

Tripping characteristics for miniature circuit-breakers (*disjoncteurs*) and wiring size and maximum wiring lengths.

Now that fuses have been placed outside the law in the French electrical code revision Amendment 5 of June 2015 (for new builds) time to have a closer look at MCBs. They provide overload and short circuit protection. Under overload conditions they warm up. The higher the overload, the faster the thermal bi-metal mechanism trips. On board also an electro-magnetic release, instantaneous tripping as protection against short circuits.

The little glass fuses in electronic equipment are available in several time/current characteristics: fast, medium and slow-blow. Something similar for MCBs. In the domestic environment: B, C and D curves.

Tripping current for curve B: 3 to 5 times the nominal current. Curve C: 5 to 10 times the nominal current and Curve D: more than 10 to 20 times the nominal current. For residential wiring in France use Curve (*courbe*) C. And for those nasty inrush currents or switch-on surges of electric motors use MCBs with the D curve.

To cut a long story short: for residential wiring the tables below show that only in exceptional circumstances, the lucky owners of a *chateau*, you have to worry about maximum wiring lengths (in meters). These tables are for the so called TN earthing system of the electrical grid for residential and industrial electric systems in France. Another element to calculate maximum wiring lengths is the maximum allowable [voltage-drop](#) (*chute de tension: éclairage 3%, autres usages 5%*).

Wiring size copper mm²	Nominal MCB current type B <i>(Courant assigné des disjoncteurs type B en ampères)</i>						
	6	10	16	20	25	32	40
1.5	200	120	75	60	48	37	30
2.5	333	200	125	100	80	62	50
4	533	320	200	160	128	100	80
6	800	480	300	240	192	150	120
10	--	800	500	400	320	250	200
16	--	--	800	640	512	400	320
25	--	--	--	--	800	625	500

**Wiring size
copper mm²****Nominal MCB current type C
(Courant assigné des disjoncteurs type C en ampères)**

	6	10	16	20	25	32	40
1.5	100	60	37	30	24	18	15
2.5	167	100	62	50	40	31	25
4	267	160	100	80	64	50	40
6	400	240	150	120	96	75	60
10	667	400	250	200	160	125	100
16	--	640	400	320	256	200	160
25	--	--	625	500	400	312	250

**Wiring size
copper mm²****Nominal MCB current type D
(Courant assigné des disjoncteurs type D en ampères)**

	6	10	16	20	25	32	40
1.5	50	30	18	15	12	9	7
2.5	83	50	31	25	20	16	12
4	133	80	50	40	32	25	20
6	200	120	75	60	48	37	30
10	333	200	125	100	80	62	50
16	533	320	200	160	128	100	80
25	833	500	312	250	200	156	125

Source: "L'OFFICIEL DE L'ÉLECTRICITÉ"
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