

DPX³ 160 thermal magnetic

MCCBs from 16 to 160 A



Electrical characteristics **see e-catalogue**
Dimensions **see e-catalogue**

Can be mounted on rail or on plate in XL³ cabinets and enclosures
MCCBs for switching, control isolation and protection of low voltage electrical lines
Supplied with fixing screws cage terminals 70 mm² max. (flexible cable) or 95 mm² max. rigid cable with accessories
Can be fitted with DPX³ 160 and 250 common auxiliaries and accessories (p. 134)
Conform to IEC 60947-2

Pack	Cat.Nos		MCCBs - fixed version Thermal adjustable from 0,8 to 1 In Magnetic fixed at 10 In (fixed at 400 A for In 16 A and 25 A) Breaking capacity Icu 16 kA (400 V~) In (A)
	3P	4P	
1	4 200 00	4 200 10	16
1	4 200 01	4 200 11	25
1	4 200 02	4 200 12	40
1	4 200 03	4 200 13	63
1	4 200 04	4 200 14	80
1	4 200 05	4 200 15	100
1	4 200 06	4 200 16	125
1	4 200 07	4 200 17	160
Breaking capacity Icu 25 kA (400 V~)			
1	4 200 40	4 200 50	16
1	4 200 41	4 200 51	25
1	4 200 42	4 200 52	40
1	4 200 43	4 200 53	63
1	4 200 44	4 200 54	80
1	4 200 45	4 200 55	100
1	4 200 46	4 200 56	125
1	4 200 47	4 200 57	160
Breaking capacity Icu 36 kA (400 V~)			
1	4 200 80	4 200 90	16
1	4 200 81	4 200 91	25
1	4 200 82	4 200 92	40
1	4 200 83	4 200 93	63
1	4 200 84	4 200 94	80
1	4 200 85	4 200 95	100
1	4 200 86	4 200 96	125
1	4 200 87	4 200 97	160
Breaking capacity Icu 50 kA (400 V~)			
1	4 201 20	4 201 30	16
1	4 201 21	4 201 31	25
1	4 201 22	4 201 32	40
1	4 201 23	4 201 33	63
1	4 201 24	4 201 34	80
1	4 201 25	4 201 35	100
1	4 201 26	4 201 36	125
1	4 201 27	4 201 37	160












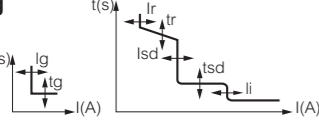
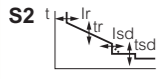
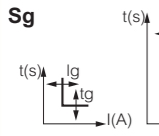
Pack	Cat.Nos		MCCBs with electronic earth leakage module - fixed version Thermal adjustable from 0,8 to 1 In Magnetic fixed at 10 In (fixed at 400 A for In 16 A and 25 A) Equipped with earth leakage module with LCD screen Adjustable sensitivity: 0.03 - 0.3 - 1 - 3 A Adjustable tripping: 0 - 0.3 - 1 - 3s (with 0.03 A possible only 0 s) Breaking capacity Icu 16 kA (400 V~) In (A)
	4P		
1	4 200 30		16
1	4 200 31		25
1	4 200 32		40
1	4 200 33		63
1	4 200 34		80
1	4 200 35		100
1	4 200 36		125
1	4 200 37		160
Breaking capacity Icu 25 kA (400 V~)			
1	4 200 70		16
1	4 200 71		25
1	4 200 72		40
1	4 200 73		63
1	4 200 74		80
1	4 200 75		100
1	4 200 76		125
1	4 200 77		160
Breaking capacity Icu 36 kA (400 V~)			
1	4 201 10		16
1	4 201 11		25
1	4 201 12		40
1	4 201 13		63
1	4 201 14		80
1	4 201 15		100
1	4 201 16		125
1	4 201 17		160
Breaking capacity Icu 50 kA (400 V~)			
1	4 201 50		16
1	4 201 51		25
1	4 201 52		40
1	4 201 53		63
1	4 201 54		80
1	4 201 55		100
1	4 201 56		125
1	4 201 57		160

See the video



DPX³

electrical characteristics

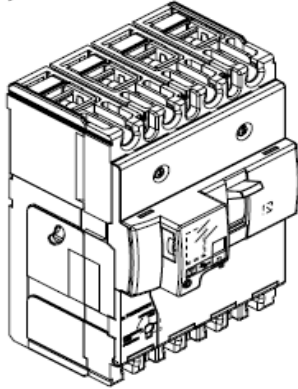
																																					
DEVICES	DPX ³ 160 thermal magnetic				DPX ³ 250 thermal magnetic				DPX ³ 250 electronic release				DPX ³ 630 thermal magnetic				DPX ³ 630 electronic release				DPX ³ 1600 thermal magnetic				DPX ³ 1600 electronic release												
Mounting	On rail  or on plate				On rail  or on plate				On rail  or on plate				On plate				On plate				On plate				On plate												
Breaking capacity (kA) (EN 60947-2 and IEC 60947-2)	16 kA	25 kA	36 kA	50 kA	25 kA	36 kA	50 kA	70 kA	25 kA	36 kA	50 kA	70 kA	36 kA	50 kA	70 kA	100 kA	36 kA	50 kA	70 kA	100 kA	36 kA	50 kA	70 kA	100 kA	36 kA	50 kA	70 kA	100 kA									
380/415 V~	16	25	36	50	25	36	50	70	25	36	50	70					36	50	70	100	36	50	70	100	36	50	70	100	36	50	70	100					
220/240 V~	25	35	50	65	40	60	100	100	40	60	100	100					70	100	120	170	70	100	120	170	70	100	120	170	70	100	120	170					
Breaking capacity (% Icu)	100	100	100	100	100	100	100	100	100	100	100	100					100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100					
Characteristic of use																																					
Nominal frequency	50/60 Hz												50/60 Hz																								
Maximum rated operating voltage Ue	690 V (500 V with integrated e.l.c.bs)				690 V (500 V with integrated e.l.c.bs)				690 V (500 V with integrated e.l.c.bs)				690 V~				690 V~				690 V~				690 V~												
Category of use	A				A				A				A				A: In 630 A - B: In 200 to 400 A				A				B												
Thermal magnetic adjustment																																					
 Thermal	0,8 to 1 In				0,8 to 1 In				-				0.8 to 1 In				-				0.8 to 1 In				-												
 Magnetic	10 In (400 A for 16 A and 25 A sizes)				5 to 10 In				-				5 to 10 In				-				5 to 10 In				-												
Electronic protection adjustment																																					
 S2																																					
 Sg													Ir : 0,4 to 1 In Isd : 1,5 to 10 Ir																								
													Ir = 0.4 - 1 x In Ir = 3-30 s Isd = 1.5 - 10 Ir tsd (I=K) = 0-500 ms tsd (I≠K) = 0-500 ms Ig = 0.2 - 1 x In tg = 0.1 - 1 s				S2 Sg				Ir = 0.4 - 1 x In Ir = 3-30 s Isd = 1.5 - 10 Ir tsd (I=K) = 0-500 ms tsd (I≠K) = 0-500 ms Ig = 0.2 - 1 x In tg = 0.1 - 1 s				S2 Sg												
Maximum cable cross-section																																					
Rigid cable	150 mm ²				150 mm ²				150 mm ²				300 mm ² or 2 x 240 mm ²				300 mm ² or 2 x 240 mm ²				2 or 4 x 240 mm ²				2 or 4 x 240 mm ²												
Flexible cable	120 mm ²				120 mm ²				120 mm ²				240 mm ² or 2 x 185 mm ²				240 mm ² or 2 x 185 mm ²				2 or 4 x 185 mm ²				2 or 4 x 185 mm ²												
Copper bar and lug width	18 mm				28.5 mm ⁽¹⁾				28.5 mm ⁽¹⁾				32 mm				32 mm				50 mm				50 mm												
Tightening torque	8 Nm				10 Nm				10 Nm				15 Nm				15 Nm				20 Nm				20 Nm												
Nominal current (In) at 40 °C (A)																																					
In (A)	16	25	40	63	80	100	125	160	100	160	200	250	40	100	160	250	250	320	400	500	630	250	320	400	500	630	500	630	800	1000	1250	500	630	800	1000	1250	1600
Phase	16	25	40	63	80	100	125	160	100	160	200	250	40	100	160	250	250	320	400	500	630	250	320	400	500	630	500	630	800	1000	1250	500	630	800	1000	1250	1600
N	16	25	40	63	80	100	125	160	100	160	200	250	40	100	160	250	250	320	400	500	630	0 - 50 - 100 % of phase value				500	630	800	1000	1250	0 - 50 - 100 % of phase value						
N/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	250	250	320	-				-	-	-	500	630	-						
Magnetic threshold (Im) (A) ⁽²⁾ of DPX ³ thermal magnetic																																					
	Fixed								Adjustable				Adjustable				Adjustable																				
In (A)	16	25	40	63	80	100	125	160	100	160	200	250	-				250	320	400	500	630	-				500	630	800	1000	1250	-						
Phase	400	400	400	630	800	1000	1250	1600	125-250	200-400	315-630	500-1000	-				1250-2500	1600-3200	2000-4000	2500-5000	3150-6300	-				2500-5000	3150-6300	4000-8000	5000-10000	6250-12500	-						
N	400	400	400	630	800	1000	1250	1600	125-250	200-400	315-630	500-1000	-				1250-2500	1600-3200	2000-4000	2500-5000	3150-6300	-				2500-5000	3150-6300	4000-8000	5000-10000	6250-12500	-						
N/2	-	-	-	-	-	-	-	-	-	-	-	-	-				-	1000-2000	1250-2500	1600-2500	2000-4000	-				-	-	-	2500-5000	3150-6000	-						
Endurance (cycles)																																					
Electrical	8000				8000				8000				5000				5000				4000				4000												
Mechanical	25000				20000				20000				10000				20000				10000				10000												
Electronic earth leakage module																																					
Type	without or integrated				without or integrated				without or integrated				downstream e.l.c.bs.				downstream e.l.c.bs.				-				-												

1: Copper bars only
 2: Trip current for 50/60 Hz. For direct current, multiply by 1.5

 For DPX³ magnetic release only, Please, consult us

DPX³ 160 + earth leakage DPX³-I 160 + earth leakage

Reference(s) : 420 030/ 031/ 032/033/ 034/ 035/ 036/ 037/ 070/ 071/
072/ 073/ 074/ 075/ 076/ 077/ 110/ 111/ 112/ 113/ 114/ 115/ 116/ 117/
150/ 151/ 152/ 153/ 154/ 155/ 156/ 157/ 197



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1. USE

DPX³ "moulded case" offers optimal solutions to answer protection requirements of tertiary and industrial installations.

2. RANGE

DPX³

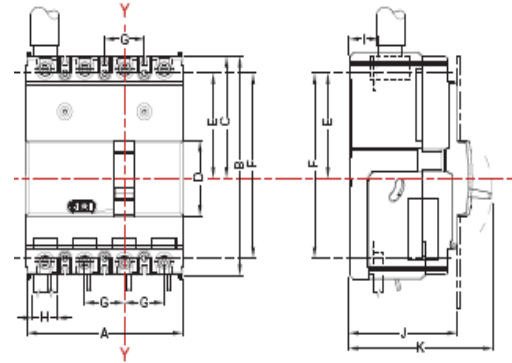
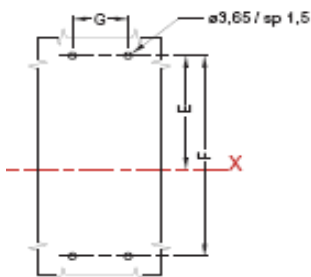
In (A)	16 kA 4P	25 kA 4P	36 kA 4P	50 kA 4P
16	420 030	420 070	420 110	420 150
25	420 031	420 071	420 111	420 151
40	420 032	420 072	420 112	420 152
63	420 033	420 073	420 113	420 153
80	420 034	420 074	420 114	420 154
100	420 035	420 075	420 115	420 155
125	420 036	420 076	420 116	420 156
160	420 037	420 077	420 117	420 157

DPX³-I

	4P
160	420 197

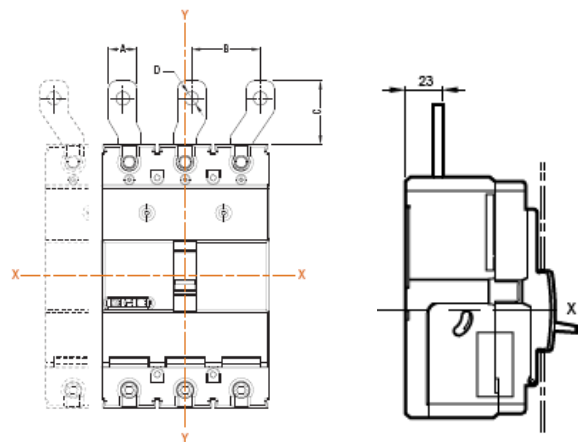
3. DIMENSIONS

3.1 Fixed version



	A	B	C	D	E	F	G	H	I	J	K
160 DIFF	108	160	72,5	45	62,5	140	27	19	18	74	97

3.2 Fixed version, front terminals

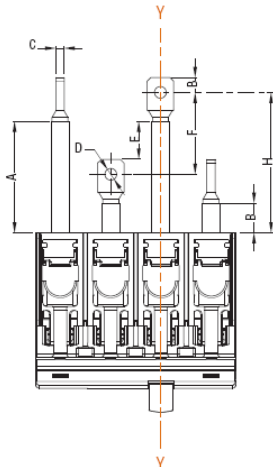


	A	B	C	D
160	17,5	35	41	8,5

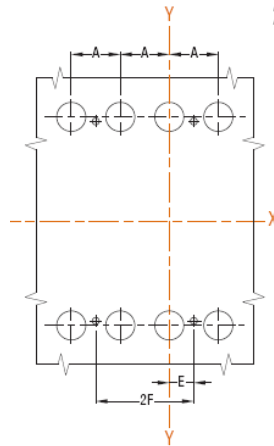
DPX³ 160 + earth leakage DPX³-I 160 + earth leakage

Reference(s) : 420 030/ 031/ 032/033/ 034/ 035/ 036/ 037/ 070/ 071/
072/ 073/ 074/ 075/ 076/ 077/ 110/ 111/ 112/ 113/ 114/ 115/ 116/ 117/
150/ 151/ 152/ 153/ 154/ 155/ 156/ 157/ 197

3.3 Fixed version, rear terminals

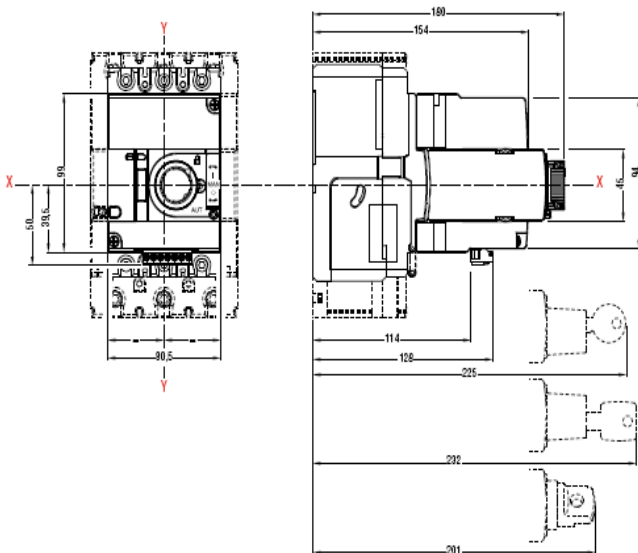


	A	B	C	D	E	F	G	H
160	65,5	21,5	4,5	6,3	19,5	44	11	79

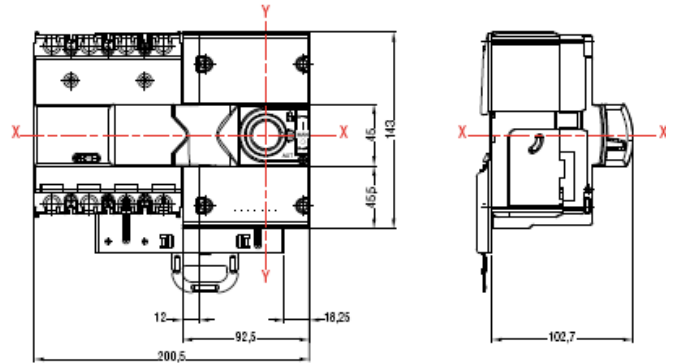


	A	B	C	D	E	F	G	H	I
160 DIFF	27	145	3,65	16	13,5	27	62,5	140	65

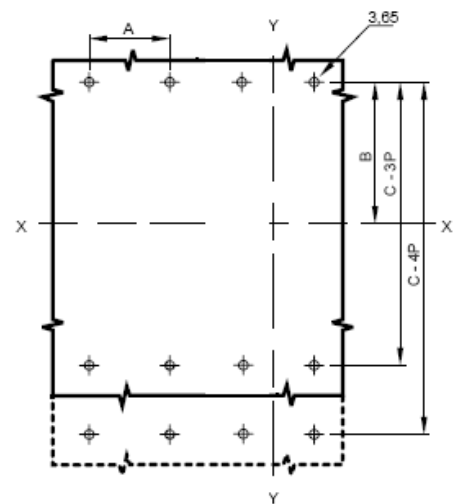
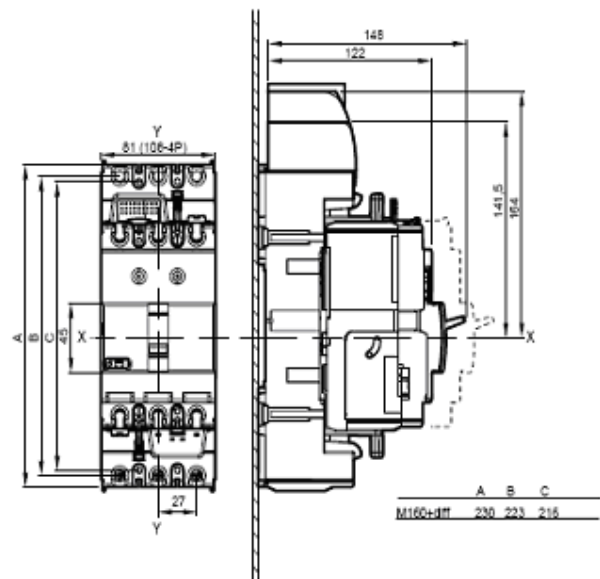
3.4 Fixed version, front motor operator



3.5 Fixed version, side motor operator



3.6 Plug-in version



	A	B	C
DPX³ 160 + earth leakage	27	100,5	216

DPX³ 160 + earth leakage DPX³-I 160 + earth leakage

Reference(s) : 420 030/ 031/ 032/033/ 034/ 035/ 036/ 037/ 070/ 071/
072/ 073/ 074/ 075/ 076/ 077/ 110/ 111/ 112/ 113/ 114/ 115/ 116/ 117/
150/ 151/ 152/ 153/ 154/ 155/ 156/ 157/ 197

4. ELECTRICAL AND MECHANICAL CHARACTERISTICS

4.1 Breaker technical characteristics

Circuit breaker	DPX ³ 160 + earth leakage
Rated current I _n (A)	16-160
Rated insulation voltage U _i (V)	600
Rated operational voltage U _e (V)	500 V (ac) 500 V (dc)
Rated impulse withstand volt. U _{imp} (kV)	6
Ambient temperature (°C)	40
Endurance electrical / mechanical	8000/10000
Utilization category	A
Releases type	thermal-mag + earth leakage
Nominal frequency (Hz)	50-60
Thermal adjustment	0,8 ÷ 1 I _n
Magnetic threshold (for 16 and 25A I _m = 400A)	10 x I _n

4.2 Switches technical characteristics

Switches	DPX ³ -I 160
Rated current I _n (A)	160
Rated insulation voltage U _i (V)	800
Rated operational voltage U _e (V)	690 V (ac) 500 V (dc)
Rated impulse withstand voltage U _{imp} (kV)	8
Ambient temperature (°C)	40
Endurance electrical / mechanical	8000/25000
Nominal frequency (Hz)	50-60
Rated short-time withstand current I _{cw} (1 s) (kA)	1,7
Rated short-circuit making capacity I _{cm} (kA)	2,4
AC 22, AC 23, DC 22, DC 23 (A)	160

4.3 Breaking capacity (KA)

Breaking capacity I _{cu} and I _{cs} in AC (kA)					
	U _e	16 kA	25 kA	36 kA	50 kA
I _{cu} (kA)	220/240V	25	36	50	65
	380/415V	16	25	36	50
	440V	10	18	25	30
	460V	10	18	25	30
	480/500V	8	10	12	15
I _{cs} (%I _{cu})	-	100	100	100	100
Rated short-circuit making capacity I _{cm} (kA)					
	U _e	16 kA	25 kA	36 kA	50 kA
I _{cm} (kA)	415 V	32	52.5	75.6	105

4.4 Derating temperature Ta (°C)

Influence of ambient temperature Ta(°C)												
I _n (A)	-25	-20	-10	-5	0	10	20	30	40	50	60	70
16	22	21	20	20	20	19	18	16	16	15	14	13
25	34	33	32	31	31	30	28	25	25	24	22	21
40	54	53	51	50	49	48	45	41	40	38	36	34
63	85	83	81	79	78	76	71	65	63	60	58	55
80	108	106	102	100	99	96	90	85	80	76	72	67
100	135	132	128	126	123	120	112	102	100	97	94	90
125	169	165	160	157	154	150	140	127	125	118	112	105
160	216	211	205	201	197	192	179	168	160	154	145	139

4.5 Breaker power loss (W)

4.5.1 Breaker power loss (W)

Power loss DPX ³ 160 + earth leakage (W)								
I _n (A) ---->	16	25	40	63	80	100	125	160
Cage terminals	2,8	5	5,1	6,7	7	11	12,5	15,4
Lugs	2,8	5	5,1	6,7	7	11	12,5	15,4
External terminals	2,8	5	5,1	6,7	7	11	12,5	15,4
Spreaders	2,8	5	5,1	6,7	7	11	12,5	15,4
Rear terminals	2,8	5	5,1	6,7	7	11	12,5	15,4
Plugin version	2,9	5,1	5,4	7,5	8,3	13	15,6	20,5

4.5.2 Switches power loss (W)

Power loss DPX ³ -I 160 (W)	
I _n (A) ---->	160
Cage terminals	9,2
Lugs	9,2
External terminals	9,2
Spreaders	9,2
Rear terminals	9,2
Plugin version	14,3

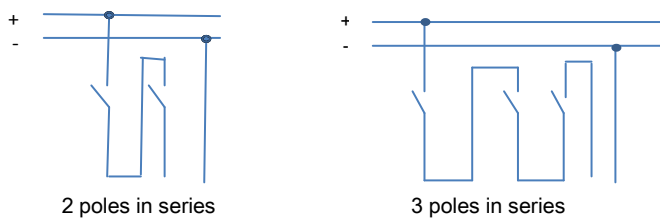
DPX³ 160 + earth leakage DPX³-I 160 + earth leakage

Reference(s) : 420 030/ 031/ 032/033/ 034/ 035/ 036/ 037/ 070/ 071/
072/ 073/ 074/ 075/ 076/ 077/ 110/ 111/ 112/ 113/ 114/ 115/ 116/ 117/
150/ 151/ 152/ 153/ 154/ 155/ 156/ 157/ 197

4.6 Short-circuit breaking capacity in D.C. current

Short-circuit breaking capacity in D.C. current				
Breaking capacity I _{cu} (kA)				
	2 p. in ser.	2 p. in ser.	3 p. in ser.	3 p. in ser.
	110-125V	250V	400V	500V
160 16kA	32	16	16	10
160 25kA	50	25	25	20
160 36kA	60	30	30	25
160 50kA	80	40	40	35

* Earth leakage protection not available



4.7 Protection in DC

Protection in D.C. current		
	thermal	magnetic
160 16 kA	like AC	1,5 I _m AC
160 25 kA	like AC	1,5 I _m AC
160 36 kA	like AC	1,5 I _m AC
160 50 kA	like AC	1,5 I _m AC

4.8 Altitude

Altitude (m)				
	Altitude (m)	≤2000	3000	4000
DPX ³ 160	Rated current (A)	1 x I _n	0,96 x I _n	0,93 x I _n
	Rated voltage (V)	500	500	400

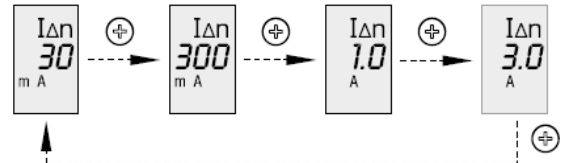
4.9 Loads operation

Loads operation	
Rated current (A)	I _n =160
Opening (N)	45
Closing (N)	78
Reset (N)	75

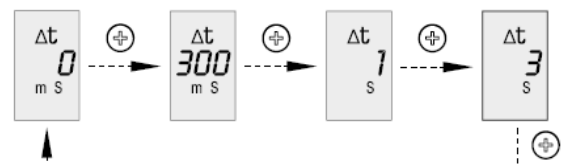
5. NAVIGATION

Setup mode

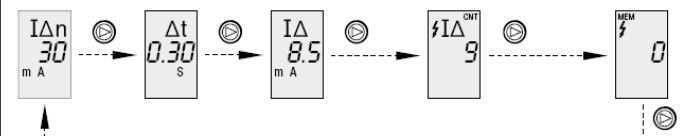
Setting I_{Δn}:



Setting t:



ATTENTION: after 5" of permanence on display of the new protection value I_{Δn} or time Δt, it is automatically set.

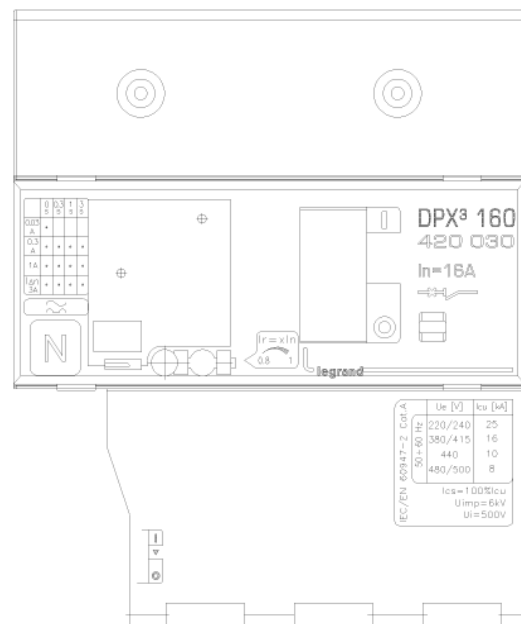


I_{Δn} value Δt value I_Δ measured History of interventions
set set value present for differential intervention

6. CONFORMITY

IEC 60947-2
(for switches IEC 60947-3)
EN 60947-2
(for switches EN 60947-3)

7. MARKING



DPX³ 160 + earth leakage DPX³-I 160 + earth leakage

Reference(s) : 420 030/ 031/ 032/033/ 034/ 035/ 036/ 037/ 070/ 071/
072/ 073/ 074/ 075/ 076/ 077/ 110/ 111/ 112/ 113/ 114/ 115/ 116/ 117/
150/ 151/ 152/ 153/ 154/ 155/ 156/ 157/ 197

8. EQUIPMENTS AND ACCESSORIES

8.1 Releases

• Shunt releases with voltage:

12 Vac/dc	ref. 421 012
24 Vac/dc	ref. 421 013
48 Vac/dc	ref. 421 014
110-130 Vac	ref. 421 015
200-277 Vac	ref. 421 016
380-480 Vac	ref. 421 017

• undervoltage releases with voltage:

12 Vac/dc	ref. 421 018
24 Vac/dc	ref. 421 019
48 Vac/dc	ref. 421 020
110 Vac	ref. 421 021
200-240 Vac	ref. 421 022
277 Vac	ref. 421 023
380-415 Vac	ref. 421 024
440-480 Vac	ref. 421 025

• auxiliary contact:

set of connectors for aux contacts	ref. 421 044
aux contacts and fault signal	ref. 421 011
aux contacts (1NC and 1 NO) for all rotary handles	ref. 421 010
inserted device signal	ref. 421 048

8.2 Rotary handles :

Direct:

• DPX ³ direct rotary handle ele/RCD	ref. 421 001
• DPX ³ emergency direct rotary handle ele/RCD	ref. 421 003

Vari-depht:

• DPX ³ vari depth rotary handle	ref. 421 004
• DPX ³ emergency vari depth rotary handle	ref. 421 005

Locking accessories

• locking acc. for direct rotary handle - ronis	ref. 421 006
• locking acc. for direct rotary handle - profalux	ref. 421 007
• locking acc. for vari depth rotary handle - ronis	ref. 421 008
• locking acc. for vari depth rotary handle – profalux	ref. 421 009

8.3 Mechanical accessories :

Insulated shields

• Set of 3	ref. 421 070
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Sealable terminal shields

• sealable terminal shield for rear terminals 160 4P	ref. 421 051
• sealable terminal shield for front spreaders 160 4P	ref. 421 055

Padlocks

• DPX ³ padlock accessory for handle (off)	ref. 421 049
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Interlock:

• DPX ³ interlock mounting plate	ref. 421 058
• DPX ³ interlock for plug-in / draw-out version	ref. 421 059

8.4 Connection's accessories :

Cage terminals

• High capacity terminals for al or cu cables kit (4) - flex 1x120mm ² , rigid 1x150mm ² , bar/cable lug 18mm	ref. 421 027
• rack screw and nut for cable lug (4)	ref. 421 029

Front spreaders

• DPX ³ front spreaders for 4P DPX ³ 160 (4)	ref. 421 033
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Rear terminals

• DPX ³ flat rear terminals for 4P DPX ³ 160 (4)	ref. 421 037
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8.5 Plug-in version

Bases

• front/rear terminals plug-in base 4P DPX ³ 160	ref. 421 041
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Locking accessories

• locking accessory for plug-in base – ronis	ref. 421 045
• locking accessory for plug-in base – profalux	ref. 421 046
• padlock accessory for plug-in base	ref. 421 047

8.6 Motor operator

• side motor operator 24-230 Vac - 24-230 Vdc	ref. 421 060
• front motor operator 24-230 Vac - 24-230 Vdc	ref. 421 061

Locking accessories for front motor operator:

• locking acc. for front motor operator - ronis	ref. 421 062
• locking acc. for front motor operator – profalux	ref. 421 063
• padlock selector for front motor operator	ref. 421 064

Locking accessories for side motor operator:

• locking acc. for side motor operator - ronis	ref. 421 065
• locking acc. for side motor operator – profalux	ref. 421 066
• padlock selector for side motor operator	ref. 421 067

Din plate:

DPX ³ din plate for motor operator DPX ³ 160	ref. 421 068
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8.7 Mounting on rail fixing plate

DPX ³ din rail fixing plate DPX ³ 160 4P+Earth Leakage	ref. 421 073
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8.8 Supply

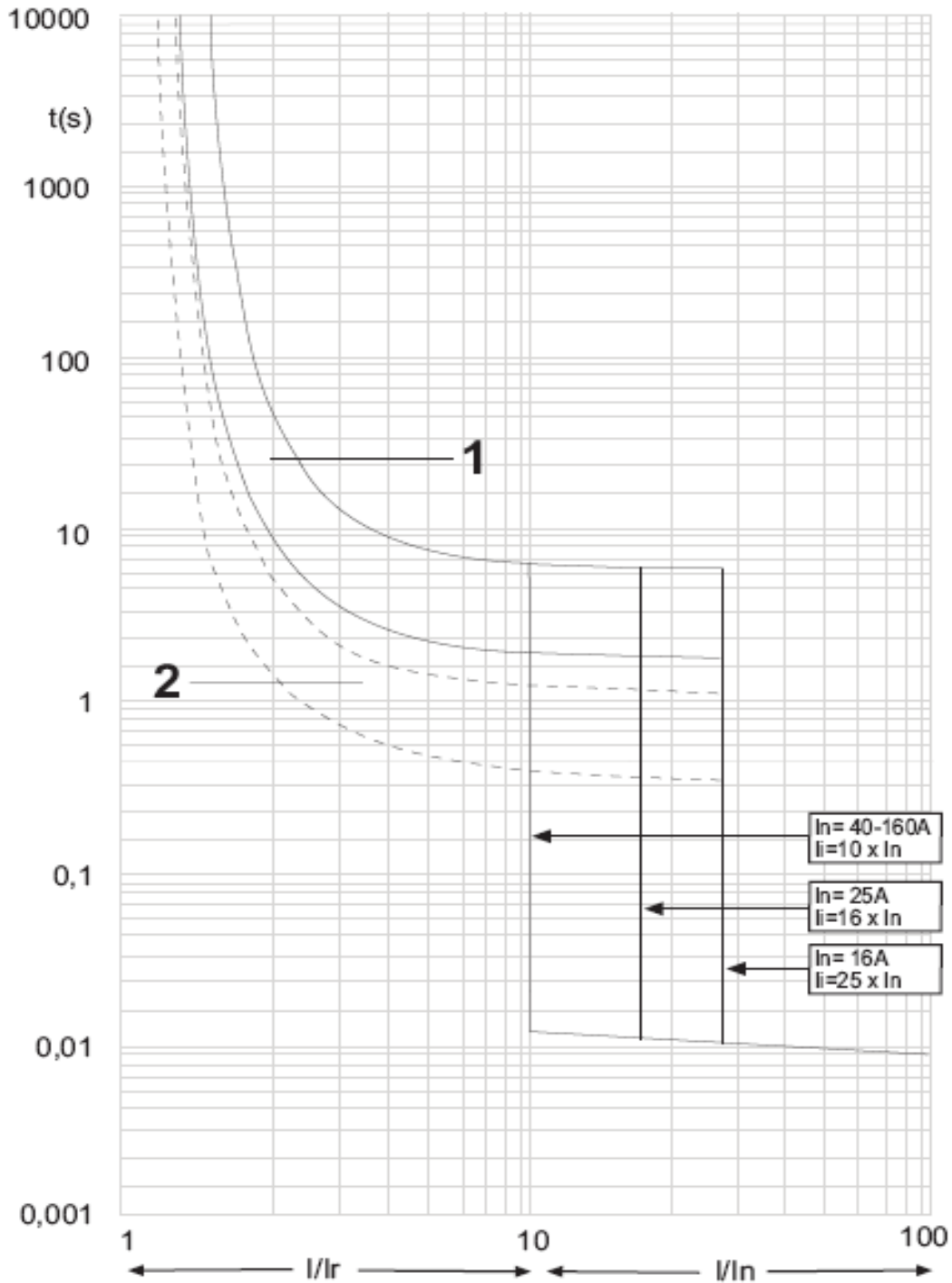
Lithium battery CR1616 3V x 2	ref. 421 082
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DPX³ 160 + earth leakage
DPX³-I 160 + earth leakage

Reference(s) : 420 030/ 031/ 032/033/ 034/ 035/ 036/ 037/ 070/ 071/
 072/ 073/ 074/ 075/ 076/ 077/ 110/ 111/ 112/ 113/ 114/ 115/ 116/ 117/
 150/ 151/ 152/ 153/ 154/ 155/ 156/ 157/ 197

9. CURVES

9.1 TRIPPING CURVE

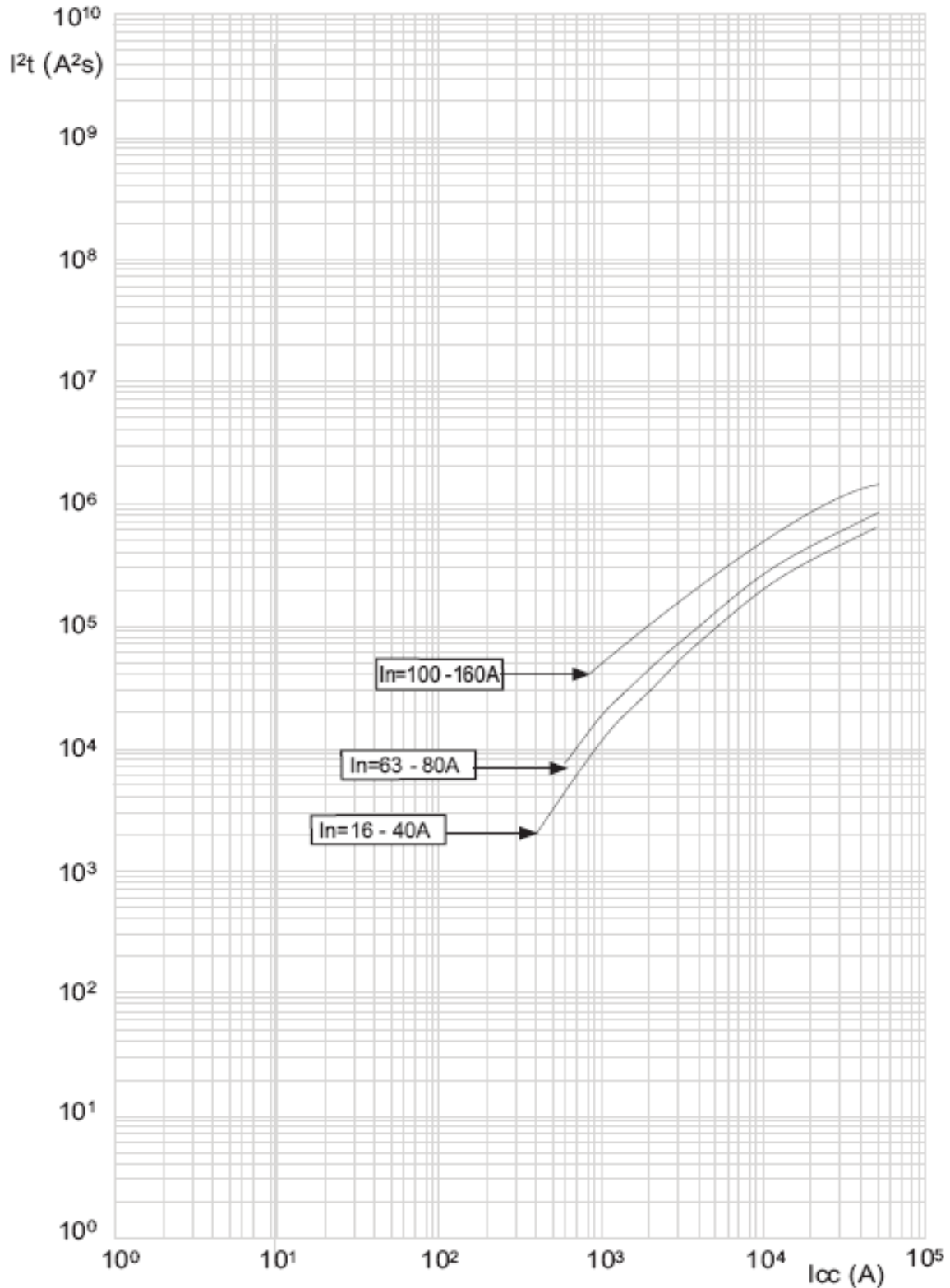


t = time
 I = rated current □
 I_r = setting current
 curve number 1 = characteristic with cold start
 curve number 2 = characteristic with hot start

DPX³ 160 + earth leakage DPX³-I 160 + earth leakage

Reference(s) : 420 030/ 031/ 032/033/ 034/ 035/ 036/ 037/ 070/ 071/
072/ 073/ 074/ 075/ 076/ 077/ 110/ 111/ 112/ 113/ 114/ 115/ 116/ 117/
150/ 151/ 152/ 153/ 154/ 155/ 156/ 157/ 197

9.2 Energy curve

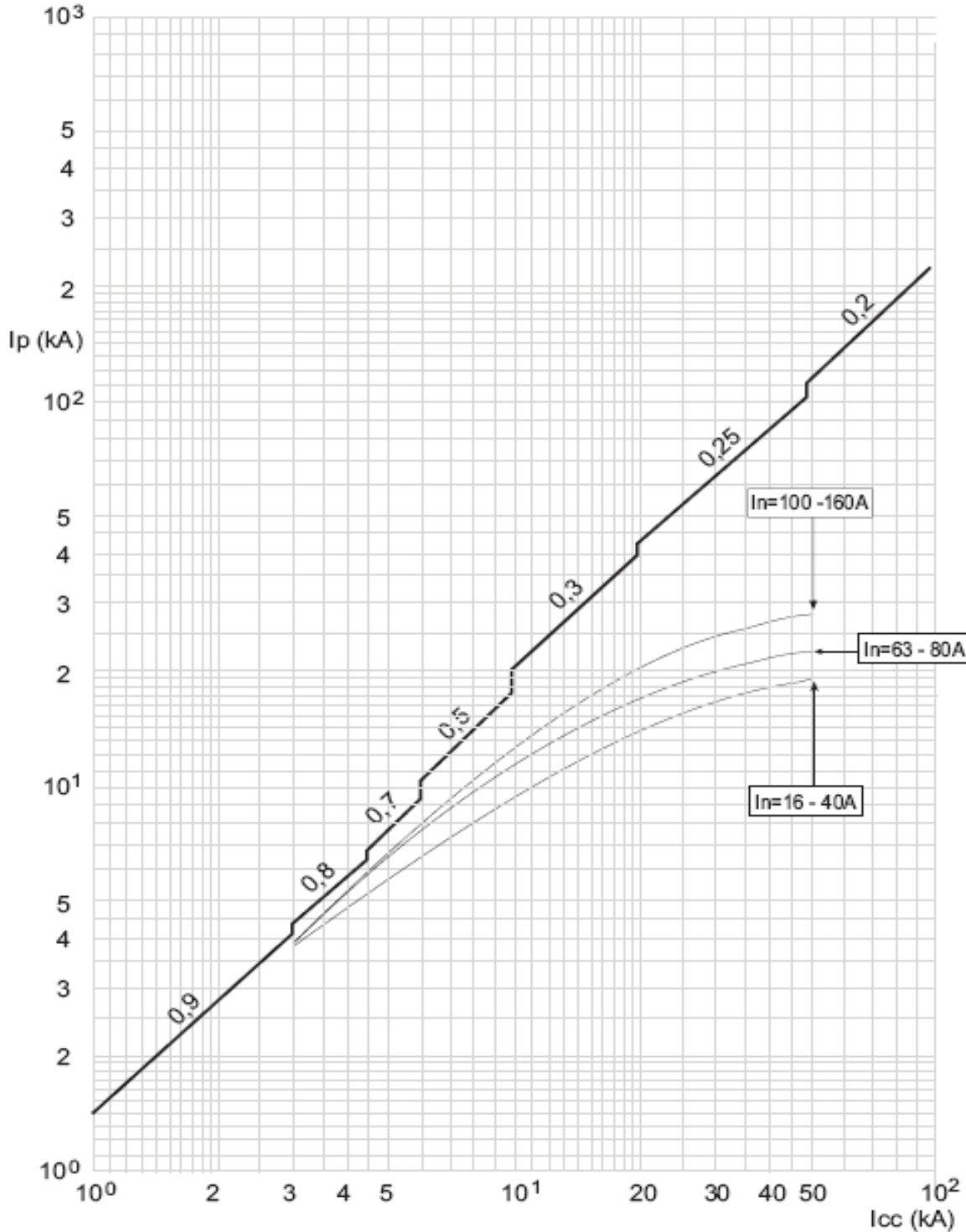


I_{cc} = estimated short circuit symmetrical current (RMS value)
 I^2t (A²s) = pass-through specific energy

DPX³ 160 + earth leakage
DPX³-I 160 + earth leakage

Reference(s) : 420 030/ 031/ 032/033/ 034/ 035/ 036/ 037/ 070/ 071/
 072/ 073/ 074/ 075/ 076/ 077/ 110/ 111/ 112/ 113/ 114/ 115/ 116/ 117/
 150/ 151/ 152/ 153/ 154/ 155/ 156/ 157/ 197

9.3 Restricted current curve

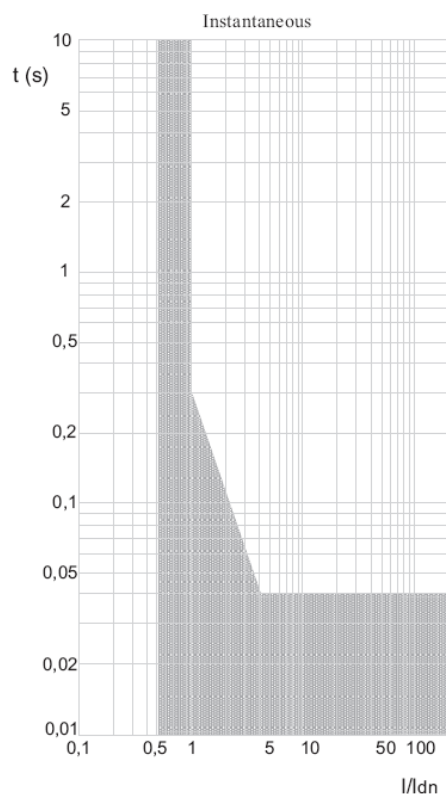


I_{cc} = estimated short circuit symmetrical current (RMS value)
 I_p = maximum short circuit peak current
 ——— maximum prospective short circuit peak current
 corresponding at the power factor
 ——— maximum real peak short circuit current

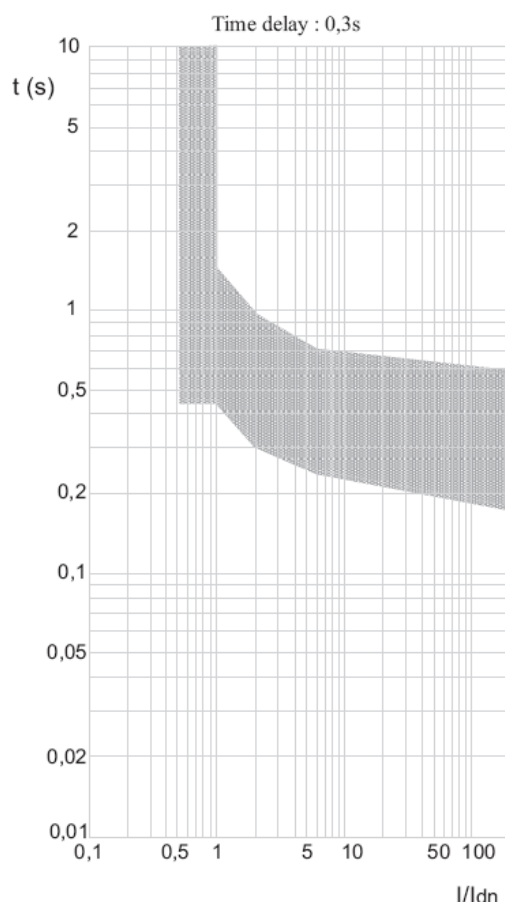
DPX³ 160 + earth leakage DPX³-I 160 + earth leakage

Reference(s) : 420 030/ 031/ 032/033/ 034/ 035/ 036/ 037/ 070/ 071/
072/ 073/ 074/ 075/ 076/ 077/ 110/ 111/ 112/ 113/ 114/ 115/ 116/ 117/
150/ 151/ 152/ 153/ 154/ 155/ 156/ 157/ 197

9.4 Earth leakage curve, instantaneous



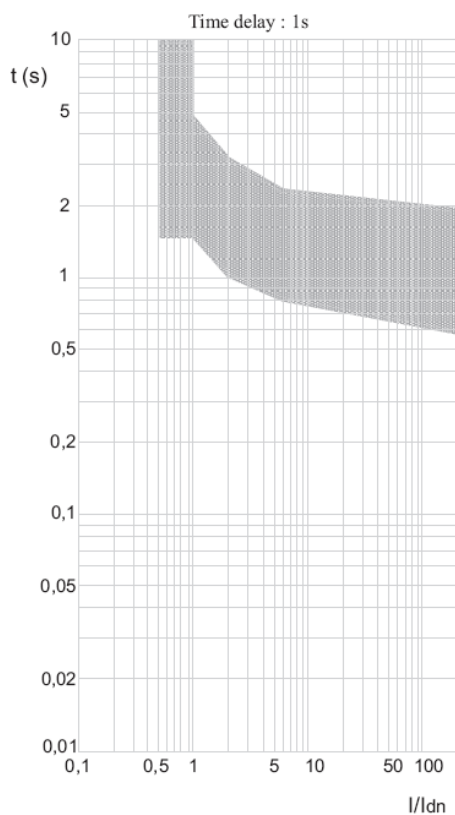
9.4 Earth leakage curve, time delay = 0.3 s



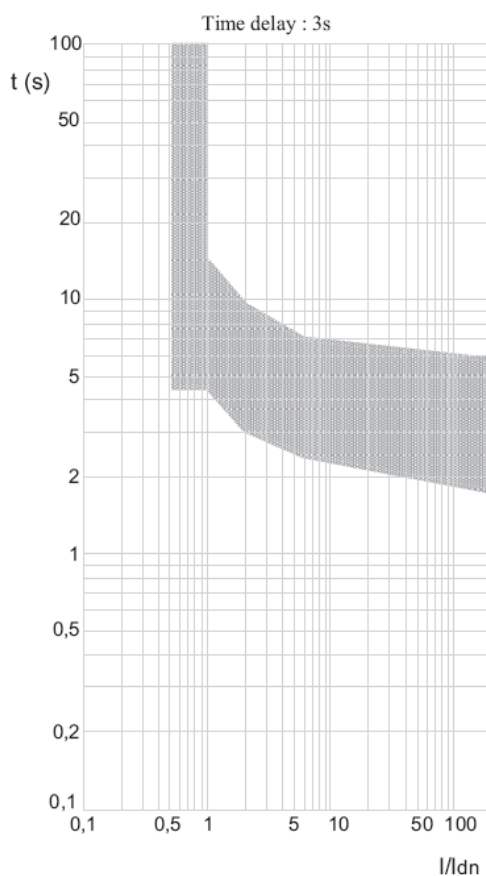
DPX³ 160 + earth leakage DPX³-I 160 + earth leakage

Reference(s) : 420 030/ 031/ 032/033/ 034/ 035/ 036/ 037/ 070/ 071/
072/ 073/ 074/ 075/ 076/ 077/ 110/ 111/ 112/ 113/ 114/ 115/ 116/ 117/
150/ 151/ 152/ 153/ 154/ 155/ 156/ 157/ 197

9.4 Earth leakage curve, time delay = 1 s



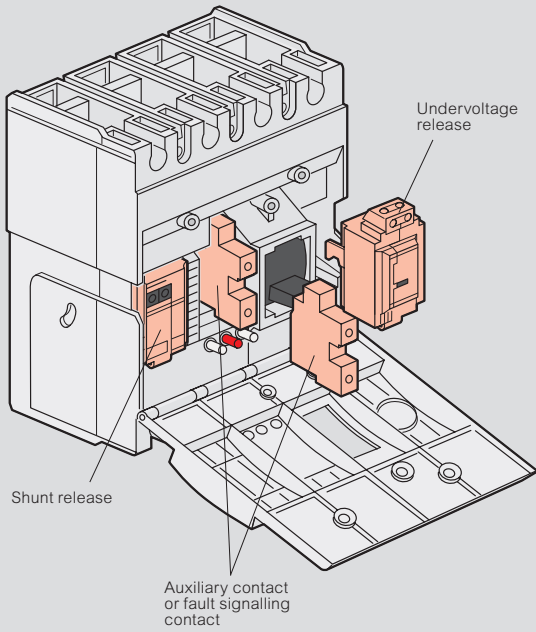
9.4 Earth leakage curve, time delay = 3 s



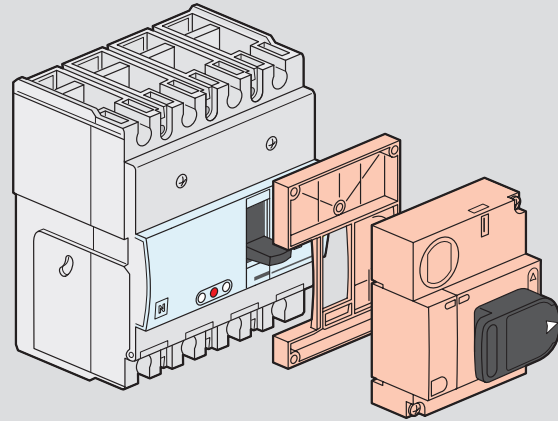
DPX³ 160/250

installation principle

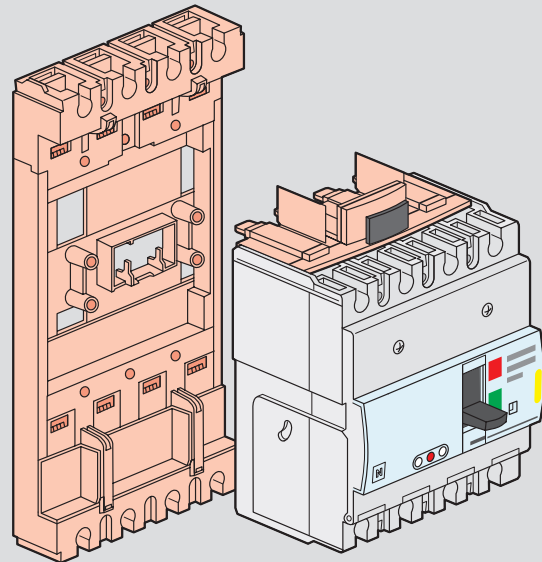
Auxiliaries mounting



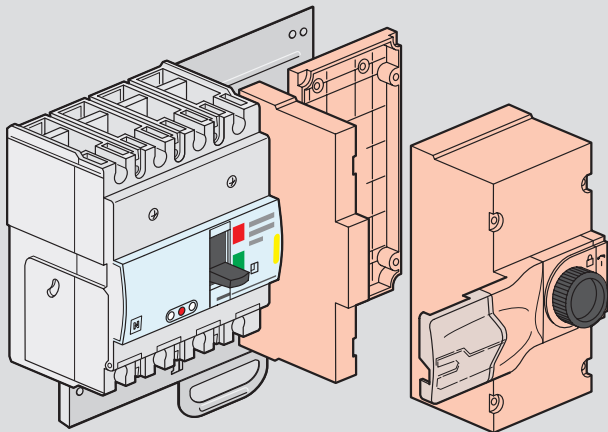
Direct rotary handle



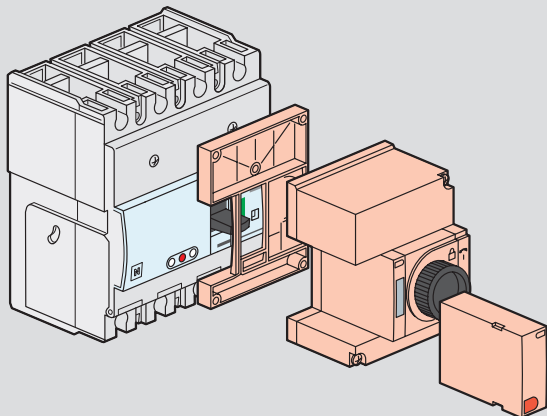
Plug-in version



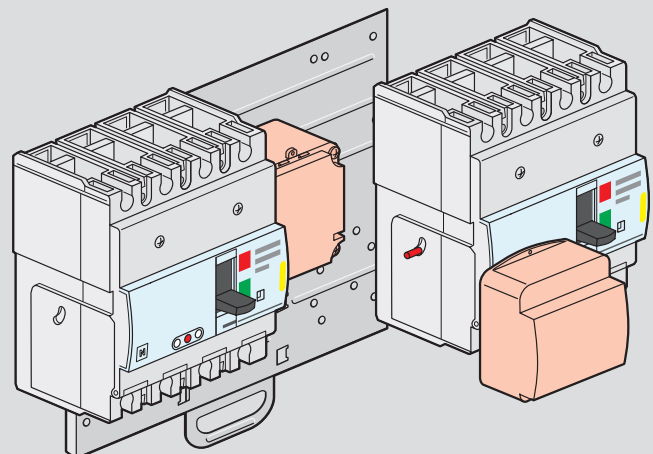
Side mounting motor-driven handle

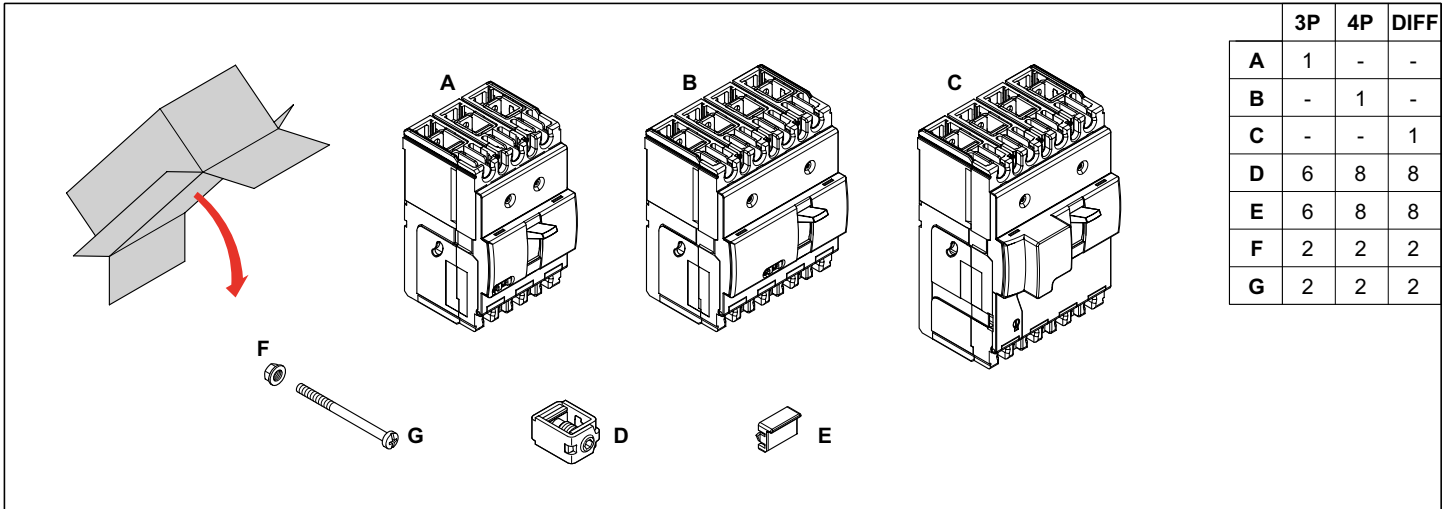


Front mounting motor-driven handle

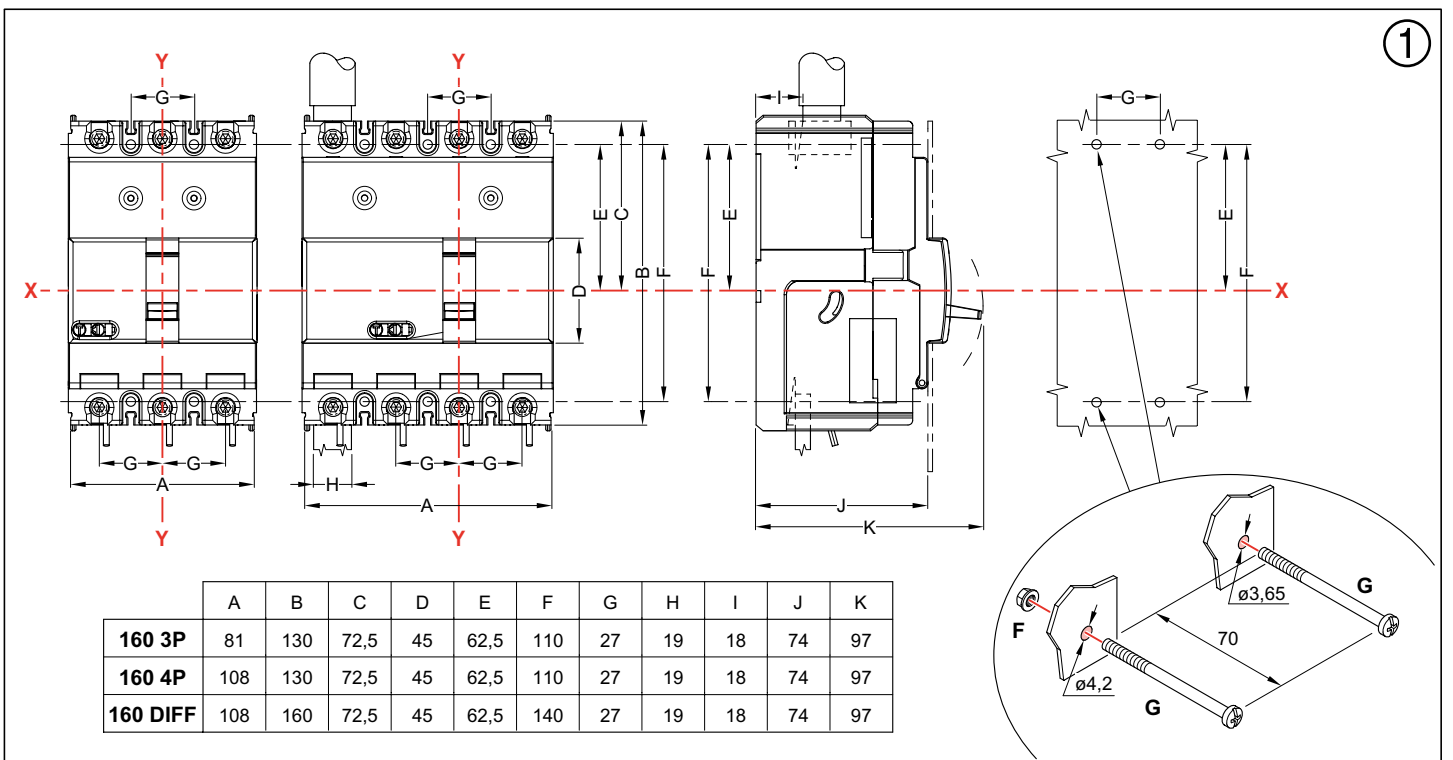


Supply inverter type

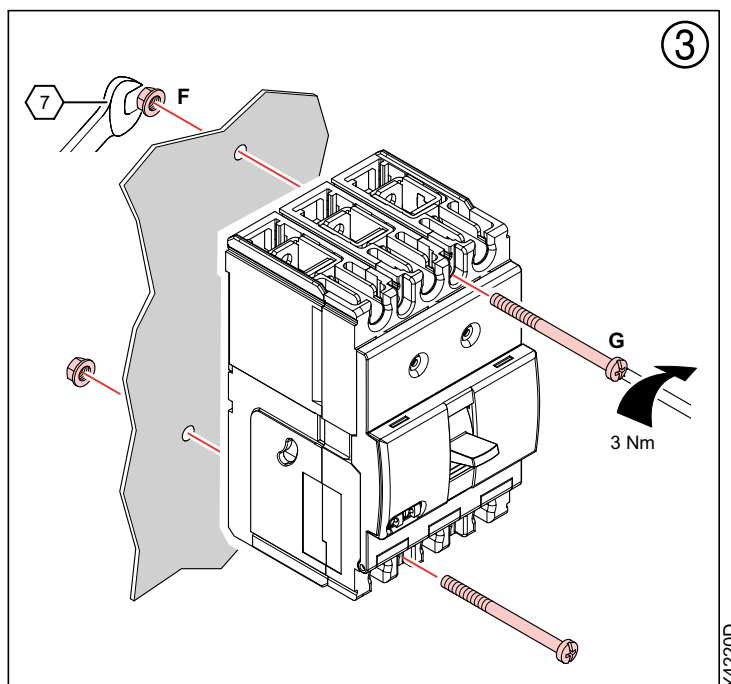
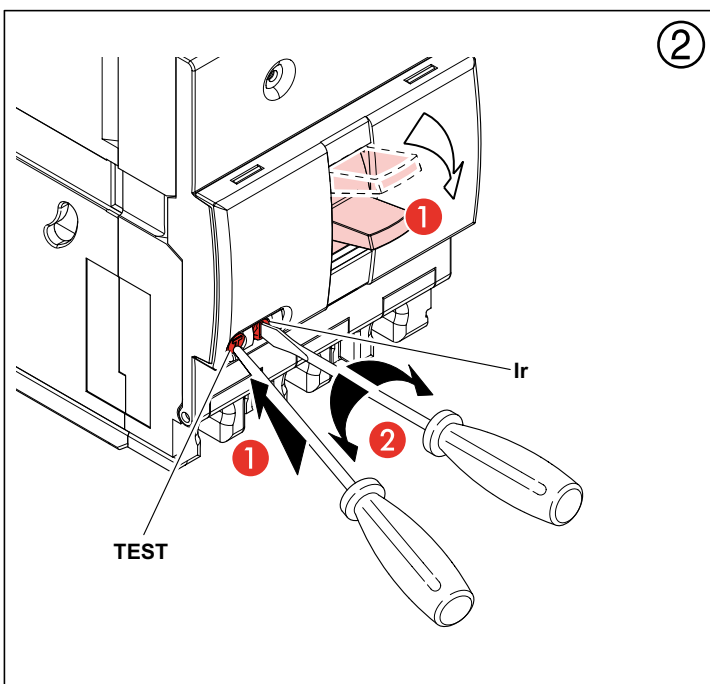


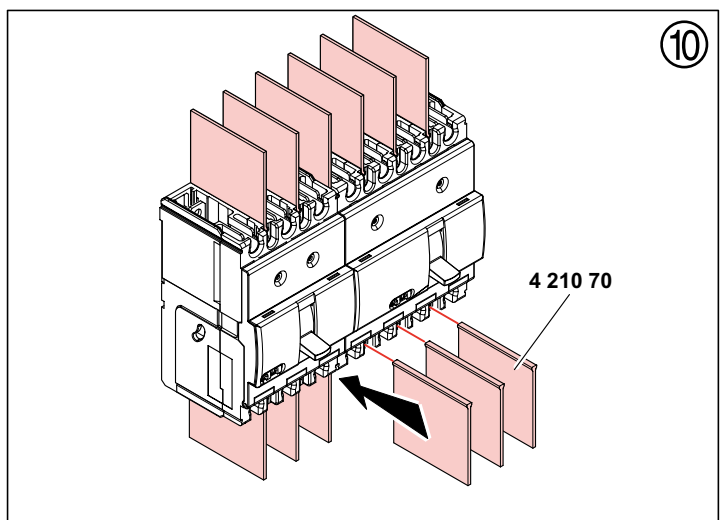
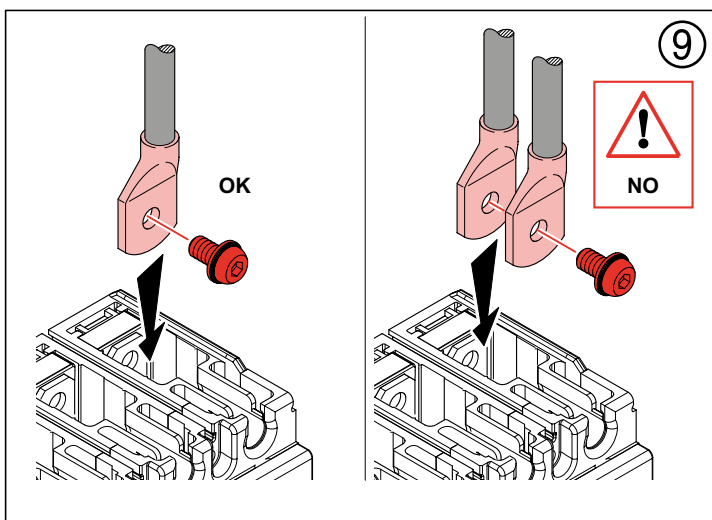
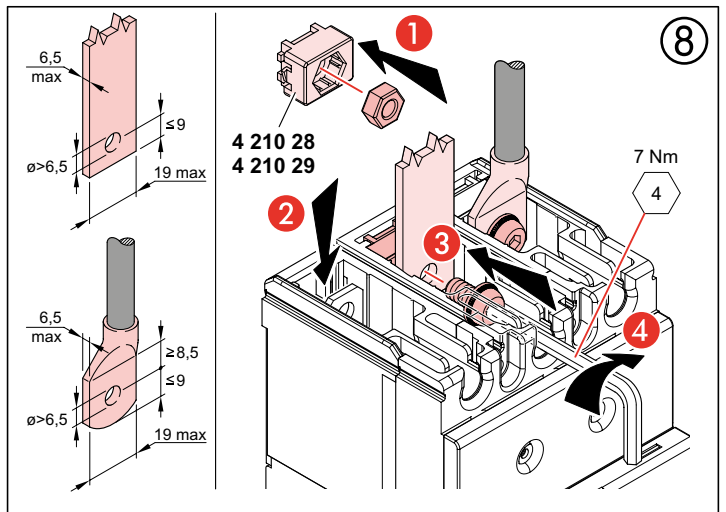
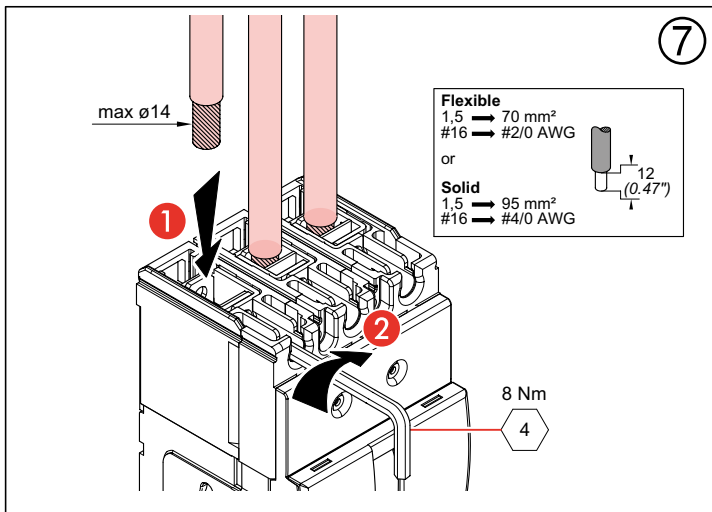
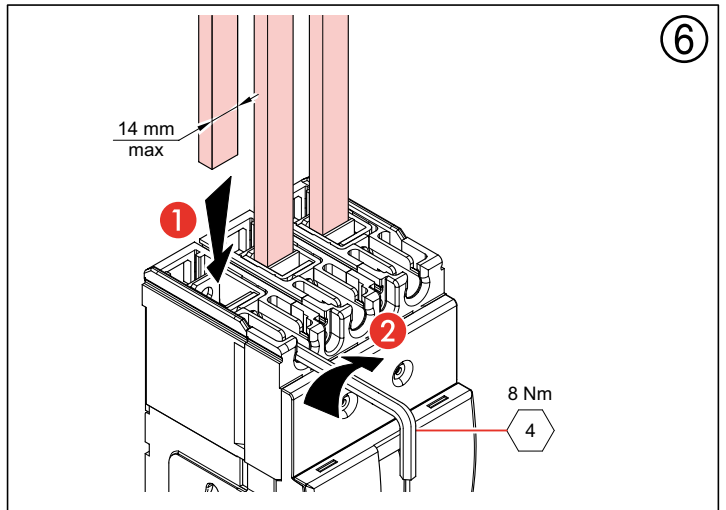
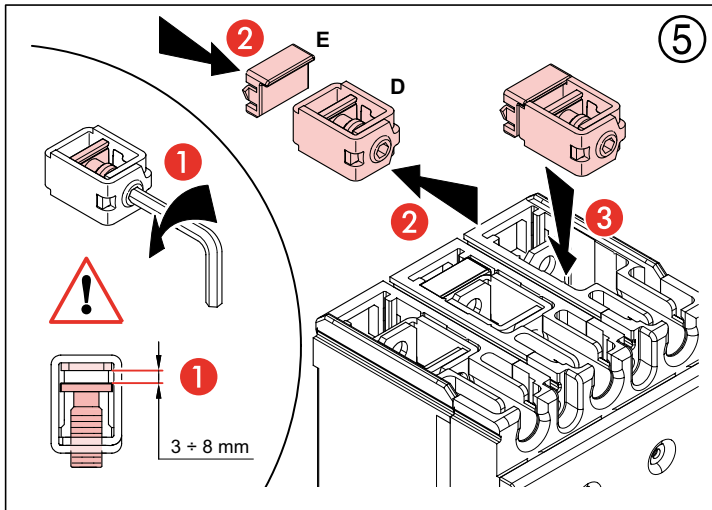
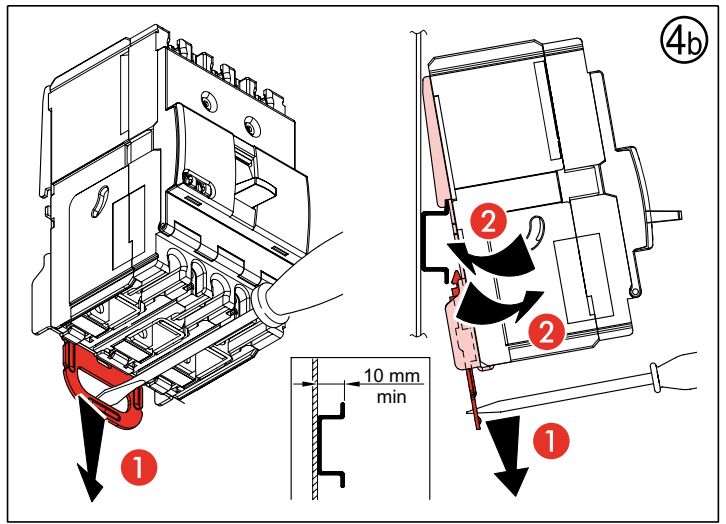
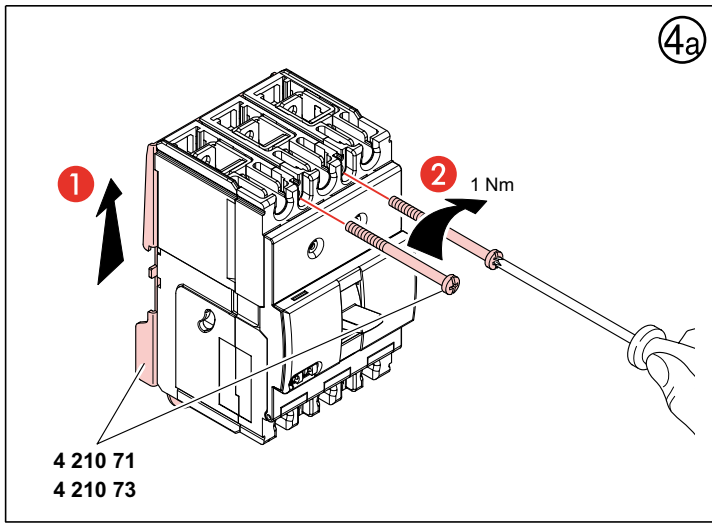


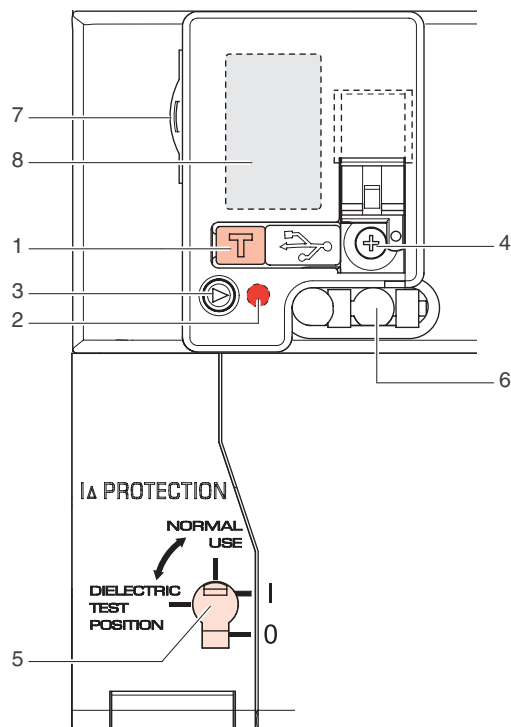
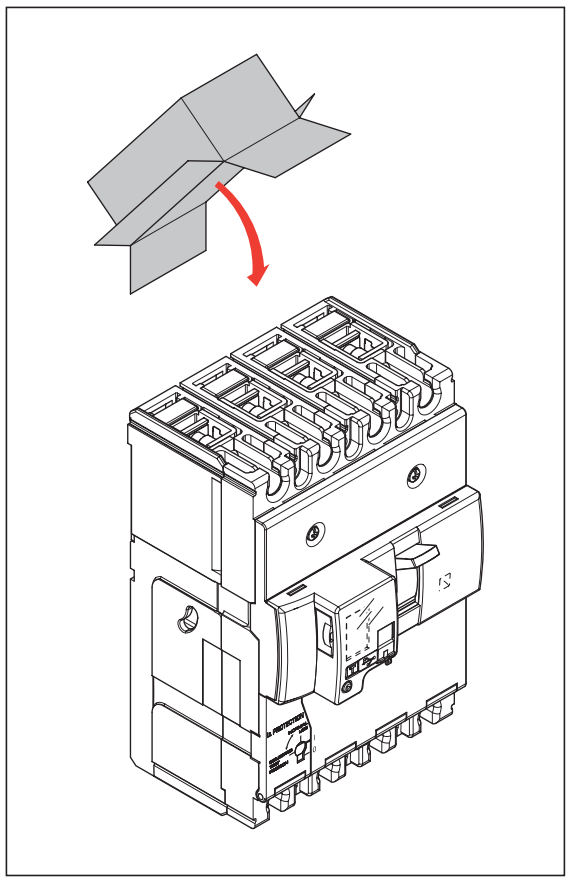
	3P	4P	DIFF
A	1	-	-
B	-	1	-
C	-	-	1
D	6	8	8
E	6	8	8
F	2	2	2
G	2	2	2



	A	B	C	D	E	F	G	H	I	J	K
160 3P	81	130	72,5	45	62,5	110	27	19	18	74	97
160 4P	108	130	72,5	45	62,5	110	27	19	18	74	97
160 DIFF	108	160	72,5	45	62,5	140	27	19	18	74	97







- 1 Bouton de TEST bloc différentiel
- 2 Led de signalisation
- 3 Bouton de navigation
- 4 Bouton de réglage
- 5 Sélecteur de test diélectrique
- 6 Bouton test mécanique
- 7 Emplacement batterie
- 8 Ecran

- 1 Earth Leakage TEST button
- 2 Indications led
- 3 Navigation button
- 4 Setting button
- 5 Mechanical release selector / dielectric test
- 6 Mechanical test button
- 7 Battery compartment
- 8 Display

- 1 Aardlek TEST knop
- 2 Signalerings LED
- 3 Navigatie knop
- 4 Set knop
- 5 Mechanische selector voor diëlectrische test
- 6 Mechanische Test
- 7 Batterijen compartiment
- 8 Display

- 1 Botón de test diferencial
- 2 Led de señalización
- 3 Pulsador de navegación
- 4 Pulsador de reglaje
- 5 Selector de desbloqueo mecánico / test dieléctrico
- 6 Botón de test mecánico
- 7 Compartimento de la batería
- 8 Pantalla

- 1 Tasto TEST differenziale
- 2 Led segnalazioni
- 3 Pulsante di navigazione
- 4 Pulsante di impostazione
- 5 Selettore sgancio meccanico / Test Dielettrico
- 6 Tasto test meccanico
- 7 Vano batterie
- 8 Display

- 1 Botão de TESTE diferencial
- 2 LED de sinalização
- 3 Botão de navegação
- 4 Botão de regulação
- 5 Selector disparo manual / teste dieléctrico
- 6 Botão de teste mecânico
- 7 Compartimento das pilhas
- 8 Ecrã LCD

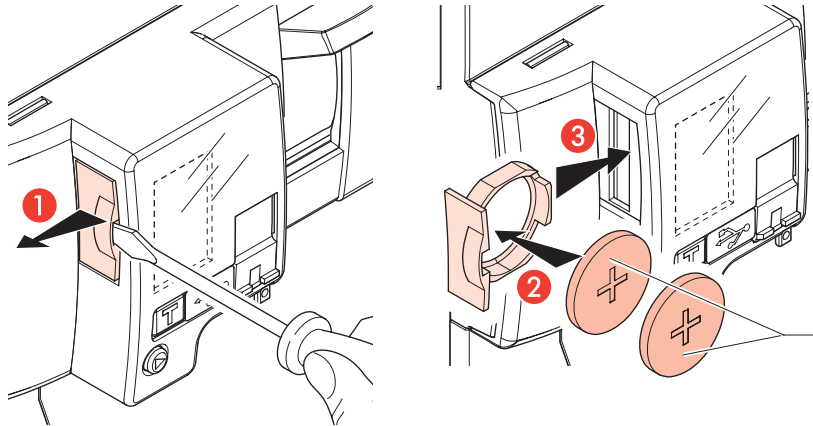
- 1 Przycisk TEST członu różnicowoprądowego
- 2 Diody sygnalizacyjne LED
- 3 Przycisk nawigacyjny
- 4 Przycisk regulacyjny
- 5 Selektor mechanicznego wyzwolenia / test izolacji
- 6 Przycisk testu mechanizmu
- 7 Komora baterii
- 8 Wyświetlacz

- 1 Kaçak akım TEST butonu
- 2 Led'li sinyal lambaları
- 3 Menü gezintisi tuşları
- 4 Ayar düğmesi
- 5 Mekanik açtırma/ dielektrik test seçici
- 6 Mekanik test butonu
- 7 Pil yuvası
- 8 Gösterge ekranı

**INSERTION DES BATTERIES / BATTERY INSERTION / BATTERIJEN PLAATSEN
COLOCACIÓN DE LA BATERÍA / INSERIMENTO BATTERIA / INERÇÃO DAS PILHAS
MONTAŻ BATERII / PILLERIN YERLEŞTIRILMESİ**

1

En fonctionnement sur batterie, l'écran s'éteint après 10s si il n'est pas utilisé. / **If battery powered the display switch off after 10 s if not used.**
Het display schakelt uit wanneer het 10 seconde niet wordt gebruikt. / Si se alimenta con batería, la pantalla se apaga tras 10s sin utilizarla.
Se alimentato in batteria il display si spegne dopo 10s se inutilizzato. / Se alimentado por pilhas o ecrã apaga-se após 10 s sem utilização.
Przy zasilaniu z baterii wyświetlacz wyłączy się po 10 sekundach bezczynności. / Eğer pil üzerinden besleniyorsa kullanılmadan 10s kaldığında ekran kapanır.



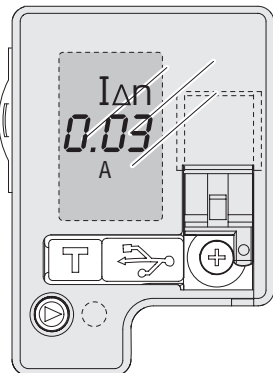
Batteries 2x CR1616 3V
Batteries 2x CR1616 3V
Batterijen 2x CR1616 3V
Baterias 2x CR1616 3V
Batterie 2x CR1616 3V
Baterias 2x CR1616 3V
Baterie: 2x CR1616 3V
2x CR1616 3V pil



A la fin de leur cycle de vie, recycler les batteries conformément à la directive européenne 2006/66/CE traitant des batteries, accumulateurs et déchets associés.
At the end of life cycle, process the included batteries according to the EU directive 2006/66/CE about the batteries, accumulators and relative wastes.
Gebruikte batterijen afvoeren volgens EU richtlijn 2006/66/CE Batterijen en accu's
Cuando se agoten las baterías, reciclarlas conforme a la directiva europea 2006/66/CE relativa a baterías, acumuladores y residuos asociados
A fine vita, smaltire le batterie incluse nell'articolo secondo quanto prescritto dalla direttiva 2006/66 CE relativo a pile, accumulatori e relativi rifiuti.
No final do ciclo de vida, processe as pilhas de acordo com a directiva UE de reciclagem de pilhas e acumuladores
W celu recyklingu zużytych baterii należy postępować zgodnie z dyrektywą EU 2006/66/CE dotyczącą baterii i akumulatorów, oraz związanych z tym odpadów.
Piller, ömürleri sona erdiğinde piller,aküler ve bağlı atıklarla ilgili EU2006/66/CE direktiflerine uygun olarak geri dönüştürülmelidir.

PARAMETRES / SETTINGS / INSTELLINGEN / PARÁMETROS / IMPOSTAZIONI / REGULAÇÕES / REGULACJA / AYARLAR

2



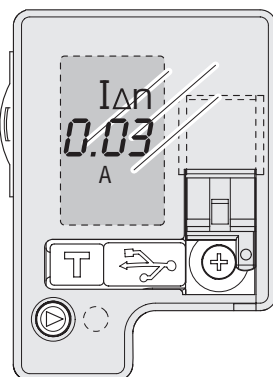
- * Réglages par défaut $I_{\Delta n} (A) = 0,03 - \Delta t (s) = 0$
- * **Factory setting** $I_{\Delta n} (A) = 0,03 - \Delta t (s) = 0$
- * Impostazioni di fabbrica $I_{\Delta n} (A) = 0,03 - \Delta t (s) = 0$
- * Fabrika ayarı $I_{\Delta n} (A) = 0,03 - \Delta t (s) = 0$

		$I_{\Delta n} = [A]$			
		* 0.03	0.3	1	3
* 0	$\Delta t [s]$	OK	OK	OK	OK
0.3		NO	OK	OK	OK
1		NO	OK	OK	OK
3		NO	OK	OK	OK



Avec un seuil différentiel de $I_{\Delta n} = 0.03A$, le temps de déclenchement est réglé automatiquement à $\Delta t (s) = 0$
With differential threshold of $I_{\Delta n} = 0.03A$, the trip time automatically sets to $\Delta t (s) = 0$
Wanneer de differentiaalstroom is ingesteld op $I_{\Delta n} = 0.03A$ wordt de reactievertaging automatisch $\Delta t (s) = 0$
Con un umbral de disparo diferencial de $I_{\Delta n} = 0.03A$, el tiempo de desconexión está ajustado automáticamente a $\Delta t (s) = 0$
Con soglia differenziale di $I_{\Delta n} = 0.03A$ il tempo di intervento automaticamente si imposta su $\Delta t (s) = 0$
Com regulação diferencial de $I_{\Delta n} = 0.03A$ o tempo de intervenção passa automaticamente a $\Delta t (s) = 0$
Dla nastawy czlonu różnicowoprądowego równej $I_{\Delta n} = 0.03A$, czas zadziałania zostaje automatycznie ustawiony na $\Delta t (s) = 0$
Kaçak akım eşik değeri $I_{\Delta n} = 0.03A$ olarak ayarlandığında zaman gecikmesi otomatik olarak $\Delta t (s) = 0$ a getirilir.

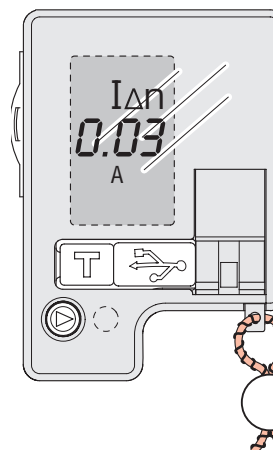
1



**PARAMETRES $I_{\Delta n}$ et Δt possibles
SETTINGS $I_{\Delta n}$ and Δt possible
instellen van $I_{\Delta n}$ en Δt mogelijk
AJUSTE $I_{\Delta n}$ y Δt posible
IMPOSTAZIONE $I_{\Delta n}$ e Δt possibili
REGULAÇÕES $I_{\Delta n}$ e Δt possíveis
Możliwość REGULACJI $I_{\Delta n}$ oraz Δt
Mümkün olan $I_{\Delta n}$ ve Δt ayarları**

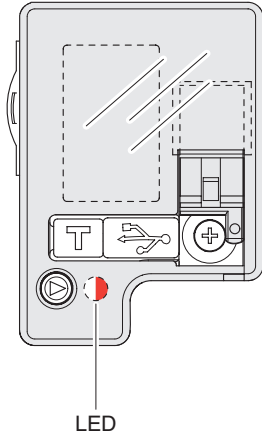


2



**CONSULTATION
CONSULTATION
ALLEEN AF/UITLEZEN
CONSULTA
CONSULTAZIONE
VERIFICAÇÕES
SPRAWDZENIE
INCELEME**





Double color led / LED bicolore / Led Bicolore / Çift renkli Led		
Signal / Indication / Segnalazione / Sinyal	Événements / Event / Eventi / Olay	Priorité / Priority / Priorità / Öncelik
LED verte allumée Green led on Led Verde acceso Yeşil Led sabit yanıyor	IΔn en-dessous du seuil IΔn under limit IΔn sotto soglia IΔn limitin altında	3
LED verte clignotante Green led blinking Led Verde lampeggiante Yeşil Led yanıp sönüyor	Réglage incorrect - Réglage en cours Setting mistake - Setting in process Regolazione non corretta - Regolazione in corso Ayarlama hatası - Ayarlama yapılıyor	3
LED rouge allumée Red led on Led Rosso acceso Kırmızı Led sabit yanıyor	IΔn supérieur à 45% du seuil défini IΔn higher than 45% of settled limit IΔn superiore al 45% della soglia imposta IΔn ayarlanan limit değerinin %45'inin üzerinde	3
LED rouge clignotante Red led blinking Led Rosso lampeggiante Kırmızı Led yanıp sönüyor	IΔn supérieur à 60% du seuil défini IΔn higher than 60% of settled limit IΔn superiore al 60% della soglia imposta IΔn ayarlanan limit değerinin %60'ının üzerinde	3
LED verte et rouge en clignotement alterné Green and Red alternately blinking Led Verde e Led Rosso lampeggianti alternativamente Yeşil ve Kırmızı Ledler sırayla yanıp sönüyor	Température > 85°C Temperature > 85°C Temperatura > 85°C Sıcaklık > 85° C	1

En cas de plusieurs événements simultanés, celui dont la priorité est la plus élevée sera signalé. Le niveau 1 de priorité est le plus élevé.

If more events were at the same time, the signal would be the one with highest priority. The highest priority is 1

Se più eventi fossero concomitanti, la segnalazione visualizzata sarà quella a priorità più elevata. La priorità maggiore è la 1
Aynı anda birden fazla olay söz konusu ise en öncelikli olay gösterilir. En yüksek öncelik değeri 1'dir.

- Affichage écran / **Service signals** / Service signalen / Señalización de servicio / Segnalazioni di servizio / Indicações de serviço / Komunikaty serwisowe / Servis sinyalleri

L'affichage des valeurs de IΔn et de Δt sur l'écran alterne à une fréquence de 3 s

The viewing on display of set values of IΔn and Δt takes place alternately with a viewing frequency of 3 s.

De waarden IΔn and Δt zijn met een interval van 3s op het display af te lezen.

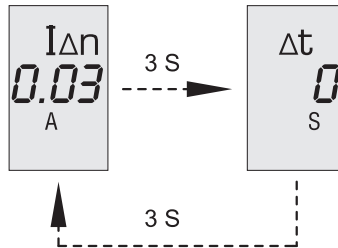
La visualización en pantalla de los valores de ajuste de IΔn y Δt se sucede alternativamente con una frecuencia de visualización de 3 segundos.

La visualizzazione su display dei valori impostati di IΔn e Δt avviene alternativamente con una frequenza di visualizzazione di 3 sec."

A visualização no ecrã dos valores regulados IΔn e Δt, ocorre alternadamente com uma frequência de 3 seg.

Wyświetlanie ustawionych wartości IΔn i Δt następuje naprzemiennie z częstotliwością 3s.

Ayarlanan IΔn ve Δt değerleri 3 saniyelik sürelerle ekranda dönüşümlü olarak gösterilir.



En cas de batterie faible.

In case of low battery.

Wanneer de batterij leeg raakt wordt.

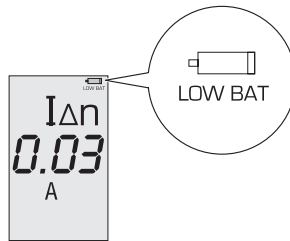
En caso de nivel bajo de batería.

In caso di batterie a livello basso.

Se bateria com carga baixa.

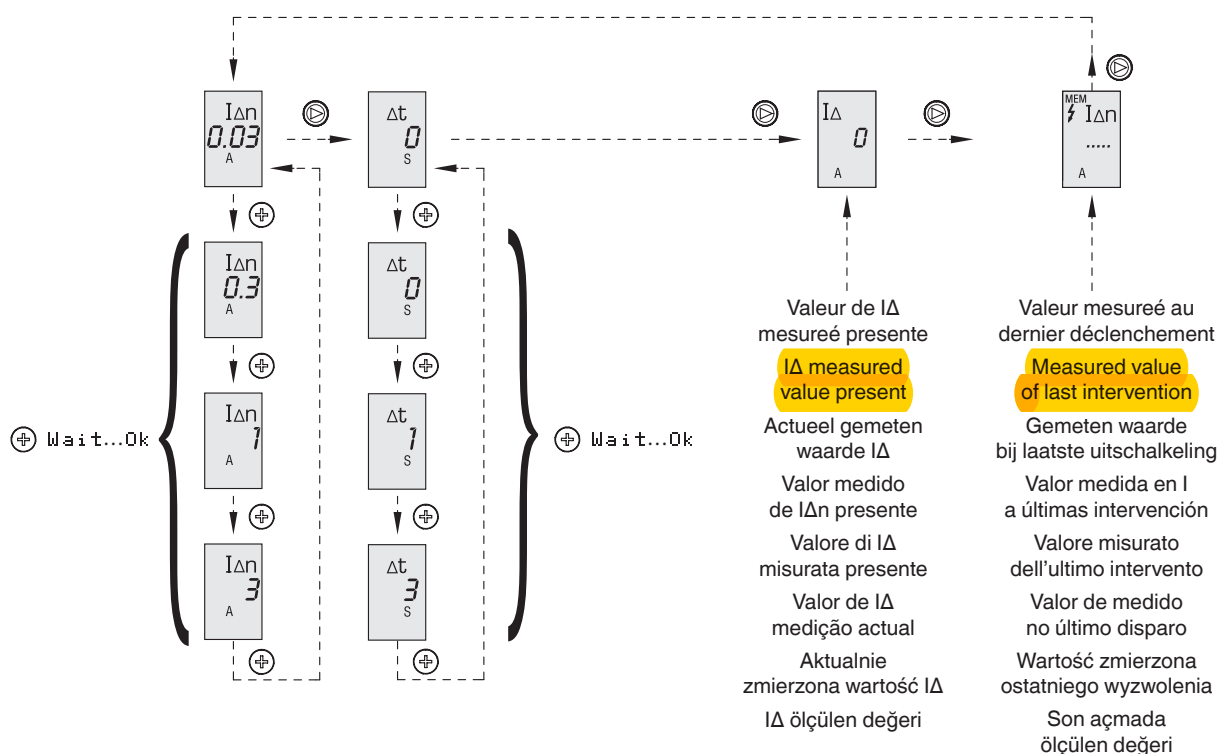
W przypadku niskiego poziomu baterii.

Piller zayıfladığında ilave olarak.

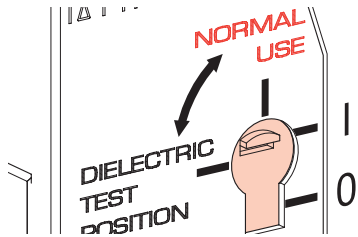


Navigation / **Navigation** / Navigatie / Navegación / Navigazione / Navegação / Nawigacja / Menüde Gezinme

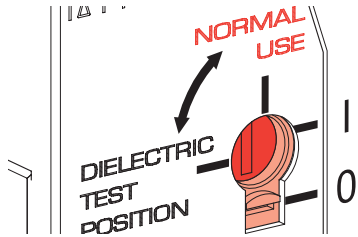
Mode configuration / Setup mode / Setup Modus / Modo de configuración / Modalità di set up / Modo de regulação / Tryb konfiguracyjny / Uyarlama modu




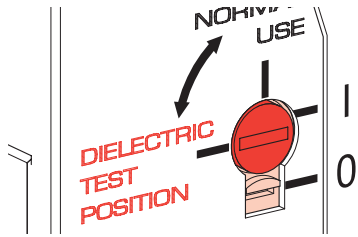
DESCRIPTION DE L'UTILISATION DU SELECTEUR DE TEST DIELECTRIQUE / WORKING CONDITIONS
DESCRIPTIONS OF DIELECTRIC TEST SELECTOR / OMSCHRIJVING DIËLEKTRISCHE TEST SELECTOR /
'DESCRIPCIÓN DE LAS CONDICIONES DE TRABAJO DEL SELECTOR DE TEST DIELECTRICO / DESCRIZIONE
DELLE CONDIZIONI DI LAVORO DEL SELETORE TEST DIELETTORICO / DESCRIÇÃO DAS CONDIÇÕES DE
FUNCIONAMENTO DO SELECTOR DE TESTE DIELECTRICO / OPIS TRYBÓW PRACY PRZEŁACZNIKA TESTU
IZOLACJI / DİELEKTRİK TEST SEÇİCİNİN ÇALIŞMA KOŞULU TANIMLARI



Position d'utilisation normale, différentiel actif.
Normal running position, residual current device active.
 Posizione di normale utilizzo, differenziale attivo.
 Normal çalışma konumu, artık akım koruması devrede.

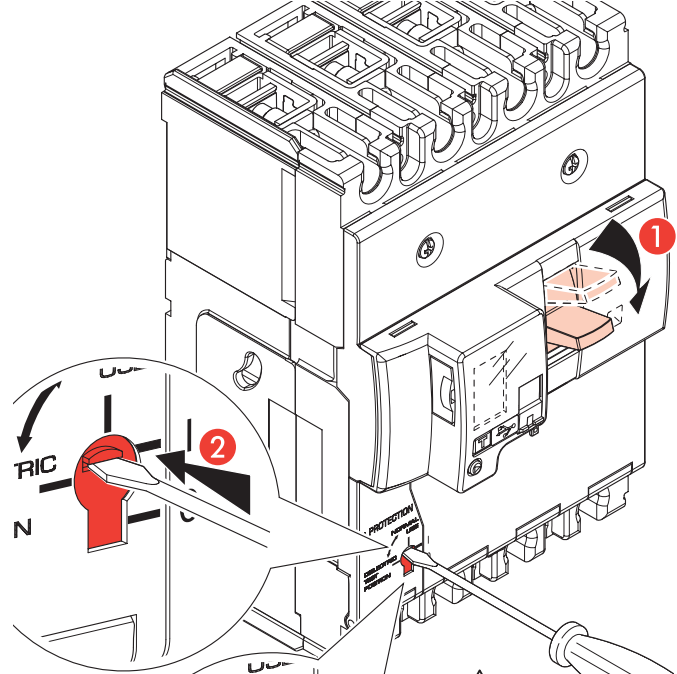



 Position de blocage en position ouverte avec circuit électronique connecté.
OPEN blocked position with electronic circuit inserted.
 Posizione di blocco in aperto con circuito elettronico collegato.
 AÇIK konumda kilitleme, elektronik devre çalışır.

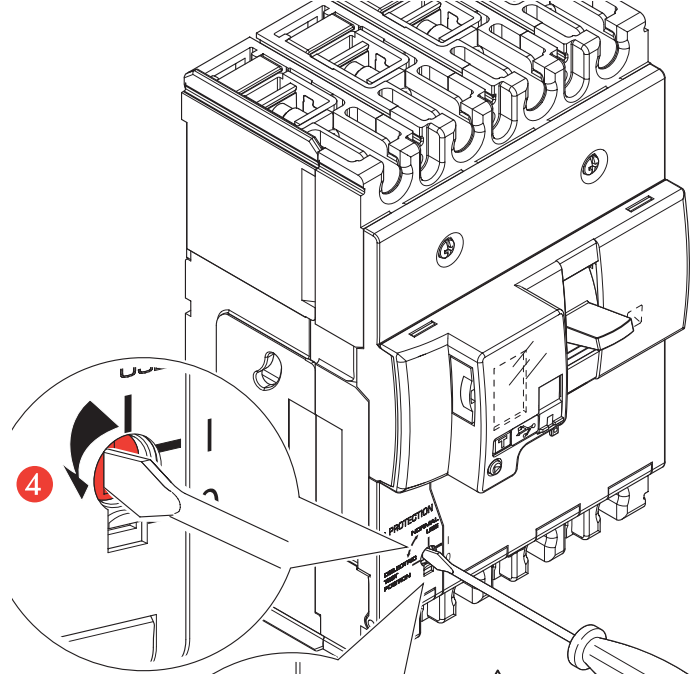



Position de test diélectrique, appareil bloqué en position ouverte, circuit électronique coupé.
Dielectric test position, OPEN device, electronic circuit isolated.
 Posizione di test dielettrico, apparecchio bloccato in aperto, circuito elettronico sezionato.
 Dielektrik test konumu, Şalter AÇIK ve elektronik devre yalıtılmış.

TEST DIELECTRIQUE / DIELECTRIC TEST / DİELEKTRISCHE TEST / TEST DIELECTRICO / TEST DIELETTORICO /
TESTE DIELECTRICO / PRÓBA IZOLACJI / DİELEKTRİK TEST

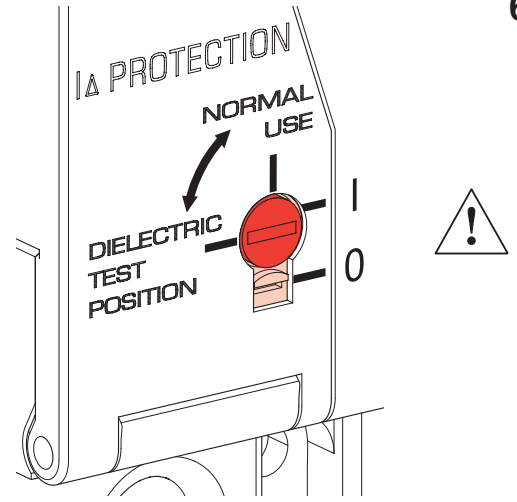
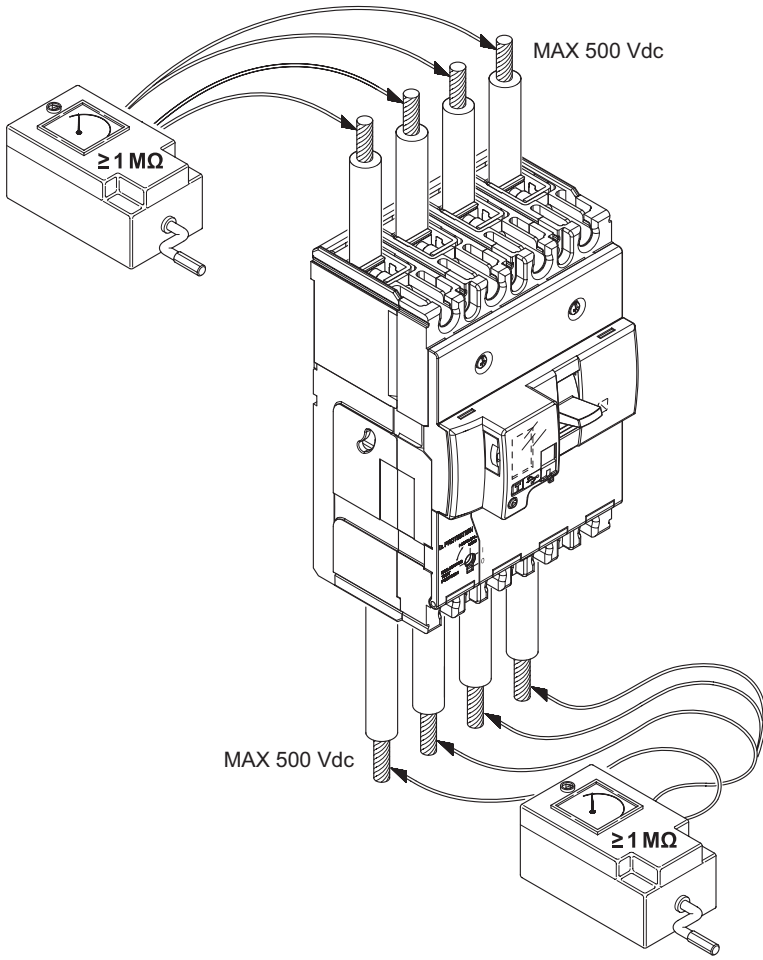



 Essai de l'isolement de l'installation.
Installation insulation test.
 Prova di isolamento impianto.
 Tesisatın yalıtım testi.



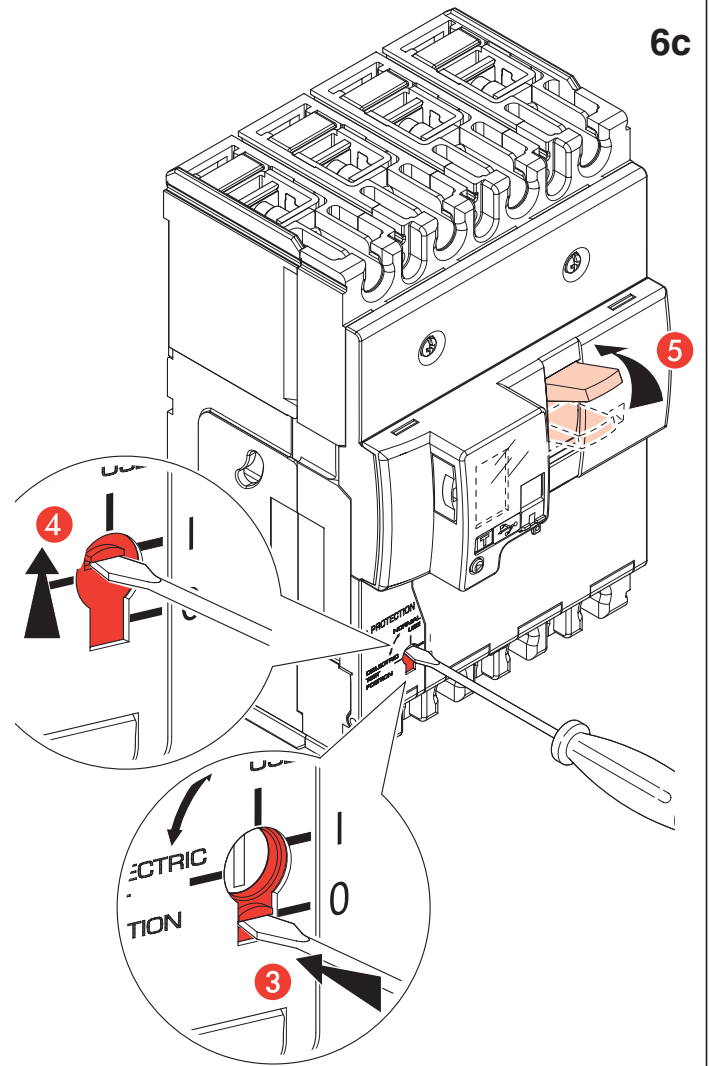
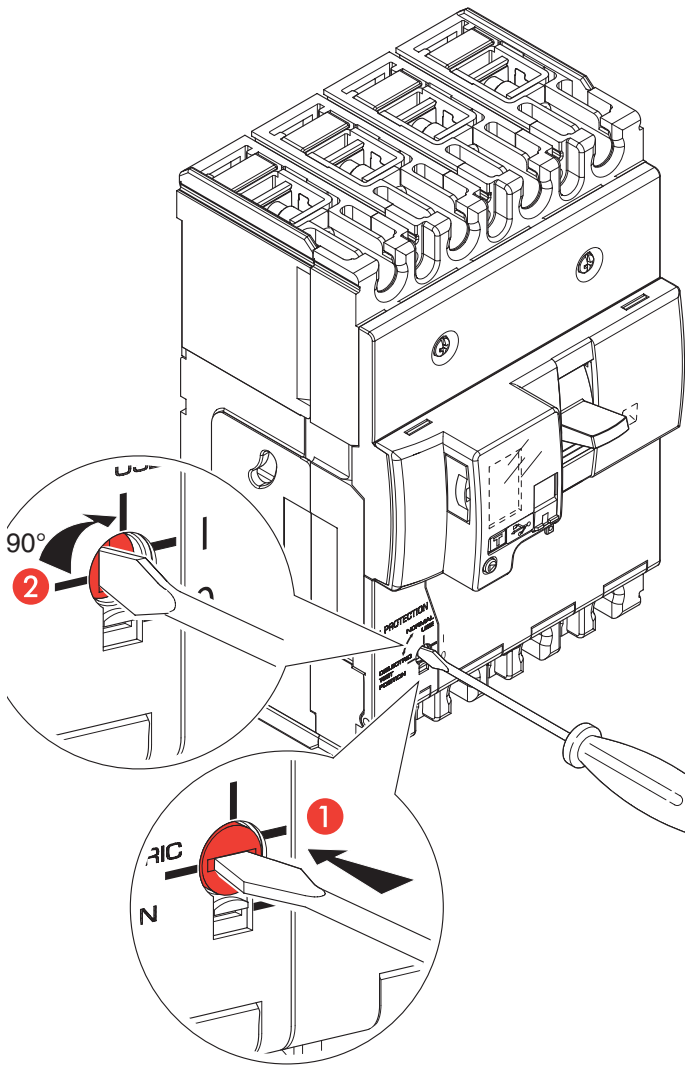

 Exclusion du circuit intérieur.
Exclusion of internal circuit.
 Esclusione circuito interno.
 Cihazın iç elektriksel devresi yalıtılır.

6b

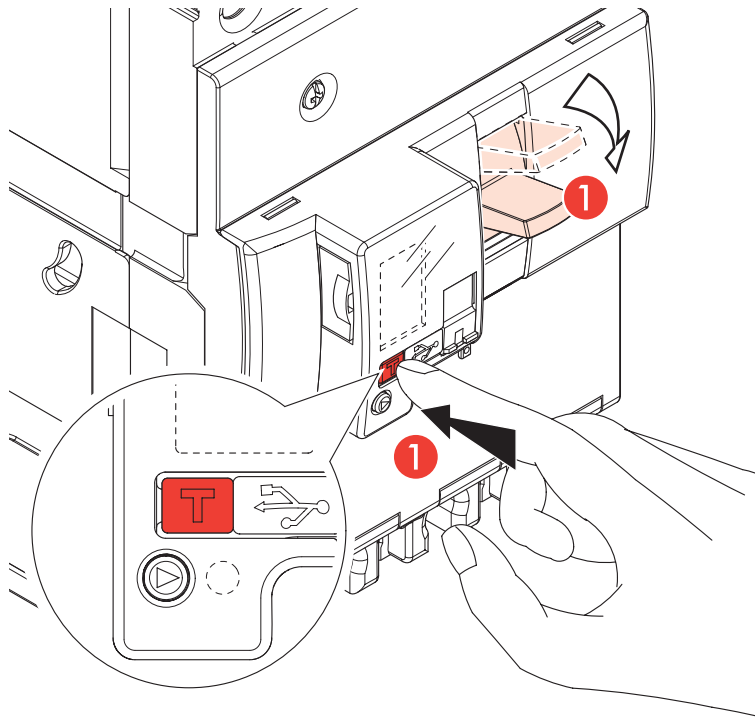


Exclusion du circuit interieur.
Exclusion of internal circuit.
 Esclusione circuito interno.
 Cihazın iç elektriksel devresi yalıtılır.

6c



ESSAI DE DECLenchement DIFFERENTIEL / TEST OF RESIDUAL CURRENT TRIPPING / TEST VAN DIFFERENTIËLSTROOM AFschAKELING / TEST DE DESCONEXIÓN DIFERENCIAL TEST SGANCIO DIFFERENZIALE / TESTE DE DISPARO DIFERENCIAL / TEST CZŁONU RÓŻNICOWOPRĄDOWEGO / ARTIK AKIMLA AÇMANIN TESTİ.



Essai de déclenchement différentiel.

Test of residual current tripping.

Prova d'intervento differenziale.

Artık akımla açmanın testi.



Répéter cet essai mensuelle pendant l'exercice.

Repeat this test monthly during service.

Ripetere questa prova mensilmente durante l'esercizio.

Çalışma süresince aylık bu testi gerçekleştirin.

Schéma interne de l'appareil magnétothermique avec différentiel intégré

Internal diagram of breaker with integrated Earth leakage

Intern schema van vermogensautomaat met ingegreerd aardlekblok

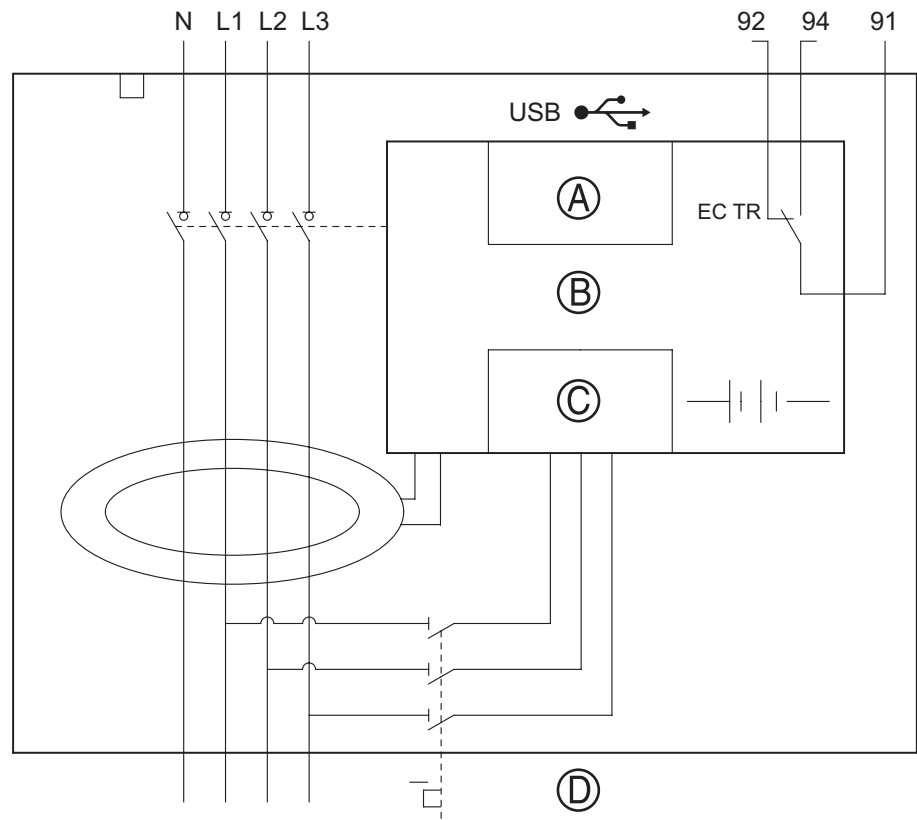
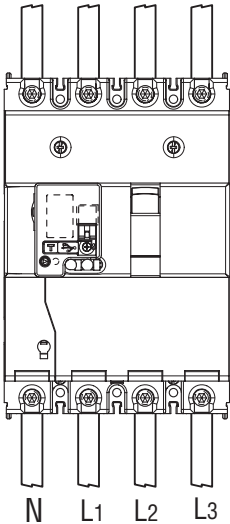
Esquema interno del aparato magnetotérmico con diferencial integrado

Schema interno apparecchio magneto termico con differenziale integrato

Esquema interno de aparelho magnetotérmico com diferencial integrado

Schemat wewnętrzny wyłącznika magneto-termicznego ze zintegrowanym członem różnicowoprądowym

Dahili kaçak akım modüllü termik manyetik şalterin iç bağlantı şeması



A Alimentation externe / External power / **Externe spanning** / Alimentación externa / Alimentazione esterna / Alimentação externa / Zasilanie zewnętrzne / Harici besleme

B Bloc différentiel / **Earth Leakage module** / Aardlek module / Bloque diferencial / Modulo differenziale / Módulo diferencial / Moduł różnicowoprądowy / Kaçak akım bloğu

C Alimentation directe / **Direct power** / Directe voeding / Alimentación directa / Alimentazione diretta / Alimentação directa / Zasilanie bezpośrednie / Doğrudan besleme

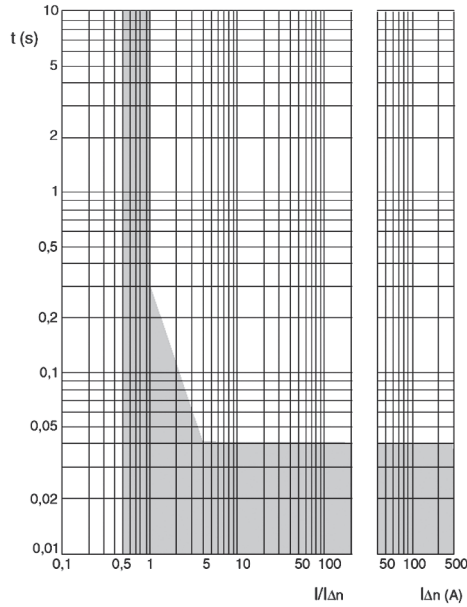
D Test diélectrique / **Dielectric Test** / Diélectrische test / Test dieléctrico / Test dielettrico / Teste dieléctrico / Próba izolacji / Dielektirk test

Lorsqu e le délai de non-déclenchement a été réglé sur «instantané», les temps de déclenchement sont conformes au graphique suivant:

Tripping curve when tiem delay is settled on "instantaneous":

I tempi di sgancio, quando il tempo di non intervento è regolato su "istantaneo" sono conformi al seguente grafico:

Zaman gecikmesi anlık (instantaneous) olarak ayarlandığında açma eğrisi:



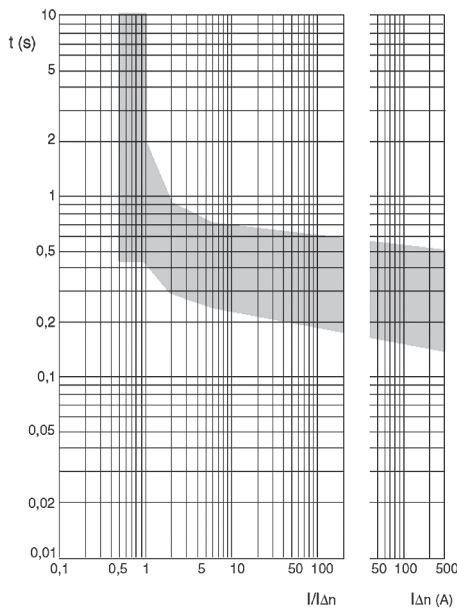
Δt=0s

Lorsque le délai de non-déclenchement a été réglé sur 0,3s, 1s et 3s, les temps de déclenchement sont conformes au graphique suivant:

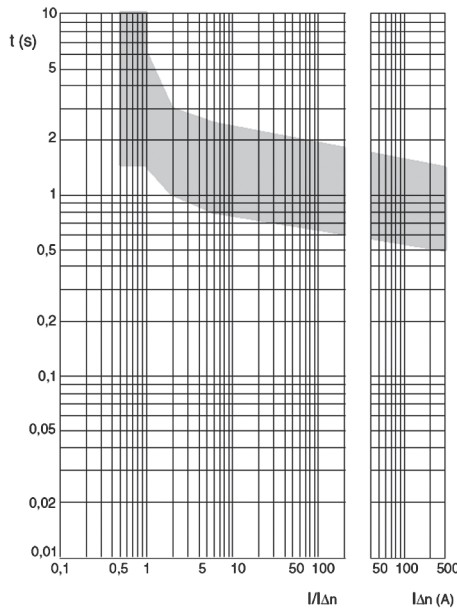
Tripping curves when time delay is settled on 0.3s, 1s, 3s:

I tempi di sgancio, quando il tempo di non intervento è regolato su 0.3s, 1s, 3s sono conformi al seguente grafico:

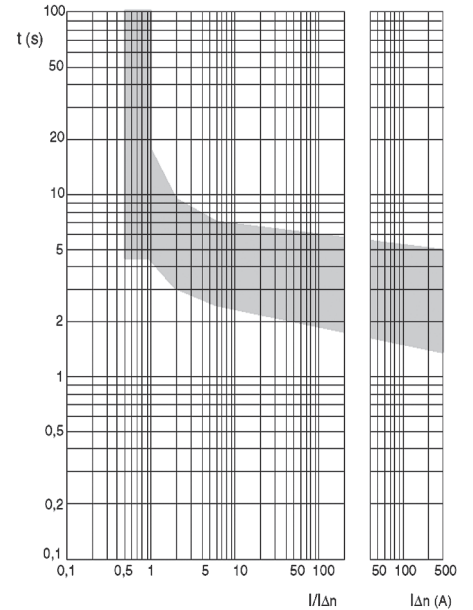
Zaman gecikmesi 0,3s, 1s, 3s olarak ayarlandığında açma eğrisi:



Δt=0,3s



Δt=1s



Δt=3s

MODBUS TABLE ORGANIZATION

Starting Address of the Group Registers (Dec)	Starting Address of the Group Registers (Hex)	System Version (Release)	System Version (Build)	Group Name (Text)	Group Code (Hex)	Group Complexity (Hex)	Group Version (Hex)
28672	7000	1	05	Differential Electric Protection	73 05	10	01 00
20480	5000	1	05	Three-phase Electric Measurement	7103	10	01 00
32768	8000	1	05	Single-channel Thermal Measurement	81 00	10	01 00

MODBUS PROTOCOL DETAILS

Function Code (Dec)	Exception Codes (Dec)	Data Encoding
2 (Read Discrete Inputs)	1, 2, 3	"Big Endian" (most significant byte first)
4 (Read Input Registers)	1, 2, 3	"Big Endian" (most significant byte first)

MODBUS OVER SERIAL DETAILS

Physical Layer	Trasmission Modes	Device Addressing	Baud Rates (bit/s)	Data Bits	Data bits trasmission sequence	Parity	Stop Bits
standard EIA/TIA 485 (RS-485) two-wire configuration	RTU	1-247	programmable (1200, 2400, 4800, 9600, 19200, 38400)	8	Least significant bit first	NONE	1

MASTER/SLAVE COMMUNICATION TIMING

Timer Description	Timer Value (msec)
Inter-character time-out	< 1,5 character times
Response delay (from master request)	-
Delay Time (between two master trasmissions)	-

REFER ALSO TO: www.modbus.org - MODBUS over serial line specification and implementation guide V1.02
 - MODBUS APPLICATION PROTOCOL SPECIFICATION V1.1b

NOTE: File and printed copies of this document are not subject to document change control.



Register Number	Register Address (Dec)	Register Address (Hex)	Dimension [bit]	Description	Note	Read Function Codes (Dec)	Data Storing
28673	28672	7000	3	Differential Electric Protection		2	
28673	28672	7000	1	Differential pre-alarm (>threshold I Δ 1)	The information reported here "self-resets" when the condition that generated it ends.	2	
28674	28673	7001	1	Differential alarm (>threshold I Δ 2)	The information reported here "self-resets" when the condition that generated it ends.	2	
28675	28674	7002	1	Over-temperature alarm (>threshold T)	The information reported here "self-resets" when the condition that generated it ends.	2	

Register Number	Register Address (Dec)	Register Address (Hex)	Dimension [bit]	Description	Note	Read Function Codes (Dec)	Write Function Codes (Dec)	Data Storing
				(no COILS available)				

Register Number	Register Address (Dec)	Register Address (Hex)	Dimension [word]	Bit Position	Description	Type	Scale	Unit	Range	Note	Read Function Code (Dec)	Data Storing
20481	20480	5000	6		Three-phase Electric Measurement							
20481	20480	5000	5		RESERVED (returns 84h error)							
20486	20485	5005	1		Differential Current Value	unsigned integer	1	mA		Expressed on "numeric coding"; without mark (fixed more significant bit = 0)	4	
28673	28672	7000	7		Differential Electric Protection							
28673	28672	7000	2		RESERVED (returns 84h error)							
28675	28674	7002	1		Last Release data Buffer: "Tripped" type reading only bit reply					If the value is not available, the value 8000h is returned	4	
				0	Differential P. Relay Tripped Reply						4	
				1	Over-temperature P. Relay Tripped Reply						4	
				15÷2	RESERVED (returns "0")						4	
28676	28675	7003	2		Last Release data Buffer: interrupted current or temperature ("numeric coding")		1	mA, °C		If the value is not available, the value 80000000h is returned	4	
28678	28677	7005	1		G1 "main setting"- differential: levels		1	mA			4	
28679	28678	7006	1		G1 - differential: times		1	msec			4	
32769	32768	8000	1		Single-channel Thermal Measurement							
32769	32768	8000	1		Sensor 1 Temperature Value		1	°C			4	

Register Number	Register Address (Dec)	Register Address (Hex)	Dimension [word]	Bit Position	Description	Type	Scale	Unit	Range	Note	Read Function Codes (Dec)	Write Function Codes (Dec)	Data Storing
					(no HOLDING REGISTERS available)								