

# 12.5

## Technical data

Switch and protection devices dimensions and data

### 6kA Miniature Circuit Breakers (MCBs) technical Data

Eaton's range of 6kA high performance Miniature Circuit Breakers (MCBs) are manufactured to IEC/EN 60898, meeting the latest UK, European and International standards, with ratings from 2A to 63A as standard.

DIN rail mountable and suitable for use with both pin and comb type busbar systems, Eaton's MCBs are suitable for use on 230/240 V, AC systems and are calibrated for use at 40°C. These devices suite with the other modular devices including RCBOs, RCCBs and Isolators, for use within Eaton's MEM consumer units and a wide range of other applications.

The Eaton 6kA MCBs are fitted with box clamp terminals suitable for use with cables up to 25mm<sup>2</sup>.

The Eaton 6kA miniature circuit breakers are available with both B and C characteristic curves as standard. Type B MCBs are most commonly used in domestic applications, however the use of type C devices may be desirable e.g. on lighting circuits where high switching surges are involved. Type D devices are not commonly used in other than industrial applications.

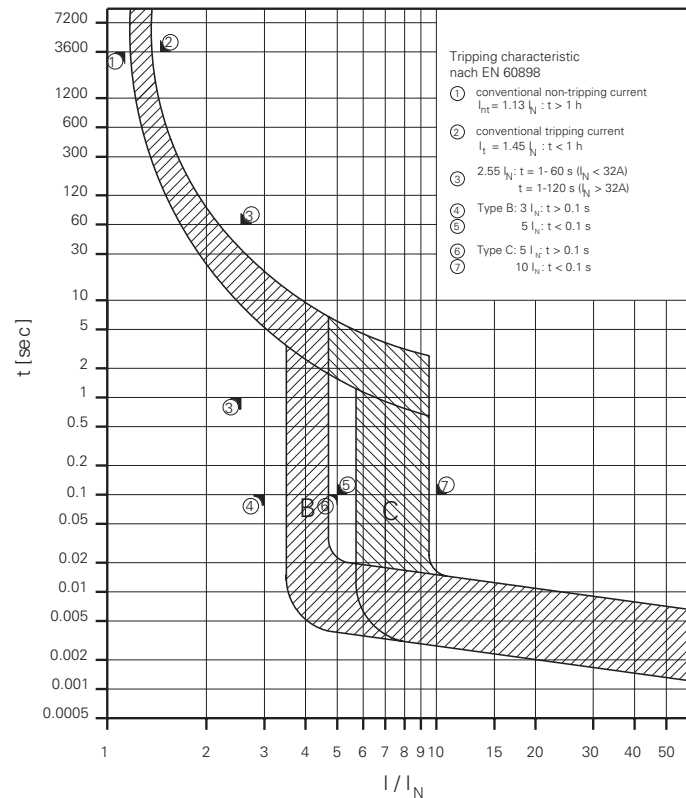
IEC/EN 60898 Type	Instantaneous Trip Current (x I <sub>n</sub> )	Typical Application	Eaton 6kA MCB Type
B	3 to 5	Domestic	EAD B
C	5 to 10	Commercial Light Industrial	EAD C
D	10 to 20	General Industrial	–

**Type B:** Suitable for general, domestic and commercial installations having little or no switching surges

**Type C:** Suitable for general use in commercial or industrial applications where the greater use of fluorescent lighting and small motors can produce switching surges, which may cause nuisance tripping of type B breakers.

**Type D:** Suitable for General Industrial applications where there are a lot of high inrush switching surges associated with equipment such as transformers, large motors, welding and X ray equipment.

### Tripping characteristic type B and C



### Earth fault loop impedance's (Zs) to provide compliance with BS 7671

The wiring regulations BS 7671 makes specific reference to MCB types and the maximum earth loop impedance allowable to meet the required disconnection times.

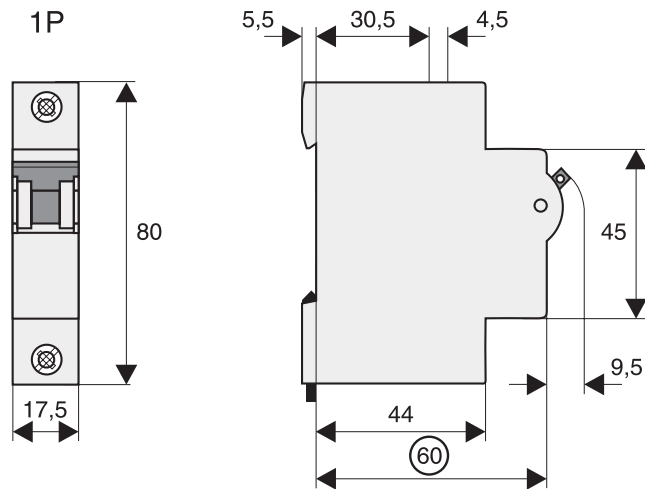
It can be seen that it is much easier to achieve adequate disconnection times with type B devices than it is with types C and indeed type D devices.

Maximum earth fault loop impedance i.e. Zs ohms for final circuits fed from Miniature Circuit Breakers MCBs or RCBOs with U<sub>o</sub> of 230V, for instantaneous operation giving compliance with 0.4s disconnection time of Reg 411.3.2.2 and 5s disconnection time of 411.3.2.3

**Table Zs Ohms**

Device	Standard	2A	4A	6A	10A	13A	16A	20A	25A	32A	40A	45A	50A	63A
Type B MCB	BS EN 60898	23.00	11.50	7.67	4.60	3.54	2.88	2.30	1.84	1.44	1.15	–	0.92	0.73
Type C MCB	BS EN 60898	11.50	5.75	3.83	2.30	1.77	1.44	1.15	0.92	0.72	0.58	–	0.46	0.37
Type B RCBO	BS EN 61009	–	–	7.67	4.60	–	2.88	2.30	1.84	1.44	1.15	1.02	–	–
Type C RCBO	BS EN 61009	–	–	3.83	2.30	–	1.44	1.15	0.92	0.72	0.58	0.51	–	–

6kA MCB dimensional drawings



6kA MCB technical data

Product standard	IEC/EN 60898
No of poles	1P
<b>Mechanical specification</b>	
Device width	17.7mm
Terminal type	Box clamp
Terminal capacity	1 – 25mm <sup>2</sup>
Terminal Screw	M5 combination
Terminal torque recommended	2.0Nm - max 2.4Nm
Mounting	DIN rail
Degree of protection	IP 20
Positive contact indication	Yes (Toggle position)
<b>Electrical specification</b>	
Rated voltage	230/240 V AC
Current ratings	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	6kA
Selectivity class	3 to IEC/ EN 60898
<b>Tripping characteristic</b>	
Instantaneous Tripping current I <sub>mt</sub>	Type B: 3 I <sub>n</sub> < I <sub>mt</sub> < 5 I <sub>n</sub> Type C: 5 I <sub>n</sub> < I <sub>mt</sub> < 10 I <sub>n</sub>
Conventional non tripping current	I <sub>nt</sub> = 1.13 I <sub>n</sub>
Conventional tripping current	I <sub>t</sub> = 1.45 I <sub>n</sub>
Ref/calibration temp	40° C
Number of operating cycles elec	>4000
Number of operating cycles mech	>20000