF (k)
- 36 separate CT for REF (l)
- 41 42 communication line
- 32 communication lline (common)

Symbols for accessories

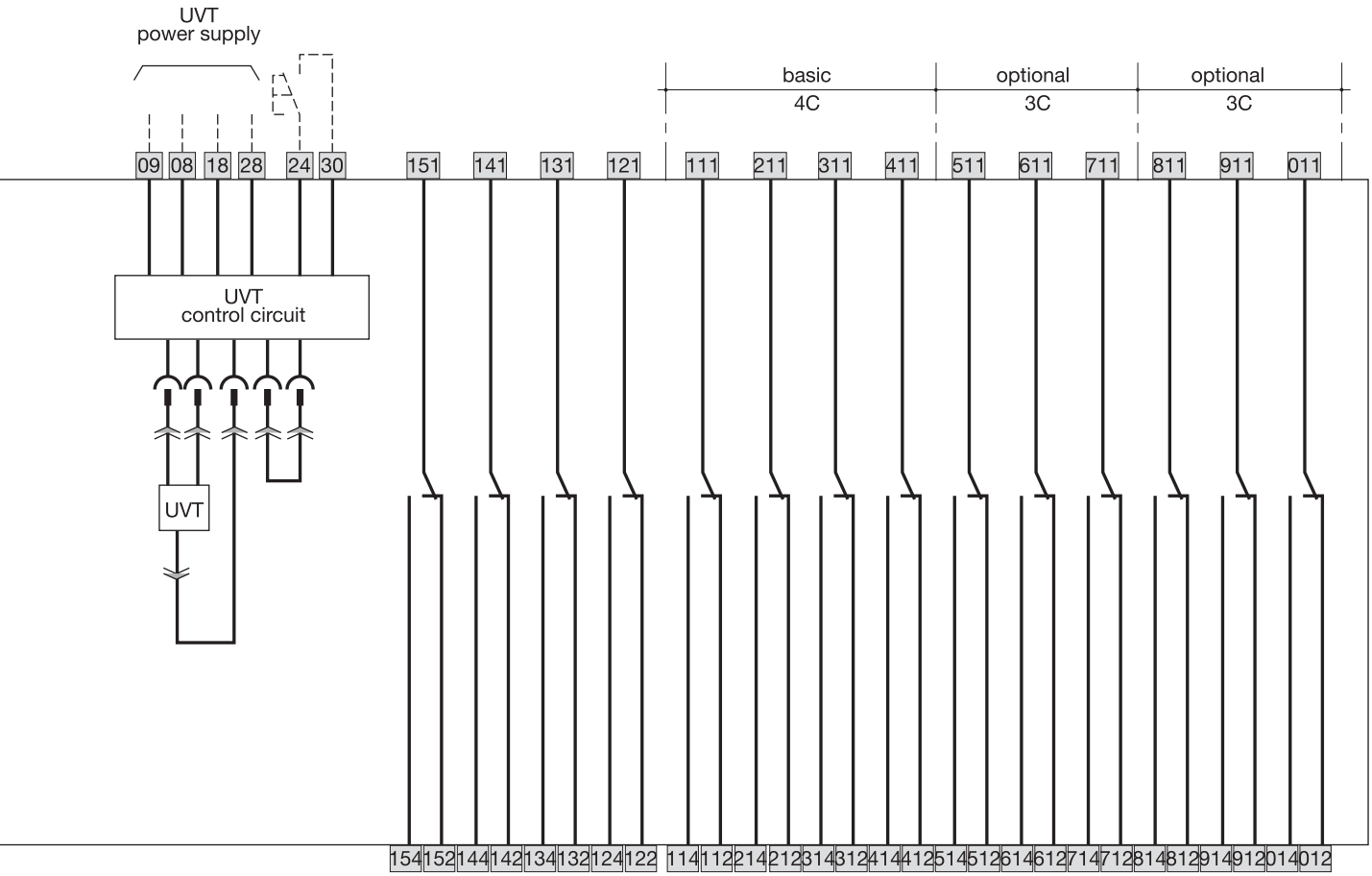
CT1–CT3 : power CTs
S1–S3 : current sensors
M : charging motor
LRC : latch release coil
MHT : magnetic hold trigger
—<— : isolating teminal connector (for draw-out type)
—«— : manual connector
--- : user wiring
--⊗-- : relay or indicator lamp

UVT power supply

terminal No.	AC 100 V unit	AC 200 V unit	AC 400 V unit
08 - 09	100 V	200 V	380 V
18 - 09	110 V	220 V	415 V
28 - 09	120 V	240 V	440 V

terminal No.	DC
08 (+) 09 (-)	24 V
08 (+) 09 (-)	48 V
08 (+) 09 (-)	110 V

⚠ Do not exceed specified voltages.



Position switches

Top	151	141	131	121
Middle	154	144	134	124
Bottom	152	142	132	122

Operation / control circuits

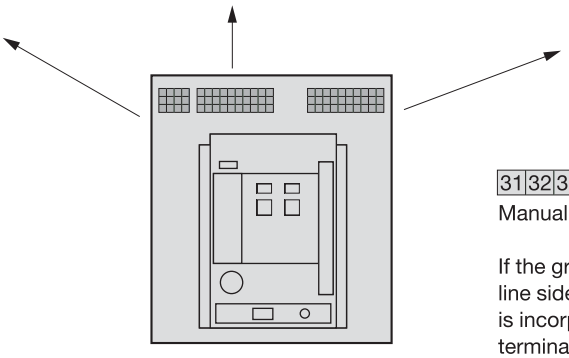
01	02	03	04	05	06	07	08	09	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

Auxiliary switches

111	211	311	411	511	611	711	811	911	011
114	214	314	414	514	614	714	814	914	014
112	212	312	412	512	612	712	812	912	012

4c + optional 6c arrangement

Top	131	121
Middle	134	124
Bottom	132	122



111	211	311	411	
114	214	314	414	
112	212	312	412	

4c arrangement

31	32	33	34	35	36	37	38	39	40	41	42	

Manual connection

If the ground fault protection on the line side or communication function is incorporated, control circuit terminals are of manual connection type.

Designation of terminals for auxiliary and position switches

***

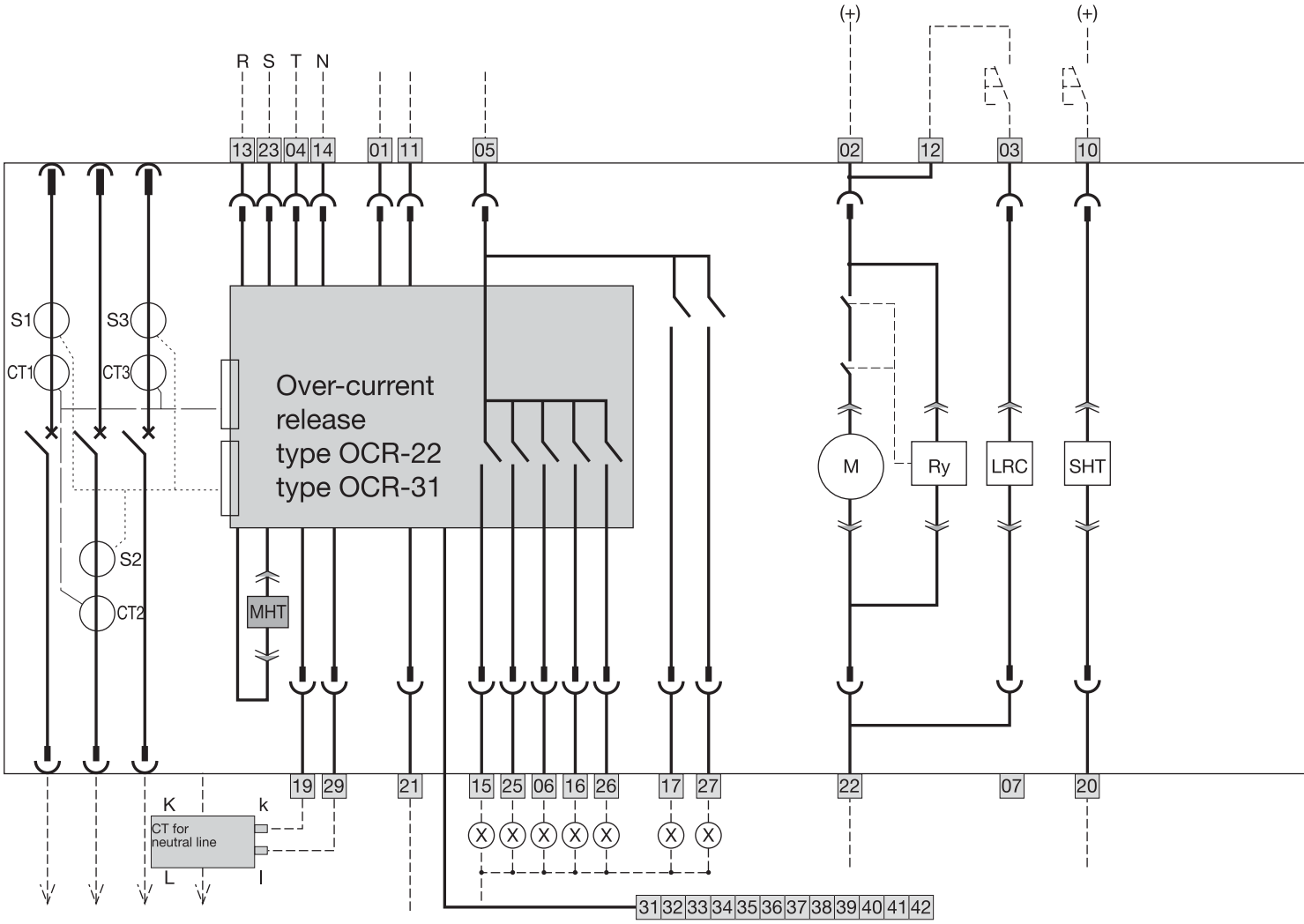
1 : common
2 : b-contact
3 : a-contact

1 : auxiliary switch
2 : position switch (for CONNECTED)
3 : position switch (for TEST)
4 : position switch (for ISOLATED)
5 : position switch (for INSERT)

1 – 0 : switch numbers
A,B,C : auxiliary switches for microload

CONNECTED position : 121 – 124 ON
121 – 122 OFF
TEST position : 131 – 134 ON
131 – 132 OFF
ISOLATED position : 141 – 144 ON
141 – 142 OFF
INSERT position : 151 – 154 ON
151 – 152 OFF

Technical characteristics



Terminal description

- 01 21 control power supply 200-240V AC, 200-250V DC, 48V DC
- 01 11 control power supply 100-120V AC
- 11 21 control power supply 100-125V DC, 24V DC
- 02 22 control power supply 100-240V AC, 100-250V DC, 24V DC, 4 V DC
- 12 operation switch, common
- 03 ON switch
- 05 operation indication terminal, common
- 15 LT trip indication
- 25 ST, INST trip indication
- 06 PTA indication
- 16 GF trip indication or RPT trip indication
- 26 system alarm indication
- 17 REF, NS or trip indication
- 27 PTA2, UV or spring charge indication
- 10 20 continuously-rated shunt trip
- 19 separate CT for neutral line (k)
- 29 separate CT for neutral line (l)
- 08 18 28 UVT power supply
- 09 UVT power supply common
- 35 separate CT for REF (k)
- 36 separate CT for REF (l)
- 41 42 communication line
- 32 communication line (common)

Symbols for accessories

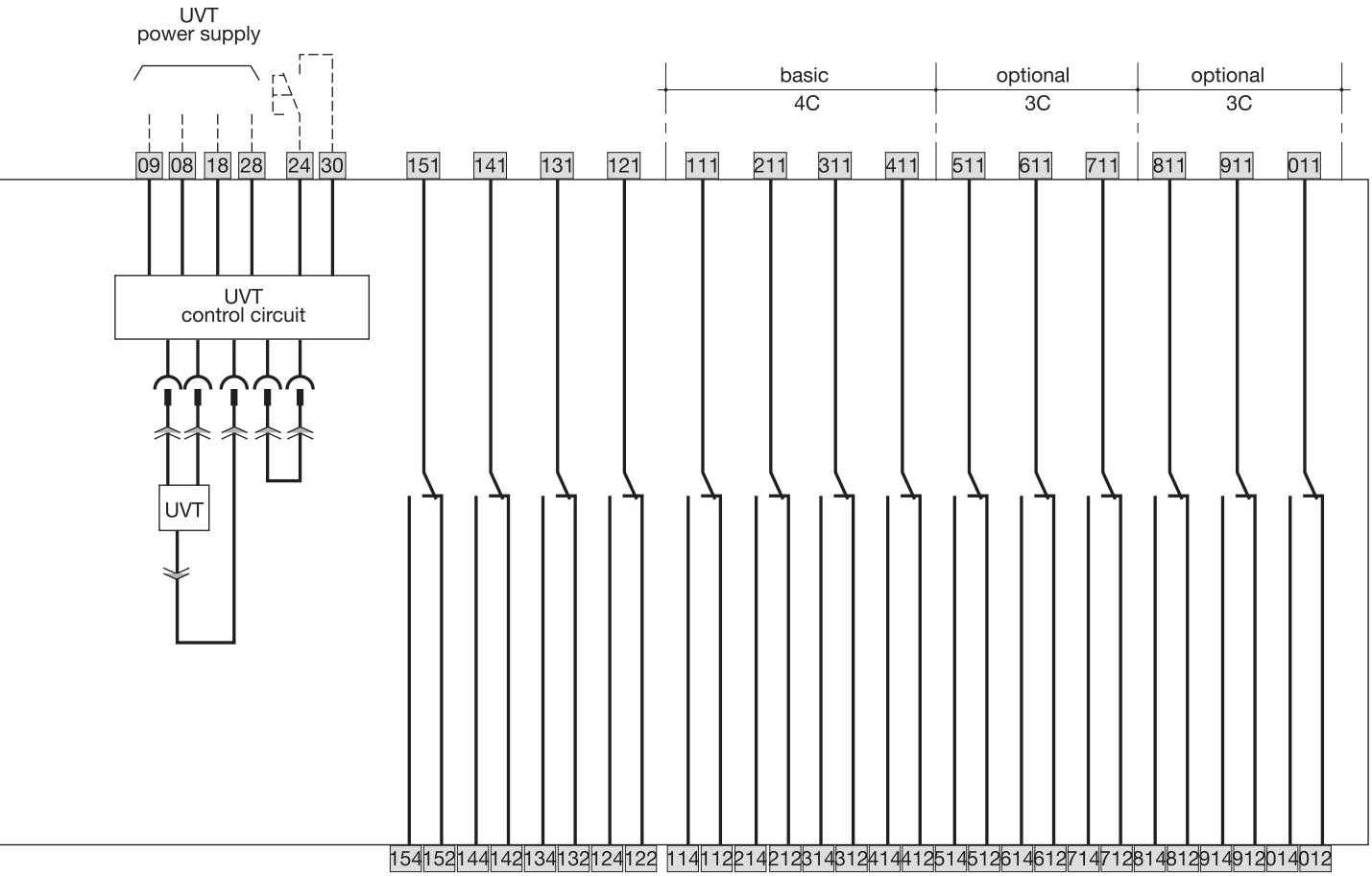
CT1–CT3 : power CTs
S1–S3 : current sensors
M : charging motor
LRC : latch release coil
MHT : magnetic hold trigger
-⊂— : Isolating terminal connector (for draw-out type)
-⋘— : manual connector
--- : user wiring
--Ⓧ-- : relay or indicator lamp

UVT power supply

terminal No.	AC 100 V unit	AC 200 V unit	AC 400 V unit
08 - 09	100 V	200 V	380 V
18 - 09	110 V	220 V	415 V
28 - 09	120 V	240 V	440 V

terminal No.	DC
08 (+) 09 (-)	24 V
08 (+) 09 (-)	48 V
08 (+) 09 (-)	110 V

⚠ Do not exceed specified voltages



Position switches

Top	151	141	131	121
Middle	154	144	134	124
Bottom	152	142	132	122

Operation/control circuits

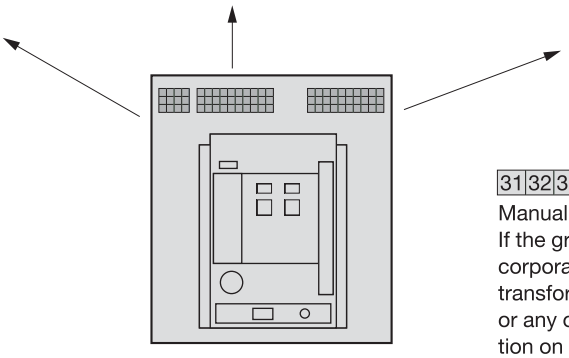
01	02	03	04	05	06	07	08	09	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

Auxiliary switches

111	211	311	411	511	611	711	811	911	011
114	214	314	414	514	614	714	814	914	014
112	212	312	412	512	612	712	812	912	012

4c + optional 6c arrangement

Top	131	121
Middle	134	124
Bottom	132	122



111	211	311	411	
114	214	314	414	
112	212	312	412	

4c arrangement

31	32	33	34	35	36	37	38	39	40	41	42	

Manual connection
If the ground fault protection is incorporated and a separate current transformer for neutral line is used, or any one of ground fault protection on the line side, zone interlock or communication function is incorporated, control circuit terminals are of manual connection type.

Designation of terminals for auxiliary and position switches

***

1 : common
2 : b-contact
3 : a-contact

1 : auxiliary switch
2 : position switch (for CONNECTED)
3 : position switch (for TEST)
4 : position switch (for ISOLATED)
5 : position switch (for INSERT)

1 – 0 : switch numbers
A,B,C : auxiliary switches for microload

CONNECTED position : 121 – 124 ON
121 – 122 OFF
TEST position : 131 – 134 ON
131 – 132 OFF
ISOLATED position : 141 – 144 ON
141 – 142 OFF
INSERT position : 151 – 154 ON
151 – 152 OFF

Discrimination chart according to IEC 60947-2
ACBs / MCCBs

	Icc (kA)	Upstream	**frame II, type HWT208S**				**frame II, type HWT212S frame II, type HWT212H**				**frame II, type HWT216S frame II, type HWT216H**				**frame II, type HWT220S frame II, type HWT220H**			
	Downstream		**max rated current 800A Icu = Ics = 65 kA @ 440V**				**max rated current 1250A Icu = Ics = 65 kA @ 440V Icu = Ics = 80 kA @ 440V**				**max rated current 1600A Icu = Ics = 65 kA @ 440V Icu = Ics = 80 kA @ 440V**				**max rated current 2000A Icu = Ics = 65 kA @ 440V Icu = Ics = 80 kA @ 440V**			
			OCR: 11Bx, 21Bx, 31Bx I_R, t_R of the MCCB / Isd, tsd of the ACB > Isd, tsd of the MCCB / Ii = 16 x In, NON, MCR ON															
		(A)	400	500	630	800	630	800	1000	1250	800	1000	1250	1600	1000	1250	1600	2000
HDA HHA HNA	**x160 TM** 18/25/40 kA	16	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		25	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		32	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		40	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		50	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		63	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		80	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		100	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		125	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		160	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
HHB HNB	**x250 TM** 25/40 kA	100	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		125	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		160	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		200	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		225	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		250	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
HHG HNG HEG	**h250 TM** 25/50/65 kA	20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		32	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		50	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		63	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		100	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		125	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		160	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		200	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		250	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
HNH HEH	**h250 TM+** 50/70 kA	20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		32	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		50	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		63	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		100	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		125	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		160	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		250	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
HNC HEC	**h250 LSI** 50/70 kA	40	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		125	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		250	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
HHD HND HKD	**h400 TM** 25/50/70 kA	250	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		300	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		350	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		400	-	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
HND HED	**h630 LSI** 50/70kA	250	-	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		400	-	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		500	-	-	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		600	-	-	T	T	T	T	T	T	T	T	T	T	T	T	T	T
		630	-	-	-	T	-	T	T	T	T	T	T	T	T	T	T	T
HNK HEK	**h800 TM** 50/70 kA	630	-	-	-	T	-	T	T	T	T	T	T	T	T	T	T	T
		800	-	-	-	-	-	-	T	T	-	T	T	T	T	T	T	T
HNE HEE	**h1000 LSI** 50/70 kA	630	-	-	-	T	-	T	T	T	T	T	T	T	T	T	T	T
		700	-	-	-	T	-	T	T	T	T	T	T	T	T	T	T	T
		800	-	-	-	-	-	-	T	T	-	T	T	T	T	T	T	T
		7000	-	-	-	-	-	-	-	T	-	-	T	T	-	T	T	T
HNF HEF	**h1600 LSI** 50/70 kA	800	-	-	-	-	-	-	T	T	-	T	T	T	T	T	T	T
		1250	-	-	-	-	-	-	-	-	-	-	-	T	-	-	T	T
		1600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T

Breaking capacity according to IEC 947-2. Network : 3 phasis + neutral 220/380 ~ 240/415 V AC

notes : “T” = total discrimination (up to the breaking capacity of the downstream device)

“-” = no discrimination

frame III, type HWT316H				frame III, type HWT320H				frame III, type HWT325S frame III, type HWT325H				frame III, type HWT332S frame III, type HWT332H				frame IV, type HWT440SB			
max rated current 1600A Icu = Ics = 100 kA @ 440V				max rated current 2000A Icu = Ics = 100 kA @ 440V				max rated current 2500A Icu = Ics = 85 kA @ 440V Icu = Ics = 100 kA @ 440V				max rated current 2000A Icu = Ics = 85 kA @ 440V Icu = Ics = 100 kA @ 440V				max rated current 4000A Icu = Ics = 100 kA @ 440V			
800	1000	1250	1600	1000	1250	1600	2000	1250	1600	2000	2500	1600	2000	2500	3200	2000	2500	3200	4000
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
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T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
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T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
-	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
-	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
-	-	T	T	-	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
-	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
-	-	-	T	-	-	T	T	-	T	T	T	T	T	T	T	T	T	T	T
-	-	-	-	-	-	-	T	-	-	T	T	-	T	T	T	T	T	T	T

Max. cascading value in kA rms according to IEC 947-2 and IEC 60439-1 Network: 3 phases + neutral 220/380 - 240/415 VAC

					Upstream				
					frame II, type HWT208S	**frame II, type HWT212S**	**frame II, type HWT212H**	**frame II, type HWT216S**	**frame II, type HWT216H**
					max rated current 800A 400-500-630A	**max rated current 1250A 630-800-1000A**	**max rated current 800A 400-500-630A**	**max rated current 1600A 800-1000-1250A**	**max rated current 1600A 800-1000-1250A**
			IEC 60947-2		65 kA	65 kA	80 kA	65 kA	80 kA
				IEC 60439-1	65kA	65 kA	80 kA	65 kA	80 kA
Downstream	**x160 TM**	**HDA**	18 kA	40 kA	18/30	18/30	18/30	18/30	18/30
		HHA	25 kA	50 kA	25/40	25/40	25/40	25/40	25/40
		HNA	40 kA	100 kA	40/50	40/50	40/50	40/50	40/50
	x250 TM	**HHB**	25 kA	50 kA	25/40	25/40	25/40	25/40	25/40
		HNB	40 kA	100 kA	40/50	40/50	40/50	40/50	40/50
	h250 TM	**HHG**	25 kA	50 kA	25/40	25/40	25/40	25/40	25/40
		HNG	50 kA	100 kA	50/60	50/60	50/60	50/60	50/60
		HEG	65 kA	100 kA	65/65	65/65	67/70	65/65	65/70
	h250 TM+	**HNH**	50 kA	60 kA	50/60	50/60	50/60	50/60	50/60
		HEH	70 kA	80 kA	65/65	65/65	70/80	65/65	70/80
	h250 LSI	**HNC**	50 kA	100 kA	50/60	50/60	50/60	50/60	50/60
		HEC	70 kA	100 kA	65/65	65/65	70/80	65/65	70/80
	h400 TM	**HHD**	25 kA	50 kA	25/40	25/40	25/40	25/40	25/40
		HND	50 kA	100 kA	50/60	50/60	50/60	50/60	50/60
		HKD	70 kA	80 kA	65/65	65/65	70/80	65/65	70/80
	h630 LSI	**HND**	50 kA	100 kA	50/60	50/60	50/60	50/60	50/60
		HED	70 kA	100 kA	65/65	65/65	70/80	65/65	70/80
	h800 TM	**HNK**	50 kA	60 kA	50/60	50/60	50/60	50/60	50/60
		HEK	70 kA	80 kA	65/65	65/65	70/80	65/65	70/80
	h1000 LSI	**HNE**	50 kA	100 kA	-	50/60	50/60	50/60	50/60
		HEE	70 kA	100 kA	-	65/65	70/80	65/65	70/80
	h1600 LSI	**HNF**	50 kA	100 kA	-	-	-	50/60	50/60
		HEF	70 kA	100 kA	-	-	-	65/65	70/80

Max. cascading value in kA rms according to IEC 947-2 and IEC 60439-1 Network: 3 phases + neutral 127/220 - 138/240 VAC

					Upstream				
					frame II, type HWT208S	**frame II, type HWT212S**	**frame II, type HWT212H**	**frame II, type HWT216S**	**frame II, type HWT216H**
					max rated current 800A 400-500-630A	**max rated current 1250A 630-800-1000A**	**max rated current 800A 400-500-630A**	**max rated current 1600A 800-1000-1250A**	**max rated current 1600A 800-1000-1250A**
			IEC 60947-2		65 kA	65 kA	80 kA	65 kA	80 kA
				IEC 60439-1	65kA	65 kA	80 kA	65 kA	80 kA
Downstream	**x160 TM**	**HDA**	25 kA	40 kA	25/40	25/40	25/40	25/40	25/40
		HHA	35 kA	50 kA	35/50	35/50	35/50	35/50	35/50
		HNA	85 kA	100 kA	65/65	65/65	80/80	65/65	80/80
	x250 TM	**HHB**	35 kA	50 kA	35/50	35/50	35/50	35/50	35/50
		HNB	85 kA	100 kA	65/65	65/65	80/80	65/65	80/80
	h250 TM	**HHG**	35 kA	50 kA	35/50	35/50	35/50	35/50	35/50
		HNG	85 kA	100 kA	65/65	65/65	80/80	65/65	80/80
		HEG	85 kA	100 kA	65/65	65/65	80/80	65/65	80/80
	h250 TM+	**HNH**	85 kA	100 kA	65/65	65/65	80/80	65/65	80/80
		HEH	100 kA	100 kA	65/65	65/65	80/80	65/65	80/80
	h250 LSI	**HNC**	85 kA	100 kA	65/65	65/65	80/80	65/65	80/80
		HEC	100 kA	100 kA	65/65	65/65	80/80	65/65	80/80
	h400 TM	**HHD**	35 kA	50 kA	35/50	35/50	35/50	35/50	35/50
		HND	85 kA	100 kA	65/65	65/65	80/80	65/65	80/80
		HKD	100 kA	100 kA	65/65	65/65	80/80	65/65	80/80
	h630 LSI	**HND**	85 kA	100 kA	65/65	65/65	80/80	65/65	80/80
		HED	100 kA	100 kA	65/65	65/65	80/80	65/65	80/80
	h800 TM	**HNK**	85 kA	100 kA	65/65	65/65	80/80	65/65	80/80
		HEK	100 kA	100 kA	65/65	65/65	80/80	65/65	80/80
	h1000 LSI	**HNE**	85 kA	100 kA	-	65/65	80/80	65/65	80/80
		HEE	100 kA	100 kA	-	65/65	80/80	65/65	80/80
	h1600 LSI	**HNF**	85 kA	100 kA	-	-	-	65/65	80/80
		HEF	100 kA	100 kA	-	-	-	65/65	80/80

frame II, type HWT220S	frame II, type HWT220H	frame III, type HWT316H	frame III, type HWT320H	frame III, type HWT325S	frame III, type HWT325H	frame III, type HWT332S	frame III, type HWT332H	frame IV, type HWT440SB
max rated current 2000A 1000-1250-1600A	max rated current 2000A 1000-1250-1600A	max rated current 1600A 800-1000-1250A	max rated current 2000A 1000-1250-1600A	max rated current 2500A 1250-1600-2000A	max rated current 2500A 1250-1600-2000A	max rated current 3200A 1600-2000-2500A	max rated current 3200A 1600-2000-2500A	max rated current 4000A 2000-2500-3200A
65 kA	80 kA	100 kA	100 kA	85 kA	100 kA	85 kA	100 kA	100 kA
65 kA	80 kA	100 kA	100 kA	85 kA	100 kA	85 kA	100 kA	100 kA
18/30	18/30	18/30	18/30	18/30	18/30	18/30	18/30	18/30
25/40	25/40	25/40	25/40	25/40	25/40	25/40	25/40	25/40
40/50	40/50	40/50	40/50	40/50	40/50	40/50	40/50	40/50
25/40	25/40	25/40	25/40	25/40	25/40	25/40	25/40	25/40
40/50	40/50	40/50	40/50	40/50	40/50	40/50	40/50	40/50
25/40	25/40	25/40	25/40	25/40	25/40	25/40	25/40	25/40
50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
65/65	65/70	65/70	65/70	65/70	65/70	65/70	65/70	65/70
50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
65/65	70/80	70/80	70/80	70/80	70/80	70/80	70/80	70/80
50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
65/65	70/80	70/80	70/80	70/80	70/80	70/80	70/80	70/80
25/40	25/40	25/40	25/40	25/40	25/40	25/40	25/40	25/40
50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
65/65	70/80	70/80	70/80	70/80	70/80	70/80	70/80	70/80
50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
65/65	70/80	70/80	70/80	70/80	70/80	70/80	70/80	70/80
50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
65/65	70/80	70/80	70/80	70/80	70/80	70/80	70/80	70/80
50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
65/65	70/80	70/80	70/80	70/80	70/80	70/80	70/80	70/80
50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
65/65	70/80	70/80	70/80	70/80	70/80	70/80	70/80	70/80

frame II, type HWT220S	frame II, type HWT220H	frame III, type HWT316H	frame III, type HWT320H	frame III, type HWT325S	frame III, type HWT325H	frame III, type HWT332S	frame III, type HWT332H	frame IV, type HWT440SB
max rated current 2000A 1000-1250-1600A	max rated current 2000A 1000-1250-1600A	max rated current 1600A 800-1000-1250A	max rated current 2000A 1000-1250-1600A	max rated current 2500A 1250-1600-2000A	max rated current 2500A 1250-1600-2000A	max rated current 3200A 1600-2000-2500A	max rated current 3200A 1600-2000-2500A	max rated current 4000A 2000-2500-3200A
65 kA	80 kA	100 kA	100 kA	85 kA	100 kA	85 kA	100 kA	100 kA
65 kA	80 kA	100 kA	100 kA	85 kA	100 kA	85 kA	100 kA	100 kA
25/40	25/40	25/40	25/40	25/40	25/40	25/40	25/40	25/40
35/50	35/50	35/50	35/50	35/50	35/50	35/50	35/50	35/50
65/65	80/80	85/100	85/100	85/85	85/100	85/85	85/100	85/100
35/50	35/50	35/50	35/50	35/50	35/50	35/50	35/50	35/50
65/65	80/80	85/100	85/100	85/85	85/100	85/85	85/100	85/100
35/50	35/50	35/50	35/50	35/85	35/50	35/85	35/50	35/50
65/65	80/80	85/100	85/100	85/85	85/100	85/85	85/100	85/100
65/65	80/80	85/100	85/100	85/85	85/100	85/85	85/100	85/100
65/65	80/80	85/100	85/100	85/85	85/100	85/85	85/100	85/100
65/65	80/80	100/100	100/100	85/85	100/100	85/85	100/100	100/100
65/65	80/80	85/100	85/100	85/85	85/100	85/85	85/100	85/100
65/65	80/80	100/100	100/100	85/85	100/100	85/85	100/100	100/100
35/50	35/50	35/50	35/50	35/50	35/50	35/50	35/50	35/50
65/65	80/80	85/100	85/100	85/85	85/100	85/85	85/100	85/100
65/65	80/80	100/100	100/100	85/85	100/100	85/85	100/100	100/100
65/65	80/80	85/100	85/100	85/85	85/100	85/85	85/100	85/100
65/65	80/80	100/100	100/100	85/85	100/100	85/85	100/100	100/100
65/65	80/80	85/100	85/100	85/85	85/100	85/85	85/100	85/100
65/65	80/80	100/100	100/100	85/85	100/100	85/85	100/100	100/100
65/65	80/80	85/100	85/100	85/85	85/100	85/85	85/100	85/100
65/65	80/80	100/100	100/100	85/85	100/100	85/85	100/100	100/100
65/65	80/80	100/100	100/100	85/85	100/100	85/85	100/100	100/100
65/65	80/80	100/100	100/100	85/85	100/100	85/85	100/100	100/100

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