

TX³ RCCBs 2P up to 100 A

Cat. N°(s) : : 4 115 02, 4 115 09 to 13, 4 115 19 to 23, 4 115 29 to 33, 4 115 39, 4 115 47, 4 115 52, 4 115 59 to 62, 4 115 64 to 67, 4 115 74 to 77, 4 115 79 to 80, 4 115 87, 4 115 95 to 98

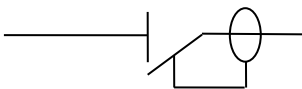


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1. DESCRIPTION - USE

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:

. 16 / 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 (additional immunity to unwanted tripping and detection of high frequency fault currents).
- F products are also A type.

Sensitivity:

. 10 / 30 / 100 / 300 / 500 mA

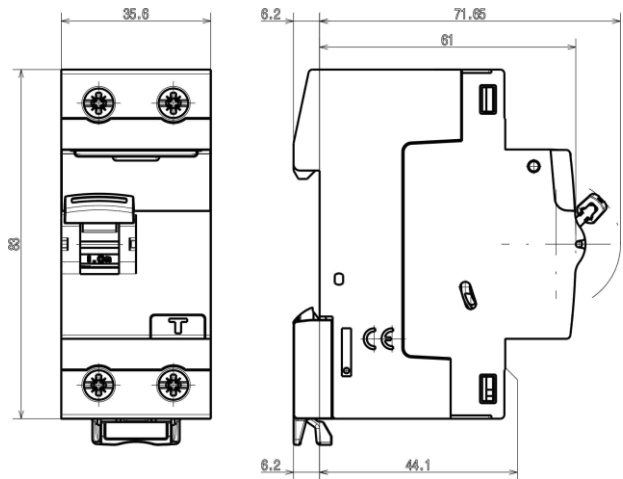
Nominal voltage and frequency:

. 230 V~ / 240 V~, 50 Hz with standard tolerances

Maximum operating voltage:

. 250 V ~, 50 Hz

3. OVERALL DIMENSIONS



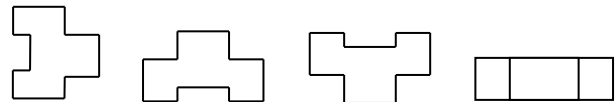
4. PREPARATION - CONNECTION

Mounting:

. On symmetrical rail EN 60715 or DIN 35 rail

Operating positions:

. Vertical horizontal upside down flat



Power supply:

. From the top or the bottom

Connection:

. Inputs and outputs via screw terminals

Terminal arrangement:

. Cage terminals, with disengageable and captive screws. Terminals protected against direct finger contact IP20, wired

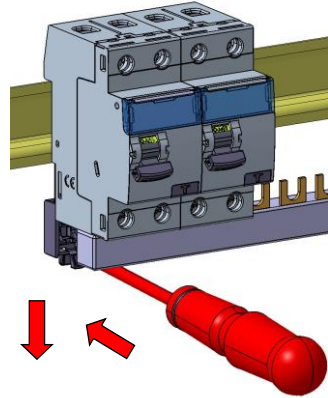
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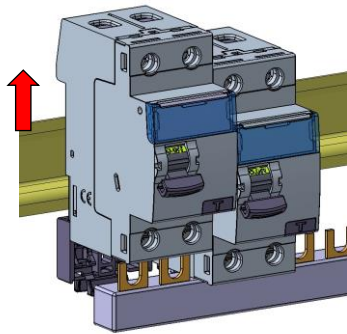
4. PREPARATION - CONNECTION (continued)

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

Unscrew the terminals completely

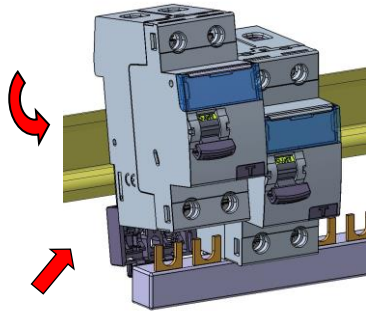


Put the clamp in the unlocking position with a screwdriver



Pull the device upward

Pull the device downward in order to release it completely from the prongs of the busbar. Then pull the device forward



Connection:

- . Terminals protected against direct finger contact IP20, wired device
- . Cage terminals, with disengageable or captive screws
- . 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 fork supply busbars

4. PREPARATION - CONNECTION (continued)

Terminal arrangement: (continued)

- . Alignment and spacing of the terminals permitting shutters with the other products via fork 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 mm ² or 2 x 0.75 to 16 mm ²	/
Flexible cable	1 x 0.75 to 35 mm ² or 2 x 0.75 to 16 mm ²	1 x 0.75 to 25 mm ²

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

Labelling:

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



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5. GENERAL CHARACTERISTICS

Neutral earthing system:

. IT, TT and TN

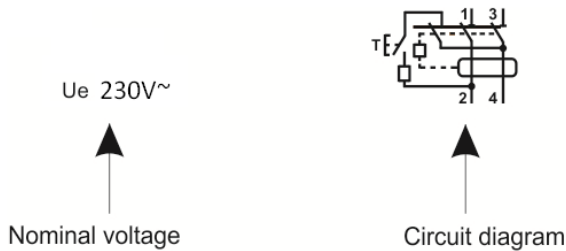
Marking:

. Marking on the "front side": (by permanent ink pad printing)



Marking on the upper panel:

. By permanent ink pad printing



Test operating voltage:

- . 10 mA, : from 110 V to 250 V~
- . 30 mA, all types : from 180 V to 250 V~
- . 100 mA all types : from 130 V to 250 V~
- . 300 mA A/AC : from 125V to 250V
- . 300 mA S type : from 110 V to 250 V~
- . 500 mA A type : from 130 V to 250 V~

Rated conditional short-circuit current:

. I_{nc} = 10 kA, in accordance with EN/IEC61008-1

Rated conditional short-circuit residual current:

. I_{Δc} = 10 kA, in accordance with EN/IEC61008-1

Rated residual breaking capacity:

. I_{Δm} = 1000 A, in accordance with EN/IEC61008-1

Rated breaking and making capacity:

In accordance with EN/IEC61008-1,
. I_n = 16 / 25 / 40 A : I_m = 500 A
. I_n = 63 A : I_m = 630 A
. I_n = 80 A : I_m = 800 A
. I_n = 100 A : I_m = 1,000 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

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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			
TX ³ RCCB 2P	gG or aM type fuse			
Rating	≤ 50 A	63 A	80 A	≥ 100 A
16 A to 100 A	100 kA	50 kA	15 kA	10 kA

. Association with a circuit breaker:

Downstream TX ³ RCCB 2P	Curves	Upstream circuit breaker	
		TX ³ 6000 A	TX ³ 10 000A
2P - 230 V~	In	≤ 63 A	≤ 63 A
	16 A à 100 A	10 kA	16 kA

Downstream TX ³ RCCB 2P	Curves	Upstream circuit breaker			
		DX ³ 4500 / 6 kA P+N 1 mod	DX ³ 4500 / 6 kA 3P / 4P 3 mod	DX ³ 6000 / 10 kA P+N 1 mod	DX ³ 6000 / 10 kA
2P - 230 V~	In	≤ 40 A	≤ 32 A	≤ 40 A	≤ 63 A
	16 A à 100 A	6 kA	10 kA	10 kA	16 kA

Downstream TX ³ RCCB 2P	Curves	Upstream circuit breaker				
		DX ³ 10000 / 16 kA P+N 1 mod	DX ³ 10000 / 16 kA	DX ³ 25 kA	DX ³ 36 kA	DX ³ 50 kA
2P - 230 V~	In	≤ 20 A	≤ 125 A	≤ 125 A	≤ 80 A	≤ 63 A
	16 A à 100 A	16 kA	25 kA	36 kA	50 kA	70 kA

Downstream TX ³ RCCB 2P	In	Upstream circuit breaker			
		DPX ³ 160 / DPX ³ 160 + residual current			
2P - 240 V~	16 A to 100 A	16 kA	25 kA	36 kA	50 kA
		≤ 160 A	≤ 160 A	≤ 160 A	≤ 160 A
		25 kA	36 kA	36 kA	36 kA

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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 TX ³ RCCB 2P	Circuit breaker upstream
	DX ³ 1P / 2P / 3P / 4P
	10000 A
At 240 V	10 kA
At 415 V	3 kA

Downstream TX ³ RCCB 2P	Circuit breaker upstream			
	DX ³ 1P / 2P / 3P / 4P	DX ³ 1P / 2P / 3P / 4P	DX ³ 1P / 2P / 3P / 4P	DX ³ 1P / 2P / 3P / 4P
	10000 A	25 kA	36 kA	36 kA
At 240 V	16 kA	25 kA	36 kA	50 kA
At 415 V	4 kA	6,25 kA	9 kA	12,5 kA

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5. GENERAL CHARACTERISTICS (continued)

Power dissipated by the device:

TX ³ RCCB 2P		Power dissipated by the device (In)				
In	Sensitivity	AC type	A type	AC-S type	A-S type	F type
16 A	10 mA	0.8 W	0.8 W			
25 A	30 mA	1.6 W	1.5 W			0.5 W
25 A	100 mA	0.5 W	1.3 W			
25 A	300 mA	0.5 W	0.5 W			
25 A	500 mA		1.3 W			
40 A	30 mA	4 W	4 W			1.2 W
40 A	100 mA	1.3 W	3.2 W			
40 A	300 mA	1.3 W	1.3 W			
40 A	500 mA		3.2 W			
63 A	30 mA	3.1 W	3.1 W			3 W
63 A	100 mA	3.1 W	3.1 W	3 W		
63 A	300 mA	3.1 W	3.1 W	3 W	3 W	
80 A	30 mA	5 W	5 W			5 W
80 A	100 mA	5 W	5 W			
80 A	300 mA	5 W	5 W			
100 A	30 mA	7.5 W				
100 A	100 mA	7.5 W				
100 A	300 mA	7.5 W				

Temperature derating:

. Reference temperature: 30°C in accordance with standard IEC 60947-2

In (A)	Ambient Temperature/In								
	- 25°C	- 10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C
16 A	16	16	16	16	16	16	16	16	16
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 chlorinated environment (pool-type)

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5. GENERAL CHARACTERISTICS (continued)

Weight per device:

Référence	Catalogue Number	Weight (kg)
411502	16 A AC type 10 mA	0.18
411509	25 A AC type 30 mA	0.19
411510	40 A AC type 30 mA	0.19
411511	63 A AC type 30 mA	0.22
411512	80 A AC type 30 mA	0.22
411513	100 A AC type 30 mA	0.20
411519	25 A AC type 100 mA	0.22
411520	40 A AC type 100 mA	0.22
411521	63 A AC type 100 mA	0.22
411522	80 A AC type 100 mA	0.22
411523	100 A AC type 100 mA	0.22
411529	25 A AC type 300 mA	0.18
411530	40 A AC type 300 mA	0.18
411531	63 A AC type 300 mA	0.19
411532	80 A AC type 300 mA	0.18
411533	100 A AC type 300 mA	0.19
411539	63 A AC-S type 100 mA	0.21
411547	63 A AC-S type 300 mA	0.21
411552	16 A A type 10 mA	0.19
411559	25 A A type 30 mA	0.22
411560	40 A A type 30 mA	0.22
411561	63 A A type 30 mA	0.22
411562	80 A A type 30 mA	0.21
411564	25 A A type 100 mA	0.21
411565	40 A A type 100 mA	0.21
411566	63 A A type 100 mA	0.21
411567	80 A A type 100 mA	0.21
411574	25 A A type 300 mA	0.19
411575	40 A A type 300 mA	0.19
411576	63 A A type 300 mA	0.19
411577	80 A A type 300 mA	0.19
411579	25 A A type 500 mA	0.21
411580	40 A A type 500 mA	0.21
411587	63 A AS type 300 mA	0.21
411595	25 A F type 30 mA	0.21

5. GENERAL CHARACTERISTICS (continued)

Weight per device:

Référence	Catalogue Number	Weight (kg)
411596	40 A F type 30 mA	0.21
411597	63 A F type 30 mA	0.21
411598	80 A F type 30 mA	0.21

Packaged volume and quantity:

	Volume (dm ³)	Packaging
For all catalogue numbers	0.35	per unit

Isolation distance: (distance between the contacts)

- Handle in open position - O-Off:
- Greater than 4.5 mm

Rated insulation voltage:

- U_i = 250 V

Insulation resistance:

- 2 MΩ

Degree of pollution:

- 2

Dielectric strength:

- 2000 V - 50 Hz

Impulse withstand voltage:

- U_{imp} = 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
 - AC-S / A-S and 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.

Device's upper heating value:

- Estimated heating value of a 25 or 40A 30mA AC device: 2.41 MJ

Electrical endurance:

- Conforms to standard EN/IEC 61008-1
- Tested with 10,000 operations with load (at I_n x Cos φ 0.9)
- Tested with 2,000 residual current trip operations using the test button or the fault current

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5. GENERAL CHARACTERISTICS (continued)

Enclosure heat and fire resistance:

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

Operating ambient temperature:

- . - 25°C / + 60°C

Storage temperature:

- . - 40°C / + 70°C

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. 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

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.

5. GENERAL CHARACTERISTICS (continued)

Handle opening and closing forces:

- . Force of 23 N for closing - (all ratings)
- . Force of 8 N for opening - (all ratings)

Mechanical endurance:

- . Conforms to standard BIS/IEC 61008-1
- . Tested with 20,000 operations with no load

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 EN/IEC 61008-1

6. COMPLIANCE AND APPROVALS

Reference product standards:

- . EN/IEC 61008-1
- . NF EN 62423 / IEC 62423 (F type)
- . 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

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 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

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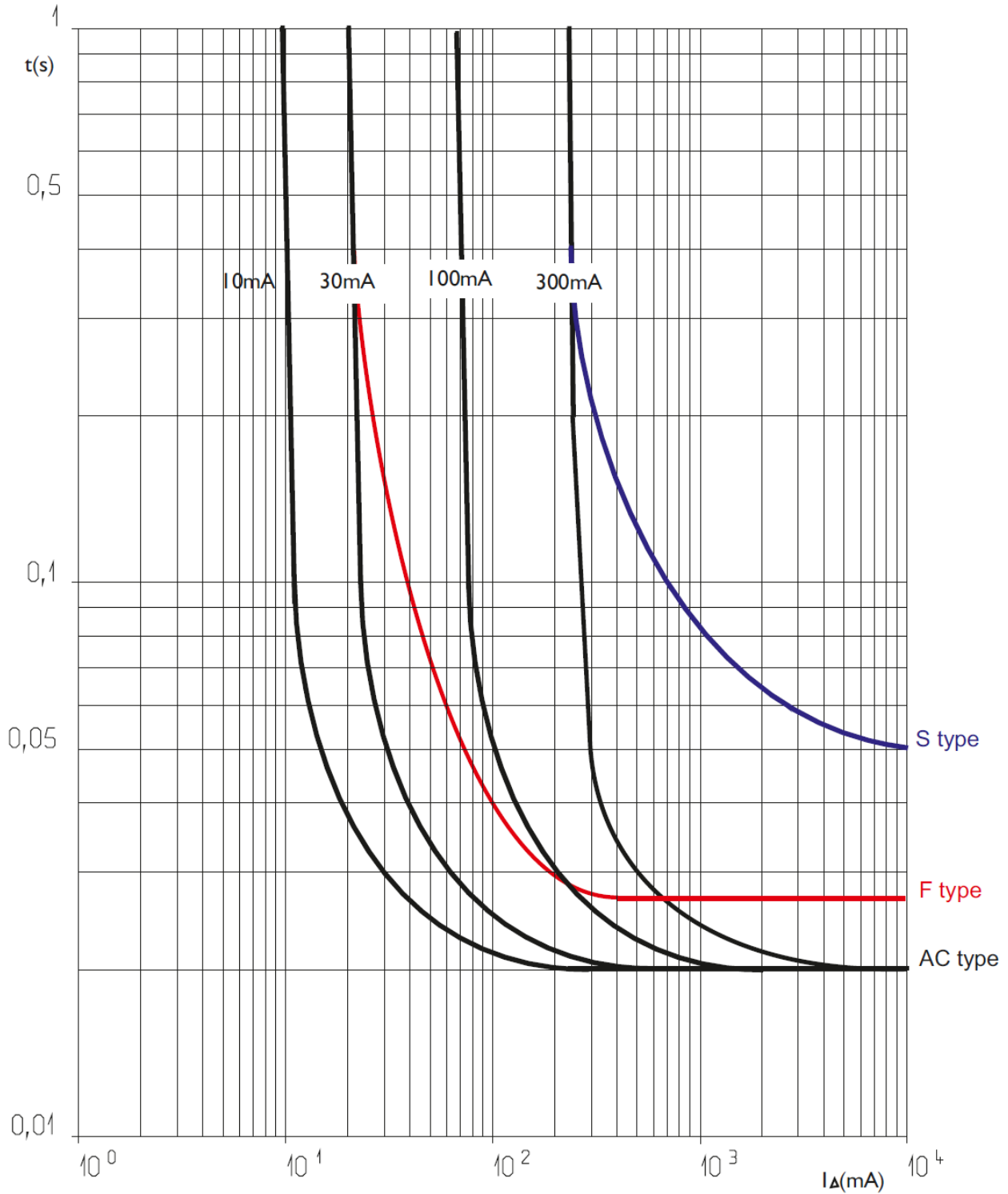
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7. CURVES

Tripping current curves:

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

ALL TYPES



8. AUXILIARIES AND ACCESSORIES

Wiring accessories:

- . Fork busbar
- . Pin busbar HX³ traditional.
- . Sealable screw cover (cat n° 4 063 04).
- . Insulating shields (cat n° 4 063 05)

Signalling auxiliaries - fork busbar adapted:

- . Auxiliary contact (½ module – cat n° 4 062 50).
- . Fault signalling changeover switch (½ module – cat n° 4 062 52).
- . Auxiliary contact modifiable in default signal (½ module – cat n° 4 062 56).
- . Auxiliary contact + fault signalling switch - can be modified to 2 auxiliary contacts (1 module - cat n° 4 062 64)

Signalling auxiliaries - prong busbar adapted:

- . Auxiliary contact (½ module – cat n° 4 062 58).
- . Fault signalling changeover switch (½ module – cat n° 4 062 60).
- . Auxiliary contact modifiable in default signal (½ module – cat n° 4 062 62).
- . Auxiliary contact + fault signalling switch - can be modified to 2 auxiliary contacts (1 module - cat n° 4 062 66).

Control auxiliaries:

- . Shunt releases (1 module - cat n° 4 062 76 /78)
- . Under voltage release (1 module - cat n° 4 062 80 /82)
- . Autonomous shunt trip for NC push-button (1 module - cat n° 4 062 84).
- . Power Overvoltage Protection (1 module – cat n° 4 062 86)

Motor driven control modules

- . Motor driven control module (1 module – cat n° 4 062 91)
- . Motor driven control module with automatic resetting integrated (2 modules – cat n° 4 062 93 /95)

Front external rotary handle

- . Black handle (cat nat n° 4 063 19)
- . Yellow and red handle (cat n° 4 063 20)

Possible combinations of rccb and auxiliaries:

- . Auxiliaries are clipped on the left of the rccb
- . Maximum number of auxiliaries for one circuit-breaker: 3.
- . Two signalling auxiliaries max. (cat. n° 4 062 58 /60 /62 /66).
- . Only one control auxiliary (cat. n° 4 062 76 /78 /80 /82 / 84).
- . One remote control or Stop & Go motor driven remote control
- . If signalling and control auxiliaries are associated on the same circuit breaker, the command auxiliary must be placed to the left of the signal auxiliary

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