



Residual Current Protection Devices – Reliability You Can Trust

BETA Low-Voltage Circuit Protection



Answers for industry.

SIEMENS



BETA Protecting – Suitable for Any Application

Greater protection for personnel and plants

Residual current protective devices protect against direct and indirect contact with electrical voltages and offer additional protection against electrical fires. This is why the DIN VDE regulations specify the mandatory use of residual current protective devices for many applications.

Leaders in technology with a broad spectrum of products

As a recognized leader of technology for residual current protective devices, we have the broadest range of products on the market and are pioneers of innovation. Which is why we always have the right device for all your applications – and you benefit from the safety of reliable protection and the high availability of your plant.

Two types

Type A is the pulse-current-sensitive residual current operated circuit breaker (RCCB), generally used in Germany for sinusoidal AC residual currents and pulsating DC residual currents. Type B, SIQUENCE, covers smooth DC residual currents, as well as the residual current types covered by type A devices. Ensuring instantaneous tripping, it is the most frequently used of the standard RCCBs.

Range of versions

Super resistant [K]: prevents unwanted shutdowns by briefly delaying the tripping of the RCCB. Short-time pulse-shaped leakage currents often occur when capacitors are switched on. Selective [S]: in the event of a fault, a staggered tripping time enables the selective tripping of series-connected RCCBs.

Choosing the right RCCB

A key factor is the rated residual current necessary for the protection objective. RCCBs with a rated residual current of max. 30 mA are ideal for extra protection in the event of direct contact. Devices with 10 mA are suitable for individual loads in areas with an increased risk, such as bathrooms or outdoor areas. Devices with max. 300 mA are used as preventative fire protection in case of insulation faults. The rated residual current of selective RCCBs from 100 mA to 1000 mA must be at least three times that of the downstream RCCB with the highest rated residual current.

Highlights

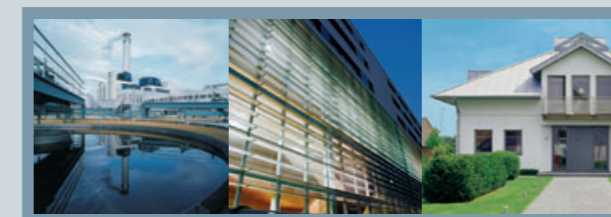
- Huge range of residual current protective devices
- The right device for every application
- Protection against direct and indirect contact with electrical voltages
- Additional protection against electrical fires

BETA Low-Voltage Circuit Protection: Circuits under Control, Wherever, Whenever

Whether protecting, switching, measuring or monitoring – BETA low-voltage circuit protection offers a broad spectrum of products – for industrial applications, as well as for non-residential and residential buildings. How you benefit: regardless of application – you always have the right device. And as your one-stop supplier, we help you save time.

Four ways to success: BETA Low-Voltage Circuit Protection

Low-Voltage Circuit Protection



Protecting

Switching

Measuring

Monitoring



SIGRES RCCBs for extreme ambient conditions.



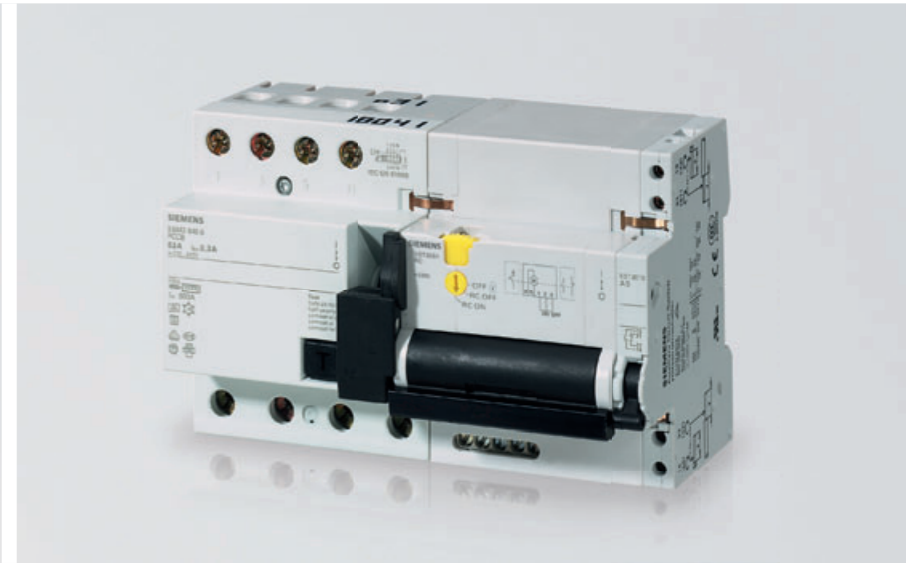
SIQUENCE RCCBs also suitable for smooth DC residual currents.



RC units allow flexible use.



Combined protection RCBO in 2 MW, recommended according to DIN VDE 0100-410.




RCCB with remote controlled mechanism and auxiliary switch.

That's What Makes Them So Special

All RCCBs from Siemens offer at least 1 kA surge current withstand capability. That is considerably higher than required by the standard. The super resistant versions even offer 3 kA, and the selective versions 5 kA. That's pretty impressive.

Super resistant through short-time delay

Super resistant RCCBs  prevent unwanted tripping – such as that which occurs when atmospheric overvoltages in the form of traveling waves penetrate the installations of a system during a thunderstorm.

SIGRES – the only one also resistant to pollution gases

Pollution gases lead to the corrosion of metal parts, which can impair the function of residual current protective devices. We have developed the SIGRES RCCB, type A, specially for use in such harsh environments. Whether ammonia in the agricultural sector, chlorine and ozone in swimming baths or sulfur dioxide in industry – SIGRES-FI has an extremely long service life thanks to its patented active condensation protection. Furthermore, because SIGRES has the same dimensions, it is quick and simple to replace previously installed devices.

SIQUENCE - getting a handle on all residual currents

The use of power electronics can cause higher pulsating currents or smooth DC residual currents. SIQUENCE universal current-sensitive residual current protective devices, type B, have an additional transformer which is supplied with a control signal. This enables an evaluation of the change in transformer behavior due to smooth DC residual currents, thus ensuring the required protective function.

Available as an RCBO up to 125 A, the line protection provided by SIQUENCE also combines personnel and fire protection. The new revised version of the standard DIN VDE 0100-723 now requires that classrooms with experimental equipment be fitted with residual current protective devices of type B with 30 mA. Our SIQUENCE, Type B range offers a broad spectrum of products that satisfy the requirements of this standard.

Combined protection with RCBOs

RCBOs combine personnel, fire and line protection. The advantages of the high plant availability and high level of protection ensured by combined RCBOs are so conclusive that they are explicitly recommended in the new DIN VDE 0100-410 "Low-voltage electrical installations: Protection for safety - Protection against electric shock". They enable the realization of additional protection in any socket outlet current circuit up to 20 A. RCBOs can be created using an RC unit and an MCB. Both components can be simply plugged into each other and secured with captive metal brackets – no tools required.








To complete the range: Accessories

Auxiliary switches are used for signaling the switching states of the RCCBs. Bus systems, such as instabus KNX, AS-Interface bus or PROFIBUS, can be integrated in the communication over binary inputs. Remote controlled mechanisms are used for the remote switching of RCCBs and RCBOs. They also enable local manual switching. A blocking function permits maintenance work. All additional components can be mounted on an RCCB – even retrofitted – without the need for tools.

Highlights

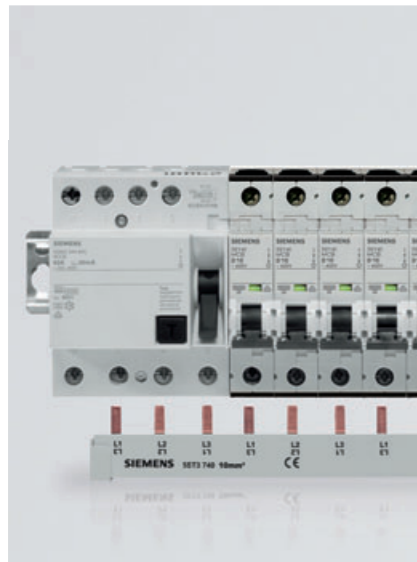
- SIGRES with patented active condensation protection is also resistant to pollution gases
- SIQUENCE evaluates the changes in transformer behavior due to smooth DC residual currents
- DIN recommendation: combined protection through RCBOs meets the specified additional protection for any socket outlet current circuit up to 20 A

Allocation of residual current protective devices in different types with tripping ranges.

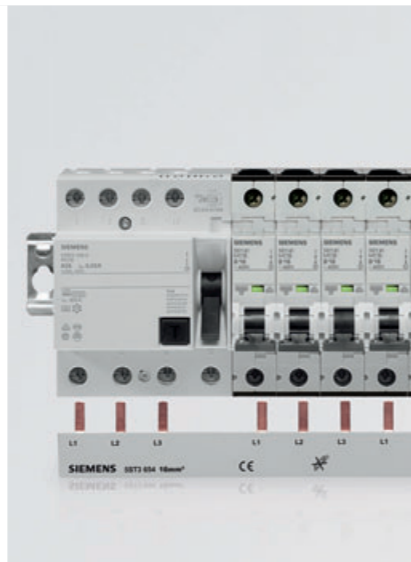
Current waveform	Correct function of residual current protection equipment of type		Tripping current
	A 	B 	
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.5 to 1.0 I_{n}
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.35 to 1.4 I_{n}
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Start angle 90°: 0.25 to 1.4 I_{n} Start angle 135°: 0.11 to 1.4 I_{n}
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	max. 1.4 I_{n} + 6 mA
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.5 to 2.0 I_{n}

SIGRES RCCBs offer a much longer service life in environments subjects to pollution gases, such as swimming baths.

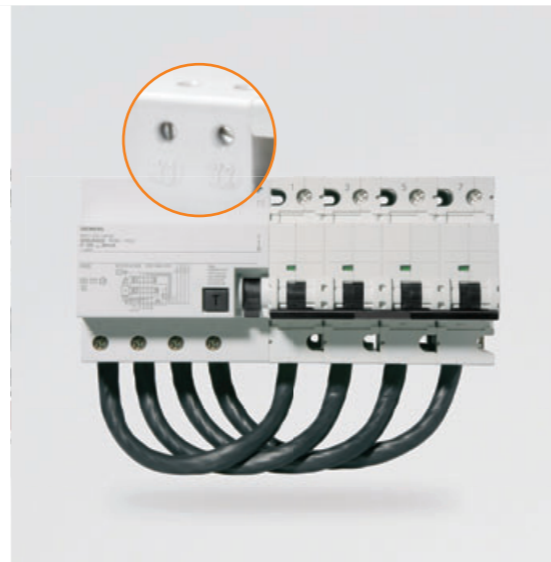




RCCBs with the N connection on the left-hand side enable simple bus-mounting.



RCCBs with the N pole on the right-hand side: can be bus-mounted with MCBs using a special pin busbar.



The 125 A RCBOs offer remote tripping over terminals Y1/Y2. This supports implementation of central OFF circuits.

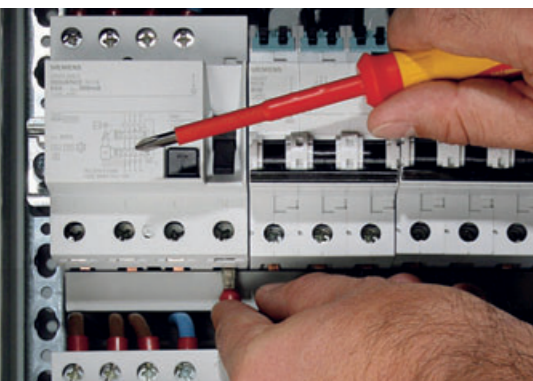
Yet One More Advantage: Simple Mounting

All our protective devices offer easy mounting and clear and visible conductor connection in front of the busbar that can be easily checked. Furthermore, the large and easily accessible wiring space enables easy insertion of the conductor in the terminals.

Residual current circuit breaker with left-side N-connection

RCCBs with the N connection on the left-hand side enable simple bus-mounting with standard pin busbars with miniature circuit breakers installed on the right-hand side. RCCBs with the N pole on the right-hand side can be bus-mounted with MCBs using a special pin busbar.

Infeed in front of the rear busbar facilitates mounting and visual checks.



For all RCBOs (2 MW) in 10 kA version up to 40 A

Integrated movable terminal covers located at the cable entries ensure the terminals are fully insulated when the screws are tightened. The effective touch protection when grasping the device considerably exceeds the requirements of BGV A3. If connections need to be changed, the RCBOs can be quickly and easily removed from the assembly by hand. Time-saving if parts need to be replaced because the busbars no longer need to be freed from the adjacent miniature circuit breakers.

Highlights

- Ultra-easy bus-mounting
- Effective touch protection through integrated terminal covers exceeds the requirements of BGV A3
- Remote tripping supports implementation of central OFF circuits

Version	Characteristic	Rated residual currents in mA	Rated current in A	Standards	insert		
					1)	2)	3)
RCCBs, type A							
	Instantaneous	10, 30, 100, 300	16 ... 125	EN 61008	■	■	■
	SIGRES	30, 300	25 ... 80	EN 61008	■	■	■
	Super resistant \square	30, 300	25 ... 80	EN 61008	■	■	■
	Selective \square	100, 300, 500, 1.000	40 ... 125	EN 61008	■	■	■
SIQUENCE, type B							
RCCBs							
	Super resistant \square	30, 300, 500	25 ... 80	DIN VDE 0664-100	■	■	■
	Selective \square	300, 500	63, 80	DIN VDE 0664-100	■	■	■
RCBOs							
	Super resistant \square	C, D	30, 300	100, 125	DIN VDE 0664-200	■	■
	Selective \square	C, D	300	100, 125	DIN VDE 0664-200	■	■
RC units, type A							
	Instantaneous	10, 30, 300, 500	16 ... 100	EN 61009	■	■	■
	Super resistant \square	30	40, 63	EN 61009	■	■	■
	Selective \square	300, 500, 1.000	40 ... 100	EN 61009	■	■	■
RCBOs, type A							
	Instantaneous	B, C	10, 30, 300	6 ... 40, 125	EN 61009	■	■
	Super resistant \square	C	30	10 ... 25	EN 61009	■	■
	Selective \square	B,C	300	125	EN 61009	■	■

¹⁾Non-residential buildings ²⁾Residential buildings ³⁾Industry

Welcome to the world of innovative thinking

Innovation

Siemens invests a great deal in both manpower and research and development. This results in a steady stream of new insights, technologies and inventions that enable us to offer products and systems of the highest quality, reliability, safety and user friendliness to our customers.

Reliability

With a history of over a hundred years, Siemens is an established, reliable partner. Siemens will continue to provide trouble-free product and system updates and innovations for many years to come, which ensures your investment for the future.

Comfort

Siemens products and solutions ensure comfort in your working and living environments. Today, tomorrow and for decades to come. That's why numerous customers around the world rely on Siemens.

Protection

Siemens offers all components needed for safe and efficient power distribution, as well as everything for complete plant, personal and device protection – always tailored to the specific requirements of industry, non-residential and residential buildings.



If you have technical questions, please contact:

Tel.: ++49 (0) 180 5050 222

Fax: ++49 (0) 180 5050 223

(0.14 € /min. from the German landline network,
deviating mobile communications prices are possible)

E-Mail: support.automation@siemens.com

Internet: www.siemens.com/automation/service&support

Siemens AG
Industry Sector
Building Technologies Division
Electrical Installation Technology
P.O. Box 100953
93009 Regensburg
Germany

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