Viale Borri 231,
21100 Varese - Italy

Btdin-RS RCBO 2p
Phase + Neutral, neutral on right

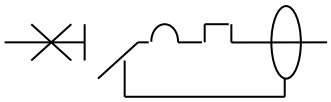
Cat. N° (s) : GC8813AC.., GC8813F.., GC8813A..

CONTENTS PAGE

1. DESCRIPTION - USE

Residual Current Circuit Breaker with Overload (RCBO) with positive contact indication for control, protection against short-circuits and overloads, and isolation of electrical circuits, protecting people from direct and indirect contact and protecting installations from insulation faults.

Symbol:



Technology:
. Limiting device
. The Neutral contact closes before and opens after the Phase contact
. The phase pole provides protection and isolation for the phase circuit
. The neutral pole provides isolation for the neutral circuit

2. RANGE

Polarity:
. 2 poles including 1 protected pole and 1 neutral pole

Width:
. 2 modules (2 x 17.8 mm)

Rated current In:
. 6 / 10 / 16 / 20 / 25 / 32 A

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

Type :

. AC (sinusoidal differential alternating current)

. A (residual currents with a DC component)

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

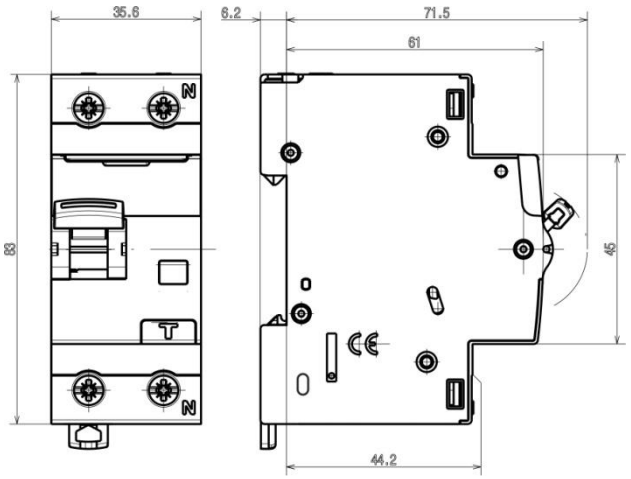
F products are also A type (sinusoidal differential alternating current with or without a DC component)

2. RANGE *(continued)*

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

Breaking capacity:
. Icn = 4500 A in accordance with standard EN/IEC 61009-1
. Icu = 6 kA in accordance with standard EN/IEC 60947-2

3. OVERALL DIMENSIONS

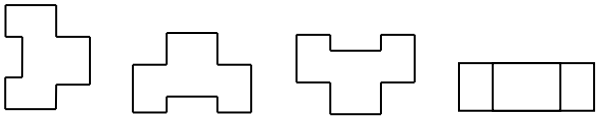


4. PREPARATION - CONNECTION

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

Operating positions:

Vertical Horizontal Upside down flat



Trip indication on residual current fault:
. Yellow indicator on the front

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4. PREPARATION - CONNECTION *(continued)*

Connection:

. Terminals protected against direct finger contact IP20 when wired device
. Cage terminals, with release and captive screws
. Terminals fitted with shutters preventing a cable being placed under the terminal, with the terminal partly open or closed
. Alignment and spacing of the terminals permitting shutters with the other products via pin and 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 type:

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

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

. Prong busbar, alone or with a 10 mm² flexible wire (without ferrule) or a connection terminal in the same terminal.

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

Manual actuation of the RCBO:

. Ergonomic 2-position handle
- "O-OFF" : device open
- "I-ON" : device closed

Contact status display:

. By marking of the handle
- "O-OFF" in white on a green background = contacts open
- "I-ON" in white on a red background = contacts closed

Locking:

. 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

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, TN

Marking on the front side:

. By permanent ink pad printing

. The terminals upstream and downstream of the neutral pole are marked with an "N" moulded close to the screw heads.

Maximum operating voltage:

. U = 250 V

Test operating voltages:

IΔn	30 mA
min. U	**180 V~**
max. U	**264 V~**

Breaking capacity:

. With a single-phase network (with alternating current 50 Hz)

Standard		Un	1P+N
IEC/EN 61009-1	Icn	230V~	4.5kA
	Ics	230V~	4.5kA

Standard		Un	1P+N
IEC/EN 60947-2	Icu	230V~	6kA
	Ics	230V~	4.5kA

5. GENERAL CHARACTERISTICS *(continued)*

Power supply:
. Either from the top or the bottom

Breaking capacity on one single pole (phase pole):
. In accordance with I_{IT} EN60947-2 – Appendix H (double fault in IT system): 3 kA at 400 V~ and 3 kA at 230 V~
. In accordance with Icn1 EN60898-1: 4.5 kA at 230 V~ and 10 kA at 127V~

Residual breaking capacity:
. In accordance with standard EN/IEC 61009-1 section 9.12.11.4d (IΔm: short-circuit to earth) IΔm = 3 kA

Insulation voltage:
. Ui = 250 V in accordance with standard EN/IEC 61009-1

Isolation distance:
. The distance between the contacts is greater than 5.5 mm with the handle in the open position.
. The RCBO is suitable for isolation in accordance with standard EN/IEC 61009-1.

Degree of pollution:
. 2 in accordance with standard EN/IEC 61009-1.

Dielectric strength:
. 2,000 V

Rated impulse withstand voltage
. Uimp = 4 KV (wave 1.2/50 µs)

Protection from false tripping:
. 8/20 µs wave resistance : 250 A for AC type
. 0.5 µs/100 kHz damped recurring wave resistance : 200 A for AC

Degree or class of protection:
. Terminals protected against direct contact, class of protection against solid objects and liquids (wired device): IP20 in accordance with standards IEC 529 / EN 60529 and NF 20-010
. Front side protected against direct contact: IP40
. Class II in relation to metallic conductive parts
. Class of protection against mechanical impacts IK02 in accordance with standard EN 62262.

Plastic materials:
. Polyamide and P.B.T.

Enclosure heat and fire resistance:
. Resistance to glow wire tests at 960° C, in accordance with standard EN/IEC 61009-1
. Classification V2, in accordance with standard UL94

Higher heating potential:
. The heat potential is assessed at: 2.1MJ

Closing and opening force via the handle:
. 4 N on opening
. 10 N on closing

Mechanical endurance:
. Compliant with standard EN/IEC 61009-1
. Tested with 20,000 operations with no load

5. GENERAL CHARACTERISTICS *(continued)*

Electrical endurance:
. Conpliant with standard EN/IEC 61009-1
. 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

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

Resistance to tremors:
. In accordance with standard NF EN 61009-1

Ambient temperature:
. Operation:
. For the AC and A type from - 25° C to + 70° C
.Storage: from - 40°C to +70°C

DC operation:
. No

Frequency:
. Operation at 400Hz: No
. Can be used at 60Hz, only with F types

Packaged volume and quantity:

	Volume (dm^3)	Packaging
For all ratings	**0.4**	**Per 1**

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

Number of RCBOs 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. F80/05D (0.5 module).

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5. GENERAL CHARACTERISTICS *(continued)*

Impact of height:

	≤ 2000 m	3,000 m	4,000 m	5,000 m
Dielectric strength	**2,000 V**	**1,750 V**	**1,500 V**	**1,250 V**
Maximum operating voltage	**230 V**	**230 V**	**230 V**	**230 V**
Derating at 30° C	**none**	**none**	**none**	**none**

Derating of RCBOs in the event of use with fluorescent tubes:

Electronic or ferromagnetic ballasts provide a high inrush current for a very short time. These currents are liable to cause tripping of the RCBOs.The maximum number of ballasts per RCBO stated by the lamp and ballast manufacturers in their catalogues should be taken into account during installation.

Dissipated power (W):

. C curve RCBOs in In/Un

RATED CURRENT	6 A	10 A	16 A	20 A	25 A	32 A
Power (W) Phase pole	**0.7 W**	**1.9 W**	**3.3 W**	**4.9 W**	**3.7 W**	**5.7 W**
Power (W) Neutral pole	**0.2 W**	**0.5 W**	**1.5 W**	**2.3 W**	**2.6 W**	**4.2 W**

Derating of RCBOs depending on the ambient temperature:

. The nominal characteristics of a circuit breaker are modified depending on the ambient temperature which prevails in the cabinet or enclosure where the RCBO is located.
. Reference temperature: 30° C in accordance with standard EN/IEC 61009-1.

In (A)	- 25°C	- 10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C	70°C
6	**7.5**	**7.2**	**6.9**	**6.6**	**6.3**	**6**	**5.82**	**5.64**	**5.46**	**5.28**
10	**12.5**	**12**	**11.5**	**11**	**10.5**	**10**	**9.7**	**9.4**	**9.1**	**8.8**
ç16	**20**	**19.2**	**18.4**	**17.6**	**16.8**	**16**	**15.52**	**15.04**	**14.56**	**14.08**
20	**25**	**24**	**23**	**22**	**21**	**20**	**19.4**	**18.8**	**18.2**	**17.6**
25	**31.25**	**30**	**28.75**	**27.5**	**26.25**	**25**	**24.25**	**23.5**	**22.75**	**22**
32	**40**	**38.4**	**36.8**	**35.2**	**33.6**	**32**	**31.04**	**30.08**	**29.12**	**28.16**

6. COMPLIANCE AND APPROVALS

In accordance with standard:
. EN/IEC 61009-1
. EN/IEC 62423 (F type)
. EN/IEC 60 529 (IP)

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

Respect for the 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 27/07/04

Plastic materials:
. Halogen free plastic materials.
. Labelling of parts compliant with ISO 11469 and ISO 1043.

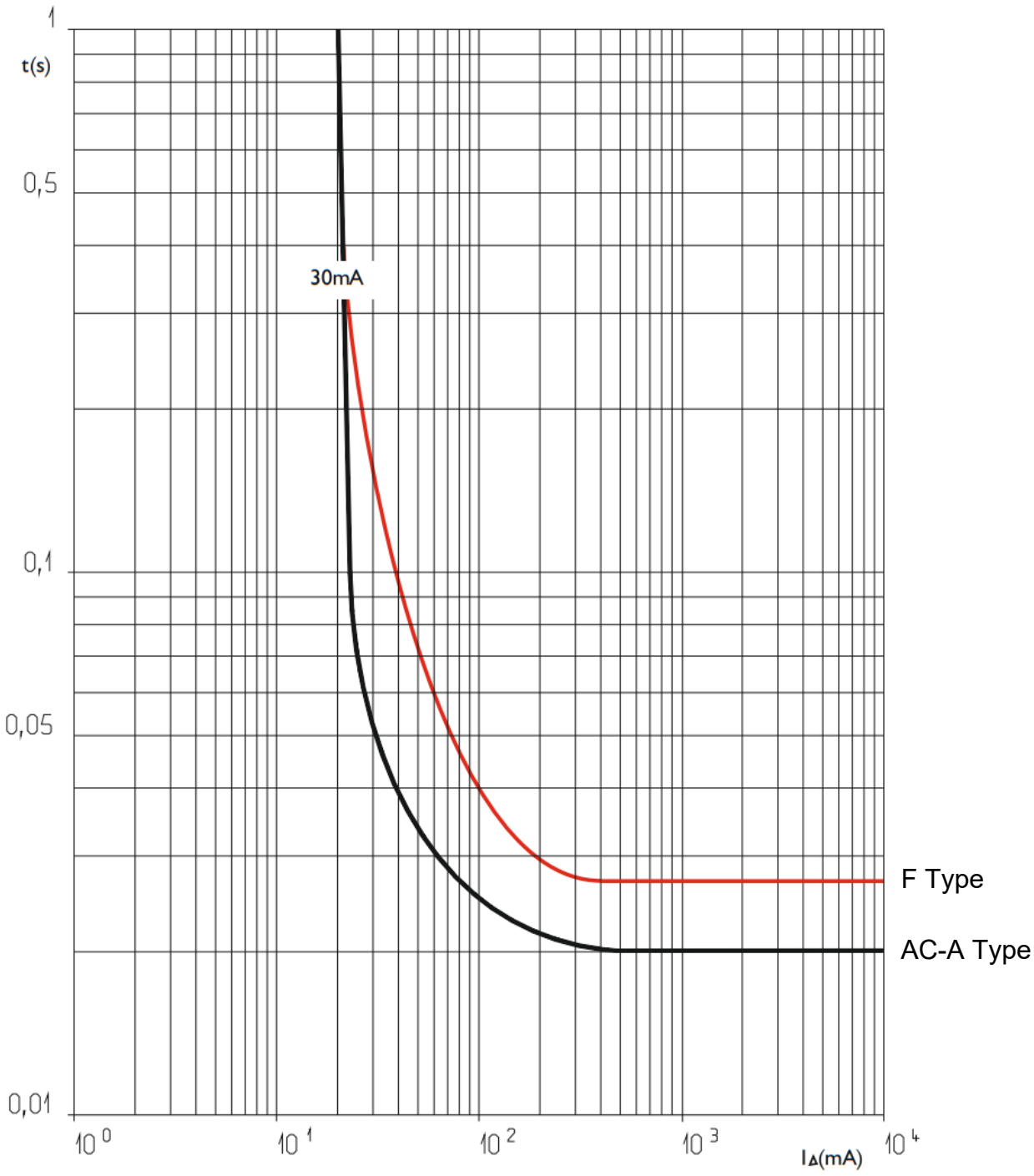
Packaging:
. Design and manufacture of packaging compliant with decree 98-638 of 20/07/98 and Directive 94/62/EC

7. CURVES

Tripping current curves:

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

AC - A - F TYPE



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8. AUXILIARIES AND ACCESSORIES

Wiring accessories:

. Supply busbar: Pin and Fork busbar (See Bticino catalogue)
. Sealable screw cover (Cat. No. F80CV)
. Terminal for aluminium cable with max. 50 mm² cross-section (F80ALU63)

Sealing:

. Possible in the open or closed positions

Locking options:

. 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 which 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 the safety level of your installation has been reduced.
The presence of residual current protection does not remove the need to observe all the precautions associated with using electrical energy.