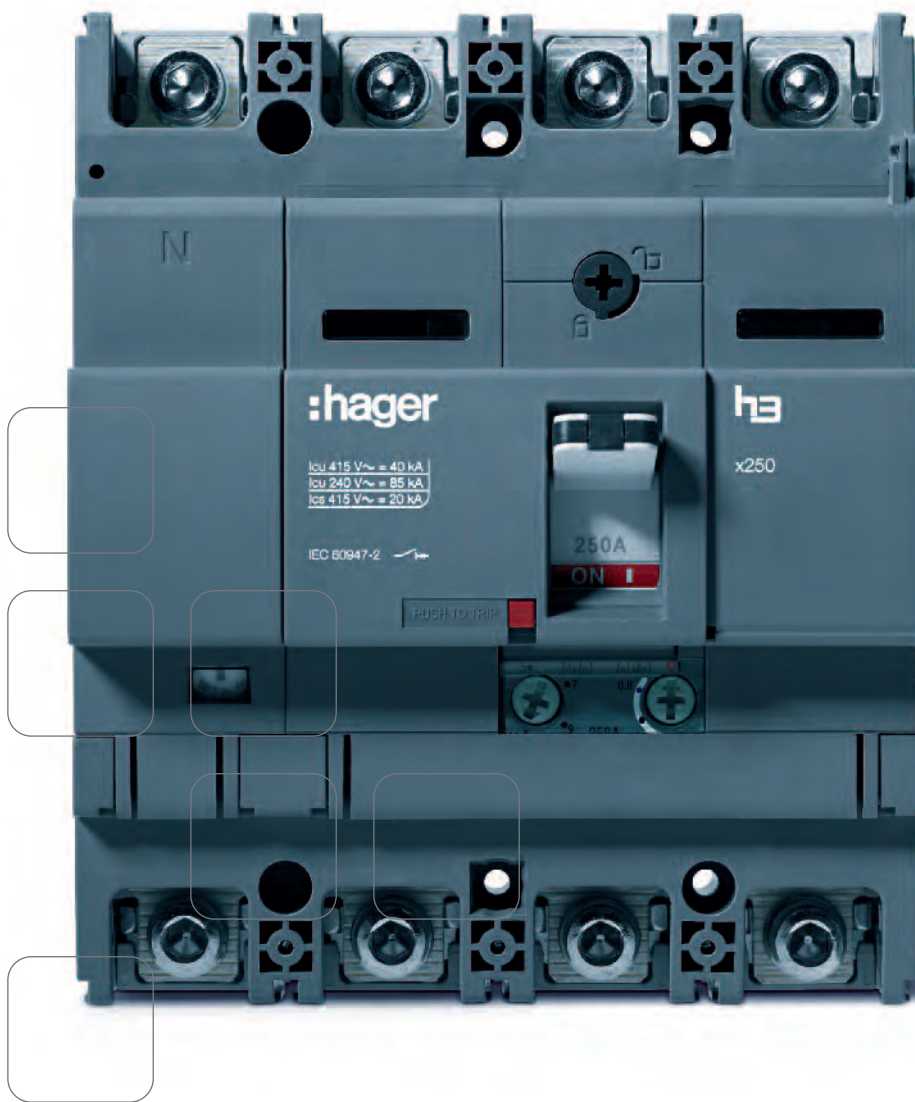
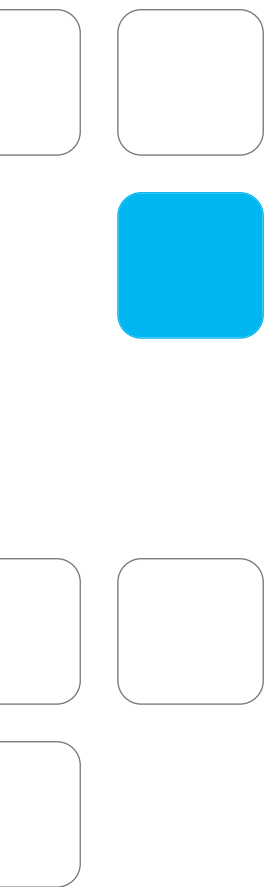


h3 MCCBs :

Low voltage protection devices



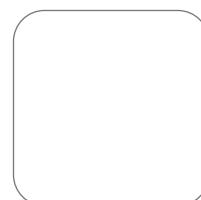
h3 MCCBs

from 16 to 1600 A

Allow the connection, protection, breaking and switching in the low voltage distribution boards.



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h250	35
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h3 MCCBs and trip-free switches 16 to 1600 A

Easy mounting and safety

The new h3 range of MCCBs provides safe and easy solutions for low voltage electrical circuits protection. The state of the art circuit breakers offers both designers and installers wide range of features and benefits.

Special attention has been given to ergonomics, especially with the integration of these devices in the TP&N and panelboard.



Your benefits:

- Easy to install
- Quick, easy and safety mounting of accessories
- Wide range of rated current ratings and breaking capacities
- Calibrated at 50 Deg centigrade
- Trip-free switches

Technical data :

- Comply with IEC 60947-2
- 6 frame sizes: x160, x250, h250, h630, h1000, h1600
- Breaking capacity: 18, 25, 40, 50, 65, 70 kA
- Thermal magnetic and electronic trip units
- 1 pole to 4 poles
- Current limiting type
- Complete range of accessories
- International certification and approvals

Expert tips

1



Design by Hager
In harmony with Hager enclosures and modular products.

5



Visibility of auxiliaries fitted
Indicates type of auxiliary mounted in breaker.

2



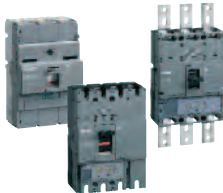
Electronic trip unit (LSI)
Is permitting total selectivity and generator protection.

6



Integrated padlocking facility
Nice solution for maintenance.

3



Breaking capacity
18 to 70kA, Icu 415V AC, covers all applications.

7



Complete range of accessories
Rotary handles, padlocks, motors, terminal covers.

4



Easy mounting of auxiliaries
Easy opening of secondary cover, clip-on type auxiliaries.

8



Flexible connection
Collar terminals, front and rear connections, straight connections, spreaders ...

MCCBs technical characteristics

Frame	x160				x250			h250 TM			h250 TM+		
Product	Switch	MCCB			Switch	MCCB		MCCB			MCCB		
Reference	HCA	HDA	HHA	HNA	HCB	HHB	HNB	HHG	HNG	HEG	HNH	HEH	
Number of poles	[No.]	3-4	1-2-3-4	1-2-3-4	3-4			3-4			3-4		
Electrical characteristics													
Rated current	In [A]	160				250			250			250	
Current rated range	[A]	125-160	16-125 (1P), 16-160 (2,3,4P)		250	100-250		12,5-250			12,5-250		
Rated service voltage, (AC)	Ue [V]	220-440				220-440			220-690			220-690	
Frequency	f [Hz]	50/60				50/60			50/60			50/60	
Rated insulation voltage	Ui [V]	690				800			800			800	
Rated impulse withstand voltage	Uimp [kV]	8				8			8			8	
Rated ultimate short-circuit breaking capacity, (Icu)													
(AC) 50-60 Hz 220/230 V	Icu [kA]	-	25	35	85	-	35	85	35	85	85	85	100
(AC) 50-60 Hz 380/415 V	Icu [kA]	-	18	25	40	-	25	40	25	50	65	50	70
(AC) 50-60 Hz 480/500/525 V	Icu [kA]	-	6	7.5	12.5	-	-	10	10	25	25	30	45
(AC) 50-60 Hz 660/690 V	Icu [kA]	-	-	-	6	-	-	4	-	7,5	7,5	20	20
(DC) 250 V - 2 poles in series	Icu [kA]	-	12.5	20	25	-	25	25	25	40	40	40	40
Rated service short-circuit breaking capacity, (Ics)													
(AC) 50-60 Hz 220/230 V	Ics [kA]	-	25	25	40	-	25	40	27	65	85	85	100
(AC) 50-60 Hz 380/415 V	Ics [kA]	-	18	20	25	-	20	20	19	25	36	50	70
(AC) 50-60 Hz 480/500/525 V	Ics [kA]	-	3	4	7.5	-	-	7.5	7.5	25	25	30	45
(AC) 50-60 Hz 660/690 V	Ics [kA]	-	-	-	3	-	-	2	-	7.5	7.5	15	15
(DC) 250 V - 2 poles in series	Ics [kA]	-	7	10	13	-	13	13	19	40	40	40	40
Rated short-circuit making capacity	Icm [kA]	2,8	-	-	-	6	-	-	-	-	-	-	-
Rated short-time withstand current for 1s	Icw [kA]	2	-	-	-	3	-	-	-	-	-	-	-
Category of use (EN 60947-2)		-	A		-	A		A			A		
Calibration temperature		-	50°C		-	50°C		50°C			50°C		
Derating 40°C		-	100%		-	100%		100%			100%		
	50°C	-	100%		-	100%		100%			100%		
	55°C	-	95%		-	94%		94%			94%		
	60°C	-	93%		-	91%		91%			91%		
	65°C	-	90%		-	88%		88%			88%		
Suitability for isolation		ok				ok			ok			ok	
Electric endurance in number of cycles		10000				10000			10000			10000	
Mechanical endurance in number of operations		20000				20000			30000			30000	
Operating temperature		-25 to +70°C				-25 to +70°C			-25 to +70°C			-25 to +70°C	
Storage temperature		-35 to +70°C				-35 to +70°C			-35 to +70°C			-35 to +70°C	
Power loss (at In for 3P)	[W]	39				60			65			68	
Reference standard		IEC60947-3	IEC 60947-2		IEC60947-3	IEC 60947-2		IEC 60947-2			IEC 60947-2		
Releases: switch		ok	-		ok	-		-			-		
Releases: TM (thermomagnetic)		-	ok		-	ok		ok			ok		
T fixed, M fixed		-	ok		-	ok		-			-		
T adjustable, M fixed		-	ok		-	-		-			-		
T adjustable, M adjustable		-	-		-	ok		ok			ok		
Thermal adjustment value		-	0,63 to 1 x In		-	0,63 to 1 x In		0,63 to 1 x In			0,63 to 1 x In		
Magnetic adjustment value		-	-		-	6-8-10-13 x In (200A) 5-7-9-11 In (250A)		6-8-10-13 x In			6-8-10-13 x In		
Releases: LSI (electronic)		-	-		-	-		-			-		
Long delay		-	-		-	-		-			-		
Short delay		-	-		-	-		-			-		
Time delay		-	-		-	-		-			-		
Terminations													
Standard terminal type		lugs				lugs			lugs			lugs	
Maximum terminal capacity		95 mm ²				185 mm ² (cage)			120 mm ² (cage)			120 mm ² (cage)	
Terminal width	mm	17.2				25			25			25	
Terminal shields		ok				ok			ok			ok	
Cage terminal		Z version				ok			ok			ok	
Extended connections		ok				ok			ok			ok	
Rear connections		no				ok			ok			ok	
Dimensions													
Height	mm	130				165			165			165	
Width	1P mm	-	25	-	-	-		-			-		
	2P mm	-	50	-	-	-		-			-		
	3P mm	75				105			105			105	
	4P mm	100				140			140			140	
Depth	mm	68				68			68			97	
Weight	1P kg	-	0,29	-	-	-		-			-		
	2P kg	-	0,48	-	-	-		-			-		
	3P kg	0,715				1,3			1,5			2,4	
	4P kg	0,95				1,6			1,9			3,2	

h250 LSI		h400 TM			h630 LSI			h800 TM		h1000 LSI			h1600 LSI			
MCCB		MCCB			Switch	MCCB		MCCB		Switch	MCCB		Switch	MCCB		
HNC	HEC	HHD	HND	HKD	HCD	HND	HED	HNK	HEK	HCE	HNE	HEE	HCF	HNF	HEF	
3-4		3-4			3-4			3-4		3-4			3-4			
250		400			630			800		1000			1600			
40-125-250		250-400			400-630		250-400-630		630-800		630-800-1000			1250-1600		
220-690		220-690			220-690			220-690		220-690			220-690			
50/60		50/60			50/60			50/60		50/60			50/60			
800		800			800			800		800			800			
8		8			8			8		8			8			
85	100	35	85	100	-	85	100	85	100	-	85 (800A) 75 (1000A)	100	-	100	100	
50	70	25	50	70	-	50	70	50	70	-	50	70	-	50	70	
25	45	10	30		-	30	30	30	30	-	30	30	-	45	65	
7,5	20	7,5	20		-	20	20	20	20	-	20	20	-	25	45	
-	-	25	40		-			50	50	-	-	-	-	-	-	
85	100	35	85		-	85	85	85	75	-	85 (800A) 75 (1000A)	100 (800A) 75 (1000A)	-	75	75	
25	70	25	50	50	-	50	50	50	50	-	50	50	-	50	50	
25	45	10	30		-	30	30	30	30	-	30	30	-	45	50	
7,5	15	7,5	15		-	15	15	20	20	-	20	20	-	25	34	
-	-	25	40		-			50	50	-	-	-	-	-	-	
-	-	-	-		9	-	-	-	-	20	-	-	45	-	-	
-	-	-	-		5 (0,3s)	-	-	-	-	10 (0,3s)	-	-	20 (0,3s)	-	-	
A	A	A			-	B(250-400A) - A(630A)		A	A	-	B(800A) - A(1000A)		-	B		
40/50°C	50°C	50°C			-	40/50°C		40°C	40°C	-	40/50°C		-	40/50°C		
100%	100%	100%			-	100%		100%	100%	-	100%		-	100%		
95%	100%	100%			-	95%		100%	100%	-	95%		-	95%		
90%	95%	95%			-	90%		95%	95%	-	90%		-	90%		
80%	92%	92%			-	80%		92%	92%	-	80%		-	80%		
80%	89%	89%			-	80%		89%	89%	-	80%		-	80%		
ok	ok	ok			ok	ok		ok	ok	ok	ok		ok	ok		
10000	4500	4500			4500	4500		4500	4500	4500	4500		4500	4500		
30000	15000	15000			15000	15000		15000	15000	15000	15000		15000	15000		
-25 to +70°C	-25 to +70°C	-25 to +70°C			-25 to +70°C	-25 to +70°C		-25 to +70°C	-25 to +70°C	-25 to +70°C	-25 to +70°C		-25 to +70°C	-25 to +70°C		
-35 to +70°C	-35 to +70°C	-35 to +70°C			-35 to +70°C	-35 to +70°C		-35 to +70°C	-35 to +70°C	-35 to +70°C	-35 to +70°C		-35 to +70°C	-35 to +70°C		
75	150	150			150	150		150	150	150	150		170	170		
IEC 60947-2	IEC 60947-2	IEC 60947-2			IEC 60947-3	IEC 60947-2		IEC 60947-2	IEC 60947-2	IEC 60947-3	IEC 60947-2		IEC 60947-3	IEC 60947-2		
-	-	ok			ok	-		-	-	ok	-		ok	-		
-	ok	-			-	-		-	-	-	-		-	-		
-	-	-			-	-		-	-	-	-		-	-		
-	-	-			-	-		-	-	-	-		-	-		
-	ok	-			-	-		-	-	ok	-		-	-		
-	0,63 to 1 x In	-			-	-		-	-	0,63 to 1 x In	-		-	-		
-	6-8-10-12 x In	-			-	-		-	-	5 to 10 x In	-		-	-		
-	-	-			-	ok		-	-	-	ok		-	ok		
0,4 to 1 x Ir	-	-			-	0,4 to 1 x Ir		-	-	-	0,4 to 1 x Ir		-	0,4 to 1 x In		
2,5 to 10 x Ir	-	-			-	2,5 to 10 x Ir (250-400A) 2,5 to 8 x Ir (630A)		-	-	-	2,5 to 10 x Ir (800A) 2,5 to 8 x Ir (1000A)		-	2,5 to 10 x Ir		
0,1 - 0,2s	-	-			-	0,1 - 0,2s		-	-	-	0,1 - 0,2s		-	0,1 - 0,2s		
lugs	lugs	lugs			lugs	lugs		lugs	lugs	lugs	lugs		lugs	lugs		
120 mm² (cage)	240 mm² (cage)	-			-	-		-	-	-	-		-	-		
25	30	30			30	45		45	45	45	45		45	45		
ok	ok	ok			ok	ok		ok	ok	ok	ok		ok	ok		
ok	ok	-			-	-		-	-	-	-		-	-		
ok	ok	integrated			integrated	integrated		integrated	integrated	integrated	integrated		integrated	integrated		
ok	ok	ok			ok	ok		ok	ok	ok	ok		ok	ok		
165	260	260			260	273/433		273/433	273/433	273/433	273/433		370/570	370/570		
-	-	-			-	-		-	-	-	-		-	-		
-	-	-			-	-		-	-	-	-		-	-		
105	140	140			140	210		210	210	210	210		210	210		
140	185	185			185	280		280	280	280	280		280	280		
97	97	97			97	99,5		99,5	99,5	99,5	99,5		140	140		
-	-	-			-	-		-	-	-	-		-	-		
-	-	-			-	-		-	-	-	-		-	-		
2,5	4,2	4,3			4,3	8,5		8,5	11	11	27		27	27		
3,3	5,6	5,7			5,7	11,5		11,5	14,8	14,8	31		31	31		

Product Frame		Add-on blocks h3	
		x250	h630
Number of poles		4	4
Tripping access		mechanical	mechanical
Standards CEI/EN 60947-2 appendix B		ok	ok
Electrical characteristics			
Max rated current (40°) In A	In	160 - 250A	400A - 500A
Rated service voltage Ue V AC (50/60Hz)	Ue	240-415V	240-415V
Mechanical characteristics			
Top and bottom supply		ok	ok
For tripping, no additional external electrical sources		ok	ok
Possible operating with 2 active phases		ok	ok
Settings			
Sensitivity I Δ n	I Δ n (A)	0.03, 0.1, 0.3, 1, 3, 6A	0.03, 0.1, 0.3, 1, 3, 6A
Time delay Δ t	Δ t (s)	inst., 0.06, 0.15, 0.3, 0.5, 1	inst., 0.06, 0.15, 0.3, 0.5, 1
Max. opening time	ms	10	10
Delay add-on block is not possible if I Δ n = 30mA		ok	ok
Selective product		ok	ok
Mechanical test button		ok	ok
Isolating test without cable removal		ok	ok
Electrical test button		ok	ok
Reset button		ok	ok
Sealable setting button		ok	ok
Isolation level signaling by led 25 and 50%		ok	ok
In running signalisation by led		ok	ok
Residual default signaling contact		ok	ok
Signaling contact 50% I Δ n		ok	ok
Anti-transient	type AC	ok	ok
Pulsating current	type A	ok	ok
High immunity	type HI	yes	yes
-25°C		ok	ok
Accessories and connection			
Steel terminal cage (x3/x4)		accessories	accessories
Connection by lugs		ok	ok
Extended connections (x4)		ok	ok
Spreaders (x4)		ok	ok
Terminal covers (3P/4P)		ok	ok
Interphase barriers (x3)		ok	ok
Rigid cables connection capacity mm ²		35-185	35-240
Flexible cables connection capacity mm ² (with terminal)		35-150	35-185
Tightening torque Nm		12	22
Copper bar (width) in mm		25	30
Mounting			
Clips on DIN rail		no	no
Fixed on mounting plate		ok	ok
Fixation type		bottom	bottom
Mounting by customer		ok	ok
Dimensions and weight			
Dimensions (LxHxD) in mm	L	140	184
Side mounted 4P	H	107,5	133
	D	85	110
Weight	3P	/	/
	4P	1,2	2,4

	Pole	Trip unit	Serie	HDx	HHx	HNx	HNx	HEx		
			In A	18kA	25kA	40kA	30KA - 50kA	65kA* - 70kA		
x160	1P	TM fix/fix	16	HDA014Z	HHA014Z					
			20	HDA018Z	HHA018Z					
			25	HDA023Z	HHA023Z					
			32	HDA030Z	HHA030Z					
			40	HDA038Z	HHA038Z					
			50	HDA048Z	HHA048Z					
			63	HDA061Z	HHA061Z					
			80	HDA078Z	HHA078Z					
			100	HDA098Z	HHA098Z					
			125	HDA123Z	HHA123Z					
			2P	TM fix/fix	16	HDA015P	HHA015P			
					20	HDA019P	HHA019P			
	25	HDA024P			HHA024P					
	32	HDA031P			HHA031P					
	40	HDA039P			HHA039P					
	50	HDA049P			HHA049P					
	63	HDA062P			HHA062P					
	80	HDA079P			HHA079P					
	100	HDA099P			HHA099P					
	125	HDA124P			HHA124P					
	160	HDA159P			HHA159P					
	3P	TM fix/fix			16	HDA016P	HHA016P	HNA016P		
			20	HDA020P	HHA020P	HNA020P				
			25	HDA025P	HHA025P	HNA025P				
			32	HDA032P	HHA032P	HNA032P				
			40	HDA040P	HHA040P	HNA040P				
			50	HDA050P	HHA050P	HNA050P				
			63	HDA063P	HHA063P	HNA063P				
			80	HDA080P	HHA080P	HNA080P				
			100	HDA100P	HHA100P	HNA100P				
			125	HDA125P	HHA125P	HNA125P				
			160	HDA160P	HHA160P	HNA160P				
			TM adj/fix	16-20-25	HDA025S	HHA025S	HNA025S			
		25-32-40		HDA040S	HHA040S	HNA040S				
		40-50-63		HDA063S	HHA063S	HNA063S				
		50-63-80		HDA080S	HHA080S	HNA080S				
		63-80-100		HDA100S	HHA100S	HNA100S				
		80-100-125		HDA125S	HHA125S	HNA125S				
		100-125-160		HDA160S	HHA160S	HNA160S				
		4P 100%		TM fix/fix	16	HDA017P	HHA017P	HNA017P		
					20	HDA021P	HHA021P	HNA021P		
					25	HDA026P	HHA026P	HNA026P		
					32	HDA033P	HHA033P	HNA033P		
					40	HDA041P	HHA041P	HNA041P		
			50		HDA051P	HHA051P	HNA051P			
	63		HDA064P		HHA064P	HNA064P				
	80		HDA081P		HHA081P	HNA081P				
	100		HDA101P		HHA101P	HNA101P				
	125		HDA126P		HHA126P	HNA126P				
	160		HDA161P		HHA161P	HNA161P				
	TM adj/fix		16-20-25		HDA026S	HHA026S	HNA026S			
		25-32-40	HDA041S	HHA041S	HNA041S					
		40-50-63	HDA064S	HHA064S	HNA064S					
		50-63-80	HDA081S	HHA081S	HNA081S					
		63-80-100	HDA101S	HHA101S	HNA101S					
		80-100-125	HDA126S	HHA126S	HNA126S					
		100-125-160	HDA161S	HHA161S	HNA161S					
		x250	3P	TM fix/fix	100		HHB100Z	HNB100Z		
					125		HHB125Z	HNB125Z		
					160		HHB160Z	HNB160Z		
					200		HHB200Z	HNB200Z		
					250		HHB250Z	HNB250Z		
	TM adj/adj			63-80-100			HNB100U			
				80-100-125			HNB125U			
				100-125-160			HNB160U			
				125-160-200			HNB200U			
				160-200-250			HNB250U			
				4P 0% - 4P 100%	TM fix/fix	100		HHB101Z	HNB101Z	
						125		HHB126Z	HNB126Z	
	160					HHB161Z	HNB161Z			
	200					HHB201Z	HNB201Z			
	250					HHB251Z	HNB251Z			
	TM adj/adj		63-80-100				HNB101U			
			80-100-125				HNB126U			
			100-125-160				HNB161U			
			125-160-200				HNB201U			
			160-200-250				HNB251U			

	Pole	Trip unit	Serie	HDx	HHx	HNx	HNx	HEx	HKx		
			In A	18kA	25kA	40kA	30kA - 50kA	65kA* - 70kA	65kA* - 70kA		
h250	3P	TM adj/adj	12,5-16-20		HHG020U		HNG020U				
			20-25-32		HHG032U		HNG032U				
			32-40-50		HHG050U				HEG050U*		
			40-50-63		HHG063U				HEG063U*		
			63-80-100		HHG100U				HEG100U*		
			80-100-125		HHG125U				HEG125U*		
			100-125-160		HHG160U				HEG160U*		
			125-160-200		HHG200U				HEG200U*		
			160-200-250		HHG250U				HEG250U*		
		TM+ adj/adj	12,5-16-20					HNH020U		HEH020U	
			20-25-32					HNH032U		HEH032U	
			32-40-50					HNH050U		HEH050U	
			40-50-63					HNH063U		HEH063U	
			63-80-100					HNH100U		HEH100U	
			80-100-125					HNH125U		HEH125U	
			100-125-160					HNH160U		HEH160U	
			125-160-200								
			160-200-250								
	LSI	16-40					HNC040U		HEC040U		
		50-125					HNC125U		HEC125U		
		100-250					HNC250U		HEC250U		
	4P	TM adj/adj	12,5-16-20				HNG021U				
			20-25-32				HNG033U				
			32-40-50				HNG051U		HEG051U		
			40-50-63				HNG064U		HEG064U		
			63-80-100				HNG101U		HEG101U		
			80-100-125				HNG126U		HEG126U		
			100-125-160				HNG161U		HEG161U		
			125-160-200				HNG201U		HEG201U		
			160-200-250				HNG251U		HEG251U		
		TM+ adj/adj	12,5-16-20					HNH021U		HEH021U	
			20-25-32					HNH033U		HEH033U	
			32-40-50					HNH051U		HEH051U	
			40-50-63					HNH064U		HEH064U	
			63-80-100					HNH101U		HEH101U	
			80-100-125					HNH126U		HEH126U	
100-125-160							HNH161U		HEH161U		
125-160-200											
160-200-250							HNH251U		HEH251U		
4P 0 - 50 - 100%	LSI	16-40				HNC041U		HEC041U			
		50-125				HNC126U		HEC126U			
		100-250				HNC251U		HEC251U			
h400 - h630	3P	TM adj/adj	160-200-250		HHD250U		HND250U		HKD250U		
			250-320-400		HHD400U		HND400U		HKD400U		
			160-400								
		LSI	250-630				HND630U				
			160-400				HND400H				
	4P	TM adj/adj	400-630						HED400U		
			250-630				HND630U		HED630U		
			160-200-250				HND251U		HKD251U		
		LSI	250-320-400				HND401U		HKD401U		
			160-400				HND401H		HED401U		
h1000	3P	TM	630				HNK630U		HEK630U		
			800				HNK800U		HEK800U		
			630				HNE630U				
		LSI	800				HNE800U		HEE800U		
			1000				HNE970U		HEE970U		
	4P	TM	630				HNK631U		HEK631U		
			800				HNK801U		HEK801U		
			630				HNE631U				
		LSI	800				HNE801U		HEE801U		
			1000				HNE971U		HEE971U		
h1600	3P	LSI	1250				HNF980U		HEF980U		
			1600				HNF990U		HEF990U		
	4P 0% - 50% - 100%	LSI	1250				HNF981U		HEF981U		
1600					HNF991U		HEF991U				

Serie				x160	x250	h630	h1000	h1600	
Product	Version	Poles	In A						
Trip-free switches		3 poles	125	HCA125Z					
			160	HCA160Z					
		4 poles	125	HCA126Z					
			160	HCA161Z					
		3 poles	250		HCB250Z				
		4 poles	250		HCB251Z				
		3 poles	400			HCD400U			
			630			HCD630U			
		4 poles	400			HCD401U			
			630			HCD631U			
		3 poles	800				HCE800U		
			1000				HCE970U		
	4 poles	800				HCE801U			
		1000				HCE971U			
	Add-on blocks	Bottom mounted	4 poles	160 adjustable		HBB161H			
				250 adjustable		HBB251H			
400 adjustable						HBD401H			
500 adjustable						HBD631H			

Switches and accessories for h3 references guide

		Switches and accessories								
Products	Version	pole	In A / Ue V	x160	x250	h250	h400-h630	h1000	h1600	
Auxiliaries	Shunt trip release	3/4P	24V DC	HXA001H		HXC001H				
			48V DC	HXA002H		HXC002H				
			110V DC	-		HXC008H				
			100-120V AC	HXA003H		HXC003H				
			200-240V AC	HXA004H		HXC004H				
			380-450V AC	HXA005H		HXC005H				
	Undervoltage release	3/4P	24V DC	HXA011H		HXC011H			HXE011H	
			100-120V DC	-		HXC018H			HXE018H	
			200-240V DC	-		HXC019H			HXE019H	
			100-120V AC	HXA013H		HXC013H			HXE013H	
			200-240V AC	HXA014H		HXC014H			HXE014H	
			380-450V AC	HXA015H		HXC015H			HXE015H	
	Delayed undervoltage release	3/4P	24V DC	HXA051H		HXC051H	HXD051H	HXE051H	HXF051H	
		3/4P	110-120V AC	HXA053H		HXC053H	HXD053H	HXE053H	HXF053H	
		3/4P	220-240V AC	HXA054H		HXC054H	HXD054H	HXE054H	HXF054H	
		3/4P	380-415V AC	HXA055H		HXC055H	HXD055H	HXE055H	HXF055H	
	Auxiliary contact	3/4P	1NO+1NC	HXA021H		HXC021H				
	Alarm contact	3/4P	1NO+1NC	HXA024H		HXC024H				
	Auxiliary contact - low level	3/4P	1NO+1NC	HXA025H		HXC025H				
	Alarm contact - low level	3/4P	1NO+1NC	HXA026H		HXC026H				
	Direct rotary handle				HXA030H	HXB030H	HXC030H	HXD030H	HXE030H	HXF030H
	Extended rotary handle				HXA031H	HXB031H	HXC031H	HXD031H	HXE031H	HXF031H
	Padlock				HXA039H HXA037H*	HXA039H	HXC039H	HXD039H		HXF039H
	Motor operator	3/4P	24-48V DC	-		HXB040H	HXC040H	HXD040H	HXE040H	HXF040H
			200-240V AC	-		HXB042H	HXC042H	HXD042H	HXE042H	HXF042H
	Interlocking wire type (kit)	3/4P			-	HXB065H	HXC065H	HXD065H	HXE065H	-
Interlocking wire type (unit)				-	HXB066H	HXC066H	HXD066H	HXE066H	-	
Cable for interlock wire 1 m				-	HXB070H				-	
Cable for interlock wire 1,5 m				-	HXB071H				-	
Electrical interlock for motor type A	3/4P			-	HXB068H		HXD068H		-	
Electrical interlock for motor type B	3/4P			-	HXB069H (between HXB04xH or HXC04xH and HXD04xH or HXE04xH.)				-	

* for HxAxxxP references - standard version handle

Products	Version	pole	In A / Ue V	Switches and accessories						
				x160	x250	h250	h400-h630	h1000	h1600	
Connections	Collar terminal - copper	3P		-	-	HYC003H	HYD003H (250-400A)	-	-	
		4P		-	-	HYC004H	HYD004H (250-400A)	-	-	
	Collar terminal - aluminium / copper 185 mm²	3P		-	HYB001H	-	-	-	-	
		4P		-	HYB002H	-	-	-	-	
	Collar terminal - aluminium / copper 240 mm²	3P		-	HYB005H	-	HYD005H	-	-	
		4P		-	HYB006H	-	HYD006H	-	-	
	Collar terminal multiple - aluminium / copper 240 mm²	3P		-	-	-	HYD007H	HYE007H (to 800)	-	
		4P		-	-	-	HYD008H	HYE008H (to 800)	-	
	Extended straight connection	3/4P			HYA010H	HYB010H	HYC010H	HYD010H (250-400A) HYD013H (630A integrated)	included	included
	Extended spreader connection	3P			HYA011H	HYB011H	HYC011H	HYD011H (250-400A) HYD014H (630A)	-	-
		4P			HYA012H	HYB012H		HYD012H (250-400A) HYD015H (630A)	-	-
	Interphase barrier	3/4P	short		HYA019H		-	-	-	-
			long		HYB019H		included / HYC019 (LSI/TM+) HYB019 (TM)	included / HYD019H		
	Terminal cover for extended straight connections	3P			HYA021H	HYB021H	HYC021H (LSI / TM+) HYG021H (TM)	HYD021H	HYE021H	-
		4P			HYA022H	HYB022H	HYC022H (LSI / TM+) HYG022H (TM)	HYD022H	HYE022H	-
	Terminal cover large for spreader connection	3P			HYA023H	HYB023H	-	HYD023H	-	-
		4P			HYA024H	HYB024H	-	HYD024H	-	-
	Terminal cover short for rear connections	3P			HYA025H	HYB025H	HYC025H (LSI / TM+)	HYD025H	HYE025H	-
		4P			HYA026H	HYB026H	HYC026H (LSI / TM+)	HYD026H	HYE026H	-
	Terminal cover for collar terminal	3P			HYA027H	HYB027H	HYC027H	HYD027H	-	-
		4P			HYA028H	HYB028H	HYC028H	HYD028H	-	-
	Rear connections	3P			HYA031H (16-50A) HYA131H (63-160A) for S version	HYB031H	HYC031H (LSI / TM+) HYG031H (TM)	HYD031H (250-400A) HYD033H (630A)	HYE031H (630-800A) HYE033H (1000A)	-
		4P			HYA032H (16-50A) HYA132H (63-160A) for S version	HYB032H	HYC032H (LSI / TM+) HYG032H (TM)	HYD032H (250-400A) HYD034H (630A)	HYE032H (630-800A) HYE034H (1000A)	-
	DIN rail adaptor	3/4P			HYA033H	-	-	-	-	-
	Connecting kit (0,75mm²)	3/4P			HYA035H					
	Rail Din raiser	3/4P			HYA036H	-	-	-	-	-
	OCR sealing cover				-	-	HYC041H (LSI) HYG041H (TM)	-	-	-
	Compact lugs 16mm² D:8,5	3/4P			HYA086H	-	-	-	-	-
	Compact lugs 25mm² D:8,5	3/4P			HYA087H	-	-	-	-	-
	Compact lugs 35mm² D:8,5	3/4P			HYA088H	-	-	-	-	-
	Compact lugs 50mm² D:8,5	3/4P			HYA089H	-	-	-	-	-
	Compact lugs 70mm² D:8,5	3/4P			HYA090H	-	-	-	-	-
	Compact lugs 95mm² D:8,5	3/4P			HYA091H	-	-	-	-	-
	Compact lugs 120mm² D:8,5	3/4P			-	HYB092H	-	-	-	-
	Compact lugs 120mm² D:10	3/4P			-	-	-	HYD093H	-	-
	Compact lugs 150mm² D:8,5	3/4P			-	HYB094H	-	-	-	-
	Compact lugs 150mm² D:10,5	3/4P			-	-	-	HYD095H	-	-
	Compact lugs 185mm² D:10,5	3/4P			-	-	-	HYD096H	-	-
	Compact lugs 185mm² D:12,8	3/4P			-	-	-	HYD097H*	-	-
	Compact lugs 240mm² D:12,8	3/4P			-	-	-	HYD098H*	-	-

* with spreaders

Moulded case circuit breakers x160

Thermal magnetic trip unit, 2 versions:
 - Z version: fixed thermal and fixed magnetic, collar terminal
 - S version: adjustable thermal and fixed magnetic, cable lug terminal
 - P version: fixed thermal and fixed magnetic, cable lug terminal

1P, 2P, 3P and 4P
 Mechanical test button, lockable settings,
 integrated padlocking handle
 Ø 4mm (S version),
 needs accessory for DIN rail mounting.

Connection capacity
 95 mm² rigid cables
 70 mm² flexible cables

Comply with IEC 60 947-2.

Trip-free switches

Allows tripping at distance using a voltmetrical trip unit (optional)
 AC 22/23A.

Comply with IEC 60 947-3.



HDA125P

Designation	In	Cat. ref.				
		1P	2P	3P	4P	
MCCBs x160 18kA breaking capacity Ics : 18 kA (400/415 V AC) fixed thermal 1x In fixed magnetic > 10 x In	16A	HDA014Z	HDA015P	HDA016P	HDA017P	
	20A	HDA018Z	HDA019P	HDA020P	HDA021P	
	25A	HDA023Z	HDA024P	HDA025P	HDA026P	
	32A	HDA030Z	HDA031P	HDA032P	HDA033P	
	40A	HDA038Z	HDA039P	HDA040P	HDA041P	
	50A	HDA048Z	HDA049P	HDA050P	HDA051P	
	63A	HDA061Z	HDA062P	HDA063P	HDA064P	
	80A	HDA078Z	HDA079P	HDA080P	HDA081P	
	100A	HDA098Z	HDA099P	HDA100P	HDA101P	
	125A	HDA123Z	HDA124P	HDA125P	HDA126P	
	160A	-	HDA159P	HDA160P	HDA161P	
	adjustable thermal 0,63 - 0,8 - 1 x In fixed magnetic > 10 x In	25A	-	-	HDA025S	HDA026S
		40A	-	-	HDA040S	HDA041S
63A		-	-	HDA063S	HDA064S	
80A		-	-	HDA080S	HDA081S	
100A		-	-	HDA100S	HDA101S	
125A		-	-	HDA125S	HDA126S	



HDA161S

MCCBs x160 25kA breaking capacity Ics : 20 kA (400/415 V AC) fixed thermal 1x In fixed magnetic > 10 x In	16A	HHA014Z	HHA015P	HHA016P	HHA017P	
	20A	HHA018Z	HHA019P	HHA020P	HHA021P	
	25A	HHA023Z	HHA024P	HHA025P	HHA026P	
	32A	HHA030Z	HHA031P	HHA032P	HHA033P	
	40A	HHA038Z	HHA039P	HHA040P	HHA041P	
	50A	HHA048Z	HHA049P	HHA050P	HHA051P	
	63A	HHA061Z	HHA062P	HHA063P	HHA064P	
	80A	HHA078Z	HHA079P	HHA080P	HHA081P	
	100A	HHA098Z	HHA099P	HHA100P	HHA101P	
	125A	HHA123Z	HHA124P	HHA125P	HHA126P	
	160A	-	HHA159P	HHA160P	HHA161P	
	adjustable thermal 0,63 - 0,8 - 1 x In fixed magnetic > 10 x In	25A	-	-	HHA025S	HHA026S
		40A	-	-	HHA040S	HHA041S
63A		-	-	HHA063S	HHA064S	
80A		-	-	HHA080S	HHA081S	
100A		-	-	HHA100S	HHA101S	
125A		-	-	HHA125S	HHA126S	



HNA125P

Designation	In	Cat. ref.			
		1P	2P	3P	4P
MCCBs x160 40kA	16A	-	-	HNA016P	HNA017P
breaking capacity	20A	-	-	HNA020P	HNA021P
lcs : 25 kA	25A	-	-	HNA025P	HNA026P
(400/415 V AC)	32A	-	-	HNA032P	HNA033P
	40A	-	-	HNA040P	HNA041P
fixed thermal	50A	-	-	HNA050P	HNA051P
1 x In	63A	-	-	HNA063P	HNA064P
fixed magnetic	80A	-	-	HNA080P	HNA081P
> 10 x In	100A	-	-	HNA100P	HNA101P
	125A	-	-	HNA125P	HNA126P
	160A	-	-	HNA160P	HNA161P
adjustable thermal	25A	-	-	HNA025S	HNA026S
0,63 - 0,8 - 1 x In	40A	-	-	HNA040S	HNA041S
fixed magnetic	63A	-	-	HNA063S	HNA064S
> 10 x In	80A	-	-	HNA080S	HNA081S
	100A	-	-	HNA100S	HNA101S
	125A	-	-	HNA125S	HNA126S
	160A	-	-	HNA160S	HNA161S
Trip-free switches x160	125A	-	-	HCA125P	HCA126P
suitable for	160A	-	-	HCA160P	HCA161P
AC22A / AC 23A					
Ue: 415 V AC					
l _{cw} (1s): 2 kA					



HXA030H



HXA031H



HYA021H



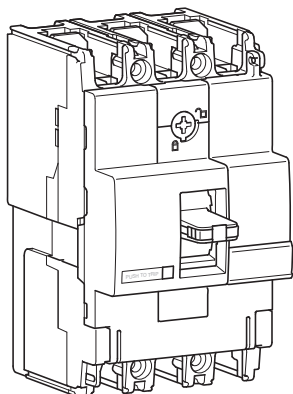
HYA023H



HYA027H

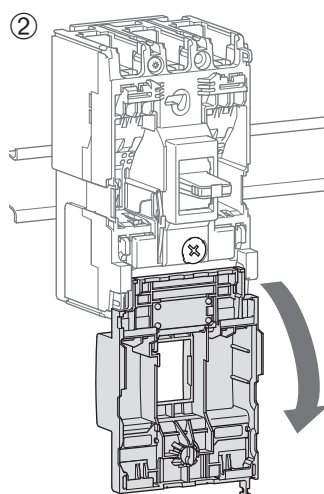
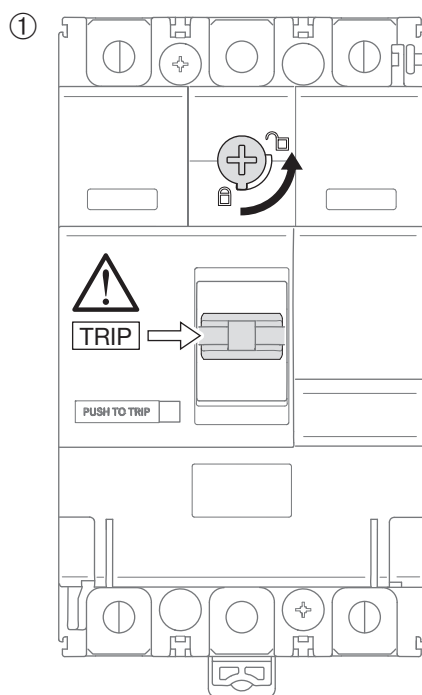
Designation	Characteristics	Cat. ref.	
		3P	4P
Direct rotary handle	padlockable handle max Ø 6 mm	HXA030H	HXA030H
Extended rotary handle	padlockable handle max Ø 8 mm	HXA031H	HXA031H
Padlock	for padlock integrated handle to mount on MCCB for handle locking for 3 padlock max Ø 8 mm	HXA039H	HXA039H
	for HxAxxxP references standard version handle	HXA037H	HXA037H
Extended connections	set of 4 straight connections	HYA010H	HYA010H
	set of 3 or 4 spreader connections	HYA011H	HYA012H
Interphase barriers	set of 3, height: 50 mm	HYA019H	HYA019H
	set of 3, height: 97 mm	HYB019H	HYB019H
Terminal covers	for extended straight connections	HYA021H	HYA022H
	for extended spreader connections	HYA023H	HYA024H
	for collar terminal	HYA027H	HYA028H
Din rail adaptor		HYA033H	HYA033H
Rear connections	16 to 50A	HYA031H	HYA032H
	63 to 160A	HYA131H	HYA132H
Connecting kit	0,75 mm ² set of 3 x 2 wires length: 1,30m	HYA035H	HYA035H
Rail Din raiser		HYA036H	HYA036H
Designation	Characteristics	Cat. ref.	
Ring lugs	compact lugs 16 mm ² Ø8,5	HYA086H	
	compact lugs 25 mm ² Ø8,5	HYA087H	
	compact lugs 35 mm ² Ø8,5	HYA088H	
	compact lugs 50 mm ² Ø8,5	HYA089H	
	compact lugs 70 mm ² Ø8,5	HYA090H	
	compact lugs 95 mm ² Ø8,5	HYA091H	

MCCBs

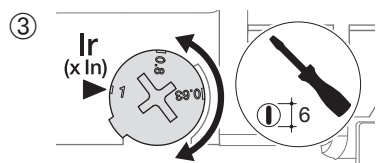


		220/240V AC IEC 60 947-2	380/415V AC IEC 60 947-2
HDA	l _{cu}	25 kA	18 kA
	l _{cs}	25 kA	18 kA
HHA	l _{cu}	35 kA	25 kA
	l _{cs}	25 kA	20 kA
HNA	l _{cu}	85 kA	40 kA
	l _{cs}	30 kA	25 kA
HCA	l _{cm}	-	2,8 kA
	l _{cw}	-	2 kA - 1s

Magnetic and thermal settings



For DIN rail mounting, use HYA033H.



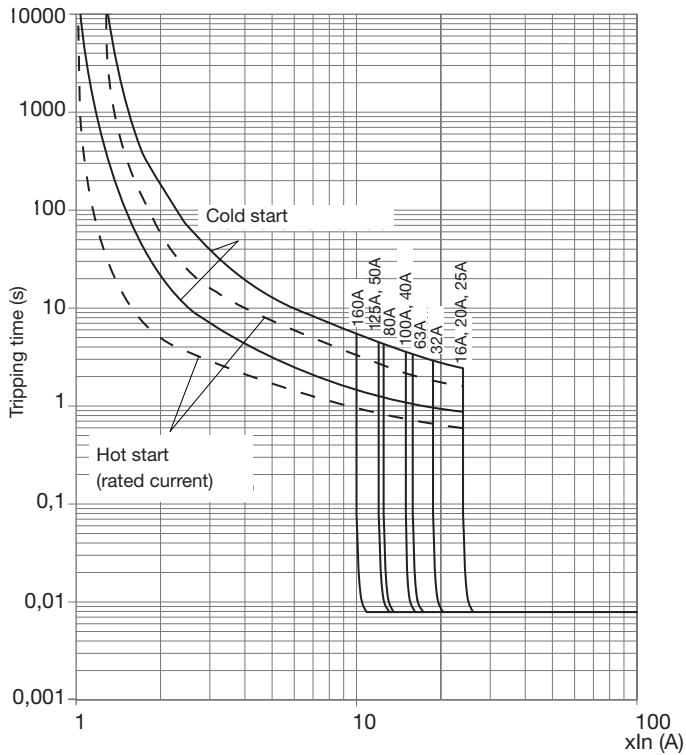
Thermal adjustment from 0,63 to 1 x I_n

Magnetic adjustment fixed > 10 x I_n

I _n	15 - 50 A	63 - 80 A	100 - 125 A	160 A
I _{mag}	600 A	1000 A	1500 A	1600 A

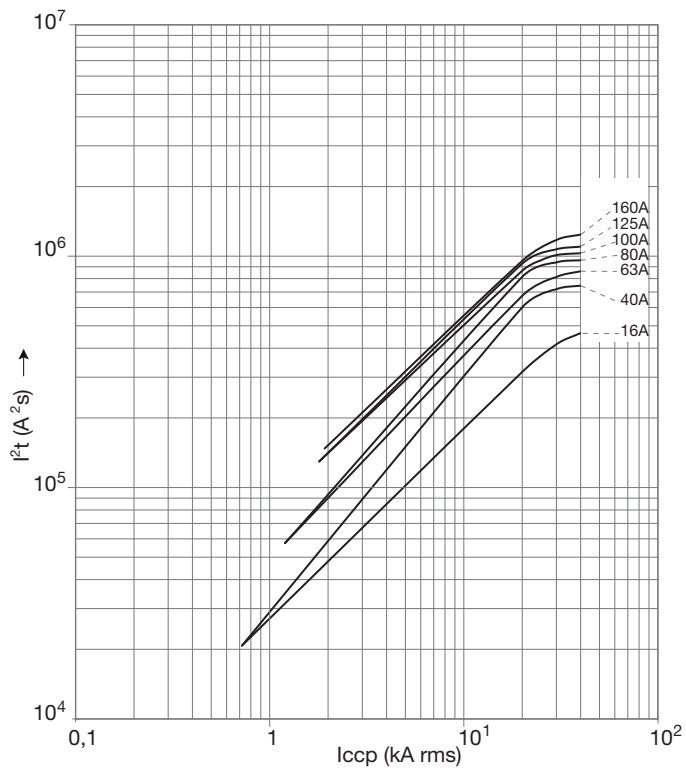
Tripping curve

MCCB x160



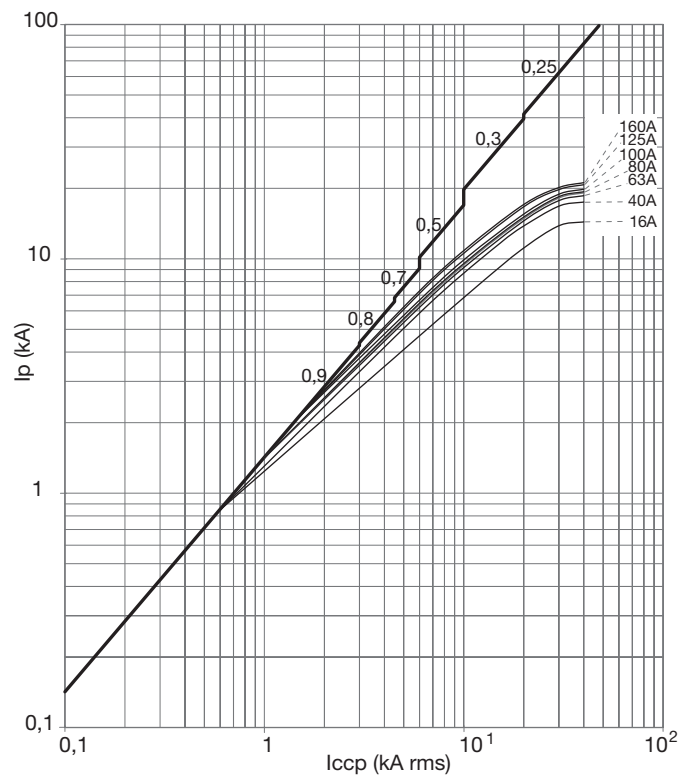
Thermal constraint curve at 400V (Let-through energy)

MCCB x160



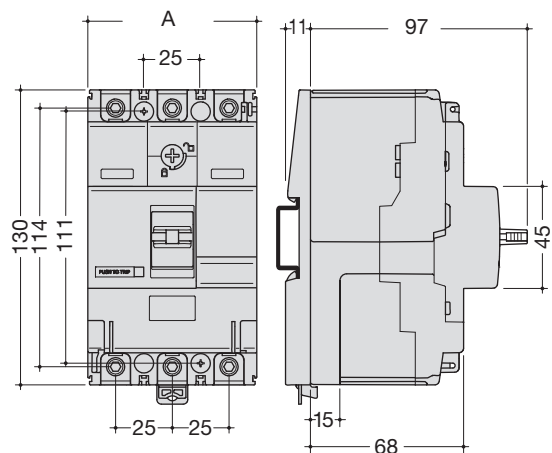
Current limiting curve at 400V (Let-through peak current)

MCCB x160



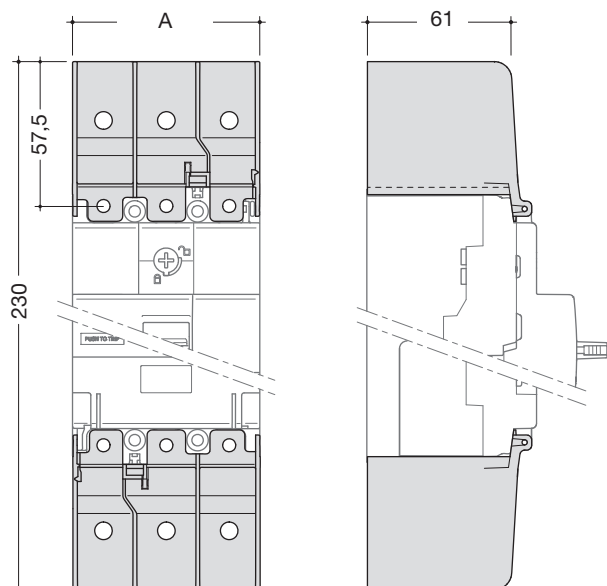
Dimensions

MCCB x160



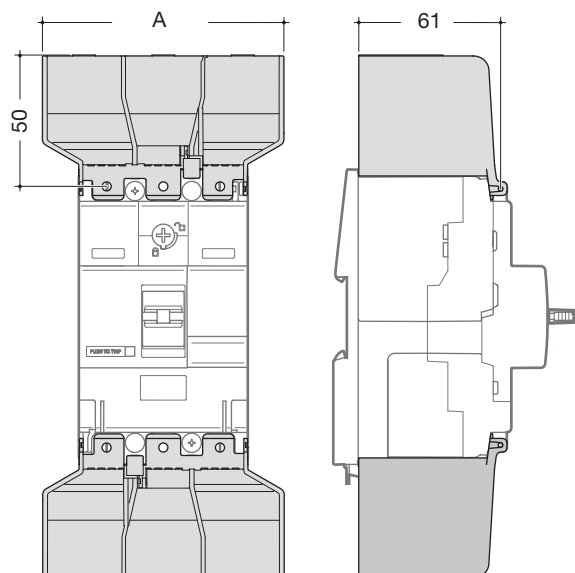
	A (mm)
1P	24,8
2P	49,5
3P	74,5
4P	99,5

Terminal covers for extended straight connections



	A (mm)
1P	24,4
2P	49,5
3P	74,5
4P	99,5

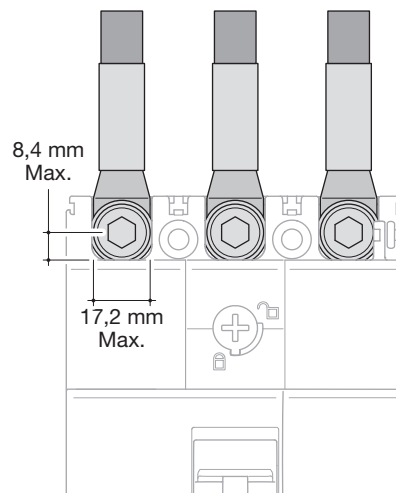
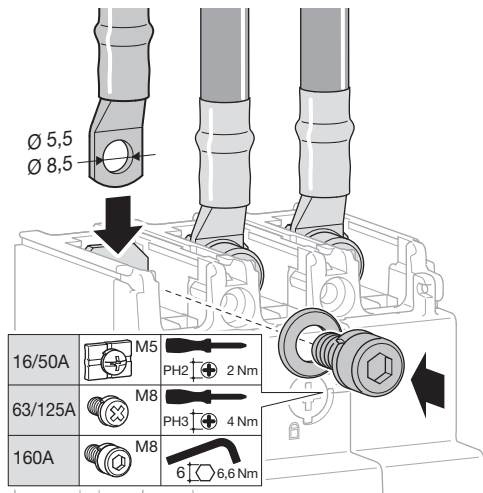
Terminal cover for extended spreader connections



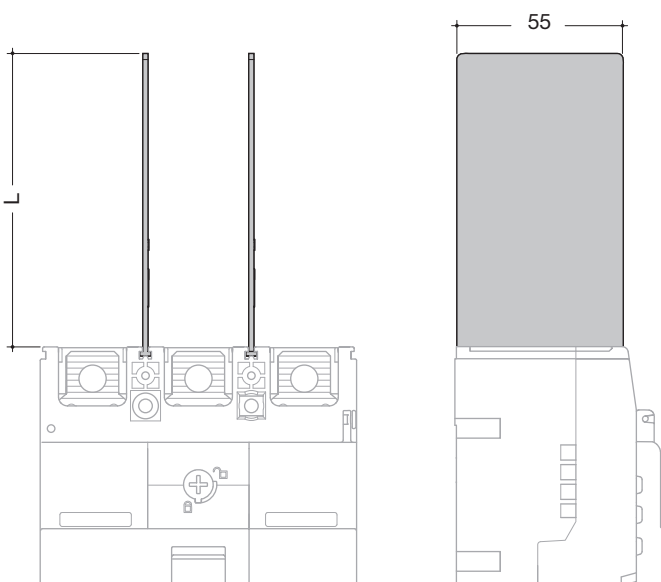
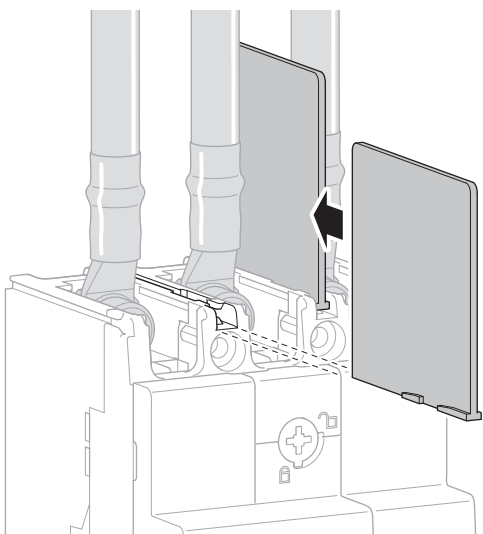
	A (mm)
3P	106,5
4P	141,5

Connection

Connection with cable lugs

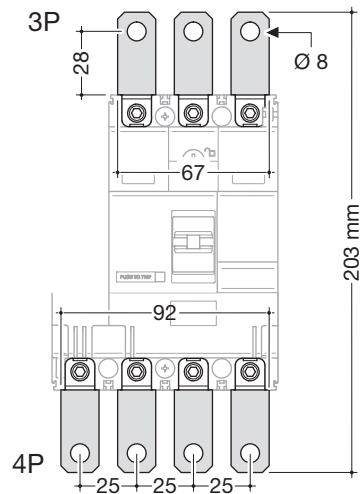
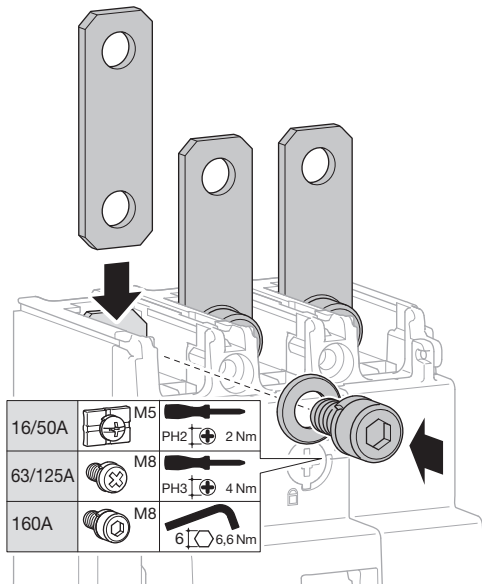


Interphase barriers

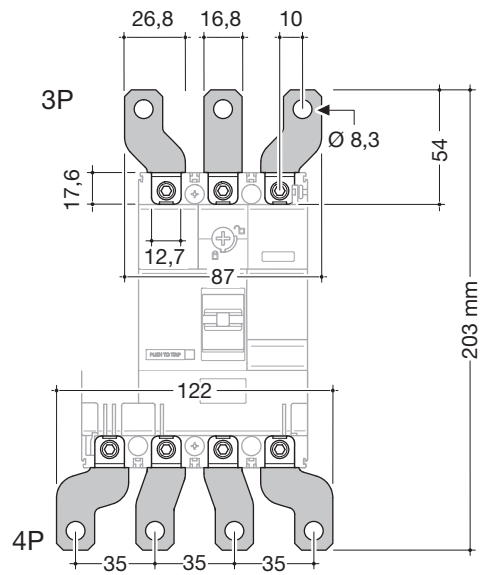
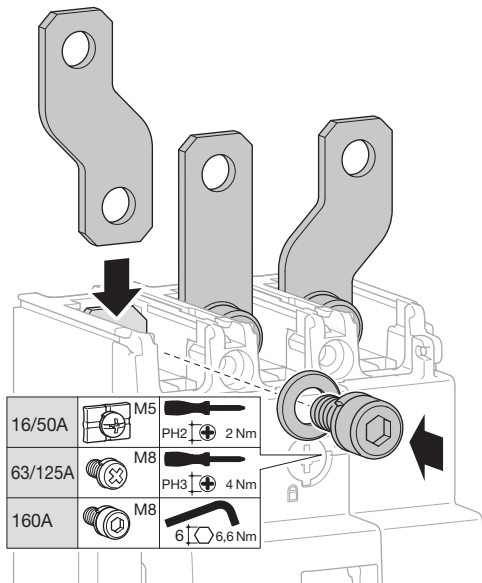


	L (mm)
HYA019H	50
HYB019H	97

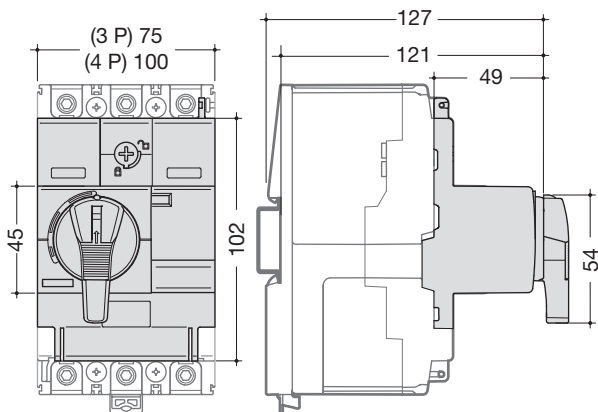
Extended straight connections



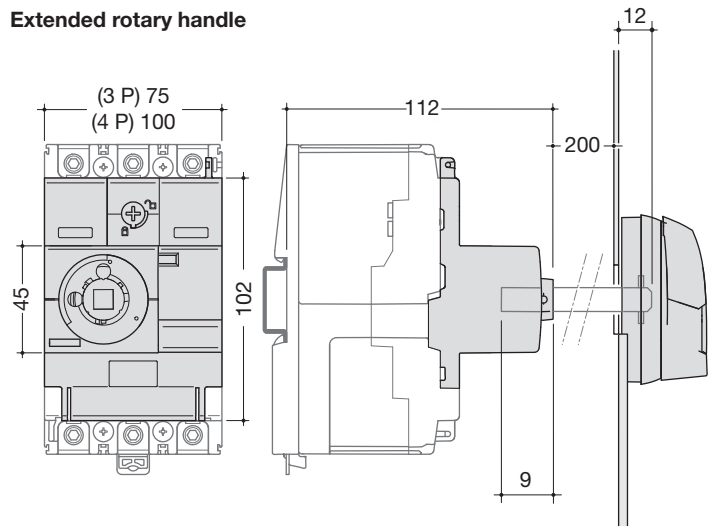
Extended spreader connections



Direct rotary handle

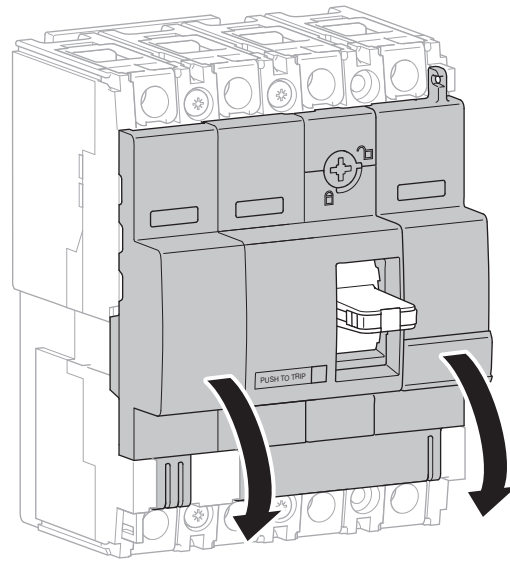
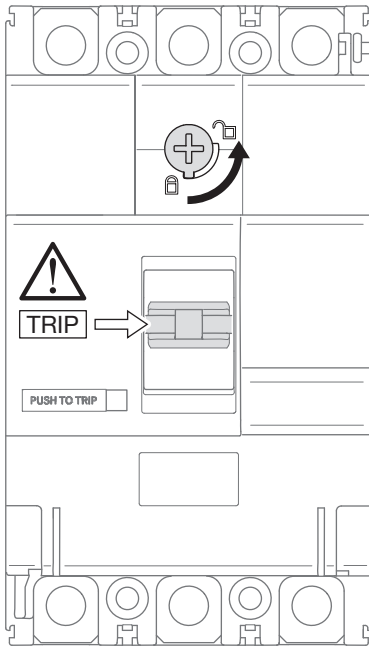


Extended rotary handle



Auxiliaries

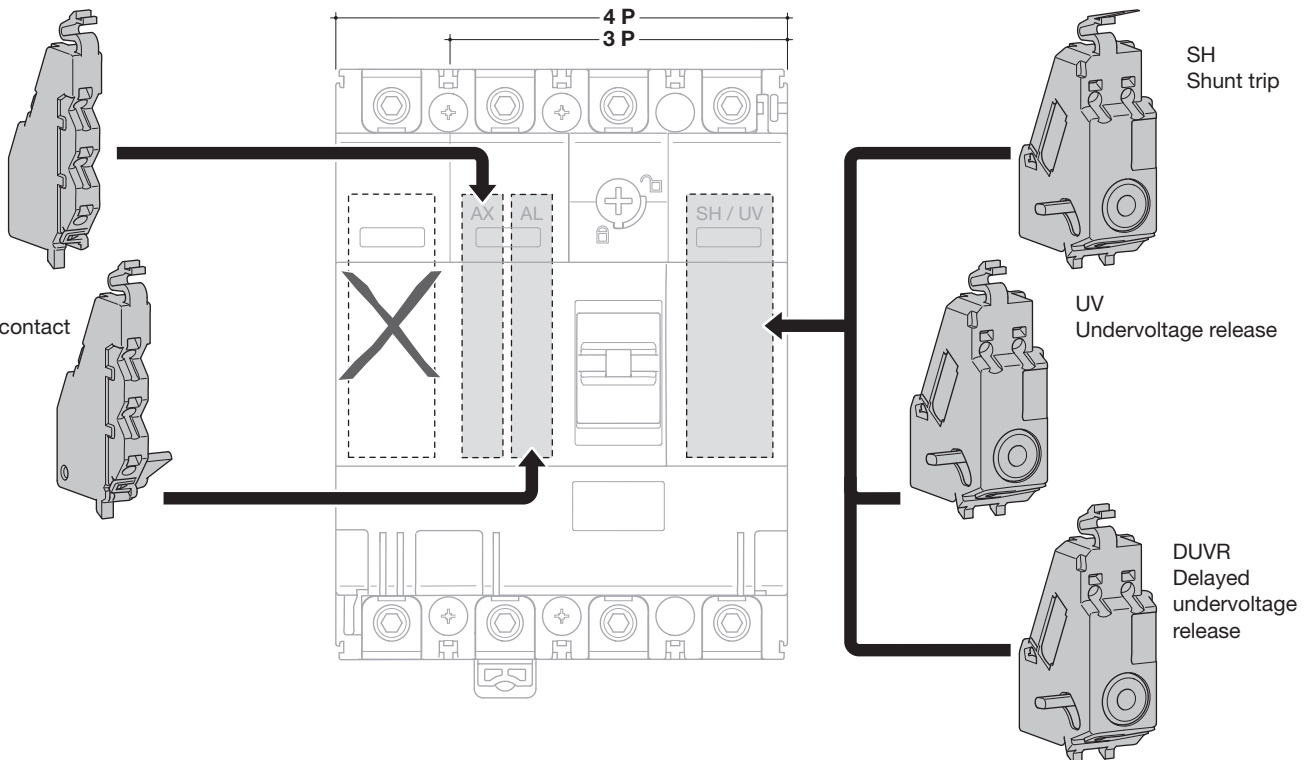
Auxiliaries for MCCBs and trip-free switches



Mounting combination for auxiliaries and releases

AX
Auxiliary contact

AL
Alarm contact



Moulded case circuit breakers x250,
 2 versions of trip unit:
 - Z version: fixed thermal and magnetic
 - U version: adjustable thermal and magnetic

3P and 4P
 Mechanical test button, lockable settings, integrated padlocking handle Ø 4mm.
 Comply with IEC 60 947-2.

Connection:
 Directly on copper cable terminal,

with end lug max. width: 25 mm
 Connection capacity: 185 mm² rigid cables

Comply with IEC 60 947-2.
 Collar terminals

Trip-free switches
 Allows tripping at distance using a voltmeter trip unit (optional)
 Complies with IEC 60 947-3
 AC 22/23A

Add-on blocks for x250 devices
 These devices are intended to be fixed at the bottom of the devices.

Type A and HI for fault component dc pulsating current and the products with "reinforced immunity".
 Adjustable sensitivity and tripping.
 Test button for differential functioning check.
 Mechanical test button LED or at distance signal for tripping or advance warning (25 - 50% I_{Δn}).

Comply with IEC 60 947-2 annexe B



HNB250Z



HNB100U



HBB251H

Designation	Designation	In	Cat. ref.	
			3P	4P
MCCBs x250 25kA	breaking capacity	100A	HNB100Z	HNB101Z
	I _{cu} : 25 kA (400/415 V AC)	125A	HNB125Z	HNB126Z
	I _{cs} : 20kA	160A	HNB160Z	HNB161Z
	fixed thermal 1 x I _n	200A	HNB200Z	HNB201Z
	fixed magnetic ≥10 x I _n	250A	HNB250Z	HNB251Z
MCCBs x250 40kA	breaking capacity	100A	HNB100Z	HNB101Z
	I _{cu} : 40 kA (400/415 V AC)	125A	HNB125Z	HNB126Z
	I _{cs} : 20 kA	160A	HNB160Z	HNB161Z
	fixed thermal 1 x I _n	200A	HNB200Z	HNB201Z
	fixed magnetic ≥10 x I _n	250A	HNB250Z	HNB251Z
	adjustable thermal 0,63 - 0,8 - 1x I _n	100A	HNB100U	HNB101U
	adjustable magnetic 6 - 8 - 10 - 13 x I _n (100 - 200A)	125A	HNB125U	HNB126U
	5 - 7 - 9 - 11 x I _n (250A)	160A	HNB160U	HNB161U
	3P, 3 trip units	200A	HNB200U	HNB201U
	4P, neutral setting: 0 or 100%	250A	HNB250U	HNB251U
Trip-free switches x250	capacity suitable for AC 22/23A	250A	HCB250Z	HCB251Z
	I _{cw} (1s): 3 kA			
Add-on blocks	adjustable sensitivity I _{Δn} : 0,03 - 0,1 - 0,3 - 1 - 3 - 6A	160A	-	HBB161H
	adjustable tripping: - instantaneous - time delay: 0,06 - 0,15 - 0,3 - 0,5 - 1 sec	250A	-	HBB251H

Indication contacts

- 1 changeover switch (ON/OFF): indicates the position of the MCCB is "open" or "closed".
- 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

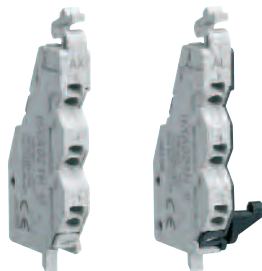


Allows the tripping of MCCBs or trip-free switches when voltage level drop between 35 and 70% of Un. Pick up voltage 0,85 x Un

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.

Designation	Characteristics	Cat. ref.	
 HXA021H HXA024H	Auxiliary contacts AX AL	1 changeover contact 250 V AC / 3A 125 V DC / 0,4A 1 NO + 1 NC	HXA021H
		1 changeover alarm contact 250 V AC / 3A 125 V DC / 0,4A 1 NO + 1 NC	HXA024H
		low level contact (ON/OFF) 125 V AC 1 NO + 1 NC	HXA025H
		low level alarm contact 125 V AC 1 NO + 1 NC	HXA026H
 HXA014H	Shunt trips SH	24 V DC 48 V DC 100 - 120 V AC 200 - 240 V AC 380 - 450 V AC	HXA001H HXA002H HXA003H HXA004H HXA005H
	Undervoltage releases UV	24 V DC 100 - 120 V AC 200 - 240 V AC 380 - 450 V AC	HXA011H HXA013H HXA014H HXA015H
	Delayed undervoltage releases DUVR	24 V DC 110 - 120 V AC 200 - 240 V AC 380 - 415 V AC	HXA051H HXA053H HXA054H HXA055H
	Direct rotary handles	padlockable handle max Ø 6 mm	HXB030H
	Extended rotary handles	padlockable handle max Ø 8 mm	HXB031H
 HXB042H	Padlocks	to mount on MCCBs for handle locking for 3 padlocks max Ø 8 mm	HXA039H
	Motor operators	24 V DC 230 - 240V AC	HXB040H HXB042H
	Electrical interlock	for motor type A (between 2 250A) for motor type B (between 250A and other sizes)	HXB068H HXB069H



HYB010H



HYB002H



HYB012H



HYB022H



HYB024H

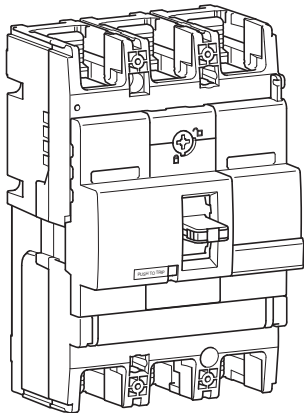


HYB031H

Designation	Characteristics	Cat. ref.	
		3P	4P
Interlocking kit	wire type set of 2 pieces and cable	HXB065H	HXB065H
Interlocking unit	wire type	HXB066H	HXB066H
Interlocking mechanical cable	1 m	HXB070H	HXB070H
	1,5 m	HXB071H	HXB071H
Collar terminals	aluminium / copper conductors 150 mm ² rigid cables 120 mm ² flexible cables	HYB001H	HYB002H
Collar terminals 240 mm²	aluminium / copper conductors	HYB005H	HYB006H
Extended connections	set of 4 pieces for straight connections	HYB010H	HYB010H
	spreader connections	HYB011H	HYB012H
Interphase barriers	set of 3, height: 97 mm	HYB019H	HYB019H
Terminal covers	for extended straight connections	HYB021H	HYB022H
	for extended spreader connections	HYB023H	HYB024H
	for rear connections	HYB025H	HYB026H
	for collar terminals	HYB027H	HYB028H
Rear connections	set of 3 or 4 pieces	HYB031H	HYB032H
Connecting kit	0,75 mm ² set of 3 x 2 wires length: 1,30m	HYA035H	HYA035H

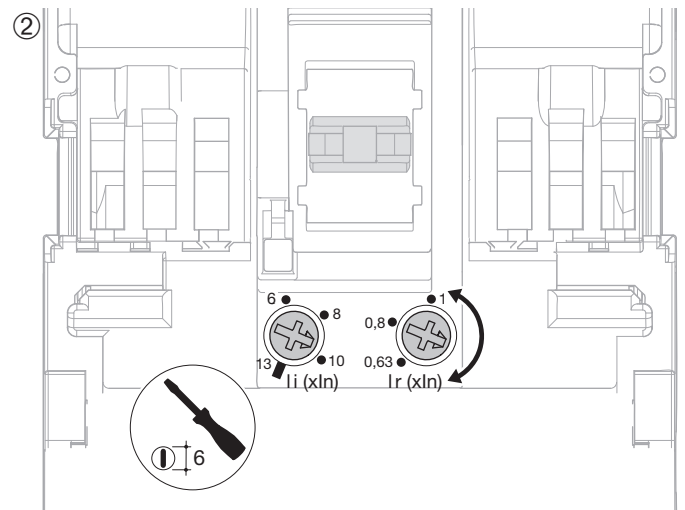
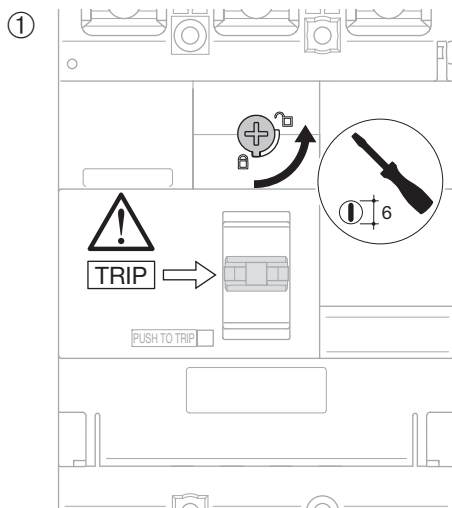
Designation	Characteristics	Cat. ref.
Ring lugs	compact lugs 35 mm ² Ø8,5	HYA088H
	compact lugs 50 mm ² Ø8,5	HYA089H
	compact lugs 70 mm ² Ø8,5	HYA090H
	compact lugs 95 mm ² Ø8,5	HYA091H
	compact lugs 120 mm ² Ø8,5	HYB092H
	compact lugs 150 mm ² Ø8,5	HYB094H

MCCBs



		220/240V AC IEC 60 947-2	380/415V AC IEC 60 947-2
HNB	Icu	35 kA	25 kA
	Ics	25 kA	20 kA
HNB	Icu	85 kA	40 kA
	Ics	40 kA	20 kA
HCB	Icm	-	9 kA
	Icw	-	3 kA - 1s

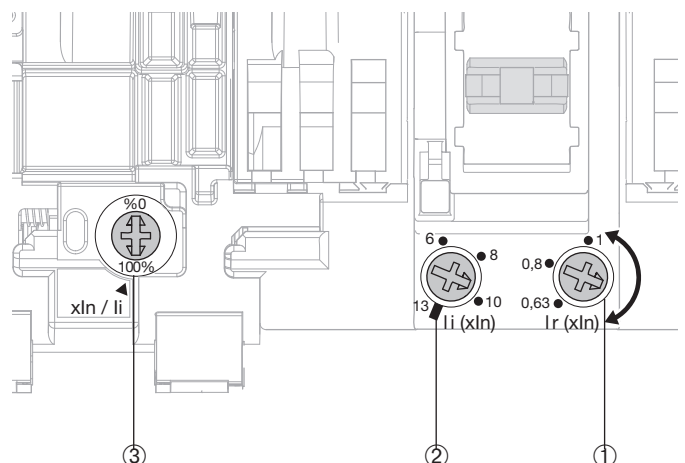
Magnetic and thermal settings



Thermal adjustment from 0,63 to 1 x In

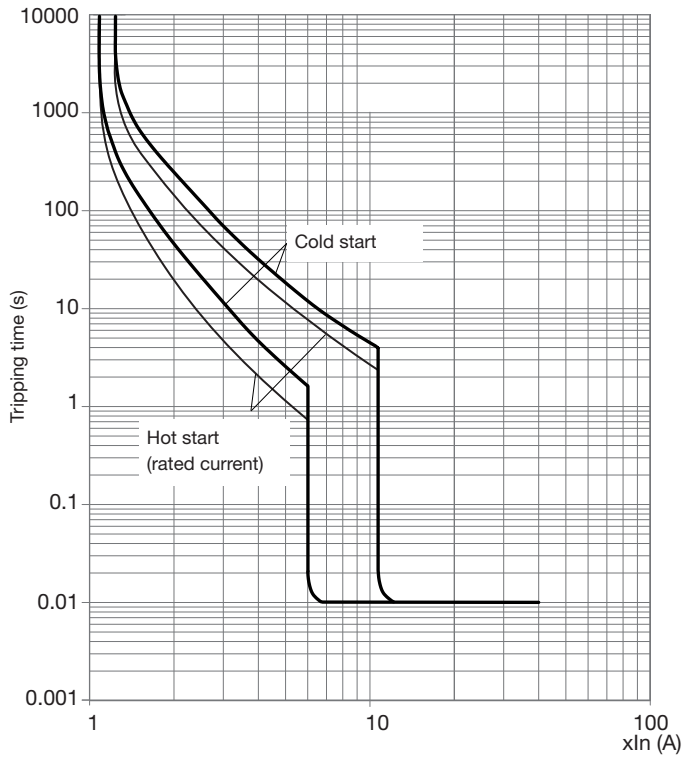
Magnetic adjustment from 6 to 13 x In (100 - 200A)
from 5 to 11 x In (250A)

	100 - 200A	250A
I _r (x I _n) ①	0,63 - 0,8 - 1 x I _n	
I _i (x I _n) ②	6 - 8 - 10 - 13 x I _n	5 - 7 - 9 - 11 x I _n
x I _n /I _i ③	0 - 100%	
	0 - 60%	



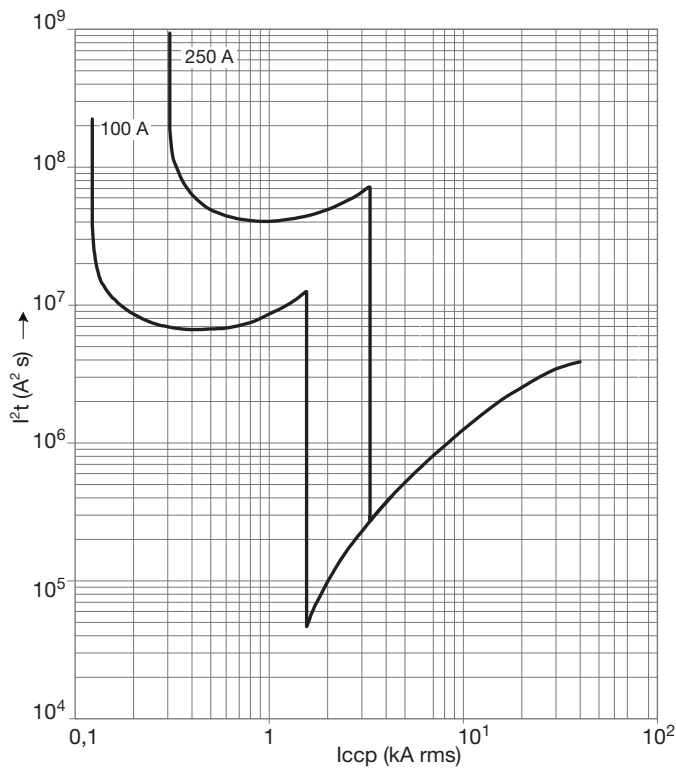
Tripping curve

MCCB x250



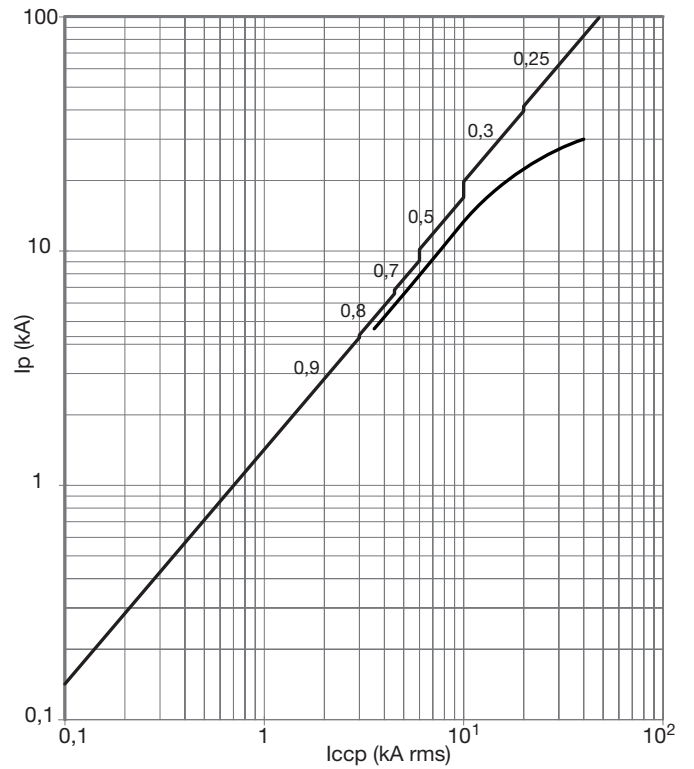
Thermal constraint curve at 400V (Let-through energy)

MCCB x250



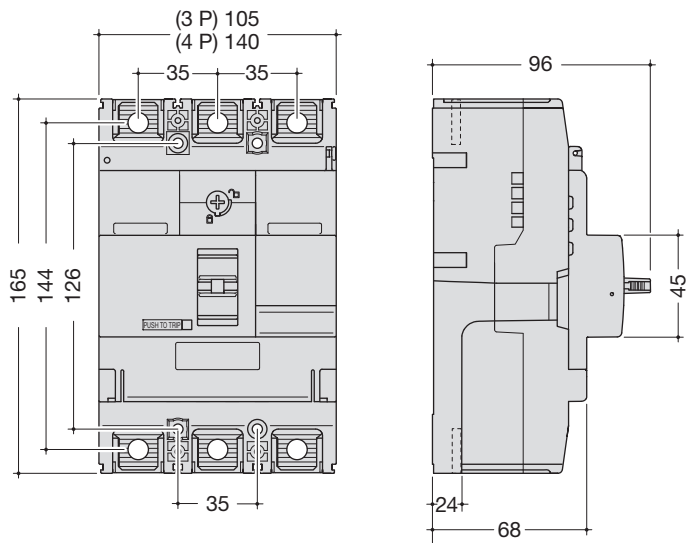
Current limiting curve at 400V (Let-through peak current)

MCCB x250

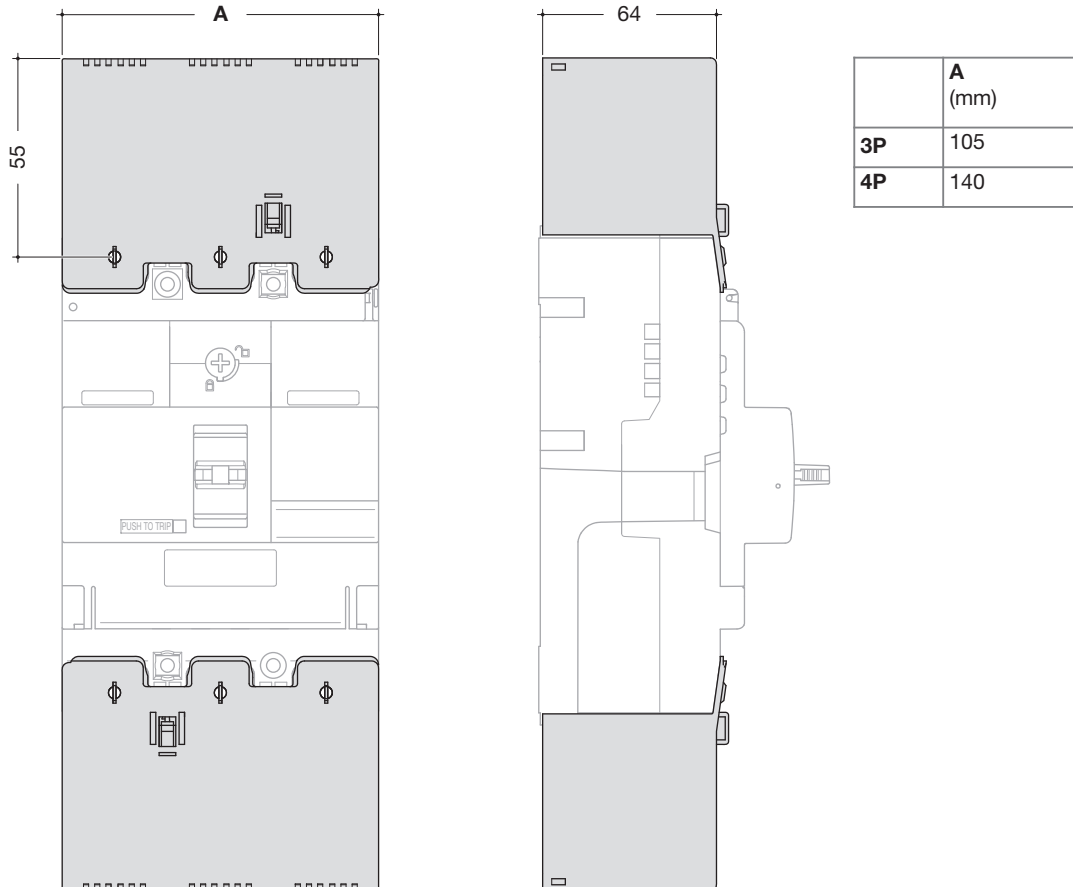


Dimensions

MCCB x250

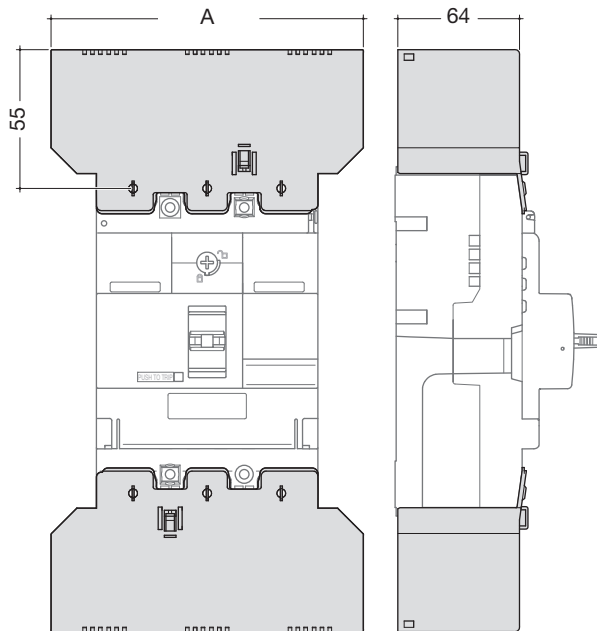


Terminal covers for extended straight connections



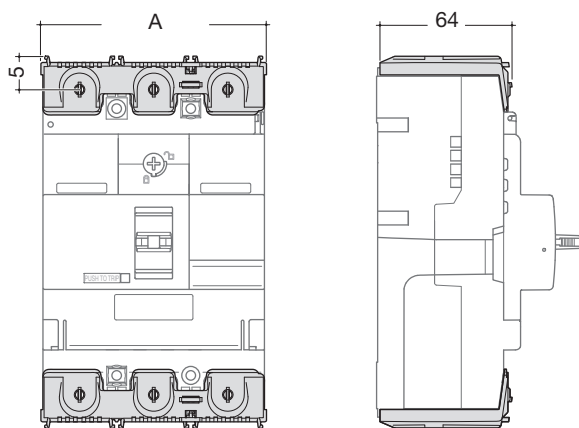
Accessories

Terminal cover for extended spreader connections



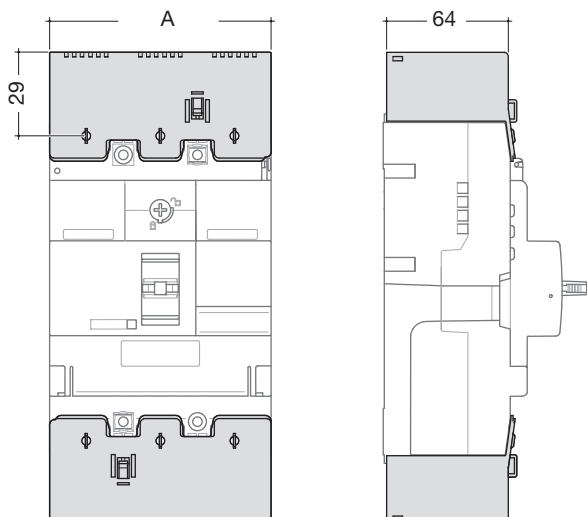
	A (mm)	B (mm)	C (mm)
3P	147,5	54,5	64
4P	196	54,5	64

Terminal cover for rear connections



	A (mm)
3P	105
4P	140

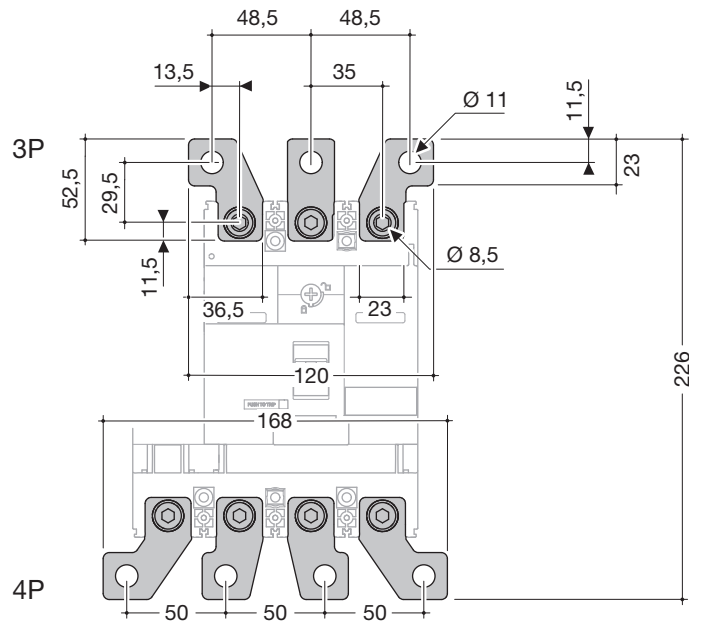
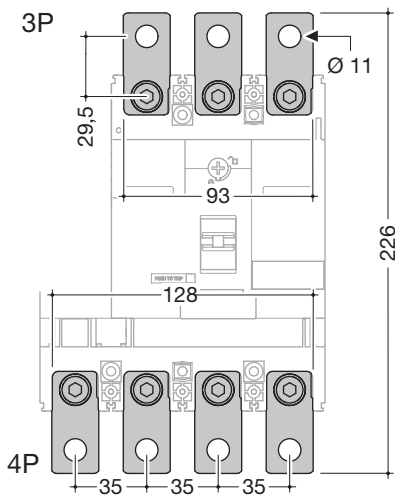
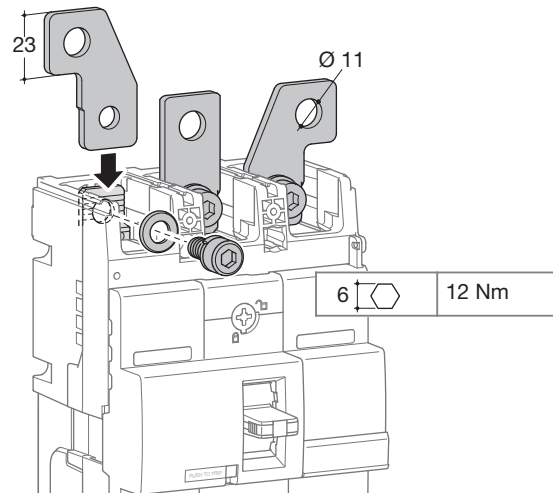
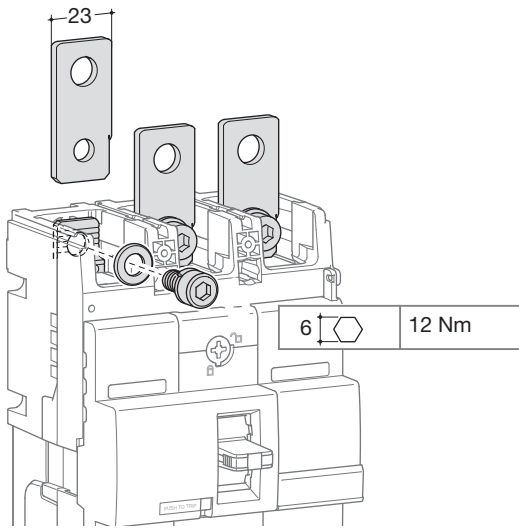
Terminal covers for collar terminals



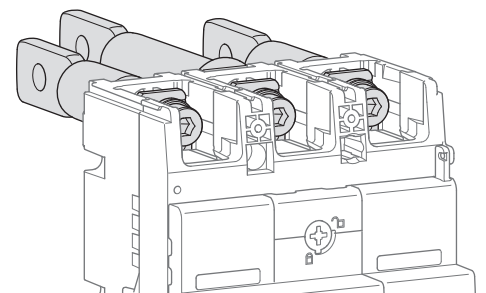
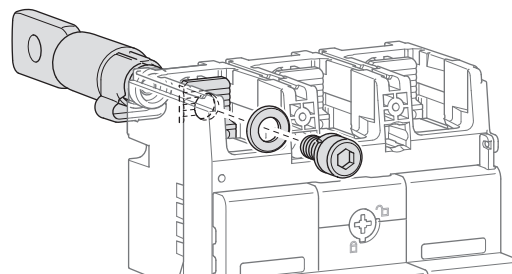
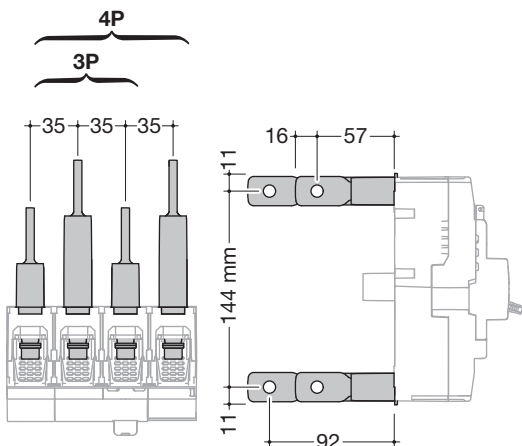
	A (mm)
3P	105
4P	140

Connection

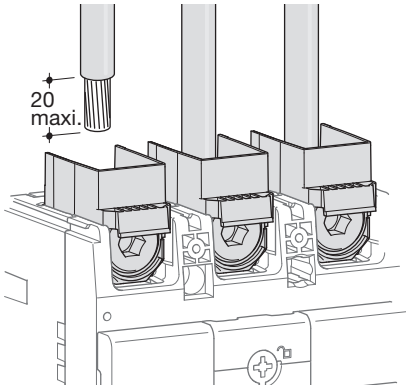
Extended straight and spreader connections



Rear connections

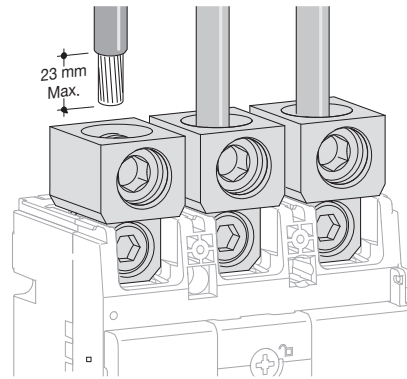


Connection by collar



Terminals for aluminium / copper conductors (accessory)
HYB001H, HYB002H

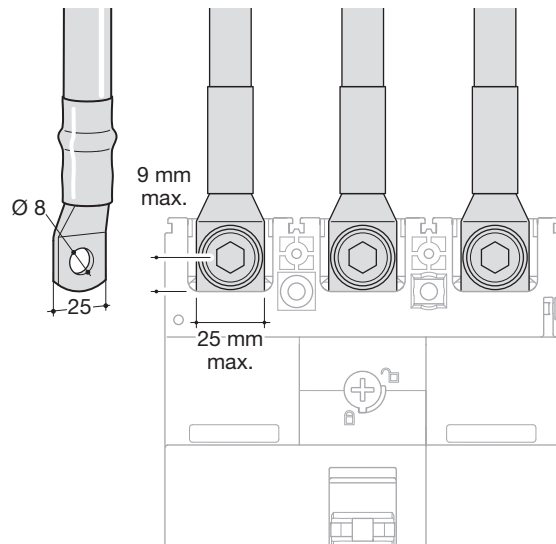
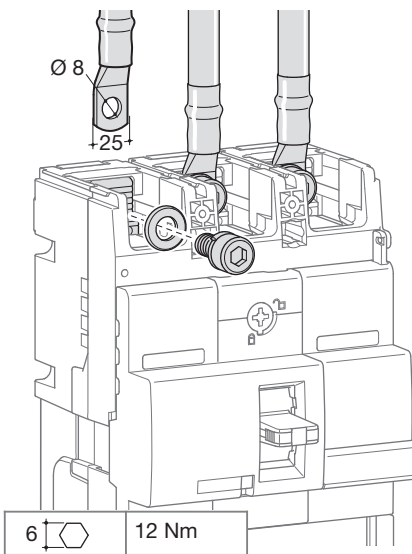
	min. 35 mm ²	max. 150 mm ²
	min. 35 mm ²	max. 185 mm ²
	35 mm ² to 50 mm ² = 25 Nm 60 mm ² to 185 mm ² = 25 Nm	



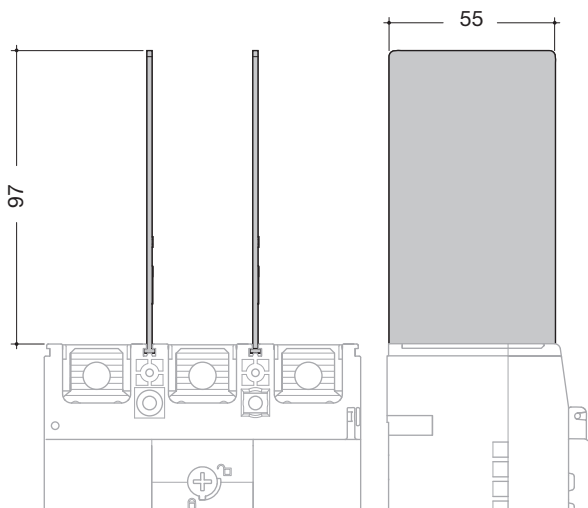
Terminals for aluminium / copper conductors (accessory)
HYB005H, HYB006H

	min. 95 mm ²	max. 240 mm ²
	95 mm ² to 240 mm ² = 25 Nm	

Connection with end lugs

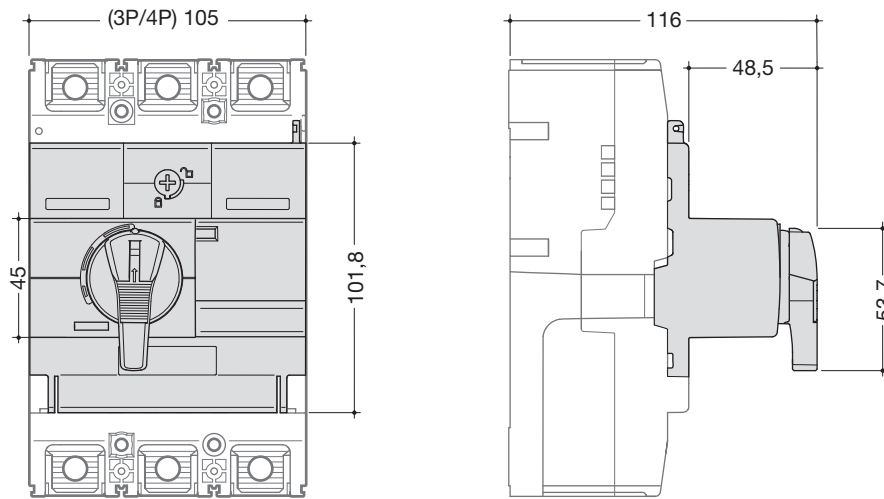


Interphase barriers

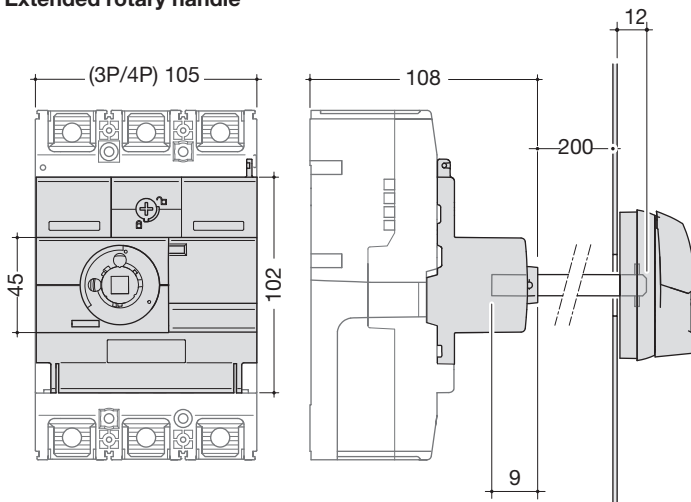


Accessories

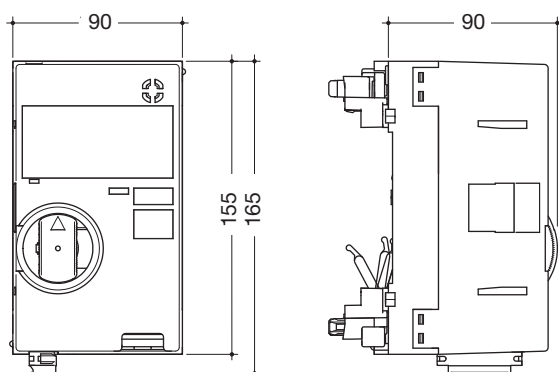
Rotary handle



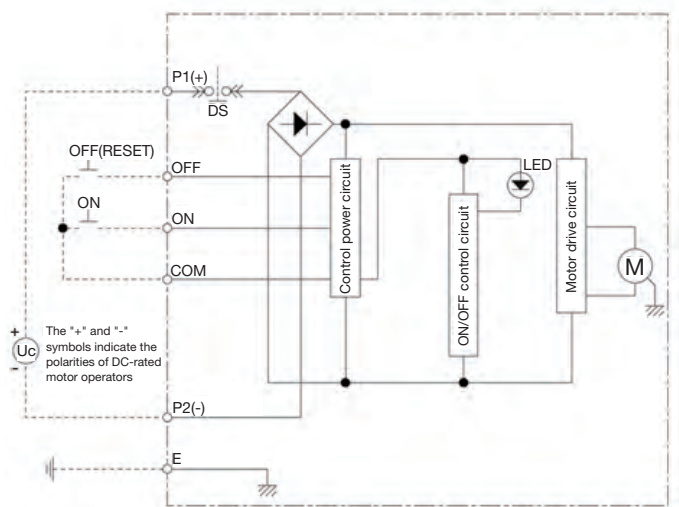
Extended rotary handle



Motor operator



Wiring diagram

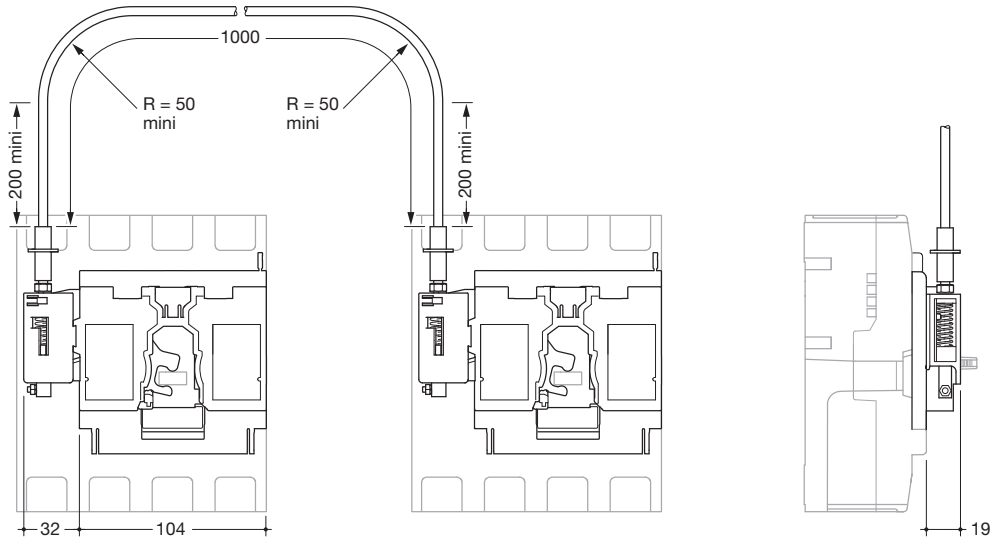


	HXB040H	HXB042H
Operating voltage	24V DC	230-240V AC
Operating current / starting current peak value (A)	24V DC 230-240V AC	18/26 - 3,5/7
Operating time (s)	(ON) (OFF) (RESET)	0,1s 0,1s 0,1s
Power supply required	300VA min.	
Dielectric properties (1 min)	1000V AC	1500V AC

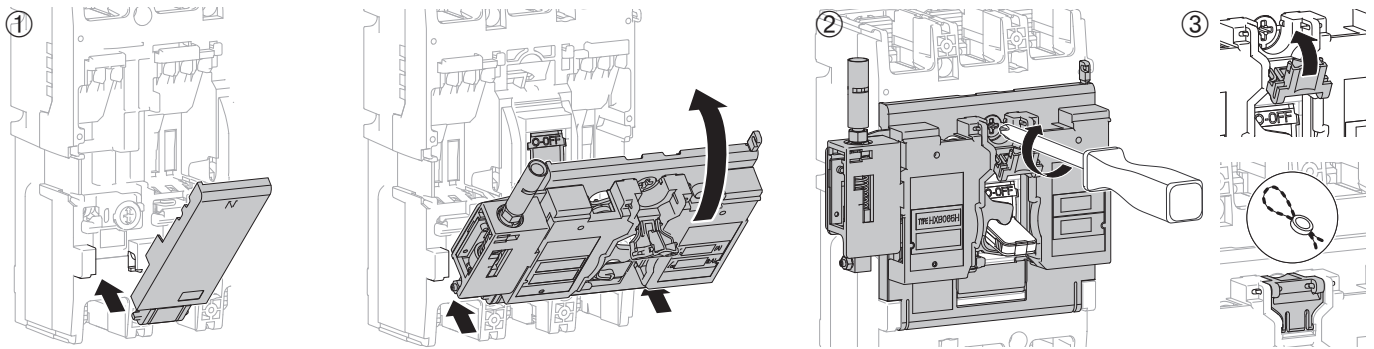
Interlocking system

Suitable with motor operator HXB04xH.
With electrical interlock for motor operator HXB068H (for 250A) or HXB069H (for 630/1000A).

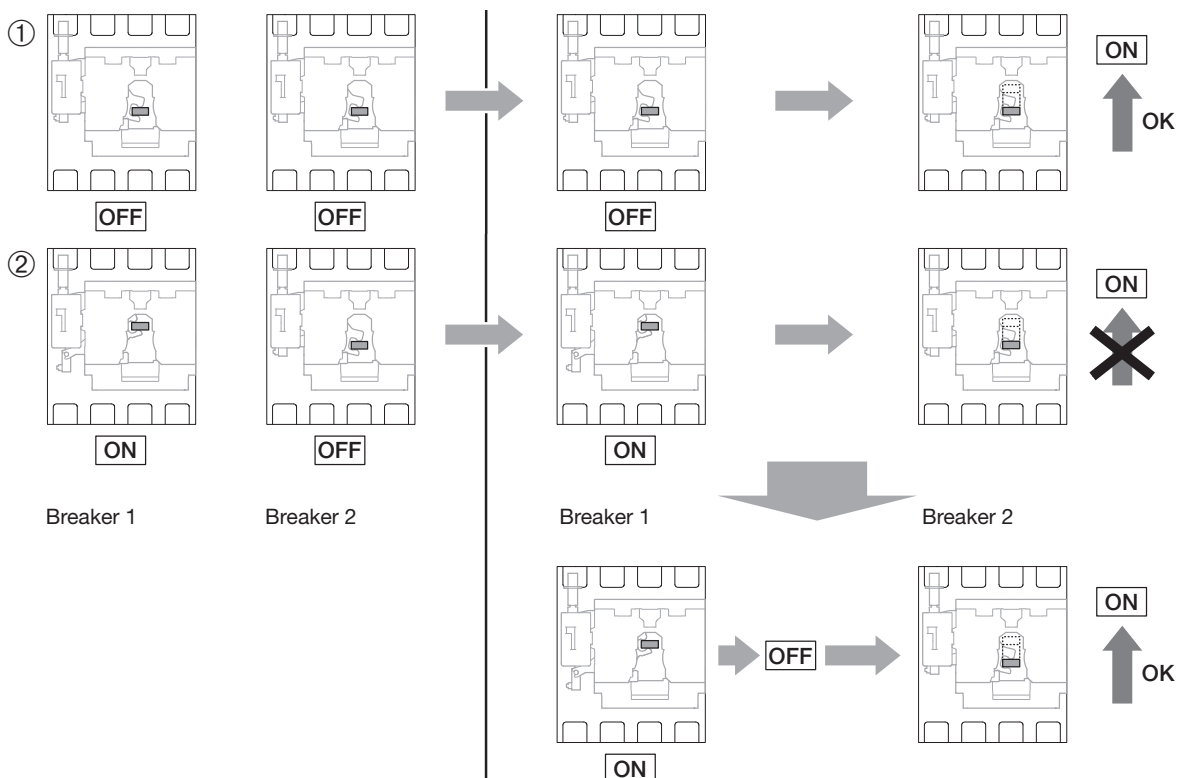
- Length HXB068H: 1500 mm
- Length HXB069H: 2100 mm



Mounting

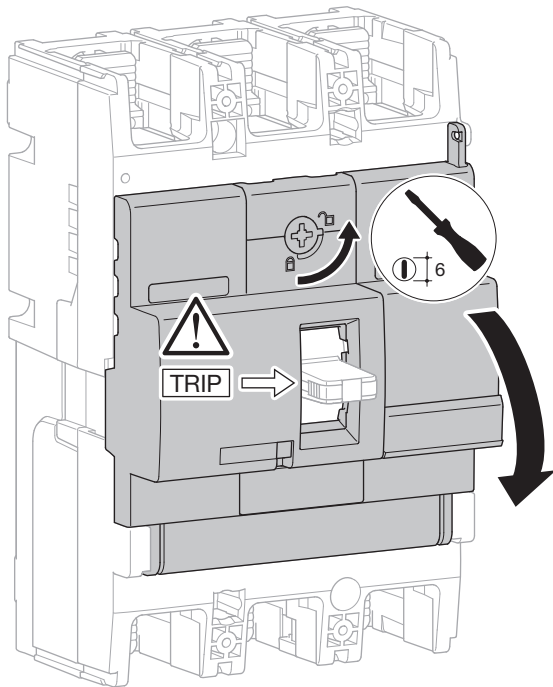


Checking the correct assembly



Auxiliaries

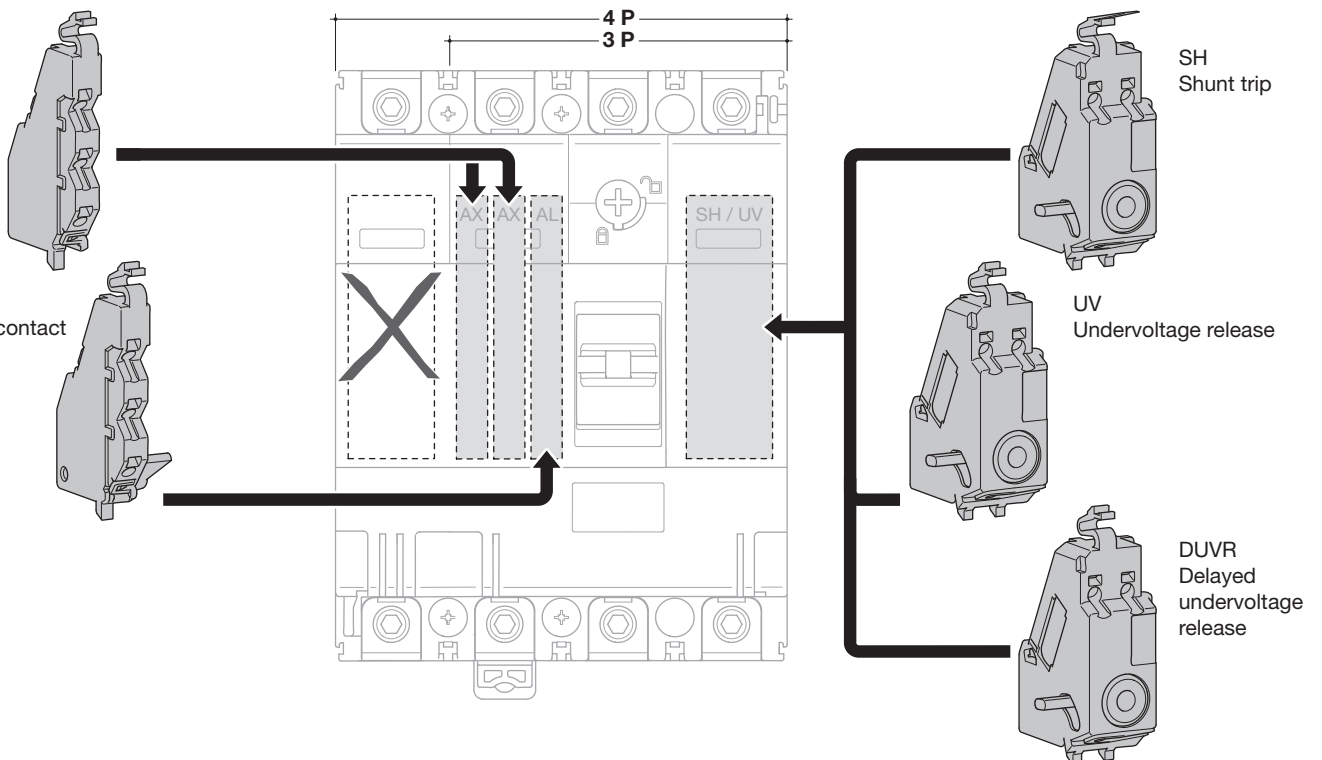
Auxiliaries for MCCBs and trip-free switches

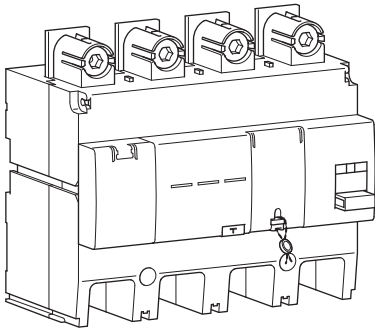


Mounting combination for auxiliaries and releases


AX
Auxiliary contact

AL
Alarm contact





When associated with MCCB, the add-on block provides an earth fault protection and protects against electrical shocks by direct or indirect contacts.

The add-on blocks are protected against nuisance tripping caused by transient voltages. It's able to detect sinusoidal alternating currents and residual pulsating direct currents (A type ). It also avoids miss tripping (HI type - High Immunity).

Characteristics

Reset button :

Signals add-on block tripping and must be acknowledged before switching on the installation.

Test button for differential operating :

Allows to check the electrical operating of the MCCB / Add-on block association.

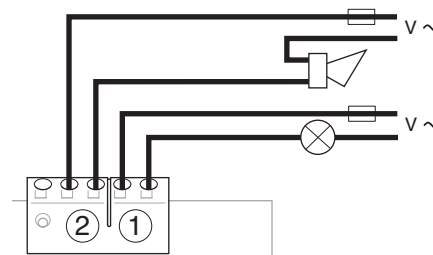
Mechanical test button :

Allows to check the mechanical operating of the MCCB / Add-on block association.

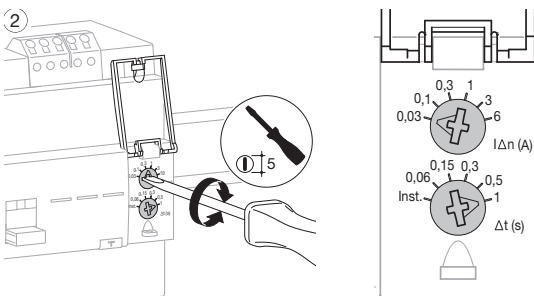
LED signaling default current level in the installation:

25% (orange) and 50% (red) IΔn; green light to signal correct operating.

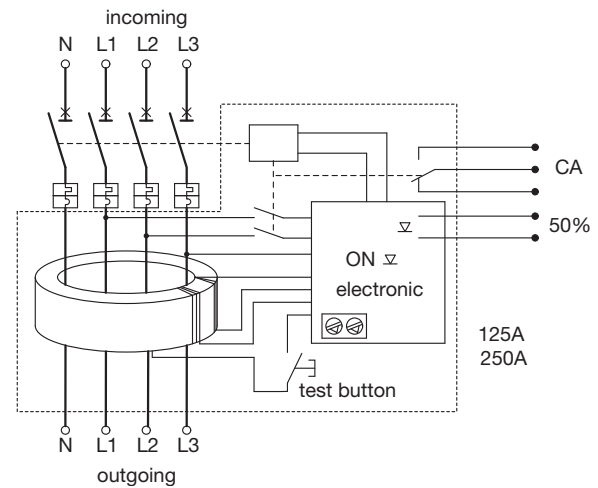
Remote tripping and advanced warning (50% IΔn) signaling thanks to these contacts:



Earth leakage current (IΔn) and delay (Δt) setting

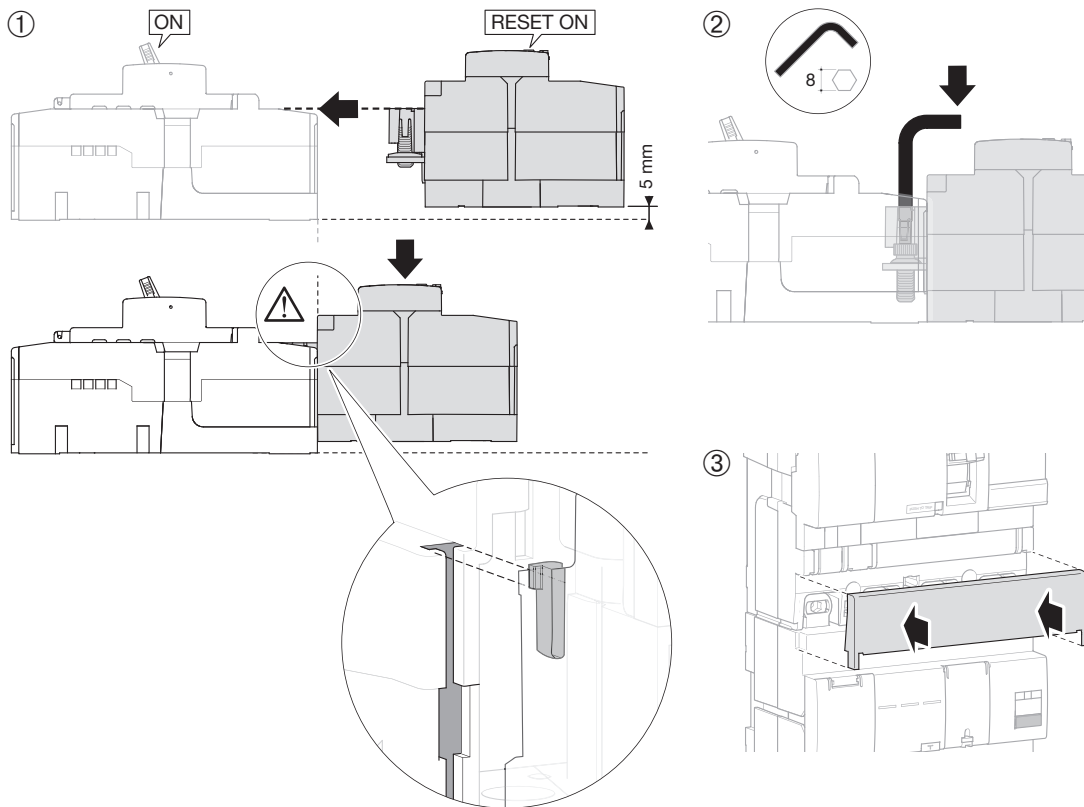


Add-on block operating

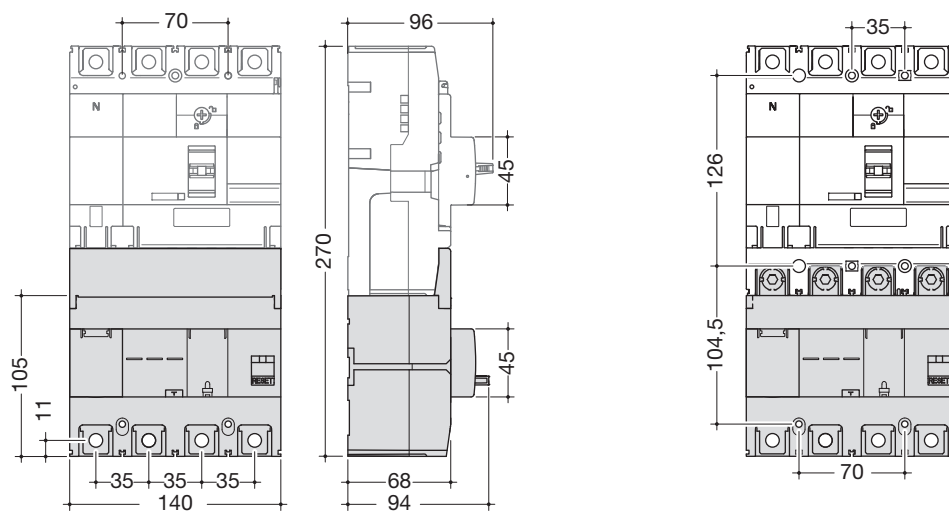


S (Δt)	A (IΔn)						
		0,03	0,1	0,3	1	3	6
Inst.	OK	OK	OK	OK	OK	OK	OK
0,06	no	OK	OK	OK	OK	OK	OK
0,15	no	OK	OK	OK	OK	OK	OK
0,3	no	OK	OK	OK	OK	OK	OK
0,5	no	OK	OK	OK	OK	OK	OK
1	no	OK	OK	OK	OK	OK	OK

Add-on block mounting



Dimensions



Moulded case circuit breakers h250
Thermal magnetic trip unit:
 thermal adjustment: 0.63 to 1 In
 magnetic adjustment:
 6-8-10-13 x In
 3P & 4P (3P only for 25kA)
 Mechanical test button,
 lockable settings,

Connection:
 Directly on copper cable
 terminal,
 with end lug max. width: 25 mm
 Comply with IEC 60 947-2.



HHG250U

Designation	Characteristics	In	Cat. ref.	
			3P	4P
MCCBs h250 25kA TM	breaking capacity Icu : 25 kA (400/415 V AC) Ics: 19 kA	20A	HHG020U	-
		32A	HHG032U	-
		50A	HHG050U	-
		63A	HHG063U	-
	adjustable thermal 0.63 to 1 x In adjustable magnetic 6 - 8 - 10 - 13 x In	100A	HHG100U	-
		125A	HHG125U	-
		160A	HHG160U	-
		200A	HHG200U	-
		250A	HHG250U	-

MCCBs h250 50kA TM	breaking capacity Icu : 30 kA (20-32A) Icu : 50 kA (400/415 V AC) Ics: 25 kA	20A	HNG020U	HNG021U
		32A	HNG032U	HNG033U
		63A	HNG063U	HNG064U
		100A	HNG100U	HNG101U
	adjustable thermal 0.63 to 1 x In adjustable magnetic 6 - 8 - 10 - 13 x In	125A	HNG125U	HNG126U
		160A	HNG160U	HNG161U
		200A	HNG200U	HNG201U
		250A	HNG250U	HNG251U

MCCBs h250 65kA TM	breaking capacity Icu : 65 kA (400/415 V AC) Ics: 36 kA	50A	HEG050U	HEG051U
		63A	HEG063U	HEG064U
		100A	HEG100U	HEG101U
		125A	HEG125U	HEG126U
	adjustable thermal 0.63 to 1 x In adjustable magnetic 6 - 8 - 10 - 13 x In	160A	HEG160U	HEG161U
		200A	HEG200U	HEG201U
		250A	HEG250U	HEG251U



HNH250U

MCCBs h250 50kA TM+	breaking capacity Icu : 50 kA (400/415 V AC) Ics: 50 kA	20A	HNH020U	HNH021U
		32A	HNH032U	HNH033U
		50A	HNH050U	HNH051U
		63A	HNH063U	HNH064U
	adjustable thermal 0.63 to 1 x In adjustable magnetic 6 - 8 - 10 - 13 x In	100A	HNH100U	HNH101U
		125A	HNH125U	HNH126U
		160A	HNH160U	HNH161U
		250A	HNH250U	HNH251U

MCCBs h250 70kA TM+	breaking capacity Icu : 70 kA (400/415 V AC) Ics: 70 kA	20A	HEH020U	HEH021U
		32A	HEH032U	HEH033U
		50A	HEH050U	HEH051U
		63A	HEH063U	HEH064U
	adjustable thermal 0.63 to 1 x In adjustable magnetic 6 - 8 - 10 - 13 x In	100A	HEH100U	HEH101U
		125A	HEH125U	HEH126U
		160A	HEH160U	HEH161U
		250A	HEH250U	HEH251U

Moulded case circuit breakers h250

Electronic trip unit LSI:

Long delay (thermal equivalent)

adjustable: $I_r = 0.4$ to $1 \times I_n$

short delay (magnetic equivalent)

adjustable: 2.5 to $10 \times I_r$

time delay: $0,1 - 0,2$ s

3P & 4P

Mechanical test button,
sealable settings,

Not for use in TPN and panel boards.

Connection:

Directly on copper cable

terminal,

with end lug max. width: 25 mm

Comply with IEC 60 947-2.



HEC250U

Designation	Characteristics	In	Cat. ref.	
			3P	4P
MCCBs h250 50kA LSI	breaking capacity	40A	HNC040U	HNC041U
	l _{cu} : 50 kA (400/415 V AC)	125A	HNC125U	HNC126U
	l _{cs} : 25 kA	250A	HNC250U	HNC251U
	adjustable thermal			
	$I_r = 0.4$ to $1 \times I_n$			
	adjustable magnetic			
	2.5 to $10 \times I_r$			
	3P, 3 trip units & 4P, 3 trip units			
MCCBs h250 70kA LSI	breaking capacity	40A	HEC040U	HEC041U
	l _{cu} : 70 kA (400/415 V AC)	125A	HEC125U	HEC126U
	l _{cs} : 70 kA	250A	HEC250U	HEC251U
	adjustable thermal			
	$I_r = 0.4$ to $1 \times I_n$			
	adjustable magnetic			
	2.5 to $10 \times I_r$			
	3P, 3 trip units & 4P, 3 trip units			

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.

Designation	Characteristics	Cat. ref.			
  HXC021H HXC024H	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	HXA025H			
	low level alarm contact 125 V AC 1 NO + 1 NC	HXA026H			
 HXC004H	Shunt trips SH 24 V DC 48 V DC 110 V DC 100 - 120 V AC 200 - 240 V AC 380 - 450 V AC	HXC001H HXC002H HXC008H HXC003H HXC004H HXC005H			
	 HXC014H	Undervoltage releases UV 24 V DC 100 - 120 V DC 200 - 240 V DC 100 - 120 V AC 200 - 240 V AC 380 - 450 V AC	HXC011H HXC018H HXC019H HXC013H HXC014H HXC015H		
		 HXC030H	Delayed undervoltage releases DUVR 24 V DC 110 - 120 V AC 200 - 240 V AC 380 - 415 V AC	HXC051H HXC053H HXC054H HXC055H	
			Direct rotary handles	padlockable handle Ø 5 - 8 mm ² max	HXC030H
			Extended rotary handles	padlockable handle Ø 5 - 8 mm ² max	HXC031H



HXC039H

Designation	Characteristics	Cat. ref.	
		3P	4P
Padlocks	to mount on MCCBs for handle locking for 3 padlocks max Ø 5 mm		HXC039H
Motor operators	24 V DC 230-240 V AC		HXC040H HXC042H
Interlocking kit	wire type set of 2 pieces and cable		HXC065H
Interlocking unit	wire type		HXC066H
Interlocking mechanical cable	1 m 1,5 m		HXB070H HXB071H
Electrical interlocks	for motor type A (between 2 250A) for motor type B (between 250A and other size)		HXB068H HXB069H



HYC011H

Designation	Characteristics	Cat. ref.	
		3P	4P
Collar terminals	set of 3 or 4 pieces for copper conductors 120 mm ²	HYC003H	HYC004H
Extended connections	spreader connections straight connections	HYC011H HYC010H	HYB012H HYC010H
Interphase barriers	for LSI and TM+ for TM only	HYC019H HYB019H	HYC019H HYB019H



HYC022H

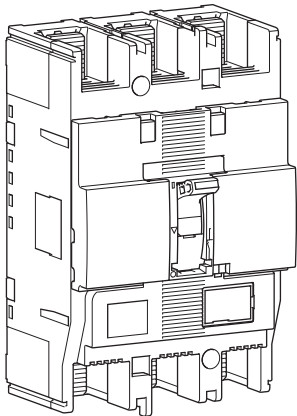
Terminal covers	for extended straight connections (LSI and TM+)	HYC021H	HYC022H
	for extended straight connections (TM only)	HYG021H	HYG022H
	for rear connections (LSI only)	HYC025H	HYC026H
	for collar terminals	HYC027H	HYC028H



HYC031H

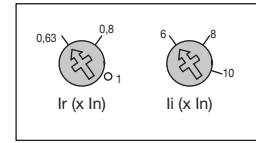
Rear connections	for LSI only	HYC031H	HYC032H
Connecting kit	0,75 mm ² set of 3 x 2 wires length: 1,30m	HYA035H	HYA035H
OCR sealing covers	for LSI only for TM only	HYC041H HYG041H	HYC041H HYG041H

MCCBs



		220/240 V AC	380/415 V AC	660/690 V AC
TM HHG	Icu (kA)	35	25	-
	Ics (kA)	27	19	-
TM HNG	Icu (kA)	35	50	7,5
	Ics (kA)	65	25	7,5
TM HEG	Icu (kA)	85	65	7,5
	Ics (kA)	85	36	7,5
LSI HNC	Icu (kA)	85	50	7,5
	Ics (kA)	85	25	7,5
LSI HEC	Icu (kA)	100	70	20
	Ics (kA)	100	70	15
TM+ HNN	Icu (kA)	85	50	20
	Ics (kA)	85	50	15
TM+ HEH	Icu (kA)	100	70	20
	Ics (kA)	100	70	15

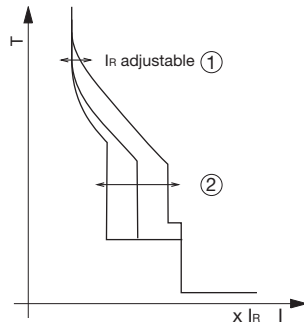
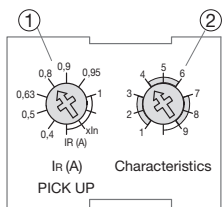
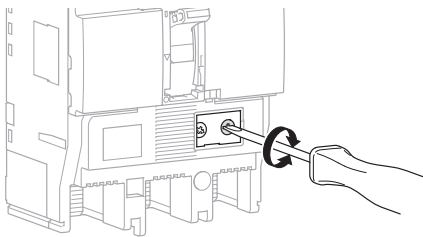
Magnetic and thermal settings (TM/TM+)



Thermal adjustment from 0,63 to 1 x In

Magnetic adjustment from 6 to 10 x In (250A)
from 6 to 13 x In (160 and 200A)
from 6 to 12 x In (32, 63, 100 and 125A)

Electronic trip unit setting (LSI)



L - Long delay - protection against overloads: I_r and t_r settings

S - Short delay - protection against short circuits: I_{sd} and t_{sd} settings

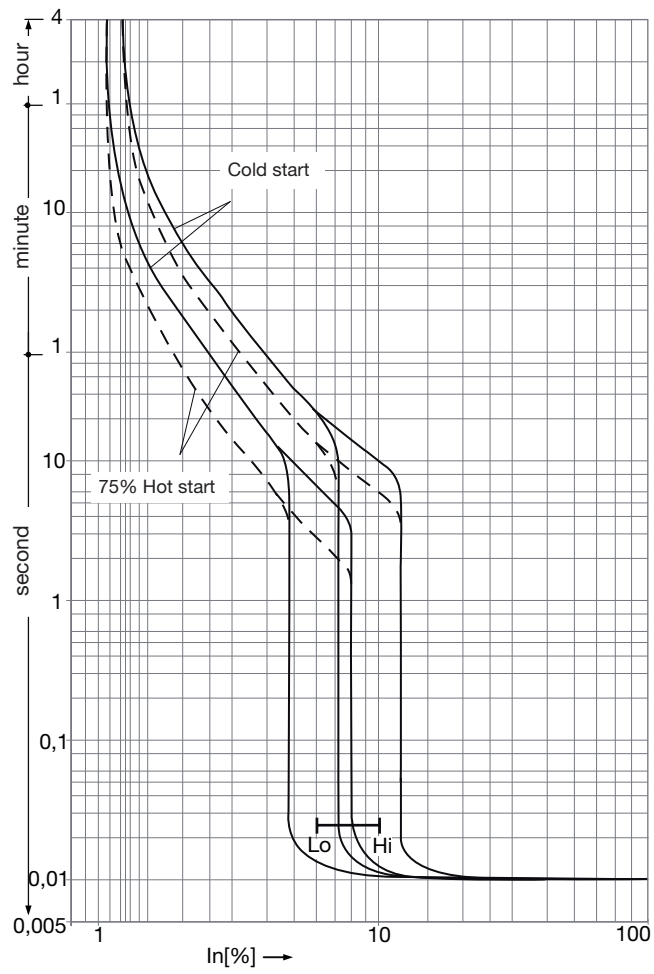
I - Instantaneous - max. instantaneous threshold (< 10 ms) in case of short circuit: 2,5 to 10 x I_r.

Use	Characteristics (*)	
	3 P	4 P
Generator protection	pos. 1	pos. 1, 4 and 7
Standard protection	pos. 2 and 3	pos. 2, 5 and 8
Motor protection	pos. 4 and 5	pos. 3, 6 and 9

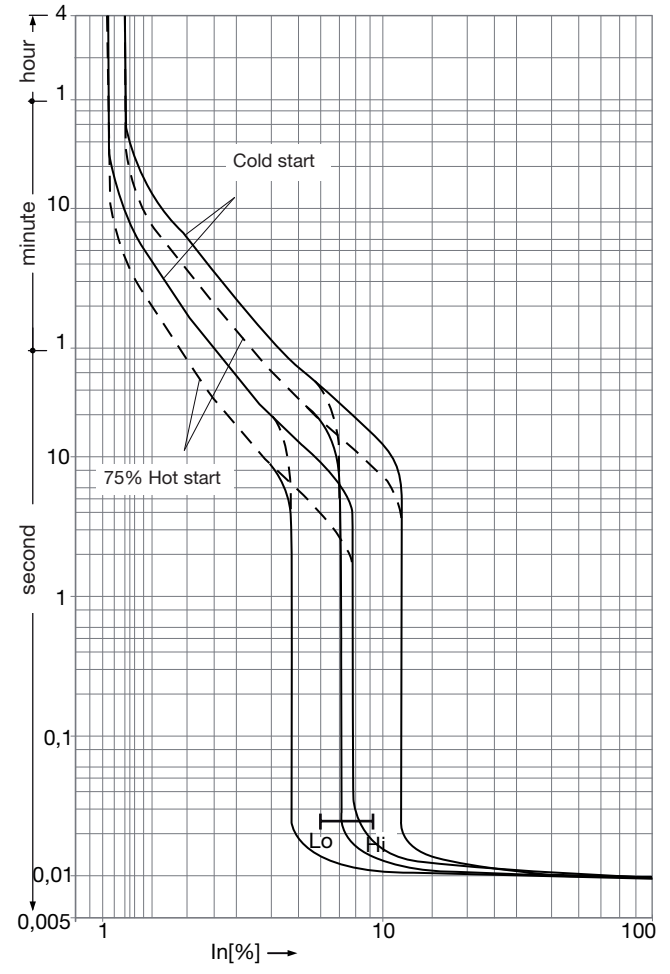
LSI	In A										
	3P					4P					
	Long Time Delay		Short Time Delay		Inst	Long Time Delay		Short Time Delay		Inst	Protection
I _r (x I _n)	t _r (s)	I _{sd} (x I _r)	t _{sd} (s)	I _i (x I _r)	I _r (x I _n)	t _r (s)	I _{sd} (x I _r)	t _{sd} (s)	I _i (x I _r)	Neutral	
I _r (x I _n)	0,4	OK				OK					
	0,5	OK				OK					
	0,63	OK				OK					
	0,8	OK				OK					
	0,9	OK				OK					
	0,95	OK				OK					
	1	OK				OK					
Characteristics	1	11s at 2 x I _r	2,5	0,1	14	11 s at 2 x I _r	2,5	0,1	14	no	
	2	21s at 2 x I _r	5	0,2	14 (max 13 x I _n)	21 s at 2 x I _r	5	0,2	14	50%	
	3	7,5 s at 6 x I _r				10	11 s at 2 x I _r				2,5
	4	5 s at 6 x I _r	10	0,2	14	21 s at 2 x I _r	5	0,2	14	100%	
	5	7,5 s at 6 x I _r				11 s at 6 x I _r	2,5				0,1
	6					7,5 s at 6 x I _r	10	0,2			
	7					11 s at 6 x I _r	2,5	0,1			
	8					21 s at 2 x I _r	5				
	9					7,5 s at 6 x I _r	10	0,2			

Tripping curve

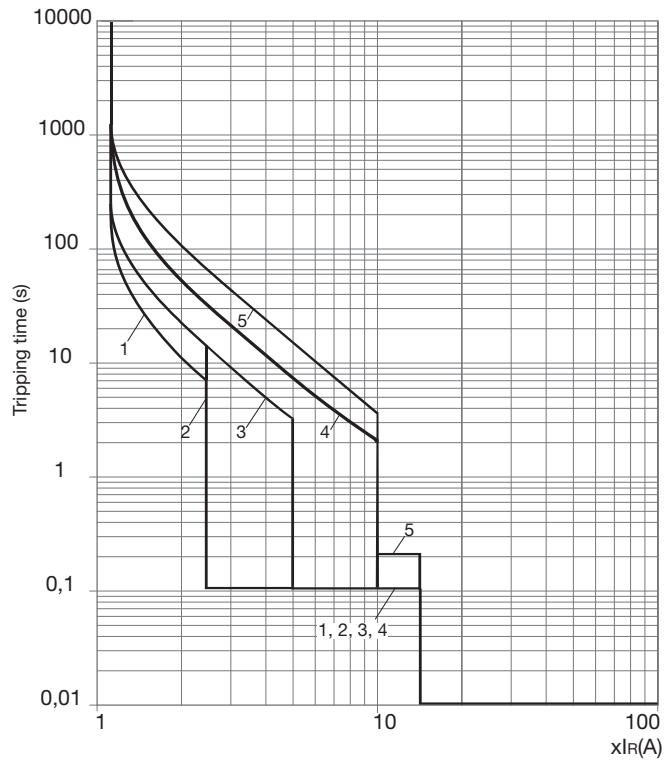
MCCB h250 TM



MCCB h250 TM+

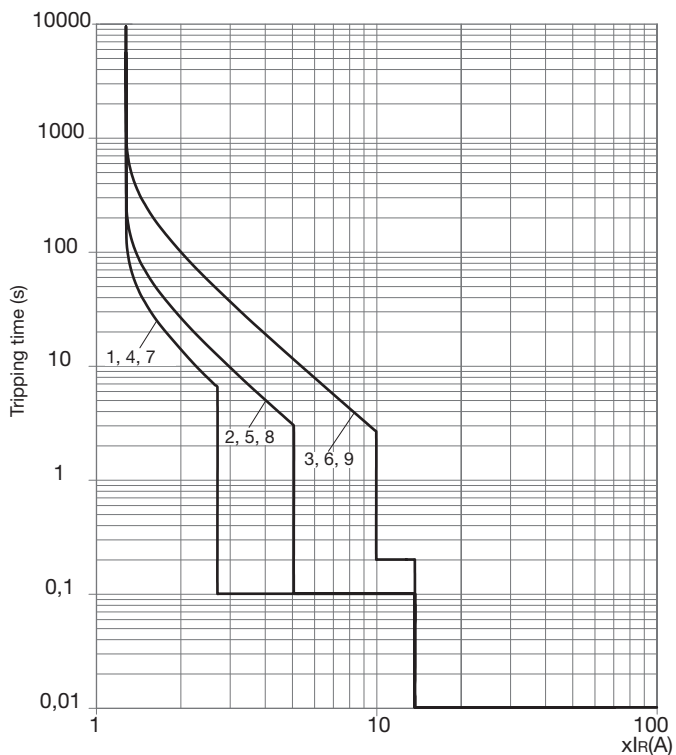


MCCB h250 3P LSI



LTD pick-up current		I_R	$x I_n$	0,4	0,5	0,63	0,8	0,9	0,95	1
Characteristics			No.	1	2	3	4	5		
Standard	LTD	t_R	(s)	11	21	21	5	7,5		
				200 % x I_R			600 % x I_R			
	STD	I_{sd}	x I_R	2,5	2,5	5	10	10		
			t_{sd}	(s)	0,1	0,1	0,1	0,1	0,2	
INST	I_i	x I_R	14 (max 13 x I_n)							

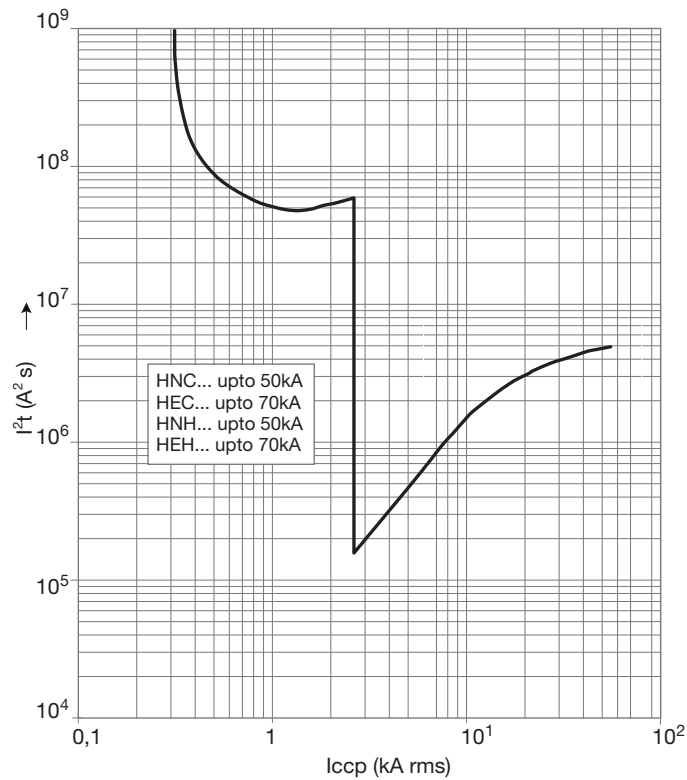
MCCB h250 4P LSI



LTD pick-up current		I _R	x I _n	0,4	0,5	0,63	0,8	0,9	0,95	1		
Characteristics			No.	1	2	3	4	5	6	7	8	9
Standard	LTD	t _R	(s)	11 s	21 s	7,5 s	11 s	21 s	7,5 s	11 s	21 s	7,5 s
				200 % x I _R		600% x I _R	200 % x I _R		600% x I _R	200 % x I _R		600% x I _R
	STD	I _{sd}	x I _R	2,5	5	10	2,5	5	10	2,5	5	10
		t _{sd}	(s)	0,1		0,2	0,1		0,2	0,1		0,2
	INST	I _i	x I _R	14								
Neutral protection			x I _n	no			0,5			1		

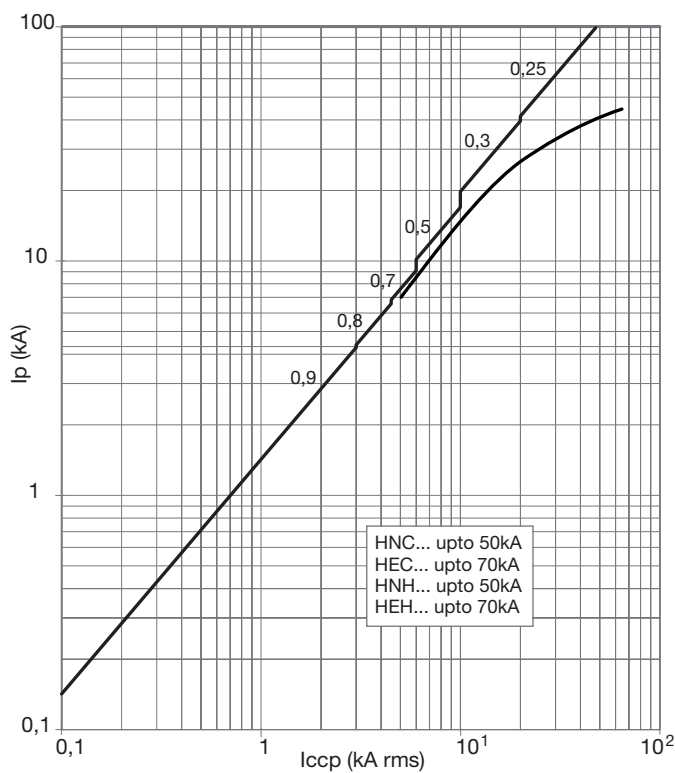
Thermal constraint curve at 400V (Let-through energy)

MCCB h250



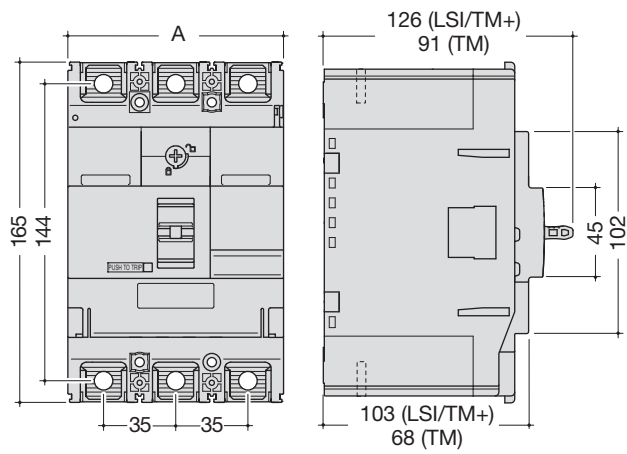
Current limiting curve at 400V (Let-through peak current)

MCCB h250



Dimensions

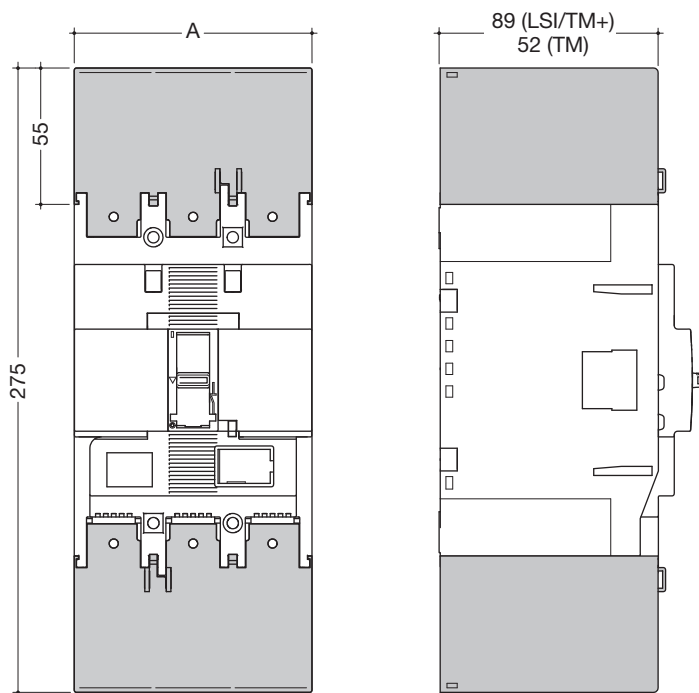
MCCBs



	A (mm)
3P	105
4P	140

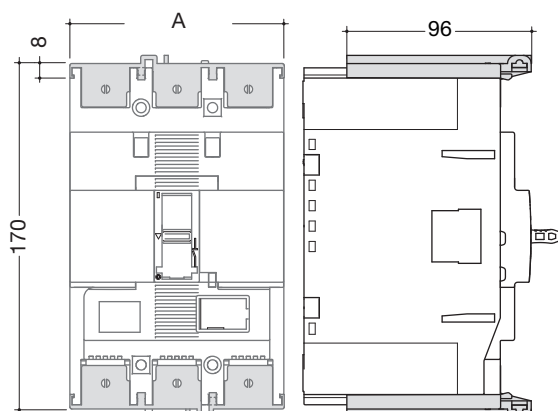
Accessories

Terminal covers for extended straight connections



	A (mm)
3P	105
4P	140

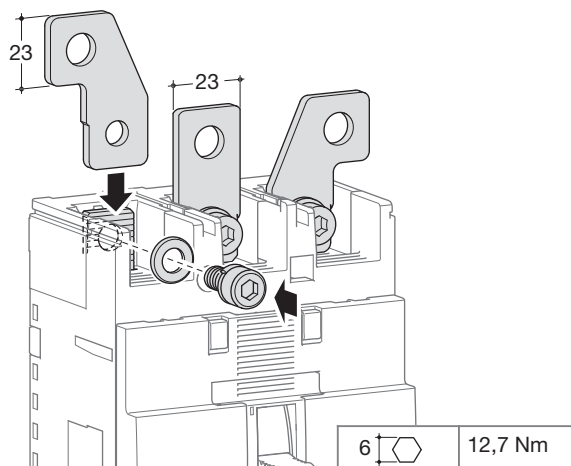
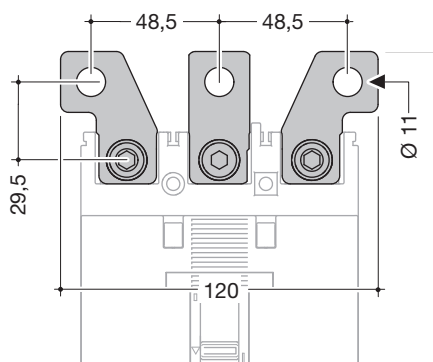
Terminal cover for rear connections (LSI/TM+ only)



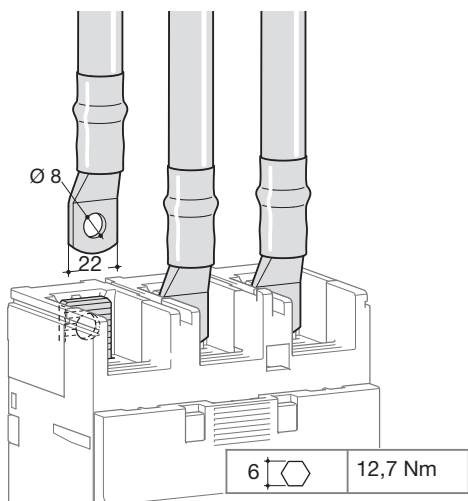
	A (mm)
3P	105
4P	140

Connection

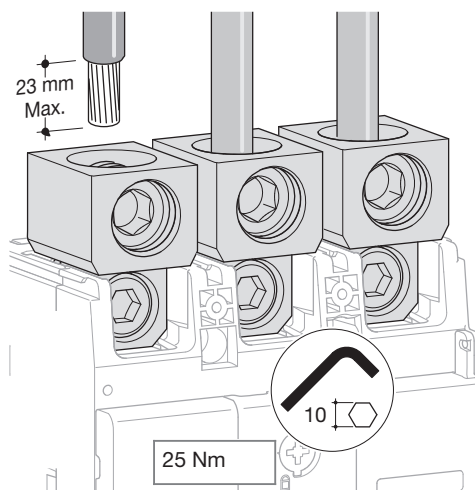
Extended straight and spreader connections



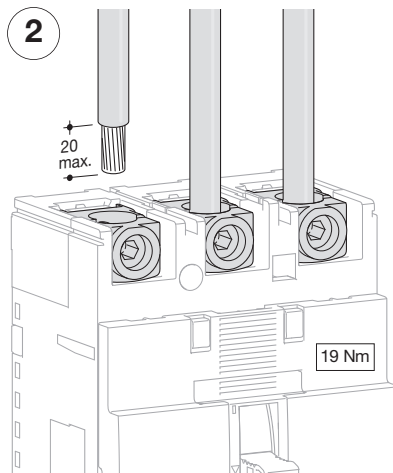
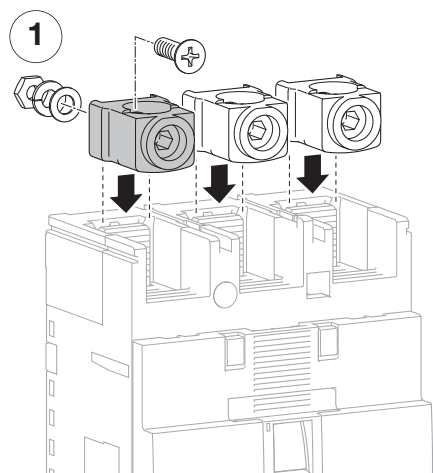
Connection with end lugs



Connection by collar 240mm² - HYB005H and HYB006H



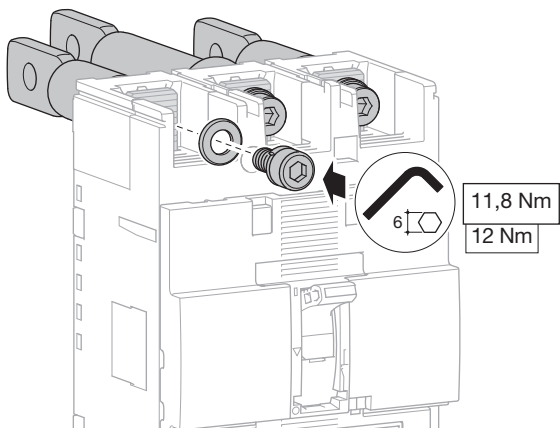
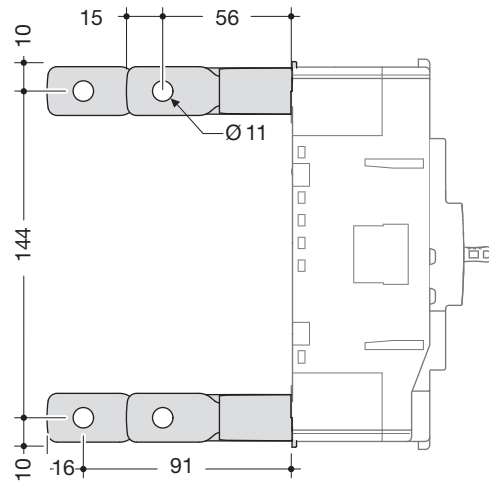
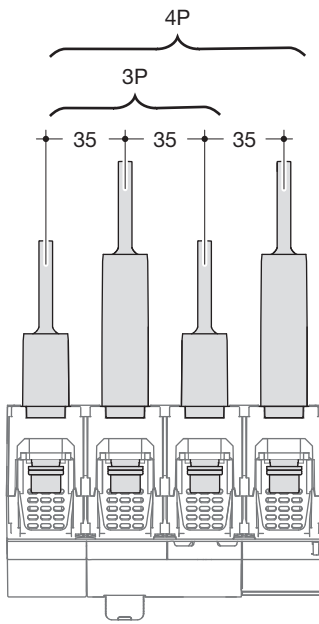
Connection by collar



Terminals for copper conductors
HYC003H, HYC004H

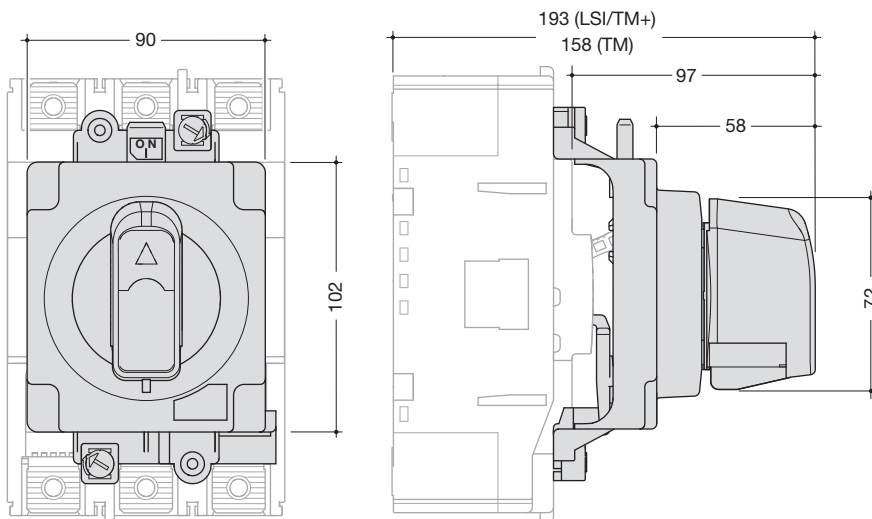
	min. 35 mm ²	max. 120 mm ²
	min. 35 mm ²	max. 120 mm ²
6	19 Nm	

Rear connections (LSI/TM+ only)

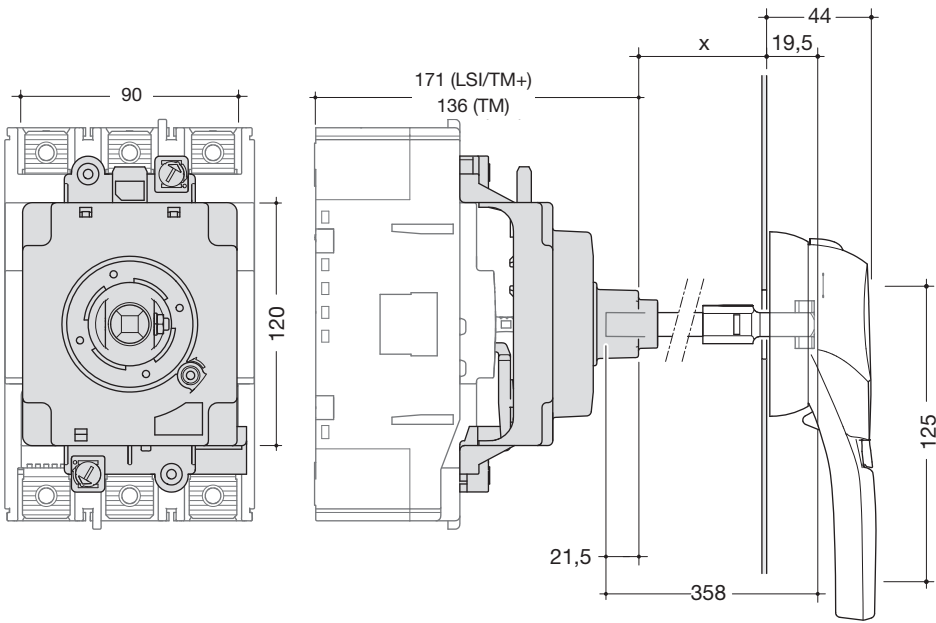


Accessories

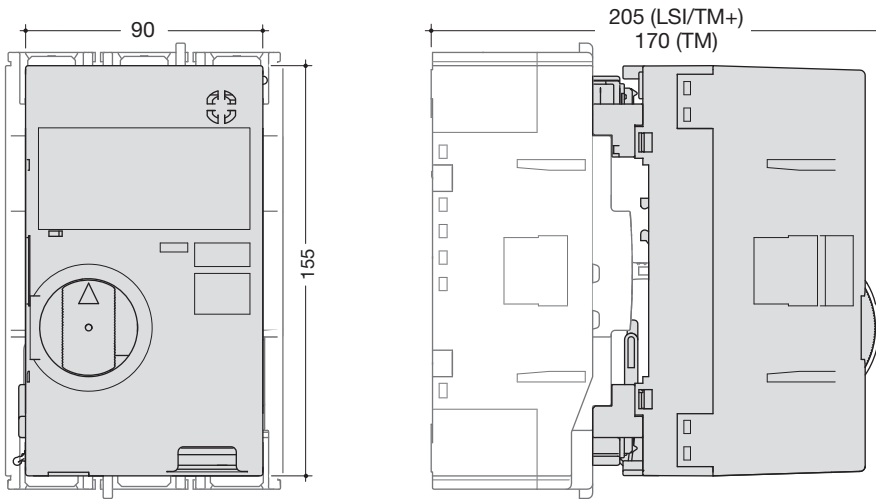
Direct rotary handle



Extended rotary handle

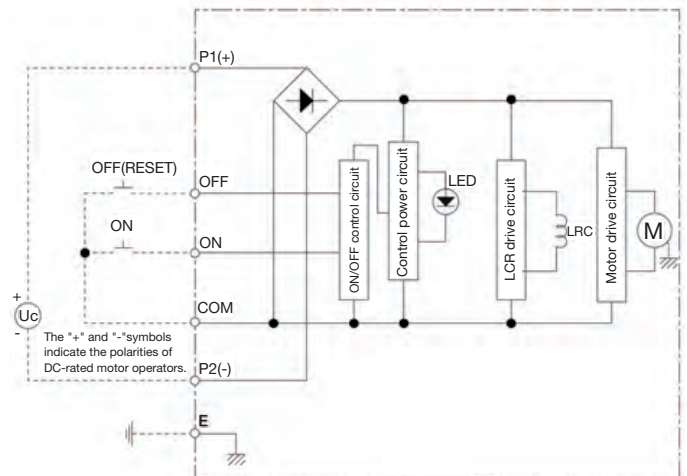


Motor operator



		HXC040H	HXC042H
Operating voltage		24V DC	230-240V AC
Operating current / starting current peak value (A)	24V DC	18/26	-
	230-240V AC	-	3,5/7
Operating time (s)	(ON)	0,1s	
	(OFF)	0,1s	
	(RESET)	0,1s	
Power supply required		300VA min.	
Dielectric properties (1 min)		1000V AC	1500V AC

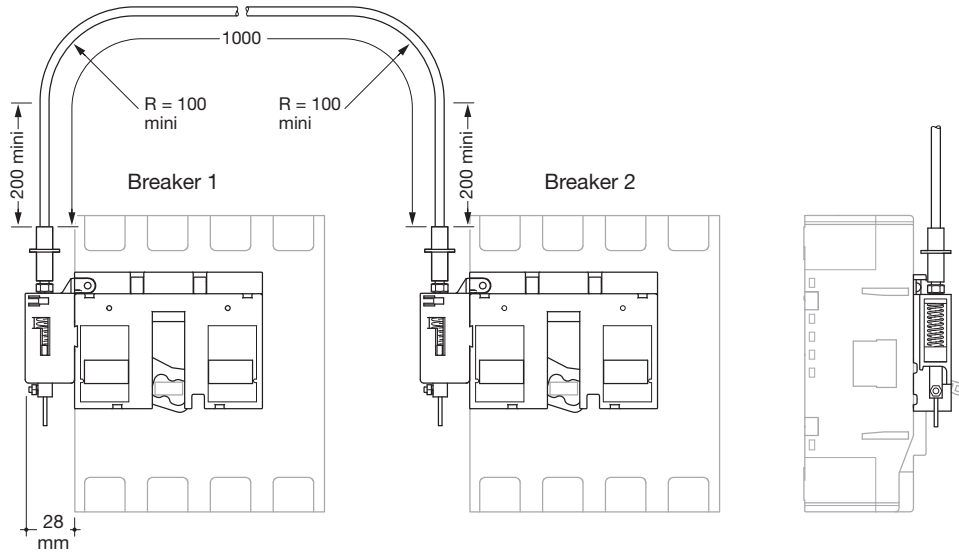
Wiring diagram



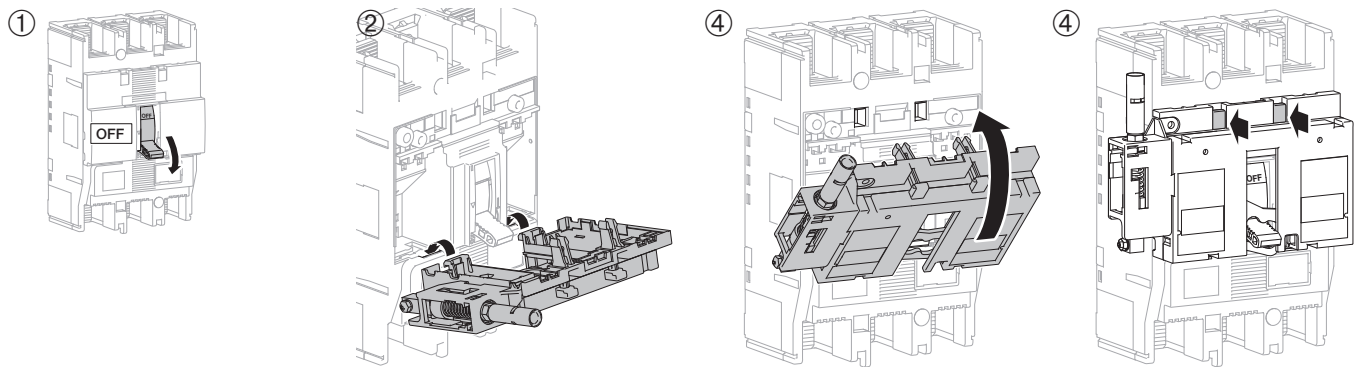
Interlocking system

Suitable with motor operator HXC04xH.
 With electrical interlock for motor operator HXB068H (for 250A) or
 HXB069H (for 630/1000A).

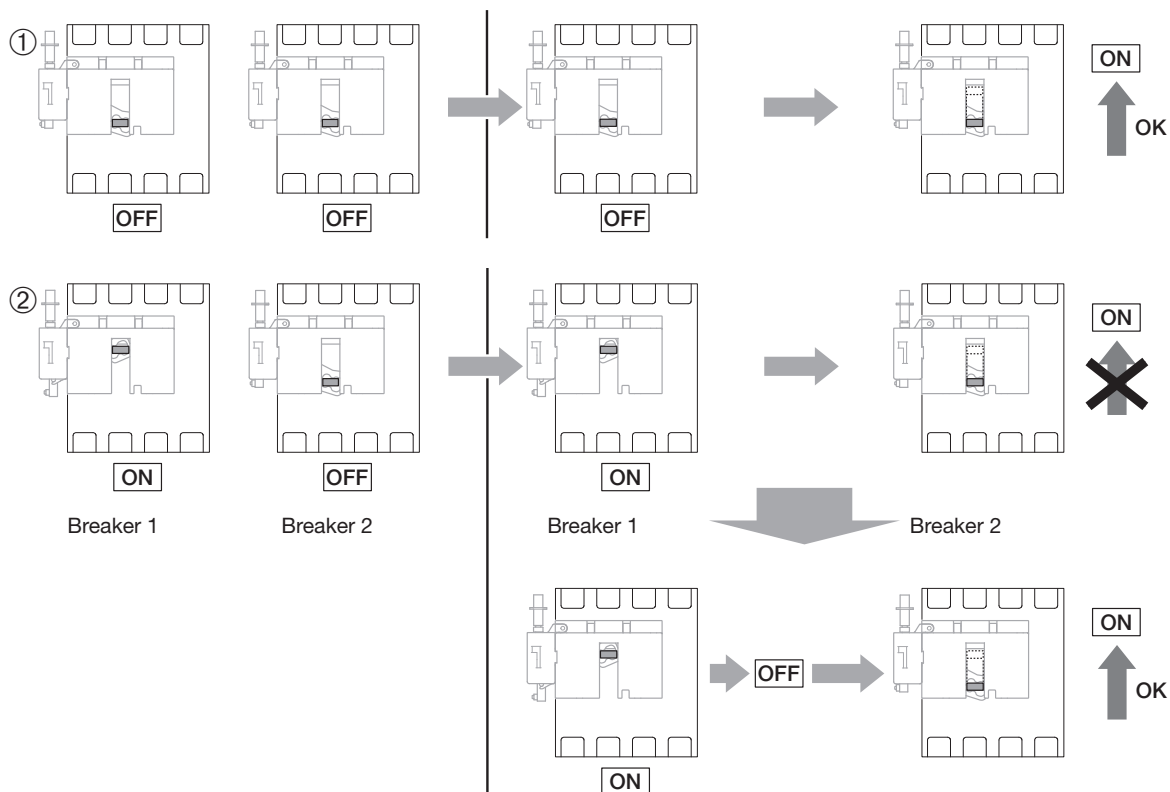
- Length HXB068H: 1500 mm
- Length HXB069H: 2100 mm



Mounting

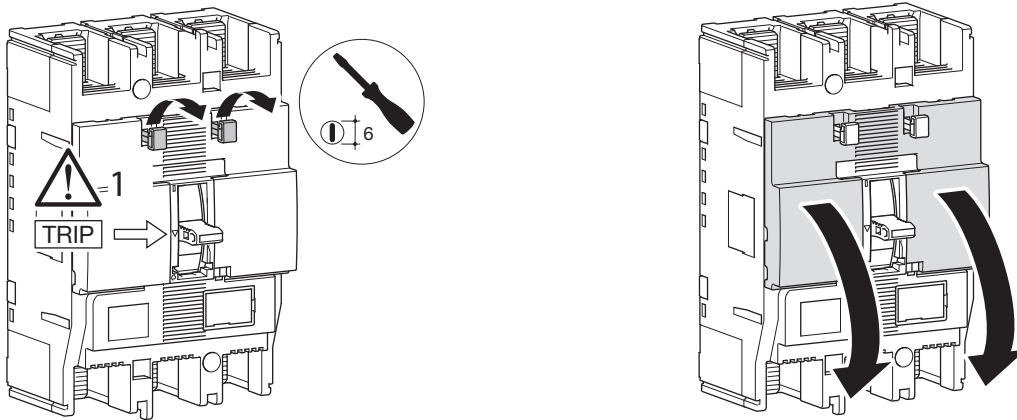


Checking the correct assembly

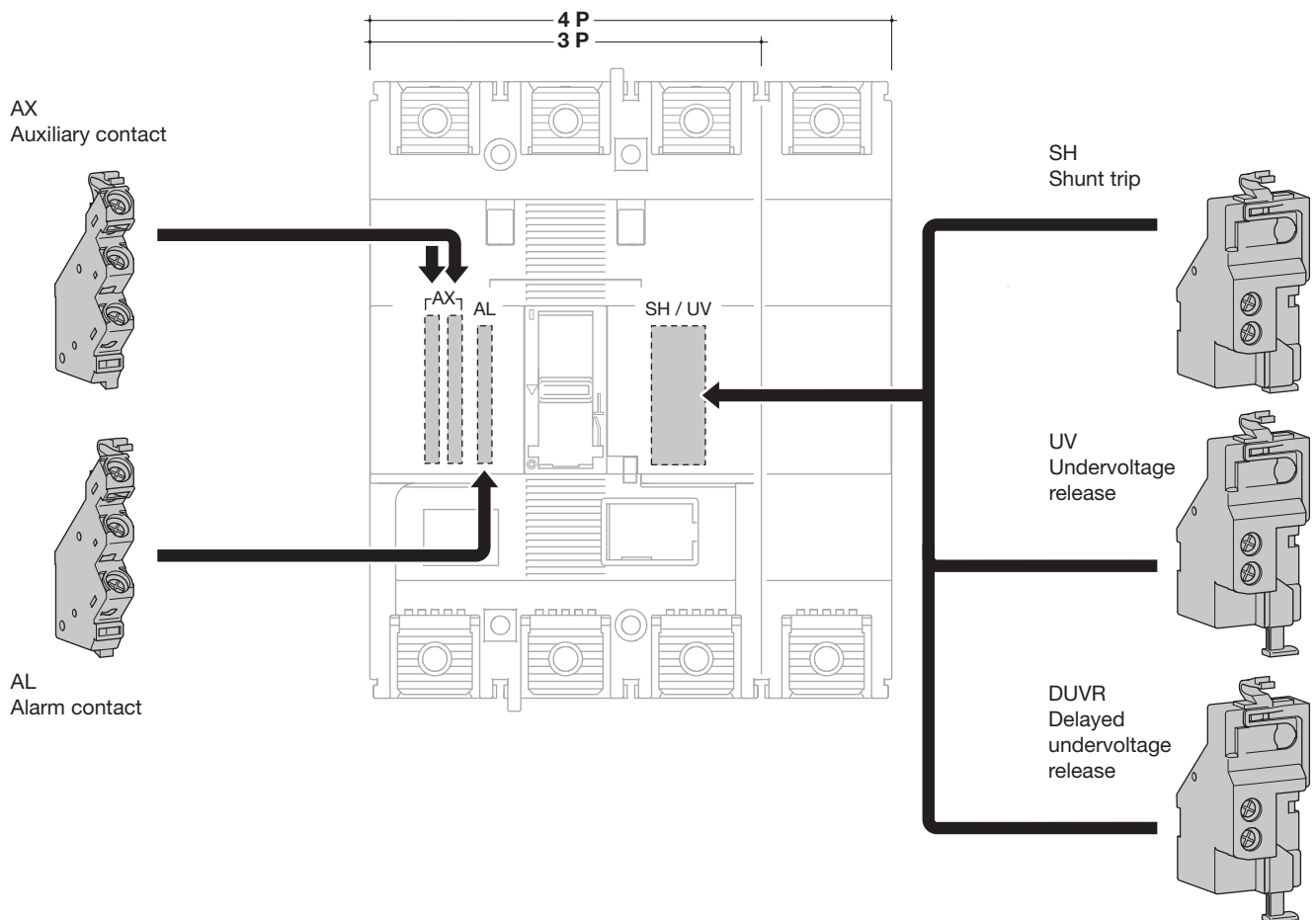


Auxiliaries

Auxiliaries for MCCBs and trip-free switches



Mounting combination for auxiliaries and releases



**Moulded case circuit breakers
h400, h630**

Thermal magnetic trip unit TM:

- thermal adjustment:
from 0.63 to 1 x I_n
- magnetic adjustment:
from 6 to 12 x I_n

Connection:

Directly on copper cable
terminal,
with end lug max. width: 30 mm

Comply with IEC 60 947-2.



HHD400U

Designation	Characteristics	I _n	Cat. ref.	
			3P	4P
MCCBs h400 25kA TM	breaking capacity I _{cu} : 25 kA (400/415 V AC) I _{cs} : 25 kA	250A	HHD250U	-
		400A	HHD400U	-
	adjustable thermal: 0.63 to 1 x I _n adjustable magnetic: 6 to 12 x I _n			
MCCBs h400 50kA TM	breaking capacity I _{cu} : 50 kA (400/415 V AC) I _{cs} : 50 kA	250A	HND250U	HND251U
		400A	HND400U	HND401U
	adjustable thermal: 0.63 to 1 x I _n adjustable magnetic: 6 to 12 x I _n			
MCCBs h400 70kA TM	breaking capacity I _{cu} : 70 kA (400/415 V AC) I _{cs} : 50 kA	250A	HKD250U	HKD251U
		400A	HKD400U	HKD401U
	adjustable thermal: 0.63 to 1 x I _n adjustable magnetic: 6 to 12 x I _n			

Moulded case circuit breakers h400, h630

Electronic trip unit LSI:

- long delay (thermal equivalent) adjustable:

$I_r = 0.4$ to $1 \times I_n$

- short delay (magnetic equivalent) adjustable:

2.5 to $10 \times I_r$ (400A)

2.5 to $8 \times I_r$ (630A)

- time delay: 0,1 - 0,2 s

3P & 4P (adjustable neutral 0 - 50% - 100%).

Mechanical test button, lockable settings

Connection:

Directly on copper cable terminal,

with end lug max. width: 30 mm

Comply with IEC 60 947-2.

Trip-free switches

Allows tripping at distance using a voltmeterical trip unit (optional)

Comply with IEC 60 947-3.

AC 23A / DC 22A

Add-on blocks

For h630 (LSI) devices

These devices are intended to be fixed at the bottom of the devices.

Fixed version: 300mA sensitivity and instantaneous tripping

Adjustable version: sensitivity from 30mA to 6A, tripping from instantaneous to 1s delay. Test button for differential functioning check. Mechanical test button. LED or remote signal for tripping or advance warning (25-50% $I_{\Delta n}$). Type A (for fault component DC pulsating current) and HI (reinforced immunity against unexpected tripping).

Comply with IEC 60 947-2.



HND630U



HBD401H

Designation	Characteristics	In	Cat. ref.	
			3P	4P
MCCBs h630 50kA LSI * delivered with spreader bars	breaking capacity Icu : 50 kA (400/415 V AC) Ics: 50 kA	400A	HND400H	HND401H
	adjustable thermal: $I_r = 0.4$ to $1 \times I_n$ adjustable magnetic: 2.5 to $10 \times I_r$ (250-400A) 2.5 to $8 \times I_r$ (630A) time delay: 0,1 - 0,2 s	630A	HND630U*	HND631U*
MCCBs h630 70kA LSI * delivered with spreader bars	breaking capacity Icu : 70 kA (400/415 V AC) Ics: 50 kA	400A	HED400U	HED401U
	adjustable thermal: $I_r = 0.4$ to $1 \times I_n$ adjustable magnetic: 2.5 to $10 \times I_r$ (250-400A) 2.5 to $8 \times I_r$ (630A) time delay: 0,1 - 0,2 s	630A	HED630U*	HED631U*
Trip-free switches * delivered with spreader bars	suitable for AC 22A / AC 23A Ue: 415 V AC Icw (0,3s) = 5kA	400A	HCD400U	HCD401U
		630A	HCD630U*	HCD631U*
Add-on blocks (only for h630)	adjustable sensitivity I n: 0,03 - 0,1 - 0,3 - 1 - 3 - 6A	400A	-	HBD401H
	adjustable tripping instantaneous time delay: 0,06s - 0,15s - 0,3s - 0,5 - 1s	500A	-	HBD631H

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

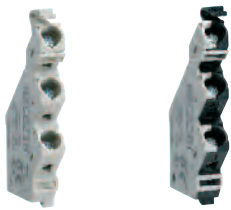
Direct rotary handle

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

Extended rotary handle

- IP 55
- supplied complete with shaft and handle.

Designation	Characteristics	Cat. ref.
-------------	-----------------	-----------



HXC021H

HXC024H

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



HXC004H

Shunt trips

SH

24 V DC
48 V DC
110 V DC
100 - 120 V AC
200 - 240 V AC
380 - 450 V AC

HXC001H

HXC002H

HXC008H

HXC003H

HXC004H

HXC005H



HXC014H

Undervoltage releases

UV

24 V DC
100 - 120 V DC
200 - 240 V DC
100 - 120 V AC
200 - 240 V AC
380 - 450 V AC

HXC011H

HXC018H

HXC019H

HXC013H

HXC014H

HXC015H



HXD030H

Delayed undervoltage releases

DUVR

24 V DC
100 - 120 V AC
200 - 240 V AC
380 - 450 V AC

HXD051H

HXD053H

HXD054H

HXD055H

Designation	Characteristics	Cat. ref.
-------------	-----------------	-----------



HXD039H

Direct rotary handle

padlockable handle
max Ø 6 mm

HXD030H

Extended rotary handle

padlockable handle
max Ø 8 mm

HXD031H

Padlock

to mount on MCCBs for
handle locking
for 3 padlock
Ø 5 - 8 mm² max

HXD039H



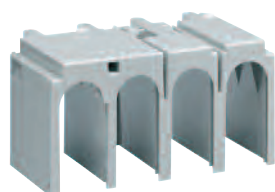
HXD042H



HYD003H



HYD015H



HYD022H

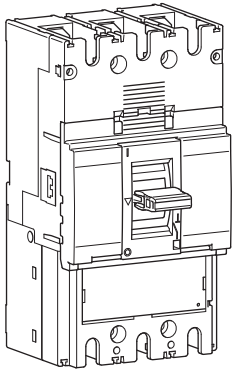


HYD033H

Designation	Characteristics	In	Cat. ref.	
			3P	4P
Motor operators	24-48 V DC		HXD040H	HXD040H
	100-240 V AC		HXD042H	HXD042H
Interlocking kit	wire type set of 2 pieces and cable		HXD065H	HXD065H
Interlocking unit	wire type		HYD066H	HYD066H
Interlocking mechanical cable	1 m		HXB070H	HXB070H
	1,5 m		HXB071H	HXB071H
Electrical interlocks	for motor type A (between 2 630/1000A)		HXD068H	HXD068H
	for motor type B (between 630 and 250A)		HXB069H	HXB069H
Collar terminals	set of 3 or 4 terminals for copper conductors 1 x 35 - 240 mm ²	250 - 400A	HYD003H	HYD004H
	set of 3 or 4 terminals for aluminium / copper conductors 1 x 35 - 240 mm ²	250 - 400 - 630A	HYD005H	HYD006H
	set of 3 or 4 terminals for multiple aluminium / copper conductors 2 x 35 - 240 mm ²	250 - 400 - 630A	HYD007H	HYD008H
Extended connections	set of 4 pieces for straight connections	250 - 400A 630A	HYD010H HYD013H	HYD010H HYD013H
	spreader connections	250 - 400A 630A	HYD011H HYD014H	HYD012H HYD015H
Interphase barrier	set of 4 pieces		HYD019H	HYD019H
Terminal covers	for extended straight connections		HYD021H	HYD022H
	for extended spreader connections		HYD023H	HYD024H
	for rear connections		HYD025H	HYD026H
	for collar terminals		HYD027H	HYD028H
Rear connections		250 - 400A 630A	HYD031H HYD033H	HYD032H HYD034H
	Connecting kit	0,75 mm ² set of 3 x 2 wires length: 1,30m	HYA035H	HYA035H

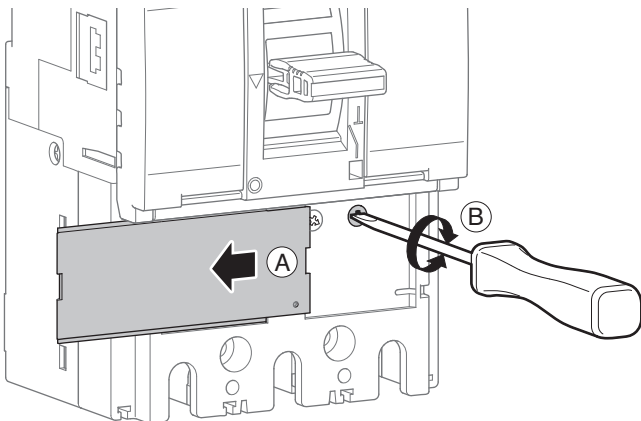
Designation	Characteristics	Cat. ref.
Ring lugs	compact lugs 120 mm ² Ø10	HYD093H
	compact lugs 150 mm ² Ø10,5	HYD095H
	compact lugs 185 mm ² Ø10,5	HYD096H
	compact lugs 185 mm ² Ø12,8 suitable with spreader	HYD097H
	compact lugs 240 mm ² Ø12,8 suitable with spreader	HYD098H

MCCBs

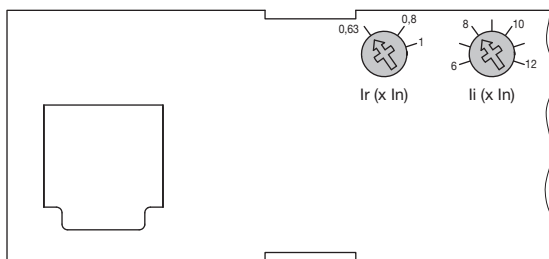


		220/240 V AC	380/415 V AC	660/690 V AC
h400 TM/h630 LSI HND	I _{cu} (kA)	85	50	20
	I _{cs} (kA)	85	50	15
h400 TM HKD	I _{cu} (kA)	100	70	20
	I _{cs} (kA)	85	50	15
h400 TM HHD	I _{cu} (kA)	35	25	-
	I _{cs} (kA)	35	25	-
h630 LSI HED	I _{cu} (kA)	100	70	20
	I _{cs} (kA)	85	50	15
h630 HCD	I _{cm} (kA)	-	9	-
	I _{cw} (kA)	-	5 kA-0,3 s	-

Settings



Magnetic and thermal settings (TM)



Thermal adjustment from 0,63 to 1 x I_n

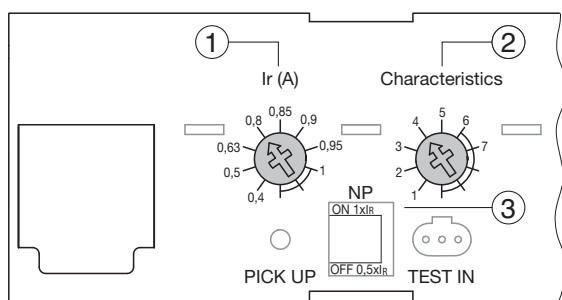
Magnetic adjustment from 6 to 12 x I_n

Electronic trip unit setting (LSI)

L - Long delay - protection against overloads: I_r and t_r settings

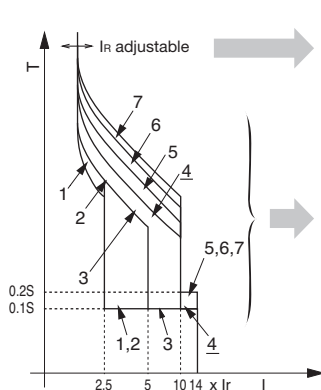
S - Short delay - protection against short circuits: I_{sd} and t_{sd} settings

I - Instantaneous - max. instantaneous threshold (< 10 ms) in case of short circuit: 2,5 to 10 x I_r (250 - 400A) and 2,5 to 8 x I_r (630A).



Neutral settings:

- ① Long delay current I_r setting
- ② Other curve characteristics setting (t_r , I_{sd} , t_{sd})
- ③ Neutral protection against overloads setting



LSI	In A									
	Long Time Delay	250 A / 400 A				630 A				
		I_r (x I_n)	t_r (s)	I_{sd} (x I_r)	t_{sd} (s)	li (x I_r)	Long Time Delay	Short Time Delay	Inst	
① I_r (x I_n)	0,4	OK				OK				
	0,5	OK				OK				
	0,63	OK				OK				
	0,8	OK				OK				
	0,85	-				OK				
	0,9	OK				OK				
	0,95	OK				OK				
	1	OK				OK				
② Characteristics	1	11 s at 2 x I_r	2,5	0,1	14 (max 13 x I_n)	11 s at 2 x I_r	2,5	0,1	14 (max 10 x I_n)	
	2	21 s at 2 x I_r				21 s at 2 x I_r				
	3		5				5			
	4	5 s at 6 x I_r	10			5 s at 6 x I_r	8			
	5	10 s at 6 x I_r		0,2		10 s at 6 x I_r		0,2		
	6	19 s at 6 x I_r				16 s at 6 x I_r				
	7	29 s at 6 x I_r				-		-	-	
③ Neutral protection	0%									
	50%									
	100%									

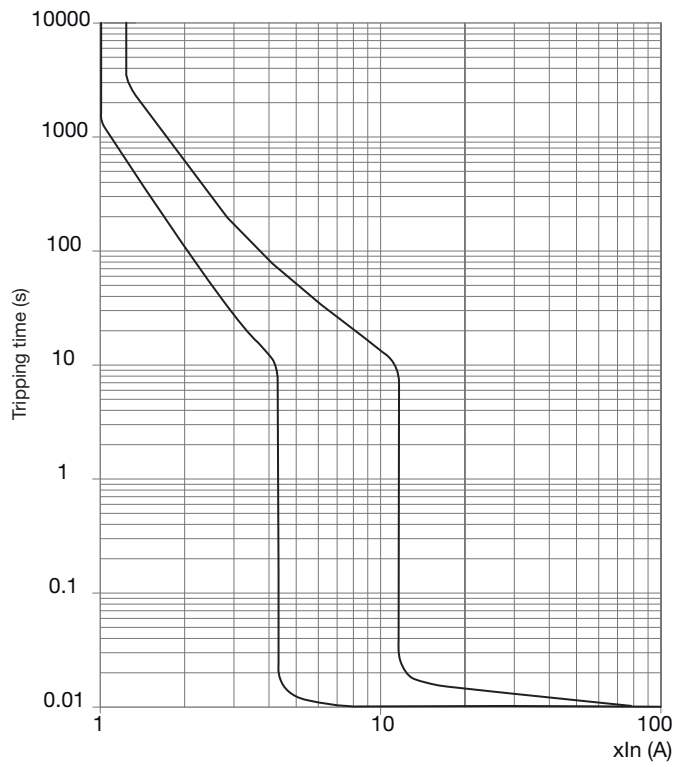
(*) Characteristic 1 : use for generators protection.

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.

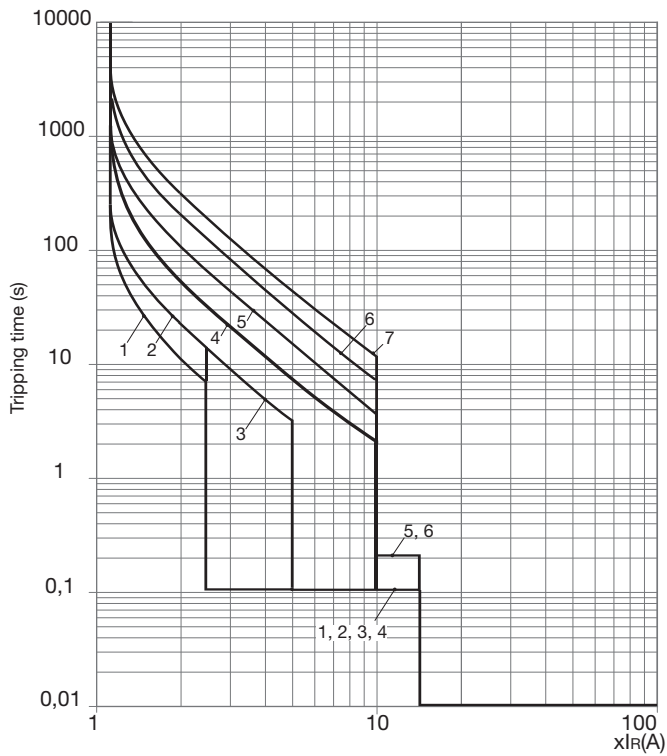
Tripping curve

MCCB h400 TM (250 and 400A)



Tripping curve

MCCB h630 LSI (250A and 400A)



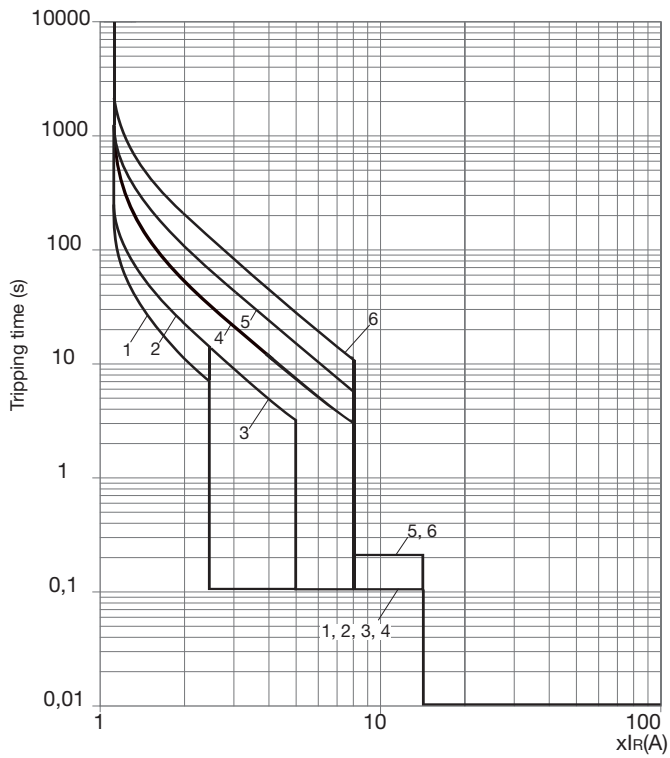
Electronic trip unit setting (LSI)

MCCB h630 LSI (250A and 400A)

		I_R (A)								
LTD Pick-up current		I_R	$x I_n$	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	I_{sd}	$x I_R$	2,5		5	10			
		t_{sd}	(s)	0,1					0,2	
	INST	I_i	$x I_R$	14 (max : 13 $x I_n$)						
Optional	N	I_N	$x I_n$	0 - 0,5 - 1						
		t_N	(s)	$t_N = t_R$						

Tripping curve

MCCB h630 LSI (630A electronic)



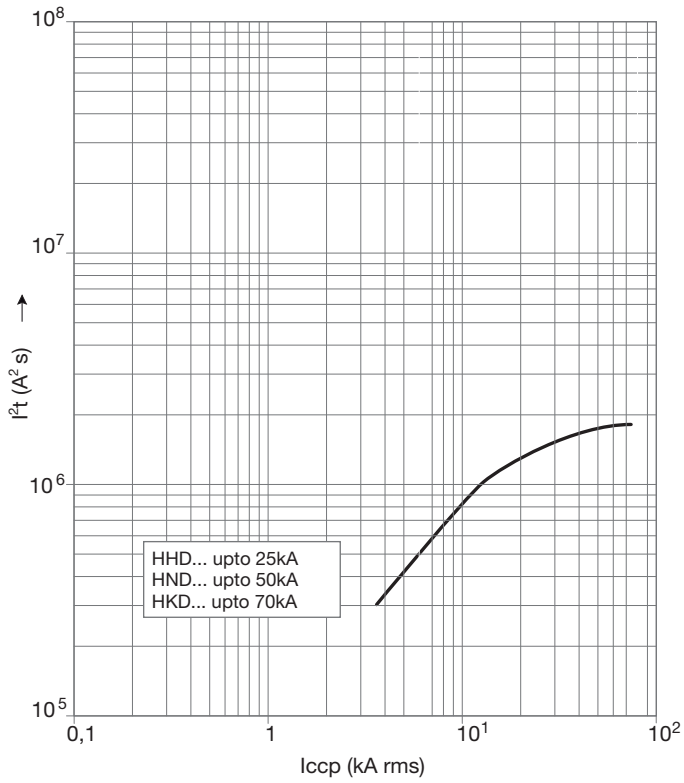
Electronic trip unit setting (LSI)

MCCB h630 LSI (630A electronic)

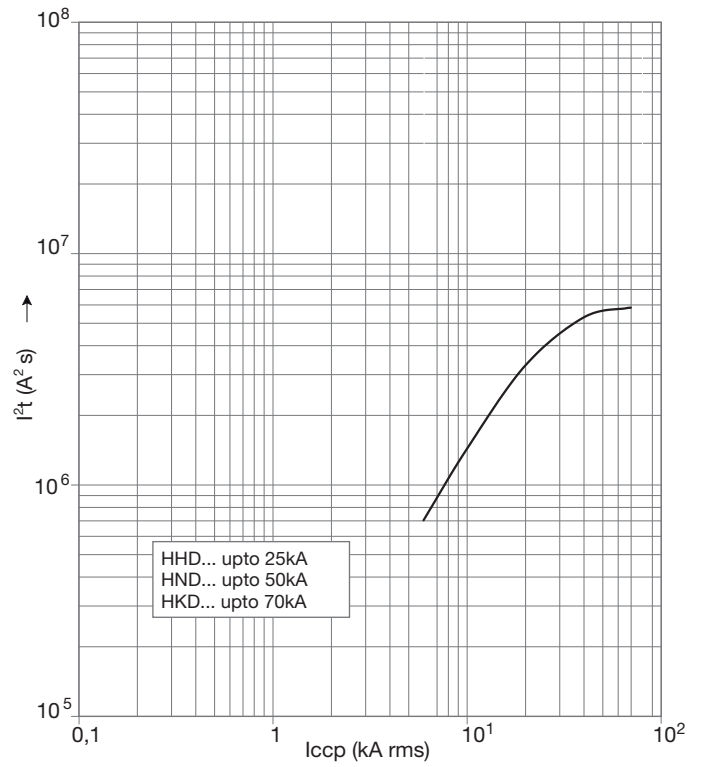
		I_R (A)									
LTD Pick-up current		I_R	$x I_n$	0,4	0,5	0,63	0,8	0,85	0,9	0,95	1
Characteristics			No.	1	2	3	4	5	6		
Standard	LTD	t_R	(s)	11	21	21	5	10	16		
				200% $x I_R$			600% $x I_R$				
	STD	I_{sd}	$x I_R$	2,5		5	8				
			t_{sd}	(s)	0,1			0,1			
	INST	I_i	$x I_R$	14 (max : 10 $x I_n$)							
Optional	N	I_N	$x I_n$	0 - 0,5 - 1							
			t_N	(s)	$t_N = t_R$						

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

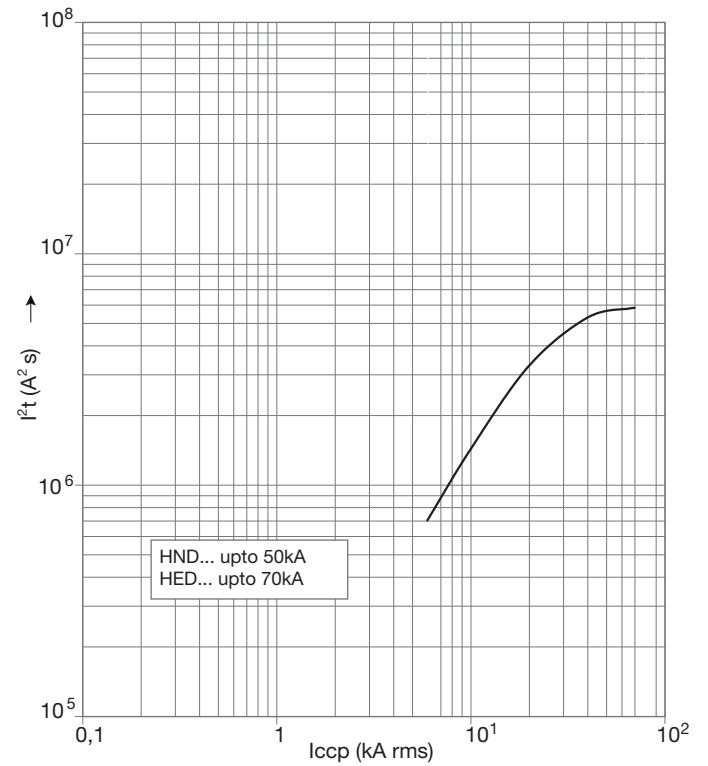
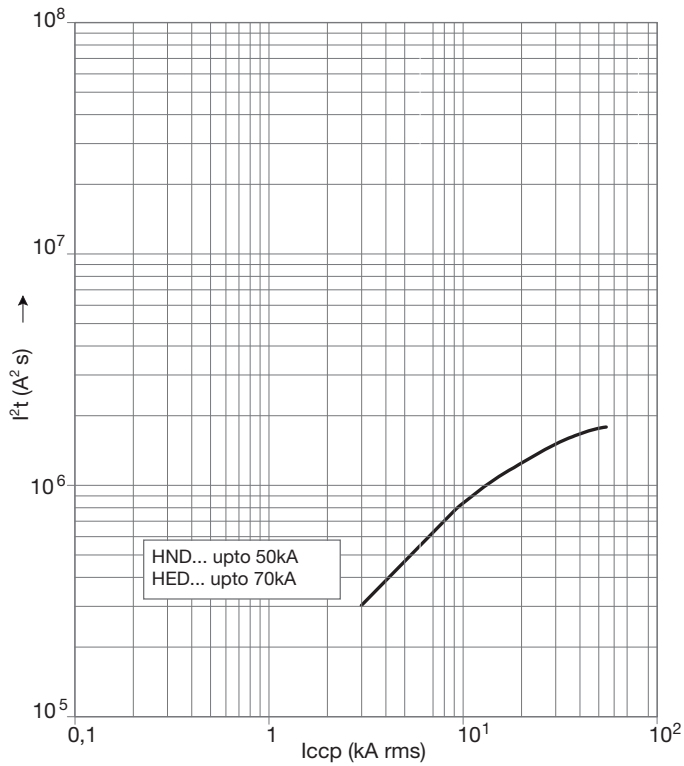
MCCB h400 TM (250A)



MCCB h400 TM (400A)

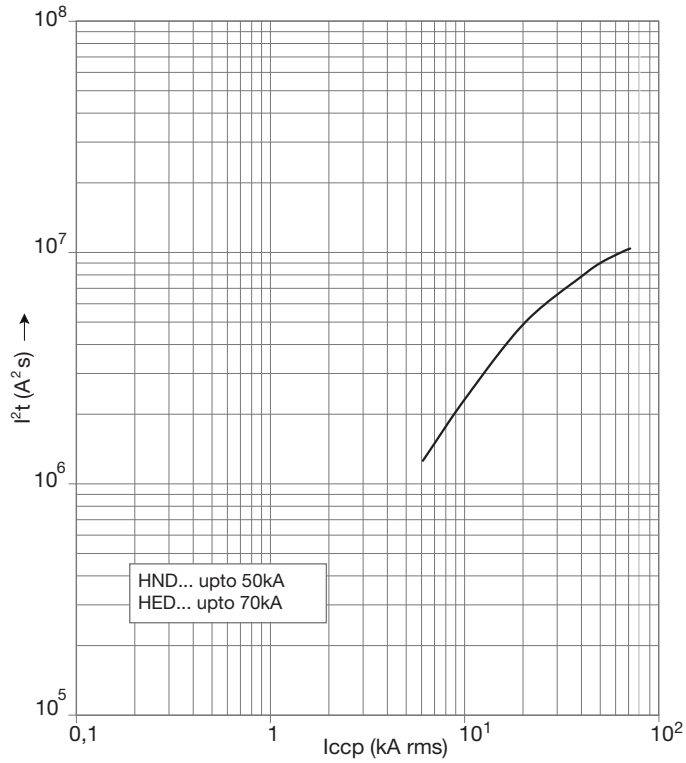


MCCB h630 LSI (250A)



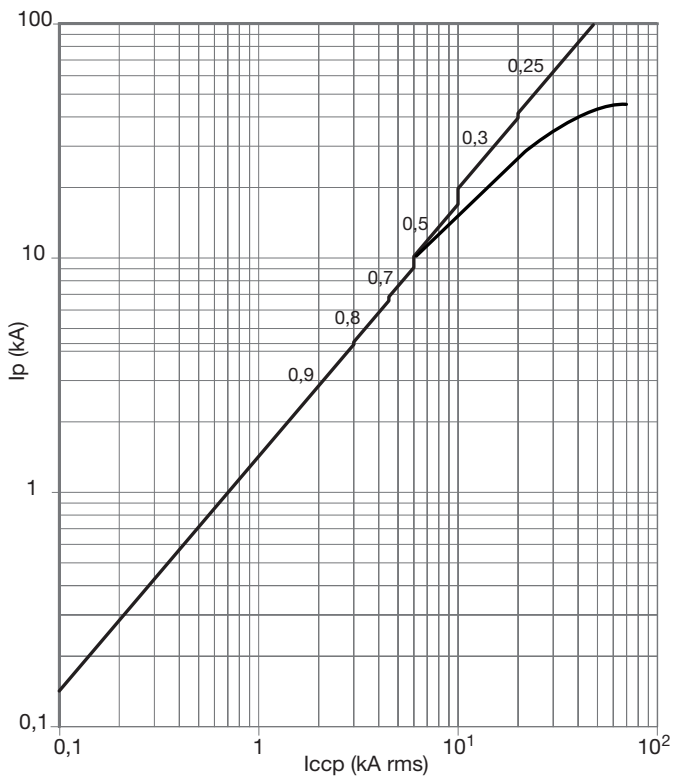
Thermal constraint curve at 400V (Let-through energy)

MCCB h630 LSI (630A)

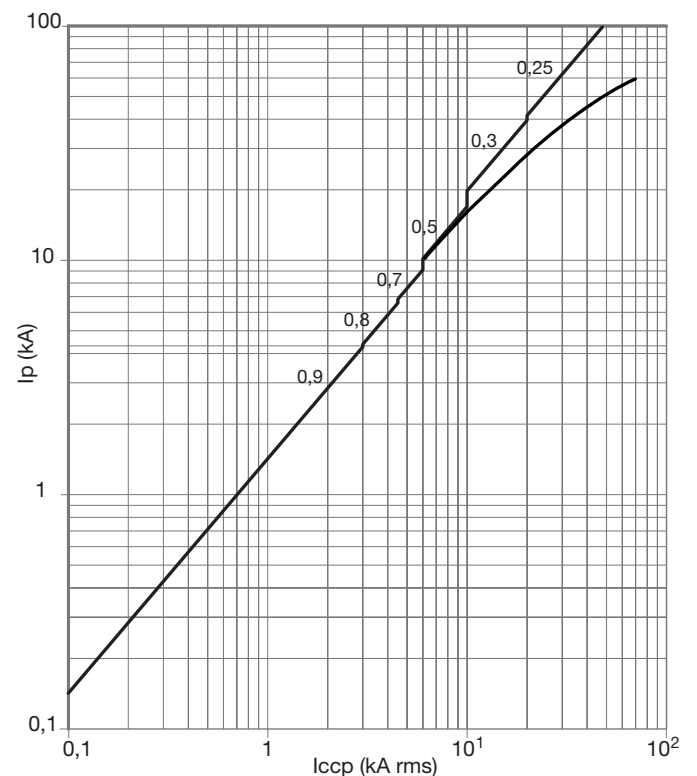


Current limiting curve at 400V (Let-through peak current)

MCCB h630 LSI (250A and 400A)
MCCB h400 TM

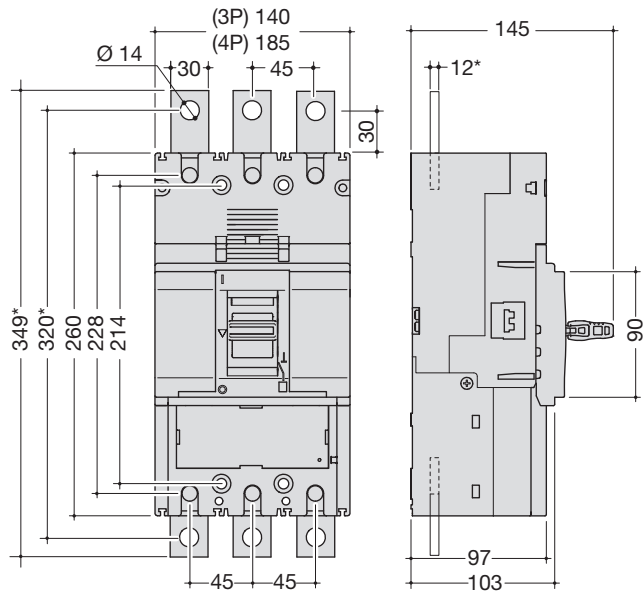


MCCB h630 LSI (630A)

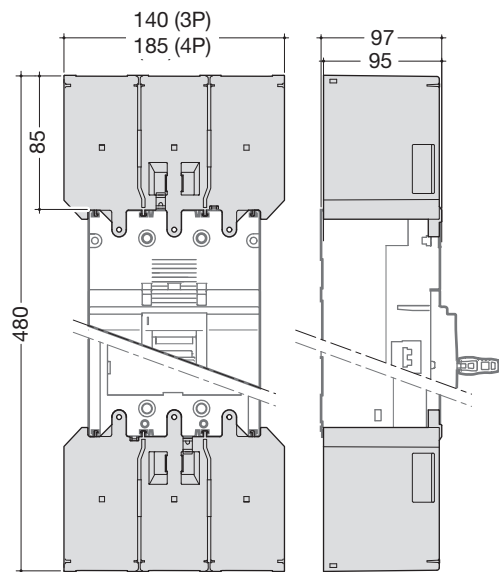


Dimensions

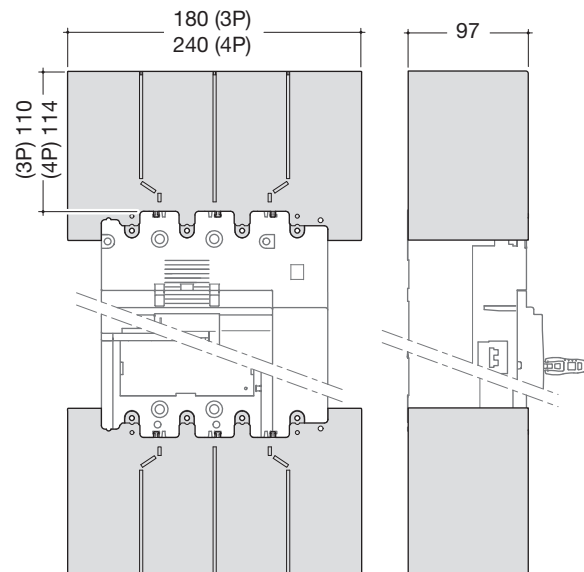
MCCBs



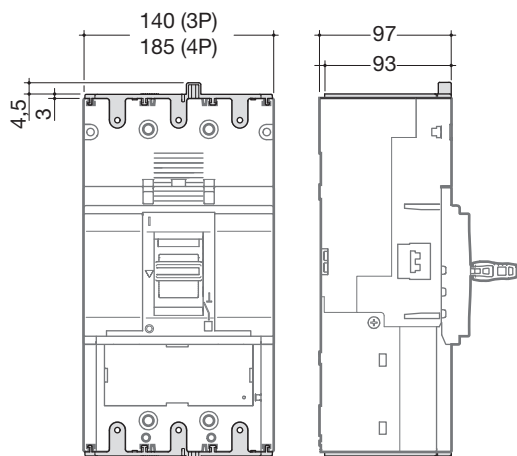
Terminal covers for extended straight connections



Terminal covers for extended spreader connections



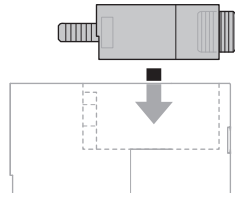
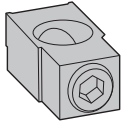
Terminal covers for rear connections and collar terminal



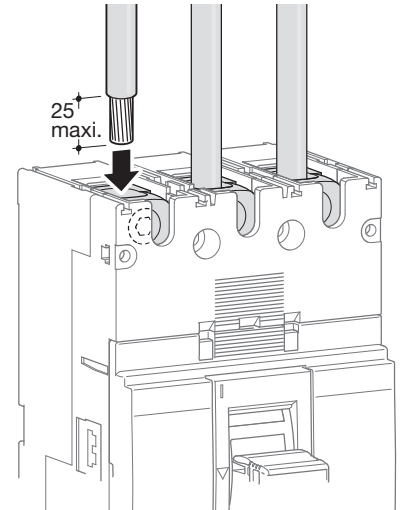
Connection

Connection for aluminium / copper conductors (h400 TM, h630 LSI)

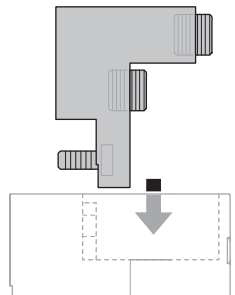
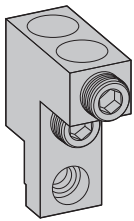
HYD005 (3P) - HYD006H (4P)



	max. 1x240 mm ²
10	25 Nm

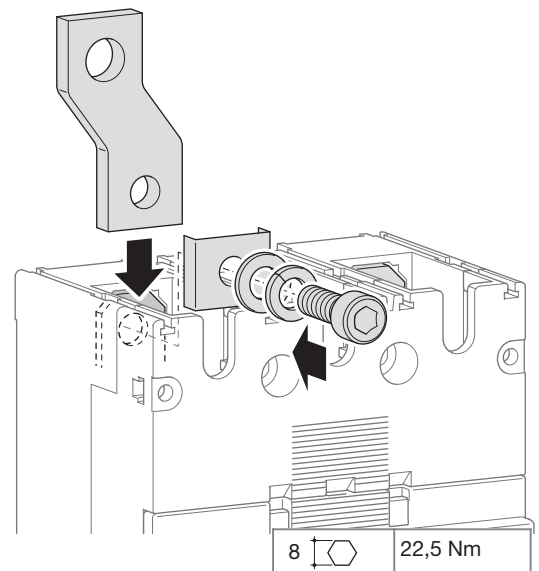
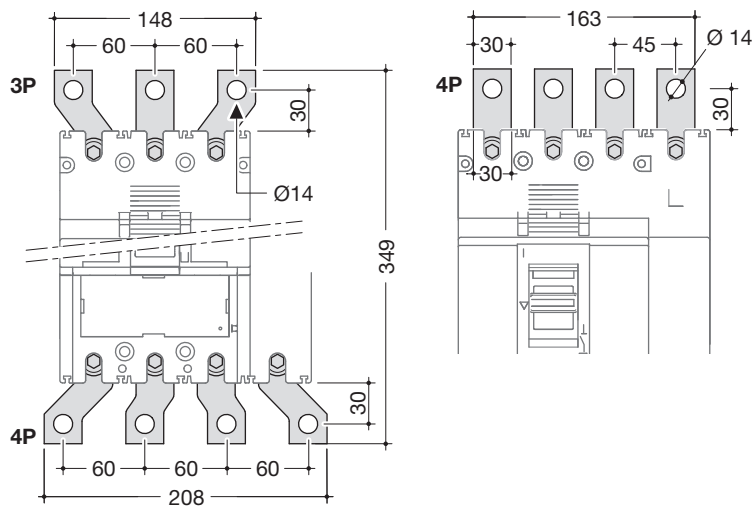


HYD007 (3P) - HYD008H (4P)

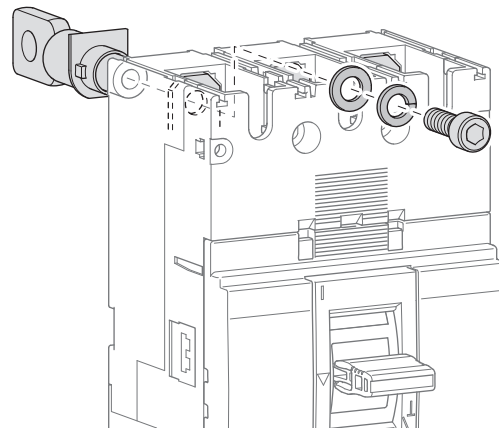
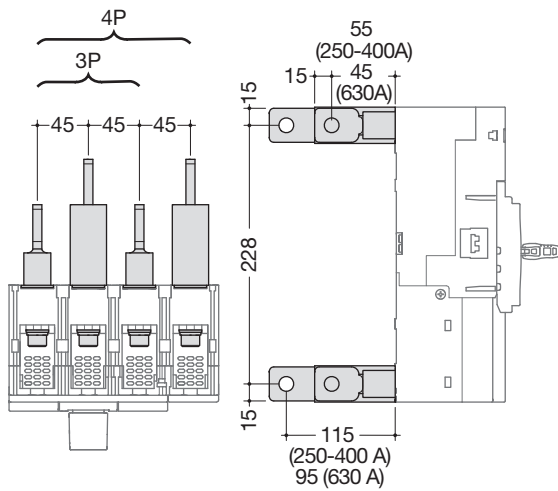


	max. 2x240 mm ²
10	25 Nm

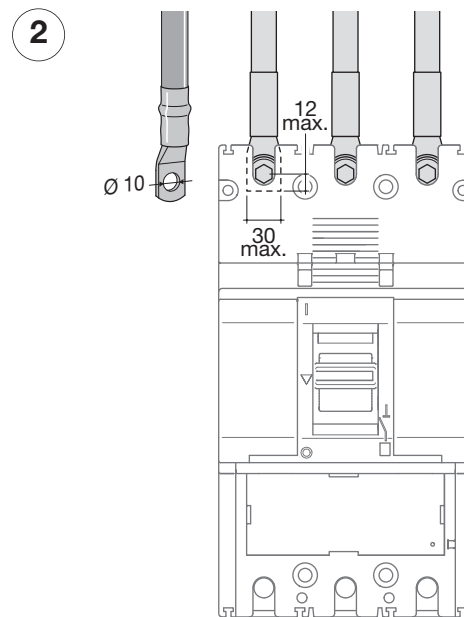
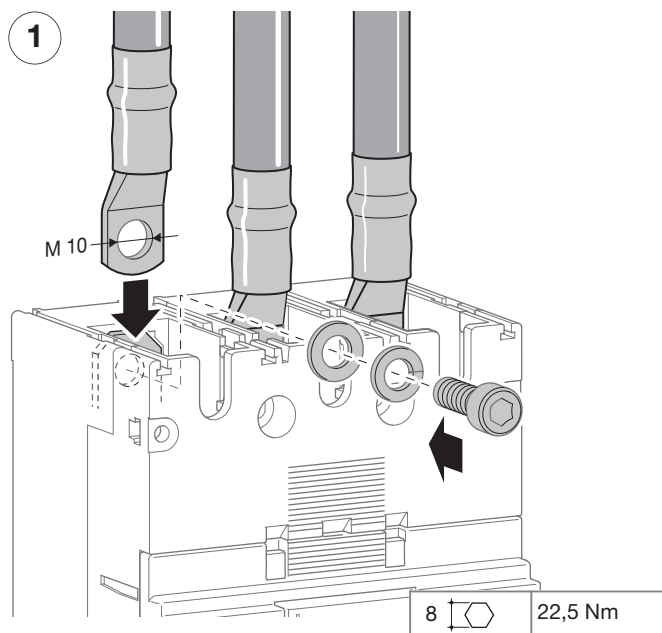
Extended straight and spreader connections



Rear connections

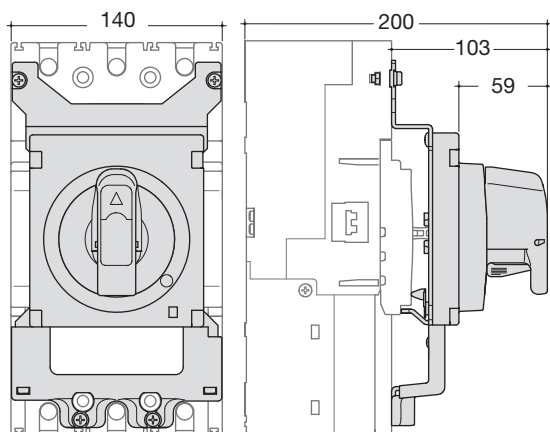


Connection with end lugs

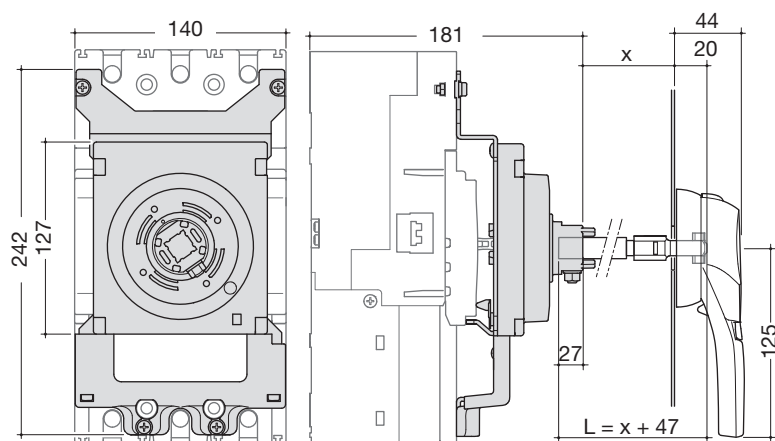


Accessories

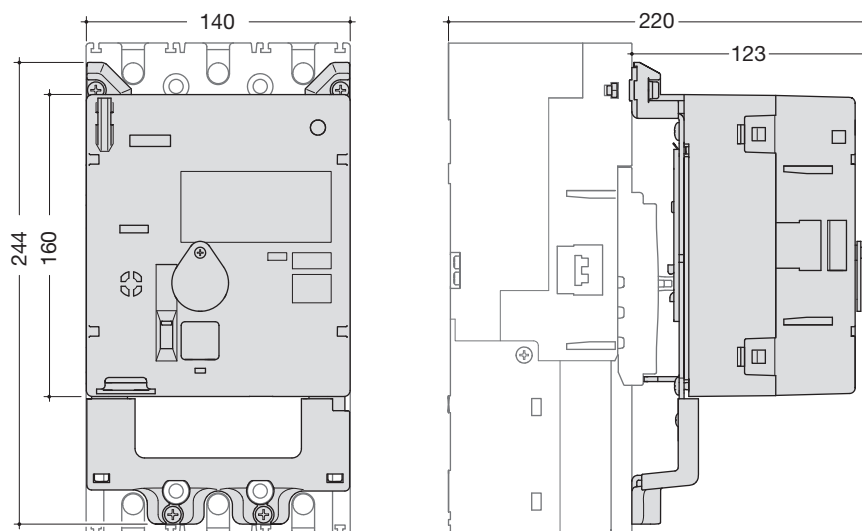
Direct rotary handle



Extended rotary handle

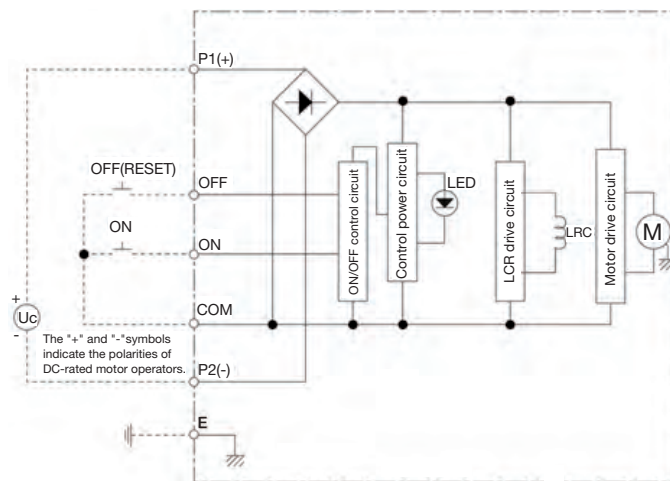


Motor operator



		HXD040H	HXD042H
Operating voltage		24-48V DC	100-240V AC
Operating current/starting current peak value (A)	24V DC	-/9,2 (ON) 4,3/9,8 (OFF, RESET)	-
	48V DC	-/3,8 (ON) 2,0/5,2 (OFF, RESET)	-
	100-110V AC	-	-/1,9 (ON) 1,3/3,8 (OFF, RESET)
	200-240V AC	-	-/3,3 (ON) 0,9/3,8 (OFF, RESET)
Operating time (s)	(ON)	0,1s	
	(OFF)	1,5 s	
	(RESET)	1,5 s	
Power supply required		300VA min.	
Dielectric properties (1 min)		1000V AC	1500V AC

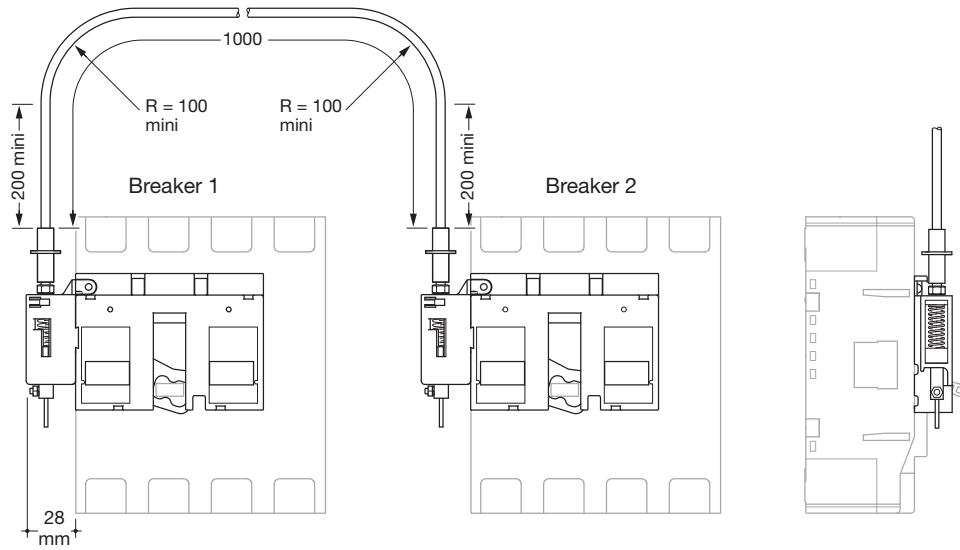
Wiring diagram



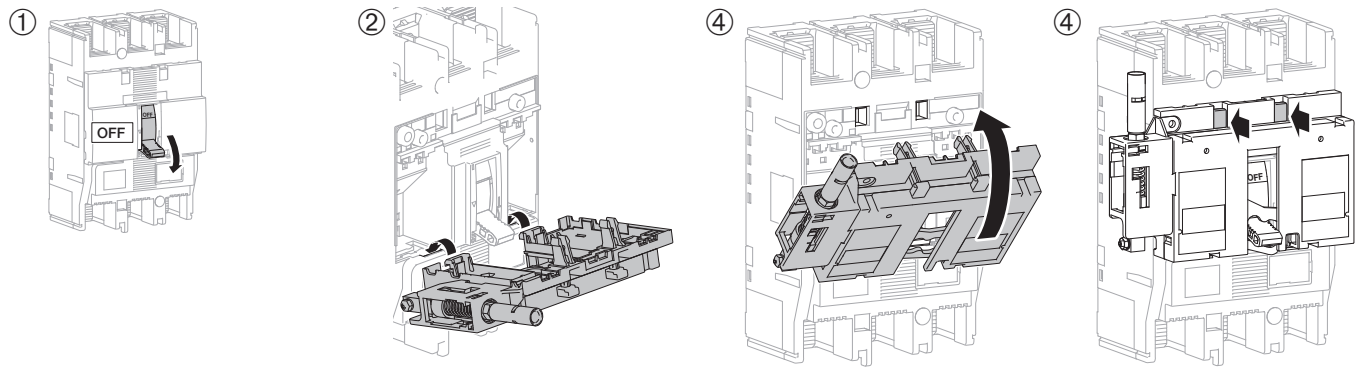
Interlocking system

Suitable with motor operator HXD04xH.
With electrical interlock for motor operator HXD068H (for 630/1000A) or HXB069H (for 250A).

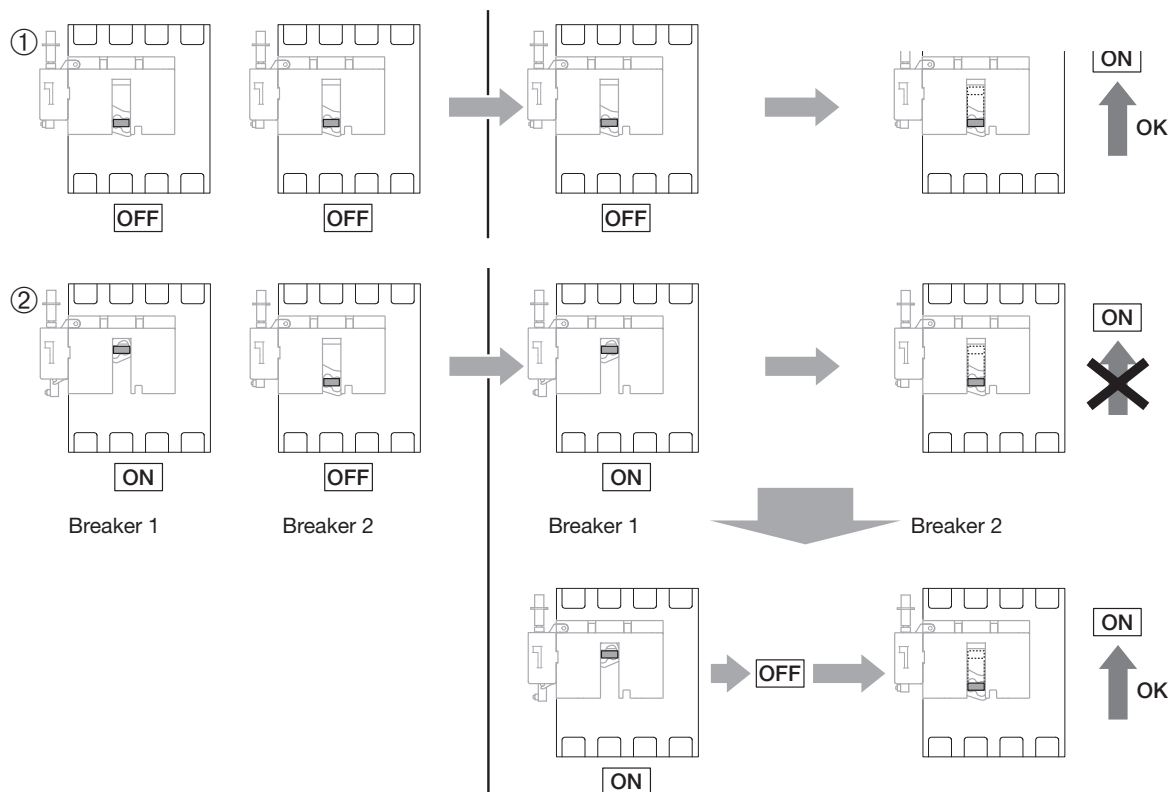
- Length HXD068H: 2100 mm
- Length HXB069H: 2100 mm



Mounting

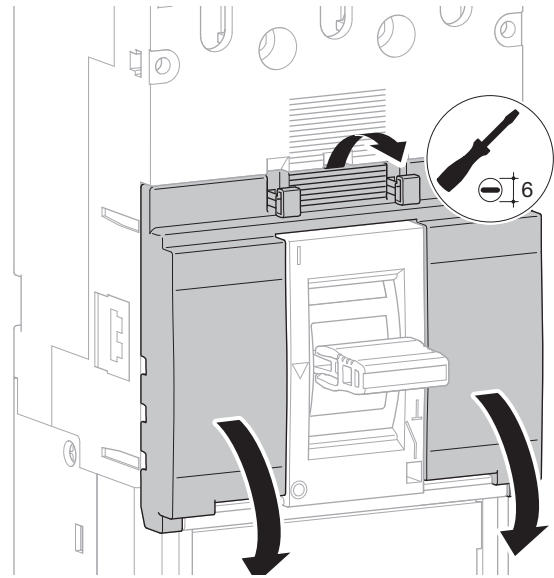
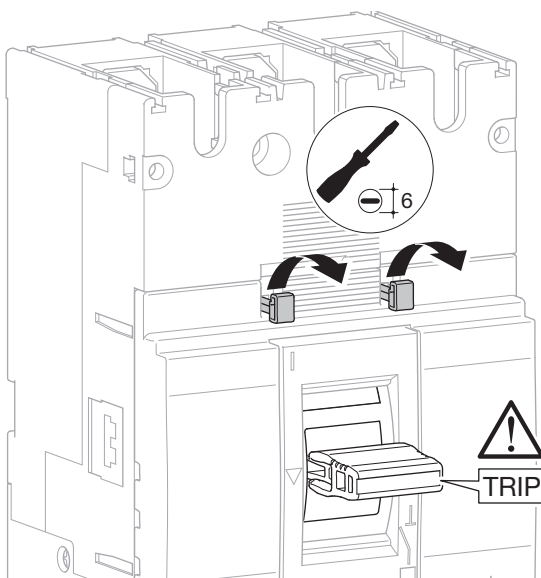


Checking the correct assembly

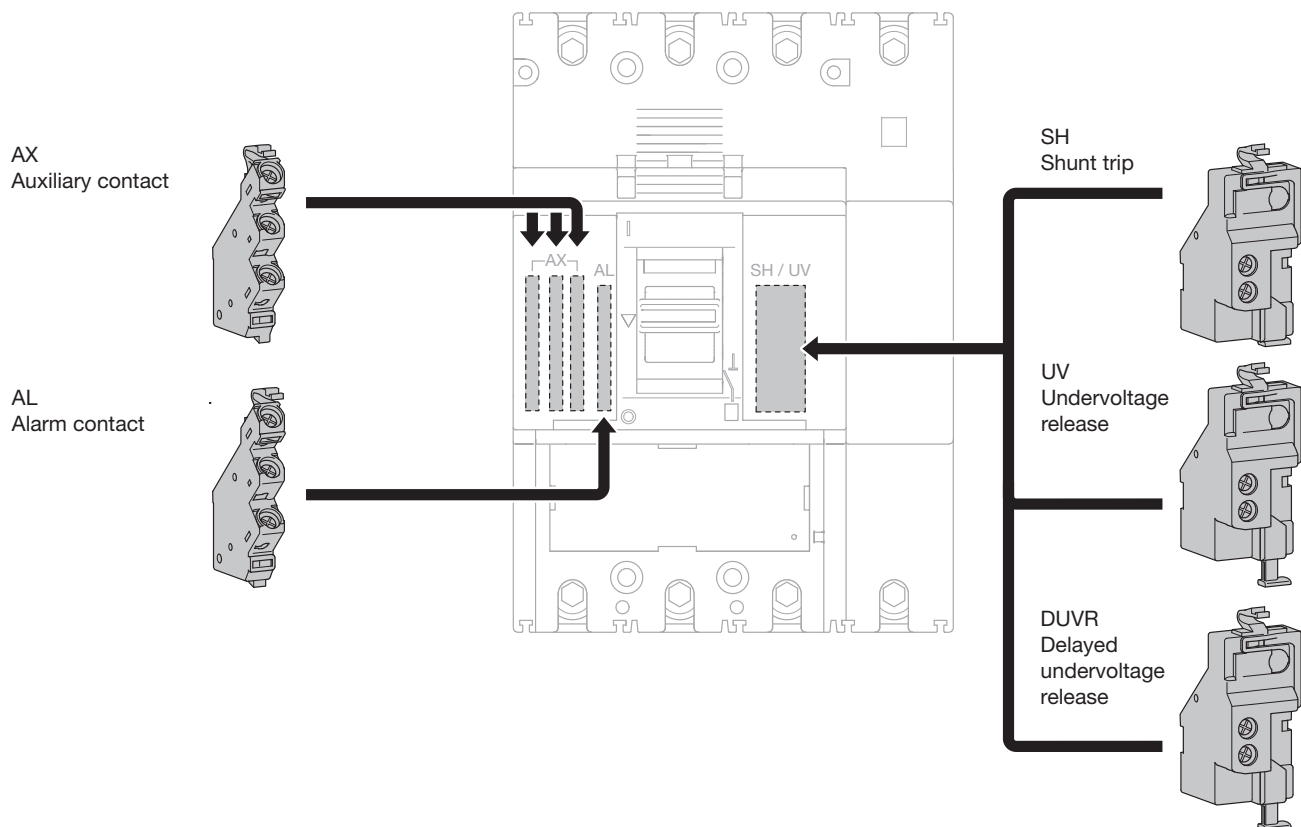


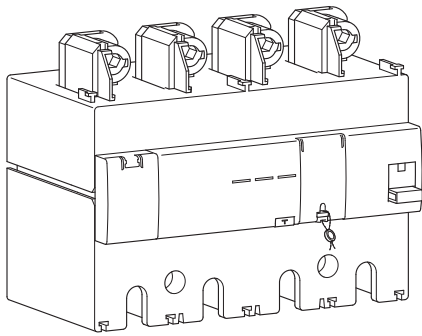
Auxiliaries

Auxiliaries for MCCBs and free tripping switches



Mounting combination for auxiliaries and releases





When associated with MCCB, the add-on block provides an earth fault protection and protects against electrical shocks by direct or indirect contacts.

The add-on blocks are protected against nuisance tripping caused by transient voltages. It's able to detect sinusoidal alternating currents and residual pulsating direct currents (A type). It also avoids miss tripping (HI type - High Immunity).

Characteristics

Reset button :

Signals add-on block tripping and must be acknowledged before switching on the installation.

Test button for differential functioning :

Allows to check the electrical operating of the MCCB / Add-on block association.

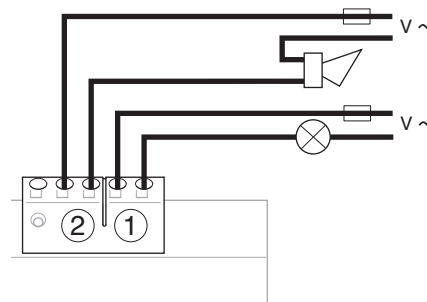
Mechanical test button :

Allows to check the mechanical operating of the MCCB / Add-on block association.

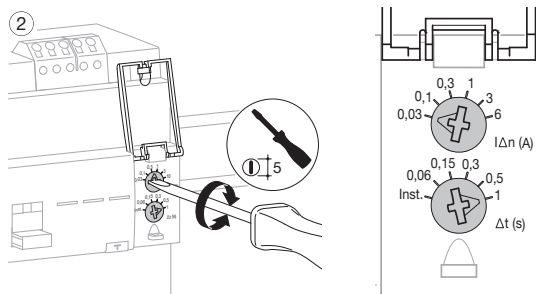
LED signaling default current level in the installation:

25% (orange) and 50% (red) $I_{\Delta n}$; green light to signal correct operating.

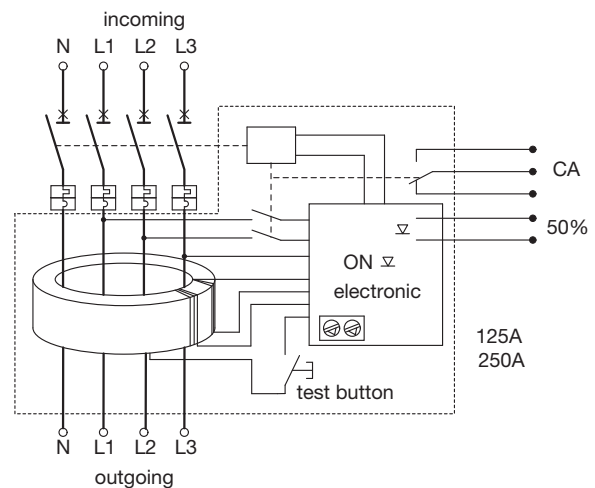
Remote tripping and advanced warning (50% $I_{\Delta n}$) signaling thanks to these contacts:



Earth leakage current ($I_{\Delta n}$) and delay (Δt) setting

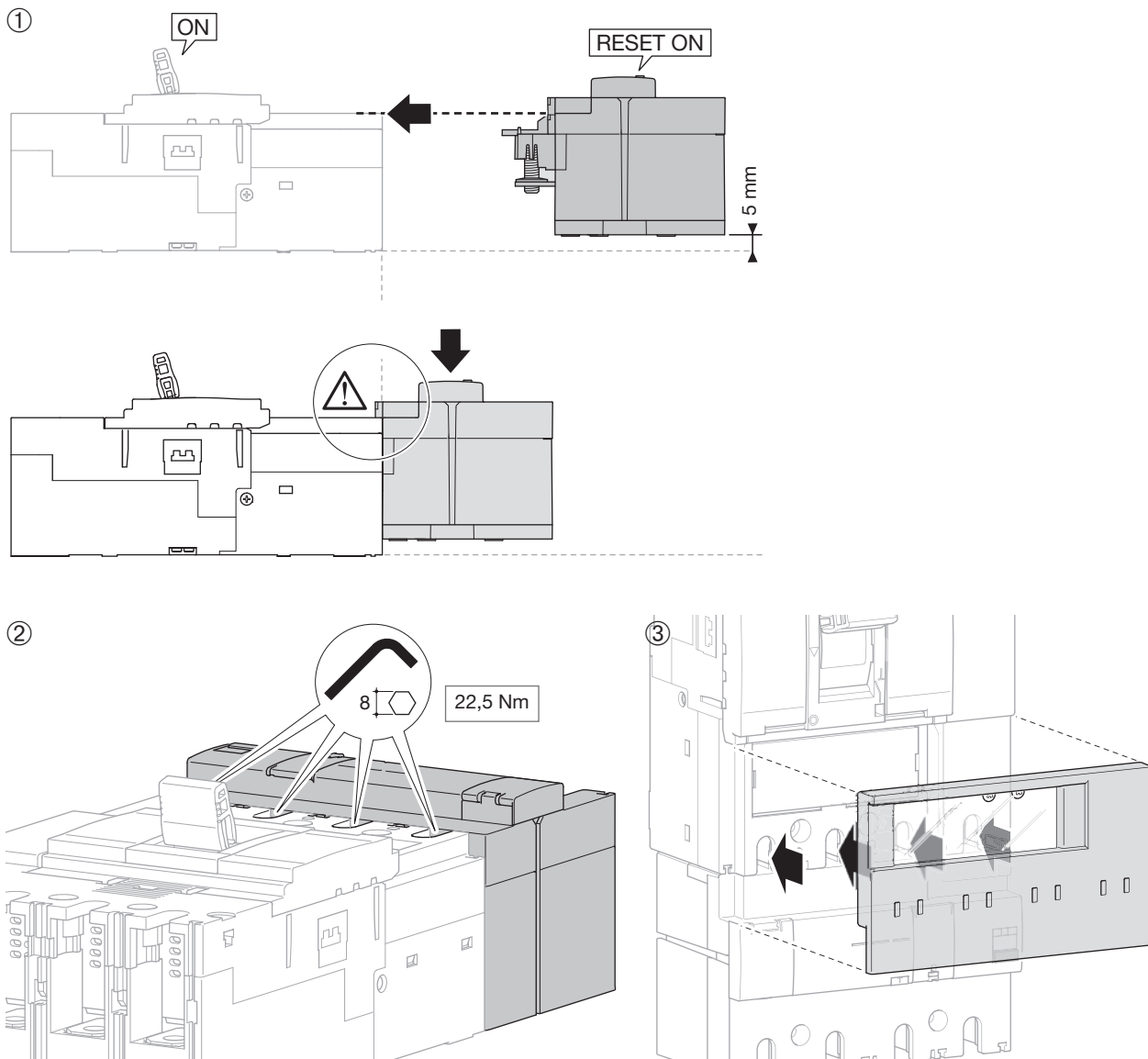


Add-on block operating

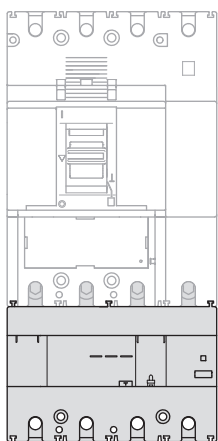


S (Δt)	A ($I_{\Delta n}$)						
	0,03	0,1	0,3	1	3	6	
Inst.	OK	OK	OK	OK	OK	OK	
0,06	no	OK	OK	OK	OK	OK	
0,15	no	OK	OK	OK	OK	OK	
0,3	no	OK	OK	OK	OK	OK	
0,5	no	OK	OK	OK	OK	OK	
1	no	OK	OK	OK	OK	OK	

Add-on block mounting

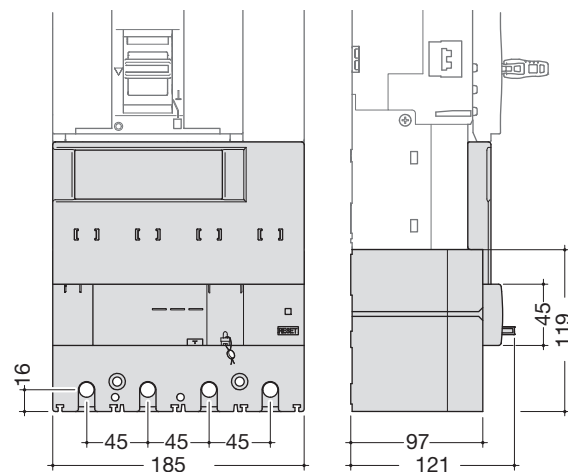


Association / Compatibility



250 - 400A	630A x 0,8
HBD401H 400A	HBD631H 500A (le: 630A x 0,8)

Dimensions



Moulded case circuit breakers h800

Thermal magnetic trip unit TM:

- thermal adjustment:
from 0.63 to 1 x I_n
- magnetic adjustment:
from 5 to 10 x I_n

Connection:

Directly on copper cable terminal,
with end lug max. width: 30 mm

Comply with IEC 60 947-2.

Moulded case circuit breakers h1000

Electronic trip unit LSI:

- long delay (thermal equivalent) adjustable:
I_r = 0,4 to 1 x I_n
- short delay (magnetic equivalent) adjustable:
2,5 to 10 x I_r (630-800A) and 2,5 to 8 x I_r (1000A)
- time delay: 0,1-0,2 s

3P & 4P (adjustable neutral 0 - 50% - 100%).
Mechanical test button,

lockable settings.

Connection:

Directly on copper cable terminal,
with end lug max. width: 50 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

Designation	Characteristics	I _n	Cat. ref.	
			3P	4P
MCCBs h800 50kA TM	breaking capacity I _{cu} : 50 kA (400/415 V AC) I _{cs} : 50 kA	630A	HNK630U	HNK631U
	adjustable thermal 0.63 to 1 x I _n adjustable magnetic 5 to 10 x I _n	800A	HNK800U	HNK801U
MCCBs h800 70kA TM	breaking capacity I _{cu} : 70 kA (400/415 V AC) I _{cs} : 50 kA	630A	HEK630U	HEK631U
	adjustable thermal 0.63 to 1 x I _n adjustable magnetic 5 to 10 x I _n	800A	HEK800U	HEK801U
MCCBs h1000 50kA LSI	breaking capacity I _{cu} : 50 kA (400/415 V AC) I _{cs} : 50 kA	630A	HNE630U	HNE631U
	adjustable thermal I _r = 0,4 to 1 x I _n adjustable magnetic 2,5 to 10 x I _r (630 - 800A) 2,5 to 8 x I _r (1000A) time delay: 0,1-0,2 s	800A	HNE800U	HNE801U
	neutral setting from 0-50 to 100%	1000A	HNE970U	HNE971U
MCCBs h1000 70kA LSI	breaking capacity I _{cu} : 70 kA (400/415 V AC) I _{cs} : 50 kA	800A	HEE800U	HEE801U
	adjustable thermal I _r = 0,4 to 1 x I _n adjustable magnetic 2,5 to 10 x I _r (800A) 2,5 to 8 x I _r (1000A) time delay: 0,1-0,2 s	1000A	HEE970U	HEE971U
Trip-free switches	suitable for AC 22A / AC 23A U _e : 415 V AC I _{cw} (0,3 s) = 10 kA	800A	HCE800U	HCE801U
		1000A	HCE970U	HCE971U



HNE970U

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

Designation	Characteristics	Cat. ref.	
  HXC021H HXC024H	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	
 HXC004H	Shunt trips SH	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	
 HXE014H	24 V DC	HXC001H	
	48 V DC	HXC002H	
	110 V DC	HXC008H	
	100 - 120 V AC	HXC003H	
	200 - 240 V AC	HXC004H	
Undervoltage releases UV	380 - 450 V AC	HXC005H	
	24 V DC	HXE011H	
	100 - 120 V DC	HXE018H	
	200 - 240 V DC	HXE019H	
	110 - 120 V AC	HXE013H	
	220 - 240 V AC	HXE014H	
Delayed undervoltage releases DUVR	380 - 415 V AC	HXE015H	
	24 V DC	HXE051H	
	110 - 120 V AC	HXE053H	
	220 - 240 V AC	HXE054H	
	380 - 415 V AC	HXE055H	

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.

Designation	Characteristics	In	Cat. ref.	
			3P	4P
Electrical interlock	for motor type A (between 2 630/1000A)		HXD068H	HXD068H
	for motor type B (between 1000A and 250A)		HXB069H	HXB069H
Collar terminals	Terminals for aluminium / copper conductors 4 x 35 - 240 mm ²	630-800A	HYE007H	HYE008H
Connecting kits	0,75 mm ² set of 3 x 2 wires length: 1,30m		HYA035H	HYA035H
Interphase barrier	set of 4 pieces		HYD019H	HYD019H
Terminal covers	for extended connections		HYE021H	HYE022H
	for rear connections		HYE025H	HYE026H
Rear connections		630-800A	HYE031H	HYE032H
		1000A	HYE033H	HYE034H



HYE031H

Designation	Characteristics	Cat. ref.	
Direct rotary handles	padlockable handle	HXE030H	
Extended rotary handles	padlockable handle	HXE031H	
Padlocks	to mount on MCCB for handle locking for 3 padlocks max Ø 8 mm	HXD039H	
Motor operators	24 - 48V DC	HXE040H	
	100 - 240V AC	HXE042H	
Interlocking kit	wire type set of 2 pieces and cable	HXE065H	
Interlocking unit	wire type	HXE066H	
Interlocking mechanical cable	1 m	HXB070H	
	1,5 m	HXB071H	

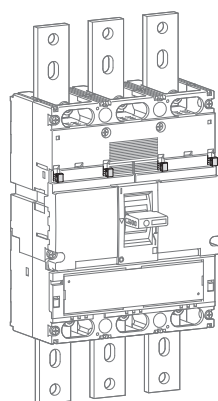


HXE030H

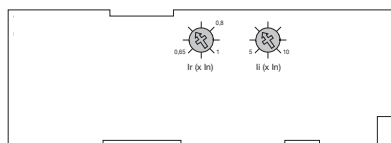


HXD039H

MCCBs

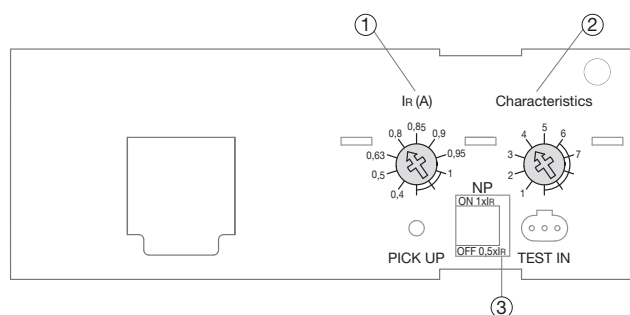
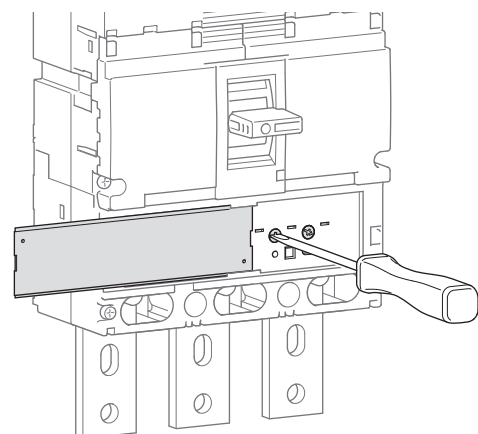


Magnetic and thermal settings



		220/240 V AC		380/415 V AC	660/690 V AC
		630 / 800A	1000A	630 / 800 / 1000A	630 / 800 / 1000A
LSI HNE	I _{cu} (kA)	85	75	50	20
	I _{cs} (kA)	85	75	50	20
LSI HEE	I _{cu} (kA)	100	100	70	20
	I _{cs} (kA)	100	75	50	20
TM HNK	I _{cu} (kA)	85	-	50	20
	I _{cs} (kA)	85	-	50	20
TM HEK	I _{cu} (kA)	100	-	70	20
	I _{cs} (kA)	75	-	50	20
HCE	I _{cm} (kA)	-	-	17	-
	I _{cw} (kA)	-	-	10kA - 0,3s	-

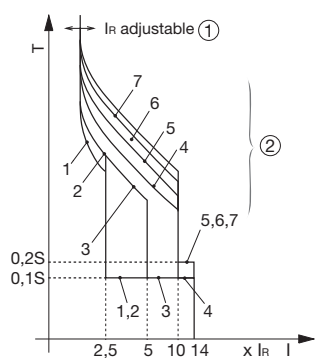
Electronic trip unit settings (LSI)



L - Long delay - protection against overloads: I_r and t_r settings

S - Short delay - protection against short circuits: I_{sd} and t_{sd} settings

I - Instantaneous - max. instantaneous threshold (< 10 ms) in case of short circuit: 2,5 to 10 x I_r (630-800A) and 2,5 to 8 x I_r (1000A).



LSI	I _n A									
	630-800 A					1000 A				
	Long Time Delay		Short Time Delay		Inst	Long Time Delay		Short Time Delay		Inst
	I _r (x I _n)	t _r (s)	I _{sd} (x I _r)	t _{sd} (s)	I _i (x I _r)	I _r (x I _n)	t _r (s)	I _{sd} (x I _r)	t _{sd} (s)	I _i (x I _r)
① I _r (x I _n)	0,4	OK				OK				
	0,5	OK				OK				
	0,63	OK				OK				
	0,8	OK				OK				
	0,9	OK				OK				
	0,95	OK				OK				
	1	OK				OK				
② Characteristics*	1	11s at 2 x I _r	2,5	0,1	14 (max 12 x I _n)	11s at 2 x I _r	2,5	0,1	14 (max 10 x I _n)	
	2	21s at 2 x I _r				21s at 2 x I _r				
	3		5				5			
	4	5 s at 6 x I _r	10			5 s at 6 x I _r	8			
	5	10 s at 6 x I _r		0,2		10 s at 6 x I _r		0,2		
	6	19 s at 6 x I _r				16 s at 6 x I _r				
	7	29 s at 6 x I _r				-				
③ Neutral protection	0%									
	50%									
	100%									

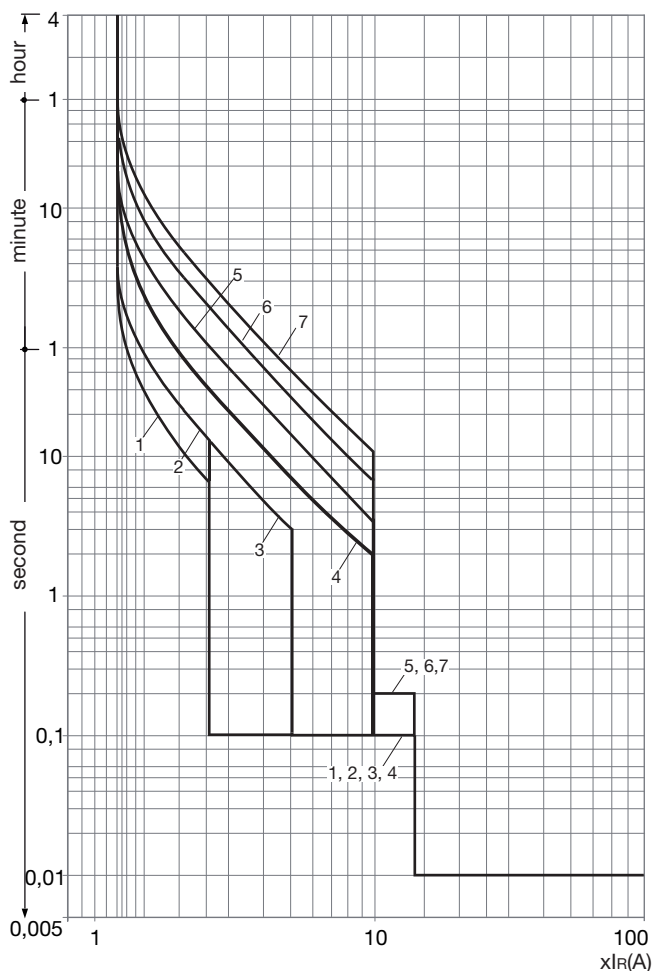
(*) Characteristic 1 : use for generators protection.

Characteristic 2 to 4 - standard protection : options allow coordination optimisation with other products.

Characteristic 5 to 7 - motor protection: use options according to motor starting characteristics.

Tripping curve

MCCB h1000 LSI (630-800A)



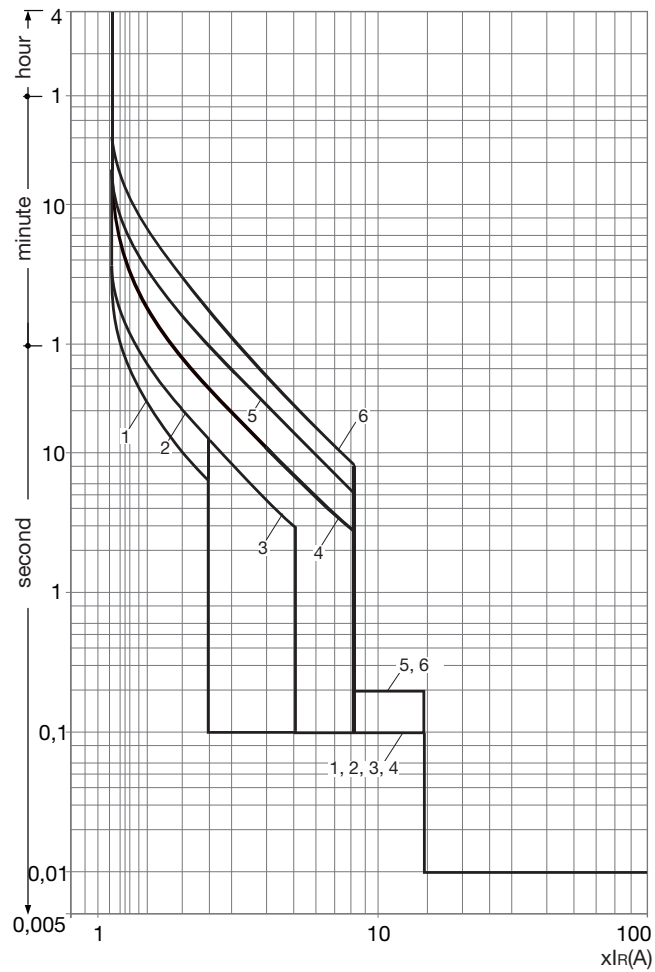
Electronic trip unit setting (LSI)

MCCBs 630-800A electronic

		I_R (A)								
LTD Pick-up current		I_R	$x I_n$	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	I_{sd}	$x I_R$	2,5		5	10			
			t_{sd}	(s)	0,1					0,2
	INST	I_i	$x I_R$	14 (max : 12 x I_n)						
Optional	NP	I_N	$x I_n$	0 - 0,5 - 1						
			t_N	(s)	$I_N = t_R$					

Tripping curve

MCCB h1000 LSI (1000A)



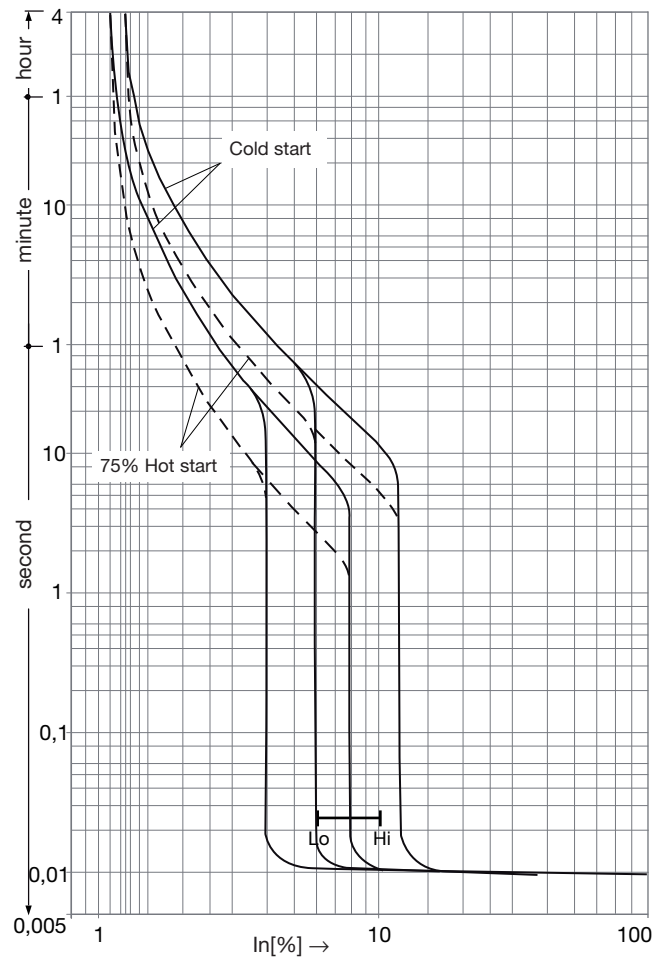
Electronic trip unit setting (LSI)

MCCBs 1000A electronic

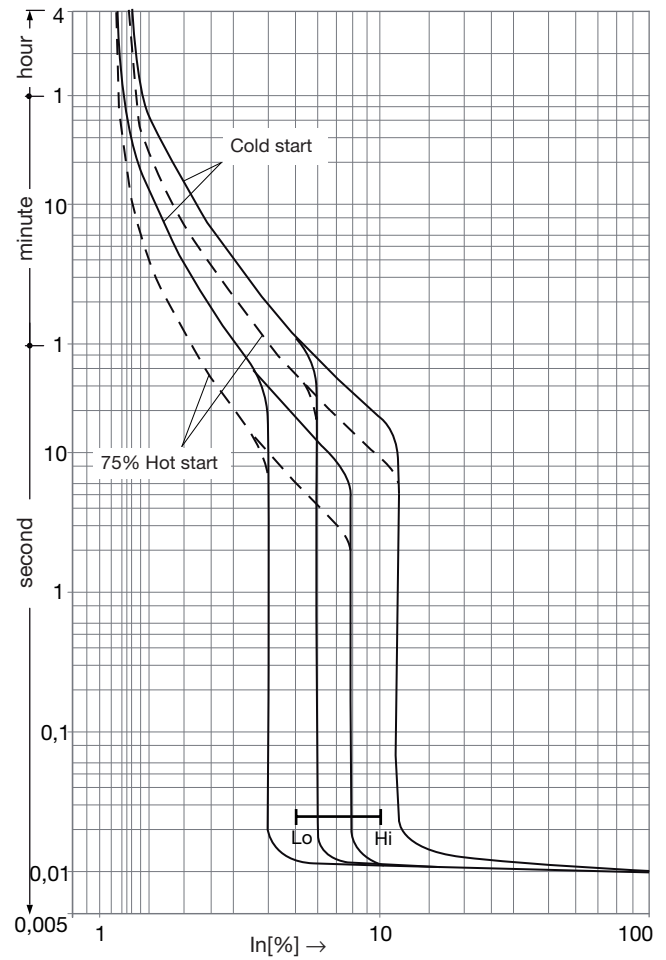
		I_R (A)									
LTD Pick-up current		I_R	$x I_n$	0,4	0,5	0,63	0,8	0,9	0,95	1	
Characteristics		No.		1	2	3	4	5	6		
Standard	LTD	t_R	(s)	11	21	21	5	10	16		
				200% $x I_R$			600% $x I_R$				
	STD	I_{sd}	$x I_R$	2,5		5	8				
		t_{sd}	(s)	0,1					0,2		
	INST	I_i	$x I_n$	14 (max : 10 $x I_n$)							
Optional	NP	I_N	$x I_n$	0 - 0,5 - 1							
		t_N	(s)	$I_N = t_R$							

Tripping curve

MCCB h800 TM (630A)

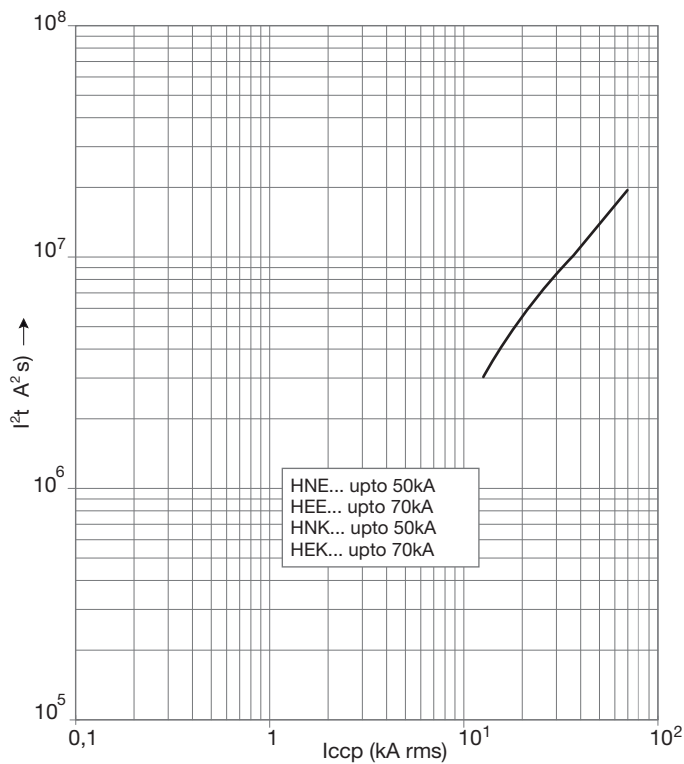


MCCB h800 TM (800A)



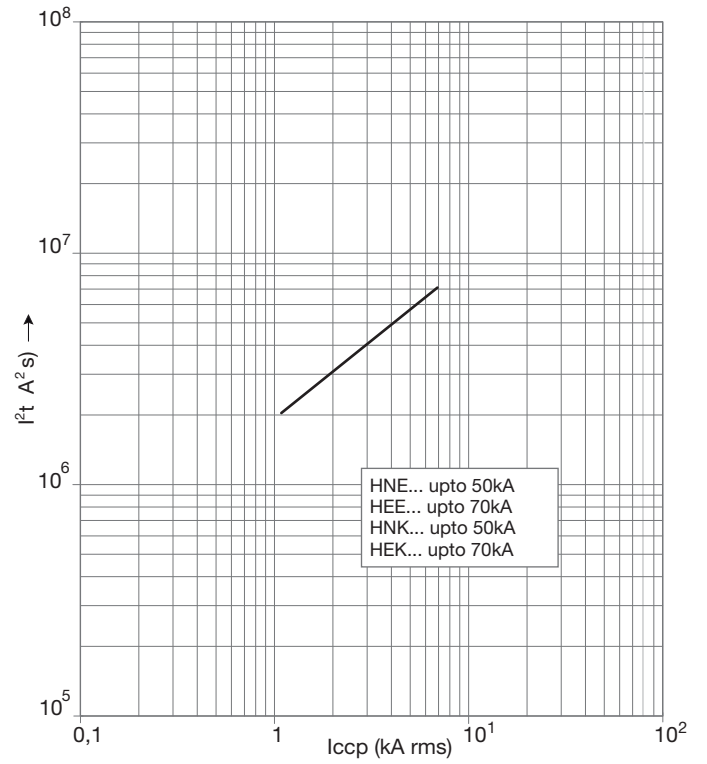
Thermal constraint curve at 400V (Let-through energy)

MCCB h1000



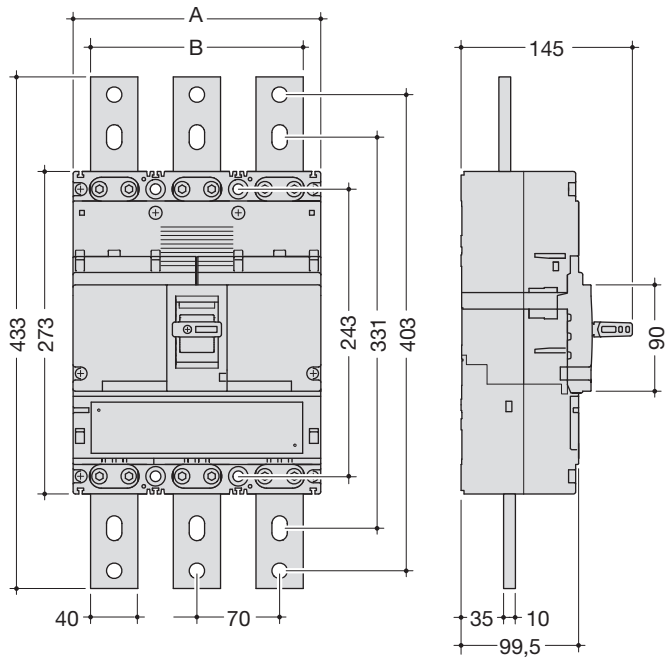
Current limiting curve at 400V (Let-through peak current)

MCCB h1000



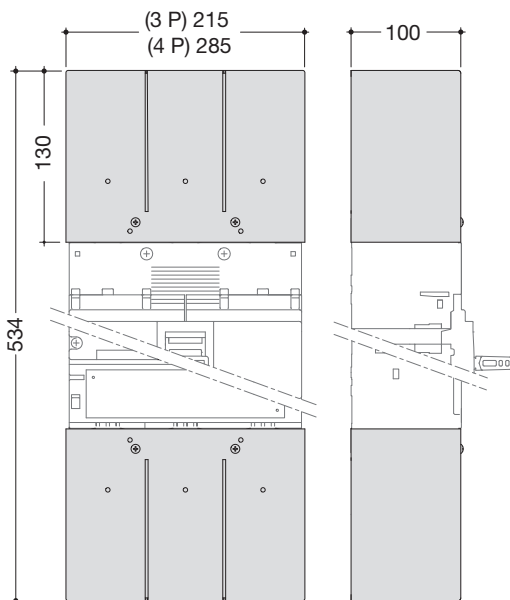
Dimensions

MCCBs

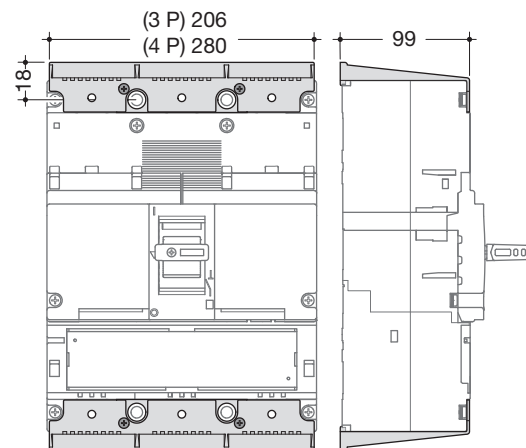


	A (mm)	B (mm)
3P	210	180
4P	280	250

Terminal covers for extended straight connections

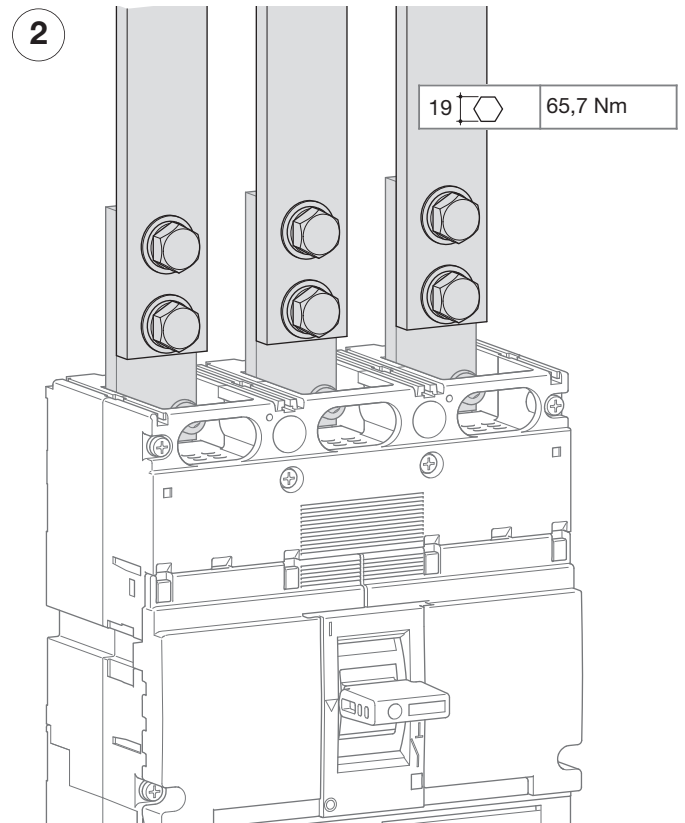
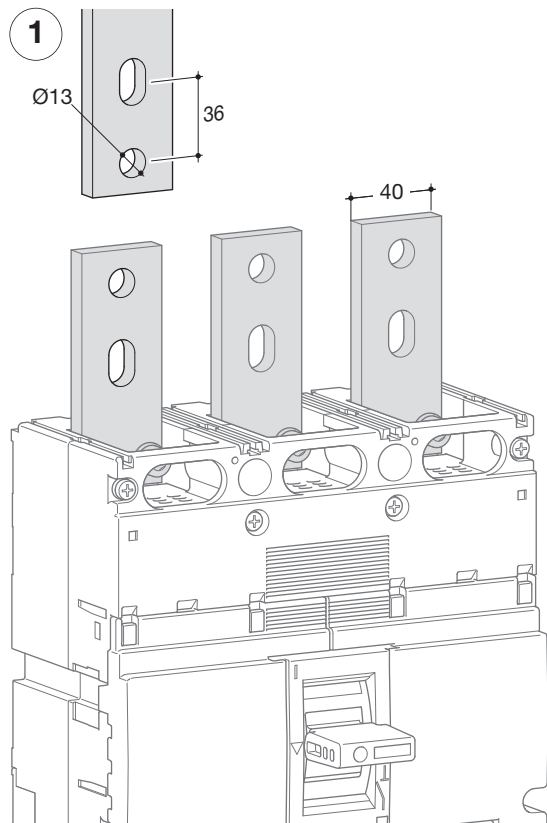


Terminal covers for rear connections



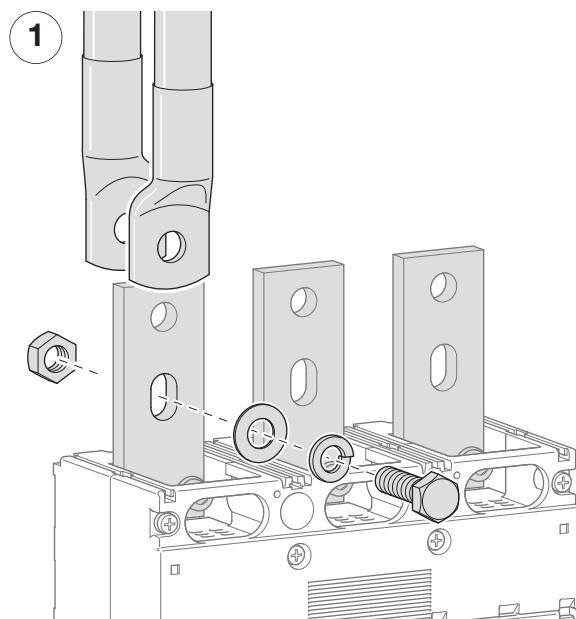
Connection

Extended straight connections

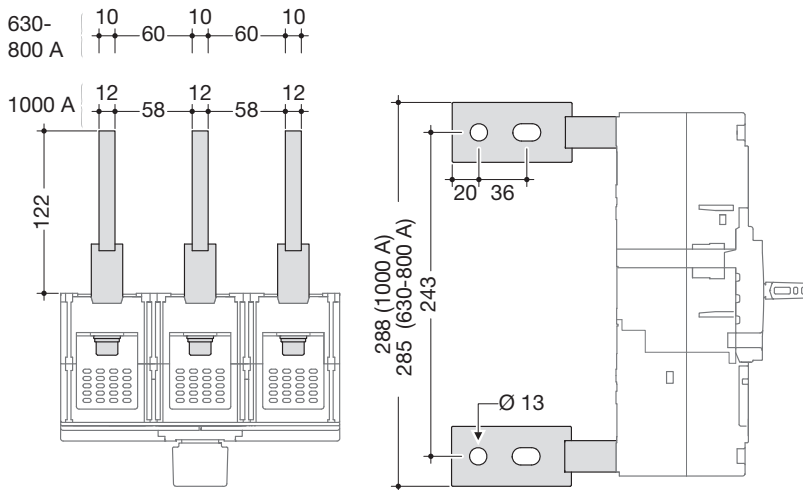
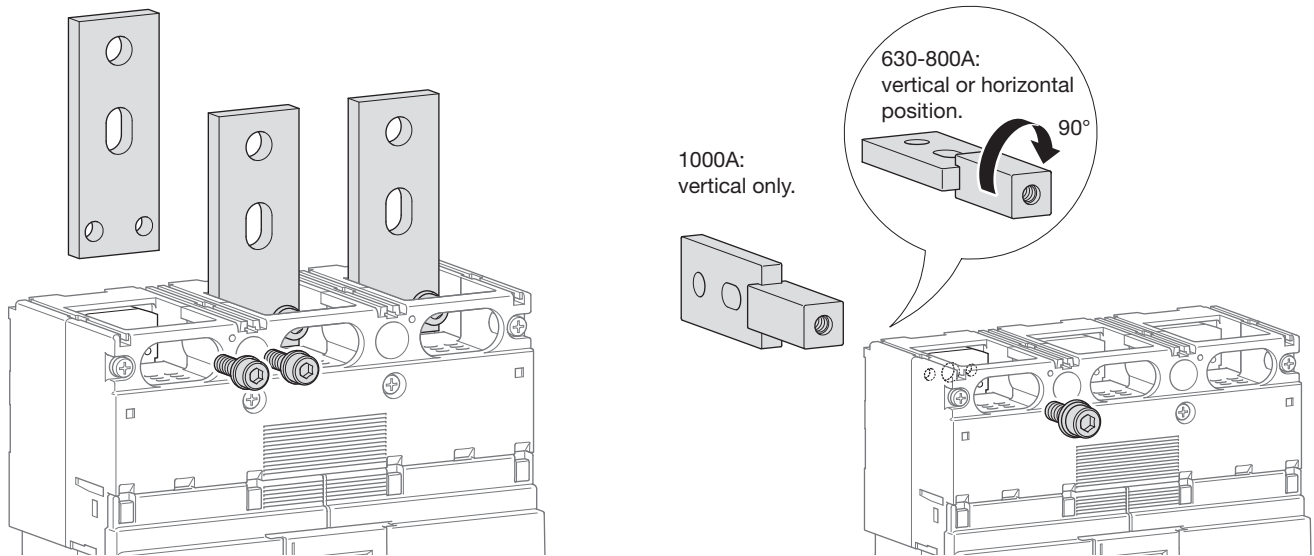


Direct cable connection on terminal
Copper with conductor max. width: 50 mm

Connection with end lugs

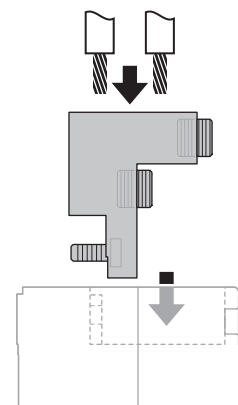
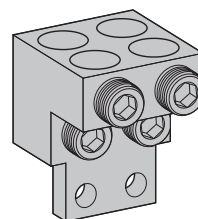
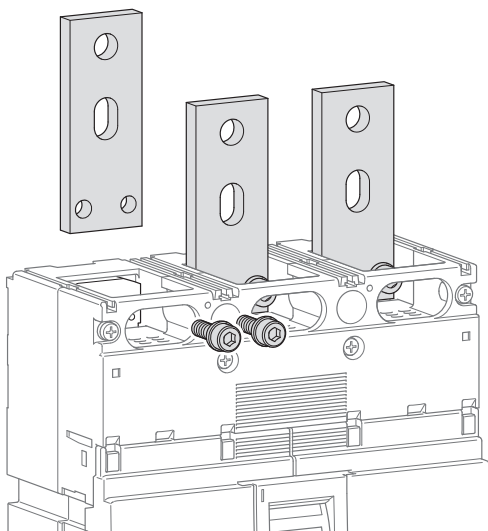


Rear connections



Connection for aluminium / copper conductors (h1000)

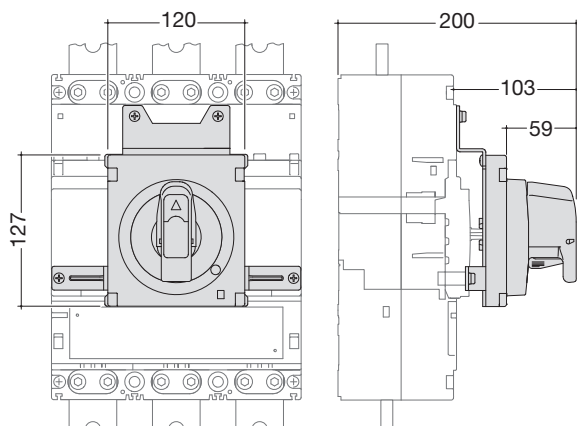
HYE007 (3P) - HYE008H (4P)



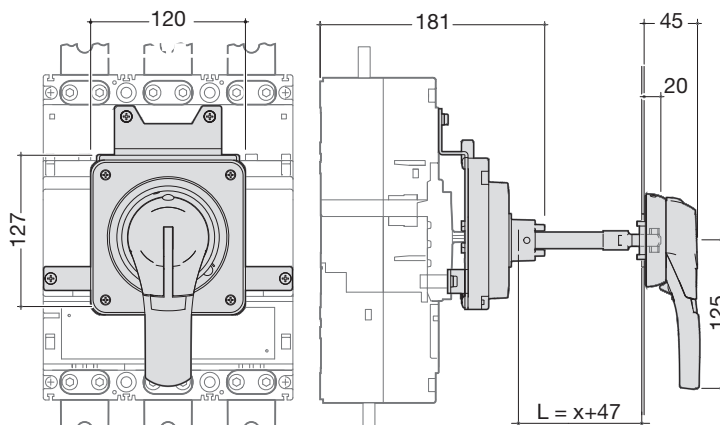
	max. 4x240 mm ²
10	25 Nm

Accessories

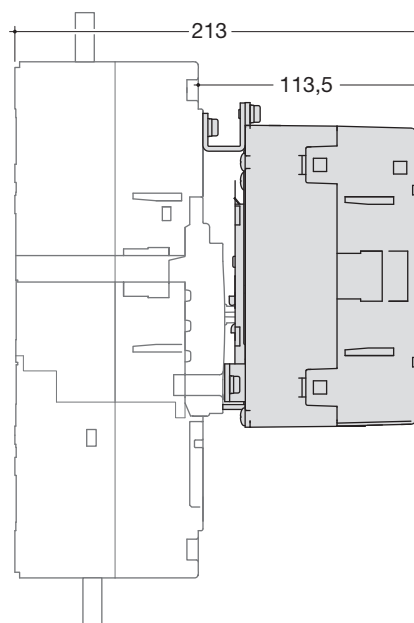
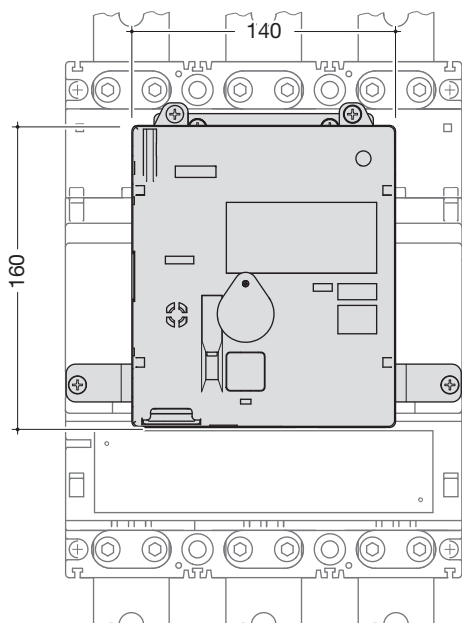
Direct rotary handle



Extended rotary handle

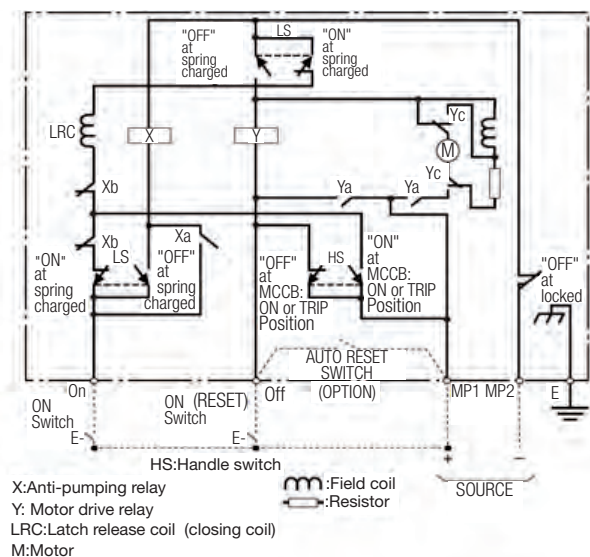


Motor operator



		HXE040H	HXE042H
Operating voltage		24-48V DC	100-240V AC
Operating current/starting current peak value (A)	24V DC	-/12 (ON) 6/11,5 (OFF, RESET)	-
	48V DC	-/7 (ON) 3,2/6,5 (OFF, RESET)	-
	100-110V AC	-	-/2,2 (ON) 1,7/3,5 (OFF, RESET)
	200-240V AC	-	-/2,2 (ON) 1,3/3,5 (OFF, RESET)
Operating time (s)	(ON)	0,1s	
	(OFF)	1,5 s	
	(RESET)	1,5 s	
Power supply required		300VA min.	
Dielectric properties (1 min)		1000V AC	1500V AC

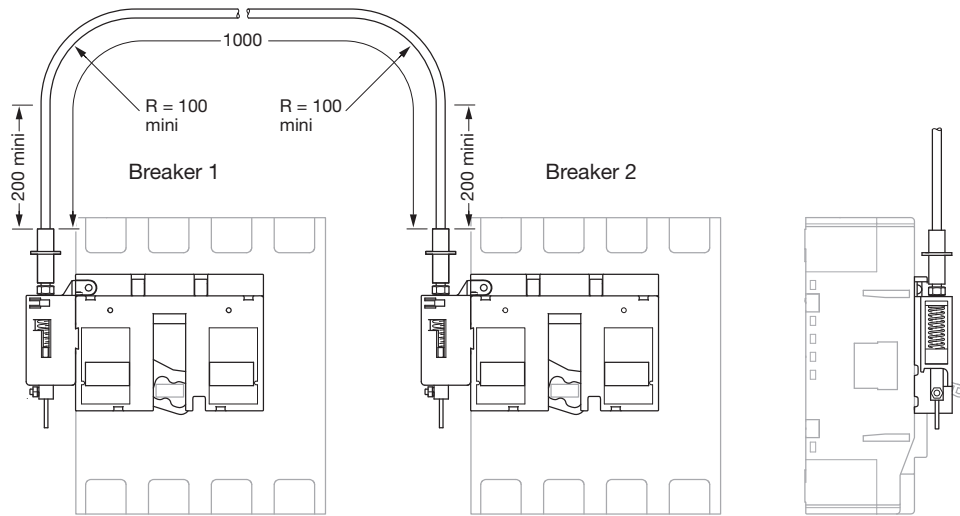
Wiring diagram



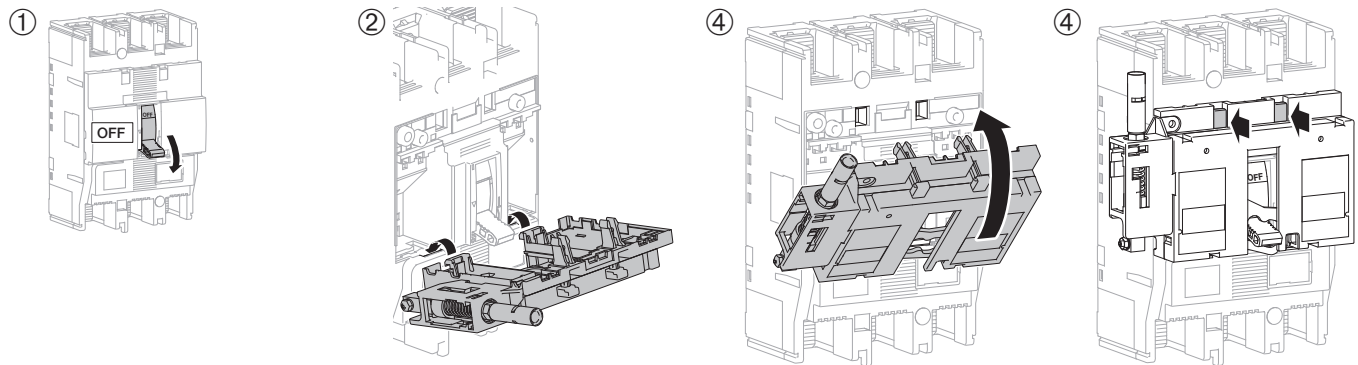
Interlocking system

Suitable with motor operator HXE04xH.
With electrical interlock for motor operator HXD068H (for 630/1000A) or HXB069H (for 250A).

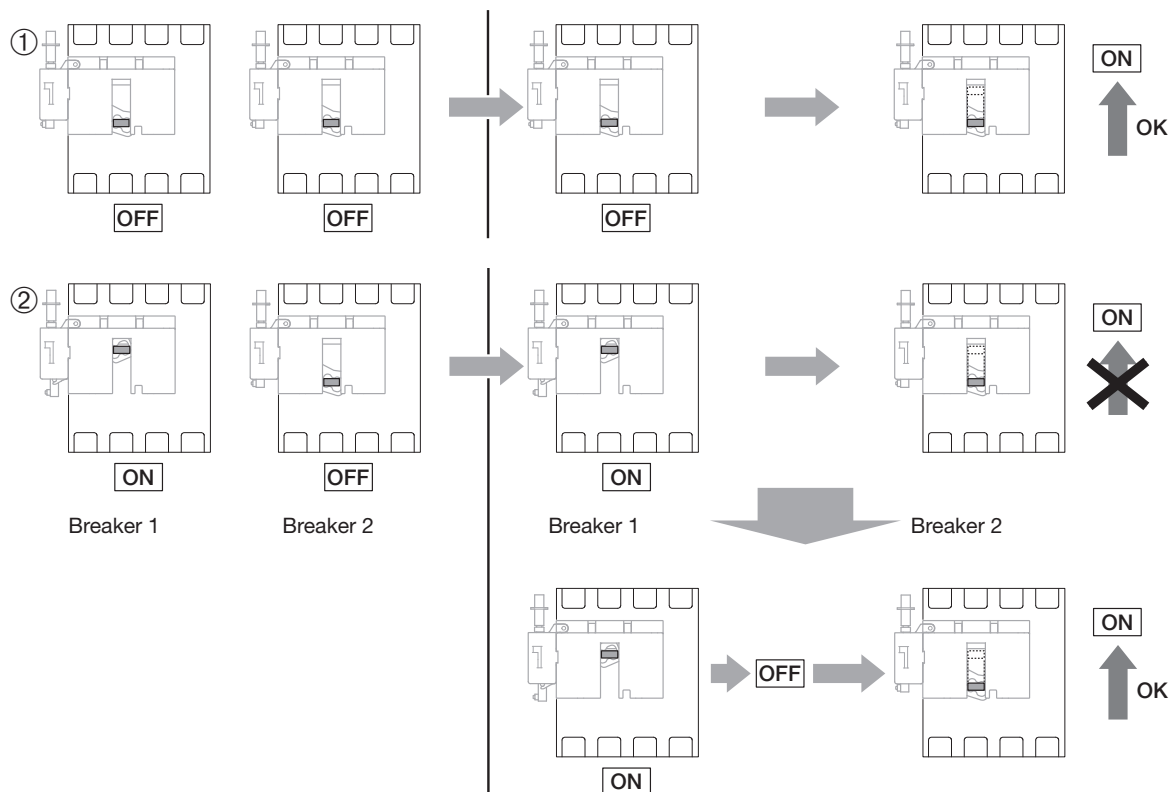
- Length HXD068H: 2100 mm
- Length HXB069H: 2100 mm



Mounting

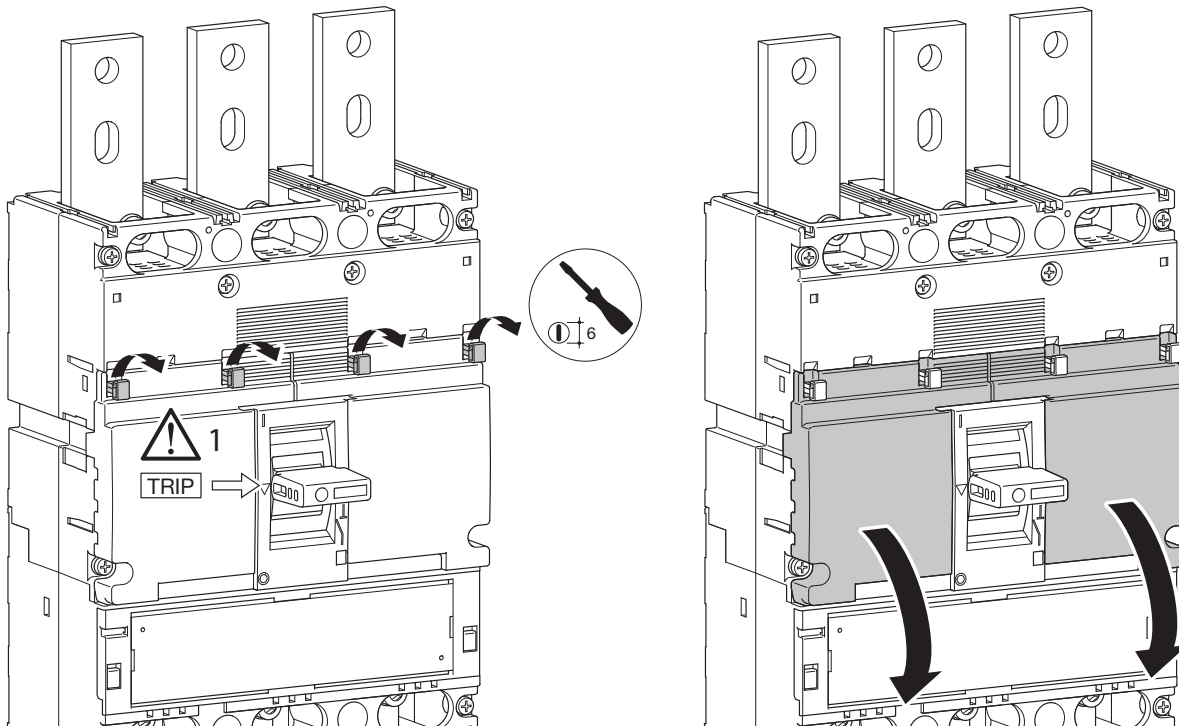


Checking the correct assembly

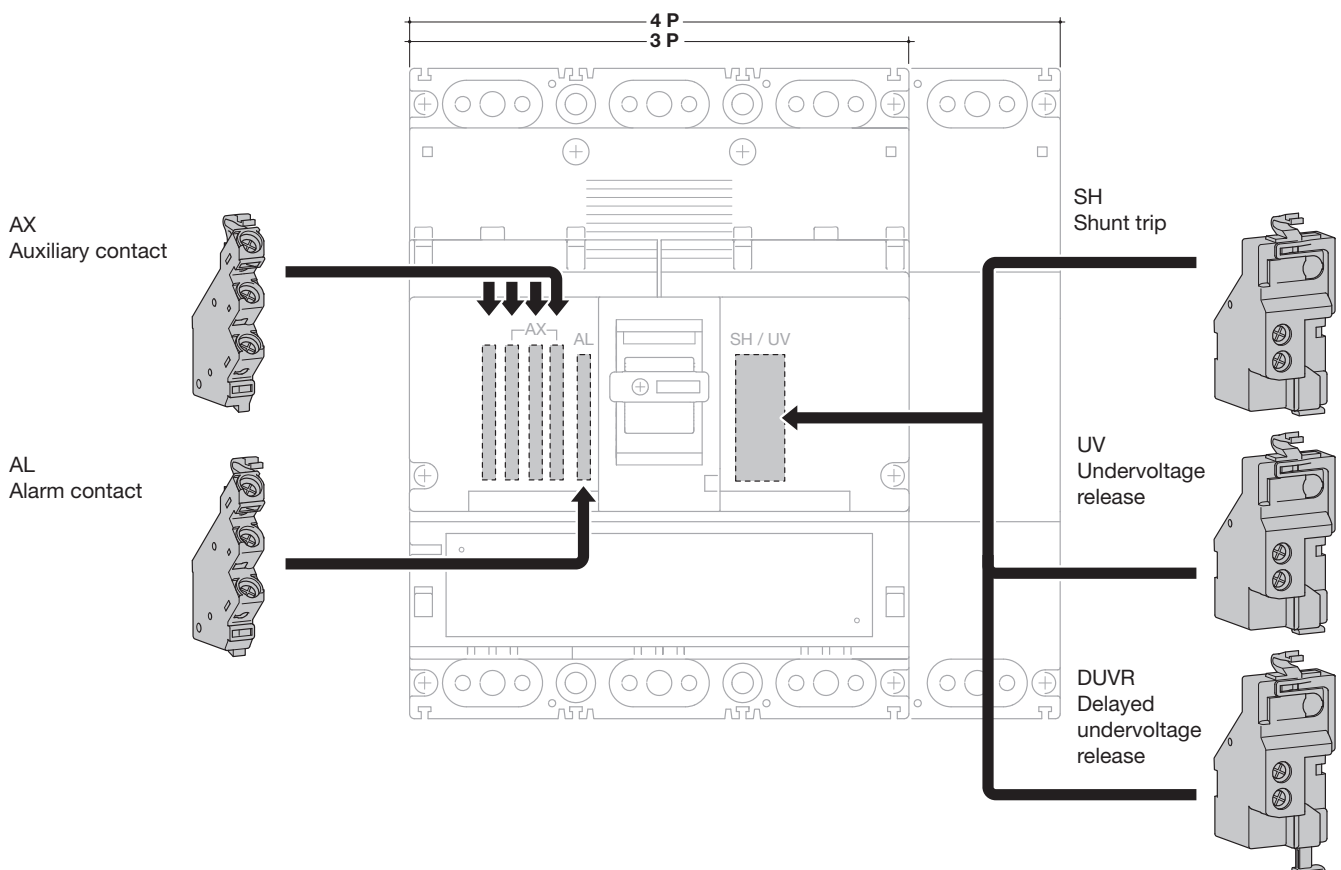


Auxiliaries

Auxiliaries for MCCBs and free tripping switches



Mounting combination for auxiliaries and releases



Moulded case circuit breakers h1600, selection and protection

Electronic trip unit LSI
 - Long delay (thermal equivalent) adjustable:
 $I_r = 0,4$ to $1 \times I_n$
 - short delay (magnetic equivalent) adjustable:
 $2,5$ to $10 \times I_r$
 - 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 voltmeterical trip unit (optional)

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



HNF990U

Designation	Characteristics	In	Cat. ref.	
			3P	4P
MCCBs h1600 50kA LSI	breaking capacity Icu : 50 kA (400/415 V AC) Ics: 50 kA	1250A	HNF980U	HNF981U
	adjustable thermal $I_r = 0,4$ to $1 \times I_n$ adjustable magnetic $2,5$ to $10 \times I_r$ time delay: $0,1-0,2$ s neutral setting 0, 50, 100%	1600A	HNF990U	HNF991U
MCCBs h1600 70kA LSI	breaking capacity Icu : 70 kA (400/415 V AC) Ics: 50 kA	1250A	HEF980U	HEF981U
	adjustable thermal $I_r = 0,4$ to $1 \times I_n$ adjustable magnetic $2,5$ to $10 \times I_r$ time delay: $0,1-0,2$ s neutral setting from 0, 50, 100%	1600A	HEF990U	HEF991U
Trip-free switches	suitable for AC 22A / AC 23A Ue : 415 V AC Icw (0,3 s) = 20 kA	1250A	HCF980U	HCF981U
		1600A	HCF990U	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



HXC 021H



HXC 024H



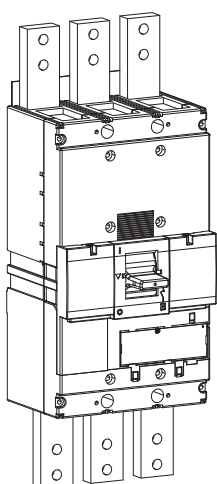
HXC 004H



HXC 014H

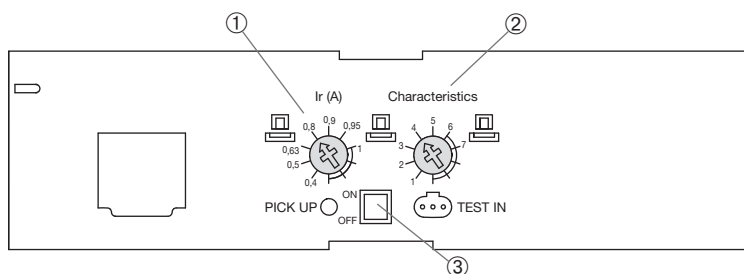
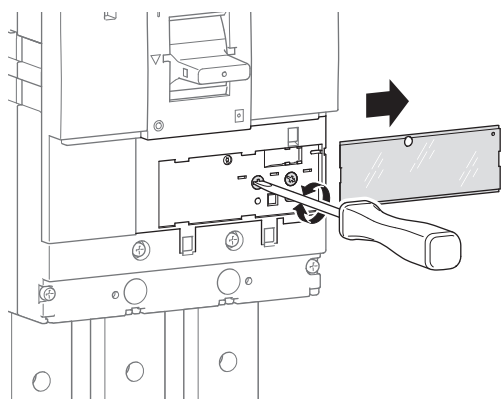
Designation	Characteristics	Cat. ref.
Auxiliary contacts	1 changeover contact	HXC021H
AX	250 V AC / 3A	
AL	125 V DC / 0,4A	
	1 NO + 1 NC	
	1 changeover alarm contact	HXC024H
	250 V AC / 3A	
	125 V DC / 0,4A	
	1 NO + 1 NC	
	low level contact (ON/OFF)	HXC025H
	125 V AC	
	1 NO + 1 NC	
	low level alarm contact	HXC026H
	125 V AC	
	1 NO + 1 NC	
Shunt trips	24 V DC	HXC001H
SH	48 V DC	HXC002H
	110 V DC	HXC008H
	100 - 120 V AC	HXC003H
	200 - 240 V AC	HXC004H
	380 - 450 V AC	HXC005H
Undervoltage releases	24 V DC	HXE011H
UV	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	24 V DC	HXF051H
DUVR	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 mm ² 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	-

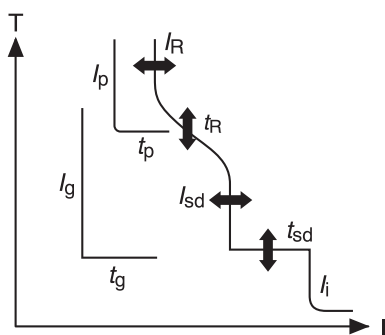
Electronic trip unit settings (LSI)



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	②	③
	Ir(A)	Im	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 (xlr)	tsd (s)	li (xlr)	
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 xlr 21s at 2 xlr	2,5	0,1	14 (max 12 x In)
	2				
	3	5 s at 6 xlr	10	0,2	
	4				
	5	10 s at 6 xlr			
	6	19 s at 6 xlr			
	7	29 s at 6 xlr			
③ Neutral protection	0%				
	50%				
	100%				

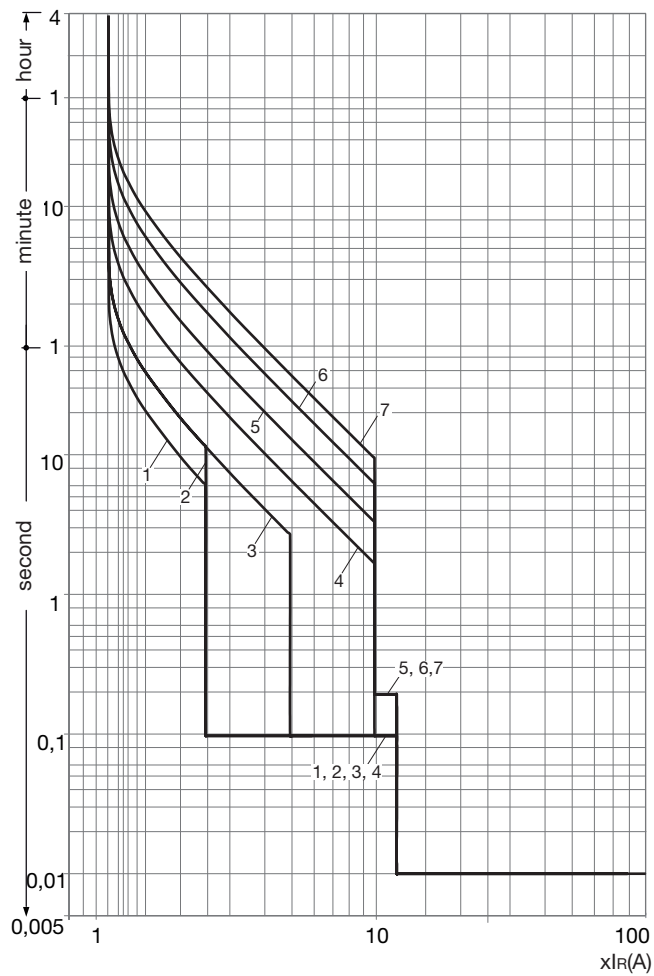
(*) Characteristic 1 : use for generators protection.

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



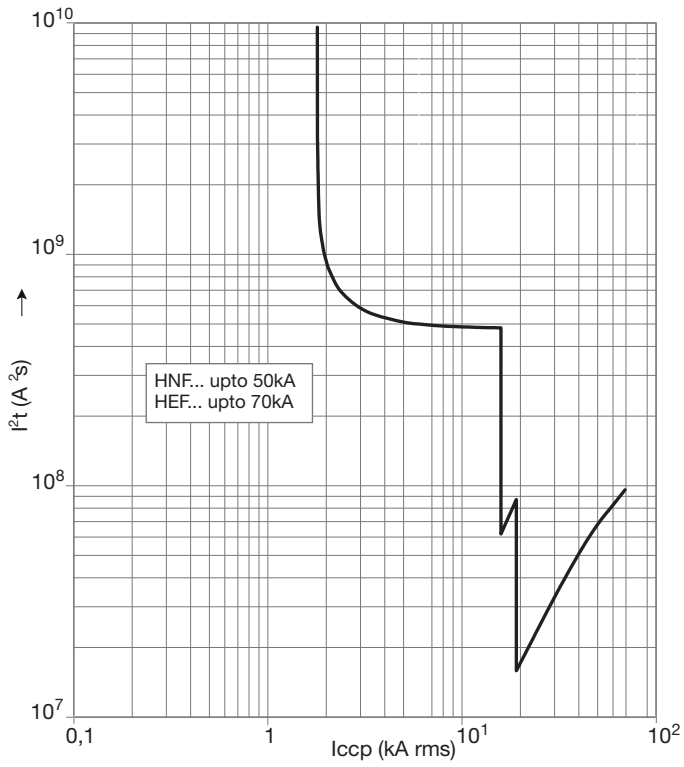
Electronic trip unit setting (LSI)

MCCBs 1250A and 1600A electronic

		I_R (A)								
LTD Pick-up current		I_R	$x I_n$	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	I_{sd}	$x I_R$	2,5		5	10			
		t_{sd}	(s)	0,1					0,2	
	INST	I_i	$x I_R$	14 (max : 12 $x I_n$)						
Optional	NP	I_N	$x I_n$	0 - 0,5 - 1						
		t_N	(s)	$I_N = t_R$						

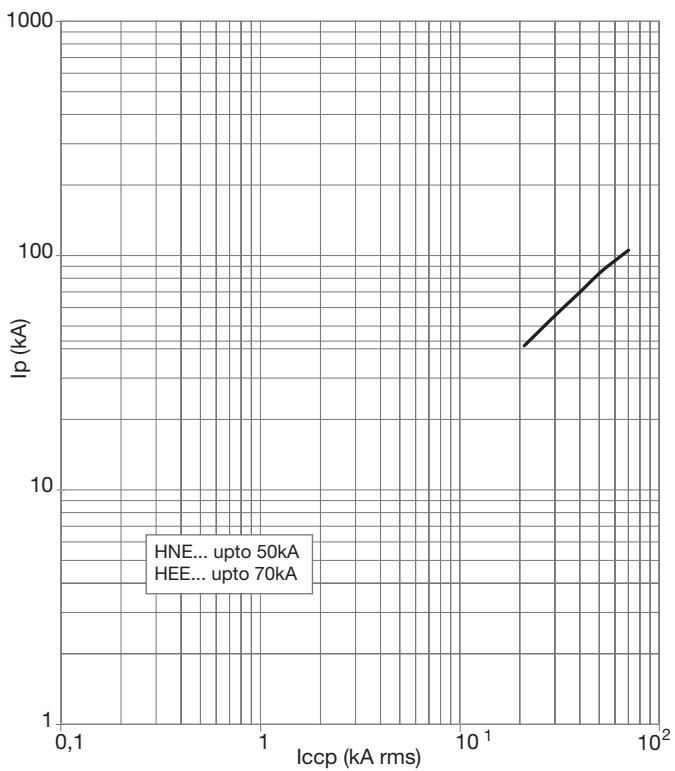
Thermal constraint curve at 400V (Let-through energy)

MCCB h1600



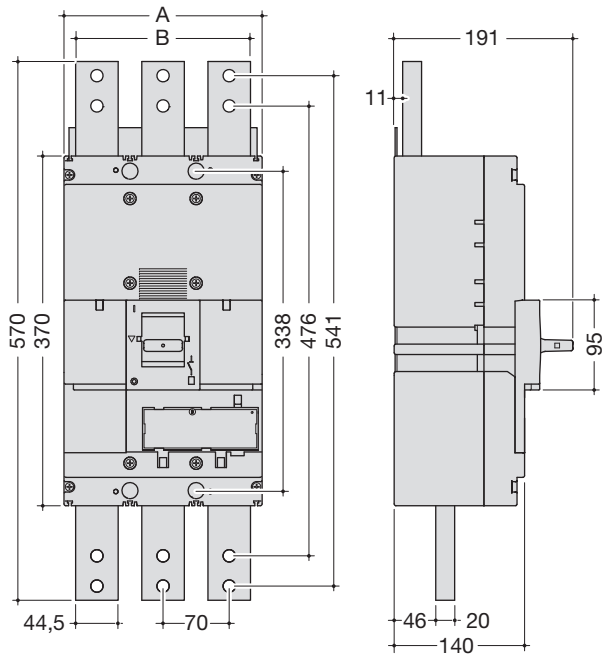
Current limiting curve at 400V (Let-through peak current)

MCCB h1600



Dimensions

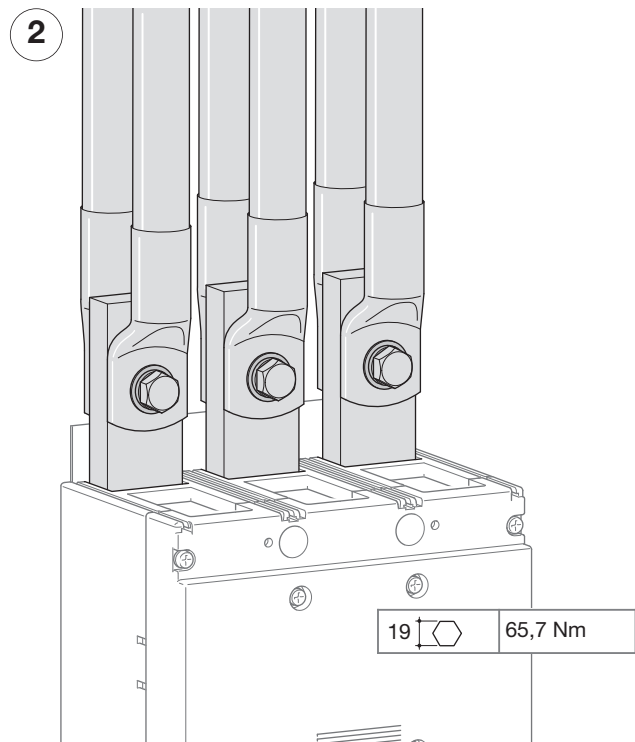
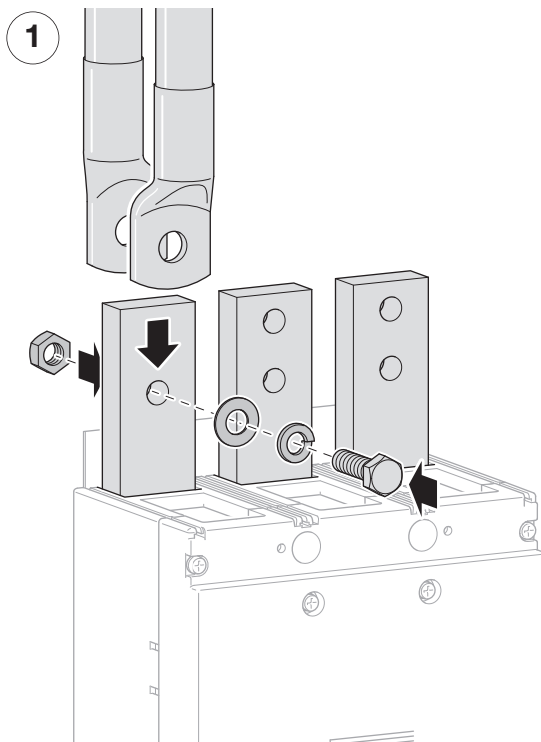
MCCBs



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

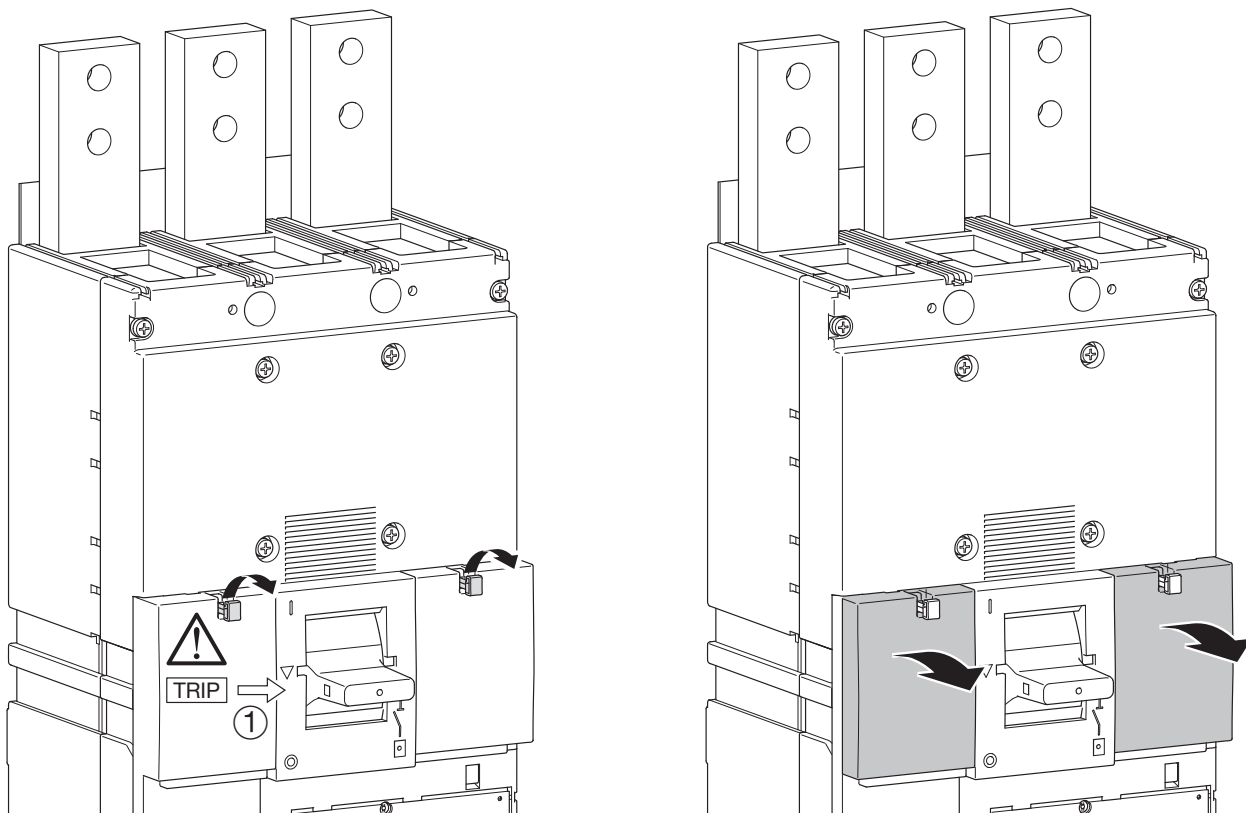
Connection

Connection with end lugs

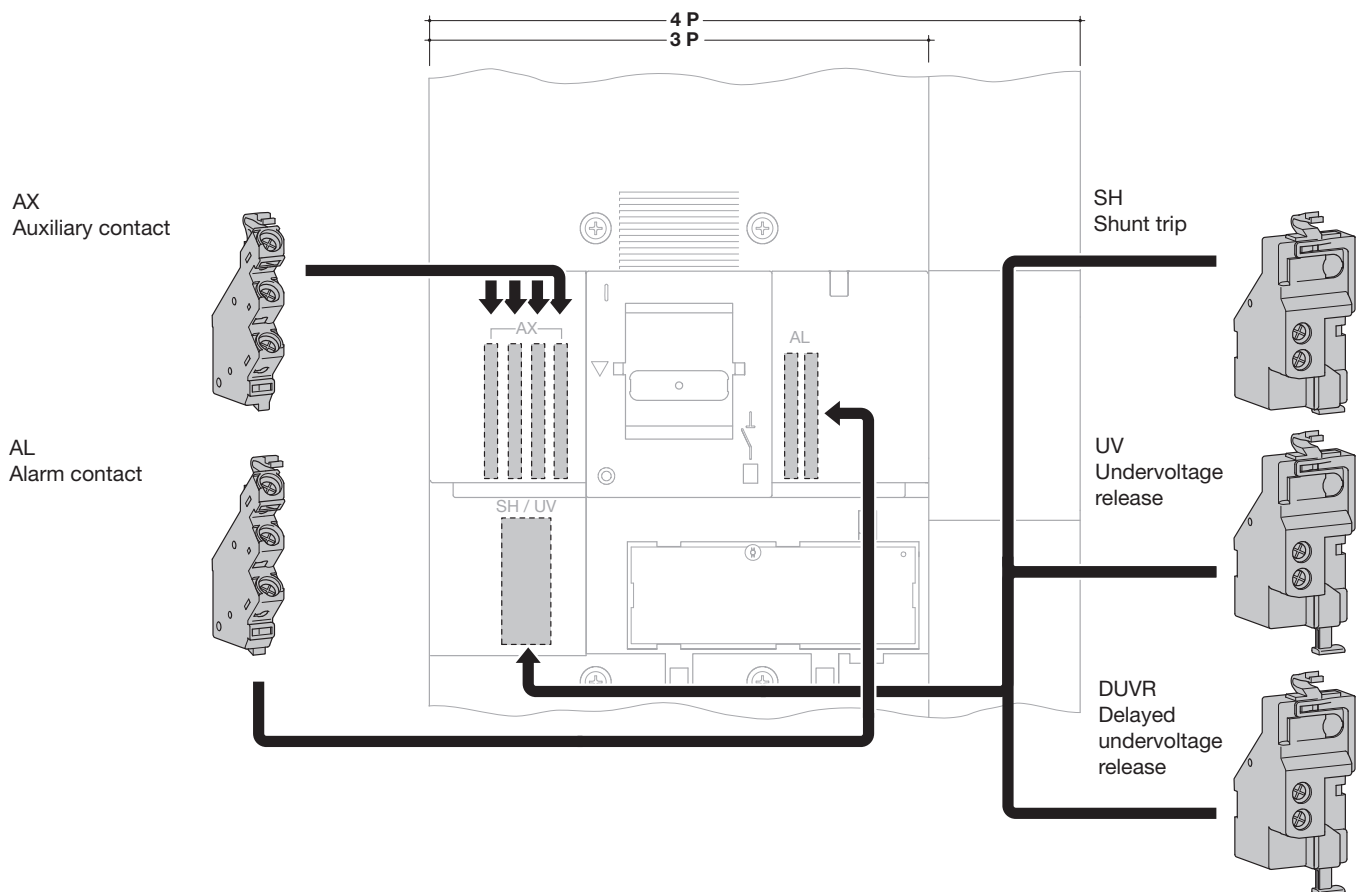


Auxiliaries

Auxiliaries for MCCBs and free tripping switches



Mounting combination for auxiliaries and releases



Cascading according to IEC 60947-2

MCCBs x160, x250, h250, h400, h630, h800, h1000, h1600

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

			Upstream										
			x160 TM			x250 TM		h250 TM			h250 TM+		
			HDA	HHA	HNA	HHB	HNB	HHG	HNG	HEG	HNH	HEH	
IEC 60947-2			18 kA	25 kA	40 kA	25 kA	40 kA	25 kA	50 kA	65 kA	50 kA	70 kA	
Downstream	x160 TM	HDA	18 kA	18	25	40	25	40	25	40	40	50	70
		HHA	25 kA	-	25	40	25	40	25	50	65	50	70
		HNA	40 kA	-	-	40	25	40	25	50	65	50	70
	x250 TM	HHB	25 kA	-	-	-	25	40	25	50	65	50	70
		HNB	40 kA	-	-	-	-	40	-	50	65	50	70
	h250 TM	HHG	25 kA	-	-	-	25	40	25	50	65	50	70
		HNG	50 kA	-	-	-	-	-	-	50	65	50	70
		HEG	65 kA	-	-	-	25	40	25	50	65	50	70
	h250 TM+	HNH	50 kA	-	-	-	-	-	-	50	65	50	70
		HEH	70 kA	-	-	-	-	-	-	-	65	-	70
	h250 LSI	HNC	50 kA	-	-	-	-	-	-	50	65	50	70
		HEC	70 kA	-	-	-	-	-	-	-	-	-	70
	h400 TM	HHD	25 kA	-	-	-	-	-	-	-	-	-	-
		HND	50 kA	-	-	-	-	-	-	-	-	-	-
		HKD	70 kA	-	-	-	-	-	-	-	-	-	-
	h630 LSI	HND	50 kA	-	-	-	-	-	-	-	-	-	-
		HED	70 kA	-	-	-	-	-	-	-	-	-	-
	h800 TM	HNK	50 kA	-	-	-	-	-	-	-	-	-	-
HEK		70 kA	-	-	-	-	-	-	-	-	-	-	
h1000 LSI	HNE	50 kA	-	-	-	-	-	-	-	-	-	-	
	HEE	70 kA	-	-	-	-	-	-	-	-	-	-	
h1600 LSI	HNF	50 kA	-	-	-	-	-	-	-	-	-	-	
	HEF	70 kA	-	-	-	-	-	-	-	-	-	-	

Max. cascading value in kA rms according to IEC 947-2 Network: 3 phases + neutral 127/220 - 138/240 VAC
or downstream devices in single-phase network: 3 phases + neutral 220/380 - 240/415 VAC

			Upstream										
			x160 TM			x250 TM		h250 TM			h250 TM+		
			HDA	HHA	HNA	HHB	HNB	HHG	HNG	HEG	HNH	HEH	
IEC 60947-2			25 kA	35 kA	85 kA	35 kA	85 kA	35 kA	85 kA	85 kA	85 kA	85 kA	100 kA
Downstream	x160 TM	HDA	25 kA	25	35	85	35	85	35	85	85	85	100
		HHA	35 kA	-	35	85	35	85	35	85	85	85	100
		HNA	85 kA	-	-	85	35	85	35	85	85	85	100
	x250 TM	HHB	35 kA	-	-	-	35	85	35	85	85	85	100
		HNB	85 kA	-	-	-	-	85	-	85	85	85	100
	h250 TM	HHG	35 kA	-	-	-	35	85	35	85	85	85	100
		HNG	85 kA	-	-	-	-	85	-	85	85	85	100
		HEG	85 kA	-	-	-	-	85	-	85	85	85	100
	h250 TM+	HNH	85 kA	-	-	-	-	-	-	85	85	85	100
		HEH	100 kA	-	-	-	-	-	-	-	85	85	100
	h250 LSI	HNC	85 kA	-	-	-	-	85	-	85	85	85	100
		HEC	100 kA	-	-	-	-	-	-	-	-	-	100
	h400 TM	HHD	35 kA	-	-	-	-	-	-	-	-	-	-
		HND	85 kA	-	-	-	-	-	-	-	-	-	-
		HKD	100 kA	-	-	-	-	-	-	-	-	-	-
	h630 LSI	HND	85 kA	-	-	-	-	-	-	-	-	-	-
		HED	100 kA	-	-	-	-	-	-	-	-	-	-
	h800 TM	HNK	85 kA	-	-	-	-	-	-	-	-	-	-
HEK		100 kA	-	-	-	-	-	-	-	-	-	-	
h1000 LSI	HNE	85 kA	-	-	-	-	-	-	-	-	-	-	
	HEE	100 kA	-	-	-	-	-	-	-	-	-	-	
h1600 LSI	HNF	100 kA	-	-	-	-	-	-	-	-	-	-	
	HEF	100 kA	-	-	-	-	-	-	-	-	-	-	

h250 LSI		h400 TM			h630 LSI		h800 TM		h1000 LSI		h1600 LSI	
HNC	HEC	HHD	HND	HKD	HND	HED	HNK	HEK	HNE	HEE	HNF	HEF
50 kA	70 kA	25 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA
50	70	25	34	24	24	24	25	25	25	25	18	18
50	70	25	50	55	50	55	45	45	45	45	28	28
50	70	25	50	70	50	70	50	70	50	70	50	50
50	70	25	50	55	50	55	45	45	45	45	28	28
50	70	25	50	70	50	70	50	70	50	70	50	50
50	70	25	50	55	50	55	45	45	45	45	28	28
50	70	25	50	70	50	70	50	70	50	70	50	70
50	70	25	50	55	50	55	45	45	50	70	28	28
50	70	25	50	70	50	70	50	70	50	70	50	70
50	70	25	50	70	50	70	50	70	50	70	50	70
50	70	25	50	70	50	70	50	70	50	70	50	70
-	70	25	50	70	50	70	50	70	50	70	50	70
-	-	25	50	55	50	55	45	45	45	45	28	28
-	-	-	50	70	50	70	50	70	50	70	50	70
-	-	-	-	70	50	70	50	70	50	70	50	70
-	-	-	-	-	50	70	50	70	50	70	50	70
-	-	-	-	-	-	70	50	70	50	70	50	70
-	-	-	-	-	-	-	50	70	50	70	50	70
-	-	-	-	-	-	-	-	70	-	70	50	70
-	-	-	-	-	-	-	-	-	50	70	50	70
-	-	-	-	-	-	-	-	-	-	70	50	70
-	-	-	-	-	-	-	-	-	-	-	50	70
-	-	-	-	-	-	-	-	-	-	-	-	70

h250 LSI		h400 TM			h630 LSI		h800 TM		h1000 LSI		h1600 LSI	
HNC	HEC	HHD	HND	HKD	HND	HED	HNK	HEK	HNE	HEE	HNF	HEF
85 kA	100 kA	35 kA	85 kA	100 kA	85 kA	100 kA	85 kA	100 kA	85 kA	100 kA	100 kA	100 kA
85	100	35	85	100	85	100	57	57	57	57	30	30
85	100	35	85	100	85	100	85	100	85	100	45	45
85	100	35	85	100	85	100	85	100	85	100	100	100
85	100	35	85	100	85	100	85	100	85	100	45	45
85	100	35	85	100	85	100	85	100	85	100	100	100
85	100	35	85	100	85	100	85	100	85	100	100	100
85	100	35	85	100	85	100	85	100	85	100	100	100
85	100	35	85	100	85	100	85	100	85	100	100	100
85	100	35	85	100	85	100	85	100	85	100	100	100
-	100	35	85	100	85	100	85	100	85	100	100	100
-	-	35	85	100	85	100	85	100	85	100	45	45
-	-	-	85	100	85	100	85	100	85	100	100	100
-	-	-	-	70	85	100	85	100	85	100	100	100
-	-	-	-	-	85	100	85	100	85	100	100	100
-	-	-	-	-	-	100	85	100	85	100	100	100
-	-	-	-	-	-	-	85	100	85	100	100	100
-	-	-	-	-	-	-	-	100	-	100	100	100
-	-	-	-	-	-	-	-	-	85	100	100	100
-	-	-	-	-	-	-	-	-	-	100	100	100
-	-	-	-	-	-	-	-	-	-	-	100	100
-	-	-	-	-	-	-	-	-	-	-	100	100
-	-	-	-	-	-	-	-	-	-	-	100	100

Cascading according to IEC 60947-2

MCCBs x160, x250, h250, h400, h630, h800, h1000, h1600

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

			Upstream									
			x160 TM			x250 TM		h250 TM			h250 TM+	
			HDA	HHA	HNA	HHB	HNB	HHG	HNG	HEG	HNH	HEH
IEC 60947-2			18 kA	25 kA	40 kA	25 kA	40 kA	25 kA	50 kA	65 kA	50 kA	70 kA
Downstream	x160	HCA	18	25	40	25	40	25	50	65	50	70
	x250	HCB	-	-	-	25	40	25	50	65	50	70
	h630	HCD	-	-	-	-	-	-	-	-	-	-
	h1000	HCE	-	-	-	-	-	-	-	-	-	-
	h1600	HCF	-	-	-	-	-	-	-	-	-	-

Max. cascading value in kA rms according to IEC 947-2 Network: 3 phases + neutral 127/220 - 138/240 VAC
or downstream devices in single-phase network: 3 phases + neutral 220/380 - 240/415 VAC

			Upstream									
			x160 TM			x250 TM		h250 TM			h250 TM+	
			HDA	HHA	HNA	HHB	HNB	HHG	HNG	HEG	HNH	HEH
IEC 60947-2			25 kA	35 kA	85 kA	35 kA	85 kA	35 kA	85 kA	85 kA	85 kA	100 kA
Downstream	x160	HCA	25	35	85	35	85	35	85	85	85	100
	x250	HCB	-	-	-	35	85	35	85	85	85	100
	h250	HCD	-	-	-	-	-	-	-	-	-	-
	h250	HCE	-	-	-	-	-	-	-	-	-	-
	h250	HCF	-	-	-	-	-	-	-	-	-	-

h250 LSI		h400 TM			h630 LSI		h800 TM		h1000 LSI		h1600 LSI	
HNC	HEC	HHD	HND	HKD	HND	HED	HNK	HEK	HNE	HEE	HNF	HEF
50 kA	70 kA	25 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA
25	70	25	50	70	50	70	50	70	50	70	50	70
25	70	25	50	70	50	70	50	70	50	70	50	70
-	-	-	-	70	50	70	50	70	50	70	50	70
-	-	-	-	-	-	-	50	70	50	70	50	70
-	-	-	-	-	-	-	-	-	-	-	50	70

h250 LSI		h400 TM			h630 LSI		h800 TM		h1000 LSI		h1600 LSI	
HNC	HEC	HHD	HND	HKD	HND	HED	HNK	HEK	HNE	HEE	HNF	HEF
85 kA	100 kA	35 kA	85 kA	100 kA	85 kA	100 kA	85 kA	100 kA	85 kA	100 kA	100 kA	100 kA
35	100	35	85	100	85	100	85	100	100	100	100	100
35	100	35	85	100	85	100	85	100	100	100	100	100
-	-	-	-	100	85	100	85	100	100	100	100	100
-	-	-	-	-	-	-	85	100	100	100	100	100
-	-	-	-	-	-	-	-	-	-	-	100	100

Cascading according to IEC 60947-2 MCCBs / Switches, RCDs, RCBOs, MCBs

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

						Upstream									
						x160 TM			x250 TM		h250 TM				
						HDA	HHA	HNA	HHB	HNB	HHG	HNG	HEG		
						IEC 60898 IEC 61008 IEC 61009	IEC 60947-2	18 kA	25 kA	40 kA	25 kA	40 kA	25 kA	50 kA	65 kA
Downstream	Switches	SB1xx, SB3xx, SB4xx	32A	1P, 3P, 4P			2.2	2.2	2.2	-	-	-	-	-	
		SB1xx, SB3xx, SB4xx	63A	1P, 3P, 4P			3.1	3.1	3.1	-	-	-	-	-	
		SB1xx, SB3xx, SB4xx	100A	1P, 3P, 4P			4.8	4.8	4.8	4.6	4.6	-	-	-	
	Switches	SB2xx	32A	2P			2.3	2.3	2.3	-	-	-	-	-	
		SB2xx	63A	2P			3.4	3.4	3.4	-	-	-	-	-	
		SB2xx	100A	2P			5.5	5.5	5.5	4.6	4.6	-	-	-	
	IDL 2P/4P	SA2xx	80A	2P			6.7	6.7	6.7	5.1	5.1	5	5	5	
		SA4xx	80A	4P			5.7	5.7	5.7	5.1	5.1	5	5	5	
	RCD 2P/4P	CCxxx, CDxxx, CExxx, CFxxx, CGxxx	63A	2P			4.25	4.25	4.25	3.7	3.7	-	-	-	
			63A	4P			3.8	3.8	3.8	3.7	3.7	-	-	-	
			100A	2P			5.5	5.5	5.5	4.6	4.6	-	-	-	
			100A	4P			4.8	4.8	4.8	4.6	4.6	-	-	-	
	MCB Ph+N under 240V	MFS, MFN	32A	C	3 kA	-	3.3	3.3	3.3	-	-	-	-	-	
		MJN, MHN	40A	B, C	4.5 kA	6 kA	8	8	8	6.5	6.5	6	6	6	
		MLN, MLU	40A	C	6 kA	7.5 kA	12.5	12.4	12.5	9.7	9.7	7.5	7.5	7.5	
	MCB Spinx Ph+N under 240V	3PP: NFT3xx, NGT3xx 3PP+N: NFT8xx, NGT8xx	40A	C, D	6 kA	10 kA	18	20	20	14.1	20	10.1	10.1	10.1	
			Ph+N: NFT7xx, NGT7xx	40A	C, D	6 kA	10 kA	18	18	18	14.1	14.1	10.1	10.1	10.1
			Ph+N: MHT7xx, MJT7xx	40A	B, C	4.5 kA	6 kA	8	8	8	6.5	6.5	6	6	6
	RCBO 2 mod 1PP+N under 240V	ADC, ADH	32A	C	3 kA	-	3.3	3.3	3.3	-	-	-	-	-	
		Ax8xx	40A	C	4.5 kA	6 kA	8	8	8	6.5	6.5	6	6	6	
		Ax9xx	40A	C	6 kA	10 kA	18	18	18	14	14	10	10	10	
	RCBO 1 mod 1PP+N under 240V	AC1xx, AD1xx, AE1xx, AF1xx, ACx1xx, ADx1xx, AEx1xx	40A	B, C	10 kA	15 kA	18	25	40	25	40	25	25	25	
			50A	B, C	6 kA	10 kA	18	20	20	14.1	14.1	10.1	10.1	10.1	
	MCB Ocean 2 & v1 1 mod	MV, MW	63A	B, C	3 kA	4.5 kA	5.4	5.4	5.4	5.2	5.2	-	-	-	
		MX, MY	63A	B, C	4.5 kA	6 kA	8	8	8	6.5	6.5	6	6	6	
		MU, MT	63A	B, C	6 kA	10 kA	18	20	20	14.1	14.1	10.1	10.1	10.1	
		NB, NC, ND	63A	B, C, D	10 kA	15 kA	18	25	40	25	40	25	25	25	
	MCB GDE 1 mod	MVN, MWN	63A	B, C	3 kA	-	3.3	3.3	3.3	-	-	-	-	-	
		MXN, MYN	63A	B, C	4.5 kA	-	5.4	5.4	5.4	5.2	5.2	-	-	-	
		MBN, MCN, MTN, MUN, MP	63A	B, C	6 kA	-	8	8	8	6.5	6.5	6	6	6	
MCB GTE 1 mod	MBA, MCA, NEN, NFN, NGN	63A	B, C, D	6 kA	10 kA	18	25	30	20	25	15	18	20		
	NBN, NCN, NDN, NKN NQN, NRN, NSN	63A	B, C, D	10 kA	15 kA	18	25	40	25	40	25	25	25		
		20A	B, C, D	-	25 kA	18	25	40	25	40	25	50	65		
		40A	B, C, D	-	20 kA	18	25	40	25	40	25	50	55		
	MMN2xx, MMN3xx	63A	B, C, D	-	15 kA	18	25	40	25	40	25	50	25		
		12A magn.	-	-	25 kA	18	25	40	25	40	25	50	65		
MMN2xx, MMN3xx	25A magn.	-	-	20 kA	18	25	40	25	40	25	50	53.4			
MCB DEFI 125 1,5 mod	HLE, HLF, HLG, HME, HMF, HMG	125A	B, C	10 kA	15 kA	18	25	40	25	40	25	50	25		
	HMB, HMC, HMD	125A	B, C, D	15 kA	15 kA	18	25	40	25	40	25	50	25		
	HMJ, HMK	125A	C	-	30 kA	18	25	40	25	40	25	50	65		
	HMX	63A	C	-	50 kA	18	25	40	25	40	25	50	65		

h250 TM+		h250 LSI		h400 TM			h630 LSI		h800 TM		h1000 LSI		h1600 LSI	
HNH	HEH	HNC	HEC	HHD	HND	HKD	HND	HED	HNK	HEK	HNE	HEE	HNF	HEF
50 kA	70 kA	50 kA	70 kA	25 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA
3.5	3.5	3.5	3.5	-	-	-	-	-	-	-	-	-	-	-
3.9	3.9	3.9	3.9	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.5	3.5	3.5	3.5	-	-	-	-	-	-	-	-	-	-	-
3.9	3.10	3.11	3.12	-	-	-	-	-	-	-	-	-	-	-
4.7	4.7	4.7	4.7	-	-	-	-	-	-	-	-	-	-	-
5.3	5.3	5.3	5.3	-	-	-	-	-	-	-	-	-	-	-
5.3	5.3	5.3	5.3	-	-	-	-	-	-	-	-	-	-	-
5.3	5.3	5.3	5.3	-	-	-	-	-	-	-	-	-	-	-
5.3	5.3	5.3	5.3	-	-	-	-	-	-	-	-	-	-	-
4.7	4.7	4.7	4.7	-	-	-	-	-	-	-	-	-	-	-
4.7	4.7	4.7	4.7	-	-	-	-	-	-	-	-	-	-	-
4.1	4.1	4.1	4.1	-	-	-	-	-	-	-	-	-	-	-
6.5	6.5	6.5	6.5	-	-	-	-	-	-	-	-	-	-	-
9	9	9	9	9	9	7.7	7.7	7.7	-	-	-	-	-	-
20	20	20	20	13.6	13.6	20	20	20	10	10	10	10	10	10
14	14	14	14	13.6	13.6	10.1	10.1	10.1	10	10	10	10	10	10
6.5	6.5	6.5	6.5	6	6	6	6	6	6	6	6	6	6	6
4.1	4.1	4.1	4.1	-	-	-	-	-	-	-	-	-	-	-
6.5	6.5	6.5	6.5	-	-	-	-	-	-	-	-	-	-	-
14	14	14	14	14	14	10	10	10	-	-	-	-	-	-
46	46	46	46	23	23	18.6	18.6	18.6	18	18	18	18	-	-
14	14	14	14	13.6	13.6	10.1	10.1	10.1	-	-	-	-	-	-
5.1	5.1	5.1	5.1	-	-	-	-	-	-	-	-	-	-	-
6.5	6.5	6.5	6.5	-	-	-	-	-	-	-	-	-	-	-
14	14	14	14	13.6	13.6	10.1	10.1	10.1	-	-	-	-	-	-
47	47	47	47	23	23	18.6	18.6	18.6	18	18	18	18	-	-
4.1	4.1	4.1	4.1	-	-	-	-	-	-	-	-	-	-	-
5.1	5.1	5.1	5.1	-	-	-	-	-	-	-	-	-	-	-
6.5	6.5	6.5	6.5	-	-	-	-	-	-	-	-	-	-	-
25	35	25	35	15	20	20	20	20	18	18	18	18	-	-
47	47	47	47	23	23	20	20	20	18	18	18	18	-	-
50	70	50	70	25	50	58	50	58	44	44	44	44	28	28
50	70	50	70	25	44	29	29	29	30	30	30	30	20	20
47	47	47	47	25	33	19	19	19	18	18	18	18	-	-
50	70	50	70	25	50	58	50	58	44	44	44	44	28	28
50	70	50	70	25	44	29	29	29	30	30	30	30	20	20
47	47	47	47	23	23	18.6	18.6	18.6	18	18	18	18	-	-
47	47	47	47	23	23	19	19	19	18	18	18	18	-	-
50	70	50	70	25	50	70	50	70	50	65	50	65	34	34
50	70	50	70	25	50	70	50	70	50	70	50	70	50	70

Cascading according to IEC 60947-2 MCCBs / Switches, RCDs, RCBOs, MCBs

Max. cascading value in kA rms according to IEC 947-2 Network: 3 phases + neutral 127/220 - 138/240 VAC
or downstream devices in single-phase network: 3 phases + neutral 220/380 - 240/415 VAC

						Upstream								
						x160 TM			x250 TM		h250 TM			
						HDA	HHA	HNA	HHB	HNB	HHG	HNG	HEG	
						25 kA	35 kA	85 kA	35 kA	85 kA	35 kA	85 kA	85 kA	
Downstream	Switches	SB1xx, SB3xx, SB4xx	32A	1P, 3P, 4P	IEC 69898 IEC 61008 IEC 61009	IEC 60947-2	2.5	2.5	2.5	-	-	-	-	-
		SB1xx, SB3xx, SB4xx	63A	1P, 3P, 4P			4	4	4	-	-	-	-	-
		SB1xx, SB3xx, SB4xx	100A	1P, 3P, 4P			7.7	7.7	7.7	4.6	4.6	-	-	-
	Switches	SB2xx	32A	2P			2.7	2.7	2.7	-	-	-	-	-
		SB2xx	63A	2P			4.4	4.4	4.4	-	-	-	-	-
		SB2xx	100A	2P			9	9	9	4.6	4.6	-	-	-
	IDL 2P/4P	SA2xx	80A	2P			11.5	11.5	11.5	5.1	5.1	-	-	-
		SA4xx	80A	4P			9.9	9.9	9.9	5.1	5.1	-	-	-
	RCD 2P/4P	CCxxx, CDxxx, CExxx, CFxxx, CGxxx	63A	2P			6.2	6.2	6.2	3.7	3.7	-	-	-
			63A	4P			5.5	5.5	5.5	3.7	3.7	-	-	-
			100A	2P			9	9	9	4.6	4.6	-	-	-
			100A	4P			7.7	7.7	7.7	4.6	4.6	-	-	-
	MCB Ph+N under 240V	MFS, MFN	32A	C	3 kA	-	4.5	4.5	4.5	3.5	3.5	-	-	-
		MJN, MHN	40A	B, C	4.5 kA	6 kA	15	15	15	6.5	6.5	6	6	6
		MLN, MLU	40A	C	6 kA	7.5 kA	24	24	24	9	9	9	9	9
	MCB Spinx Ph+N under 240V	NFT7xx, NGT7xx	40A	C, D	6 kA	10 kA	25	35	45	15	20	18	18	18
		MHT7xx, MJT7xx	40A	B, C	4.5 kA	6 kA	15	15	15	6.5	6.5	6	6	6
	RCBO 2 mod 1PP+N under 240V	ADC, ADH	32A	C	3 kA	-	4.5	4.5	4.5	3.5	3.5	-	-	-
		Ax8xx	40A	C	4.5 kA	6 kA	15	15	15	6.5	6.5	6	6	6
		Ax9xx	40A	C	6 kA	10 kA	25	35	45	15	15	18	18	18
	RCBO 1 mod 1PP+N under 240V	AC1xx, AD1xx, AE1xx, AF1xx, ACx1xx, ADx1xx, AEx1xx	40A	B, C	10 kA	15 kA	25	35	45	35	85	35	85	85
			50A	B, C	6 kA	10 kA	25	35	45	15	15	18	18	18
	RCBO 2PP	ADA2xxN	32A	B, C	10 kA	10 kA	25	35	45	15	15	18	18	18
	MCB Ocean 2 & V1	MV, MW	63A	B, C	4,5 kA	6 kA	15	15	15	6.5	6.5	6	-	6
		MX, MY	63A	B, C	6 kA	10kA	25	35	45	15	15	18	18	18
		MU, MT	63A	B, C	10 kA	10 kA	25	35	45	15	15	18	18	18
		NB, NC, ND	63A	B, C, D	15 kA	20 kA	25	35	85	35	85	35	85	85
	MCB GDE 1 mod	MVN, MWN	63A	B, C	4.5 kA	-	-	-	-	-	-	-	-	-
		MXN, MYN	63A	B, C	6 kA	-	15	15	15	6.5	6.5	6	6	6
		MP 5xx under 240V	63A	ICP-M	6 kA	-	8	8	8	6.5	6.5	6	6	6
		MUN 5xx under 240V	40A	C	6 kA	-	8	8	8	6.5	6.5	6	6	6
		MBN, MCN, MTN, MUN, MP	63A	B, C	10 kA	-	25	35	45	15	15	18	18	18
	MCB GTE 1 mod	NFN 7xx under 240V	63A	C	6 kA	10 kA	18	18	18	14.1	15.1	10.1	10.1	10.1
		MBA, MCA, NEN, NFN, NGN	63A	B, C, D	10 kA	20 kA	25	35	85	35	85	35	85	85
		NBN, NCN, NDN, NKN	63A	B, C, D	10 kA	30 kA	25	35	85	35	85	35	85	85
		NQN, NRN, NSN	20A	B, C, D	-	50 kA	25	35	85	35	85	35	85	85
			40A	B, C, D	-	40 kA	25	35	85	35	85	35	85	85
			63A	B, C, D	-	30 kA	25	35	85	35	85	35	85	85
		MMN2xx, MMN3xx	12A	magn.	-	50 kA	25	35	85	35	85	35	85	85
	MMN2xx, MMN3xx	25A	magn.	-	40 kA	25	35	85	35	85	35	85	85	
MCB DEFI 125 1,5 mod	HLE, HLF, HLG, HME, HMF, HMG	125A	B, C	15 kA	30 kA	25	35	85	35	85	35	85	85	
	HMB, HMC, HMD	125A	B, C, D	15 kA	30 kA	25	35	85	35	85	35	85	85	
	HMJ, HMK	125A	C	-	60 kA	25	35	85	35	85	35	85	85	
	HMX	63A	C	-	100 kA	25	35	85	35	85	35	85	85	

h250 TM+		h250 LSI		h400 TM			h630 LSI		h800 TM		h1000 LSI		h1600 LSI	
HNH	HEH	HNC	HEC	HHD	HND	HKD	HND	HED	HNK	HEK	HNE	HEE	HNF	HEF
85 kA	100 kA	85 kA	100 kA	35 kA	85 kA	100 kA	85 kA	100 kA	85 kA	100 kA	85 kA	100 kA	100 kA	100 kA
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	6	6	-	-	-	-	-	-	-	-	-
-	-	-	-	6	6	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	7	6	7	8.2	8.2	7.2	7.2	7.2	-	-	-	-	-	-
9	12	9	12	13.5	13.5	10	10	10	-	-	-	-	-	-
20	40	20	40	19	19	15	15	15	10	10	10	10	10	10
6	7	6	7	8.2	8.2	7.2	7.2	7.2	6	6	6	6	6	6
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	7	6	7	8.2	8.2	7.2	7.2	7.2	-	-	-	-	-	-
18	40	18	40	19	19	15	15	15	14	14	14	14	-	-
85	100	85	100	35	42	37	37	37	27	27	27	27	16	16
18	40	18	40	19	19	15	15	15	14	14	14	14	-	-
18	40	18	40	19	19	15	15	15	14	14	14	14	-	-
6	7	6	7	8.2	8.2	7.2	7.2	7.2	-	-	-	-	-	-
18	40	18	40	19	19	15	15	15	14	14	14	14	-	-
18	40	18	40	19	19	15	15	15	14	14	14	14	-	-
85	100	85	100	35	64	63	63	63	40	40	40	40	21	21
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	7	6	7	8.2	8.2	7.2	7.2	7.2	-	-	-	-	-	-
6.5	6.5	6.5	6.5	-	-	-	-	-	-	-	-	-	-	-
6.5	6.5	6.5	6.5	-	-	-	-	-	-	-	-	-	-	-
18	40	18	40	19	19	15	15	15	14	14	14	14	-	-
14	14	14	14	13.6	13.6	10.1	10.1	10.1	-	-	-	-	-	-
85	100	85	100	35	64	63	63	63	40	40	40	40	27	27
85	100	85	100	35	85	100	85	100	85	85	85	85	37	37
85	100	85	100	35	85	100	85	100	85	100	85	100	85	85
85	100	85	100	35	85	100	85	100	85	100	85	100	55	55
85	100	85	100	35	85	100	85	100	85	100	85	100	37	37
85	100	85	100	35	85	100	85	100	85	100	85	100	85	85
85	100	85	100	35	85	100	85	100	85	100	85	100	55	55
85	100	85	100	35	85	100	85	100	85	100	85	100	37	37
85	100	85	100	35	85	100	85	100	85	100	85	100	37	37
85	100	85	100	35	85	100	85	100	85	100	85	100	100	100
85	100	85	100	35	85	100	85	100	85	100	85	100	100	100

Discrimination chart according to IEC 60947-2

MCCBs x160, x250, h250, h400, h630, h800, h1000, h1600

	Icc (kA)	Upstream	x160 TM 18/25/40 kA						x250 TM 25/40 kA						h250 TM 25/50/65 kA													
			Downstream						HDA, HHA, HNA						HHB, HNB						HHG, HNG, HEG							
			(A)	16 - 50	63	80	100	125	160	100	125	160	200	225	250	20	32	50	63	100	125	160	200	250				
HDA HHA HNA	x160 TM 18/25/40 kA	16	-	2	2	2.9	2.9	3	2.15	2.9	4.1	5.6	5.5	5.4	-	-	-	1.2	2.15	2.9	4.1	5.6	5.4					
		20	-	2	2	2.9	2.9	3	2.15	2.9	4.1	5.6	5.5	5.4	-	-	-	1.2	2.15	2.9	4.1	5.6	5.4					
		25	-	2	2	2.9	2.9	3	2.15	2.9	4.1	5.6	5.5	5.4	-	-	-	1.2	2.15	2.9	4.1	5.6	5.4					
		32	-	1.8	1.8	2.6	2.6	2.7	2	2.6	3.6	5	4.9	4.8	-	-	-	1.15	2	2.6	3.6	5	4.8					
		40	-	1.6	1.6	2.35	2.35	2.4	1.8	2.35	3.3	4.3	4.25	4.2	-	-	-	1.1	1.8	2.35	3.3	4.3	4.2					
		50	-	1.6	1.6	2.35	2.35	2.4	1.8	2.35	3.15	4.25	4.2	4.15	-	-	-	1.1	1.8	2.35	3.15	4.25	4.15					
		63	-	-	-	2.15	2.15	2.2	1.7	2.15	3	4.05	4	3.9	-	-	-	-	1.7	2.15	3	4.05	3.9					
		80	-	-	-	2.15	2.15	2.2	1.7	2.15	2.9	3.9	3.9	3.8	-	-	-	-	1.7	2.15	2.9	3.9	3.8					
		100	-	-	-	-	-	2.1	-	1.95	2.75	3.7	3.7	3.6	-	-	-	-	-	1.95	2.75	3.7	3.6					
125	-	-	-	-	-	2.1	-	-	2.65	3.5	3.5	3.4	-	-	-	-	-	-	2.65	3.5	3.4							
160	-	-	-	-	-	-	-	-	-	3.45	3.4	3.35	-	-	-	-	-	-	-	3.45	3.35							
HHB HNB	x250 TM 25/40 kA	100	-	-	-	-	-	-	1.95	2.5	3.15	3.2	3.3	-	-	-	-	-	1.95	2.5	3.15	3						
		125	-	-	-	-	-	-	-	2.5	3.15	3.2	3.3	-	-	-	-	-	-	2.5	3.15	3						
		160	-	-	-	-	-	-	-	-	3.15	3.2	3.3	-	-	-	-	-	-	-	3.15	3						
		200	-	-	-	-	-	-	-	-	-	3.2	3.3	-	-	-	-	-	-	-	-	3						
		225	-	-	-	-	-	-	-	-	-	-	3.3	-	-	-	-	-	-	-	-	-	3					
250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
HHG HNG HEG	h250 TM 25/50/65 kA	20	-	-	-	-	-	-	1.55	1.95	2.5	3.15	3.2	3.3	-	0.41	0.6	1	1.55	1.95	2.5	3.15	3					
		32	-	-	-	-	-	-	1.55	1.95	2.5	3.15	3.2	3.3	-	-	0.6	1	1.55	1.95	2.5	3.15	3					
		50	-	-	-	-	-	-	1.55	1.95	2.5	3.15	3.2	3.3	-	-	-	1	1.55	1.95	2.5	3.15	3					
		63	-	-	-	-	-	-	1.55	1.95	2.5	3.15	3.2	3.3	-	-	-	-	1.55	1.95	2.5	3.15	3					
		100	-	-	-	-	-	-	-	1.95	2.5	3.15	3.2	3.3	-	-	-	-	-	1.95	2.5	3.15	3					
		125	-	-	-	-	-	-	-	-	2.5	3.15	3.2	3.3	-	-	-	-	-	-	2.5	3.15	3					
		160	-	-	-	-	-	-	-	-	-	3.15	3.2	3.3	-	-	-	-	-	-	-	3.15	3					
		200	-	-	-	-	-	-	-	-	-	-	3.2	3.3	-	-	-	-	-	-	-	-	3					
250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
HNH HEH	h250 TM+ 50/70 kA	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
		32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
		50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
		63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
		100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
		125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
		160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-								
HNC HEC	h250 LSI 50/70 kA	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
HHD HND HKD	h400 TM 25/50/70 kA	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
HND HED	h630 LSI 50/70kA	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		630	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
HNK HEK	h800 TM 50/70 kA	630	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
HNE HEE	h1000 LSI 50/70 kA	630	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		7000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
HNF HEF	h1600 LSI 50/70 kA	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		1250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
		1600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							

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

Discrimination chart according to IEC 60947-2

MCCBs / RCBOs and MCBs

Icc (kA)	Upstream	x160 TM 18/25/40 kA										x250 TM 25/40 kA					h250 TM 25/50/65 kA										
		HDA, HHA, HNA										HHB, HNB					HHG, HNG, HEG										
Downstream	(A)	16	20	25	32	40	50	63	80	100	125	160	100	125	160	200	225	250	20	32	50	63	100	125	160	200	250
MCB 1 module / multi SPHINX range (10 kA max IEC 60947-2)	C curve	6	1.2	1.2	1.2	1.2	1.2	2.7	2.7	5.9	5.9	6.7	3.9	5.9	9.6	T	T	0.3	0.7	1.1	1.7	3.9	5.9	9.6	T	T	T
		10	1.1	1.1	1.1	1.1	1.1	2.3	2.3	4.9	4.9	5.5	3.2	4.9	8	T	T	0.3	0.6	1	1.4	3.2	4.9	8	T	T	T
		16	1	1	1	1	1	2.1	2.1	4.4	4.4	4.9	2.8	4.4	6.9	T	T	0.3	0.6	0.9	1.3	2.8	4.4	6.9	T	9.8	T
		20	-	0.9	0.9	0.9	0.9	1.8	1.8	3.6	3.6	4.1	2.5	3.6	5.6	8.5	9.4	0.3	0.5	0.8	1.2	2.5	3.6	5.6	8.5	7.9	8.9
		25	-	-	0.9	0.9	0.9	1.8	1.8	3.6	3.6	4.1	2.5	3.6	5.6	8.5	9.4	-	0.5	0.8	1.2	2.5	3.6	5.6	8.5	7.9	8.9
		32	-	-	-	0.9	0.9	1.6	1.6	3	3	3.4	2.1	3	4.7	7	7.8	-	0.5	0.8	1.1	2.1	3	4.7	7	6.5	7.1
	D curve	6	1.1	1.1	1.1	1.1	1.1	2.5	2.5	5.5	5.5	6.2	3.6	5.5	9.1	T	T	0.3	0.6	1	1.5	3.6	5.5	9.1	T	T	T
		10	1	1	1	1	1	2.1	2.1	4.4	4.4	5	2.8	4.4	7.2	T	T	0.3	0.6	0.9	1.3	2.8	4.4	7.2	T	T	T
		16	0.9	0.9	0.9	0.9	0.9	1.9	1.9	3.8	3.8	4.3	2.5	3.8	5.9	9.3	T	0.3	0.5	0.9	1.2	2.5	3.8	5.9	9.3	8.6	T
		20	-	0.9	0.9	0.9	0.9	1.6	1.6	3.1	3.1	3.6	2.2	3.1	4.9	7.3	8.1	0.3	0.5	0.8	1.2	2.2	3.1	4.9	7.3	6.7	8.7
		25	-	-	0.9	0.9	0.9	1.6	1.6	3.1	3.1	3.6	2.2	3.1	4.9	7.3	8.1	-	0.5	0.8	1.2	2.2	3.1	4.9	7.3	6.7	8.7
		32	-	-	-	0.8	0.8	1.4	1.4	2.6	2.6	2.9	1.9	2.6	3.9	5.5	5.9	-	0.5	0.8	1.1	1.9	2.6	3.9	5.5	5.2	6.9
RCBO Ph+N 1 module AC1xx, AD1xx, AE1xx, AF1xx, AC5xx, AD5xx, AE5xx, AF5xx, AC9xx, AD9xx, AE9xx, AF9xx, ACx1xx, ADx1xx, AEx1xx (10kA max IEC 61009)	B curve	6	1.3	1.3	1.3	1.3	1.3	2.6	2.6	5.5	5.5	6.3	3.8	5.5	8.4	T	T	T	0.33	0.65	1.1	1.6	3.8	5.5	8.4	T	T
		10	1.1	1.1	1.1	1.1	1.1	2.3	2.3	4.6	4.6	5.3	3.1	4.6	7	T	T	T	0.31	0.58	0.95	1.5	3.1	4.6	7	T	T
		16	0.96	0.96	0.96	0.96	0.96	2.1	2.1	3.9	3.9	4.4	2.6	3.9	5.7	T	T	T	0.3	0.54	0.88	1.4	2.6	3.9	5.7	10	9.1
		20	-	0.9	0.9	0.9	0.9	1.8	1.8	3.3	3.3	3.7	2.4	3.3	4.8	8.1	9.1	8.1	0.29	0.52	0.81	1.4	2.4	3.3	4.8	8.1	7.5
		25	-	-	0.9	0.9	0.9	1.8	1.8	3.3	3.3	3.7	2.4	3.3	4.8	8.1	9.1	7	0.29	0.52	0.81	1.3	2.4	3.3	4.8	8.1	7.5
		32	-	-	-	0.83	0.83	1.6	1.6	2.8	2.8	3.2	2.1	2.8	4.2	7	8	7	-	5	0.76	1.2	2.1	2.8	4.2	7	6.4
	C curve	6	1.3	1.3	1.3	1.3	1.3	2.6	2.6	5.5	5.5	6.3	3.8	5.5	8.4	T	T	T	0.33	0.65	1.1	1.6	3.8	5.5	8.4	T	T
		10	1.1	1.1	1.1	1.1	1.1	2.3	2.3	4.6	4.6	5.3	3.1	4.6	7	T	T	T	0.31	0.58	0.95	1.5	3.1	4.6	7	T	T
		16	0.96	0.96	0.96	0.96	0.96	2.1	2.1	3.9	3.9	4.4	2.6	3.9	5.7	T	T	T	0.3	0.54	0.88	1.4	2.6	3.9	5.7	10	9.1
		20	-	0.9	0.9	0.9	0.9	1.8	1.8	3.3	3.3	3.7	2.4	3.3	4.8	8.1	9.1	8.1	0.29	0.52	0.81	1.4	2.4	3.3	4.8	8.1	7.5
		25	-	-	0.9	0.9	0.9	1.8	1.8	3.3	3.3	3.7	2.4	3.3	4.8	8.1	9.1	7	0.29	0.52	0.81	1.3	2.4	3.3	4.8	8.1	7.5
		32	-	-	-	0.83	0.83	1.6	1.6	2.8	2.8	3.2	2.1	2.8	4.2	7	8	7	-	5	0.76	1.2	2.1	2.8	4.2	7	6.4
MCB 1 module / pole, Ocean2 and V1 ranges MV, MW, MX, MY, MU, MT, NB, NC, ND (10 kA max IEC 60898)	B curve	6	1.3	1.3	1.3	1.3	1.3	2.7	2.7	5.9	5.9	6.6	3.7	5.9	9.8	T	T	T	0.35	0.65	1.1	1.7	3.7	5.9	9.8	T	T
		10	1.1	1.1	1.1	1.1	1.1	2.3	2.3	4.9	4.9	5.3	3.1	4.9	8	T	T	T	0.35	0.59	1	1.5	3.1	4.9	8	T	T
		13	0.96	0.96	0.96	0.96	0.96	2	2	4.2	4.2	4.8	2.7	4.2	6.9	T	T	T	0.33	0.54	0.92	1.4	2.7	4.2	6.9	T	9.8
		16	0.96	0.96	0.96	0.96	0.96	2	2	4.2	4.2	4.8	2.7	4.2	6.9	T	T	T	0.32	0.54	0.92	1.4	2.7	4.2	6.9	T	9.8
		20	-	0.9	0.9	0.9	0.9	1.8	1.8	3.6	3.6	4	2.4	3.6	5.6	8.5	T	9.3	0.31	0.52	0.86	1.2	2.4	3.6	5.6	8.3	7.9
		25	-	-	0.9	0.9	0.9	1.8	1.8	3.6	3.6	4	2.4	3.6	5.6	8.5	T	9.3	-	0.52	0.86	1.2	2.4	3.6	5.6	8.3	7.9
	C curve	6	1.3	1.3	1.3	1.3	1.3	2.7	2.7	5.9	5.9	6.6	3.7	5.9	9.8	T	T	T	0.35	0.65	1.1	1.7	3.7	5.9	9.8	T	T
		10	1.1	1.1	1.1	1.1	1.1	2.3	2.3	4.9	4.9	5.3	3.1	4.9	8	T	T	T	0.35	0.59	1	1.5	3.1	4.9	8	T	T
		13	0.96	0.96	0.96	0.96	0.96	2	2	4.2	4.2	4.8	2.7	4.2	6.9	T	T	T	0.33	0.54	0.92	1.4	2.7	4.2	6.9	T	9.8
		16	0.96	0.96	0.96	0.96	0.96	2	2	4.2	4.2	4.8	2.7	4.2	6.9	T	T	T	0.32	0.54	0.92	1.4	2.7	4.2	6.9	T	9.8
		20	-	0.9	0.9	0.9	0.9	1.8	1.8	3.6	3.6	4	2.4	3.6	5.6	8.5	T	9.3	0.31	0.52	0.86	1.2	2.4	3.6	5.6	8.3	7.9
		25	-	-	0.9	0.9	0.9	1.8	1.8	3.6	3.6	4	2.4	3.6	5.6	8.5	T	9.3	-	0.52	0.86	1.2	2.4	3.6	5.6	8.3	7.9
D curve	6	1.3	1.3	1.3	1.3	1.3	2.7	2.7	5.9	5.9	6.6	3.7	5.9	9.8	T	T	T	0.35	0.65	1.1	1.7	3.7	5.9	9.8	T	T	
	10	1.1	1.1	1.1	1.1	1.1	2.3	2.3	4.9	4.9	5.3	3.1	4.9	8	T	T	T	0.35	0.59	1	1.5	3.1	4.9	8	T	T	
	13	0.96	0.96	0.96	0.96	0.96	2	2	4.2	4.2	4.8	2.7	4.2	6.9	T	T	T	0.33	0.54	0.92	1.4	2.7	4.2	6.9	T	9.8	
	16	0.96	0.96	0.96	0.96	0.96	2	2	4.2	4.2	4.8	2.7	4.2	6.9	T	T	T	0.32	0.54	0.92	1.4	2.7	4.2	6.9	T	9.8	
	20	-	0.9	0.9	0.9	0.9	1.8	1.8	3.6	3.6	4	2.4	3.6	5.6	8.5	T	9.3	0.31	0.52	0.86	1.2	2.4	3.6	5.6	8.3	7.9	
	25	-	-	0.9	0.9	0.9	1.8	1.8	3.6	3.6	4	2.4	3.6	5.6	8.5	T	9.3	-	0.52	0.86	1.2	2.4	3.6	5.6	8.3	7.9	
	32	-	-	-	0.83	0.83	1.5	1.5	3	3	3.3	2.1	3	4.6	7	9	7.8	-	0.5	0.8	1.15	2.1	3	4.6	7	6.4	
	40	-	-	-	-	0.83	1.5	1.5	3	3	3.3	2.1	3	4.6	7	9	7.8	-	-	0.8	1.15	2.1	3	4.6	7	6.4	
	50	-	-	-	-	0.8	1.4	1.4	2.6	2.6	2.8	1.8	2.6	3.7	5.4	6.6	6	-	-	0.78	1.1	1.8	2.6	3.7	5.3	5	
	63	-	-	-	-	-	1.4	1.4	2.6	2.6	2.7	1.8	2.6	3.7	5.4	6.6	6	-	-	-	1.1	1.8	2.6	3.7	5.3	5	
	0,5	5	5	5	5	5	T	T	T	T	T	T	T	T	T	T	T	T	0.8	1.8	4.5	8.6	T	T	T	T	T
	1	1.7	1.7	1.7	1.7	1.7	4.8	4.8	T	T	T	7	T	T	T	T	T	T	0.42	0.84	1.4	2.6	7	T	T	T	T
2	1.7	1.7	1.7	1.7	1.7	4.8	4.8	T	T	T	7	T	T	T	T	T	T	0.42	0.84	1.4	2.6	7	T	T	T	T	
3	1.4	1.4	1.4	1.4	1.4	3.5	3.5	8	8	9	4.1	8	T	T	T	T	T	0.36	0.7	1.3	2	4.1	8	T	T	T	
4	1.4	1.4	1.4	1.4	1.4	3.5	3.5	8	8	9	4.1	8	T	T	T	T	T	0.36	0.7	1.3	2	4.1	8	T	T	T	
6	1.3	1.3	1.3	1.3	1.3	2.7	2.7	5.9	5.9	6.6	3.7	5.9	9.8	T	T	T	T	0.35	0.65	1.1	1.7	3.7	5.9	9.8	T	T	
10	1.1	1.1	1.1	1.1	1.1	2.3	2.3	4.9	4.9	5.3	3.1	4.9	8	T	T	T	T	0.35	0.59	1	1.5	3.1	4.9	8	T	T	
13	0.96	0.96	0.96	0.96	0.96	2	2	4.2	4.2	4.8	2.7	4.2	6.9	T	T	T	T	0.33	0.54	0.92	1.4	2.7	4.2	6.9	T	9.8	
16	0.96	0.96	0.96	0.96	0.96	2	2	4.2	4.2	4.8	2.7	4.2	6.9	T	T	T	T	0.32	0.54	0.92	1.4	2.7	4.2	6.9	T	9.8	
20	-	0.9	0.9	0.9	0.9	1.8	1.8	3.6	3.6	4	2.4	3.6	5.6	8.5	T	9.3	0.31	0.52	0.86	1.2	2.4	3.6	5.6	8.3	7.9		
25	-	-	0.9	0.9	0.9	1.8	1.8	3.6	3.6	4	2.4	3.6	5.6	8.5	T	9.3	-	0.52	0.86	1.2	2.4	3.6	5.6	8.3	7.9		
32	-	-	-	0.83	0.83	1.5	1.5	3	3	3.3	2.1	3	4.6	7	9	7.8	-	0.5	0.8	1.15	2.1	3	4.				

h250 TM+ 50/70 kA									h250 LSI 50/70 kA				h400 TM 25/50/70 kA				h630 LSI 50/70 kA					h800 TM 50/70 kA			h1000 LSI 50/70 kA				h1600 LSI 50/70 kA		
HNH, HEH									HNG, HEG				HHD, HND, HKD				HND, HED					HNK, HEK			HNE, HEE				HNF, HEF		
20	32	50	63	100	125	160	250		40	125	250	250	300	350	400	250	400	500	600	630	630	800	630	700	800	1000	800	1250	1600		
0.3	0.6	1.1	1.5	3.3	5.1	9.6	T	0.7	4.2	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.3	0.5	1	1.3	2.8	4.2	8	T	0.6	3.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.3	0.5	0.9	1.2	2.5	3.7	6.9	9.8	0.6	3	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.3	0.5	0.8	1.1	2.2	3.1	5.6	7.9	0.6	2.6	9.1	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	0.5	0.8	1.1	2.2	3.1	5.6	7.9	0.6	2.6	9.1	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	0.5	0.8	1	1.9	2.7	4.7	6.5	0.5	2.3	7.6	9.2	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	-	0.8	1	1.9	2.7	4.7	6.5	0.5	2.3	7.6	9.2	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.3	0.6	1	1.4	3	4.7	9.1	T	0.7	3.9	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.3	0.5	0.9	1.2	2.5	3.8	7.2	T	0.6	3	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.3	0.5	0.9	1.1	2.2	3.3	5.9	8.6	0.6	2.7	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.3	0.5	0.8	1.1	2	2.8	4.9	6.7	0.6	2.4	7.8	9.4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	0.5	0.8	1.1	2	2.8	4.9	6.7	0.6	2.4	7.8	9.4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	0.5	0.8	1	1.7	2.3	3.9	5.2	0.5	2	5.8	7	9.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	-	0.8	1	1.7	2.3	3.9	5.2	0.5	2	5.8	7	9.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.33	0.6	1.1	1.4	3	5	8.4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.31	0.54	0.95	1.2	2.4	4	7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.3	0.5	0.88	1.1	2.2	3.4	5.7	9.1	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.29	0.48	0.81	1.05	2	3	4.8	7.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.29	0.48	0.81	1.05	2	3	4.8	7.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	0.46	0.76	0.93	1.7	2.6	4.2	6.4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	-	0.74	0.9	1.5	2.4	3.6	5.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	-	0.74	0.9	1.5	2.4	3.6	5.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	-	0.74	0.9	1.5	2.4	3.6	5.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.33	0.6	1.1	1.4	3	5	8.4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.31	0.54	0.95	1.2	2.4	4	7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.3	0.5	0.88	1.1	2.2	3.4	5.7	9.1	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.29	0.48	0.81	1.05	2	3	4.8	7.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.29	0.48	0.81	1.05	2	3	4.8	7.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	0.46	0.76	0.93	1.7	2.6	4.2	6.4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	-	0.74	0.9	1.5	2.4	3.6	5.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	-	0.74	0.9	1.5	2.4	3.6	5.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	-	0.74	0.9	1.5	2.4	3.6	5.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.35	0.59	1.1	1.4	3.5	5.2	9.8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.35	0.51	1	1.3	2.9	4.3	8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.33	0.49	0.92	1.2	2.6	3.8	6.9	9.8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.32	0.49	0.92	1.2	2.6	3.8	6.9	9.8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.31	0.47	0.86	1.1	2.3	3.2	5.6	7.9	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	0.47	0.86	1.1	2.3	3.2	5.6	7.9	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	0.45	0.8	0.95	1.9	2.7	4.6	6.4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	-	0.8	0.95	1.9	2.7	4.6	6.4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	-	0.78	0.92	1.7	2.3	3.7	5	-	T	T	8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	-	-	0.92	1.7	2.3	3.7	5	-	T	T	8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.8	1.6	4.5	6.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.42	0.75	1.4	2	6.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.42	0.75	1.4	2	8.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.36	0.61	1.3	1.5	4.6	7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.36	0.61	1.3	1.5	4.6	7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.35	0.59	1.1	1.4	3.5	5.2	9.8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.35	0.51	1	1.3	2.9	4.3	8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.33	0.49	0.92	1.2	2.6	3.8	6.9	9.8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.32	0.49	0.92	1.2	2.6	3.8	6.9	9.8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.31	0.47	0.86	1.1	2.3	3.2	5.6	7.9	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	0.47	0.86	1.1	2.3	3.2	5.6	7.9	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	0.45	0.8	0.95	1.9	2.7	4.6	6.4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	-	0.8	0.95	1.9	2.7	4.6	6.4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	-	0.78	0.92	1.7	2.3	3.7	5	-	T	T	8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	-	-	0.92	1.7	2.3	3.7	5	-	T	T	8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.75	1.6	3.7	6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.4	0.72	1.5	2.2	6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.4	0.72	1.5	2.2	6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.35	0.61	1.2	1.6	4	7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.35	0.61	1.2	1.6	4	7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.34	0.54	1	1.4	3	5	9.1	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.33	0.51	0.91	1.3	2.5	4	7.2	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.32	0.49	0.91	1.2	2.3	3.4	6	8.4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.31	0.49	0.86	1.2	2.3	3.4	6	8.4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
0.3	0.49	0.8	1.1	2	2.9	4.9	6.7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	0.49	0.8	1.1	2	2.9	4.9	6.7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T			
-	0.48	0.76	0.96	1.7	2.4	3.8																									

Discrimination chart according to IEC 60947-2 MCCBs / RCBOs and MCBs

Icc (kA)	Upstream	x160 TM 18/25/40 kA										x250 TM 25/40 kA					h250 TM 25/50/65 kA											
		HDA, HHA, HNA										HHB, HNB					HHG, HNG, HEG											
Downstream	(A)	16	20	25	32	40	50	63	80	100	125	160	100	125	160	200	225	250	20	32	50	63	100	125	160	200	250	
MCB 1 module / pole, GTE range MBA, MCA, NEN, NFN, NGN, NBN, NCN, NDN, NKN (15 kA max IEC 60947-2)	B curve	6	1.3	1.3	1.3	1.3	1.3	2.7	2.7	5.8	5.8	6.7	3.8	5.8	9.6	T	T	T	0.35	0.65	1.2	1.7	3.8	5.8	9.6	T	T	
		10	1.2	1.2	1.2	1.2	1.2	2.2	2.2	4.8	4.8	5.4	3.1	4.8	8	13	T	T	0.33	0.58	1	1.5	3.1	4.8	8	13	12	
		13	0.97	0.97	0.97	0.97	0.97	2	2	4.3	4.3	4.8	2.8	4.3	6.9	11	13	12	0.32	0.55	0.92	1.4	2.8	4.3	6.9	11	9.7	
		16	0.97	0.97	0.97	0.97	0.97	2	2	4.3	4.3	4.8	2.8	4.3	6.9	11	13	12	0.32	0.55	0.92	1.4	2.8	4.3	6.9	11	9.7	
		20	-	0.92	0.92	0.92	0.92	1.8	1.8	3.6	3.6	4	2.4	3.6	5.5	8.3	10	9.3	0.31	0.53	0.85	1.3	2.4	3.6	5.5	8.3	7.7	
		25	-	-	0.92	0.92	0.92	1.8	1.8	3.6	3.6	4	2.4	3.6	5.5	8.3	10	9.3	-	0.53	0.85	1.3	2.4	3.6	5.5	8.3	7.7	
		32	-	-	-	0.84	0.84	1.5	1.5	3	3	3.4	2.1	3	4.7	6.9	8	7.7	-	0.5	0.8	1.2	2.1	3	4.7	6.9	6.4	
		40	-	-	-	-	0.84	1.5	1.5	3	3	3.4	2.1	3	4.7	6.9	8	7.7	-	-	0.8	1.2	2.1	3	4.7	6.9	6.4	
		50	-	-	-	-	-	0.81	1.4	1.4	2.5	2.5	2.8	1.8	2.5	3.7	5.4	6.2	6	-	-	0.78	1.1	1.8	2.5	3.7	5.4	5
		63	-	-	-	-	-	1.4	1.4	2.5	2.5	2.8	1.8	2.5	3.7	5.4	6.2	6	-	-	-	1.1	1.8	2.5	3.7	5.4	5	
		0,5	5	5	5	5	5	T	T	T	T	T	T	T	T	T	T	T	0.8	1.8	4.5	8.5	T	T	T	T	T	
		1	1.6	1.6	1.6	1.6	1.6	4.8	4.8	12	12	14	7.1	12	T	T	T	T	0.42	0.85	1.5	2.6	7.1	12	T	T	T	
		2	1.6	1.6	1.6	1.6	1.6	4.8	4.8	12	12	14	7.1	12	T	T	T	T	0.42	0.85	1.5	2.6	7.1	12	T	T	T	
	3	1.4	1.4	1.4	1.4	1.4	3.5	3.5	8	8	9.2	5.1	8	14	T	T	T	0.37	0.7	1.3	2	5.1	8	14	T	T		
	4	1.4	1.4	1.4	1.4	1.4	3.5	3.5	8	8	9.2	5.1	8	14	T	T	T	0.37	0.7	1.3	2	5.1	8	14	T	T		
	6	1.3	1.3	1.3	1.3	1.3	2.7	2.7	5.8	5.8	6.7	3.8	5.8	9.6	T	T	T	0.35	0.65	1.2	1.7	3.8	5.8	9.6	T	T		
	10	1.2	1.2	1.2	1.2	1.2	2.2	2.2	4.8	4.8	5.4	3.1	4.8	8	13	T	T	0.33	0.58	1	1.5	3.1	4.8	8	13	12		
	13	0.97	0.97	0.97	0.97	0.97	2	2	4.3	4.3	4.8	2.8	4.3	6.9	11	13	12	0.32	0.55	0.92	1.4	2.8	4.3	6.9	11	9.7		
	16	0.97	0.97	0.97	0.97	0.97	2	2	4.3	4.3	4.8	2.8	4.3	6.9	11	13	12	0.32	0.55	0.92	1.4	2.8	4.3	6.9	11	9.7		
	20	-	0.92	0.92	0.92	0.92	1.8	1.8	3.6	3.6	4	2.4	3.6	5.5	8.3	10	9.3	0.31	0.53	0.85	1.3	2.4	3.6	5.5	8.3	7.7		
	25	-	-	0.92	0.92	0.92	1.8	1.8	3.6	3.6	4	2.4	3.6	5.5	8.3	10	9.3	-	0.53	0.85	1.3	2.4	3.6	5.5	8.3	7.7		
	32	-	-	-	0.84	0.84	1.5	1.5	3	3	3.4	2.1	3	4.7	6.9	8	7.7	-	0.5	0.8	1.2	2.1	3	4.7	6.9	6.4		
	40	-	-	-	-	0.84	1.5	1.5	3	3	3.4	2.1	3	4.7	6.9	8	7.7	-	-	0.8	1.2	2.1	3	4.7	6.9	6.4		
	50	-	-	-	-	-	0.81	1.4	1.4	2.5	2.5	2.8	1.8	2.5	3.7	5.4	6.2	6	-	-	0.78	1.1	1.8	2.5	3.7	5.4	5	
	63	-	-	-	-	-	1.4	1.4	2.5	2.5	2.8	1.8	2.5	3.7	5.4	6.2	6	-	-	-	1.1	1.8	2.5	3.7	5.4	5		
	0,5	4.3	4.3	4.3	4.3	4.3	14	14	T	T	T	T	T	T	T	T	T	0.8	1.8	4	7	T	T	T	T	T		
	1	1.6	1.6	1.6	1.6	1.6	4.6	4.6	11	11	13	6.8	11	T	T	T	T	0.42	0.84	1.5	2.6	6.8	11	T	T	T		
	2	1.6	1.6	1.6	1.6	1.6	4.6	4.6	11	11	13	6.8	11	T	T	T	T	0.42	0.84	1.5	2.6	6.8	11	T	T	T		
	3	1.4	1.4	1.4	1.4	1.4	3.2	3.2	7.4	7.4	8.5	4.6	7.4	13	T	T	T	0.36	0.7	1.3	2.6	4.6	7.4	13	T	T		
	4	1.4	1.4	1.4	1.4	1.4	3.2	3.2	7.4	7.4	8.5	4.6	7.4	13	T	T	T	0.36	0.7	1.3	1.9	4.6	7.4	13	T	T		
	6	1.2	1.2	1.2	1.2	1.2	2.4	2.4	5.4	5.4	6.2	3.4	5.4	9	T	T	T	0.34	0.62	1.05	1.5	3.4	5.4	9	T	14		
	10	0.98	0.98	0.98	0.98	0.98	2	2	4.3	4.3	4.9	2.8	4.3	7.2	12	14	13	0.33	0.56	0.93	1.4	2.8	4.3	7.2	12	10.5		
	13	0.92	0.92	0.92	0.92	0.92	1.8	1.8	3.7	3.7	4.2	2.5	3.7	6	9.2	11	11	0.32	0.54	0.88	1.3	2.5	3.7	6	9.2	8.4		
	16	0.92	0.92	0.92	0.92	0.92	1.8	1.8	3.7	3.7	4.2	2.5	3.7	6	9.2	11	11	0.32	0.54	0.88	1.3	2.5	3.7	6	9.2	8.4		
	20	-	0.86	0.86	0.86	0.86	1.6	1.6	3.2	3.2	3.4	2.2	3.2	4.8	7.1	8.5	7.9	0.31	0.52	0.82	1.2	2.2	3.2	4.8	7.1	6.7		
	25	-	-	0.86	0.86	0.86	1.6	1.6	3.2	3.2	3.4	2.2	3.2	4.8	7.1	8.5	7.9	-	0.52	0.82	1.2	2.2	3.2	4.8	7.1	6.7		
	32	-	-	-	0.81	0.81	1.5	1.5	2.5	2.5	2.7	1.8	2.5	3.7	5.4	7.2	5.9	-	0.5	0.78	1.1	1.8	2.5	3.7	5.4	5.1		
	40	-	-	-	-	0.81	1.5	1.5	2.5	2.5	2.7	1.8	2.5	3.7	5.4	7.2	5.9	-	-	0.78	1.1	1.8	2.5	3.7	5.4	5.1		
	50	-	-	-	-	-	0.78	1.4	1.4	2.4	2.4	2.5	1.7	2.4	3.3	4.6	6.2	5	-	-	0.76	1	1.7	2.4	3.3	4.6	4.3	
	63	-	-	-	-	-	1.4	1.4	2.4	2.4	2.5	1.7	2.4	3.3	4.6	6.2	5	-	-	-	1	1.7	2.4	3.3	4.6	4.3		

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

h250 TM+ 50/70 kA								h250 LSI 50/70 kA			h400 TM 25/50/70 kA				h630 LSI 50/70 kA					h800 TM 50/70 kA		h1000 LSI 50/70 kA				h1600 LSI 50/70 kA		
HNH, HEH								HNG, HEG			HHD, HND, HKD				HND, HED					HNK, HEK		HNE, HEE				HNF, HEF		
20	32	50	63	100	125	160	250	40	125	250	250	300	350	400	250	400	500	600	630	630	800	630	700	800	1000	800	1250	1600
0.35	0.59	1.2	1.5	3.3	5	9.6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.33	0.52	1	1.4	2.8	4.2	8	12	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.32	0.5	0.92	1.3	2.5	3.7	6.9	9.7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.32	0.5	0.92	1.3	2.5	3.7	6.9	9.7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.31	0.48	0.85	1.1	2.2	3.1	5.5	7.7	T	T	T	11	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.48	0.85	1.1	2.2	3.1	5.5	7.7	T	T	T	11	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.46	0.8	1	1.9	2.6	4.7	6.4	T	T	T	9	14	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	0.8	1	1.9	2.6	4.7	6.4	T	T	T	9	14	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	0.78	0.95	1.6	2.3	3.7	5	-	T	T	7	10	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	-	0.95	1.6	2.3	3.7	5	-	T	T	7	10	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.8	1.6	4.5	7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.42	0.74	1.5	2.2	6.2	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.42	0.74	1.5	2.2	6.2	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.37	0.61	1.3	1.7	4.5	7	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.37	0.61	1.3	1.7	4.5	7	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.35	0.59	1.2	1.5	3.3	5	9.6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.33	0.52	1	1.4	2.8	4.2	8	12	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.32	0.5	0.92	1.3	2.5	3.7	6.9	9.7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.32	0.5	0.92	1.3	2.5	3.7	6.9	9.7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.31	0.48	0.85	1.1	2.2	3.1	5.5	7.7	T	T	T	11	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.48	0.85	1.1	2.2	3.1	5.5	7.7	T	T	T	11	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.46	0.8	1	1.9	2.6	4.7	6.4	T	T	T	9	14	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	0.8	1	1.9	2.6	4.7	6.4	T	T	T	9	14	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	0.78	0.95	1.6	2.3	3.7	5	-	T	T	7	10	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	-	0.95	1.6	2.3	3.7	5	-	T	T	7	10	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.8	1.6	4	5.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.42	0.72	1.5	2	5.8	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.42	0.72	1.5	2	5.8	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.36	0.6	1.3	1.6	4	6.6	13	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.36	0.6	1.3	1.6	4	6.6	13	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.34	0.53	1.05	1.4	3	5	9	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.33	0.5	0.93	1.2	2.5	4	7.2	10.5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.32	0.48	0.88	1.1	2.2	3.4	6	8.4	T	T	T	12	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.32	0.48	0.88	1.1	2.2	3.4	6	8.4	T	T	T	12	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.31	0.46	0.82	1	1.9	2.8	4.8	6.7	T	T	T	9.5	8	8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.46	0.82	1	1.9	2.8	4.8	6.7	T	T	T	9.5	8	8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.44	0.78	0.95	1.7	2.4	3.7	5.1	T	T	T	7	10	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	0.78	0.95	1.7	2.4	3.7	5.1	T	T	T	7	10	10	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	0.76	0.9	1.6	2.2	3.3	4.3	T	T	T	5.8	14	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	-	0.9	1.6	2.2	3.3	4.3	T	T	T	5.8	14	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	

Discrimination chart according to IEC 60947-2 MCCBs / RCBOs and MCBs

Icc (kA)	Upstream	x160 TM 18/25/40 kA										x250 TM 25/40 kA					h250 TM 25/50/65 kA											
		HDA, HHA, HNA										HHB, HNB					HHG, HNG, HEG											
Downstream	(A)	16	20	25	32	40	50	63	80	100	125	160	100	125	160	200	225	250	20	32	50	63	100	125	160	200	250	
MCB 1 module / pole, GTE range NQN, NRN, NSN (25 kA max IEC 60947- 2)	B curve	6	1.3	1.3	1.3	1.3	1.3	1.3	2.7	2.7	5.8	5.8	6.7	3.8	5.8	9.6	15	20	17	0.35	0.65	1.2	1.7	3.8	5.8	9.6	15	14
		10	1.2	1.2	1.2	1.2	1.2	1.2	2.2	2.2	4.8	4.8	5.4	3.1	4.8	8	13	16	14	0.33	0.58	1	1.5	3.1	4.8	8	13	12
		13	0.97	0.97	0.97	0.97	0.97	0.97	2	2	4.3	4.3	4.8	2.8	4.3	6.9	11	13	12	0.32	0.55	0.92	1.4	2.8	4.3	6.9	11	9.7
		16	0.97	0.97	0.97	0.97	0.97	0.97	2	2	4.3	4.3	4.8	2.8	4.3	6.9	11	13	12	0.32	0.55	0.92	1.4	2.8	4.3	6.9	11	9.7
		20	-	0.92	0.92	0.92	0.92	0.92	1.8	1.8	3.6	3.6	4	2.4	3.6	5.5	8.3	10	9.3	0.31	0.53	0.85	1.3	2.4	3.6	5.5	8.3	7.7
		25	-	-	0.92	0.92	0.92	0.92	1.8	1.8	3.6	3.6	4	2.4	3.6	5.5	8.3	10	9.3	-	0.53	0.85	1.3	2.4	3.6	5.5	8.3	7.7
		32	-	-	-	0.84	0.84	0.84	1.5	1.5	3	3	3.4	2.1	3	4.7	6.9	8	7.7	-	0.5	0.8	1.2	2.1	3	4.7	6.9	6.4
		40	-	-	-	-	0.84	0.84	1.5	1.5	3	3	3.4	2.1	3	4.7	6.9	8	7.7	-	-	0.8	1.2	2.1	3	4.7	6.9	6.4
		50	-	-	-	-	-	0.81	1.4	1.4	2.5	2.5	2.8	1.8	2	3.7	5.4	6.2	6	-	-	0.78	1.1	1.8	2.5	3.7	5.4	5
		63	-	-	-	-	-	-	1.4	1.4	2.5	2.5	2.8	1.8	2.5	3.7	5.4	6.2	6	-	-	-	1.1	1.8	2.5	3.7	5.4	5
		0.5	5	5	5	5	5	5	17	17	T	T	T	T	T	T	T	T	T	0.8	1.8	4.5	8.5	T	T	T	T	T
		1	1.6	1.6	1.6	1.6	1.6	1.6	4.8	4.8	12	12	14	7.1	12	20	T	T	T	0.42	0.85	1.5	2.6	7.1	12	20	T	T
		2	1.6	1.6	1.6	1.6	1.6	1.6	4.8	4.8	12	12	14	7.1	12	20	T	T	T	0.42	0.85	1.5	2.6	7.1	12	20	T	T
3	1.4	1.4	1.4	1.4	1.4	1.4	3.5	3.5	8	8	9.2	5.1	8	14	22	T	T	0.37	0.7	1.3	2	5.1	8	14	22	20		
4	1.4	1.4	1.4	1.4	1.4	1.4	3.5	3.5	8	8	9.2	5.1	8	14	22	T	T	0.37	0.7	1.3	2	5.1	8	14	22	20		
6	1.3	1.3	1.3	1.3	1.3	1.3	2.7	2.7	5.8	5.8	6.7	3.8	5.8	9.6	15	20	17	0.35	0.65	1.2	1.7	3.8	5.8	9.6	15	14		
10	1.2	1.2	1.2	1.2	1.2	1.2	2.2	2.2	4.8	4.8	5.4	3.1	4.8	8	13	16	14	0.33	0.58	1	1.5	3.1	4.8	8	13	12		
13	0.97	0.97	0.97	0.97	0.97	0.97	2	2	4.3	4.3	4.8	2.8	4.3	6.9	11	13	12	0.32	0.55	0.92	1.4	2.8	4.3	6.9	11	9.7		
16	0.97	0.97	0.97	0.97	0.97	0.97	2	2	4.3	4.3	4.8	2.8	4.3	6.9	11	13	12	0.32	0.55	0.92	1.4	2.8	4.3	6.9	11	9.7		
20	-	0.92	0.92	0.92	0.92	0.92	1.8	1.8	3.6	3.6	4	2.4	3.6	5.5	8.3	10	9.3	0.31	0.53	0.85	1.3	2.4	3.6	5.5	8.3	7.7		
25	-	-	0.92	0.92	0.92	0.92	1.8	1.8	3.6	3.6	4	2.4	3.6	5.5	8.3	10	9.3	-	0.53	0.85	1.3	2.4	3.6	5.5	8.3	7.7		
32	-	-	-	0.84	0.84	0.84	1.5	1.5	3	3	3.4	2.1	3	4.7	6.9	8	7.7	-	0.5	0.8	1.2	2.1	3	4.7	6.9	6.4		
40	-	-	-	-	0.84	0.84	1.5	1.5	3	3	3.4	2.1	3	4.7	6.9	8	7.7	-	-	0.8	1.2	2.1	3	4.7	6.9	6.4		
50	-	-	-	-	-	0.81	1.4	1.4	2.5	2.5	2.8	1.8	2.5	3.7	5.4	6.2	6	-	-	0.78	1.1	1.8	2.5	3.7	5.4	5		
63	-	-	-	-	-	-	1.4	1.4	2.5	2.5	2.8	1.8	2.5	3.7	5.4	6.2	6	-	-	-	1.1	1.8	2.5	3.7	5.4	5		
0.5	4.3	4.3	4.3	4.3	4.3	4.3	14	14	T	T	T	18	T	T	T	T	T	-	1.8	-	7	18	T	T	T	T		
1	1.6	1.6	1.6	1.6	1.6	1.6	4.6	4.6	11	11	13	6.8	11	19	T	T	T	-	0.84	-	7	6.8	11	19	T	T		
2	1.6	1.6	1.6	1.6	1.6	1.6	4.6	4.6	11	11	13	6.8	11	19	T	T	T	-	0.84	-	7	6.8	11	19	T	T		
3	1.4	1.4	1.4	1.4	1.4	1.4	3.2	3.2	7.4	7.4	8.8	4.6	7.4	13	21	T	24	-	0.7	-	2.6	4.6	7.4	13	21	19		
4	1.4	1.4	1.4	1.4	1.4	1.4	3.2	3.2	7.4	7.4	8.5	4.6	7.4	13	21	T	24	-	0.7	-	1.9	4.6	7.4	13	21	19		
6	1.2	1.2	1.2	1.2	1.2	1.2	2.4	2.4	5.4	5.4	6.2	3.4	5.4	9	15	18	16	-	0.62	-	1.5	3.4	5.4	9	15	14		
10	0.98	0.98	0.98	0.98	0.98	0.98	2	2	4.3	4.3	4.9	2.8	4.3	7.2	12	14	13	-	0.56	-	1.4	2.8	4.3	7.2	12	10.5		
13	0.92	0.92	0.92	0.92	0.92	0.92	1.8	1.8	3.7	3.7	4.2	2.5	3.7	6	9.2	11	11	-	0.54	-	1.3	2.5	3.7	6	9.2	8.4		
16	0.92	0.92	0.92	0.92	0.92	0.92	1.8	1.8	3.7	3.7	4.2	2.5	3.7	6	9.2	11	11	-	0.54	-	1.3	2.5	3.7	6	9.2	8.4		
20	-	0.86	0.86	0.86	0.86	0.86	1.6	1.6	3.2	3.2	3.4	2.2	3.2	4.8	7.1	8.5	7.9	-	0.52	-	1.2	2.2	3.2	4.8	7.1	6.7		
25	-	-	0.86	0.86	0.86	0.86	1.6	1.6	3.2	3.2	3.4	2.2	3.2	4.8	7.1	8.5	7.9	-	0.52	-	1.2	2.2	3.2	4.8	7.1	6.7		
32	-	-	-	0.81	0.81	0.81	1.5	1.5	2.5	2.5	2.7	1.8	2.5	3.7	5.4	7.2	5.9	-	0.5	-	1.1	1.8	2.5	3.7	5.4	5.1		
40	-	-	-	-	0.81	0.81	1.5	1.5	2.5	2.5	2.7	1.8	2.5	3.7	5.4	7.2	5.9	-	-	-	1.1	1.8	2.5	3.7	5.4	5.1		
50	-	-	-	-	-	0.78	1.4	1.4	2.4	2.4	2.5	1.7	2.4	3.3	4.6	6.2	5	-	-	-	1	1.7	2.4	3.3	4.6	4.3		
63	-	-	-	-	-	-	1.4	1.4	2.4	2.4	2.5	1.7	2.4	3.3	4.6	6.2	5	-	-	-	1	1.7	2.4	3.3	4.6	4.3		
MCB 1.5 module / pole, DEF125 range HLE, HLF, HLG, HME, HMF, HMG, HMB, HMC, HMD (15 kA max IEC 60947- 2)	B curve	80	-	-	-	-	-	-	1.3	2.3	2.3	2.5	1.6	2.3	3.2	4.2	5	4.6	-	0.5	-	1	1.6	2.3	3.2	4.2	4	
		100	-	-	-	-	-	-	1.3	2.3	2.3	2.5	1.6	2.3	3.2	4.2	5	4.6	-	0.5	-	1	1.6	2.3	3.2	4.2	4	
		125	-	-	-	-	-	-	-	1.3	2.3	2.3	2.5	1.6	2.3	3.2	4.2	5	4.6	-	0.5	-	1	1.6	2.3	3.2	4.2	4
	C curve	80	-	-	-	-	-	-	-	1.3	2.3	2.3	2.5	1.6	2.3	3.2	4.2	5	4.6	-	-	-	-	1.6	2.3	3.2	4.2	4
		100	-	-	-	-	-	-	-	1.3	2.3	2.3	2.5	1.6	2.3	3.2	4.2	5	4.6	-	-	-	-	1.6	2.3	3.2	4.2	4
		125	-	-	-	-	-	-	-	1.3	2.3	2.3	2.5	1.6	2.3	3.2	4.2	5	4.6	-	-	-	-	1.6	2.3	3.2	4.2	4
D curve	80	-	-	-	-	-	-	1.3	2	2	2.1	1.5	2	2.5	3.5	4	3.8	-	-	-	-	1.5	2	2.5	3.5	3.3		
	100	-	-	-	-	-	-	2	2	2.1	1.5	2	2.5	3.5	4	3.8	-	-	-	-	-	1.5	2	2.5	3.5	3.3		
	125	-	-	-	-	-	-	-	2	2.1	-	2	2.5	3.5	4	3.8	-	-	-	-	-	-	2	2.5	3.5	3.3		
MCB 1.5 module / pole, DEF125 range HMJ, HMK, HMK, HMX (50 kA max IEC 60947- 2)	C curve	10	1.5	1.5	1.5	1.5	1.5	3	3	5	5	5.5	4	5	7	14	18	14	0.4	0.85	1.3	2.1	4	5	7	14	12	
		16	1.4	1.4	1.4	1.4	1.4	2.8	2.8	4.2	4.2	5	3.5	4.2	6	8	10	8.5	0.4	0.85	1.3	2	3.5	4.2	6	8	8	
		20	-	1.35	1.35	1.35	1.35	1.35	2.8	2.8	4	4	4.5	3.2	4	5.5	6	8.5	7.5	0.4	0.85	1.25	2	3.3	4	5.5	6	7.3
		25	-	-	1.3	1.3	1.3	1.3	2.6	2.6	3.8	3.8	4.3	3.1	3.8	5.4	6.5	8	7	-	0.8	1.25	1.9	3.3	3.8	5.4	6.5	7.3
		32	-	-	-	1.3	1.3	1.3	2.6	2.6	3.8	3.8	4.3	3.1	3.8	5.4	6.5	8	7	-	0.8	1.2	1.9	3.2	3.8	5.4	6.5	7
		40	-	-	-	-	1.3	1.3	2.5	2.5	3.5	3.5	4	3	3.5	5.1	6	7.5	6.5	-	-	1.2	1.8	3.2	3.5	5.1	6	7
		50	-	-	-	-	-	1.3	2.5	2.5	3.5	3.5	4	3	3.5	5.1	6	7.5	6.5	-	-	1.2	1.8	3	3.5	5.1	6	6.5
		63	-	-	-	-	-	-	2.5	2.5	3.5	3.5	4	3	3.5	5.1	6	7.5	6.5	-	-	-	1.8	3	3.5	5.1	6	6.5
		80	-	-	-	-	-	-	-	1.3	2.3	2.3	2.5	1.6	2.3	3.2												

h250 TM+ 50/70 kA								h250 LSI 50/70 kA			h400 TM 25/50/70 kA				h630 LSI 50/70 kA					h800 TM 50/70 kA		h1000 LSI 50/70 kA				h1600 LSI 50/70 kA		
HNH, HEH								HNG, HEG			HHD, HND, HKD				HND, HED					HNK, HEK		HNE, HEE				HNF, HEF		
20	32	50	63	100	125	160	250	40	125	250	250	300	350	400	250	400	500	600	630	630	800	630	700	800	1000	800	1250	1600
0.35	0.59	1.2	1.5	3.3	5	9.6	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.33	0.52	1	1.4	2.8	4.2	8	12	T	T	T	18	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.32	0.5	0.92	1.3	2.5	3.7	6.9	9.7	T	T	T	15	20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.32	0.5	0.92	1.3	2.5	3.7	6.9	9.7	T	T	T	15	20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.31	0.48	0.85	1.1	2.2	3.1	5.5	7.7	T	T	T	12	16	22	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.48	0.85	1.1	2.2	3.1	5.5	7.7	T	T	T	12	16	22	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.46	0.8	1	1.9	2.6	4.7	6.4	T	T	T	10	13	18	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.46	0.8	1	1.9	2.6	4.7	6.4	T	T	T	10	13	18	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.46	0.78	0.95	1.6	2.3	3.7	5	-	T	T	7.5	10	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.46	-	0.95	1.6	2.3	3.7	5	-	T	T	7.5	10	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.8	1.6	4.5	7	22	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.42	0.74	1.5	2.2	6.2	10	20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.42	0.74	1.5	2.2	6.2	10	20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.37	0.61	1.3	1.7	4.5	7	14	20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.37	0.61	1.3	1.7	4.5	7	14	20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.35	0.59	1.2	1.5	3.3	5	9.6	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.33	0.52	1	1.4	2.8	4.2	8	12	T	T	T	18	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.32	0.5	0.92	1.3	2.5	3.7	6.9	9.7	T	T	T	15	20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.32	0.5	0.92	1.3	2.5	3.7	6.9	9.7	T	T	T	15	20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.31	0.48	0.85	1.1	2.2	3.1	5.5	7.7	T	T	T	12	16	22	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.48	0.85	1.1	2.2	3.1	5.5	7.7	T	T	T	12	16	22	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.46	0.8	1	1.9	2.6	4.7	6.4	T	T	T	10	13	18	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.46	0.8	1	1.9	2.6	4.7	6.4	T	T	T	10	13	18	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.46	0.78	0.95	1.6	2.3	3.7	5	-	T	T	7.5	10	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.46	-	0.95	1.6	2.3	3.7	5	-	T	T	7.5	10	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.8	1.6	4	5.5	15	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.42	0.72	1.5	2	5.8	10	19	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.42	0.72	1.5	2	5.8	10	19	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.36	0.6	1.3	1.6	4	6.6	13	19	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.36	0.6	1.3	1.6	4	6.6	13	19	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.34	0.53	1.05	1.4	3	5	9	14	T	T	T	20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.33	0.5	0.93	1.2	2.5	4	7.2	10.5	T	T	T	14	22	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.32	0.48	0.88	1.1	2.2	3.4	6	8.4	T	T	T	12	17	24	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.32	0.48	0.88	1.1	2.2	3.4	6	8.4	T	T	T	12	17	24	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.31	0.46	0.82	1	1.9	2.8	4.8	6.7	T	T	T	9.5	14	17	22	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.46	0.82	1	1.9	2.8	4.8	6.7	T	T	T	9.5	14	17	22	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.44	0.78	0.95	1.7	2.4	3.7	5.1	T	T	T	7	10	13	17	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	0.78	0.95	1.7	2.4	3.7	5.1	T	T	T	7	10	13	17	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	0.76	0.9	1.6	2.2	3.3	4.3	T	T	T	5.8	8	10	15	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	-	0.9	1.6	2.2	3.3	4.3	T	T	T	5.8	8	10	15	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	-	-	1.5	2	3.2	4	T	T	T	7	7.2	8.8	14	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	-	-	-	2	3.2	4	T	T	T	7	7.2	8.8	14	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	-	-	-	-	3.2	4	T	T	T	7	7.2	8.8	14	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	-	-	-	-	3.2	4	-	T	T	7	7.2	8.8	14	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	-	-	-	-	3.2	4	-	T	T	7	7.2	8.8	14	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	-	-	1.4	1.8	2.5	3.3	-	T	T	5.5	6	8.8	14	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	-	-	-	1.8	2.5	3.3	-	T	T	5.5	6	8.8	14	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	-	-	-	-	2.5	3.3	-	T	T	5.5	6	8.8	14	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.4	0.7	1.3	1.9	3.4	4.6	7	12	T	T	T	20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.4	0.7	1.3	1.8	3.1	4	6	8	T	T	T	10	18	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
0.4	0.7	1.25	1.7	3	3.8	5.5	7.3	T	T	T	9	12	22	40	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.7	1.25	1.6	2.9	3.6	5.4	7.3	T	T	T	8	11	15	18	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	0.7	1.2	1.6	2.9	3.6	5.4	7	T	T	T	8	11	15	18	T	T	T	T	T	T	T	T	T	T	T	T	T	
-	-	1.2	1.5	2.7	3.5	5.1	7	-	T	T	7.5	9	11	15	T	T	T	T	T	30	T	T	T	T	T	T	T	
-	-	1.2	1.5	2.7	3.5	5.1	6.5	-	T	T	7.5	9	11	15	T	T	T	T	T	30	T	T	T	T	T	T	T	
-	-	-	1.5	2.7	3.5	5.1	6.5	-	T	T	7.5	9	11	15	T	T	T	T	T	30	T	T	T	T	T	T	T	
-	-	-	-	1.5	2	3.2	4	-	T	T	7	7.2	8.8	14	T	T	T	T	T	15	T	T	T	T	T	T	T	
-	-	-	-	1.5	2	3.2	4	-	T	T	7	7.2	8.8	14	T	T	T	T	T	15	T	T	T	T	T	T	T	
-	-	-	-	-	2	3.2	4	-	T	T	7	7.2	8.8	14	T	T	T	T	T	15	T	T	T	T	T	T	T	

Discrimination chart according to IEC 60947-2 ACBs / MCCBs

	Icc (kA)	Upstream	frame I, HWG				frame I, HWN						
			Downstream	Icu = Ics = 50 kA @ 415V				Icu = Ics = 65 kA @ 415V					
				OCR: LSI or LSIG with OCR with Ir=1xIn, Tr>24s at 6lr, Is=10In, Ts>20ms, Ip=Max									
(A)			630	800	1000	1250	630	800	1000	1250	1600	2000	
HDA HHA HNA	x160 TM 18/25/40 kA	16	T	T	T	T	T	T	T	T	T	T	
		20	T	T	T	T	T	T	T	T	T	T	
		25	T	T	T	T	T	T	T	T	T	T	T
		32	T	T	T	T	T	T	T	T	T	T	T
		40	T	T	T	T	T	T	T	T	T	T	T
		50	T	T	T	T	T	T	T	T	T	T	T
		63	T	T	T	T	T	T	T	T	T	T	T
		80	T	T	T	T	T	T	T	T	T	T	T
		100	T	T	T	T	T	T	T	T	T	T	T
		125	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	
		125	T	T	T	T	T	T	T	T	T	T	
		160	T	T	T	T	T	T	T	T	T	T	
		200	T	T	T	T	T	T	T	T	T	T	
		225	T	T	T	T	T	T	T	T	T	T	
		250	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	
		32	T	T	T	T	T	T	T	T	T	T	
		50	T	T	T	T	T	T	T	T	T	T	
		63	T	T	T	T	T	T	T	T	T	T	
		100	T	T	T	T	T	T	T	T	T	T	
		125	T	T	T	T	T	T	T	T	T	T	
		160	T	T	T	T	T	T	T	T	T	T	
		200	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	
		32	T	T	T	T	T	T	T	T	T	T	
		50	T	T	T	T	T	T	T	T	T	T	
		63	T	T	T	T	T	T	T	T	T	T	
		100	T	T	T	T	T	T	T	T	T	T	
		125	T	T	T	T	T	T	T	T	T	T	
		160	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	
		125	T	T	T	T	T	T	T	T	T	T	
		250	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	
		300	T	T	T	T	T	T	T	T	T	T	
		350	T	T	T	T	T	T	T	T	T	T	
		400	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	
		400	T	T	T	T	T	T	T	T	T	T	
		500	T	T	T	T	T	T	T	T	T	T	
		600	T	T	T	T	T	T	T	T	T	T	
		630	-	T	T	T	-	T	T	T	T	T	
HNK HEK	h800 TM 50/70 kA	630	-	-	T	T	-	-	T	T	T	T	
		800	-	-	T	T	-	-	T	T	T	T	
HNE HEE	h1000 LSI 50/70 kA	630	-	-	T	T	-	-	T	T	T	T	
		700	-	-	T	T	-	-	T	T	T	T	
		800	-	-	T	T	-	-	T	T	T	T	
		7000	-	-	-	T	-	-	-	T	T	T	
HNF HEF	h1600 LSI 50/70 kA	800	-	-	T	T	-	-	T	T	T	T	
		1250	-	-	-	-	-	-	-	-	T	T	
		1600	-	-	-	-	-	-	-	-	-	T	

Breaking capacity according to IEC 60947-2. 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

Cascading according to IEC 60947-2 and IEC 60439-1 ACBs / MCCBs

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 I, HWG		frame I HWN		
			rated current 630-800- 1000-1250A	rated current 630-800- 1000-1250A	rated current 1600A	rated current 2000A	
IEC 60947-2			50 kA	65 kA	65 kA	65 kA	
Downstream	x160 TM	HDA	18 kA	18	18	18	18
		HHA	25 kA	25	25	25	25
		HNA	40 kA	40	40	40	40
	x250 TM	HHB	25 kA	25	25	25	25
		HNB	40 kA	40	40	40	40
	h250 TM	HHG	25 kA	25	25	25	25
		HNG	50 kA	50	50	50	50
		HEG	65 kA	50	65	65	65
	h250 TM+	HNH	50 kA	50	50	50	50
		HEH	70 kA	50	65	65	65
	h250 LSI	HNC	50 kA	50	50	50	50
		HEC	70 kA	50	65	65	65
	h400 TM	HHD	25 kA	25	25	25	25
		HND	50 kA	50	50	50	50
		HKD	70 kA	50	65	65	65
	h630 LSI	HND	50 kA	50	50	50	50
		HED	70 kA	50	65	65	65
	h800 TM	HNK	50 kA	50	50	50	50
		HEK	70 kA	50	65	65	65
	h1000 LSI	HNE	50 kA	50	50	50	50
HEE		70 kA	50	65	65	65	
h1600 LSI	HNF	50 kA	-	-	50	50	
	HEF	70 kA	-	-	65	65	

frame II, HWS	frame II, HWS	frame II, HWS	frame III, HWP
rated current 800A	rated current 1000A	rated current 1600- 2000-2500-3200A	rated current 3200- 4000A
80 kA	80 kA	80 kA	100 kA
18	18	18	18
25	25	25	25
40	40	40	40
25	25	25	25
40	40	40	40
25	25	25	25
50	50	50	50
65	65	65	65
50	50	50	50
70	70	70	70
50	50	50	50
70	70	70	70
25	25	25	25
50	50	50	50
70	70	70	70
50	50	50	50
70	70	70	70
50	50	50	50
70	70	70	70
-	50	50	50
-	70	70	70
-	-	50	50
-	-	70	70

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