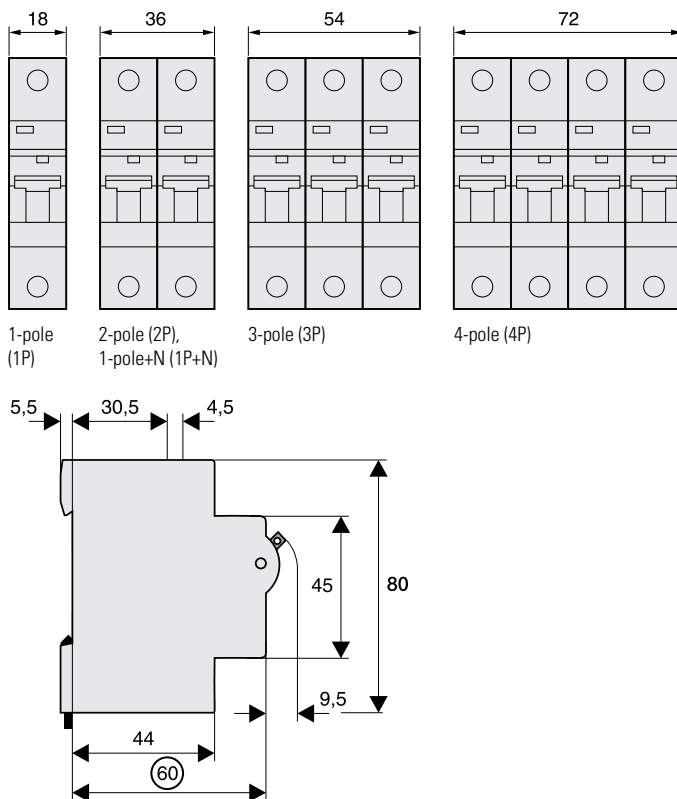


10/15kA MCBs dimensional drawings



10/15kA MCBs technical data

Product standard	IEC EN 60898 & IEC EN 60947-2
No of poles	1p, 1p&N, 2p, 3p, 4p
Mechanical specification	
Device width (pole)	17.7mm
Terminal type	Box clamp
Terminal capacity	1–25mm ²
Terminal Screw	M5 combination
Terminal torque	2.0Nm – 2.4Nm max
Mounting	DIN rail
Degree of protection	IP 20
Positive contact indication	Red/Green flag indicator
Electrical specification	
Rated voltage	230/240 V AC 48V DC (per pole)
Current ratings	1, 2, 4, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63 A
Rated impulse and withstand voltage	4kV (1.2/50) μ sec
Rated short circuit capacity	10kA to IEC EN 60898 and 15kA to IEC EN 60947-2
Selectivity class	3 to EN 60898
Tripping characteristic	
Instantaneous tripping current I_{mt}	Type B: $3 I_n < I_{mt} < 5 I_n$ Type C: $5 I_n < I_{mt} < 10 I_n$ Type D: $10 I_n < I_{mt} < 20 I_n$
Conventional non tripping current	$I_{nt} = 1.13 I_n$
Conventional tripping current	$I_t = 1.45 I_n$
Ref/Calibration temp	40 \pm 0 C
Number of operating cycles elec	>4000
Number of operating cycles mech	>20000

MCB Max Zs (Ohms) figures (Data in line with BS7671)

Range	I_n (A)	Disconnection 0.4s	Disconnection 5s
Type B (EMBH Series)	1	43.70	43.70
	2	21.85	21.85
	4	10.93	10.93
	6	7.28	7.28
	8	5.46	5.46
	10	4.37	4.37
	13	3.36	3.36
	16	2.73	2.73
	20	2.19	2.19
	25	1.75	1.75
	32	1.37	1.37
	40	1.09	1.09
	50	0.87	0.87
	63	0.69	0.69
Type C (EMCH Series)	1	21.85	21.85
	2	10.93	10.93
	4	5.46	5.46
	6	3.64	3.64
	8	2.73	2.73
	10	2.19	2.19
	13	1.68	1.68
	16	1.37	1.37
	20	1.09	1.09
	25	0.87	0.87
	32	0.68	0.68
	40	0.55	0.55
	50	0.44	0.44
	63	0.35	0.35
Type D (EMDH Series)	1	10.93	21.85
	2	5.46	10.93
	4	2.73	5.46
	6	1.82	3.64
	8	1.37	2.73
	10	1.09	2.19
	13	0.84	1.68
	16	0.68	1.37
	20	0.55	1.09
	25	0.44	0.87
	32	0.34	0.68
	40	0.27	0.55
	50	0.22	0.44
	63	0.17	0.35

Note : Values take account of minimum voltage factor C_{min} - in accordance with BS7671 Amendment 3

27mm style miniature circuit breakers (for 250A distribution boards)

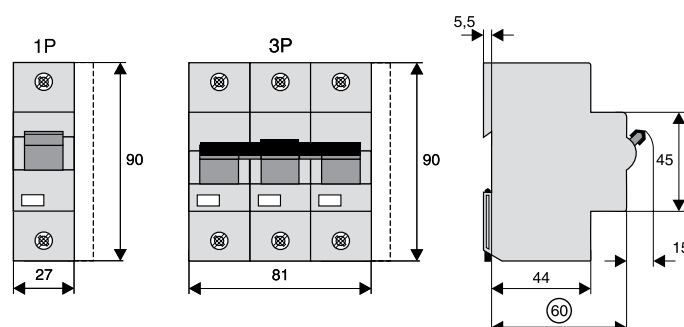
Eaton's 27mm style miniature circuit breakers (MCBs) are manufactured and tested to IEC EN 60947-2, meeting the latest UK, European and international standards, with ratings from 20A to 125A single and triple pole as standard.

Eaton's MCBs are suitable for use on 230/400 VAC systems and are calibrated for use at 40°C. and are available with B, C, and D characteristic curve, with breaking capacities up to 25kA.

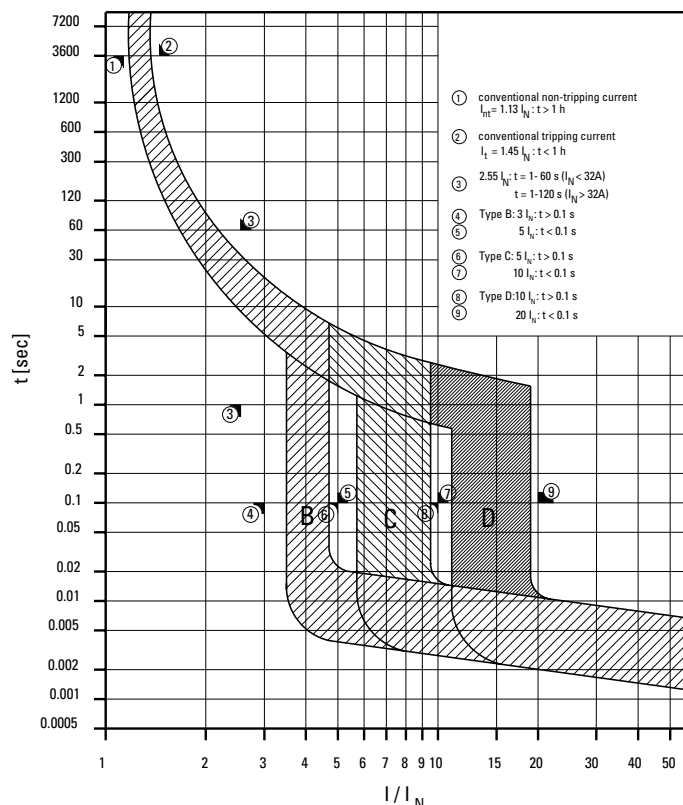
15/25kA MCBs technical data

Product standard		IEC EN 60947-2
No of poles		1p, 3p
Mechanical specification		
Device width (pole)		27mm
Terminal type	Lower Box clamp	Upper Box clamp
Terminal capacity	1 - 25 mm ²	2 - 16 mm ²
Terminal Screw	MS Combination	MS Combination
Terminal torque	2.4Nm max	1.5Nm max
Mounting		DIN rail
Degree of protection		IP 20
Positive contact indication		Red/Green flag indicator
Electrical specification		
Rated voltage		230/400 V AC
		60V DC (per pole)
Current ratings		63, 80, 100, 125 A
Rated impulse and withstand voltage		4kV (1.2/50) u sec
Rated short circuit capacity		
Types B and C		20–63A – 25kA
		80–100A – 20kA
		125A – 15kA
Rated short circuit capacity		
Type D		20–63A – 25kA
		80A – 20kA
		100A – 15kA
Selectivity class		In accordance with class C
Tripping characteristic		
Instantaneous Tripping current I mt		Type B: 3 In < I mt < 5 In Type C: 5 In < I mt < 10 In Type D: 10In < I mt < 20 In
Conventional non tripping current		I nt = 1.13 In
Conventional tripping current		It = 1.45 In
Ref/Calibration temp		40o C
Number of operating cycles elec		>20000

Miniature circuit breakers – dimensional drawings



Tripping characteristic type B, C & D



Eaton Memshield-3 MCB Max Zs (Ohms) Data in line with BS7671

Range	I _n (A)	Disconnection 0.4s	Disconnection 5s
Type B (EMBS Series)	20	2.19	2.19
	32	1.37	1.37
	40	1.09	1.09
	50	0.87	0.87
	63	0.69	0.69
	80	0.55	0.55
	100	0.44	0.44
	125	0.35	0.35
Type C (EMCS Series)	20	1.09	1.09
	32	0.68	0.68
	40	0.55	0.55
	50	0.44	0.44
	63	0.35	0.35
	80	0.27	0.27
	100	0.22	0.22
	125	0.17	0.17
Type D (EMDS Series)	20	0.55	1.09
	32	0.34	0.68
	40	0.27	0.55
	50	0.22	0.44
	63	0.17	0.35
	80	0.14	0.27
	100	0.11	0.22

Note : Values take account of minimum voltage factor C_{min} - in accordance with BS7671 Amendment 3

Residual current circuit breakers (RCCBs) technical data

Eaton's range of residual current circuit breakers without integral Overload protection (RCCBs), are manufactured to IEC EN/61008 and meet the latest European and International standards.

DIN rail mountable in 2 and 4 module widths these RCCBs provide protection solutions to a wide range of applications. With standard thermal ratings of 16A to 100A and trip sensitivities of 10mA, 30mA, 100mA and 300mA, these devices can be equipped with a range of modular accessories.

The Eaton RCCBs suite with the complete range of modular devices, and are for use within Eaton's Memshield 3 distribution boards and other applications.

These devices will accommodate cables up to 35mm².

Terminology

RCD – Residual current device:- This is the generic term covering a range of devices that are able to detect residual currents sometimes also referred to as earth leakage current. The residual current is measured by detecting the difference between the current flowing in the live and neutral conductors of a circuit and where the residual current is above a predefined level the RCD will trip. RCDs are available in a range of trip sensitivities for different applications.

RCCB – Residual current circuit breaker is an RCD which will cause disconnection of the electrical supply should it detect a residual current passing through the device, above a specified tripping current limit e.g. 30mA. This device does not provide over current protection and is therefore also referred to as an RCCB without integral over-current protection.

RCBO – Residual current circuit breaker, with overload protection, is an RCCB which will cause disconnection of the electrical supply should it detect a residual current above a specified tripping current limit, combined with integral overload, over-current, and shortcircuit protection associated with a miniature circuit breaker.

The 17th Edition of the IEE wiring regulations BS7671 now places much greater emphasis on the use of 30mA RCDs to provide "additional protection" in many areas covered by the regulations, such as circuits feeding socket outlets and for the protection of concealed wiring.

Trip sensitivities

10mA – Provides the highest degree of RCD protection in hazardous environments where supplementary protection against electric shock is required. This very high sensitivity should only be applied to final circuits where a high degree of risk exists.

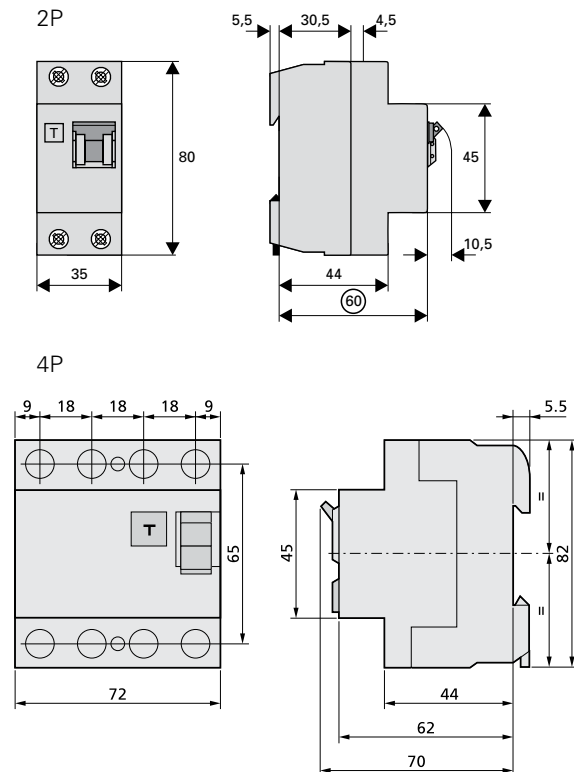
30mA – Provides a high degree of protection against electric shock due to direct and indirect contact. A 30mA RCD will trip within 40mS when a fault current of 150mA is detected.

This type of RCD is required to satisfy the requirements for "additional protection" in accordance with BS7671 (IEE wiring regs.)

100mA – Provides a degree of protection against electric shock resulting from indirect contact, and is generally used to protect a group of circuits as well as providing overall protection against Fire risk.

300mA – Provides a lower level of RCD protection in the form of an overall protection against the risk of fire resulting from faults in electrical wiring etc.

RCCB dimensions (mm)



RCCB technical data

Specifications	2-pole RCCB	4-pole RCCB
Product standard	IEC EN 61008	IEC EN 61008
No of poles	2p	4p
Mechanical specification		
Device width	35 mm	70 mm
Terminal type	Box clamp	Box clamp
Terminal capacity	1.5–35mm ²	35mm ²
Terminal Screw	M5 combination	M5 combination
Terminal torque	2.4Nm max	2.4Nm max
Mounting	DIN rail	DIN rail
Degree of protection	IP 20	IP 20
Positive contact indication	Yes (toggle position)	Red/green flag
Electrical specification		
Rated voltage	230/400 V AC	230/400 V AC
Current ratings	16, 40, 63, 80, 100 A	16, 40, 63, 80, 100 A
Rated impulse and withstand voltage	4kV (1.2/50) u sec	4kV (1.2/50) u sec
Rated short circuit capacity	10kA (with back up)	10kA (with back up)
Sensitivity	AC	AC
Tripping characteristic		
Rated tripping currents	10, 30, 100, 300 mA	10, 30, 100, 300 mA
Tripping type	Instantaneous	Instantaneous
Number of operating cycles elec	>4000	>4000
Number of operating cycles mech	>20000	>20000

Residual current circuit breakers – with overload protection (RCBOs) technical data

Eaton's range of residual current circuit breakers with integral overload protection (RCBOs), are manufactured to IEC EN 61009 and meet the latest European and International standards.

Trip Sensitivity

Provides a high degree of protection against electric shock due to direct contact. A 30mA RCD will trip within 40mS when a fault current of 150mA is detected.

This type of RCD is required to satisfy the requirements for "additional protection" in accordance with BS7671 (IET wiring regs.)

Single phase RCBO technical data**Specifications**

Product standard	IEC EN 61009
No of poles	1p & solid N

Mechanical specification

Device width	17.7 mm
Terminal type	Lower-Box clamp Upper-Box clamp
Terminal capacity	1–25mm ² 2-16mm ²
Terminal Screw	M5 combination M4 combination
Terminal torque	2.4Nm max 1.5Nm max
Mounting	DIN rail
Degree of protection	IP 20
Positive contact indication	Yes (Red/Green flag)

Electrical specification

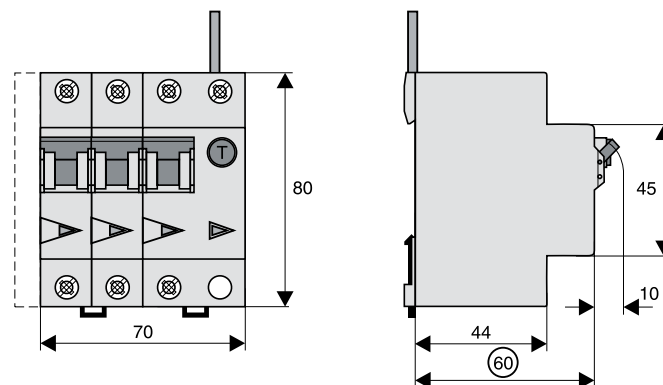
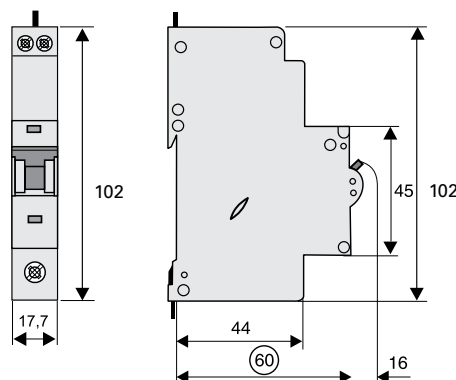
Rated voltage	230/240 V AC
Current ratings	6, 10, 16, 20, 25, 32, 40, 45A
Rated impulse and withstand voltage	4kV (1.2/50) u sec
Rated short circuit capacity	10kA
Sensitivity	Type A

Tripping characteristic

Instantaneous Tripping current I _{mt}	Type B: 3 I _n < I _{mt} < 5 I _n Type C: 5 I _n < I _{mt} < 10 I _n
Conventional non tripping current	I _{nt} = 1.13 I _n
Conventional tripping current	I _t = 1.45 I _n
Ref/Calibration temp	40o C
Rated tripping currents	10, 30, 100mA
Tripping type	Instantaneous
Number of operating cycles elec	>400
Number of operating cycles mech	>20000

Three phase RCBO technical data**Electrical**

Design according to	IEC/EN 61009
Tripping	line voltage-independent
	instantaneous 250A (8/20μs)
	surge current-proof
Rated voltage U _n	240/415V; 50Hz
Rated tripping current I _n	0, 100, 300 mA
Rated non-tripping current I _{no}	0.5 I _n
Sensitivity	Type A (AC and pulsating DC)
Selectivity class	3
Rated breaking capacity	10 kA
Rated current	6 - 32 A
Rated peak withstand voltage U _{imp}	4 kV (1.2/50μs)
Characteristic	B, C, D
Maximum back-up fuse (short circuit)	100 A gL (>10 kA)
Endurance electrical comp.	≥ 4,000 operating cycles
mechanical comp.	≥ 20,000 operating cycles

RCBOs dimensions (mm)**Mechanical**

Frame size	45 mm
Device height	80 mm
Device width	70 mm
Upper and lower terminals	open mouthed/lift terminals
Terminal capacity	1 - 25 mm ²
Degree of protection	IP20
Operating temperature	-25°C to +40°C
Resistance to climatic conditions	acc. to IEC/EN 61009