

MODULAR DEVICES FOR RESIDUAL CURRENT PROTECTION

RCBO - MDC

Technical data

TYPE				MDC 45		MDC 60		MDC 100		MDC 100 MA	
											
Standard				IEC/EN 61009-1 IEC/EN 61009-2-1		IEC/EN 61009-1 IEC/EN 61009-2-1		IEC/EN 61009-1 IEC/EN 61009-2-1		IEC/EN 61009-1 IEC/EN 61009-2-1	
Rated current (In) (A)				6-32		6-32		6-32		6-32	
Utilization category				A		A		A		A	
Rated operational voltage (Ue) (V AC)				230/400 - 240/415		230/400 - 240/415		230 - 240		110	
Insulation voltage (Ui) (V)				500		500		500		500	
Rated frequency (Hz)				50/60		50/60		50/60		50/60	
Rated impulse withstand voltage (Uimp)				4		4		4		4	
Overvoltage category				III		III		III		III	
Number of poles				1+N, 2 3, 4		1+N, 2 3, 4		1+N, 2, 3		2	
Energy limiting class (B and C)				3 1		3 1		3		3	
Breaking capacity											
Alternating current	IEC/EN 61009-1	Icn	(A)	4500		6000		10000		10000	
		Ics	(A)	1 Icn		1 Icn		0.75 Icn		0.75 Icn	
	IEC/EN 60947-2	Icu	230/240 V (kA)	6	-	7.5	-	10	10		
		Ics	400/415 V (kA)	-	4,5	-	6	-	-		
Ics (kA)				100% Icu		100% Icu		75% Icu		75% Icu	
Rated residual operating current (IΔn) (mA)											
Type	AC			30		30		30		30	
				300		300		300		300	
				30		30		30		30	
				-		-		100		-	
				300		300		300		300	
				A[IR]		-		30		30	
A[S]				-		300		-		-	
Level of immunity (8/20 μs) (A)				250		250 (for AC and A types) 3000 (for A[IR] and A[S] types)		250 (for AC and A types) 3000 (for A[IR] type)		250	
Residual making and breaking capacity (IΔm) (A)				4500		4500		4500		4500	
Voltage independent working:				yes		yes		yes		yes	
Wiring		cable	rigid	≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10		≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10		≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10		≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10	
		section (mm²)	flexible	≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10		≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10		≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10		≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10	
Electrical endurance				10000		10000		10000		10000	
Mechanical endurance				20000		20000		20000		20000	
Max. no. of usable modular accessories:				2		2		2		2	
Upline/Downline power supply				yes		yes		yes		yes	
Status displayed				yes		yes		yes		yes	
Mounting position				any		any		any		any	
Rated tightening torque (Nm)				2		2		2		2	
Screwdriver suggested				PZ2		PZ2		PZ2		PZ2	
Degree of protection		terminals		IP20		IP20		IP20		IP20	
		front		IP40		IP40		IP40		IP40	
Tropicalization				55°C - RH 95%		55°C - RH 95%		55°C - RH 95%		55°C - RH 95%	
Reference temperature (°C)				30		30		30		30	
Operating temperature (°C)				-25 +40		-25 +40		-25 +40		-25 +40	
Stocking temperature (°C)				-40 +70		-40 +70		-40 +70		-40 +70	
Double connection (cable+fork busbar)				yes (only downstream)		yes (only downstream)		yes (only downstream)		yes (only downstream)	
Weight per pole (g)				120		120		120		120	
Tripping characteristic				C		C B		C B		C	
Rated currents available (In) (A)				6		6 6		6 6		6	
				10		10 10		10 10		10	
				13		13 13		13 13		13	
				16		16 16		16 16		16	
				20		20 20		20 20		20	
				25		25 25		25 25		25	
				32		32 32		32 32		32	

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ADD-ON RCD - BD - BDHP

Technical data

TIPO			BD	BDHP	BDHP ADJUSTABLE
					
Standard			IEC/EN 61009-1 app. G IEC/EN 61009-2-1 app. G		EN 60947-2 app. B
Rated current (In)	(A)		≤ 25	≤ 125	≤ 125
Rated operational voltage (Ue)	(V AC)		230/400		230/400
Insulation voltage (Ui)	(V)		500		500
Rated frequency	(Hz)		50/60		50
Rated impulse withstand voltage (Uimp)	(kV)		4		4
Overvoltage category			III		III
Number of poles			2,3,4		4
Rated residual operating current (IΔn)	(mA)				
Type	AC		10 ⁽¹⁾	-	-
			30	30	-
			300	300	-
			500	-	-
	A		30	30	-
			300	300	-
			500	-	-
	A[IR]		-	30	-
	A[S]		-	300	-
			-	1000	-
	A[Adj.]		-	-	300 - 500 - 1000 - 3000
Adjustable tripping time (t)	(ms)		-		0 - 60 - 150
Level of immunity (8/20 μs)	(A)		250 (for AC and A types) 3000 (for A[IR] and A[S] types)		3000
Residual making and breaking capacity (IΔm)	(A)		Icn circuit breaker		Icn circuit breaker
Voltage independent working:			yes		yes
Wiring	cable section (mm ²)	rigid	≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10		≤ 1x70 - ≤ 2x25 - ≤ 2x25+1x10
		flexible	≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10		≤ 1x50 - ≤ 2x25 - ≤ 3x16
Upline/Downline power supply			yes		yes
Mounting position			any		any
Rated tightening torque	(Nm)		2		3,5 / 3 (terminals)
Screwdriver suggested			PZ2		PZ2
Degree of protection	terminals		IP20		IP20
	front		IP40		IP40
Pollution degree			2		2
Tropicalization			55°C - RH 95%		55°C - RH 95%
Reference temperature	(°C)		30		30
Operating temperature	(°C)		-25 +40		-25 +40
Stocking temperature:	(°C)		-40 +70		-40 +70
Weight per pole	(g)		100		200

⁽¹⁾ Only for 2P versionsFor technical information contact the Technical Assistance Service or visit gewiss.com

MODULAR DEVICES FOR RESIDUAL CURRENT PROTECTION

RCCB - IDP

Technical data

		IDP NA	IDP	IDP 4P (3M)	IDP 125A	IDP B Type
						
Standard		IEC/EN 61008-1 IEC/EN 61008-2-1	IEC/EN 61008-1 IEC/EN 61008-2-1	IEC/EN 61008-1 IEC/EN 61008-2-1	IEC/EN 61008-1 IEC/EN 61008-2-1	IEC/EN 61008-1 IEC/EN 61008-2-1 IEC/EN 62423
Rated current (I _n)	(A)	25-40-63	25-100	25-40	125	25-80
Rated operational voltage (U _e)	(V a.c.)	230/400 - 240/415	230/400 - 240/415	230/400	400	230/400
Insulation voltage (U _i)	(V)	500	500	500	500	500
Rated impulse withstand voltage (U _{imp})	kV	4	4	4	4	4
Overvoltage category		III	III	III	III	III
Rated frequency	(Hz)	50	50/60	50	50	50/60
Poles		2 (Up to 40A) 4 (Up to 63A)	2, 4	4	4	2 (Up to 40A) 4 (Up to 80A)
Number of modules		2 (2P) 4 (4P)	2 (2P) 4 (4P)	3	4	4 (2P / 4P)
Rated residual operating current (I _{Δn})	(mA)					
Type	AC	-	10 ⁽¹⁾	-	-	-
		30	30	30	30	-
		-	100	100	-	-
		300	300	300	300	-
	A	-	500	500	500	-
		-	10 ⁽¹⁾	10 ⁽¹⁾	-	-
		30	30	30	30	-
		-	100	100	-	-
		300	300	300	300	-
		-	500	500	500	-
	IR - Impulse resistant	-	30	-	-	30
		-	300	-	-	300
	S - Selective	-	-	-	-	500
		-	300	-	-	300
		-	500	-	-	-
Level of immunity (8/20μs)	(A)	250	250 (Type AC - A) 3000 (Type A[IR] - A[S])	250	250	3000 (Type B[IR]) 5000 (Type B[S])
Residual making and breaking capacity (I _{dm})	(A)	10 x I _n (500A min)	10xI _n (500A min)	630	1250	800
Making and breaking capacity (I _m)	(A)	10 x I _n (500A min)	10xI _n (500A min)	630	1250	800
Voltage independent working		yes	yes	yes	yes	yes
Wiring	Cable section					
	rigid	≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10	≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10	≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10	≤ 50	≤ 25
	flexible	≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10	≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10	≤ 1x25 - ≤ 1x16+1x10 - ≤ 3x6	≤ 50	≤ 25
Electrical endurance		5000	10000	5000	10000	10000
Mechanical endurance		10000	20000	10000	10000	10000
Upstream / Downstream supply		yes	yes	yes	yes	yes
Mounting position		any	any	any	any	any
Rated tightening torque	(Nm)	2	3	2	3	2,5
Screw type		PZ2	PZ2	PZ2	PZ2	PZ2
Pollution degree		2	2	2	2	2
Fire resistance		Glow wire Test IEC 60695-2-11 according with IEC 61008-1				
IP degree (inside the distribution board)		IP40	IP40	IP40	IP40	IP40
Tropicalization		55°C - UR 95%	55°C - UR 95%	55°C - UR 95%	55°C - UR 95%	55°C - UR 95%
Installation altitude	(m)	≤ 2000	≤ 2000	≤ 2000	≤ 2000	≤ 2000
Operating temperature (average daily temperature ≤ 35°C)	(°C)	-5 ÷ +40	-25 ÷ +60	-25 ÷ +40	-25 ÷ +40	-25 ÷ +45
Storage temperature (average daily temperature ≤ 35°C)	(°C)	-40 ÷ +70	-40 ÷ +70	-40 ÷ +70	-40 ÷ +70	-40 ÷ +70
Double connection (cable + fork busbar)		no (for 2P) yes (only downstream for 4P)	yes (Upstream and downstream)	yes (Upstream and downstream)	no	yes (only downstream)
Signalization of the relay tripping		no	yes	no	no	no

⁽¹⁾ Up to 25A

RATED CONDITIONAL RESIDUAL SHORT-CIRCUIT CURRENT I _{Δc} (kA)												
Rated current I _n		25A / 40A (NA)		25A / 40A			63A(NA)		80A		100A	
Poles		2P	4P	2P	4P	4P (3M)	2P/4P	2P/4P	2P	4P	2P	4P
Fuse	gG 63A	6	6	10	10	6	6	-	-	-	-	-
	gG 80A	-	-	-	-	-	-	10	-	-	-	-
	gG 100	-	-	10*	10*	-	-	10*	6	6	6	6
	gG 125	-	-	-	-	-	-	-	-	-	-	10
MCB	MTC 45			4,5			-		-		-	-
	MTC 60			6			-		-		-	-
	MT 60			6			6		-		-	-
	MT 100			10			10		-		-	-
	MT 250			10			10		-		-	-
	MTHP 160			-			10		10		10	10
	MTHP 250			10			10		-		-	-

* Only Type B RCCBs

For technical information contact the Technical Assistance Service or visit gewiss.com

Power loss values and temperature performance

MDC 45 - 60 - 100 compact residual current circuit breakers with overcurrent protection

Technical characteristics

For circuit overcurrent protection and the residual current protection of devices and services, there are the MDC 45, MDC 60 and MDC 100 compact residual current circuit breakers with overcurrent protection.

The MDC compact miniature circuit breakers with residual current release have a thermomagnetic part with the same characteristics as the MTC circuit breakers. The residual current release - assembled in the factory inside the same modular shell - is available in AC, A, A[IR] impulse resistant and A[S] selective versions with a rated residual current of 30, 100 and 300 mA.

Some advice about selection and installation

One of the most common problems when installing residual current circuit breakers is the untimely tripping caused by earth leakage which is not due to real faults.

The most frequent causes are:

- services with electronic devices such as computers, hi-fi systems and household appliances in general, which are fitted with anti-interference capacity filters
- capacity effects of the electrical lines of the system which have a high capacity towards earth, especially if they are widely extended.

In these cases, the capacity effect leads to the generation of a residual current leakage, causing the circuit breaker to trip. The intensity of this current increases above all when there are surges of voltage in the mains due to atmospheric disturbance, or transitory interference caused by the services. At the time of switch-off, fluorescent lamps equipped with a ballast are typical generators of such interference, which can be removed by introducing small capacities in parallel. All residual current circuit breakers are equipped with anti-interference devices.

In the presence of electronic equipment which can generate one-way runaway currents, it is essential to install A-type residual current circuit breakers.

MDC temperature performance

In (A)	Temperature					
	10°C	20°C	30°C	40°C	50°C	60°C
6	7.2	6.6	6	5.7	5.3	5
10	11.8	10.8	10	9.6	9.1	8.6
13	14.8	14	13	12.2	11.2	10.3
16	18.2	17.2	16	15.2	14.3	13.4
20	22.8	21.4	20	19.5	18.9	18.4
25	28.5	26.8	25	24	23	22
32	36.5	34.2	32	30.8	29.5	28.8

MDC power loss per pole

In (A)	6		10		13		16		20		25		32	
	Pole	N	Pole	N	Pole	N	Pole	N	Pole	N	Pole	N	Pole	N
R (mΩ)	29.4	2.6	20.6	2.6	14.5	2.6	8.9	2.6	6.8	2.6	4.6	2.6	3.6	2.6
P (W)	1.06	0.09	2.06	0.26	2.45	0.44	2.28	0.67	2.72	1.04	2.88	2	3.67	2.66

BD - BDHP add-on for miniature circuit breaker

Add-on for MT (BD) and MTHP (BDHP) miniature circuit breakers, which can be coupled by the installer once only (in compliance with Standard CEI EN 61009, appendix G). AC, A, A[IR] impulse resistant, A[S] selective and adjustable types are available.

BD and BDHP power loss per pole

Power loss (W)		Rated current of the associated MT/MTHP miniature circuit breaker [A]																
		1	2	3	4	6	10	13	16	20	25	32	40	50	63	80	100	125
BD add-on	2P	0.01	0.04	0.01	0.02	0.04	0.11	0.2	0.29	0.45	0.70	0.45	0.70	1.10	1.75	-	-	-
	3P-4P	0.002	0.008	0.02	0.03	0.07	0.21	0.37	0.53	0.83	1.30	0.65	1.00	1.60	2.50	-	-	-
BDHP add-on		-	-	-	-	-	-	-	-	0.2	0.3	0.5	0.8	1.25	2	1.4	2.2	3.4

MODULAR DEVICES FOR RESIDUAL CURRENT PROTECTION

IDP residual current circuit breakers

TECHNICAL CHARACTERISTICS

Two-pole and four-pole residual current circuit breakers without built-in overcurrent releases - free release monobloc.

AC class devices with instantaneous tripping are available (for residual sinusoidal alternating currents only), whereas A class residual current circuit breakers (suitable for residual one-way pulsating currents with a direct component) are available in instantaneous, impulse-resistant and selective versions.

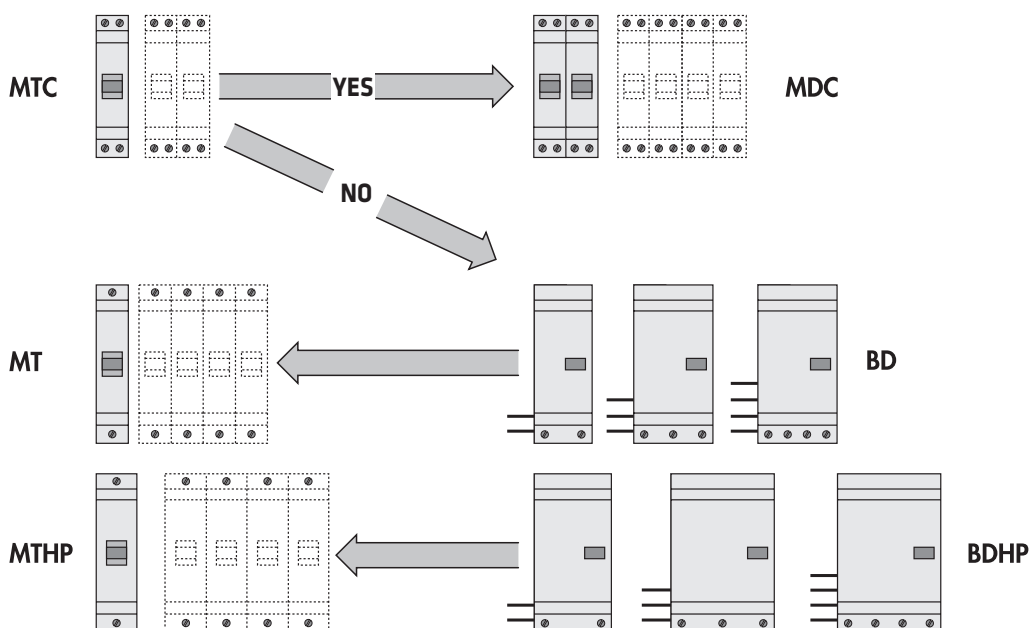
Moreover B class residual current circuit breakers in instantaneous and selective versions are available for the protection of electrical loads which can create fault currents with a direct component in case of earth leakage.

POWER LOSS PER DEVICE (W)							
Rated current In (A)							
Type AC, A, A[IR] and A[S]							
Poles	No. of modules	25	40	63	80	100	125
2	2	2,2	5,4	6,2	10,4	11	-
4	3	6	6	-	-	-	-
	4	3,5	6	12	16	18	25
Type B[IR] and B[S]							
2/4	4	1,2 (30mA) 0,65 (300mA)	3,2 (30mA) 1,65 (300mA)	4 (30mA) 3,2 (3/500mA)	6,4 (30mA) 4,8 (300mA)	-	-

Composition rules for the modular residual current circuit breakers

In order to obtain a residual current circuit breaker from a miniature circuit breaker, it is necessary to observe these rules:

- 1 - there is no residual current device that can be associated with the MTC circuit breakers. There is the MDC compact monobloc residual current circuit breaker with overcurrent protection.
- 2 - the BD add-on residual current device can only be associated with the MT circuit breakers.
- 3 - the BDHP add-on residual current device can only be associated with the MTHP circuit breakers.

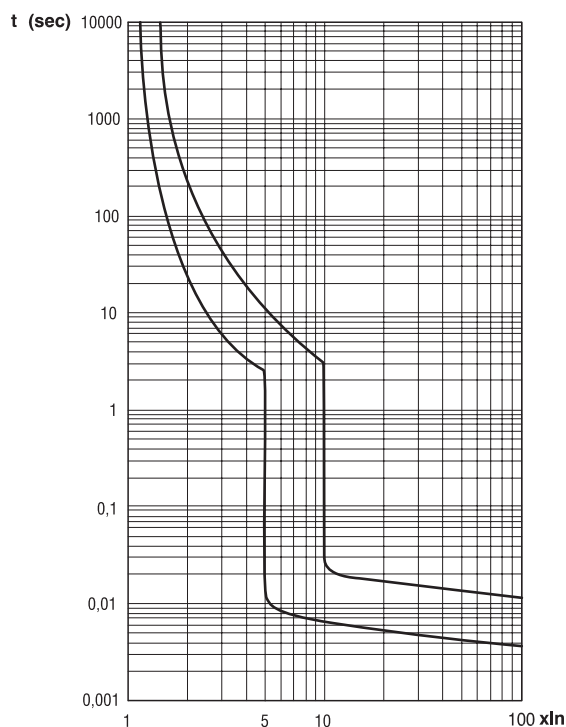


Tripping characteristics

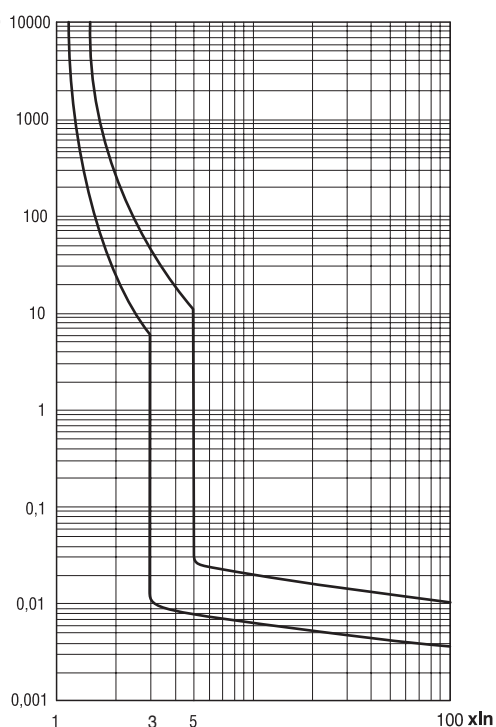
Termo-magnetic

release

MDC 45 - 60 - 100 Characteristic C

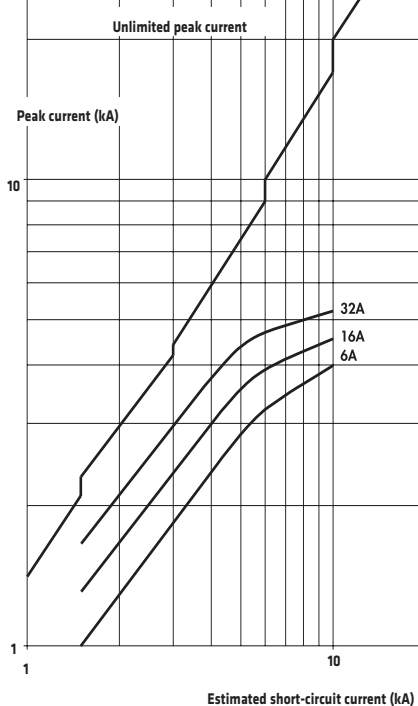


MDC 60 - 100 Characteristic B

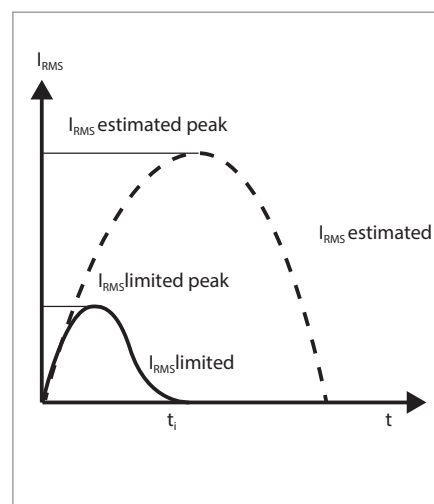
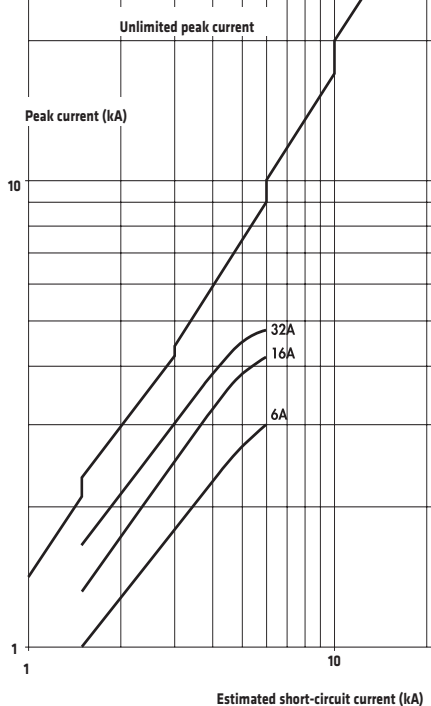


Peak current limitation characteristics

MDC - 1P + N 2P 230V version



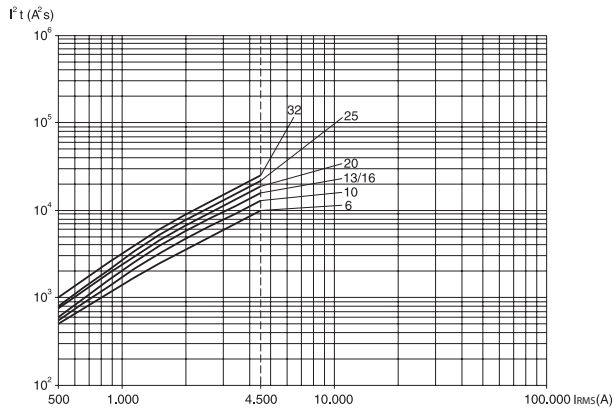
MDC - 3P 4P 400V version



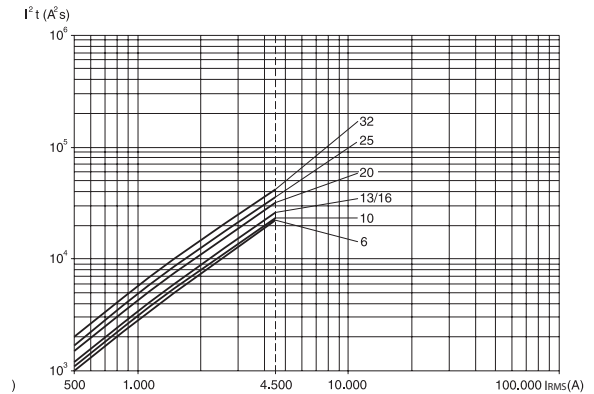
The following curves give the values of the peak current in relation to the estimated short-circuit current expressed in kA. Every curve refers to each rated current value of circuit breaker.

Specific let-through energy characteristics - MDC

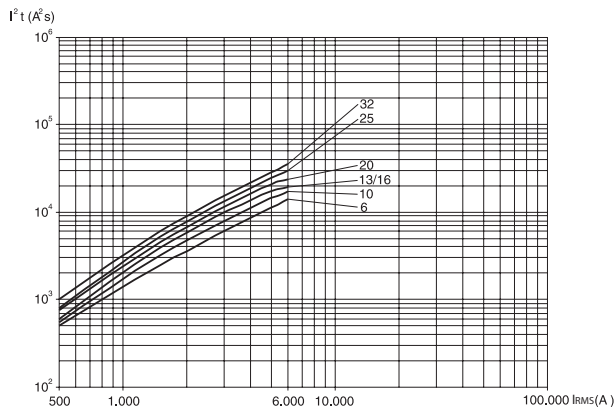
MDC 45 - 1P+N, 2P - 230V versions



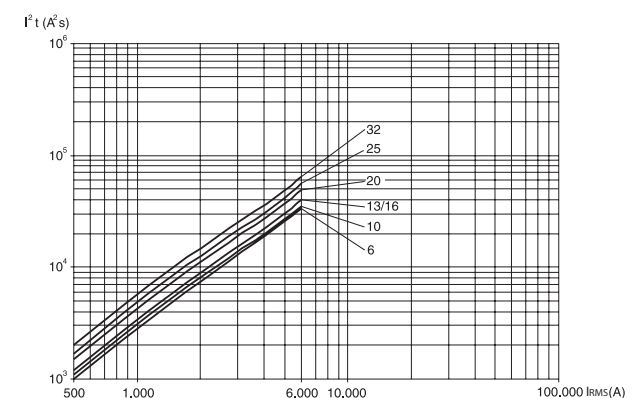
MDC 45 - 3P, 4P - 230/400V versions



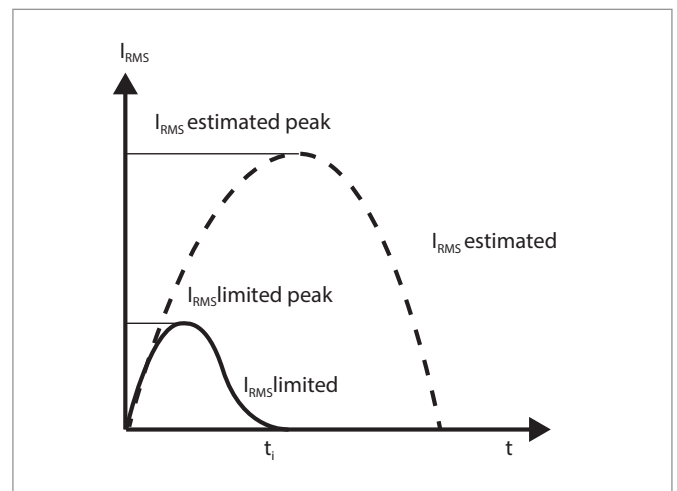
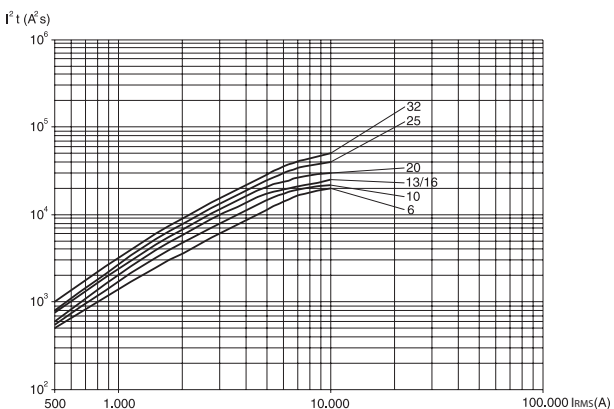
MDC 60 - 1P+N, 2P - 230V versions



MDC 60 - 3P, 4P - 230/400V versions



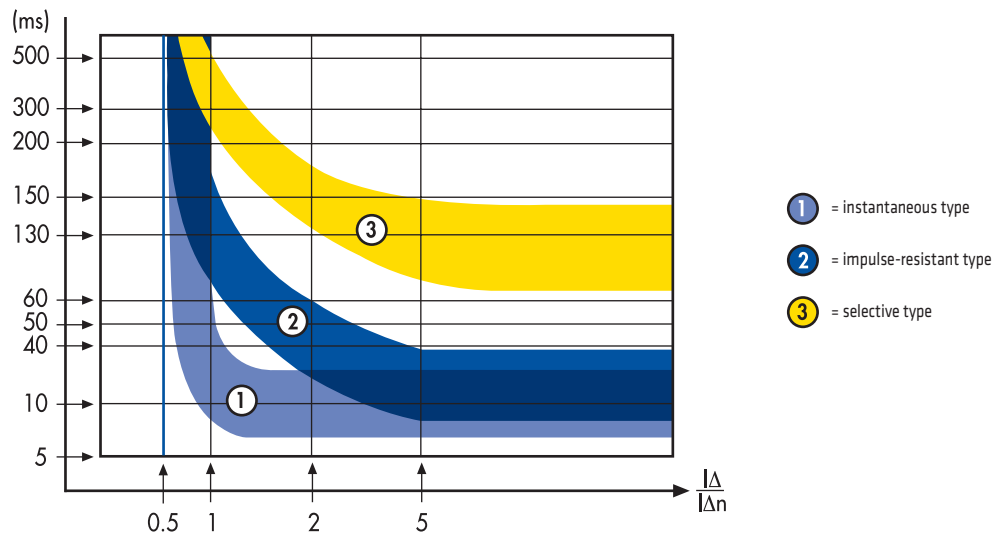
MDC 100 - 1P+N, 2P - 230V versions



The curves above give the values of the specific let-through energy in relation to the short-circuit current expressed in A. Every curve refers to each rated current value of circuit breaker.

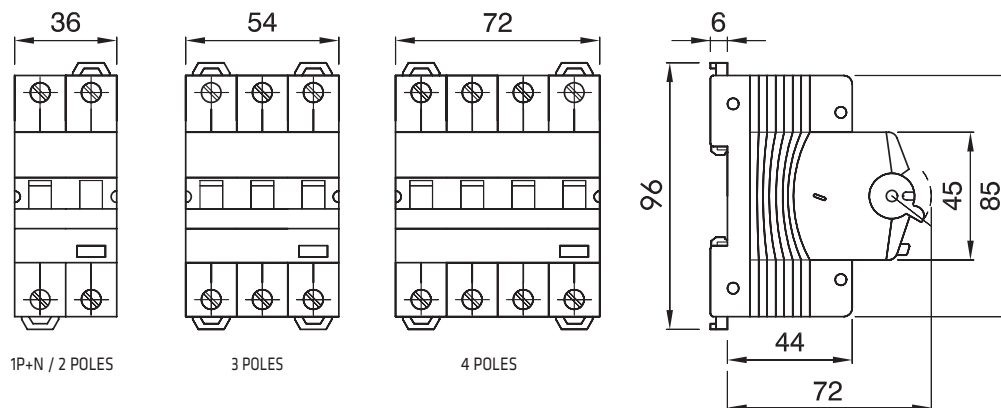
Residual current circuit breaker tripping characteristics

MDC - BD - BDHP - IDP



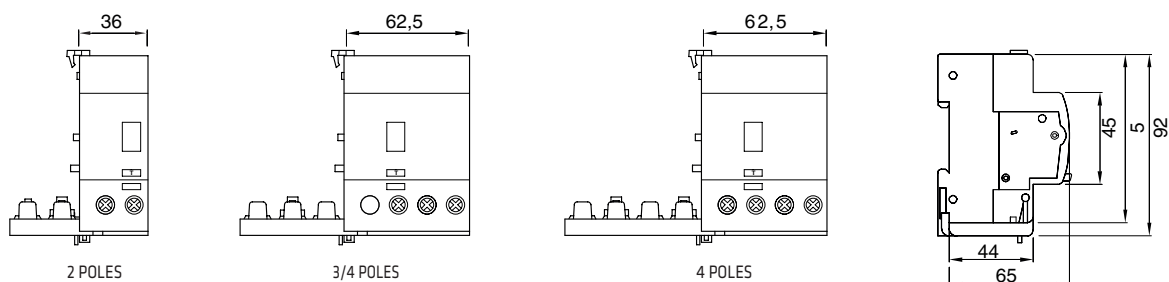
Dimension tables

MDC 45 - MDC 60 - MDC 100 RESIDUAL CURRENT CIRCUIT BREAKERS WITH OVERCURRENT PROTECTION

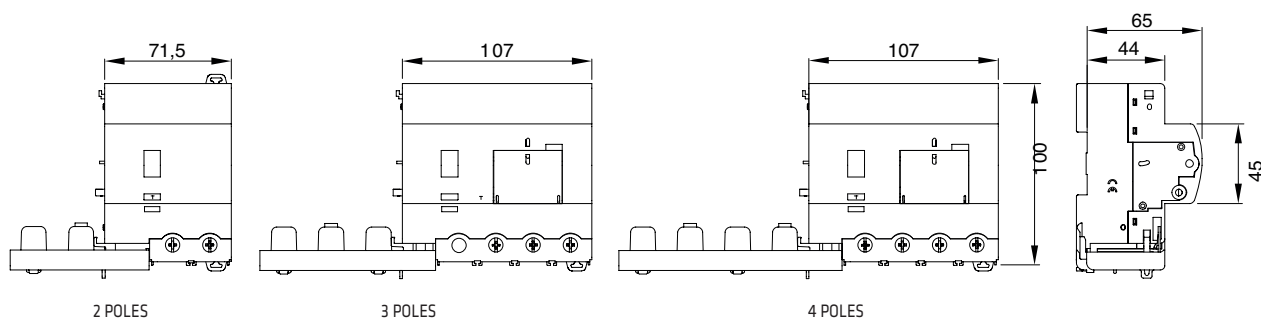


MODULAR DEVICES FOR RESIDUAL CURRENT PROTECTION

BD - ADD-ON RESIDUAL CURRENT DEVICES

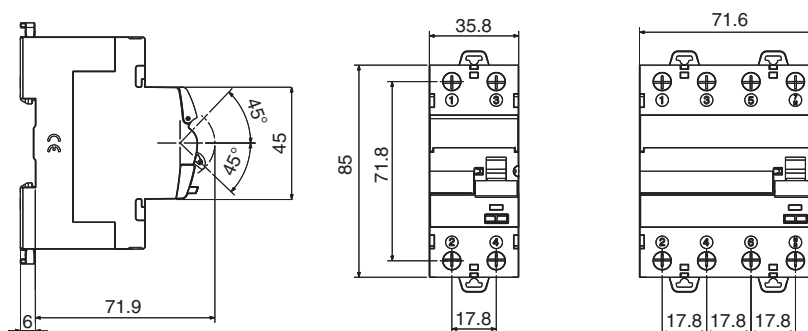


BDHP - ADD-ON RESIDUAL CURRENT DEVICES

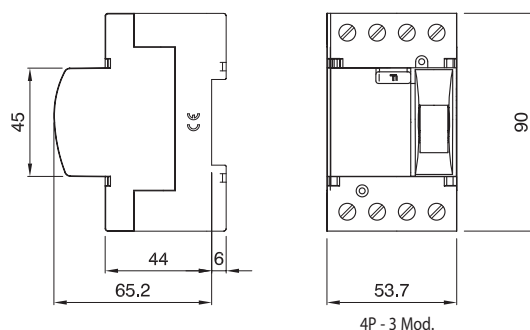


MODULAR DEVICES FOR RESIDUAL CURRENT PROTECTION

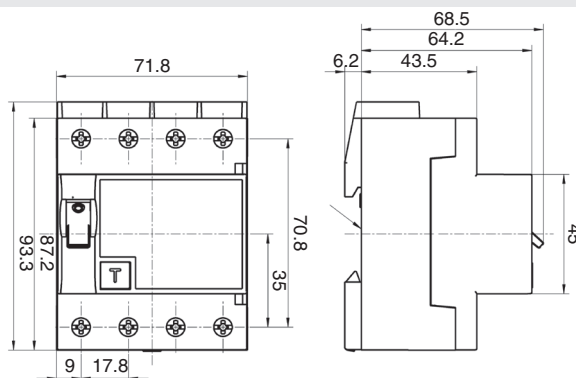
IDP - 2P AND 4P (4M) RESIDUAL CURRENT CIRCUIT BREAKERS



IDP - 4P (3M) RESIDUAL CURRENT CIRCUIT BREAKERS



IDP - 125A RESIDUAL CURRENT CIRCUIT BREAKERS



IDP - TYPE B RESIDUAL CURRENT CIRCUIT BREAKERS

