

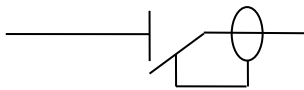


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**1. DESCRIPTION - USE**

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

**Symbol:**



**Technology:**

. Electromagnetic residual current function with current-sensing relay

**2. RANGE**

**Poles:**

. 2-pole

**Width:**

. 2 modules (2 x 17.8 mm)

**Rated currents:**

. 25 / 40 A

**Residual current types:**

. AC (sinusoidal differential alternating currents)

. F (additional immunity to unwanted tripping and detection of high frequency fault currents).

**Sensitivity:**

. 30 mA

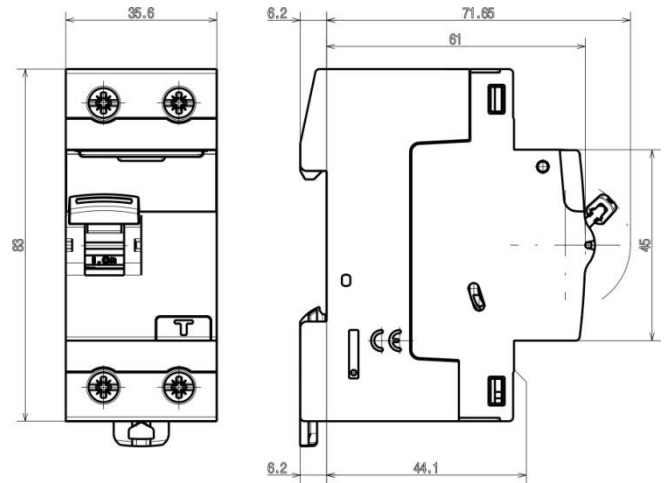
**Rated voltage and frequency:**

. 230 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 or the bottom

**Connection:**

- . Inputs and outputs via screw terminals
- . Cage terminals, with disengageable and captive screws
- . Terminals protected against direct finger contact IP20, wired
- . Alignment and spacing of the terminals enabling to supply the products via prong supply busbars

**4. PREPARATION - CONNECTION** *(continued)***Connection:** *(continued)*

- . Terminal depth: 14 mm
- . Terminal capacity: 60 mm<sup>2</sup>
- . 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

**Type of wire:**

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

	Without ferrule	With ferrule
Rigid cable	<b>1 x 0.75 to 50 mm<sup>2</sup></b> or <b>2 x 0.75 to 16 mm<sup>2</sup></b>	/
Flexible cable	<b>1 x 0.75 to 35 mm<sup>2</sup></b> or <b>2 x 0.75 to 16 mm<sup>2</sup></b>	<b>1 x 0.75 to 25 mm<sup>2</sup></b>

**Tools required:**

- . 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

**Manual actuation:**

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

**Contact status display:**

- . By marking of the product:
  - I-On : closed contacts
  - O-Off : contacts open

**Residual current tripping display:**

- . Handle at the bottom position

**Lockout:**

- . Possible in the open or closed positions with padlock support (Cat. No. F80BL) and Ø5 mm padlock or Ø6 mm padlock.
- . Possible in the open or closed positions

**Sealing:**

- . Possible in the open (OFF) or closed (ON) 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

**Test operating voltage:**

. from 180 V to 250 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

**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 fuse:

Downstream RCCB	Upstream gG or aM type fuse							
	16 A	25 A	32 A	40 A	50 A	63 A	80 A	100 A
Rating								
25 A		100 kA	100 kA	100 kA	100 kA	50 kA	15 kA	10 kA
40 A				100 kA	100 kA	50 kA	15 kA	10 kA

. Association with a circuit breaker:

Downstream RCCB	Curves	Upstream circuit breaker		
		BTDIN60 (1P+N)	BTDIN60	BTDIN100
2P - 230 V~	In	≤ 40 A	≤ 32 A	≤ 63 A
	25 / 40 A	<b>6 kA</b>	<b>10 kA</b>	<b>16 kA</b>

Downstream RCCB	Curves	Upstream circuit breaker		
		BTDIN160	BTDIN250	BTDIN500
	In	≤ 125 A	≤ 125 A	≤ 63 A
		B, C & D	B, C & D	B, C & D

**5. GENERAL CHARACTERISTICS** *(continued)***Temperature derating:**

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

In (A)	Ambient Temperature/In								
	- 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

**Volume and packaging:**

	Volume (dm <sup>3</sup> )	Packaging
For all catalogue numbers	0.35	per unit

**Dissipated power:**

RCCB		Total power dissipated by a 2 poles RCCBs (In)	
In	Sensitivity	AC type	F type
25 A	30 mA	1,6 W	0,5 W
40 A	30 mA	4 W	1,2 W

**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 M $\Omega$

**Degree of pollution:**

. 2

**Dielectric strength:**

. 2000 V - 50 Hz

**Impulse withstand voltage:**

.  $U_{imp} = 4$  kV

**Protection classes:**

- . Terminals ingress protection: IP20 (wired device)
- . Front side ingress protection: IP40
- . Class II in relation to metallic conductive parts
- . Protection against impacts: IK04

**Plastic materials used:**

. Parts made of polyamide and P.B.T.

**Protection from unwanted tripping:**

- . 0.5  $\mu$ s/100 kHz damped recurring wave = 200 A
- . 8/20  $\mu$ s wave: AC type = 250 A

**Weight:**

0.20 Kg per device

**5. GENERAL CHARACTERISTICS** *(continued)***Enclosure heat and fire resistance:**

- . Resistance to glow 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: 2.41 MJ

**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 EN 61008-1
- . Tested with 20,000 operations with no load

**Electrical endurance:**

- . Conforms to standard EN 61008-1
- . Tested with 10,000 operations with load (at  $I_n \times \cos \varphi 0.9$ )
- . Tested with 2,000 residual current tripping operations using the test button or the fault current

**Operating ambient temperature:**

- . - 25° C / + 60° C

**Storage ambient temperature:**

- . - 40°C / + 70°C

**Resistance to sinusoidal vibrations:** (in accordance with IEC 68.2.6)

- . Axis: x / y / z
- . Frequency: 10 to 55 Hz
- . Acceleration: 3 g (1 g = 9.81 m.s<sup>-2</sup>)

**Resistance to tremors :**

- . Conforms to standard EN 61008-1

**DC operation:**

- . Cannot be used with DC

**Operation at 60 Hz:**

- . Can be used at 60Hz, only with F types

**Derating of RCCBs in terms of the number of devices installed 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. Applying the following coefficients to the operating currents is recommended.

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

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. F80/05D (0.5 module).

**5. GENERAL CHARACTERISTICS** *(continued)***Impact of height:**

	2000 m	3000 m	4000 m	5000 m
Dielectric strength	<b>2000 V</b>	<b>2000 V</b>	<b>2000 V</b>	<b>1500 V</b>
Maximum operating voltage	<b>230 V</b>	<b>230 V</b>	<b>230 V</b>	<b>230 V</b>
Derating at 30°C	<b>none</b>	<b>none</b>	<b>none</b>	<b>none</b>

**Operation at 400 Hz:**

. Cannot be used at 400 Hz

**Operation at 60 Hz:**

. Can be used at 60Hz, except ratings 25A/40A/63A, A and AC types, with sensitivity 30mA, which can be replaced by F types of equivalent ratings and sensitivity.

**6. COMPLIANCE AND APPROVALS****Reference product standards:**

- . EN 61008-1/IEC 61008-1
- . EN/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

**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.

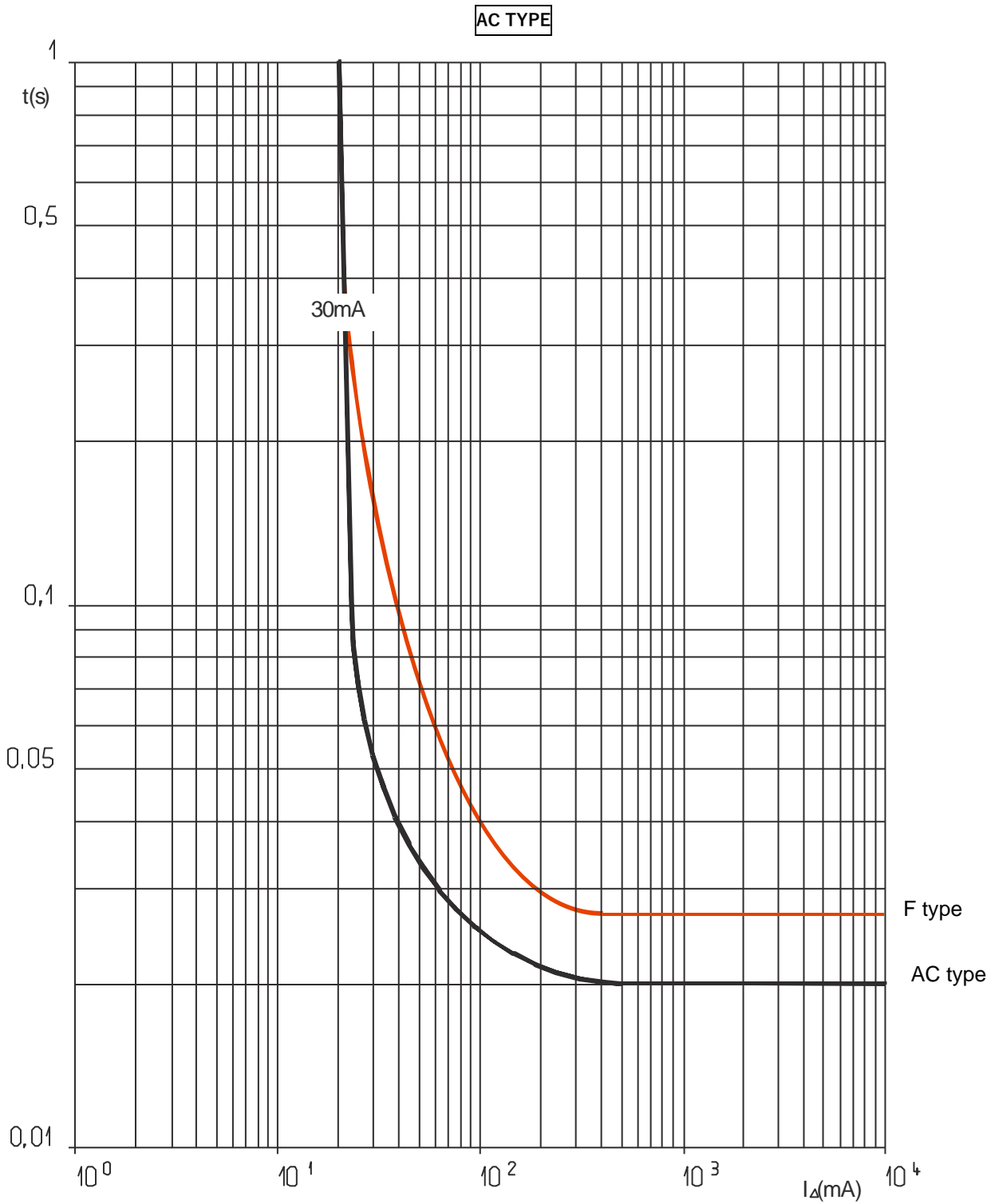
**Packaging:**

- . 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:



**8. AUXILIARIES AND ACCESSORIES****Wiring accessories:**

- . Supply busbar: Pin and Fork busbar (See Btcino catalogue)
- . Sealable screw cover (Cat. No. F80CV)
- . Terminal for aluminium cable with max. 50 mm<sup>2</sup> cross-section (F80ALU63)

**Sealing:**

- . Possible in the open or closed positions

**Lockout possibilities:**

- . Via Ø 5 mm padlock or Ø 6 mm padlock and padlock support (Cat. No. F80BL)

**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, Btcino 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