

Main Switchgear

This section includes Moulded Case Circuit Breakers (MCCBs), Manual and Automatic Transfer Switches and Load Break Switches which are utilised for the switching, protection and distribution of low voltage installations.



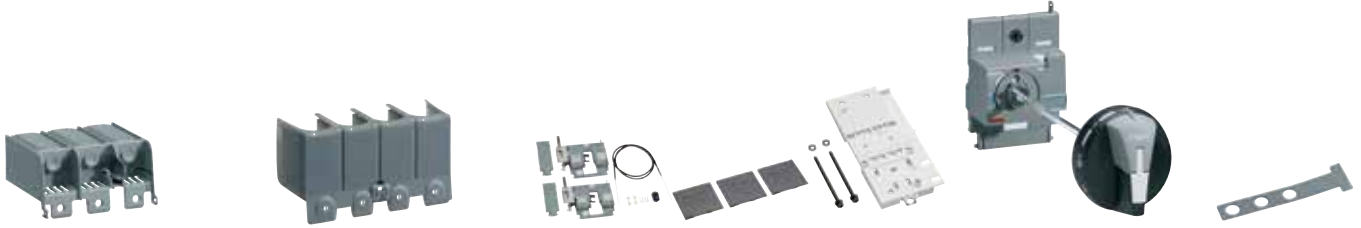
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Frame	Trip Unit	Pole	MCCBs				Terminal connectors				
			In (A)	25 kA	40 kA	50 kA	Collar	Straight	Spreader	Rear	
h3 x160	TM	3	25	HHA025U	HNA025U	-	HYA005H	HYA013H	HYA014H	-	
			40	HHA040U	HNA040U	-					
			63	HHA063U	HNA063U	-					
			80	HHA080U	HNA080U	-					
			100	HHA100U	HNA100U	-					
			125	HHA125U	HNA125U	-					
		4	25	HHA026U	HNA026U	-	HYA006H	HYA013H	HYA015H	-	
			40	HHA041U	HNA041U	-					
			63	HHA064U	HNA064U	-					
			80	HHA081U	HNA081U	-					
			100	HHA101U	HNA101U	-					
			125	HHA126U	HNA126U	-					
	h3 x250	3	160	-	HNB160U	-	HYB001H	HYB010H	HYB011H	HYB031H	
			200	-	HNB200U	-					
		4	160	-	HNB161U	-	HYB002H	HYB010H	HYB012H	HYB032H	
			200	-	HNB201U	-					
h3 x630	3	250	HHJ250DR	HNJ250DR	HMJ250DR	-	HYW010H	HYW013H	HYW011H	HYW014H	-
		320	HHJ320DR	HNJ320DR	HMJ320DR						
		400	HHJ400DR	HNJ400DR	HMJ400DR						
		630	HHJ630DE	HNJ630DE	HMJ630DE						
		-	-	-	-						



Frame	Operating Voltage	Shunt Trips - SH	Under Voltage - UV	Motor Operator with auto-reset	Motor Operator without auto-rest	Auxilliary Contact (1C/O)	
						AUX, AX (1NO + 1NC)	Alarm, AL (1NO +1NC)
h3 x160	24V DC	HXA001H	HXA011H	-	-	HXA021H	HXA024H
	48V DC	HXA002H	-	-	-		
	100 - 120V AC	HXA003H	HXA013H	-	-		
	200 - 240V AC	HXA004H	HXA014H	-	-		
	380 - 450V AC	HXA005H	HXA015H	-	-		
h3 x250	24V DC	HXA001H	HXA011H	HXB040H	-	HXA021H	HXA024H
	48V DC	HXA002H	-	-	-		
	100 - 120V AC	HXA003H	HXA013H	-	-		
	230 - 240V AC	-	-	HXB042H	-		
	200 - 240V AC	HXA004H	HXA014H	-	-		
380 - 450V AC	HXA005H	HXA015H	-	-			



Terminal covers				Interlock	Phase Barrier	DIN rail adaptor	Rotary Handle		Padlock
Collar	Straight	Spreader	Rear				Direct	Extended	
HYA027H	HYA021H	HYA023H	-	-	HYA019H	HYA033H	HXA030H	HXA031H	HXA039H
HYA028H	HYA022H	HYA024H	-	-	HYA019H	HYA033H	HXA030H	HXA031H	HXA039H
HYB027H	HYB021H	HYB023H	HYB025H	HXB065H	HYB019H	-	HXB030H	HXB031H	HXA039H
HYB028H	HYB022H	HYB024H	HYB026H	HXB065H	HYB019H	-	HXB030H	HXB031H	HXA039H
-	HYW021H	HYW023H	-	-	-	-	HXW030H	HXW031H	HXA039H

Main switchgear



Frame	Operating Voltage	Shunt Trips - SH	Under Voltage - UV	Motor Operator with auto-reset	Motor Operator without auto-reset	Auxilliary Contact (1C/O)	
						AUX, AX (1NO + 1NC)	Alarm, AL (1NO +1NC)
h3 x630	24V DC	HXA001H	HXA011H	HXW040H(K)	HXW043H(K)	-	-
	48V DC	HXA002H	-			-	-
	100 - 110V DC	-	-	HXW041H(K)	HXW046H(K)	-	-
	100 - 120V AC	HXA003H	HXA013H	-	-	-	-
	110 - 240V AC	-	-	HXW042H(K)	HXW044H(K)	-	-
	200 - 240V AC	HXA004H	HXA014H	-	-	-	-
	250V AC	-	-	-	-	HXA021H	HXA024H HXA027H
	380 - 450V AC	HXA005H	HXA015H	-	-	-	-

(K) = With Key

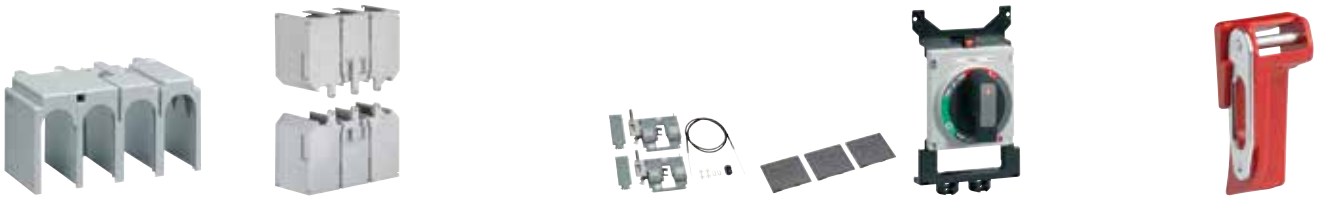


Frame	Trip Unit	Pole	MCCBs			Terminal connectors						
			In (A)	50 kA	70 kA	Collar	Straight	Spreader	Rear			
h3 h250	LSI	3	40	HNC040H	HEC040H	HYC003H	HYC010H	HYC011H	HYC031H			
			125	HNC125H	HEC125H							
			250	HNC250H	HEC250H							
		4	40	HNC041H	HEC041H	HYC004H	HYC010H	HYC012H	HYC032H			
			125	HNC126H	HEC126H							
			250	HNC251H	HEC251H							
h3 h630		LSI	3	400	HND400H	HED400H	HYD003H	HYD010H	HYD011H	HYD031H		
				630	HND630H	HED630H	HYD007H	HYD013H	HYD014H	HYD033H		
			4	400	HND401H	HED401H	HYD004H	HYD010H	HYD012H	HYD032H		
				630	HND631H	HED631H	HYD008H	HYD013H	HYD015H	HYD034H		
			h3 h1000	LSI	3	800	HNE800H	HEE800H	-	-	-	HYE031H
						1000	HNE970H	HEE970H	-	-	-	HYE033H
4	800	HNE801H			HEE801H	-	-	-	HYE032H			
	1000	HNE971H			HEE971H	-	-	-	HYE034H			
h3 h1600	LSI	3	1250	HNF980H	HEF980H	-	-	-	-			
			1600	HNF990H	HEF990H	-	-	-	-			
		4	1250	HNF981H	HEF981H	-	-	-	-			
			1600	HNF991H	HEF991H	-	-	-	-			

Main switchgear



Frame	Operating Voltage	Shunt Trips - SH	Under Voltage - UV	Motor Operator	Auxiliary Contact (1C/O)	
					AUX, AX (1NO + 1NC)	Alarm, AL (1NO +1NC)
h3 h250	24V DC	HXC001H	HXC011H	HXC040H	HXC021H	HXC024H
	48V DC	HXC002H	-	-		
	100 - 120V AC	HXC003H	HXC013H	-		
	200 - 240V AC	HXC004H	HXC014H	HXC042H		
	380 - 450V AC	HXC005H	HXC015H	-		
h3 h630	24V DC	HXC001H	HXC011H	HXD040H	HXC021H	HXA024H
	48V DC	HXC002H	-	HXD040H		
	100 - 120V AC	HXC003H	HXC013H	HXD042H		
	200 - 240V AC	HXC004H	HXC014H	HXD042H		
	380 - 450V AC	HXC005H	HXC015H	-		



Terminal covers				Interlock	Interphase Barrier	Rotary handles		Padlock
Collar	Straight	Spreader	Rear			Direct	Extended	
HYC027H	HYC021H	-	HYC025H	HXC065H	HYC019H	HXC030H	HXC031H	HXC039H
HYC028H	HYC022H	-	HYC026H	HXC065H	HYC019H	HXC030H	HXC031H	HXC039H
HYD027H	HYD021H	HYD023H	HYD025H	HXD065H	HYD019H	HXD030H	HXD031H	HXD039H
HYD028H	HYD022H	HYD024H	HYD026H	HXD065H	HYD019H	HXD030H	HXD031H	HXD039H
-	HYE021H	-	HYE025H	HXE065H	-	HXE030H	HXE031H	HXD039H
-	HYE022H	-	HYE026H	HXE065H	-	HXE030H	HXE031H	HXD039H
-	-	-	-	-	-	HXF030H	HXF031H	HXF039H
-	-	-	-	-	-	HXF030H	HXF031H	HXF039H

Main switchgear



Frame	Operating Voltage	Shunt Trips - SH	Under Voltage - UV	Motor Operator	Auxiliary Contact (1C/O)	
					AUX, AX (1NO + 1NC)	Alarm, AL (1NO + 1NC)
h3 h1000	24V DC	HXC001H	HXE011H	HXE040H	HXC021H	HXC024H
	48V DC	HXC002H	-	HXE040H		
	100 - 120V AC	HXC003H	HXE013H	HXE042H		
	200 - 240V AC	HXC004H	HXE014H	HXE042H		
	380 - 450V AC	HXC005H	HXE015H	-		
h3 h1600	24V DC	HXC001H	HXE011H	HXF040H	HXC021H	HXC024H
	48V DC	HXC002H	-	-		
	100 - 120V AC	HXC003H	HXE013H	-		
	200 - 240V AC	HXC004H	HXE014H	HXF042H		
	380 - 450V AC	HXC005H	HXE015H	-		



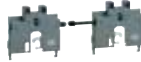
Frame	Trip Unit	Pole	MCCBs			Terminal connectors									
			In (A)	25 kA	40 kA	50 kA	Collar	Straight	Spreader	Rear					
h3+ P160	TM	3	25	HHS025DR	HNS025DR	HMS025DR	-	HYS010H HYS013H	HYS011H HYS014H	HYS031H (16A - 50A) HYS131H (63A - 160A)					
			40	HHS040DR	HNS040DR	HMS040DR									
			63	HHS063DR	HNS063DR	HMS063DR									
			80	HHS080DR	HNS080DR	HMS080DR									
			100	HHS100DR	HNS100DR	HMS100DR									
			125	HHS125DR	HNS125DR	HMS125DR									
	LSI	3	40	HHS040JR	HNS040JR	HMS040JR									
			100	HHS100JR	HNS100JR	HMS100JR									
			160	HHS160JR	HNS160JR	HMS160JR									
	Energy	3	40	HHS040NR	HNS040NR	HMS040NR									
			100	HHS100NR	HNS100NR	HMS100NR									
			160	HHS160NR	HNS160NR	HMS160NR									
	h3+ P250	TM	3	50	HHT050DR	HNT050DR					HMT050DR	-	HYB010H	HYB011H	HYB031H
				63	HHT063DR	HNT063DR					HMT063DR				
				100	HHT100DR	HNT100DR					HMT100DR				
125				HHT125DR	HNT125DR	HMT125DR									
160				HHT160DR	HNT160DR	HMT160DR									
200				HHT200DR	HNT200DR	HMT200DR									
LSI		3	40	HHT040JR	HNT040JR	HMT040JR									
			100	HHT100JR	HNT100JR	HMT100JR									
			160	HHT160JR	HNT160JR	HMT160JR									
			250	HHT250JR	HNT250JR	HMT250JR									
Energy		3	40	HHT040NR	HNT040NR	HMT040NR									
			100	HHT100NR	HNT100NR	HMT100NR									
			160	HHT160NR	HNT160NR	HMT160NR									
			250	HHT250NR	HNT250NR	HMT250NR									
			250	-	HNW250JR	HMW250JR	-	HYW010H	HYW011H	HYD031H					
LSI	3	400	-	HNW400JR	HMW400JR										
		630	-	HNW630JR	HMW630JR										
		250	-	HNW250NR	HMW250NR										
Energy	3	400	-	HNW400NR	HMW400NR										
		630	-	HNW630NR	HMW630NR										
		630	-	HNW630NR	HMW630NR	HYW013H					HYW014H	HYD033H			

Main switchgear



Frame	Operating Voltage	Shunt Trips - SH	Under Voltage - UV	Motor Operator auto-reset	Motor Operator no auto-rest	Auxiliary Contact (1C/O)	
						AUX, AX (1NO + 1NC)	Alarm, AL (1NO +1NC)
h3+ P160	24V DC	HXA001H	HXA011H	-	-	HXA021H HXA025H (low level)	HXA024H HXA026H (low level) HXA027H HXA028H (low level)
	48V DC	HXA002H	-	-	-		
	100 - 120V AC	HXA003H	HXA013H	-	-		
	200 - 240V AC	HXA004H	HXA014H	-	-		
	380 - 450V AC	HXA005H	HXA015H	-	-		
h3+ P250	24V DC	HXA001H	HXA011H	HXT040H(K)	HXT043H(K)	HXA021H HXA025H (low level)	HXA024H HXA026H (low level) HXA027H HXA028H (low level)
	48V DC	HXA002H	-	HXT048H(K)	HXT049H(K)		
	100 - 110V AC/DC	-	-	HXT041H(K)	HXT046H(K)		
	100 - 120V AC	HXA003H	HXA013H	-	-		
	200 - 220V AC/DC	-	-	HXT045H(K)	HXT047H(K)		
	230 - 240V AC	-	-	HXT042H(K)	HXT044H(K)		
	200 - 240V AC	HXA004H	HXA014H	-	-		
380 - 450V AC	HXA005H	HXA015H	-	-			

(K) = With Key



Terminal covers				Interlock	Phase Barrier	DIN rail adaptor	Rotary Handle		Padlock
Collar	Straight	Spreader	Rear				Direct	Extended	
-	HYS021H	HYS023H	-	HXS165H HXS066H	HYS019H	HYS033H	HXS030H HXS032H (With interlocking)	HXS031H	HXA039H
-	HYT021H	HYT023H	-	HXT165H HXT066H	HYT019H	HYT033H	HXT030H HXT032H (With interlocking)	HXT031H	HXA039H
-	HYW021H	HYW023H	-	HXW165H HXW066H	HYW019H	-	HXW030H HXW032H (With interlocking)	HXW031H	HXA039H

Main switchgear



Frame	Operating Voltage	Shunt Trips - SH	Under Voltage - UV	Motor Operator auto-reset	Motor Operator no auto-rest	Auxiliary Contact (1C/O)	
						AUX, AX (1NO + 1NC)	Alarm, AL (1NO + 1NC)
h3+ P630	24V DC	HXA001H	HXA011H	HXW040H(K)	HXW043H(K)	HXA021H HXA025H (low level)	HXA024H HXA026H (low level) HXA027H HXA028H (low level)
	48V DC	HXA002H	-				
	100 - 110V DC	-	-	HXW041H(K)	HXW046H(K)		
	100 - 120V AC	HXA003H	HXA013H	-	-		
	110 - 240V AC	-	-	HXW042H(K)	HXW044H(K)		
	200 - 240V AC	HXA004H	HXA014H	-	-		
	380 - 450V AC	HXA005H	HXA015H	-	-		

(K) = With Key

Product	x160 TM MCCB		x250 TM MCCB		x630 TM MCCB (h3+ only)		
Reference	HHA	HNA	HNB		HHJ	HNJ	HMJ
Number of poles	[No.]		3-4		3-4		3

Electrical characteristics

Rated current	In	[A]	160		250		630		
Current rated range		[A]	16-160		100-250		250-630		
Rated service voltage, (AC)	Ue	[V]	220-440		220-440		220-415		
Frequency	f	[Hz]	50/60		50/60		50/60		
Rated insulation voltage	Ui	[V]	690		800		800		
Rated impulse withstand voltage	Uimp	[kV]	8		8		8		
Rated ultimate short-circuit breaking capacity, (Icu)									
(AC) 50-60Hz 220/230V	Icu	[kA]	35	85	85	-	-	-	
(AC) 50-60Hz 220/240V	Icu	[kA]				35	70	85	
(AC) 50-60Hz 380/415V	Icu	[kA]	25	40	40	25	40	50	
(AC) 50-60Hz 480/500/525V	Icu	[kA]	-	-	-	-	-	-	
(AC) 50-60Hz 660/690V	Icu	[kA]	-	-	-	-	-	-	
(DC) 250V - 2 poles in series	Icu	[kA]	10	10	9	-	-	-	
Rated service short-circuit breaking capacity, (Ics)									
(AC) 50-60Hz 220/230V	Ics	[kA]	25	40	40				
(AC) 50-60Hz 220/240V	Ics	[kA]	-	-	-	35	70	85	
(AC) 50-60Hz 380/415V	Ics	[kA]	20	20	20	25	40	50	
(AC) 50-60Hz 480/500/525V	Ics	[kA]	-	-	-	-	-	-	
(AC) 50-60Hz 660/690V	Ics	[kA]	-	-	-	-	-	-	
(DC) 250V - 2 poles in series	Ics	[kA]	5	5	5	-	-	-	
Rated short-circuit making capacity	Icm	[kA]	-	-	-	-	-	-	
Rated short-time withstand current for 1s	Icw	[kA]	-	-	-	-	-	-	
Category of use (EN 60947-2)			A		A		A		
Calibration temperature			50°C		50°C		50°C (250A-400A), 30°C (630A)		
Derating 40°C			100%		100%		-		
	30°C		-		-		100% (630A)		
	50°C		100%		100%		100% (250A - 400A), 90% (630A)		
	55°C		95%		94%		97% (250A - 400A), 87% (630A)		
	60°C		93%		91%		94.5% (250A - 400A), 84.5% (630A)		
	65°C		90%		88%		92% (250A - 400A), 81.6% (630A)		
Suitability for isolation			ok		ok		ok		
Electric endurance in number of cycles			10000		10000		6000<=400A 4000 for 630A (Above 400A)		
Mechanical endurance in number of operations			20000		20000		15000		
Operating temperature			-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		
Power loss (at In for 3P)		[W]	39		60		250A - 71.4W 320A - 75W 400A - 116W 630A - 176.3W		
Reference standard			IEC 60947-2		IEC 60947-2		IEC 60947-2		
Releases: switch			-		-		-		
Releases: TM (thermomagnetic)			ok		ok		-		
T fixed, M fixed			ok		ok		-		
T adjustable, M fixed			ok		-		-		
T adjustable, M adjustable			-		ok		ok		
Thermal adjustment value			0.63 to 0.8 to 1 x In		0.63 to 0.8 to 1 x In		0.63 to 0.8 to 1 x In		
Magnetic adjustment value			-		6-8-10-13 x In (200A) 5-7-9-11 In (250A)		5 to 10 x In (Up to 400A) 4 to 8 x In (630A)		
Releases: LSI (electronic)			-		-		-		
Long delay			-		-		-		
Short delay			-		-		-		
Time delay			-		-		-		

Terminations

Standard terminal type		cage	lugs		lugs		
Maximum terminal capacity		95mm ²	185mm ² (cage)		-		
Terminal width	mm	-	25		32		
Terminal shields		ok	ok		ok		
Cage terminal		integrated	ok		-		
Extended connections		ok	ok		ok		
Rear connections		no	ok		-		

Dimensions

Height		mm	130		165		260		
Width	3P	mm	75		105		140		
	4P	mm	100		140		-		
Depth		mm	68		68		150		
Weight	3P	kg	0.715		1.3		5.8		
	4P	kg	0.95		1.6		-		

h250 LSI MCCB		h400 TM MCCB		h630 LSI MCCB		h1000 LSI MCCB		h1600 LSI MCCB	
HNC	HEC	HND	HND	HED	HNE	HEE	HNF	HEF	
3-4		3-4	3-4		3-4		3-4		

250	400	630	1000	1600
40-125-250	250-400	250-630	800-1000	1250-1600
220-690	220-690	220-690	220-690	220-690
50/60	50/60	50/60	50/60	50/60
800	800	800	800	800
8	8	8	8	8

85	100	85	85	100	85 (800A) 75 (1000A)	100	100	100
50	70	50	50	70	50	70	50	70
25	45	30	30	30	30	30	45	65
7,5	20	20	20	20	20	20	25	45
-	-	40	-	-	-	-	-	-

85	100	85	85	85	85 (800A) 75 (1000A)	100 (800A) 75 (1000A)	75	75
25	70	50	50	50	50	50	50	50
10	45	30	30	30	30	30	45	50
7.5	15	15	15	15	20	20	25	34
-	-	40	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
B	A	B (400A) - A (630A)	B (800A) - A (1000A)	B				
40°C	50°C	40°C	40°C	40°C				
100%	100%	100%	100%	100%				
-	-	-	-	-				
95%	100%	100%	100%	100%				
90%	95%	95%	95%	95%				
80%	92%	90%	90%	90%				
80%	89%	80%	80%	80%				
ok	ok	ok	ok	ok				
10000	4500	4500	4500	4500				
30000	15000	15000	15000	15000				
-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				
75	75	150	150	170				
IEC 60947-2	IEC 60947-2	IEC 60947-2	IEC 60947-2	IEC 60947-2				
-	-	-	-	-				
-	ok	-	-	-				
-	-	-	-	-				
-	ok	-	-	-				
-	0.63 to 0.8 to 1 x In	-	-	-				
-	6-8-10-12 x In	-	-	-				
-	-	ok	ok	ok				
0.4 to 1 x lr	-	0.4 to 1 x lr	0.4 to 1 x lr	0.4 to 1 x lr				
2.5 to 10 x lr	-	2.5 to 10 x lr (400A) 2.5 to 8 x lr (630A)	2.5 to 10 x lr (800A) 2.5 to 8 x lr (1000A)	2.5 to 10 x lr				
0.1 - 0.2s	-	0.1 - 0.2s	0.1 - 0.2s	0.1 - 0.2s				

lugs	lugs	lugs	lugs	lugs
120mm ² (cage)	240mm ² (cage)	-	-	-
25	30	30	45	45
ok	ok	ok	ok	ok
ok	ok	-	-	-
ok	ok	integrated	integrated	integrated
ok	ok	ok	ok	ok

165	260	260	273/433	370/570
105	140	140	210	210
140	185	185	280	280
97	97	97	99,5	140
2.5	4.2	4.3	11	27
3.3	5.6	5.7	14.8	31

Product	P160 MCCB		
Reference	HHS	HNS	HMS
Number of poles	[No.]	3	

Electrical characteristics

Rated current	In	[A]	160		
Current rated range		[A]	25 - 160 (Thermal Magnetic), 40 - 160 (Electronic)		
Rated service voltage, (AC)	Ue	[V]	220 to 690		
Frequency	f	[Hz]	50/60		
Rated insulation voltage	Ui	[V]	800		
Rated impulse withstand voltage	Uimp	[kV]	8		
Rated ultimate short-circuit breaking capacity, (Icu)					
(AC) 50-60Hz 220/230V	Icu	[kA]	-	-	-
(AC) 50-60Hz 220/240V	Icu	[kA]	35	50	65
(AC) 50-60Hz 380/415V	Icu	[kA]	25	40	50
(AC) 50-60Hz 480/500/525V	Icu	[kA]	-	-	-
(AC) 50-60Hz 660/690V	Icu	[kA]	6	6	6
(DC) 250V - 2 poles in series	Icu	[kA]	-	-	-
Rated service short-circuit breaking capacity, (Ics)					
(AC) 50-60Hz 220/230V	Ics	[kA]	-	-	-
(AC) 50-60Hz 220/240V	Ics	[kA]	35	50	65
(AC) 50-60Hz 380/415V	Ics	[kA]	25	40	50
(AC) 50-60Hz 480/500/525V	Ics	[kA]	-	-	-
(AC) 50-60Hz 660/690V	Ics	[kA]	6	6	6
(DC) 250V - 2 poles in series	Ics	[kA]	-	-	-
Rated short-circuit making capacity	Icm	[kA]	-	-	-
Rated short-time withstand current for 1s	Icw	[kA]	-	-	-
Category of use (EN 60947-2)			A		
Calibration temperature			50°C		
Derating	40°C		-		
	50°C		100%		
	55°C		97%		
	60°C		94.3%		
	65°C		91%		
	70°C		-		
Suitability for isolation			ok		
Electric endurance in number of cycles			10 000		
Mechanical endurance in number of operations			40 000		
Operating temperature			-25 °C to +70 °C		
Storage temperature			-35 °C to +70 °C		
Power loss (at In for 3P)		[W]	42.3W		
Reference standard			IEC 60947-2		
Releases: switch			-		
Releases: TM (thermomagnetic)			ok		
T fixed, M fixed			-		
T adjustable, M fixed			-		
T adjustable, M adjustable			ok		
Thermal adjustment value			0.63 to 0.8 to 1 x In		
Magnetic adjustment value			6-8-10-12 x In (Up to 125A) 6-7-8-9-10 In (160A)		
Releases: LSI (electronic)			-		
Long delay			-		
Short delay			-		
Time delay			-		
Ir1	40A		16 - 18 - 20 - 22 - 25 - 28 - 32 - 34 - 37 - 40		
	100A		40 - 45 - 50 - 57 - 63 - 72 - 80 - 87 - 93 - 100		
	160A		63 - 70 - 80 - 90 - 100 - 110 - 125 - 135 - 150 - 160		
	250A		-		
	400A		-		
	600A		-		
I _{sd} = OFF ; = Ir x ...			-		
tsd (ms)			-		

Terminations

Standard terminal type			lugs
Maximum terminal capacity			-
Terminal width		mm	21
Terminal shields			ok
Cage terminal			-
Extended connections			ok
Rear connections			-

Dimensions

Height		mm	130
Width	3P	mm	90
Depth		mm	97
Weight	3P	kg	1.1

P250 MCCB			P630 MCCB (Electronic only)	
HHT	HNT	HMT	HNW	HMW
3			3	

250	50 - 250 (Thermal Magnetic), 40 - 250 (Electronic)		630	250-630
	220 to 690			220 to 690
	50/60			50/60
	800			800
	8			8

-	-	-	-	-
35	50	65	70	85
25	40	50	40	50
-	-	-	-	-
6	6	6	7	12
-	-	-	-	-

-	-	-	-	-
35	50	65	70	85
25	40	50	40	50
-	-	-	-	-
6	6	6	7	12
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

A	A (>400A), B (<=400A)			
-	-			
100%	-			
-	100%			
96.5%	-			
93%	100% (250A - 400A), 98% (630A)			
89.3%	100% (250A - 400A), 90% (630A)			
-	100% (250A - 400A), 81% (630A)			
ok	ok			
10 000	6000 ≤ 400A, 4000 > 400A			
40 000	30 000			
-25 °C to +70 °C	-25 °C to +70 °C			
-35 °C to +70 °C	-35 °C to +70 °C			
50.7W	175.8W			
-	-			
-	-			
ok	-			
-	-			
-	-			
ok	-			
0.63 to 0.8 to 1 x In	-			
6-8-10-13 x In (up to 160A)	-			
6-8-10-12 x In (up to 200A)	-			
6-7-8-9-10 x In (250A)	ok			
-	-			
-	-			
-	-			
16 - 18 - 20 - 22 - 25 - 28 - 32 - 34 - 37 - 40	-			
40 - 45 - 50 - 57 - 63 - 72 - 80 - 87 - 93 - 100	-			
63 - 70 - 80 - 90 - 100 - 110 - 125 - 135 - 150 - 160	-			
90 - 100 - 110 - 125 - 140 - 160 - 180 - 200 - 225 - 250	90 - 100 - 110 - 125 - 140 - 160 - 180 - 200 - 225 - 250			
-	160 - 180 - 200 - 225 - 250 - 300 - 350 - 370 - 400			
-	250 - 300 - 350 - 370 - 400 - 500 - 600 - 630			
-	1.5 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 10			
-	50 - 100 - 200 - 300 - 400			

lugs	lugs
-	-
25	32
ok	ok
-	-
ok	ok
-	-

165	260
105	140
97	150
1.5	5.8

Moulded Case

Circuit Breakers x160

- Thermal magnetic trip unit, 2 versions:
- Z version: fixed thermal and fixed magnetic
- U version: adjustable thermal and fixed magnetic
- 1P, 2P, 3P & 4P
- Mechanical test button, sealable settings, integrated padlocking handle Ø4mm.

Connection capacity

- 95mm² rigid cables
- 70mm² flexible cables
- Comply with IEC60947-2.

Technical information: [Page 150](#)

Main switchgear



HHA125U



HHA161U

MCCBs x160 25kA

Description	In	Cat ref.		
		1P	3P	4P
- Breaking capacity Ics: 20kA (400/415V AC) - Fixed thermal 1 x In - Fixed magnetic > 10 x In	16A	HHA014Z	-	-
	20A	HHA018Z	-	-
	25A	HHA023Z	-	-
	32A	HHA030Z	-	-
	40A	HHA038Z	-	-
	50A	HHA048Z	-	-
	63A	HHA061Z	-	-
	80A	HHA078Z	-	-
	100A	HHA098Z	-	-
	125A	HHA123Z	-	-
- Adjustable thermal 0.63 - 0.8 - 1 x In - Fixed magnetic > 10 x In	25A	-	HHA025U	HHA026U
	40A	-	HHA040U	HHA041U
	63A	-	HHA063U	HHA064U
	80A	-	HHA080U	HHA081U
	100A	-	HHA100U	HHA101U
	125A	-	HHA125U	HHA126U
	160A	-	HHA160U	HHA161U

MCCBs x160 40kA



HNA125U

Description	In	Cat ref.	
		3P	4P
- Breaking capacity Ics: 20kA (400/415V AC) - Adjustable thermal 0.63 - 0.8 - 1 x In - Fixed magnetic > 10 x In	25A	HNA025U	HNA026U
	40A	HNA040U	HNA041U
	63A	HNA063U	HNA064U
	80A	HNA080U	HNA081U
	100A	HNA100U	HNA101U
	125A	HNA125U	HNA126U
	160A	HNA160U	HNA161U

Switch Disconnecter



HCA125Z

Description	In	Cat ref.
		3P
- Suitable for AC22A/ AC23A	125A	HCA125Z
- Ue: 415V AC	160A	HCA160Z
- Icw (1s): 2kA		

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: 0.75mm flexible or rigid cables.
- Optional connection cables. The cable capacity of the terminals is 0.5 to 1.25mm².

Shunt Trip

- Remote tripping of MCCBs or trip-free switches.
- Operating voltage: 0.7 to 1.1 x Un

Under Voltage Release

- Allows the tripping of MCCBs when voltage level drops 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.

Technical information: [Page 151](#)

Accessories

Description	Characteristics	Cat ref.
Auxiliary contacts AX	1 changeover contact (ON/OFF) 250V AC / 3A	HXA021H
AL	125V DC / 0.4A 1NO + 1NC	
	1 changeover alarm contact 250V AC / 3A	HXA024H
	125V DC / 0.4A 1NO + 1NC	
Shunt trips SH	24V DC	HXA001H
	48V DC	HXA002H
	100 - 120V AC	HXA003H
	200 - 240V AC	HXA004H
	380 - 450V AC	HXA005H
Undervoltage releases UV	24V DC	HXA011H
	100 - 120V AC	HXA013H
	200 - 240V AC	HXA014H
	380 - 450V AC	HXA015H



Main switchgear

Accessories

Description	Characteristics	Cat ref.	Cat ref.
		3P	4P
Direct rotary handle Padlockable	Max Ø 6mm	HXA030H	HXA030H
Extended rotary handle Padlockable	Max Ø 8mm 200mm	HXA031H	HXA031H
Padlocking device To mount on MCCB for handle locking 3 padlocks	Max Ø 8mm	HXA039H	HXA039H
Collar terminals Terminals for aluminium conductor	Set of 3 or 4	HYA005H	HYA006H
Extended connections	Straight connections - set of 4	HYA013H	HYA013H
	Spreader connections - set of 3 or 4	HYA014H	HYA015H
Interphase barriers	Set of 2 Height: 50mm	HYA019H	HYA019H
Terminal covers - 2 pcs	For extended straight connections	HYA021H	HYA022H
	For extended spreader connections	HYA023H	HYA024H
	For collar terminal	HYA027H	HYA028H
Din rail adaptor		HYA033H	HYA033H



- Moulded Case
Circuit Breakers x250**
- Adjustable thermal and magnetic trip unit
 - 3P and 4P
 - Mechanical test button
 - Lockable settings
 - Integrated padlocking handle
Ø 4mm
 - Complies with IEC60947-2.

Connection:

- Terminal area width 25mm

Technical information: [Page 155](#)

Connection capacity:

- 185mm² rigid cables
- Collar terminals optional



HNB160U

Main
switchgear

MCCBs x250 40kA

Description	In	Cat ref.	Cat ref.
		3P	4P
Breaking capacity	160A	HNB160U	HNB161U
Icu: 40 kA (400/415V AC)	200A	HNB200U	HNB201U
Ics: 20 kA	250A	HNB250U	HNB251U
Adjustable thermal 0.63 - 0.8 - 1x In			
Adjustable magnetic			
6 - 8 - 10 - 13 x In (160/200A)			
5 - 7 - 9 - 11 x In (250A)			
4P neutral setting: 0 or 100%			

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: 0.75mm² flexible or rigid cables
- Optional connection cables. The cable capacity of the terminals is 0.5 to 1.25mm².

Shunt Trip

- Remote tripping of MCCBs or trip-free switches. Operating voltage: 0.7 to 1.1 x Un.

Under Voltage Release

- Allows the tripping of MCCBs when voltage level drops 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

- IP55
- Supplied complete with shaft and handle.

Technical information: [Page 156](#)

Accessories

Description	Characteristics	Cat ref.
Auxiliary contacts AX	1 changeover contact 250V AC / 3A	HXA021H
AL	125V DC / 0.4A 1NO + 1NC	
	1 changeover alarm contact 250V AC / 3A	HXA024H
	125V DC / 0.4A 1NO + 1NC	
Shunt trips SH	24V DC	HXA001H
	48V DC	HXA002H
	100 - 120V AC	HXA003H
	200 - 240V AC	HXA004H
	380 - 450V AC	HXA005H
Undervoltage releases UV	24V DC	HXA011H
	100 - 120V AC	HXA013H
	200 - 240V AC	HXA014H
	380 - 450V AC	HXA015H
Direct rotary handles Padlockable	Max Ø 6mm	HXB030H
Extended rotary handles Padlockable	Max Ø 8mm 200mm	HXB031H
Padlocking device To mount on MCCBs for handle locking 3 padlocks	Max Ø 8mm	HXA039H
Motor operators	24V DC	HXB040H
	230 - 240V AC	HXB042H



HXA021H

HXA024H



HXA004H

HXA014H



HXB040H

Main switchgear

Accessories

Description	Characteristics	Cat ref.	Cat ref.
		3P	4P
Interlocking	Wire type	HXB065H	HXB065H
Collar terminals Aluminium / copper conductors 150mm ² rigid cables 185mm ² flexible cables	Set of 4 pieces	HYB001H	HYB002H
Extended connections For straight connections	Set of 4 pieces	HYB010H	HYB010H
For spreader connections	Set of 4 pieces	HYB011H	HYB012H
Rear connections	Set of 3 pieces	HYB031H	HYB032H
Interphase barriers	Set of 3 Height: 97mm	HYB019H	HYB019H
Terminal covers - 2 pcs	For extended straight connections	HYB021H	HYB022H
	For extended spreader connections	HYB023H	HYB024H
	For rear connections	HYB025H	HYB026H
	For collar terminals	HYB027H	HYB028H



HYB022H



HYB024H



HYB031H

- Moulded Case
Circuit Breakers x630**
- Adjustable thermal and magnetic trip unit
 - 3P
 - Mechanical test button
 - Lockable settings
 - Compliant with IEC60947-2.

- Connection:**
- Directly on copper cable terminal with end lug
 - Max. width: 32mm

Technical information: [Page 162](#)



HHJ250DR



HNJ630DE

MCCB x630 - TM Adjustable

Description	Characteristics	Cat ref.
Icu / Ics 400 / 415 V~ 25 kA/ 25 kA 3 Poles	250A	★ HHJ250DR
	320A	★ HHJ320DR
	400A	★ HHJ400DR
	630 A	★ HHJ630DE
Icu / Ics 400 / 415 V~ 40 kA/ 40 kA 3 Poles	250 A	★ HNJ250DR
	320 A	★ HNJ320DR
	400 A	★ HNJ400DR
	630 A	★ HNJ630DE
Icu / Ics 400 / 415 V~ 50 kA/ 50 kA 3 Poles	250 A	★ HMJ250DR
	320 A	★ HMJ320DR
	400 A	★ HMJ400DR
	630 A	★ HMJ630DE



HXA025H



HXA005H



HXA015H



HXA035HH

Accessories - Auxiliaries

Description	Characteristics	Cat ref.
Auxiliary contacts Auxiliary (AX) Alarm (AL)	250V AC - AX	HXA021H
	250V AC - AL left	HXA024H
	125V AC - AX	★ HXA025H
	125V AC - AL left	★ HXA026H
	250V AC - AL Right	★ HXA027H
	125V AC - AL Right	★ HXA028H
	Shunt trips SH	24V DC
48V DC		HXA002H
100 - 120V AC		HXA003H
200 - 240V AC		HXA004H
380 - 450V AC		HXA005H
Undervoltage releases UV	24V DC	HXA011H
	100 - 120V AC	HXA013H
	200 - 240V AC	HXA014H
	380 - 450V AC	HXA015H
Delayed UVR	24 V DC	★ HXA051H
	110 V~ AC	★ HXA053H
	240 V~ AC	★ HXA054H
	440 V~ AC	★ HXA055H
Cable Kit	0.75 mm ² - 6 wires	★ HXA035H

Motor Operator

- Can be used for the remote operation of the breaker

Technical information: [Page 164](#)

Terminal Covers

- Provides IP2X protection

Accessories - Handle-locking and Motor Operators

Description	Characteristics	Cat ref.
Direct rotary handles		★ HXW030H
	With interlocking	★ HXW032H
Key kit for rotary handle		★ HXW888H
	Key lock only	★ HXS999H
On door rotary handle kit with handle and shaft		★ HXW031H
Padlocking kit (3P)		HXA039H
Link interlock kit (3P)		★ HXW165H
Mechanical interlock, 1 front cover (3P)		★ HXW066H
Cable for mechanical interlock	1m length	★ HXB070H
	1.5m length	★ HXB071H
Motor operator with auto-rest	24 - 48 V DC	★ HXW040H
	100 - 110 V DC	★ HXW041H
	100 - 240 V AC	★ HXW042H
Motor operator with auto-rest Key lock	24 - 48 V DC	★ HXW040HK
	100 - 110 V DC	★ HXW041HK
	100 - 240 V AC	★ HXW042HK
Motor operator without auto-rest	24 - 48 V DC	★ HXW043H
	100 - 110 V DC	★ HXW046H
	100 - 240 V AC	★ HXW044H
Motor operator without auto-rest Key lock	24 - 48 V DC	★ HXW043HK
	100 - 110 V DC	★ HXW046HK
	100 - 240 V AC	★ HXW044HK
Electrical interlock for Motor Operator	For 2 x x630 motors	★ HXD068H
	For p250 / x630 motors	★ HXB069H



HXW030H



HXW033H



HXW040HK



HXD068H

Accessories - Connections and Covers

Description	Characteristics	Cat ref.
Terminal covers	For straight terminal extensions (3P)	★ HYW021H
	For spreader terminal extensions (3P)	★ HYW023H
Isolating earth plate	For straight terminal extensions (3P)	★ HYW050H
	For spreader terminal extensions (3P)	★ HYW052H
Integrated / 3 poles	1 wire Cu/Al	★ HYW001H
External / 3 poles	2 wires Cu/Al	★ HYW007H
Interphase barrier / 3 poles	250A	★ HYW019H
Straight terminal extension / 3 Poles	Up to 400A	★ HYW010H
	Up to 630A	★ HYW013H
Spreader terminal extension / 3 Poles	Up to 400A	★ HYW011H
	Up to 630A	★ HYW014H



HYW021H



HYW014H

**Moulded Case
Circuit Breakers h250**

- 3P & 4P
- Mechanical test button, sealable settings.
- Comply with IEC 60947-2.

Connection

Terminal area width 25 mm

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: $0.1 - 0.2s$

Technical information: [Page 168](#)

*Please check availability with your local Hager sales office at time of order



HNC250H

MCCBs h250 50kA LSI

Description	Characteristics	Cat ref.	Cat ref.
		3P	4P*
- Breaking capacity Icu: 50 kA (400/415V AC) Ics: 25 kA	40A	HNC040H	HNC041H
	125A	HNC125H	HNC126H
	250A	HNC250H	HNC251H
- Adjustable thermal $I_r = 0.4$ to $1 \times I_n$			
- Adjustable magnetic 2.5 to $10 \times I_r$			

Main switchgear



HEC250H

MCCBs h250 70kA LSI

Description	Characteristics	Cat ref.	Cat ref.
		3P	4P*
- Breaking capacity Icu: 70 kA (400/415V AC) Ics: 70 kA	40A	HEC040H	HEC041H
	125A	HEC125H	HEC126H
	250A	HEC250H	HEC251H
- Adjustable thermal $I_r = 0.4$ to $1 \times I_n$			
- Adjustable magnetic 2.5 to $10 \times I_r$			

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: 0.75mm² flexible or rigid cables
- Optional connection cables. The cable capacity of the terminals is 0.5 to 1.25mm².

Shunt Trip

- Remote tripping of MCCBs or trip-free switches. Operating voltage: 0.7 to 1.1 x Un.

Under Voltage Release

- Allows the tripping of MCCBs when voltage level drops 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

- IP55
- Supplied complete with shaft and handle.

Technical information: [Page 169](#)

Accessories

Description	Characteristics	Cat ref.
Auxiliary contacts AX AL	1 changeover contact 250V AC / 3A 125V DC / 0,4A 1NO + 1NC	HXC021H
	1 changeover alarm contact 250V AC / 3A 125V DC / 0,4A 1NO + 1NC	HXC024H
Shunt trips SH	24V DC	HXC001H
	48V DC	HXC002H
	100 - 120V AC	HXC003H
	200 - 240V AC	HXC004H
Undervoltage releases UV	380 - 450V AC	HXC005H
	24V DC	HXC011H
	100 - 120V AC	HXC013H
Direct rotary handles Padlockable	200 - 240V AC	HXC014H
	380 - 450V AC	HXC015H
Extended rotary handles Padlockable	Ø 5 - 8mm ² max	HXC030H
	320mm	HXC031H
Padlocking device To mount on MCCBs for handle locking 3 padlocks	Max Ø 5mm	HXC039H
Motor operators	24V DC	HXC040H
	230-240V AC	HXC042H
Interlocking Wire type		HXC065H



HXC021H

HXC024H



HXC004H

HXC014H



HXC039H

Main switchgear

Accessories

Description	Characteristics	Cat ref.	
		3P	4P
Collar terminals - copper	Set of 3 or 4	HYC003H	HYC004H
Extended connections	Straight connections - set of 4	HYC010H	HYC010H
	Spreader connections - set of 3 or 4	HYC011H	HYC012H
Rear connections	Set of 3 or 4	HYC031H	HYC032H
Interphase barriers	Set of 3 Height: 97mm	HYC019H	HYC019H
Terminal covers - 2 pcs	For extended straight connections	HYC021H	HYC022H
	For rear connections	HYC025H	HYC026H
	For collar terminals	HYC027H	HYC028H



HYC011H



HYC031H

Moulded Case

Circuit Breakers h630

- 3P & 4P
- Adjustable neutral 0 - 50% - 100%
- Mechanical test button, lockable settings
- Comply with IEC 60947-2.

Connection

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

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 (400A)
2.5 to 8 x I_r (630A)
- Time delay: 0.1 - 0.2 s

Technical information: [Page 174](#)

*Please check availability with your local Hager sales office at time of order



HND630H

MCCBs h630 50kA LSI

Description	I _n	Cat ref.	Cat ref.
		3P	4P*
- Breaking capacity	400A	HND400H	HND401H
I _{cu} : 50 kA (400/415V AC)	630A	HND630H	HND631H
I _{cs} : 50 kA			
- Adjustable thermal			
I _r = 0.4 to 1 x I _n			
- Adjustable magnetic			
2.5 to 10 x I _r (400A)			
2.5 to 8 x I _r (630A)			
- Time delay: 0.1 - 0.2s			



HED630H

MCCBs h630 70kA LSI

Description	I _n	Cat ref.	Cat ref.
		3P	4P*
- Breaking capacity	400A	HED400H	HED401H
I _{cu} : 70 kA (400/415V AC)	630A	HED630H	HED631H
I _{cs} : 50 kA			
- Adjustable thermal			
I _r = 0.4 to 1 x I _n			
- Adjustable magnetic			
2.5 to 10 x I _r (400A)			
2.5 to 8 x I _r (630A)			
- Time delay: 0.1 - 0.2s			

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: 0.75mm² flexible or rigid cables
- Optional connection cables. The cable capacity of the terminals is 0.5 to 1.25mm².

Shunt Trip

- Remote tripping of MCCBs. Operating voltage: 0.7 to 1.1 x Un.

Under Voltage Release

- Allows the tripping of MCCBs when voltage level drops 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

- IP55
- Supplied complete with shaft and handle.

Technical information: [Page 175](#)

Accessories

Description	Characteristics	Cat ref.
Auxiliary contacts AX AL	1 changeover contact 250V AC / 3A 125V DC / 0,4A 1NO + 1NC	HXC021H
	1 changeover alarm contact 250V AC / 3A 125V DC / 0,4A 1NO + 1NC	HXC024H
Shunt trips SH	24V DC	HXC001H
	48V DC	HXC002H
	100 - 120V AC	HXC003H
	200 - 240V AC	HXC004H
	380 - 450V AC	HXC005H
Undervoltage releases UV	24V DC	HXC011H
	100 - 120V AC	HXC013H
	200 - 240V AC	HXC014H
Direct rotary handles Padlockable	Max Ø 6 mm	HXD030H
	Max Ø 8mm 320mm	HXD031H
Extended rotary handles Padlockable	Max Ø 8mm 320mm	HXD031H
Padlocking device To mount on MCCBs for handle locking 3 padlocks	Max Ø 8mm	HXD039H



HXC021H

HXC024H



HXD030H



HXD039H

Main switchgear

Accessories

Description	Characteristics	In	Cat ref.	Cat ref.
			3P	4P
Motor operators	24-48V DC 100-240V AC		HXD040H	HXD040H
			HXD042H	HXD042H
Interlocking Wire type			HXD065H	HXD065H
Collar terminals Terminals for copper conductors 1 x 35 - 240mm ²	Set of 3 or 4	160 - 400A	HYD003H	HYD004H
Terminals for multiple aluminium/ copper conductors 2 x 35 - 240mm ²	Set of 3 or 4	400 - 630A	HYD007H	HYD008H
Extended connections For straight connections	Set of 4	400A	HYD010H	HYD010H
		630A	HYD013H	HYD013H
For spreader connections	Set of 3 or 4	400A	HYD011H	HYD012H
		630A	HYD014H	HYD015H
Rear connections	Set of 3 or 4	400A	HYD031H	HYD032H
		630A	HYD033H	HYD034H
Interphase barriers	Set of 3 Height: 97mm		HYD019H	HYD019H
Terminal covers - 2 pcs	For extended straight connections For extended spreader connections For rear connections For collar terminals		HYD021H	HYD022H
			HYD023H	HYD024H
			HYD025H	HYD026H
			HYD027H	HYD028H



HXD042H



HYD003H



HYD015H

Moulded Case

Circuit Breakers h1000

- 3P & 4P
- Adjustable neutral 0 - 50% - 100%
- Mechanical test button, lockable settings.

Connection

- Direct on copper terminal, with end lug max. width: 50mm
- Comply with IEC60947-2.

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)
2,5 to 8 x I_r (1000A)
- Time delay: 0.1-0.2s

Technical information: [Page 179](#)

*Please check availability with your local Hager sales office at time of order

Main switchgear



HNE970H

MCCBs h1000 50kA LSI

Description	I _n	Cat ref.	Cat ref.
		3P	4P*
- Breaking capacity	800A	HNE800H	HNE801H
I _{cu} : 50 kA (400/415V AC)	1000A	HNE970H	HNE971H
I _{cs} : 50 kA			
- 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: 0.1-0.2s			
- Neutral setting from 0-50 to 100%			



HEE801H

MCCBs h1000 70kA LSI

Description	I _n	Cat ref.	Cat ref.
		3P	4P*
- Breaking capacity	800A	HEE800H	HEE801H
I _{cu} : 70 kA (400/415V AC)	1000A	HEE970H	HEE971H
I _{cs} : 50 kA			
- 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: 0,1-0,2s			
- Neutral setting from 0-50 to 100%			

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: 0.75mm² flexible or rigid cables
- Optional connection cables. The cable capacity of the terminals is 0.5 to 1.25mm².

Shunt Trip

- Remote tripping of MCCBs. Operating voltage: 0.7 to 1.1 x Un.

Under Voltage Release

- Allows the tripping of MCCBs when voltage level drops 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

- IP55
- Supplied complete with shaft and handle.

Technical information: [Page 180](#)

Accessories

Description	Characteristics	Cat ref.
Auxiliary contacts AX AL	1 changeover contact 250V AC / 3A 125V DC / 0,4A 1NO + 1NC	HXC021H
	1 changeover alarm contact 250V AC / 3A 125V DC / 0,4A 1NO + 1NC	HXC024H
Shunt trips SH	24V DC	HXC001H
	48V DC	HXC002H
	100 - 120V AC	HXC003H
	200 - 240V AC	HXC004H
Undervoltage releases UV	380 - 450V AC	HXC005H
	24V DC	HXE011H
	100 - 120V AC	HXE013H
Direct rotary handle Padlockable	200 - 240V AC	HXE014H
	380 - 450V AC	HXE015H
Extended rotary handles Padlockable		HXE030H
	Max Ø 8mm 320mm	HXE031H
Padlocking device To mount on MCCB for handle locking 3 padlocks	Max Ø 8 mm	HXD039H
Motor operators	24 - 48V DC	HXE040H
	100 - 240V AC	HXE042H
Interlocking Wire type		HXE065H



HXC021H

HXC024H



HXC004H

HXE014H



HXD039H

Accessories

Description	In	Cat ref. 3P	Cat ref. 4P*
Terminal covers - 2 pcs	For extended connections	HYE021H	HYE022H
	For rear connections	HYE025H	HYE026H
Rear connections	Set of 3 or 4 800A	HYE031H	HYE032H
	1000A	HYE033H	HYE034H



HYE031H

Main switchgear

Moulded Case

Circuit Breakers h1600

- 3 pole - 3 trip units
- 4 pole - 4 trip units
- Adjustable neutral 0 - 50% - 100%
- Mechanical test button, lockable settings.
- Comply with IEC60947-2.

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

Connection

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

Technical information: [Page 185](#)

*Please check availability with your local Hager sales office at time of order

Main switchgear



HNF990H

MCCBs h1600 50kA LSI

Description	In	Cat ref.	Cat ref.
		3P	4P*
- Breaking capacity	1250A	HNF980H	HNF981H
- Icu: 50 kA (400/415V AC)	1600A	HNF990H	HNF991H
- Ics: 50 kA			
- Adjustable thermal $I_r = 0.4$ to $1 \times I_n$			
- Adjustable magnetic 2.5 to $10 \times I_r$			
- Time delay: 0.1-0.2s			
- Neutral setting 0, 50, 100%			



HEF980H

MCCBs h1600 70kA LSI

Description	In	Cat ref.	Cat ref.
		3P	4P*
- Breaking capacity	1250A	HEF980H	HEF981H
- Icu: 70 kA (400/415V AC)	1600A	HEF990H	HEF991H
- Ics: 50 kA			
- Adjustable thermal $I_r = 0.4$ to $1 \times I_n$			
- Adjustable magnetic 2.5 to $10 \times I_r$			
- Time delay: 0.1-0.2s			
- Neutral setting from 0, 50, 100%			

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: 0.75mm² flexible or rigid cables
- Optional connection cables. The cable capacity of the terminals is 0.5 to 1.25mm².

Shunt Trip

- Remote tripping of MCCBs. Operating voltage: 0.7 to 1.1 x Un.

Under Voltage Release

- Allows the tripping of MCCBs when voltage level drops 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

- IP55
- Supplied complete with shaft and handle.
- Rear connection included

Technical information: [Page 186](#)

Accessories

Description	Characteristics	Cat ref.
Auxiliary contacts AX AL	1 changeover contact 250V AC / 3A 125V DC / 0,4A 1NO + 1NC	HXC021H
	1 changeover alarm contact 250V AC / 3A 125V DC / 0,4A 1NO + 1NC	HXC024H
Shunt trips SH	24V DC	HXF001H
	48V DC	HXF002H
	100 - 120V AC	HXF003H
	200 - 240V AC	HXF004H
Undervoltage releases UV	380 - 450V AC	HXF005H
	24V DC	HXE011H
	100 - 120V AC	HXE013H
Direct rotary handles Padlockable	200 - 240V AC	HXE014H
	380 - 450V AC	HXE015H
Extended rotary handles Padlockable	Max Ø 8mm	HXF030H
	Max Ø 8mm 320mm	HXF031H
Padlocking device To mount on MCCBs for handle locking 3 padlocks	Max Ø 8mm	HXF039H
Motor operators	24V DC	HXF040H
	200 - 230V AC	HXF042H



HXC021H



HXC024H



HXF004H



HXE014H



HXF040H

Main switchgear

Moulded Case Circuit Breakers

P160

Moulded case circuit breakers P160

- Only suitable for quadro evo
- 3P
- Mechanical test button, sealable settings.
- Compliant with IEC 60947-2.

Connection:

Terminal area width 21 mm

Thermal Magnetic Trip Unit

- Adjustable thermal: 0.63, 0.8, 1 x In
- Adjustable magnetic: <math><160 - 6, 8, 10, 12 \times I_n</math>
=160 - 6, 7, 8, 9, 10 x In

Electronic trip unit LSI:

- Long delay (thermal equivalent) adjustable: $I_{r1} = 0.4$ to $1 \times I_n^*$ adjustable: $I_{r2} = 0.91$ to $1 \times I_n^*$
 $I_r = I_{r1} \times I_{r2}$
- Short delay (magnetic equivalent) adjustable: 1.5, 2, 3, 4, 5, 6, 7, 8 & 10 x I_r
- Time delay: I2t on/ off: 0.05s, 0.1s, 0.2s, 0.3s, 0.4s
Non tripping: 0.02s, 0.08s, 0.18s, 0.28s, 0.38s
Maximum breaking time: 0.08s, 0.15s, 0.25s, 0.35s, 0.45s

* For full range, please refer to technical pages.

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HNS063DR

P160 - TM adjustable with front connection (3P)

Description	In (A)	Cat ref.
Icu / Ics 400 / 415 V~ 25 kA/ 25 kA 3 Poles	25A	★ HHS025DR
	40A	★ HHS040DR
	63A	★ HHS063DR
	80A	★ HHS080DR
	100A	★ HHS100DR
	125A	★ HHS125DR
Icu / Ics 400 / 415 V~ 40 kA/ 40 kA 3 Poles	160A	★ HHS160DR
	25A	★ HNS025DR
	40A	★ HNS040DR
	63A	★ HNS063DR
	80A	★ HNS080DR
	100A	★ HNS100DR
Icu / Ics 400 / 415 V~ 50 kA/ 50 kA 3 Poles	125A	★ HNS125DR
	160A	★ HNS160DR
	25A	★ HMS025DR
	40A	★ HMS040DR
	63A	★ HMS063DR
	80A	★ HMS080DR
Icu / Ics 400 / 415 V~ 50 kA/ 50 kA 3 Poles	100A	★ HMS100DR
	125A	★ HMS125DR
	160A	★ HMS160DR



HNS100JR

P160 - LSI with front connection (3P)

Description	In (A)	Cat ref.
Icu / Ics 400 / 415 V~ 25 kA/ 25 kA 3 Poles	40A	★ HHS040JR
	100A	★ HHS100JR
	160A	★ HHS160JR
Icu / Ics 400 / 415 V~ 40 kA/ 40 kA 3 Poles	40A	★ HNS040JR
	100A	★ HNS100JR
	160A	★ HNS160JR
Icu / Ics 400 / 415 V~ 50 kA/ 50 kA 3 Poles	40A	★ HMS040JR
	100A	★ HMS100JR
	160A	★ HMS160JR

Moulded Case Circuit Breakers P160

- Moulded case circuit breakers P160
- Only suitable for quadro evo
 - 3P
 - Mechanical test button, sealable settings.
 - Compliant with IEC 60947-2.

Connection:

Terminal area width 21 mm

Energy trip unit:

- Long delay (thermal equivalent) adjustable: $I_r = 0.4$ to $1 \times I_n^*$
- Short delay (magnetic equivalent) adjustable: 1.5 to 10 (steps of 0.5) $\times I_r$
- Time delay:
 - I2t on/ off: 0.05s, 0.1s, 0.2s, 0.3s, 0.4s
 - Non tripping: 0.02s, 0.08s, 0.18s, 0.28s, 0.38s
 - Maximum breaking time: 0.08s, 0.15s, 0.25s, 0.35s, 0.45s

* For full range, please refer to technical pages.

Technical information: [Page 193](#)
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P160 - Energy with front connection (3P)

Description	In (A)	Cat ref.
Icu / Ics 400 / 415 V~ 25 kA/ 25 kA 3 Poles	40A	★ HHS040NR
	100A	★ HHS100NR
	160A	★ HHS160NR
Icu / Ics 400 / 415 V~ 40 kA/ 40 kA 3 Poles	40A	★ HNS040NR
	100A	★ HNS100NR
	160A	★ HNS160NR
Icu / Ics 400 / 415 V~ 50 kA/ 50 kA 3 Poles	40A	★ HMS040NR
	100A	★ HMS100NR
	160A	★ HMS160NR



HMS100NR

Moulded Case Circuit Breakers P250

- Only suitable for quadro evo
- 3P
- Mechanical test button, sealable settings.
- Comply with IEC 60947-2.

Connection

- Terminal area width 25 mm

Thermal Magnetic Trip Unit

- Adjustable thermal: 0.63, 0.8, 1 x In
- Adjustable magnetic: < 200 - 6, 8, 10, 13 x In = 200 - 6, 8, 10, 12 x In = 250A - 6, 7, 8, 9, 10 x In

Electronic trip unit LSI

- Long delay (thermal equivalent) adjustable: Ir1 = 0.36 to 1 x In* Ir2 = 0.91 to 1 x In* Ir = Ir1 x Ir2
- Short delay (magnetic equivalent) adjustable: 1.5, 2, 3, 4, 5, 6, 7, 8 & 10 x Ir
- Time delay: I2t on/ off: 0.05s, 0.1s, 0.2s, 0.3s, 0.4s Non tripping: 0.02s, 0.08s, 0.18s, 0.28s, 0.38s Maximum breaking time: 0.08s, 0.15s, 0.25s, 0.35s, 0.45s

* For full range, please refer to technical pages.

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HMT050DR

P250 - TM adjustable with front connection (3P)

Description	In (A)	Cat ref.
Icu / Ics 400 / 415 V~ 25 kA/ 25 kA 3 Poles	50A	★ HHT050DR
	63A	★ HHT063DR
	100A	★ HHT100DR
	125A	★ HHT125DR
	160A	★ HHT160DR
	200A	★ HHT200DR
Icu / Ics 400 / 415 V~ 40 kA/ 40 kA 3 Poles	250A	★ HHT250DR
	50A	★ HNT050DR
	63A	★ HNT063DR
	100A	★ HNT100DR
	125A	★ HNT125DR
	160A	★ HNT160DR
Icu / Ics 400 / 415 V~ 50 kA/ 50 kA 3 Poles	200A	★ HNT200DR
	250A	★ HNT250DR
	50A	★ HMT050DR
	63A	★ HMT063DR
	100A	★ HMT100DR
	125A	★ HMT125DR
Icu / Ics 400 / 415 V~ 50 kA/ 50 kA 3 Poles	160A	★ HMT160DR
	200A	★ HMT200DR
	250A	★ HMT250DR



HMT100JR

P250 - LSI with front connection (3P)

Description	In (A)	Cat ref.
Icu / Ics 400 / 415 V~ 25 kA/ 25 kA 3 Poles	40A	★ HHT040JR
	100A	★ HHT100JR
	160A	★ HHT160JR
	250A	★ HHT250JR
Icu / Ics 400 / 415 V~ 40 kA/ 40 kA 3 Poles	40A	★ HNT040JR
	100A	★ HNT100JR
	160A	★ HNT160JR
	250A	★ HNT250JR
Icu / Ics 400 / 415 V~ 50 kA/ 50 kA 3 Poles	40A	★ HMT040JR
	100A	★ HMT100JR
	160A	★ HMT160JR
	250A	★ HMT250JR

Moulded Case Circuit Breakers
P250

- Only suitable for quadro evo
- 3P
- Mechanical test button, sealable settings.
- Comply with IEC 60947-2.

Connection

- Terminal area width 25 mm

Energy trip unit

- Long delay (thermal equivalent) adjustable: $I_r = 0.36$ to $1 \times I_n^*$
- Short delay (magnetic equivalent) adjustable: 1.5 to 10 (steps of 0.5) $\times I_r$
- Time delay:
I2t on/ off: 0.05s, 0.1s, 0.2s, 0.3s, 0.4s
Non tripping: 0.02s, 0.08s, 0.18s, 0.28s, 0.38s
Maximum breaking time: 0.08s, 0.15s, 0.25s, 0.35s, 0.45s

* For full range, please refer to technical pages.

Technical information: [Page 199](#)
Trip unit information: [Page 191](#)

P250 - Energy with front connection (3P)

Description	In (A)	Cat ref.
Icu / Ics 400 / 415 V~ 25 kA/ 25 kA 3 Poles	40A	★ HHT040NR
	100A	★ HHT100NR
	160A	★ HHT160NR
	250A	★ HHT250NR
Icu / Ics 400 / 415 V~ 40 kA/ 40 kA 3 Poles	40A	★ HNT040NR
	100A	★ HNT100NR
	160A	★ HNT160NR
	250A	★ HNT250NR
Icu / Ics 400 / 415 V~ 50 kA/ 50 kA 3 Poles	40A	★ HMT040NR
	100A	★ HMT100NR
	160A	★ HMT160NR
	250A	★ HMT250NR



HMT100NR

Moulded case circuit breakers P630

- Only suitable for quadro evo
- 3P
- Mechanical test button, sealable settings.
- Compliant with IEC 60947-2.

Connection

- Terminal area width 32 mm

Electronic trip unit LSI:

- Long delay (thermal equivalent) adjustable: $I_{r1} = 0.4$ to $1 \times I_n^*$ adjustable: $I_{r2} = 0.91$ to $1 \times I_n^*$ $I_{r=} I_{r1} \times I_{r2}$
- Short delay (magnetic equivalent) adjustable: 1.5, 2, 3, 4, 5, 6, 7, 8 & $10 \times I_r$
- Time delay: I_{2t} on/ off: 0.05s, 0.1s, 0.2s, 0.3s, 0.4s
Non tripping: 0.02s, 0.08s, 0.18s, 0.28s, 0.38s
Maximum breaking time: 0.08s, 0.15s, 0.25s, 0.35s, 0.45s

Energy trip unit:

- Long delay (thermal equivalent) adjustable: $I_r = 0.4$ to $1 \times I_n^*$
- Short delay (magnetic equivalent) adjustable: 1.5 to 10 (steps of 0.5) $\times I_r$
- Time delay: I_{2t} on/ off: 0.05s, 0.1s, 0.2s, 0.3s, 0.4s
Non tripping: 0.02s, 0.08s, 0.18s, 0.28s, 0.38s
Maximum breaking time: 0.08s, 0.15s, 0.25s, 0.35s, 0.45s

* For full range, please refer to technical pages.

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Trip unit information: [Page 190](#)



HMW250JR

P630 - LSI with front connection (3P)

Description	In (A)	Cat ref.
Icu / Ics 400 / 415 V~ 40 kA/ 40 kA 3 Poles	250A	★ HNW250JR
	400A	★ HNW400JR
	630A	★ HNW630JR
Icu / Ics 400 / 415 V~ 50 kA/ 50 kA 3 Poles	250A	★ HMW250JR
	400A	★ HMW400JR
	630A	★ HMW630JR



HMW250NR

P630 - Energy with front connection (3P)

Description	In (A)	Cat ref.
Icu / Ics 400 / 415 V~ 40 kA/ 40 kA 3 Poles	250A	★ HNW250NR
	400A	★ HNW400NR
	630A	★ HNW630NR
Icu / Ics 400 / 415 V~ 50 kA/ 50 kA 3 Poles	250A	★ HMW250NR
	400A	★ HMW400NR
	630A	★ HMW630NR

P160, P250 and P630 - Connections and covers

Description	Characteristics	Cat ref.
DIN rail adaptor (3P)	P160	★ HYS033H
	P250	★ HYT033H
Straight terminal extension (3P)	P160 Front connection	★ HYS010H
	P160 Cable terminal	★ HYS013H
	P250	★ HYB010H
	P630 (250 - 400A)	★ HYW010H
	P630 (630A)	★ HYW013H
Spreader terminal extension (3P)	P160 Front connection	★ HYS011H
	P160 Cable terminal	★ HYS014H
	P250	★ HYB011H
	P630 (250 - 400A)	★ HYW011H
	P630 (630A)	★ HYW014H
Rear Connection (3P)	P160 Front connection (16A - 50A)	★ HYS031H
	P160 Cable terminal (63A - 160A)	★ HYS131H
	P250	★ HYB031H
	P630 (250-400A)	★ HYD031H
	P630 (630A)	★ HYD033H
Terminal cover for straight extensions	P160	★ HYS021H
	P250	★ HYT021H
	P630	★ HYW021H
Terminal Cover for spread extensions	P160	★ HYS023H
	P250	★ HYT023H
	P630	★ HYW023H
Isolating earth plate for straight terminal cover	P160	★ HYS050H
	P250	★ HYT050H
	P630	★ HYW050H
Isolating earth plate for spread terminal cover	P160	★ HYS052H
	P250	★ HYT052H
	P630	★ HYW052H
Interphase barrier	P160, 50mm	★ HYS019H
	P250,	★ HYT019H
	P630	★ HYW019H



HYT033H



HYB010H



HYW014H



HYT021H



HYT050H



HYT052H



HYT019H

Com Module

- Interface - Mod bus RTU
- Mod bus addresses: adjustable from 1 to 99
- Connection capacity 0.5 to 1.5mm²
- Supply voltage - 24V DC
- Digital output - <=100V DC (typical 24V DC, 48V DC)

AX/AL Energy

- Pre wired contact - 0.34mm²
- Nominal current 250V AC-14 = 3A
250V AC-15 = 1A
125V DC-12 = 0.4A

Panel Display

- IP65
- Rated supply voltage: 24V DC

Technical information: [Page 212](#)

AX/AL Energy low level

- 125V AC-14 = 0.1A
- 30V DC-12 = 0.1A



HTC320H



HTD210H



HTP610H



HTG911H



HTG471H



HTG465H



HTG485H

P160, P250 and P630 Electronic Devices and Accessories

Description	Characteristics	Cat ref.	
AX/AL Energy For P160, P250 and P630 Energy	For communication only	★ HXS120H	
	COM + 250V AC contact wires	★ HXS121H	
	COM + 125V AC low level contact wires	★ HXS122H	
COM Module For P160, P250 and P630 Energy	Without I/O	★ HTC310H	
	With I/O	★ HTC320H	
	Side support for wire	★ HTC100H	
Panel display For P160, P250 and P630 Energy		★ HTD210H	
Spare parts	Configuration tool	★ HTP610H	
	h3+ Configurator	★ HTP010H	
	MIP adaptor for h3+	★ HTP020H	
	VGA cable 1m for HTP610H	★ HTP030H	
	Power supply for HTP610H	★ HTP040H	
	Battery for HTP610H	★ HTP050H	
24V DC Power supply For P160, P250 and P630 Energy		★ HTG911H	
CIP - Adaptor For P160, P250 and P630 Energy	0.5m long	★ HTC330H	
	1.5m long	★ HTC340H	
	3m long	★ HTC350H	
	5m long	★ HTC360H	
	10m long	★ HTC370H	
CIP - 24V Adaptor For P160, P250 and P630 Energy	1.2m long	★ HTC140H	
OAC/PTA adaptor	1.2m long	★ HTC130H	
ZSI adaptor For P160, P250 and P630 Energy	1.2m long	★ HTC150H	
NSP cable adaptor For P160, P250 and P630 Energy	1.2m long	★ HTC160H	
	Modbus cables RJ45 - RJ45	0.2m long	★ HTG480H
	For P160, P250 and P630 Energy	1m long	★ HTG481H
		2m long	★ HTG482H
5m long		★ HTG484H	
Modbus cables RJ45 - RJ45 with earth For P160, P250 and P630 Energy	1m long	★ HTG471H	
	2m long	★ HTG472H	
	5m long	★ HTG474H	
	3m long	★ HTG465H	
Modbus cable	25m long	★ HTG485H	

Indication Contacts

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

Auxiliary Contact - Coil connection

- Connection capacity: 0.75mm² flexible or rigid cables
- Optional connection cables. The cable capacity of the terminals is 0.5 to 1.25mm².

Shunt Trip

- Remote tripping of MCCBs or trip-free switches.
- Operating voltage
 - 24V DC and 48V DC: 75% to 125% x Un.
 - 100-120V, 200-240V and 380-450V: 85% to 110% x Un.

Under Voltage Release

- Allows the tripping of MCCBs when voltage level drops between 35% and 70% of Un.
- Closing voltage >85% x Un.

Direct Rotary Handle

- Padlockable
- Equipped with front cover and handle
- 1/4 turn screws to ease the mounting in front of P160-P250 MCCBs

Extended Rotary Handle

- Supplied complete with shaft and handle.

Technical information:

- [P160 - Page 194](#)
- [P250 - Page 200](#)
- [P630 - Page 208](#)

P160, P250 and P630 - Auxiliaries and Handles

Description	Characteristics	Cat ref.
AX position auxiliary contact For P160, P250 and P630 Energy		HXA021H
	Low level	★ HXA025H
AL tripping auxiliary contact For P160, P250 and P630 Energy	Left side	HXA024H
	Low level left side	★ HXA026H
	Right side	★ HXA027H
	Low level right side	★ HXA028H
Shunt trip release For P160, P250 and P630 Energy	24 V DC	HXA001H
	48 V DC	HXA002H
	100 - 120 V ~	HXA003H
	200 - 240 V ~	HXA004H
	380 - 450 V ~	HXA005H
Undervoltage release For P160, P250 and P630 Energy	24 V DC	HXA011H
	100 - 120 V ~	HXA013H
	200 - 240 V ~	HXA014H
	380 - 450 V ~	HXA015H
Delayed UVR For P160, P250 and P630 Energy	24 V DC	★ HXA051H
	110 V ~	★ HXA053H
	240 V ~	★ HXA054H
	440 V ~	★ HXA055H
Cable Kit For P160, P250 and P630 Energy	0.75 mm ² - 6 wires	★ HYA035H
Direct rotary handle	P160	★ HXS030H
	P250	★ HXT030H
	P630	★ HXW030H
Direct rotary handle with interlocking	P160	★ HXS032H
	P250	★ HXT032H
	P630	★ HXW032H
Key kit for rotary handle	P160 and P250	★ HXS888H
	P630	★ HXW888H
Rotary handle - Key lock only	P160, P250, P630	★ HXS999H
On door extended rotary handle - Kit with black IP55 handle and 200 mm shaft	P160	★ HXS031H
	P250	★ HXT031H
	P630	★ HXW031H
On door rotary handle - Black and gray IP55	P160 and P250	★ HXS901H
	P630	★ HXW901H
Shaft extension 200mm	P160 and P250	★ HXS912H
	P630	★ HXW912H
Shaft extension 320mm	P160 and P250	★ HXS913H
	P630	★ HXW913H
Shaft extension 500mm	P160 and P250	★ HXS915H
	P630	★ HXW915H
Shaft guide for door rotary handle	P160 and P250	★ HXS920H



HXA024H



HXA015H



HXA051H



HXT031H



HXS920H



HXW033H

Description

- Suitable to operate P250 & P630 MCCBs remotely
- Fast Operation
- Automatic reset option available
- Power supply: > 300VA

Motor Operator for P250

- Operating Voltage: 230V-240V AC (for other voltages please refer to MCCB manual)
- Starting current: 6A
- Operating current: 3.4A

Motor Operator for P630

- Operating Voltage: 100V-240V AC (for other voltages please refer to MCCB manual)
- Starting current: 1A

P250 and P630 - Motor Operators

Description	Characteristics	Cat ref.
Motor operator with auto-reset	P250, 24 V DC	★ HXT040H
	P630, 24 - 48 V DC	★ HXW040H
	P250, 48 V DC	★ HXT048H
	P250, 100 - 110 V AC/DC	★ HXT041H
	P630, 100 - 110 V DC	★ HXW041H
	P630, 110 - 240 V AC	★ HXW042H
Motor operator with auto-reset and Ronis key lock	P250, 24 V DC	★ HXT040HK
	P630, 24 - 48 V DC	★ HXW040HK
	P250, 48 V DC	★ HXT048HK
	P250, 100 - 110 V AC/DC	★ HXT041HK
	P630, 100 - 110 V DC	★ HXW041HK
	P630, 110 - 240 V AC	★ HXW042HK
Motor operator without auto-reset	P250, 24 V DC	★ HXT043H
	P630, 24 - 48 V DC	★ HXW043H
	P250, 48 V DC	★ HXT049H
	P250, 100 - 110 V AC/DC	★ HXT046H
	P630, 100 - 110 V DC	★ HXW046H
	P630, 110 - 240 V AC	★ HXW044H
Motor operator without auto-reset and Ronis key lock	P250, 24 V DC	★ HXT043HK
	P630, 24 - 48 V DC	★ HXW043HK
	P250, 48 V DC	★ HXT049HK
	P250, 100 - 110 V AC/DC	★ HXT046HK
	P630, 100 - 110 V DC	★ HXW046HK
	P630, 110 - 240 V AC	★ HXW044HK
Electrical interlock for Motor operator Type A	P250	★ HXB068H
	P630	★ HXD068H
	For P250 to P630 motors	★ HXB069H



HXT040H



HXT040HK



HXT043H



HXT043HK



HXB068H

Link Interlock Kit

- For the use of interlocking between same frame sized MCCBs, mounted side by side.

Cable Interlock

- For the use of interlocking between same or different frame sized MCCBs.
- Does not need to be mounted side by side. (2x front covers + cable for interlock)

P160, P250 and P630 - Locking Kits and Mechanical Interlocking (3P)

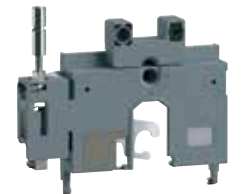
Description	Characteristics	Cat ref.
Padlocking kit		HXA039H
Locking kit for on door rotary handle		★ HZC019
Link interlock kit (3P)	P160	★ HXS165H
	P250	★ HXT165H
	P630	★ HXW165H
Mechanical interlock (1 front cover)	P160	★ HXS066H
	P250	★ HXT066H
	P630	★ HXW066H
Cable for mechanical interlock	1 m long	★ HXB070H
	1.5 m long	★ HXB071H



HXA039H



HXT166H



HXT066H



HXB070H

Fuse carriers description

Size according to DIN from 000 to 2 to suit fuses according to AS/NZS60269

Connection capacity

- 70 - 240mm

Fuse description

DIN fuses with a breaking capacity up to 120kA at 500V

- Class gG
- IEC 60269
- sizes from 000 to 2

Technical information: [Page 213](#)



LNH0080M



LNH2160M

NH Fuses

Description	Current rating (A)	Cat ref.
Size 000	50A	LNH0050M
	63A	LNH0063M
	80A	LNH0080M
	100A	LNH0100M
Size 00	125A	LNH0125M
	160A	LNH0160M
Size 1	100A	LNH1100M
	125A	LNH1125M
	160A	LNH1160M
	200A	LNH1200M
	250A	LNH1250M
Size 2	160A	LNH2160M
	200A	LNH2200M
	250A	LNH2250M
	315A	LNH2315M
	400A	LNH2400M

Fuse Switch Disconnectors



LT150

Description	Cat ref.
Suits 3 x size 00 160A DIN blade fuses	LT052
Suits 3 x size 1 250A DIN blade fuses	LT150
Suits 3 x size 2 400A DIN blade fuses	LT250

Description

The HA series is a range of multi-pole load disconnecter switches with manual operation. They enable making and breaking on load and safety isolation of any low voltage installation.

Technical data

- Visualised breaking
- Double breaking per phase
- 3 or 4 pole
- Padlockable handle
- Auxiliary contacts
- Rotary handles
- Extension shafts
- Complying with IEC60947-3

For replacement parts,
please contact customer service
on 1300 850 253

Technical information: [Page 214](#)

*Please check availability with your local Hager sales office at time of order

Load Break Switches - DIN or Screw Mount

Description	Width	Characteristics	Module mm	Cat ref.
3 pole 400V~	6 mod	In 80A	108	HA304
	6 mod	In 100A	108	HA305
	6 mod	In 125A	108	HA306
	8.5 mod	In 160A	142	HA307
	8.5 mod	In 200A	142	HA308
	8.5 mod	In 250A	142	HA309M
4 pole 400V~	6 mod	In 125A	108	HA406
	8.5 mod	In 200A	142	HA408



HA305

Accessories

Description	Characteristics	Module mm	Cat ref.
Auxiliary contacts	1NC + 1NO		HZ022
Terminal shrouds	To suit HA307/HA308/HA408 Switch line or load side (Cable lug connection)	1 mod	HZ062
	To suit HA307/HA308 Switch line or load side c/- cable clamp	1 mod	HZ072
Interlocked handle - Black IP55 for use with extension shaft only NOTE: does not replace rotary handle	80 to 200A (Not suited for HA309M)		HZC001
Extension shaft - 200mm	80 to 200A (Not suited for HA309M)		HZC103



HZC001



HZC103



HZ022



HZC062



HZC072

Description

The HA Series is a range of multi-pole load disconnecter switches with manual operation. They enable making and breaking on load and safety isolation of any low voltage installation. Fibreglass reinforced polyester case, self extinguishable, resists creepage distance and arc, tropicalised.

Technical data

- lth (40°): 250 to 1600A
- Un 400 / 690V AC
- Visualised breaking
- Double breaking per phase
- 3 or 4 pole
- Padlockable handle
- Auxiliary contacts

NOTE: Handles and shaft must be ordered separately.

For replacement parts, please contact customer service on 1300 850 253

Technical information: [Page 214](#)

Standards

- Compliant with IEC60947-3

*Please check availability with your local Hager sales office at time of order



HA354

Load Break Switches - Screw Mount Only

Description	Characteristics	Cat ref.
3 pole 400V~	In 250A	HA354
	In 400A	HA356
	In 630A	HA358
	In 800A	HA360
	In 1250A	HA362
	In 1600A	HA364
4 pole 400V~	In 400A - AC23	HA457
	In 630A - AC23	HA458

Main switchgear



HZC003

Accessories

Description	Characteristics	Modules	Cat ref.
Auxiliary contacts	125 to 1600A 1NO + 1NC AC1, 5A, 250V		HZ023
Terminal shrouds - 3 pcs	To suit HA354 Switch line or load side	1 mod	HZC203
	To suit HA356/HA358/ Switch line or load side	1 mod	HZC205
Interlocked handle - Black IP55 for use with extension shaft NOTE: does not replace rotary handle	100 to 630A		HZC002
	800 to 1600A		HZC003
Extension Shaft - 320mm	100 to 630A		HZC102
	800 to 1600A		HZC106



HZC106



HZ023



HZC203

Automatic transfer switches

63A to 1600A

Selection guide



Type of transfer	HIC4xxA	HIB4xxM	HIC4xxG	HIC4xxE
Emergency manual transfer via handle	•	•	•	•
Remote controlled transfer using dry contact piloting (RTSE)		•		
Automatic transfer (ATSE)	•		•	•
Number of poles				
4P	•	•	•	•
Supply type				
230 VAC single power supply		•		
230 VAC dual power supply	•		•	•
Connection of remote control interface				
Remote display D10			•	
Remote control interface D20				•
Automatic controller configuration				
Configuration by potentiometers and dip switches	•		•	
Configuration by screen and keyboard				•
Auto-configuration of the voltage and frequency			•	•
Application				
Generator - Generator applications		• (1)		
Network - Generator application	•	• (1)	•	•
Network - Network application	•	• (1)	•	•
Specific functions for gensets				
On load test	•		•	•
Off load test			•	•
Inputs / outputs				
Fixed inputs / outputs	•	•	•	
Configurable inputs / outputs (e.g. watchdog, load shedding)				•
Automatic controller functionalities				
Contact for availability status	•	•	•	•
Control of voltages and frequency	•		•	•
Control of phase rotation			•	•
Phase unbalance control				•
LED display of source availability	•		•	•
LED display of positions			•	•
Display of meters & voltage/frequency measurements				•
Load shedding				•
Display & measure power & energy (with CT option)				•
Supervision (with optional module)				
Scheduling of generator start-up				•
RS485 communication				•
Ethernet communication (optional)				•
Webserver via Ethernet module (optional)				•
Data log				•

(1) using an external controller.

Automatic Transfer Switches

Automatic transfer switches allow automatic switching, changeover switching or ON load power circuit permutation.

For safety breaking. Can be mounted on perforated plates or DIN rail.

Terminal Shrouds

IP2X protection against direct contact with terminals or connecting parts. Perforations allow remote thermographic inspection without removing the shrouds. (1) For complete shrouding at front, rear top and bottom, order qty x 4; if equipped with bridging bars order Qty x 3. (2) For top and bottom shrouding for the front only, order Qty x 2.

Terminal Screens

Upstream and downstream protection against direct contact with terminals or connection parts. For upstream and downstream protection order Qty x 1.

Bridging Bars

For bridging power terminals on the upstream or downstream side of the switch. One reference required per ATS.

Voltage Tapping and Power Supply Kit

For power supply and voltage measurement. Routing of the conductors is controlled, which means that no specific protective device is necessary for the connections. The kit can be fitted on the top or bottom of the switch.

For replacement parts, please contact customer service on 1300 850 253

Technical information: [Page 215](#)



HIC416A

Modular Automatic Transfer Switches (63A - 160A)

Description	In/A	Cat. ref. with energy mngmt.
4 pole	63	HIC406A*
- 3 positions: 0-I-II	80	HIC408A*
- Lockable in position: O	100	HIC410A*
- Complies with EN 60947-3	125	HIC412A*
- Connection on copper conductors with collar terminals	160	HIC416A*



HZC218

Accessories

Description	Characteristics	Cat ref.
Terminal shrouds top and bottom - 2 pieces per pack	for HIC4xxA switches	HZC218*
Auxiliary contacts 1NO + 1NC	for switches 125 to 200 A	HZI300*
Single phase voltage sensing taps - For switch control circuit supply	2 conductors per pole	HZI230*
Bridging bars 2 x 4P	for HIC4xxA 63A to 125A	HZI400*
	for HIC416A	HZI401*
Sealable cover	for HIC4xxA switches	HZI210*



HZI300



HZI230



HZI400



HZI210

Description

Automatic transfer switches allow automatic switching, changeover switching or ON load power circuit permutation. For safety breaking.

For replacement parts, please contact customer service on 1300 850 253

Technical information: [Page 216](#)

Features

- 4 pole
- Mounting on plain or perforated plates.
- Lockable in position: O

Standards

- Compliant with EN 60947-3

*Please check availability with your local Hager sales office at time of order

Automatic Transfer Switches

Description	In/A	Cat ref. w/o autom. transf. relay	Cat ref. with autom. transf. relay	Cat ref. with energy mngmt.
4 pole - 3 positions: 0-I-II	125	HIB412M*	HIC412G*	HIC412E*
	160	HIB416M*	HIC416G*	HIC416E*
	200	HIB420M*	HIC420G*	HIC420E*
	250	HIB425M*	HIC425G*	HIC425E*
	400	HIB440M*	HIC440G*	HIC440E*
	630	HIB463M*	HIC463G*	HIC463E*
	800	HIB480M*	HIC480G*	HIC480E*
	1000	HIB490M*	HIC490G*	HIC490E*
	1250	HIB491M*	HIC491G*	HIC491E*
	1600	HIB492M*	HIC492G*	HIC492E*



HIC425G

Main switchgear

Automatic Transfer Switch Accessories

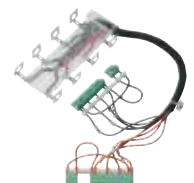
Description	Characteristics	Cat ref.
Terminal shrouds	4P In/A: 125 to 200A	HZC202*
	4P In/A: 200 to 400A	HZC204*
	4P In/A: 400 to 630A	HZC206*
Terminal covers	for switches 125 to 200A	HZI201*
	for switches 250 to 400A	HZI202*
	for switches 630A	HZI203*
	for switches 800 to 1250A	HZI204*
	for switches 1600A	HZI205*
Busbars	for switches 125 to 200A	HZ156*
	for switches 250A	HZ157*
	for switches 400A	HZ158*
	for switches 630A	HZ159*
	for switches 800 to 1000A	HZ162*
	for switches 1250A	HZ163*
	for switches 1600A	HZ164*
Voltage tapping and power supply kits	for switches 125 to 200A	HZI410*
	for switches 250A	HZI411*
	for switches 400A	HZI412*
	for switches 630A	HZI413*
	for switches 800/1000A	HZI414*
	for switches 1250A	HZI415*
	for switches 1600A	HZI416*
Selection Auto/Manual key	for switches 125 to 200A	HZI010*



HZC002



HZI205



HZI411

Auxiliary contacts

Pre-break and signalling of positions I and II: each reference provides 1 NO/ NC auxiliary contact for positions I and II. possibility to install up to 2 auxiliary contacts for each position.

Remote interfaces

To remotely display source availability and position indication typically used on the front of a panel when the product is enclosed. Interfaces are powered from the ATS transfer switch via the RJ45 connection cable. Max. cable length = 3m

Sealable cover

Prevents access to the configuration of HIB4xxM and HIC4xxG devices (seals supplied).

Control relays

Ensure the automatic control of remotely controlled transfer switches. Characteristics

- Inputs for auxiliary contact position information.
- 3U measurement on network 1 and 1U on network 2.
- 2 programmable inputs for the following functions: test on/off load, manual retransfer, start/stop transfer cycle.

- Up to 2 programmable outputs for the following functions: source availability information and circuit breaker control.
- 1 relay output for genset control.
- HZI910 or HZI911 remote interfaces are available for transferring data or control to the front panel (only HZI811 version).

Advantages

- Modular products (6 modules, 105mm wide) which can be DIN-rail mounted.
- The products are used with Hager transfer switches, or those using identical technology.

- Compatible with contactor and circuit breaker technologies.

For replacement parts, please contact customer service on 1300 850 253

Auxiliary Contacts

Description		Cat ref.
Auxiliary contacts	for switches 125 to 630A	HZI160*



HZI911

Remote Interfaces

Description	Characteristics	Cat ref.
Displays source availability and position indication on the front panel of an enclosure. IP21	For HIB4xxM and HIC4xxG Changeover status display	HZI910*
In addition to the functions of the HZI910, displays measurements and enables control and configuration from the front of a panel. IP21	For HIC4xxE Changeover status and control display	HZI911*



HZI210

Sealable Cover

Description	Characteristics	Cat ref.
Sealable cover	For HIB4xxM and HIC4xxG	HZI210*



HZI810

Control Relays

Description	Characteristics	Cat ref.
Supplied from measurement circuit		HZI810*
	can be used with HZI910 or HZI911	HZI811*



HZI811

Description

Manual transfer switches allow manual switching, changeover switching or ON load power circuit permutation. For safety breaking.

Technical data

- 4 pole
- Mounting on perforated plates or crossbars.
- Lockable in position: I, O or II

HI452, HI454 and HI456 can be mounted in quadro M distribution boards.

Standards

- Compliant with EN 60947-3

For replacement parts,
please contact customer service
on 1300 850 253

Technical information: [Page 218](#)

*Please check availability with your local Hager sales office at time of order

Manual Transfer Switches

Description	In/A	Cat ref.
4 pole	160	HI452*
Non-modular design	250	HI454*
	400	HI456*
	630	HI458*
	800	HI460*
	1250	HI462*
	1600	HI464*



HI452

Main
switchgear

Manual Transfer Switch Accessories

Description	Characteristics	Cat ref.
Interlocked handle for use with extension shaft - 3 positions: 0-I-II - Locked with 3 padlocks NOTE: does not replace rotary handle	160 to 630A	HZI002*
	800 to 1600A	HZI003*
Extension Shaft - 320mm	160 to 630A	HZC102
	800 to 1600A	HZC106
Auxiliary contacts	125 to 1600A, 1 NO + 1 NC	HZ160*
Terminal shrouds	4P In/A: 125 to 200A	HZC202*
	4P In/A: 200 to 400A	HZC204*
	4P In/A: 400 to 630A	HZC206*
Terminal covers	for switches 125A/160A 4P	HZI201*
	for switches 250 to 400A	HZI202*
	for switches 630A	HZI203*
	for switches 800 to 1250A	HZI204*
	for switches 1600A	HZI205*
Busbars	for switches 160A	HZ156*
	for switches 250A	HZ157*
	for switches 400A	HZ158*
	for switches 630A	HZ159*
	for switches 800 to 1000A	HZ162*
	for switches 1250A	HZ163*
	for switches 1600A	HZ164*



HZI002



HZC102



HZ160



HZC202

Description

Hager's HFD Series (Isolators) are manually operated multipolar fuse combination switches. They break or switch OFF/ON load and provide safety isolation with protection against over current for any low voltage electrical circuit.

Features

- Double break by phase (top and bottom of fuse)
- Protection against overcurrent by fuse circuit-breakers with high breaking capacity (100kA eff.)
- IP2 protection with terminal shrouds
- Compact
- TEST position for testing control circuits without power using U type auxiliary contacts.

Standards

- Compliant to:
- IEC 6094-3
 - IEC 60269-1
 - IEC 60269-2
 - EN 60947-3
 - DIN 43620
 - VDE 0636-10
 - VDE 0660 Part 107

Note: Interlocked handle and shaft must be ordered separately.

For replacement parts, please contact customer service on 1300 850 253

*Please check availability with your local Hager sales office at time of order



HFD312

Fuse Combination Switches with handle

Description	In/A	Fuse sizes	Length (mm)	Modules (17.5mm)	Cat ref.
3 pole 400V~	125	00	120	min. 24	HFD312*
	160	000	120	min. 24	HFD316*
	250	1	120	min. 72	HFD325*
	400	2	120	min. 72	HFD340*

Main switchgear



HZC002

Fuse Combination Switch Accessories

Description	Characteristics	Cat ref.
Interlocked handle - Black IP55 for use with extension shaft NOTE: does not replace rotary handle	125 to 400A	HZC002*
Extension Shaft - 320mm	125 to 400A	HZC102*
Auxiliary contacts - suitable for switches 125 to 400A	1 NO	HZF301*
	1 NC	HZF302*
Terminal shrouds	3P In/A: 100 to 160A	HZF202*
	3P In/A: 250 to 400A	HZF204*



HZC102



HZF301





HZF204

Description

This range of earth leakage relays were designed on an electronic basis, which ensure the monitoring of earth fault currents. When the fault current rises above the selected level, the outputs of the relay operate & depending on the relay selected, it can have both adjustable sensitivity and time delay that can provide selectivity/discrimination. The relays are linked with detection toroids.

Common features

- Fixed & adjustable devices
- Positive safety: the relay trips in the event of a break in the connection between relay & toroid.
- Positive / local reset required after a fault is detected.
- Protected against nuisance tripping 
- Class A 
- Visual display of fault
- Output: 1c/o contact 250V~ 6A AC1
- Supply voltage 230V +/- 20% 50/60Hz

Connection capacity

- Flexible - 1 to 2.5mm
- Stranded/rigid - 1.5 to 4mm

Standards

- Standard DIN EN60947-2, IEC60755, IEC61008-8

Premium features

- Adjustable sensitivity & time delay (sealable)
- Display of fault current prior to triggering relay (5%-75%)
- Extra output contact (250V-AC1/6A) to enable remote indication of fault currents above 50% of I_{rn}
- Remote test and reset by three wire link

Technical information: [Page 220](#)

Earth Leakage Relays

Description	Width	Cat ref.
Without delay c/o contact 250V 6A ~ AC1 Fixed sensitivity = 300mA Trips immediately	1 mod	HR502
Standard c/o contact 250V 6A ~ AC1 Adjustable sensitivity I _{rn} = 0.03/0.1/0.3/0.5/1/3/10A Adjustable time delay rt= 0/0.1/0.3/0.4/0.5/1/3sec	3 mod	HR510
Premium c/o contact 250V 6A ~ AC1 Fail safe contact 250V 6A ~ AC1 Pre-alarm contact 250V 6A ~ AC1 Adjustable sensitivity I _{rn} = 0.03/0.1/0.3/0.5/1/3/10A Adjustable time delay rt= 0/0.1/0.3/0.4/0.5/1/3sec Bargraph = 5% - 75% I _{rn}	3 mod	HR520
Integral toroid c/o contact 250V 6A ~ AC1 Adjustable sensitivity I _{rn} = 0.03/0.1/0.3/0.5/1/3A Adjustable time delay rt= 0/0.1/0.3/0.5/0.75/1sec Ø of toroid: 35mm	6 mod	HR441



HR510



HR520

Main switchgear

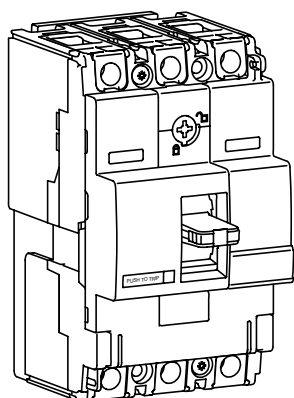
Circular Section Toroids

Characteristics	Cat ref.
Inside Ø of toroid: 30mm	HR700
Inside Ø of toroid: 35mm	HR701
Inside Ø of toroid: 70mm	HR702
Inside Ø of toroid: 105mm	HR703
Inside Ø of toroid: 140mm	HR704



HR700

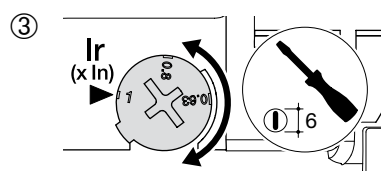
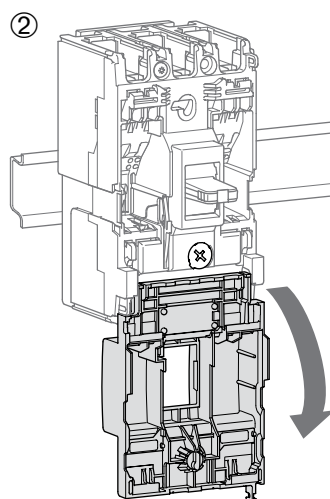
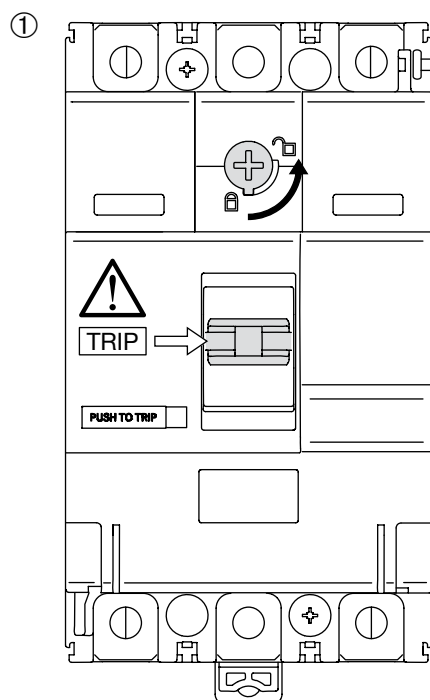
MCCBs



x160 TM		220/240V AC IEC 60 947-2	380/415V AC IEC 60 947-2
HHA	l _{cu}	35 kA	25 kA
	l _{cs}	25 kA	20 kA
HNA	l _{cu}	85 kA	40 kA
	l _{cs}	40 kA	20 kA

Magnetic and thermal settings

Main switchgear



Thermal adjustment from 0.63 to 1 x I_n

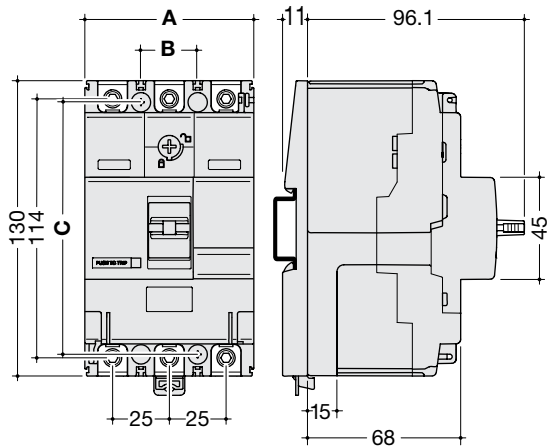
TM - Thermal magnetic setting

I _n	16 - 50 A	63 - 80 A	100 - 125 A	160 A
I _{mag}	600 A	1000 A	1500 A	1600 A

Magnetic adjustment fixed > 10 x I_n

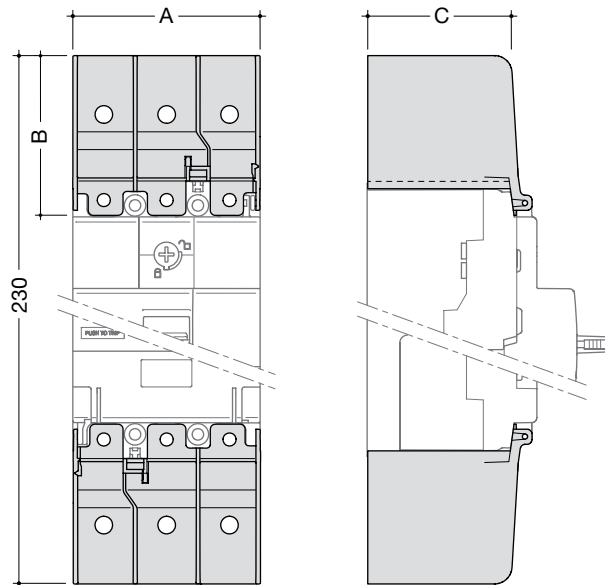
Dimensions

MCCB x160



	A (mm)	B (mm)	C (mm)
1P	24.8	25	111
2P	49.5	25	111
3P	74.5	25	111
4P	99.5	25	111

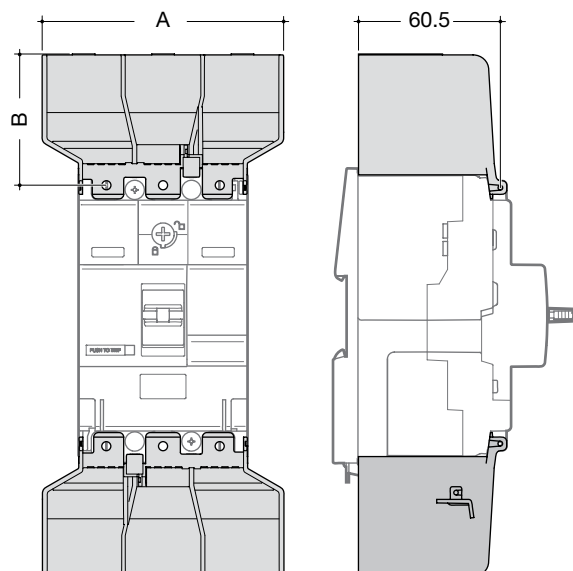
Terminal covers for extended straight connections



	A (mm)	B (mm)	C (mm)
1P	24.4	50	60.5
2P	49.5	50	60.5
3P	74.5	50	60.5
4P	99.5	50	60.5

Main switchgear

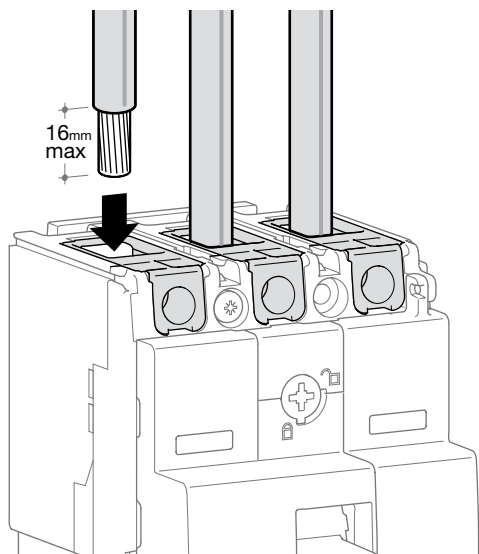
Terminal cover for extended spreader connections



	A (mm)	B (mm)	C (mm)
3P	106.5	50	60.5
4P	141.5	50	60.5

Connection

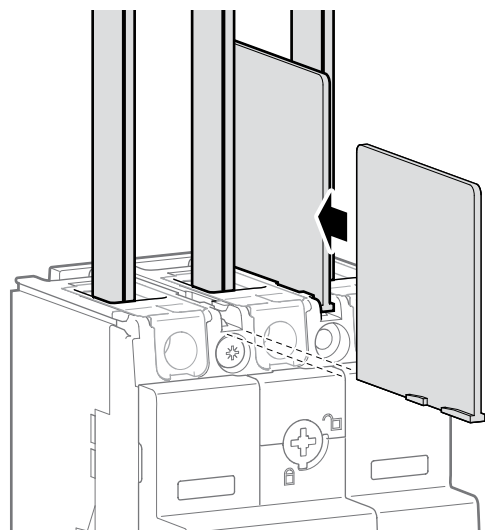
Connection with end lugs



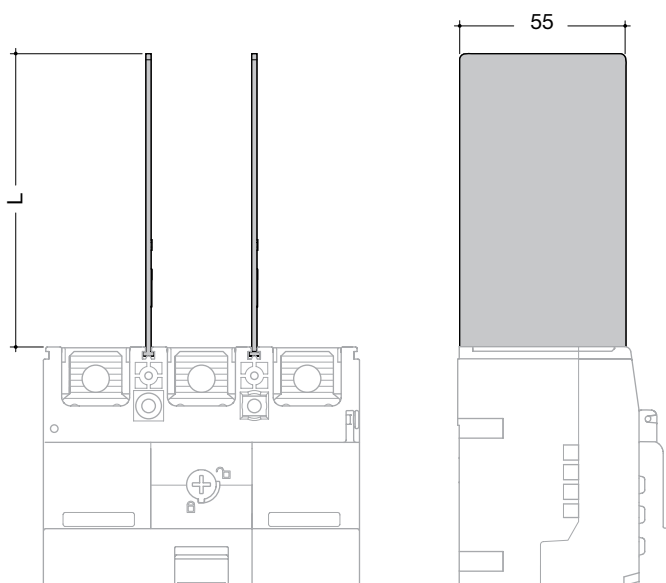
	min. 6°	max. 70°
	min. 6°	max. 95°
4	6Nm	

	min. 6°	max. 150°
	min. 35°	max. 185°
8	35° to 50° = 25Nm 60° to 185° = 25Nm	

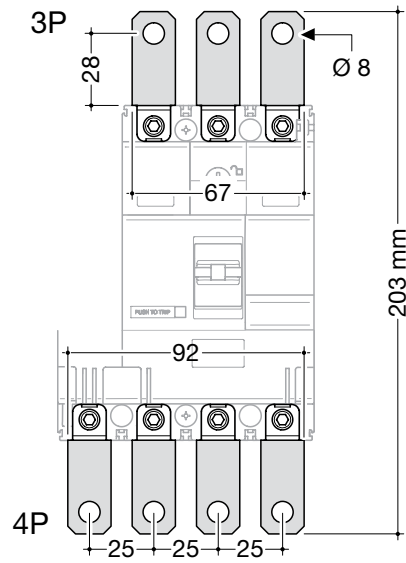
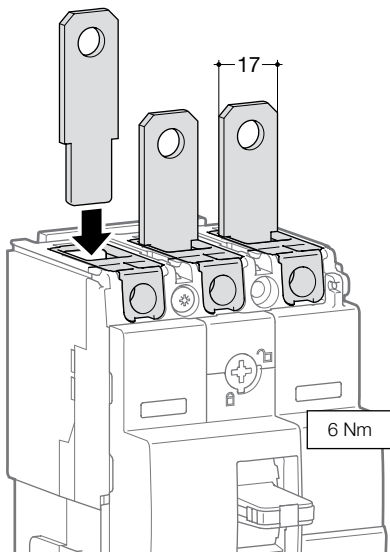
Interphase barriers



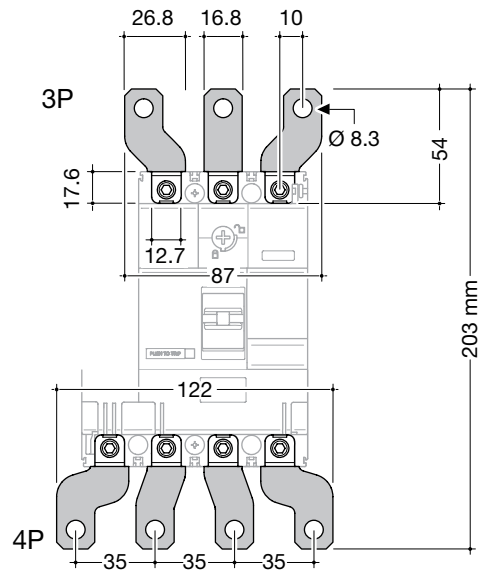
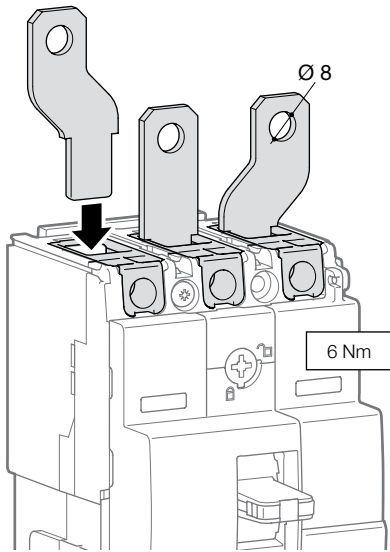
	L (mm)
HYA019H	50



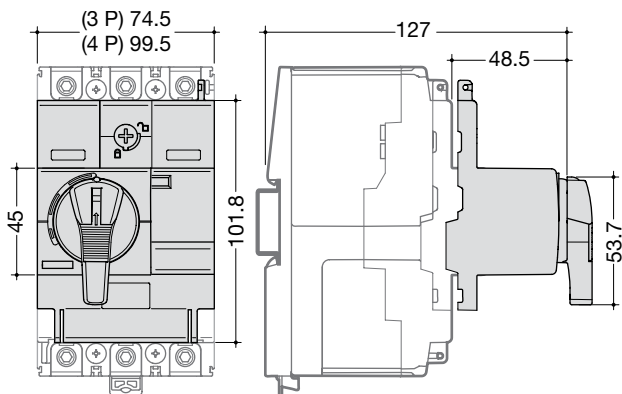
Extended straight connections



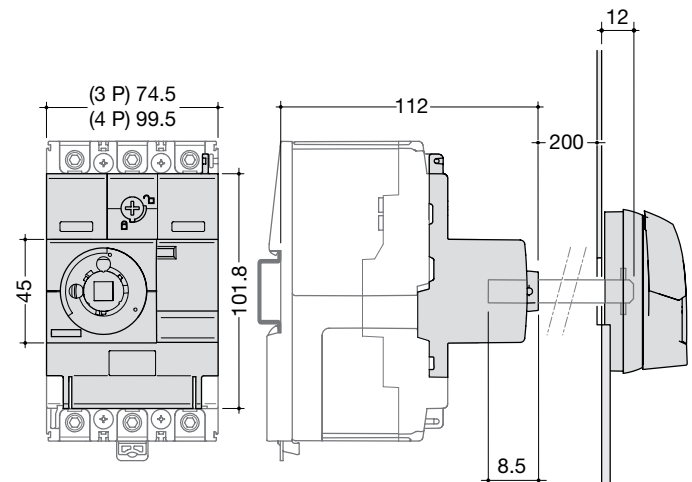
Extended spreader connections



Direct rotary handle

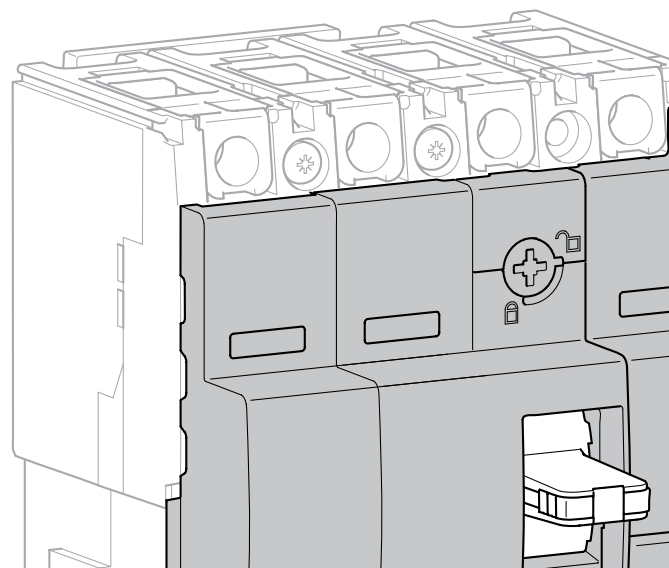
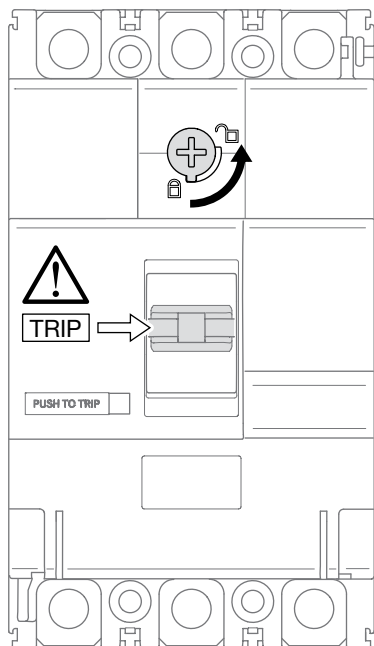


Extended rotary handle



Auxiliaries

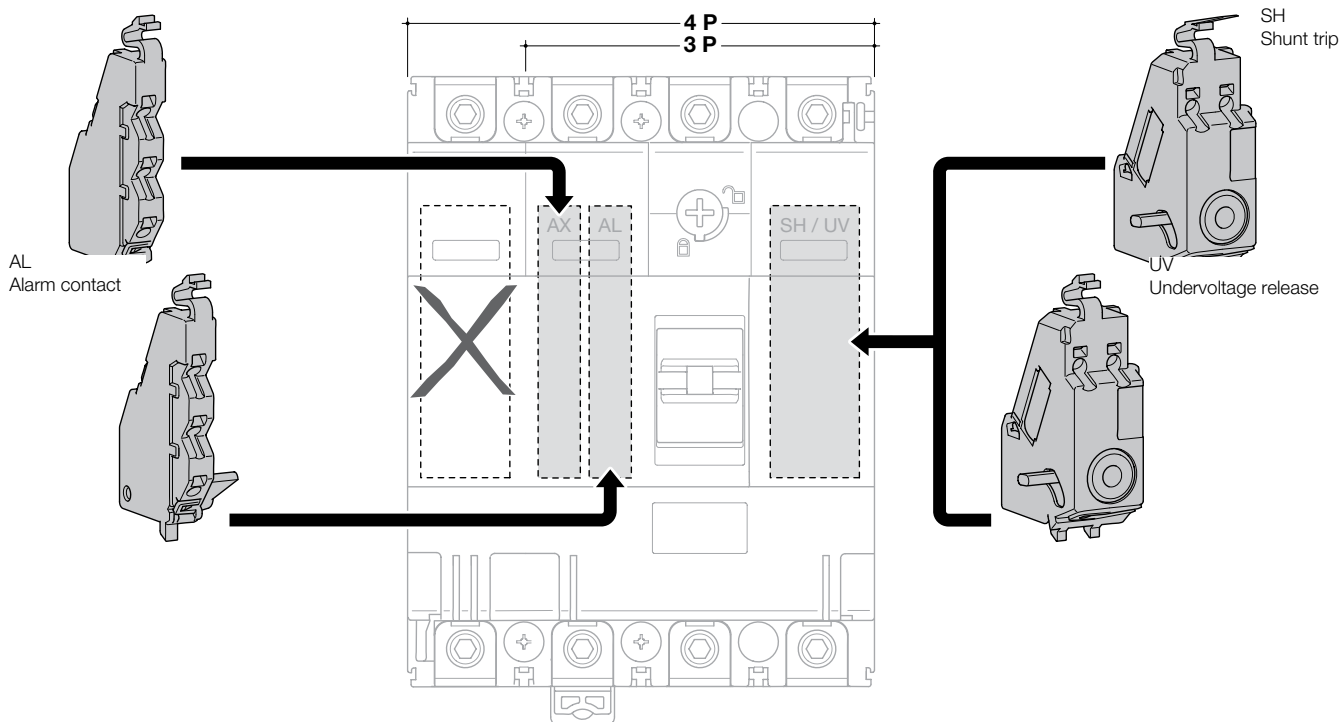
Auxiliaries for MCCBs



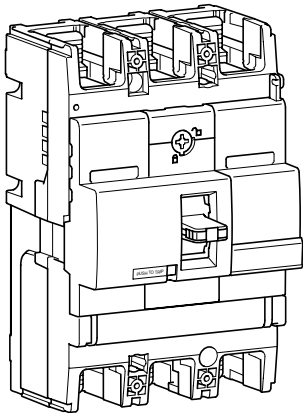
Main switchgear

Mounting combination for auxiliaries and releases

AX
Auxiliary contact

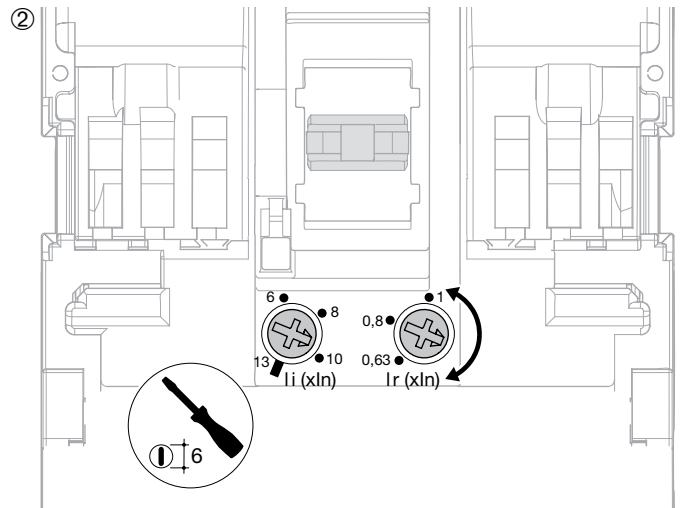
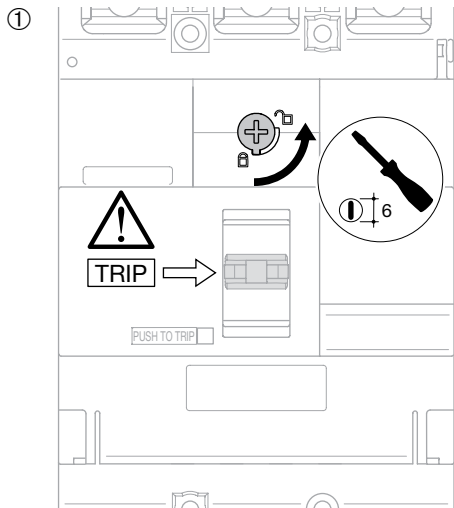


MCCBs



x250 TM		220/240V AC IEC 60 947-2	380/415V AC IEC 60 947-2
HNB	Icu	85 kA	40 kA
	Ics	40 kA	20 kA

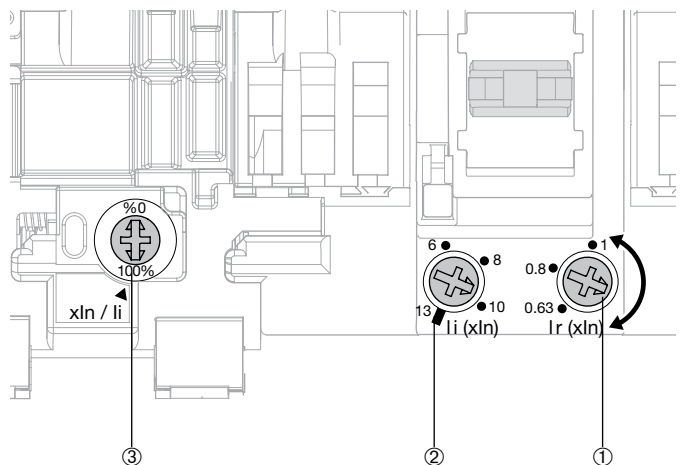
Magnetic and thermal settings



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)

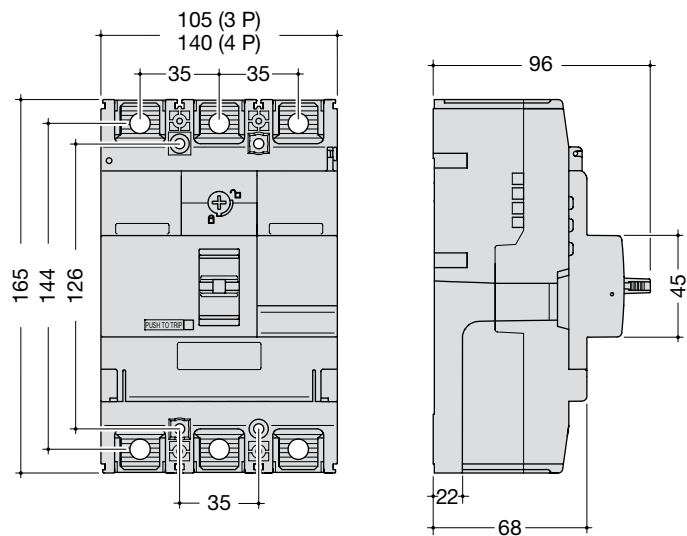
TM - Thermal magnetic setting

	100 - 200A	250A
$I_r (x I_n) \hat{a}$	0.63 - 0.8 - 1 x In	
$I_i (x I_n) \hat{e}$	6 - 8 - 10 - 13 x In	5 - 7 - 9 - 11 x In
$x I_n / I_i \hat{o}$	0 - 100%	



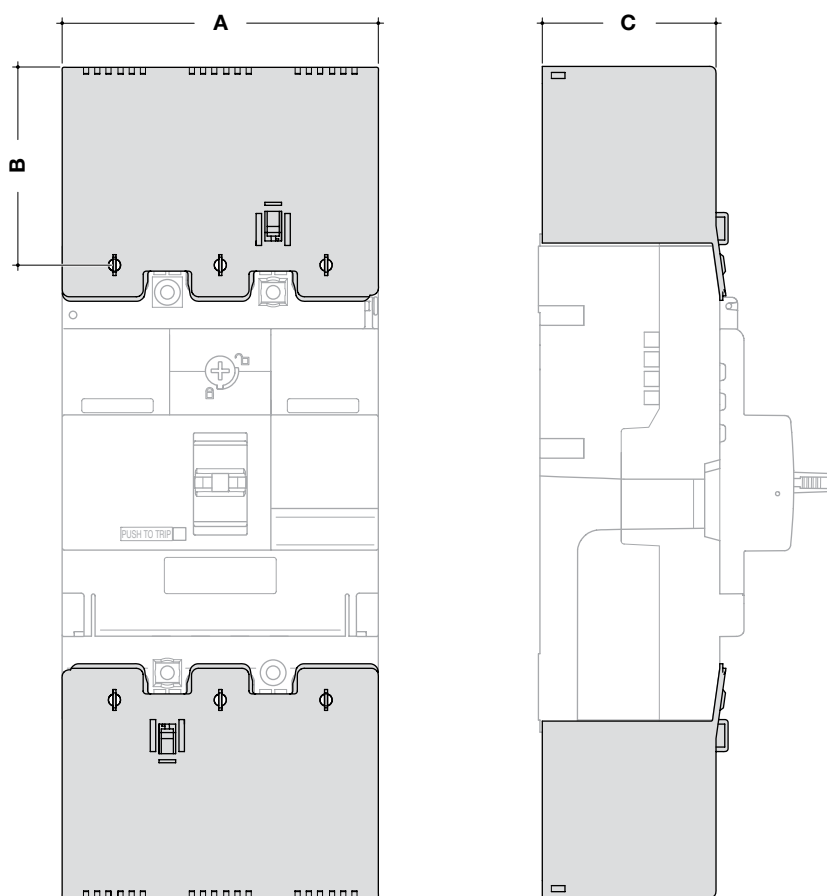
Dimensions

MCCB x250



Main switchgear

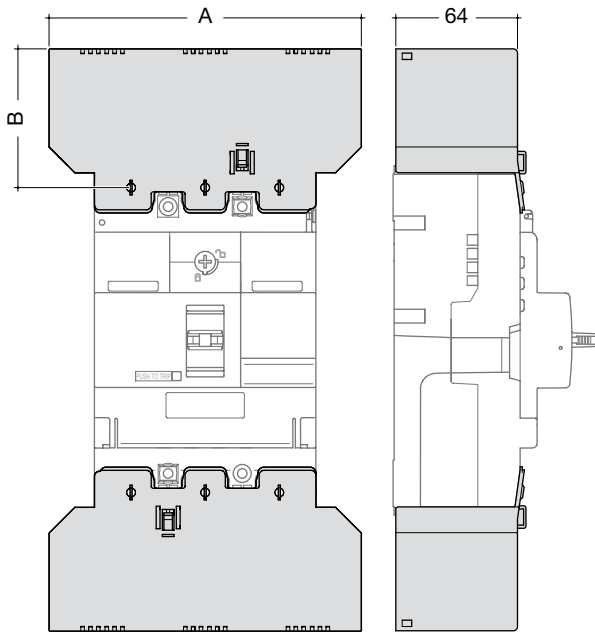
Terminal covers for extended straight connections



	A (mm)	B (mm)	C (mm)
3P	105	54.5	64
4P	140	54.5	64

Accessories

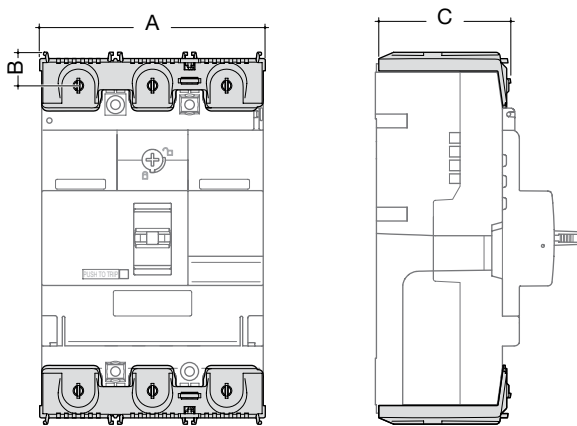
Terminal cover for extended spreader connections



	A (mm)	B (mm)	C (mm)
3P	147.5	54.5	64
4P	196	54.5	64

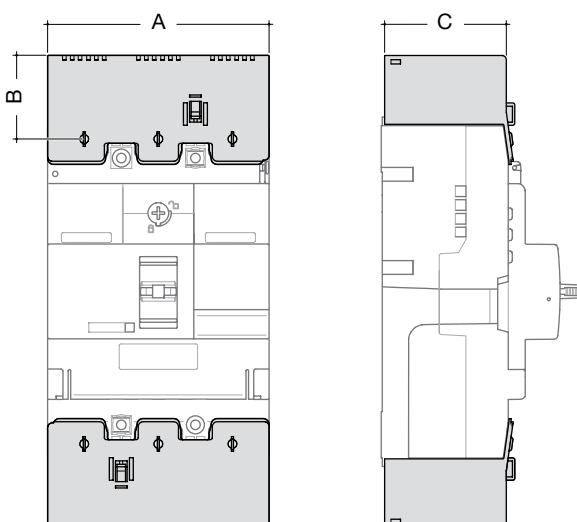
Main switchgear

Terminal cover for rear connections



	A (mm)	B (mm)	C (mm)
3P	105	5	64
4P	140	5	64

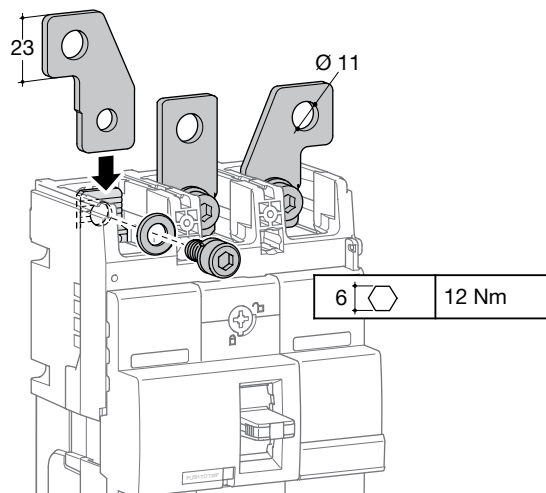
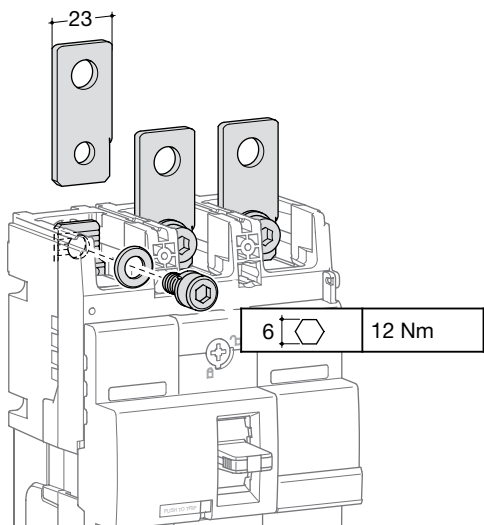
Terminal covers for collar terminals



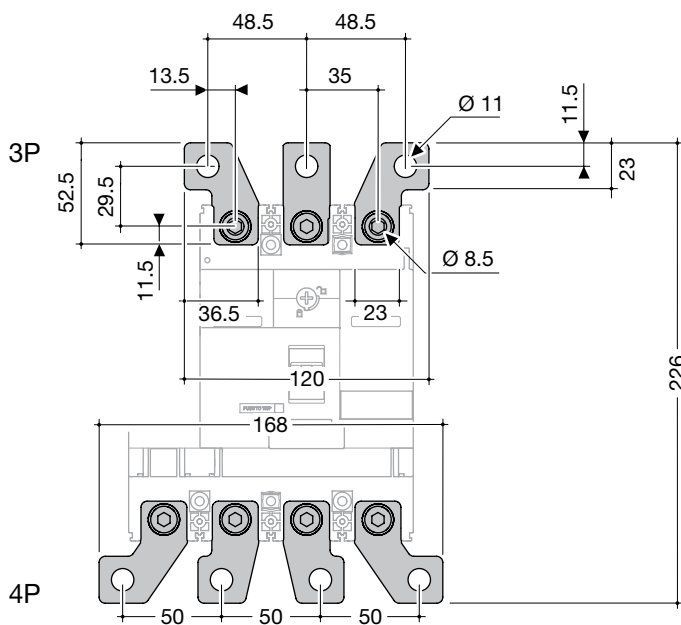
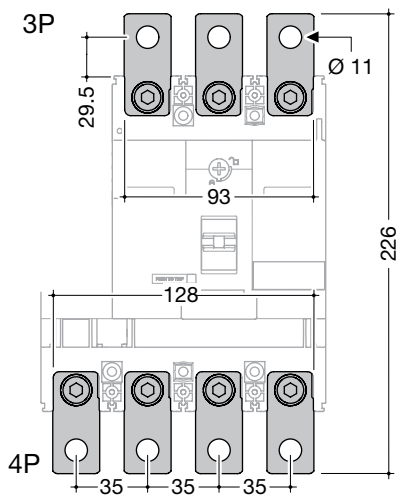
	A (mm)	B (mm)	C (mm)
3P	105	28.5	64
4P	140	28.5	64

Connection

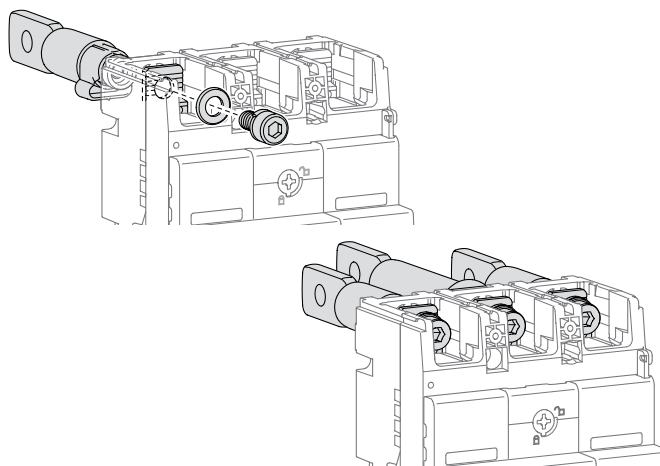
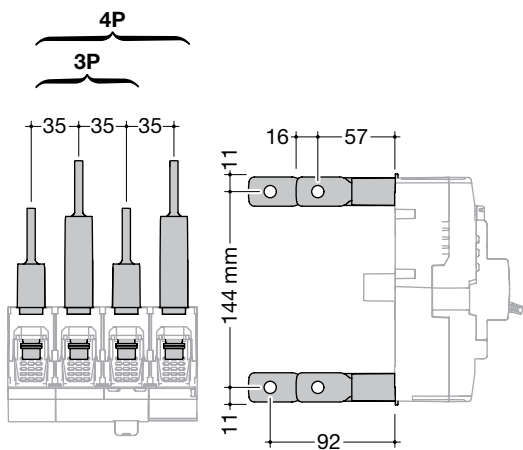
Extended straight and spreader connections



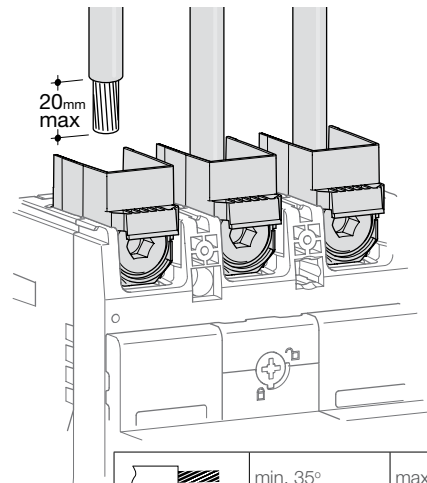
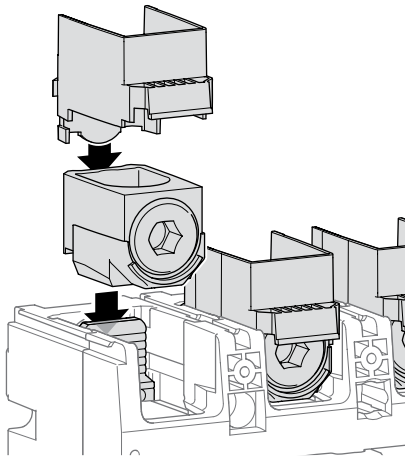
Main switchgear



Rear connections

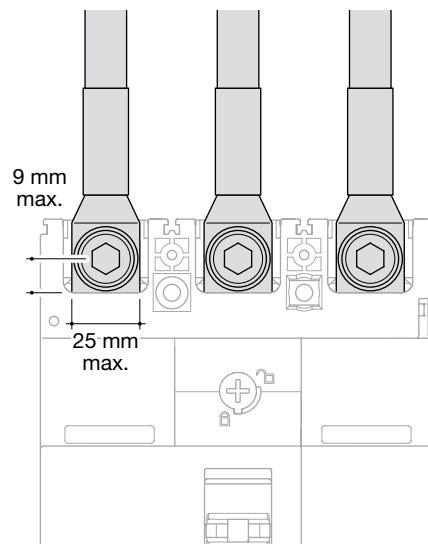
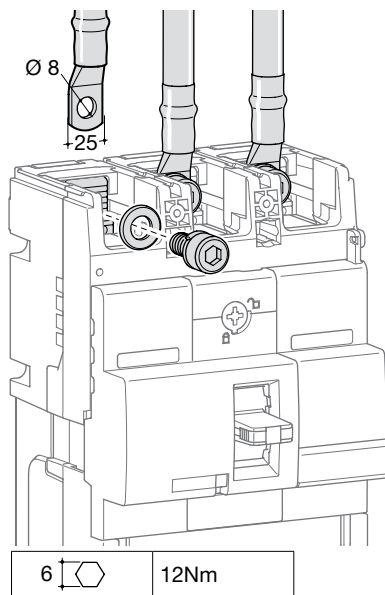


Connection by collar



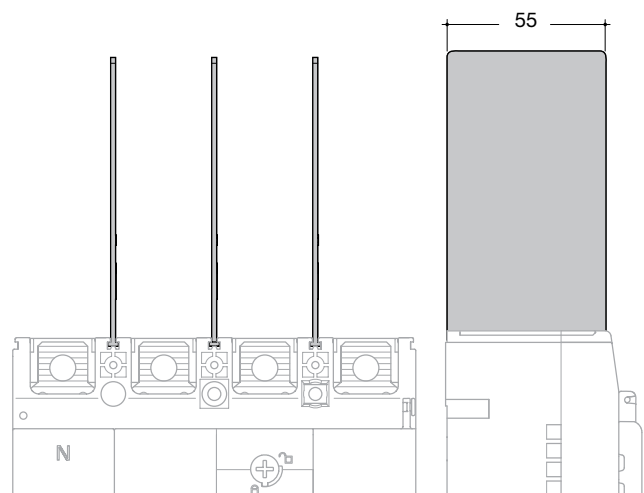
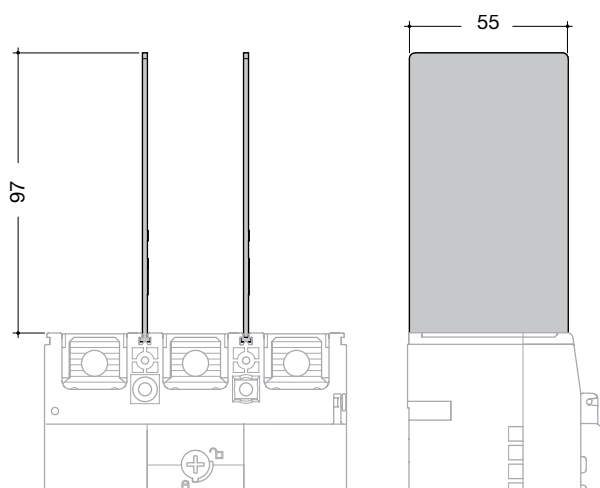
	min. 35°	max. 150°
	min. 35°	max. 185°
	35° to 50° = 25Nm 60° to 185° = 25Nm	

Connection with end lugs



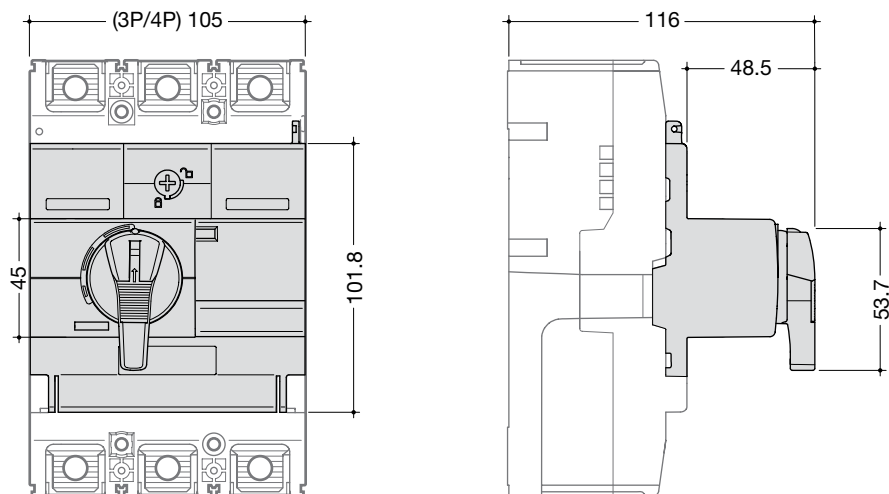
	12Nm
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Interphase barriers

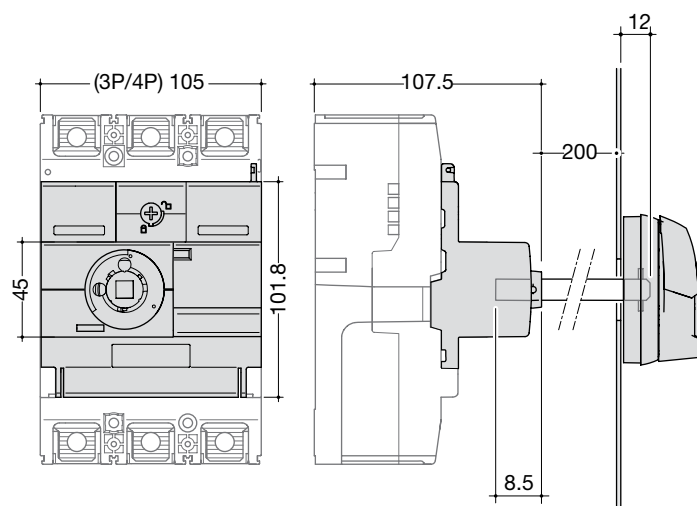


Accessories

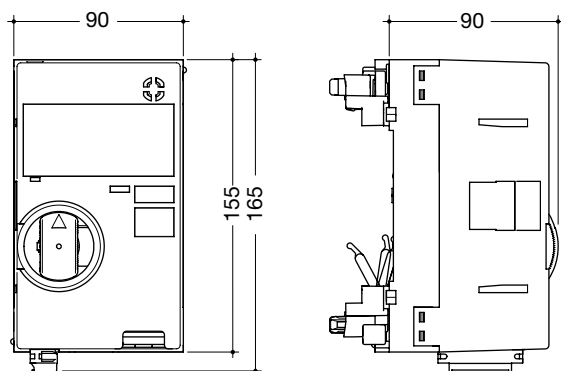
Rotary handle



Extended rotary handle



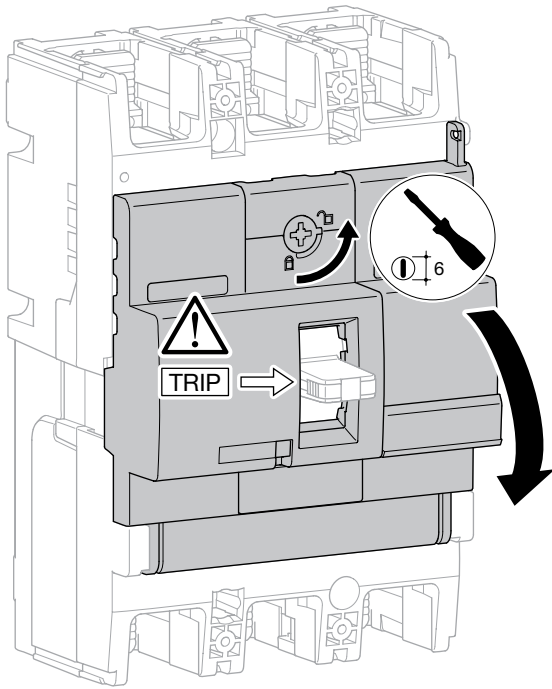
Motor operator



Rated operating voltage	24V DC	HXB040H
	230-240V AC	HXB042H
Operating current (A)	24V DC	18
	230-240V AC	4
Starting current (A)	24V DC	26
	230-240V AC	8
Operating method		direct drive
Operating time (s)	ON	0.1
	OFF	0.1
	RESET	0.1
Operating switch rating	100V, 0.1A, opening voltage 44V, current 4mA	
Power supply required	300 VA minimum	
Dielectric properties (1min)	24V DC	1000 V AC
	230-240V AC	1500 V AC

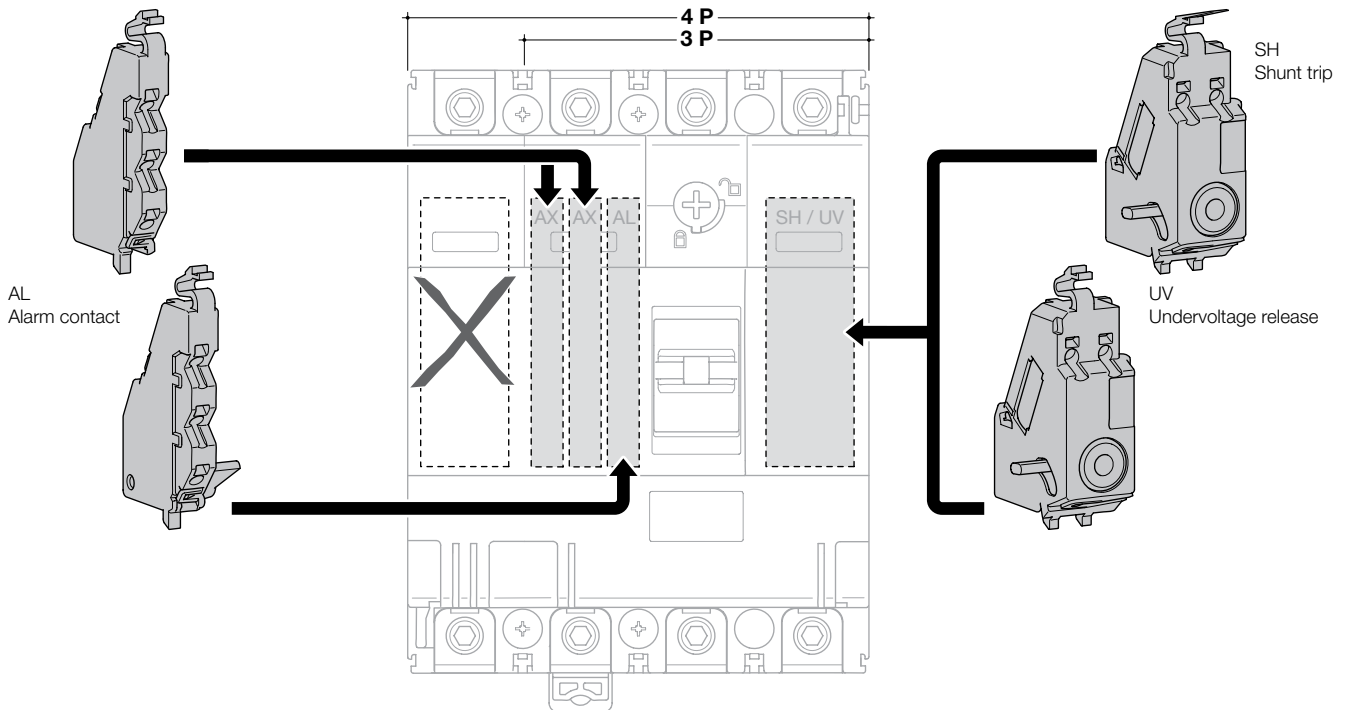
Auxiliaries

Auxiliaries for MCCBs



Mounting combination for auxiliaries and releases

AX
Auxiliary contact



TM adjustable pick-up trip units

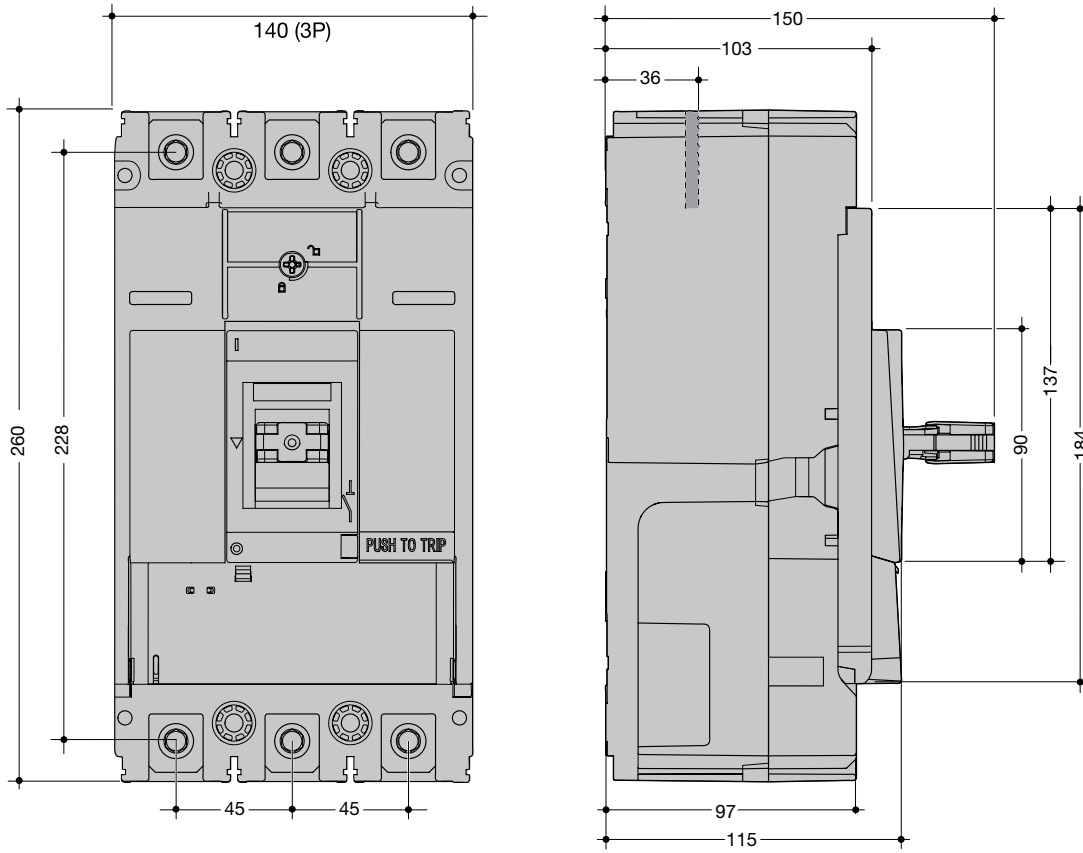
In at 50 °C	250A	320A	400A	630A*
Thermal protection				
$I_r \dots \times I_n$ (tripping current between 1.05 and 1.30 x I_r)	adjustable 0.63 - 0.8 - 1			
Time delay t_r	non-adjustable			
Magnetic protection				
I_i (+/- 20 %)	adjustable 5 - 6 - 7 - 8 - 9 - 10			adjustable 4 - 5 - 6 - 7 - 8
Time delay	none			

* Thermo-magnetic MCCBs with $I_n = 630A$ are calibrated at 30°C.



Trip unit TM adjustable

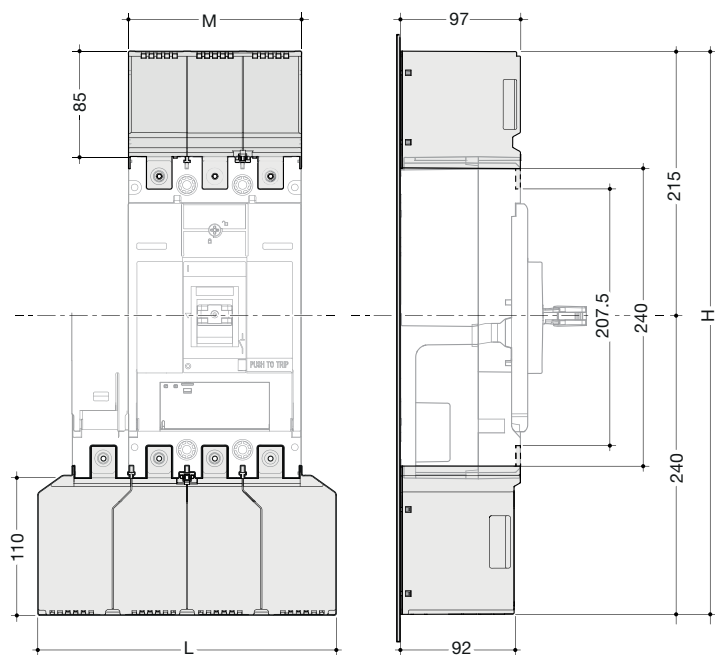
MCCBs



Main switchgear

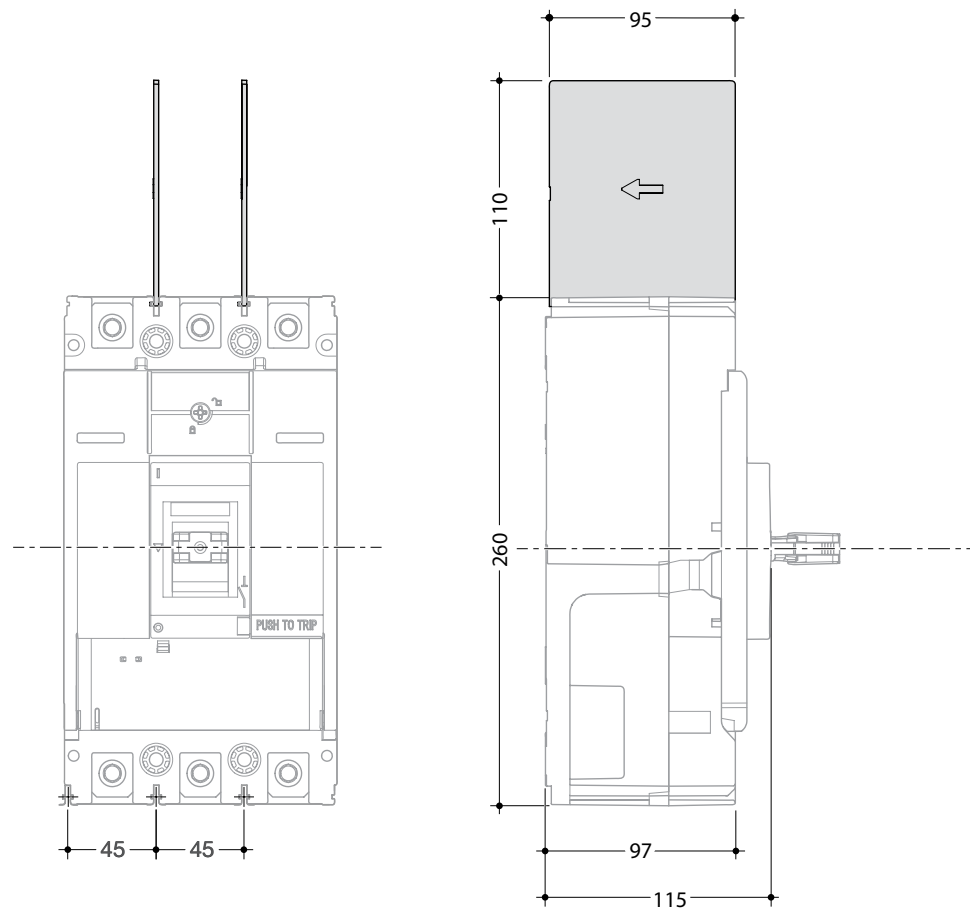
Terminal covers for extended straight connections

Main switchgear

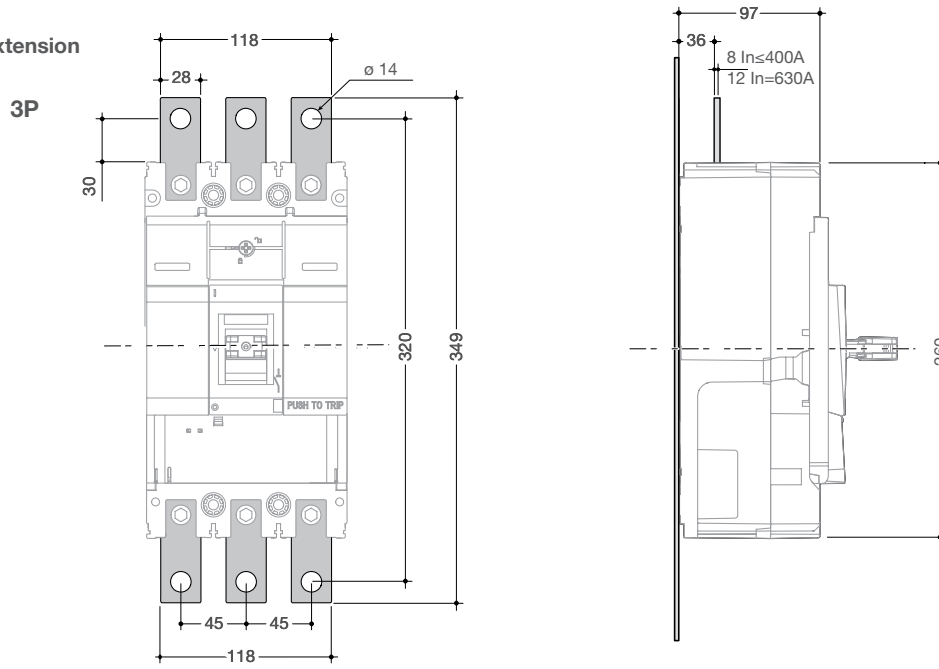


	Spreader L (mm)	Straight M (mm)
3P	180	140
H	480	430

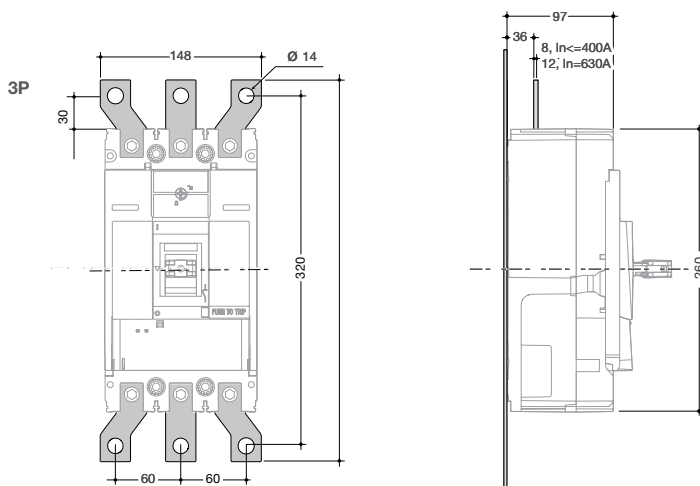
Interphase barriers



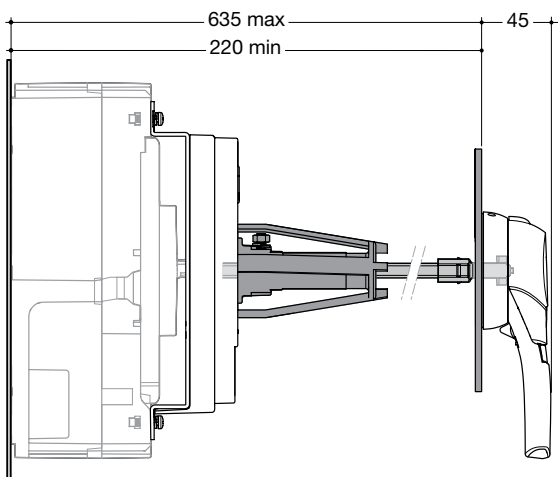
Straight terminal extension



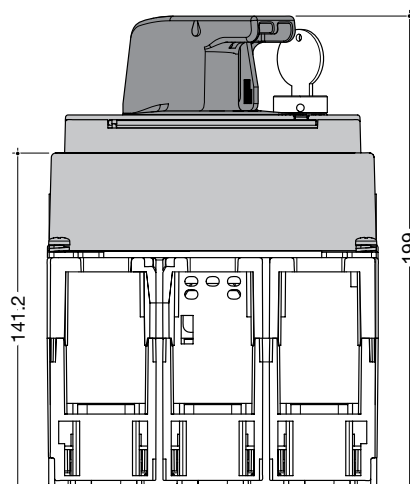
Spreader terminal extension



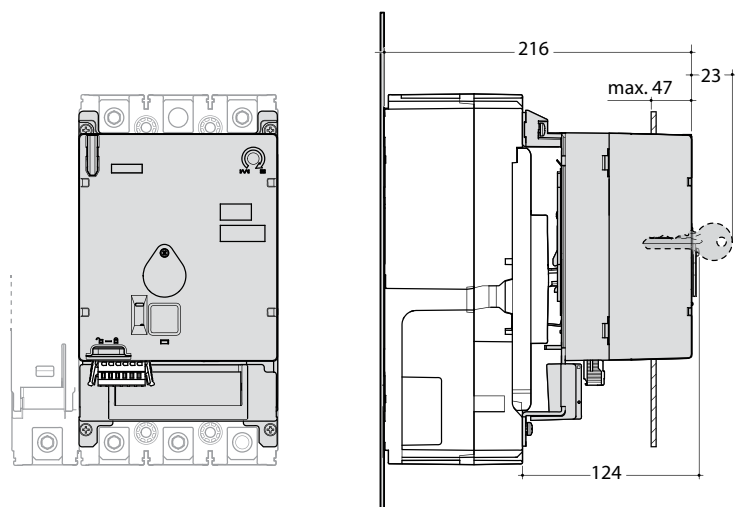
Extended rotary handle



Rotary handle

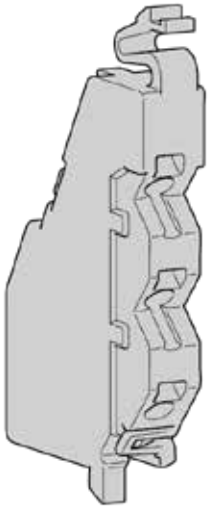


Motor operator with fixed circuit breaker

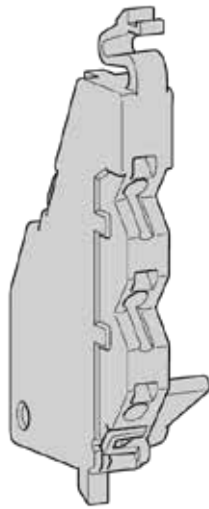


Rated operating voltage	24-48V DC	
	100-110V DC	
	110-240V AC	
Frequency (Hz)	24-48V DC	-
	100-110V DC	-
	110-240V AC	50 / 60
Operating and Starting current (A) ON	24-48V DC	-
	100-110V DC	-
	110-240V AC	-
Operating and Starting current (A) OFF, RESET	24-48V DC	6.7
	100-110V DC	1.2
	110-240V AC	1.0
Operating method	direct drive	
Operating time (s)	ON	0.1
	OFF	1.4
	RESET	1.5
Operating frequency	Cycle / min = 4	
Power supply required	300 VA minimum	

Auxiliaries

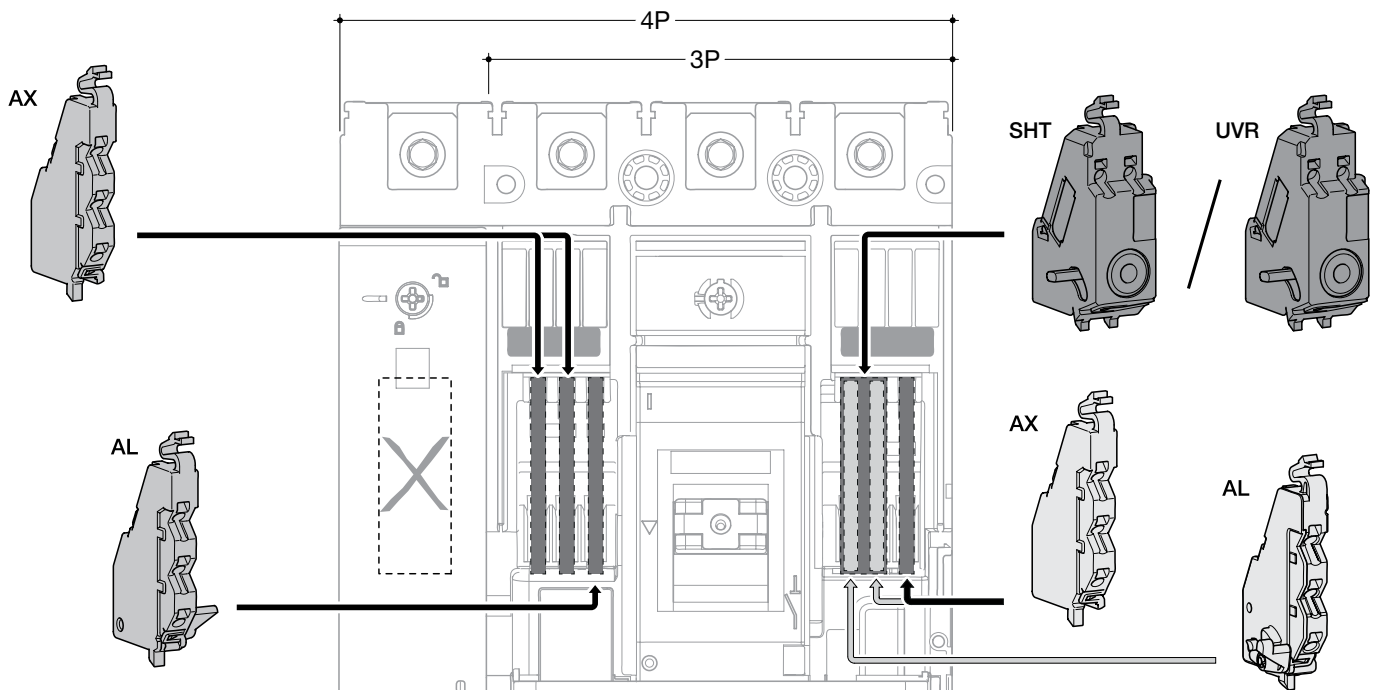


AX auxiliary

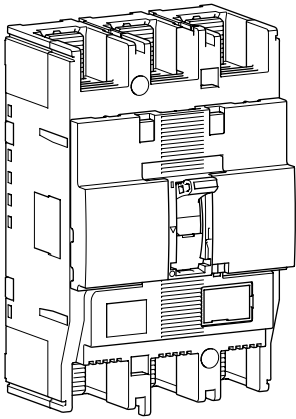


AL auxiliary

Mounting combination for auxiliaries and releases



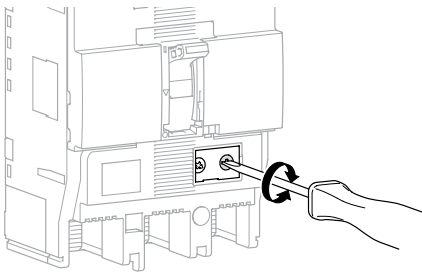
MCCBs



h250 LSI		220/240 V AC (kA)	380/415 V AC (kA)	660/690 V AC (kA)
HNC	Icu	85	50	7.5
	Ics	85	25	7.5
HEC	Icu	100	70	20
	Ics	100	70	15

Electronic trip unit setting (LSI)

Main switchgear

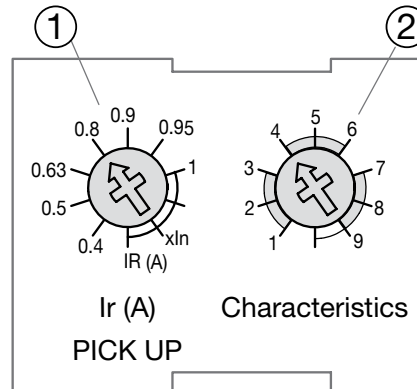
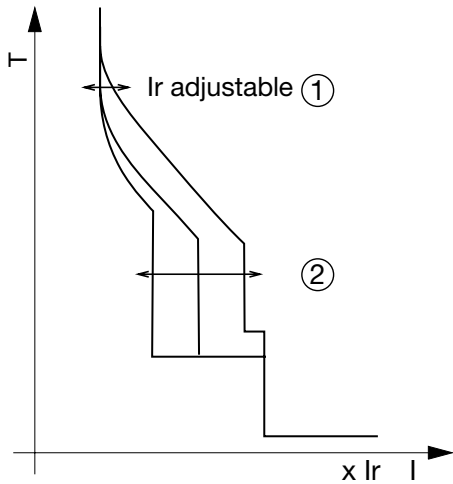


Use	Characteristics (*)	
	3P	4P
Generator protection	pos. 1	pos. 1, 4 and 7
Standard protection	pos. 2 and 3	pos. 2, 5 and 8
Motor protection	pos. 4 and 5	pos. 3, 6 and 9

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

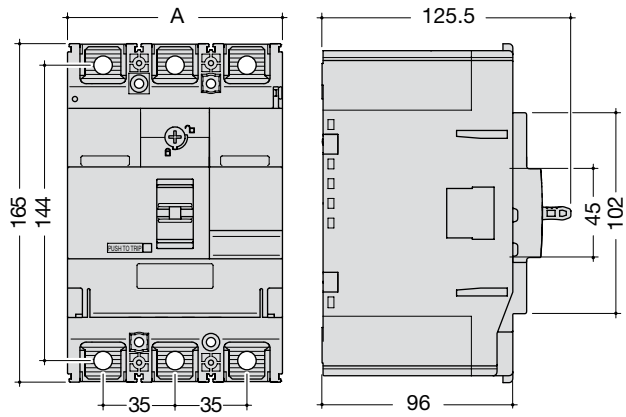
S - Short delay - protection against short circuits: I_{sd} and t_{sd} settings

I - Instantaneous - max. instantaneous threshold (< 10 ms) in case of short circuit: 2.5 to 10 x Ir.



Dimensions

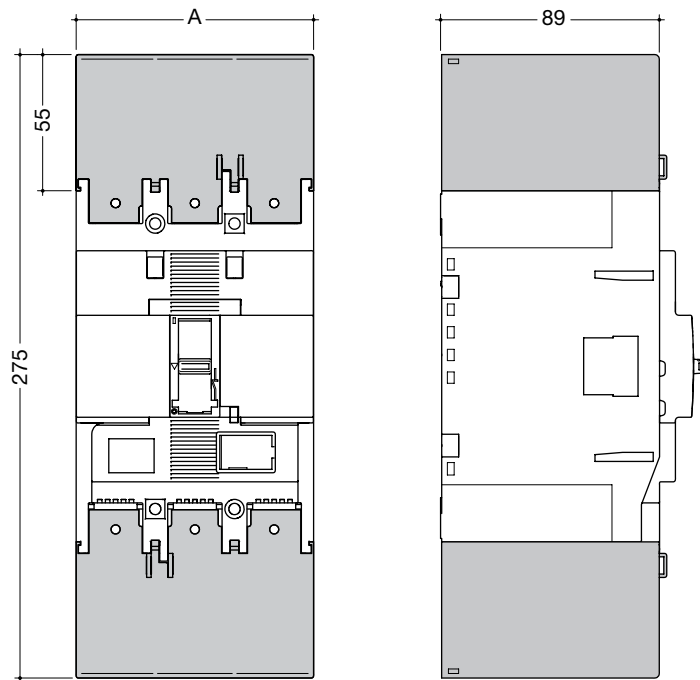
MCCBs



	A (mm)
3P	105
4P	140

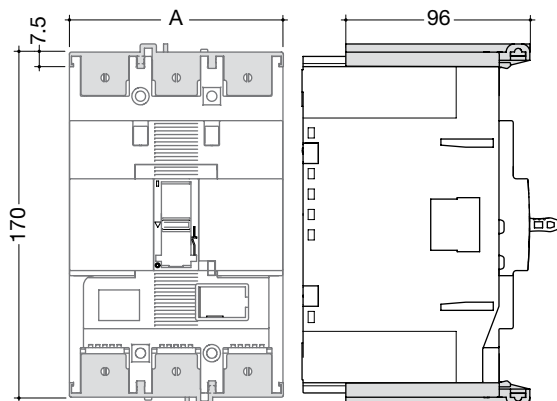
Accessories

Terminal covers for extended straight connections



	A (mm)
3P	105
4P	140

Terminal cover for rear connections

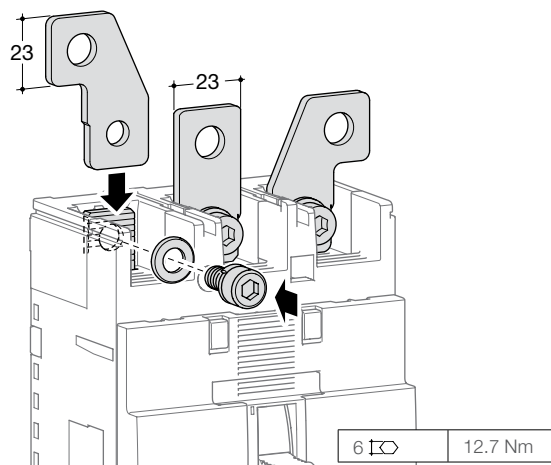
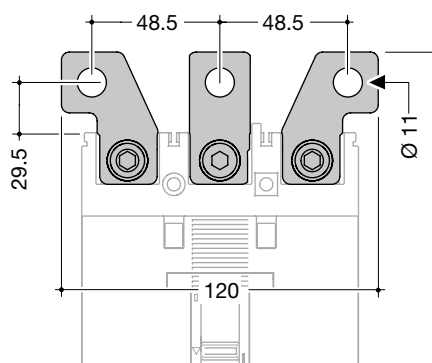


	A (mm)
3P	105
4P	140

Main switchgear

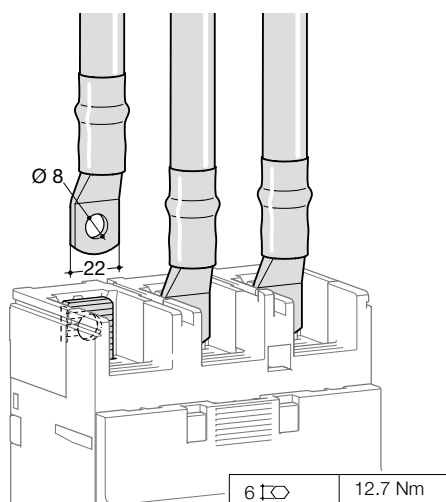
Connection

Extended straight and spreader connections

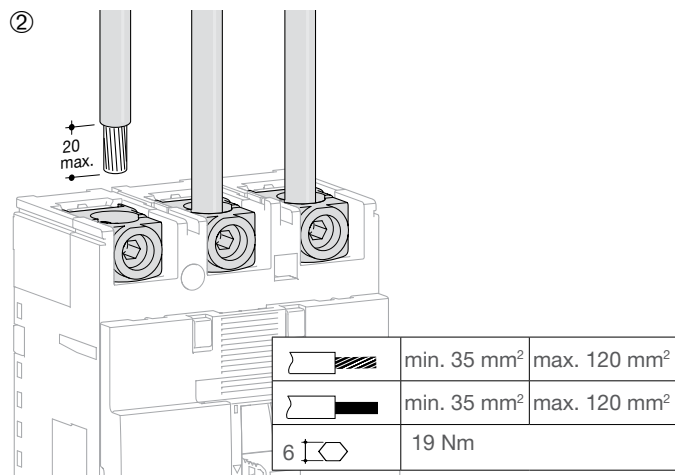
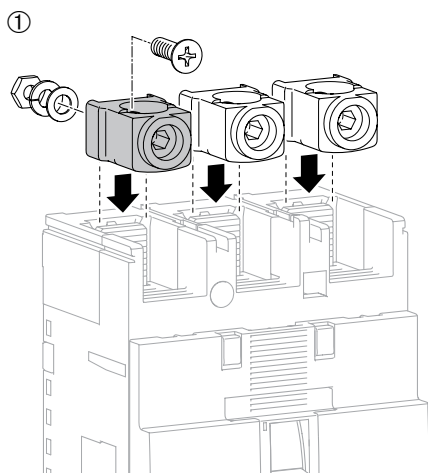


Main switchgear

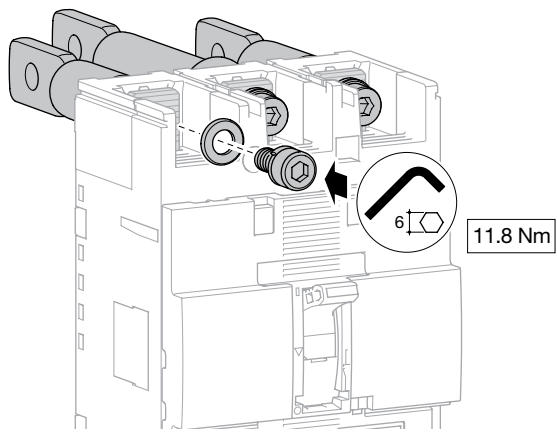
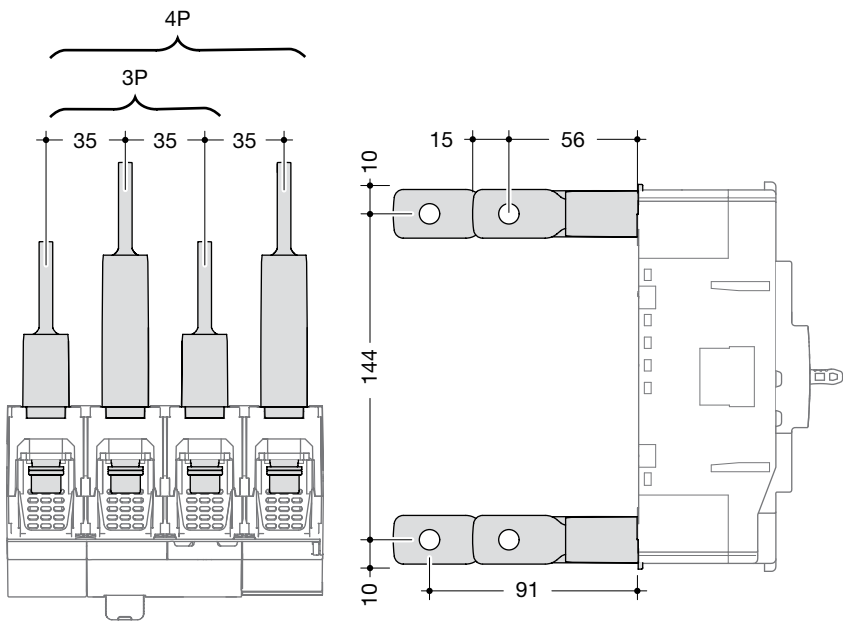
Connection with end lugs



Connection by collar

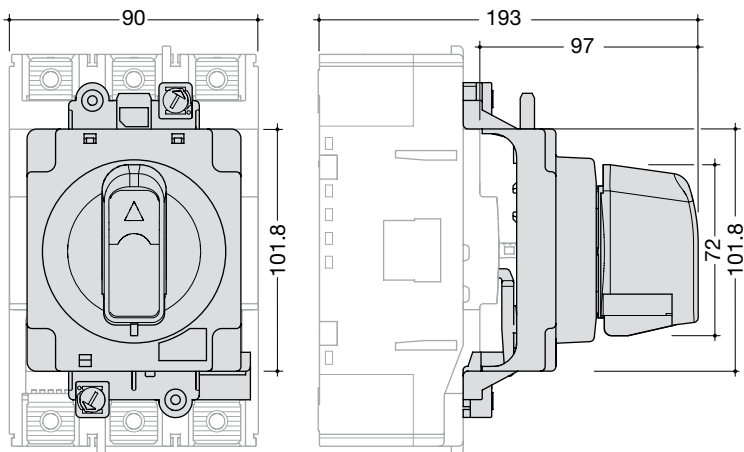


Rear connections

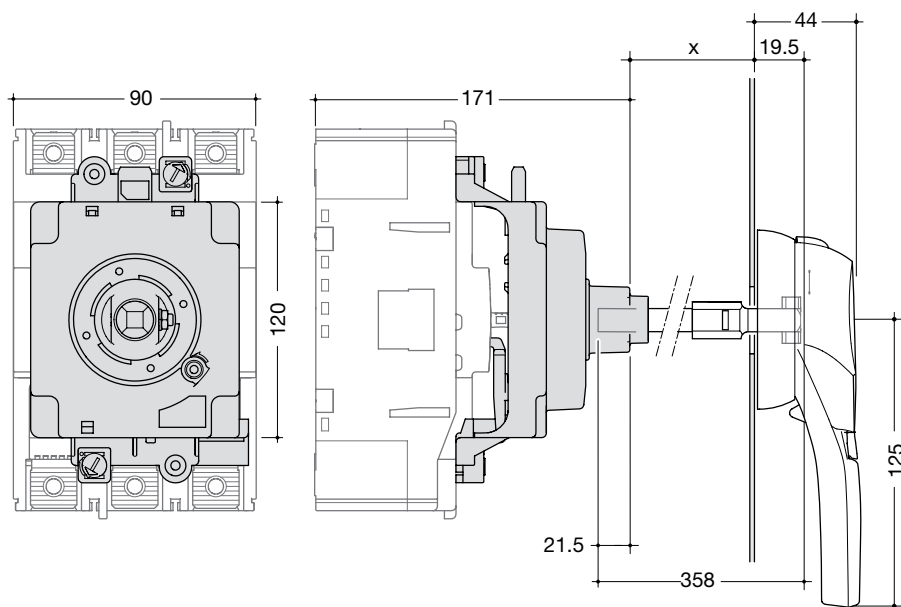


Accessories

Direct rotary handle

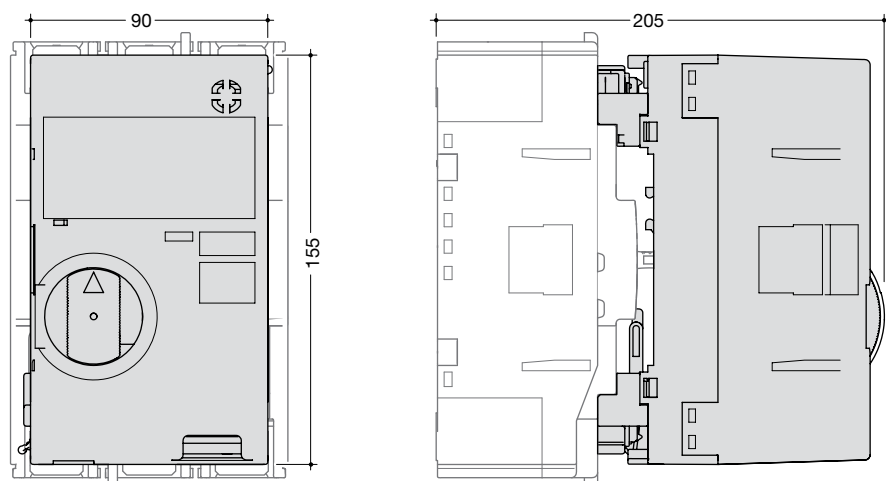


Extended rotary handle



Main switchgear

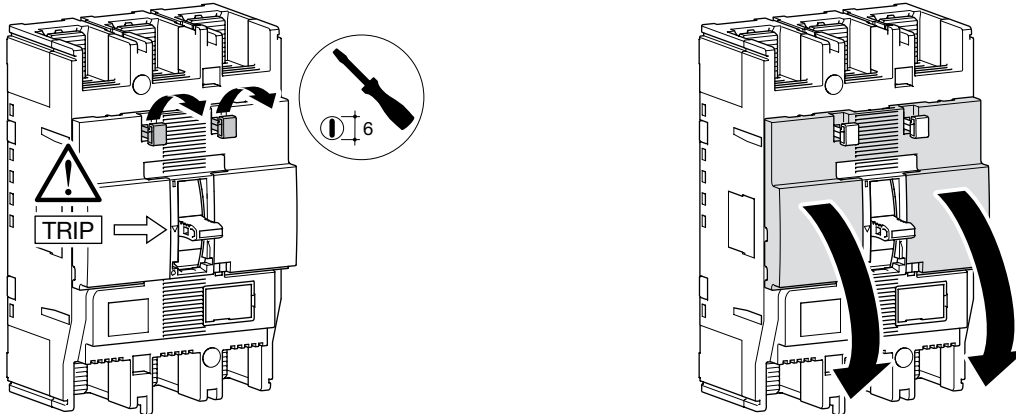
Motor operator



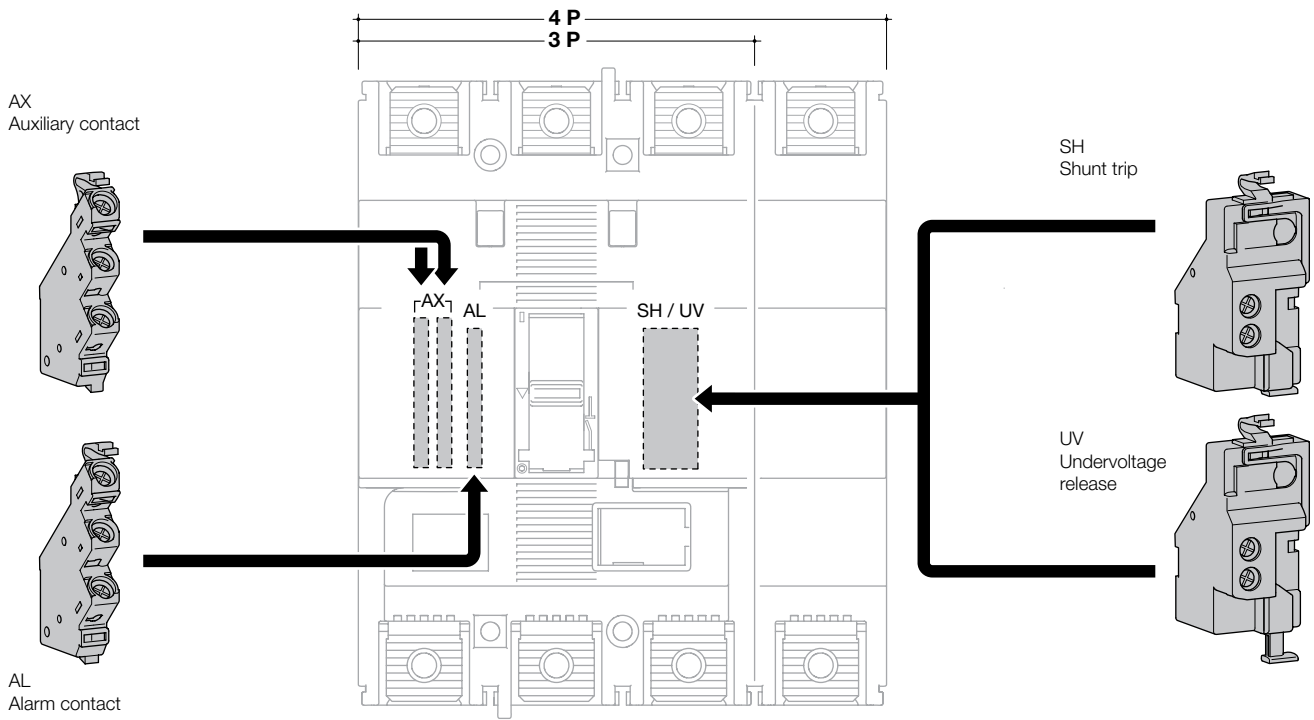
Rated operating voltage	24V DC	HXC040H
	230-240V AC	HXC042H
Operating current (A)	24V DC	18
	230-240V AC	4
Starting current (A)	24V DC	26
	230-240V AC	8
Operating method		direct drive
Operating time (s)	ON	0.1
	OFF	0.1
	RESET	0.1
Operating switch rating		100V, 0.1A, opening voltage 44V, current 4mA
Power supply required		300 VA minimum
Dielectric properties	24V DC	1000 V AC
	230-240V AC	1500 V AC

Auxiliaries

Auxiliaries for MCCBs

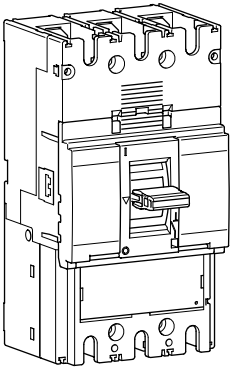


Mounting combination for auxiliaries and releases



Main switchgear

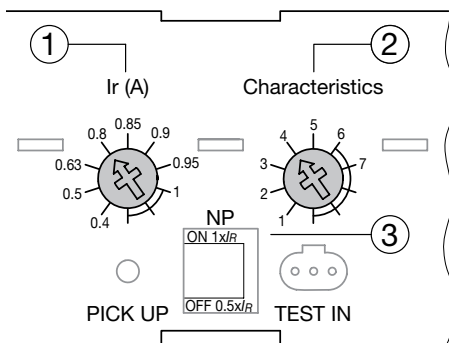
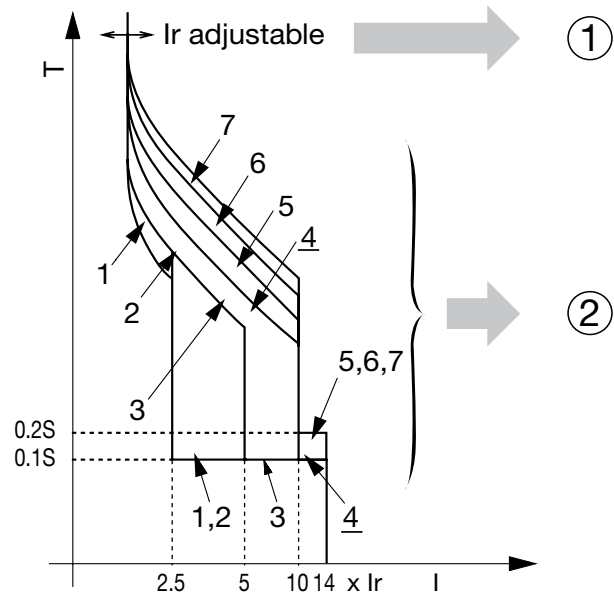
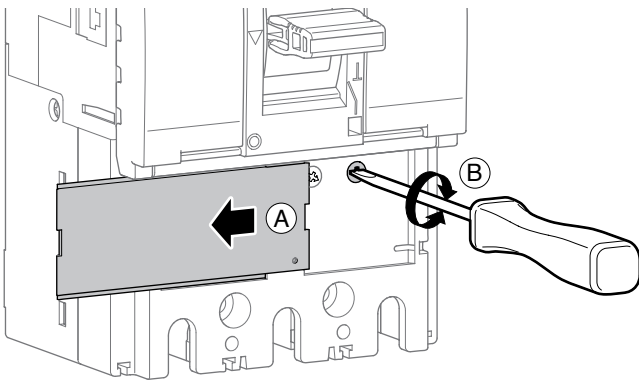
MCCBs



h630 LSI		220/240 V AC (kA)	380/415 V AC (kA)	660/690 V AC (kA)
HND	Icu	85	50	20
	Ics	85	50	15
HED	Icu	100	70	20
	Ics	85	50	15

Electronic trip unit setting (LSI)

Main switchgear



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

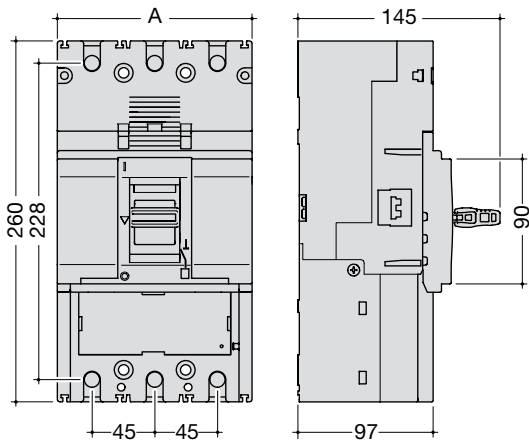
(*) Characteristic 1: use for generators protection.
 Characteristic 2 to 4 - standard protection: options allow coordination optimisation with other products.
 Characteristic 5 to 7 - motor protection: use positions according to motor starting characteristics.

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

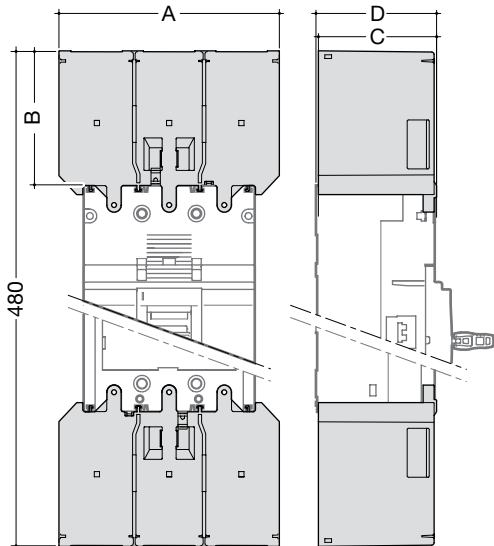
I - Instantaneous - max. instantaneous threshold (< 10 ms) in case of short circuit: $2,5$ to $10 \times I_r$ (400A) and $2,5$ to $8 \times I_r$ (630A).

Dimensions



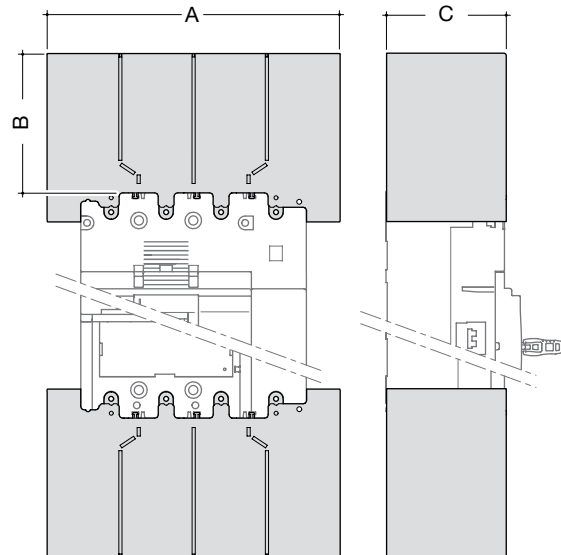
	A (mm)	B (mm)	C (mm)
3P	140	45	214
4P	185	45	214

Terminal covers for extended straight connections



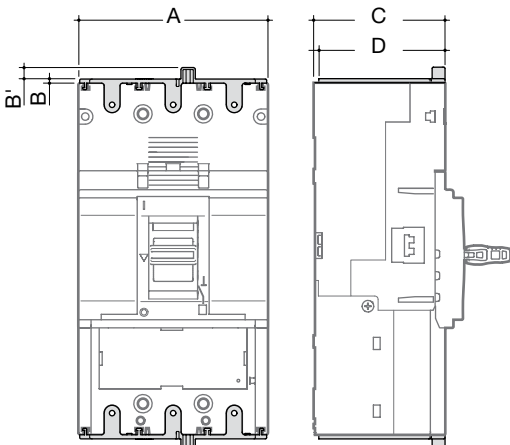
	A (mm)	B (mm)	C (mm)	D (mm)
3P	140	85	97	94,5
4P	185	85	97	94,5

Terminal covers for extended spreader connections



	A (mm)	B (mm)	C (mm)
3P	180	110	97
4P	240	114	98

Terminal covers for rear connections and collar terminal



	A (mm)	B (mm)	B' (mm)	C (mm)	D (mm)
3P	140	3	4,5	97	93
4P	185	3	4,5	97	93

Connection

Cable connection (h400 TM 400A, h630 LSI 400A)

①

② HYD005H (3P) - HYD006H (4P)

HYD007H (3P) - HYD008H (4P)

③

	HYD005H (3P) HYD006H (4P)	HYD007H (3P) HYD008H (4P)
	max. 1x240mm ²	max. 2x240mm ²
10	25 Nm	25 Nm

Extended straight and spreader connections

3P

4P

Rear connections

4P

3P

55 (400A)
45 (630A)

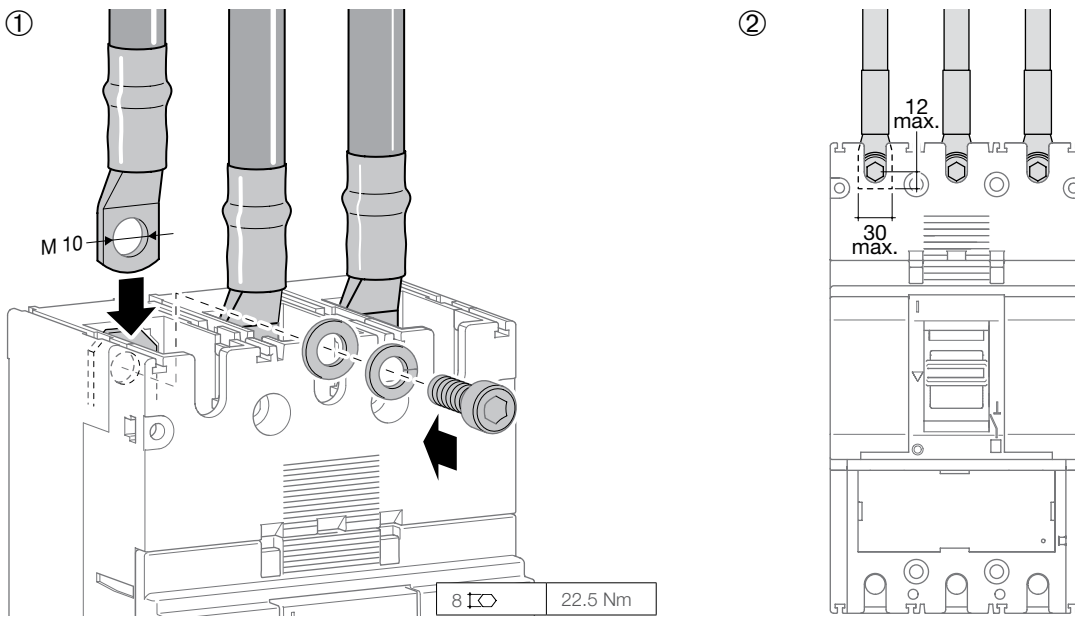
15

15

115 (400 A)
95 (630 A)

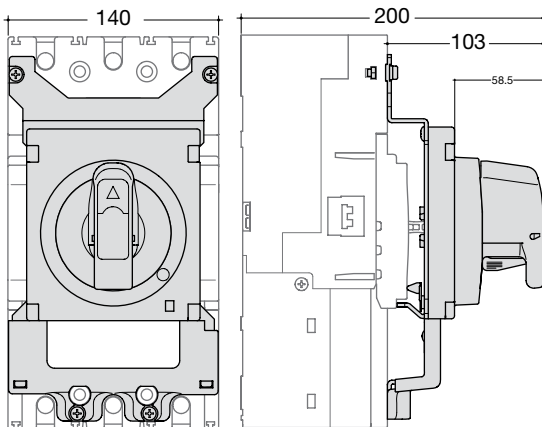
Main switchgear

Connection with end lugs

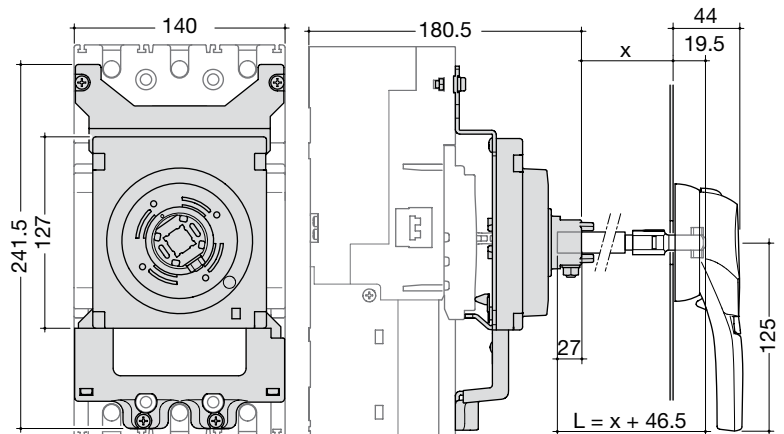


Accessories

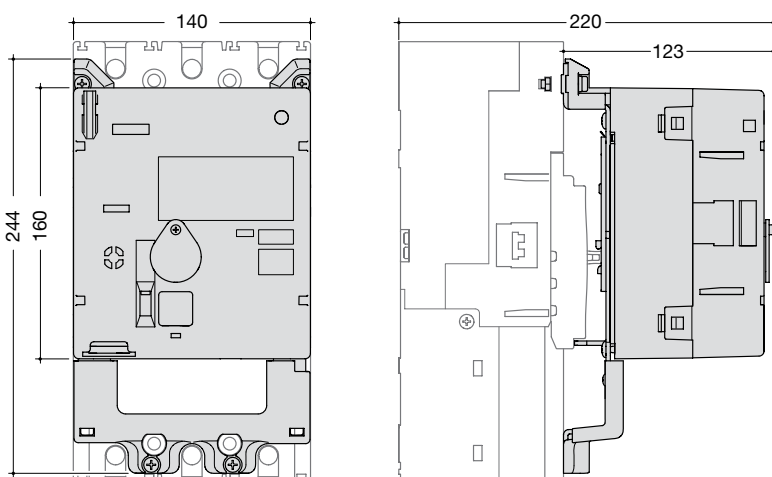
Direct rotary handle



Extended rotary handle



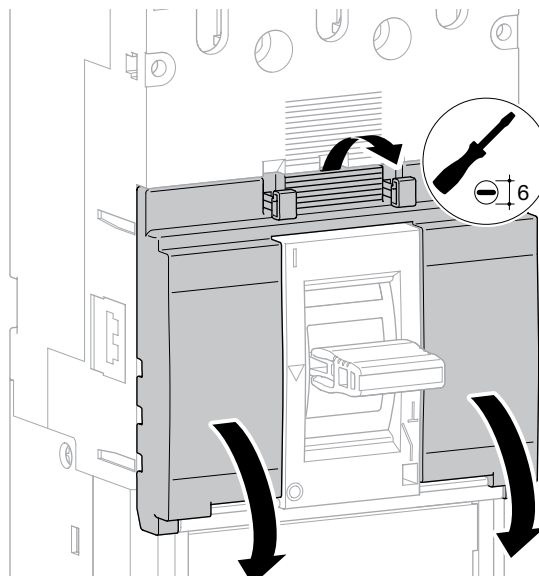
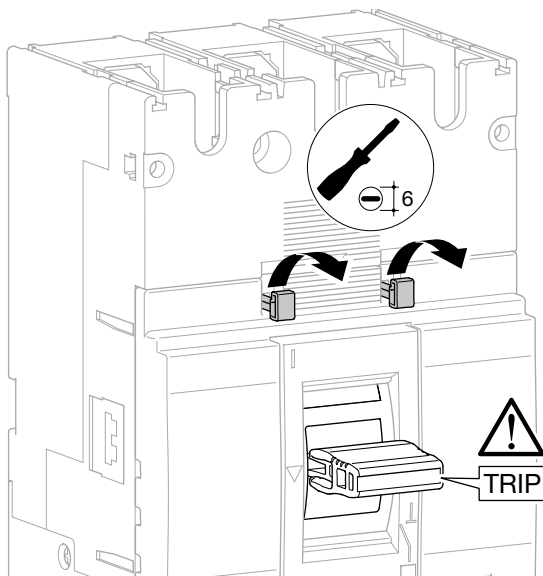
Motor operator



Rated operating voltage	24-48V DC	HXD040H
	100-240V AC	HXD042H
Operating current (A)	24-48V DC	4.3
	100-240V AC	0.9
Starting current (A)	24-48V DC	9.8
	100-240V AC	3.8
Operating method	spring charging	
Operating time (s)	ON	0.1
	OFF	1.5
	RESET	1.5
Power supply required	300 VA minimum	
Dielectric properties	24-48V DC	1000 V AC
	100-240V AC	1500 V AC

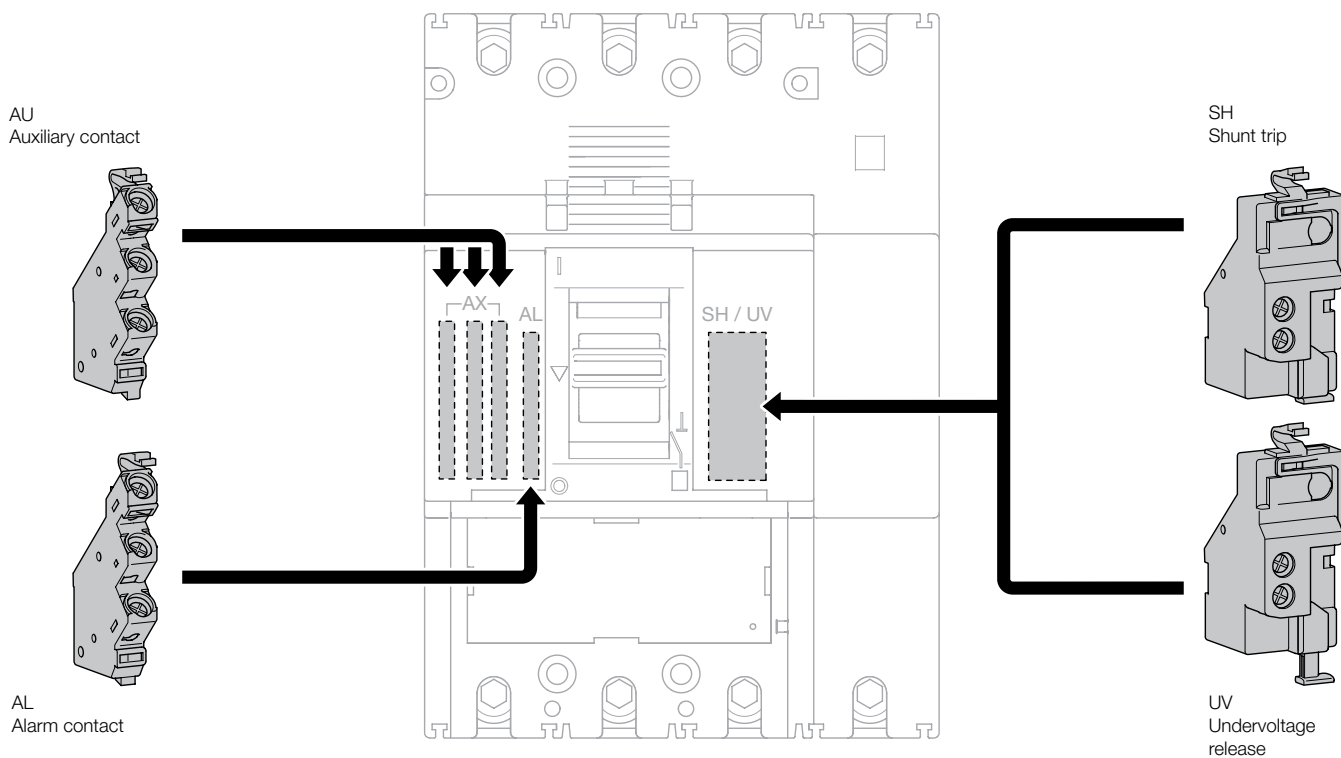
Auxiliaries

Auxiliaries for MCCBs

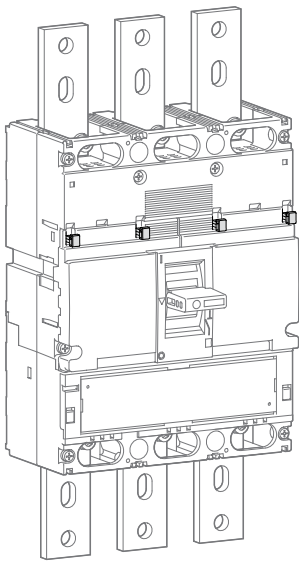


Main switchgear

Mounting combination for auxiliaries and releases

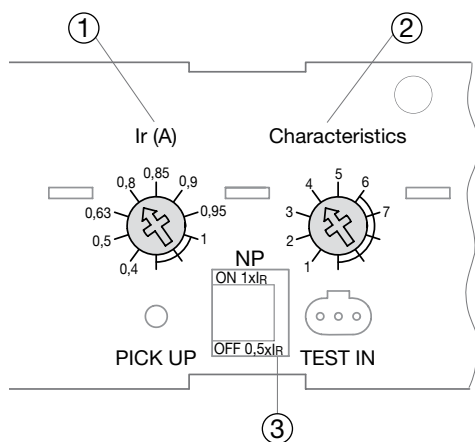
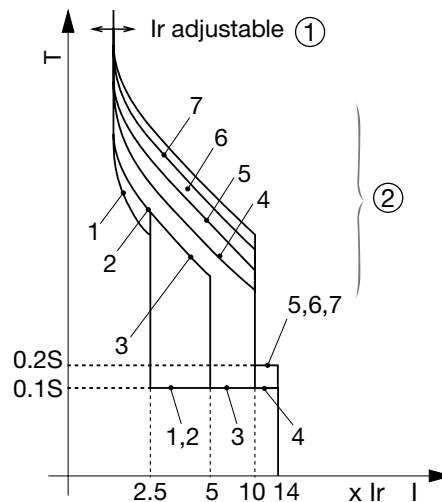
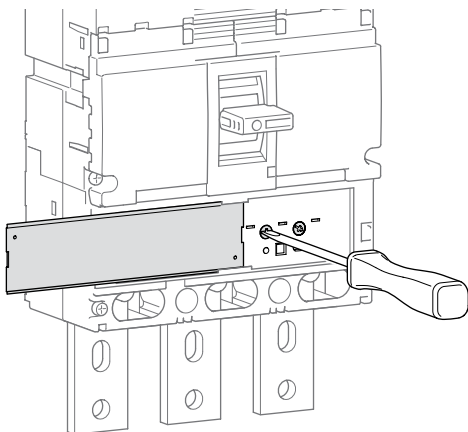


MCCBs



h1000 LSI		220/240 V AC (kA)	380/415 V AC (kA)	660/690 V AC (kA)
HNE	Icu	85 (800A), 75 (1000A)	50	20
	Ics	85 (800A), 75 (1000A)	50	20
HEE	Icu	100	70	20
	Ics	100 (800A), 75 (1000A)	50	20

Electronic trip unit settings (LSI)



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

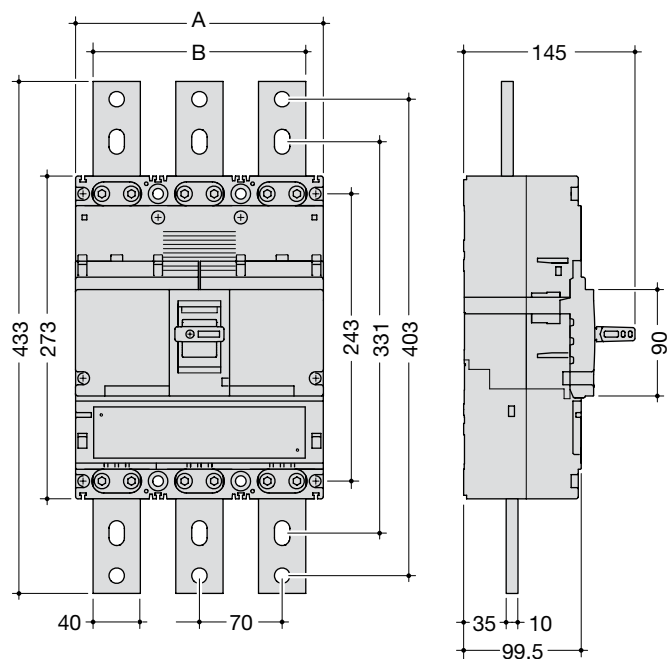
S - Short delay - protection against short circuits: I_{sd} and t_{sd} settings

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

(*) 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.

Dimensions

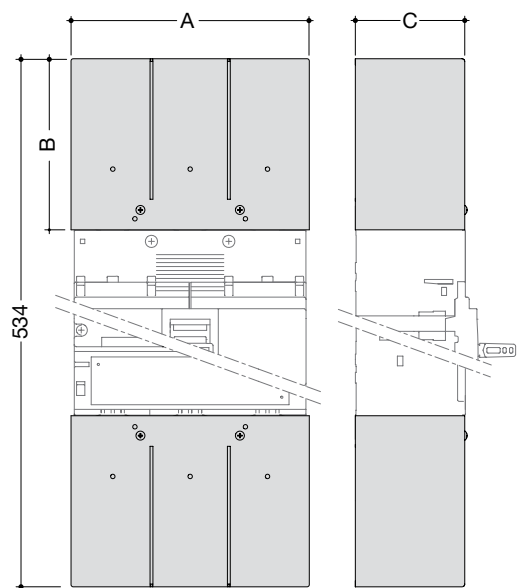
MCCBs



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

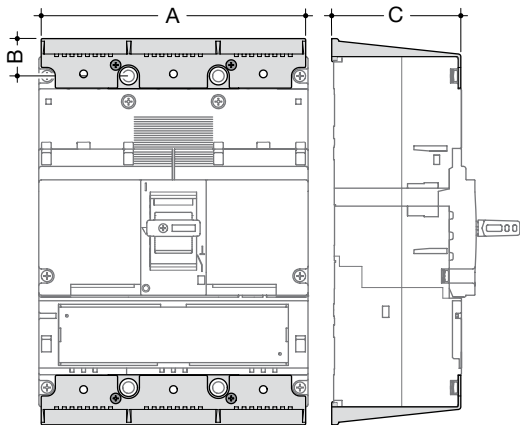
Main switchgear

Terminal covers for extended straight connections



	A (mm)	B (mm)	C (mm)
3P	215	130	99.5
4P	285	130	99.5

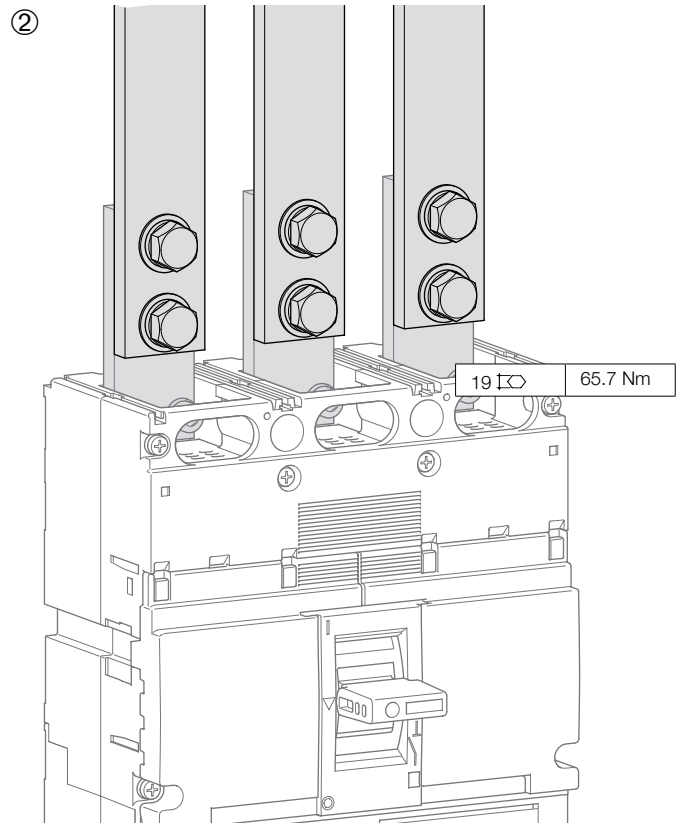
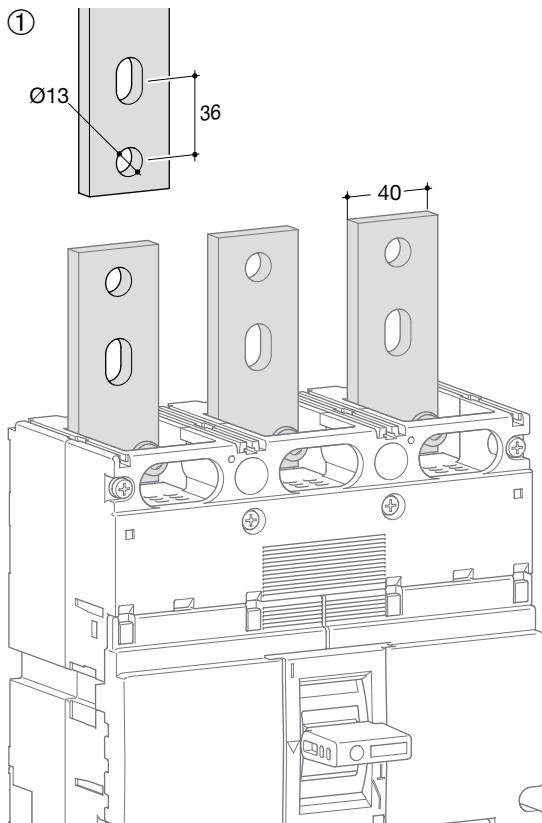
Terminal covers for rear connections



	A (mm)	B (mm)	C (mm)
3P	210	14	101
4P	280	18	99

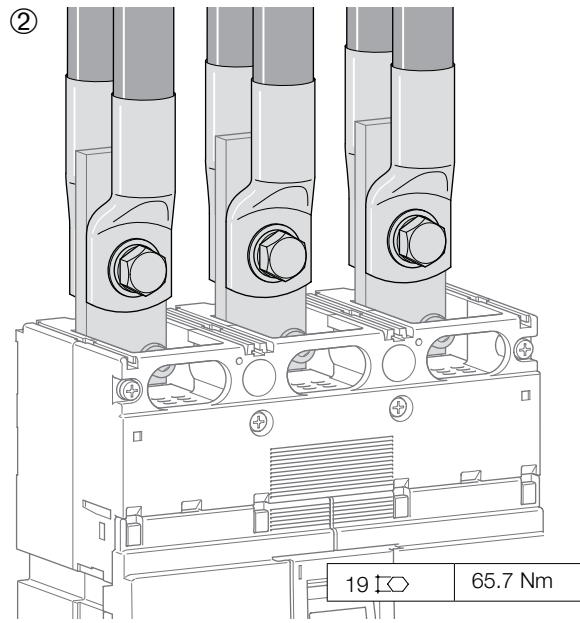
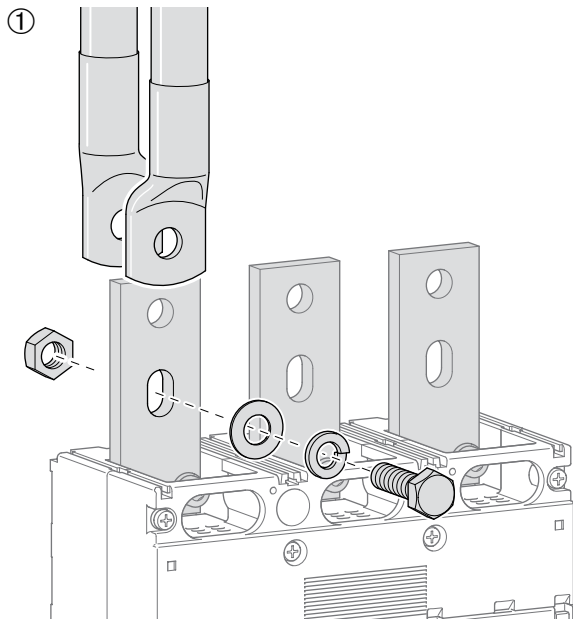
Connection

Extended straight connections



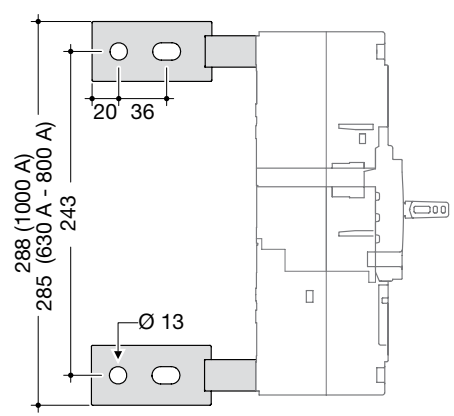
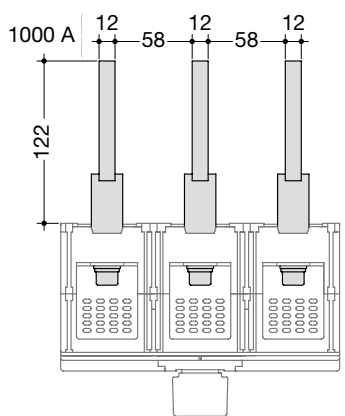
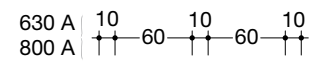
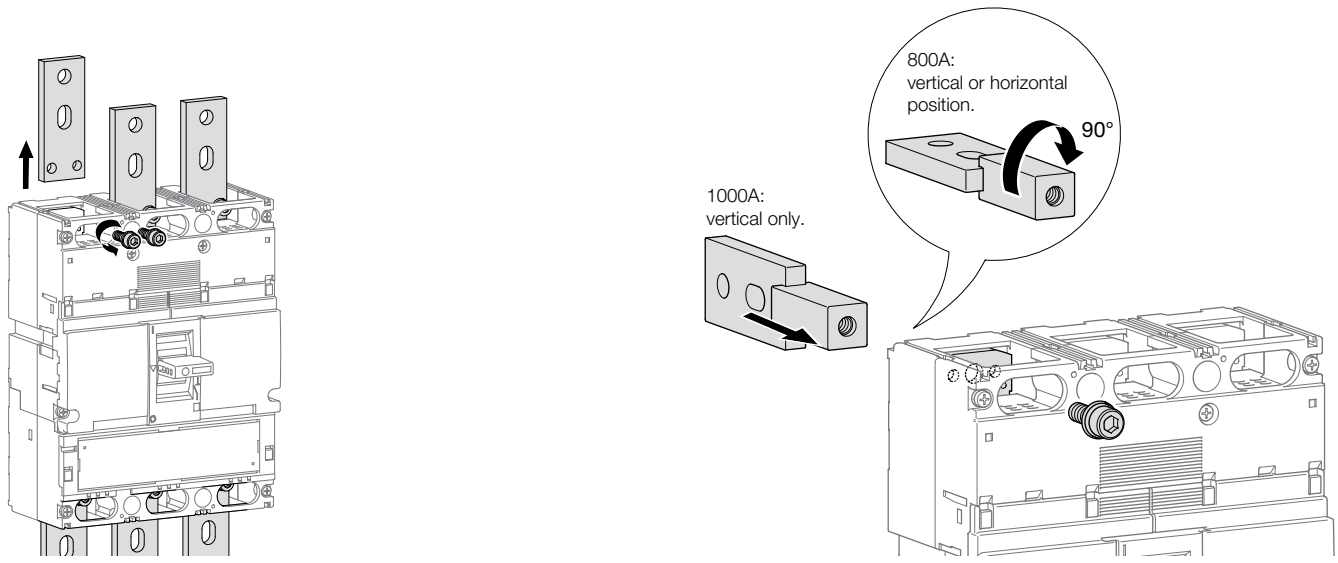
Direct cable connection on terminal
Copper with conductor max. width: 50 mm

Connection with end lugs

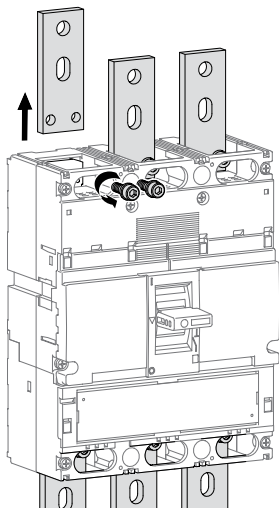


Main switchgear

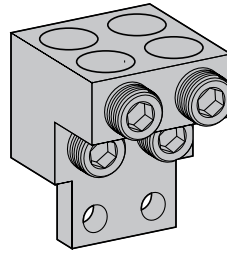
Rear connections



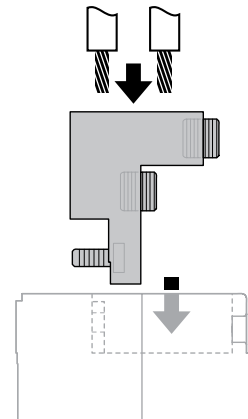
Cable connection (h1000)



HYE007H (3P) - HYE008H (4P)

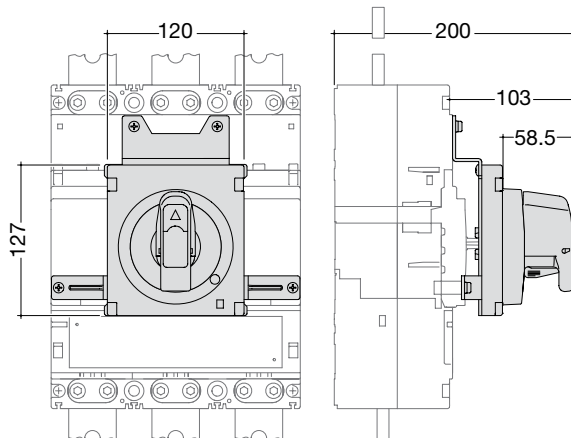


	HYE007H (3P) HYE008H (4P)
	max. 4x240mm ²
10	25 Nm

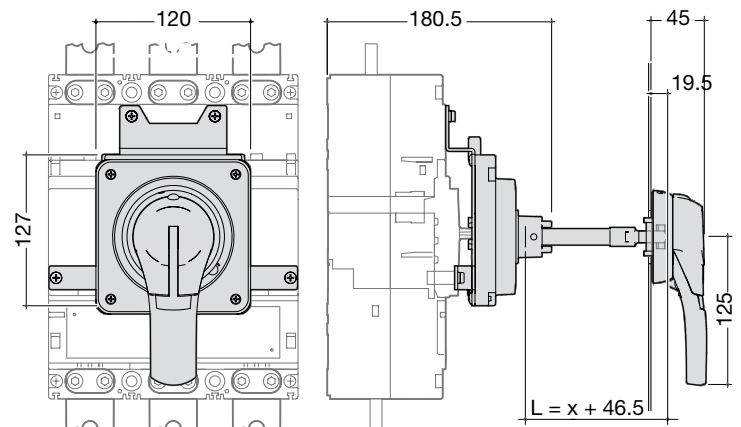


Accessories

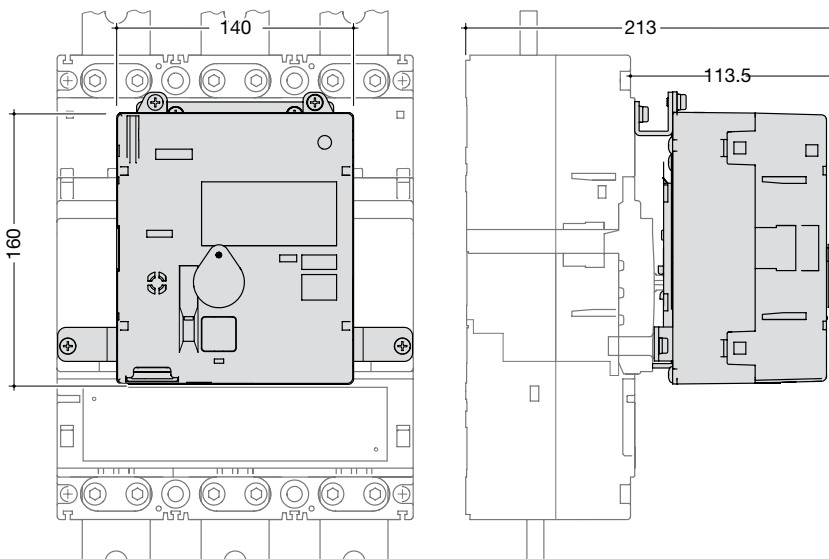
Direct rotary handle



Extended rotary handle



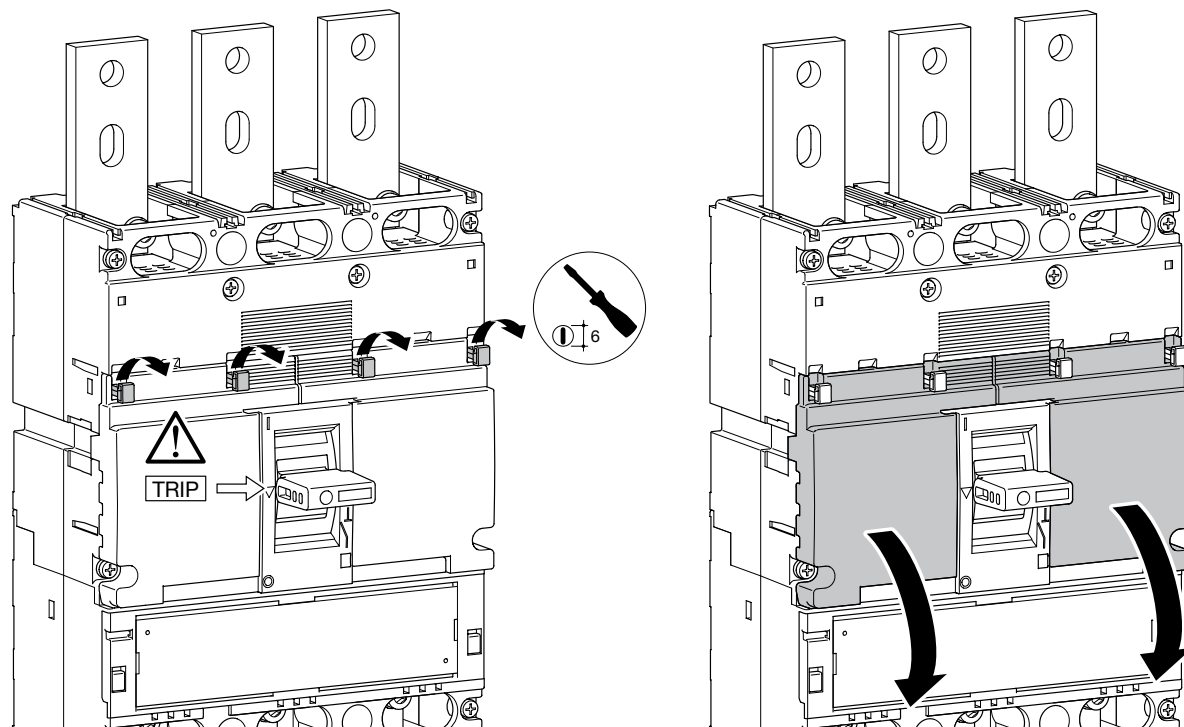
Motor operator



Rated operating voltage	24-48V DC	HXE040H
	100-240V AC	HXE042H
Operating method	spring charging	
Power supply required	300 VA minimum	
Dielectric properties (1min)	24-48V DC	1000 V AC
	100-240V AC	1500 V AC
Operating time (s)	(ON)	0.1
	(OFF)	1.5
	(RESET)	1.5

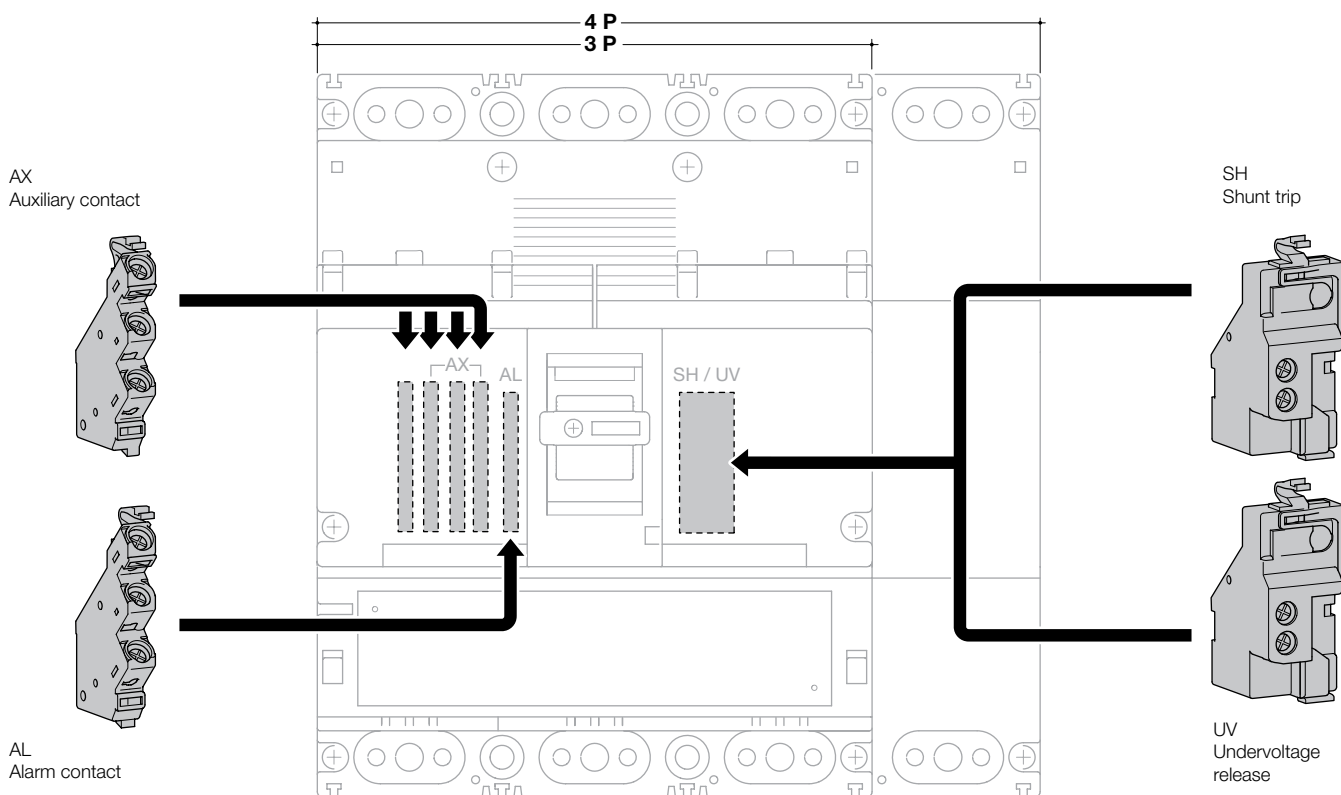
Auxiliaries

Auxiliaries for MCCBs

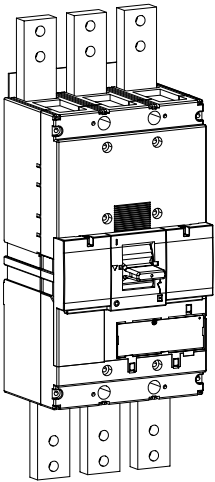


Main switchgear

Mounting combination for auxiliaries and releases

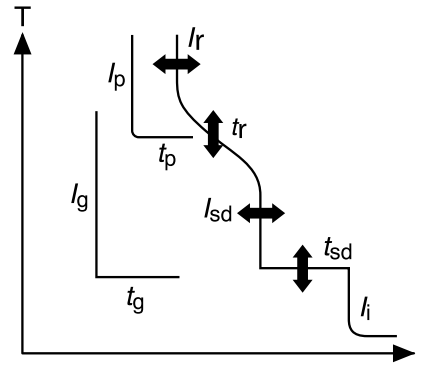
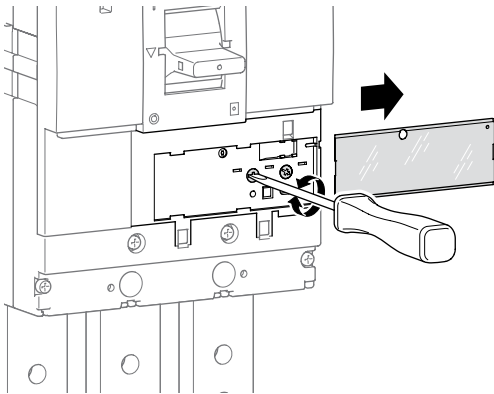


MCCBs



h1600 LSI		220/240 V AC (kA)	380/415 V AC (kA)	660/690 V AC (kA)
HNF	I _{cu}	100	50	25
	I _{cs}	75	50	25
HEF	I _{cu}	100	70	45
	I _{cs}	75	50	34

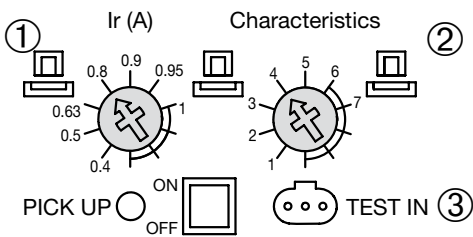
Electronic trip unit settings (LSI)



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 (<10ms) in case of short circuit: 2.5 to 10 x I_r.

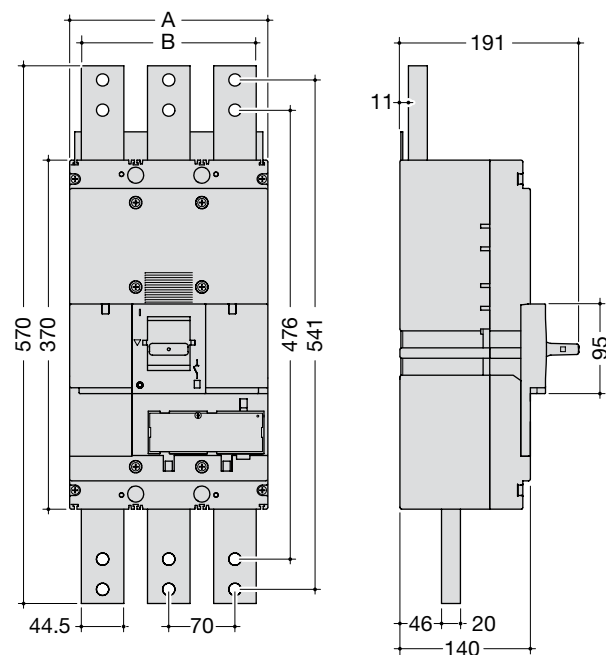
	① I _r (A)	② I _m	③ N
LSI	0.4 - 1 I _n	2.5 - 10 I _r	0% 50% 100 %

(*) 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.



Dimensions

MCCBs

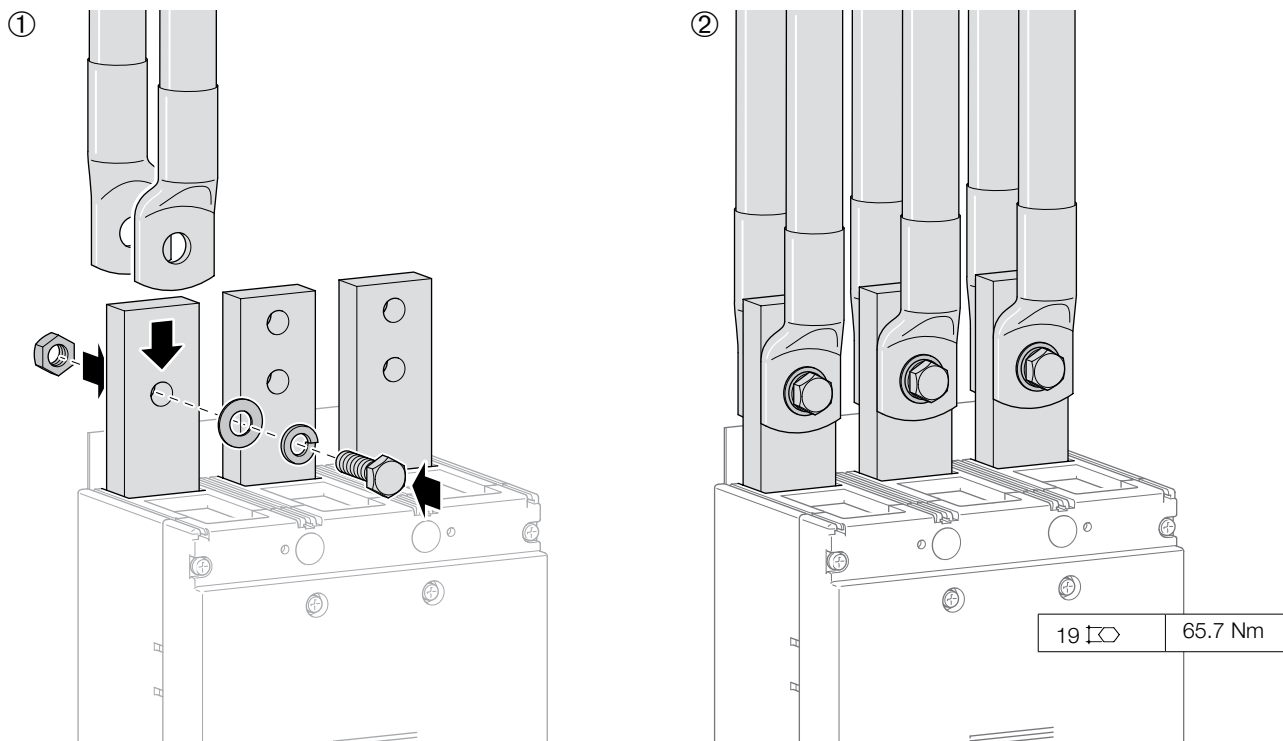


	A (mm)	B (mm)
3P	210	185
4P	280	255

Main switchgear

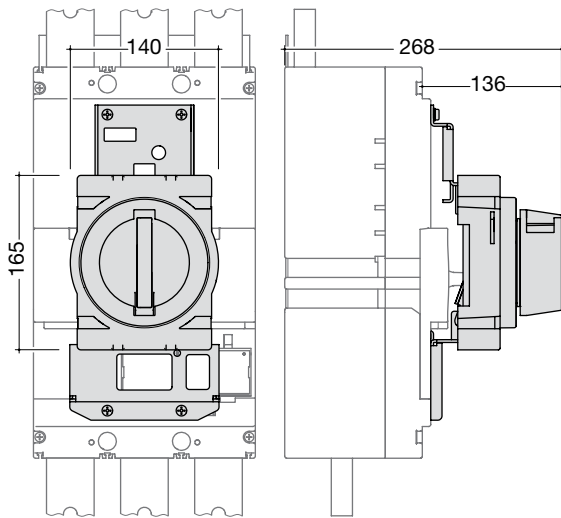
Connection

Connection with end lugs

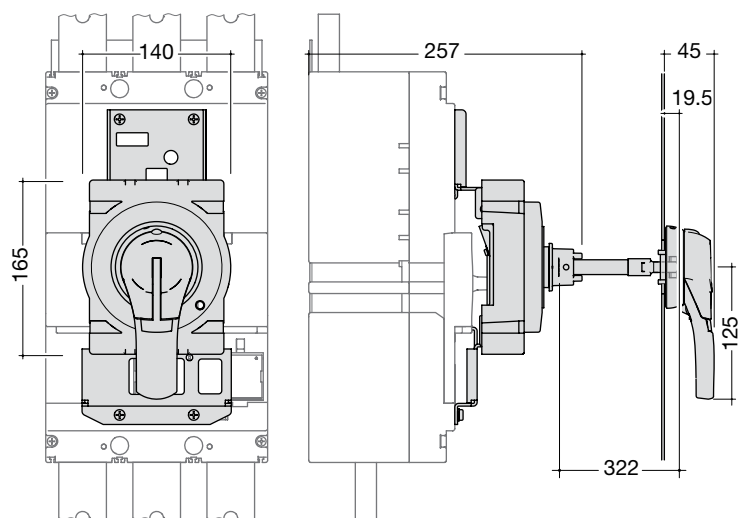


Accessories

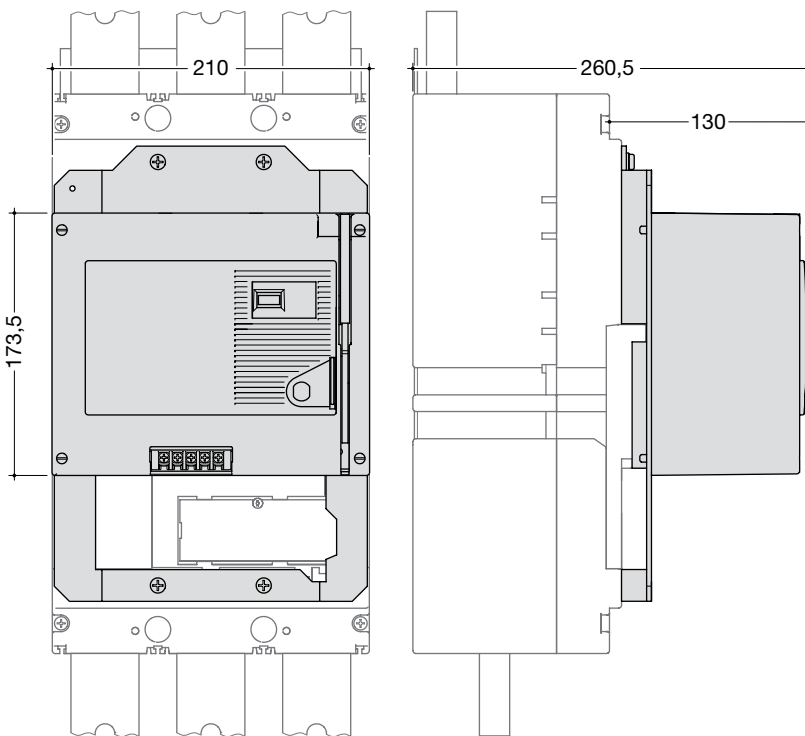
Direct rotary handle



Extended rotary handle



Motor operator

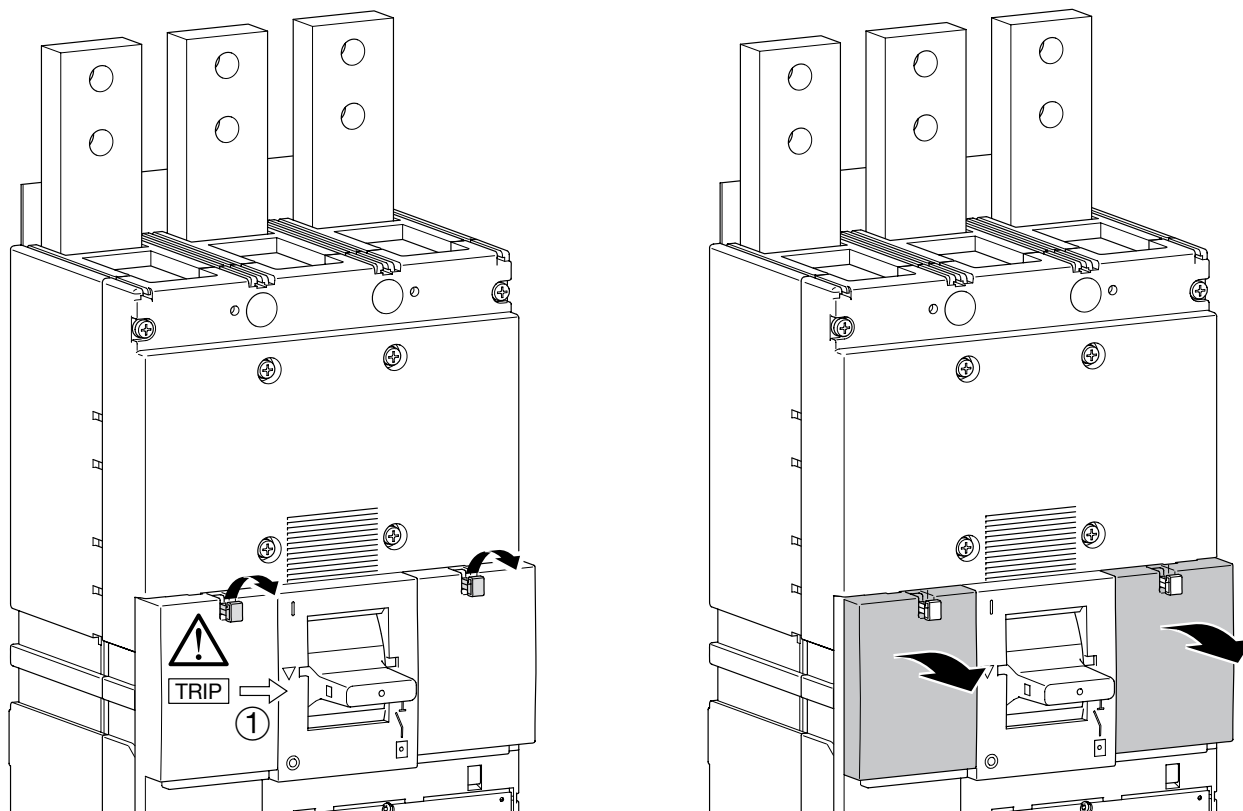


Rated operating voltage	24V DC	HXF040H
	200-230V AC	HXF042H
Operating current (A)	200-230V AC	1
Starting current (A)	200-230V AC	3.2
Operating method		spring charging
Operating time (s)	ON	0.06
	OFF	3
	RESET	3
Power supply required		300 VA minimum
Dielectric properties (1min)	24V DC	500 V AC
	200-230V AC	1500 V AC

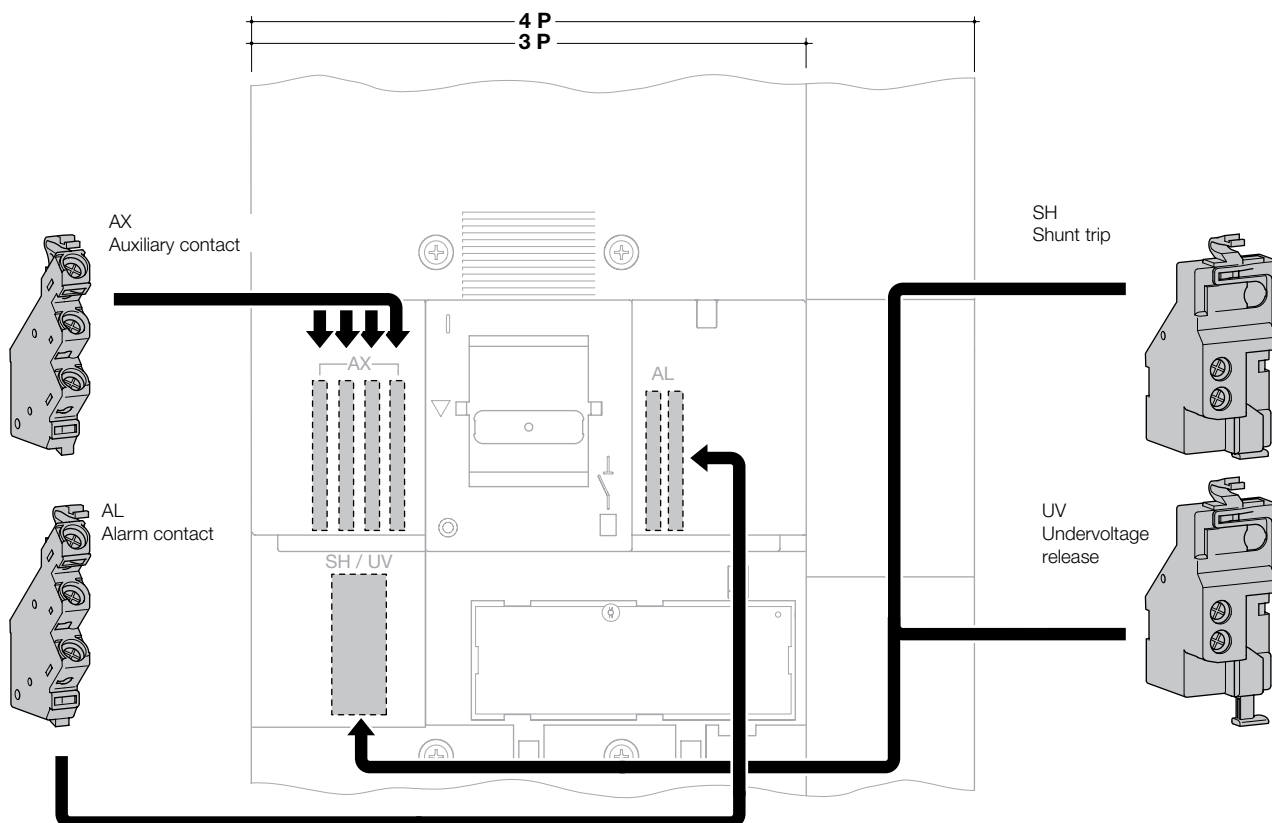
Auxiliaries

Auxiliaries for MCCBs

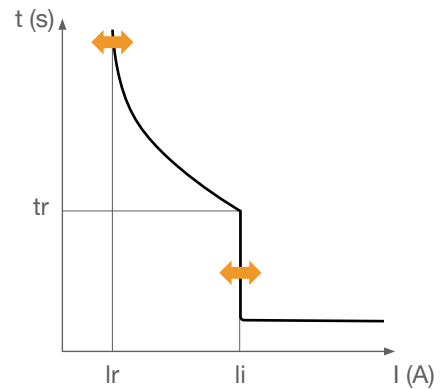
Main switchgear



Mounting combination for auxiliaries and releases



TM trip units



In at 50 °C	25 A	40 A	50 A	63 A	80 A	100 A	125 A	160 A	200 A	250 A
P160	x	x	x	x	x	x	x			
P250			x	x	x	x	x	x	x	x

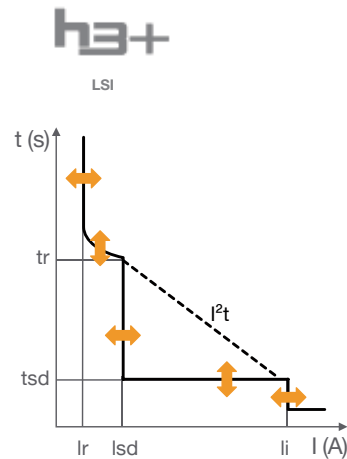
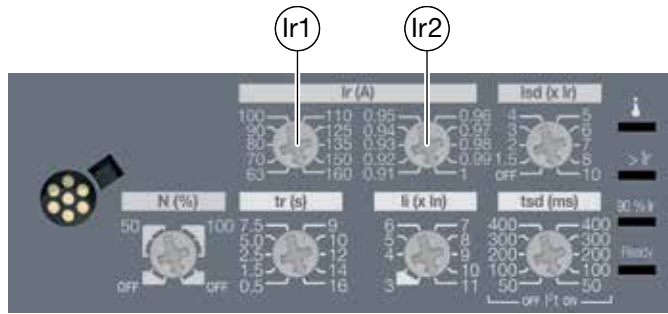
Thermal protection

Ir ... x In (tripping current between 1.05 and 1.30 x Ir)	adjustable 0.63 - 0.8 - 1
Time delay tr	fixed

Magnetic protection

li (+/- 20 %) x In	adjustable
P160	6 - 8 - 10 - 12 6 - 7 - 8 - 9 - 10
P250	6 - 8 - 10 - 13 6 - 8 - 10 - 12 6 - 7 - 8 - 9 - 10
Time delay	fixed

LSI trip units



In	40 A	100 A	160 A	250 A	400 A	630 A
P160	X	X	X			
P250	X	X	X	X		
P630				X	X	X

Long time protection

Ir (pick-up tripping between 1.05 and 1.20 x Ir)

Ir1 (A)	In = 40 A	16 - 18 - 20 - 22 - 25 - 28 - 32 - 34 - 37 - 40
	In = 100 A	40 - 45 - 50 - 57 - 63 - 72 - 80 - 87 - 93 - 100
	In = 160 A	63 - 70 - 80 - 90 - 100 - 110 - 125 - 135 - 150 - 160
	In = 250 A	90 - 100 - 110 - 125 - 140 - 160 - 180 - 200 - 225 - 250
	In = 400 A	160 - 180 - 200 - 225 - 250 - 300 - 350 - 370 - 400
	In = 630 A	250 - 300 - 350 - 370 - 400 - 500 - 600 - 630
Ir (A) = Ir1 x Ir2	Fine tuning Ir2	0.91 - 0.92 - 0.93 - 0.94 - 0.95 - 0.96 - 0.97 - 0.98 - 0.99 - 1
Time delay (s) accuracy -21% / +1%	tr at 6 x Ir	0.5 - 1.5 - 2.5 - 5 - 7.5 - 9 - 10 - 12 - 14 - 16

S Short time protection

Isd = OFF ; = Ir x ...	Accuracy +/- 10 %	1.5 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 10				
Time delay (ms)	tsd I²t OFF	50	100	200	300	400
	tsd I²t ON	50	100	200	300	400
	Non-tripping time	20	80	180	280	380
	Maximum breaking time	80	150	250	350	450

I Instantaneous protection

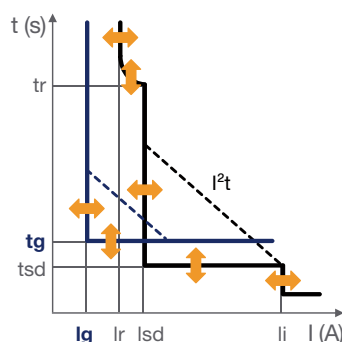
Instantaneous pickup li = In x ... accuracy +/- 15 %	P160 - P250	In = 40 A ; 100 A	3 - 4 - 5 - 6 - 7 - 8 - 10 - 12 - 15
		In = 160 A ; 250 A	3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11
	P630	In = 250 A ; 400 A	3 - 4 - 5 - 6 - 7 - 8 - 10 - 11 - 12
		In = 630 A	3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11
Time delay (ms)	Non-tripping time	10	
	Maximum breaking time	50	

Energy trip units



h3+

Energy



In	40 A	100 A	160 A	250 A	400 A	630 A
P160	X	X	X			
P250	X	X	X	X		
P630				X	X	X

Long time protection

Ir (pick-up tripping between 1.05 and 1.20 x Ir)

Ir (A) ; Ir max (A)	In = 40 A	16 - 25 - 32 - 40
In = 100 A	40 - 63 - 80 - 100	
In = 160 A	63 - 100 - 125 - 160	
In = 250 A	90 - 100 - 125 - 160 - 200 - 250	
In = 400 A	160 - 200 - 250 - 300 - 350 - 400	
In = 630 A	250 - 300 - 350 - 400 - 500 - 630	

Fine tuning of 1A steps below Ir max is available using the dial on the front of the tripping unit until reaching the minimal value.

Time delay (s) accuracy -21% / +1%	tr (s) at 6 x Ir	0.5 - 1.5 - 2.5 - 5 - 7.5 - 9 - 10 - 12 - 14 - 16
------------------------------------	------------------	---

S Short time protection

Isd = OFF ; = Ir x ...	Accuracy +/- 10 %	1.5 to 10 with steps of 0.5
Time delay (ms)	tsd I²t OFF	50 100 200 300 400
	tsd I²t ON	50 100 200 300 400
	Non-tripping time	20 80 180 280 380
	Maximum breaking time	80 150 250 350 450

I Instantaneous protection

Instantaneous pickup li = In x ... accuracy +/- 15 %	P160 - P250	In = 40 A ; 100 A	3 to 15 with steps of 0.5
P630	In = 160 A ; 250 A	3 to 11 with steps of 0.5	
	In = 250 A ; 400 A	3 to 12 with steps of 0.5	
	In = 630 A	3 to 11 with steps of 0.5	
Time delay (ms)	Non-tripping time	10	
	Maximum breaking time	50	

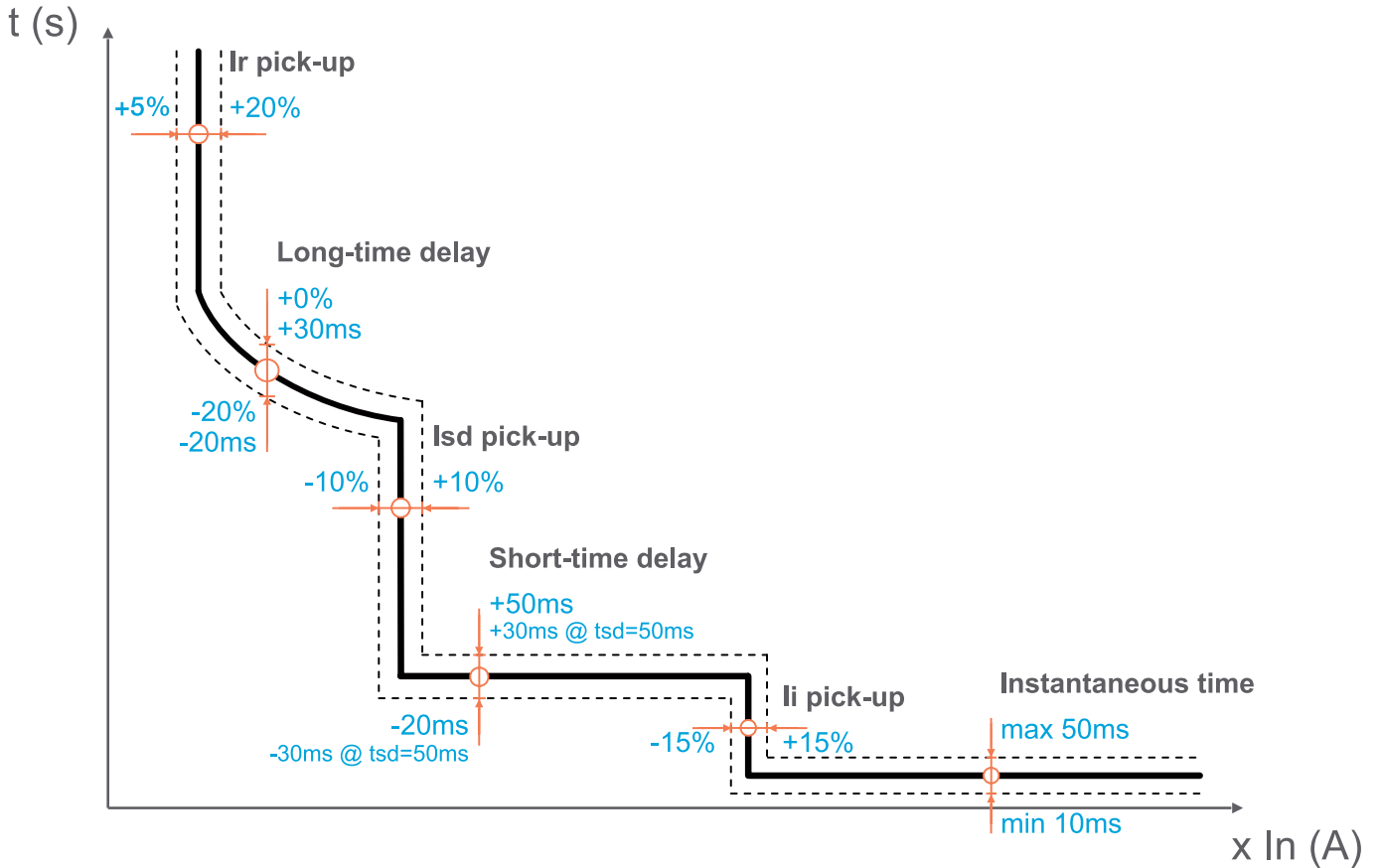
G Ground fault protection

Ground fault pickup Ig lg = OFF; = % In	In = 40 A	40 to 100 with steps of 5
Time Delay (ms)	In > 40 A	20 to 100 with steps of 5
	tsd I²t OFF	50 100 200 300 400 500
	tsd I²t ON	50 100 200 300 400 500
	Non-tripping time	20 80 180 280 380 480
	Maximum breaking time	80 150 250 350 450 550

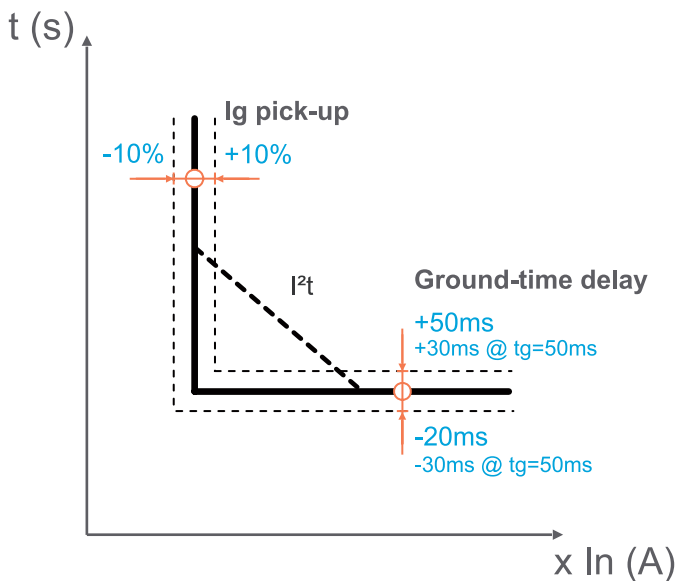
Tripping tolerance of electronic trip units

Tolerances limits for tripping curves of electronic trip units are not described on tripping curves drawing. Both following diagrams give the tolerance to take in account on further LSnl, LSI, LSiG, Energy and G tripping curves drawings

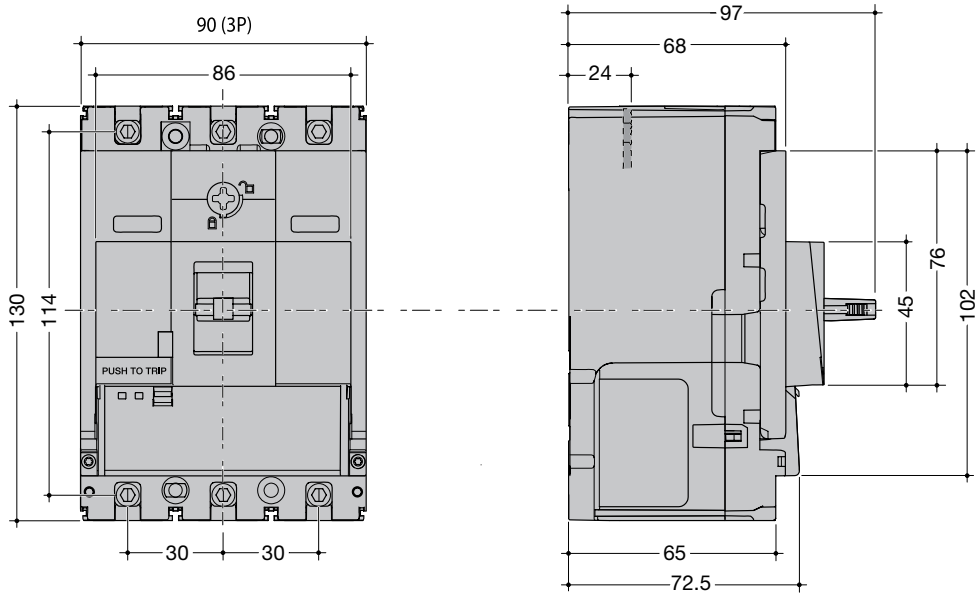
Tolerance limits of LSnl, LSI, LSiG and Energy tripping curves



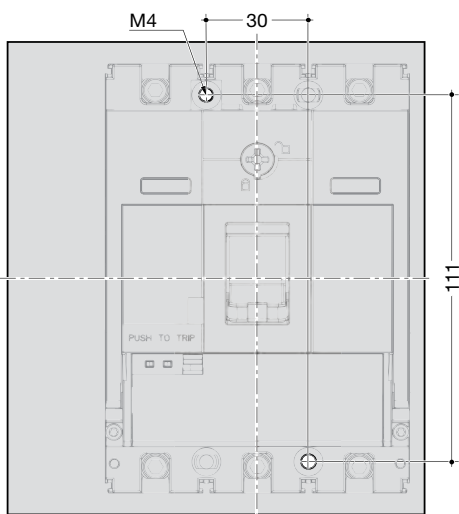
Tolerance limits of G characteristic of Energy trip unit



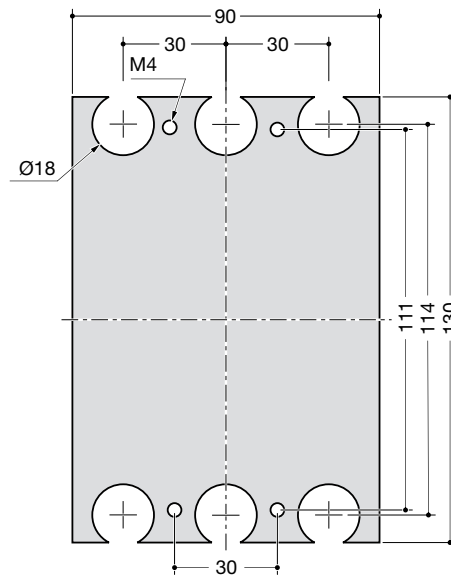
Circuit Breakers



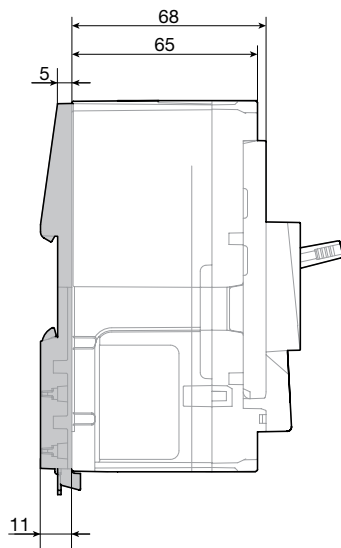
Back plate drilling pattern (3P)



Rear connection back plate drilling pattern (3P)

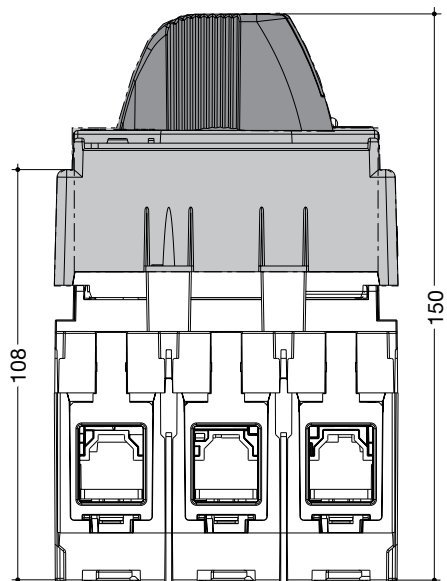


DIN rail adaptor



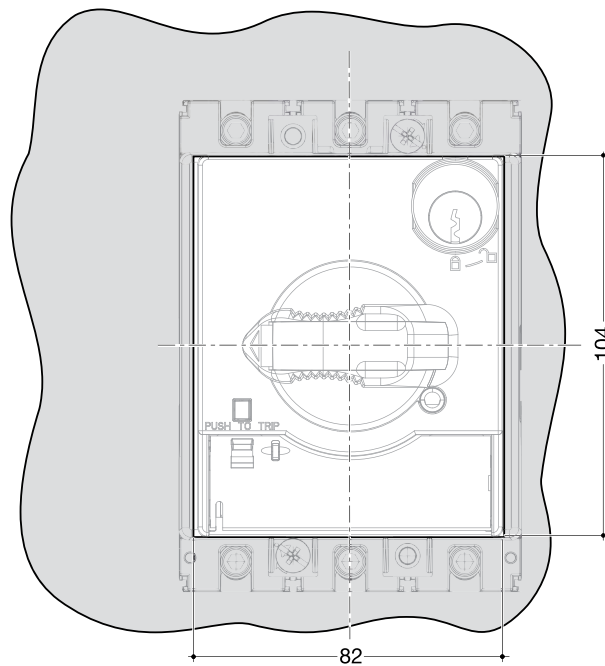
Rotary handle P160

3P



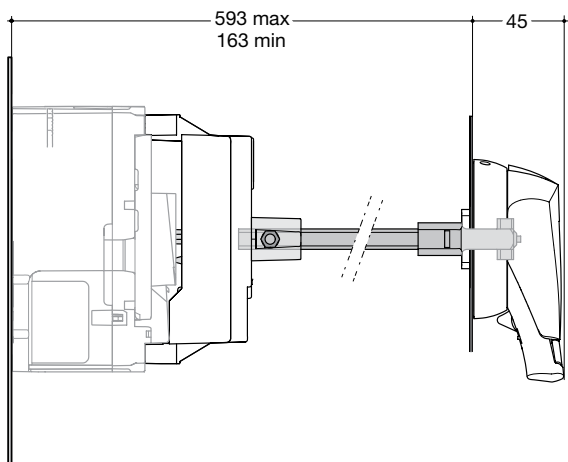
Panel cut-out rotary handle P160

3P



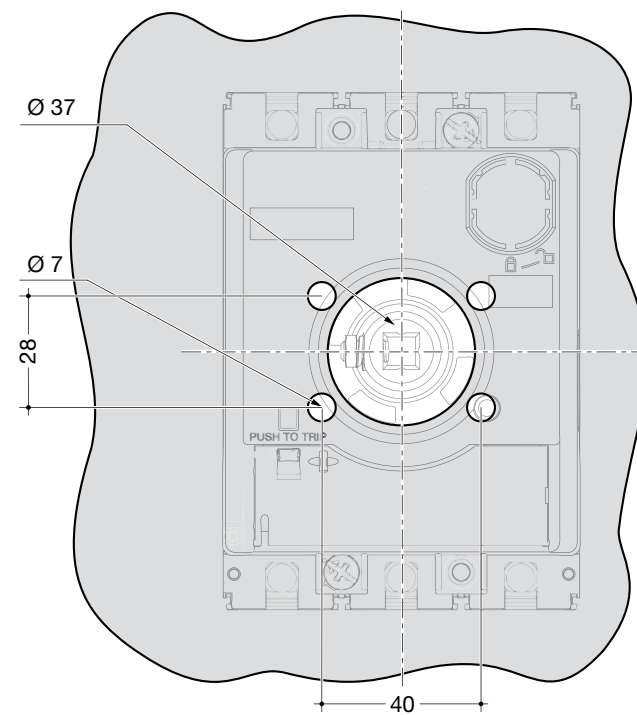
Main switchgear

Extended rotary handle P160



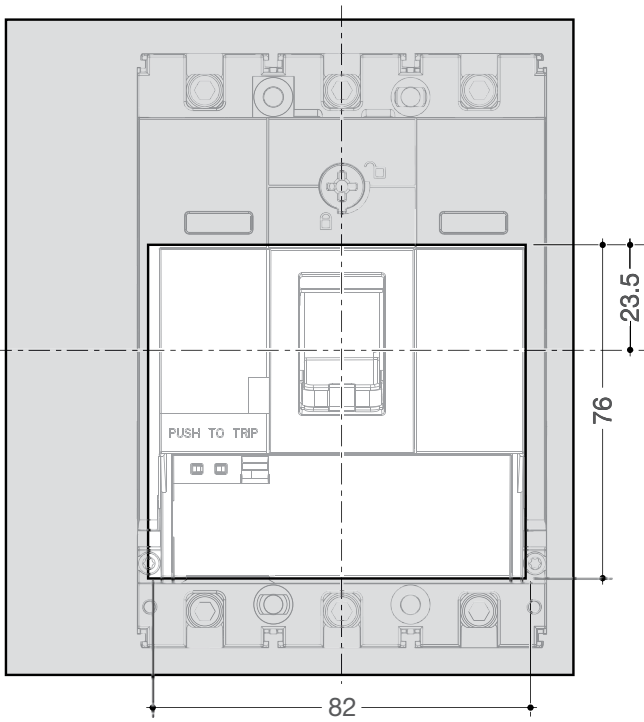
Panel cut-out extended rotary handle P160

3P



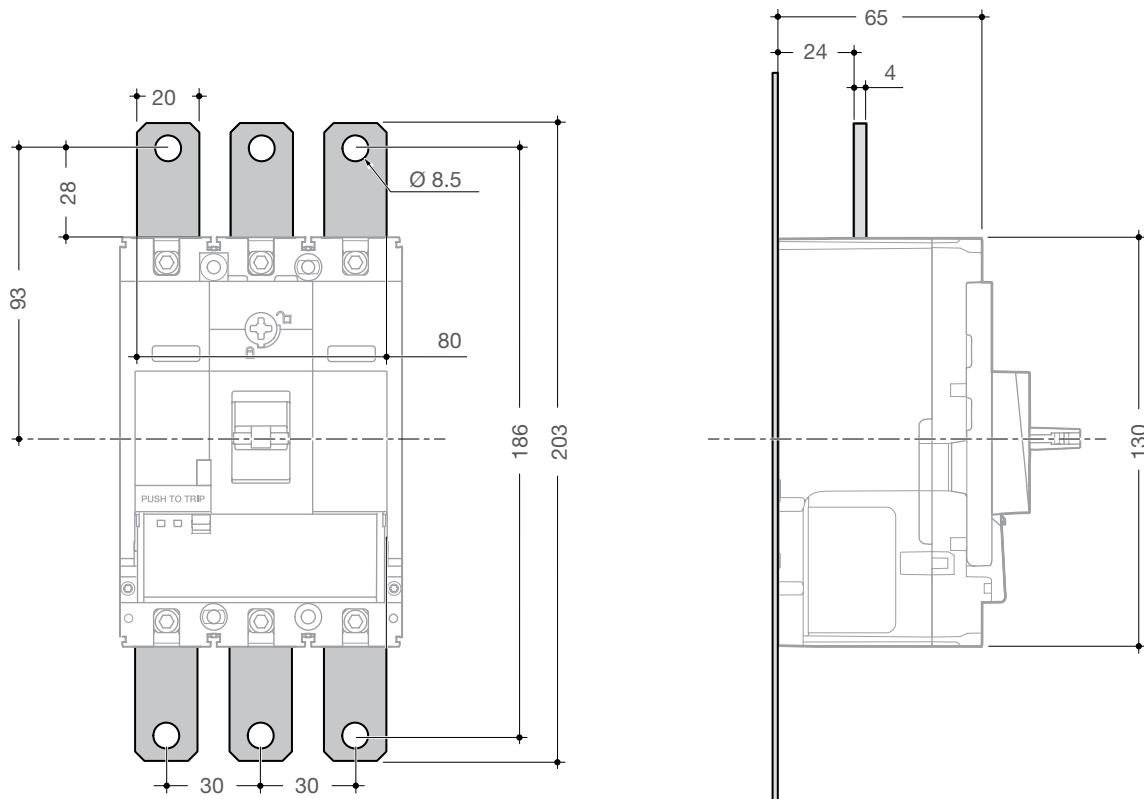
Dimensions in mm

Panel cut-out circuit breaker P160
3P



Main switchgear

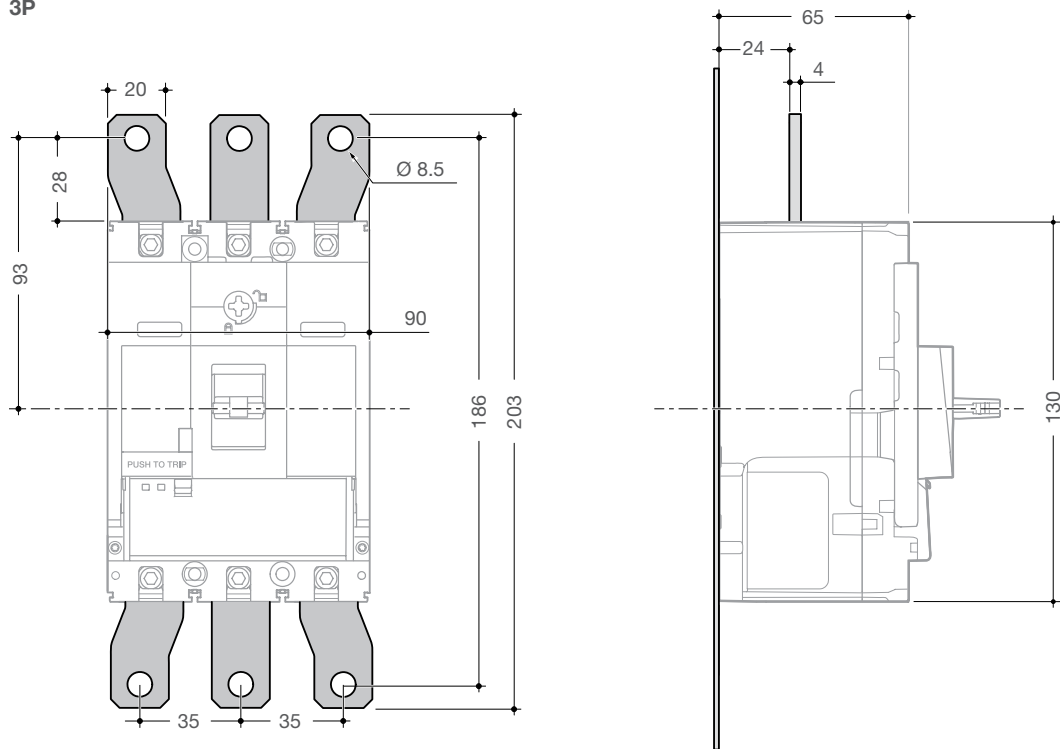
Straight terminal extensions P160
3P



Dimensions in mm

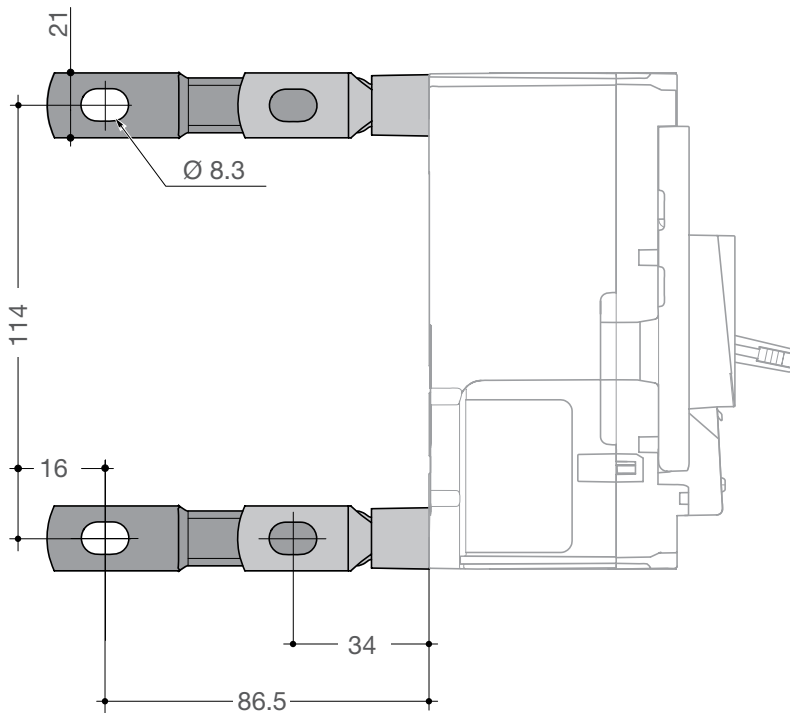
Subject to technical modification

Spreaders P160
3P



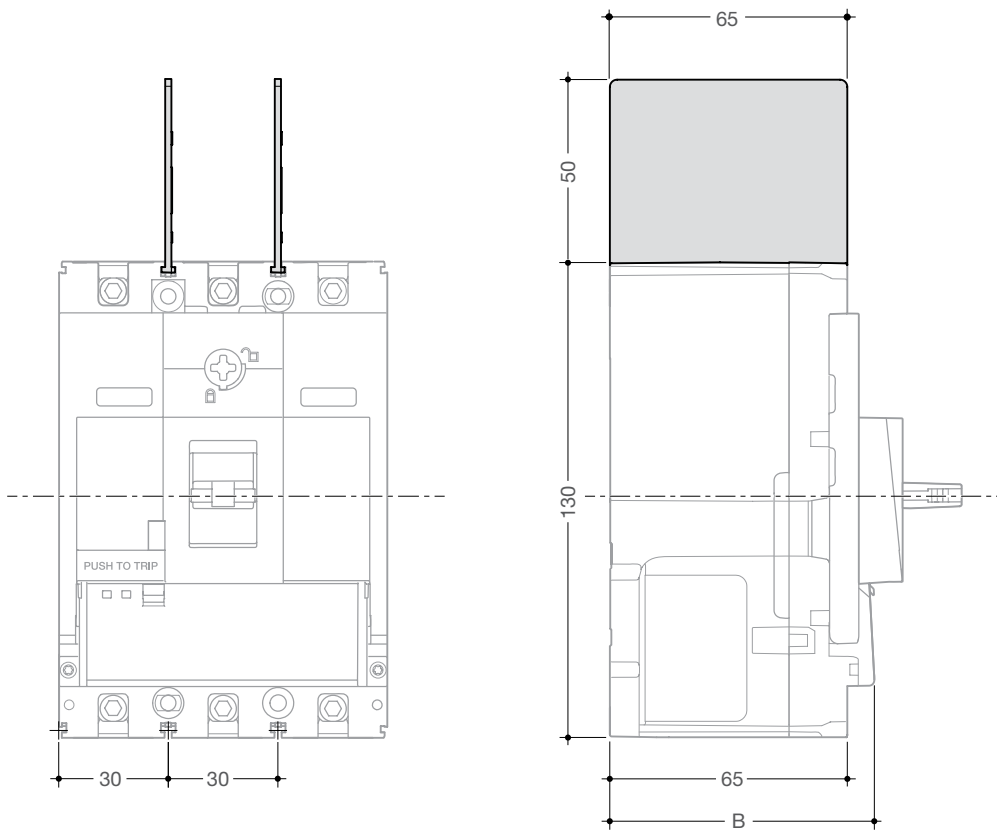
Main
switchgear

Rear connections P160
3P



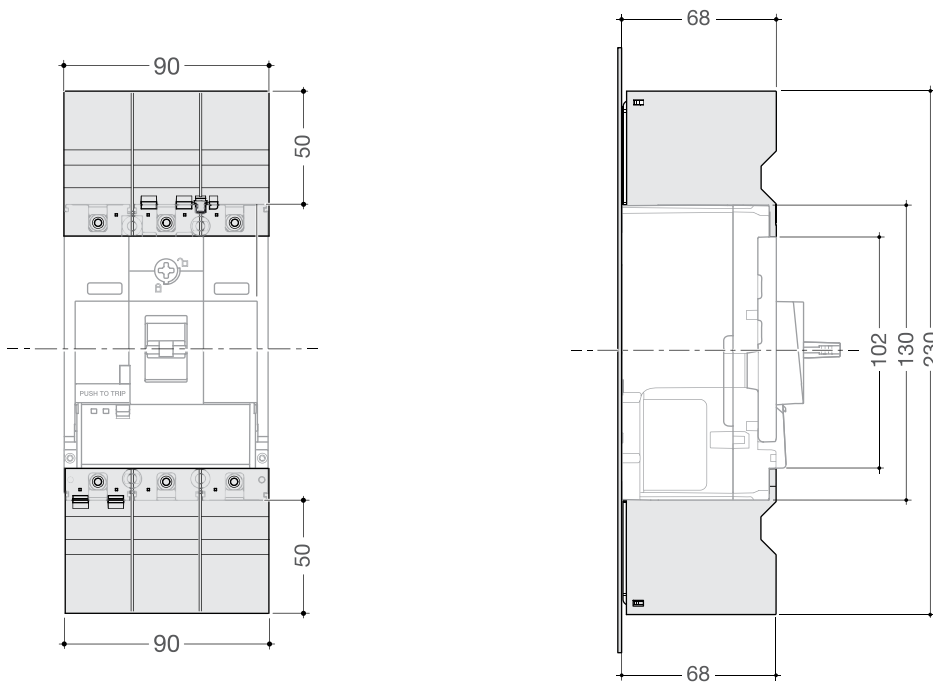
Dimensions in mm

Interphase barriers P160
3P



Main switchgear

Terminal cover P160
3P



Dimensions in mm

Subject to technical modification

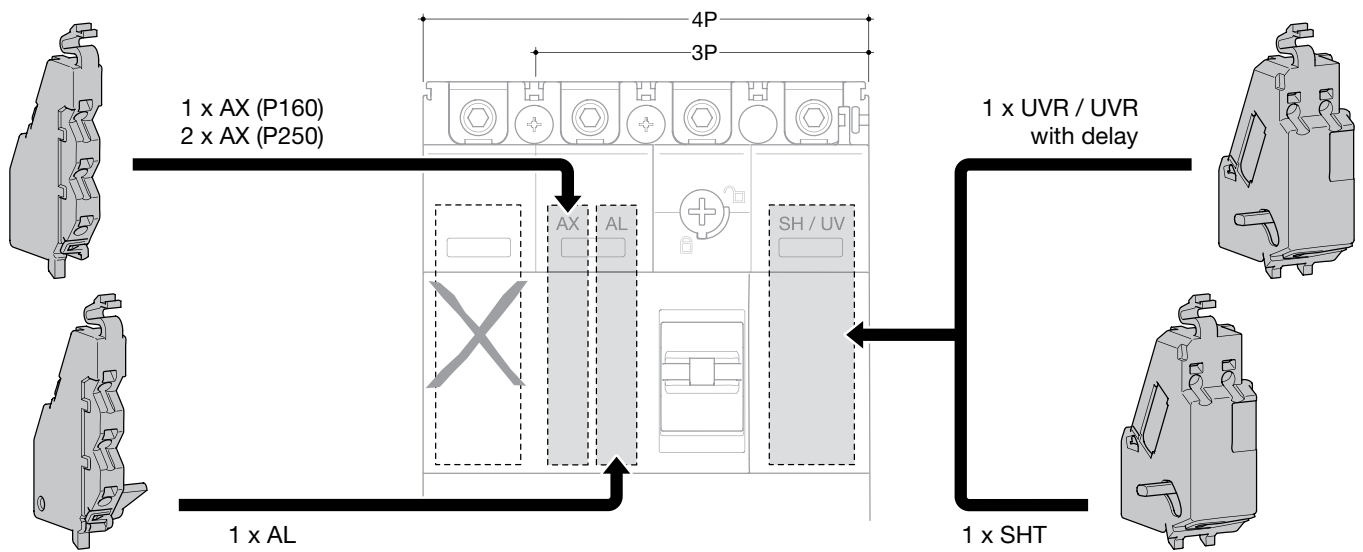
Selection of auxiliaries

All MCCBs share the same internal auxiliaries. The installation of the auxiliaries is simple and does not require any specific tool.

P160 MCCBs have internal locations dedicated to the mounting of the following electrical auxiliaries.

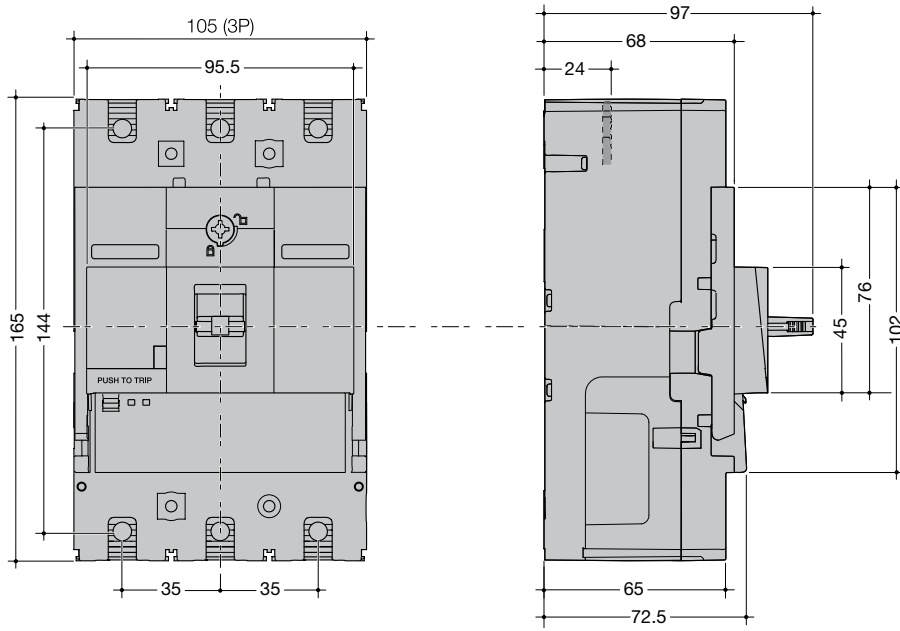
- 1 AX ON/OFF
- 1 AL trip indication
- 1 UVR / UVR with delay or 1 SHT

Location of auxiliaries P160

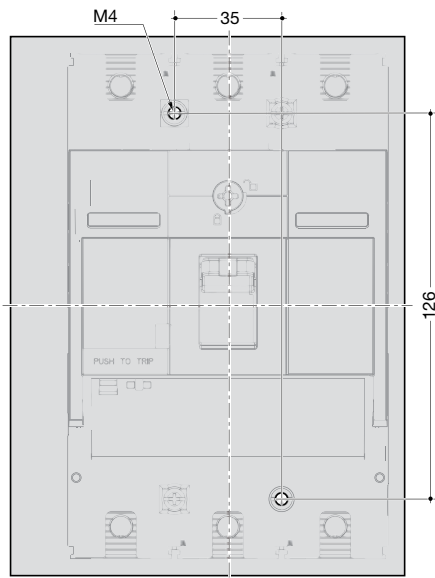


Dimensions in mm

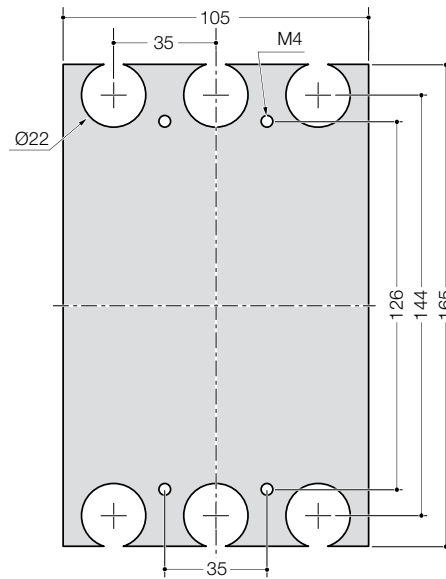
Circuit Breakers



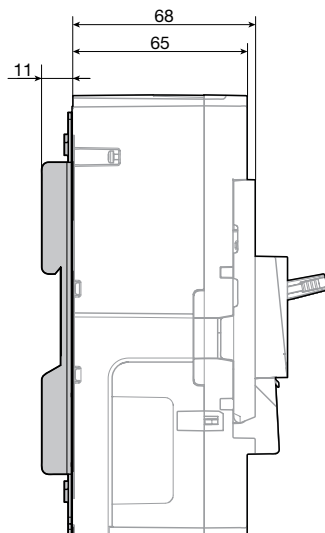
Back plate drilling pattern (3P)



Rear connection back plate drilling pattern (3P)

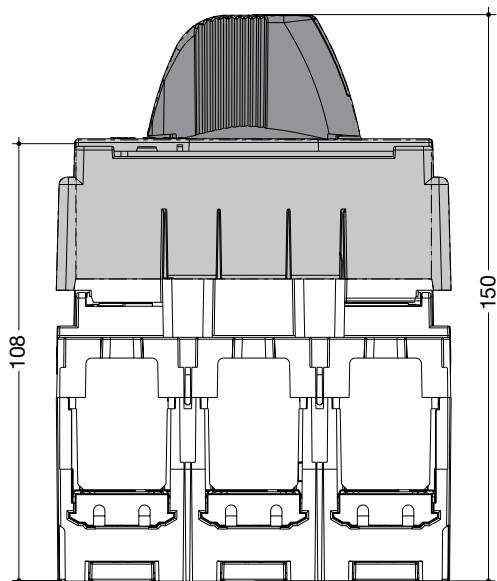


DIN rail adaptor

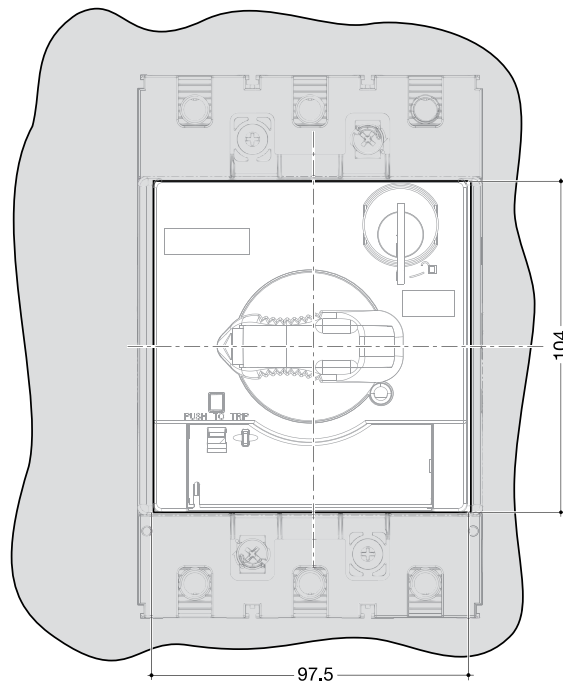


Dimensions in mm

Rotary handle P250
3P

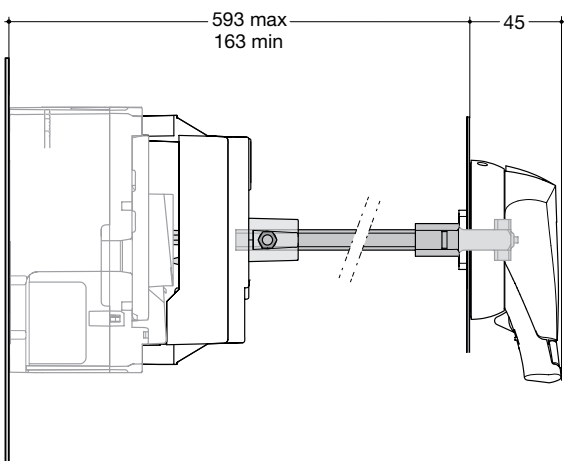


Panel cut-out rotary handle P250
3P

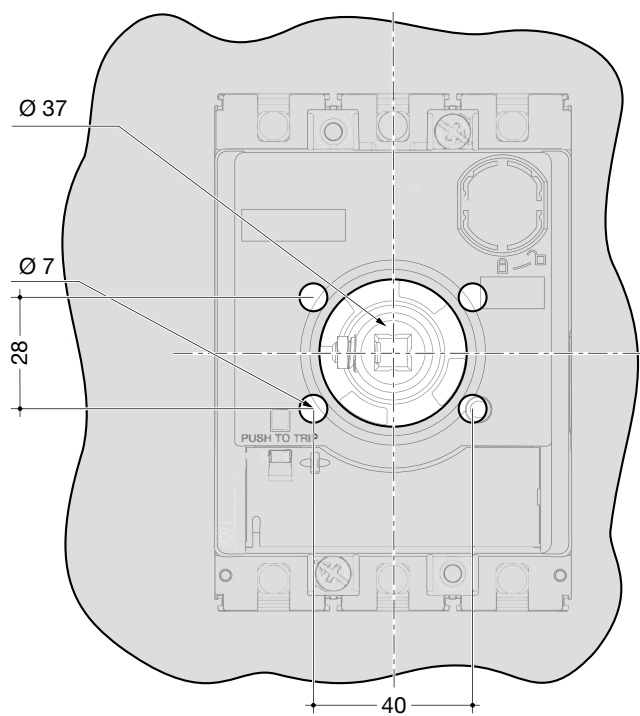


Main switchgear

Extended rotary handle P250
3P

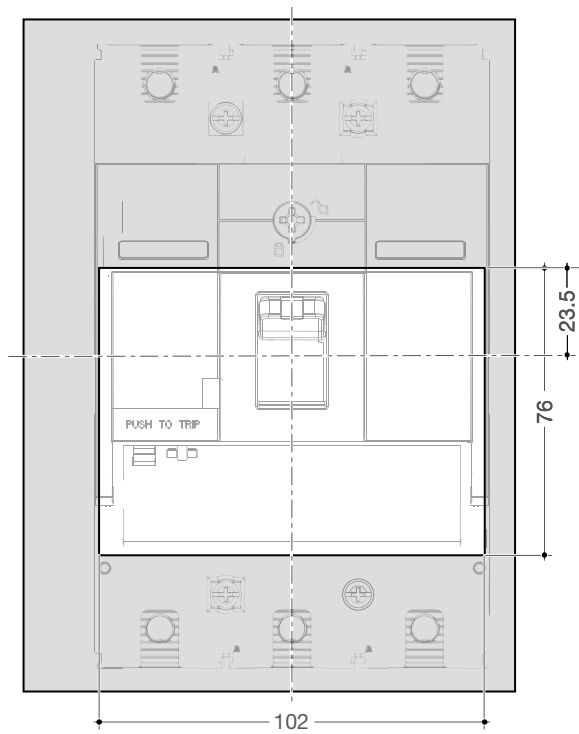


Panel cut-out extended rotary handle P250
3P



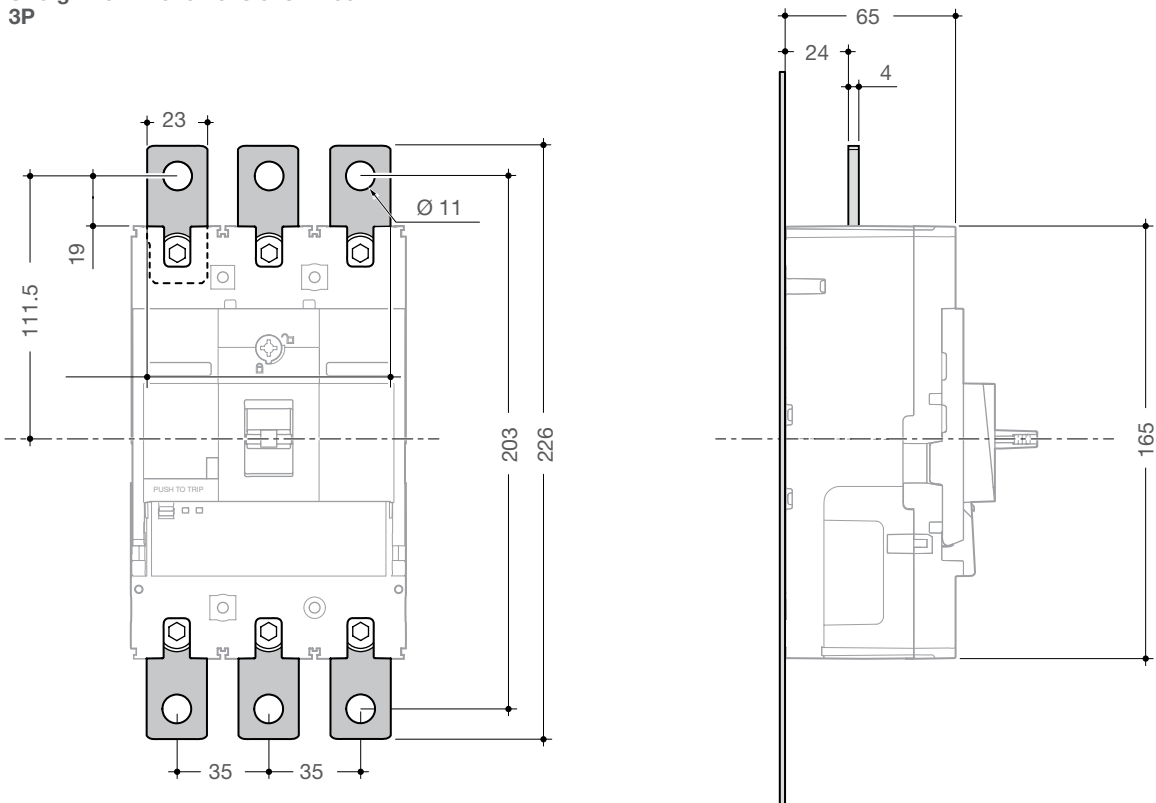
Dimensions in mm

Panel cut-out circuit breaker P250
3P



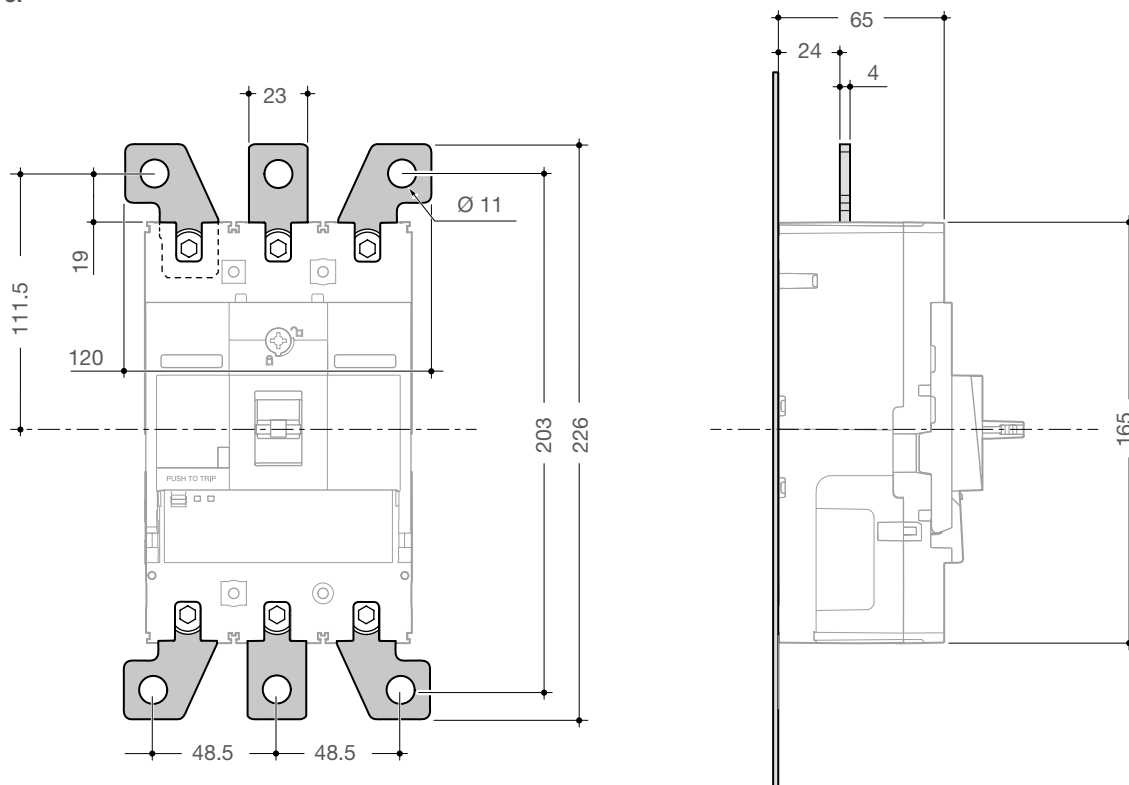
Main switchgear

Straight terminal extensions P250
3P



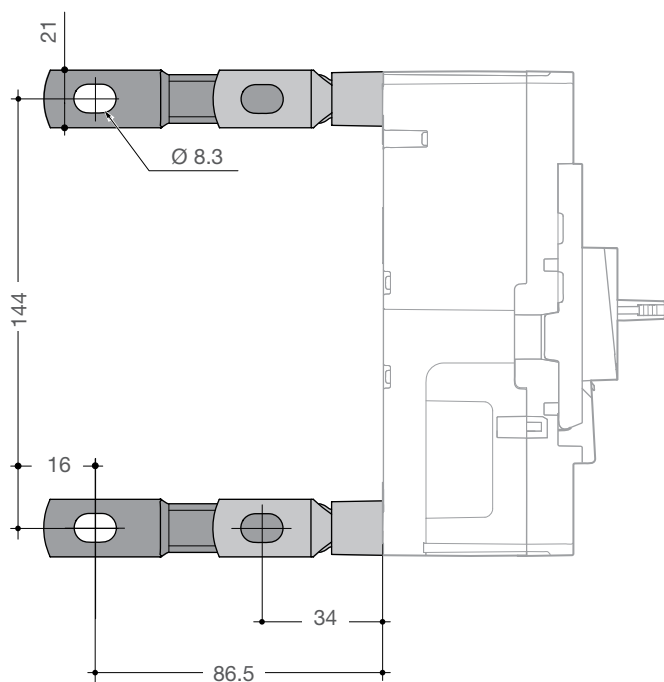
Dimensions in mm

Spreaders P250
3P



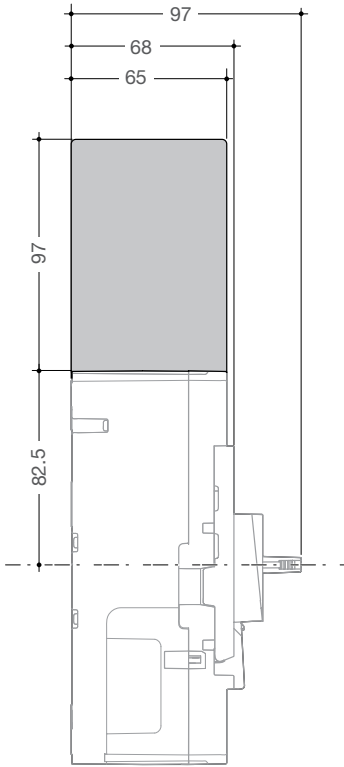
Main switchgear

Rear connections P250
3P



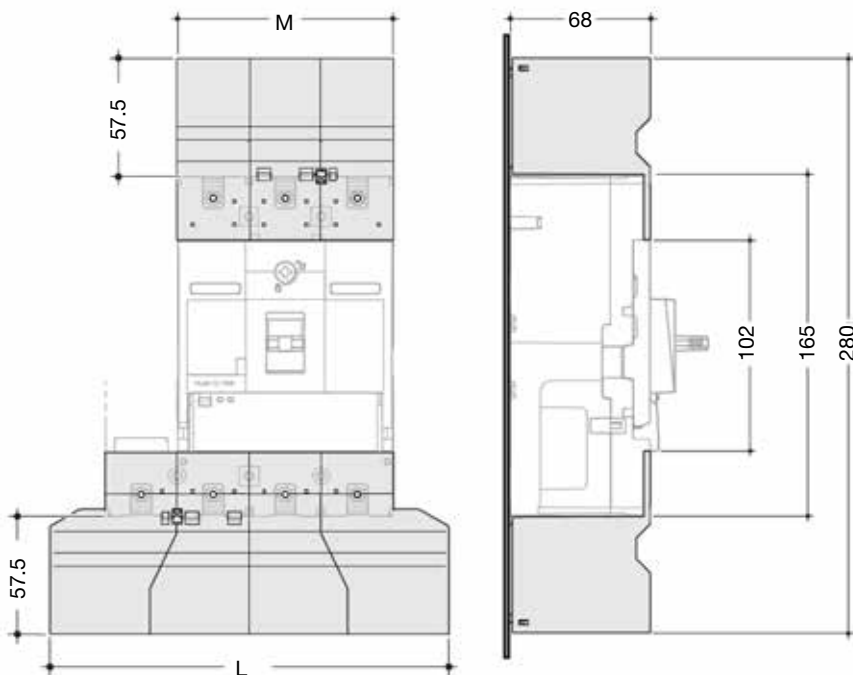
Dimensions in mm

Interphase barriers P250
3P



Main switchgear

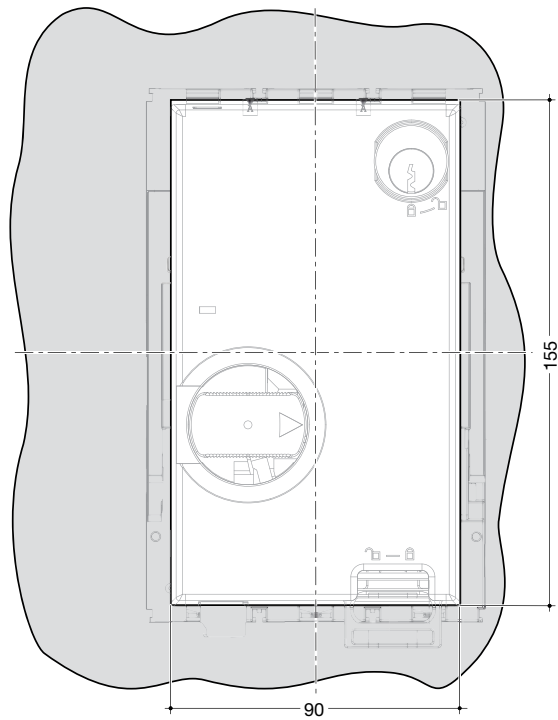
Terminal Cover P250
3P



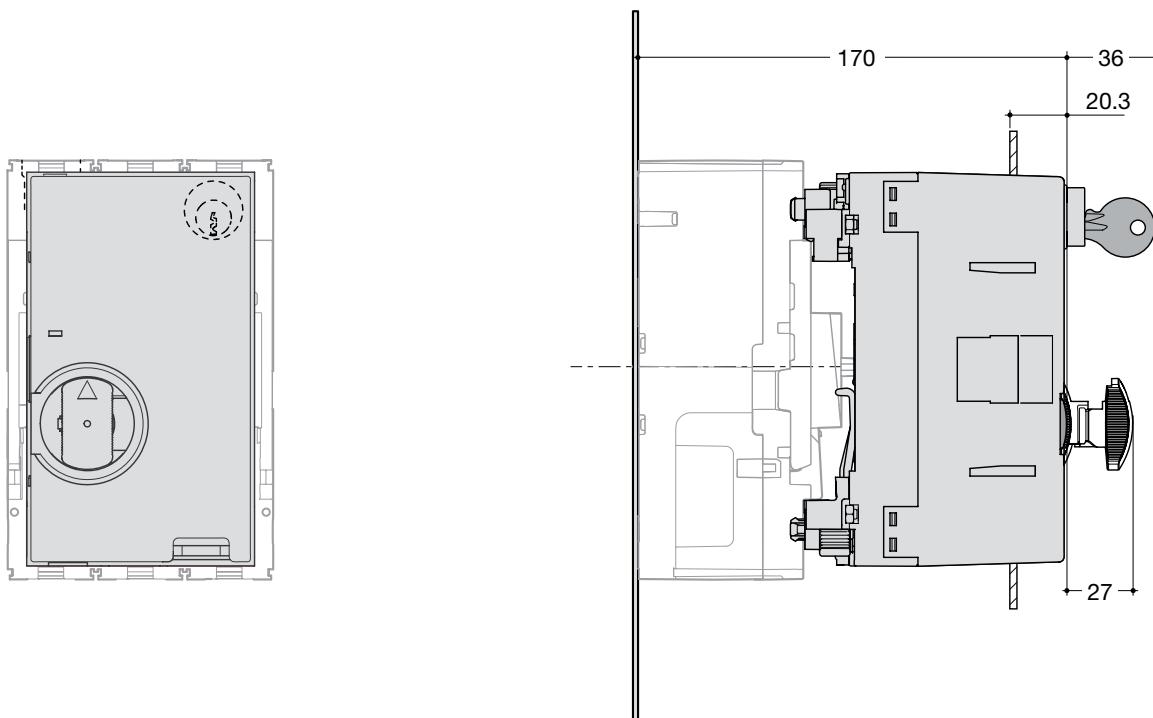
	L (mm)	M (mm)
3P	145.5	105

Dimensions in mm

Panel cut-out motor operator P250
3P



Motor operator with fixed circuit breaker P250
3P



Dimensions in mm

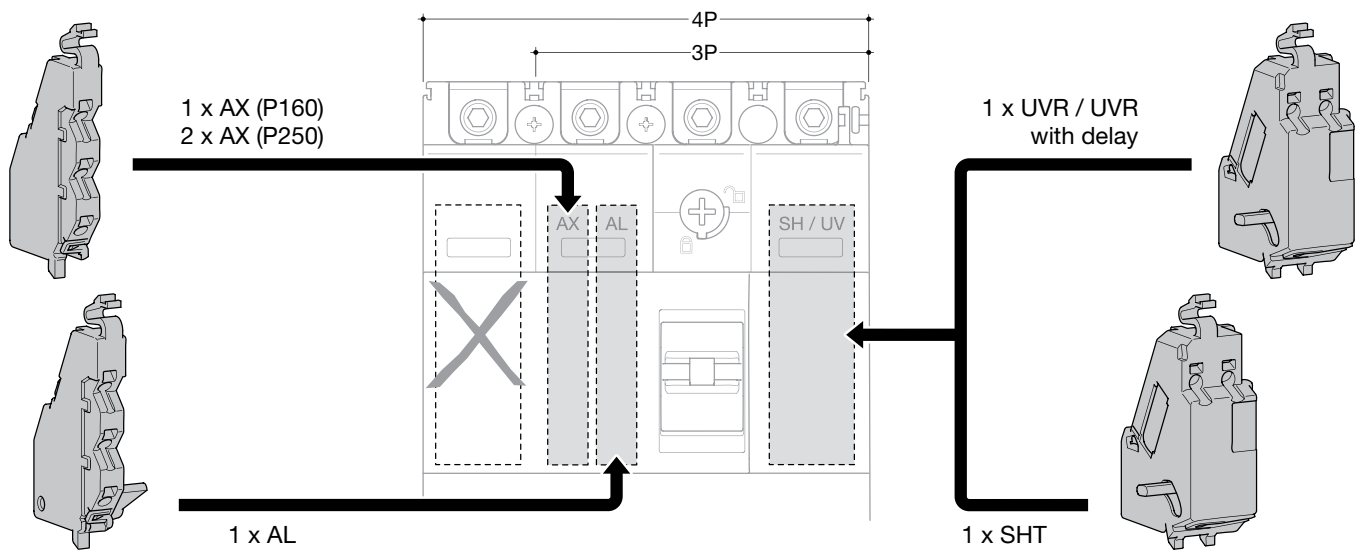
Selection of auxiliaries

All MCCBs share the same internal auxiliaries. The installation of the auxiliaries is simple and does not require any specific tool.

P250 MCCBs have internal locations dedicated to the mounting of the following electrical auxiliaries.

- 1 AX ON/OFF
- 1 AL trip indication
- 1 UVR / UVR with delay or 1 SHT

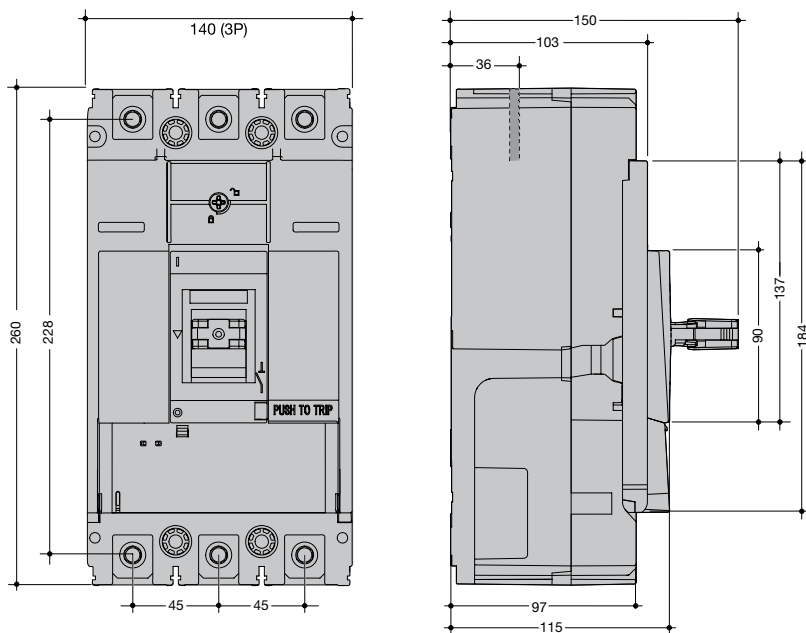
Location of auxiliaries P250



Rated operating voltage	Un	24 V DC	48 V DC	100-110 V DC	200-220 V DC	100-110 V AC	200-220 V AC	230-240 V AC
Frequency	Hz	-	-	-	-	50/60	50/60	50/60
Operating current / Starting current Peak value	A	14.1/26.5	11.4/17.1	3.4/7.6	4.2/5.9	3.6/8.7	3.6/6.6	3.4/6
Operating method		Direct drive						
Operating time	ON	ms	<100					
	OFF	ms	<100					
	RESET	ms	<100					
Operating frequency	Cycle / min.	4						
Power supply required	VA	>300						

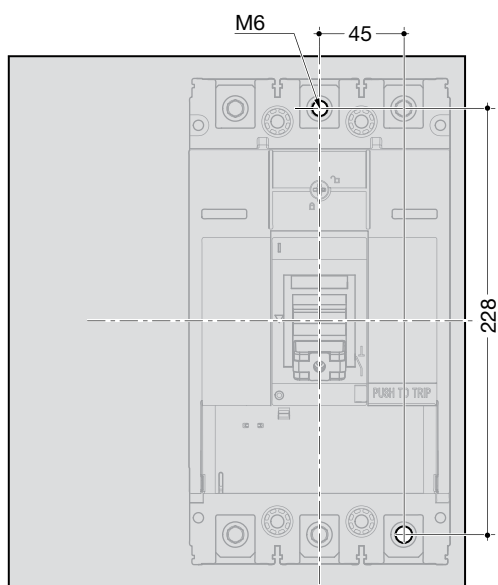
Dimensions in mm

Circuit Breakers

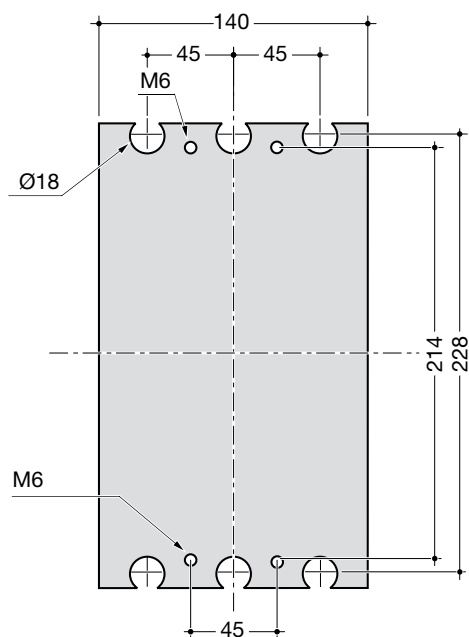


Main switchgear

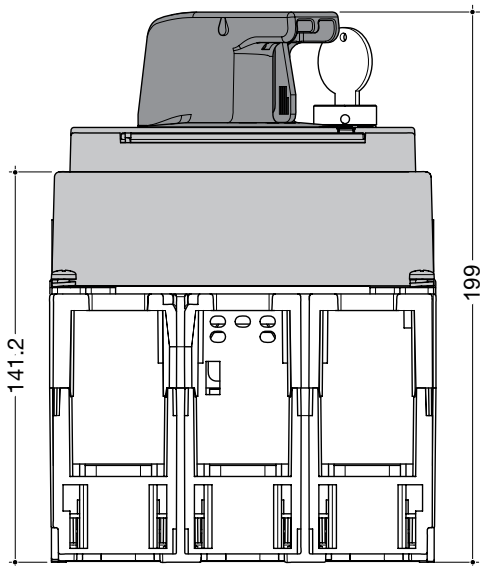
Back plate drilling pattern (3P)



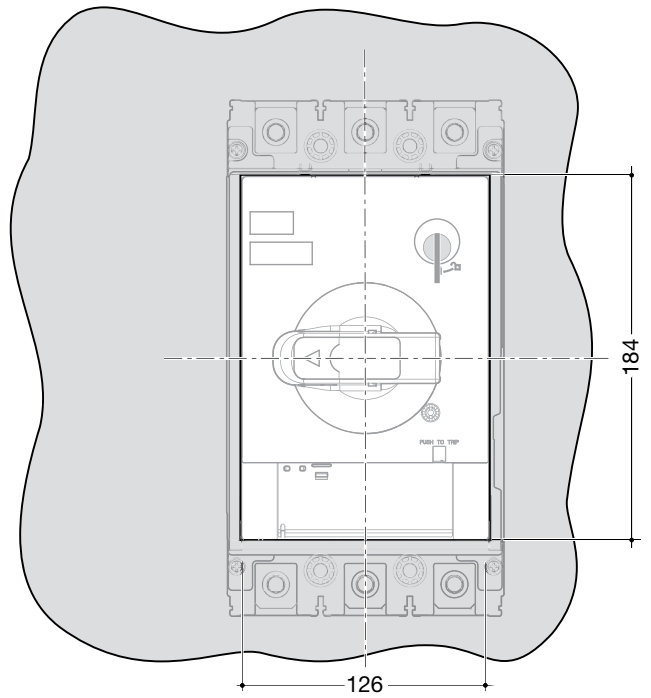
Rear connection back plate drilling pattern (3P)



Rotary handle P630
3P

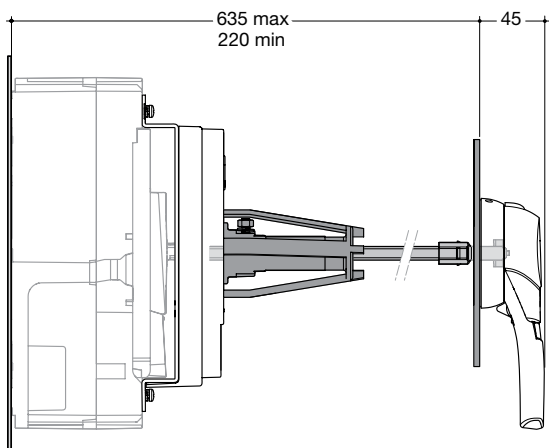


Panel cut-out rotary handle P630
3P

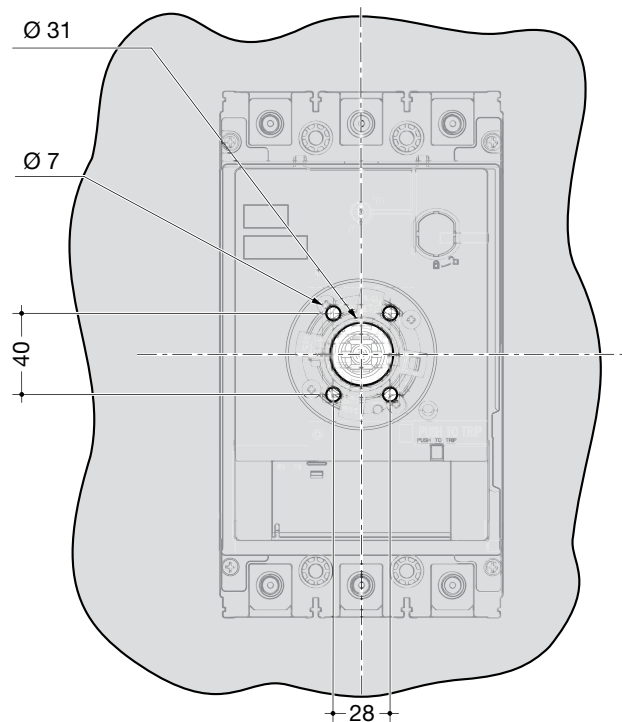


Main switchgear

Extended rotary handle P630
3P



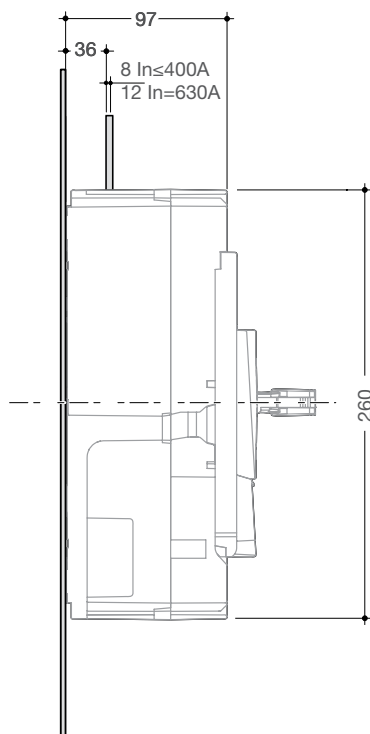
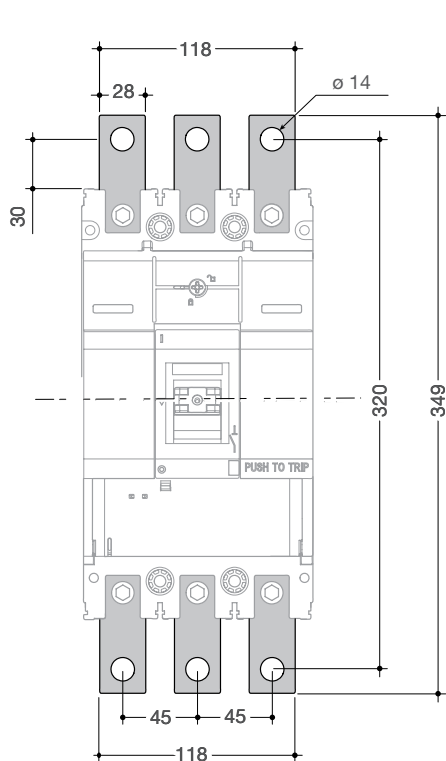
Panel cut-out extended rotary handle P630
3P



Dimensions in mm

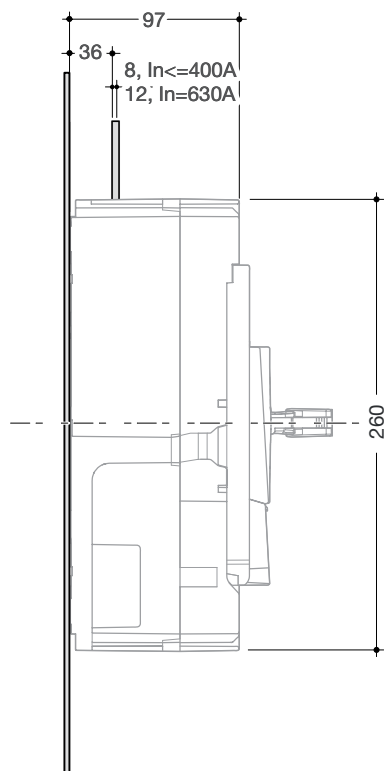
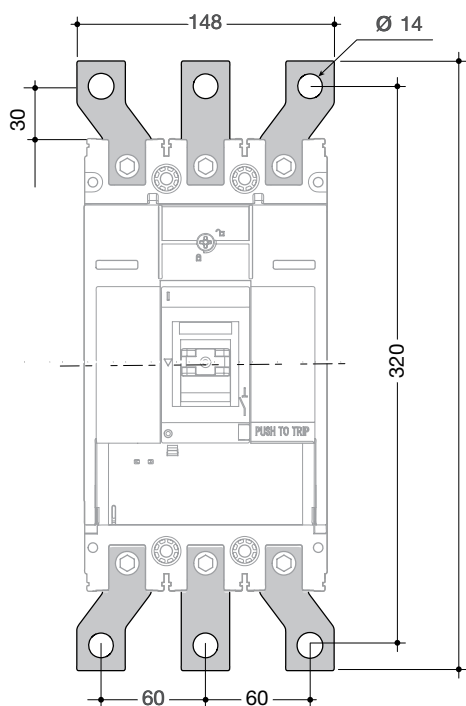
Subject to technical modification

Straight terminal extensions P630 3P



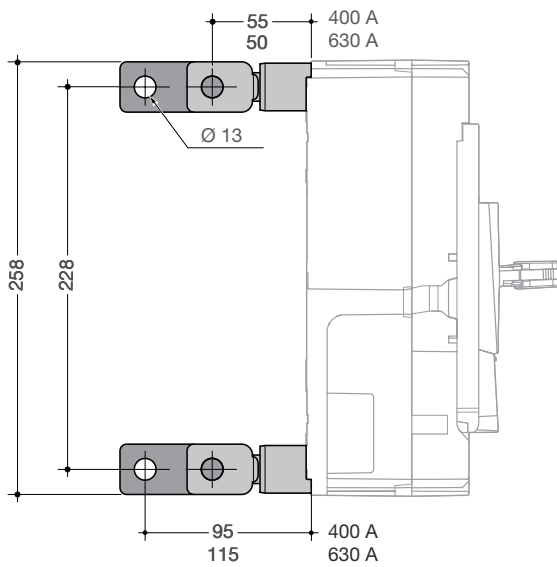
Main switchgear

Spreaders P630 3P

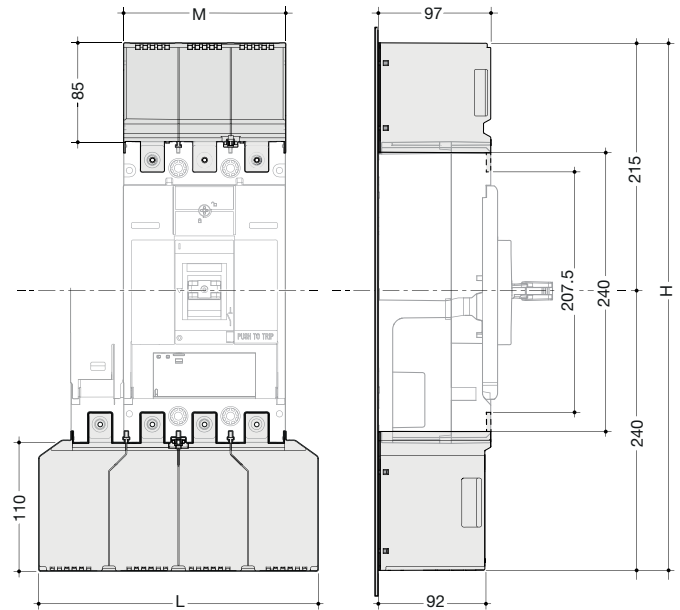


Dimensions in mm

Rear connections P630
3P



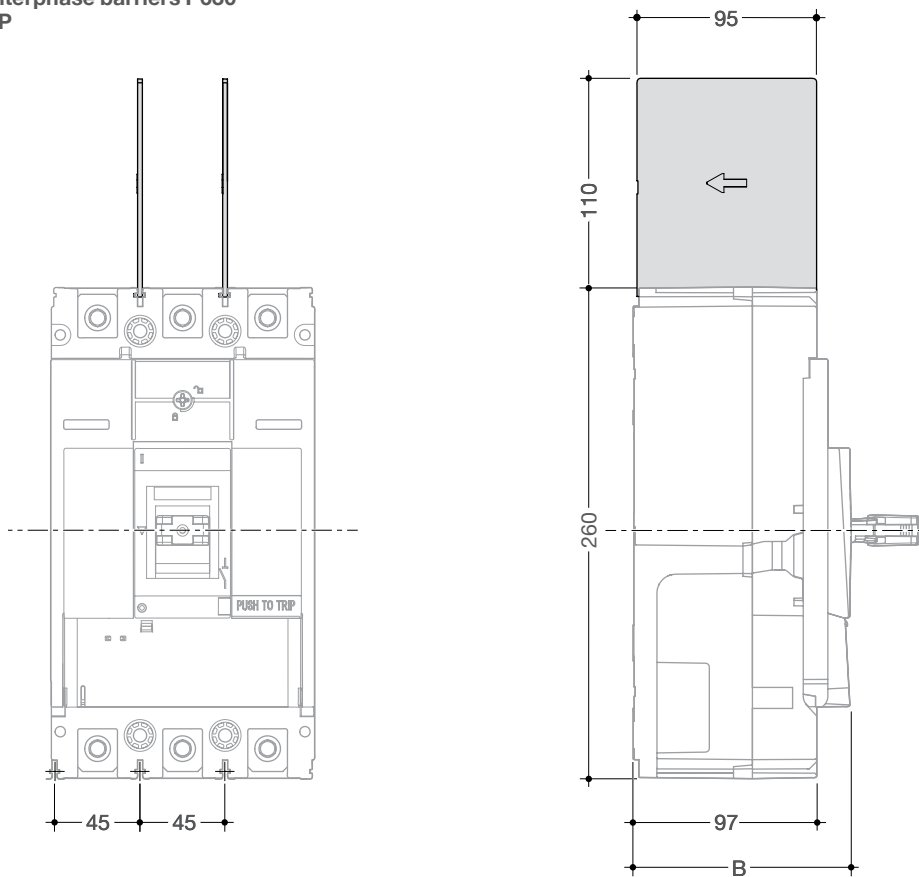
Terminal cover P630
3P



	Spreader	Straight
	L (mm)	M (mm)
3P	180	140
H	480	430

Main switchgear

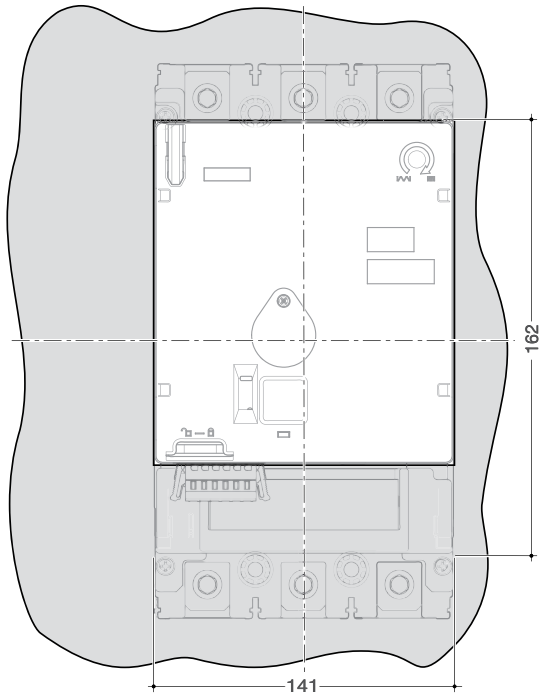
Interphase barriers P630
3P



	B (mm)
TM LSI	72.5
Energy	74.5

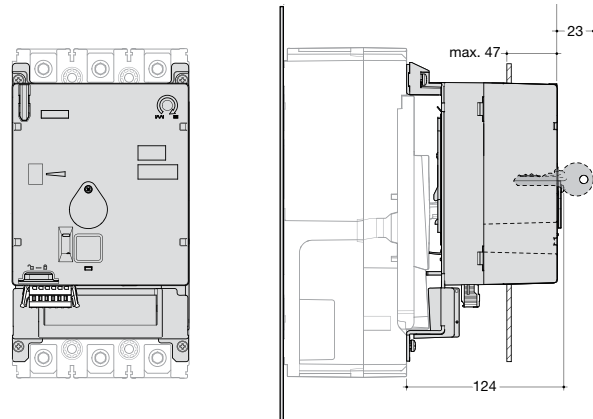
Dimensions in mm

Panel cut-out motor operator P630
3P



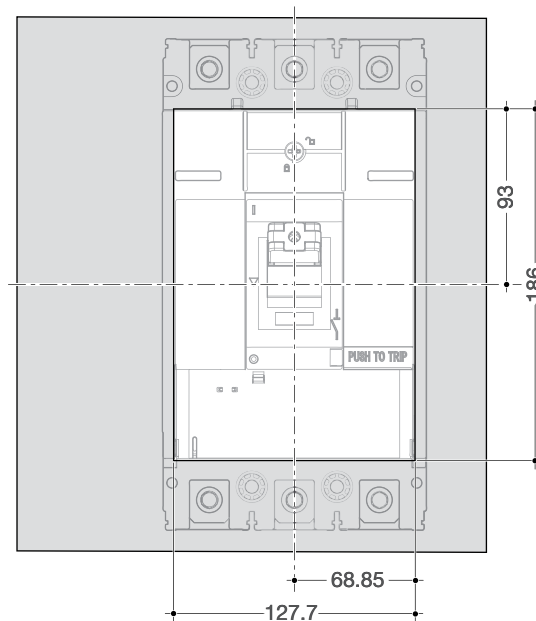
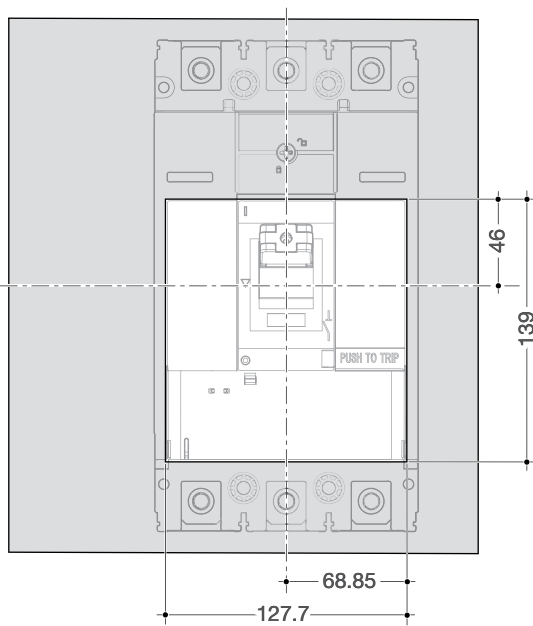
Main switchgear

Motor operator with fixed circuit breaker P630



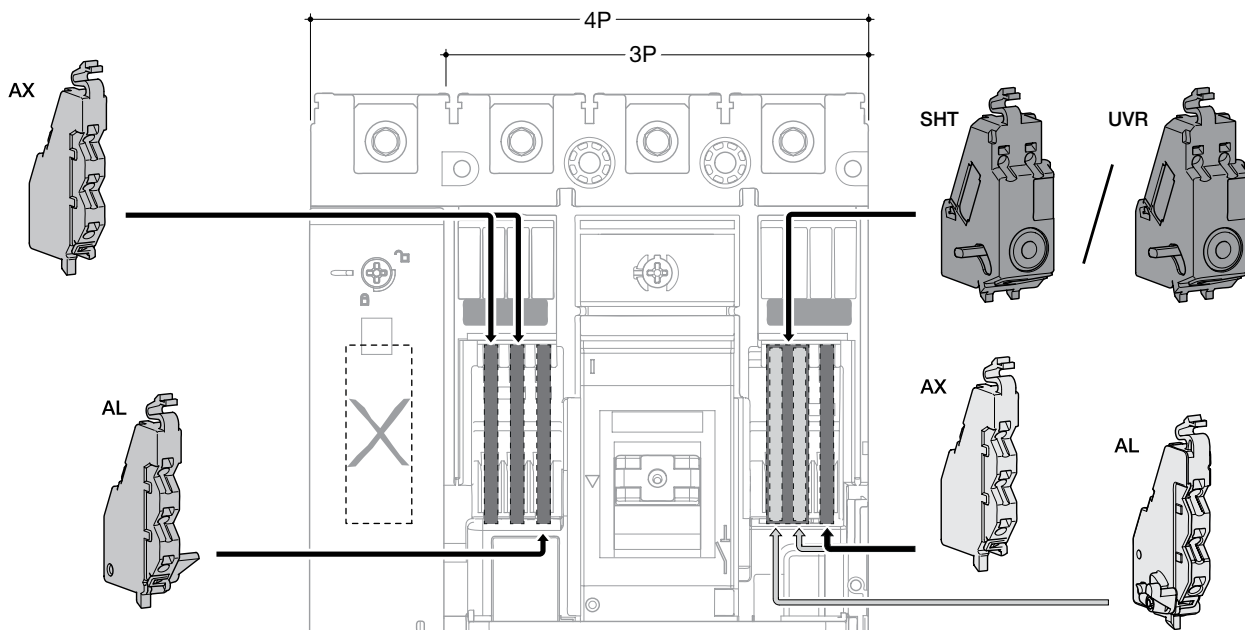
Rated operating voltage	24-48V DC	
	100-110V DC	
	110-240V AC	
Frequency (Hz)	24-48V DC	-
	100-110V DC	-
	110-240V AC	50 / 60
Operating and Starting current (A) ON	24-48V DC	-
	100-110V DC	-
	110-240V AC	-
Operating and Starting current (A) OFF, RESET	24-48V DC	6.7
	100-110V DC	1.2
	110-240V AC	1.0
Operating method	direct drive	
Operating time (s)	ON	0.1
	OFF	1.4
	RESET	1.5
Operating frequency	Cycle / min = 4	
Power supply required	300 VA minimum	

Panel cut-out circuit breaker P630
3P



Dimensions in mm

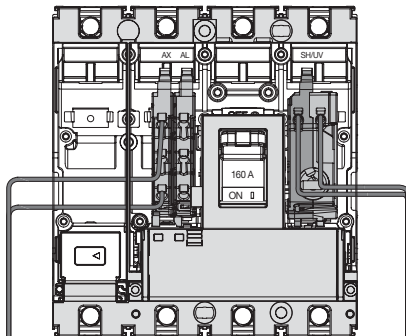
Location of auxiliaries P630



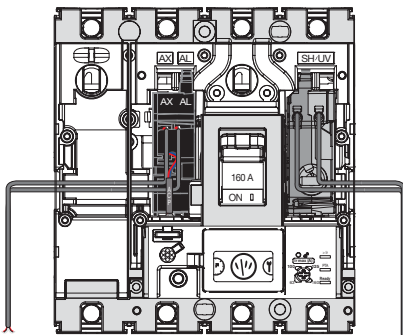
Connection of auxiliaries

The maximum wire cross section is 1.25 mm² for auxiliary contacts (AX or AL), shunt trip releases SHT or undervoltage releases UVR. These auxiliaries are fitted with spring terminals. It is recommended to route the wires from the inside to the outside of the circuit breaker, under the front auxiliary cover, in the following way.

The AX/AL - Energy dedicated to the Energy MCCB is fitted with prewired contacts.



Auxiliary cabling on TM MCCB



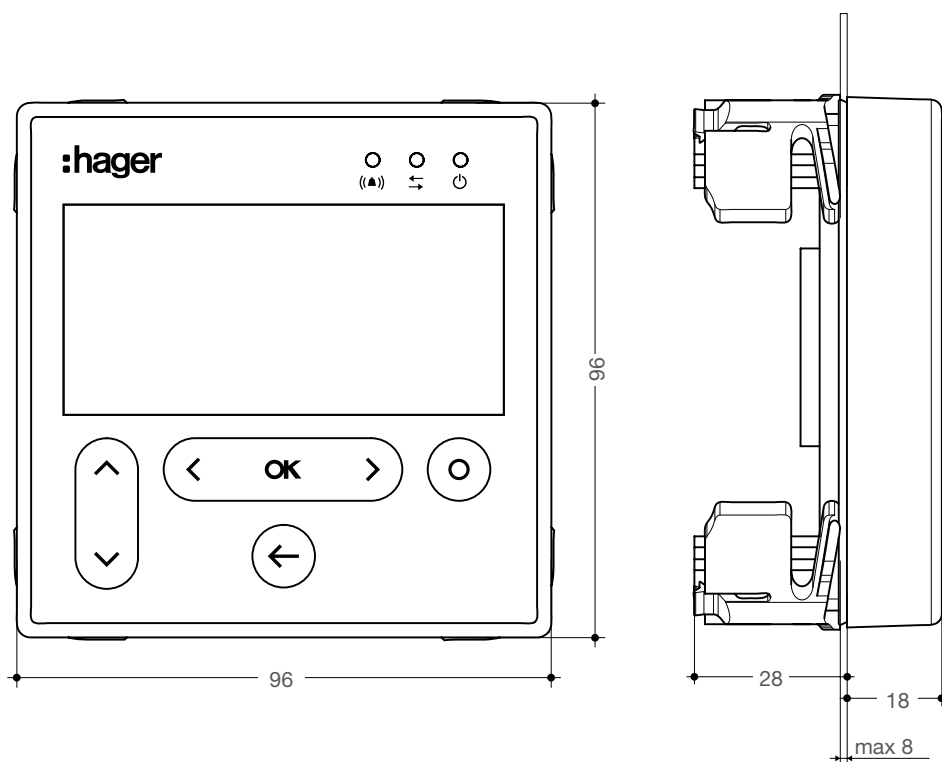
Auxiliary cabling on Energy MCCB

Dimensions in mm

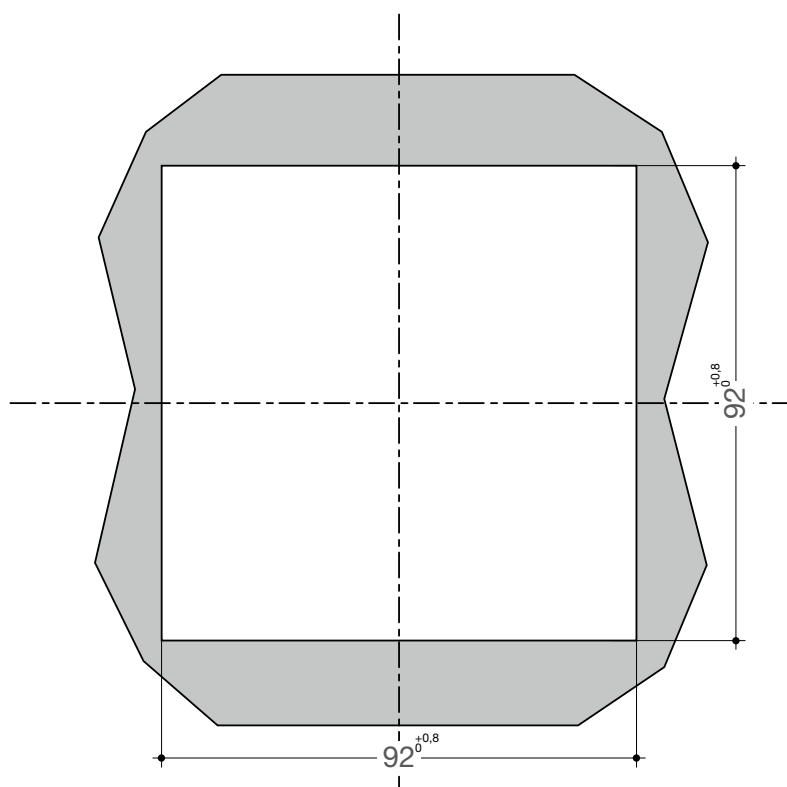
Subject to technical modification

Panel display (To be used with Energy trip units)

Main switchgear



Cut-out



Dimensions in mm

Pre-Arcing / Total I2T

Hager LNHTM (size 000 - 3)
DIN NH, gG, 500 VAC
IEC/EN 60269-2

In (A)	Fuse size							
	000		00		1		2	
	Pre-Arcing	Total I2T	Pre-Arcing	Total I2T	Pre-Arcing	Total I2T	Pre-Arcing	Total I2T
50	6330	16150	6330	16150	6330	16150	6330	16150
63	7430	20800	7430	20800	7430	20800	7430	20800
80	14250	39900	14250	39900	14250	39900	14250	39900
100	25340	70900	25340	70900	25340	71000	25340	71000
125			39600	110800	39600	111000	39600	111000
160			70400	197100	70400	197100	70400	197100
200					114400	320000	114400	320000
224					158400	444000	158400	444000
250					228000	639000	228000	639000
315							275900	773000
355							356400	998000
400							431200	1207000

Nominal Power Dissipation (W)

In (A)	Fuse size			
	000	00	1	2
50	4.1	4.1	4.1	4.1
63	5.4	5.6	6.6	6.8
80	6.5	6.8	8.0	8.3
100	7.5	7.5	9.4	10.7
125		10.0	11.8	12.2
160		12.0	14.6	15.0
200			18.0	18.5
224			19.0	19.2
250			20.0	20.6
315				25.0
355				31.5
400				28.5

Cat ref.	HA304	HA305	HA306/406	HA307	HA308/408	HA309M
thermal current I_{th}	80	100	125	160	200	250
insulation voltage U_i (V)	800	800	800	800	800	800
impulse withstand voltage U_{imp} (kV)	8	8	8	8	8	8
rated operation current (A)	A/B	A/B	A/B	A/B	A/B	A/B
400V AC ⁽¹⁾ AC-21A / AC-21B	80/80	100/100	125/125	160/160	200/200	200/250
AC-22A / AC-22B	80/80	100/100	125/125	160/160	200/200	200/200
AC-23A / AC-23B	80/80	100/100	125/125	160/160	200/200	200/200
690V AC ⁽²⁾ AC-20A / AC-20B	80/80	100/100	125/125	160/160	200/200	200/250
AC-22A / AC-22B	40/40	40/40	40/40	160/160	160/160	160/160
AC-23A / AC-23B	25/25	25/25	25/25	63/80	63/80	63/80
220V DC DC-20A / DC-20B	80/80	100/100	125/125	160/160	200/200	200/250
operational power (kW)						
400V AC	40	51	63	80	100	100
690V AC	33	33	33	150	150	150
short time withstand current 1 sec (kA rms)	2.5	2.5	2.5	4	4	4
short circuit making capacity (kA peak)	12	12	12	16	16	16
connection						
max. cable section (mm)	50	50	50	95	95	95
max. busbar width (mm)	-	-	-	20	20	20

- (1) A/B = category with index - A = frequent operation / B = infrequent operation
 (2) with terminal shrouds or phase barriers

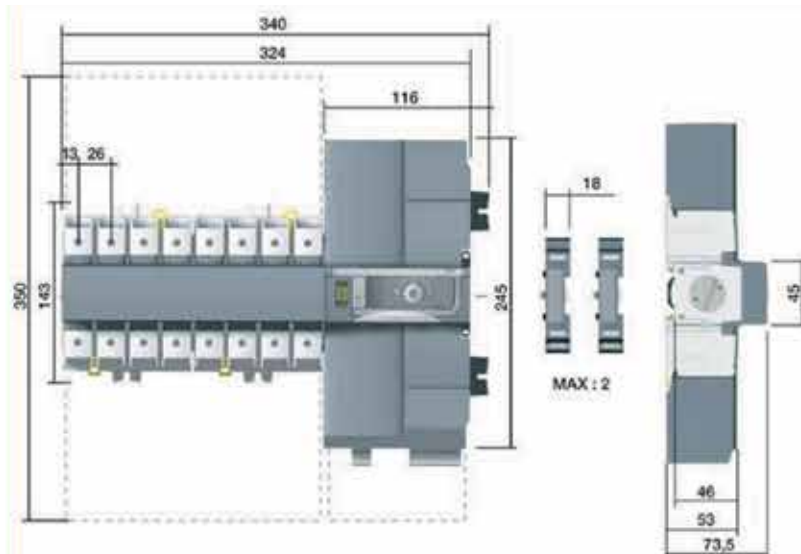
Cat ref.	HA354	HA356	HA457	HA358/458	HA360	HA362	HA364
thermal current I_{th}	250	400	400	630	800	1250	1600
insulation voltage U_i (V)	800	1000	1000	1000	1000	1000	1000
impulse withstand voltage U_{imp} (kV)	8	8	8	12	12	12	12
rated operation current (A)	A/B	A/B	A/B	A/B	A/B	A/B	A/B
400V AC ⁽¹⁾ AC-21A / AC-21B	250/250	400/400	400/400	630/630	800/800	1250/1250	1600/1600
AC-22A / AC-22B	250/250	400/400	400/400	630/630	800/800	1250/1250	1600/1600
AC-23A / AC-23B	250/250	400/400	400/400	500/630	800/800	1250/1250	1250/1250
690V AC ⁽²⁾ AC-20A / AC-20B	250/250	400/400	400/400	630/630	800/800	1250/1250	1600/1600
AC-22A / AC-22B	200/250	400/400	400/400	500/500	800/800	1000/1000	1000/1000
AC-23A / AC-23B	125/160	250/315	250/315	315/315	800/800	1000/1000	1000/1000
220V DC DC-20A / DC-20B	250/250	400/400	400/400	630/630	800/800	1250/1250	1600/1600
operational power (kW)							
400V AC	132/132	220/220	220/220	280/280	450/450	710/710	710/710
690V AC	90/110	150/185	150/185	150/185	185/220	475/475	475/475
short time withstand current 1 sec (kA rms)	9	13	9	13	26	50	50
short circuit making capacity (kA peak)	30	45	45	45	55	110	110
connection							
max. cable section (mm)	150	240	240	2 x 300	2 x 300	4 x 185	6X185
max. busbar width (mm)	32	40	50	50	63	100	100

- (1) A/B = category with index - A = frequent operation / B = infrequent operation
 (2) with terminal shrouds or phase barriers

Application condition & utilisation category, according to IEC 60947-3

Utilisation category		Use	Application
AC	DC		
AC20	DC20	Off-load making & breaking	Disconnectors
AC21	DC21	Resistive loads including moderate overloads	Switches at installation head or for resistive circuits (lighting)
AC22	DC22	Inductive & resistive mixed loads including moderate overloads	Switches in secondary circuits or reactive circuits (capacitor banks)
AC23	DC23	Loads made of motors or other highly inductive loads	Switches feeding one or several motor or inductive circuits (series motors, magnetic brakes)

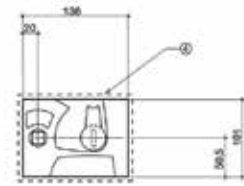
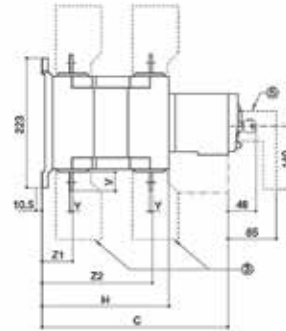
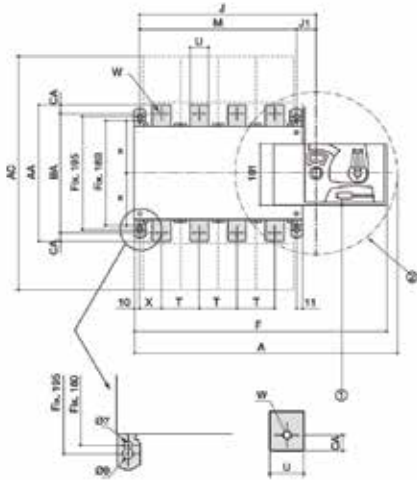
Modular automatic transfer switches



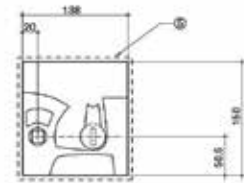
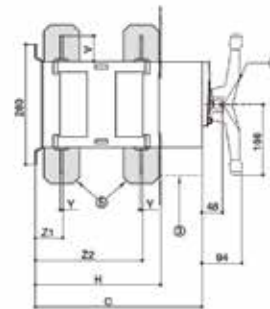
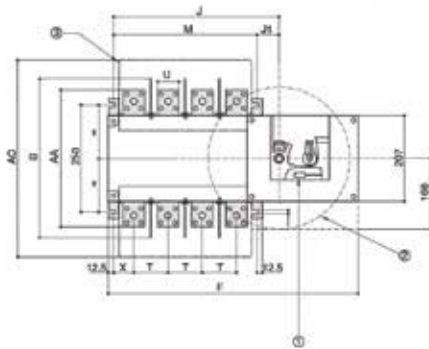
Technical characteristics		HIC406A	HIC408A	HIC410A	HIC412A	HIC416A
Thermal current I _{th} at 40°C		63 A	80 A	100 A	125 A	160 A
Frequencies		50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Thermal current I _{th} at 50°C		63	80	100	110*	125
Thermal current I _{th} at 60°C		50	63	80	100*	125
Thermal current I _{th} at 70°C		40	50	63	80	100
Insulation voltage U _i (V) (power circuit)		800	800	800	800	800
Impulse withstand voltage U _{imp} (kV) (power circuit)		6	6	6	6	6
Insulation voltage U _i (V) (control circuit)		300	300	300	300	300
Impulse withstand voltage U _{imp} (kV) (control circuit)		2.5	2.5	2.5	2.5	2.5
Rated operational currents I_e (A) according to IEC 60947-3						
Rated voltage	Utilisation category	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾
415 VAC	AC-21 A / AC-21 B	63/63	80/80	100/100	125/125	160/160
415 VAC	AC-22 A / AC-22 B	63/63	80/80	100/100	125/125	160/160
415 VAC	AC-23 A / AC-23 B	63/63	80/80	100/100	125/125	125/160
690 VAC	AC-21 A / AC-21 B	63/63	80/80	100/100	125/125	160/160
690 VAC	AC-22 A / AC-22 B	63/63	80/80	80/80	100/125	100/125
690 VAC	AC-23 A / AC-23 B	63/63	63/63	80/80	80/80	80/80
Rated operational currents I_e (A) according to IEC 60947-6-1						
415 VAC	AC-31 B	63/63	80/80	100/100	100/125	100/160
415 VAC	AC-32 B	63/63	80/80	100/100	100/125	100/160
415 VAC	AC-33 B	-/63	-/80	-/100	-/125	-/125
Fuse protected short-circuit withstand as per IEC 60947-3						
Prospective short-circuit current (kA rms)		50	50	50	50	40
Associated fuse rating (A)		63	80	100	125	160
Circuit breaker protected short-circuit withstand with any circuit breaker that ensures tripping in less than 0.3s						
Rated short-time withstand current 0.3s I _{cw} (kA rms)		7	7	7	7	7
Rated short-circuit withstand without protection						
Rated short-time withstand current 60ms I _{cw} (kA rms) as per IEC 60947-6-1 at 415 VAC		4	4	4	4	4
Rated peak withstand current (kA peak) as per IEC 60947-3 at 690 VAC		17	17	17	17	17
Connection						
Maximum Cu cable cross-section (mm ²)		10	10	10	10	10
Maximum Cu cable cross-section (mm ²)		70	70	70	70	70
Tightening torque mini / maxi (Nm)		5	5	5	5	5
Switching time (Standard setting)						
I-0 or 0-II (s)		1.2	1.2	1.2	1.2	1.2
Operating Transfer time I - II or II - I (ms)		1.4	1.4	1.4	1.4	1.4
Duration of "electrical blackout" I - II (ms)		150	150	150	150	150
Power supply						
min / max (VAC)		176/288	176/288	176/288	176/288	176/288
Control supply power demand						
Nominal power (VA)		6	6	6	6	6
Max current under 230VAC (A)		30	30	30	30	30
Mechanical characteristics						
Durability (number of operating cycles)		10,000	10,000	10,000	10,000	10,000
Weight - without packaging (kg)		3.5	3.5	3.5	3.5	3.5
Weight - with packaging (kg)		4.2	4.2	4.2	4.2	4.2

Automatic transfer switches

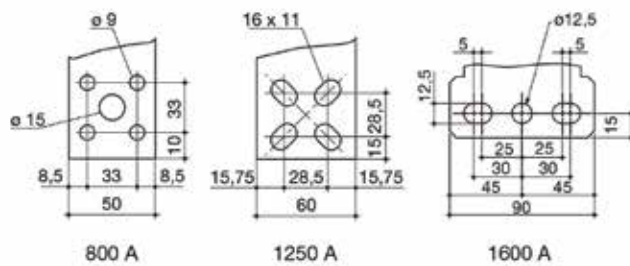
125 to 630A



800 to 1600A



Dimensions of connecting lugs



Dimensions (in mm)

Ref.	In (A)	A	B	C	AC	F	H	J	J1	M	T	U	V	W	X	Y	Z1	Z2	AA	BA	CA
Hlx412	125	322.5	-	244	235	322.5	151	184	34	150	36	20	25	9	22	3.5	38	134	135	115	10
Hlx416	160	322.5	-	244	235	322.5	151	184	34	150	36	20	25	9	22	3.5	38	134	135	115	10
Hlx425	250	378	-	244.5	280	378	153	245	35	210	50	25	30	11	33	3.5	39.5	134.5	160	130	15
Hlx440	400	378	-	244.5	280	378	153	245	35	210	50	25	35	11	33	3.5	39.5	134.5	170	140	15
Hlx463	630	437	-	320.5	400	437	221	304	34	270	65	45	50	13	37.5	5	53	190	260	220	20
Hlx480	800	584	370	391.5	461	584	293	386.5	51.5	335	80	50	60.5	-	60	7	66.5	253.5	321	-	-
Hlx490	1000	584	370	391.5	461	584	293	386.5	51.5	335	80	60	65	-	60	7	66.5	253.5	330	-	-
Hlx491	1250	584	370	391.5	461	584	293	386.5	51.5	335	80	60	65	-	60	7	66.5	253.5	330	-	-
Hlx492	1600	716	380	391.5	481	716	293	518.5	51.5	467	120	90	144	-	66	8	67.5	253.5	288	-	-

	HIB412M HIC412G HIC412E	HIB416M HIC416G HIC416E	HIB420M HIC420G HIC420E	HIB425M HIC425G HIC425E	HIB440M HIC440G HIC440E	HIB463M HIC463G HIC463E	HIB480M HIC480G HIC480E	HIB490M HIC490G HIC490E	HIB491M HIC491G HIC491E	HIB492M HIC492G HIC492E
Technical characteristics										
Thermal current I _{th} at 40°C	125A	160A	200A	250A	400A	630A	800A	1000A	1250A	1600A
Insulation voltage U _i (V)	800	800	800	1000	1000	1000	1000	1000	1000	1000
Impulse withstand voltage U _{imp} (kV)	8	8	8	12	12	12	12	12	12	12

Rated operational currents I_e (A) according to IEC 60947-3

Rated voltage	Utilisation category	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾
415 VAC	AC-20 A / AC-20 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
415 VAC	AC-21 A / AC-21 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
415 VAC	AC-22 A / AC-22 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
415 VAC	AC-23 A / AC-23 B	125/125	160/160	200/200	200/200	400/400	630/630	800/800	1000/1000	1250/1250	1250/1250
500 VAC	AC-20 A / AC-20 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
500 VAC	AC-21 A / AC-21 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
500 VAC	AC-22 A / AC-22 B	125/125	160/160	200/200	200/200	400/400	500/500	630/630	800/800	1000/1000	1600/1600
500 VAC	AC-23 A / AC-23 B	80/80	80/80	80/80	200/200	200/200	400/400	400/400	630/630	800/800	1000/1000
690 VAC	AC-20 A / AC-20 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
690 VAC	AC-21 A / AC-21 B	125/125	160/160	200/200	200/200	200/200	500/500	800/800	1000/1000	1250/1250	1600/1600
690 VAC	AC-22 A / AC-22 B	125/125	125/125	125/125	160/160	160/160	400/400	630/630	800/800	1000/1000	1000/1000
690 VAC	AC-23 A / AC-23 B	63/80	63/80	63/80	125/125	125/125	400/400	400/400	630/630	800/800	800/800
220 VDC ⁽²⁾	DC-20 A / DC-20 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
220 VDC ⁽²⁾	DC-21 A / DC-21 B	125/125	160/160	200/200	250/250	250/250	630/630	800/800	1000/1000	1250/1250	1250/1250
220 VDC ⁽²⁾	DC-22 A / DC-22 B	125/125	160/160	200/200	250/250	250/250	630/630	800/800	1000/1000	1250/1250	1250/1250
220 VDC ⁽²⁾	DC-23 A / DC-23 B	125/125	125/125	125/125	200/200	200/200	630/630	800/800	1000/1000	1250/1250	1250/1250
440 VDC ⁽²⁾	DC-20 A / DC-20 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
440 VDC ⁽²⁾	DC-21 A / DC-21 B	125/125	125/125	125/125	200/200	200/200	630/630	800/800	1000/1000	1250/1250	1250/1250
440 VDC ⁽²⁾	DC-22 A / DC-22 B	125/125	125/125	125/125	200/200	200/200	630/630	800/800	1000/1000	1250/1250	1250/1250
440 VDC ⁽²⁾	DC-23 A / DC-23 B	125/125	125/125	125/125	200/200	200/200	630/630	800/800	1000/1000	1250/1250	1250/1250

Rated operational currents I_e (A) according to IEC 60947-6-1

415 VAC	AC-31 B	125	160	200	250	400	630	800	1000	1250	1600
415 VAC	AC-32 B				200	400	500	800	1000	1250	1600
415 VAC	AC-33 B				200	200	400	800	800	800	1000

Fuse protected short-circuit withstand as per IEC 60947-3

Prospective short-circuit current (kA rms)	100	100	50	50	50	50	50	100	100	100
Associated fuse rating (A)	125	160	200	250	400	630	800	1000	1250	2x800

Circuit breaker protected short-circuit withstand with any circuit breaker that ensures tripping in less than 0.3s

Rated short-time withstand current 0.3s I _{cw} (kA rms)	12	12	12	15	15	17	47	64	64	78
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Rated short-circuit withstand without protection

Rated short-time withstand current 60ms I _{cw} (kA rms) as per IEC 60947-6-1 at 415 VAC				10 ⁽³⁾	10 ⁽³⁾	12.6	16	20	25	32
Rated short-time withstand current 1ms I _{cw} (kA rms) as per IEC 60947-3 at 415 VAC	7	7	7							
Rated short-time withstand current 1ms I _{cw} (kA rms) as per IEC 60947-3 at 690 VAC				8	8	10	26	35	35	50
Rated peak withstand current (kA peak) as per IEC 60947-3 at 690 VAC	20	20	20	30	30	45	55	55	80	110

Connection

Maximum Cu cable cross-section (mm ²)	35	50	70	95	185	2 x 150	2 x 185	2 x 240		
Minimum Cu busbar cross-section (mm ²)						2 x 30 x 5	2 x 50 x 5	2 x 50 x 5	2 x 60 x 5	2 x 80 x 5
Maximum Cu cable cross-section (mm ²)	50	95	120	150	240	2 x 300	2 x 300	4 x 185	4 x 185	6 x 185
Maximum Cu busbar width (mm)	25	25	25	32	32	50	63	63	63	100
Tightening torque mini / maxi (Nm)	9/13	9/13	9/13	20/26	20/26	20/26	20/26	20/26	20/26	40/45

Switching time (Standard setting)

I - II or II - I (s)	0.75	0.75	0.75	1.3	1.3	1.3	2.6	2.6	2.6	2.6
I-0 or 0-II (s)	0.45	0.45	0.45	0.85	0.85	0.85	1.6	1.6	1.6	1.6
Duration of "electrical blackout" I - II (s)	0.3	0.3	0.3	0.6	0.6	0.6	1.5	1.5	1.5	1.6

Power supply

min / max (VAC)	166/332	166/332	166/332	166/332	166/332	166/332	166/332	166/332	166/332	166/332
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Control supply power demand

Power supply 230 VAC inrush / nominal (VA) - ATyS	184/92	184/92	184/92	275/115	275/115	276/150	460/184	460/184	460/184	460/230
Power supply 230 VAC inrush / nominal (VA) - ATyS d, t, g, p	206/114	206/114	206/114	298/137	298/137	298/172	482/206	482/206	482/206	482/252

Mechanical characteristics

Durability (no. of operating cycles)	10,000	10,000	10,000	8,000	8,000	5,000	4,000	4,000	4,000	3,000
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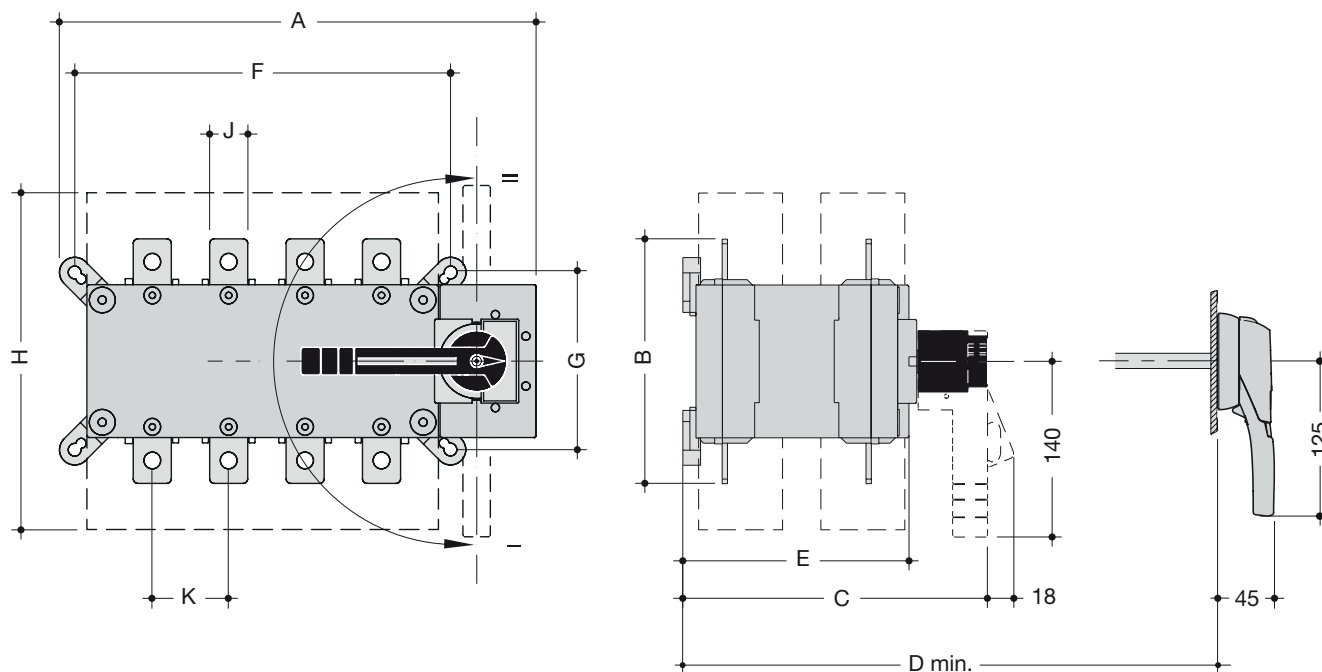
(1) Category with index A = frequent operation - Category with index B = infrequent operation.

(2) 3-pole device with 2 pole in series for the "+" and 1 pole for the "-", 4-pole device with 2 poles in series by polarity.

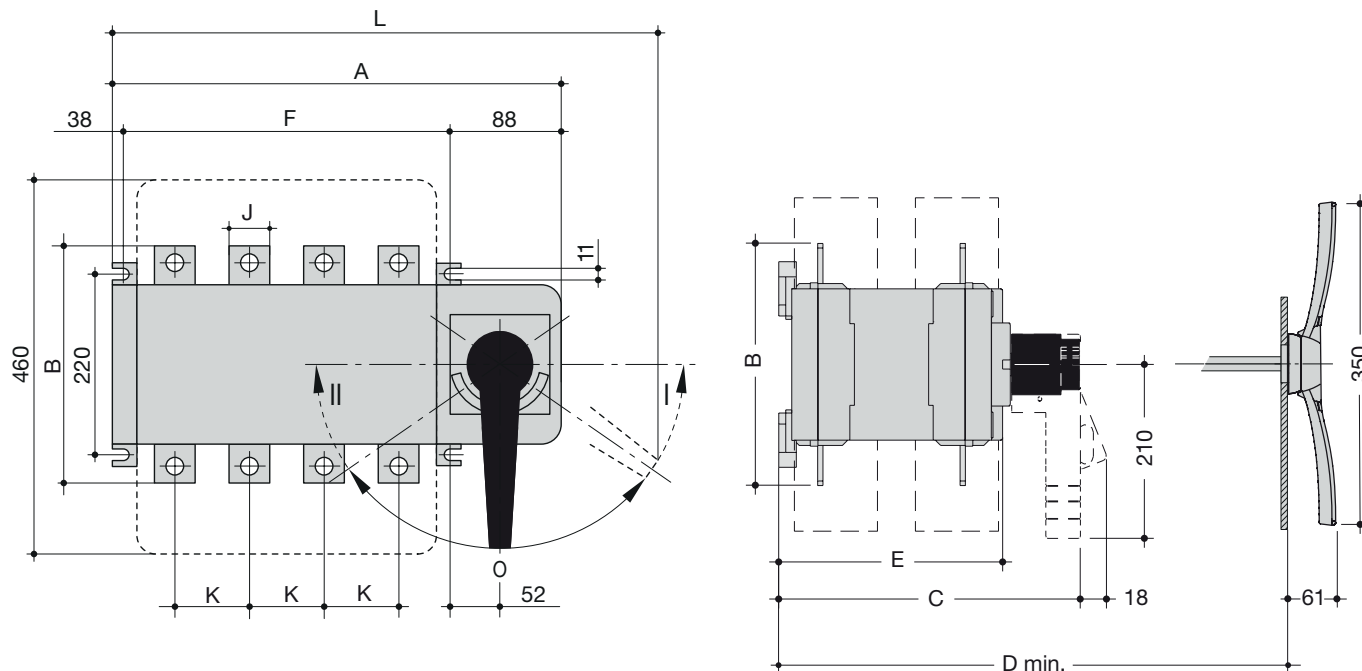
(3) At 30ms.

Manual transfer switches

HI452, HI454, HI456, HI458



HI460, HI462, HI464



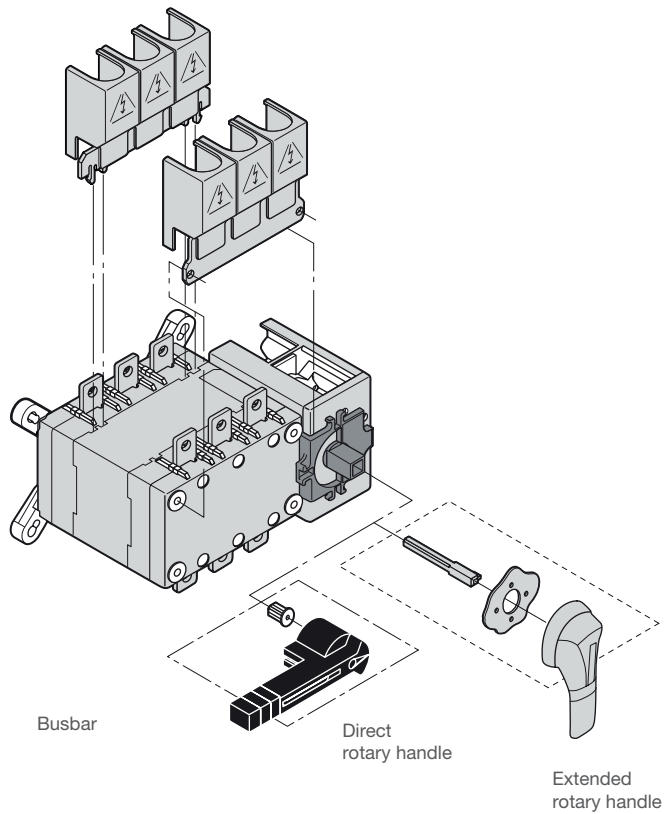
Dimensions (in mm)

	A	B	C	D min.	E	F	G	H	J	K	L
HI452	251	135	218	208	148	186	101	235	20	36	-
HI454	312	160	218	208	148	246	116	280	25	50	-
HI456	312	170	218	208	148	246	116	280	35	50	-
HI458	379	260	295	285	225	306	176	400	45	65	-
HI460	460	320	374	390	302	335	220	460	50	80	609
HI462	592	330	374	390	302	467	220	460	60	120	741
HI464	592	360	374	390	302	467	220	460	90	120	741

Technical characteristics

		HI452	HI454	HI456	HI458	HI460	HI462	HI464
In		160A	250A	400A	630A	800A	1250A	1600A
Insulation voltage Ui	(V)	800	800	800	1000	1000	1000	1000
Impulse withstand voltage Uimp	(kV)	8	12	8	12	12	12	12
Ie AC22, 400V	(A)	160	250	400	630	800	1250	1600
Ie AC23, 400V	(A)	160	250	400	630	800	1250	1600
Operational power AC23A @ 400VM	(kW)	80	132	220	280	450	710	710
Short circuit current with gG DIN fuses	(kA)	100	50	18	70	50	100	100
Associated fuse rated	(A)	160	250	400	630	800	1250	2 x 800
Rated short circuit making capacity Icm	(A peak)	12	17	15.3	30	48	75	86
Rated short circuit withstand current Icw	(kA/1s)	7	9	9	13	26	50	50
Mechanical endurance	(cycles)	10,000	10,000	10,000	5,000	3,000	4,000	4,000
Connection for lugs	(mm²)	95	150	240	2 x 300	2 x 300	4 x 185	6 x 185

Mounting

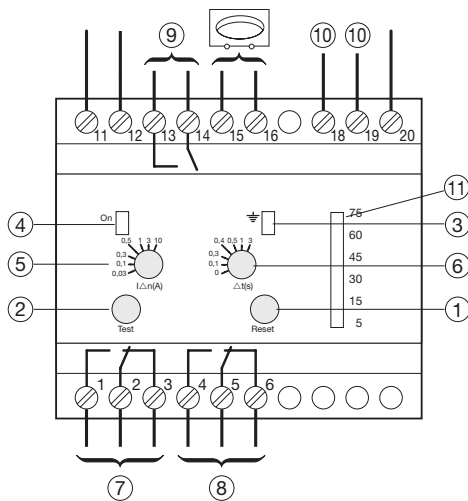


Main switchgear

Earth leakage relays

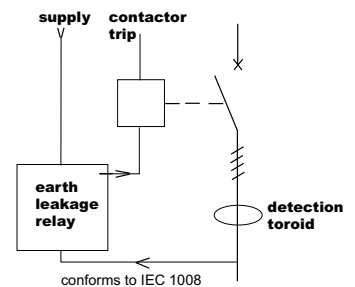
		W/o adjustment	Adjustable		With integrated toroid
		HR502	HR510	HR520	HR441
Number of modules		1	3	3	6
Supply voltage		230V +/- 20%			
Network voltage		50 à 700V			
Power consumption		3 VA	5 VA		6 VA
Output command		Potential free changeover contacts			
Contact rating (standard output, fail safe, 50% pre-alarm)		5A / 250V AC1	6A / 250V AC1		
Residual current settings I _m		0.3A	0.03 / 0.1/0.3 / 0.5/ 1/ 3/10		0.03 / 0.1/0.3 / 0.5/ 1/ 3
Delay on opening (+/- 20%)		Instant	0/0,1s/0,3s/0,4s /0,5s/1s/3s	0/0,1s/0,3s/0,4s /0,5s/1s/3s/5S	0s /0,1s /0,3s /0,5s/0,75s/1s
Permissible overload of the toroid		30 kA / 100 ms			
Test & reset push button voltage		100 - 250V			
Type A		yes			
Increased immunity (HI)		yes			
Voltage & fault indication		yes			
Signalling current default		yes			
Bar graph indication		-		yes	-
Standard output (1OF)		yes			
Fail safe output (1OF)		no	yes		no
50% I _m output		-		yes	-
Analog output		-			
Maximum cable length to test & reset		200m			
Maximum cable length between toroid & relay		50m maximum width 1,5mm ² twisted pair cable - 25m for non twisted cable			
Connection. Relay: cage terminals		rigid/stranded	1,5 to 4 mm ²		1,5 to 4 mm ²
		flexible	1 to 2,5 mm ²		1 to 2,5 mm ²
Connection. Toroid:		rigid/stranded	1,5 to 4 mm ²		1,5 to 4 mm ²
		flexible	1 to 6 mm ²		1 to 6 mm ²
Operating temperature		-10 to +55°C			
Storage temperature		-25 to +70°C			
Standard compliance		IEC 60947-2 annexe B, IEC 61543, IEC 61008-1, IEC 60755			

Main switchgear



Product presentation:

- ① reset push button
- ② test push button
- ③ fault indicator
- ④ supply indicator
- ⑤ IΔn ratings (A)
- ⑥ temporisation Δt (s)
- ⑦ standard output 1 OF
- ⑧ positive safety output
- ⑨ pre-alarm output
- ⑩ barregraph: indicates continuously the value of the leakage current, 5 to 15 %, 15 to 30 %, 30 to 45 %, 45 to 60 % and 60 to 75 % of IΔn.
- ⑪ LCD display



Application notes

Discrimination between Residual Current Devices

Hager residual current relays (HR210, HR212) have adjustable time delay and residual current settings. They can be used as an upstream device to achieve residual current protection of the entire installation. It is advisable to set the residual current relay at a residual higher tripping current than a downstream devices (> 30mA) since the upstream device will see the accumulation of leakage currents from the entire installation. The residual current setting will depend on the quantity and type of equipment connected to the installation (Immersion water heaters, switch mode power supplies are particularly prone to leakage currents to earth). The time delay should be set above zero to 300ms.

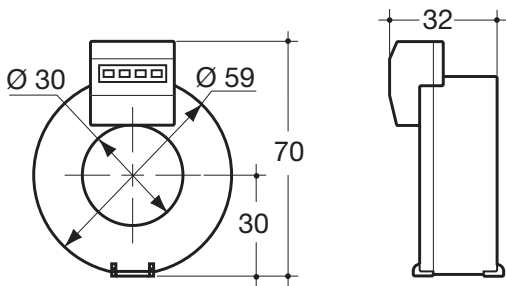
In theory it is possible to achieve current discrimination between residual current devices, but the limit of discrimination is far too low for practical purposes. Time delay is the only reliable & by far the best method used to obtain discrimination. It can be achieved by delaying the tripping of the upstream residual current devices. The downstream device would typically be a 30mA or occasionally a 10mA residual current device. Typically they will operate within 40ms and occasionally much faster.

If further levels of protection are required upstream from the Hager residual current relay, then another residual current relay can be installed upstream and the settings of the device (time and residual current) adjusted higher again.

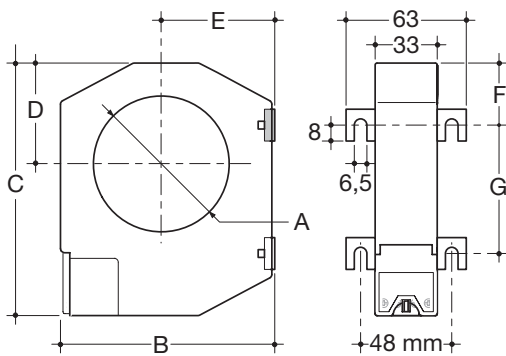
Toroids

	HR700	HR701	HR702	HR703	HR704
Internal diameter of toroid	30mm	35mm	70mm	105mm	140mm
Maximum screw torque	1Nm				
Maximum connection distance between toroid & ELR	50m max with twisted pair cable				
Rated frequency	50-60 Hz				
Connection: rigid/stranded cable	1 to 1.5 mm ²	1,5 à 4 mm ²			
Connection section in flexible cable for the measurement	1 to 1,5mm ²	1,5 à 2,5mm ²			
Operating temperature	-10 to +55°C				
Storage temperature	-25 to +70°C				
Rated voltage for alternating use	50 to 700V				
Rated insulation voltage	250V				
Rated impulse withstand voltage	4kV				
IP for toroids	IP41				

**Circular toroids:
HR700**



**Circular toroids:
HR701 to HR705**



Dimensions for circular toroids (in mm)

ref.	A	B	C	D	E	F	G
HR701	Ø 35	79	100	35	43	26	48.5
HR702	Ø 70	110	130	52	57	32	66
HR703	Ø 105	146	170	72	73	38	94
HR704	Ø 140	196	220	97	98	48.5	123
HR705	Ø 210	284	299	-	-	69	161