Moulded case circuit breakers h1600, selection and protection
Electronic trip unit LSI
- Long delay (thermal equivalent) adjustable:
Ir = 0,4 to 1 x In
- short delay (magnetic equivalent) adjustable:
2,5 to 10 x Ir
- time delay: 0,1-0,2 s

3 pole, 3 trip units,
4 pole, 4 trip units,
adjustable neutral 0 - 50% - 100%

Mechanical test button, lockable settings.

Connection:
Directly on copper cable terminal,
with end lug max. width: 60 mm

Comply with IEC 60 947-2.

Trip-free switches
Allows tripping at distance using a voltmetrical trip unit (optional)

Comply with IEC 60 947-3.
AC 23A / DC 22A


HNF990H

Designation	Characteristics	In	Cat. ref. 3P	Cat. ref. 4P
MCCBs h1600 50kA LSI	breaking capacity Icu : 50 kA (400/415 V AC) Ics: 50 kA adjustable thermal Ir = 0,4 to 1 x In adjustable magnetic 2,5 to 10 x Ir time delay: 0,1-0,2 s neutral setting 0, 50, 100%	1250A	**HNF980H**	**HNF981H**
		1600A	**HNF990H**	**HNF991H**
MCCBs h1600 70kA LSI	breaking capacity Icu : 70 kA (400/415 V AC) Ics: 50 kA adjustable thermal Ir = 0,4 to 1 x In adjustable magnetic 2,5 to 10 x Ir time delay: 0,1-0,2 s neutral setting from 0, 50, 100%	1250A	**HEF980H**	**HEF981H**
		1600A	**HEF990H**	**HEF991H**
Trip-free switches	suitable for AC 22A / AC 23A Ue : 415 V AC Icw (0,3 s) = 20 kA	1250A	**HCF980U**	**HCF981U**
		1600A	**HCF990H**	**HCF991U**

Indication contacts
- 1 changeover switch (ON/OFF): indicates the position of the MCCB is “open” or “close”.
- 1 changeover alarm contact: indicates MCCB tripping.

Coil connection
Connection capacity:
0,75 mm² flexible or rigid cables
Optional connection cables.
The cable capacity of the terminals is 0,5 to 1,25 mm².

Shunt trip
Remotes tripping of MCCBs or trip-free switches.
Operating voltage:
0,7 to 1,1 x Un

Under voltage release
Allows the tripping of MCCBs or trip-free switches when voltage level drop between 35 and 70% of Un. Pick up voltage 0,85 x Un

Direct rotary handle
- padlockable
- equipped with front cover and handle
- fixing without any additional screw.

Extended rotary handle
- IP 55
- supplied complete with shaft and handle.

Rear connection: included


HXC021H


HXC024H

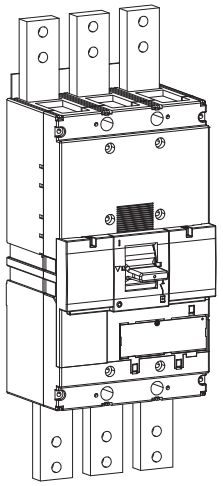

HXC004H



HXC014H

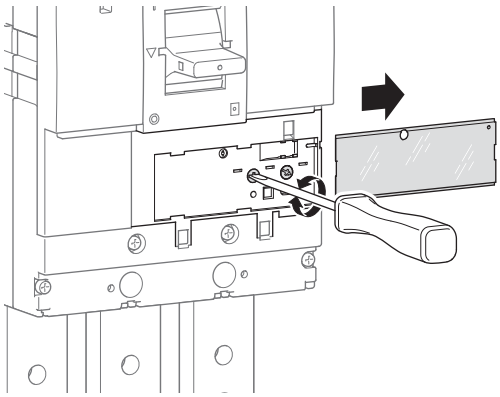
Designation	Characteristics	Cat. ref.
Auxiliary contacts **AX** **AL**	1 changeover contact 250 V AC / 3A 125 V DC / 0,4A 1 NO + 1 NC	**HXC021H**
	1 changeover alarm contact 250 V AC / 3A 125 V DC / 0,4A 1 NO + 1 NC	**HXC024H**
	low level contact (ON/OFF) 125 V AC 1 NO + 1 NC	**HXC025H**
	low level alarm contact 125 V AC 1 NO + 1 NC	**HXC026H**
Shunt trips **SH**	24 V DC	**HXF001H**
	48 V DC	**HXF002H**
	110 V DC	**HXF008H**
	100 - 120 V AC	**HXF003H**
	200 - 240 V AC	**HXF004H**
	380 - 450 V AC	**HXF005H**
Undervoltage releases **UV**	24 V DC	**HXE011H**
	100 - 120 V DC	**HXE018H**
	200 - 240 V DC	**HXE019H**
	110 - 120 V AC	**HXE013H**
	220 - 240 V AC	**HXE014H**
	380 - 415 V AC	**HXE015H**
Delayed undervoltage releases **DUVR**	24 V DC	**HXF051H**
	110 - 120 V AC	**HXF053H**
	220 - 240 V AC	**HXF054H**
	380 - 415 V AC	**HXF055H**
Direct rotary handle	padlockable handle, max Ø 8 mm	**HXF030H**
Extended rotary handle	padlockable handle, max Ø 8 mm	**HXF031H**
Padlock	to mount on MCCB for handle locking for 3 padlocks max Ø 8 mm	**HXF039H**
Motor operators	24 V DC	**HXF040H**
	200 - 230 V AC	**HXF042H**
Interphase barriers	set of 4 pieces	**HYD019H**
Connection kit	0,75 mm² set of 3 x 2 wires length: 1,30m	**HYA035H**

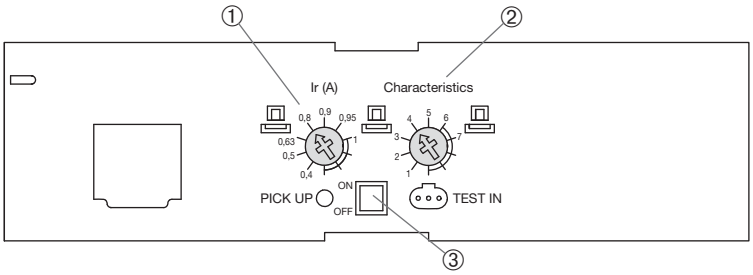
MCCBs



		220/240 V AC	380/415 V AC	660/690 V AC
HNF	Icu (kA)	100	50	25
	Ics (kA)	75	50	25
HEF	Icu (kA)	100	70	45
	Ics (kA)	75	50	34
HCF	Icm (kA)	-	45	-
	Icw (kA)	-	20 kA-0,3 s	-

Electronic trip unit settings (LSI)

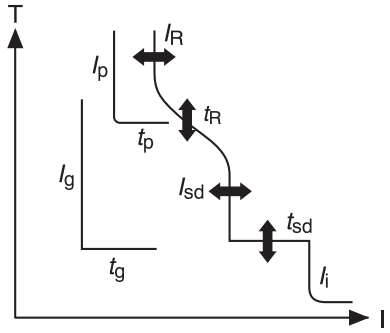




L - Long delay - protection against overloads: Ir and tr settings

S - Short delay - protection against short circuits: Isd and tsd settings

I - Instantaneous - max. instantaneous threshold (< 10 ms) in case of short circuit: 2,5 to 10 x Ir.



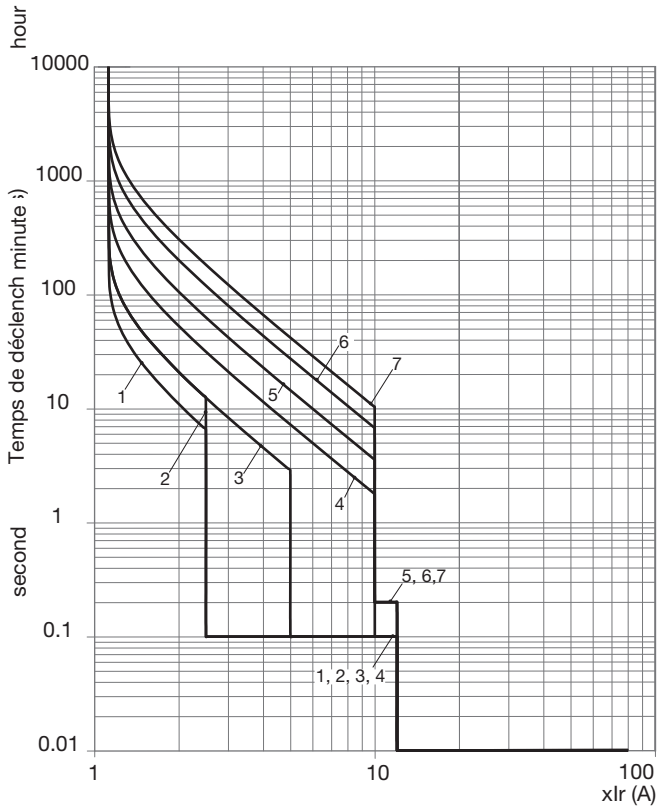
		① Ir(A)	② Im	③ N
LSI		0,4 - 1 In	2,5 - 10 Ir	0% 50% 100 %

LSI		In A				
		1250 - 1600 A				
		Long Time Delay		Short Time Delay		Inst
		Ir (x In)	tr (s)	isd (xIr)	tsd (s)	Ii (xIr)
① Ir (x In)	**0,4**	OK				
	0,5	OK				
	0,63	OK				
	0,8	OK				
	0,9	OK				
	0,95	OK				
	1	OK				
② Characteristics*	**1**		11s at 2 xIr	2,5	0,1	14 (max 12 x In)
	2		21s at 2 xIr			
	3			5		
	4		5 s at 6 xIr	10		
	5		10 s at 6 xIr		0,2	
	6		19 s at 6 xIr			
	7		29 s at 6 xIr			
③ Neutral protection	0% 50% 100%					

(*) Characteristic 1 : use for generators protection.
Characteristic 2 to 4 - standard protection : options allow coordination optimisation with other products.
Characteristic 5 to 7 - motor protection: use positions according to motor starting characteristics.

Tripping curve

MCCB h1600 LSI



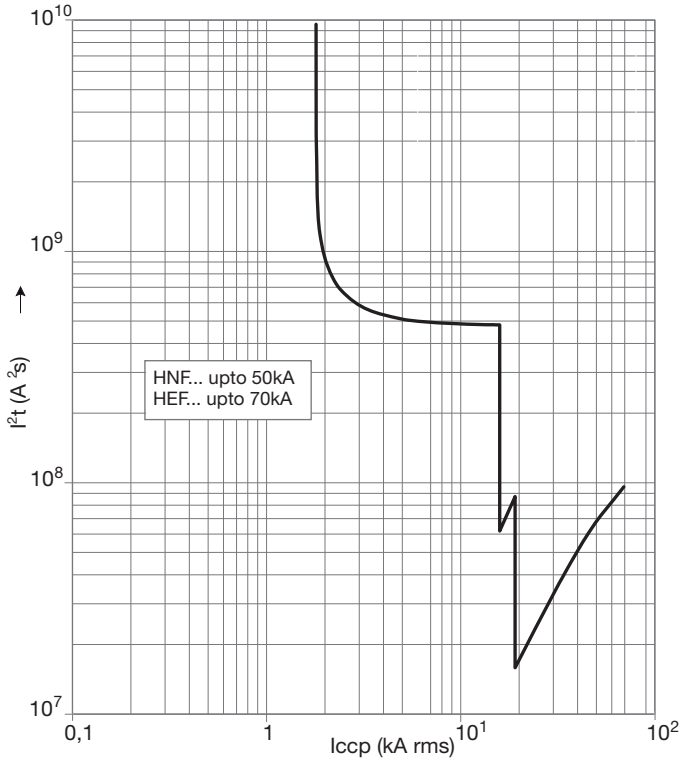
Electronic trip unit setting (LSI)

MCCBs 1250A and 1600A electronic

I_R (A)										
LTD Pick-up current		**I_R**	x In	0,4	0,5	0,63	0,8	0,9	0,95	1
Characteristics			No.	1	2	3	4	5	6	7
Standard	**LTD**	**t_R**	(s)	11	21	21	5	10	19	29
				200% x I_R			600% x I_R			
	STD	**Isd**	x I_R	2,5		5	10			
		tsd	(s)	0,1				0,2		
	INST	**Ii**	x I_R	14 (max : 12 x In)						
Optional	**NP**	**I_N**	x In	0 - 0,5 - 1						
		t_N	(s)	I_N=t_R						

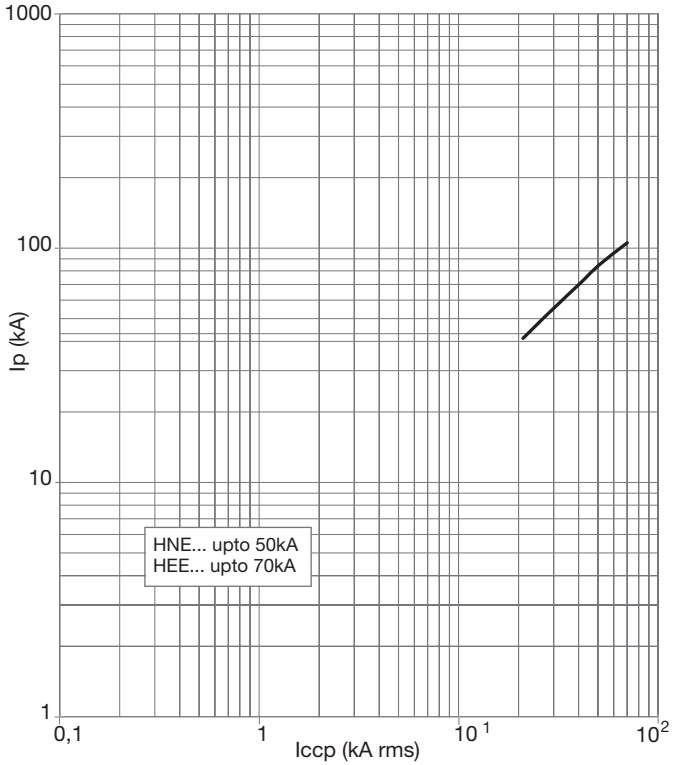
Thermal constraint curve at 400V (Let-through energy)

MCCB h1600



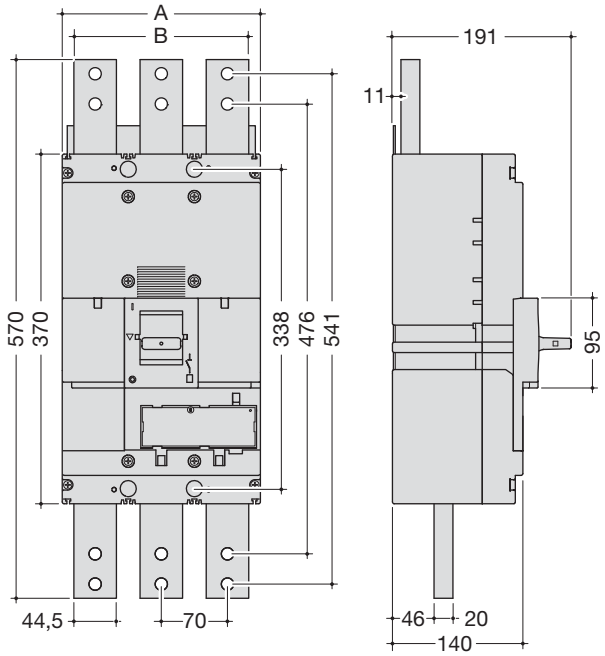
Current limiting curve at 400V (Let-through peak current)

MCCB h1600



Dimensions

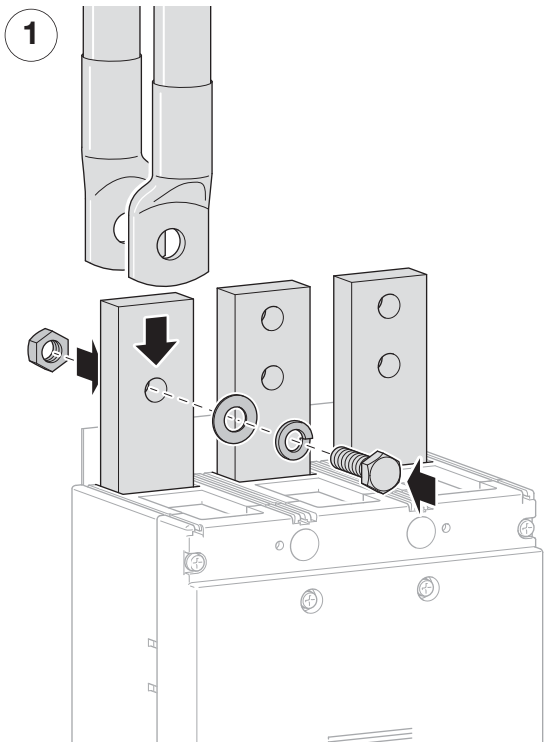
MCCBs

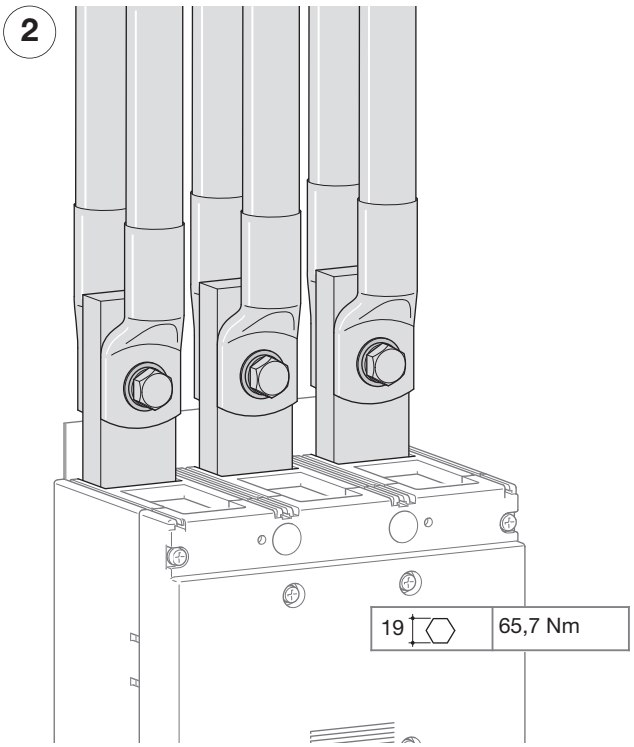


	A (mm)	B (mm)
3P	210	185
4P	280	255

Connection

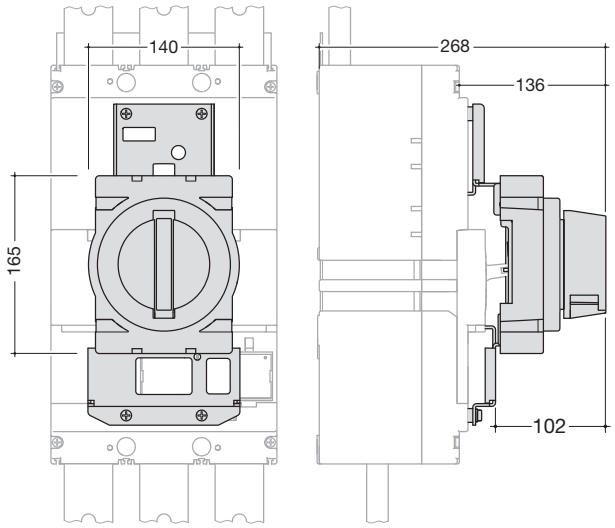
Connection with end lugs



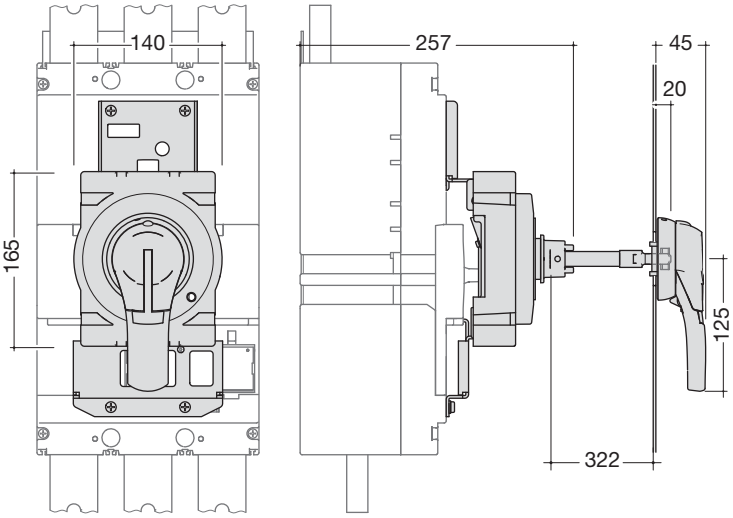


Accessories

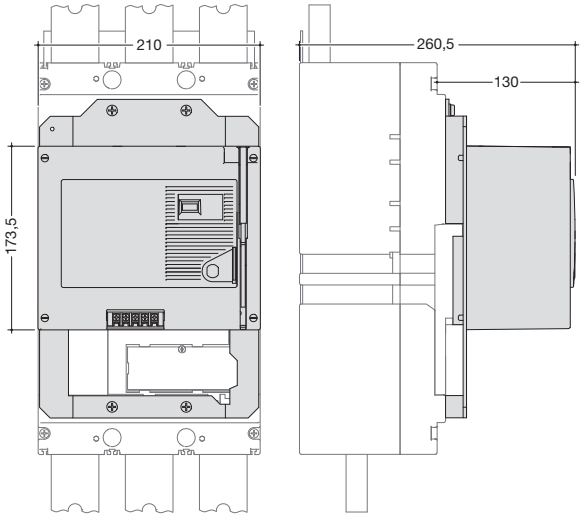
Direct rotary handle



Extended rotary handle

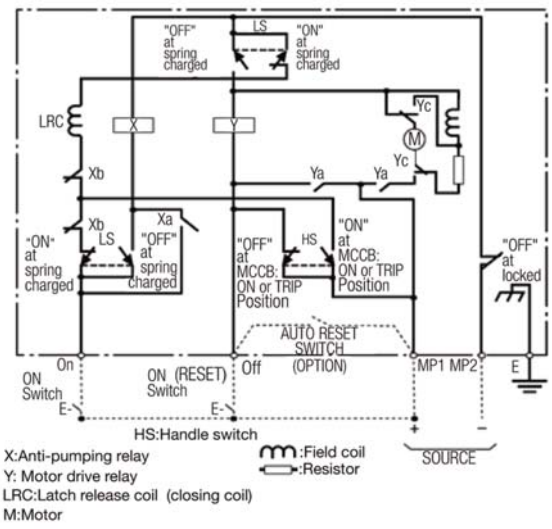


Motor operator



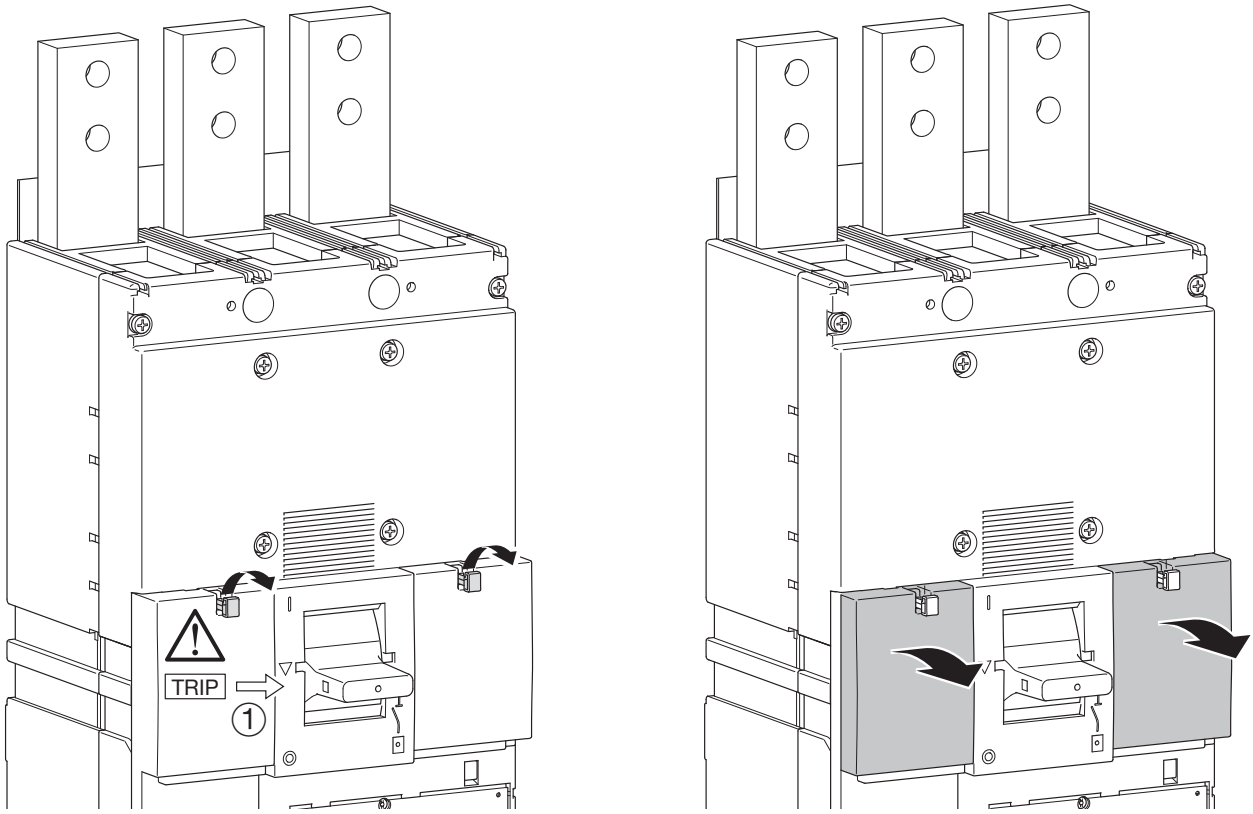
		HXF040H	HXF042H
Operating voltage		24V DC	200-230V AC
Operating current / starting current peak value (A)	24V DC	-/4,5 (ON) 4,0/12,0 (OFF, RESET)	-
	200-230V AC	-	-/1,2 (ON) 1,0/3,2 (OFF, RESET)
Operating time (s)	(ON)	0,06s	
	(OFF)	3s	
	(RESET)	3s	
Power supply required		300VA min.	
Dielectric properties (1 min)		500V AC	1500V AC

Wiring diagram



Auxiliaries

Auxiliaries for MCCBs and free tripping switches



Mounting combination for auxiliaries and releases

