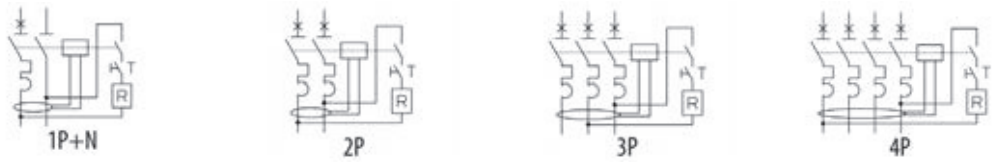
90 RCD

Modular circuit breakers for residual current protection

The 90 RCD range meets any ground fault protection requirement for any area of application. The range comprises MDC compact residual current c.b. with overcurrent protection (from 6 to 32 A, curves B and C, up to 10 kA and IΔn from 30 and 300 mA type AC, A, A[IR] and A[S]) BD and BDHP, add-on residual current devices for circuit breakers MT and MTHP (IΔn from 10 mA to 3 A type AC, A, A[IR], A[S] and A adjustable) SD residual current circuit breakers (up to 125 A, IΔn from 10 to 500 mA type AC, A, A[IR], A[S], B[IR] and B[S]).

Technical characteristics page 122

MDC - MONOBLOC COMPACT RCBO'S



MDC 45 - AC TYPE - C CURVE - 4500 A (EN 61009-1) - 4.5 KA (EN 60947-2)

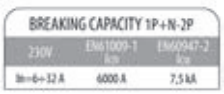
GW 94 027

COMPACT RESIDUAL CURRENT CIRCUIT BREAKERS WITH OVERCURRENT PROTECTION

Code	Idn	Rated current	Rated voltage	No. of modules EN 50022	Pack Carton
No. of poles: 1P+N					
GW 94 005	30 mA	6 A	230 V	2	1/6
GW 94 006	30 mA	10 A	230 V	2	1/6
GW 94 011	30 mA	13 A	230 V	2	1/6
GW 94 007	30 mA	16 A	230 V	2	1/6
GW 94 008	30 mA	20 A	230 V	2	1/6
GW 94 009	30 mA	25 A	230 V	2	1/6
GW 94 010	30 mA	32 A	230 V	2	1/6
GW 94 015	300 mA	6 A	230 V	2	1/6
GW 94 016	300 mA	10 A	230 V	2	1/6
GW 94 017	300 mA	16 A	230 V	2	1/6
GW 94 018	300 mA	20 A	230 V	2	1/6
GW 94 019	300 mA	25 A	230 V	2	1/6
GW 94 020	300 mA	32 A	230 V	2	1/6
No. of poles: 2P					
GW 94 025	30 mA	6 A	230 V	2	1/6
GW 94 026	30 mA	10 A	230 V	2	1/6
GW 94 031	30 mA	13 A	230 V	2	1/6
GW 94 027	30 mA	16 A	230 V	2	1/6
GW 94 028	30 mA	20 A	230 V	2	1/6
GW 94 029	30 mA	25 A	230 V	2	1/6
GW 94 030	30 mA	32 A	230 V	2	1/6
GW 94 035	300 mA	6 A	230 V	2	1/6
GW 94 036	300 mA	10 A	230 V	2	1/6
GW 94 037	300 mA	16 A	230 V	2	1/6
GW 94 038	300 mA	20 A	230 V	2	1/6
GW 94 039	300 mA	25 A	230 V	2	1/6
GW 94 040	300 mA	32 A	230 V	2	1/6

to be continued on next page

MDC 60 - A TYPE - C CURVE - 6000 A (EN 61009-1) - 6 KA (EN 60947-2)

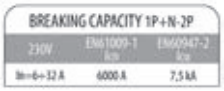


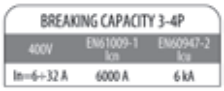
GW 94 347

COMPACT RESIDUAL CURRENT CIRCUIT BREAKERS WITH OVERCURRENT PROTECTION

Code	Idn	Rated current	Rated voltage	No. of modules EN 50022	Pack Carton
No. of poles: 1P+N					
GW 94 305	30 mA	6 A	230 V	2	1/6
GW 94 306	30 mA	10 A	230 V	2	1/6
GW 94 311	30 mA	13 A	230 V	2	1/6
GW 94 307	30 mA	16 A	230 V	2	1/6
GW 94 308	30 mA	20 A	230 V	2	1/6
GW 94 309	30 mA	25 A	230 V	2	1/6
GW 94 310	30 mA	32 A	230 V	2	1/6
GW 94 315	300 mA	6 A	230 V	2	1/6
GW 94 316	300 mA	10 A	230 V	2	1/6
GW 94 317	300 mA	16 A	230 V	2	1/6
GW 94 318	300 mA	20 A	230 V	2	1/6
GW 94 319	300 mA	25 A	230 V	2	1/6
GW 94 320	300 mA	32 A	230 V	2	1/6
No. of poles: 2P					
GW 94 325	30 mA	6 A	230 V	2	1/6
GW 94 326	30 mA	10 A	230 V	2	1/6
GW 94 331	30 mA	13 A	230 V	2	1/6
GW 94 327	30 mA	16 A	230 V	2	1/6
GW 94 328	30 mA	20 A	230 V	2	1/6
GW 94 329	30 mA	25 A	230 V	2	1/6
GW 94 330	30 mA	32 A	230 V	2	1/6
GW 94 335	300 mA	6 A	230 V	2	1/6
GW 94 336	300 mA	10 A	230 V	2	1/6
GW 94 337	300 mA	16 A	230 V	2	1/6
GW 94 338	300 mA	20 A	230 V	2	1/6
GW 94 339	300 mA	25 A	230 V	2	1/6
GW 94 340	300 mA	32 A	230 V	2	1/6
No. of poles: 3P					
GW 94 345	30 mA	6 A	400 V	3	1/4
GW 94 346	30 mA	10 A	400 V	3	1/4
GW 94 351	30 mA	13 A	400 V	3	1/4
GW 94 347	30 mA	16 A	400 V	3	1/4
GW 94 348	30 mA	20 A	400 V	3	1/4
GW 94 349	30 mA	25 A	400 V	3	1/4
GW 94 350	30 mA	32 A	400 V	3	1/4
GW 94 355	300 mA	6 A	400 V	3	1/4
GW 94 356	300 mA	10 A	400 V	3	1/4
GW 94 357	300 mA	16 A	400 V	3	1/4
GW 94 358	300 mA	20 A	400 V	3	1/4
GW 94 359	300 mA	25 A	400 V	3	1/4
GW 94 360	300 mA	32 A	400 V	3	1/4
No. of poles: 4P					
GW 94 365	30 mA	6 A	400 V	4	1/3
GW 94 366	30 mA	10 A	400 V	4	1/3
GW 94 371	30 mA	13 A	400 V	4	1/3
GW 94 367	30 mA	16 A	400 V	4	1/3
GW 94 368	30 mA	20 A	400 V	4	1/3
GW 94 369	30 mA	25 A	400 V	4	1/3
GW 94 370	30 mA	32 A	400 V	4	1/3
GW 94 375	300 mA	6 A	400 V	4	1/3
GW 94 376	300 mA	10 A	400 V	4	1/3
GW 94 377	300 mA	16 A	400 V	4	1/3
GW 94 378	300 mA	20 A	400 V	4	1/3
GW 94 379	300 mA	25 A	400 V	4	1/3
GW 94 380	300 mA	32 A	400 V	4	1/3

MDC 60 - A TYPE - B CURVE - 6000 A (EN 61009-1) - 6 KA (EN 60947-2)





GW 95 168

COMPACT RESIDUAL CURRENT CIRCUIT BREAKERS WITH OVERCURRENT PROTECTION

Code	Idn	Rated current	Rated voltage	No. of modules EN 50022	Pack Carton
No. of poles: 1P+N					
GW 95 105	30 mA	6 A	230 V	2	1/6
GW 95 106	30 mA	10 A	230 V	2	1/6
GW 95 111	30 mA	13 A	230 V	2	1/6
GW 95 107	30 mA	16 A	230 V	2	1/6
GW 95 108	30 mA	20 A	230 V	2	1/6
GW 95 109	30 mA	25 A	230 V	2	1/6
GW 95 110	30 mA	32 A	230 V	2	1/6
GW 95 115	300 mA	6 A	230 V	2	1/6
GW 95 116	300 mA	10 A	230 V	2	1/6
GW 95 117	300 mA	16 A	230 V	2	1/6
GW 95 118	300 mA	20 A	230 V	2	1/6
GW 95 119	300 mA	25 A	230 V	2	1/6
GW 95 120	300 mA	32 A	230 V	2	1/6
No. of poles: 2P					
GW 95 125	30 mA	6 A	230 V	2	1/6
GW 95 126	30 mA	10 A	230 V	2	1/6
GW 95 131	30 mA	13 A	230 V	2	1/6
GW 95 127	30 mA	16 A	230 V	2	1/6
GW 95 128	30 mA	20 A	230 V	2	1/6
GW 95 129	30 mA	25 A	230 V	2	1/6
GW 95 130	30 mA	32 A	230 V	2	1/6
GW 95 135	300 mA	6 A	230 V	2	1/6
GW 95 136	300 mA	10 A	230 V	2	1/6
GW 95 137	300 mA	16 A	230 V	2	1/6
GW 95 138	300 mA	20 A	230 V	2	1/6
GW 95 139	300 mA	25 A	230 V	2	1/6
GW 95 140	300 mA	32 A	230 V	2	1/6
No. of poles: 3P					
GW 95 145	30 mA	6 A	400 V	3	1/4
GW 95 146	30 mA	10 A	400 V	3	1/4
GW 95 151	30 mA	13 A	400 V	3	1/4
GW 95 147	30 mA	16 A	400 V	3	1/4
GW 95 148	30 mA	20 A	400 V	3	1/4
GW 95 149	30 mA	25 A	400 V	3	1/4
GW 95 150	30 mA	32 A	400 V	3	1/4
GW 95 155	300 mA	6 A	400 V	3	1/4
GW 95 156	300 mA	10 A	400 V	3	1/4
GW 95 157	300 mA	16 A	400 V	3	1/4
GW 95 158	300 mA	20 A	400 V	3	1/4
GW 95 159	300 mA	25 A	400 V	3	1/4
GW 95 160	300 mA	32 A	400 V	3	1/4
No. of poles: 4P					
GW 95 165	30 mA	6 A	400 V	4	1/3
GW 95 166	30 mA	10 A	400 V	4	1/3
GW 95 171	30 mA	13 A	400 V	4	1/3
GW 95 167	30 mA	16 A	400 V	4	1/3
GW 95 168	30 mA	20 A	400 V	4	1/3
GW 95 169	30 mA	25 A	400 V	4	1/3
GW 95 170	30 mA	32 A	400 V	4	1/3
GW 95 175	300 mA	6 A	400 V	4	1/3
GW 95 176	300 mA	10 A	400 V	4	1/3
GW 95 177	300 mA	16 A	400 V	4	1/3
GW 95 178	300 mA	20 A	400 V	4	1/3
GW 95 179	300 mA	25 A	400 V	4	1/3
GW 95 180	300 mA	32 A	400 V	4	1/3

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
			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
			A		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 section (mm²)	rigid			≤ 1x35 - ≤ 2x16 -≤ 1x16+2x10		≤ 1x35 - ≤ 2x16 -≤ 1x16+2x10		≤ 1x35 - ≤ 2x16 -≤ 1x16+2x10		≤ 1x35 - ≤ 2x16 -≤ 1x16+2x10
		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

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.

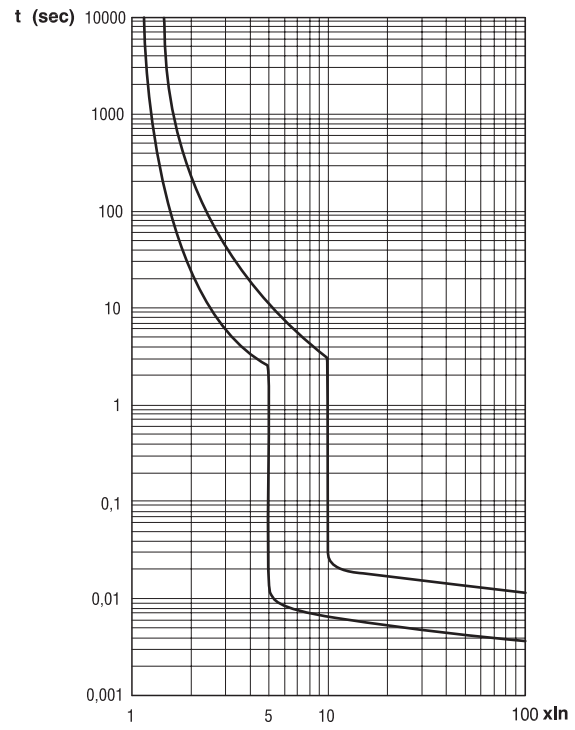
BD and BDHP power loss per pole

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

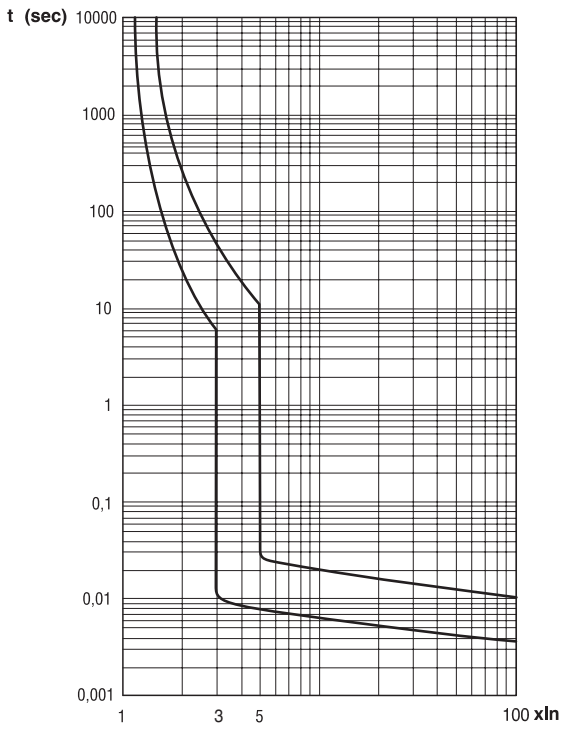
Tripping characteristics

Termo-magnetic release

MDC 45 - 60 - 100 Characteristic C

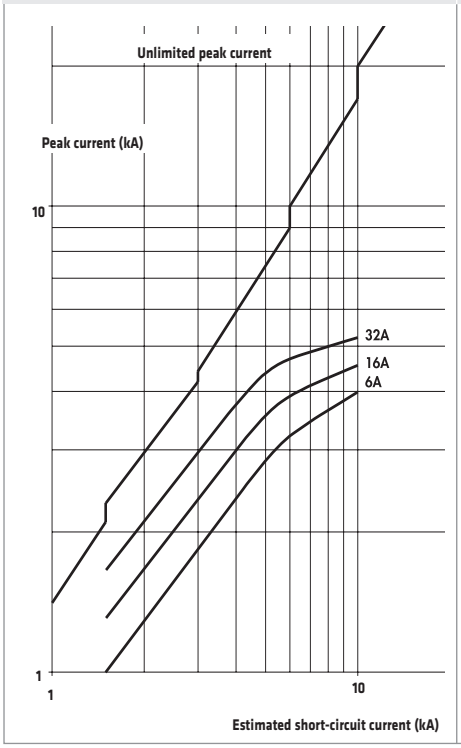


MDC 60 - 100 Characteristic B

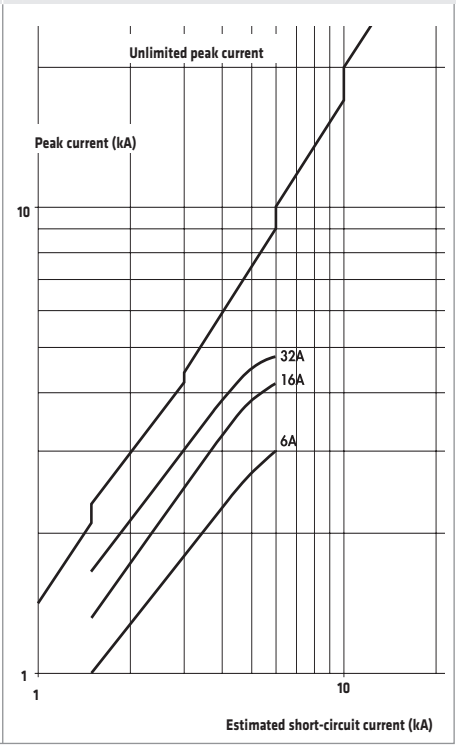


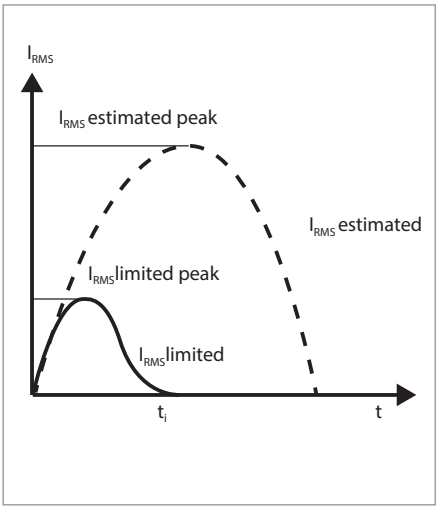
Peak current limitation characteristics

MDC - 1P + N 2P 230V version



MDC - 3P 4P 400V version



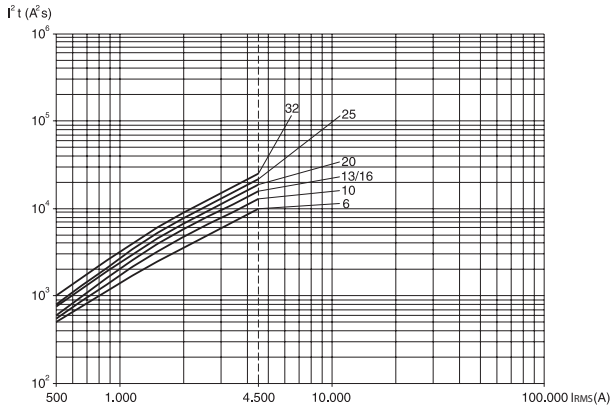


The following curves give the values of the peak current in relation to the estimated short-circuit current expressed in kA. Every curve refers to each rated current value of circuit breaker.

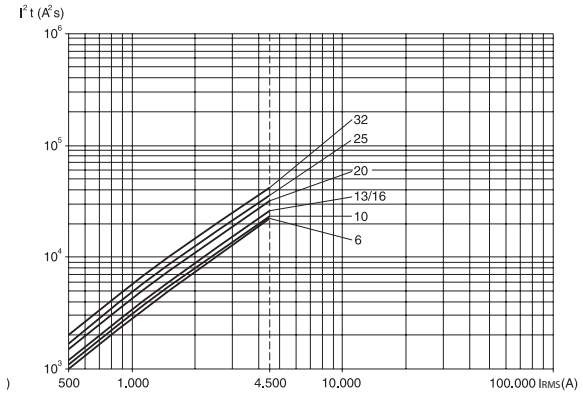
For technical information contact the Technical Assistance Service or visit gewiss.com

Specific let-through energy characteristics - MDC

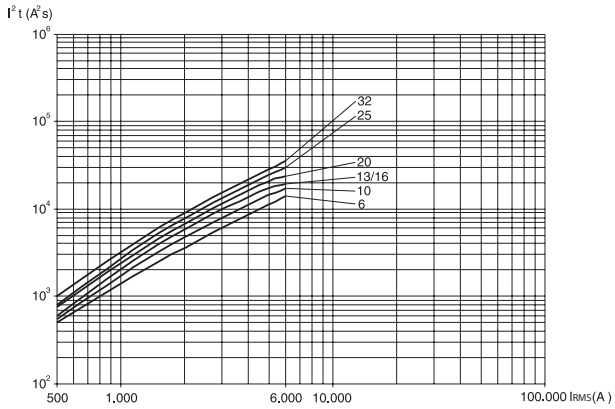
MDC 45 - 1P+N, 2P - 230V versions



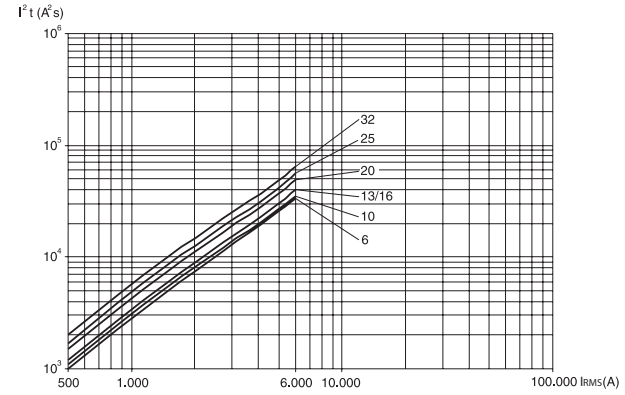
MDC 45 - 3P, 4P - 230/400V versions



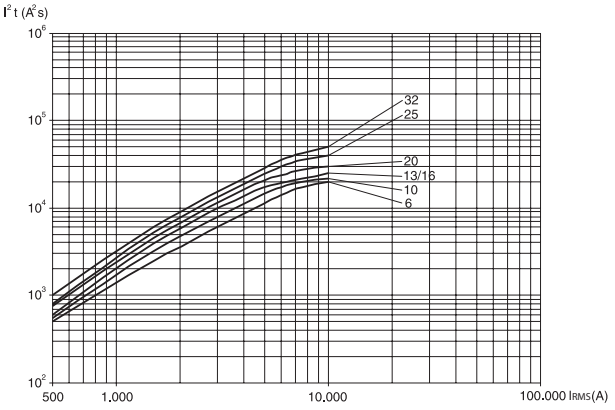
MDC 60 - 1P+N, 2P - 230V versions

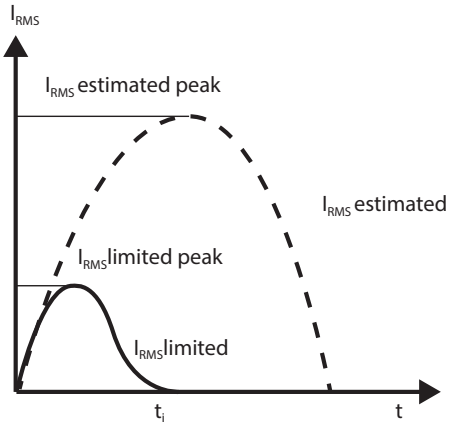


MDC 60 - 3P, 4P - 230/400V versions



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

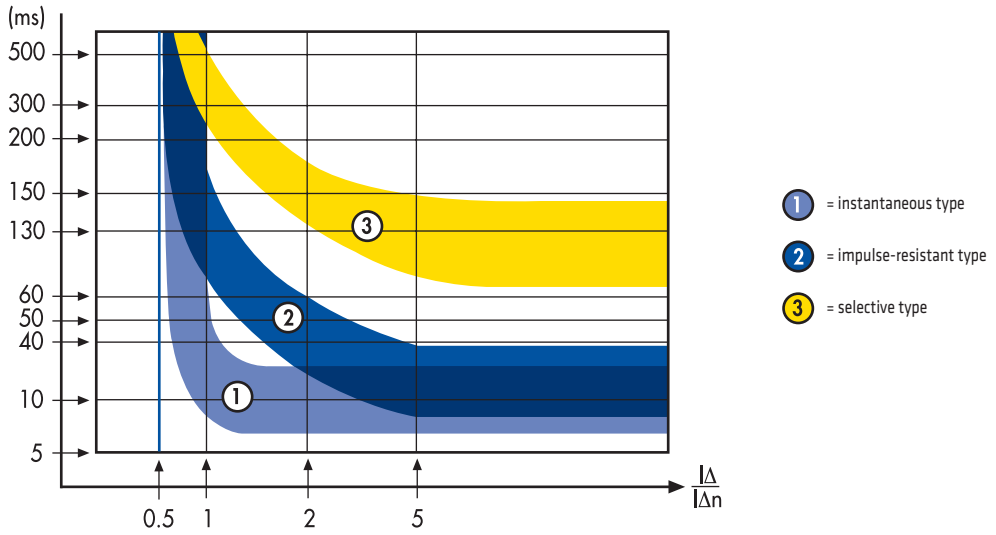




The curves above give the values of the specific let-through energy in relation to the short-circuit current expressed in A. Every curve refers to each rated current value of circuit breaker.

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