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R.C.B.O. four pole DX 6000 A

Cat. n°(s) : 079 62/64/65/66/67/75/77/78/79/80/ 080 75/76/77/78/79/80/84/85/86/87/88/95/96/97/98/99



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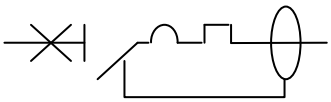
1. DESCRIPTION - USE

Residual Current Operated Circuit Breakers with integral overcurrent protection.
For control and protection of electrical circuits against overcurrent and insulation faults.
For protection of people against direct and indirect contact

Symbol :



Technology :
. Limiting device
. Electromagnetic residual current operating by sensitive relay
. Simultaneous opening and closing of the four poles (trip free mechanism)

2. PRODUCT RANGE

Poles :
. 4 pole RCBO

Width :
. 4 module wide (4 x 17.5)

Rated current :
. 6 – 10 – 13 – 16 – 20 – 25 - 32 A

Magnetic tripping curve :
. C (between 5 and 10 In) and B (between 3 and 5 In)

Type :
. AC (residual sinusoidal alternating current)
. A (residual alternating current with a DC component)

Sensitivity :
. 30 mA – 300 mA

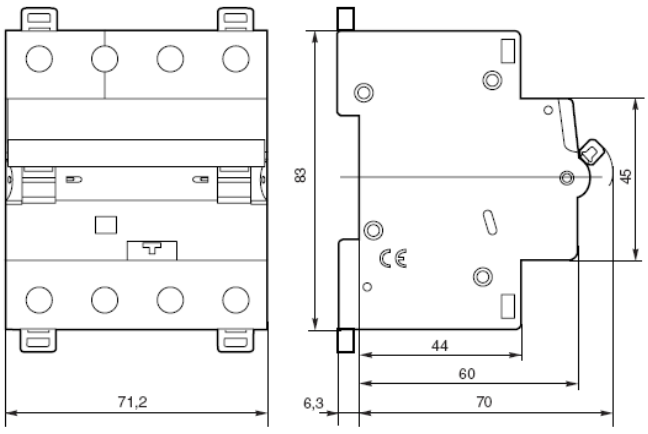
Rated voltage / Frequency :
. 230 / 400 V ~, 50 / 60 Hz with standard tolerances

2. PRODUCT RANGE (*continued*)

Breaking capacity :
. In three phase and neutral network (alternating current 50 / 60 Hz)

Standards		Voltage between phases	Breaking capacity
EN 61009-1	Icn	230 V	**6 kA**
		400 V	**6 kA**
EN 60947-2	Ics	230 V	**10 kA**
		400 V	**10 kA**
	Icu	230 V	**10 kA**
		400 V	**10 kA**

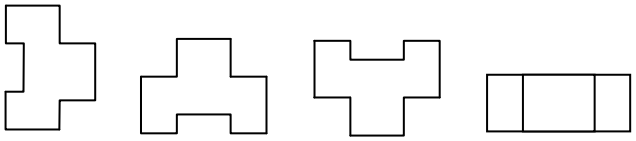
3. OVERALL DIMENSIONS



4. PREPARATION – CONNECTION

Fixing :
. On symmetric rail EN 50-022 or DIN 35

Operating positions :
.



Terminals :
. Terminals protected against touching (IP20)
. Terminals, with release type captive screw (feeder equipped preventing the insertion of a wire cable under the terminal, terminal half-opened or closed)
.Terminals enabling to supply this RCBO by the mean of a prong busbar or a fork busbar in parallel with other Legrand modular devices
. Terminals depth : top 13 mm and bottom 13 mm
. Screw head : mixed, slotted and pozidriv n° 2
. Tightening torque :
- Recommended : 2 Nm
- Min : 1.3 Nm
- Max : 3.5 Nm

Supply :
. top or bottom side

Wire type :
. Copper cable, in top and bottom terminals

	Without ferrule	With ferrule
Rigid cable	**1 x 0.75 mm² to 35 mm² 2 x 0.75 mm² to 16 mm²**	-
Flexible cable	**1 x 0.75 mm² to 25 mm² 2 x 0.75 mm² to 16 mm²**	**1 x 0.75 mm² to 25 mm²**

. Prong-type busbar for top and bottom terminals, without and with flexible wire (without ferrule) 16 mm² in the same terminal
. Fork busbar for bottom terminals or connection terminals

Operating device :
. by 2 position ergonomic handle
- I / ON : closed circuits
- O / OFF: open circuits

Display of contact status :
. By a marking on the handle
- I / ON in white on a red background : closed contacts
- O / OFF in white on a green background : open contacts

Display of residual current fault :
. Blue indicator front face

Circuits labelling :
. by a label in the front face label holder

4. PREPARATION – CONNECTION *(continued)*

Tools recommended :
. For terminals : 4 mm to 5.5 mm plate screwdriver or Posidriv n°2 screwdriver recommended
. For fixing on DIN rail or unclipping : 4 mm to 5.5 mm plate screwdriver recommended

5. GENERAL CHARACTERISTICS

Operation limit voltages for test operation :

IΔn	30 mA	300 mA
Umini	**195 V ~**	**195 v ~**
Umaxi	**440 V ~**	**440 V ~**

Electric network type – Neutral connection :
. IT – TT – TN

Residual breaking capacity :
. According to EN 61009-1 § 9.12.11.4d (IΔm : short circuit to the Earth) : IΔm = 4.5 kA

Breaking capacity of one single pole alone :
. At 400 V~, according to I_{IT} EN 60 947-2 – Annex H, one single pole breaking capacity is 3 kA (Double fault in IT network)

Isolating distance :
. The distance between contacts is over 5.5 mm when the handle is in “O-Off” position

Insulation voltage :
. Ui = 5000 V according to EN/IEC 61009-1

Pollution degree :
. 2

Dielectric strength :
. 3500 V

Electric shocks withstand rated voltage :
. U imp = 6 kV (1.5 / 50 µs wave)

Protection against unwanted tripping :
. 8 / 20 µs wave withstand : 250 A
. 0.5 µs / 100 kHz wave withstand : 200 A

Plastic raw material :
. Polyamide and P.B.T. parts

5. GENERAL CHARACTERISTICS *(continued)*

Resistance to heat and fire :

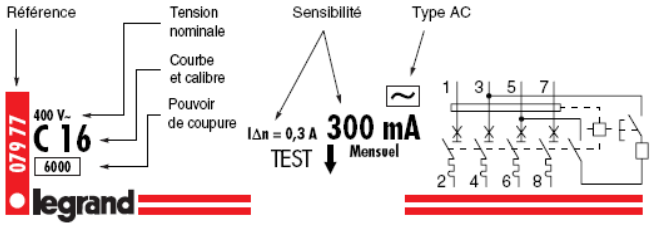
. Self extinguishing material
. heat and fire resistant according to EN 61009. Glow wire test at 960°C (650°C for handle)

Mechanical endurance :

. 20 000 operations without load
. 10 000 operations with load (under In x Cos φ 0.9)
. 2000 operations by Test button or residual current

Marking on front face :

. By permanent pad printing



Average weight :

. From 0.45 kg by device

Volume and quantity when packed :

	Volume (dm^3)	Packaging
For all rated currents	**0.7**	**Per 1**

Derating of R.C.B.O.'s according to ambient temperature

A standardised r.c.b.o. is set to operate at In with an ambient temperature of 30°C.
The rated characteristics of this device are not modified according to the ambient temperature within the cabinet or the enclosure where the r.c.b.o. is located.
Between 25°C and +40°C,the R.C.B.O. is still complying with the standard and no derating is required.
Stocking temperature from -25°C to +60°C.

Resistance against sinusoidal vibrations (according to IEC 68.2.6) :

. Axis : x – y – z
. Frequency : 10 to 55 Hz
. Acceleration : 3 g (1 g = 9.81 $m.s^{-2}$)

Heighth effect :

	2000 m	3000 m	4000 m	5000 m
Dielectric strength	**3000 V**	**2500 V**	**2000 V**	**1500 V**
Max operating voltage	**400 V**	**400 V**	**400 V**	**400 V**
Derating at 30°C	**none**	**none**	**none**	**none**

5. GENERAL CHARACTERISTICS *(continued)*

Derating in terms of numbers r.c.b.o.'s installed side by side :

. When several RCBO's operate at the same time side by side, thermal exhaust may be limited and the temperature of the RCBO's may increase high enough to produce unwanted tripping. Depending on the temperature inside the enclosure, it may be necessary to derate RCBO's according to the table below (standards IEC/EN 60439).

Number of RCBO's side by side	Factor
2 ou 3	**1**
4 ou 5	**0.8**
6 à 9	**0.7**
More than 10	**0.6**

In order to avoid to use these derating factors, use spacing elements cat. N° 044 40 (0.5 module) or cat. N° 044 41 (1 module) between RCBO's

Back-up protection with fuses upstream

. In three phase network (+N) 400 / 415 V according to IEC 60947-2 standard

		Upstream Fuses Type gG				
Downstream R.C.B.O. 4 pole		≤ 125A	160A	200A	250A	400A
DX 6000A / 10kA curves B / C	6A to 32A	**100 kA**	**40 kA**	**25 kA**	**16 kA**	**10 kA**

Back-up protection with M.C.B.'s upstream

. In three phase network (+N) 400 / 415 V according to IEC 60947-2 standard

		Upstream M.C.B.			
Downstream R.C.B.O. 4 pole		DX-H 10000A / 25kA curves B / C		DX-L 50kA	
		≤ 32A	40A to 125A	≤ 32A	40A to 63A
DX 6000A / 10kA curves B / C	6A to 25A	**25 kA**	**12,5 kA**	**50 kA**	**25 kA**
	32A	**-**	**12,5 kA**	**-**	**25 kA**

5. GENERAL CHARACTERISTICS *(continued)*

Back-up protection with M.C.C.B.'s upstream

. In three phase network (+N) 400 / 415 V according to IEC 60947-2 standard

		Upstream M.C.C.B.			
Downstream R.C.B.O. 4 pole		DPX-E 125	DPX 125	DPX DPX-H 160	DPX 250 ER
DX 6000A / 10kA curves B / C	6A to 32A	**16 kA**	**25 kA**	**25 kA**	**25 kA**

		Upstream M.C.C.B.			
Downstream R.C.B.O. 4 pole		DPX DPX-H 250	DPX DPX-H DPX-L 630	DPX DPX-H 1250	DPX DPX-H 1600
DX 6000A / 10kA curves B / C	≤ 20A	**25 kA**	**25 kA**	**25 kA**	**25 kA**
	25A			**20 kA**	**20 kA**
	32A			**15 kA**	**15 kA**

Selectivity with M.C.C.B.'s upstream

		Upstream M.C.C.B.			
Downstream R.C.B.O. 4 pole		DPX 125			
		≤ 40A	63A	100A	125A
DX 6000A / 10kA curves B / C	6A	**6000**	**6000**	**T**	**T**
	10A	**5000**	**5000**	**7500**	**7500**
	13A	**4000**	**4000**	**6000**	**6000**
	16A	**4000**	**4000**	**6000**	**6000**
	20A	**3000**	**3000**	**5000**	**5000**
	25A	**3000**	**3000**	**4500**	**4500**
	32A	**-**	**2000**	**4000**	**4000**

		Upstream M.C.C.B.		
Downstream R.C.B.O. 4 pole		DPX 160		
		63A	100A	160A
DX 6000A / 10kA curves B / C	6A	**T**	**T**	**T**
	10A	**7500**	**7000**	**T**
	13A	**6000**	**6000**	**T**
	16A	**6000**	**6000**	**T**
	20A	**5000**	**5000**	**T**
	25A	**4500**	**4500**	**8500**
	32A	**4000**	**4000**	**7000**

5. GENERAL CHARACTERISTICS *(continued)*

		Upstream M.C.C.B.		
Downstream R.C.B.O. 4 pole		DPX 250 ER		
		100A	160A	250A
DX 6000A / 10kA curves B / C	6A	**T**	**T**	**T**
	10A	**T**	**T**	**T**
	13A	**T**	**T**	**T**
	16A	**T**	**T**	**T**
	20A	**8000**	**T**	**T**
	25A	**6000**	**8500**	**T**
	32A	**5000**	**7000**	**T**

		Upstream M.C.C.B.			
Downstream R.C.B.O. 4 pole		DPX 250 DPX-H 250			DPX 630 1250 1600
		63A	100A	250A	tous In
DX 6000A / 10kA curves B / C	6A	**6000**	**T**	**T**	**T**
	10A	**5000**	**T**	**T**	**T**
	13A	**4000**	**T**	**T**	**T**
	16A	**4000**	**T**	**T**	**T**
	20A	**4000**	**8000**	**T**	**T**
	25A	**3000**	**6000**	**T**	**T**
	32A	**2000**	**5000**	**T**	**T**

6. CONFORMITIES AND APPROVALS

Compliance with standards :

. EN 61009-1
. IEC 61009-1
. « Tropicalization » : type II (all climates) according to UTE C 63-100 and IEC 68-2 standard (humid heat and salty fog)

Compliance with environment European rules :

. Complying with rule 2002/95/CE of 27/01/03 called « RoHS »
. Complying with rule 91/338/CEE of 18/06/91 and order 94-647 of 27/07/04

Plastic materials :

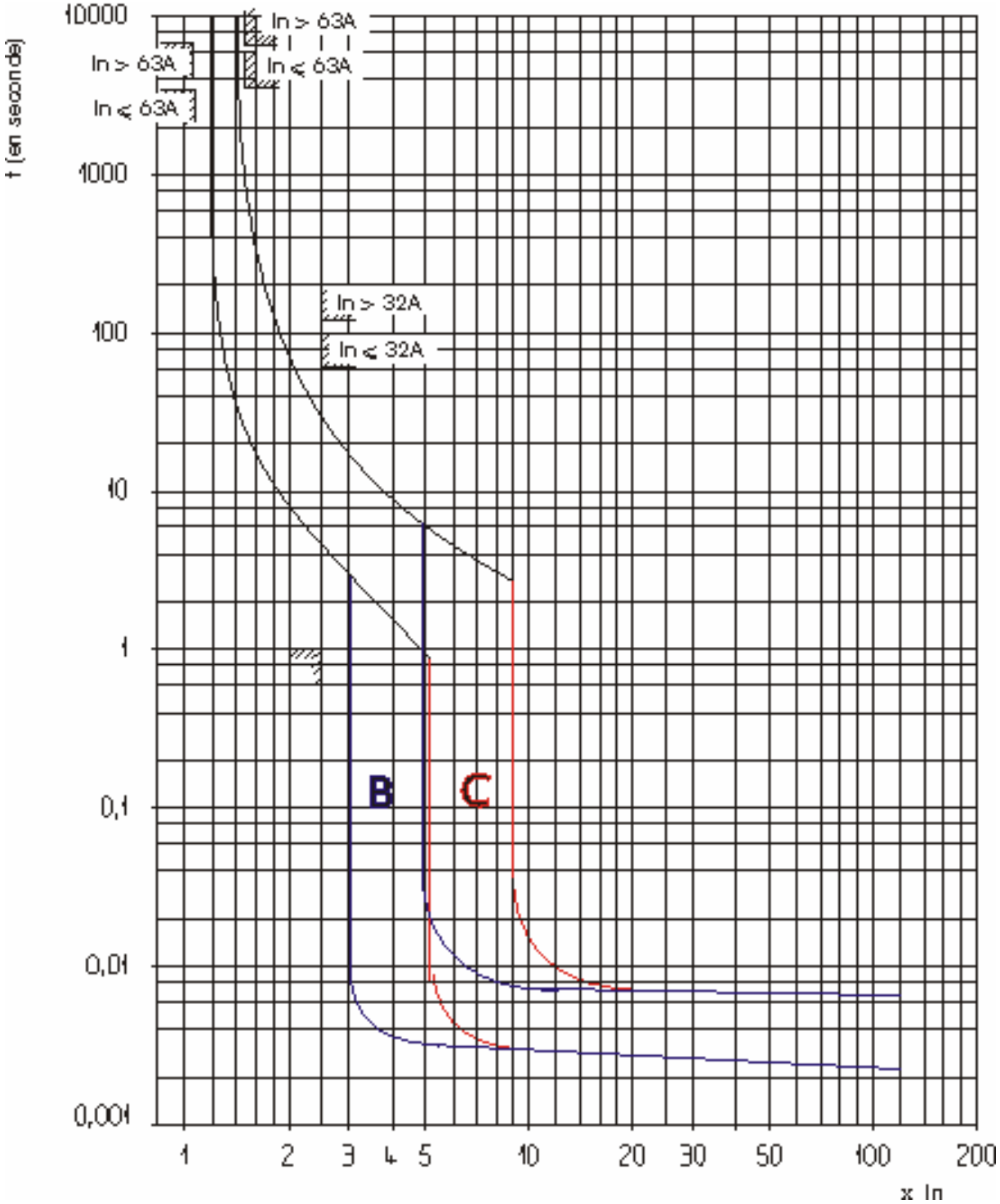
. Plastic parts are marked in compliance with ISO 11469 and ISO 1043

Packaging :

. Design and manufacturing of the packaging complying with order 98-638 of 20 July 1998 and rule 94/62/CE

7. CURVES

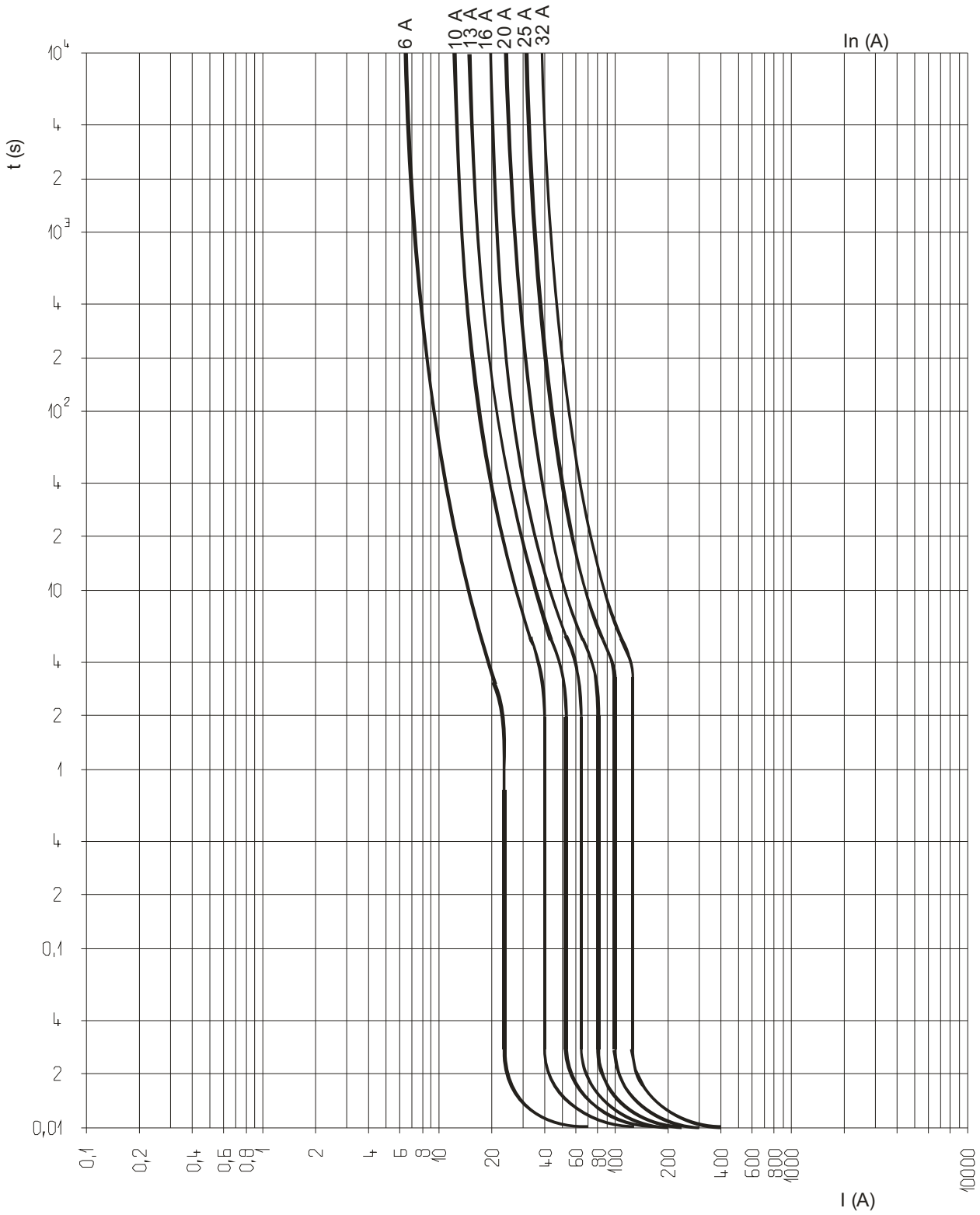
Magneto-thermal tripping zone : four pole RCBO's curves B and C



Thermal tripping at ambient temperature = 30°C
In = Rated current of the RCBO

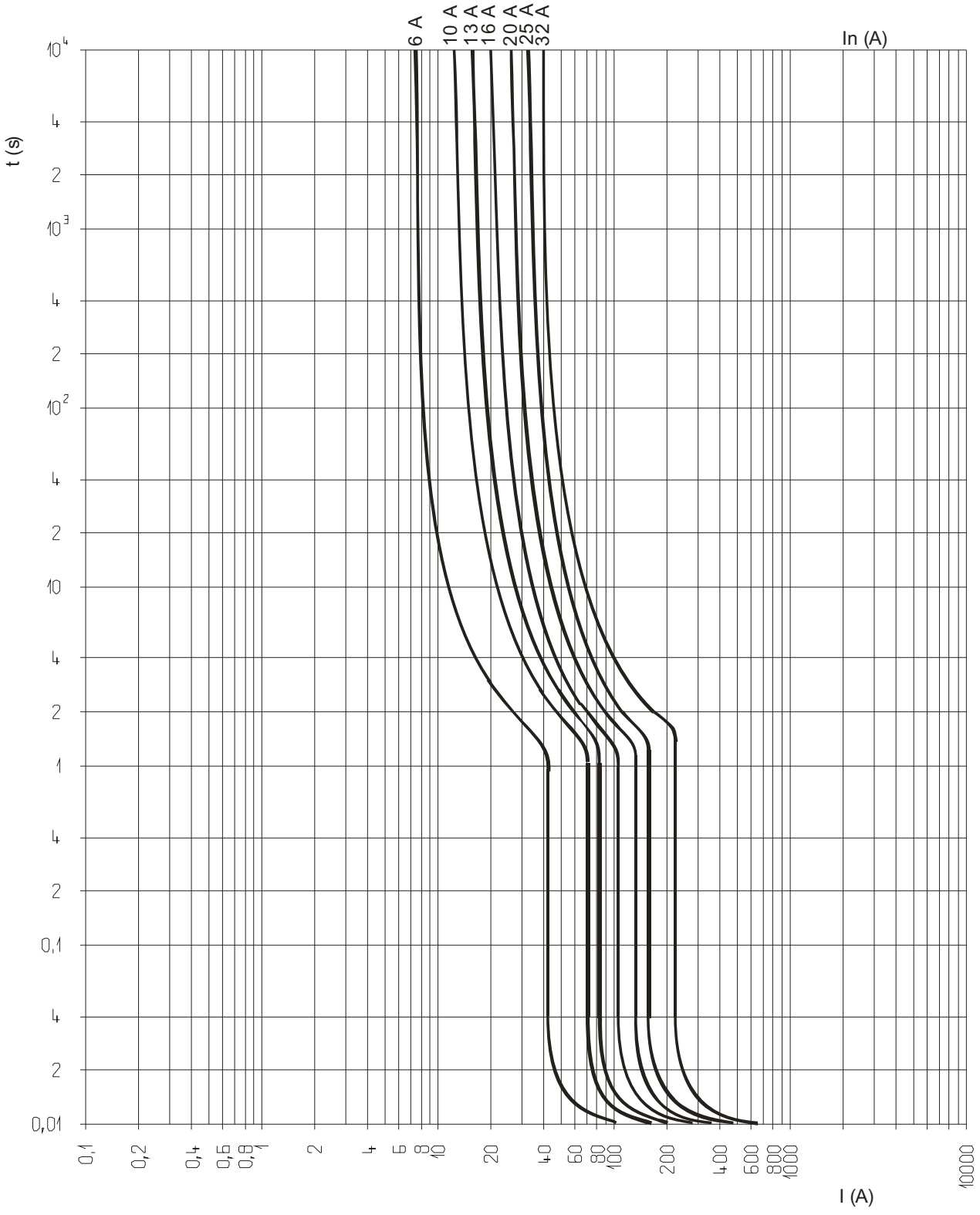
7. CURVES *(Continued)*

Typical operating curves : four pole RCBO DX curve B



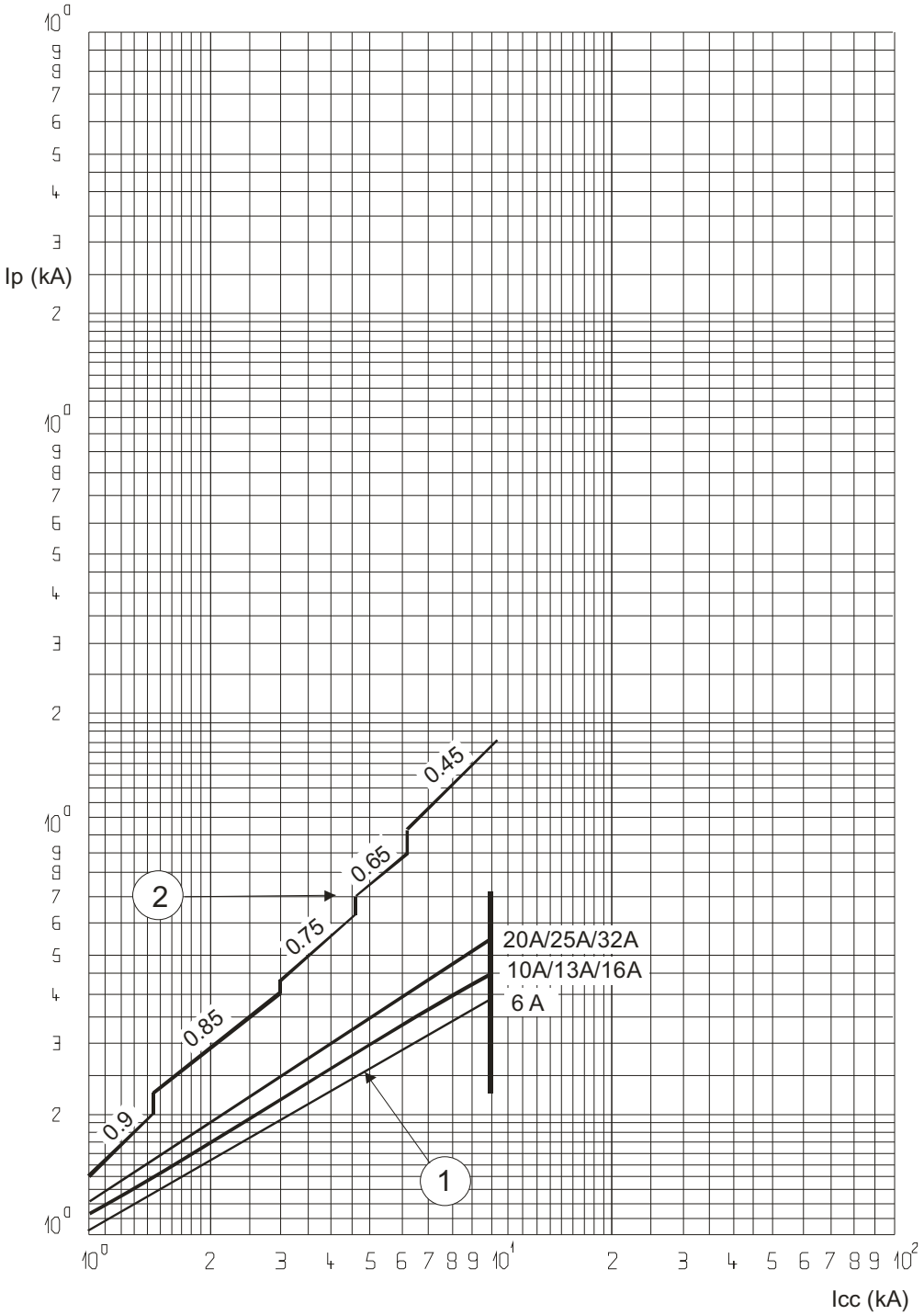
7. CURVES *(Continued)*

Typical operating curves : four pole RCBO DX curve C



7. CURVES *(Continued)*

Current limitation curves : four pole RCBO's curves B and C



Icc = Symmetric expected short circuit current (effective value in kA)

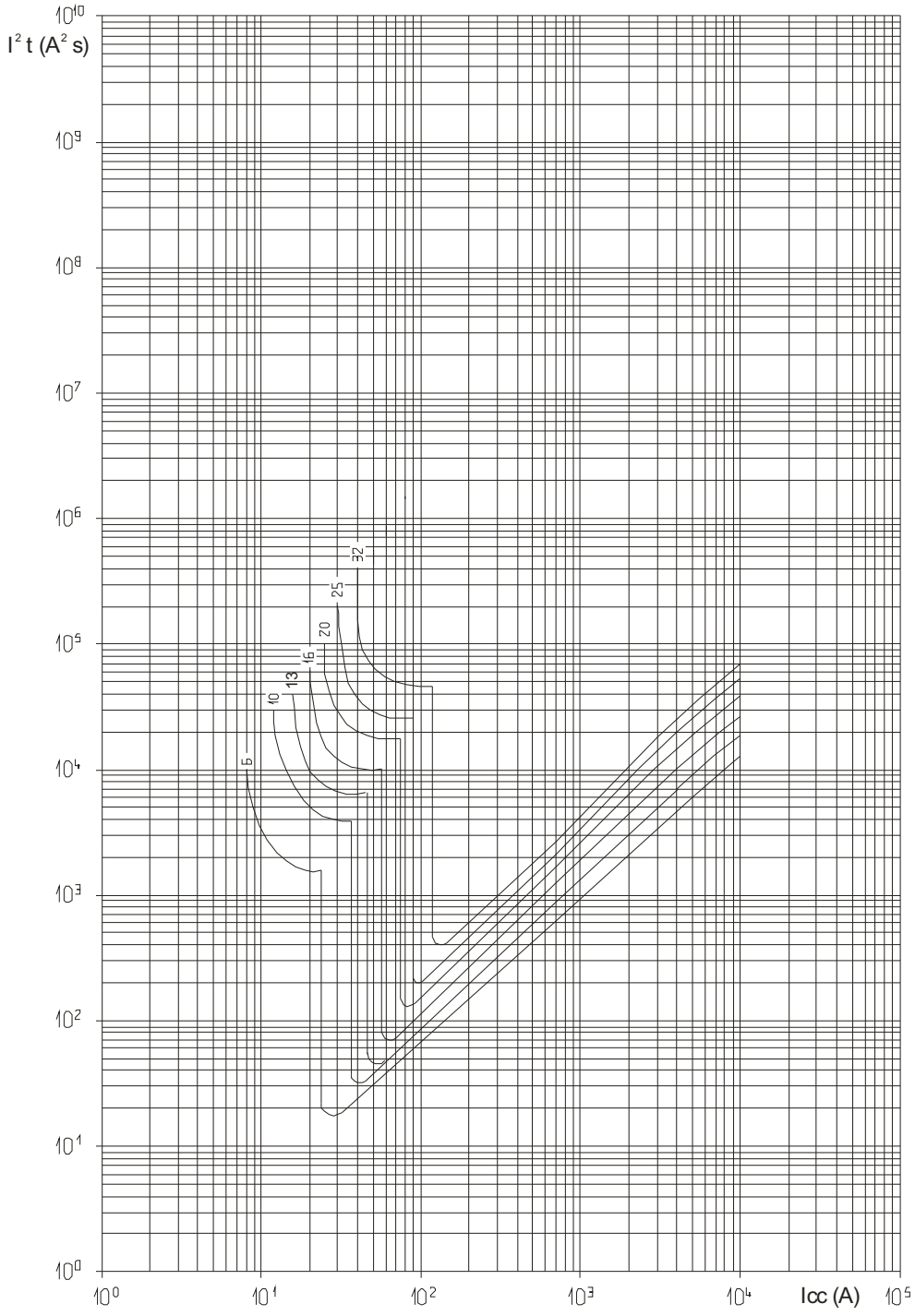
Ip = Maximum Peak Value (in kA)

(1) = effective short circuit currents (max peak)

(2) = not limited peak current (max), corresponding to power factors indicated above (0,15 to 0,9)

7. CURVES *(Continued)*

Thermal stress limitation curves : four pole RCBO's curve B

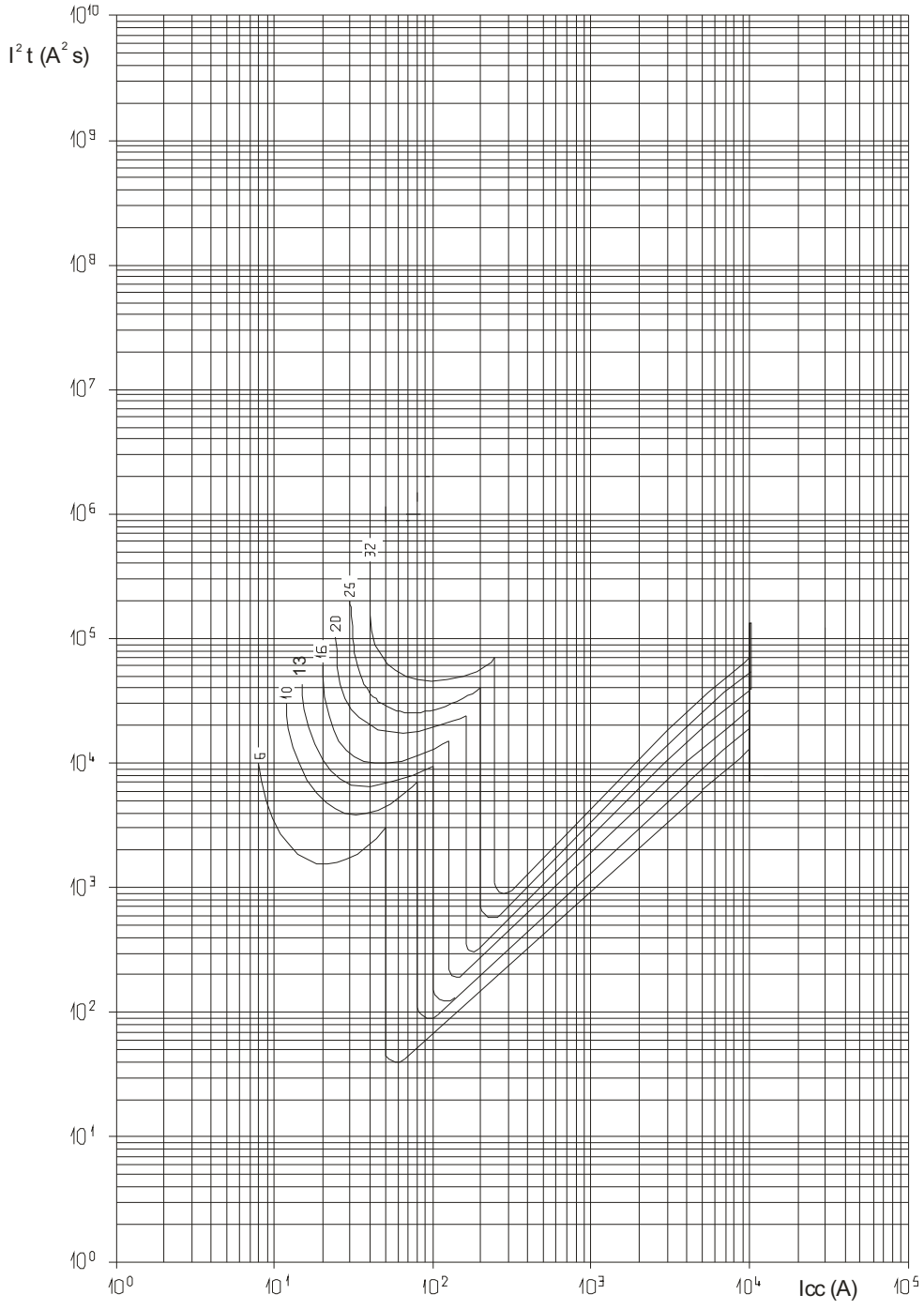


Icc = Expected short circuit symmetrical current (effective value in kA)

I²t = Limitated thermal stress (in A²s)

7. CURVES *(Continued)*

Thermal stress limitation curves : four pole RCBO's curves C

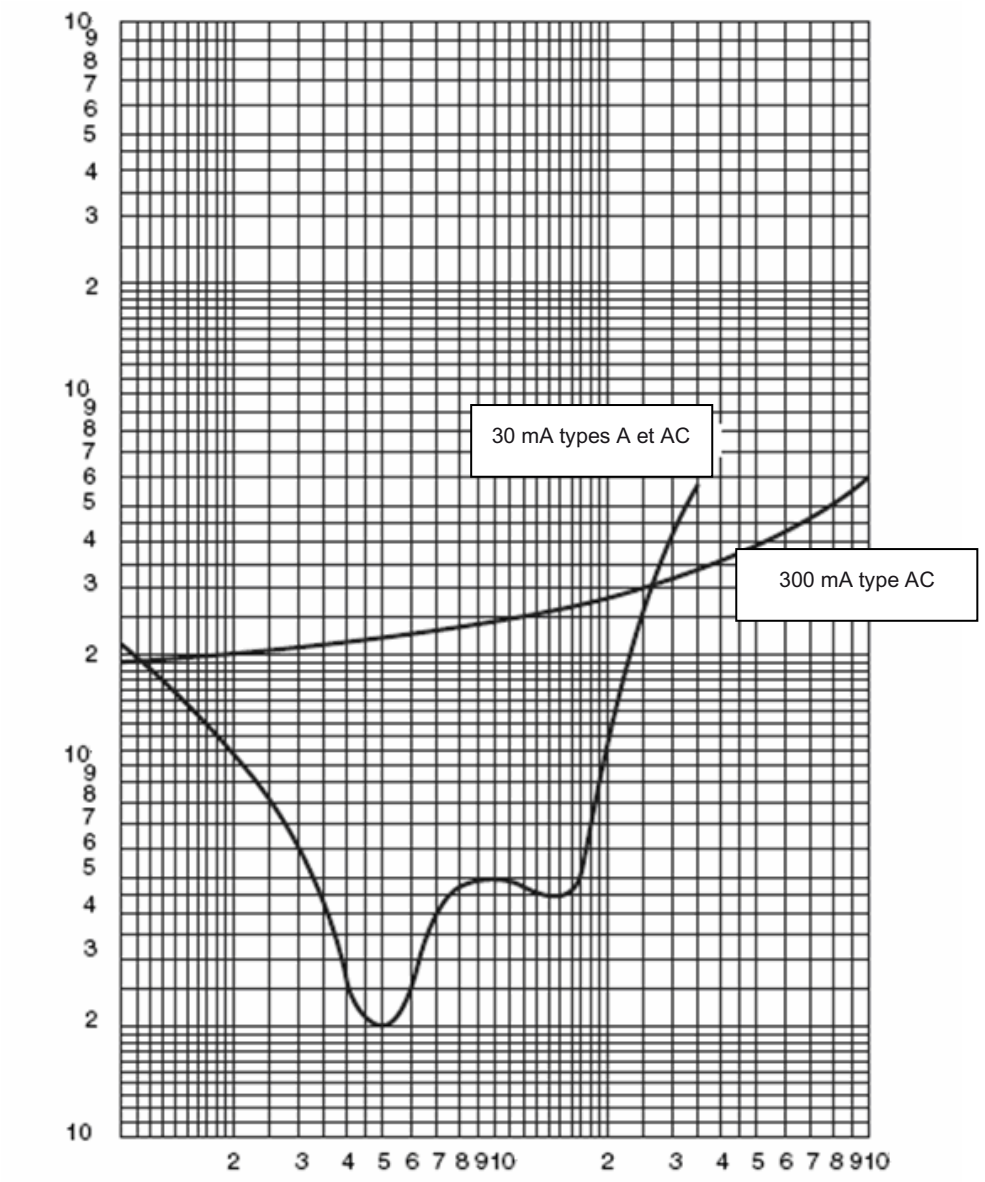


Icc = Expected short circuit symmetrical current (effective value in kA)

I²t = Limitated thermal stress (in A²s)

7. CURVES *(Continued)*

Residual current typical operating curves (threshold in mA) in terms of frequencies



8. EQUIPMENTS AND ACCESSORIES

Wiring accessories :

. Supply busbar
. Terminal screw covers (ref. 044 44)
. LEXICLIC distribution blocks + wires

Auxiliaries list :

. Auxiliary changeover switch (0.5 module, cat. n° 073 50)
. Fault signalling changeover switch (0.5 module, cat. n° 073 51)
. Auxiliary changeover switch can be modified to a fault signalling switch (0.5 module, cat. n° 073 53)
. Auxiliary changeover switch + fault signalling switch can be modified to 2 auxiliary changeover switches (1 module, cat. n° 073 54)
. Shunt trip enables RCBO to be tripped from a distance (1 module, cat. n° 073 60/61)
. Minimum voltage trip enables RCBO to be tripped from a distance (1 module, cat. n° 073 65/66/68)

Allowed combinations of auxiliaries and RCBO :

. Auxiliaries are clipped on the left-hand side of the RCBO
. Maximum number of auxiliaries = 3
. Maximum number of 1 module signalling auxiliaries = 2
. Maximum number of ½ module signalling auxiliaries = 1
. Maximum number of control auxiliaries (073 6X) = 1
. Control auxiliary (cat. n° 073 6 X) must be positioned on the left-hand side of the signalling auxiliary in the case of auxiliaries of this two families used with the same RCBO

Sealing :

. Possible in open or closed position

Possibility to lock :

. By padlock diameter 5 mm (ref. 044 43) or padlock diameter 6 mm (cat. n° 227 97) and support padlock (cat. n° 044 42)

Installation software :

. XL PRO²

Marking :

. Circuit marking on front face (with label holder)
. With label design software
. With electronic title printer with ribbon
. With plates of symbols
. With adhesive label-holders