

# Btdin RCBO 4500A up to 32A (2P)

Cat N° (s):

GC8230AC10 - GC8230AC16 - GC8230AC20 -  
GC8230AC25 - GC8230AC32

<i>Index</i>	<i>Pages</i>
1. Description.....	2
2. Product range .....	2
3. Overall dimensions .....	2
4. Fixing – Connection .....	3
5. General characteristics. ....	4-7
6. Compliance - Approvals .....	8
7. Curves .....	8

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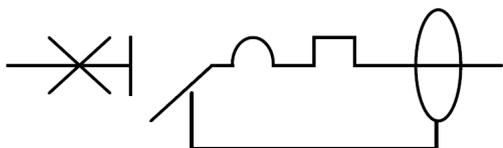
## 1. DESCRIPTION

Residual current operated circuit breaker with integral overcurrent protection (residual current breaking overload RCBO).

For control, disconnection and protection of electrical circuits against overcurrent and insulation faults.

For protection of people against direct and indirect electric shocks.

Symbol:



Technology:

- . Current limiting device.
- . Electromagnetic residual current operating by sensitive relay

## 2. PRODUCT RANGE:

Number of poles:

- . Double pole (2P)

Width:

- . Double pole – 4 modules (4 x 17.8 mm = 71.2 mm).

Rated current at 30°C:

- . 10 / 16 / 20 / 25 / 32A

Tripping characteristics and magnetic tripping calibrations:

- . Curve C (between 5 and 10 In)

Thermal threshold:

according to IEC/EN 61009-1

- . Non operating current (In<sub>f</sub>): 1.13 In.
- . Operating current (I<sub>f</sub>): 1.45 In.

Types :

- . AC (sinusoidal AC fault currents).

Sensitivities and tripping time:

- . 30 mA i instantaneous.

## 2. PRODUCTRANGE (continued):

Rated Voltage / Frequency:

- . Duple pole 230 V ~, 50 Hz with standard tolerances.

Operating voltage ~ 50 Hz with standard tolerances :

U	Duple pole
U mini	170 V ~
U maxi	253 V ~

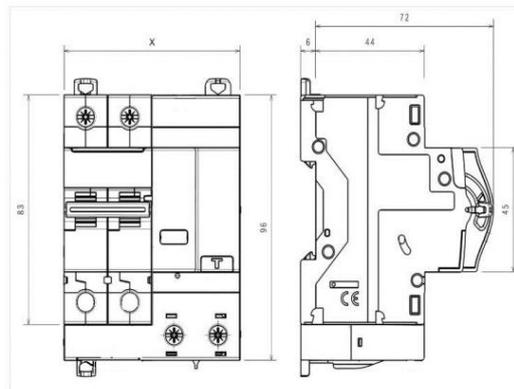
Breaking capacity:

- . 4500 A according to IEC /EN 61009-1

Residual breaking capacity I $\Delta$ m:

- . In accordance with standard IEC/EN 61009-1 (I $\Delta$ m: short-circuit to ground) I $\Delta$ m = 4500A

## 3. OVERALL DIMENSIONS



N° of poles	"X"
2P	71.2 mm

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## 4. PREPARATION - CONNECTION

### Fixing:

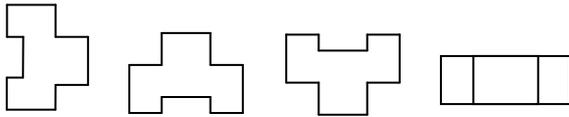
- . On symmetrical IEC/EN 60715 rail or DIN 35 rail.

### Power supply:

- . From the top through the m.c.b. associated or from the bottom directly on the differential block.

### Operating position :

- . *Vertical, Horizontal, Flat.*



### Screw terminals:

- . Terminals protected against accidental contact (IP20).
- . Cage terminals, with release and captive screw
- . Terminal depth: 14 mm.
- . Stripping length recommended: 11 mm
- . Screw head: Mixed, Slotted and Pozidriv n°2.
- . Recommended tightening torque: 3 Nm.
- . The screw terminals are separated by built-in shields.

### Connectable section:

- . In the power terminals in the lower part of the product.
- . Copper cable.

	Without ferrule	With ferrule
Rigid cable	1 x 25 mm <sup>2</sup>	-
Flexible cable	1 x 16 mm <sup>2</sup>	1 x 16 mm <sup>2</sup>

### Recommended tools:

- . For the terminals: screwdriver Pozidriv n°2 or flat screwdriver 5,5 mm (6,5 mm maximum).
- . For fixing on the DIN rail: flat screwdriver 5 mm (from 4 to 5 mm).

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

### Manual actuation of the add-on module:

- . By the 2-position ergonomic handle of the associated MCB:
  - I / ON: Closed circuit.
  - 0 / OFF: Opened circuit.

### Contacts status display:

- . By marking of the associated MCB handle:
  - "O-Off" white on a green background = contacts opened.
  - "I-On" white on a red background = contacts closed

### Display of differential fault trip:

- . Yellow mechanical signaller into the window on front-side marking zone.

### Lockout:

- . By 5 mm padlock with padlock support (cat. N° F80BL)

### Labelling:

- . Identification of the circuit by insertion of a label in the label holder.

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## 5. GENERAL CHARACTERISTICS :

### Front side marking :

- . By permanent ink pad printing showing and laser marking.
- . Cat No: GC8230AC10
- . Trade name: ground fault interrupter
- . Differential rated current.
- . Electrical diagram.
- . Bticino mark.
- . Symbol that identifies product for switchboard

### Code structure :

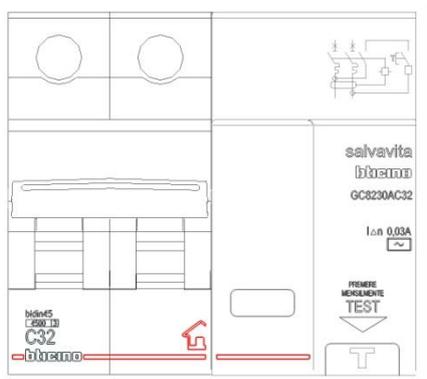
G	C	8	2	3	0	AC
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- . Initial code root composed of seven elements:
  - Letter "G" shows the device type: Add-on module (BDA).
  - Letter "N" breaking capacity 4500A
  - Numbers 8 shows device with MCB protection
  - Numbers of poles "2" = Two.
  - Sensitivity,  $I_{\Delta n}$  (mA): N° 3 = 30mA.
  - Numbers 0 indicates a product for switchboard
  - Indication of the type "AC" = AC type.

10

- . Numerical part composed of one element:
  - Rated current of MCB,  $I_n$  (A).

### Marking exemple :



## 5. GENERAL CHARACTERISTICS (continued):

### Short-circuit breaking capacity:

- . single-phase or three-phase network (50/60 Hz AC)
- According to IEC/EN 61009-1
- .  $I_{cn} = I_{cs}$  4500A

### Test key operating voltages :

U test	Duble pole
U mini	170 V ~
U maxi	253 V ~

### Neutral system :

- . IT – TT – TN.

### Residual breaking capacity $I_{\Delta m}$ :

- . In accordance with standard IEC/EN 61009-1 ( $I_{\Delta m}$ : short-circuit to ground)
- $I_{\Delta m} = 3000A$

### Insulation rated voltage:

- .  $U_i = 500 V$  in accordance with standard IEC/EN 61009-1

### Pollution degree:

- . 2.

### Dielectric strength:

- . 2500 V

### Pulse rated voltage:

- .  $U_{imp} = 4 kV$  (wave 1.2 / 50  $\mu s$ ).

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## 5. GENERAL CHARACTERISTICS (continued):

### Protection against unwanted tripping:

- . Damped recurrent wave – 0.5  $\mu$ s/10kHz : 200A for all types
- . Held to the wave 8/20  $\mu$ s: 250A

### Protection class :

- . Protection index of terminals against solid and liquid bodies:  
IP 20 (in accordance with standards IEC/EN 60529 et NF C 20-010).
- . Protection index of the box against solid and liquid bodies:  
IP 40 (in accordance with standards , IEC/EN 60529 et NF C 20-010).
- . Class II compared to conductive parts.
- . Protection index against mechanical shocks:  
IK 02 (in accordance with standards EN 50102 et NF C 20-015).

### Mechanical endurance: (with MCB associated) :

- . 20000 operations without load.
- . 10000 operations with load.
- . 750 differential tripping operations by the Test key.
- . 750 differential tripping operations for fault current.

### Specific use:

- . Appropriate to be used in humid environment and polluted by chlorine (pool-type)

### Load to close and to open a RCBO by the handle:

- . 0,5 Nm per pole to close.
- . 0,3 Nm per pole to open.

### Power dissipated and impedance average per pole at In :

In	Double-pole	
	Z (m $\Omega$ )	P (W)
10 A	19	1.9
16 A	8.8	2.26
20 A	6.5	2.61
25 A	5.3	3.34
32 A	4.2	4.26

## 5. GENERAL CHARACTERISTICS (continued):

### Enclosure material :

- .Nylon.
- . Polycarbonate.
- . Characteristics of this material: self extinguishing, heat and fire resistant in accordance with standard IEC/EN 61009-1, glow-wire test at 960°C for external parts made of insulating material necessary to retain in position current-carrying parts and parts of protective circuit (650°C for all other external parts made of insulating material).

### Calorific value :

	Double-pole
MJ	6.2

### Average weight per device :

- . Double pole : 0,5 kg

### Packed volume:

- . Double pole: 0,9 dm<sup>3</sup> per device.

### Ambient operating temperature :

- . Min. = -25°C – Max. = +70°C

### Ambient storage temperature :

- . Min. = -40°C – Max. = +70°C

### Derating according to ambient temperature :

- . Reference temperature: 30 °C in accordance with standard IEC/EN 61009-1.
- . No derating of the differential block depending on the ambient temperature between - 25 ° C and +30 ° C.
- . Derating between + 30 °C to + 70 °C :

Temperature	30 °C	40 °C	50 °C	60 °C	70 °C
% In	100 %	95 %	90 %	85 %	80 %

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## 5. GENERAL CHARACTERISTICS *(continued)*:

### Resistance to sinusoidal vibrations:

- . in accordance with standard IEC 60068-2-35.
- . Axis: x, y, z.
- . Frequency range: 5÷100 Hz ; duration 90 min.
- . Displacement (5÷13,2 Hz) : 1mm
- . Acceleration (13,2÷100 Hz) : 0,7g (g=9,81 m/s<sup>2</sup>).

### Influence of the altitude :

	2000 m	3000 m	4000 m	5000 m
Dielectric strength	3000 V	2500 V	2000 V	1500 V
Max operating voltage	400 V	400 V	400 V	400 V
Derating at 30°C	none	none	none	none

### Derating of circuit-breakers depending on the ambient temperature :

. Rated characteristics of a circuit breaker are modified depending on the ambient temperature which prevails inside the cabinet or the enclosure where the circuit breaker is located.

. Reference temperature: 30°C according to IEC/EN 60898-1

In (A)	Ambient temperature / In									
	- 25°C	- 10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C	70°C
10	12.5	11.5	11.1	10.7	10.3	10.0	9.7	9.3	9.0	8.7
16	20.0	18.7	18.0	17.3	16.6	16.0	15.4	14.7	14.1	13.5
20	25.0	23.2	22.4	21.6	20.8	20.0	19.2	18.4	17.6	16.8
25	31.5	29.5	28.3	27.2	26.0	25.0	24.0	22.7	21.7	20.7
32	41.0	37.8	36.5	34.9	33.3	32.0	30.7	29.1	27.8	26.5

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## 5. GENERAL CHARACTERISTICS *(continued)*:

### Derating of RCBOs function of the number of devices side by side:

When several RCBOs are juxtaposed and operate simultaneously, the heat dissipation of the poles is limited. This results in an increase in operating temperature of the circuit breakers which can cause unwanted tripping. It is recommended to apply the following coefficients to the rated currents.

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 given by the recommendation of IEC/EN 60439-1 e NF C 63421 standards.

To avoid to have to use these coefficients, it is necessary to allow a good ventilation and to keep the devices apart with 0.5 module spacing elements (cat. N° F80/05D).

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## 6. COMPLIANCE- APPROVALS :

### In accordance with standards:

- . IEC/EN 61009-1.
- . IEC/EN 60947-2.
- . Compliance with Directives 2014/35/UE (LVC), subsequent modifications and additions.
- . Compliance with Directives 2014/30/UE (EMC), subsequent modifications and additions.

### Environment respect – Compliance with CEE directives:

- . Compliance with Directive 2011/65/UE called "RoHS" provides the banishment of hazardous substances, subsequent modifications and additions.
- . Compliance with Directives 91/338/CEE of 18/06/91 and decree 94-647, subsequent modifications and additions.

### Plastic materials :

- . Halogen-free plastic materials.
- . Marking of parts according to ISO 11469 and ISO 1043.

### Packaging:

- . Design and manufacture of packaging in accordance with decree 98-638 and Directive 94/62/EC, subsequent modifications and additions.

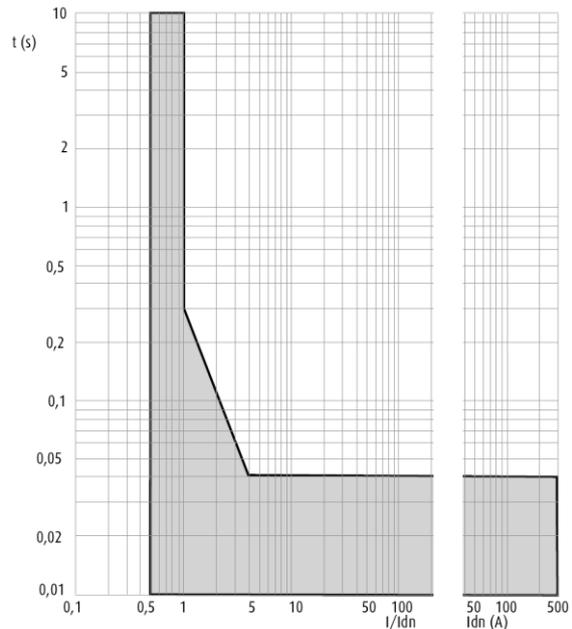
### Approvals:

- .Certificates obtained from the range:  
IMQ - LOVAG
- .These markings may vary depending on the article

## 7. CURVES :

### Residual current operating characteristic :

- . Average tripping time depending on the intensity of the fault current.



## 8. AUXILIARIES - ACCESSORIES

### Wiring accessories:

- . Sealable screw cover (cat n° F80CV).
- . Insulating shields (cat n° F80S)

### Automatic resetting module STOP & GO :

- . Automatic resetting module Stop & Go (2 modules – cat n° F80SG)
- . Automatic resetting module Stop & Go with self-test (2 modules – cat n° F80SGB)

### Installation software:

- . TiQuadri