

Resi9™

The ultimate in residential circuit protection



Lead the way with the latest innovation
in residential circuit protection.

pdl.co.nz/resi9

Life Is 

Schneider
 Electric

About Resi9 range

Innovation in home electrical safety

Since 1937, PDL has been the New Zealand market leader, providing access to safe, reliable and innovative electrical solutions for Kiwi homes and commercial buildings.

Since becoming part of the Schneider Electric global footprint in 2001, PDL's local knowledge and leadership for the New Zealand industry has married with global technology and a belief in creating a more sustainable future.

Resi9 – The ultimate in circuit protection for the MAX Generation

The Resi9 range is designed to provide maximum efficiency and peace of mind for electricians, so that you can focus on growing your business and providing best service to your customers with latest innovation in residential circuit protection.

MAX PROFESSIONALISM

New modern look for clean, professional finish

COMPLETE SOLUTION

Includes RCCB, MCB, RCBO, AFDD, SPD, 1-3P Main switches, Plastic enclosures and accessories.



MAX PERFORMANCE

High electrical and mechanical endurance performance for all devices – 10k Elec, 20k Mech*
Except 2 module RCCBs

MAX FLEXIBILITY

Option of top or bottom line-feeding for all devices*
Except 2 module RCBOs

EASE OF INSTALL

Larger terminal size for MCBs and Main switches

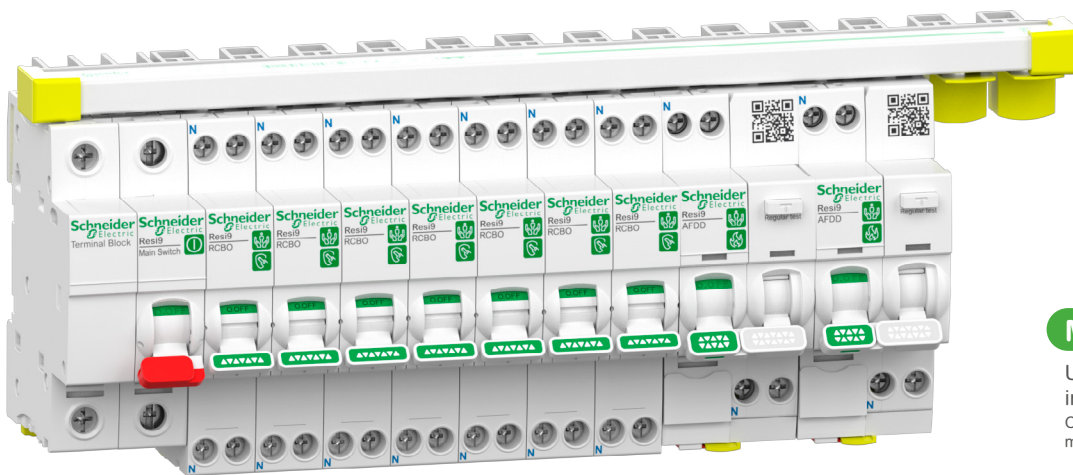
QR code for instructions and data sheet

Introducing MAXBAR™ – the next generation busbar

Resi9 takes the definition of a busbar to the next level with MAXBAR. MAXBAR is nothing like ordinary busbars, it helps to improve your installation speed by up to 2 times when compared to traditional RCCB+MCB method. With MAXBAR, you don't need any cable connections to feed final sub-circuits protected by an RCBO or AFDD – it picks up the active feed from main switch, a neutral from the neutral terminal block and distributes both active and neutral across the RCBOs and AFDDs. MAXBAR helps to connect the main switch to all types of Resi9 RCBOs – SLIM RCBO or a 2 module RCBO.

MAX PROFESSIONALISM

No cables for feeding RCBOs



MAX SPEED

Up to 2 times faster
installation speed
Compared to RCCB+MCB
method

MAX PERFORMANCE

100A rated system

MAX FLEXIBILITY

One busbar connects to main
switch, all type of Resi9 RCBOs
and AFDD

Resi9 substitution list

Discover our new range

Domae Reference	Resi9 Reference	Description
DOM12529	R9D06606	Resi9 SLIM RCBO C 6A 1PN 6kA 30mA, Type A
DOM12530	R9D06610	Resi9 SLIM RCBO C 10A 1PN 6kA 30mA, Type A
DOM12531	R9D06616	Resi9 SLIM RCBO C 16A 1PN 6kA 30mA, Type A
DOM12532	R9D06620	Resi9 SLIM RCBO C 20A 1PN 6kA 30mA, Type A
DOM12533	R9D06625	Resi9 SLIM RCBO C 25A 1PN 6kA 30mA, Type A
DOM12534	R9D06632	Resi9 SLIM RCBO C 32A 1PN 6kA 30mA, Type A
DOM16695	R9R06240	Resi9 RCCB 2P 40A 30mA, Type A
DOM16696	R9R06263	Resi9 RCCB 2P 63A 30mA, Type A
DOM11375	R9F06106	Resi9 MCB C 6A 1P 6kA
DOM11376	R9F06110	Resi9 MCB C 10A 1P 6kA
DOM11377	R9F06116	Resi9 MCB C 16A 1P 6kA
DOM11378	R9F06120	Resi9 MCB C 20A 1P 6kA
DOM11379	R9F06125	Resi9 MCB C 25A 1P 6kA
DOM11380	R9F06132	Resi9 MCB C 32A 1P 6kA
DOM11381	R9F06140	Resi9 MCB C 40A 1P 6kA
DOM19802	R9D08610	Resi9 RCBO C 10A 1PN 6kA 30mA Type A 2MOD
DOM19803	R9D08616	Resi9 RCBO C 16A 1PN 6kA 30mA Type A 2MOD
DOM19804	R9D08620	Resi9 RCBO C 20A 1PN 6kA 30mA Type A 2MOD
DOM19805	R9D08625	Resi9 RCBO C 25A 1PN 6kA 30mA Type A 2MOD
DOM19806	R9D08632	Resi9 RCBO C 32A 1PN 6kA 30mA Type A 2MOD
DOM19807	R9D08640	Resi9 RCBO C 40A 1PN 6kA 30mA Type A 2MOD
DCK12458	R9S06191	Resi9 Switch 100A 1P
DCK12461	R9S06291	Resi9 Switch 100A 2P
DCK12464	R9S06391	Resi9 Switch 100A 3P
16693	R9L40100	Resi9 SPD 1P 40kA
None	R9L40102	Resi9 SPD 1P 40kA Cartridge
None	R9TDB3606	Resi9 AFDD+RCBO C 6A 1PN 6kA 30mA, Type A
None	R9TDB3610	Resi9 AFDD+RCBO C 10A 1PN 6kA 30mA, Type A
None	R9TDB3616	Resi9 AFDD+RCBO C 16A 1PN 6kA 30mA, Type A
None	R9TDB3620	Resi9 AFDD+RCBO C 20A 1PN 6kA 30mA, Type A
None	R9TDB3625	Resi9 AFDD+RCBO C 25A 1PN 6kA 30mA, Type A

Domae Reference	Resi9 Reference	Description
PDLDBF10	R9HSB110F	Resi9 Plastic Swbd, 1 Row, 10 Ways, Flush
PDLDBF15	R9HSB115F	Resi9 Plastic Swbd, 1 Row, 15 Ways, Flush
PDLDBF30	R9HSB215F	Resi9 Plastic Swbd, 2 Row, 30 Ways, Flush
PDLDBF45	R9HSB315F	Resi9 Plastic Swbd, 3 Row, 45 Ways, Flush
PDLDBF60	R9HSB415F	Resi9 Plastic Swbd, 4 Row, 60 Ways, Flush
PDLDBS15	R9HSB115S	Resi9 Plastic Swbd, 1 Row, 15 Ways, Surface
PDLDBS30	R9HSB215S	Resi9 Plastic Swbd, 2 Row, 30 Ways, Surface
PDLDBS45	R9HSB315S	Resi9 Plastic Swbd, 3 Row, 45 Ways, Surface
PDLDBS60	R9HSB415S	Resi9 Plastic Swbd, 4 Row, 60 Ways, Surface
PDLSE2	R9HME102S	Resi9 Mini enclosures 2 Ways, Surface
PDLSE4	R9HME104S	Resi9 Mini enclosures 4 Ways, Surface
PDLSE6	R9HME106S	Resi9 Mini enclosures 6 Ways, Surface
PDL4DBE	R9AECT	Resi9 Earth Conductor Tag
PDLDBF15/23	R9APF08	Resi9 Pole Filler 8 Modules
PDLDBFN4	R9ANB04	Resi9 RCD Neutral/Earth Bar 4 Ways
PDLMG15	R9XPH115	Resi9 Pin Type Busbar 15M 100A
PDLDBF10ASSY	R9ADA110	Resi9 SB Spare Door Assy 1 Row 10 Ways
PDLDBF15ASSY	R9ADA115	Resi9 SB Spare Door Assy 1 Row 15 Ways
PDLDBF30ASSY	R9ADA215	Resi9 SB Spare Door Assy 2 Rows 15 Ways
PDLDBF45ASSYNT	R9ADA315	Resi9 SB Spare Door Assy 3 Rows 15 Ways
PDLDBF60ASSYNT	R9ADA415	Resi9 SB Spare Door Assy 4 Rows 15 Ways
PDLDBF15/19	R9ACIL	Resi9 Circuit ID Label Sheet
None	R9XPN115N	Resi9 1PN MAXBAR 15M with NTB & Acc.
None	R9XPN115	Resi9 1PN MAXBAR 15M with Acc.
None	SEA9TB1001	25A Terminal Block 1 Pole
None	A9XPT920	Set of 20 Busbar Tooth Caps
None	RMXPC1	ResiMAX Connectors 1PN Set of 4
None	E2115FBP	Metal Back Plate For 1 Row Flush Plastic Encl.
None	E2215FBP	Metal Back Plate For 2 Rows Flush Plastic Encl.
None	E2315FBP	Metal Back Plate For 3 Rows Flush Plastic Encl.
None	E2415FBP	Metal Back Plate For 4 Rows Flush Plastic Encl.
None	MX9XT3	Resi9 Extra Terminal Lug Connector 3 Ways

What's new in residential circuit protection?

Performance that the Resi9 generation deserves

The Resi9 system is designed to provide MAX performance to the Resi9 generation with 100A rated system. MAXBAR and Resi9 enclosures are designed to withstand 100A current. Resi9 range is built for tough Kiwi conditions with all devices have operating temperature range from -25°C to +70°C with derating. Resi9 devices are designed to last with 20,000 mechanical cycles and 10,000 electrical cycles testing*. This can only be achieved with a robust design and precision in the manufacturing process.



Simplify safety

Resi9 also brings simplicity to the forefront for your team and business. It can be challenging to have conversations with customers to help them understand the value and benefits of circuit protection for their home. We have made this very simple with pictograms on all our products to make it easy to explain the functionality of RCDs, MCBs, RCBOs, SPDs and AFDDs.



Surge protection



Fire protection



Cable protection



People protection



Isolator switch



We have also made it simple to access all the product information like specifications, installation instructions, brochures, etc. - just scan the QR code on the product with a mobile device and all the information will be at your finger-tips.

QR CODE

Simply scan QR code for all product info – specs, brochures, installation instructions, etc.



*Except 2 module RCCBs

3 simple steps to MAX electrical protection for your customers

While growing your business

Step 1: RCBO – Residual current device (RCD) & Miniature Circuit Breaker (MCB) combo – 1 device helps to protect people as well as electrical cables

Instead of having a separate MCB's and RCD's for your circuits, make the smart choice with a Resi9 SLIM RCBO. This is a combination device that will provide RCD & MCB functions in 1 device.

Benefits of switching to an RCBO:

- 1.Space saving – almost 50% less space needed in a typical board
- 2.Cost saving with smaller board
- 3.Time saving in labour cost with up to 2 times faster installation speed with MAXBAR (R9XPN115N)
- 4.Switch both active and neutral for additional safety
- 5.Easier fault diagnosis – you can direct to the circuit that might have tripped due to earth leakage.
- 6.Less inconvenience for home owner – power lost only to one circuit in case of tripping



Step 2: Surge Protection – help to protect your customer's electrical appliances

Lightning strikes, power surges and voltage spikes can destroy electronic equipment in an instant. The average home now has an estimated \$15k worth of appliances exposed to surge risk. With increasing smart home adoption and investment into the electrification of the home, suggest a surge protection device to help protect your customers appliances.



Step 3: Arc Fault Detection Device (AFDD) – helps to detect potentially dangerous arc faults

Old cables, loose wall sockets, poor cable connections, rodents/humidity in ceiling space can all result in damage to cables. Such damages may result in electric arcs that carbonize the insulation/connection. If these arcs are not detected early then they can potentially result in electrical fires.

AFDDs help to safeguard against electrical fires by detecting even the smallest electrical arcs caused by cable or electrical contact damage and disconnect power before the resulting heat starts a fire.

Resi9 AFDD can help achieve an extra level of protection for your customers by providing

- Over current protection
- Earth leakage protection
- Arc fault protection
- Over-voltage protection in one device





Green Premium

An industry leading portfolio of offers delivering sustainable value



More than 75% of our product sales offer superior transparency on the material content, regulatory information and environmental impact of our products:

- RoHS compliance
- REACH substance information
- Industry leading # of PEP's*
- Circularity instructions



Discover what we mean by green

Check your products!

The Green Premium program stands for our commitment to deliver customer valued sustainable performance. It has been upgraded with recognized environmental claims and extended to cover all offers including products, services and solutions.

[CO₂ and P&L impact through... Resource performance](#)

Green Premium brings improved resource efficiency throughout an asset's lifecycle. This includes efficient use of energy and natural resources, along with the minimization of CO₂ emissions.

[Cost of ownership optimization through... Circular performance](#)

We're helping our customers optimize the total cost of ownership of their assets. To do this, we provide IoT-enabled solutions, as well as upgrade, repair, retrofit, and remanufacture services.

[Peace of mind through... Well-being performance](#)

Green Premium products are RoHS and REACH compliant. We're going beyond regulatory compliance with step-by-step substitution of certain materials and substances from our products.

[Improved sales through... Differentiation](#)

Green Premium delivers strong value propositions through third-party labels and services. By collaborating with third-party organizations we can support our customers in meeting their sustainability goals such as green building certifications.

*PEP: Product Environmental Profile (i.e. Environmental Product Declaration)

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Next level of protection for New Zealand homes



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Helps to protect electrical appliances from voltage surges



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One bar delivers it all



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Naming conventions for devices

Catalog number format and legend

R9		DO6		6		16	
Range		Product type		Number of poles		Rating (A)	
Meaning	Code	Meaning	Code	Meaning	Code	Meaning	Code
Resi9	R9	Slim RCBO	D06	1P	1	6A	06
		2 Mod RCBO	D08	2P	2	10A	10
		MCB	F06	3P	3	16A	16
		RCCB	R06	1P+N	6	20A	20
		Switch	S06			25A	25
		AFDD	TDB3			32A	32
						40A	40
		63A	63				
		80A	80				
				100A	91		

Example:

Description

Commercial reference

Resi9 SLIM RCBO C 20A 1PN 6kA 30mA, Type A R9D06620



Main Switches

Main switches

Resi9 offers an optimised range of high quality mains switches for residential applications. They are available in 100A, with 1, 2 and 3-pole versions, so you'll be able to find the ideal main switch for your next project.

All Resi9 Main Switches incorporate high quality internal mechanisms and come with a highly visible ON/OFF toggle, which allows for quick location when isolation of power is required in an emergency.

Isolating Switches, Residential

Isolating switches are available in 1, 2 and 3 pole models.

Features and benefits:

- Cable automatically guided to the correct position: terminals with guard.
- Insulated terminals – IP20.
- Manual control on front face by O-I lever.
- Green strip on toggle indicates full opening of the poles
- Ease of selection with optimised offer
- Ability to withstand harsher environment with Pollution degree 3
- Operating temperature up to 70 Deg C
- Big terminal capacity, up to 50mm² rigid cable

Catalogue No.	Description
R9S06191	1P, 100A
R9S06291	2P, 100A
R9S06391	3P, 100A




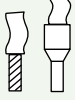
R9S06191

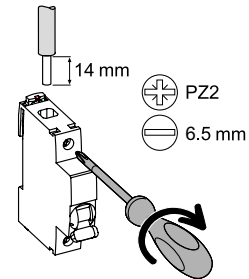
R9S06291



R9S06391

Connection

Type	Rating	Tightening torque	Copper cables	
			Rigid	Flexible or ferrule
				
Switch	100A	3.5 N.m	6 to 50mm ²	6 to 35mm ²



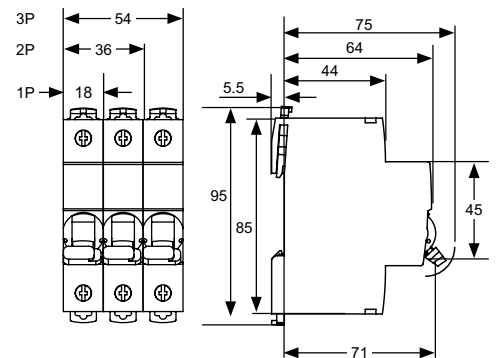
Weight

Isolator	
Type	
1P	85g
2P	170g
3P	255g

Technical Data

Main characteristics		
Insulation voltage (Ui)	500V a.c.	
Pollution degree	3	
Power circuit		
Rated impulse withstand voltage (Uimp)	6kV	
Operating category	AC-22A	
Permissible rated short-time withstand current (Icw)	1500A / 1s	
Conditional rated short circuit current (Inc)	6kA with Resi9 MCB	
Rated short circuit closing current (Icm)	5kA	
Additional characteristics		
Degree of protection	Device only	IP20
	Device in modular enclosure	IP40
Endurance (O-C)	Mechanical	20,000 cycles
	Electrical	10,000 cycles
Operation temperature	-25°C to +70°C	
Storage temperature	-40°C to +85°C	
Tropicalisation	Severity B (relative humidity 95% at 55°C)	

Dimensions (mm)





Miniature Circuit Breakers

Miniature Circuit Breakers

Resi9

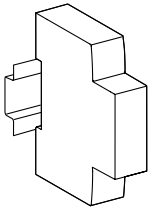
The Range

Resi9 offer an industry leading range of miniature circuit breakers (MCBs), which are ideal for residential switchboard installations.

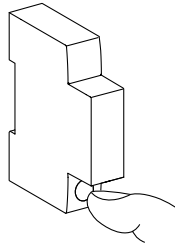
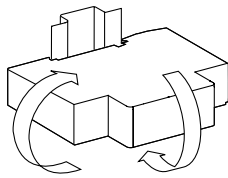
Resi9 MCBs are suitable for horizontal or vertical 35mm DIN rail mounting and are moulded from heavy-duty material. The range is IP20 rated to help provide additional protection from live terminal contact.

Resi9 MCBs include two types of operation:

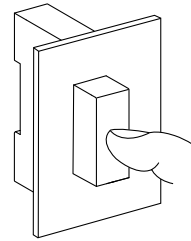
- Thermal, for normal overload.
- Magnetic, for short circuit situation.



35mm DIN rail installations



IP20 protection device only



IP40 protection device in modular enclosure

Miniature Circuit Breakers

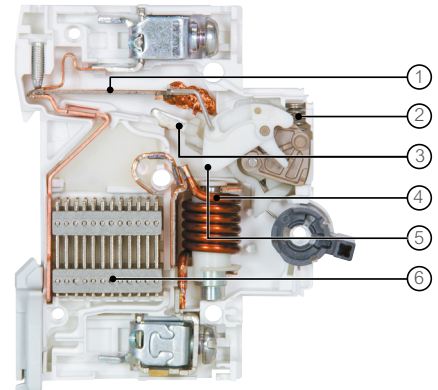
Thermal operation

Occurs when the bi-metal strip **(1)**, is heated by the overload current and deflected. This trips the tripping lever which, with its spring action **(2)**, causes the contacts **(3)** to open.

Magnetic tripping

Is achieved by utilising the solenoid **(4)**, which causes the armature **(5)** in conjunction with the mechanical action of the spring **(2)** to open the MCB's contacts.

Note: The splitter plates **(6)** break up the ionised gas as the switch mechanism opens, extinguishing the arc.



Features and benefits:

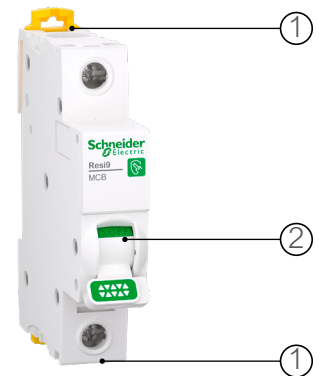
- Unique new white finish for a fresh modern look.
- Standard characteristic is C-Curve suits most applications.
- Base module = 18mm wide. Compact standardised and consistent module dimensions.
- Lift-up terminals. ‘No hot spot’ terminations and all cable strands are locked in.
- Combination head screws, choice of screwdrivers.
- MCB mechanism is free tripping and If the switch is held in the ON position, the MCB will still operate.
- Resi9 MCBs allow line or load cables to be connected at either top or bottom for greater installation flexibility.

Connection (1):

- Cable automatically guided to the correct position: terminals with guard.
- Insulated terminals IP20.
- Enhanced cable tear-off strength: serrated terminals.
- Fast closure.
- Bottom/Top side by tunnel terminals.

Positive contact indication (2):

- The presence of the green strip helps to ensure physical opening of the contacts and allows operations to be performed on the downstream circuit in complete peace of mind.



6kA C-Curve – MCB

The 6kA breaking capacity of these MCBs makes them ideal for residential applications that need MAX performance. This range has C-Curve characteristics, to suit most applications.

1-Pole, 1-Module, 240V

Catalogue No.	Current rating
R9F06106	6A
R9F06110	10A
R9F06116	16A
R9F06120	20A
R9F06125	25A
R9F06132	32A
R9F06140	40A



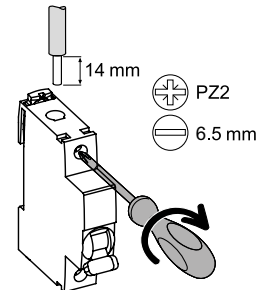
R9F061xx

Miniature Circuit Breakers

Resi9

Connection

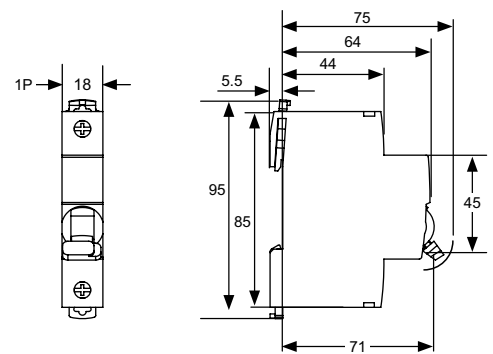
Rating	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
6 to 25A	2 N.m	1 to 25mm ²	1 to 16mm ²
32 to 40A	3.5 N.m	1 to 35mm ²	1 to 25mm ²



Weight

Circuit-breaker	
Type	
1P	125g

Dimensions (mm)



Technical Data

Main characteristics		
Insulation voltage (Ui)	500V a.c.	
Rated voltage (Ue)	230/415V a.c.	
Operating frequency	50/60Hz	
Thermal tripping	C-Curve	5 to 10 In
According to AS/NZS 60898.1		
Limitation class	3	
Rated breaking capacity (Icn)	6000A	
Service breaking capacity (Ics)	100% Icn	
Rated making and breaking capacity of an individual pole (Icn1)	Icn1=Icn	
Additional characteristics		
Degree of protection (IEC 60529)	Device only	IP20
	Device in modular enclosure	IP40
Endurance (O-C)	Electrical	10,000 cycles
	Mechanical	20,000 cycles
Operating temperature	-25°C to 70°C (Derating table refer to technical information)	
Storage temperature	-40°C to 85°C	
Tropicalisation (IEC 60068-1)	Severity B (relative humidity 95% to 55°C)	



Residual Current Devices

Residual Current Devices

Resi9

RCD – Residual Current Devices

Although New Zealand has one of the safest electrical systems in the world, accidents can still happen. A poorly maintained appliance, a person who innocently pushes something into a power socket or cuts through an electrical wire, a frayed cord, wet hands or carelessness with power tools are all situations that can lead to serious consequences.

How an RCD works

The RCD works by constantly monitoring and comparing the current flow in both the Active and Neutral cables of an electrical installation.

During normal operation, these Active and Neutral currents are in balance. However, should any current flow to Earth, an imbalance is created in these circuits. If this imbalance is sufficient, the RCD will cut the electrical supply.

Apart from helping to protect people, RCD will also cut off power to expensive electrical equipment in the event of an electrical fault to Earth. This helps to protect appliances against costly damage and the installation against fire, resulting from faults of this nature.

Switchboard Mounted RCDs

These RCDs incorporate the same housing and installation features as the MCBs.

Features and benefits:

- Line and load can be top or bottom connected, ideal when cabling space is restricted or limited.
- Lift-up terminals. helps to reduce chances of ‘hot spot’ in terminations with all cable strands are locked in.
- Compatible with Resi9 18 mm pin type busbar for connections to multiple MCBs.

Connection (1):

- Upstream/downstream by tunnel terminal.
- DIN locking clip.

Green indication strip (2):

- Green strip on the toggle that indicates opening of all the poles and allows operations to be performed on the downstream circuit with complete peace of mind.



A-Type – RCD

40 and 63 amps to suit most residential applications.

Applications

Standard Type – A-Type

- General applications.

2-Pole, 2-Module, 230V

A-type, 30mA, non-delayed, surge current protected to 250A 8/20 μ S

Catalogue No.	Current rating
R9R06240	40A
R9R06263	63A





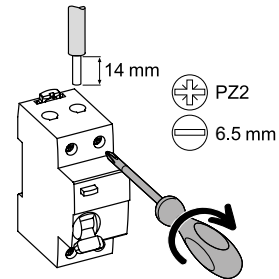
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Residual Current Devices

Resi9

Connection

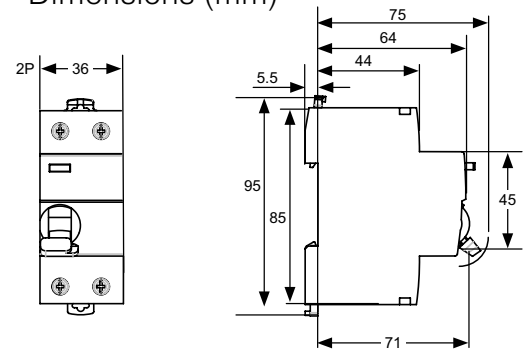
Rating	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
			
40 to 63A	3.5 N.m	1 to 35mm ²	1 to 25mm ²



Weight

Residual current device	
Type	
2P	210g

Dimensions (mm)



Technical Data

Main characteristics		
Insulation voltage (U _i)		440V
Degree of pollution		2
Rated impulse withstand voltage (U _{imp})		4kV
According to AS/NZS 61008.1		
Making and breaking capacity (I _m /I _{Δm})		10I _n or 500A, whichever is the bigger
Impulse current withstand (8/20 μs without tripping)	AC type	250A
Rated conditional short circuit current (I _{nc} /I _{Δc})		6000A with Resi9 MCB
Additional characteristics		
Degree of protection	Device alone	IP20
	Device in modular enclosure	IP40
Endurance (O-C)	Electrical	4000 cycles
	Mechanical	10,000 cycles
Operating temperature		-25°C to +70°C (Derating table refer to technical information)
Storage temperature		-40°C to 85°C



MCB/RCD Combinations – RCBO

MCB/RCD Combinations – Slim RCBO

Resi9

Slim 1-Module MCB/RCD Combination C-Curve, Electronic – RCBO

Resi9's slim DIN mounted, 30mA combination MCB/RCDs are available as single module devices to save valuable switchboard space. An RCBO also helps to streamline trouble shooting and maintenance processes as only the affected circuit is interrupted.

Features and benefits:

- RCBOs with a MAXBAR provide an installation time saving compared to MCB/RCCB.
- Top and bottom line and load compatible for ease of installation.
- Short circuit breaking capacity of 6kA.
- Rated at 230V, 30mA, type A, C-Curve.
- One module width – ideal for retrofit installations where space is limited.
- Two-pole safety feature allows switching of both Active and Neutral contacts.
- Trip free locking device (lockable 'ON' or 'OFF' position).
- Compatible with padlocking device 26970.
- AS/NZS 61009 compliance.

Applications:

- Ideal for retrofit installations where pole space is a problem.
- Small width allows a greater number of RCBOs to be installed in one enclosure.

1P+N, 1-Module, 230V


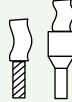
A-type 30mA non delayed

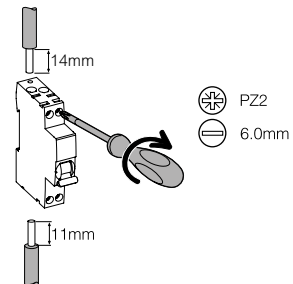
Catalogue No.	Current Rating
R9D06606	6A
R9D06610	10A
R9D06616	16A
R9D06620	20A
R9D06625	25A
R9D06632	32A



R9D066xx

Connection

Type	Rating	Tightening torque	Copper cables	
Slim RCBO			Rigid	Flexible or ferrule
				
L and N upstream	6 to 32A	2 N.m.	1 to 16mm ²	1 to 10mm ²
L and N downstream	6 to 32A	2 N.m.	1 to 10mm ²	1 to 6mm ²



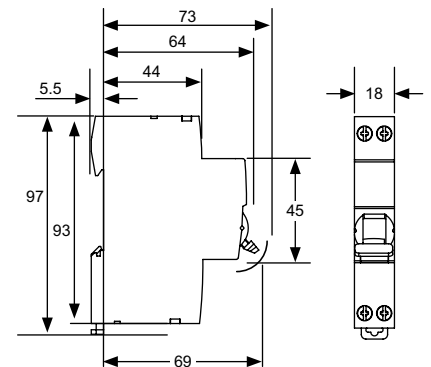
Weight

Residual current device	
Type	Slim RCBO
1P+N	136g

Technical Data

Main characteristics		
Voltage rating (Ue)	230V a.c.	
Insulation voltage (Ui)	440V a.c.	
Rated impulse withstand voltage (Uimp)	4kV	
Thermal tripping reference temperature	30°C	
Magnetic tripping	C-Curve	
Limitation class	Between 5 and 10 I _n	
Surge current withstand (8/20 μs) without tripping	3	
Rated nominal breaking capacity (I _{cn})	250A	
Phase/Earth rated residual breaking and making capacity (IΔm)	6000A	
Additional characteristics		
Degree of protection	Device only	IP20
	Device in modular enclosure	IP40
Endurance (O-C)	Electrical	10,000 cycles
	Mechanical	20,000 cycles
Operating temperature		-25°C to +70°C (Derating table refer to technical information)
Storage temperature		-40°C to +85°C
Tropicalisation		Severity B (relative humidity 95% at 55°C)

Dimensions (mm)



MCB/RCD Combinations – 2 module Type A RCBO

Resi9

These 230V single-phase + neutral electronic combination devices are 2 module wide and are compatible with top feeding MAXBAR.

Separate flag indication **(1)** for MCB and RCD tripping enables easy and speedy trip diagnosis.

Electronic type devices derive their 'action energy' from the mains supply. They typically utilise much simpler toroidal sensors, coupled to sensing amplifiers, filters, discrimination circuits and triac driven solenoids to operate the contacts.

The major advantages of electronic types lies in their simple construction, improving their chances in areas in adverse conditions where vibration and environmental conditions affect electrical products.

The added benefit of electronic types are that the filters prevent unwanted tripping. These devices are voltage dependent.

Applications

Standard – A Type

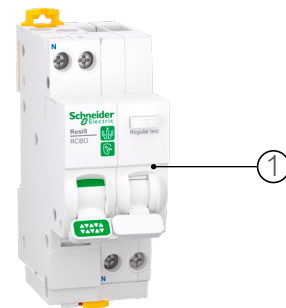
- General applications.
- Generators.
- Extreme environmental conditions.
- EV and other high current loads that require RCD protection.

1P+N, 2-Module, 240V

A Type, 30mA non-delayed



Catalogue No.	Current Rating
R9D08610	10A
R9D08616	16A
R9D08620	20A
R9D08625	25A
R9D08632	32A
R9D08640	40A

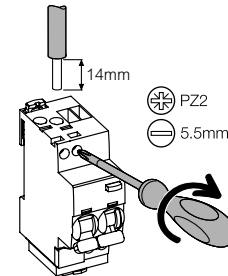
NOTE: This device is top feeding only.



R9D086xx

Connection

Rating	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
			
10 to 40A	2 N.m	1 to 16mm ²	1 to 10mm ²



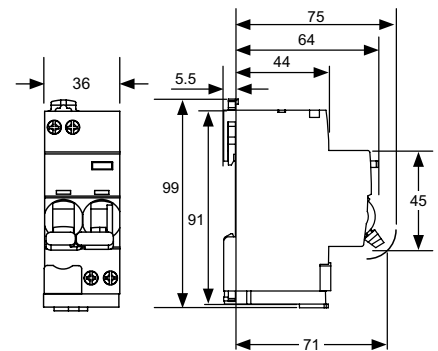
Weight

Residual current device	
Type	
1P+N	215g

Technical Data

Main characteristics		
Earth leakage protection with instantaneous tripping	30mA	Voltage dependant
Setting temperature for ratings		30°C
Tripping curve	C-Curve	The magnetic tripping devices act at between 5 and 10 I _n
Rated breaking capacity (I _{cn})		6000A
Rated residual breaking and making capacity (I _{Δm})		3000A
Endurance (O-C)	Electrical	10,000 cycles
	Mechanical	20,000 cycles
Degree of protection	Device only	IP20
	Device in modular enclosure	IP40
Insulation voltage (U _i)		440V
Rated impulse withstand voltage (U _{imp})		4 kV
Operating temperature		-25°C to +70°C (Derating table refer to technical information)
Storage temperature		-40°C to +85°C
8/20 μs impulse withstand without tripping		250A
Limitation class		3
Tropicalisation		Severity B (relative humidity 95% at 55°C)

Dimensions (mm)





Arc Fault Detection Device – AFDD

Arc Fault Detection Device – AFDD

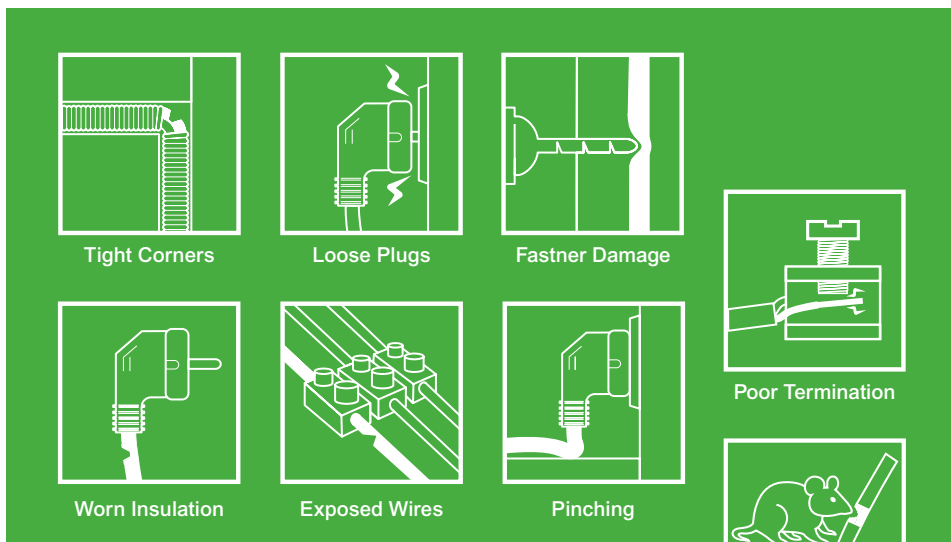
Arc Fault Detection Devices help to reduce the risk of electrical fire.

Broken wires, loose connections, crushed cables can all cause hidden arc faults in electrical circuits, which if left undetected, can erupt into flames in just seconds. AFDDs isolate the circuit the moment an arc fault is detected.

Arc faults are one of the main causes of electrical fires. Electrical fires due to arc faults are surprisingly common especially in older homes. Electrical fires cause considerable damage to property, injuries and deaths each year.

An arc fault is not always easy to see, since it can occur in hidden places such as damaged cables inside walls, a loose connection in a hidden junction box, or socket outlets.

How do arc faults occur?



What is an Arc Fault Detection Device?

An AFDD is a detection device that automatically cuts the electricity supply when it detects an arc fault in a circuit. By immediately cutting off the electricity supply, AFDDs help to prevent arc faults from reaching temperatures where fires can break out.

AFDDs fit into electrical switchboards alongside other protective equipment. When an arc fault is detected, the device immediately isolates the circuit, preventing ignition of flammable materials.

An AFDD detects the appearance of electric arcs that are responsible for starting fires. They are extremely sensitive, designed to sense and respond only to potentially dangerous arcs.

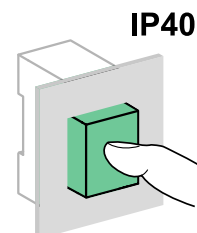
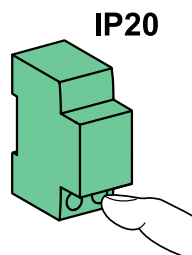
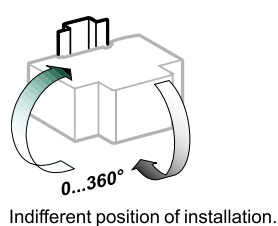
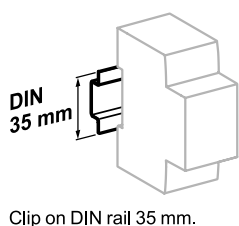
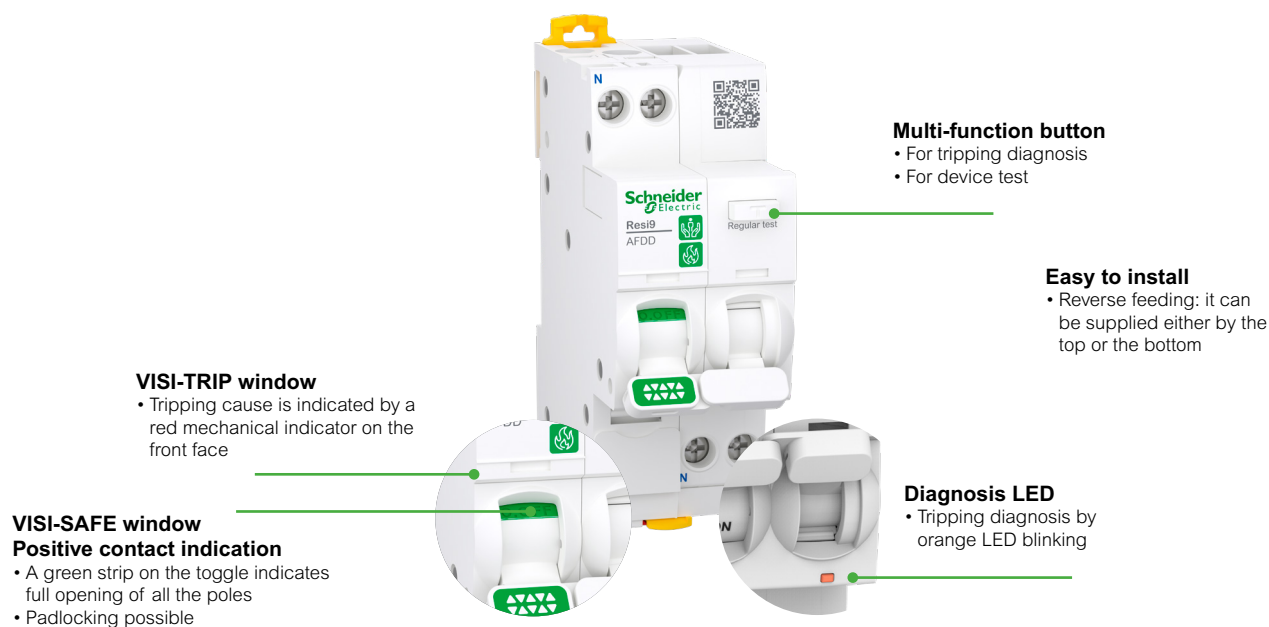
Arc Fault Detection Device – AFDD

Resi9


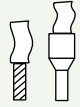
Features and benefits:

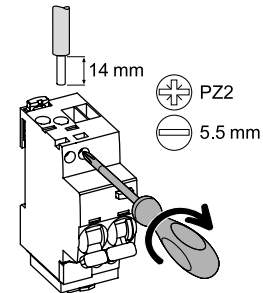
- Circuit protection against overload, short-circuit, earth leakage and Arc Fault.
- Two module width ideal for retrofit installations where space is limited.
- Top and bottom line and load compatible for ease of installation.
- Two pole safety feature allows switching of both active and neutral contacts.
- 6kA short circuit breaking capacity.
- Type A RCBO to sense both a.c. and pulsating d.c. currents.
- Fire hazard tripping indication via the front panel indicator.
- Device diagnosis via the test button.
- Green strip on the toggle that indicates opening of all the poles.
- Tripping cause diagnosis by LED blinking in front face.

Catalogue No.	Current rating
R9TDB3606	6A
R9TDB3610	10A
R9TDB3616	16A
R9TDB3620	20A
R9TDB3625	25A



Connection

Tightening torque	Copper cables	
	Rigid	Flexible or ferrule
		
2 N.m	1 to 16mm ²	1 to 10mm ²



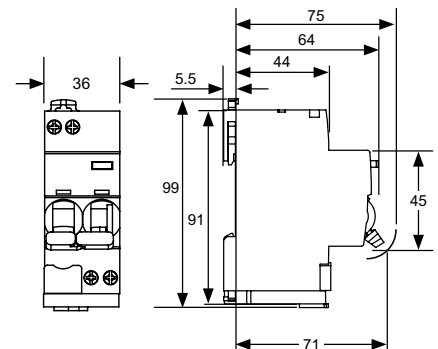
Weight

Residual current device	
Type	Weight
1P+N	237g

Technical Data

Main characteristics						
Tripping time/arc current value with $U_n = 230/240$ V AC (to IEC/EN 62606)	Current before arc (RMS)	2.5	5 A	10 A	16 A	25 A
	Max. operating time	1 s	0.5 s	0.25 s	0.15 s	0.14 s
Overvoltage tripping threshold (neutral conductor break)		275 V AC \pm 5 V				
Insulation voltage (U_i)		440V a.c.				
Degree of pollution		2				
Rated impulse withstand voltage (U_{imp})		4 kV				
Overvoltage category		III				
Thermal tripping	Reference temperature	30°C				
Magnetic tripping	Curve C	Between 5 and 10 I_n				
According to AS/NZS 61009.1						
Limitation class		3				
Rated breaking capacity (I_{cn})		6000A				
8/20 μ s impulse withstand current	A type	250 A				
Additional characteristics						
Earth leakage protection with instantaneous tripping		30 mA, type A				
Degree of protection		Device alone	IP20			
		Device in a modular enclosure	IP40			
Endurance (O-C) (IEC 60529)	Electrical	10,000 cycles				
	Mechanical	20,000 cycles				
Operating temperature		-25°C to +70°C (Derating table refer to technical information)				
Storage temperature		-40°C to +85°C				

Dimensions (mm)





Surge Protection Device – SPD

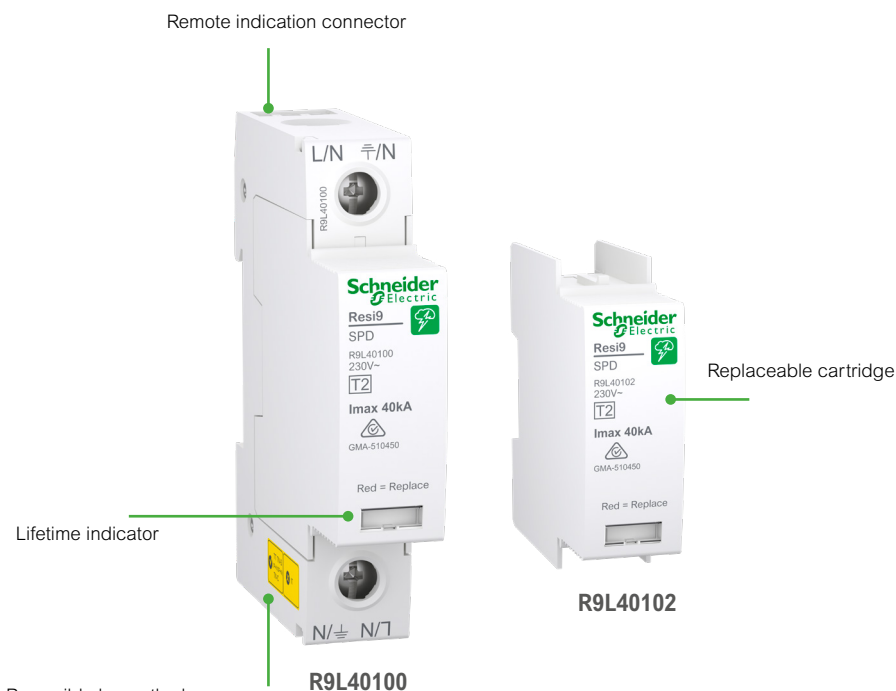
Surge Protection Device – SPD

When lightning strikes, there are no second chances. The Resi9 range of surge protection devices won't let you down. With the increasing electrification of the home and the average New Zealand house now having more electronic appliances and equipment than ever before, there is an increased demand for protection against voltage surges. From fridge to washer/dryer, smart appliances have a lot of electronic components inside them. Surge protection strips only offer limited protection to the devices connected to them. Items that are not compatible with plug strips such as washers, dryers, refrigerators, stoves, and lighting can be protected against voltage surges with a Surge Protective Device. One device can help to protect whole house from voltage spikes.

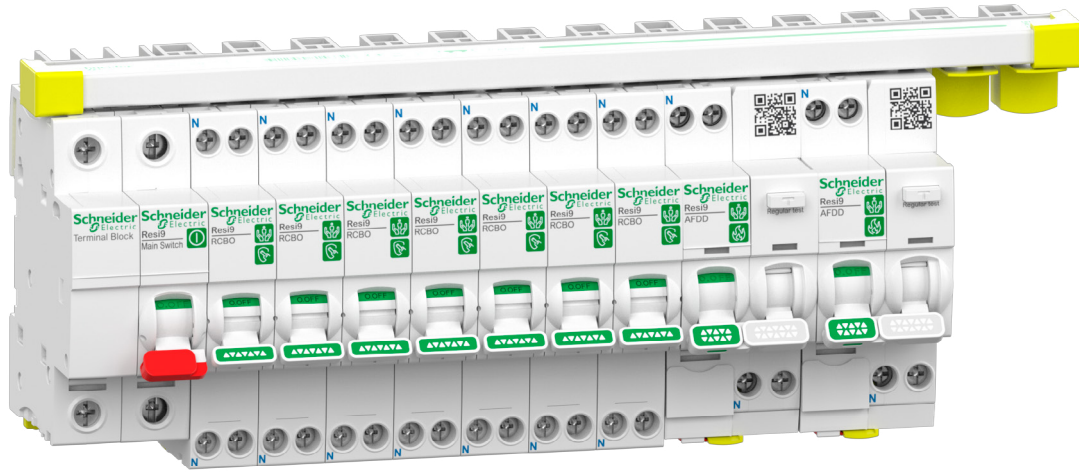
Features and benefits:

- Maximum discharge capacity of 40kA (8/20µs)
- Includes single and three pole variants
- Uniform terminal heights and modular size enables neat and efficient installation
- Cartridge replacement is quick and easy
- Replacement cartridges available as spare part
- Possibility of remote alarming.

Catalogue No.	Description
R9L40100	Surge Arrestor, 1P, I _{max} 40kA
R9L40102	Replacement Cartridge 1P I _{max} 40kA



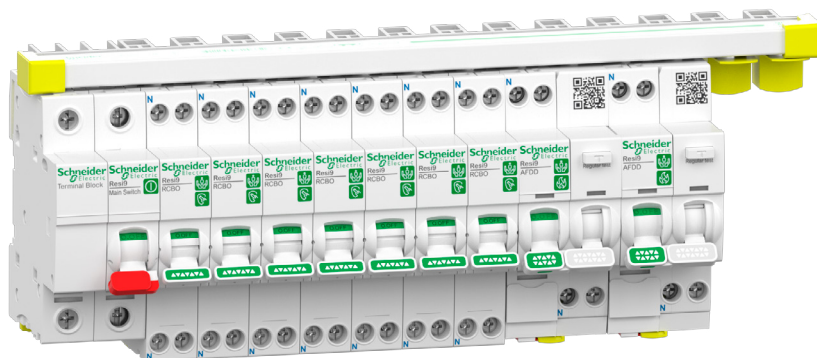
Reversible base: the base can be turned over to allow the phase/ neutral/ earth cables to enter from top or bottom



MAXBAR

MAXBAR – One bar delivers it all

Resi9 MAXBAR is a phase neutral busbar that distributes phase and neutral to all Resi9 RCBOs and AFDD for a fast, professional switchboard installation.



MAX PROFESSIONALISM

No cables for feeding RCBOs

MAX SPEED

Up to 2 times faster compared to RCCB+MCB method

MAX FLEXIBILITY

One busbar connects all type of Resi9 RCBOs and AFDD directly to main incomer and neutral distribution

MAX PERFORMANCE

100A rated system

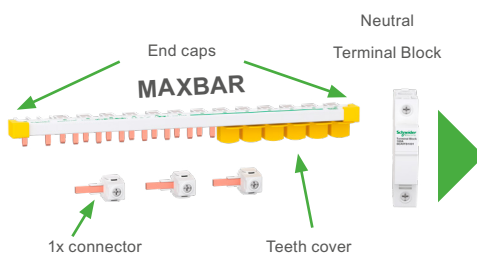
MAXBAR is easy to order with all the accessories, like cable connector, end caps, teeth covers, neutral terminal block, needed for a switchboard installation coming in a kit package.

MAXBAR Kit definition

There are two types of MAXBAR kits

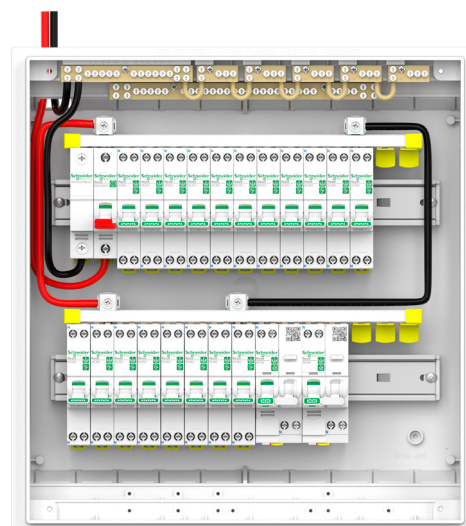
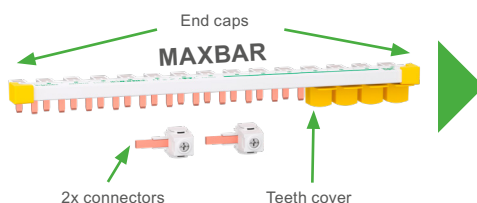
MAXBAR with Neutral Terminal Block Kit – R9XPNxxxN

For installation in all single row enclosure or row with main incomer in case of multi-row enclosures.



MAXBAR without Neutral Terminal Block Kit – R9XPNxxx

For installation in rows without main incomer in case of multi-row enclosures.



Catalog number format and legend

R9	X	PN	1	15	N
Range name	Type	Type	Number of rows	Total Module Width	Special Function (if needed)
R9 – Resi9	X - Busbar	PN – Phase, neutral – 1P+N	1	15	N – Busbar with Neutral terminal block

Features and benefits:

- MAX Speed – Up to 2 times faster compared to RCCB+MCB method
- MAX Professionalism – No cables for feeding RCBOs
- MAX Performance – 100A rated
- MAX Ease – All in 1 pack : Busbar + Connector + Teeth cover + End Caps + Neutral terminal block (refs ending with N only)
- MAX Convenience – No need to feed neutrals for RCBO's
- MAX Flexibility
 - One busbar connects to main switch, all type of Resi9 RCBOs and AFDD
 - Cutable to have desired number of modules and insulate with End caps
 - Teeth covers to insulate unused modules for future upgrades

Technical Data

Main characteristics	Comb busbar
Rated current	100A
Rated voltage	230 V
Rated Insulation voltage	500 V
IP Rating	IP2X with Tooth caps

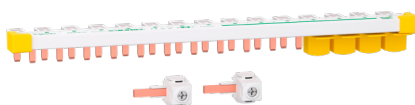
MAXBAR with Neutral Terminal Block & Accessories – For Rows with Main Incomer

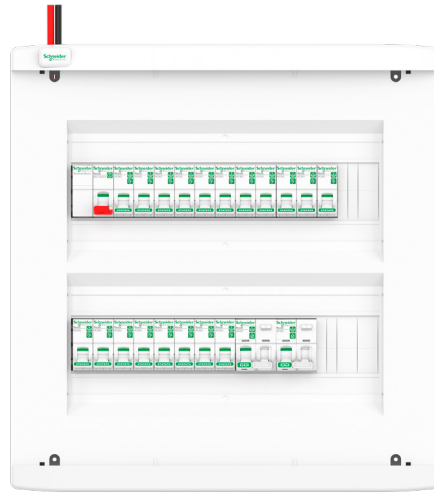
Catalogue No.	Description	Phase	No of Ways	Terminal Block	Cable Connector	Busbar Tooth Cap	Busbar End Caps
R9XPN115N	1P+N , 15 ways with Neutral Block & accessories	1 Phase	15	1	3	6	4



MAXBAR with Accessories – For Rows without Main Incomer

Catalogue No.	Description	Phase	No of Ways	Neutral Terminal Block	Cable Connector	Busbar Tooth Cap	Busbar End Caps
R9XPN115	1P+N , 15 ways with accessories	1 Phase	15	0	2	4	4





Plastic enclosures

Plastic enclosures

Plastic consumer switchboards

The requirements of electrical contractors have always been of prime importance to PDL. This is more than evident in Resi9 range of plastic enclosures. These premium plastic enclosures are available in flush and surface-mounted versions with 10 to 60 module wide options. These enclosures offer generous wiring room and are made of durable plastic material.

Catalog number format and legend

R9		H		SB		6		6		16					
Range		Category		Sub category		Number of rows		Number of modules		Mounting					
Meaning	Code	Meaning	Code	Meaning	Code	Meaning	Code	Meaning	Code	Meaning	Code				
Resi9	R9	Enclosures	H	Mini enclosure	ME	1 Row	1	Modules per row	02	Surface	S				
						Switch board	SB	2 Row	2			Modules per row	04	Flush	F
						3 Row	3	Modules per row	06						
						4 Row	4	Modules per row	10						
						Modules per row	15								

Example:

Description

Resi9 Consumer Switch board, 3 Row, 45 Ways, Flush

Commercial reference

R9HSB315F

Enclosure characteristics



Type of Enclosure	Mini Enclosure	Plastic Enclosure
No of Modules	2,4,6 ways	10 – 60 ways
Mounting type	Surface	Surface and Flush
Color	RAL 9003 (White)	RAL 9003 (White)
IP	IP 30	IP 40
Material	Plastic	Plastic Metal Spacer for Flush back box
Door	Nil	Double doors
Accessories		Pole filler Circuit labels

Resi9 plastic enclosure

Features and benefits:

- Extra wiring space with 135 mm space between the DIN rails and more space on the sides of DIN rail to run your cables
- Metal back plate option for flush mount enclosures helps to provide mechanical protection to cables
- Flexibility in installation:
 - Reversible back box for multirow enclosures allows flexibility to choose the position on Earth/Neutral bar to your style
 - Multiple cable entry/exit knock-outs
- Wide range with up to 60 modules to choose from
- Ample earth and neutral terminals to suit your typical configurations and comply to MEN type system

Surface Mount Enclosures

Catalogue No.	Description	No of Rows	No of Modules
R9HSB115S	1 row, 15 ways, Surface mounted	1	15
R9HSB215S	2 row, 30 ways, Surface mounted	2	30
R9HSB315S	3 row, 45 ways, Surface mounted	3	45
R9HSB415S	4 row, 60 ways, Surface mounted	4	60



R9HSB115S

Flush Mount Enclosures

Catalogue No.	Description	No of Rows	No of Modules
R9HSB110F	1 row, 10 ways, Flush mounted	1	10
R9HSB115F	1 row, 15 ways, Flush mounted	1	15
R9HSB215F	2 row, 30 ways, Flush mounted	2	30
R9HSB315F	3 row, 45 ways, Flush mounted	3	45
R9HSB415F	4 row, 60 ways, Flush mounted	4	60



R9HSB115F

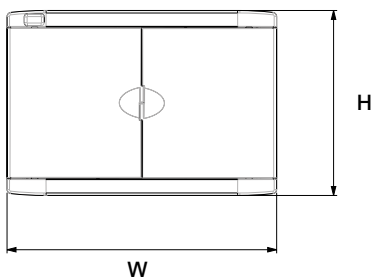
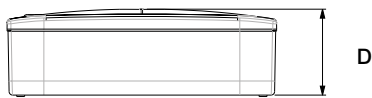
Technical Data

Main characteristics	Plastic enclosure
Rated Current	100A
Rated voltage	230 / 400 V
Rated Insulation voltage	500 V
IP Rating - Door Closed	IP4X
IK Rating	IK07
Color	RAL9003 White
Space between DIN rails	135mm
Isolation Class	2
Pole filler supplied	1 strip (8 modules) for 1 row 2 strips (16 modules) for 2,3 row 3 strips (24 modules) for 4 row
Label Sheet supplied	1 sheet for 1 row 2 sheet for 2,3,4 row
Supports the Compliance to Wiring regulations	AS NZS 3000

Plastic enclosures

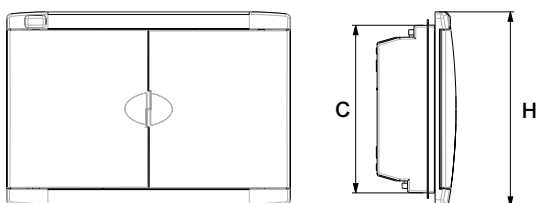
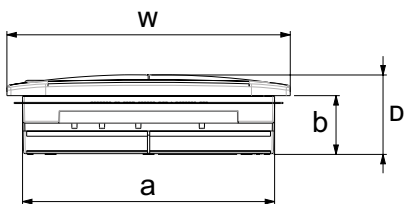
Surface Mount Enclosures

Catalogue No.	Encl. Height (H) mm	Encl. Width (W) mm	Encl. Depth (D) mm	No. of tunnels x Max cable size				Knockout dim. and location			
				Earth Bar		Neutral Bar		Back		Top	Bottom
				16 mm ²	35 mm ²	16 mm ²	35 mm ²	Triple KO Ø32mm x Ø25mm x Ø20mm	Double KO Ø25mm x Ø20mm	Triple KO Ø32mm x Ø25mm x Ø20mm	Triple KO Ø32mm x Ø25mm x Ø20mm
R9HSB115S	258	380	120	12	3	15	2	10	-	5	0
R9HSB215S	392	380	120	28	4	40	5	5	3	5	4
R9HSB315S	666	380	120	39	7	48	7	8	-	4	4
R9HSB415S	800	380	120	56	8	56	9	8	-	4	4



Flush Mount Enclosures

Catalogue No.	Encl. Height (H) mm	Encl. Width (W) mm	Encl. Depth (D) mm	Back Box Height (c)	Back Box Width (a)	Back Box Depth (b)	No. of tunnels x Max cable size					Knockout dim. and location		
							Earth Bar		Neutral Bar		No. of RCD Neutral bars	Left/Right	Top	Bottom
							16 mm ²	35 mm ²	16 mm ²	35 mm ²		Single KO Ø 25mm	Single KO Ø 30mm x 25mm	Single KO Ø 30mm x 25mm
R9HSB110F	258	290	98	222	245	71	12	3	7	2	-	-	8	8
R9HSB115F	258	380	104	222	334	76	12	3	15	2	2	-	10	10
R9HSB215F	392	380	104	356	334	76	28	4	40	4	5	-	10	10
R9HSB315F	666	380	104	631	334	78	39	7	48	4	7	4	10	10
R9HSB415F	800	380	104	765	334	78	56	8	56	4	9	6	10	10

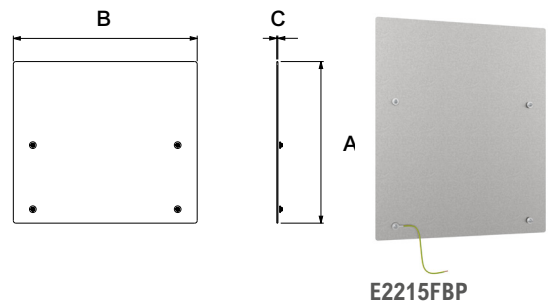


Note: MX9XT3 can be used as extra neutrals lugs for outgoing ways where required

Metal Back Plate for Flush Mount Enclosures

To suit the wiring regulation AS/NZS 3000 with WSX3 protection (Section H 5.4)

Catalogue No.	Description	Suits to Enclosure Catalogue no	Height (A) mm	Width (B) mm	Thickness (C) mm
E2115FBP	Metal Back plate 1 row flush enclosure	R9HSB115F	290	330	2
E2215FBP	Metal Back plate 2 row flush enclosure	R9HSB215F	400	330	2
E2315FBP	Metal Back plate 3 row flush enclosure	R9HSB315F	650	330	2
E2415FBP	Metal Back plate 4 row flush enclosure	R9HSB415F	760	330	2



Surface Mini Enclosures

Catalogue No.	Description	No of Rows	No of Modules	Encl. Height (H) mm	Encl. Width (W) mm	Encl. Depth (D) mm	Knock dimensions & location	
							Back	Single KO Ø 25x22
R9HME102S	Resi9 Mini enclosures 2 Ways, Surface	1	2	132	53	70	2	
R9HME104S	Resi9 Mini enclosures 4 Ways, Surface	1	4	132	89	70	4	
R9HME106S	Resi9 Mini enclosures 6 Ways, Surface	1	5	132	125	70	6	

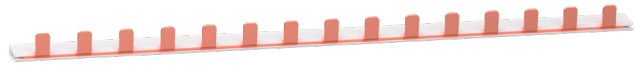
Technical Data

Main characteristics	Plastic enclosure
Rated Current	100A
Rated voltage	230 / 400 V
Rated Insulation voltage	500 V
IP Rating - Door Closed	IP30
IK Rating	IK07
Color	RAL9003 White



R9HME102S

INSTALLED BY				PHONE No.					
MAIN EARTH LOCATION				MAIN EARTH LOCATION					
RESIDUAL CURRENT DEVICE		RESIDUAL CURRENT DEVICE		MAIN ISOLATING SWITCH		ALARM			
RESIDUAL CURRENT DEVICE	RESIDUAL CURRENT DEVICE	RESIDUAL CURRENT DEVICE	RESIDUAL CURRENT DEVICE	MAIN SWITCH	MAIN SWITCH	MAIN SWITCH	ALARM		
RESIDUAL CURRENT DEVICE	RESIDUAL CURRENT DEVICE	RESIDUAL CURRENT DEVICE	RESIDUAL CURRENT DEVICE	MAIN ISOLATING SWITCH	MAIN ISOLATING SWITCH	MAIN ISOLATING SWITCH	MAIN ISOLATING SWITCH		
POWER1	POWER2	POWER3	POWER4	POWER5	GARAGE	AIR COND. 1	AIR COND. 2	AIR COND. 3	AIR COND. 4
POWER6	POWER7	POWER8	POWER9	POWER10	DISH WASHER	DISH WASHER	WALL OVEN	WALL OVEN	WALL OVEN
POWER11	POWER12	POWER13	POWER14	POWER15	LAUNDRY	LAUNDRY	UNDER FLOOR HEAT	UNDER FLOOR HEAT	PUMP
LIGHT1	LIGHT2	LIGHT3	LIGHT4	LIGHT5	SUB BOARD	SUB BOARD	HEATER	HEATER	WORK SHOP
LIGHT6	LIGHT7	LIGHT8	LIGHT9	LIGHT10	FRIDGE	FRIDGE	NIGHT STORE HEATER	NIGHT STORE HEATER	DRIVE WAY LIGHT
OVER VOLTAGE ARRESTER	OVER VOLTAGE ARRESTER	OVER VOLTAGE ARRESTER	SPA	SPA	POOL	POOL	HOT WATER OFF PEAK SWITCH		HOT WATER OFF PEAK SWITCH
RANGE	RANGE	RANGE	HOB	SAUNA	SMOKE DETECTOR	SMOKE DETECTOR	HOT WATER OFF PEAK SWITCH		HOT WATER OFF PEAK SWITCH
BED 1	BED 2	BED 3	MEN	PEN					
KITCHEN	KITCHEN	HOT WATER SYSTEM	HOT WATER SYSTEM	LOUNGE					



Accessories

Resi9 Enclosure Accessories

Socket Outlets

The 4SSO series DIN rail mounted socket outlet sockets are particularly useful when used in power supply applications such as temporary power on building sites, additional outlets in switchboards or meter enclosures.

The 4SSO series also features extra strong mounting brackets for extra strength in aggressive temporary power supply applications.

Switched Socket Outlets

Catalogue No.	Description
4SSO15D	250V 10A 3 pin socket double-pole, 4 modules



4SSO15D

Socket Outlets

Catalogue No.	Description
4PSO10	250V 10A 3 pin socket outlet, 2.5 modules
4PSO10D	250V 10A 3 pin socket double-pole, 2.5 modules
4PSO10DL	250V 10A 3 pin socket outlet double-pole with round Earth socket, 2.5 modules
4PSO15D	250V 15A 3 pin socket double-pole, 2.5 modules
4PSO20D	250V 20A 3 pin socket outlet double-pole, 2.5 modules
4PS31	Enclosure only accepts any 30 Series switch mechanisms, 2.5 modules



4PSO10

Pole Filler Blanks

Catalogue No.	Description
R9APF08	Resi9 Pole Filler 8 Modules



R9APF08

RCD Neutral/Earth Bar

Catalogue No.	Description
R9ANB04	Resi9 RCD Neutral/Earth Bar 4 Ways



R9ANB04

Plastic enclosure spare door assembly

Catalogue No.	Description
R9ADA110	Resi9 SB Spare Door Assy 1 Row 10M
R9ADA115	Resi9 SB Spare Door Assy 1 Row 15M
R9ADA215	Resi9 SB Spare Door Assy 2 Rows 15M
R9ADA315	Resi9 SB Spare Door Assy 3 Rows 15M
R9ADA415	Resi9 SB Spare Door Assy 4 Rows 15M



R9ADA215



R9ADA315

Accessories

Resi9

Resi9 Enclosure Accessories

Circuit Identification Labels

Catalogue No.	Description
R9ACIL	Resi9 Circuit ID Label Sheet



R9ACIL

Resi9 Device Accessories

Locking device

Catalogue No.	Description
A9A26970	Locking device for Resi9 devices except RCBO SLIM, lockable in ON or OFF position, with padlock diameter up to 6mm.
26970	Locking device for Resi9 RCBO SLIM, lockable in ON or OFF position, with padlock diameter up to 8mm.



A9A26970



26970

*Locking in ON position does not prevent tripping of the breaker in the event of faults

RCD Neutral Terminal

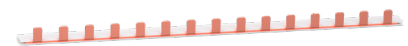
Catalogue No.	Description
MX9XT3	3x16mm Neutral link to suit terminating RCD Neutrals.



MX9XT3

Busbar for RCCB & MCB type installations

Catalogue No.	Description	Phase	No of Ways
R9XPH115	Resi9 Pin Type Busbar 15M 100A	1 Phase	15



R9XPH115

Busbar technical data

Main characteristics	Comb busbar
Rated Current	100A
Rated voltage	230 V
Rated Insulation voltage	500 V

MAXBAR tooth caps

Catalogue No.	Description
A9XPT920	Set of 20 Busbar Tooth Caps



A9XPT920

Resi9 Device Accessories

MAXBAR Connectors

Catalogue No.	Description
RMXPC1	Connectors 1PN Set of 4



RMXPC1

Earth Conductor Tag

Catalogue No.	Description
R9AECT	Resi9 Earth Conductor Tag



R9AECT

Changeover Switch

Change over switch labeled Auxiliary, Off and Mains.

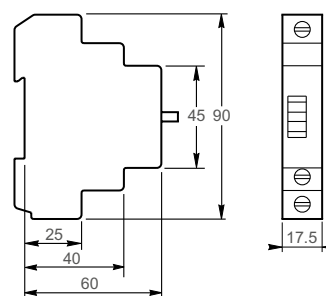
Incoming and outgoing terminals are screw down type and accommodate copper conductors up to 16mm².

1-Pole, 1-Module, 415V

Auxiliary, off, manual changeover switch

Catalogue No.	Description
4PS63CAM	63A

Dimensions (mm)



Neutral Terminal Block

Catalogue No.	Description
SEA9TB1001	100A Neutral Terminal Block 1 Pole



SEA9TB1001



Technical Information

Technical Information

To assist you with circuit protection selection and identification PDL by Schneider Electric provide an extensive range of wiring options and technical tables. And to help find critical information, these tables are referenced in individual sub-sections.

These sub-sections include:

- Cause of tripping
- Spark-e-mate
- Circuit protection trip unit variations
- Circuit breaker limitation capability
- Tripping curves
- Thermal derating tables
- Circuit breaker selection.

Technical Information

Resi9

Causes of Tripping

Tripping causes fall into three broad categories:

- Installation causes.
- Appliance causes.
- External causes.

Installation Causes:

1. Low impedance between Neutral and Earth

This is the most common cause of tripping and can be broken down into the following varieties:

- Second MEN point Neutral and Earth physically bonded together in a backyard shed or other secondary site.
- Earth and Neutral wires are exchanged at the terminals of a GPO.
- Neutral to Earth short – by penetration of cable e.g. a nail driven through a Neutral connecting to Earth or through contact with foil insulation.
- Lowered impedance due to contamination of air gaps. e.g. bridging of air insulation gaps by insects, water or other contaminants, typically found in exposed terminals of junction boxes, batten holders, etc. This may also be seen as an Active to Earth fault.
- Neutral to Earth low impedance with Neutral voltage present. This fault, while being under the category of Neutral to Earth low impedance, is peculiar because the voltage present on the Neutral is likely to cause the RCD to trip, even with the load disconnected. **Note:** If no Neutral potential was present, nuisance tripping would not occur until the load current is drawn.

2. Cable Insulation Deterioration

This most commonly occurs in older insulation where VIR and TRS cables can exhibit residual current in excess of 20mA.

3. Crossed Neutrals

These occur where a Neutral from an unprotected circuit is used as the load 'return' from an Active, which is protected by an RCD or vice versa.

4. Incorrect wiring of the RCDs

This occurs when the RCD Neutral connections are taken from the wrong side, e.g. the Neutral is coming from the line side rather than the load side, yet the Active still comes through the correct load side.

Appliance causes

By far the most common cause of an appliance induced residual current occurs where the appliance has a reduced impedance value between Active and Earth or Neutral and Earth, often due to moisture.

Metal sheathed heating elements absorb moisture which can result in substantially reduced impedances and residual currents flowing when they are first energised.

Some typical appliances which develop these problems are refrigerator defrost elements, evaporative elements, stove elements, hot water services and washing machine heating elements.

Another possible cause is 'tracking', which can be caused by food particle contaminants in toasters and mini ovens, an accumulation of lint in irons and washing machines, and carbon or graphite dust or filings in power tools.

Accumulation of residual currents.

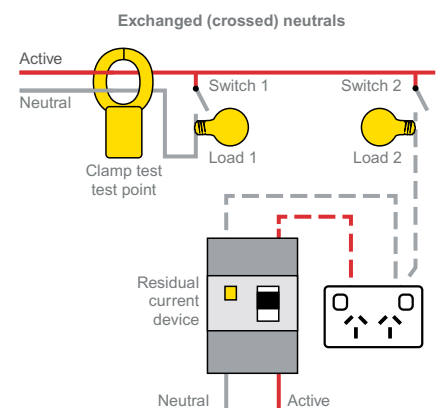
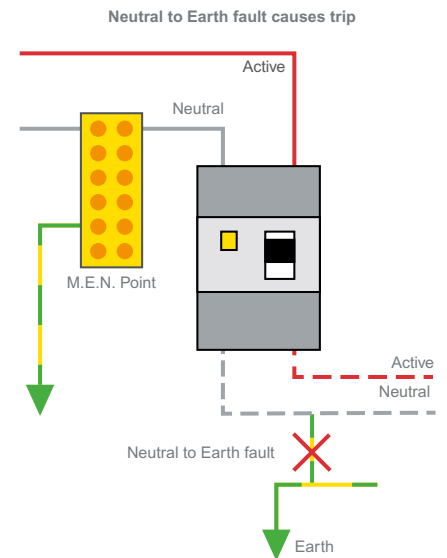
All appliances can have some minor leakage level. If a number of appliances are covered by one RCD the accumulative effect can cause the RCD to trip.

Special impedances

This can result from Earth and Neutral being bounced by capacitors, inductors or resistors in computer equipment or communications equipment, causing a residual current.

External causes

A lightning strike causing insulation breakdown and mains current to flow is the most likely cause of tripping from an external source.



Technical Information

Resi9

Spark-e-mate

Spark-e-mate performs comprehensive electrical wiring tests relevant to Australian and New Zealand Standards from socket outlets, to the switchboard.

Why waste your precious time finding the correct instrument to test installations? The Spark-e-mate has you tested and covered. One instrument does it all.

Testing with Spark-e-mate is easy. Simply plug into outlet or Active, Neutral and Earth. Select a function. Then record and report the results.

Features and benefits:

Spark-e-mate can test for:

- Earth continuity.
- Insulation resistance.
- Polarity.
- Correct circuit connections.
- Earth fault loop impedance (without tripping RCDs).
- Residual current device (earth leakage detector or safety switch).
- Extension leads and power accessories.
- Supply voltage.
- Mains frequency.



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Technical Data

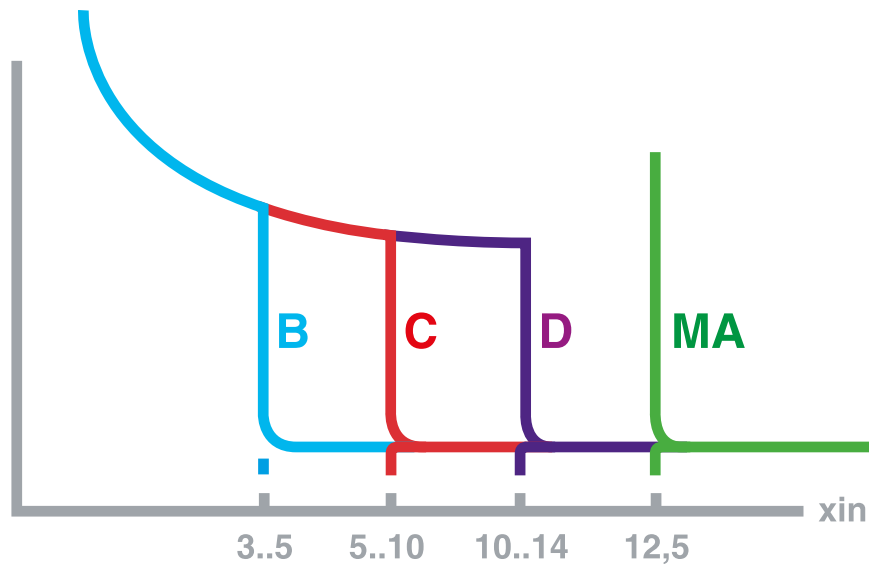
Main characteristics	493
Enclosure	Hammond 1599HBK, ABS fire retardant rating UL94HB, IP-54 rated
Dimensions (H x W x D)	220mm x 110mm x 45mm.
Label	EBG180 autoflex textured satin polycarbonate, automotive grade
Holster	Santoprene thermoplastic vulcanizate rubber, PANTONE 115U (Yellow)
Operating Temperature Range	-10 to 50°C ambient
Storage Temperature Range	-20 to 70°C ambient
Humidity, Storage and Operating	To 98% non-condensing
Mean Time Between Failure	> 20 years.
Control Logic	PIC 18LF8722, 128K bytes internal program flash memory, 4K bytes RAM, 1K bytes EEPROM
Indicators	Graphical liquid crystal display 122 (H) x 64 (V) pixels
Connector	IEC mains socket
Power Lead	CAT# PS-4106 power cord mains plug to IEC320-C13. Other plugs to order.
Testing Criteria	AS/NZS 3000:2007, section 8 – verification
Earth Continuity Test	Earth impedance in powered mode derived from mains power. In unpowered mode from an internal battery. Range 0. to 15Ω. Display accuracy ±0.1Ω ±2%
Insulation Resistance Test	Active to Earth insulation resistance derived from an internally generated 250V d.c. or 500V d.c. -10%/+20% applied across a 1MΩ load. At 250V nominal range 20kΩ to 10MΩ and at 500V nominal 250kΩ to 20MΩ. Accuracy ±2% at 1MΩ decreasing to ±5% at extremes of range. Voltage accuracy ± 1V ± 2%
Polarity	Polarity Correct, A&N reversed, A&E reversed, no Neutral, no Earth
Correct Circuit Connections	Circuit checks OK, Earth hazard – load or short between Earth and live conductor, detect threshold of ≥70V a.c. potential on Earth with respect to surroundings detection method.
Earth Fault Loop Test	Current applied between Active and Earth from mains when available or internal battery when unpowered. (RCD should nottrip*1). Range 0 to 20Ω. Display accuracy ±0.1Ω ±2%
RCD Test	5, 10, 15, 30 and 150mA nominal between Active and Earth. Range 2 to 300ms trip time Display accuracy ±2ms
Mains Supply Indicator	RMS meter readout accuracy ±1V ±2%, 1Hz display resolution
Battery Condition Indicator	Battery symbol on the LCD, vertical bars indicate state
Field Programming	Bluetooth to RS232C optional, authorised partners only
Factory Programming	Via host computer (RS232C)
Nominal Power Requirement	230V a.c. ± 10.9%, 50Hz ± 12Hz (other voltages to order)
Abs. Minimum Power input	150V a.c.
Abs. Maximum Power input	300V a.c.
Power Consumption	0mA off, 30mA nominal, up to 150mA depending on test
Internal Batteries	6 x AA alkaline
Auto Turn-off	Backlight after 30 seconds, shutdown after 60 seconds
Unpacked Weight	610gms
Warranty	Two years
Quality Assurance Certification	ISO9001
RoHS	Compliant
Electrical Safety Compliance (non-prescribed)	AS/NZS3300, AS/NZS3017, AS/NZS3260 (AS/NZS60950), AS/NZS3100, AS/NZS3350.1, AS/NZS61010.1 category III
ACMA Compliance	Design 2000 Pty Ltd ACMA supplier's code N468
EMC Compliance	AS/NZS CISPR 22
Human Rights Australia	Privacy commissioner assent 89/328

Technical Information

Resi9

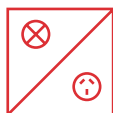
Circuit Protection Trip Unit Variations

A choice of several curves. Whatever circuit has to be protected, a circuit breaker provides the perfect solution with a suitable curve.



B-Curve tripping

3 to 5 times the rated current (I_n); protection of generators, persons, very long cables.



C-Curve tripping

5 to 10 I_n ; protection of circuits, general applications.



D-Curve tripping

10 to 14 I_n ; protection of high surge circuits, welders, transformers, motors.



MA-Curve (magnetic only) tripping

12 I_n ; protection of motor starters (+ thermal protection when combined with contactor).

Circuit Breaker Limitation Capability

The limitation capability of a circuit breaker is that characteristic whereby only a current less than the prospective fault current is allowed to flow under short circuit conditions.

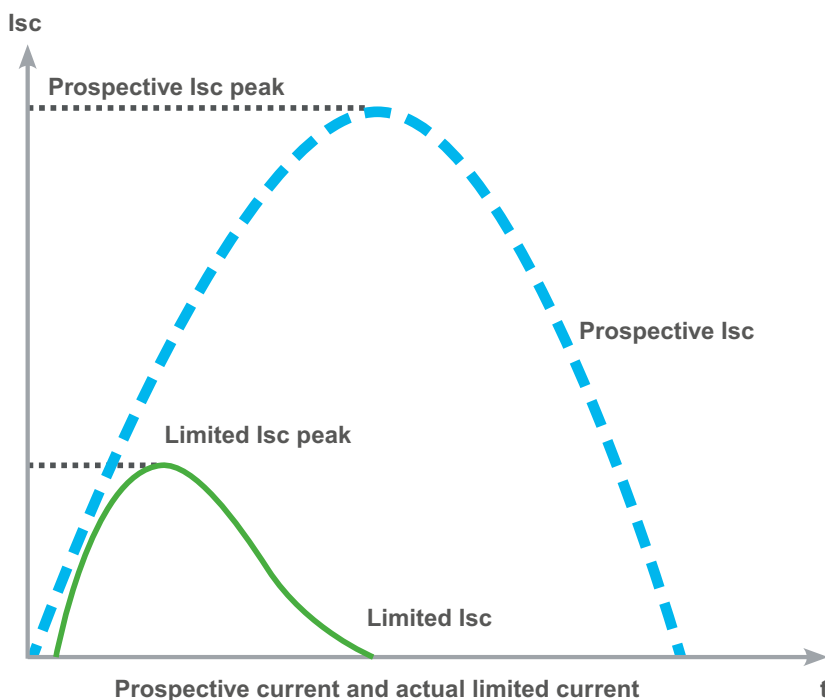
This is illustrated by limitation curves which give:

- the limited peak current in relation to the RMS value of the prospective short circuit current (the short circuit current being that current, which would flow continuously in the absence of protection equipment).
- the limited current stress in relation to the RMS value of the prospective shortcircuit current.
- current limiting capability.

The advanced design of the Resi9 range provides current limitation with far better protection than conventional circuit breakers. For example, on a 6A rating with a prospective short circuit of 5000A, the current will be limited at 350A or 7%.

Installation of current limiting circuit breakers offers several advantages:

- **Better network protection**
Current limiting circuit breakers considerably reduce the undesirable effects of short circuit currents in an installation.
- **Reduced thermal effects**
Cable heating is reduced, hence longer cable life.
- **Reduced mechanical effects**
Electrodynamic forces reduced, thus electrical contacts are less likely to be deformed or broken.
- **Reduced electromagnetic effects**
Measuring equipment situated near an electrical circuit less affected.



Technical Information

Resi9

Tripping Curves

The operating range of the magnetic release is as follows:

- For B-curve: between 3 In and 5 In
- For C-curve: between 5 In and 10 In
- For D-curve: between 10 In and 14 In.

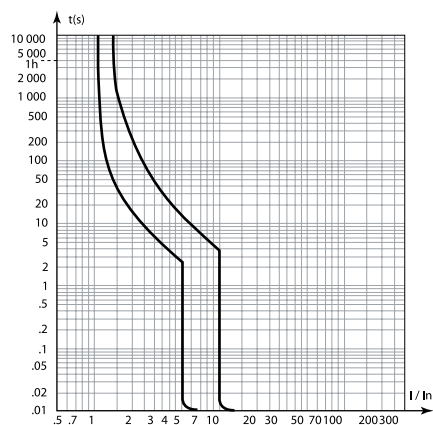
The curves show the cold thermal tripping limits when poles are charged and the electromagnetic tripping limits with 2 charged poles.

Curves

MCB

According to AS/NZS 60898

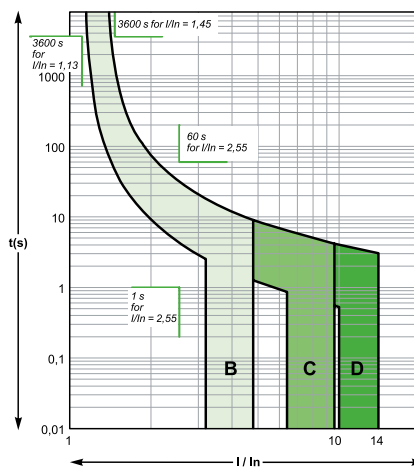
Curve C



RCBO

According to AS/NZS 60898
(reference temperature 30°C)

Curves B, C, D



Thermal Derating Tables

MCB18 Derating Table (according to AS/NZS 60898.1)

Resi9 MCB Ambient temperature (°C)																				
Rating	-25°C	-20°C	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
2 A	2.45	2.41	2.37	2.34	2.3	2.26	2.22	2.17	2.13	2.09	2.04	2	1.95	1.91	1.86	1.81	1.76	1.71	1.65	1.59
4 A	4.92	4.84	4.77	4.69	4.61	4.53	4.44	4.36	4.27	4.18	4.09	4	3.91	3.81	3.71	3.61	3.5	3.39	3.28	3.17
6 A	7.44	7.32	7.2	7.07	6.95	6.82	6.69	6.56	6.42	6.29	6.14	6	5.85	5.7	5.54	5.38	5.22	5.04	4.87	4.68
10 A	11.9	11.8	11.6	11.4	11.3	11.1	10.9	10.8	10.6	10.4	10.2	10	9.8	9.6	9.4	9.2	9	8.8	8.5	8.3
16 A	19	18.7	18.5	18.2	18	17.7	17.4	17.1	16.9	16.6	16.3	16	15.7	15.4	15.1	14.8	14.5	14.1	13.8	13.4
20 A	23.5	23.2	22.9	22.6	22.3	22	21.7	21.4	21	20.7	20.4	20	19.7	19.3	18.9	18.6	18.2	17.8	17.4	17
25 A	29.1	28.8	28.4	28	27.7	27.3	26.9	26.6	26.2	25.8	25.4	25	24.6	24.2	23.8	23.3	22.9	22.5	22	21.5
32 A	37.9	37.4	36.9	36.4	35.9	35.3	34.8	34.3	33.7	33.2	32.6	32	31.4	30.8	30.2	29.6	28.9	28.3	27.6	26.9
40 A	47.4	46.7	46.1	45.5	44.8	44.2	43.5	42.8	42.1	41.4	40.7	40	39.3	38.5	37.7	37	36.2	35.3	34.5	33.6
50 A	59.9	59.1	58.2	57.4	56.5	55.6	54.7	53.8	52.9	52	51	50	49	48	46.9	45.9	44.8	43.6	42.5	41.3
63 A	76.4	75.3	74.1	73	71.8	70.6	69.4	68.2	66.9	65.6	64.3	63	61.6	60.3	58.8	57.4	55.9	54.3	52.8	51.1

RCBO 1P+N 1-Module Derating Table (according to AS/NZS 61009.1)

Ambient temperature (°C)																				
Rating	-25°C	-20°C	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
6 A	7.92	7.76	7.60	7.44	7.28	7.11	6.94	6.76	6.58	6.39	6.20	6.00	5.79	5.58	5.36	5.13	4.89	4.63	4.36	4.06
10 A	12.08	11.91	11.73	11.55	11.37	11.18	11.00	10.80	10.61	10.41	10.21	10.00	9.79	9.57	9.35	9.13	8.89	8.66	8.41	8.16
16 A	19.15	18.89	18.62	18.35	18.07	17.79	17.50	17.21	16.92	16.62	16.31	16.00	15.68	15.36	15.03	14.69	14.34	13.98	13.62	13.24
20 A	24.00	23.67	23.33	22.98	22.63	22.27	21.91	21.54	21.17	20.79	20.40	20.00	19.60	19.18	18.76	18.33	17.89	17.43	16.97	16.49
25 A	30.00	29.58	29.16	28.73	28.29	27.84	27.39	26.93	26.46	25.98	25.50	25.00	24.49	23.98	23.45	22.91	22.36	21.79	21.21	20.61
32 A	37.69	37.21	36.72	36.23	35.73	35.22	34.70	34.18	33.15	33.11	32.56	32.00	31.43	30.85	30.26	29.66	29.05	28.42	27.42	27.12

RCBO 1P+N 2-Module Derating Table (according to AS/NZS 61009.1)

Ambient temperature (°C)																				
Rating	-25°C	-20°C	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
6 A	7.7	7.6	7.4	7.3	7.2	7.0	6.8	6.7	6.5	6.4	6.2	6.0	5.9	5.8	5.6	5.5	5.4	5.2	5.1	4.9
10 A	12.0	11.8	11.6	11.5	11.3	11.1	10.9	10.8	10.6	10.4	10.2	10.0	9.8	9.6	9.4	9.2	9.0	8.8	8.5	8.2
16 A	19.6	19.3	19.0	18.7	18.4	18.1	17.7	17.4	17.1	16.7	16.4	16.0	15.6	15.3	14.9	14.5	14.1	13.6	13.2	12.7
20 A	23.8	23.5	23.2	22.8	22.5	22.2	21.8	21.5	21.1	20.7	20.4	20.0	19.6	19.2	18.8	18.4	18.0	17.6	17.1	16.7
25 A	29.5	29.2	28.8	28.4	28.0	27.6	27.2	26.7	26.3	25.9	25.4	25.0	24.5	24.1	23.6	23.1	22.6	22.1	21.6	21.1
32 A	39.4	38.7	38.1	37.5	36.9	36.2	35.5	34.9	34.2	33.5	32.7	32.0	28.7	28.0	27.3	26.6	25.8	25.0	24.2	23.3
40 A	50.2	49.3	48.5	47.6	46.7	45.8	44.9	44.0	43.0	42.0	41.0	40.0	35.0	34.1	33.1	32.0	31.0	29.8	28.7	27.5

Technical Information

Resi9

AFDD Derating Table (according to AS/NZS 61009.1)

Ambient temperature (°C)																				
Rating	-25°C	-20°C	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
6 A	7.7	7.6	7.4	7.3	7.2	7.0	6.8	6.7	6.5	6.4	6.2	6.0	5.9	5.8	5.6	5.5	5.4	5.2	5.1	4.9
10 A	12.0	11.8	11.6	11.5	11.3	11.1	10.9	10.8	10.6	10.4	10.2	10	9.8	9.6	9.4	9.2	9.0	8.8	8.5	8.2
16 A	19.6	19.3	19.0	18.7	18.4	18.1	17.7	17.4	17.1	16.7	16.4	16	15.6	15.3	14.9	14.5	14.1	13.6	13.2	12.7
20 A	23.8	23.5	23.2	22.8	22.5	22.2	21.8	21.5	21.1	20.7	20.4	20	19.6	19.2	18.8	18.4	18.0	17.6	17.1	16.7
25 A	29.5	29.2	28.8	28.4	28.0	27.6	27.2	26.7	26.3	25.9	25.4	25	24.5	24.1	23.6	23.1	22.6	22.1	21.6	21.1

RCCB Derating Table

Ambient temperature (°C)							
Rating	40	45	50	55	60	65	70
40 A	40	37.5	35	32.5	30	27.5	25
63 A	63	58.5	55	51.3	47.5	44	40.5

Circuit Breaker Selection

For high efficiency motors (high inrush currents) please contact a Schneider Electric sales representative. See back cover for details.

For Direct On-Line

FLC AMPS	a.c.-3 kW	MCB C-Curve
1.1	0.37	4
1.5	0.55	4
1.8	0.75	6
2.6	1.1	6
3.4	1.5	10
4	1.5	10
5	2.2	16
6-7	3	20
8	3.7	20
9	4-4.5	25
10		25
11	5.5	32
12		32
13		32
14	7.5	40
15		40
16-17	9-9.2	40
18-19	10	50
20-22	11	63
23-24		63
25-28	15	63
29-32		
33-38	18.5	
39-44	22	
45-52	25	
53-56	30	
57-60	34	
61-68	37	

For Star Delta, Auto Transformer and Resistor/ Reactance

FLC AMPS	a.c.-3 kW	MCB C-Curve
1.1	0.37	6
1.5	0.55	6
1.8	0.75	6
2.6	1.1	6
3.4	1.5	6
4	1.5	6
5	2.2	10
6-7	3	10
8	3.7	16
9	4-4.5	16
10		20
11	5.5	20
12		20
13		25
14	7.5	25
15		32
16-17	9-9.2	32
18-19	10	32
20-22	11	40
23-24		40
25-28	15	50
29-32		63
33-38	18.5	63
39-44	22	
45-52	25	
53-56	30	
57-60	34	
61-68	37	
69-72		
73-80	45	
81-100	55	



For more information on Resi9 and other PDL Schneider products, contact your local PDL and Schneider Electric Partner Business Representative, electrical wholesaler or visit pdl.co.nz/Resi9

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