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

DRX 250HP
Thermal magnetic fixed

Reference(s) : **6 674 10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39;**
6 694 10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39;
6 694 40/41/42/43/44/45/46/47/48/49/40/41/42/43/44/45/46/47/48/49/40/41/42/43/44/45/46/47/48/49

CONTENTS

1. USE

DRXHP 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.

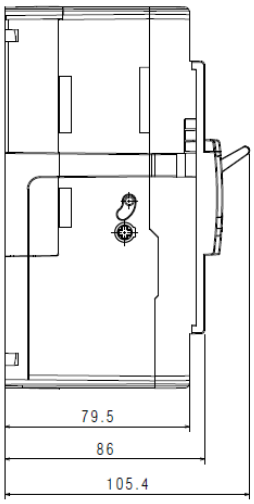
It provides easy assembly procedures during the phase of installation and mounting of accessories, suitable for professional use.

2. RANGE

	25 kA		36 kA		50 kA	
I_n (A)	3P	4P	3P	4P	3P	4P
16	669410	669425	669440	669455	667410	667425
20	669411	669426	669441	669456	667411	667426
25	669412	669427	669442	669457	667412	667427
32	669413	669428	669443	669458	667413	667428
40	669414	669429	669444	669459	667414	667429
50	669415	669430	669445	669460	667415	667430
63	669416	669431	669446	669461	667416	667431
80	669417	669432	669447	669462	667417	667432
100	669418	669433	669448	669463	667418	667433
125	669419	669434	669449	669464	667419	667434
160	669420	669435	669450	669465	667420	667435
180	669421	669436	669451	669466	667421	667436
200	669422	669437	669452	669467	667422	667437
225	669423	669438	669453	669468	667423	667438
250	669424	669439	669454	669469	667424	667439

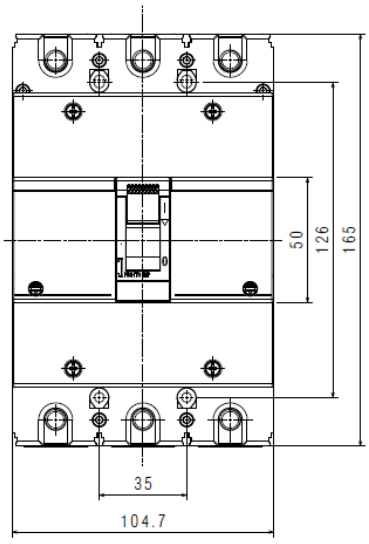
3. DIMENSIONS

Lateral view



Frontal view

3 poles



DRX 250HP
Thermal magnetic fixed

Reference(s) : **6 674 10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39;**
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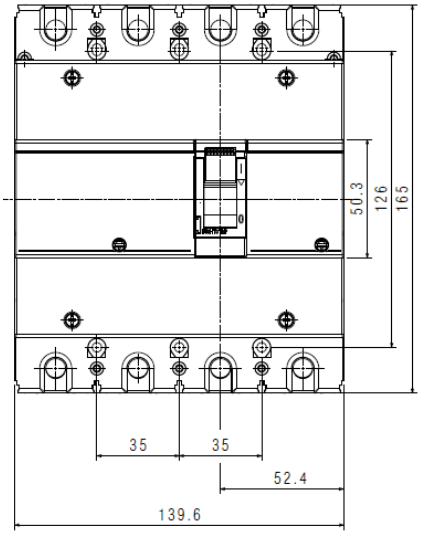
6 694 40/41/42/43/44/45/46/47/48/49/40/41/42/43/44/45/46/47/

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

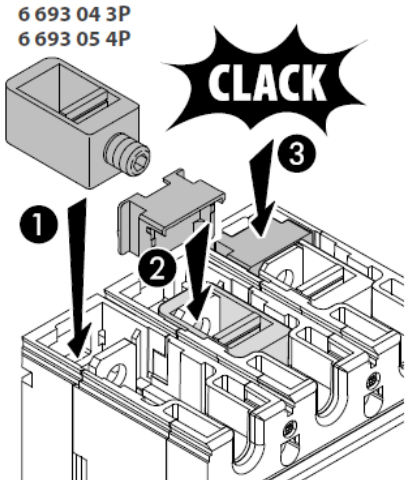
5.1 Mounting possibilities

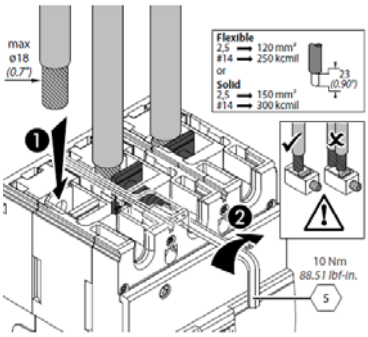
On plate:

- Vertical
- Horizontal

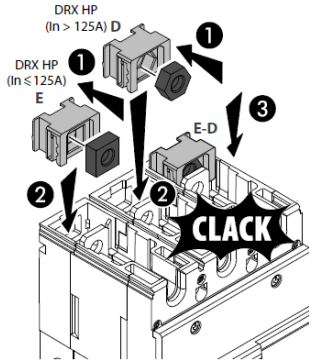
5.2 Cabling

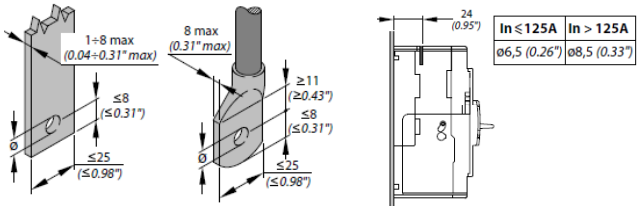
Cables:

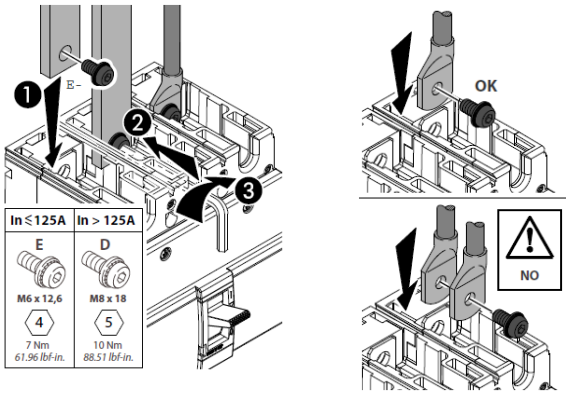




Busbars/cable lugs:







DRX 250HP
Thermal magnetic fixed

Reference(s) : **6 674 10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/ 28/29/30/31/32/33/34/35/36/37/38/39;**
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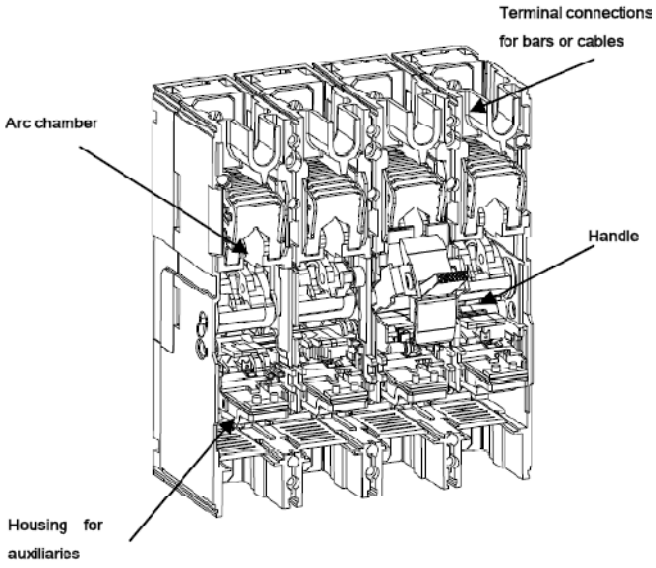
6 694 40/41/42/43/44/45/46/47/48/49/40/41/42/43/44/45/46/47/

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, 125,160,180,200,225,250
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)	fixed: at 1.0 x I_n
Magnetic adjustment I_i (A)	fixed: 400, up to 40A; 630, for I_n = 50A / 63A; 10x I_n, up to 250A
Neutral protection for 4P (%I_{th} 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		
	U_e/I_{cu}	25kA	36kA	50kA
IEC 60947-2	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}			
	I_{cm} (kA) at 415V	52.5	75.6	105
NEMA AB-1	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

6.5 Power losses per pole under I_n

Circuit breaker

	Power losses per pole (W)														
I_n (A)	16	20	25	32	40	50	63	80	100	125	160	180	200	225	250
Cage terminals	2,99	4,47	5,34	4,99	7,67	5,76	9,45	7,22	7,77	12,73	11,8	13,83	14,89	18,84	21,21
Lugs	2,73	4,08	6,38	4,56	7,01	5,26	8,63	6,59	7,1	11,63	10,78	12,64	13,6	17,21	19,38
Spreaders	2,3	3,44	4,11	3,84	5,9	4,43	7,27	5,55	5,98	9,79	9,08	10,64	11,45	14,49	16,32
Rear terminals	2,82	4,21	5,03	4,7	7,23	5,42	8,9	6,8	7,32	11,99	11,12	13,04	14,03	17,76	19,99

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

	Temperature Ta (°C)											
I_n (A)	-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
180	265	257	245	238	232	219	107	193	180	180	151	136
200	294	286	272	265	258	244	230	215	200	200	168	151
225	331	322	306	298	290	274	258	242	225	225	189	169
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 250HP 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°C/50°C)	1 x I_n	0.98 x I_n	0.93 x I_n	0.9 x I_n

6.6.4 Use at 400 Hz

See table B.

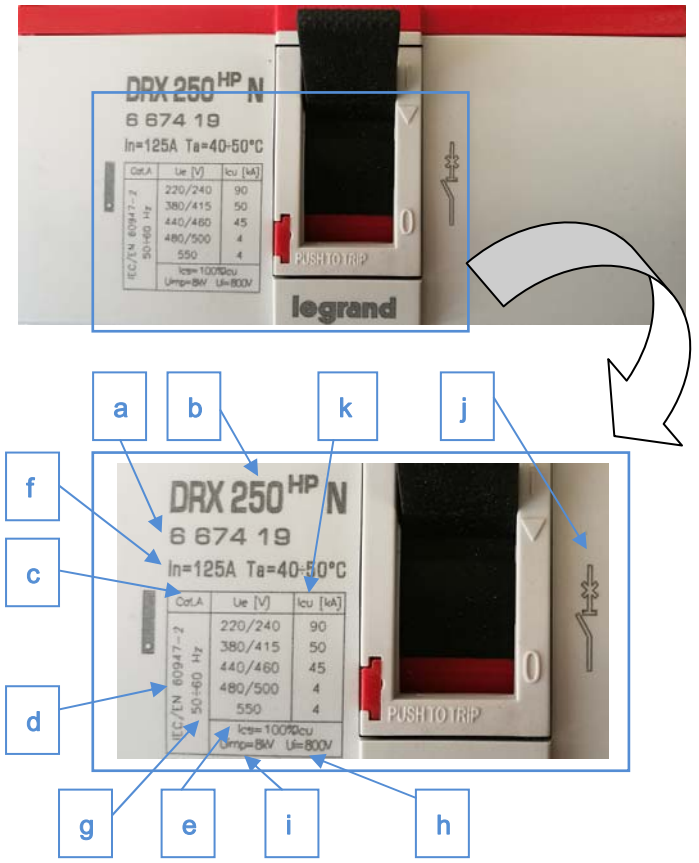
7. CONFORMITY

DRXHP 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

8. EQUIPMENTS AND ACCESSORIES

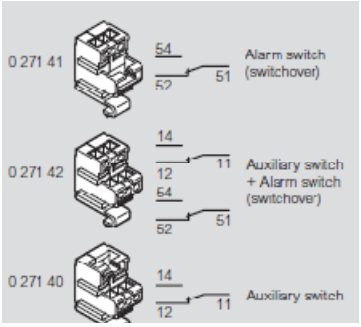
8.1 Control and signalling auxiliaries

- **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 auxiliariy 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 125HP/250HP)

For locking on “OFF” position (up to 3 locks) *ref. 0 271 80*

8.4 Connection accessories

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

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:

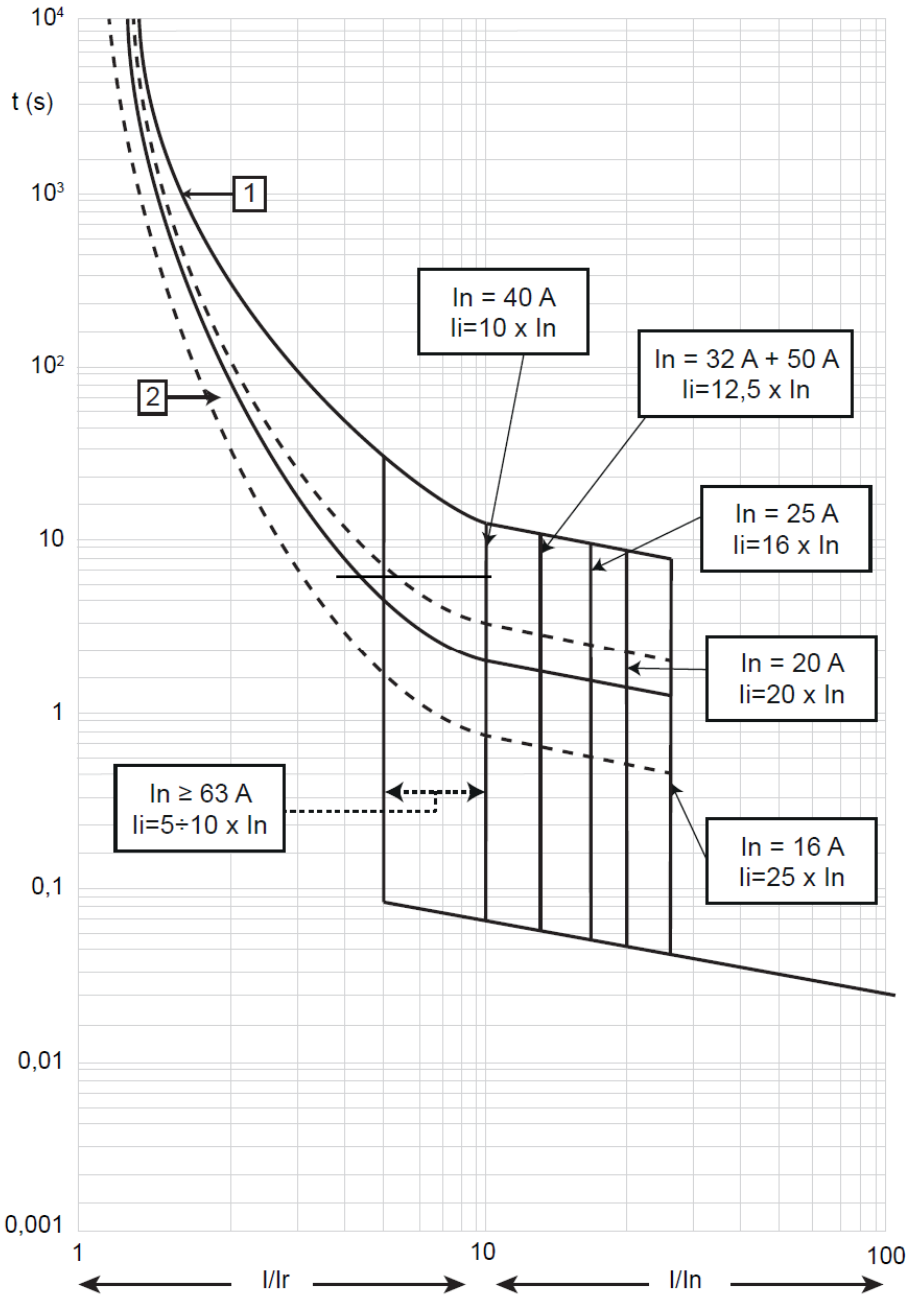
- 16, 24, 36M width
- vertical lateral uprights mounting type dedicated plates
- horizontal lateral and central (for XL³ S 4000 only) uprights mounting type dedicated plates
- dedicated or standard DIN faceplates for all the sizes

For more details, see specific specific XL³ S enclosure catalogue

9. CURVES

9.1 Thermal magnetic tripping curve

Update: 28/06/2017

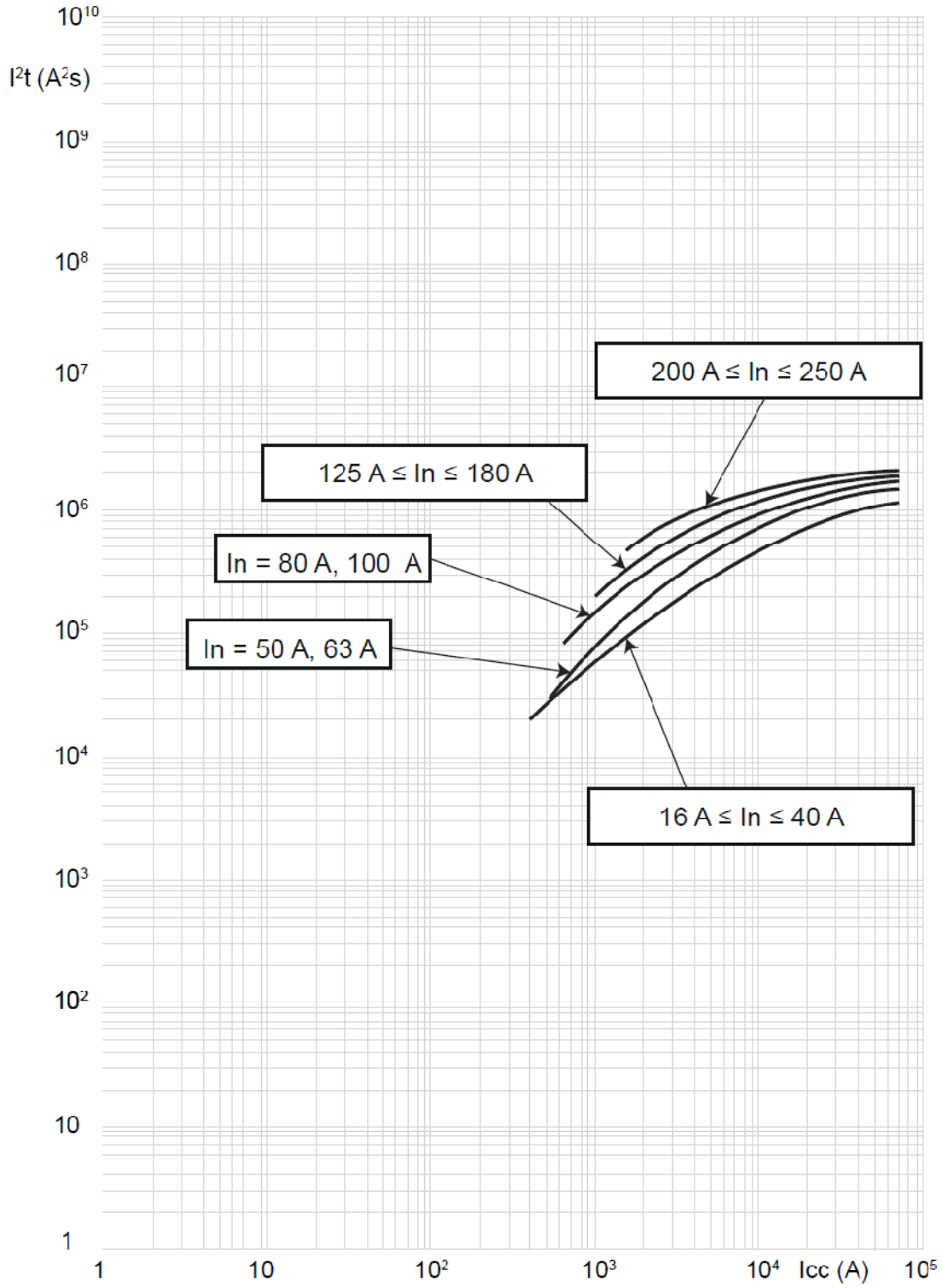


I_{cu} = 25-36-50 kA I_{max} = 250A 3-4 P U_e = 415Vac

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

9.2 Pass-through specific energy characteristic curve

Update: 28/06/2017



I_{cu} = 25-36-50 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

Reference(s) : **6 674 10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39;**
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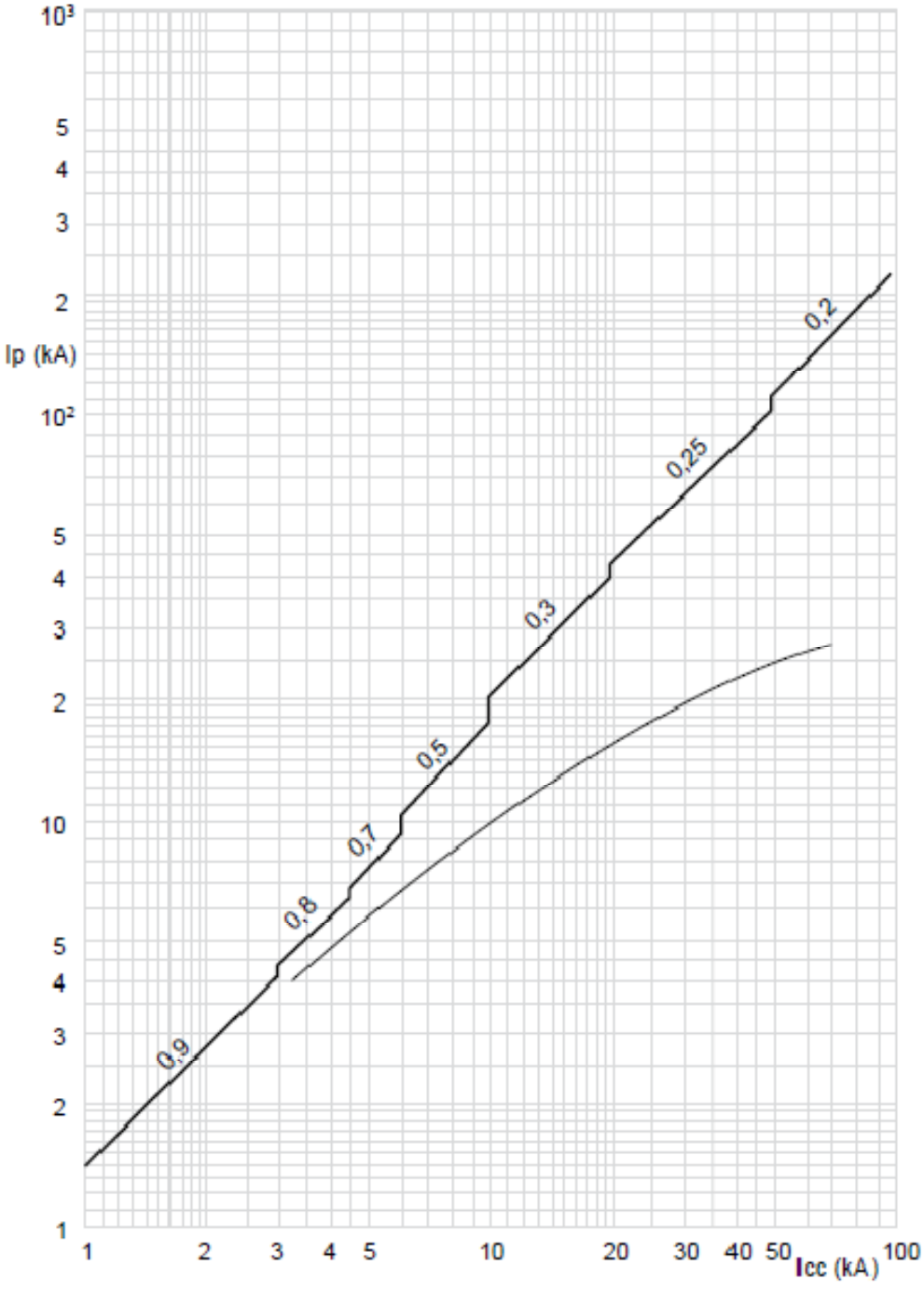
6 694 40/41/42/43/44/45/46/47/48/49/40/41/42/43/44/45/46/47/

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_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

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6 694 40/41/42/43/44/45/46/47/48/49/40/41/42/43/44/45/46/47/

A) Derating Temperature and configurations

DRX 250HP	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		
In (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	500	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
180	0,85	153	2	1800	3600
200	0,85	170	2	2000	4000
225	0,85	191	2	2250	4500
250	0,85	213	2	2500	5000

For further technical information, please contact Legrand technical support.