Viale Borri 231
21100 Varese, Italy

BTDIN RCCB 2P up to 80A

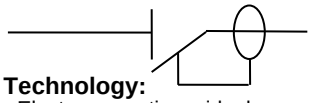
Cat n°(s): G721A.., G721AS.., G721AC.., G722A.., G722AC.., G723A.., G723F.., G723AC.., G724A.., G724F..,G724AS.., G724AC.., G725A.., G725AS.., G725AC..

Content PAGE

1. DESCRIPTION - USE

. Residual Current Circuit Breaker (RCCB) with positive contact indication for control and isolation of electrical circuits, protecting people from direct and indirect contacts and protecting installations from insulation faults.

Symbol:



Technology:
. Electromagnetic residual current function with current-sensing relay

2. RANGE

Polarity:
. 2 poles - 2 module wide (2 * 17,8mm)

Rated currents In:
. 16 / 25 / 40 / 63 / 80 A

Rated voltage:
. 230 V~ according to EN/IEC 61008-1

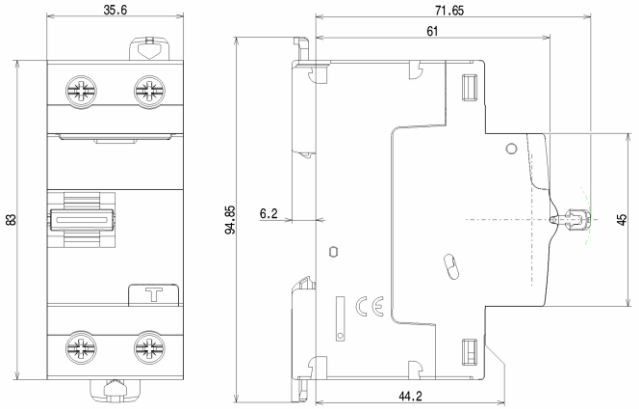
Rated frequency:
. 50 Hz

2. RANGE *(continued)*

Residual current types:
. AC (residual sinusoidal alternating currents)
. A (residual sinusoidal alternating currents and residual pulsating direct currents)
. A-S (short-delayed type A for selectivity)
. F (residual sinusoidal alternating currents and residual pulsating direct currents, for composite residual currents and for residual pulsating direct currents superimposed on smooth direct current up to 10 mA)

Residual current sensitivity:
. 10 mA / 30 mA / 100 mA / 300 mA / 500 mA

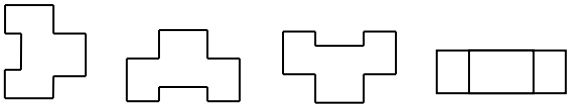
3. OVERALL DIMENSIONS



4. PREPARATION - CONNECTION

Mounting:
. On 35 mm symmetrical rail EN/IEC 60715

Operating position:
Vertical Horizontal Upside down On the side



Power supply:
. Either from the top or the bottom
. Upper terminals: pin busbars
. Lower terminals: pin or fork busbar

Maintenance:
. A RCCB can be replaced in the middle of a row supplied with pin busbars without disconnecting the other products

Connection:
. Inputs and outputs via screw terminals
. Terminals fitted with shutters preventing a cable being placed under the terminal, with the terminal partly open or closed

Terminal depth:
. 14 mm

Stripping length recommended:
. 11 mm

Screw head:
. Mixed, slotted and Pozidriv 2.

Tightening torque:
. Recommended: 2,5 Nm
. Min: 1.2 Nm. Max: 3.5 Nm.

Tools required:
. For the terminals: Pozidriv n°2 or flat screwdriver 5.5 mm (6.5 mm maximum).
. For fixing (din rail clamps): Pozidriv n°2 or flat screwdriver 5.5 mm (6 mm maximum).

4. PREPARATION - CONNECTION *(continued)*

Connectable section:

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

Manual actuation of the RCCB:
. Ergonomic 2-position handle
. "I-ON": device closed
. "O-OFF": device open

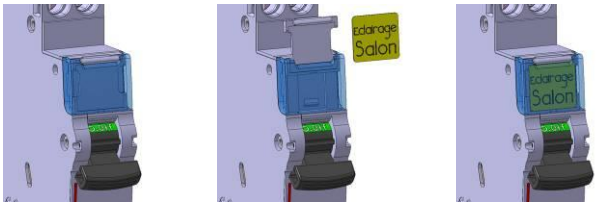
Locking:
. Padlocking is possible in the open and closed positions with padlock support (Cat. No. F80BL) and Ø5 mm padlock or Ø6 mm padlock

Sealing:
. Possible in the open and closed positions

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

Residual current tripping display:
. By the handle in “0-OFF” position

Labelling:
. Identification of the circuit by insertion of a label in the label holder.



5. GENERAL CHARACTERISTICS

Neutral earthing system:
. IT, TT and TN

Marking on the front side:
. By permanent ink pad printing

Maximum operating voltage:
. 250 V AC

Rated conditional short-circuit current:
. Inc = 10kA in accordance with EN/IEC 61008-1.

Rated conditional short-circuit residual current:
. I∆c = 10kA in accordance with EN/IEC 61008-1.

Rated residual breaking capacity:
. I∆m = 1000A in accordance with EN/IEC 61008-1 (short-circuit to earth).

Rated breaking and making capacity:
. In accordance with EN/IEC 61008-1
. In = 16 / 25 / 40A - Im = 500A
. In = 63A - Im = 630A
. In = 80A - Im = 800A

Protection against overloads:
. The RCCB must be protected against overloads by a circuit-breaker or a fuse with a rated current less than or equal to the rated current of the RCCB.

Operating voltage ranges of the Test circuit:

I∆n	10 mA	30 mA	100 mA	300 mA	500 mA
U min.	110 V~	180 V~	110 V~	115 V~	120 V~
U max.	250 V~	250 V~	250 V~	250 V~	250 V~

Ambient operating temperature:
. Min. = -25°C. Max. = +60°C

Ambient storage temperature:
. Min. = -40°C. Max. = +70°C

Isolation:
. The RCCB is suitable for isolation in accordance with EN/IEC 61008-1 standard. The distance between contacts is greater than 4.5 mm when the handle is in open position.

Insulation resistance:
. 2 MΩ

5. GENERAL CHARACTERISTICS *(continued)*

Rated insulation voltage:
. Ui = 250 V~

Rated impulse withstand voltage:
. Uimp = 4 kV

Pollution degree:
. 2 according to IEC/EN 61008-1.

Dielectric strength at power frequency:
. 2000 V 50Hz

Unwanted tripping withstand:
. 0.5 µs/100 kHz damped recurring wave = 200 A
. 8/20 µs wave:
- A / AC type = 250 A
- A-S and F type = 3000 A

Closing and opening force via the handle:
. 23 N to close the RCCB
. 8 N to open the RCCB

Mechanical endurance:
. Compliant with standard EN/IEC 61008-1
. Tested with 20,000 operations with no load

Electrical endurance:
. Compliant with standard EN/IEC 61008-1
. Tested with 10,000 operations with load (In x Cos φ 0.9)
. Tested with 2,000 residual current tripping operations using the test button or a fault current

Degree of protection:
. Degree of protection in the terminals area (wired device):
IP 20, (in accordance with standards EN/IEC 61008-1 and EN/IEC 60529).
. Degree of protection front side against direct contact :
IP 40 (in accordance with standards EN/IEC 60529).
. Protection index against mechanical shocks:
IK 04 (in accordance with standards EN/IEC 62262).

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 Bticino circuit breaker or Legrand fuse is compliant with the values stated in the tables below:

. Association with a fuse:

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

. Association with a circuit breaker :

	Upstream circuit breaker				
Downstream RCCB		BTDIN 45	BTDIN 60	BTDIN 100/250	BTDIN 160/250
	In	≤ 40 A	≤ 40 A	≤ 80 A	≤ 80 A
2P - 230 V~	16 A to 80 A	6 kA	10 kA	16 kA	16 kA

Power dissipated by the device:

RCCB		Power dissipated by the device (In)			
In	Sensibilité	AC type	A 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**		**0,5 W**	
25 A	300 mA	**0,5 W**	**0,5 W**	**0,5 W**	**0,5 W**
25 A	500 mA	**0,5 W**	**0,5 W**	**0,5 W**	
40 A	30 mA	**4 W**	**4 W**		**1,2 W**
40 A	100 mA	**1,3 W**	**1,3 W**	**1,3 W**	
40 A	300 mA	**1,3 W**	**1,3 W**	**1,3 W**	**1,3 W**
40 A	500 mA	**1,3 W**	**1,3 W**	**1,3 W**	
63 A	30 mA	**3,1 W**	**3,1 W**		**3,1 W**
63 A	100 mA	**3,1 W**	**3,1 W**	**3,1 W**	
63 A	300 mA	**3,1 W**	**3,1 W**	**3 W**	**3 W**
63 A	500 mA	**3,1 W**	**3,1 W**	**3,1 W**	
80 A	300 mA	**5 W**	**5 W**	**5 W**	
80 A	500 mA	**5 W**	**5 W**	**5 W**	

5. GENERAL CHARACTERISTICS *(continued)*

Sinusoidal vibration resistance in accordance with IEC/EN 60068-2-6:
. Axis: x, y, z.
. Frequency range: 10÷55 Hz
. Acceleration: 3g (g=9,81 m/s^2)

Resistance to tremors:
. In accordance with EN/IEC 61008-1

Enclosure material:
. Polyamide and P.B.T.

Enclosure heat and fire resistance:
. Glow-wire test at 960°C according to IEC/EN 61008-1 and IEC 60695-2-12
. Classification V2 in accordance with UL94 standard

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

Weight per device:
. Between 0,18 kg and 0,22 kg depending of the catalogue number

Package volume:

	Volume (dm^3)
For all catalogue numbers	**0.35**

Derating of RCCBs according to ambient temperature:
. Reference temperature: 30°C in accordance with EN/IEC 61008-1

	Ambient Temperature/In		
In (A)	-25° à 40°C	50°C	60°C
16 A	16	16	16
25 A	25	25	25
40 A	40	25	25
63 A	63	40	40
80 A	80	63	63

Derating of RCCBs for use with fluorescent lights:
Ferromagnetic and electronic ballasts have a high inrush current for a short time. These currents can cause the tripping of RCCBs.
At the time of the installation, it is recommended to take into account the maximum number of ballasts per RCCB that the manufacturers of lamps and ballasts indicate in their catalogues.

5. GENERAL CHARACTERISTICS *(continued)*

Specific use:
. Appropriate to operate in humid atmosphere and polluted by a chlorined environment (pool-type)

Influence of the altitude:

	≤2000 m	3000 m	4000 m
Dielectric holding	**2,000 V**	**2,000 V**	**2,000 V**
Max operational Voltage	**250 V**	**250 V**	**250 V**
Derating at 30°C	**None**	**none**	**none**

Derating of RCCBs function of the number of devices side by side:
When several RCCBs are installed side by side and operate simultaneously, the thermal evacuation of the poles is limited. This results in an increase in operating temperature of the RCCBs which can cause unwanted tripping. It is recommended to apply the following coefficients to the rated currents.

Number of RCCBs side by side	Coefficient
2 - 3	**0.9**
4 – 5	**0.8**
6 - 9	**0.7**
≥ 10	**0.6**

These values are given by the recommendation of IEC 60439-1.
To avoid using these coefficients, it is necessary to allow a good ventilation and to separate the devices with 0.5 module spacing elements (F80/05De).

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 25A/40A/63A, A and AC types, with sensitivity 30mA, which can be replaced by F types of equivalent ratings and sensitivity.

6. CONFORMITIES AND APPROVALS

Reference standards:
. EN / IEC 61008-1
. EN / IEC 62423 (F type)

Classification according to Annex Q (standard IEC/EN 60947-1):
Category C with a range test temperature -25 °C / +70 °C

Utilisation in salty condition:
Salt fog atmosphere according IEC 60068-2-52

Environment respect – Compliance with EU directives:
. Compliance with Directive 2011/65/EU of 08/06/11 (RoHS) and subsequent modifications and integrations.
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

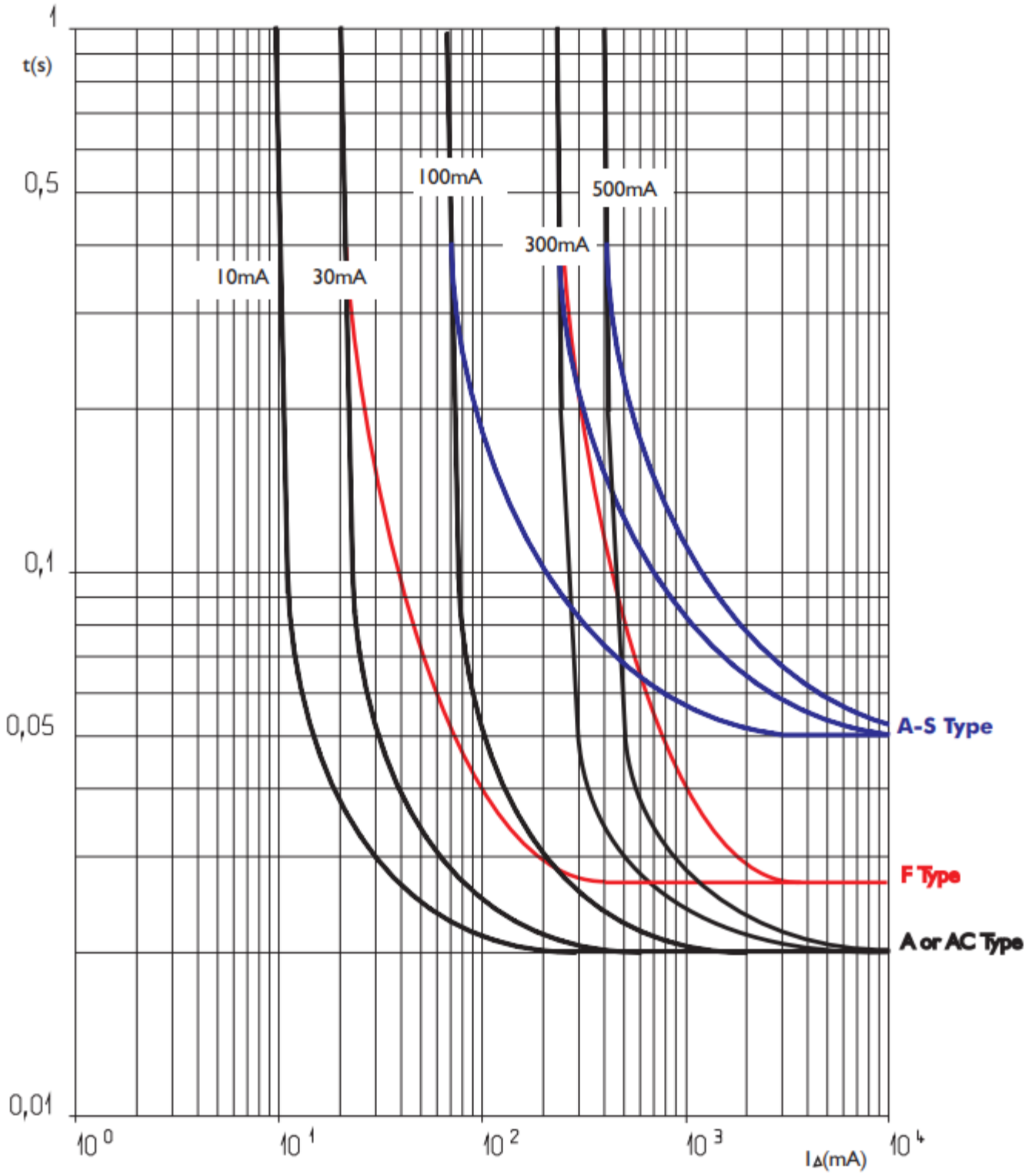
Plastic materials:.
. Labelling of parts compliant with ISO 11469 and ISO 1043.
. Halogen free plastic materials

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

7. CURVES

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

AC – A – F types:



8. AUXILIARIES AND ACCESSORIES

Wiring accessories:
. Pin busbar.
. Sealable screwcover (cat. No. F80CV)

Signalling auxiliaries:
. Auxiliary contact (0.5 module, cat. No. F80CA05)
. Fault signalling contact (0.5 module, cat. No. F80CR05)
. Auxiliary contact that can be changed into fault signalling contact (0.5 module, cat. No. F80RC05)
. Auxiliary contact + fault signalling contact that can be changed into 2 auxiliary contacts (1 module, cat. No. F80CR)

Control auxiliaries:
. Shunt trip (1 module, cat. No. F80ST1 / F80ST2)
. Under voltage release (1 module, cat. No. F80SV1 / F80SV2)
. Autonomous shunt trip release for N/C push-button (1.5 module, cat. No. F80SVE2)
. Power Overvoltage Protection (1 module, cat. No. F80SVP)

Motor driven control modules:
. Motor-driven control module (1 module, cat. No. F80MC230)
. Motor-driven control module with integrated automatic reset (2 modules, cat. No. F80MR24, F80MR230)

Automatic resetting:
. Automatic resetting STOP & Go (cat. No. F80SG, F80SGB, F80SGPN).

Possible combinations of RCCB and auxiliaries:
. Auxiliaries are clipped on the left of the RCCB
. Maximum number of auxiliaries for one RCCB: 3.
. Two signalling auxiliaries max. (cat. No. F80CA05, F80CR05, F80RC05, F80CR).
. Only one control auxiliary (cat. No. F80ST1, F80ST2, F80SV1, F80SV2, F80SVE2, F80SVP).
. One remote motor driven remote control or one STOP & GO automatic resetting.
. If signalling and control auxiliaries are associated on the same RCCB, the control auxiliary must be placed to the left of the signalling auxiliary

Front external rotary handle
. Black handle (cat. No. F80KMN)
. Yellow and red handle (cat. No. F80KMR)

8. AUXILIARIES AND ACCESSORIES *(continued)*

Supply Invertor
. Manual change-over switch (cat. No. F80KM2)

Sealing:
. Possible in the open or closed positions

Locking options:
. 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, 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.