



DDA 200 type B: RCD blocks type B
Reliable in any fault situation

RCD blocks type B: reliable in any fault situation

Complete protection against all types of leakage currents

RCD blocks type B are able to provide protection in case of sinusoidal, direct pulsating, high frequency and smooth direct earth fault currents.

DDA200 type B are devices to be coupled with S200 up to 63A with lower or equal rated current and together they provide protection against both earth-fault currents and overload or short-circuits.

Using RCDs Type B

B types are suitable in all cases in which fault currents take place with continuous wave form or with frequency values and harmonic components that do not ensure the correct intervention of an RCD type A, i.e. in the presence of:

- Three-phase AC/DC converters where, due to the lack of double insulation, insulation defects may occur in the section of the DC circuit (downstream of the rectifier).
- Three-phase frequency converters where earth fault currents

can be high frequency or with high harmonics.

- Three-phase UPS where, due to the lack of double insulation, insulation defects may occur in the section of the DC circuit (downstream of the rectifier).
- Electro-medical equipment where devices are DC-powered by an AC/DC converter inside the device.
- Photovoltaic systems without a simple separation between the AC side and the DC side.
- Charging stations for electric vehicles with three-phase power supply.

Reference Standards

DDA 200 type B are globally available and recognized thanks to IEC Standards. The ABB RCD blocks type B comply with IEC/EN 62423 2nd edition standard: "Type F and type B residual current operated circuit-breakers with and without integral overcurrent protection for household and similar uses".

International Standard IEC 62423 ed.2 has been published on 2009-11 and after on 2012-12 was released version EN 62423 2nd edition. The standard can only be used in conjunction with IEC/EN 61009 (for RCD blocks and residual current circuit

breakers). This means that an RCD block type B meets all requirements of IEC/EN 61009 Annex G.

The IEC/EN 62423 2nd edition standard includes all the definitions, requirements and tests (in addition to the IEC/EN 61009 tests) for RCD blocks type B. RCD type B symbols according to IEC 62423 2nd edition:



Range

Technical features

			DDA 200 B		
	Standards		IEC/EN 61009 Annex G, IEC/EN 62423 Ed. 2		
Electrical features	Type		B		
	Number of poles		2P – 3P – 4P		
	Rated current I_n	A	25 – 40 – 63		
	Rated sensitivity $I_{\Delta n}$	mA	30 – 300 – 500		
	Rated voltage U_e	V	230/400 – 240/415		
	Minimum operating voltage	For detecting type A/AC residual current	V	0	
			V	30	
		For detecting type B residual current	V	30	
	Rated breaking capacity according to IEC/EN 61009		Same of the coupled MCB		
	Rated residual breaking capacity $I_{\Delta n}$		Same of the coupled MCB		
	Rated impulse withstand capacity (1,2/50) U_{imp}	kV	4		
	Dielectric test voltage at ind. freq. for 1 min	kV	2.5		
	Surge current resistance (wave 8/20)	instantaneous (type B APR)	A	3000	
Selective (type B S)		A	5000		
Mechanical features	Toggle		Blue		
	Green LED		Yes, it identifies the operation as type B		
	Electrical life		10000 cycle		
	Mechanical life		20000 cycle		
	Protection degree	housing		IP4X	
		terminals		IP2X	
	Environmental testing (humid heat) according to IEC/EN 60068-2-30	°C/RH	28 cycles at 55°C/90 – 96% and 25°C/95 – 100%		
	Ambient temperature (with daily average $\leq +35$ °C)	°C	-25...+55		
Storage temperature	°C	-40...+70			
Installation	Terminal size for flexible and rigid cables	mm ²	Up to 25		
	Tightening torque	Nm	2.8		
	Mounting		On DIN rail EN 60715 (35 mm) by means of fast clip device		
Dimensions and weight	Dimensions (H x W x L)	mm	85 x 69 x 70		
	Weight	2P	g	350	
		3P	g	375	
		4P	g	395	
Combination with auxiliary elements	Combinable with: S 200 series		Yes		

RCD blocks type B

Applications

Residual current devices ensure people protection: they interrupt the circuit in case of dangerous earth leakage by avoiding direct or indirect contact with live parts. In the simplest cases, earth fault currents are perfectly sinusoidal with rated frequency, whereas in the most complex cases they are composed by DC and multiple frequencies components. RCDs type B are designed to detect any type of earth fault leakage in order to ensure people protection in all cases.

Main applications for type B RCDs:

Three-phase AC/DC converters

If double insulation is lacking, insulation defects may occur in the section of the DC circuit (downstream of the rectifier). These devices can be found in battery chargers, machine tools, elevators in very tall buildings, railway traction, cranes supplied with inverters, electric welders.

Photovoltaic systems

An RCD type B must be installed on the AC side in case of installation of an inverter without a simple separation between the AC and the DC sides in order to ensure people protection: IEC/EN 60364-7 art. 712.413.1.1.1.2

“Where an electrical installation includes a PV power supply system without at least simple separation between the AC side and the DC side, an RCD installed to provide fault protection by automatic disconnection of supply should be type B.

If the PV inverter by construction is not able to feed D.C. fault current into the electrical installation a type B RCD is not mandatory”.

Three-phase frequency converters

Frequency converters (inverters) are increasingly being used to regulate engines to save energy, reduce noise and mechanical wear. Engines with inverters are mainly used in pumping systems, air treatment systems and industrial processes. The fault may occur inside or downstream the inverter, generating an earth fault current with high frequency or high harmonics. In addition, if the inverters are equipped with accessible breaking modules (resistors), the fault current on the resistors can be continuous.

Electro-medical equipment

In case of use of devices that are DC-powered by an imbedded AC/DC converter (X-ray equipment, magnetic resonance imaging, computed tomography, etc.), an RCD type B must be installed.

Three-phase UPS

If double insulation is lacking, insulation defects may occur in the section of the DC circuit (downstream of the rectifier).

The most typical applications are hospitals, telecommunications facilities, data centres and electronic computers, alarm, security installations and machine tools.

The reference standard for inverters is

IEC/EN 50178: "Electronic equipment for use in power installations".

This standard requires the installation of RCDs type B for the protection of this kind of equipment as fault currents in three-phase inverters cannot be properly detected by RCDs of type A/AC. When RCDs type B cannot be used for protecting against indirect contacts, according to IEC/EN 50178, it is possible to use safety extra-low voltage (SELV), double insulation (class II insulation) or insulating transformers.



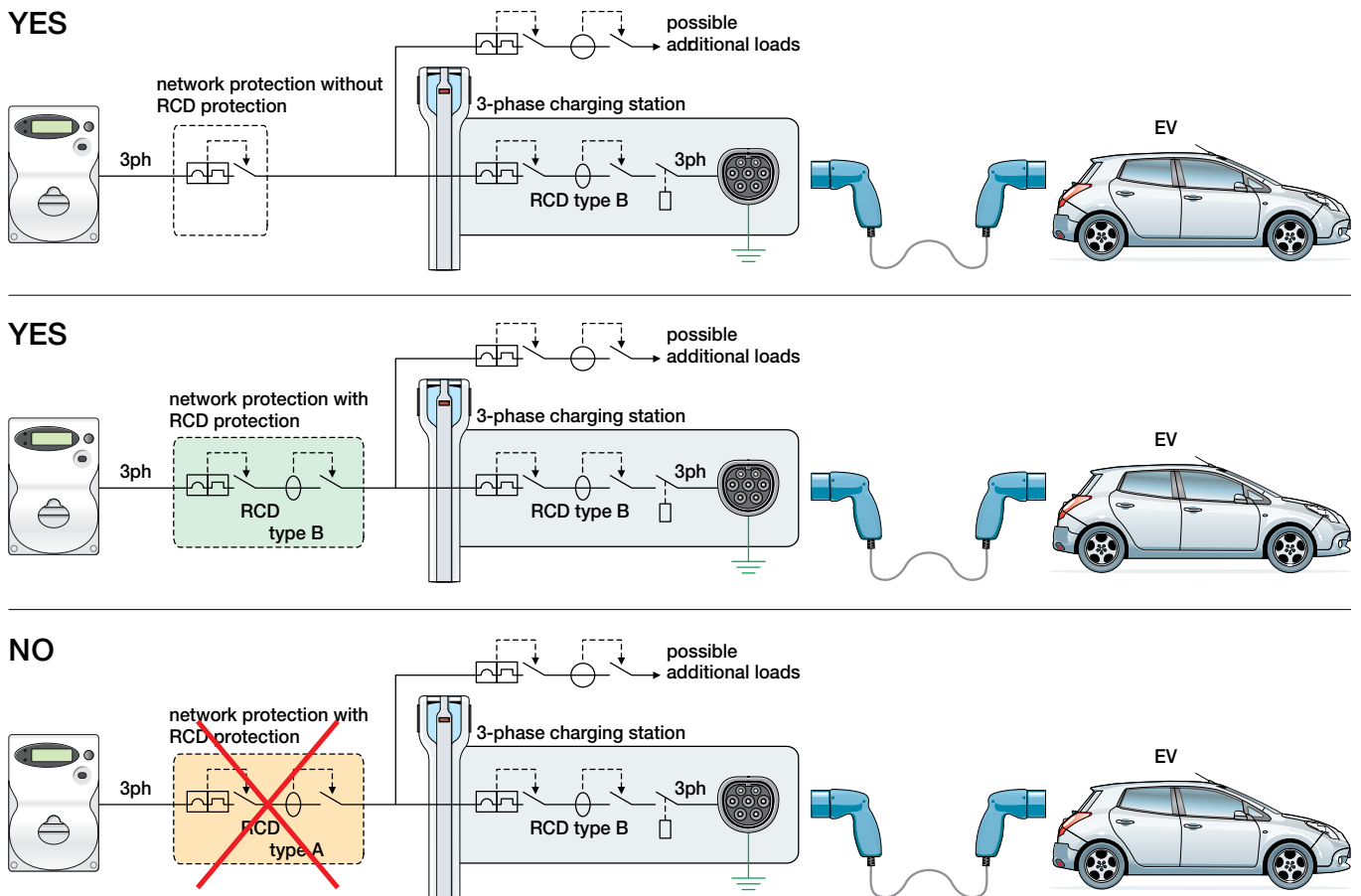
Three-phase electric vehicles charging stations

When ABB has developed first RCD type B generation there wasn't a standard reference dedicated for these products and the only application known was the frequency converter used to supply motors.

During the last years with the appearance of electric vehicles and the updating of the standard reference for RCDs type B (IEC 62423 ed.2) the resistant to unwanted tripping becomes an important feature required for this kind of RCDs.

ABB has developed the new DDA200 B APR adopting a new technology that makes these devices more resistant to unwanted tripping compare to the previous generation.

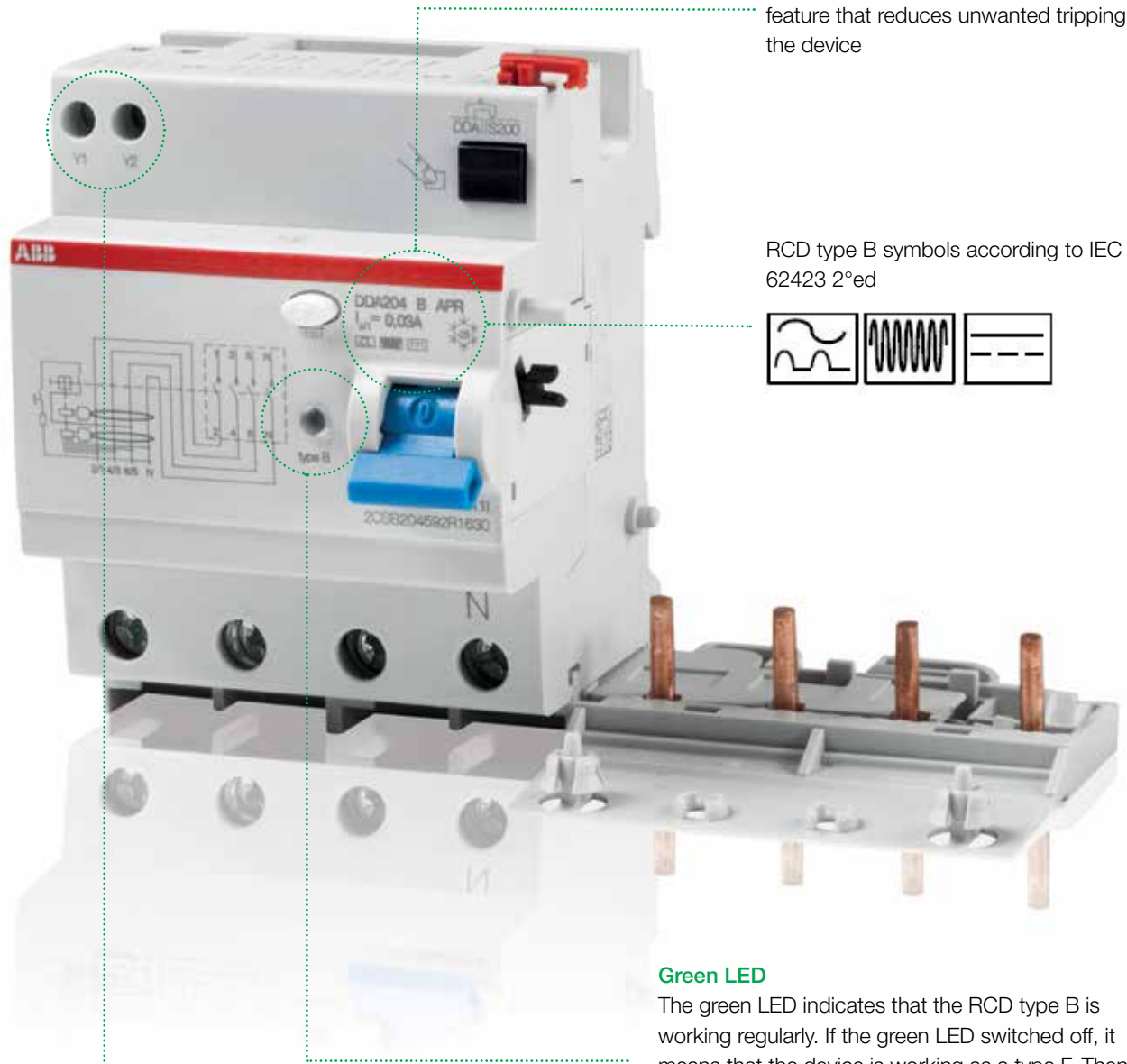
Therefore these RCD blocks result suitable where there are disturbances on the network, lightning and strong inrush currents as in case of use in the charging stations for electric vehicles.



In the case of 3-phase charging stations equipped with RCDs type B, it is compulsory that any additional residual current circuit breaker installed upstream (e.g. the distribution circuit) is also type B in order to prevent the blinding phenomenon caused by elevated values of direct earth fault current in RCDs types AC/A/F, that could compromise its proper operation.

Innovative features

Details about the range



Each type B RCD is suited with APR feature that reduces unwanted tripping of the device

RCD type B symbols according to IEC 62423 2^{ed}





Remote tripping terminals

The DDA 200 type B with rated current between 40 and 63 A are equipped with two terminals for remote tripping of the associated MCB. Tripping can be performed by pressing a NO (Normally Open) switch.

Green LED

The green LED indicates that the RCD type B is working regularly. If the green LED switched off, it means that the device is working as a type F. Then, the detection of the alternating sinusoidal currents and pulsating unidirectional currents is ensured, and single phase inverter high frequency current (type F)

-  Green LED ON: RCDs functioning like type B
-  Green LED OFF: RCDs functioning like type F

The new range of RCD blocks type B

Order codes and overall dimensions

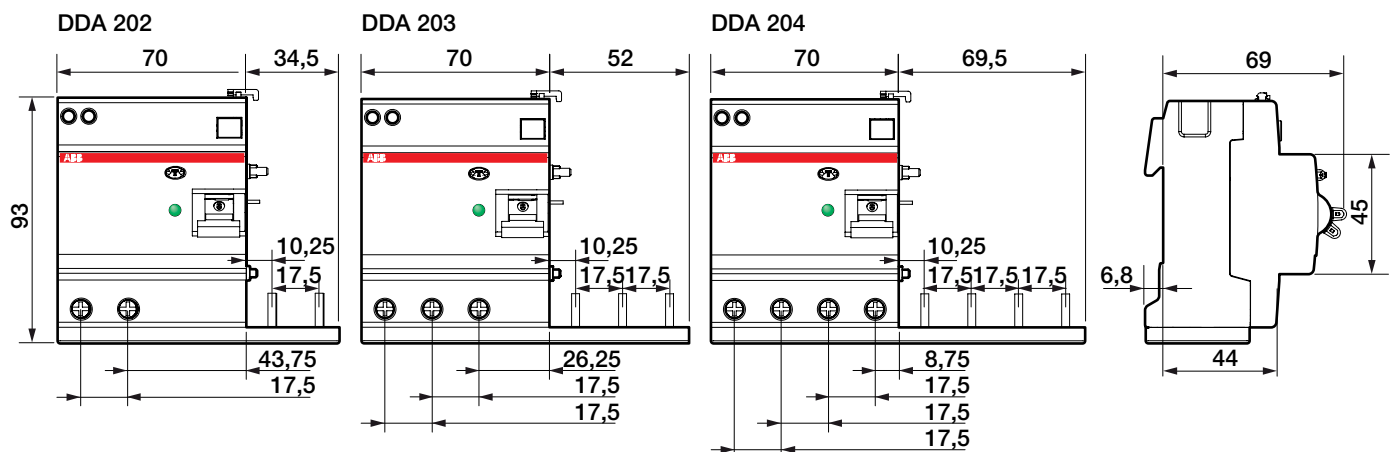
DDA 200 B order codes

Poles	Rated residual current $I_{\Delta n}$ [A]	Rated current I_n [A]	Type code	ABB code	Bbn 8012542 EAN	Unit weight [kg]
2	30	25	DDA202 B APR-25/0.03	2CSB202592R1250	748021	0.350
		40	DDA202 B APR-40/0.03	2CSB202592R1400	515128	0.350
		63	DDA202 B APR-63/0.03	2CSB202592R1630	610922	0.350
	300	25	DDA202 B APR-25/0.3	2CSB202592R3250	733324	0.350
		63	DDA202 B APR-63/0.3	2CSB202592R3630	732426	0.350
		63	DDA202 B APR-63/0.3	2CSB202592R3630	732426	0.350
3	30	63	DDA203 B APR-63/0.03	2CSB203592R1630	733225	0.375
	300	63	DDA203 B APR-63/0.3	2CSB203592R3630	732327	0.375
4	30	25	DDA204 B APR-25/0.03	2CSB204592R1250	732228	0.395
		40	DDA204 B APR-40/0.03	2CSB204592R1400	020325	0.395
		63	DDA204 B APR-63/0.03	2CSB204592R1630	733027	0.395
	300	25	DDA204 B APR-25/0.3	2CSB204592R3250	732129	0.395
		63	DDA204 B APR-63/0.3	2CSB204592R3630	732921	0.395
		63	DDA204 B APR-63/0.5	2CSB204592R4630	732020	0.395

DDA 200 B S order codes - Selective

Poles	Rated residual current $I_{\Delta n}$ [A]	Rated current I_n [A]	Type code	ABB code	Bbn 8012542 EAN	Unit weight [kg]
3	300	63	DDA203 B S-63/0.3	2CSB203892R3630	733126	0.375
4	300	63	DDA204 B S-63/0.3	2CSB204892R3630	732822	0.395

DDA 200 type B overall dimensions



Dimensions in mm

Contact us

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Modular devices

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