

DPX³ 250 + earth leakage Thermal magnetic and trip-free switches DPX³-I 250 + earth leakage

Reference(s) : 420 225/ 227/ 228/ 229

420 255/ 257/ 258/ 259

420 285/ 287/ 288/ 289

420 625/ 627/ 628/ 629

420 298



CONTENTS	PAGES
1. USE	1
2. RANGE	1
3. DIMENSIONS	1
4. OVERVIEW	2
5. ELECTRICAL AND MECHANICAL CHARACTERISTICS	3
6. CONFORMITY	4
7. NAVIGATION	4
8. EQUIPMENTS AND ACCESSORIES	4
9. CURVES	6

1. USE

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

2. RANGE

Circuit breakers

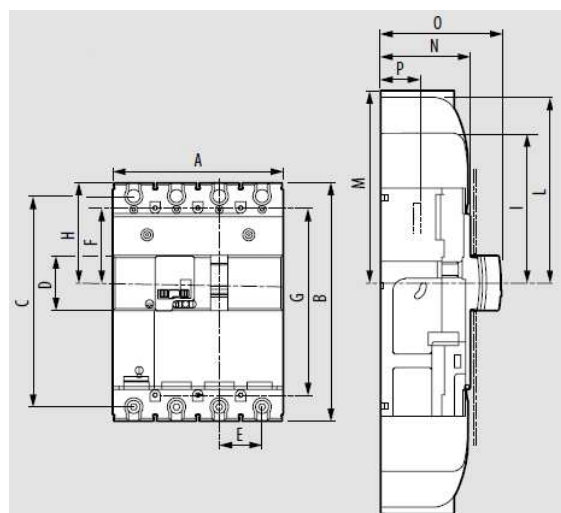
	25 kA	36 kA	50 kA	70 kA
I _n (A)	4P	4P	4P	4P
100	4 202 25	4 202 55	4 202 85	4 206 25
160	4 202 27	4 202 57	4 202 87	4 206 27
200	4 202 28	4 202 58	4 202 88	4 206 28
250	4 202 29	4 202 59	4 202 89	4 206 29

Switch

I _n (A)	4P
250	4 202 98

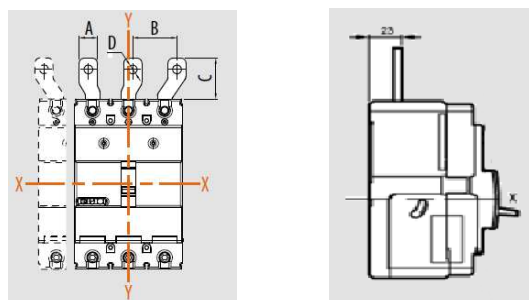
3. DIMENSIONS

Fixed version



	A	B	C	D	E	F	G	H	I	L	N	O	P
DIFF.	140	195	172,5	45	35	61,5	153	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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DPX³-I 250 + earth leakage

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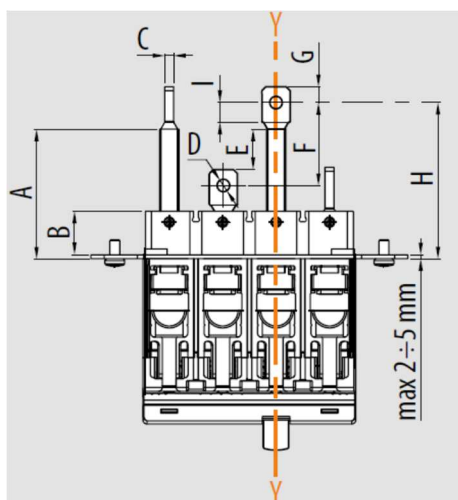
420 255/ 257/ 258/ 259

420 285/ 287/ 288/ 289

420 625/ 627/ 628/ 629

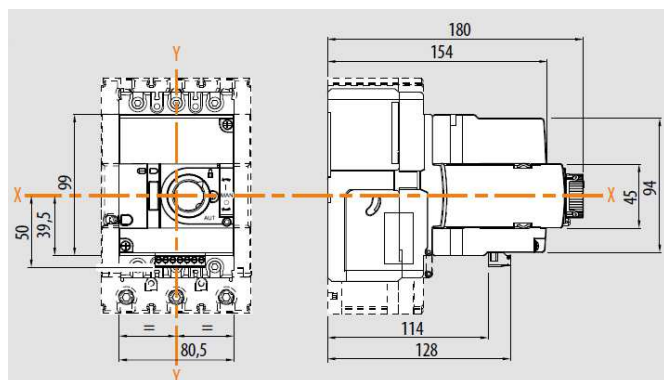
420 298

Fixed version, rear terminals

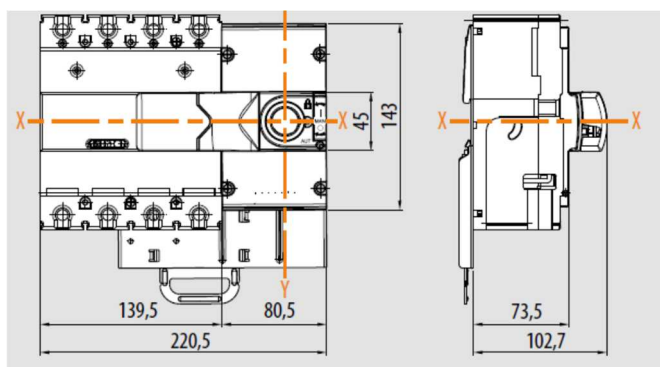


A	B	C	D	E	F	G	H	I
66,5	22	6	8,4	15,5	44	15	79	10

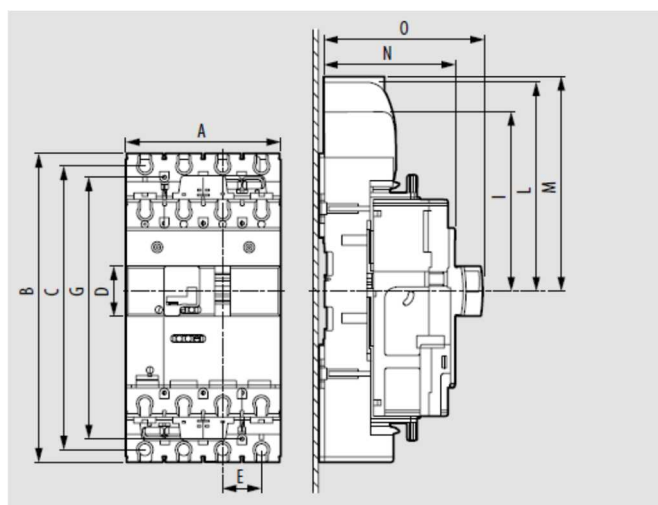
Fixed version, front motor operator



Fixed version, side motor operator



Plug-in version



	A	B	C	D	E	F	G	H	I	L	M	N	O
DIFF.	140	278	255,5	45	35	103	236	150	180	217,5	-	122	148

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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420 255/ 257/ 258/ 259

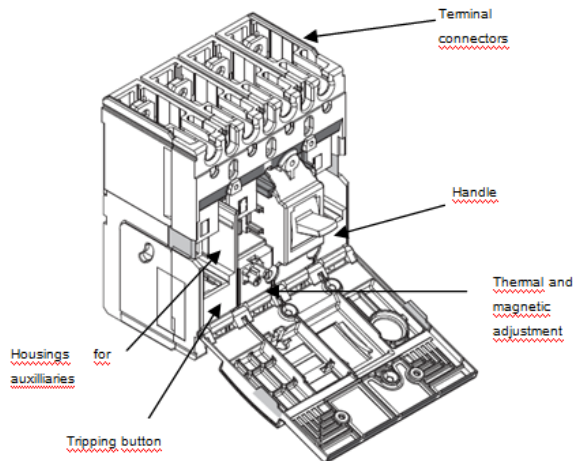
420 285/ 287/ 288/ 289

420 625/ 627/ 628/ 629

420 298

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)	500
Rated operating voltage (50/60Hz) U _e (V)	500
Rated impulse withstand current U _{imp} (kV)	6
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 _{th})	100
Dimensions (W x H x D) (mm) 4P	140 x 195 x 100
Weight (kg)	2.7 (4P)
Earth leakage type	A - Integrated
Adjustable sensitivity (A)	0.03 - 0.3 - 1 - 3
Adjustable tripping (s)	0 - 0.3 - 1 - 3 (with 0.03 A possible only 0 s)

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)	500
Maximum rated operating voltage U _e (V AC/DC)	500
Rated impulse withstand voltage U _{imp} (kV)	6
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) 4P	140 x 195 x 100
Weight (kg)	2.7 (4P)
Earth leakage type	Integrated
Adjustable sensitivity (A)	0.03 - 0.3 - 1 - 3
Adjustable tripping (s)	0 - 0.3 - 1 - 3 (with 0.03 A possible only 0 s)

5.2 Breaking capacity (kA)

		Breaking capacity (kA) & I _{cs}			
		3P-4P	3P-4P	3P-4P	3P-4P
IEC 60947-2	U _e /I _{cu}	B	F	N	H
	220/240 V AC	40	60	80	100
	380/415 V AC	25	36	50	70
	440/460 V AC	20	30	40	60
	480/500 V AC	8	16	18	20
	I _{cs} (% I _{cu})	100	100	100	100
	Rated making capacity under short circuit I _{cm}				
NEMA AB-1	I _{cm} (kA) at 415V	52.5	75.6	105	154
	220/240 V AC	40	60	80	100
	480/500 V 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

	Power losses per pole (W)			
	I _n (A)			
	100	160	200	250
Lugs	7.7	13.7	16.6	20.4

Values in the table are referred to single phase and they are misured 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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420 255/ 257/ 258/ 259

420 285/ 287/ 288/ 289

420 625/ 627/ 628/ 629

420 298

5.6 Functioning in particular conditions

5.6.1 Temperature

	Temperature T _a (°C)											
I _n (A)	-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)	500	430	380	330
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 at 400 Hz

Not possible with this release.

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.

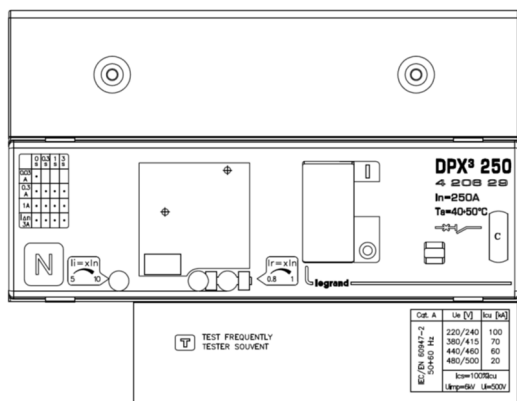
DMX³ are full in compliance with the Shipping Register of Lloyds, RINA, Bureau Veritas, Germanische Lloyd, Norske Veritas and ABS.

" Tropical climate" :

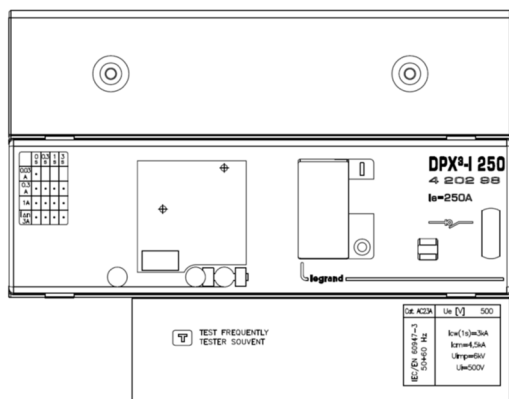
- execution II (all climates) according to IEC 60947-1 Annex Q, Cat. F.

6.1 Marking

Circuit breaker :



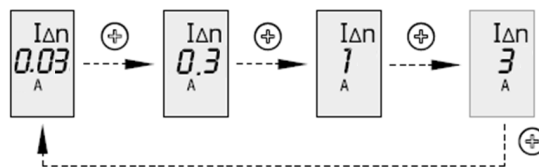
Switch:



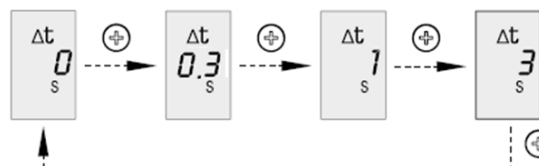
7. NAVIGATION

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 set Δt value set I_Δ measured value present History of interventions for differential intervention

8. EQUIPMENTS AND ACCESSORIES

8.1 Releases

- Shunt releases

12 V ac/dc	ref. 4 210 12
24 V ac/dc	ref. 4 210 13
48 V ac/dc	ref. 4 210 14
110-130 V ac	ref. 4 210 15
200-277 V ac	ref. 4 210 16
380-480 V ac	ref. 4 210 17

Maximum power = 400 VA / W

- Undervoltage releases

12 V ac/dc	ref. 4 210 18
24 V ac/dc	ref. 4 210 19
48 V ac/dc	ref. 4 210 20
110-130 V ac/dc	ref. 4 210 21
200-240 V ac	ref. 4 210 22
277 V ac	ref. 4 210 23
380-415 V ac	ref. 4 210 24
440-480 V ac	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	ref. 0 261 90
400 V ac	ref. 0 261 91

Release:

To be equipped with a time-lag module

ref. 4 210 98

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420 255/ 257/ 258/ 259

420 285/ 287/ 288/ 289

420 625/ 627/ 628/ 629

420 298

8.2 Auxiliary contact

set of connectors for aux contacts ref. 4 210 44
 aux contacts (1NC and 1 NO) for all rotary handles ref. 4 210 10
 signalling contact plugged-in version ref. 4 210 48
 Changeover switch 3A – 250 VAC ref. 4 210 11

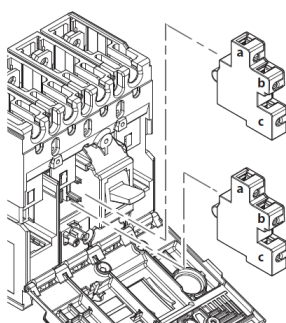
To show the state of the contacts or opening of the DPX³ on a fault:

Auxiliary contact (standard) OC
 Fault signal 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



8.3 Rotary handles

Direct

- DPX³ direct rotary handle ref. 4 210 01
- DPX³ emergency direct rotary handle ref. 4 210 03

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

8.4 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

8.5 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

8.6 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

8.7 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

8.8 Mounting on rail fixing plate

- DPX³ 250 3P/4P with earth leakage module ref. 4 210 74
- DPX³ 160 3P/4P with side mounting motor operator ref. 4 210 69

8.9 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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Reference(s) : 420 225/ 227/ 228/ 229

420 255/ 257/ 258/ 259

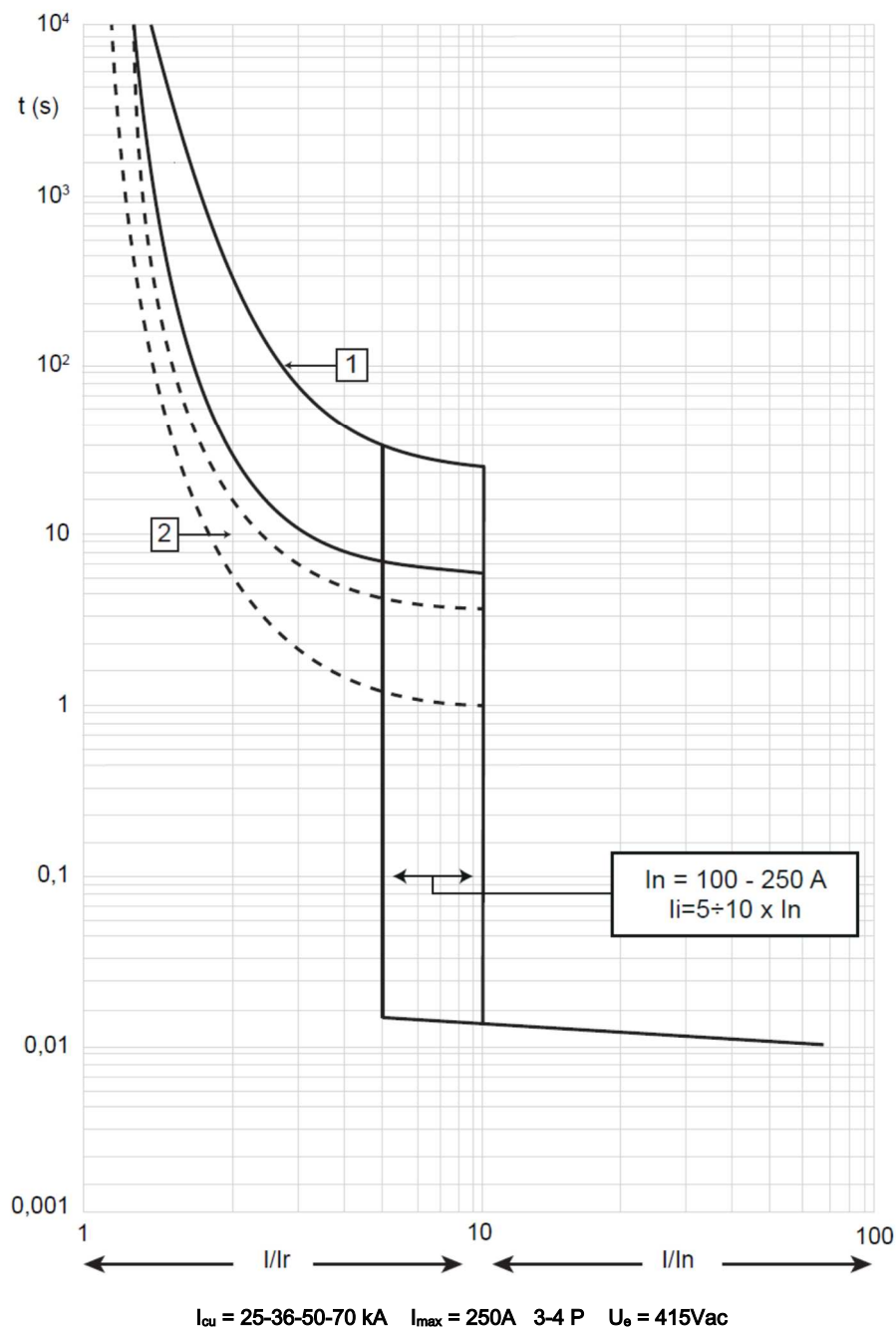
420 285/ 287/ 288/ 289

420 625/ 627/ 628/ 629

420 298

9. CURVES

9.1 Thermal magnetic tripping curve

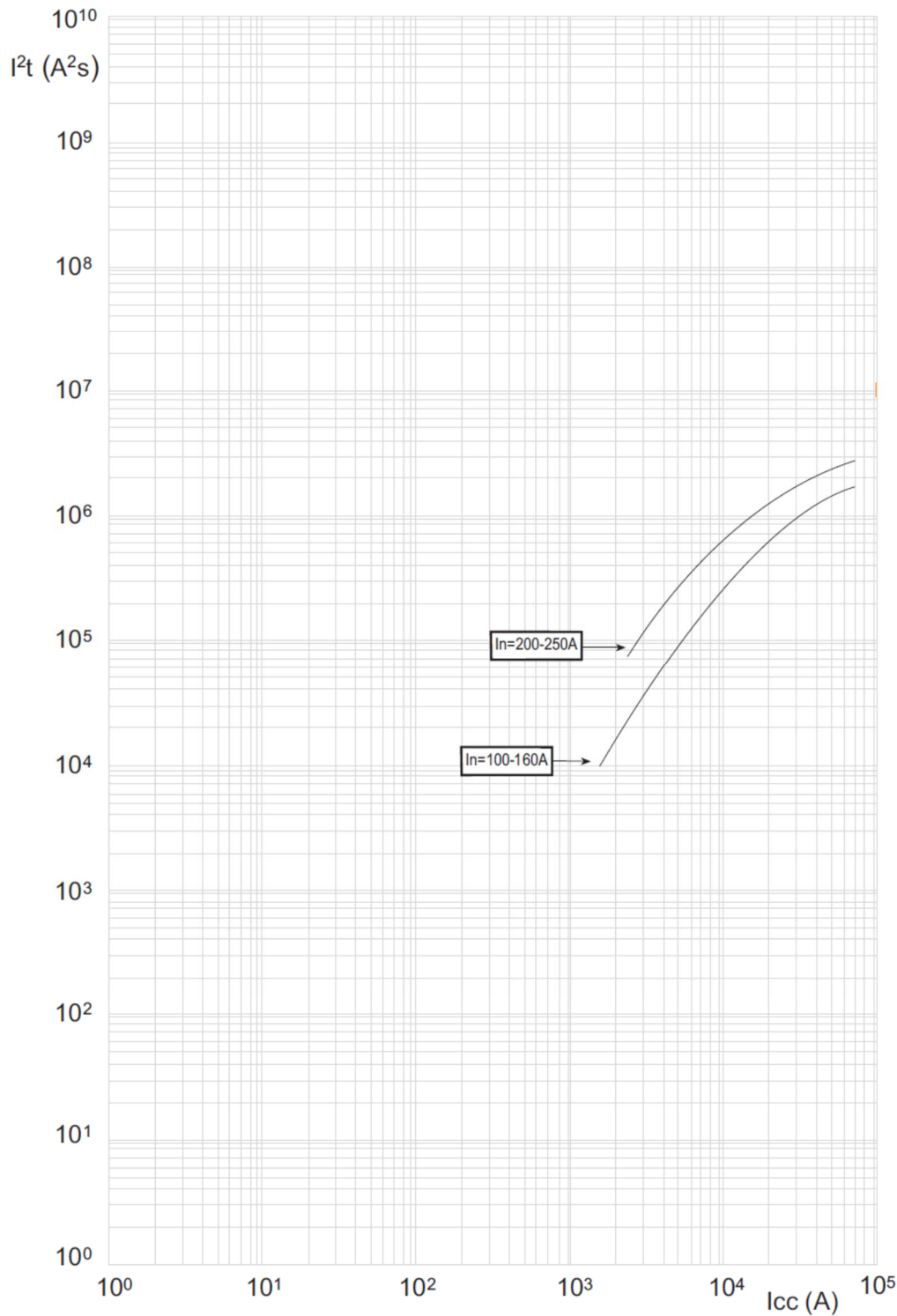


Value	Description
t	time
I	current
I_n	rated current
I_r	long time setting current
curve 1	characteristic with cold start
curve 2	characteristic with hot start

DPX³ 250 + earth leakage
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DPX³-I 250 + earth leakage

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420 255/ 257/ 258/ 259
420 285/ 287/ 288/ 289
420 625/ 627/ 628/ 629
420 298

9.2 Pass-through specific energy characteristic curve



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

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

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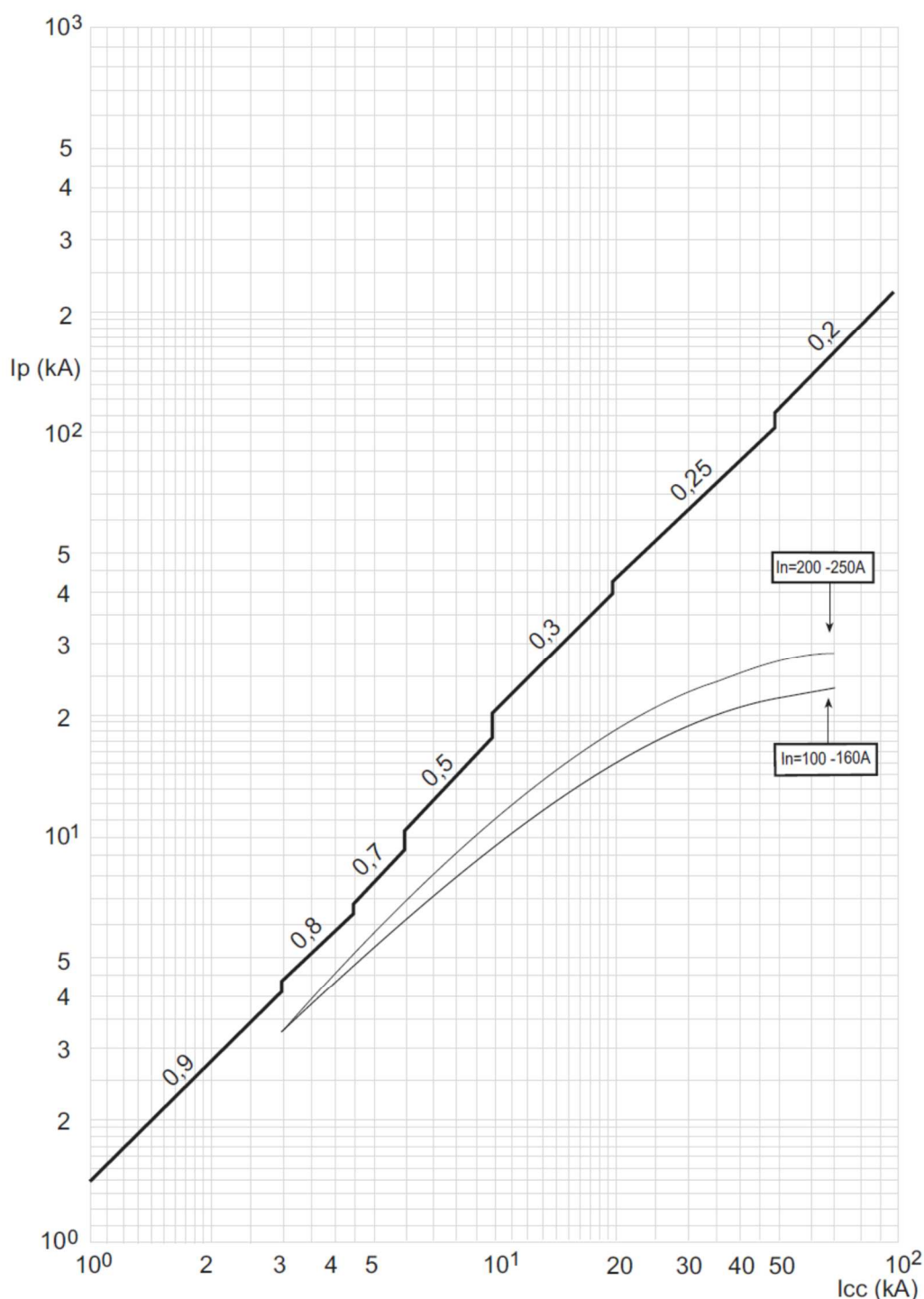
420 255/ 257/ 258/ 259

420 285/ 287/ 288/ 289

420 625/ 627/ 628/ 629

420 298

9.3 Cut-off peak current characteristic curve (kA)



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

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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DPX³-I 250 + earth leakage

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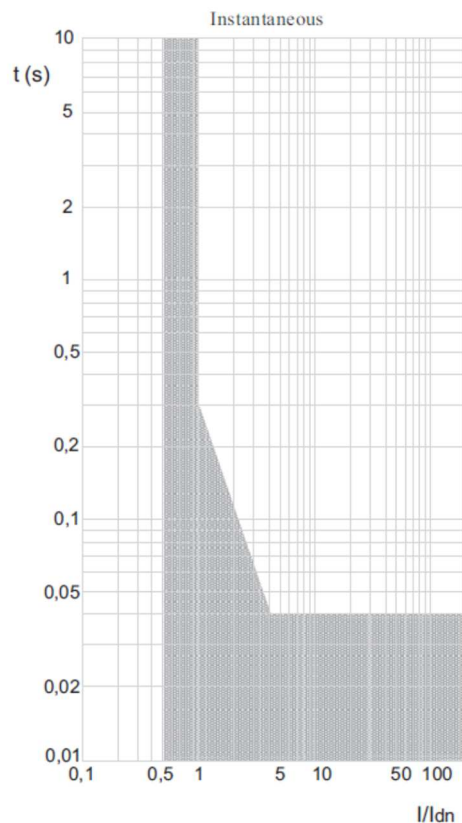
420 255/ 257/ 258/ 259

420 285/ 287/ 288/ 289

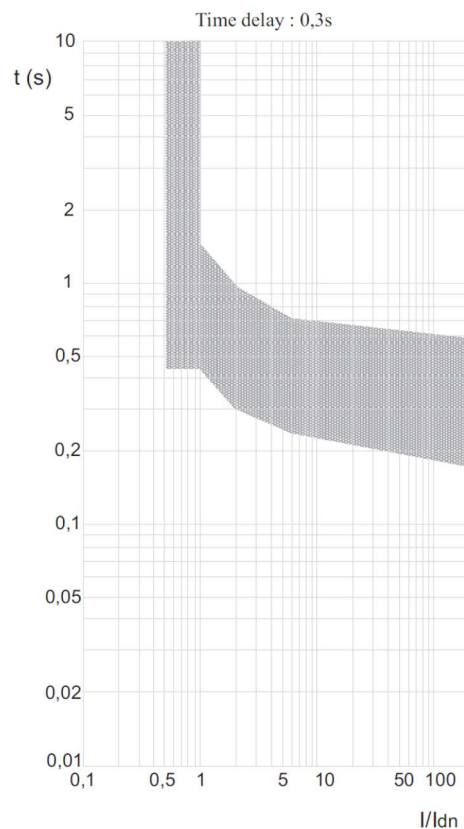
420 625/ 627/ 628/ 629

420 298

9.4.1 Earth leakage curve, instantaneous



9.4.2 Earth leakage curve, time delay = 0.3 s



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Thermal magnetic and trip-free switches
DPX³-I 250 + earth leakage

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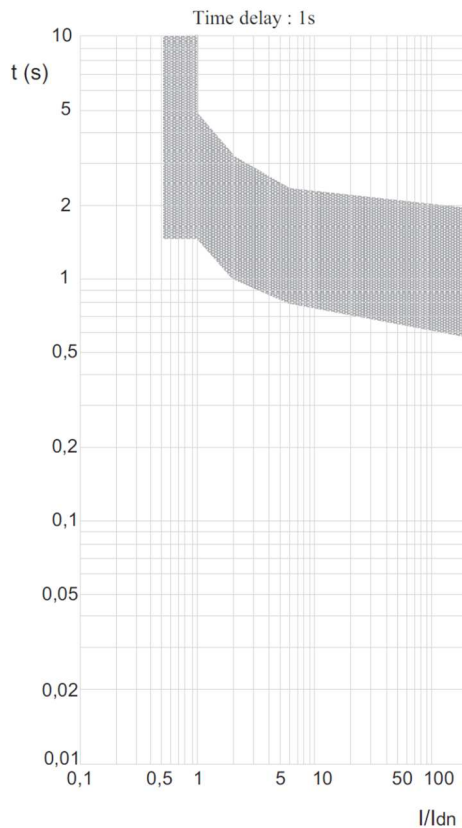
420 255/ 257/ 258/ 259

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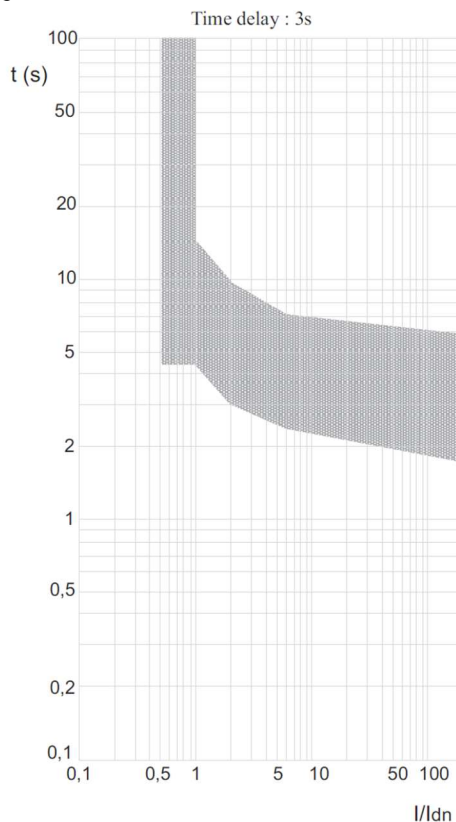
420 625/ 627/ 628/ 629

420 298

9.4.3 Earth leakage curve, time delay = 1 s



9.4.4 Earth leakage curve, time delay = 3 s



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DPX³-I 250 + earth leakage

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420 255/ 257/ 258/ 259

420 285/ 287/ 288/ 289

420 625/ 627/ 628/ 629

420 298

A) Derating Temperature and configurations

		Ambient temperature									
		30 °C		40 °C		50 °C		60 °C		70 °C	
Fixed version		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 - + RCD vertical installation	Cage terminals, flexible cable	250	1	250	1	238	0.95	188	0.75	150	0.6
	Cage terminals, flexible cable + sealable terminal shields	250	1	250	1	238	0.95	188	0.75	150	0.6
	Cage terminals, rigid cable	250	1	250	1	238	0.95	188	0.75	150	0.6
	Cage terminals, rigid cable + sealable terminal shields	250	1	250	1	238	0.95	188	0.75	150	0.6
	Lugs, flexible cable	250	1	250	1	238	0.95	188	0.75	150	0.6
	Lugs, rigid cable	250	1	250	1	238	0.95	188	0.75	150	0.6
	Lugs, flexible cable + sealable term. Shields	250	1	250	1	238	0.95	188	0.75	150	0.6
	Lugs, rigid cable + sealable term. Shields	250	1	250	1	238	0.95	188	0.75	150	0.6
	Spreaders, flexible cable	250	1	250	1	238	0.95	175	0.7	138	0.55
	Spreaders, rigid cable	250	1	250	1	238	0.95	175	0.7	138	0.55
	Rear flat staggered terminals, flexible cable	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
	Rear flat staggered term., flex. cable + sealable term. shields	250	1	250	1	238	0.95	175	0.7	138	0.55
	Rear flat staggered term., rigid cable + sealable term. shields	250	1	250	1	238	0.95	175	0.7	138	0.55

Data indicated in this document refers exclusively to test conditions according to product standards, unless otherwise indicated in the documentation.

For the different conditions of use of the product, inside electrical equipment or in any case inserted in the installation context, refer to the regulatory requirements of the equipment, local regulations and design specifications of the system