87045 LIMOGES Cedex
Telephone number: +33 (0)5 55 06 87 87 – Fax: +33 (0)5 55 06 88 88

DX³ RCCBs - ID 4P up to 100 A

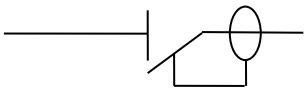
Cat. N°(s): 4 116 60, 6 61, 6 62, 6 63, 6 64, 6 65, 6 66, 6 67, 4 116 68, 6 69, 6 74, 6 75, 6 76, 6 77, 6 78, 6 84, 6 85, 6 86, 4 116 87, 6 88, 6 94, 6 95, 6 96, 6 97

CONTENTS PAGE

1. DESCRIPTION - USE

RCCBs with positive contact indication for control, protection and isolation of electrical circuits, protecting people from direct and indirect contact and protecting installations from insulation faults.

Symbol:



Technology:
. Electromagnetic residual current function with current-sensing relay

2. RANGE

Polarity:
. 4-pole

Width:
. 4 modules (4 x 17.8 mm)

Nominal rating In:
. 25 / 40 / 63 / 80 / 100 A

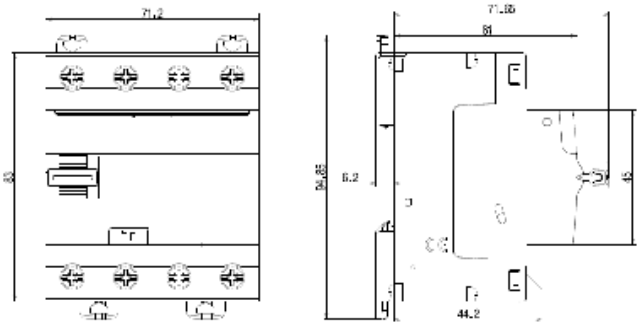
Residual current types:
. AC (sinusoidal differential alternating currents)
. A (residual currents with a DC component)
. AC-S and A-S (discriminating)
. F (immunised against false tripping). F products are also A type.

Sensitivity:
. 30/300 mA

Nominal voltage and frequency:
. 400 V~ / 415 V~, 50 Hz with standard tolerances

Maximum operating voltage:
. 440 V ~, 50 Hz

3. OVERALL DIMENSIONS

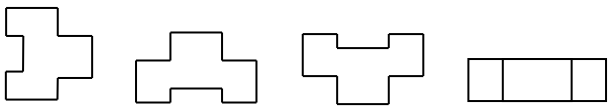


4. PREPARATION - CONNECTION

Mounting:
. On symmetrical rail EN 60715 or DIN 35 rail

Operating positions:

. Vertical, horizontal, flat, upside down



Power supply:
. From the top or the bottom

Connection:
. Inputs and outputs via screw terminals
. Neutral on left

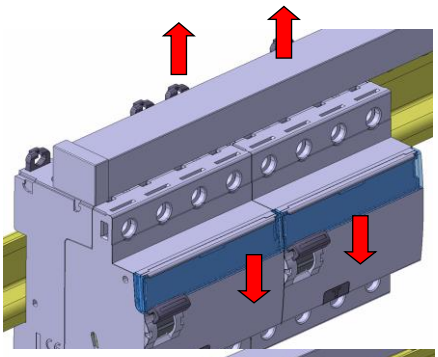
Terminal arrangement:
. Cage terminals, with disengageable and captive screws (fitted with flaps preventing a cable being placed under the terminal, with the terminal partly open or closed)
. Terminals protected against direct finger contact IP20, wired

4. PREPARATION - CONNECTION *(continued)*

. A circuit breaker may be replaced in the middle of a row supplied with busbars without disconnecting the other products

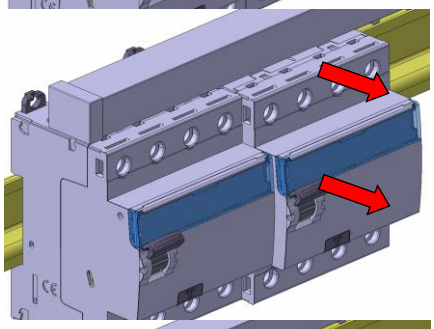
Put the lugs in the unlocking position

Put the latch clips in the unlocking position

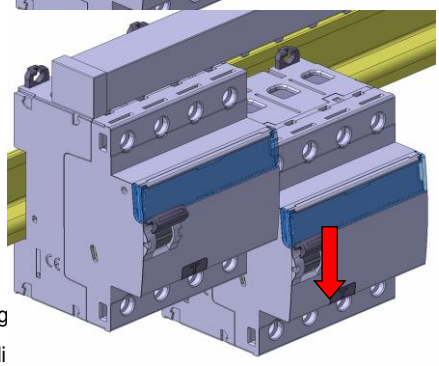


Unscrew the four upper terminals completely

Pull the device forward in order to release it from the rail



Pull the device downward in order to release it completely from the prongs of the busbar



Connection:
. Terminals protected ag
device
. Cage terminals, with di
. Terminals fitted with flaps preventing a cable being placed under the terminal, with the terminal partly open or closed
. Alignment and spacing of the terminals permitting connection with the other products in the range via toothed supply busbars

4. PREPARATION - CONNECTION *(continued)*

Terminal arrangement: *(continued)*
. Alignment and spacing of the terminals permitting shutters with the other products via toothed supply busbars
. Terminal depth: 14 mm
. Terminal capacity: 60 mm²
. Screw head: mixed head, slotted head and Philips / Pozidriv no. 2
. Tightening torques:
- Minimum / Maximum: 1.2 Nm / 3.5 Nm
- Recommended: 2.5 Nm

Conductor types:
. Copper cables at the top and bottom of the product
- Cable cross-section:

	Without ferrule	With ferrule
Rigid cable	**1 x 0.75 to 50 mm²** **or** **2 x 0.75 to 16 mm²**	/
Flexible cable	**1 x 0.75 to 35 mm²** **or** **2 x 0.75 to 16 mm²**	**1 x 0.75 to 25 mm²**

Required tools:
. For the terminals:
- 5.5 mm / 6.5 mm blade screwdriver recommended
- Pozidriv n°2 / Philips N°2 screwdriver recommended

. For the latching:
- 5.5 mm blade screwdriver recommended / 6 mm maximum
- Pozidriv n°2 / Philips N°2 screwdriver recommended

Device handling:
. Manual action via ergonomic 2 position handle:
- I-On, device closed O-Off, device open

Contact status display:
. By marking of the handle:
- I-On, in white on a red background: closed contacts
- O-Off, in white on a green background: contacts open

Residual current trip display:
. Handle at the bottom position, the residual current is released

Lockout:
. Padlocks possible in the open or closed positions with padlock support (Cat. No. 4 063 03) and Ø5 mm padlock (Cat. No. 4 063 13) or Ø6 mm padlock (Cat. No. 227 97)

Sealing:
. Possible in the open or closed positions

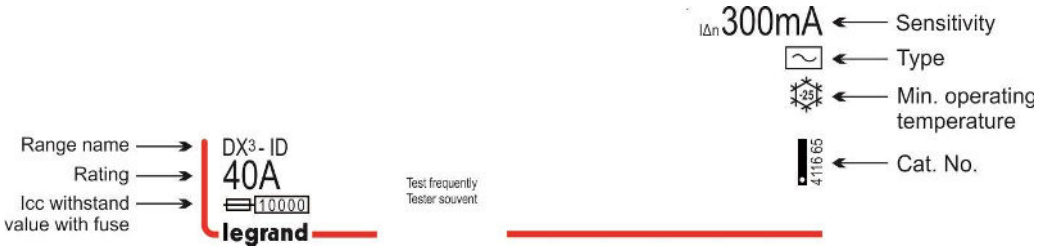
4. PREPARATION - CONNECTION *(continued)*

Labelling:
. Circuit identification by way of a label inserted in the label holder situated on the front of the product

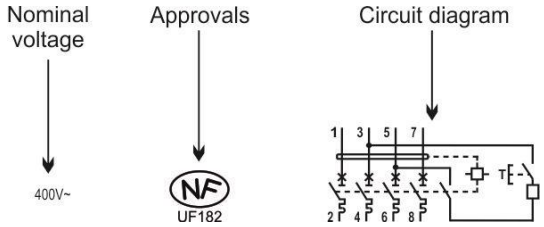
5. GENERAL CHARACTERISTICS

Neutral earthing system:
. IT, TT and TN

Marking:
. "N" marking of the neutral
. Marking on the "front side": (by permanent ink pad printing)



Marking on the upper panel:
. By permanent ink pad printing



Test operating voltage:
. 30 mA AC / A / F types: from 320 V to 440 V~
. 300 mA AC/A types: from 220 V to 440 V~
. 300 mA S type: from 220 V to 440 V~

Rated conditional short-circuit current:
. Inc = 10 kA, in accordance with EN/IEC 61008-1

Rated conditional short-circuit residual current:
. IΔc = 10 kA, in accordance with EN/IEC 61008-1

Rated residual breaking capacity:
. IΔm = 1000 A, in accordance with EN/IEC 61008-1

Rated breaking and making capacity:
In accordance with EN/IEC 61008-1,
. In = 25 / 40 A : Im = 500 A
. In = 63 A : Im = 630 A
. In = 80 A : Im = 800 A
. In = 100 A : Im = 1000 A

5. GENERAL CHARACTERISTICS *(continued)*

Protection against overloads:
. The RCCB must be protected against overloads (either upstream or downstream) by a circuit breaker or a fuse which has a maximum of the same nominal current as the residual current switch

Protection against short-circuits:
. The RCCB must be protected upstream against short circuits using a circuit breaker or a fuse. Its resistance to short circuits when associated with a Legrand circuit breaker or fuse is compliant with the values stated in the tables below:

. Association with a circuit breaker:

		Upstream circuit breaker				
		DX³ 4500 / 6 kA 3P / 4P 3 mod	DX³ 6000 / 10 kA	DX³ 10000 / 16 kA	DX³ 25 kA	DX³ 36 kA
Downstream RCCB	Curves	C	B, C & D	B, C & D	B, C & D	C
	In	≤ 32 A	≤ 63 A	≤ 125 A	≤ 125 A	≤ 80 A
4P - 400 V~	25 A to 100 A	**6 kA**	**10 kA**	**16 kA**	**25 kA**	**36 kA**

		Upstream circuit breaker				
		DX³ 50 kA	DPX³ 160 / DPX³ 160 + residual current			
			16 kA	25 kA	36 kA	50 kA
Downstream RCCB	Curves	B, C & D				
	In	≤ 63 A	≤ 160 A	≤ 160 A	≤ 160 A	≤ 160 A
4P - 400 V~	25 A to 100 A	**50 kA**	**16 kA**	**25 kA**	**25 kA**	**25 kA**

. Association with circuit breakers: case of a double fault, in IT system – Resistance to the Icc of a single pole

Downstream RCCB	Circuit breaker upstream		
	DX³ 3P / 4P 3 mod	DX³ 3P / 4P 3 mod	DX³ 1P / 2P / 3P / 4P
	4500 A / 6 kA	6000 A / 10 kA	
At 230 V	**4.5 kA**	**6 kA**	**10 kA**
At 400 V	**3 kA**	**3 kA**	**3 kA**

Downstream RCCB	Circuit breaker upstream			
	DX³ 1P / 2P / 3P / 4P	DX³ 1P / 2P / 3P / 4P	DX³ 1P / 2P / 3 P/ 4P	DX³ 1P / 2P / 3P / 4P
	10,000 A / 16 kA	25 kA	36 kA	36 kA
At 230 V	**16 kA**	**25 kA**	**36 kA**	**50 kA**
At 400 V	**4 kA**	**6.25 kA**	**9 kA**	**12.5 kA**

5. GENERAL CHARACTERISTICS *(continued)*

Protection against short circuits (continued):

. Association with a fuse:

Downstream	Upstream			
RCCB	gG or aM type fuse			
Rating	≤ 50 A	63 A	80 A	≥ 100 A
25 A to 100 A	**100 kA**	**50 kA**	**15 kA**	**10 kA**

Power dissipated by the device:

RCCB		Power dissipated by the device (In)			
Rating	Sensitivity	AC type	A type	AC-S type	F type
25 A	30 mA	**6 W**	**6 W**		**1.77 W**
25 A	300 mA	**1.9 W**	**1.9 W**		
40 A	30 mA	**15.3 W**	**15.3 W**		**4.5 W**
40 A	300 mA	**4.8 W**	**4.8 W**	**4.5 W**	
63 A	30 mA	**11.8 W**	**11.8 W**		**11.3 W**
63 A	300 mA	**11.8 W**	**11.8 W**	**11.3 W**	
80 A	30 mA	**19.1 W**	**19 W**		**18.1 W**
80 A	300 mA	**19.1 W**	**19 W**		
100 A	30 mA		**28.3 W**		
100 A	300 mA		**28.3 W**		

Temperature derating:
. Reference temperature: 30°C in accordance with standard IEC/EN 60947-2

	Ambient Temperature/In								
In (A)	- 25°C	- 10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C
25 A	**25**	**25**	**25**	**25**	**25**	25	**25**	**25**	**25**
40 A	**40**	**40**	**40**	**40**	**40**	40	**40**	**25**	**25**
63 A	**63**	**63**	**63**	**63**	**63**	63	**63**	**40**	**40**
80 A	**80**	**80**	**80**	**80**	**80**	80	**80**	**63**	**63**
100 A	**100**	**100**	**100**	**100**	**100**	100	**100**	**80**	**80**

Specific use:
. Appropriate to operate in humid atmosphere and polluted by a chlorine environment (pool type)

5. GENERAL CHARACTERISTICS *(continued)*

Weight per device:

Catalogue Number	Description	Weight (kg)
4 116 60	25 A AC type 30 MA	**0.34**
4 116 61	40 A AC type 30 MA	**0.34**
4 116 62	63 A AC type 30 MA	**0.36**
4 116 63	80 A AC type 30 MA	**0.36**
4 116 64	25 A AC type 300 MA	**0.32**
4 116 65	40 A AC type 300 MA	**0.32**
4 116 66	63 A AC type 300 MA	**0.32**
4 116 67	80 A AC type 300 MA	**0.32**
4 116 68	40 A AC-S type 300 MA	**0.37**
4 116 69	63 A AC-S type 300 MA	**0.37**
4 116 74	25 A A type 30 MA	**0.33**
4 116 75	40 A A type 30 MA	**0.33**
4 116 76	63 A A type 30 MA	**0.36**
4 116 77	80 A A type 30 MA	**0.41**
4 116 78	100 A A type 30 MA	**0.37**
4 116 84	25 A A type 300 MA	**0.32**
4 116 85	40 A A type 300 MA	**0.33**
4 116 86	63 A A type 300 MA	**0.39**
4 116 87	80 A A type 300 MA	**0.33**
4 116 88	100 A A type 300 MA	**0.33**
4 116 94	25 A F type 30 MA	**0.36**
4 116 95	40 A F type 30 MA	**0.40**
4 116 96	63 A F type 30 MA	**0.36**
4 116 97	80 A F type 30 MA	**0.36**

Packaged volume and quantity:

	Volume (dm^3)	Packaging
For all catalogue numbers	**0.70**	**per unit**

5. GENERAL CHARACTERISTICS *(continued)*

Isolation distance: (distance between the contacts)
. Handle in open position - O-Off:
- Neutral pole: greater than 4.5 mm
- Phase pole: greater than 5.5 mm

Rated insulation voltage:
. Ui = 500 V

Insulation resistance:
. 2 MΩ

Degree of pollution:
. 2

Dielectric strength:
. 2000 V - 50 Hz

Impulse withstand voltage:
. Uimp = 4 kV

Protection from false tripping:
. 0.5 µs/100 kHz damped recurring wave = 200 A
. 8/20 µs wave:
- A - AC type = 250 A
- S, F type = 3000 A

Protection classes:
. Terminals protected against direct contact:
- IP20 (wired device)

. Front side protected against direct contact:
- IP40

. Class II in relation to metallic conductive parts
. Protection against impacts:
- IK04

Plastic materials used:
. Parts made of polyamide and P.B.T.

Enclosure heat and fire resistance:
. Resistance to incandescent wire tests at 960°C, in accordance with standard IEC/EN 61008-1
. Classification V2, in accordance with standard UL94

Device's upper heating value:
. Estimated heating value of a 40A 30mA AC device:
4.30 MJ

Handle opening and closing forces:
. Force of 42 N for closing - (all ratings)
. Force of 13 N for opening - (all ratings)

5. GENERAL CHARACTERISTICS *(continued)*

Mechanical endurance:
. Conforms to standard NF EN 61008-1
. Tested with 20,000 operations with no load

Electrical endurance:
. Conforms to standard NF EN 61008-1
. Tested with 10,000 operations with load (at In x Cos φ 0.9)
. Tested with 2,000 residual current trip operations using the test button or the fault current

Operating ambient temperature:
. - 25°C / + 60°C

Storage temperature:

. - 40°C / + 70°C

Specific use:
. Appropriate to operate in humid atmosphere and polluted by a chlorined environment (pool-type)

Derating of RCCBs function of the number of devices placed side by side:
When several RCCBs are installed side by side and operate simultaneously, the heat dissipation of one pole is limited. This results in an increased operating temperature for the RCCBs which may cause false tripping. Applying the following coefficients to the operating currents is recommended.

Number of circuit breakers side by side	Coefficient
2 - 3	**0.9**
4 - 5	**0.8**
6 - 9	**0.7**
≥ 10	**0.6**

These values are provided by recommendation IEC 60439-1 and the standards NF C 63421 and EN 60439-1.
In order to avoid having to use these coefficients there must be good ventilation and the devices must be kept apart using the spacing elements Cat. No. 4 063 07 (0.5 module).

Impact of height:

	2,000 m	3,000 m	4,000 m	5,000 m
Dielectric strength	**2,000 V**	**2,000 V**	**2,000 V**	**1,500 V**
Maximum operating voltage	**400 V**	**400 V**	**400 V**	**400 V**
Derating at 30°C	**none**	**none**	**none**	**none**

5. GENERAL CHARACTERISTICS *(continued)*

DC operation:
. Cannot be used with DC

Operation at 400 Hz:
. Cannot be used at 400 Hz

Operation at 60 Hz :
. Can be used at 60Hz, except ratings 40A/63A/80A, A and AC types, with sensitivity 30mA, which can be replaced by F types of equivalent ratings and sensitivity.

Resistance to sinusoidal vibrations: (in accordance with IEC 68.2.6)
. Axes: x / y / z
. Frequency: 10 to 55 Hz
. Acceleration: 3 g (1 g = 9.81 $m.s^{-2}$)

Resistance to tremors :
. Conforms to standard NF EN 61008-1

6. COMPLIANCE AND APPROVALS

Reference product standards:
. NF EN 61008-1/IEC 61008-1
. NF EN 62423 / IEC 62423 (type F)
. EN/IEC 60 529 (IP)

Approvals obtained:
. France: NF

Environment:
. Compliance with European Union Directives
. Compliance with Directive 2002/95/EC of 27/01/03 known as "RoHS" which provides for a restriction on the use of dangerous substances such as lead, mercury, cadmium, hexavalent chromium and polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) brominated flame retardants from 1st July 2006
. Compliance with the Directive 91/338/EEC of 18/06/91 and decree 94-647 of 27/07/94

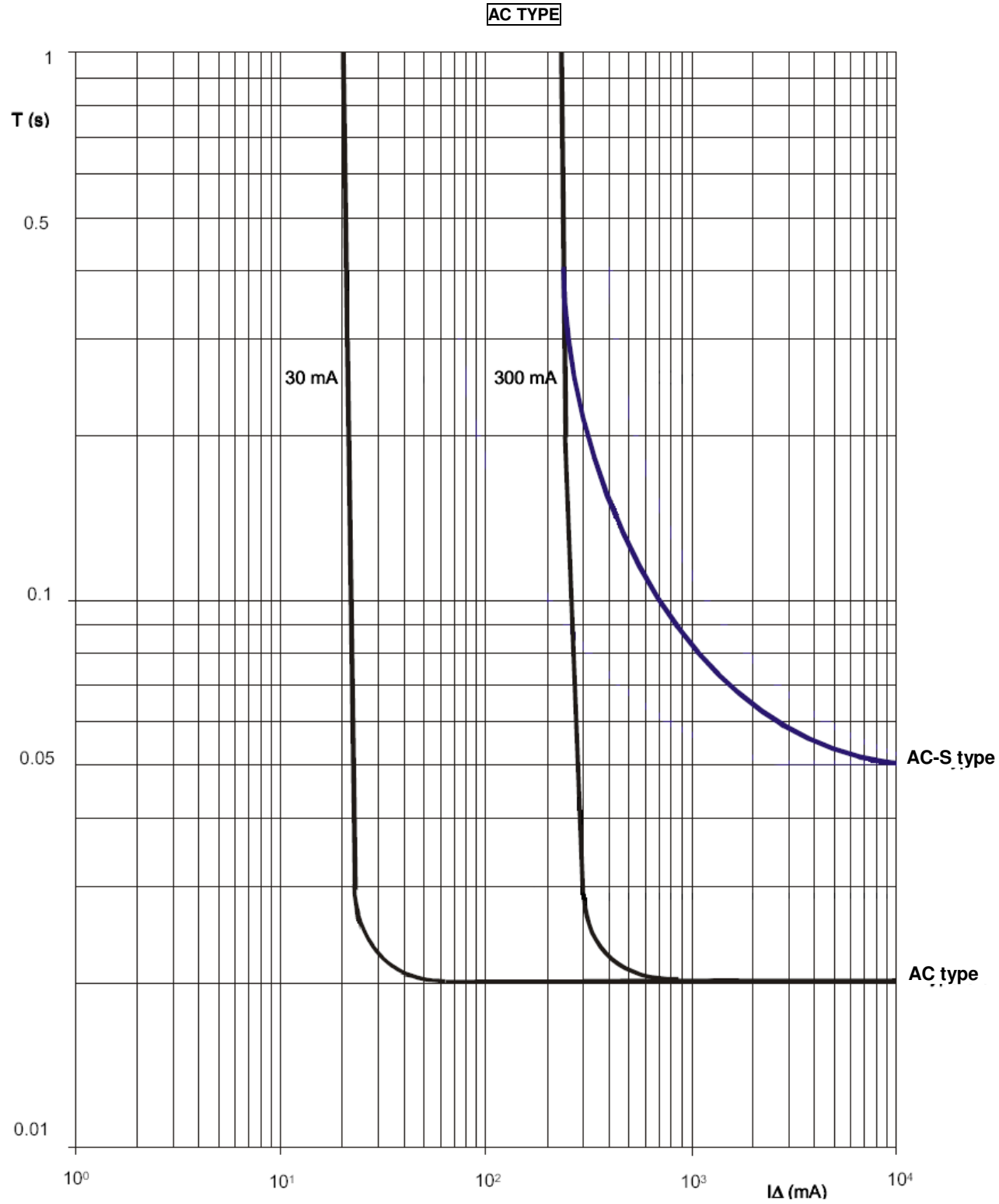
Usage in special conditions:
. Category C compliant (testing temperature of -25°C to +70°C, resistant to salt spray) in accordance with the classification defined in Appendix Q of standard IEC/EN 60947-1

Plastic materials:
. Zero halogen plastic materials.
. Labelling compliant with ISO 11469 and ISO 1043.

Packaging:
. Design and manufacture of packaging compliant with decree 98-638 of 20/07/98 and Directive 94/62/EC

7. CURVES

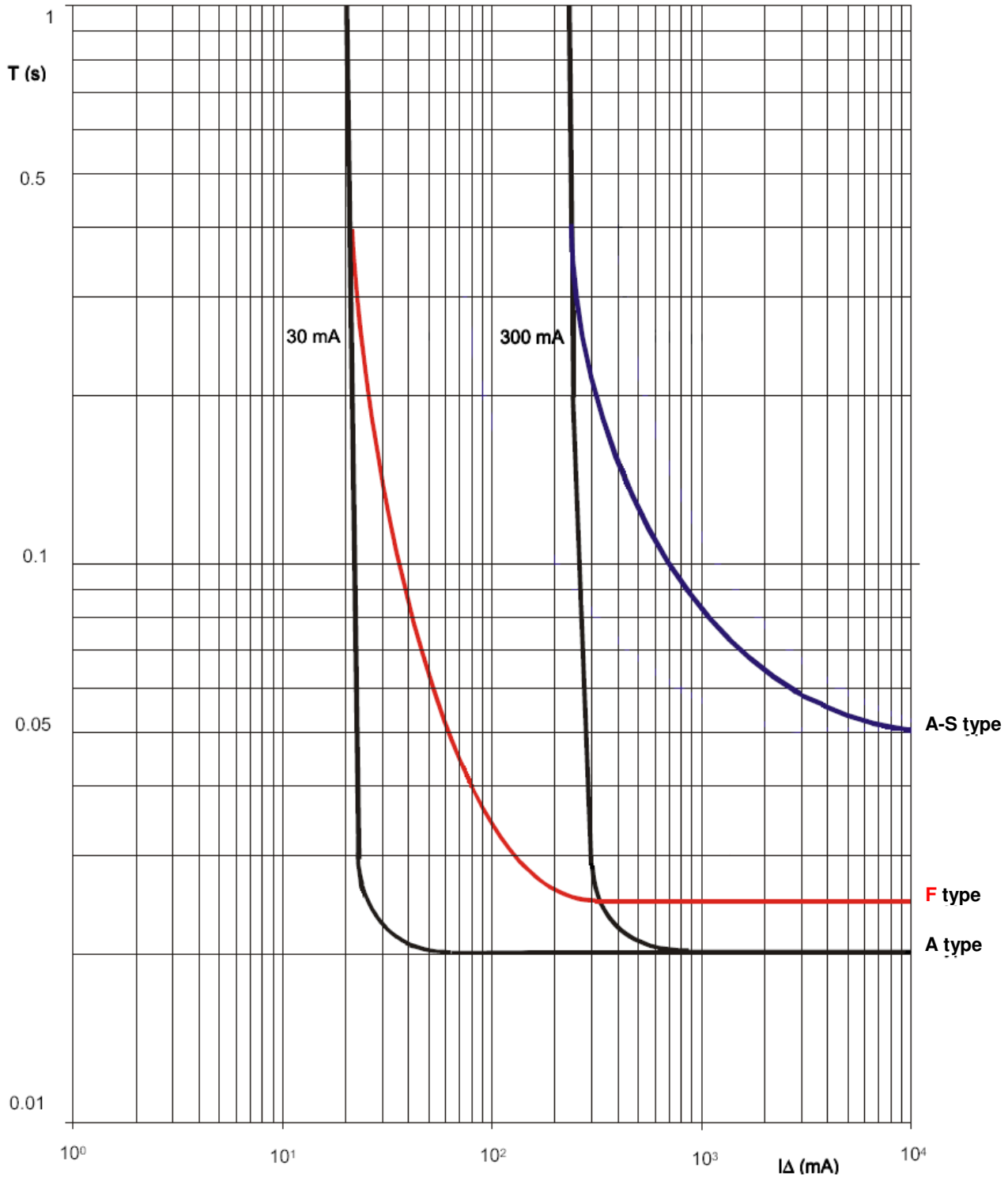
Tripping current curves:
. Tripping time curve depending on the value of the fault current:



7. CURVES *(continued)*

Tripping current curves:
. Tripping time curve depending on the value of the fault current:

A TYPE



8. AUXILIARIES AND ACCESSORIES

Wiring accessories:
. Sealable screw cover (Cat. No. 4 063 04)
. Supply busbar:
- HX³ 3/4-pole supply busbar

. Terminal for aluminium cable with max. 50 mm² cross-section (Cat. No. 4 063 10)

Signalling auxiliaries:
. Auxiliary contact (0.5 module, Cat. No. 4 062 58)
. Fault signalling contact (0.5 module, Cat. No. 4 062 60)
. Auxiliary contact that can be changed into fault signalling contact (0.5 module, Cat. No. 4 062 62)
. Auxiliary contact + fault signalling contact that can be changed into 2 auxiliary contacts (1 module, Cat. No. 4 062 66)

Control auxiliaries:
. Shunt trip (1 module, Cat. No. 4 062 76, 2 78)
. Undervoltage release (1 module, Cat. No. 4 062 80, 2 82)
. Stand-alone release for N/C push-button (1.5 module, Cat. No. 4 062 87)

Motorised controls:
. Motor-driven control (1 module, Cat. No. 4 062 91)
. Motor-driven control with integrated automatic reset (2 modules, Cat. Nos. 4 062 93, 2 95)

Possible combinations of auxiliaries and RCCBs:
. The auxiliaries are installed to the left of the RCCBs
. Maximum number of auxiliaries = 3
. Maximum number of 1 module signalling auxiliaries = 2
. Maximum number of control auxiliaries (Cat. Nos. 4 062 76 to 4 062 87) = 1
. The control auxiliary (trip Cat. Nos. 4 062 76 to 4 062 87) must mandatorily be placed to the left of the signalling auxiliaries (Cat. Nos. 4 062 58 to 4 062 66) where the auxiliaries from these 2 families are connected to the same RCCB

Sealing:
. Possible in the open or closed positions

Lockout possibilities:
. Via Ø 5 mm padlock (Cat. No. 4 063 13) or Ø 6 mm padlock (Cat. Nos. 227 97) and padlock support (Cat. No. 4 063 03)

Installation software:
. XL PRO³

9. SAFETY

. For your safety your electrical installation is equipped with residual current protection and this must be tested periodically. In the absence of any national regulations on the time period required for this, Legrand recommends that this test be carried out every month: press the "T" test button, the device should trip. Please call an electrician immediately if this does not happen as your installation's safety level has been reduced

. The presence of residual current protection does not remove the need to observe all the precautions associated with using electrical energy