

DPX³ 250

Thermal magnetic and trip-free switches

DPX³-I 250

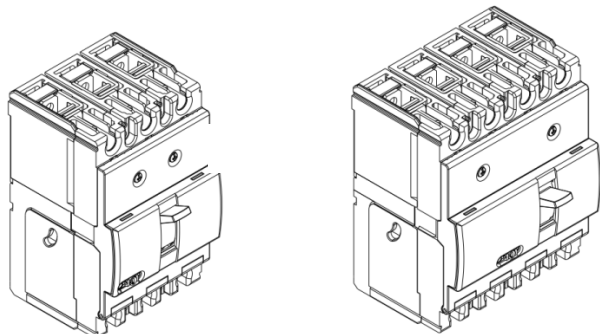
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1. USE

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

2. RANGE

Circuit breakers

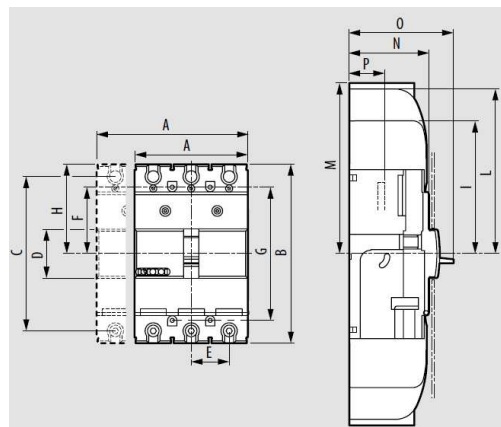
I _n (A)	25 kA		36 kA	
	3P	4P	3P	4P
100	4 202 05	4 202 15	4 202 35	4 202 45
160	4 202 07	4 202 17	4 202 37	4 202 47
200	4 202 08	4 202 18	4 202 38	4 202 48
250	4 202 09	4 202 19	4 202 39	4 202 49
I _n (A)	50 kA		70 kA	
	3P	4P	3P	4P
100	4 202 65	4 202 75	4 206 05	4 206 15
160	4 202 67	4 202 77	4 206 07	4 206 17
200	4 202 68	4 202 78	4 206 08	4 206 18
250	4 202 69	4 202 79	4 206 09	4 206 19

Switches

I _n (A)	3P	4P
250	4 202 99	4 203 00

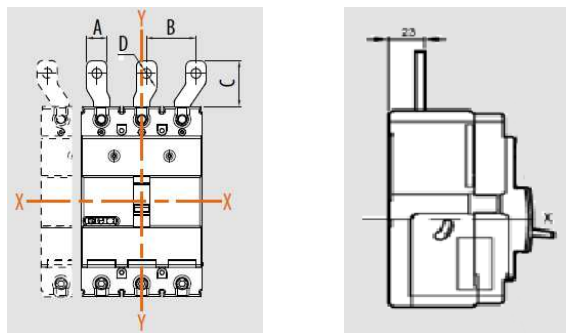
3. DIMENSIONS

Fixed version



	A	B	C	D	E	F	G	H	I	L	N	O	P
3P	105	165	142,5	45	35	61,5	123	82,5	112,5	150	74	100	18
4P	140	165	142,5	45	35	61,5	123	82,5	112,5	150	74	100	18

Fixed version, front terminals



A	B	C	D
33	48,5	54,75	13

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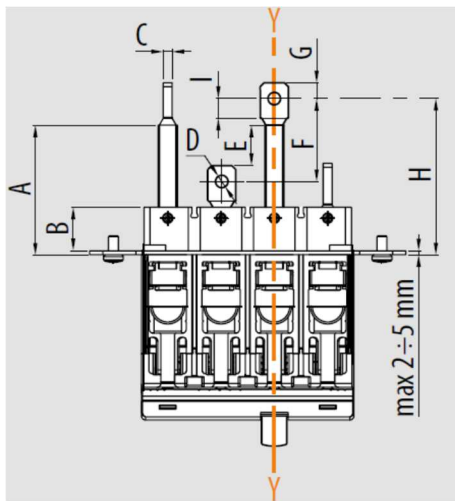
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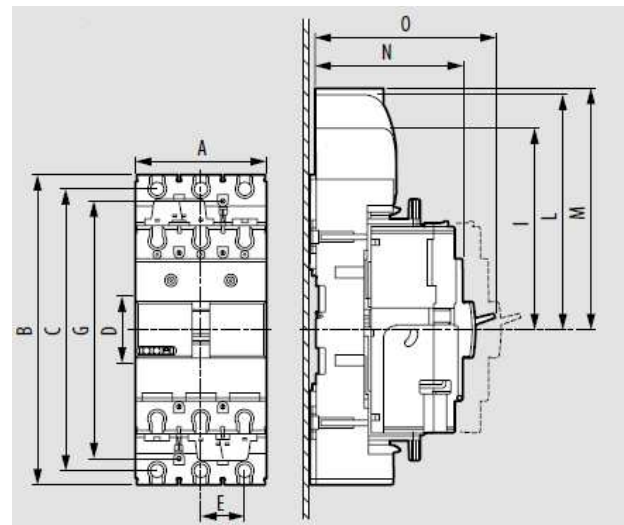
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Fixed version, rear terminals



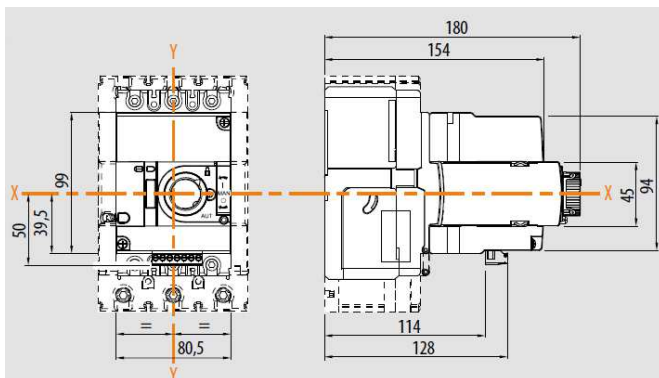
A	B	C	D	E	F	G	H	I
66,5	22	6	8,4	15,5	44	15	79	10

Plug-in version

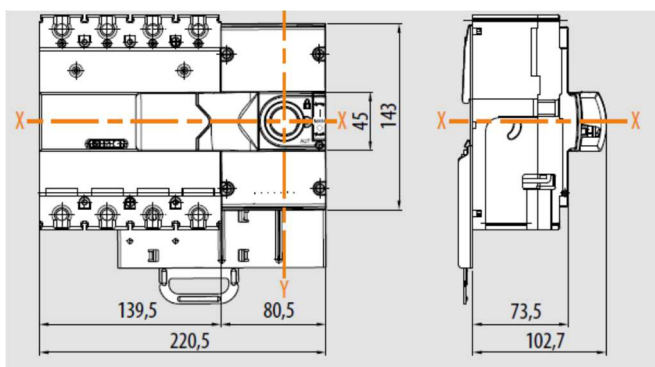


	A	B	C	D	E	F	G	H	I	L	M	N	O
3P	105	248	225,5	45	35	103	206	150	180	217,5	-	122	148
4P	140	278	255,5	45	35	103	236	150	180	217,5	-	122	148

Fixed version, front motor operator



Fixed version, side motor operator



4. OVERVIEW

4.1 Supplied

Supplied with

- fixing screws
- connection plates for bars and cable lugs
- insulating shields (phase barrier)

4.2 Mounting possibilities

On plate:

- Vertical
- Horizontal
- Supply inverter type

On DIN rail:

- Vertical
- Supply inverter type

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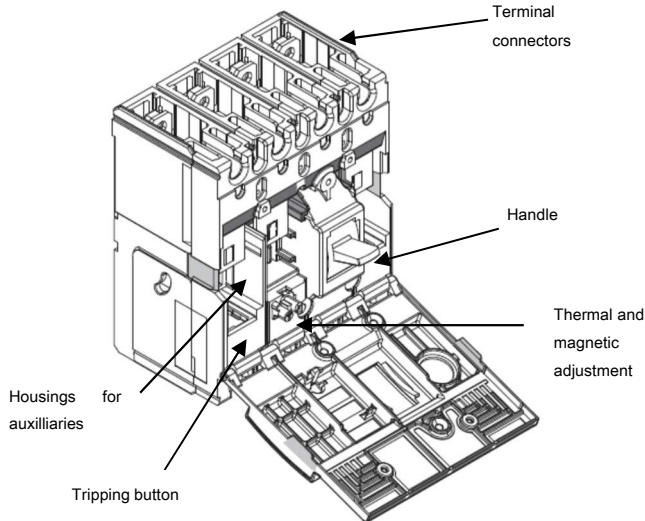
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5. ELECTRICAL AND MECHANICAL CHARACTERISTICS

5.1 Main parts constituting the circuit breaker



Circuit Breaker	DPX ³ 250 (B/F/N/H) (25kA, 36kA, 50kA, 70kA)
Rated current (A)	100, 160, 200, 250
Poles	3 - 4
Rated insulation voltage U_i (V)	800
Rated operating voltage (50/60Hz) U_e (V)	690
Rated impulse withstand current U_{imp} (kV)	8
Rated frequency (Hz)	50 - 60
Reference ambient temperature (°C)	40 - 50
Operating temperature (°C)	-25 ÷ 70
Mechanical endurance (cycles)	20000
Mechanical endurance with motor control (cycles)	20000
Electrical endurance at I_n (cycles)	8000
Electrical endurance at 0.5 I_n (cycles)	10000
Utilization category	A
Suitable for isolation	Yes
Type of protection	Thermal-magnetic
Magnetic adjustment	5 - 10 x I_n
Thermal adjustment	0.8 - 1 x I_n
Neutral protection for 4P version (% I_{ln})	100
Dimensions (W x H x D) (mm) 3P	105 x 165 x 100
Dimensions (W x H x D) (mm) 4P	140 x 165 x 100
Weight (kg)	1.9(3P) - 2.4(4P)

Switch	DPX ³ -I
Uninterrupted nominal current I_n (A)	250
Short-time resistive current I_{cw} (kA) for 1s	3
Rated short-circuit making capacity I_{cm} (kA)	4.5
Isolated voltage U_i (V AC)	800
Maximum rated operating voltage U_e (V AC/DC)	690
Rated impulse withstand voltage U_{imp} (kV)	8
Utilisation category	AC22-23A
Rated frequency (Hz)	50-60
Operating temperature (°C)	-25 ÷ 70
Mechanical endurance (cycles)	20000
Mechanical endurance with motor control (cycles)	20000
Electrical endurance (cycles) at I_n	8000
Electrical endurance (cycles) at 0.5 I_n	10000
Dimensions (W x H x D) (mm) 3P	105 x 165 x 100
Dimensions (W x H x D) (mm) 4P	140 x 165 x 100
Weight (kg)	1.9(3P) - 2.4(4P)

5.2 Breaking capacity (kA)

	U_e/I_{cu}	Breaking capacity (kA) & I_{cs}			
		3P-4P B	3P-4P F	3P-4P N	3P-4P H
IEC 60947-2	240 V AC	40	60	80	100
	415 V AC	25	36	50	70
	500 V AC	10	25	30	40
	690V AC	8	16	18	20
	250 V DC	10	10	10	10
	I_{cs} (% I_{cu})	100	100	100	100
Rated making capacity under short circuit I_{cm}					
	I_{cm} (kA) at 415V	52.5	75.6	105	154
NEMA AB-1	240 V AC	40	60	80	100
	500 V AC	10	25	30	40
	690V AC	8	16	18	20

5.3 Rated current (I_n) at 40°C / 50°C

I_n (A)	Assigned current trip			
	thermal		magnetic	
	L1-L2-L3	N	L1-L2-L3	N
100	100	100	1000	1000
160	160	160	1600	1600
200	200	200	2000	2000
250	250	250	2500	2500

5.4 Power losses per pole under I_n

Circuit breaker

Lugs	Power losses per pole (W)			
	I_n (A)			
	100	160	200	250
	7.0	12.5	15.1	19.1

Values in the table are referred to single phase and they are measured with cold breaker (with hot breaker, increase of 10% must be considered)

5.5 Load operations

Loads operation	
Rated current (A)	$I_n = 250A$
Opening (N)	45
Closing (N)	78
Reset (N)	75

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5.6 Functioning in particular conditions

5.6.1 Temperature

I _n (A)	Temperature T _a (°C)											
	-25	-20	-10	-5	0	10	20	30	40	50	60	70
100	135	132	128	126	123	120	112	102	100	100	90	84
160	216	211	205	201	197	192	179	163	160	160	143	134
200	270	264	256	251	246	240	224	203	200	200	179	168
250	338	330	320	314	308	300	280	254	250	250	224	210

5.6.2 Altitude

Altitude (m)	2000	3000	4000	5000
U _e (V)	690	590	520	460
I _n (A) (T _a = 40°C/50°C)	I _n	0.98 x I _n	0.93 x I _n	0.9 x I _n

5.6.3 Use in DC

See table B.

6. CONFORMITY

DPX³ range of product concerning circuit-breakers and switch-disconnectors are in full compliance with the EN/IEC standard 60947-2 and 60947-3 respectively.

The certificate are issued by LOVAG and/or by IECEE CB-scheme certification scheme.

All the product range are CE, CCC, EAC, ANCE marked.

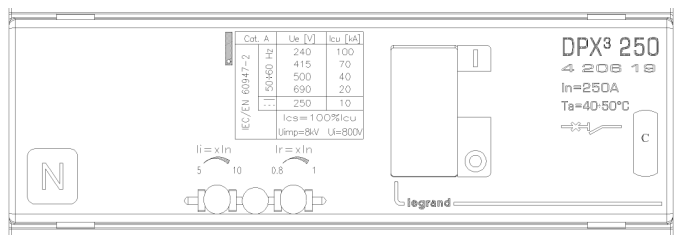
DMX³ are full in compliance with the Shipping Register of Lloyds, RINA, Bureau Veritas, Germanische Lloyds, Norske Veritas and ABS.

" Tropical climate" :

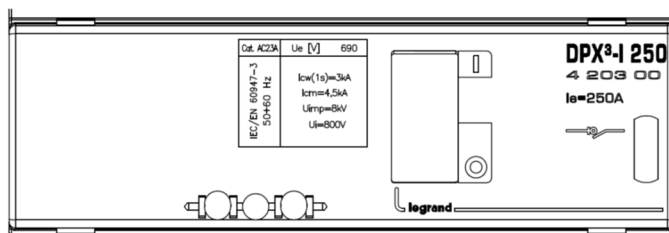
- execution II (all climates) according to IEC 60947-1 Annex Q, Cat. F.

6.1 Marking

Circuit breaker :



Switch:



7. EQUIPMENTS AND ACCESSORIES

7.1 Releases

- Shunt releases

12 V ac/dc

24 V ac/dc

48 V ac/dc

110-130 V ac

110-130 V dc

200-277 V ac

200-277 V dc

380-480 V ac

ref. 4 210 12

ref. 4 210 13

ref. 4 210 14

ref. 4 210 15

ref. 4 210 85

ref. 4 210 16

ref. 4 210 86

ref. 4 210 17

Maximum power = 400 VA / W

- Undervoltage releases

12 V ac/dc

24 V ac/dc

48 V ac/dc

110-130 V ac/dc

200-240 V ac

277 V ac

380-415 V ac

440-480 V ac

ref. 4 210 18

ref. 4 210 19

ref. 4 210 20

ref. 4 210 21

ref. 4 210 22

ref. 4 210 23

ref. 4 210 24

ref. 4 210 25

Maximum power = 4 VA

Circuit breaker opening time < 50 ms

- Time-lag undervoltage releases (800ms)

Time-lag modules with voltage:

230 V ac

400 V ac

ref. 0 261 90

ref. 0 261 91

Release:

To be equipped with a time-lag module

ref. 4 210 98

7.2 Auxiliary contact

set of connectors for aux contacts

aux contacts (1NC and 1 NO) for all rotary handles

signalling contact plugged-in version

Changeover switch 3A – 250 VAC

ref. 4 210 44

ref. 4 210 10

ref. 4 210 48

ref. 4 210 11

To show the state of the contacts or opening of the DPX³ on a fault:

Auxiliary contact (standard)

Fault signal

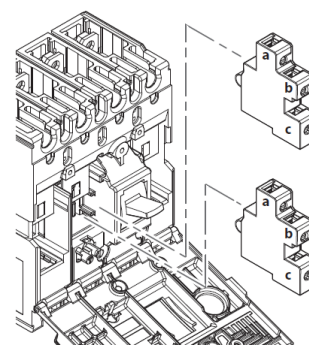
OC

CTR

Auxiliary contact		
Nominal voltage (V _n)	V (AC or DC)	24 to 250
Intensity (A)	24 V DC	5
	48 V DC	1.7
	110 V DC	0.5
	230 V DC	0.25
	110 V AC	4
	230/250 V AC	3

Configurations:

DPX³ 250 → 1 auxiliary contact + 1 fault signal



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7.3 Rotary handles

Direct

- DPX³ direct rotary handle ref. 4 210 00
- DPX³ emergency direct rotary handle ref. 4 210 02

Vari-depth handle IP55

- DPX³ vari depth rotary handle ref. 4 210 04
- DPX³ emergency vari depth rotary handle ref. 4 210 05

Locking accessories

- Ronis type flat key random for direct rotary handle ref. 4 210 06
- Profalux type star key random for direct rotary handle ref. 4 210 07
- Ronis type flat key random for vari-depth handle ref. 4 210 08
- Profalux type star key random for vari-depth handle ref. 4 210 09
- Ronis type flat key (cod. EL43525) for direct rotary handle ref. 4 228 00
- Ronis type flat key (cod. EL43363) for direct rotary handle ref. 4 228 01
- Ronis type flat key (cod. EL43525) for vari-depth handle ref. 4 228 02
- Ronis type flat key (cod. EL43363) for vari-depth handle ref. 4 228 03

7.4 Mechanical accessories

Insulated shields (phase barriers)

- Set of 36 ref. 4 210 70

Sealable terminal shields

- sealable terminal shield for rear terminals 3P ref. 4 210 52
- sealable terminal shield for rear terminals 4P ref. 4 210 53
- sealable terminal shield for front spreaders 3P ref. 4 210 56
- sealable terminal shield for front spreaders 4P ref. 4 210 57

Padlocks

- DPX³ padlock accessory for handle ("open" position) ref. 4 210 49

Interlock

- DPX³ interlock for fixed version ref. 4 210 58
- DPX³ interlock for plug-in / draw-out version ref. 4 210 59

7.5 Connection accessories

Cage terminals

- terminals for Cu/Al cables kit (3P) - flex 1x120mm², rigid 1x150mm², lugs 28.5 x 8 x 8.5mm ref. 4 210 30
- terminals for Cu/Al cables kit (4P) - flex 1x120mm², rigid 1x150mm², lugs 28.5 x 8 x 8.5mm ref. 4 210 31
- screw terminals for bar connections (3P) ref. 4 210 79
- screw terminals for bar connections (4P) ref. 4 210 80

Front spreaders

- DPX³ front spreaders for 3P DPX³ 250 (set of 3) ref. 4 210 34
- DPX³ front spreaders for 4P DPX³ 250 (set of 4) ref. 4 210 35

Rear terminals

- DPX³ flat rear terminals for 3P DPX³ 250 (set of 3) ref. 4 210 38
- DPX³ flat rear terminals for 4P DPX³ 250 (set of 4) ref. 4 210 39

7.6 Plug-in version

Bases

- front/rear terminals plug-in base 3P DPX³ 250 ref. 4 210 42
- front/rear terminals plug-in base 4P (with or without earth leakage module) ref. 4 210 43

Locking accessories

- Ronis type flat key (cod. ABA90GEL6149) for plug-in base ref. 4 210 45
- Profalux type star key (cod. HBA90GPS6149) for plug-in base ref. 4 210 46
- padlock accessory for plug-in base ref. 4 210 47

7.7 Motor operator

- side motor operator 24-230 Vac/dc ref. 4 210 60
- front motor operator 24-230 Vac/dc ref. 4 210 61

Locking accessories for front motor operator

- Ronis type flat key (cod. ABA90GEL6149) for front motor operator ref. 4 210 62
- Profalux type flat key (cod. HBA90GPS6149) for front motor operator ref. 4 210 63
- padlock selector for front motor operator ref. 4 210 64

Locking accessories for side motor operator

- Ronis type flat key (cod. ABA90GEL6149) for side motor operator ref. 4 210 65
- Profalux type flat key (cod. HBA90GPS6149) for side motor operator ref. 4 210 66
- padlock selector for side motor operator ref. 4 210 67

7.8 Mounting on rail fixing plate

- DPX³ 250 3P/4P without earth leakage module ref. 4 210 72
- DPX³ 160 3P/4P with side mounting motor operator ref. 4 210 69

7.9 Spare parts

- Fixing screws (set of 4) for plate installation ref. 4 210 81
- Battery kit (batteries + extractor) for 1 breaker ref. 4 210 82
- Fixing screws (set of 12) for DIN installation ref. 4 210 84
- Mini USB cap (for 20 device) - light grey colour ref. 4 210 89
- Plug-in base kit (for 1 breaker 3P or 4P) ref. 4 210 91
- Compact terminal shields 4P (set of 2) ref. 4 210 97
- Generic seals kit (for 4x seal kit) ref. 4 210 95

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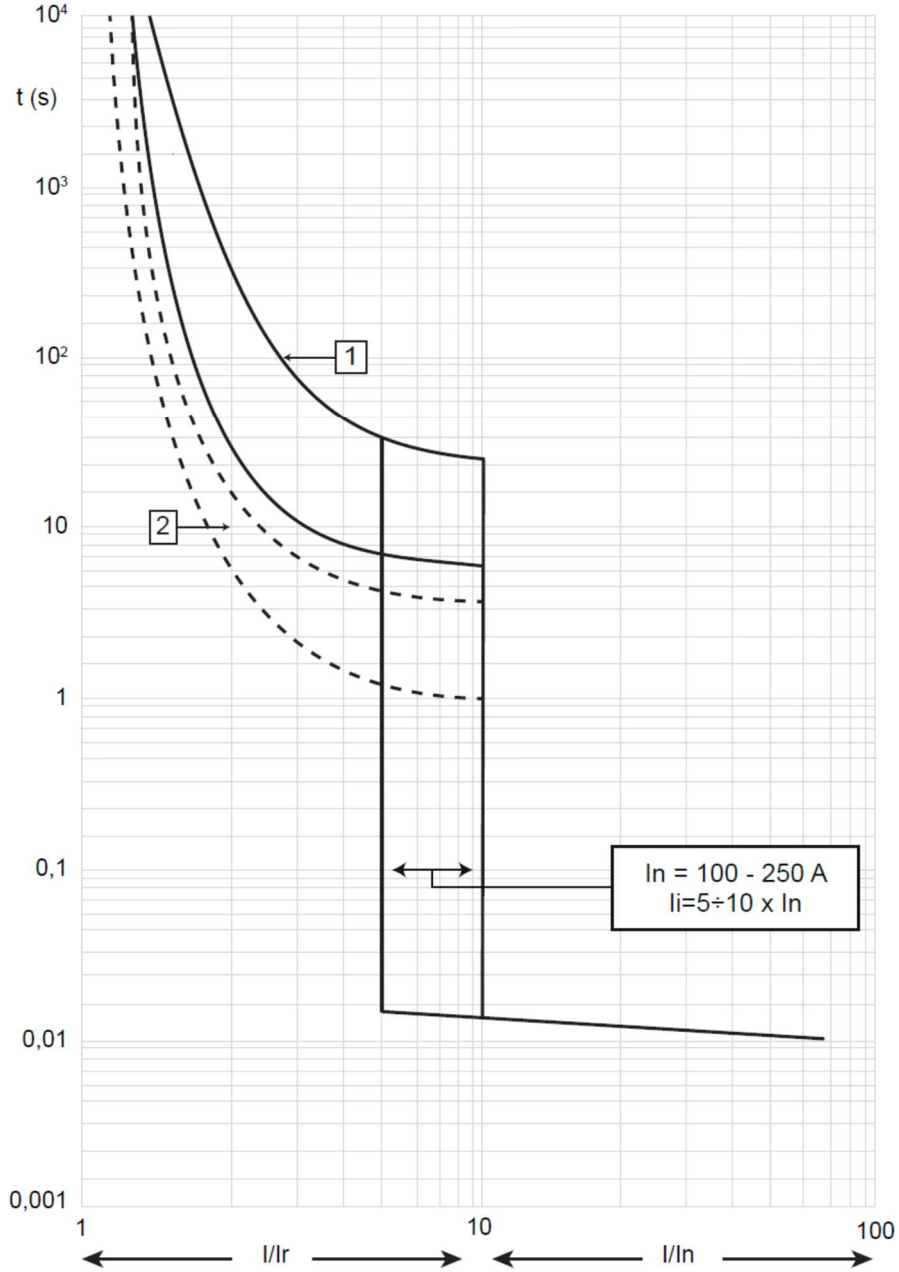
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8. CURVES

8.1 Thermal magnetic tripping curve



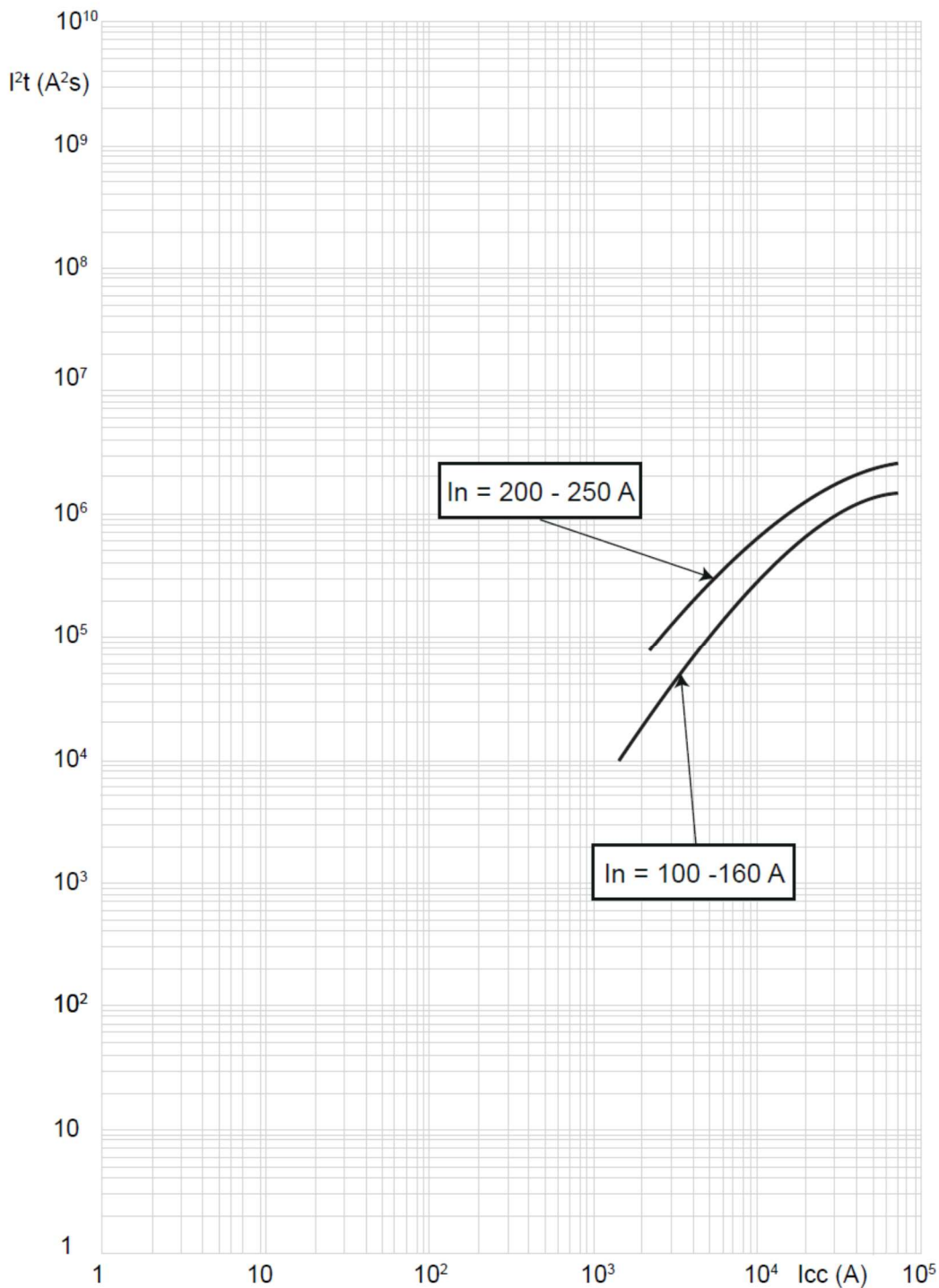
$I_{cu} = 25-36-50-70 \text{ kA}$ $I_{max} = 250 \text{ A}$ 3-4 P $U_o = 415 \text{ Vac}$

Value	Description
t	time
I	current
I_n	rated current
I_r	long time setting current
curve 1	characteristic with cold start
curve 2	characteristic with hot start

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8.2 Pass-through specific energy characteristic curve



$I_{cu} = 25-36-50-70 \text{ kA}$ $I_{max} = 250\text{A}$ 3-4 P $U_e = 415\text{Vac}$

Value	Description
I_{cc}	short circuit current
$I^2t \text{ (A}^2\text{s)}$	pass-through specific energy

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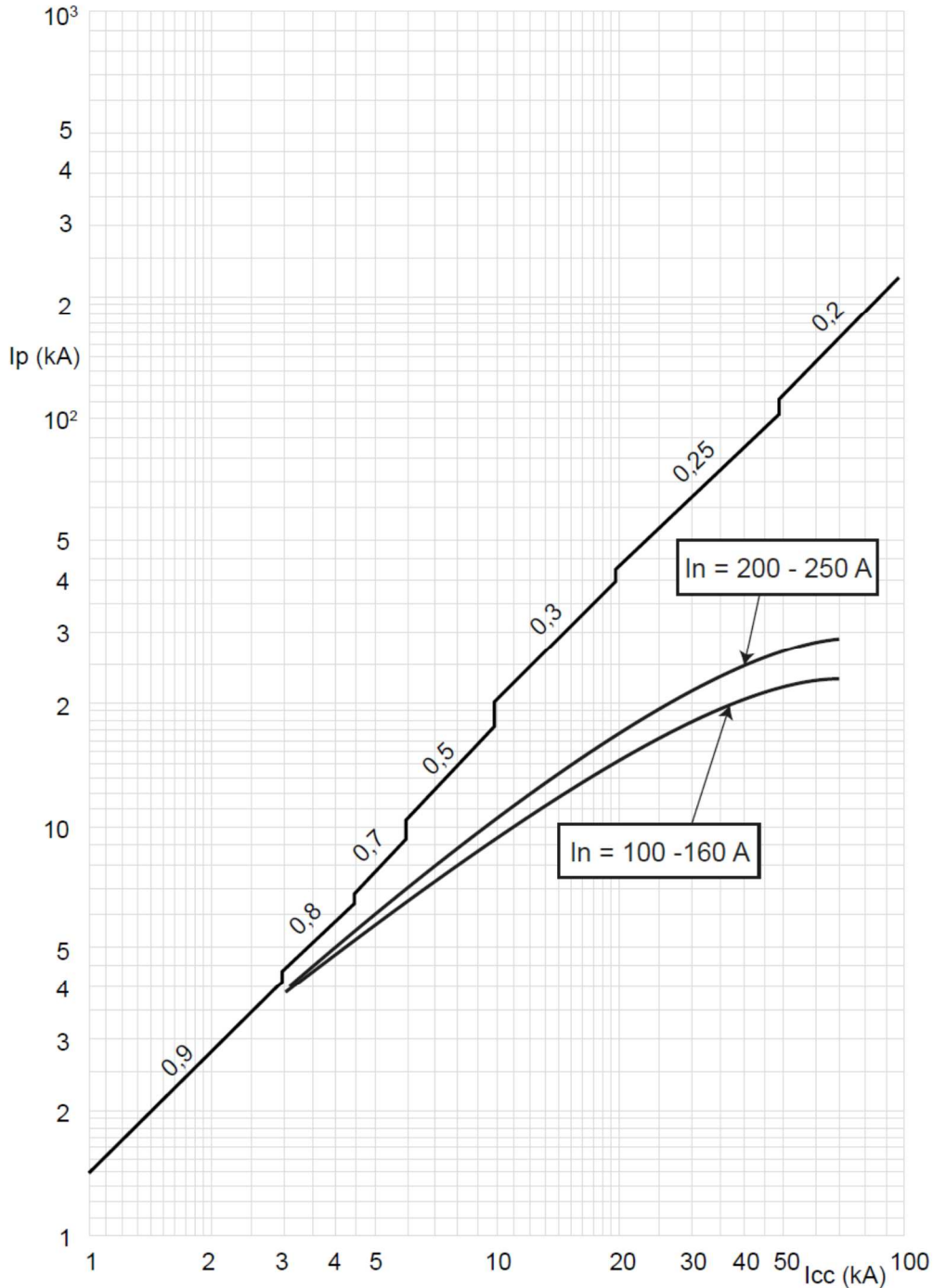
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8.3 Cut-off peak current characteristic curve (kA)



$I_{cu} = 25-36-50-70$ kA $I_{max} = 250$ A 3-4 P $U_e = 415$ Vac

Value	Description
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

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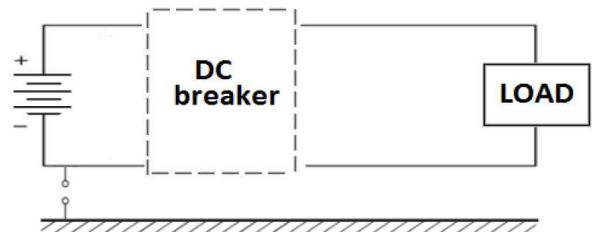
A) Derating Temperature and configurations

Fixed version		Ambient temperature									
		30 °C		40 °C		50 °C		60 °C		70 °C	
		I_{max} (A)	I_r / I_n	I_{max} (A)	I_r / I_n	I_{max} (A)	I_r / I_n	I_{max} (A)	I_r / I_n	I_{max} (A)	I_r / I_n
DPX ³ 250 fixed - vertical installation	Cage terminals, flexible cable	263	1,05	250	1	250	1	225	0,9	213	0,85
	Cage terminals, flexible cable + sealable terminal shields	0	0	0	0	0	0	0	0	0	0
	Cage terminals, rigid cable	0	0	0	0	0	0	0	0	0	0
	Lugs, flexible cable	250	1	250	1	250	1	238	0,95	225	0,9
	Lugs, rigid cable	0	0	0	0	0	0	0	0	0	0
	Spreaders, flexible cables	250	1	250	1	250	1	238	0,95	225	0,9
	Spreaders, rigid cable	0	0	0	0	0	0	0	0	0	0
	Rear flat staggered terminals, flexible cable/elds	0	0	0	0	0	0	0	0	0	0
	Rear flat staggered terminals, rigid cable	0	0	0	0	0	0	0	0	0	0
	Lugs, flexible cable + sealable terminal shields	250	1	250	1	250	1	238	0,95	225	0,9
Rear flat staggered term., flex. cable + sealable term. shields	250	1	250	1	250	1	238	0,95	225	0,9	
DPX ³ 250 fixed - horizontal installation	Cage terminals, flexible cable	0	0	0	0	0	0	0	0	0	0
	Cage terminals, flexible cable + sealable terminal shields	0	0	0	0	0	0	0	0	0	0
	Cage terminals, rigid cable	0	0	0	0	0	0	0	0	0	0
	Lugs, flexible cable	250	1	250	1	250	1	238	0,95	225	0,9
	Lugs, rigid cable	0	0	0	0	0	0	0	0	0	0
	Spreaders, flexible cables	250	1	250	1	250	1	238	0,95	225	0,9
	Spreaders, rigid cable	0	0	0	0	0	0	0	0	0	0
	Rear flat staggered terminals, flexible cable/elds	0	0	0	0	0	0	0	0	0	0
	Rear flat staggered terminals, rigid cable	0	0	0	0	0	0	0	0	0	0
	Lugs, flexible cable + sealable terminal shields	250	1	250	1	250	1	238	0,95	225	0,9
Rear flat staggered term., flex. cable + sealable term. shields	250	1	250	1	250	1	238	0,95	225	0,9	

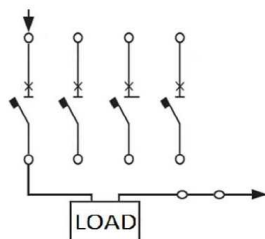
B) Breaking capacity in DC (kA)

I_{cu} (kA)	I_n (A)	1 pole *				2 poles in series *			3 poles in series *		
		60 V	60 V	110 V	250 V	110 V	250 V	500 V	110 V	250 V	500 V
25	100 ÷ 250	25	25	25	10	25	10	10			
36	100 ÷ 250	35	36	35	10	36	10	10			
50	100 ÷ 250	35	50	35	10	50	10	10			
70	100 ÷ 250	35	50	35	10	50	10	10			

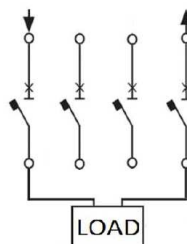
These values are applied to DC networks insulated from the ground (*this diagram applies to both 3P and 4P circuit breakers*):



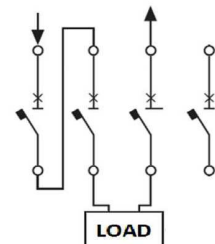
* Connection modality of the DC breaker:



1 pole



2 poles in series



3 poles in series