

DRX 250^{HP}

Thermal magnetic adjustable

Reference(s) : 6 690 00/01/02/03/04/05/06/07/08/09/10/11/12;

6 690 20/21/22/23/24/25/26/27/28/29/30/31/32;

6 690 40/41/42/43/44/45/46/47/48/49/50/51/52;

6 690 60/61/62/63/64/65/66/67/68/69/70/71/72;

6 690 80/81/82/83/84/85/86/87/88/89/90/91/92;

6 691 00/01/02/03/04/05/06/07/08/09/10/11/12;



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1. USE

DRX^{HP} circuit breakers offer optimal solutions to answer to protection requirements of tertiary and industrial installations.

It has a range of MCCBs devices able to answer to a project approach in standard segmentation and has a platform completely suitable for power projects.

It make available a range of protection device capable to have “very compact dimensions” (through greater depths of 86 mm) but contemporary to implement all “power features” in terms of breaking capacity.

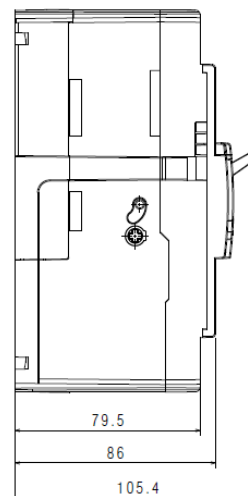
It provides easy assembly procedures during the phase of installation and mounting of accessories, suitable for professional use.

2. RANGE

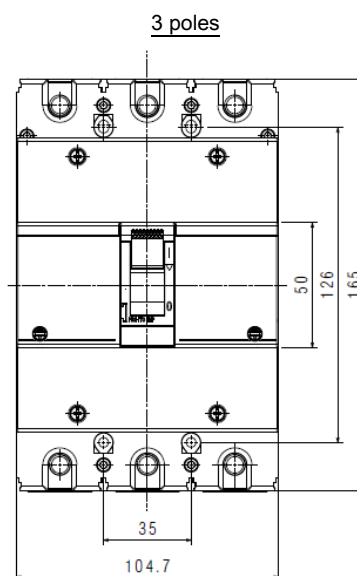
I _n (A)	25 kA		36 kA		50 kA	
	3P	4P	3P	4P	3P	4P
16	669000	669020	669040	669060	669080	669100
20	669001	669021	669041	669061	669081	669101
25	669002	669022	669042	669062	669082	669102
32	669003	669023	669043	669063	669083	669103
40	669004	669024	669044	669064	669084	669104
50	669005	669025	669045	669065	669085	669105
63	669006	669026	669046	669066	669086	669106
80	669007	669027	669047	669067	669087	669107
100	669008	669028	669048	669068	669088	669108
125	669009	669029	669049	669069	669089	669109
160	669010	669030	669050	669070	669090	669110
200	669011	669031	669051	669071	669091	669111
250	669012	669032	669052	669072	669092	669112

3. DIMENSIONS

Lateral view



Frontal view



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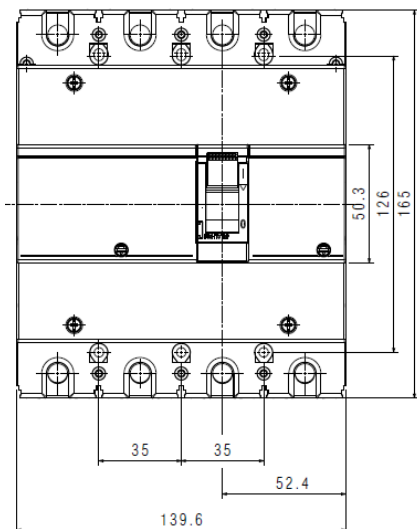
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6 690 80/81/82/83/84/85/86/87/88/89/90/91/92;

4 poles



4. OVERVIEW

4.1 Equipped with:

- Screws for connections (6 for 3P or 8 for 4P)
- Nuts for connections (6 for 3P or 8 for 4P)
- Boxes for nuts (6 for 3P or 8 for 4P)
- Plate fixing screws (2 for 3P or 4 for 4P)
- phase insulators (2 for 3P or 3 for 4P)

5. ELECTRICAL CONNECTIONS

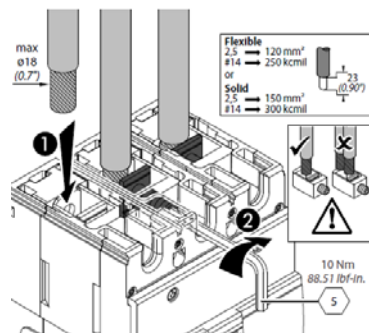
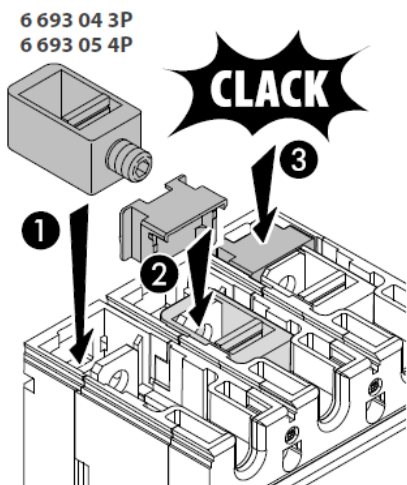
5.1 Mounting possibilities

On plate:

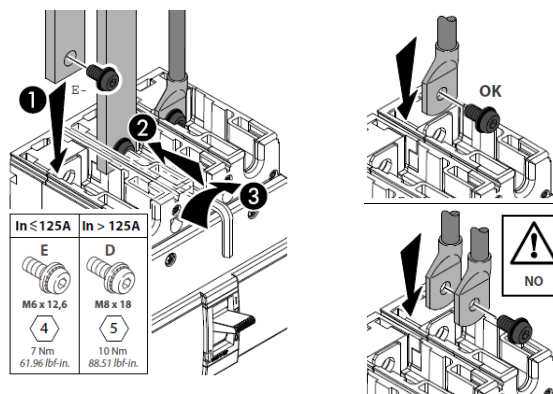
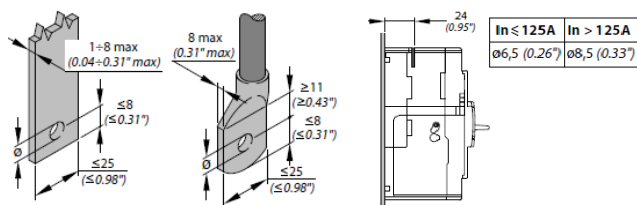
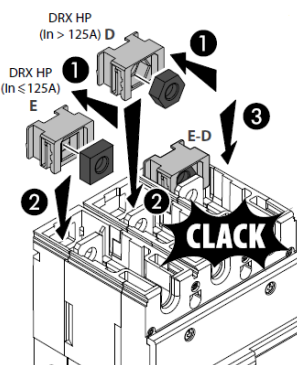
- Vertical
- Horizontal

5.2 Cabling

Cables:



Busbars/cable lugs:



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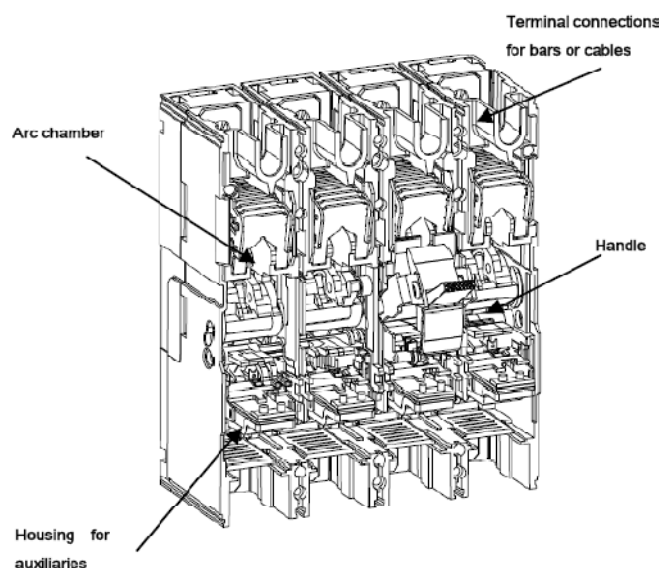
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6. ELECTRICAL AND MECHANICAL CHARACTERISTICS

Circuit Breaker	DRX 250 ^{HP} (25kA, 36kA, 50kA)
Rated current (A)	16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 160, 200, 250
Poles	3 - 4
Rated insulation voltage U_i (V)	800
Rated operating voltage (50/60Hz) U_e (V)	550
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)	12000
Electrical endurance at I_n (cycles)	6000
Electrical endurance at 0.5 I_n (cycles)	6000
Utilization category	A
Suitable for isolation	Yes
Type of protection	Thermal-magnetic
Thermal adjustment I_r (A)	0.8-0.9-1.0 x I_n
Magnetic adjustment I_i (A)	adj: 400, up to 40A; 6.5-10-13 x I_n , for $I_n = 50A$ 5.0-7.5-10 x I_n , up to $I_n = 250A$
Neutral protection for 4P (% I_{in} of phase pole)	100
Dimensions (W x H x D) (mm)	105 x 165 x 86 (3P) 140 x 165 x 86 (4P)
Weight (kg)	1.600 (3P) 2.050 (4P)

6.1 Main parts constituting the circuit breaker



6.2 Breaking capacity (kA)

		Breaking capacity (kA) & I_{cs}		
		3P-4P		
IEC 60947-2	U_e/I_{cu}	25kA	36kA	50kA
	220/240 V AC	40	70	90
	380/415 V AC	25	36	50
	440/460 V AC	20	30	45
	480/500 V AC	4	4	4
	550 V AC	4	4	4
	$I_{cs}(\% I_{cu})$	100	100	100
	Rated making capacity under short circuit I_{cm}			
NEMA AB-1	I_{cm} (kA) at 415V	52.5	75.6	105
	220/240 V AC	40	70	90
	480/500 V AC	4	4	4
	550 V AC	4	4	4

6.3 Load operations (N)

Force on handle	N
Opening operation	63,5
Closing operation	66
Restore operation	86,5

6.4 Electrodynamic forces

The table below shows an indication of suggested distances to keep between the breaker and the first fixing point of the conductor and bars in order to reduce the effects of the electrodynamic stresses that may be created during a short circuit. In the realization of anchorage system it is recommend the use of isolators suitable for the type of conductor used and the operating voltage.

I_{cc} (kA)	Maximum Distance (mm)
25	400
36	350
50	300

According to conductor type and bar system (except Legrand bar kits), the choice of the distance to keep is to be calibrated by the installer. Also installer must take into account the weight of the conductors so that this does not affect the electrical junction between the conductor itself and the connection point

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6.5 Power losses per pole under I_n

Circuit breaker

I_n (A)	Power losses per pole (W)											
	16	20	25	32	40	50	63	80	100	125	160	200
Cage terminals	2,99	4,47	5,34	4,99	7,67	5,76	9,45	7,22	7,77	12,73	11,8	14,89
Lugs	2,73	4,08	6,38	4,56	7,01	5,26	8,63	6,59	7,1	11,63	10,78	13,6
Spreaders	2,3	3,44	4,11	3,84	5,9	4,43	7,27	5,55	5,98	9,79	9,08	11,45
Rear terminals	2,82	4,21	5,03	4,7	7,23	5,42	8,9	6,8	7,32	11,99	11,12	14,03

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)

Total power losses has calculated as the sum of losses of every accessory installed

6.6 DERATINGS

6.6.1 Temperature

I_n (A)	Temperature T_a (°C)											
	-25	-20	-10	-5	0	10	20	30	40	50	60	70
16	24	23	22	21	21	20	18	17	16	16	13	12
20	29	29	27	26	26	24	23	21	20	20	17	15
25	37	36	34	33	32	30	29	27	25	25	21	19
32	47	46	44	42	41	39	37	34	32	32	27	24
40	59	57	54	53	52	49	46	43	40	40	34	30
50	74	72	68	66	64	61	57	54	50	50	42	38
63	93	90	86	83	81	77	72	68	63	63	53	47
80	118	114	109	106	103	98	92	86	80	80	67	60
100	147	143	136	132	129	122	115	107	100	100	84	75
125	184	179	170	166	161	152	143	134	125	125	105	94
160	235	229	218	212	206	195	184	172	160	160	134	120
200	294	286	272	265	258	244	230	215	200	200	168	151
250	368	358	340	331	322	305	287	269	250	250	210	188

For derating temperature with other configurations, see table A.

6.6.2 Specific condition use

Climatic condition

according to IEC/EN 60947-1 Annex Q, Cat. F subject to temperature, humidity, vibration, shock and salt mist.

Electromagnetic disturbances (EMC)

for DRX 250^{HP} according to IEC/EN 60947-2 Annex F

6.6.3 Altitude

Altitude (m)	2000	3000	4000	5000
U_e (V)	550	470	415	370
I_n (A) ($T_a = 40^\circ\text{C}/50^\circ\text{C}$)	$1 \times I_n$	$0.98 \times I_n$	$0.93 \times I_n$	$0.9 \times I_n$

6.6.4 Use at 400 Hz

See table B.

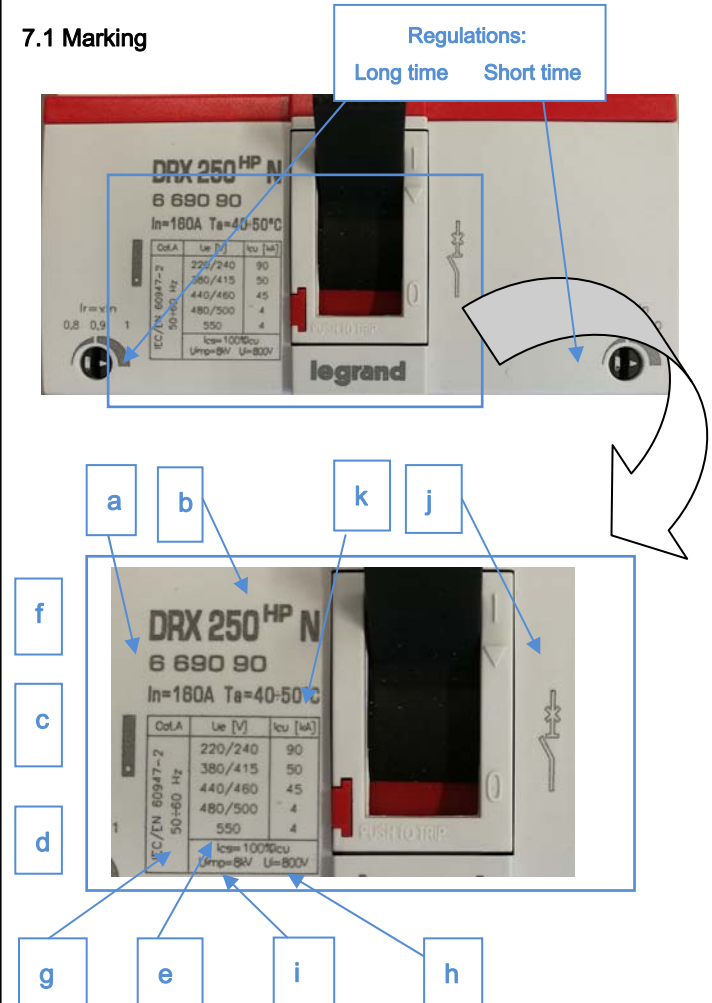
7. CONFORMITY

DRX^{HP} range of product concerning circuit-breakers are in full compliance with the IEC/EN standard 60947-2 .

The certificate are issued by LOVAG and/or by IECEE certification scheme. All the product range are CE, CCC, EAC marked.

For specific information, please contact Legrand support.

7.1 Marking



Reference	meaning
a	Product reference
b	Product type
c	Utilization category
d	Standards compliance
e	Rated service short-circuit breaking capacity
f	Rated current
g	Rated frequencies
h	Rated insulation voltage
i	Rated impulse withstand voltage
j	Indentification symbol of the device
k	Rated ultimate short-circuit breaking capacity, according to the operational voltage U_e

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8. EQUIPMENTS AND ACCESSORIES

8.1 Control and signalling auxiliaries

- Auxiliary and Alarm Contacts:**

Up to 250V AC and DC

Auxiliary Contact

ref. 0 271 40

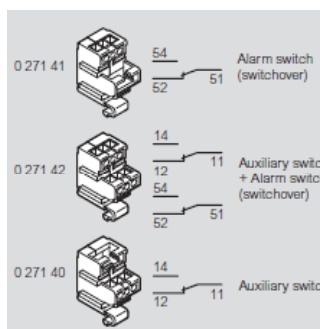
Alarm Contact

ref. 0 271 41

Auxiliary + Alarm Contact

ref. 0 271 42

Voltage	Resistive load (A)
125V a.c.	5
250V a.c.	5
30V d.c.	5
50V d.c.	1
75V d.c.	0.75
125V d.c.	0.5



- Shunt trips:**

12 Vac and dc

ref. 0 271 50

24 Vac and dc

ref. 0 271 51

48 Vac and dc

ref. 0 271 52

100/130 Vac

ref. 0 271 53

200/277 Vac

ref. 0 271 54

380/480 Vac

ref. 0 271 55

- Undervoltage releases:**

12 Vac and dc

ref. 0 271 60

24 Vac and dc

ref. 0 271 61

48 Vac and dc

ref. 0 271 62

110 Vdc

ref. 0 271 68

110/130 Vac

ref. 0 271 63

200/240 Vac

ref. 0 271 64

277 Vac

ref. 0 271 67

380/415 Vac

ref. 0 271 65

440/480 Vac

ref. 0 271 66

UVR:

Circuit breaker opening time

<= 3ms

Maximum power 277-380-440-480V

<=4 VA

To get more information on auxiliary mounting procedures, please refer to product instruction sheet.

8.2 Rotary handles

- Direct on DRX ^{HP}**

Standard (grey)

ref. 0 271 78

- Vari-depth on DRX ^{HP}**

Comprising: connecting rod, bracket, drilling template, mounting accessories, door locking mechanism

Standard (grey)

ref. 0 271 79

8.3 Padlock (for DRX 125^{HP}/250^{HP})

For locking on "OFF" position (up to 3 locks)

ref. 0 271 80

8.4 Connection accessories

- Insulating shields (for DRX 125^{HP}/250^{HP})**

Used to isolate the connection between each pole

Set of 2 (3P)

ref. 6 693 00

Set of 3 (4P)

ref. 6 693 01

- Cage terminals**

Set of 3 terminals (3P) for cable 1x150mm² max (solid) or for cable 1x120mm² max (flexible)

ref. 6 693 04

Set of 4 terminals (4P) for cable 1x150mm² max (solid) or for cable 1x120mm² max (flexible)

ref. 6 693 05

- Rear terminals**

Provided with IP20 sealable terminal shield

kit for 3P

ref. 6 693 10

kit for 4P

ref. 6 693 11

- Sealable terminal shields**

Used to isolate the connection between each pole

Set of 2 (3P)

ref. 6 693 12

Set of 2 (4P)

ref. 6 693 13

- Spreaders**

Set of 3 (incoming or outgoing 3P)

ref. 6 678 65

Set of 3 (incoming or outgoing 4P)

ref. 6 678 66

8.5 XL³ S enclosure accessories

For DRX 125 ^{HP} and 250 ^{HP} offer, there is the possibility of mounting on XL³ S enclosures.

Complete installation possibilities are available with:

- 16, 24, 36M width
- vertical lateral uprights mounting type dedicated plates
- horizontal lateral and central (for XL³ S 4000 only) uprights mounting type dedicated plates
- dedicated or standard DIN faceplates for all the sizes

For more details, see specific specific XL³ S enclosure catalogue

DRX 250HP

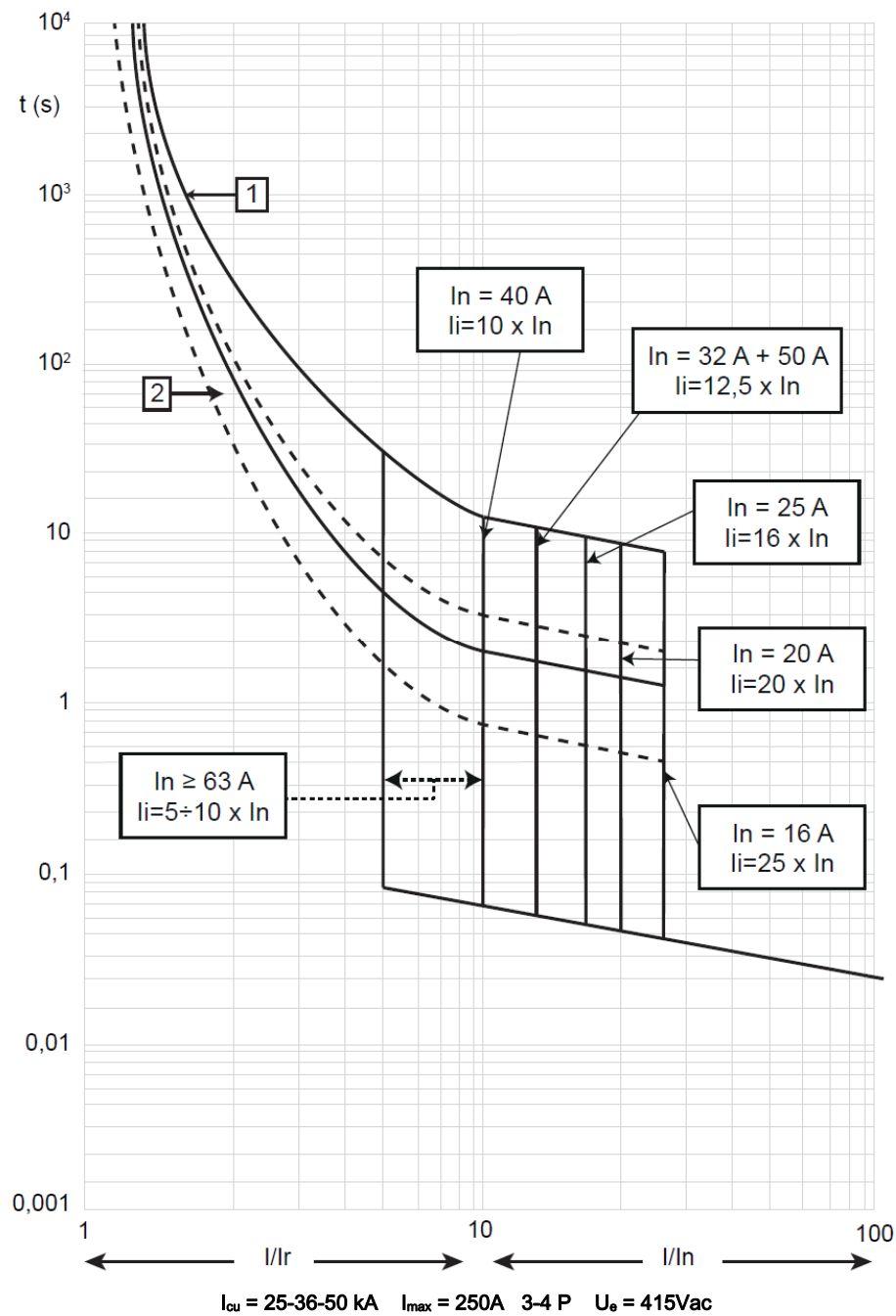
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9. CURVES

9.1 Thermal magnetic tripping curve

Update: 18/05/2018



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

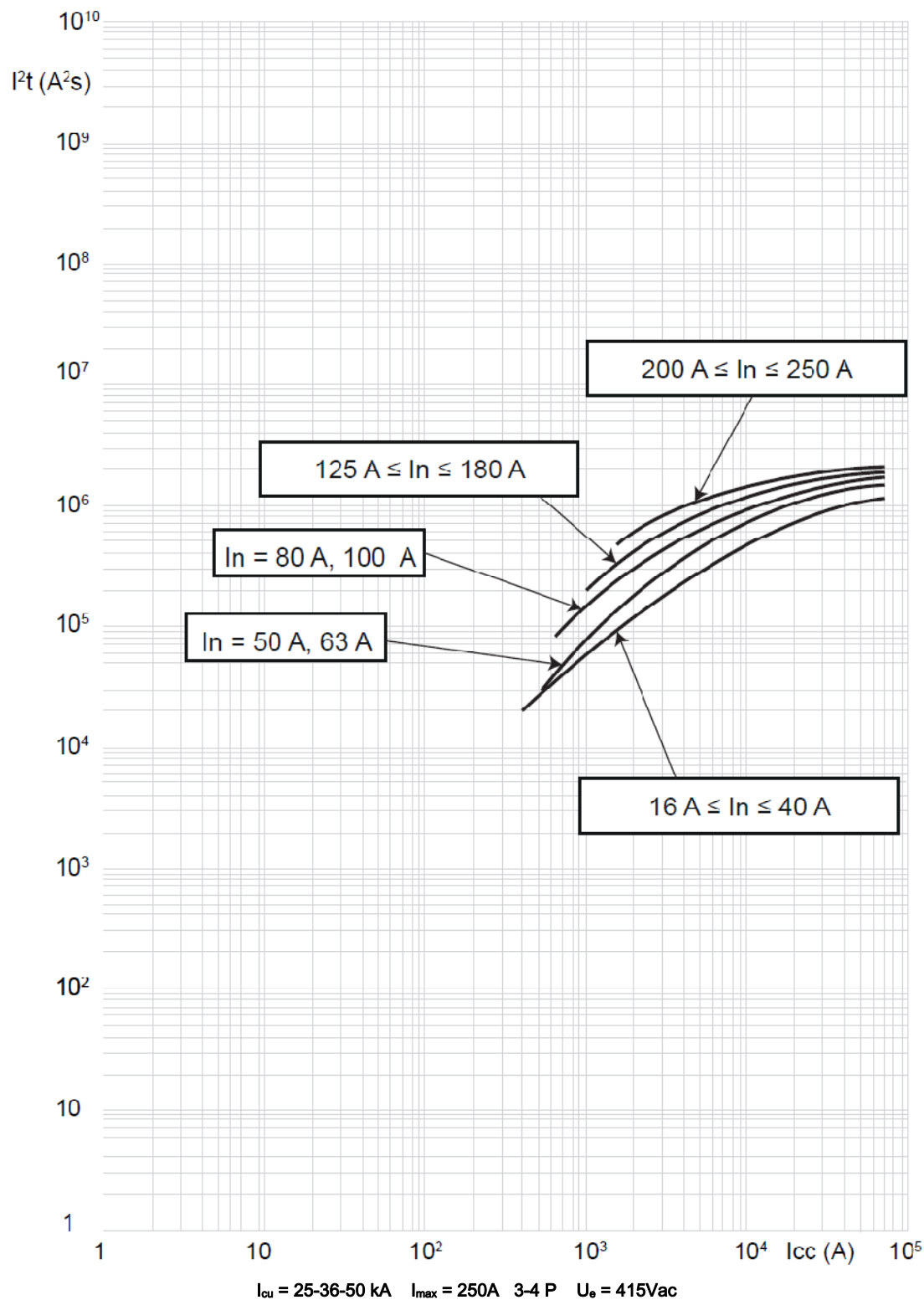
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9.2 Pass-through specific energy characteristic curve

Update: 28/06/2017



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

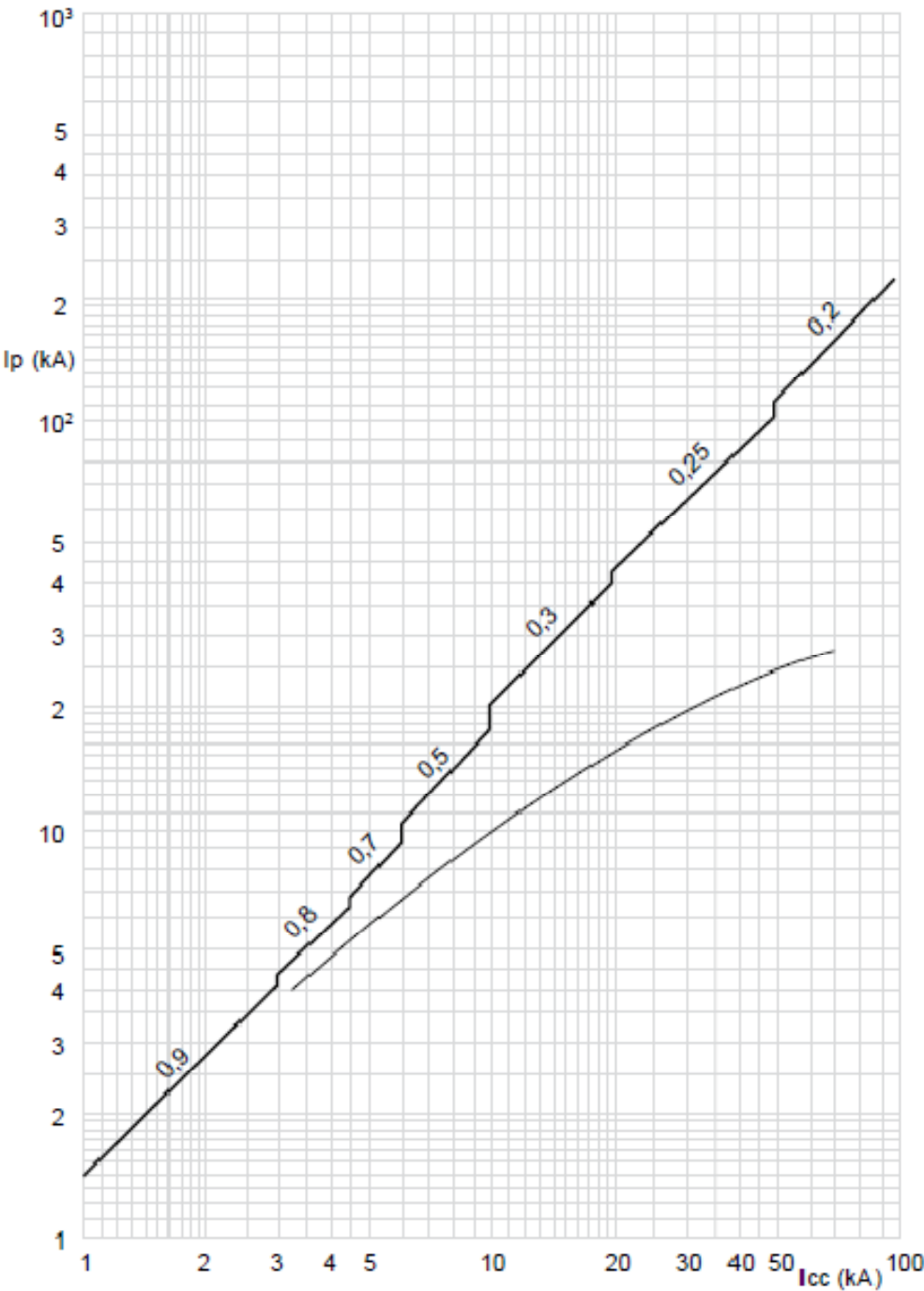
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9.3 Cut-off peak current characteristic curve (kA)

Update: 28/06/2017



I_{cu} = 25-36-50 kA I_{max} = 250A 3-4 P U_o = 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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A) Derating Temperature and configurations

DRX 250 ^{HP}	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
Cage terminals, flexible cable	250	1.00	250	1.00	250	1.00	225	0.90	213	0.85
Lugs, flexible cable	250	1.00	250	1.00	250	1.00	238	0,95	225	0.90
Spreaders, flexible cable	250	1.00	250	1.00	250	1.00	238	0,95	225	0.90

B) Correct factor for adjustment 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 _i (A) MIN at 400Hz	I _i (A) MAX at 400Hz
16	1	16	2	800	800
20	1	20	2	800	800
25	1	25	2	800	800
32	1	32	2	800	800
40	1	40	2	800	800
50	1	50	2	650	1300
63	1	63	2	630	1260
80	1	80	2	800	1600
100	0,95	95	2	1000	2000
125	0,9	113	2	1250	2500
160	0,9	144	2	1600	3200
200	0,85	170	2	2000	4000
250	0,85	213	2	2500	5000

For further technical information, please contact Legrand technical support.