

Electrical Characteristics

	MLN	MTN	NBN	NCN	NDN	HMF*	HMC*	HMD*
Poles	SP+SN	SP	SP DP TP 4P	SP DP TP 4P	SP DP TP 4P	SP DP TP 4P		
Rated Operational Voltage U_e (V)	230	230	230 / 400	230 / 400	230 / 400	230/400		
Nominal Current	6 - 40A	6 - 63A	6 - 63A	0.5 - 63A	0.5 - 63A	80 - 125A		
Breaking Capacity (I_{CN}) to BS EN 60898	6kA	6kA	10kA	10kA	10kA	10kA	15kA	
Breaking Capacity (I_{CS}) to BS EN 60898	6kA	6kA	7.5kA	7.5kA	7.5kA	7.5kA	7.5kA	
Breaking Capacity (I_{CU}) to BS EN 60947 Part 2	N/A	N/A	15kA	15kA	15kA	N/A	15kA	
Breaking Capacity (I_{CS}) to BS EN 60947 Part 2	N/A	N/A	7.5kA	7.5kA	7.5kA	N/A	7.5kA	
Rated Insulation Voltage U_i (V)	500V	500V	500V	500V	500V	500V		
Rated Impulse Voltage U_{imp} (kV)	4kV	4kV	6kV	6kV	6kV	6kV		
Electrical Endurance	10,000 cycles	10,000 cycles						
Connection of Auxiliaries	No		Yes					

Table 1

*Din rail mount only, not for use in fixed busbar distribution boards.

Power Loss

The power loss of MCB's is closely controlled by the standards and is calculated on the basis of the voltage drop across the main terminals measured at rated current. The power loss of our circuit breakers is very much lower than that required by the British Standard, so in consequences run cooler and are less affected when mounted together.

The table below gives the watts loss per pole at rated current.

MCB Rated current (A)	0.5	1	2	3	4	6	10	13	16	20	25	32	40	50	63
Watts loss per pole	1.2	1.3	1.5	2.0	1.8	1.4	1.9	2.1	2.5	2.8	3.2	3.8	4.0	4.5	5.1

For use with DC

Because of their quick make and break design and excellent arc quenching capabilities, our circuit breakers are suitable for DC applications.

The following parameters must be considered:

1. System voltage:
Determined by the number of poles connected in series (see **Table 14**).

2. Short circuit current:
(See **Table 14**).

3. Tripping Characteristics:
If the thermal trip remains unchanged the magnetic trip will become less sensitive requiring derating by $\sqrt{2}$ the ac value (See **Table 14**).

No. of poles	1 pole		2 poles in series	
Range	max voltage	breaking capacity $L/R=15ms$	Max voltage	breaking capacity $L/R=15ms$
MTN	60V	6kA	125V	6kA
NCB NCN NDN	60V	10kA	125V	10kA

Table 13

Characteristic curve	B		C		D	
Magnetic strip	50Hz	dc	50Hz	dc	50Hz	dc
I _{rm1}	3I _n	4.5 I _n	5I _n	7.5 I _n	10 I _n	15 I _n
I _{rm2}	5I _n	7.5 I _n	10I _n	15 I _n	20 I _n	30 I _n

Table 14

Connection

The circuit breaker can have the line/load connected to either the top or bottom terminals

Temperature Derating

MCBs are designed and calibrated to carry their rated current and to operate within their designated thermal time/current zone at 30°C. Testing is carried out with the breaker mounted singly in a vertical plane in a controlled environment. Therefore if the circuit breaker is required to operate in conditions which differ from the reference conditions, certain factors have to be applied to the standard data.

I _n (A)	-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
0.5	0.72	0.7	0.68	0.66	0.64	0.62	0.6	0.58	0.56	0.54	0.52	0.5	0.48	0.46	0.44	0.42	-	-
1	1.44	1.4	1.36	1.32	1.28	1.24	1.2	1.16	1.12	1.08	1.04	1	0.96	0.92	0.88	0.84	0.8	0.76
2	2.88	2.8	2.72	2.64	2.56	2.48	2.4	2.32	2.24	2.16	2.08	2	1.92	1.84	1.76	1.68	1.6	1.52
3	4.32	4.2	4.08	3.96	3.84	3.72	3.6	3.48	3.36	3.24	3.12	3	2.88	2.76	2.64	2.52	2.4	2.28
4	5.76	5.6	5.44	5.28	5.12	4.96	4.8	4.64	4.48	4.32	4.16	4	3.84	3.68	3.52	3.36	3.2	3.04
6	8.64	8.4	8.16	7.92	7.68	7.44	7.2	6.96	6.72	6.48	6.24	6	5.76	5.52	5.28	5.04	4.8	4.56
10	14.4	14	13.6	13.2	12.8	12.4	12	11.6	11.2	10.8	10.4	10	9.6	9.2	8.8	8.4	8	7.6
13	18.7	18.2	17.7	17.2	16.6	16.1	15.6	15.1	14.6	14.0	13.5	13	12.5	12	11.4	10.9	10.4	9.9
15	21.6	21	20.4	19.8	19.2	18.6	18	17.4	16.8	16.2	15.6	15	14.4	13.8	13.2	12.6	12	11.4
16	23	22.4	21.8	21.1	20.5	19.8	19.2	18.6	17.9	17.3	16.6	16	15.4	14.7	14.1	13.4	12.8	12.2
20	28.8	28	27.2	26.4	25.6	24.8	24	23.2	22.4	21.6	20.8	20	19.2	18.4	17.6	16.8	16	15.2
25	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19
32	46.1	44.8	43.5	42.2	41	39.7	38.4	37.1	35.8	34.6	33.3	32	30.7	29.4	28.2	26.9	25.6	24.3
40	57.6	56	54.4	52.8	51.2	49.6	48	46.4	44.8	43.2	41.6	40	38.4	36.8	35.2	33.6	32	30.4
50	-	-	-	-	-	62	60	58	56	54	52	50	48	46	44	42	40	38
63	-	-	-	-	-	-	-	-	-	-	-	63	60.5	58	55.4	52.9	50.4	47.9

Commercial
Distribution

Diversity Factor - Commercial Distribution boards to BS EN 61439-3

Consideration should be given to the proximity heating effect of the breakers when fully loaded and mounted together in groups.

Adjacent circuit breakers having a load 'on' time exceeding 30 minutes or where the load not exceeding 30 minutes has an 'off' time less than the 'on' time, will need to have the rated diversity factor applied.

No. of Outgoing Circuits	Assumed Loading Factor
2 and 3	0.8
4 and 5	0.7
6 to 9 inclusive	0.6
10 and above	0.5

Frequency

Circuit breakers are designed to operate at a frequency of 50-60Hz. Should the supply differ from this then the following factors should be applied

Thermal – unchanged

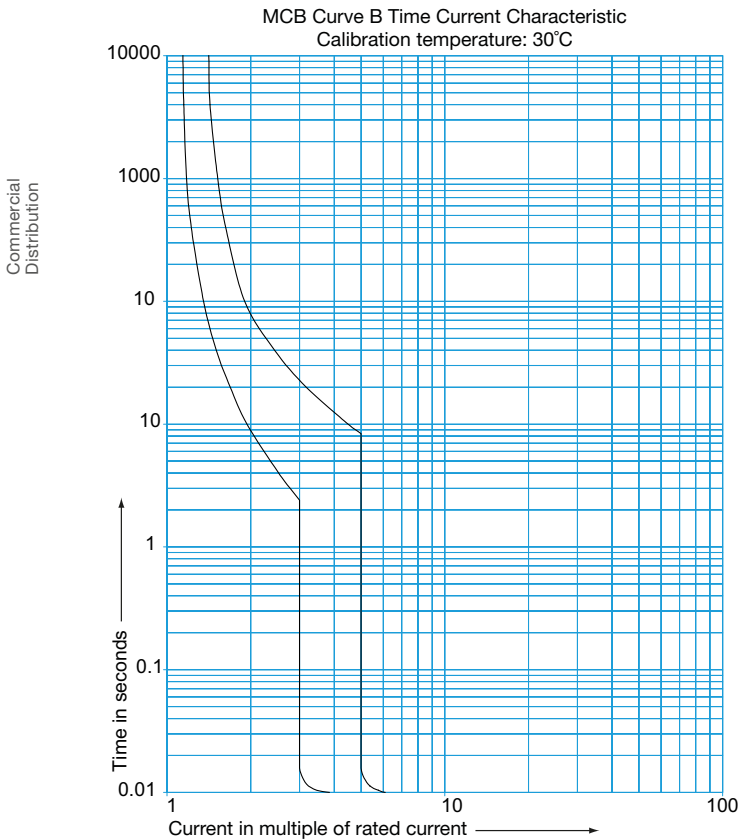
Magnetic – value multiplied by coefficient K

F (Hz)	17Hz - 60Hz	100Hz	200Hz	400Hz
K	1	1.1	1.2	1.5

Consideration should be given to the proximity heating effect of the breakers when fully loaded and mounted together in groups. (continuously & simultaneously loaded).

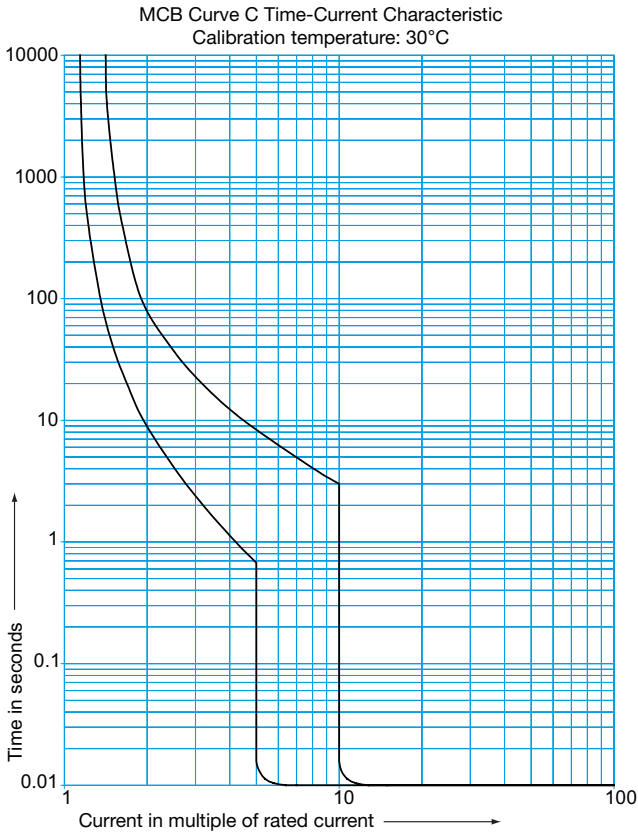
B Curve (BS EN 60898)

MCBs: MTN rated 6 - 63A
NBN rated 6 - 63A



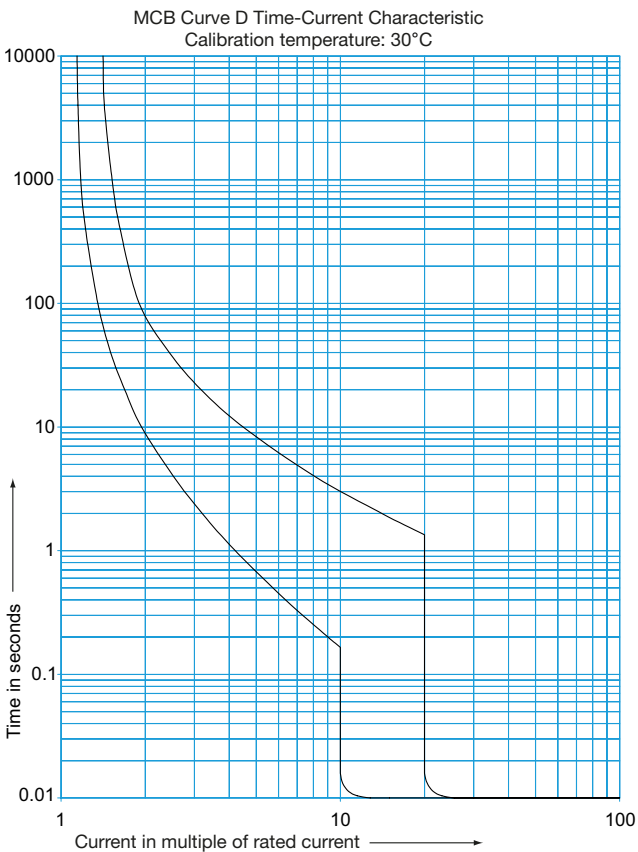
C Curve (BS EN 60898)

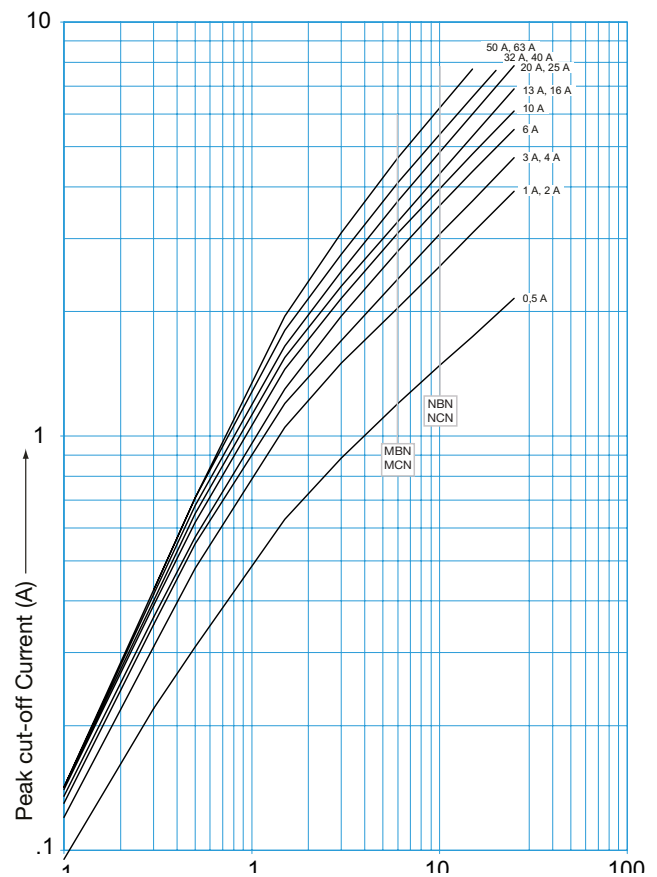
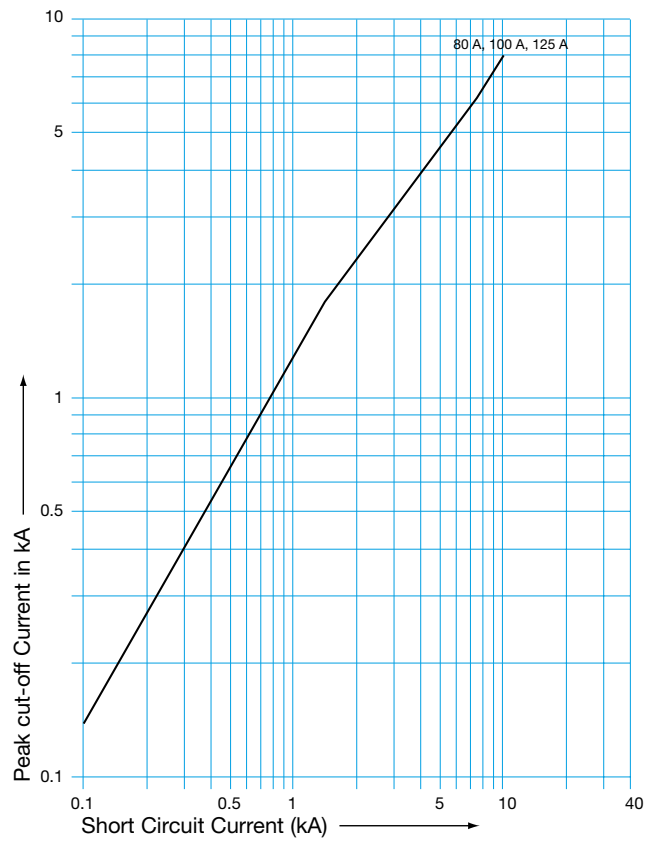
MCBs: NCN rated 0.5 - 63A
MLN rated 2 - 32A
HMF/HMC rated 80 - 125A

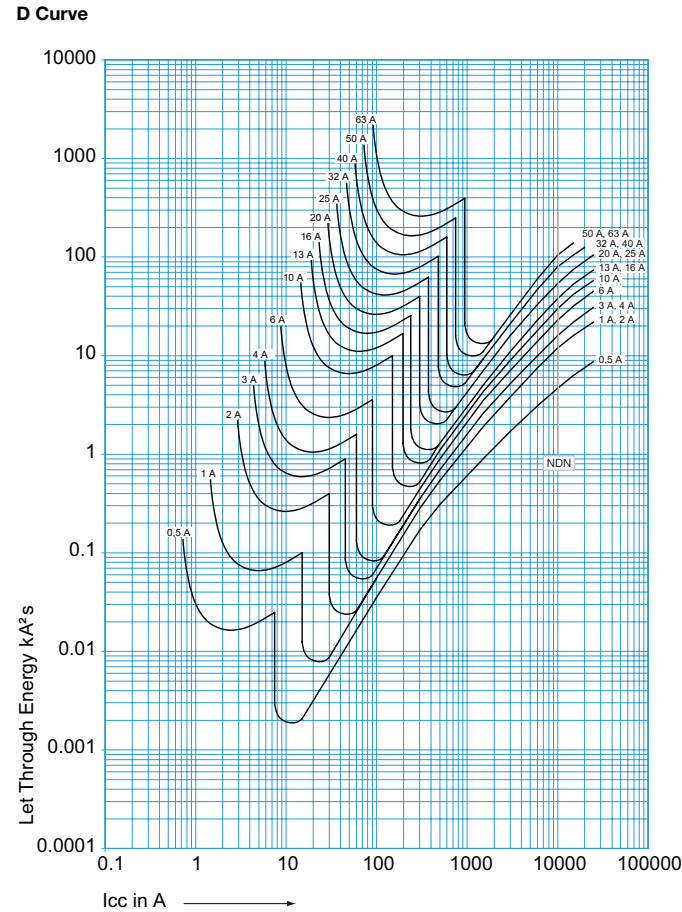
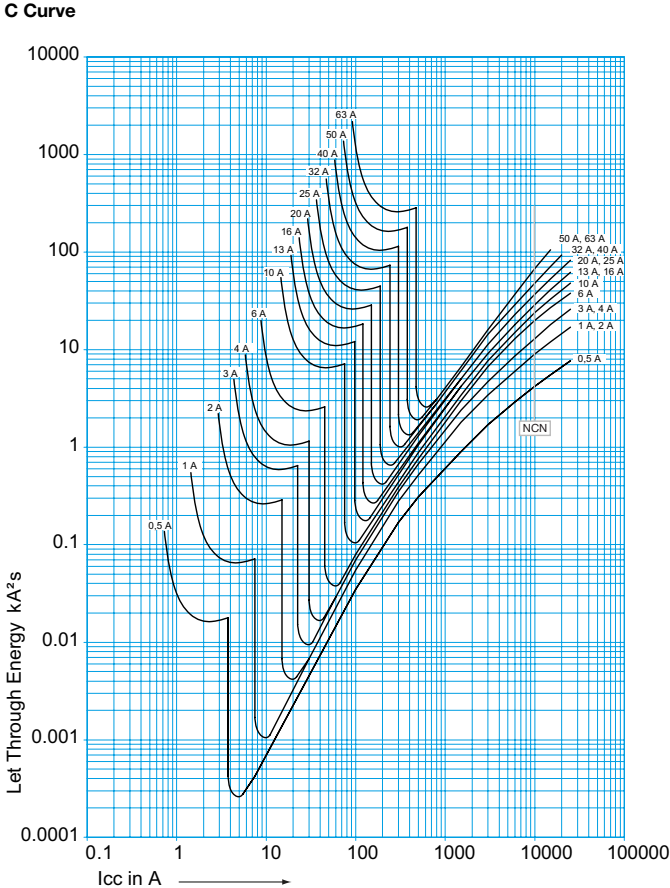
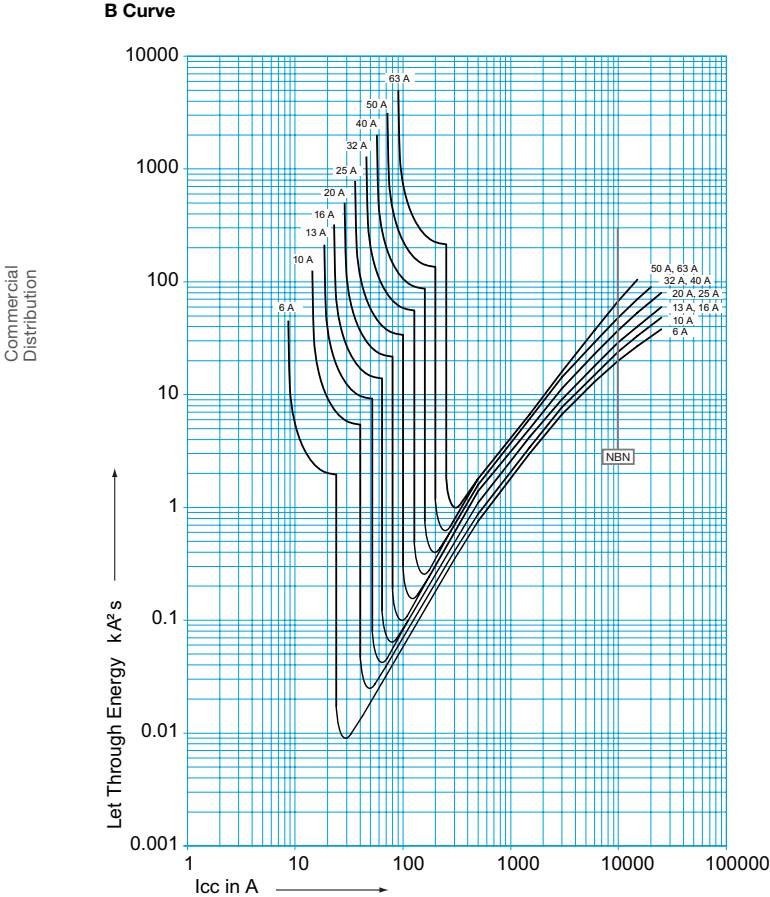


D Curve (BS EN 60898)

MCBs: NDN rated 6 - 63A
HMD rated 80 - 125A







Functions

Tripping and indication auxiliary contacts are common to the range of multi-pole 10kA MCBs, and RCCBs. They should be mounted on the left hand side of the device.

Auxiliary Contact MZ201 (Fig 9)

Allows remote indication of the status of the device contacts to which it is associated.

Auxiliary Contact and Alarm Contact MZ202

This accessory has two separate functions. Like the MZ201 auxiliary contact, however the alarm contact will provide indication if the breaker trips under fault conditions.

Wiring Diagram

MZ201 Auxiliary Contact and Alarm Contract

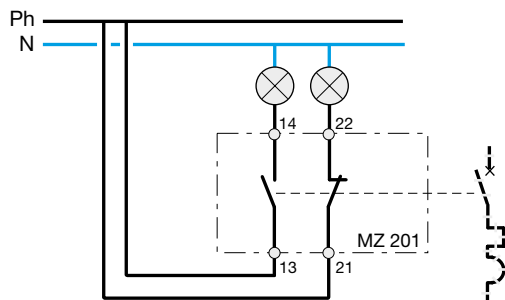


Fig. 9

Electrical Characteristics

MZ201/MZ206	MZ203	MZ206
1 x O 1 x C Contact 230V ~ 6A AC-1		
	230 - 415~ 110 - 130...	230V~ 50Hz

Grouping / Combination of Several Auxiliaries

On 2, 3 and 4 pole MCBs it is possible to associate 3 auxiliaries – 2 indication auxiliaries and 1 release auxiliary. In this case, it is important to first fix the indication auxiliary (MZ201 and MZ202) and then the release auxiliary (MZ203 and MZ206).

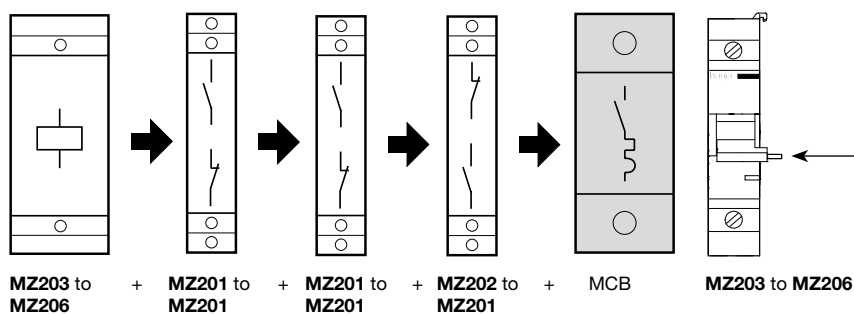


Fig. 11

MZ203 Shunt Trip*

Allows tripping of the device by feeding the coil. The contacts also allow for remote indication of operation.

MZ206 Under Voltage Release* (Fig 10)

Allows the MCB to trip when the voltage drops or by pressing a remote off switch (i.e. emergency stop).

* Indication that the product has tripped due to the voltage release is provided by a flag on the product.

MZ206 Under Voltage Release

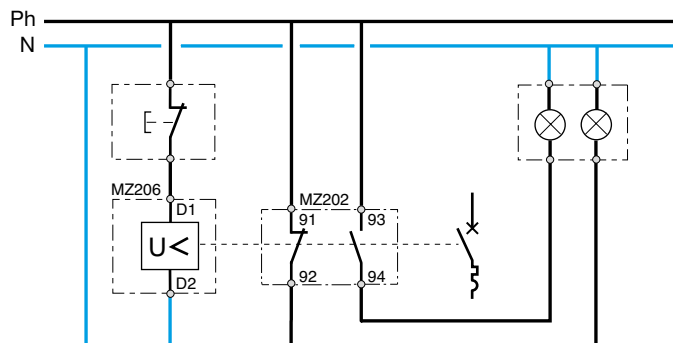


Fig. 10

Electrical connection

By terminal fitted with fixed clamp screws wiring capacity.

Flexible : 2 x 1.5mm²

Rigid : 2 x 1.5mm²

MZ203

Power - 8VA

tolerance : -15% of U_n

MZ206

Latching voltage is between 35 and 70% of U_n 230V~

Coil consumption 3VA

Flag indicating that the product has tripped due to the voltage release

Fig. 12

Max. Values (kA)			Upstream									
			B curve									
		I _n (A)	6	10	13	16	20	25	32	40	50	63
Downstream	B Curve	6	-	0.04	0.06	0.07	0.09	0.12	0.15	0.19	0.24	0.31
		10	-	-	0.06	0.07	0.09	0.11	0.15	0.19	0.24	0.30
		13	-	-	-	0.07	0.09	0.11	0.15	0.18	0.23	0.30
		16	-	-	-	-	0.09	0.11	0.14	0.18	0.23	0.29
		20	-	-	-	-	-	0.11	0.14	0.18	0.22	0.28
		25	-	-	-	-	-	-	0.14	0.18	0.22	0.28
		32	-	-	-	-	-	-	-	0.17	0.21	0.27
		40	-	-	-	-	-	-	-	-	0.21	0.27
		50	-	-	-	-	-	-	-	-	-	0.26
		63	-	-	-	-	-	-	-	-	-	-
	C Curve	0.5	0.05	0.13	0.21	0.30	0.45	0.71	1.32	2.99	7.52	T
		1	0.03	0.05	0.07	0.09	0.11	0.15	0.19	0.25	0.33	0.43
		2	0.03	0.05	0.07	0.09	0.11	0.14	0.19	0.25	0.32	0.41
		3	0.03	0.05	0.06	0.08	0.10	0.12	0.16	0.21	0.26	0.34
		4	0.03	0.05	0.06	0.08	0.10	0.12	0.16	0.20	0.25	0.33
		6	-	0.04	0.06	0.07	0.09	0.12	0.15	0.19	0.24	0.31
		8	-	0.04	0.06	0.07	0.09	0.11	0.15	0.19	0.24	0.30
		10	-	-	0.06	0.07	0.09	0.11	0.15	0.18	0.23	0.30
		13	-	-	-	0.07	0.09	0.11	0.14	0.18	0.23	0.29
		16	-	-	-	-	0.09	0.11	0.14	0.18	0.23	0.29
		20	-	-	-	-	-	0.11	0.14	0.17	0.22	0.28
		25	-	-	-	-	-	-	0.14	0.17	0.21	0.27
		32	-	-	-	-	-	-	-	0.17	0.21	0.26
		40	-	-	-	-	-	-	-	-	0.20	0.25
		50	-	-	-	-	-	-	-	-	-	0.25
		63	-	-	-	-	-	-	-	-	-	-
	D Curve	0.5	0.04	0.09	0.13	0.18	0.25	0.35	0.51	1.27	T	T
		1	0.03	0.05	0.07	0.09	0.11	0.14	0.19	0.25	0.32	0.41
		2	0.03	0.05	0.07	0.09	0.11	0.15	0.19	0.25	0.33	0.43
		3	0.03	0.05	0.06	0.08	0.10	0.12	0.16	0.20	0.26	0.33
		4	0.03	0.05	0.06	0.08	0.10	0.12	0.16	0.20	0.26	0.33
		6	-	0.04	0.06	0.07	0.09	0.11	0.15	0.19	0.24	0.30
		10	-	-	0.06	0.07	0.09	0.11	0.15	0.18	0.23	0.30
		13	-	-	-	0.07	0.09	0.11	0.14	0.18	0.22	0.28
		16	-	-	-	-	0.09	0.11	0.14	0.17	0.22	0.28
		20	-	-	-	-	-	0.11	0.14	0.17	0.21	0.27
		25	-	-	-	-	-	-	0.13	0.16	0.21	0.26
		32	-	-	-	-	-	-	-	0.16	0.20	0.25
		40	-	-	-	-	-	-	-	-	0.20	0.25
		50	-	-	-	-	-	-	-	-	-	0.25
		63	-	-	-	-	-	-	-	-	-	-

Upstream

C curve																
0.5	1	2	3	4	6	8	10	13	16	20	25	32	40	50	63	
-	-	-	-	-	-	0.07	0.09	0.11	0.14	0.18	0.23	0.29	0.37	0.47	0.59	
-	-	-	-	-	-	-	-	0.11	0.14	0.17	0.22	0.29	0.36	0.46	0.57	
-	-	-	-	-	-	-	-	-	0.14	0.17	0.22	0.28	0.35	0.45	0.56	
-	-	-	-	-	-	-	-	-	-	0.17	0.21	0.28	0.35	0.44	0.55	
-	-	-	-	-	-	-	-	-	-	-	0.21	0.27	0.34	0.43	0.54	
-	-	-	-	-	-	-	-	-	-	-	-	0.27	0.33	0.42	0.53	
-	-	-	-	-	-	-	-	-	-	-	-	-	0.32	0.41	0.51	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.40	0.51	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.48	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	0.01	0.02	0.05	0.08	0.16	0.27	0.40	0.67	1.11	2.32	5.59	T	T	T	T	
-	-	0.02	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.23	0.30	0.40	0.53	0.74	1.22	
-	-	-	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.23	0.30	0.39	0.51	0.72	1.13	
-	-	-	-	0.03	0.05	0.07	0.09	0.12	0.15	0.19	0.25	0.32	0.41	0.52	0.67	
-	-	-	-	-	0.05	0.07	0.09	0.12	0.15	0.19	0.24	0.31	0.39	0.50	0.66	
-	-	-	-	-	-	0.07	0.09	0.11	0.14	0.18	0.22	0.29	0.37	0.46	0.58	
-	-	-	-	-	-	-	0.08	0.11	0.14	0.17	0.22	0.29	0.36	0.46	0.57	
-	-	-	-	-	-	-	-	0.11	0.14	0.17	0.22	0.28	0.35	0.45	0.56	
-	-	-	-	-	-	-	-	-	0.13	0.17	0.21	0.28	0.35	0.44	0.55	
-	-	-	-	-	-	-	-	-	-	0.17	0.21	0.27	0.34	0.43	0.54	
-	-	-	-	-	-	-	-	-	-	-	0.20	0.26	0.33	0.41	0.52	
-	-	-	-	-	-	-	-	-	-	-	-	0.26	0.32	0.41	0.51	
-	-	-	-	-	-	-	-	-	-	-	-	-	0.31	0.39	0.49	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.37	0.47	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.46	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	0.01	0.02	0.04	0.06	0.10	0.16	0.22	0.34	0.46	0.77	7.50	T	T	T	T	
-	-	0.02	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.23	0.30	0.39	0.51	0.73	1.19	
-	-	-	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.23	0.30	0.40	0.53	0.74	1.15	
-	-	-	-	0.03	0.05	0.07	0.09	0.12	0.15	0.19	0.24	0.31	0.40	0.51	0.67	
-	-	-	-	-	0.05	0.07	0.09	0.12	0.15	0.19	0.24	0.32	0.40	0.51	0.67	
-	-	-	-	-	-	0.07	0.08	0.11	0.14	0.18	0.22	0.29	0.36	0.46	0.58	
-	-	-	-	-	-	-	-	0.11	0.14	0.17	0.22	0.28	0.35	0.45	0.56	
-	-	-	-	-	-	-	-	-	0.13	0.17	0.21	0.27	0.34	0.43	0.54	
-	-	-	-	-	-	-	-	-	-	0.16	0.21	0.26	0.33	0.42	0.53	
-	-	-	-	-	-	-	-	-	-	-	0.20	0.26	0.32	0.41	0.51	
-	-	-	-	-	-	-	-	-	-	-	-	0.25	0.31	0.39	0.49	
-	-	-	-	-	-	-	-	-	-	-	-	-	0.30	0.37	0.47	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.37	0.47	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.47	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Commercial
Distribution

Max. Values (kA)			Upstream														
			D curve														
		I _n (A)	0.5	1	2	3	4	6	10	13	16	20	25	32	40	50	63
Downstream	B Curve	6	-	-	-	-	-	-	0.14	0.19	0.23	0.29	0.37	0.48	0.60	0.74	1.04
		10	-	-	-	-	-	-	-	0.18	0.23	0.29	0.36	0.47	0.58	0.71	0.95
		13	-	-	-	-	-	-	-	-	0.22	0.28	0.35	0.46	0.57	0.69	0.90
		16	-	-	-	-	-	-	-	-	-	0.28	0.35	0.45	0.56	0.68	0.86
		20	-	-	-	-	-	-	-	-	-	-	0.34	0.44	0.54	0.67	0.84
		25	-	-	-	-	-	-	-	-	-	-	-	0.43	0.54	0.66	0.83
		32	-	-	-	-	-	-	-	-	-	-	-	-	0.52	0.65	0.81
		40	-	-	-	-	-	-	-	-	-	-	-	-	-	0.63	0.79
		50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78
		63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C Curve	0.5	-	0.01	0.05	0.11	0.18	0.37	1.11	2.70	6.17	T	T	T	T	T	T
		1	-	-	0.03	0.05	0.06	0.10	0.18	0.24	0.31	0.40	0.53	0.76	1.26	2.91	8.59
		2	-	-	-	0.04	0.06	0.10	0.18	0.24	0.30	0.39	0.51	0.74	1.17	2.41	6.80
		3	-	-	-	-	0.06	0.09	0.15	0.20	0.25	0.32	0.41	0.54	0.69	0.95	1.53
		4	-	-	-	-	-	0.09	0.15	0.20	0.24	0.31	0.39	0.52	0.67	0.92	1.42
		6	-	-	-	-	-	-	0.14	0.18	0.23	0.29	0.37	0.48	0.59	0.73	1.00
		8	-	-	-	-	-	-	0.14	0.18	0.23	0.29	0.36	0.47	0.58	0.71	0.95
		10	-	-	-	-	-	-	-	0.18	0.22	0.28	0.35	0.46	0.57	0.71	0.94
		13	-	-	-	-	-	-	-	-	0.22	0.28	0.35	0.45	0.56	0.69	0.89
		16	-	-	-	-	-	-	-	-	-	0.27	0.34	0.44	0.55	0.68	0.87
		20	-	-	-	-	-	-	-	-	-	-	0.33	0.42	0.53	0.66	0.84
		25	-	-	-	-	-	-	-	-	-	-	-	0.42	0.52	0.64	0.80
		32	-	-	-	-	-	-	-	-	-	-	-	-	0.50	0.63	0.79
		40	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	0.78
		50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.77
		63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	D Curve	0.5	-	0.01	0.04	0.07	0.11	0.21	0.46	0.99	9.81	T	T	T	T	T	T
		1	-	-	0.03	0.04	0.06	0.10	0.18	0.24	0.30	0.39	0.51	0.76	1.24	2.66	7.44
		2	-	-	-	0.05	0.06	0.10	0.18	0.24	0.31	0.40	0.53	0.76	1.19	2.46	7.61
		3	-	-	-	-	0.06	0.09	0.15	0.20	0.25	0.31	0.40	0.52	0.68	0.92	1.35
		4	-	-	-	-	-	0.09	0.15	0.20	0.25	0.32	0.40	0.53	0.69	0.91	1.26
		6	-	-	-	-	-	-	0.14	0.18	0.23	0.29	0.36	0.47	0.59	0.74	1.01
		10	-	-	-	-	-	-	-	0.18	0.22	0.28	0.35	0.46	0.57	0.71	0.94
		13	-	-	-	-	-	-	-	-	0.21	0.27	0.34	0.44	0.55	0.68	0.89
		16	-	-	-	-	-	-	-	-	-	0.26	0.33	0.43	0.54	0.67	0.86
		20	-	-	-	-	-	-	-	-	-	-	0.32	0.42	0.52	0.64	0.81
		25	-	-	-	-	-	-	-	-	-	-	-	0.40	0.49	0.63	0.80
		32	-	-	-	-	-	-	-	-	-	-	-	-	0.48	0.61	0.78
		40	-	-	-	-	-	-	-	-	-	-	-	-	-	0.60	0.77
		50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76
		63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Earth Fault Loop impedance (Z_s) values for MCBs and MCCBs

Below are the maximum permissible values of Z_s to obtain disconnection for compliance with BS 7671:2008 Amendment 3

I_n	Max Let-Through Energy (kA ² s) at PSCC			Max Z_s (ohms)	
	3kA	6kA	10kA	0.2 - 1s sec	5 sec
MTN/NBN (B Curve)					
6	5.9	10.5	15	7.28	7.28
10	6.5	12.2	21.5	4.37	4.37
16	8.0	17.5	30	2.73	2.73
20	8.8	19.5	34	2.19	2.19
25	10	21	38	1.75	1.75
32	11	24	42	1.37	1.37
40	12.5	29	50	1.09	1.09
50	15	34	61	0.87	0.87
63	16	38	72	0.69	0.69
NCN/HM (C Curve)					
0.5	0.01	0.01	0.01	43.7	62.43
1	4.0	7.0	10	21.85	31.21
2	4.0	7.0	10	10.93	15.61
3	5.0	10.0	15	7.28	10.40
4	5.9	10.5	15	5.46	7.80
6	5.9	10.5	15	3.64	5.20
10	6.5	12.2	21.5	2.19	3.12
16	8.0	17.5	30	1.37	1.95
20	8.8	19.5	34	1.09	1.56
25	10	21	38	0.87	1.25
32	11	24	42	0.68	0.98
40	12.5	29	50	0.55	0.78
50	15	34	61	0.44	0.62
63	16	38	72	0.35	0.50
80	-	-	-	0.27	0.39
100	-	-	-	0.22	0.31
125	-	-	-	0.1	0.25
NDN (D Curve)					
0.5	0.01	0.01	0.01	21.85	62.43
1	4.0	7.0	10	10.93	31.21
2	4.0	7.0	10	5.46	15.61
3	5.0	10.0	15	3.64	10.40
4	5.9	10.5	15	2.73	7.80
6	5.9	10.5	15	1.82	5.20
10	6.5	12.2	21.5	1.09	3.12
16	8.0	17.5	30	0.68	1.95
20	8.8	19.5	34	0.55	1.56
25	10	21	38	0.44	1.25
32	11	24	42	0.34	0.98
40	12.5	29	50	0.27	0.78
50	15	34	61	0.22	0.62
63	16	38	72	0.17	0.50
80				0.14	0.39
100				0.11	0.31
125				0.09	0.25