MAX4 Circuit Protection

MAX performance.
Complete protection.

clipsal.com/residentialprotection

Life Is On

CLIPSAL® by Schneider Electric

About MAX4 range

Innovation in electrical safety

First established in 1920, Clipsal is Australia's number one manufacturer of electrical products, accessories and solutions.

Over the last 100 years, Clipsal has been helping to make Australian homes safer by supplying customers with the most innovative and sustainable electrical solutions available on the market. Clipsal was one of the pioneers of bringing miniature version of RCD (also known as 'Safety switch') to Australian market under 4 Series.

Over time, 4 Series has evolved in to MAX4 range but the mission remains unchanged. Recently we have launched RCBO (RCD/MCB Combo) for multi-phase applications, Energy management by Wiser™ to help consumers get control of their electricity bills and latest innovation is Arc Fault Detection Device (AFDD) to help protect Australian homes from Arc faults.

Clipsal MAX4 range – Complete circuit protection solution with MAX performance

The Clipsal MAX4 range of circuit protection comes with everything you need for your residential switchboard requirements. Included are MCBs, RCDs, RCBOs (MCB/RCD combinations), isolating switches, changeover switches and busbar systems.

A huge variety of other devices and accessories are also available to complement the range, including surge protection devices, timers, contactors & linkbars. Also included in this range are premium surface and flush mount plastic enclosures.

The Clipsal MAX4 range of MCBs, RCDs, RCBOs and Isolators comply with the latest standards AS/NZS 60898.1, AS/NZS 61008.1, AS/NZS 61009.1, and AS/NZS 60947.3 respectively.

Housing for all devices is made of sturdy, self-extinguishing material in a new white colour to suit most switchboard designs.

All devices are for 35mm DIN rail mounting with a two position DIN clip of heavy duty moulded material. Mechanism locking and sealing wire facilities are also provided where required.

What's new in residential circuit protection?

A new level of safety

The Arc Fault Detection Device (AFDD) is an easy-to-install, cost-effective solution to help keep Australian homes safe from electrical fires caused by arc faults.

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.

3 Phase RCBO

AS/NZS 3000:2018 (commonly known as Wiring Rules) brings in a major change for residential applications. It states that additional protection by RCDs with a maximum rated residual current of 30mA shall be provided for all final sub-circuits. This clause applies irrespective of the circuit amperage or number of phases. This includes circuits for air conditioner, cooktops, hot water systems, pool pumps, etc. that were not required to be protected by RCD in the past. We have added 3P+N RCBO to our Clipsal MAX4 range so that you can use RCBO solution for 3 phase applications as well and comply with the latest wiring rules.

Make smarter energy choices at home

Energy takes up a significant portion of every household budget. Tracking its usage is tricky, but essential to identifying inefficiencies and reducing the amount you spend on energy bills.

That's where Energy Management by Wiser™ comes in. As a smart, connected technology for homes, it gives you 24/7 visibility into your home's energy consumption and production.

Using the Wiser App together with connected Wiser devices installed into your home's switchboard, keep track of your electrical circuits, maximise your solar performance, set a budget and save on bills.

3 steps to complete electrical protection in your home

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

The famous Clipsal RCD (also known as 'Safety Switch') is an absolute must for every home. In fact, it is a legal requirement for all new homes in Australia to have RCD protection for all final sub-circuits. Why? Because in the case of faulty appliances or wiring, this little device in your switchboard will help to disconnect power and help to save your loved ones from a potentially fatal electric shock.

Electrical cables can get extremely hot due to overload and short circuit and potentially damage your home due to electrical fires. To help protect cables from damage, you need to have MCB installed at the switchboard.

Instead of having a separate MCB and RCD for each circuit, make the smart choice with Clipsal SLIM RCBO. This is a combo device that will provide RCD & MCB functions in 1 device and save valuable space in your switchboard.

Step 2: Surge Protection – Helps to protect your electrical appliances

Lightning strikes, power surges and voltage spikes are nasty and can destroy your electronic equipment in an instant. You've invested a lot of money in your appliances. Just imagine discovering your big-screen TV, audio system or coffee machine, fried and irreparable... It just isn't worth the risk. Clipsal surge protection device helps to protect your valued possessions from such harmful surges and spikes.

Step 3: Arc Fault Detection (AFD) Device – Helps to protect your home from arc faults

Old cables, loose wall sockets, poor cable connections, rodents/humidity in ceiling space can all result in damage to cables. Such damages result in electric arcs that carbonize the insulation/connection. If these arcs are not detected early then they can potentially result in electrical fires. Clipsal AFD device sits in your switchboard and continuously looks for early signs of such arc faults. As soon as it detects such signals, it helps to disconnect power in that circuit and helps to reduce chances of a potential house fire.

Contents

MCB/RCD Combinations – Residential RCBO

MCB/RCD Combinations – Residential RCBO

MAX4

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

Clipsal's slim DIN mounted, 30mA combination MCB/RCDs are available as single module devices to save valuable switchboard space.

Features and benefits:

- Top and bottom line and load compatible for ease of installation.
- Save switchboard space with 18mm width.
- Short circuit breaking capacity of 6kA.
- Rated at 240V, 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 Clipsal's 4LD Lock Dog.
- 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, 240V

A-type 30mA non delayed

Catalogue No.	Current Rating
4RCBE206/30S	6A
4RCBE210/30S	10A
4RCBE216/30S	16A
4RCBE220/30S	20A
4RCBE225/30S	25A
4RCBE232/30S	32A

4RCBE210/30S

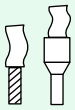
1P+N, 1-Module, 240V

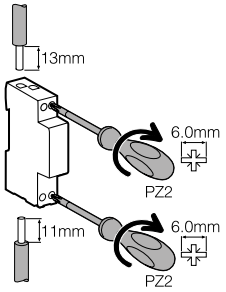
A-type 10mA non delayed

Catalogue No.	Current Rating
4RCBE206/10S	6A
4RCBE210/10S	10A
4RCBE216/10S	16A
4RCBE220/10S	20A
4RCBE225/10S	25A
4RCBE232/10S	32A

4RCBE210/10S

Connection

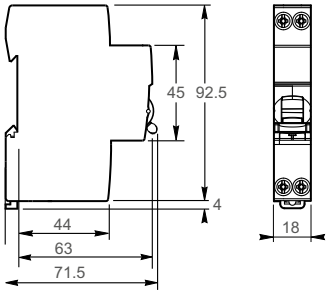
Type	Rating	Tightening torque	Copper cables	
Slim RCBO			Rigid	Flexible or ferrule
				
L and N upstream	10 to 32A	2 Nm	1 to 16mm²	1 to 16mm²
L and N downstream	10 to 32A	2 Nm	1 to 10mm²	1 to 10mm²



Weight

Residual current device	
Type	**Slim RCBO**
1P+N	130g

Dimensions (mm)



Technical Data

Main characteristics		
Voltage rating (Ue)		240V + 10%, -15%
Insulation voltage (Ui)		400V
Rated impulse withstand voltage (Uimp)		4kV
Rated residual operating current (IΔn)		4RCBE2xx/30S - 30mA 4RCBE2xx/10S - 10mA
Thermal tripping reference temperature		30°C
Magnetic tripping	C-Curve	Between 5 and 10 In
Limitation class		3
Surge current withstand (8/20 µs) without tripping		3000A
Rated nominal breaking capacity (Icn)		6000A
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		-5°C to 40°C
Storage temperature		-25°C to 70°C
Tropicalisation		Treatment 2 (relative humidity 95% at 55°C)

MCB/RCD Combinations – Residential RCBO

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MCB/RCD Combinations – Residential RCBO

Clipsal switchboard mounted combination MCBs and RCDs fall into two main categories - electro mechanical and electronic.

The electro mechanical devices derive their 'action energy' from actual leakage (residual) current.

They work on an electromagnetic principle. A toroidal transformer is used to detect the magnetic fields created by current flowing in the Active and Neutral wires of the protected circuit, which pass through the RCD.

Taking into account the magnitude and direction of these currents, under normal circuit conditions the vector sum of the currents (known as the residual current) is effectively zero and the magnetic fields cancel.

Should the condition occur where a current flows from an Active or Neutral wire to Earth, the residual current will not be zero and the magnetic field will establish a tripping signal to disconnect the protected circuit. These devices are not voltage dependant.

Features and benefits:

- Seperate RCD trip flag for easy fault finding **(1)**
- Insulated openings for easy busbar installation **(2)**
- No need to cut the busbar providing safe and quick fit off **(3)**
- Same base module as the MCBs. Uniformity in space requirements and installation.
- Top and bottom line and load compatible for ease of installation.
- Labelled terminals. Safe, easy and fast installation.
- Top and bottom clip allowing dismounting with comb busbar in place.
- Busbar compatible through an insulated slot.

Applications

Standard - AC Type

- General applications.

Super Immune - A-SI Type

- High dependency installation.

4RCBM220/30

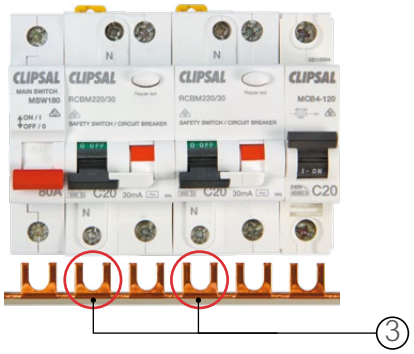
4RCBM220/30
Insulated busbar slot

MCB/RCD Combination C-Curve, Mechanical - RCBO

1P+N, 2-Module, 240V

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

Catalogue No.	Current Rating
4RCBM210/30	10A
4RCBM216/30	16A
4RCBM220/30	20A
4RCBM225/30	25A
4RCBM232/30	32A
4RCBM240/30	40A

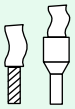


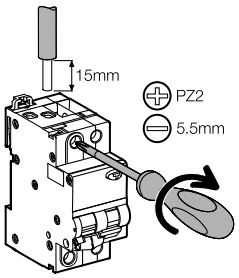
1P+N, 2-Module, 240V

SI-type, super immune, 3mA A-type, surge current protected to 3000 A 8/20ms

Catalogue No.	Current Rating
4RCBM210SI30	10A
4RCBM216SI30	16A
4RCBM220SI30	20A
4RCBM225SI30	25A
4RCBM232SI30	32A
4RCBM240SI30	40A

Connection

Rating	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
			
10 to 40A	3.5 Nm	1 to 16mm²	1 to 10mm²



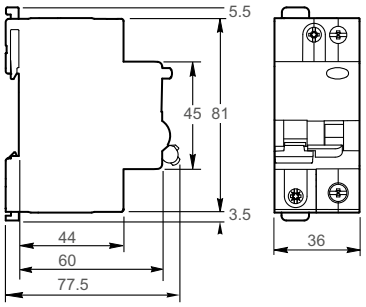
Weight

Residual current device	
Type	**4RCBMxxx/30**
2P	205g

Technical Data

Main characteristics			
Earth leakage protection with instantaneous tripping		30mA	Voltage independant
Setting temperature for ratings			30°C
Tripping curve		C-Curve	The magnetic tripping devices act at between 5 and 10 In
Rated breaking capacity (Icn)		≤ 20A	10,000A
		≥ 25A	6000A
Rated residual breaking and making capacity (IΔm)		≤ 20A	4500A
		≥ 25A	4500A
Endurance (O-C)	Electrical	≤ 20A	20,000 cycles
	Electrical	≥ 25A	10,000 cycles
	Mechanical		20,000 cycles
Degree of protection	Device only		IP20
	Device in modular enclosure		IP40 Insulation class II
Insulation voltage (Ui)			400V
Rated impulse withstand voltage (Uimp)			4kV
Service temperature		AC type	-5°C to 40°C
		SI type	-25°C to 40°C
Storage temperature			-30°C to 70°C
8/20 µs impulse withstand without tripping		AC type	250A
		SI type	3kA
Limitation class			3
Insulation class			2
Tropicalisation			Treatment 2 (relative humidity 95% at 55°C)

Dimensions (mm)



MCB/RCD Combinations – Residential RCBO

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MCB/RCD Combination C-Curve, Electronic – RCBO

These 240V single-phase + Neutral electronic combination devices incorporate the same housing (two base modules wide), installation features and ampere colour coding as the MCBs and offer individual recognition of a particular circuit.

Separate flag indication **(1)** for MCB or RCD tripping enables easy and speedy fault finding.

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 - AC Type

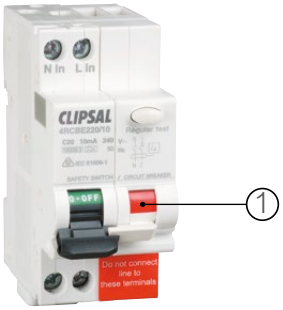
- General applications.
- Generators.
- Extreme environmental conditions.
- 10mA hospital applications.

1P+N, 2-Module, 240V

Standard-type, 10mA non-delayed, 40ms trip time

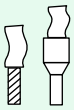
Catalogue No.	Current Rating
4RCBE210/10	10A
4RCBE216/10	16A
4RCBE220/10	20A
4RCBE232/10	32A
4RCBE240/10	40A

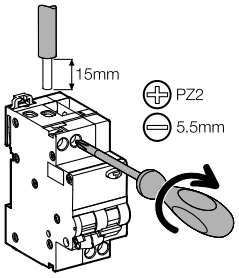
NOTE: This device is top feeding only.



4RCBE220/10

Connection

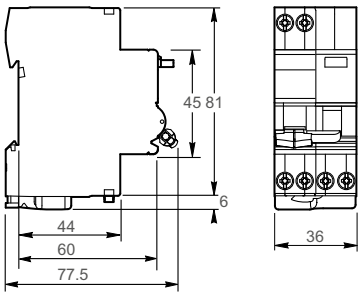
Rating	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
			
10 to 40A	3.5 Nm	1 to 16mm²	1 to 10mm²



Weight

Residual current device	
Type	**4RCBExxx/10**
1P+N	189g

Dimensions (mm)



Technical Data

Main characteristics			
Earth leakage protection with instantaneous tripping		10mA	Voltage dependant
Setting temperature for ratings			30°C
Tripping curve		C-Curve	The magnetic tripping devices act at between 5 and 10 In
Rated breaking capacity (Icn)		≤ 20A	10,000A
		≥ 25A	6000A
Rated residual breaking and making capacity (IΔm)		≤ 20A	4500A
		≥ 25A	4500A
Endurance (O-C)	Electrical	≤ 20A	20,000 cycles
		≥ 25A	10,000 cycles
	Mechanical		20,000 cycles
Degree of protection	Device only		IP20
	Device in modular enclosure		IP40 Insulation class II
Insulation voltage (Ui)			400V
Rated impulse withstand voltage (Uimp)			4 kV
Service temperature		AC type	-5°C to 40°C
Storage temperature			-30°C to 70°C
8/20 µs impulse withstand without tripping		AC type	250A
Limitation class			3
Insulation class			2
Tropicalisation			Treatment 2 (relative humidity 95% at 55°C)

MCB/RCD Combinations – Residential RCBO

MAX4

3P+N, 5-Module RCBO C-Curve, Type A

New wiring rules bring in a major change for residential applications. It states that additional protection by RCDs with a maximum rated residual current of 30mA shall be provided for all final sub-circuits. This clause applies irrespective of the circuit amperage or number of phases. This includes circuits for air conditioner, cooktops, hot water systems, pool pumps, etc. that were historically not protected by RCD. MAX4 3P+N RCBO helps to provide complete RCBO solution for 3 phase applications.

Features and benefits:

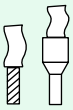
- Full installation flexibility with the option of having line connection either from top or bottom.
- Cover all your needs with complete range from 10A to 40A
- Type A earth leakage protection to help provide additional safety to end user
- Green strip on the toggle that indicates opening of all the poles.
- Easy diagnosis with visible red tripping flag to identify earth leakage tripping
- Clear marking of neutral on left side

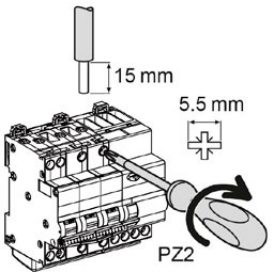
Applications:

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

Catalogue No.	Current rating
4RCBE410/30	10A
4RCBE416/30	16A
4RCBE420/30	20A
4RCBE425/30	25A
4RCBE432/30	32A
4RCBE440/30	40A

Connection

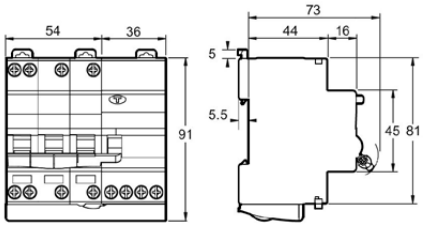
Rating	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
			
10 to 40A	2 Nm	0.75 to 16mm²	0.33 to 16mm²



Weight

Residual current device	
Type	**4RCBE2xx/30**
3P+N	498g

Dimensions (mm)



Technical Data

Main characteristics		
Voltage rating (Ue)		380V - 415V
Insulation voltage (Ui)		440V
Rated impulse withstand voltage (Uimp)		4kV
Rated residual operating current (IΔn)		30mA
Thermal tripping reference temperature		30°C
Magnetic tripping	C-Curve	Between 5 and 10 In
Pollution Degree		3
Rated nominal breaking capacity (Icn)		6000A
Additional characteristics		
Degree of protection	Device only	IP20
	Device in modular enclosure	IP40
Endurance (O-C)	Electrical	20,000 cycles
	Mechanical	20,000 cycles
Operating temperature		-25°C to 60°C
Storage temperature		-30°C to 70°C
Tropicalisation		Treatment 2 (relative humidity 95% at 55°C)

Surge Protection Device – SPD

Surge Protection Device – SPD

When lightning strikes, there are no second chances. The MAX4 range of surge protection devices won't let you down.

Modern Australian homes have estimated $15,000 worth of electronics unprotected against voltage surges. From fridge to washer/dryer, smart appliances have 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
940RMT/1	Surge Arrestor, 1P, Imax, 40kA
940RMT/3	Surge Arrestor, 3P, Imax, 40kA
940PM	Replacement Cartridge 1P Imax 40Ka

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.

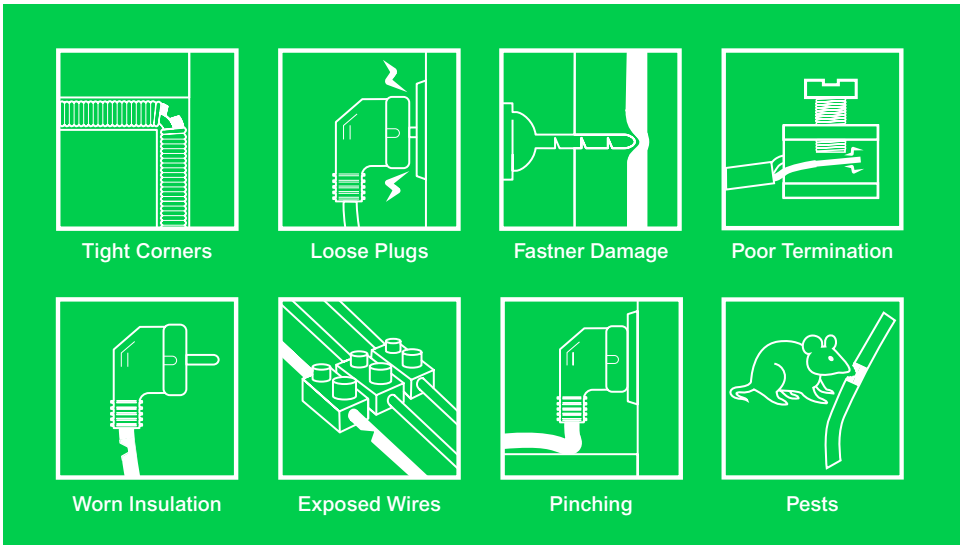
Arc faults are one of the main causes of electrical fires. Electrical fires due to arc faults are surprisingly common especially in older homes. Electrical fires cause considerable damage to property, injuries and deaths each year.

Some key facts are:

- Every year about 12,000 fires are reported from Australian homes.
- 40% of fires in homes are related to electrical fault and appliances.
- About 60 lives are lost each year due to fires in Australian homes.
- Millions are spent in repairing damage caused by fires in homes.

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 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.

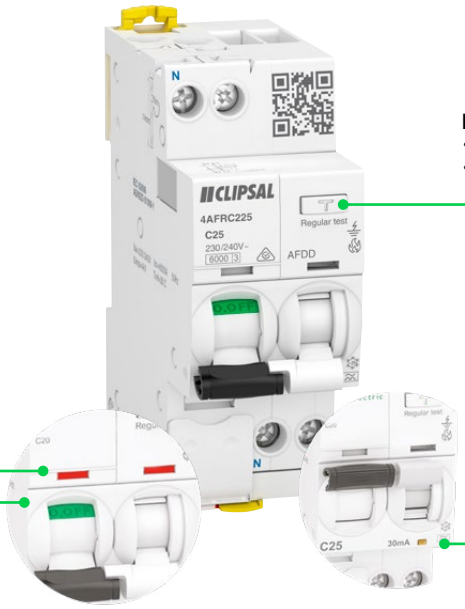
Arc fault detection RCBO

MAX4

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.
- Positive contact indication (green strip).
- Tripping cause diagnosis by LED blinking in front face.

Catalogue No.	Current rating
4AFRC206	6A
4AFRC210	10A
4AFRC216	16A
4AFRC220	20A
4AFRC225	25A



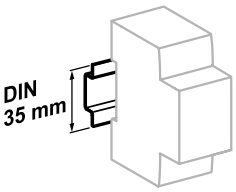
Multi-function button
- For tripping diagnosis
- For device test

Easy to install
- Reverse feeding: it can be supplied either by the top or the bottom

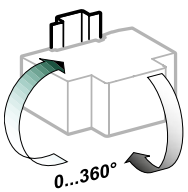
VISI-TRIP window
- Fault tripping is indicated by a red mechanical indicator on the front face

VISI-SAFE window
Positive contact indication
- A green strip on the toggle indicates full opening of all the poles
- Padlocking possible

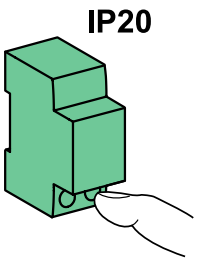
Diagnosis LED
- Tripping faults diagnosis by orange LED blinking

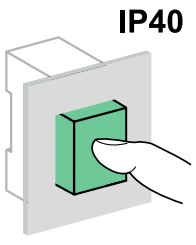


Clip on DIN rail 35 mm.

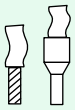


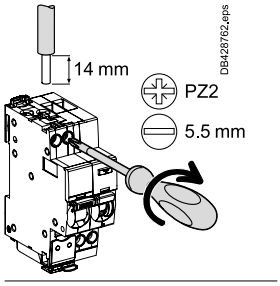
Indifferent position of installation.





Connection

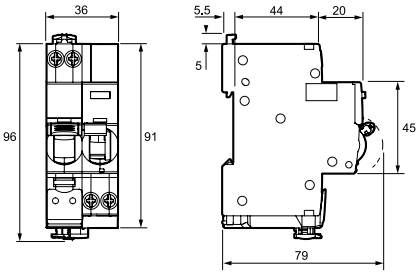
Tightening torque	Copper cables	
	Rigid	Flexible or ferrule
		
2 Nm	1 x 1 to 16mm²	1 x 1 to 10mm²



Weight

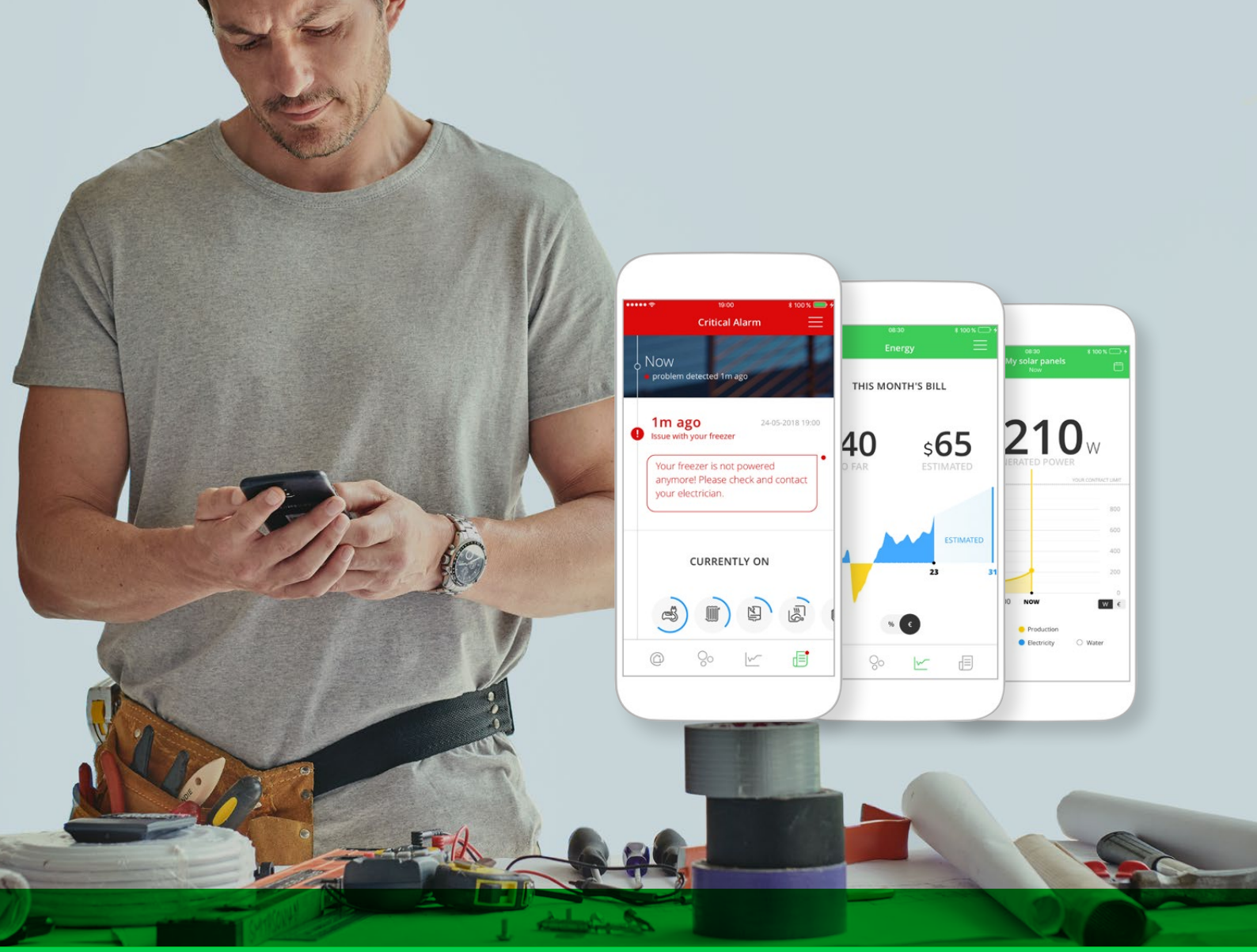
Residual current device	
Type	**Weight**
1P+N	237g

Dimensions (mm)



Technical Data

Main characteristics							
Tripping time/arc current value with Un = 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 ± 5 V				
Insulation voltage (Ui)		250 V AC				
Degree of pollution		2				
Rated impulse withstand voltage (Uimp)		4 kV				
Overvoltage category		II				
Thermal tripping	Reference temperature	30°C				
Magnetic tripping	Curve C	Between 5 and 10 In				
According to AS/NZS 61009-1						
Limitation class		3				
Rated breaking capacity (Icn)		6 000 A				
8/20 µs 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 Insulation class II				
Endurance (O-C) (IEC 60529)	Electrical ≥20 A	20,000 cycles				
	25 A	10,000 cycles				
	Mechanical	20,000 cycles				
Operating temperature		-25°C to +60°C				
Storage temperature		-40°C to +80°C				



Energy Management by Wiser™

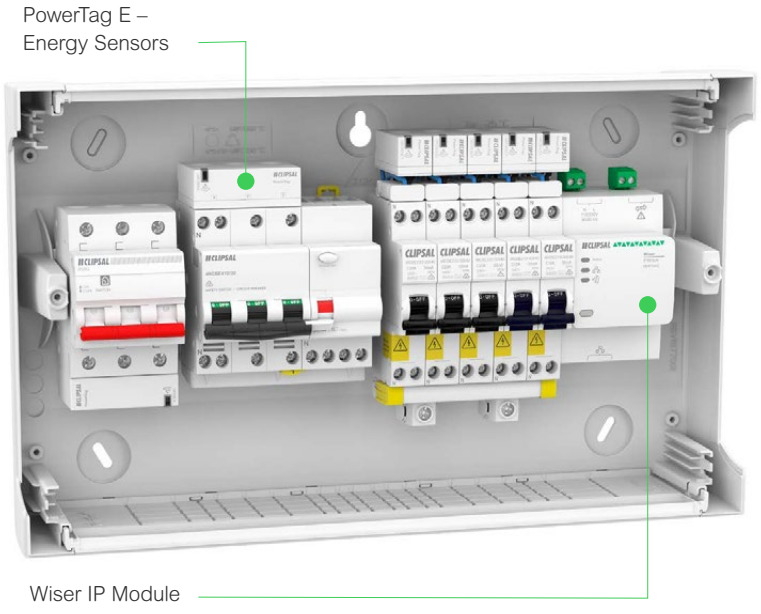
Energy Management by Wiser™

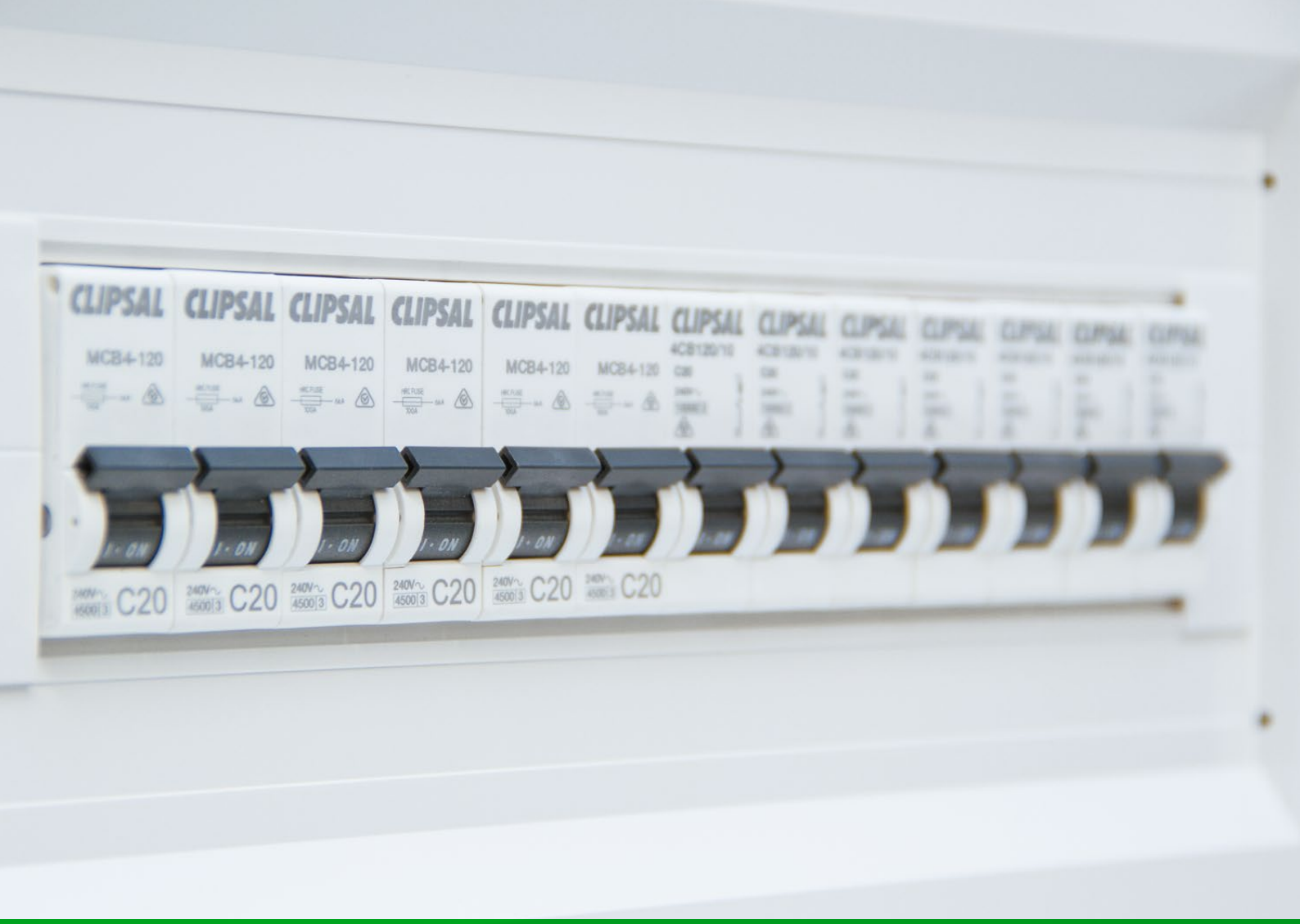
Energy takes up a significant chunk of every household budget. Tracking its usage is tricky, but essential to identifying inefficiencies and reducing energy spend. That's where Energy Management by Wiser™ comes in. As a smart, connected technology for homes it monitors your installation 24/7 to give you insight into its condition and your energy use. With Energy Management by Wiser™, you can manage your energy more efficiently, save on bills, and gain visibility of your installation status, even if you're not an energy expert.

Features and benefits:

- Easy app interface for home owners.
- All energy consumption and production data at your finger tips.
- No nasty surprises with electricity bills.
- Get better return on your solar investment.
- No cable connection needed between powertags and gateway.
- Simple commissioning for electrician with bluetooth enabled. mobile phone or tablet.
- Convert any residential switchboard into a smart communicating board.

Catalogue No.	Description
EER72600	Wiser IP communication module
4CBEM1	POWERTAG WISER M63 1PW
4CBEM3	POWERTAG WISER M63 3P
4CBEM2B	POWERTAG WISER M63 1PN BOTTOM
4CBEM2T	POWERTAG WISER M63 1PN TOP
4RCBEM2B	POWERTAG WISER P63 1PN BOTTOM RCBO
4RCBEM2T	POWERTAG WISER P63 1PN TOP RCBO
4RCBEM2	POWERTAG WISER F63 1PN
4RCBEM4	POWERTAG WISER F63 3PN





Miniature Circuit Breakers

Miniature Circuit Breakers

MAX4

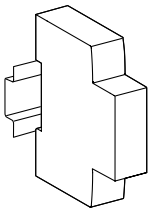
The Range

Clipsal offer an industry leading range of miniature circuit breakers (MCBs), which are ideal for retrofit installations or switchboards that are limited for space.

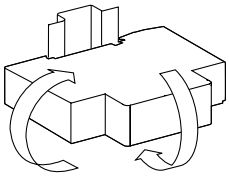
Clipsal MCBs are suitable for horizontal or vertical 35mm DIN rail mounting, with the option of a two-position clip. All Clipsal MCBs are moulded from heavy-duty material and are finger-proof, providing additional protection from live terminal contact.

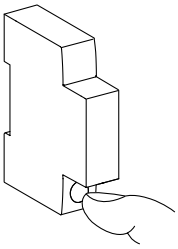
Clipsal MAX4 MCBs include two types of operation:

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

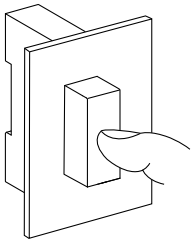


35mm DIN rail installations





IP20 protection device only



IP40 protection device in modular enclosure

Miniature Circuit Breakers

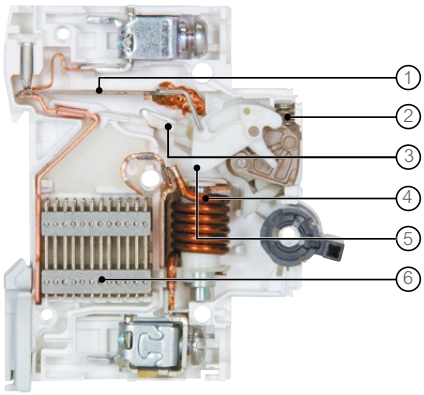
Thermal operation

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.

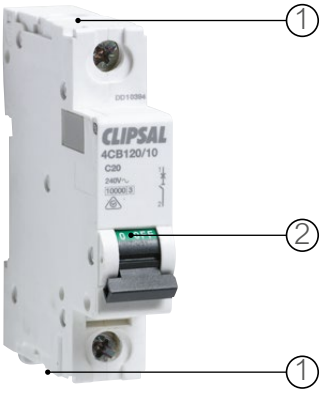


Features and benefits:

- Unique new white finish for a fresh modern look.
- Standard characteristic is C-Curve suits most applications.
- Complete solution with 1, 2 & 3 pole versions.
- 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. Fitted with bottom cog rail terminals which provides easier and faster installation with busbars.
- Field fitted auxiliary switches, standard units for any application.
- Clipsal MCBs allow line or load cables to be connected at either top or bottom for greater installation flexibility.
- Field fitted shunt trips, standard units for any application.

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 side by Fork type (Cog rail) busbar.
- 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.

Catalogue Number Legend

Using the following catologue number as an example: **4CB120/6.**

CATALOGUE NUMBER LEGEND

Miniature Circuit Breakers

MAX4

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. Please refer to page 72 of the catalogue for tripping characteristic curves.

1-Pole, 1-Module, 240V

Catalogue No.	Current rating
4CB101/6	1A
4CB102/6	2A
4CB104/6	4A
4CB106/6	6A
4CB110/6	10A
4CB116/6	16A
4CB120/6	20A
4CB125/6	25A
4CB132/6	32A
4CB140/6	40A
4CB150/6	50A
4CB163/6	63A

4CB120/6

2-Pole, 2-Module, 415V

Catalogue No.	Current rating
4CB201/6	1A
4CB202/6	2A
4CB204/6	4A
4CB206/6	6A
4CB210/6	10A
4CB216/6	16A
4CB220/6	20A
4CB225/6	25A
4CB232/6	32A
4CB240/6	40A
4CB250/6	50A
4CB263/6	63A

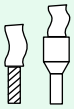
4CB220/6

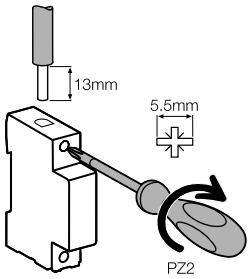
3-Pole, 3-Module, 415V

Catalogue No.	Current rating
4CB301/6	1A
4CB302/6	2A
4CB304/6	4A
4CB306/6	6A
4CB310/6	10A
4CB316/6	16A
4CB320/6	20A
4CB325/6	25A
4CB332/6	32A
4CB340/6	40A
4CB350/6	50A
4CB363/6	63A

4CB320/6

Connection

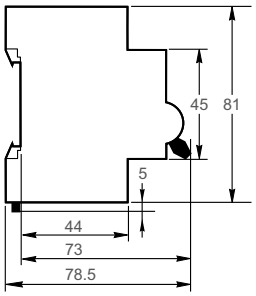
Rating	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
			
1 to 25A	2 Nm	0.75 to 16mm²	0.33 to 10mm²
32 to 63A	3.5 Nm	0.5 to 35mm²	0.5 to 25mm²

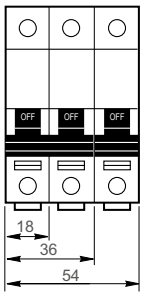


Weight

Circuit-breaker	
Type	**4CBxxx/6**
1P	115g
2P	215g
3P	310g

Dimensions (mm)





Technical Data

Main characteristics			4CBxxx/6
Insulation voltage (Ui)			440V a.c.
Rated voltage (Ue)			240/415V a.c.
Operating frequency			50/60Hz
Thermal tripping	C-Curve D-Curve	5 to 10 In 10 to 14 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			
d.c. rated voltage			48V d.c.
Degree of protection (IEC 60529)	Device only		IP20
	Device in modular enclosure		IP40 Insulation class
Endurance (O-C)	Electrical Mechanical	≤ 20A ≥ 25A	20,000 cycles 10,000 cycles 20,000 cycles
Operating temperature			-25°C to 70°C
Storage temperature			-40°C to 70°C
Tropicalisation (IEC 60068-1)			Treatment 2 (relative humidity 95% to 55°C)

Miniature Circuit Breakers

MAX4

d.c. 6kA C-Curve

These dedicated d.c. circuit breakers are available in models from 6 to 40 ampere. This range has C-Curve characteristic to suit most applications. Please refer to page 75 of this catalogue for tripping characteristic curves.

Note: Observe wiring polarity during installation.

Features and benefits:

- Same housing as a.c. type MCBs. Uniformity in space requirements and installation.
- Full 250V d.c. breaking capability. Superior, safe and reliable d.c. breaking per pole.
- 1 and 2 pole versions in all amperage sizes. Up to 500V d.c. breaking for all amperage sizes.
- 6kA rating. Excellent breaking capability for its compact size.

Applications:

- Solar power.
- Emergency power.
- Battery power.

1-Pole, 1-Module, 250V d.c.

Catalogue No.	Current rating
4CB106/6DC	6A
4CB110/6DC	10A
4CB116/6DC	16A
4CB120/6DC	20A
4CB125/6DC	25A
4CB132/6DC	32A
4CB140/6DC	40A

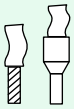
4CB120/6DC

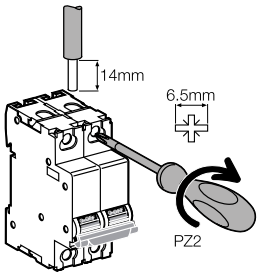
2-Pole, 2-Module, 500V d.c.

Catalogue No.	Current rating
4CB206/6DC	6A
4CB210/6DC	10A
4CB216/6DC	16A
4CB220/6DC	20A
4CB225/6DC	25A
4CB232/6DC	32A
4CB240/6DC	40A

4CB220/6DC

Connection

Rating	Tightening torque	Copper cables	
		Rigid/semi rigid	Flexible or ferrule
			
≤ 25A	2.5 Nm / 22 lb.in	1 to 25mm² #18 - #4 AWG	1 to 16mm² #18 – #6 AWG
> 25A	3.5 Nm / 31 lb.in	1 to 35mm² #18 – #2 AWG	1 to 25mm² #18 – #4 AWG



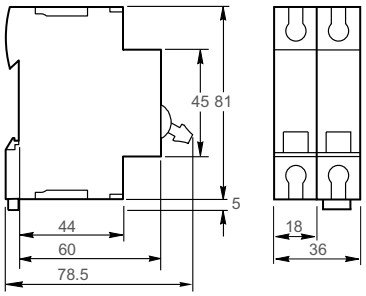
Weight

Circuit-breaker	
Type	**4CBxxx/6DC**
1P	128g
2P	256g

Technical Data

Main characteristics		4CBxxx/6DC
Insulation voltage (Ui)		500V d.c.
Magnetic tripping (Ii)		8.5 In (±20%) (compatible with C-Curve)
Rated impulse withstand voltage (Uimp) under frame		6kV
Pollution degree		3
Limitation class		3
Rated breaking capacity (Icn)		5kA / 250V d.c. (1P) 5kA / 500V d.c. (2P)
Service breaking capacity (Ics)		100% Icn
Rated making and breaking capacity of an individual pole (Icn1)		Icn1=Icn
Additional characteristics		
Endurance (O-C)	Electrical	3000 cycles (where L/R=2 ms) 6000 cycles (where the circuit is resistive)
	Mechanical	20,000 cycles
Utilisation category		A (no delay in accordance with IEC/EN 60947-2 standards)
Operating temperature		-25°C to 70°C
Storage temperature		-40°C to 85°C
Tropicalisation (IEC 60068-2 and GB 14048.2)		Relative humidity 95% at 55°C

Dimensions (mm)



Residual Current Devices

RCD – Residual Current Devices

Although Australia 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.

Benefits of residual current devices (RCDs) are well documented and latest version of wiring rules (AS/NZS 3000:2018) makes it mandatory to have RCD protection for all final sub-circuits in residential applications.

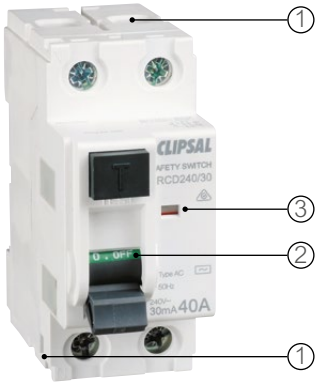
How an RCD works

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. With a range that includes pulse current sensitive and super immune devices, there's a unit for every application.

Features and benefits:

- Covers all potential residential needs – 2 pole and 4 pole variants available.
- Standard large coloured test button. Simple and convenient testing.
- Line and load can be top or bottom connected, ideal when cabling space is restricted or limited.
- Leading and lagging Neutral devices. Protects downstream sensitive 'no-floating' star-point.
- Lift-up terminals. helps to reduce chances of 'hot spot' in terminations with all cable strands are locked in
- Large range of delayed surge-proof and pulse current sensitive devices. Availability of a unit for any application.

Connection (1):

- Downstream by biconnect comb busbar.
- Upstream/downstream by tunnel terminal.
- DIN locking clip.

Positive contact indication (2):

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

Window (3):

- Potential earth leakage tripping is indicated by a red mechanical status indicator on the front panel.

Residual Current Devices

MAX4

Design improvements

Clipsal's on-going research has resulted in significant design improvements, which have reduced the incidence of nuisance tripping.

Tertiary winding is now fitted to all electromechanical 30mA Clipsal RCDs to help prevent tripping caused by high frequency residual currents.

Clipsal MAX4 range also provides SI type RCD.

Clipsal SI-Type (super immune) RCDs

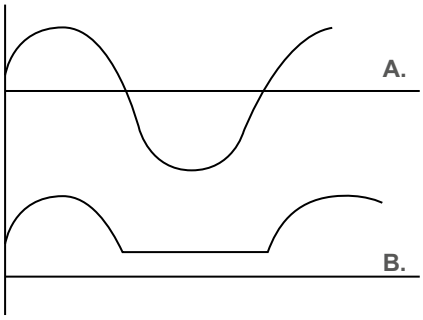
The SI range of RCDs helps to reduce nuisance tripping caused by Earth leakage currents below 30mA threshold.

Applications

SI-Type

- High dependency installations.
- Computers.
- Fluorescent lighting with electronic ballasts.

Fault current



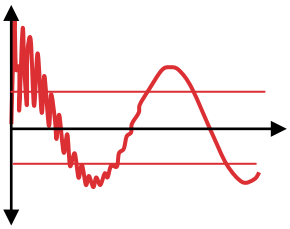
A. 30mA pure sine wave a.c.

Non d.c. sensitive breakers will trip and d.c. sensitive breakers will trip.

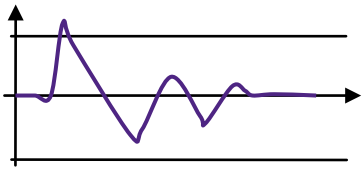
B. The test current is half wave pulsating d.c.

Non d.c. sensitive breakers may not trip but d.c. sensitive breakers will trip.

High frequency oscillations



Slow and damped oscillations



Interference Immunity – AC, A and SI-Types – RCDs

Clipsal provides various equipment technologies capable of overcoming the consequences of interference of all kinds.

Operating conditions		Examples	Types		
			AC	A	A si
Characteristics					
With no special characteristics		General purpose power sockets Incandescent lighting Household appliances: microwave oven, dishwasher, clothes dryer Electric heating, water heater	Yes	Yes	Yes
Including a rectifier	Single-phase	Household appliances: induction cooking appliances, washing machines (variable speed) Single-phase variable speed drives	-	Yes	Yes
	Three-phase	Three-phase variable speed industrial drives Three-phase uninterruptible power supplies	-	-	-
Generating high frequency interference (current peaks, harmonics)		Fluorescent lighting powered by extra low voltage transformer, by electronic ballast Variable luminosity lighting Powerful IT equipment Single-phase variable speed industrial drives Air conditioning Telecommunications equipment Capacitor banks	-	-	Yes
Including an anti-harmonic filter in the power supply		Microcomputer systems Computer peripherals (printers, scanners, etc.)	-	-	Yes
Electrical Environment					
Vicinity of equipment generating transient overvoltages		High-powered switching devices Reactive energy compensation banks	-	-	Yes
Circuits powered by an uninterruptible power supply		Backed-up networks	-	-	Yes
“Isolated neutral” (IT) Earthing system		-	-	-	Yes
Major risk of lightning strikes		Buildings protected by a lightning protection system Mountainous or humid regions Regions with high keraunic level	-	-	Yes
Atmosphere					
Ambient temperature which could be less than -5°C		-	-	Yes	Yes
Presence of corrosive agents (AF2 to AF4) or dust		Indoor swimming pools Harbours, marinas, camping grounds Water treatment Chemical industries, heavy industries, paper mills Mines and cellars, road tunnels Markets, stock raising, food processing industries	-	-	Yes

Residual Current Devices

MAX4

AC-Type – RCD

Comes in 2 and 4 pole, 25 to 80 amp to suit most residential applications.

Applications

Standard Type – AC Type

- General applications.

2-Pole, 2-Module, 240V

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

Catalogue No.	Current rating
4RC225/30	25A
4RC240/30	40A
4RC263/30	63A
4RC280/30	80A

4RC225/30

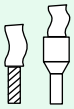
4-Pole, 4-Module, 415V

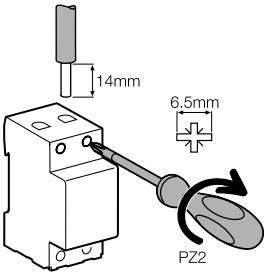
Standard-type, 30mA, non-delayed, surge current protected to 250A 8/20µS

Catalogue No.	Current rating
4RC425/30	25A
4RC440/30	40A
4RC463/30	63A
4RC480/30	80A

4RC425/30

Connection

Rating	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
			
25 to 80A	3.5 Nm	1 to 35mm²	1 to 25mm²



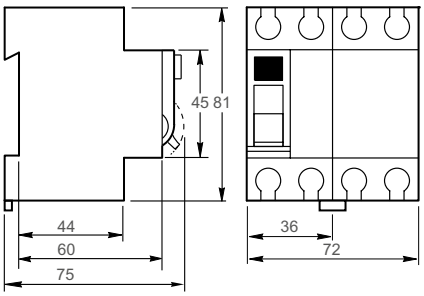
Weight

Residual current device	
Type	**4RCxxx/30**
1P	210g
4P	370g

Technical Data

Main characteristics		
Insulation voltage (Ui)		500V
Degree of pollution		2
Rated impulse withstand voltage (Uimp)		6kV
According to AS/NZS 61008-1		
Making and breaking capacity (Im/IΔm)		10 In
Impulse current withstand (8/20 µs without tripping)	AC type	250A
Rated conditional short circuit current (Inc/IΔc)	With MCB	Equal to the breaking capacity of the MCB circuit breaker
	With fuse	10,000A industry, service selector 6000A residential
Additional characteristics		
Degree of protection	Device in modular enclosure	IP40
Endurance (O-C)	Electrical	2000 cycles
	Mechanical	20,000 cycles
Operating temperature	AC type	-5°C to 40°C
Storage temperature		-40°C to 85°C

Dimensions (mm)



Residual Current Devices

MAX4

SI Type RCD

2-Pole, 2-Module, 240V

SI-type, 30mA, super immune

Catalogue No.	Current rating
4RC240SI30	40A
4RC263SI30	63A

4RC240SI30

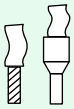
4-Pole, 4-Module, 415V

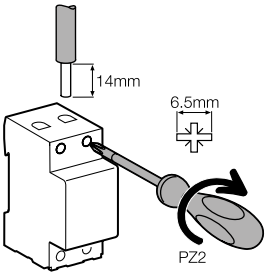
SI-type, 30mA, super immune

Catalogue No.	Current rating
4RC425SI30	25A
4RC440SI30	40A
4RC463SI30	63A

4RC440SI30

Connection

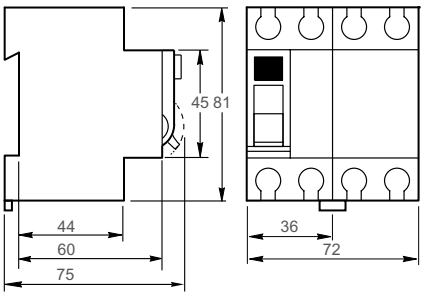
Rating	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
			
25 to 63A	3.5 Nm	1 to 35mm²	1 to 25mm²



Weight

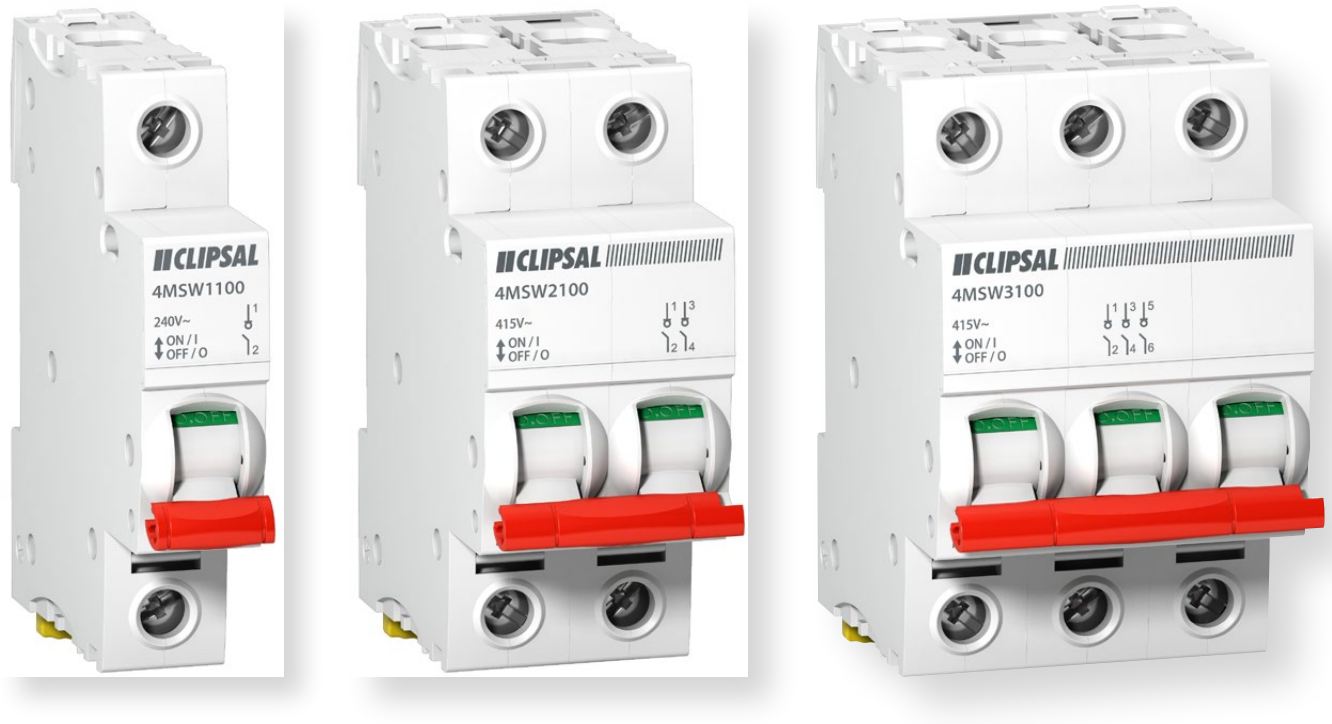
Circuit-breaker	
Type	**4RCxxx/(S)(SI)(SIS)30**
1P	210g
4P	370g

Dimensions (mm)



Technical Data

Main characteristics		
Insulation voltage (Ui)		500V
Degree of pollution		2
Rated impulse withstand voltage (Uimp)		6kV
According to AS/NZS 61008-1		
Making and breaking capacity (Im/IΔm)		10 In
Impulse current withstand (8/20 µs without tripping)	(si) type	3kA
Rated conditional short circuit current (Inc/IΔc)	With MCB	Equal to the breaking capacity of the MCB circuit breaker
	With fuse	10,000A industry, service selector 6000A residential
Additional characteristics		
Degree of protection	Device in modular enclosure	IP40
Endurance (O-C)	Electrical	2000 cycles
	Mechanical	20,000 cycles
Operating temperature	AC type	-5°C to 40°C
Storage temperature		-40°C to 85°C



Main Switches

Main Switches

MAX4

Main switches

Clipsal 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 Clipsal Main Switches incorporate superior 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
- Similar form factor as SLIM RCBOs
- Ease of selection with optimised offer
- Ability to withstand harsher environment with Pollution degree 3
- Operating temperature up to 60 Deg C

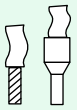
Catalogue No.	Current rating
4MSW1100 – 1Pole	100A
4MSW2100 – 2Pole	100A
4MSW3100 – 3Pole	100A

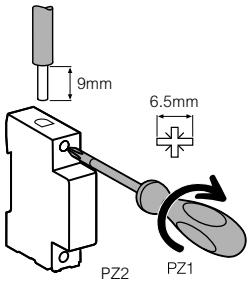
4MSW1100

4MSW2100

4MSW3100

Connection

Type	Rating	Tightening torque	Copper cables	
			Rigid	Flexible or ferrule
				
Switch	100A	3.5 Nm	≤ 50mm²	≤ 35mm²



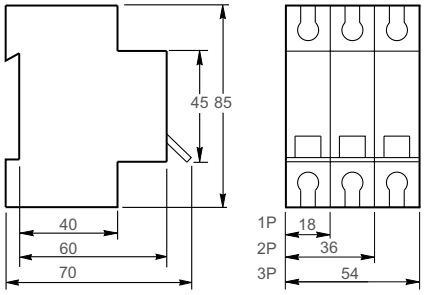
Weight

Isolator	
Type	**4MSWxxxx**
1P	81g
2P	161g
3P	243g

Technical Data

Main characteristics		
Insulation voltage (Ui)		1P 250V a.c. 2P, 3P 500V a.c.
Pollution degree		3
Power circuit		
Rated impulse withstand voltage (Uimp)		6kV
Operating category		a.c. - 22A
Permissible rated short-time withstand current (Icw)		
Conditional rated short circuit current (Inc)		10kA to AS/NZS 60947-3
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 +60°C
Storage temperature		-40°C to +85°C
Tropicalisation		Treatment 2 (relative humidity 95% at 55°C)

Dimensions (mm)



Plastic consumer switchboards

Plastic consumer switchboards

The requirements of electrical contractors have always been of prime importance to Clipsal. This is more than evident in MAX4 range of plastic enclosures. Widest range of premium plastic enclosures are available in flush-and surface-mounted versions, 6 to 60 module wide options and different aesthetics to suit varying customer preferences. These enclosures offer generous wiring room and are made of durable plastic material.

Catalogue Number Format and Legend

The following legends provide a brief explanation of the numbering system for consumer board catalogue numbers:

4 XX X XXX X

'4'	Consumer Range Primary Number
'C'	Surface Mounted Deluxe Consumer Switchboard
'FC'	As for C above except Flush
'CC'	Economy Consumer Switchboard
'xxW'	IP34 Rating or better
'X'	Number of Modules
'SB'	Shallow Base
'Blank'	Complete Switchboards

4C & 4FC – Full DIN – Premium Surface/Flush Mounting Consumer Switchboards

Features and benefits:

- Generous earth and spilt neutral bars are provided and located for ease of wiring
- More than ample cable entries and mounting points
- Generous wiring room
- Flush versions comes with solidly constructed, zinc plated steel back box.
- Loose busbar supplied for quick and versatile connection to line side of circuit breakers
- Comprehensive range of legend stickers
- Large size MEN terminal included for termination of cables up to 35 sq mm

Surface Mount – Full DIN

Catalogue No.	DIN Space	No, of tunnels x Max cable size		
		Earth Bar	Neutral Bar	RCD Neutral
4C6FD-WE	6 Modules	3 x 35mm²	1 x 35mm² 7 x 10mm²	-
4C11FD-WE	11 Modules	1 x 35mm² 11 x 10mm²	3 x 35mm² 4 x 10mm²	1 x 35mm² 6 x 10mm²
4C17FD-WE	17 Modules	1 x 35mm² 17 x 10mm²	3 x 35mm² 7 x 10mm²	1 x 35mm² 12 x 10mm²
4C24FD-WE	24 Modules	1 x 35mm² 24 x 10mm²	3 x 35mm² 12 x 10mm²	2 x 35mm² 12 x 10mm²
4C36FD-WE	36 Modules	1 x 35mm² 36 x 10mm²	3 x 35mm² 16 x 10mm²	1 x 35mm² 12 x 10mm²

4C17FD-WE

Flush Mount – Full DIN

Catalogue No.	DIN Space	No, of tunnels x Max cable size		
		Earth Bar	Neutral Bar	RCD Neutral
4FC11FD-WE	11 modules	1 x 35mm² 11 x 10mm²	3 x 35mm² 4 x 10mm²	1 x 35mm² 6 x 10mm²
4FC17FD-WE	17 modules	1 x 35mm² 17 x 10mm²	3 x 35mm² 7 x 10mm²	1 x 35mm² 12 x 10mm²

4FC17FD-WE

Plastic consumer switchboards

MAX4

4CC & 4FCC Surface/Flush Mounting Consumer Switchboards

Features and benefits:

- Front or back wired with ample cut-outs for every application
- Generous wiring room
- More space under DIN rail to run cables
- Double insulated allowing installation onto metal surfaces
- Comprehensive range of legend stickers & pole fillers
- "Flush" version only – spacer flange provided to ensure plasterboard cut-out

4CC45SB-WE

Surface Mount – 15 modules in each row

Cat Number	Description	Colour	No. Modules	Earth Bar	Earth Bar 2	Neutral Bar	RCD Neutral Bar 1	RCD Neutral Bar 2	RCD Neutral Bar 3	RCD Neutral Bar 4	RCD Neutral Bar 5	RCD Neutral Bar 6	RCD Neutral Bar 7	RCD Neutral Bar 8	RCD Neutral Bar 9	RCD Neutral Bar 10	RCD Neutral Bar 11
4CC6SB		WE	6														
4CC15SB	Full DIN, Pole Fillers & 14 Module Busbar	WE	15	4 x 25mm² 11 x 10mm²		3 x 25mm² 6 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²									
4CC30SB	Full DIN, Pole Fillers & 2x 14 Module Busbar	WE	30	4 x 25mm² 28 x 10mm²		4 x 25mm² 11 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²						
4CC45SB	Full DIN, Pole Fillers & 3x 14 Module Busbar	WE	45	4 x 25mm² 28 x 10mm²	4 x 25mm² 11 x 10mm²	4 x 25mm² 20 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²				
4CC60SB	Full DIN, Pole Fillers & 4x 14 Module Busbar	WE	60	4 x 25mm² 28 x 10mm²	4 x 25mm² 28 x 10mm²	4 x 25mm² 20 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²

	Width (mm)	Height (mm)	Depth (mm)
4CC6SB	126	206	92
4CC15SB	376	258	115
4CC30SB	376	392	115
4CC45SB	376	666	115
4CC60SB	376	800	115

Flush Mount

Cat Number	Description	Colour	No. Modules	Earth Bar	Earth Bar 2	Neutral Bar	RCD Neutral Bar 1	RCD Neutral Bar 2	RCD Neutral Bar 3	RCD Neutral Bar 4	RCD Neutral Bar 5	RCD Neutral Bar 6	RCD Neutral Bar 7	RCD Neutral Bar 8	RCD Neutral Bar 9	RCD Neutral Bar 10	RCD Neutral Bar 11
4FCC15	Full DIN, Pole Fillers & 14 Module Busbar	WE	15	4 x 25mm² 11 x 10mm²		3 x 25mm² 6 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²									
4FCC30	Full DIN, Pole Fillers & 2x 14 Module Busbar	WE	30	4 x 25mm² 28 x 10mm²		4 x 25mm² 11 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²						
4FCC45	Full DIN, Pole Fillers & 3x 14 Module Busbar	WE	45	4 x 25mm² 28 x 10mm²	4 x 25mm² 11 x 10mm²	4 x 25mm² 20 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²				
4FCC60	Full DIN, Pole Fillers & 4x 14 Module Busbar	WE	60	4 x 25mm² 28 x 10mm²	4 x 25mm² 28 x 10mm²	4 x 25mm² 20 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²	1 x 25mm² 3 x 10mm²

	Width (mm)	Height (mm)	Depth (mm)	Wall opening (mm)	
4FCC15	376	258	70 + Wall Thickness	223	335
4FCC30	376	392	70 + Wall Thickness	357	335
4FCC45	376	666	70 + Wall Thickness	631	335
4FCC60	376	800	70 + Wall Thickness	765	335

4FCC15-WE

Plastic consumer switchboards

MAX4

4CW series Weatherproof Premium Surface mount enclosures

MAX4 range provides several weatherproof enclosures to help prevent ingress of dust and water. These enclosures are ideal for damp areas such as laundries and kitchens. IP56 rated enclosures help to provide highest ingress protection and are therefore even suitable for washdown areas.

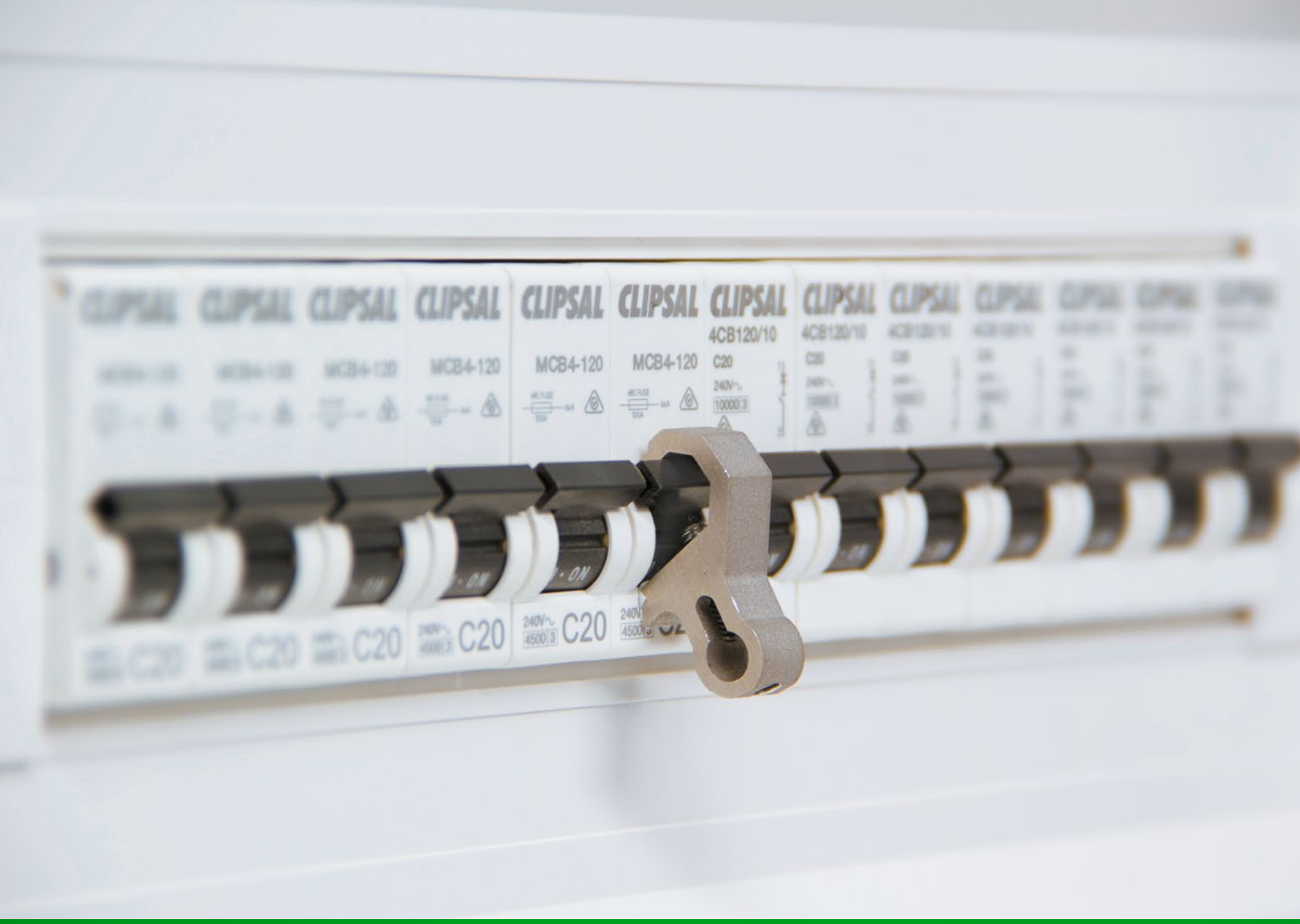
Features and benefits:

- Quality numbered split neutral and earth bars supplied
- Large terminal holes to accept bigger cable sizes with two screws per terminal
- More than ample cable entries and mounting points
- Comprehensive range of legend stickers
- Loose busbar supplied with every enclosure

4CW24FD-WE

Surface Mount

Catalogue No.	DIN Space	IP Rating	No. of tunnels x Max cable size		
			Earth Bar	Neutral Bar	RCD Neutral
4CW24FD-WE	24 modules	IP55	1 x 35mm^2 24 x 10mm^2	3 x 35mm^2 12 x 10mm^2	2 x 35mm^2 12 x 10mm^2
4CW36FD-WE	36 modules	IP56	1 x 35mm^2 36 x 10mm^2	2 x 35mm^2 16 x 10mm^2	1 x 35mm^2 12 x 10mm^2



Accessories

Accessories

MAX4

Accessories

Clipsal MAX4 offers a full range of innovative accessories to complement the extensive circuit protection range. This includes changeover switches, busbars.

MAX4 complete solution includes accessories ranging from pole fillers to circuit labels and from varying sizes of pin type busbars to fork type busbars for single phase and multi-phase installations.

Changeover Switches

Six single-pole and one double-pole changeover switches are available, rated from 25 to 63 amperes.

Applications:

- Night, off, day switching of luminaries where daylight supplements internal lighting.
- Auto, off, manual switching of machines.
- Auxiliary, off, mains switching of small stand-by generators.

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

1-Pole, 1-Module, 415V

Night, off, day changeover switch

Catalogue No.	
4PS25CO	25A
4PS40CO	40A
4PS63CO	63A

1-Pole, 1-Module, 415V

Auto, off, manual changeover switch

Catalogue No.	
4PS40COA	40A

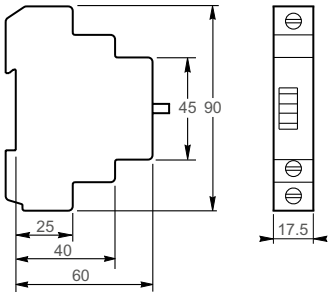
1-Pole, 1-Module, 415V

Auxiliary, off, manual changeover switch

Catalogue No.	
4PS40CAM	40A
4PS63CAM	63A

4PS25CO

Dimensions (mm)

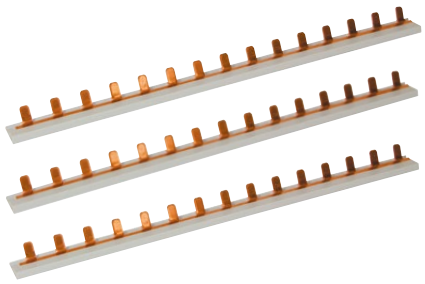


Accessories

MAX4

Pin-Type Busbars

Catalogue No.	Poles	Phase	Current Rating
4BB1	56	1	80A
4BB1/24	24	1	80A
4BB2	56	2	80A
4BB3	56	3	80A



Pin-type busbars

Cog Rail Busbars

Catalogue No.	Poles	Phase	Current Rating
4BB4/12	12	1	80A
4BB4/18	18	1	80A
4BB4/12/2	12	2/1+N	80A
4BB4/18/2	18	2/1+N	80A
4BB4/12/3	12	3	80A
4BB4/18/3	18	3	80A
4BBTC1	Busbar 1-phase end cap		
4BBTC3	Busbar 2-phase – 3-phase end cap		

4BB4/12/2 Cog rail busbars

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. This range is available in both four and eight module wide units and features easy access to terminals for quick fit-off.

The 4SSO series also features extra strong mounting brackets for extra strength in aggressive temporary power supply applications. This coupled with the use of the reliable Clipsal 15 Series Mechanism, means that you can expect years of dependable service from these sockets.

Switched Socket Outlets

Catalogue No.	Description
4SSO15D	250V 10A 3 pin socket double-pole, 4 modules
4SSO15D15	250V 15A 3 pin socket double-pole, 4 modules
4SSO25D	250V 10A 3 pin twin socket double-pole, 8 modules
4SSO25D15	250V 15A 3 pin twin socket double-pole, 8 modules

4SSO15

4SSO25D

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

Accessories

MAX4

Contactors

Complementing the MAX4 is a range of contactors.

They are rated from 25A 1 and 2 module, through to 63A 4 pole 54mm devices. The 1 and 2 pole devices are ideal for hot water service control.

1 and 2-Pole, 1-Module, 240V

Catalogue No.	AC7a	AC6b	Ue	Uc	Contact N/O	Contact N/C	Consumption Holding
4CNT1	25	8.5 A	240	240	1	-	2.7VA
4CNT2	25	8.5 A	240	240	2	-	2.7VA
4CNT1/1NC	25	8.5 A	240	240	1	1	2.7VA
4CNT1AC24	25	8.5 A	240	24	1	-	3.8VA
4CNT2AC24	25	8.5 A	240	24	2	-	3.8VA

4CNT2

2-Pole, 2 Modules, 415V

Catalogue No.	AC7a	AC6b	Ue	Uc	Contact N/O	Contact N/C	Consumption Holding
4CNT4	25	8.5 A	415	240	4	-	2.7VA
4CNT2/2NC	25	8.5 A	415	240	2	2	2.7VA
4CNT4NC	25	8.5 A	415	240	-	4	2.7VA
4CNT3/1NC	25	8.5 A	415	240	3	1	2.7VA

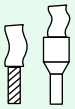
4-Pole, 3 Modules, 415V

Catalogue No.	AC7a	AC6b	Ue	Uc	Contact N/O	Contact N/C	Consumption Holding
4CNT4/40	40	15 A	415	240	4	-	6.5VA
4CNT4/63	63	20 A	415	240	4	-	6.5VA

Refer to page 80 for a.c. load characteristics.

4CNT4/40

Connection

Type	Rating	Length tripping	Circuit	Tightening torque	Copper cables	
					Rigid	Flexible or ferrule
						
PZ1 – 4mm	25A	9mm	Control	0.8 Nm	1.5-2.5mm: 2 x 1.5mm²	1.5-2.5mm: 2 x 2.5mm²
PZ2 – 6mm	40 A-63A	14mm		3.5 Nm	6-25mm²	6-16mm²
PZ1 – 4mm	-	9mm	-	0.8 Nm	1.5-2.5mm: 2 x 1.5mm²	1.5-2.5mm: 2 x 2.5mm²

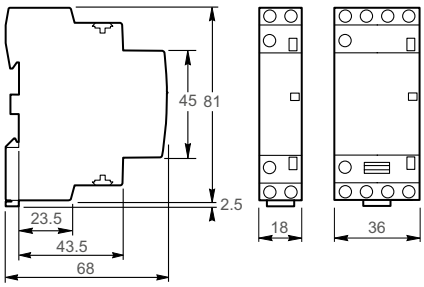
Technical Data

Main characteristics		
Voltage rating (Ue)	1P, 2P	240V a.c.
	4P	415V a.c.
Frequency		50Hz or 60Hz
Endurance (O-C)		
Electrical		100,000 cycles
Maximum number of switching operations a day		100
Additional characteristics		
Insulation voltage (Ui)		500V a.c.
Pollution degree		2
Rated impulse withstand voltage (Uimp)		2.5kV (4kV for 12/24/48V a.c.)
Degree of protection (IEC 60529)	Device only	IP20
	Device in modular enclosure	IP40
Operating temperature		-5°C to 60°C (1)
Storage temperature		-40°C to 70°C
Tropicalisation (IEC 60068-1)		Treatment 2 (relative humidity 95% at 55°C)
ELSV compliance (extra low safety voltage) for 12/24/48V a.c. versions		
The product conforms to the SELV (safety extra low safety voltage) requirements		

In the case of contactor mounting in a enclosure for which the interior temperature is in range between 50°C and 60°C, it is necessary to use a spacer between each contactor.

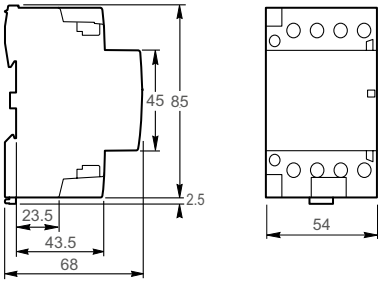
Dimensions (mm)

25 A



Dimensions (mm)

40/63 A



Accessories

MAX4

Mains Rated Filters

Mains rated filters help to provide additional overvoltage protection to sensitive electronic equipment such as computers, DVD players, microwaves and televisions.

The 970MF10 and 970F20 work in conjunction with the Surge Protection Devices by providing additional filtering to slow down the rate of rise of a voltage spike.

Whereas the Surge Protection Devices typically clamp the voltage spike to values less than 1kV, the rate of rise of the voltage spike remains unchanged.

The additional filtering provided by the Mains Rated Filters considerably slows down the rate of rise to further protect electronic equipment.

2-Module, 250V

Catalogue No.	Description
970MF10	Mains rated filter, 10A

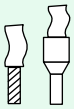
970MF10

4-Module, 250V

Catalogue No.	Description
970MF20	Mains rated filter, 20A

970MF20

Connection

Rating	Tightening torque	Copper cables	
		Rigid/semi rigid	Flexible or ferrule
			
10 to 20	2 Nm	1.5 to 2.5mm²	1.5 to 2.5mm²

Technical Data (With 970 Surge Arrester)

Main characteristics	970MF10	970MF20	
Maximum continuous operating voltage (Uc)	275Vrms		
Load current ILoad	10A	20A	
Operating temperature	0-55°C		
Conductor size	1.5 – 6mm²		
Mounting	30mm DIN rail		
Let through at 3kA, 8/20µS	<800V	<720V	
Rate of voltage rise at 20kA, 8/20µS	<100V/µS	<50V/µS	
Let through at 3kA, 8/20µS	<820V	<720V	
Rate of voltage rise at 20kA, 8/20µS	<120V/µS	<100/µS	
Frequency bandwidth	<20kHz		
Test performance – typical			
Let through voltage			
6kV3kA, 8/20µS	811V	711V	700V
6kV20kA, 8/20µS	1109V	797V	750V
Rate of rise (dV/dt)			
6kV3kA, 8/20µS	6919V/µS	83.4V/µS	36.1V/µS
6kV20kA, 8/20µS	5378V/µS	106.9V/µS	49.8V/µS
Current pulse applied L to N			

Accessories

MAX4

Locking devices and terminals

Extension Terminal

Catalogue No.	Description
27060	Expanding terminal 35mm to suit 1 module MCBs and switches.

27060

4XT3

RCD Neutral Terminal

Catalogue No.	Description
4XT3	3x16mm Neutral link to suit terminating RCD Neutrals.

Locking Device

Catalogue No.	Description
4LD	Locking device for MAX4 circuit breakers, isolating switches and RCDs (lockable in ON and OFF position). Suits padlocks with shafts up to 6mm.

4LD

4SWLD

Locking Device

Catalogue No.	Description
4SWLD	Locking device for MAX4 10kA circuit breakers, isolating switches and RCDs (lockable in ON and OFF position). Suits padlocks with shafts up to 5mm.

Power Pole Filler Blanks

Pole Filler Blanks

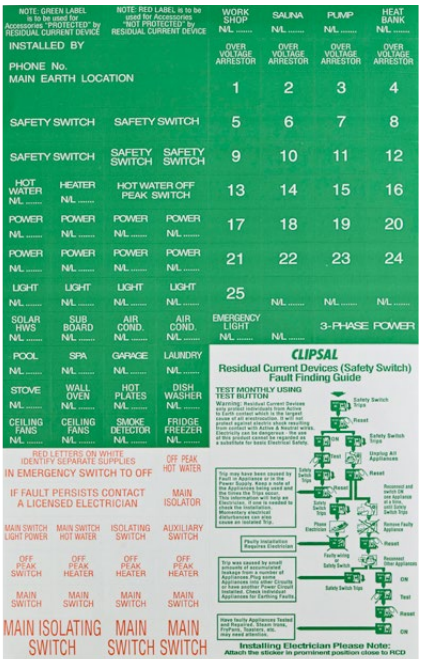
Catalogue No.	Description
4F8	6x1 modules wide, 4x1/2 modules wide.
4F6	6 modules wide. White. Universal. Suits metal switchboards.

4F8

4F6

Circuit Identification Labels

Catalogue No.	Description
4C15-6G	Green labels for RCD protected circuits
4C15-6R	Red labels for non-RCD protected circuits



4C15-6G

Accessories

MAX4

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 vise 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.

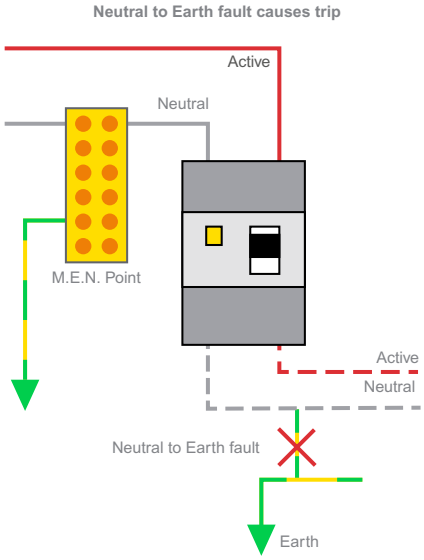
All appliances can have some minor leakage level. If a number of appliances are covered by one RCD the accumulative effect can cause the RCD to trip.

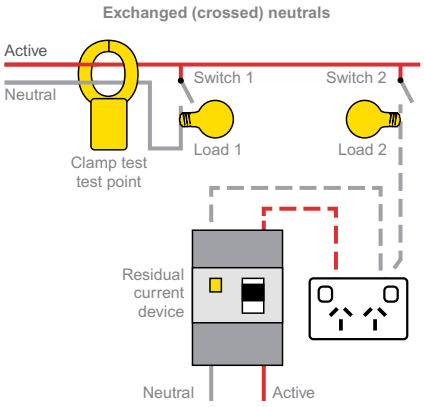
Special impedances

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.





Accessories

MAX4

Insulation and Continuity Tester

Insulation resistance tests provide a ready way of testing for leakage Earths in an installation.

To test by this method using a Clipsal 491 Insulation Tester:

1. Turn off the supply.
2. Disconnect main Earth (if MEN point is at consumer's Neutral link) and the main Neutral from the link.
3. Connect any suspect appliance (or test separately).
4. Test between the Load side of the main switch and the main Earth, and between the Neutral link and the main Earth.
5. If a low reading is obtained, remove the circuits that you are not intending to protect with the RCD and test again.
6. If the low reading persists, it will then be necessary to remove and test each circuit individually.

The drawback in using resistance tests is that the installation has to be at least partially shut down and disassembled while tests are carried out. There are times when this is inconvenient.

491

Digital Clamp Tester with Residual Current Measurement

A much simpler and easier way of checking an installation is to use an appropriate clamp tester. The Clipsal 489D Clamp Tester is one of the few meters available that will read down to a few milliamps.

1. Set function switch to 40mA scale.
2. Disconnect main Earth (if MEN point is at consumer's Neutral link).
3. Clamp the tongs around the incoming supply (Active and Neutral). Of course, if the MEN point is at the supply authority link, you will need to test downstream from that link.
4. If leakage is present, by opening each circuit in turn the offending circuit can be readily ascertained.

Similarly, the clamp tester can be used to locate the fault within the circuit without it being necessary to disassemble the wiring.

Appliances can also be readily checked by utilising the special adaptor supplied with every Clipsal 489D. It's simply a matter of plugging the appliance in via the adaptor, turning it on and reading any leakage with the clamp tester.

Remember, any standing leakage current not eliminated from circuits to be protected increases the apparent sensitivity of the RCD. That is, if you have 10mA standing leakage current, a 30mA RCD (normal tripping current @ 25mA) will then trip on a 15mA fault.

NOTE: Remember to turn off power supply when disconnecting cables and follow safety standards.

489D

RCD Tester with Digital Readout

Post installation testing is obviously vital and is definitely in the interests of good customer relations. Some statutory regulations require regular periods of checking and testing.

The objective is to test whether:

a) the RCD is actually providing protection on the required circuits

b) the RCD operates with a nominal residual current of 30mA flowing in the protected circuits

c) the test function of the RCD is operating.

The simplest method of testing an RCD once installed is to use an RCD tester – preferably one that gives an indication of the trip time of the RCD, such as a 486D or 486CD.

The tester is simply connected into one of the protected GPOs and the tester is operated according to the manufacturer's instructions.

This test should be continued on each protected sub-circuit.

(It is also very important to verify that other circuits are not inadvertently connected to the RCD.)

Testing with a 486CD or 486D in accordance with AS/NZS 3190 should determine:

1) RCDs should not trip at 50% or less of rated value

2) 10mA RCDs should trip at less than 40mS

3) 30mA and 100mA RCDs should trip at the rated value in less than 300 milliseconds.

(This may also be carried out at 2 or 5 times rated current, and trip in 150 or 40 milliseconds respectively.)

Important:

1) If a load is connected during testing, arcing may occur when the RCD is operated, which may cause distortion of disconnection time.

2) Single pole RCDs may be affected by motors operating as generators after disconnection, causing an apparent increase in the disconnection time.

When an RCD tester is not available, a 15 watt test lamp of about 60mA can be used to test that an RCD is operating on a particular circuit. This test closely simulates the operation of the test circuit of an RCD. (According to AS/NZS 3190, the test circuit must inject a leakage current 2.5 times the nominal current value of the RCD.)

Finally, it is essential to press the test button on the RCD to ensure it is operational.

486D

Accessories

MAX4

Spark-e-mate

The Clipsal 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 Clipsal 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.

493

Features and benefits:

Clipsal's 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.

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

Technical Information

To assist you with circuit protection selection and identification Clipsal 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:

- On-site fault finding guide.
- Circuit protection trip unit variations.
- Circuit breaker limitation capacity.
- Tripping curves.
- Derating tables.
- Circuit supplementary protectors.
- Lighting, heating and small motor application categories.
- Circuit breaker selection.
- Fuse back-up protection.
- Power formulas and common conversion factors.

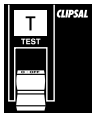
Technical Information

MAX4

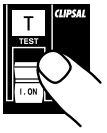
Electrcians On-Site Fault Finding Guide

When you arrive at a customer's house, talk to them and find out what they were doing when the RCD tripped.

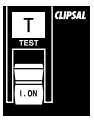
RCD trips.



Reset RCD.



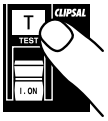
RCD holds in?



NO

YES

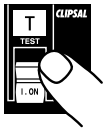
Press test function to check operation.



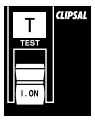
Trip may have been caused by a fault in an appliance or by momentary electrical disturbances in power supply network.

Unlplug all appliances.

Reset RCD.



RCD holds in?



NO

YES

Bridge and clamp test (RCD in off position). See notes 1 and 2.

Connect known safe appliance.

Is reading equal to 100% of load current?

NO

Is reading approx equal to 50% of load current?

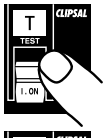
YES

Neutral and Earth swapped and connections or Neutral returning via alternate circuit.

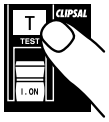
Clear fault for a reading below 5mA.

Remove bridge.

Reset RCD.



Press test function to check operation.



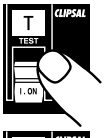
NO

Neutral and Earth fault nail through cable or bridged terminals.

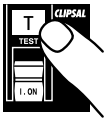
Clear fault for a reading below 5mA.

Remove bridge.

Reset RCD.



Press test function to check operation.



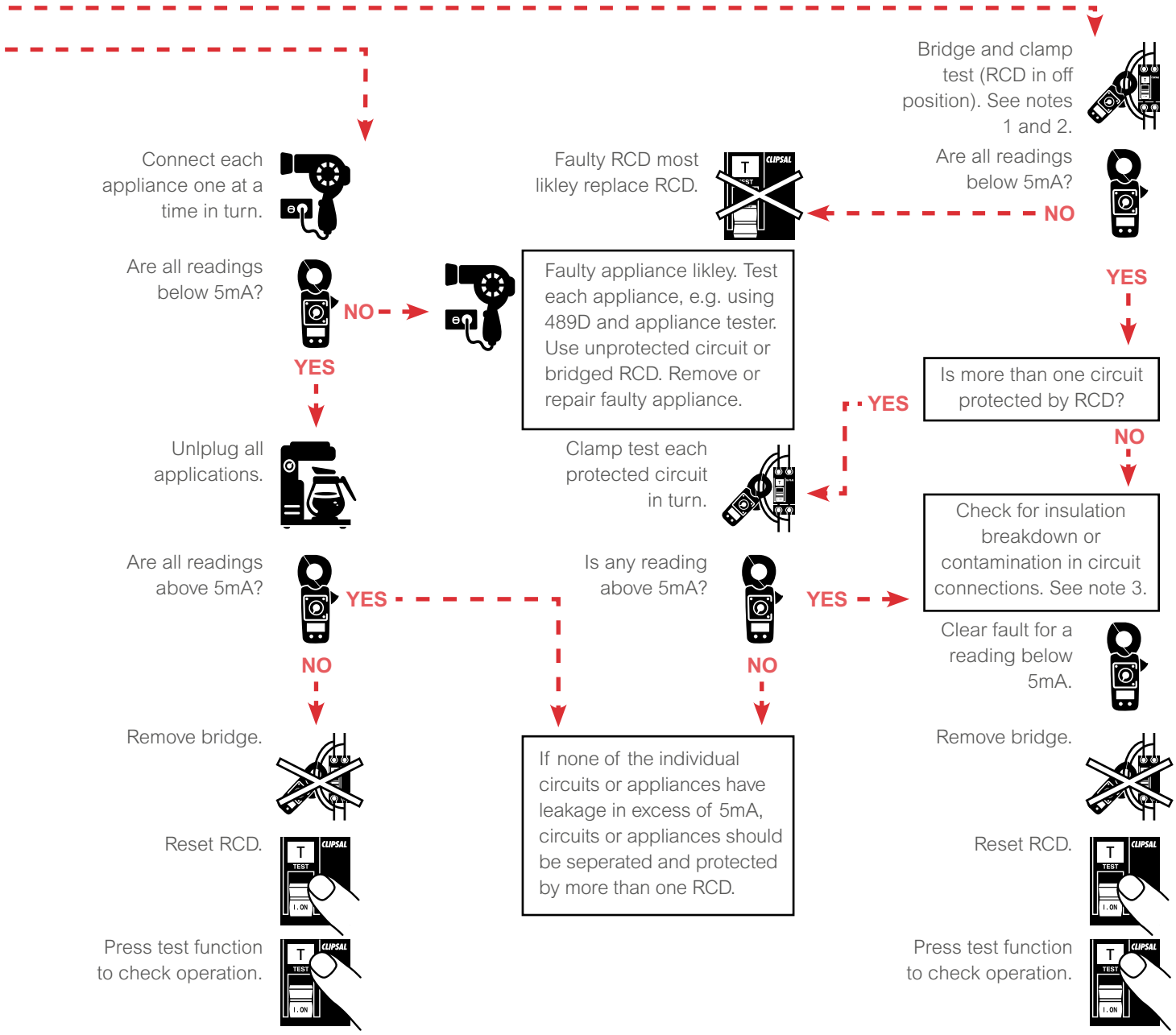
NOTE 1: Bridging of combination RCDs with over current protection, negates that function and may result in fusing the main fuse with faulty wiring. Note that in these instances, fault currents could be significantly higher and suitable precautions should be taken.

NOTE 2: Under no circumstances should the press to test function be utilised while an RCD is bridged.

NOTE 3: Insulation breakdown could be alternatively identified by the Clipsal 491 Insulation Tester.

Remember to test regularly

RCDs should be tested monthly by operating their inbuilt test button. You should remind the customer of this.

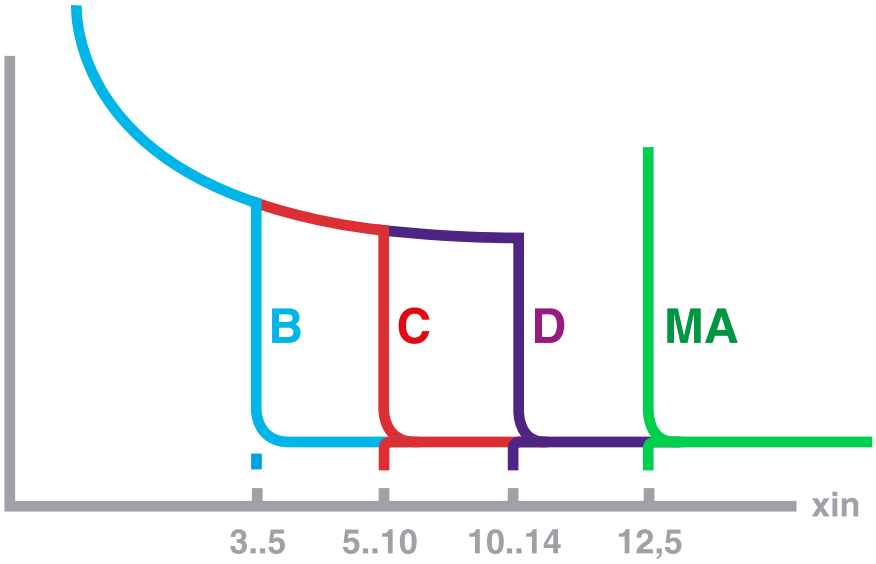


Technical Information

MAX4

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 (In); protection of generators, persons, very long cables.

C-Curve tripping
5 to 10 In; protection of circuits, general applications.

D-Curve tripping
10 to 14 In; protection of high surge circuits, welders, transformers, motors.

MA-Curve (magnetic only) tripping
12 In; 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.

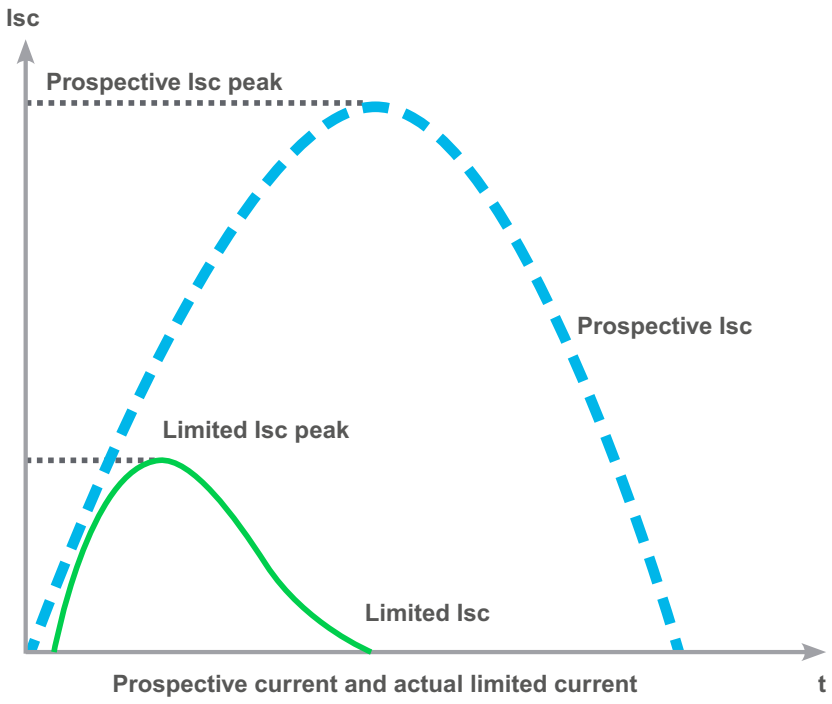
This is illustrated by limitation curves which give:

- 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 MAX4 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

MAX4

Tripping Curves

C and D-curves, as in standard AS/NZS 60898

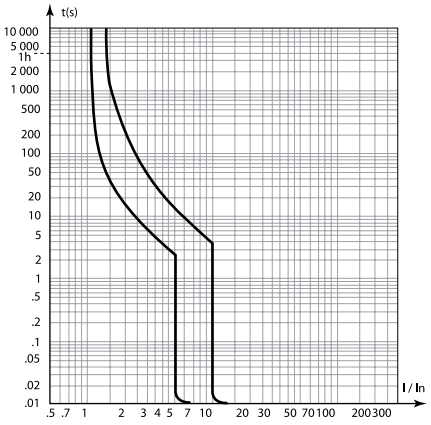
The operating range of the magnetic release is as follows:

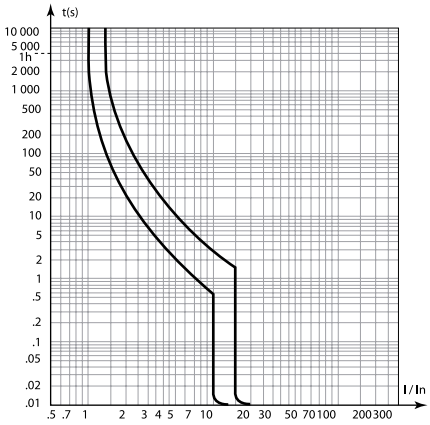
- For B-curve: between 3 In and 5 In
- For C-curve: between 5 In and 10 In
- For D-curve: between10 In and14 In.

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

Curves

MCB	MCB
According to AS/NZS 60898	According to AS/NZS 60898
Curve C	Curve D



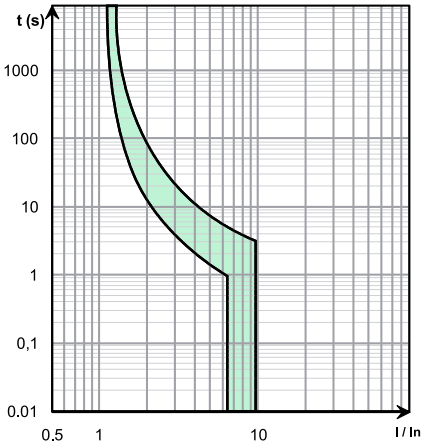


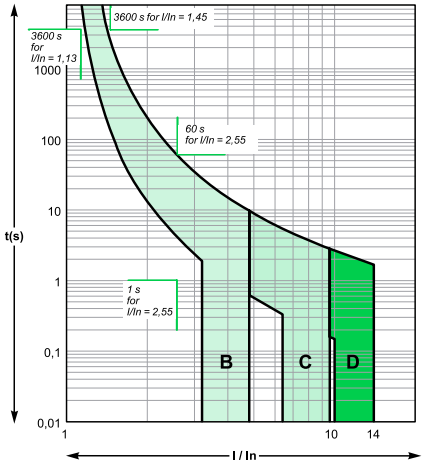
C-curve as in standard AS/NZS 60947.2:

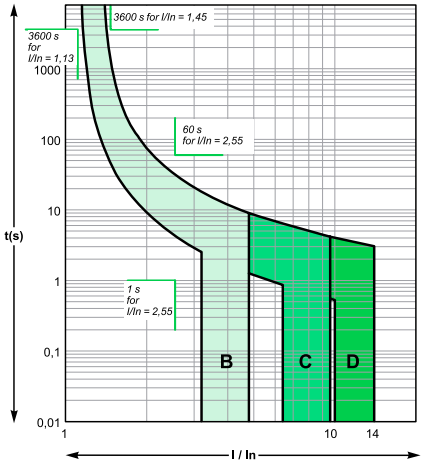
- The operating range of the magnetic release is as follows between 7 In and 10 In.
- The curves show the cold thermal tripping limits when poles are charged and the electromagnetic tripping limits with 2 charged poles.
- The curves are used without any derating.

Curves

MCB d.c.	MCB 1.5 module	RCBO
According to AS/NZS 60947.2	According to AS/NZS 60898 (reference temperature 30°C)	According to AS/NZS 60898 (reference temperature 30°C)
Curves C	Curves B, C, D	Curves B, C, D







Technical Information

MAX4

Thermal Derating Tables

MCB Derating Table

Deraiting (according AS/NZS 61009 – AS/NZS 60898). Torque 1,33 m/N <= 25A and 1,66 m/N >25A. Max torque of lugs MCB = 6m/N																		
Cal.	-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
0.5A	0.64	0.63	0.62	0.6	0.59	0.58	0.57	0.55	0.54	0.53	0.51	0.5	0.49	0.47	0.45	0.44	0.42	0.4
0.75A	0.96	0.94	0.92	0.9	0.89	0.87	0.85	0.83	0.81	0.79	0.77	0.75	0.73	0.71	0.68	0.66	0.63	0.61
1A	1.24	1.22	1.2	1.18	1.16	1.14	1.11	1.09	1.07	1.05	1.02	1	0.98	0.95	0.92	0.9	0.87	0.84
2A	2.45	2.42	2.38	2.34	2.3	2.26	2.22	2.18	2.13	2.09	2.05	2	1.95	1.91	1.86	1.81	1.76	1.7
3A	3.86	3.79	3.72	3.64	3.57	3.49	3.42	3.34	3.26	3.17	3.09	3	2.91	2.82	2.72	2.62	2.51	2.41
4A	5.09	5	4.91	4.82	4.72	4.63	4.53	4.43	4.32	4.22	4.11	4	3.89	3.77	3.65	3.52	3.39	3.26
6A	7.47	7.35	7.22	7.1	6.97	6.84	6.71	6.57	6.43	6.29	6.15	6	5.85	5.69	5.53	5.37	5.2	5.02
8A	10.83	10.61	10.37	10.14	9.9	9.65	9.39	9.13	8.86	8.58	8.3	8	7.69	7.37	7.03	6.68	6.31	5.91
10A	13.36	13.09	12.82	12.54	12.25	11.95	11.65	11.34	11.02	10.69	10.35	10	9.64	9.26	8.86	8.45	8.02	7.56
13A	15.85	15.61	15.37	15.13	14.88	14.62	14.37	14.1	13.84	13.56	13.28	13	12.71	12.41	12.11	11.79	11.47	11.14
15A	19.3	18.95	18.59	18.22	17.85	17.47	17.09	16.69	16.28	15.87	15.44	15	14.55	14.08	13.59	13.09	12.57	12.03
16A	20.1	19.77	19.42	19.07	18.72	18.35	17.98	17.6	17.22	16.82	16.42	16	15.57	15.13	14.68	14.22	13.73	13.23
20A	24.9	24.49	24.08	23.66	23.24	22.8	22.36	21.91	21.45	20.98	20.49	20	19.49	18.97	18.44	17.89	17.32	16.73
25A	31.24	30.72	30.2	29.67	29.12	28.57	28.01	27.43	26.85	26.24	25.63	25	24.35	23.69	23.01	22.3	21.58	20.82
32A	39.84	39.19	38.53	37.86	37.18	36.49	35.78	35.05	34.32	33.56	32.79	32	31.19	30.36	29.5	28.62	27.71	26.77
40A	50.07	49.24	48.4	47.54	46.66	45.77	44.86	43.93	42.98	42.01	41.02	40	38.96	37.88	36.78	35.64	34.46	33.24
45A	57.36	56.35	55.32	54.27	53.2	52.11	50.99	49.85	48.68	47.49	46.26	45	43.7	42.37	40.99	39.56	38.08	36.53
50A	62.95	61.89	60.8	59.7	58.57	57.43	56.26	55.06	53.84	52.59	51.31	50	48.65	47.27	45.84	44.36	42.84	41.26
63A	80.67	79.22	77.75	76.26	74.73	73.17	71.57	69.94	68.27	66.56	64.81	63	61.14	59.22	57.24	55.19	53.06	50.84

MCB 1.5 Module Derating Table

Deraiting table (AS/NZS 60989-1)																		
Rating	-25	-20	-15	-10	-5	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
10A	12.66	12.45	12.22	12.00	11.77	11.53	11.29	11.04	10.79	10.53	10.27	10	9.72	9.44	9.14	8.83	8.52	8.19
16A	19.09	18.83	18.57	18.30	18.03	17.75	17.47	17.19	16.90	16.60	16.31	16	15.69	15.37	15.05	14.72	14.38	14.03
20A	24.24	23.88	23.52	23.16	22.79	22.41	22.03	21.64	21.24	20.83	20.42	20	19.57	19.13	18.68	18.22	17.74	17.26
25A	30.46	30.00	29.54	29.07	28.59	28.11	27.61	27.11	26.60	26.08	25.54	25	24.44	23.87	23.29	22.69	22.08	21.45
32A	38.38	37.85	37.30	36.75	36.19	35.62	35.04	34.46	33.86	33.25	32.63	32	31.36	30.70	30.03	29.34	28.63	27.91
40A	49.07	48.32	47.55	46.77	45.98	45.17	44.35	43.52	42.67	41.80	40.91	40	39.07	38.12	37.14	36.14	35.11	34.05
50A	61.30	60.36	59.41	58.44	57.45	56.45	55.42	54.38	53.32	52.24	51.13	50	48.84	47.66	46.44	45.19	43.91	42.59
63A	77.46	76.26	75.04	73.80	72.53	71.25	69.94	68.61	67.25	65.87	64.45	63	61.52	60.00	58.44	56.84	55.19	53.49
80A	97.01	95.59	94.15	92.68	91.19	89.68	88.14	86.57	84.98	83.35	81.69	80	78.27	76.50	74.69	72.84	70.93	68.98
100A	122.61	120.73	118.82	116.87	114.90	112.89	110.85	108.77	106.64	104.47	102.26	100	97.69	95.32	92.89	90.39	87.82	85.18
125A	154.61	152.16	149.66	147.13	144.55	141.92	139.24	136.51	133.73	130.88	127.98	125	121.95	118.83	115.62	112.31	108.91	105.40

RCBO Derating Table

Deraiting table (AS/NZS 60947-2)																			
Rating	Curve	-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
1A	B,C,D	1.66	1.62	1.59	1.55	1.51	1.47	1.43	1.39	1.35	1.30	1.26	1.21	1.16	1.11	1.06	1	0.94	0.88
2A	B,C,D	2.64	2.60	2.56	2.52	2.48	2.44	2.40	2.36	2.32	2.28	2.23	2.19	2.14	2.10	2.05	2	1.95	1.90
3A	B,C,D	3.97	3.91	3.86	3.80	3.74	3.68	3.61	3.55	3.49	3.42	3.36	3.29	3.22	3.15	3.07	3	2.92	2.85
4A	B,C,D	5.19	5.12	5.05	4.98	4.90	4.83	4.75	4.67	4.60	4.52	4.43	4.35	4.27	4.18	4.09	4	3.91	3.81
6A	B,C,D	7.42	7.34	7.25	7.16	7.07	6.98	6.89	6.80	6.70	6.61	6.51	6.41	6.31	6.21	6.11	6	5.89	5.78
10A	B	12.33	12.19	12.05	11.90	11.76	11.61	11.46	11.30	11.15	10.99	10.83	10.67	10.51	10.34	10.17	10	9.82	9.65
10A	C,D	12.85	12.68	12.51	12.34	12.16	11.98	11.80	11.61	11.42	11.23	11.03	10.84	10.63	10.43	10.22	10	9.78	9.56
13A	B	16.74	16.52	16.29	16.06	15.83	15.59	15.35	15.11	14.86	14.61	14.36	14.09	13.83	13.56	13.28	13	12.71	12.42
13A	C,D	16.92	16.69	16.45	16.21	15.97	15.72	15.47	15.22	14.96	14.69	14.43	14.15	13.87	13.59	13.30	13	12.70	12.38
16A	B,C	20.36	20.10	19.84	19.57	19.30	19.02	18.74	18.46	18.17	17.87	17.58	17.27	16.96	16.65	16.33	16	15.67	15.32
16A	D	20.51	20.24	19.97	19.69	19.41	19.13	18.84	18.54	18.24	17.94	17.63	17.32	17.00	16.67	16.34	16	15.65	15.30
20A	B	25.33	25.01	24.69	24.36	24.03	23.69	23.35	23.00	22.65	22.29	21.92	21.55	21.17	20.79	20.40	20	19.59	19.18
20A	C,D	25.65	25.31	24.97	24.62	24.27	23.91	23.55	23.18	22.81	22.43	22.04	21.65	21.25	20.84	20.42	20	19.57	19.12
25A	B,C,D	31.63	31.23	30.83	30.42	30.00	29.58	29.16	28.72	28.29	27.84	27.39	26.93	26.46	25.98	25.50	25	24.49	23.98
32A	B,C,D	41.06	40.52	39.97	39.42	38.85	38.28	37.70	37.11	36.51	35.90	35.28	34.65	34.01	33.35	32.68	32	31.30	30.59
40A	B,C,D	51.99	51.28	50.56	49.83	49.08	48.33	47.56	46.78	45.99	45.18	44.36	43.52	42.67	41.80	40.91	40	39.07	38.12

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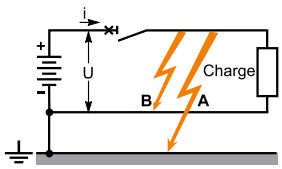
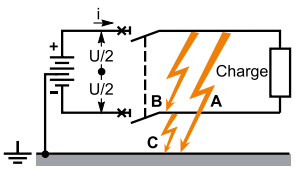
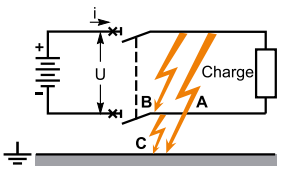
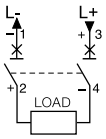
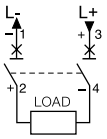
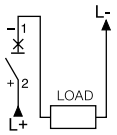
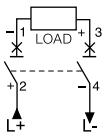
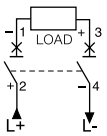
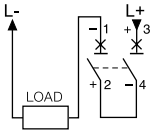
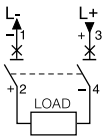
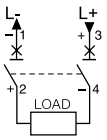
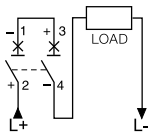
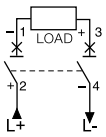
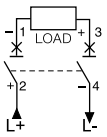
d.c. Circuit Supplementary Protectors for Feeders/ Distribution Systems. 4CBxxx/6DC C-Curve.

Poles Connected in Series

Network selection			
Type	**Earth**		**Isolated from Earth**
Source	Earthed polarity + or -	Earthed central point	Isolated polarities
Protected polarities	1 (1P isolation)	2	2
Diagrams (and type of faults)	Example: negative polarity to the Earth. 		
Selection of supplementary protector and pole connection			
24 V ≤ Un ≤ 250V	**Single-pole**	**Two-pole**	**Two-pole**
Diagrams (and type of faults)	Only if L+ polarity is Earthed		
Downstream connection			
250 V < Un ≤ 500V	**Two-pole**	**Two-pole**	**Two-pole**
Upstream connection			
Downstream connection			

Fault analysis (low Earth connection resistance)			
Fault A	• Isc maximum at U • Only protected polarity concerned • All the poles of the protected polarity must have a breaking capacity ≥ Isc max. at U	• Isc maximum at U/2 • Only positive polarity concerned • All the positive polarity poles must have a breaking capacity ≥ Isc max. at U/2	• Not relevant • The fault must be indicated by a permanent insulation monitor (PIM) and cleared (IEC/EN 60364)
Fault B	• Isc maximum at U • If one polarity (in this case positive) is protected: all the poles of this polarity must have a breaking capacity ≥ Isc max. at U • If two polarities are protected, to ensure isolation: all the protections of the two polarities must have a breaking capacity ≥ Isc max. at U	• Isc maximum at U • The 2 polarities are concerned • All the poles of the two polarities must have a breaking capacity ≥ Isc max. at U	• Isc maximum at U • The 2 polarities are concerned • All the poles of the two polarities must have a breaking capacity ≥ Isc max. at U
Fault C		• As for fault A • All the negative polarity poles must have a breaking capacity ≥ Isc max. at U/2	• As for fault A with the same requirements

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Lighting Application AC5a and AC5b Categories

- The following tables are relevant to all the contactors from the CT range, with or without manual control, for 230V single-phase lighting circuits.
- They indicate the contactor rating to be chosen according to the number and type of lamps to be controlled. As a guideline, maximum power is also given.

To obtain an equivalence on:

- Three-phase + Neutral circuits: multiply the number of lamps and the power indicated in the table by 3.
- Three-phase without Neutral circuits: multiply the number of lamps and the power indicated in the table by 1.7.

Lighting applications

230V single-phase circuit	Maximum number of lamps for a given rating. CT contactors		
Incandescent lamp – halogen gas	**25A**	**40A**	**63A**
40W	57	115	172
60W	45	85	125
75W	38	70	100
100W	28	50	73
150W	18	35	50
200W	14	26	37
300W	10	18	25
500W	6	10	15
1000W	3	6	8
12V halogen lamp (on ELV electromagnetic transformer)	**25A**	**40A**	**63A**
20W	23	42	63
50W	15	27	42
75W	12	23	35
100W	9	18	27
150W	6	13	19
26mm fluorescent tube (single parallel-corrected)	**25A**	**40A**	**63A**
15W	20	40	60
18W	20	40	60
20W	20	40	60
36W	20	40	60
40W	20	40	60
58W	15	30	43
65W	15	30	43
115W	7	14	20
140W	7	14	20
26mm fluorescent tube (single uncorrected)	**25A**	**40A**	**63A**
15W	30	70	100
18W	30	70	100
20W	30	70	100
36W	28	60	90
40W	28	60	90
58W	17	35	56
65W	17	35	56
115W	10	20	32
140W	10	20	32

230V single-phase circuit	Maximum number of lamps for a given rating. CT contactors		
26mm fluorescent tube (dual serial-corrected)	**25A**	**40A**	**63A**
2 x 18W	46	80	123
2 x 20W	46	80	123
2 x 36W	25	43	67
2 x 40W	25	43	67
2 x 58W	16	27	42
26mm fluorescent tube (4 tubes, serial connection)	**25A**	**40A**	**63A**
4 x 18W	23	46	69
Electronic ballast (1 x 26mm tube)	**25A**	**40A**	**63A**
18W	111	222	333
36W	58	117	176
58W	37	74	111
Electronic ballast (2 x 26mm tube)	**25A**	**40A**	**63A**
2 x 18W	55	111	166
2 x 36W	30	60	90
2 x 58W	19	38	57
Electronic compact lamp (low consumption)	**25A**	**40A**	**63A**
7W	200	400	600
11W	120	240	360
15W	88	176	264
20W	66	132	200
23W	57	114	171
Low pressure sodium vapour lamp (without correction)	**25A**	**40A**	**63A**
18W	34	57	91
35W	9	14	24
55W	9	14	24
90W	6	9	19
135W	4	6	10
180W	4	6	10
Low pressure sodium vapour lamp (with parallel correction)	**25A**	**40A**	**63A**
18W	21	40	60
35W	5	10	15
55W	5	10	15
90W	4	8	11
135W	2	4	6
180W	2	5	7
High pressure sodium vapour lamp (without correction)	**25A**	**40A**	**63A**
70W	12	20	32
150W	7	13	18
250W	4	8	11
400W	3	5	8
1000W	1	2	3
High pressure sodium vapour lamp (with parallel correction)	**25A**	**40A**	**63A**
70W	9	18	25
150W	9	18	25

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Heating Application AC7a and AC1 Categories

- The following table concerns all the contactors in the CT range, with or without manual control, for 230V single-phase and 400V three-phase heating circuits.
- It indicates the contactor rating to be chosen according to the power to be controlled and the number of operations a day.

Heating applications

Number of operations per day	Maximum power (kW) for a given rating. CT contactors		
230V heating	**25A**	**40A**	**63A**
25	5.4	8.6	14
50	5.4	8.6	14
75	4.6	7.4	12
100	4	6	9.5
250	2.5	3.8	6
500	1.7	2.7	4.5
400V heating	**25A**	**40A**	**63A**
25	16	26	14
50	16	26	14
75	14	22	35
100	11	17	26
250	5	8	13
500	3.5	6	9

Small Motor Application

- The following table concerns all the contactors in the CT range, with or without manual control, for 230V single-phase and 400V three-phase circuits.
- It indicates the contactor rating to be chosen according to the power of the motor to be controlled.

Small motor applications

Motor to be controlled	Maximum power (kW) for a given rating. CT contactors		
Single-phase motor with capacitor	**25A**	**40A**	**63A**
230V	1.4	2.5	4
Single-phase motor with capacitor	**25A**	**40A**	**63A**
400V	4	7.5	15

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Circuit Breaker Selection

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

For Direct On-Line

FLC AMPS	a.c.-3 kW	MCB C-Curve	MCB D-Curve	MCB 1.5 Module C-Curve	MCB 1.5 Module D-Curves
1.1	0.37	4	4	10	10
1.5	0.55	4	4	10	10
1.8	0.75	6	4	10	10
2.6	1.1	6	6	10	10
3.4	1.5	10	6	10	10
4	1.5	10	10	16	16
5	2.2	16	10	16	16
6-7	3	20	16	20	16
8	3.7	20	20	25	20
9	4-4.5	25	25	25	25
10		25	25	32	32
11	5.5	32	25	32	32
12		32	32	40	40
13		32	32	40	40
14	7.5	40	32	40	40
15		40	40	40	40
16-17	9-9.2	40	40	50	50
18-19	10	50	50	50	50
20-22	11	63	50	63	50
23-24		63	63	63	63
25-28	15	63	63	80	63
29-32			63	80	80
33-38	18.5			80	80
39-44	22			80	80
45-52	25			100	100
53-56	30			100	100
57-60	34			125	
61-68	37			125	

For Star Delta, Auto Transformer and Resistor/Reactance

FLC AMPS	a.c.-3 kW	MCB C-Curve	MCB D-Curve	MCB 1.5 module C-Curve	MCB 1.5 module D-Curve
1.1	0.37	6	4	10	10
1.5	0.55	6	4	10	10
1.8	0.75	6	4	10	10
2.6	1.1	6	4	10	10
3.4	1.5	6	6	10	10
4	1.5	6	6	10	10
5	2.2	10	6	10	10
6-7	3	10	10	16	16
8	3.7	16	16	20	16
9	4-4.5	16	16	20	20
10		20	20	20	20
11	5.5	20	20	25	25
12		20	20	25	25
13		25	25	32	32
14	7.5	25	25	32	32
15		32	32	32	32
16-17	9-9.2	32	32	32	32
18-19	10	32	32	40	40
20-22	11	40	40	50	40
23-24		40	40	50	50
25-28	15	50	50	50	50
29-32		63	63	63	63
33-38	18.5	63	63	80	63
39-44	22			80	80
45-52	25			80	80
53-56	30			100	80
57-60	34			100	100
61-68	37			125	
69-72				125	
73-80	45			125	
81-100	55				

Technical Information

MAX4

4CBxxx/6DC Derating Table

The maximum permissable current in a device depends on the ambient temperature in which it is placed. Ambient temperature is the temperature inside the enclosure or switchboard in which the devices have been installed.

When several simultaneously operating devices are mounted side by side in a small enclosure, the temperature rise inside the enclosure causes a reduction in the current rating. A reduction coefficient of the order of 0.8 must therefore be allocated to the rating (already derated if it depends on the ambient temperature).

4CBxxx/6DC derating table

Derating (according to UL 1077 – CSA22.2 – UL489 – AS/NZS 60947-2 standards).																		
Temperature	-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
Ratings (A)																		
0.5	0.62	0.61	0.60	0.59	0.58	0.56	0.55	0.54	0.53	0.51	0.5	0.49	0.47	0.46	0.44	0.43	0.41	0.39
1	1.17	1.15	1.14	1.12	1.10	1.09	1.07	1.05	1.04	1.02	1	0.98	0.96	0.94	0.92	0.90	0.88	0.86
1.2	1.43	1.41	1.39	1.37	1.34	1.32	1.30	1.27	1.25	1.22	1.2	1.17	1.15	1.12	1.09	1.07	1.04	1.01
1.5	1.83	1.80	1.77	1.74	1.71	1.67	1.64	1.61	1.57	1.54	1.5	1.46	1.42	1.39	1.34	1.30	1.26	1.22
2	2.50	2.45	2.41	2.36	2.31	2.26	2.21	2.16	2.11	2.06	2	1.94	1.88	1.82	1.76	1.70	1.63	1.56
3	3.71	3.65	3.58	3.51	3.45	3.38	3.30	3.23	3.16	3.08	3	2.92	2.84	2.75	2.66	2.57	2.48	2.38
4	4.99	4.90	4.81	4.71	4.62	4.52	4.42	4.32	4.22	4.11	4	3.89	3.77	3.65	3.53	3.40	3.27	3.13
5	5.92	5.83	5.74	5.66	5.57	5.48	5.39	5.29	5.20	5.10	5	4.90	4.80	4.69	4.58	4.47	4.36	4.24
6	7.15	7.04	6.94	6.83	6.71	6.60	6.48	6.37	6.25	6.12	6	5.87	5.74	5.61	5.47	5.33	5.19	5.04
7	8.62	8.47	8.32	8.17	8.01	7.85	7.69	7.52	7.35	7.18	7	6.82	6.63	6.44	6.24	6.03	5.82	5.60
8	9.50	9.36	9.22	9.08	8.93	8.78	8.63	8.48	8.32	8.16	8	7.83	7.67	7.49	7.31	7.13	6.95	6.76
10	12.38	12.16	11.94	11.71	11.49	11.25	11.01	10.77	10.52	10.26	10	9.73	9.45	9.17	8.87	8.57	8.25	7.92
13	15.28	15.07	14.85	14.63	14.41	14.19	13.96	13.72	13.49	13.25	13	12.75	12.49	12.23	11.97	11.69	11.41	11.13
15	18.31	18.01	17.70	17.38	17.06	16.74	16.40	16.07	15.72	15.36	15	14.63	14.25	13.85	13.45	13.03	12.60	12.16
16	19.14	18.85	18.55	18.25	17.95	17.64	17.32	17.00	16.68	16.34	16	15.65	15.29	14.93	14.56	14.17	13.78	13.37
20	23.72	23.37	23.02	22.67	22.31	21.94	21.56	21.18	20.80	20.40	20	19.59	19.17	18.74	18.30	17.85	17.39	16.92
25	29.91	29.45	28.99	28.52	28.05	27.56	27.07	26.57	26.06	25.53	25	24.46	23.90	23.33	22.74	22.14	21.53	20.89
30	36.74	36.12	35.50	34.86	34.21	33.54	32.86	32.17	31.46	30.74	30	29.24	28.46	27.66	26.83	25.98	25.10	24.19
32	37.91	37.36	36.80	36.24	35.66	35.08	34.48	33.88	33.27	32.64	32	31.35	30.68	30.00	29.31	28.59	27.86	27.11
35	43.40	42.63	41.86	41.06	40.25	39.42	38.58	37.72	36.83	35.93	35	34.05	33.06	32.05	31.01	29.93	28.81	27.64
40	48.17	47.42	46.65	45.87	45.08	44.28	43.45	42.62	41.76	40.89	40	39.09	38.16	37.20	36.22	35.21	34.17	33.10
50	59.09	58.25	57.39	56.52	55.63	54.74	53.82	52.89	51.95	50.98	50	49.00	47.97	46.93	45.86	44.77	43.64	42.49
60	74.83	73.48	72.11	70.71	69.28	67.82	66.33	64.81	63.25	61.64	60	58.31	56.57	54.77	52.92	50.99	48.99	46.90
63	76.91	75.63	74.33	73.01	71.67	70.30	68.90	67.47	66.02	64.53	63	61.44	59.83	58.18	56.49	54.74	52.93	51.06

Notes

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For more information on MAX4 and other Clipsal products, contact your local Clipsal and Schneider Electric Partner Business Representative, electrical wholesaler or visit clipsal.com

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