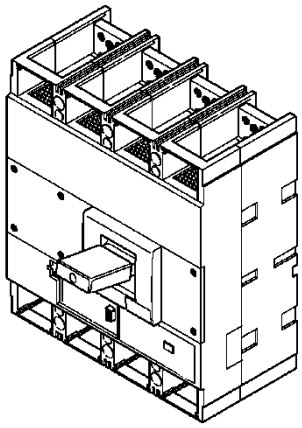
87045 LIMOGES Cedex
Phone :+33 05 55 06 87 87 – Fax :+33 05 55 06 88 88

DPX³ 1600
Thermal magnetic and trip-free switches
DPX³-I 1600

Reference(s) : **422 250 /251/ 252/ 253/ 254/ 255 /256/ 257/ 258/ 259/ 260/ 261/ 262/263/ 264/ 265/ 266/ 267/268/ 269/ 270/ 271/ 272/ 273/274/ 275/ 276/ 277/ 278/279/ 280/ 281/ 282/ 283/ 284/ 285/286/ 287/ 288/ 289/ 290/ 291/ 292/ 293/ 294/ 295/ 296/ 297 & 422 490/ 491/ 492/ 493/ 494/ 495/ 496/ 497**



CONTENTS **PAGES**

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

1. USE

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

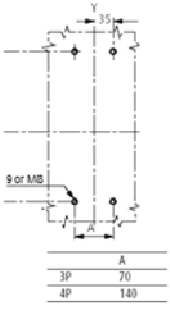
2. RANGE

	36 kA			50 kA		
I_n (A)	3P	4P	3P + N/2	3P	4P	3P + N/2
500	422250	422255	-	422262	422267	-
630	422251	422256	-	422263	422268	-
800	422252	422257	-	422264	422269	-
1000	422253	422258	422260	422265	422270	422272
1250	422254	422259	422261	422266	422271	422273
	70 kA			**100 kA**		
I_n (A)	3P	4P	3P + N/2	3P	4P	3P + N/2
500	422274	422279	-	422286	422291	-
630	422275	422280	-	422287	422292	-
800	422276	422281	-	422288	422293	-
1000	422277	422282	422284	422289	422294	422296
1250	422278	422283	422285	422290	422295	422297

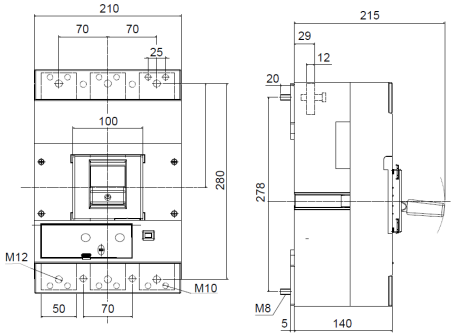
	DPX³-I	
I_n (A)	3P	4P
500	-	-
630	422490	422494
800	422491	422495
1000	-	-
1250	422492	422496
1600	422493	422497

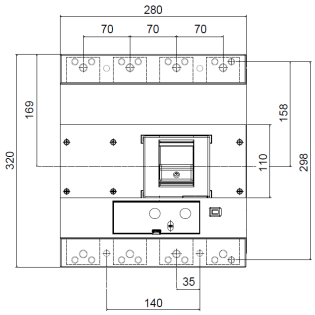
3. DIMENSIONS

Implantation

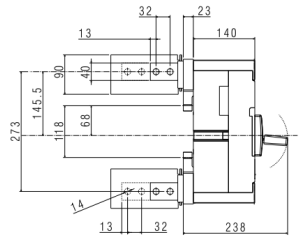


Front terminals, fixed version

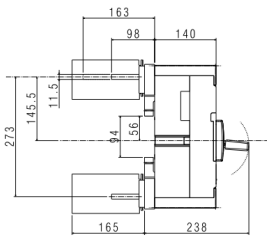




Vertical



Horizontal

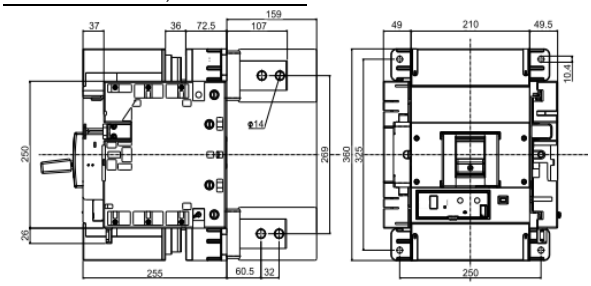


DPX³ 1600
Thermal magnetic and trip-free switches
DPX³-I 1600

Reference(s) : **422 250 /251/ 252/ 253/ 254/ 255 /256/ 257/ 258/ 259/ 260/ 261/ 262/263/ 264/ 265/ 266/ 267/268/ 269/ 270/ 271/ 272/ 273/274/ 275/ 276/ 277/ 278/279/ 280/ 281/ 282/ 283/ 284/ 285/286/ 287/ 288/ 289/ 290/ 291/ 292/ 293/ 294/ 295/ 296/ 297 & 422 490/ 491/ 492/ 493/ 494/ 495/ 496/ 497**

3. DIMENSIONS (NEXT)

Draw-out version, rear terminals



4. OVERVIEW

4.1 Supplied

Supplied with

- fixing screws
- connection plates for bars (width 50mm max)
- phase insulators
- sealable terminal shields

4.2 Mounting possibilities

On plate :

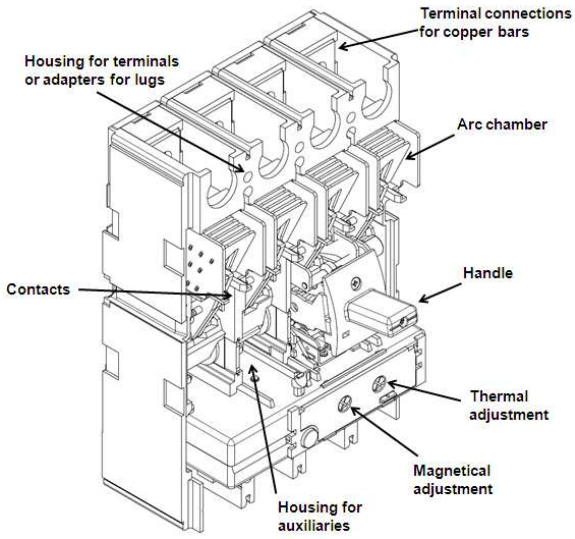
- Vertical
- Horizontal
- Supply invertor type

5. ELECTRICAL AND MECHANICAL CHARACTERISTICS

Circuit Breaker	DPX³ 1600 F/N/H/L (36 kA, 50 kA, 70 kA, 100 kA)
Nominal current I_n (A)	500, 630, 800, 1000, 1250
Poles	3 – 4
Rated insulation voltage U_i (V)	1000
Rated operating voltage (50/60Hz) U_e (V)	690
Rated impulse withstand current U_{imp} (kV)	8
Nominal frequency (Hz)	50 - 60
Functioning temperature (°C)	40 - 50
Operating temperature (°C)	-25 ÷ 70
Mechanical endurance (cycles)	10000
Mechanical endurance with motor control (cycles)	5000
Electrical endurance at I_n (cycles)	4000
Electrical endurance at 0.5 I_n (cycles)	8000
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)	280(4P) x 320 x 140
Weight (kg)	13.9(3P) - 17.6(4P)

Switch	DPX³-I
Nominal current I_n (A)	630 - 800 - 1250 - 1600
Rated closing capacity on short-circuit I_{cm} (kA)	17 (up to 800A) - 24 (up to 1000A) - 40 (up to 1600A)
Utilization category	AC23A
Short-time resistive current I_{cw}(kA) for 1s	10 (up to 800A) - 12 (up to 1000A) - 20 (up to 1600A)
Isolated voltage U_i (V AC)	1000
Maximum rated operating voltage (50/60Hz) U_e (V)	690
Rated impulse withstand voltage U_{imp} (kV)	8
Nominal frequency (Hz)	50 - 60
Operating temperature (°C)	-25 ÷ 70
Mechanical endurance (cycles)	10000
Mechanical endurance with motor control (cycles)	5000
Electrical endurance (cycles)	4000
Electrical endurance at 0.5 I_n (cycles)	8000
Dimensions (W x H x D) (mm)	280(4P) x 320 x 140
Weight (kg)	13.6(3P) - 17.4(4P)

5.1 Main parts constituting the circuit breaker



5.2 Breaking capacity (kA)

Breaking capacity (kA) and I_{cs}				
	3P-4P	3P-4P	3P-4P	3P-4P
Ue/Icu	F	N	H	L
220/240 V AC	70	100	120	150
380/415 V AC	36	50	70	100
440/460 V AC	30	45	65	80
480/500 V AC	25	35	45	55
600 V AC	20	24	28	30
690V AC	14	20	22	25
I_{cs} (% I_{cu})	100	100	100	70
Rated making capacity under short circuit I_{cm}				
I_{cm} (kA) at 415V	75.6	105	154	220

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

	Assigned current trip					
	Thermal			Magnetic		
I_n (A)	L1 - L2 - L3	N	N/2	L1 - L2 - L3	N	N/2
500	500	500	-	2500 ÷ 5000	2500 ÷ 5000	-
630	630	630	-	3150 ÷ 6300	3200 ÷ 6300	-
800	800	800	-	4000 ÷ 8000	4000 ÷ 8000	-
1000	1000	1000	630	5000 ÷ 10000	5000 ÷ 10000	3200 ÷ 6300
1250	1250	1250	800	6250 ÷ 12500	6250 ÷ 12500	4000 ÷ 8000

5.4 Power losses per pole under I_n

Circuit breaker

	Power losses per pole (W)				
	I_n (A)				
	500	630	800	1000	1250
Rear terminals - Fixed version	30.7	47.7	46.2	53.7	99.4
Front terminals - Fixed version	30.0	46.4	44.8	53.0	96.9
Front terminals - D-O version	52.3	81.0	78.1	92.0	170.3
Rear terminals - D-O version	38.5	59.9	57.6	68.0	125.0

Switch

	Power losses per pole (W)			
	I_n (A)			
	630	800	1250	1600
Rear terminals - Fixed version	50.8	29.8	74.4	65.3
Front terminals - Fixed version	49.6	29.4	73.4	58.9
Front terminals - D-O version	86.5	51.2	128.1	112.6
Rear terminals - D-O version	63.9	38.4	93.8	97.3

5.5 Functioning in particular conditions

5.5.1 Temperature

	Temperature T_a (°C)						
I_n (A)	10	20	30	40	50	60	70
500	605	570	535	500	500	430	395
630	743	705	668	630	630	555	518
800	944	896	848	800	800	704	656
1000	1180	1120	1060	1000	1000	880	820
1250	1475	1400	1325	1250	1250	1100	1025

For derating temperature with other configuration, see table A.

5.5.2 Altitude

Altitude (m)	2000	3000	4000	5000
U_e (V)	690	590	520	460
I_n (A) (T_a = 40°C/50°C)	1 x I_n	0.98 x I_n	0.93 x I_n	0.90 x I_n

5.5.3 Use at 400 Hz

See table B.

5.5.4 Use in DC

See table C.

6. CONFORMITY

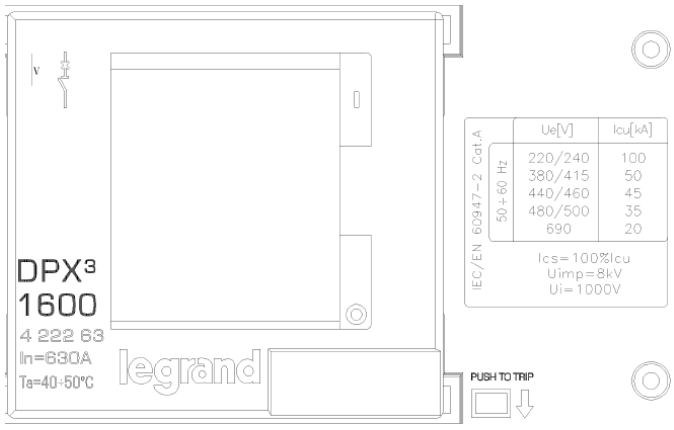
DPX³ range of product concerning circuit-breakers and switch-disconnectors are in full compliance with the EN/IEC standard 60947-2 and 60947-3 respectively.

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, Germanishe Lloyds, Norske Veritas and ABS.

6.1 MARKING



" Tropical climate " :

- execution II (all climates) according to guide UTE C63100

7. EQUIPMENTS AND ACCESSORIES

7.1 Releases

- shunt releases (Power consumption= 300 VA) with voltage

24 V AC and DC	ref. 4 222 39
48 V AC and DC	ref. 4 222 40
110 V AC and DC	ref. 4 222 41
230 V AC and DC	ref. 4 222 42
400 V AC and DC	ref. 4 222 43

- undervoltage releases (Power consumption = 5 VA) with voltage

24 V DC	ref. 4 222 44
24 V AC	ref. 4 222 45
48 V DC	ref. 4 222 46
110 V AC	ref. 4 222 47
230 V AC	ref. 4 222 48
400 V AC	ref. 4 222 49

- time-lag undervoltage releases (800 ms)

Time-lag modules with voltage

24 V AC and DC	ref. 0 261 92
230 V AC	ref. 0 261 90
400 V AC	ref. 0 261 91
Universal Release	ref. 4 226 23

7.2 Auxiliary contact

Changeover switch 3A – 250 V AC ref. 4 210 11

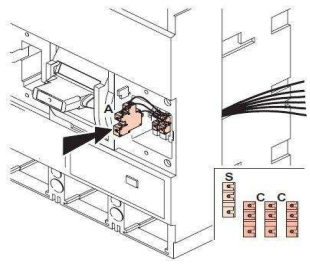
To show the state of the contacts or opening of the DPX³ on a fault:

Auxiliary contact (standard) **C**

Fault signal **S**

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

3 auxiliary contact + 1 fault signal (max) + 1 release



7.3 Rotary handles

- Standard (black) ref. 0 262 61

Vari-depth handle IP55

- Standard (black) ref. 0 262 83
- For emergency use (red / yellow)

Adapting on standard handle ref. 0 262 84

Locking accessories

- Profalux type star key (cod. HBA90GPS6149) for vari-depth handle ref. 0 262 93
- Ronis type flat key (cod. ABA90GEL6149) for vari-depth handle ref. 0 262 94

7.4 Motor-driven handles

Factory assembled

Front operated

- Voltage 230 V AC ref. 0 261 54

Customer assembled

Front operated

- Voltage 24 V AC and DC ref. 0 261 24
- Voltage 48 V AC and DC ref. 0 261 25
- Voltage 110 V AC ref. 0 261 26
- Voltage 220 V AC for rating up to 1250A ($I_n \leq 1250A$) ref. 0 261 23
- Voltage 230 V AC. for rating of 1600A (I_n=1600A) ref. 0 261 27

Locking accessories

- Ronis type flat key (cod. ABA90GEL6149) ref. 0 261 59
- Profalux type star key (cod. HBA90GPS6149) ref. 0 261 58

7.5 Mechanical accessories

Phase insulators

- Set of 3 ref. 0 262 66

Sealable terminal shields

- Set of 2 3P ref. 0 262 64
- Set of 2 4P ref. 0 262 65

Padlock

- Accessories to lock in open position ref. 0 262 60

Terminal covers to guarantee IP20

- Set of 2 3P ref. 4 225 90
- Set of 2 4P ref. 4 225 91
- External neutral ref. 4 225 92

7.6 Connection accessories

Cage terminals

- Set of 4 terminals for cables 2x240mm² max (rigid) or 2x185mm² max (flexible) (Cu/Al) ref. 0 262 69
- Set of 4 terminals for cables 4x240mm² max (rigid) or 4x185mm² max (flexible) (Cu/Al) ref. 0 262 70

Extended front terminals

- Short terminals for 500 - 1250A (2 bars max. per pole) ref. 0 262 67
- Long terminals for 1600A (3 bars max. per pole) ref. 0 262 68

Spreaders

- Set of 3 (incoming or outgoing 3P) ref. 0 262 73
- Set of 4 (incoming or outgoing 4P) ref. 0 262 74

Rear terminals

(use to connect fixed version with front terminals into fixed version with rear terminal)

- Set of swivel terminals, incoming or outgoing
  - 3P ref. 0 263 80
  - 4P ref. 0 263 82
- Set of flat rear terminals, incoming or outgoing
  - 3P ref. 0 263 81
  - 4P ref. 0 263 83

7.7 Draw-out version

(A DPX³ draw-out version is a plug-in DPX³ fitted with a "Débro-lift" mechanism which can be used to withdraw the DPX³ while keeping it on its base)

Draw-out base

Base for DPX³ 1600 supplied not with "Débro-lift" assembled a rigid slide and handle for drawing-out

- Front terminals
  - 3P ref. 4 225 86
  - 4P ref. 4 225 87
- Rear terminals
  - 3P ref. 4 225 88
  - 4P ref. 4 225 89

"Débro-lift" mechanism

Suitable for turning a fixed circuit-breaker into the moving part of a withdrawable circuit breaker

- Mobile part for draw-out version
  - 3P ref. 4 225 93
  - 4P ref. 4 225 94

Key lock for "Débro-lift" mechanism

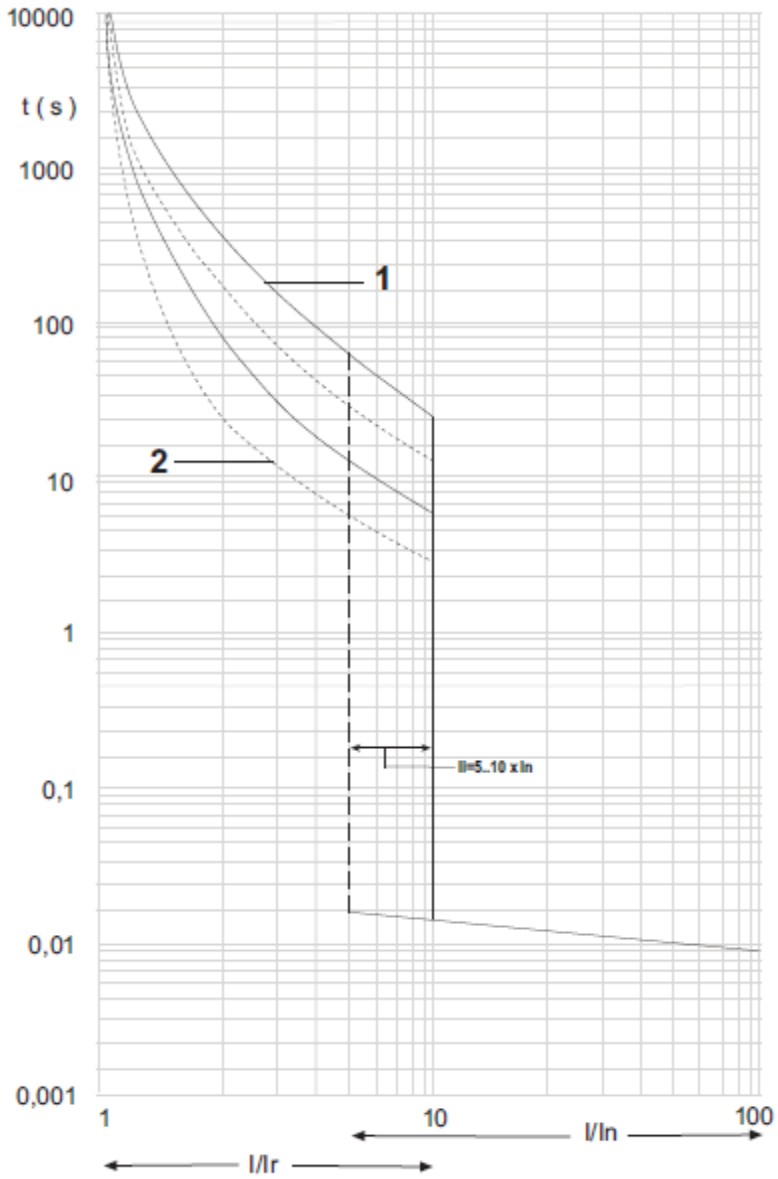
- One key for DPX³ only
  - Ronis type flat key (cod. ABA90GEL6149) ref. 0 265 76
  - Profalux type star key (cod. HBA90GPS6149) ref. 0 263 48
- Two keys (one key supplied) for motorized DPX³ or with rotary handle
  - Ronis type flat key (cod. ABA90GEL6149) ref. 0 265 80
  - Profalux type star key (cod. HBA90GPS6149) ref. 0 265 79

Accessories for "Débro-lift" mechanism

- Isolated handle for drawing-out ref 0 265 75
- Signal contact (plugged-in / drawn-out) ref 0 265 74
- Set of connectors (8 contacts) ref 0 263 99
- Set of connectors (6 contacts) ref 0 263 19
- Support plate for draw-out version ref 4 225 95
- Automatic auxil. contacts (12 pin) for D/O version ref.4 222 30

8. CURVES

8.1 TRIPPING CURVE (up to 800A)

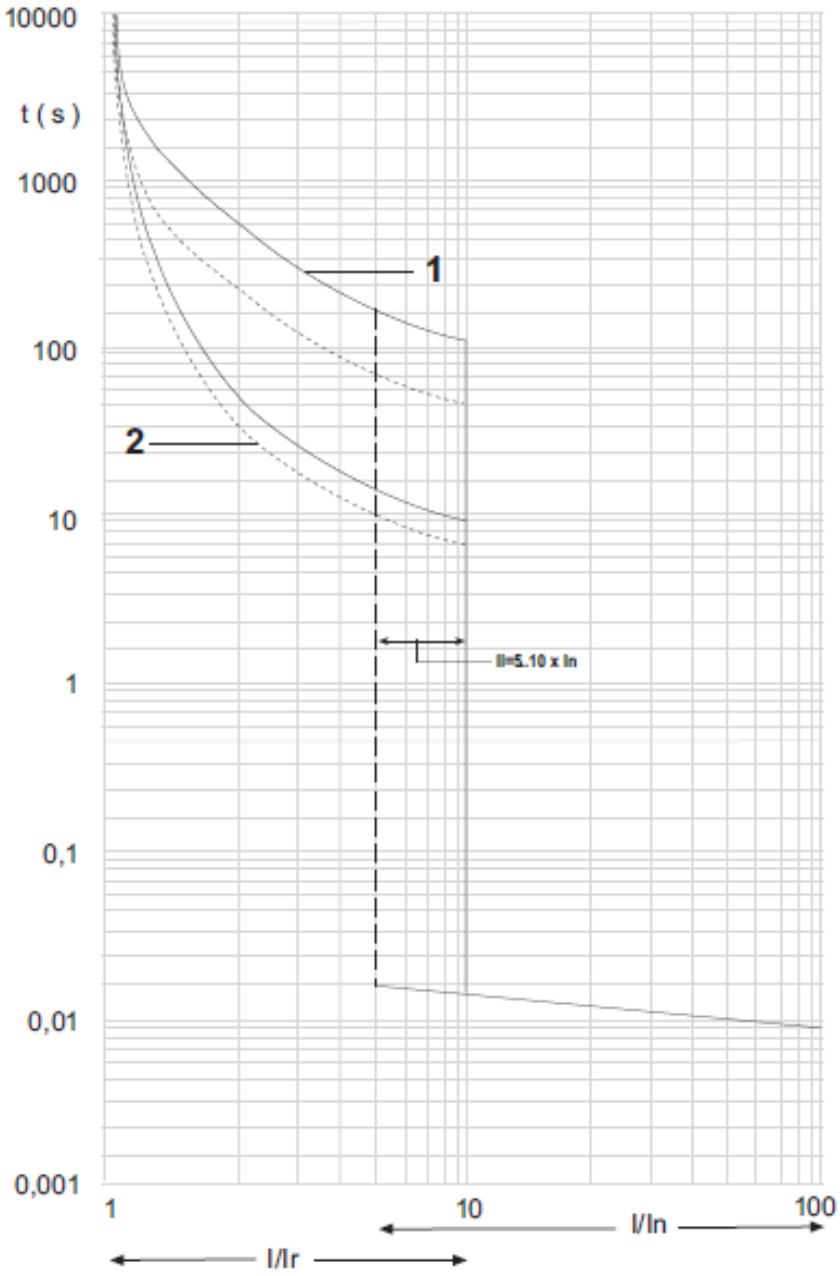


I_{cu} = 36-50-70-100 kA I_{max} = 800A 3-4 P U_e = 415Vac

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

(*) please, for magnetic current value I_i consider a normative tolerance of ±20%

8.2 TRIPPING CURVE (up to 1250A)

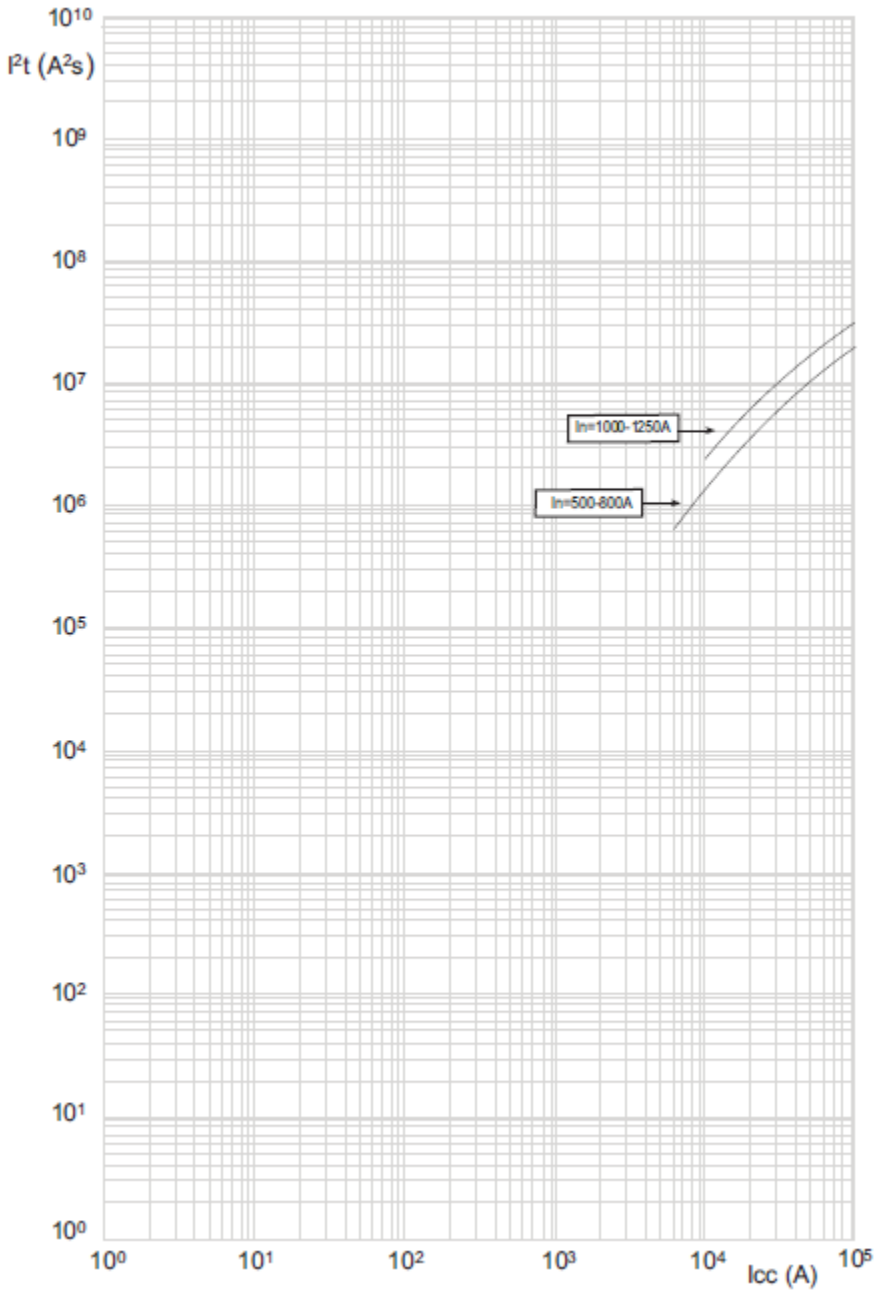


I_{cu} = 36-50-70-100 kA I_{max} = 1250A 3-4 P U_e = 415Vac

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

(*) please, for magnetic current value I_i consider a normative tolerance of ±20%

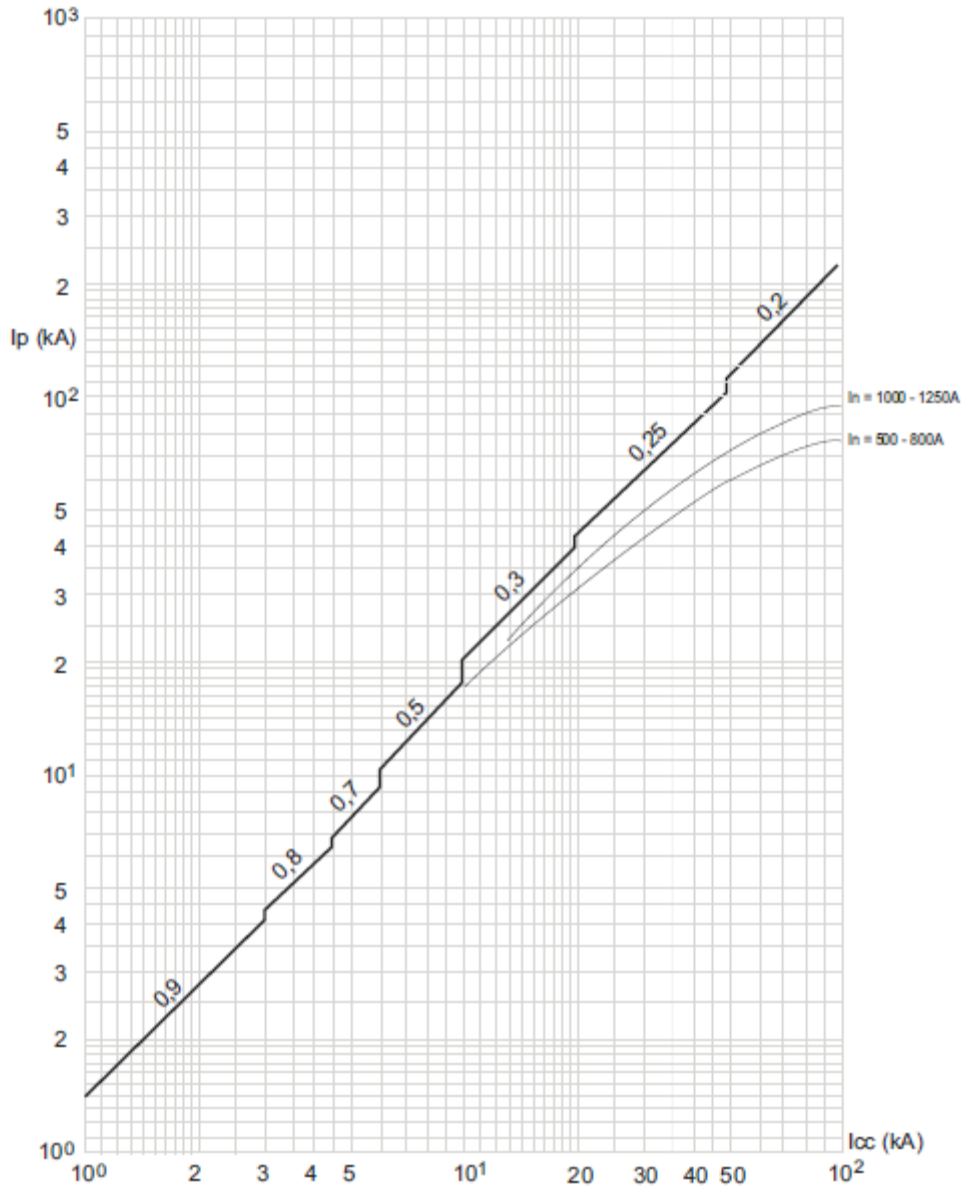
8.3 RESTRICTED CURVE IN THERMAL CONSTRAINT



I_{cu} = 36-50-70-100 kA I_{max} = 1250A 3-4 P U_e = 415Vac

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

8.4 RESTRICTED CURRENT CURVE



I_{cu} = 36-50-70-100 kA I_{max} = 1250A 3-4 P U_e = 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

DPX³ 1600
Thermal magnetic and trip-free switches
DPX³-I 1600

Reference(s) : **422 250 /251/ 252/ 253/ 254/ 255 /256/ 257/ 258/ 259/ 260/ 261/ 262/263/ 264/ 265/ 266/ 267/268/ 269/ 270/ 271/ 272/ 273/274/ 275/ 276/ 277/ 278/279/ 280/ 281/ 282/ 283/ 284/ 285/286/ 287/ 288/ 289/ 290/ 291/ 292/ 293/ 294/ 295/ 296/ 297 & 422 490/ 491/ 492/ 493/ 494/ 495/ 496/ 497**

A) Derating Temperature and configurations

		Ambient temperature											
		30 °C		40 °C		50 °C		60 °C		65 °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	I_{max} (A)	I_r / I_n
Fixed version - 500A	Cage terminals, flexible cable	500	1	500	1	500	1	500	1	500	1	500	1
	Cage terminals, flexible cable + sealable terminal shields	500	1	500	1	500	1	500	1	500	1	500	1
	Lugs, rigid cable	500	1	500	1	500	1	500	1	500	1	500	1
	Spreaders, flexible cable	500	1	500	1	500	1	500	1	500	1	500	1
	Spreaders, bars 2x50x10 Cu	500	1	500	1	500	1	500	1	500	1	500	1
	Rear flat terminals, bars 2x80x5 Cu, vertical	500	1	500	1	500	1	500	1	500	1	500	1
	Rear flat staggered terminals, bars 2x80x5 Cu, vertical	500	1	500	1	500	1	500	1	500	1	500	1
		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	I_{max} (A)	I_r / I_n
Fixed version - 800A	Cage terminals, flexible cable	800	1	800	1	800	1	800	1	800	1	800	1
	Cage terminals, flexible cable + sealable terminal shields	800	1	800	1	800	1	800	1	800	1	800	1
	Lugs, rigid cable	800	1	800	1	800	1	800	1	800	1	800	1
	Spreaders, flexible cable	800	1	800	1	800	1	800	1	800	1	800	1
	Spreaders, bars 2x50x10 Cu	800	1	800	1	800	1	800	1	800	1	800	1
	Rear flat terminals, bars 2x80x5 Cu, vertical	800	1	800	1	800	1	800	1	800	1	800	1
	Rear flat staggered terminals, bars 2x80x5 Cu, vertical	800	1	800	1	800	1	800	1	800	1	800	1
		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	I_{max} (A)	I_r / I_n
Fixed version - 1000A	Cage terminals, flexible cable	1000	1	1000	1	1000	1	1000	1	950	0.95	900	0.9
	Cage terminals, flexible cable + sealable terminal shields	1000	1	1000	1	1000	1	1000	1	950	0.95	900	0.9
	Lugs, rigid cable	1000	1	1000	1	1000	1	1000	1	950	0.95	900	0.9
	Spreaders, flexible cable	1000	1	1000	1	1000	1	1000	1	1000	1	900	0.9
	Spreaders, bars 2x50x10 Cu	1000	1	1000	1	1000	1	1000	1	1000	1	900	0.9
	Rear flat terminals, bars 2x80x5 Cu, vertical	1000	1	1000	1	1000	1	1000	1	1000	1	900	0.9
	Rear flat staggered terminals, bars 2x80x5 Cu, vertical	1000	1	1000	1	1000	1	1000	1	1000	1	900	0.9
		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	I_{max} (A)	I_r / I_n
Fixed version - 1250A	Cage terminals, flexible cable	1250	1	1250	1	1250	1	1087.5	0.87	975	0.78	937.5	0.75
	Cage terminals, flexible cable + sealable terminal shields	1250	1	1250	1	1250	1	1087.5	0.87	975	0.78	937.5	0.75
	Lugs, rigid cable	1250	1	1250	1	1250	1	1087.5	0.87	975	0.78	937.5	0.75
	Spreaders, flexible cable	1250	1	1250	1	1250	1	1125	0.9	1000	0.8	937.5	0.75
	Spreaders, bars 2x50x10 Cu	1250	1	1250	1	1250	1	1125	0.9	1000	0.8	937.5	0.75
	Rear flat terminals, bars 2x80x5 Cu, vertical	1250	1	1250	1	1250	1	1125	0.9	1000	0.8	937.5	0.75
	Rear flat staggered terminals, bars 2x80x5 Cu, vertical	1250	1	1250	1	1250	1	1125	0.9	1000	0.8	937.5	0.75

B) Adjustments for use at 400 Hz

	Thermal adjustment		Magnetic adjustment		
I_n (A) at 50 Hz	Correction factor	I_n (A) at 400Hz	Correction factor	I_m (A) MIN at 400Hz	I_m (A) MAX at 400Hz
500	0.6	300	1	2500	5000
630	0.6	378	1	3150	6300
800	0.6	480	1	4000	8000
1000	0.6	600	1	5000	10000
1250	0.6	750	1	6250	12500

C) Breaking capacity in DC (kA)

		1 pole		2 poles in series		3 poles in series			Protection		
Circuit breaker	I_n (A)	≤55-60V	≤110-125V	≤110-125V	250V	≤110-125V	250V	400V	Thermal	Magnetic	Earth leakage
DPX³ 1600 (I_{cu} = 36 kA)	500 - 630	36	36	N/A	36	N/A	N/A	36	like AC	1.5 I_i AC	No protection
DPX³ 1600 (I_{cu} = 50 kA)	500 - 630	50	50	N/A	50	N/A	N/A	50	like AC	1.5 I_i AC	No protection
DPX³ 1600 (I_{cu} = 70 kA)	500 - 630	60	60	N/A	60	N/A	N/A	60	like AC	1.5 I_i AC	No protection
DPX³ 1600 (I_{cu} = 100 kA)	500 - 630	80	80	N/A	80	N/A	N/A	80	like AC	1.5 I_i AC	No protection
DPX³ 1600 (I_{cu} = 36 kA)	800	36	36	N/A	36	N/A	N/A	36	like AC	1.5 I_i AC	No protection
DPX³ 1600 (I_{cu} = 50 kA)	800	50	50	N/A	50	N/A	N/A	50	like AC	1.5 I_i AC	No protection
DPX³ 1600 (I_{cu} = 70 kA)	800	60	60	N/A	60	N/A	N/A	60	like AC	1.5 I_i AC	No protection
DPX³ 1600 (I_{cu} = 100 kA)	800	80	80	N/A	80	N/A	N/A	80	like AC	1.5 I_i AC	No protection
DPX³ 1600 (I_{cu} = 36 kA)	1000 - 1250	36	36	N/A	36	N/A	N/A	36	like AC	1.5 I_i AC	No protection
DPX³ 1600 (I_{cu} = 50 kA)	1000 - 1250	50	50	N/A	50	N/A	N/A	50	like AC	1.5 I_i AC	No protection
DPX³ 1600 (I_{cu} = 70 kA)	1000 - 1250	60	60	N/A	60	N/A	N/A	60	like AC	1.5 I_i AC	No protection
DPX³ 1600 (I_{cu} = 100 kA)	1000 - 1250	80	80	N/A	80	N/A	N/A	80	like AC	1.5 I_i AC	No protection