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DX³ RCCBs - ID
2P up to 40 A

Cat. N°(s) : 4 116 10, 11, 13, 14, 16, 17, 22, 23, 31, 32, 34, 35, 37, 38, 44


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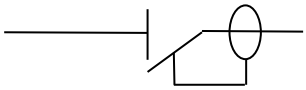
1. DESCRIPTION - USE

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:
. 2-pole

Width:
. 2 modules (2 x 17.8 mm)

Nominal rating In:
. 25 / 40 A

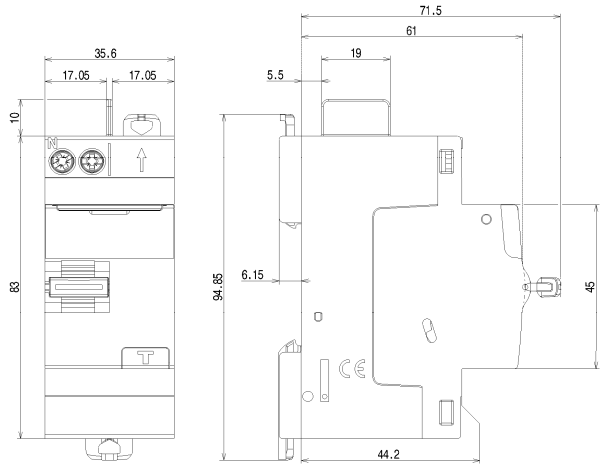
Residual current types:
. AC (sinusoidal differential alternating currents)
. A (residual currents with a DC component)
. F (additional immunity to unwanted tripping and detection of high frequency fault currents).
F products are also A type.

Sensitivity:
. 30 / 300 mA

Nominal voltage and frequency:
. 230 V~ / 240 V~, 50 Hz with standard tolerances

Maximum operating voltage:
. 250 V ~, 50 Hz

3. OVERALL DIMENSIONS

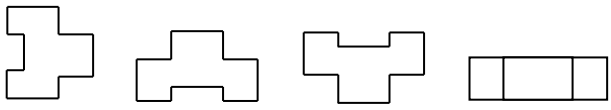


4. PREPARATION - CONNECTION

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

Operating positions:

. Vertical Horizontal Upside down On the side



Power supply:
. From the top

Connection:
. Inputs via screw terminals and outputs via terminals for supply busbars
. 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 fitted with flaps preventing a cable being placed under the terminal, with the terminal partly open or closed
. Neutral on left

4. PREPARATION - CONNECTION *(continued)*

Terminal arrangement:

. Terminals protected against direct finger contact IP20, wired device
. 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 / 2,8 Nm
- Recommended: 2,5 Nm

Conductor types:

Ouput
. Prong busbar
Input
. Copper cable
. Cable cross-section

	Without ferrule	With ferrule
Rigid cable	**1 x 0.75 to 16 mm² or 2 x 0.75 to 6 mm²**	**/**
Flexible cable	**1 x 0.75 to 10 mm² or 2 x 0.75 to 4 mm²**	**1 x 0.75 to 10 mm²**

Terminals for supply busbars:

. Without tool, simply by inserting
. HX³ single-pole universal supply busbar (Cat. No. 4 049 26, 37)

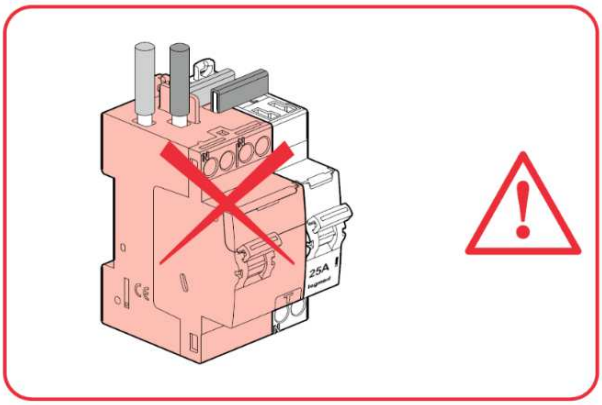
Required tools:

. 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

Installation restriction :

. Installation of a single MCB ≥ 25A with shortened comb strictly forbidden, except separated by two spacing units (Cat. No. 4 063 07)



4. PREPARATION - CONNECTION *(continued)*

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:

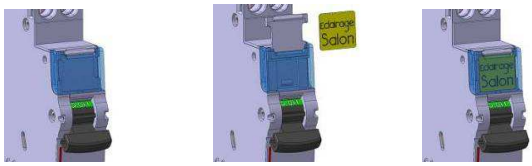
. Padlocks possible in the open or closed positions with padlock support (Cat. No. 4 063 03) and Ø5 mm padlock (Cat. No. 4 063 13) or Ø6 mm padlock (Cat. No. 227 97)

Sealing:

. Possible in the open or closed positions

Labelling:

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



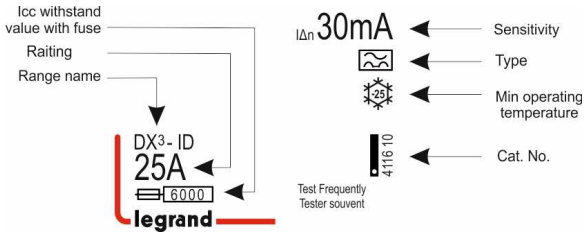
5. GENERAL CHARACTERISTICS

Neutral earthing system:

. IT, TT and TN

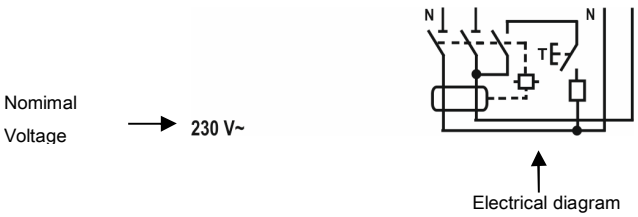
Marking on the front side:

. By permanent ink pad printing



Marking on the upper panel:

. By permanent ink pad printing



5. GENERAL CHARACTERISTICS *(continued)*

Test operating voltage:
. 30 mA, AC / A / F types : from 180 V to 250 V~
. 300 mA AC type : from 130 V to 250 V ~

Rated conditional short-circuit current:
. Inc = 6 kA, in accordance with EN/IEC 61008-1

Rated conditional short-circuit residual current:
. I∆c = 6 kA, in accordance with EN/IEC 61008-1

Rated residual breaking capacity:
. I∆m = 500 A, in accordance with EN/IEC 61008-1

Rated breaking and making capacity:
In accordance with EN/IEC 61008-1,
. Im = 500 A

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

5. GENERAL CHARACTERISTICS *(continued)*

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 fuse:

Downstream	Upstream			
RCCB	gG or aM type fuse			
Rating	≤ 50 A	63 A	80 A	≥ 100 A
25 to 40 A	**100 kA**	**50 kA**	**15 kA**	**10 kA**

. Association with a circuit breaker:

		Upstream circuit breaker			
		DX³ 4500 / 6 kA P+N 1 mod	DX³ 4500 / 6 kA 3P / 4P 3 mod	DX³ 6000 / 10 kA P+N 1 mod	DX³ 6000 / 10 kA
Downstream RCCB	Curves	C	C	B & C	B, C & D
	In	≤ 40 A	≤ 32 A	≤ 40 A	≤ 63 A
2P - 230 V~	25 to 40 A	**6 kA**	**10 kA**	**10 kA**	**16 kA**

		Upstream circuit breaker				
		DX³ 10000 / 16 kA P+N 1 mod	DX³ 10000 / 16 kA	DX³ 25 kA	DX³ 36 kA	DX³ 50 kA
Downstream RCCB	Curves	C	B, C & D	B, C & D	C	B, C & D
	In	≤ 20 A	≤ 125 A	≤ 125 A	≤ 80 A	≤ 63 A
2P - 230 V~	25 to 40 A	**16 kA**	**25 kA**	**36 kA**	**50 kA**	**70 kA**

		Upstream circuit breaker			
		DPX³ 160 / DPX³ 160 + residual current			
		16 kA	25 kA	36 kA	50 kA
Downstream RCCB	In	≤ 160 A	≤ 160 A	≤ 160 A	≤ 160 A
2P - 230 V~	25 to 40 A	**25 kA**	**36 kA**	**36 kA**	**36 kA**

5. GENERAL CHARACTERISTICS *(continued)*

Protection against short circuits (continued):

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

Downstream RCCB	Upstream circuit breaker		
	DNX³ P+N 1 mod	DX³ P+N 1 mod	DX³ 3P / 4P 3 mod
	4500 A / 4,5 kA	4500 A / 6 kA	
At 230 V	**4,5 kA**	**4,5 kA**	**4,5 kA**

Downstream RCCB	Upstream circuit breaker		
	DX³ P+N 1 mod	DX³ 3P / 4P 3 mod	DX³ 1P / 2P / 3P / 4P
	6000 A / 10 kA		
At 230 V	**4,5 kA**	**6 kA**	**10 kA**

Downstream RCCB	Upstream circuit breaker				
	DX³ P+N 1 mod	DX³ 1P / 2P / 3P / 4P	DX³ 1P / 2P / 3P / 4P	DX³ 1P / 2P / 3P / 4P	DX³ 1P / 2P / 3P / 4P
	10000 A / 16 kA		25 kA	36 kA	36 kA
At 230 V	**6 kA**	**16 kA**	**25 kA**	**36 kA**	**50 kA**

5. GENERAL CHARACTERISTICS *(continued)*

Power dissipated by the device:

RCCB		Power dissipated by the device		
In	Sensitivity	AC type	A type	F type
25 A	30 mA	**3,5 W**	**3,5 W**	**5,5 W**
25 A	300 mA	**3,0 W**		
40 A	30 mA	**5,5 W**	**5,5 W**	**5,5 W**
40 A	300 mA	**4,5 W**		

Temperature derating:

. Reference temperature: 30°C in accordance with standard IEC/EN 61008-1

	In (A) function reference temperature		
In	De -25 °C à + 40 °C	+ 50 °C	+ 70 °C
25 A	**25**	**25**	**25**
40 A	**40**	**25**	**25**

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).

5. GENERAL CHARACTERISTICS *(continued)*

Weight per device:

Cat. N°	Description	Weight (kg)
411 610	25 A type AC 30 mA	**0,16**
411 611	40 A type AC 30 mA	**0,16**
411 613	25 A type AC 300 mA	**0,13**
411 614	40 A type AC 300 mA	**0,13**
411 616	25 A type A 30 mA	**0,16**
411 617	40 A type A 30 mA	**0,16**
411 623	40 A type F 30 mA	**0,16**
411 631	25 A type AC 30 mA	**0,16**
411 632	40 A type AC 30 mA	**0,16**
411 634	25 A type A 30 mA	**0,16**
411 635	40 A type A 30 mA	**0,16**
411 637	25 A type A 30 mA	**0,16**
411 638	40 A type A 30 mA	**0,16**
411 644	40 A type F 30 mA	**0,16**

Packaged volume and quantity:

	Volume (dm^3)	Packaging
For all catalogue numbers	**0.38**	**per unit**

Isolation distance: (distance between the contacts)

. Handle in open position - O-Off:
Greater than 4,5 mm

Rated insulation voltage:

. Ui = 250 V

Insulation resistance:

. 2 MΩ

Degree of pollution:

. 2

Dielectric strength:

. 2000 V - 50 Hz

Impulse withstand voltage:

. Uimp = 4 kV

5. GENERAL CHARACTERISTICS *(continued)*

Protection from false tripping:

. 0.5 µs/100 kHz damped recurring wave = 200 A
. 8/20 µs wave:
- A / AC type = 250 A
- 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 25 or 40A 30mA AC device:
2.29 MJ

Handle opening and closing forces:

. Force of 9 N for closing - (all ratings)
. Force of 2 N for opening - (all ratings)

Mechanical endurance:

. Conforms to standard NF EN 61008-1
. Tested with 20000 operations with no load

Electrical endurance:

. Conforms to standard NF EN 61008-1
. Tested with 10000 operations with load (at In x Cos φ 0.9)
. Tested with 2000 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

Influence of the altitude:

	2000 m	3000 m	4000 m	5000 m
Dielectric strength	**2000 V**	**2000 V**	**2000 V**	**1500 V**
Maximum operating voltage	**230 V**	**230 V**	**230 V**	**230 V**
Derating at 30°C	**none**	**none**	**none**	**none**

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 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 (F type)
. EN/IEC 60 529 (IP)

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

6. COMPLIANCE AND APPROVALS *(continued)*

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.

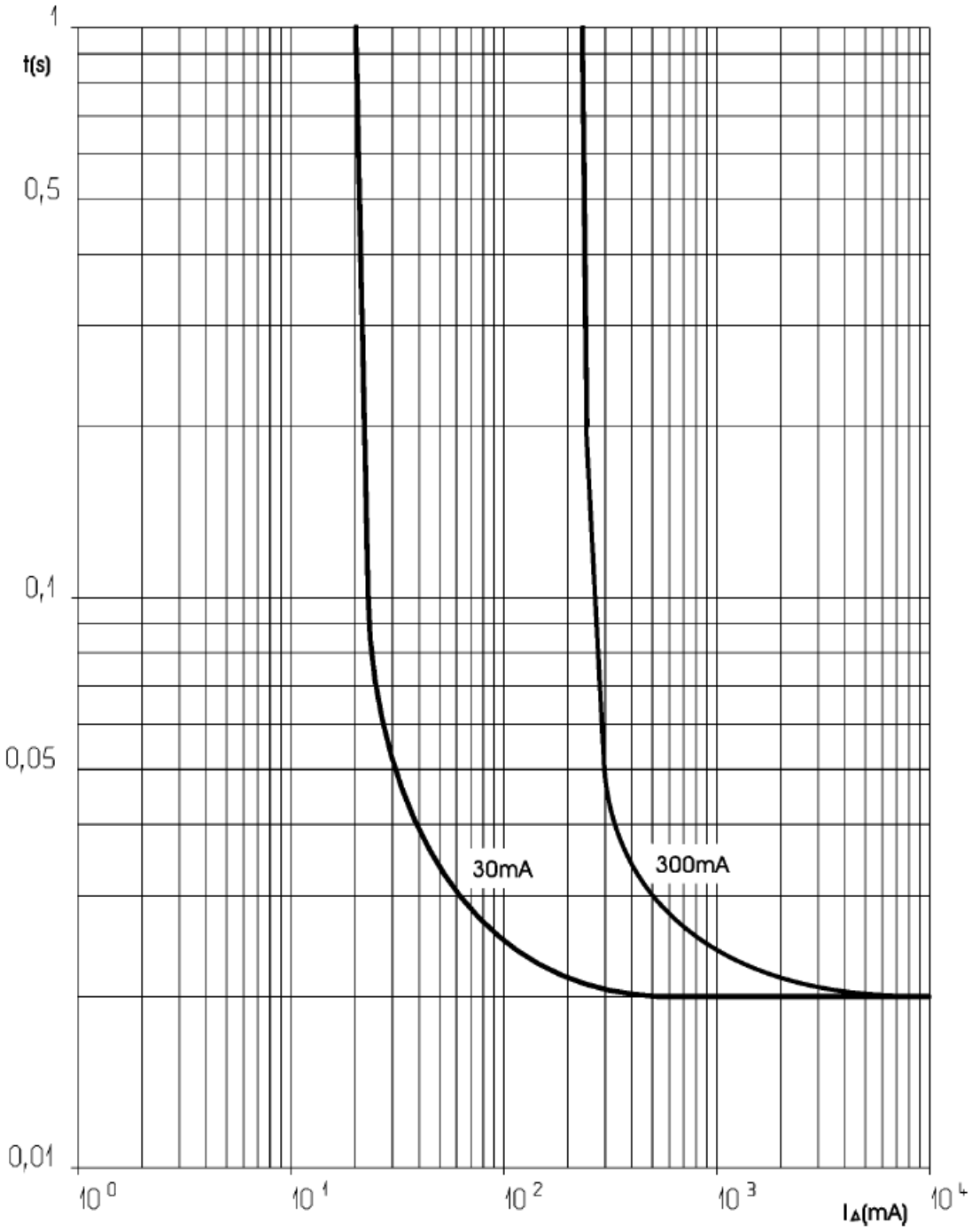
Packaging:
. Design and manufacture of packaging compliant with decree 98-638 of 20/07/98 and Directive 94/62/EC

7. CURVES

Tripping current curves:

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

AC TYPE

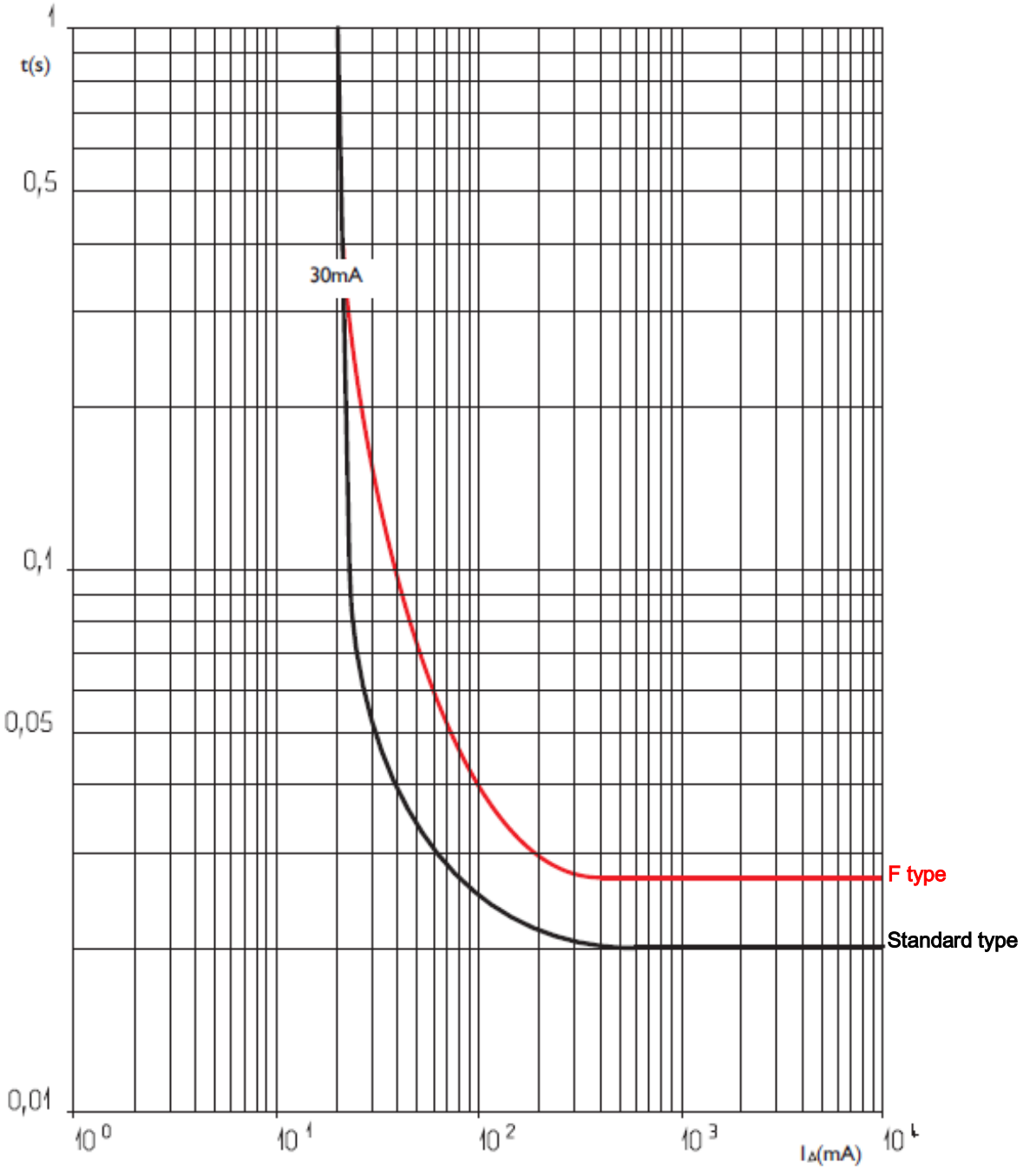


7. CURVES *(continued)*

Tripping current curves:

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

A TYPE



8. AUXILIARIES AND ACCESSORIES

Wiring accessories:

. Supply busbar:
HX³ 2-pole supply busbar (Cat. No. 4 049 26, 37)

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)
. DX³ power overvoltage protection "POP"
(1 module, Cat. No. 4 062 86)

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)

STOP&GO automatic resetting for DX³:

. STOP&GO automatic resetting
(2 modules, Cat. No. 4 062 88)
. STOP&GO automatic resetting – self unit test
(2 modules, Cat. No. 4 062 89)

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. 0 227 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