

Industrial Motors
Commercial &
Appliance Motors
**Automation &
Systems**
Energy
Transmission &
Distribution
Coatings

MDW — Miniature Circuit Breaker

**Ensuring the
protection**
of the electrical
installation



Driving efficiency and sustainability



S U M M A R Y

Miniature circuit breakers

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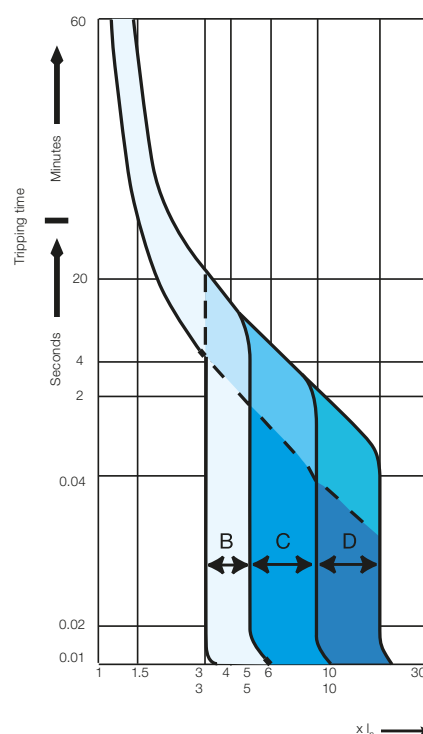
Miniature circuit breakers

Ensuring the protection of the electrical installation

MDWP, MDWS, MDW and MDWH mini circuit breaker line offers **protection against overload and short circuit in electric conductors**, complying with the tripping characteristic curves B, C, and D, according to standards IEC 60898-1 and IEC 60947-2. Developed to be used in low voltage circuits with direct or alternating current from 2 to 125 A, the line has a short circuit breaking capacity up to 20 kA (127/220 V_{AC}), according to standard IEC 60947-2. The miniature circuit breakers have a trip free mechanism, which makes the trip independent from the handle, and circuit breaker status indication.

Tripping curves:

- **Curve B**
The main characteristic of the miniature circuit breaker of curve B is the instantaneous trip for currents from 3 to 5 times above the rated current. Therefore, they are applied mainly in the protection of circuits with resistive characteristics or with great cable lengths.
- **Curve C**
The characteristic of the miniature circuit breaker of curve C is the instantaneous trip for currents from 5 to 10 times above the rated current. Therefore, they are used for the protection of circuits with installation of inductive loads.
- **Curve D**
The characteristic of the miniature circuit breaker of curve D is the instantaneous trip for currents from 10 to 20 times above the rated current. Therefore, they are used for the protection of highly inductive loads who present a high starting current peak during the starting time, like big electric motors, electric transformers, etc.

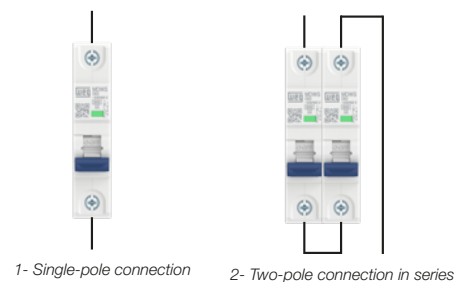


Technical characteristics MDWP and MDWS

Selection table

Model			MDWP	MDWS
Curves			B, C	B, C, D
Rated current		[A]	$2 \leq I_n \leq 63$	$2 \leq I_n \leq 63$
Standard	N. poles	U_e [V]		
IEC/EN 60898-1 Alternating current in kA	I_{cn}	1, 2, 3, 4	127/220	10
			230/400	6
IEC/EN 60947-2 Alternating current in kA	I_{cu}	1	127	20
			230	10
		2, 3, 4	220	20
			400	10
	I_{cs}	1	127	15
			230	7.5
		2, 3, 4	220	15
			400	7.5
IEC/EN 60947-2 Direct current in kA	I_{cu}	1 ¹⁾	48	15
			60	15
			125	10
			250	5
		2 ²⁾	125	-
			250	10

Notes: 1) Single-pole connection.
2) Two-pole connection in series.



Technical characteristics MDWP and MDWS

Technical characteristics

Model			MDWP	MDWS
General data	Standards		IEC/EN 60898-1	
			IEC/EN 60947-2	
	Poles		1P, 2P, 3P, 4P	1P, 2P, 3P, 4P, 1P+N, 3P+N
	Tripping characteristics		B, C	B, C, D
	Rated current ¹⁾²⁾ I_n	A	2-63 A	
	Rated frequency f	Hz	50 / 60 Hz	
	Rated insulation voltage U_i	V	500 V _{AC} (phase to phase)	
	Overvoltage category		III	
Data acc. to IEC/EN 60898-1	Pollution degree		3	
	Rated operational voltage U_n	V	1P: 230 V _{AC}	
			2-4P: 400 V _{AC}	
	Max. power frequency recovery voltage (U_{max})	V	1P: 253 V _{AC}	
			2-4P: 440 V _{AC}	
	Min. operating voltage	V	24 V _{AC} - 24 V _{DC}	
	Rated short-circuit capacity I_{cn}	kA	3 kA	6 kA
	Energy limiting class (B, C)		1	3
	Rated impulse withstand voltage U_{imp} (1.2/50 μ s)	kV	4 kV at 2,000 m (6.2 kV at sea level)	
	Dielectric test voltage	kV	1.89 kV (50 / 60 Hz, 1min)	
Data acc. to IEC/EN 60947-2	Reference temperature for tripping characteristics	°C	B, C: 30 °C	B, C, D: 30 °C
	Electrical endurance	ops.	4,000 ops, (1 cycle 2s - ON, 13s - OFF, $I_n \leq 32$ A), (1 cycle 2s - ON, 28s - OFF, $I_n > 32$ A)	
	Rated operational voltage U_e	V	1P: 230 V _{AC}	
			2-4P: 400 V _{AC}	
	Max. power frequency recovery voltage (U_{max})	V	1P: 253 V _{AC}	
			2-4P: 440 V _{AC}	
	Min. operating voltage	V	24 V _{AC} - 24 V _{DC}	
	Rated ultimate short-circuit breaking capacity I_{cu}	kA	5 kA	10 kA
	Rated service short-circuit breaking capacity I_{cs}	kA	3 kA	7.5 kA
Mechanical data	Rated impulse withstand voltage U_{imp} (1.2/50 μ s)	kV	4 kV at 2,000 m (6.2 kV at sea level)	
	Dielectric test voltage	kV	1.89 kV (50 / 60 Hz, 1min)	
	Reference temperature for tripping characteristics	°C	B, C: 50 °C	B, C, D: 50 °C
	Electrical endurance	ops.	4,000 ops, (1 cycle 2s - ON, 13s - OFF, $I_n \leq 32$ A), (1 cycle 2s - ON, 28s - OFF, $I_n > 32$ A)	
	Housing		Insulation group II, RAL 7035 fire exposure V2 acc.to UL 94	
	Toggle		Insulation group II, RAL 7035 fire exposure HB acc.to UL 94	
	Contact position indication		Marking on toggle (I-ON / 0-OFF)	Marking on toggle (I-ON / 0-OFF), real CPI (red ON / green OFF)
	Protection degree acc. to EN 60529		IP20	
	Mechanical endurance	ops.	10,000 ops.	
Installation	Ambient temperature ³⁾	°C	-35 ... +70 °C	
	Storage temperature	°C	-35 ... +70 °C	
	Cross-section of conductors ⁴⁾ (top / bottom)	Solid	mm ²	
		Stranded	mm ²	
		AWG	18 - 4 AWG	
	Tightening torque	Nm	2 Nm	
		in-lbs.	18 in-lbs.	
	Screwdriver		No. 2 pozidrive	
	Mounting		On DIN rail 35 mm acc. to EN 60715 by fast clip	
	Mounting position		Any	
	Supply		Top or bottom	
Maximum dissipated active power	Per pole	W	$2 A \leq I_n \leq 10 A = 2.5 W$ $I_n = 16 A = 3 W$ $20 A \leq I_n \leq 25 A = 4 W$ $32 A \leq I_n \leq 40 A = 5 W$ $50 A \leq I_n \leq 63 A = 7 W$	
Dimensions, weight and quantity per package	Pole dimensions (H x D x W)	mm	83 x 77 x 17.8 mm	
	Pole weight	g	Approx. 120 g	
	Quantity per package	Un	1P = 12 units 2P = 6 units 3P = 4 units 4P = 3 units	

Notes: 1) Rated current considering ambient temperatura of 30 °C according IEC/EN 60898-1.
 2) Rated current considering ambient temperatura of 50 °C according IEC/EN 60947-2.
 3) According the adjustment factors for maximum allowable current on page 15.
 4) Data considering a cooper cable conductor.

References and codes MDWP

Single-pole miniature circuit breakers

References	Current	Curve	Code
MDWP-B2	2 A	B	15265839
MDWP-B4	4 A	B	15265840
MDWP-B6	6 A	B	15265841
MDWP-B10	10 A	B	15265843
MDWP-B16	16 A	B	15265844
MDWP-B20	20 A	B	15265845
MDWP-B25	25 A	B	15265846
MDWP-B32	32 A	B	15265847
MDWP-B40	40 A	B	15265888
MDWP-B50	50 A	B	15265890
MDWP-B63	63 A	B	15265891

References	Current	Curve	Code
MDWP-C2	2 A	C	15265508
MDWP-C4	4 A	C	15265514
MDWP-C6	6 A	C	15265637
MDWP-C10	10 A	C	15220827
MDWP-C16	16 A	C	15265681
MDWP-C20	20 A	C	15265683
MDWP-C25	25 A	C	15265685
MDWP-C32	32 A	C	15265689
MDWP-C40	40 A	C	15265691
MDWP-C50	50 A	C	15265692
MDWP-C63	63 A	C	15265694

Two-pole miniature circuit breakers

References	Current	Curve	Code
MDWP-B2-2	2 A	B	15265892
MDWP-B4-2	4 A	B	15265893
MDWP-B6-2	6 A	B	15265894
MDWP-B10-2	10 A	B	15265895
MDWP-B16-2	16 A	B	15265896
MDWP-B20-2	20 A	B	15267246
MDWP-B25-2	25 A	B	15265897
MDWP-B32-2	32 A	B	15265908
MDWP-B40-2	40 A	B	15265909
MDWP-B50-2	50 A	B	15265910
MDWP-B63-2	63 A	B	15265911

References	Current	Curve	Code
MDWP-C2-2	2 A	C	15265696
MDWP-C4-2	4 A	C	15265718
MDWP-C6-2	6 A	C	15265720
MDWP-C10-2	10 A	C	15265721
MDWP-C16-2	16 A	C	15265722
MDWP-C20-2	20 A	C	15265723
MDWP-C25-2	25 A	C	15265725
MDWP-C32-2	32 A	C	15265726
MDWP-C40-2	40 A	C	15265727
MDWP-C50-2	50 A	C	15265739
MDWP-C63-2	63 A	C	15265740

Three-pole miniature circuits breakers

References	Current	Curve	Code
MDWP-B2-3	2 A	B	15265912
MDWP-B4-3	4 A	B	15265913
MDWP-B6-3	6 A	B	15265914
MDWP-B10-3	10 A	B	15265915
MDWP-B16-3	16 A	B	15265916
MDWP-B20-3	20 A	B	15265917
MDWP-B25-3	25 A	B	15265938
MDWP-B32-3	32 A	B	15265939
MDWP-B40-3	40 A	B	15265941
MDWP-B50-3	50 A	B	15265942
MDWP-B63-3	63 A	B	15265943

References	Current	Curve	Code
MDWP-C2-3	2 A	C	15265741
MDWP-C4-3	4 A	C	15265743
MDWP-C6-3	6 A	C	15265744
MDWP-C10-3	10 A	C	15265745
MDWP-C16-3	16 A	C	15265747
MDWP-C20-3	20 A	C	15265760
MDWP-C25-3	25 A	C	15265762
MDWP-C32-3	32 A	C	15265763
MDWP-C40-3	40 A	C	15265764
MDWP-C50-3	50 A	C	15265766
MDWP-C63-3	63 A	C	15265767

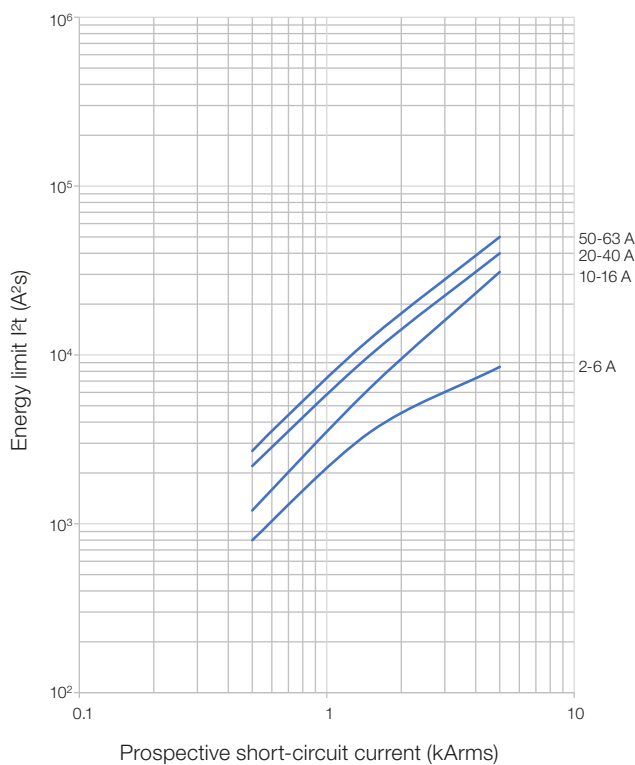
Four-pole miniature circuits breakers

References	Current	Curve	Code
MDWP-B2-4	2 A	B	15265944
MDWP-B4-4	4 A	B	15265945
MDWP-B6-4	6 A	B	15265947
MDWP-B10-4	10 A	B	15265988
MDWP-B16-4	16 A	B	15265989
MDWP-B20-4	20 A	B	15265990
MDWP-B25-4	25 A	B	15265991
MDWP-B32-4	32 A	B	15265992
MDWP-B40-4	40 A	B	15265993
MDWP-B50-4	50 A	B	15265994
MDWP-B63-4	63 A	B	15265996

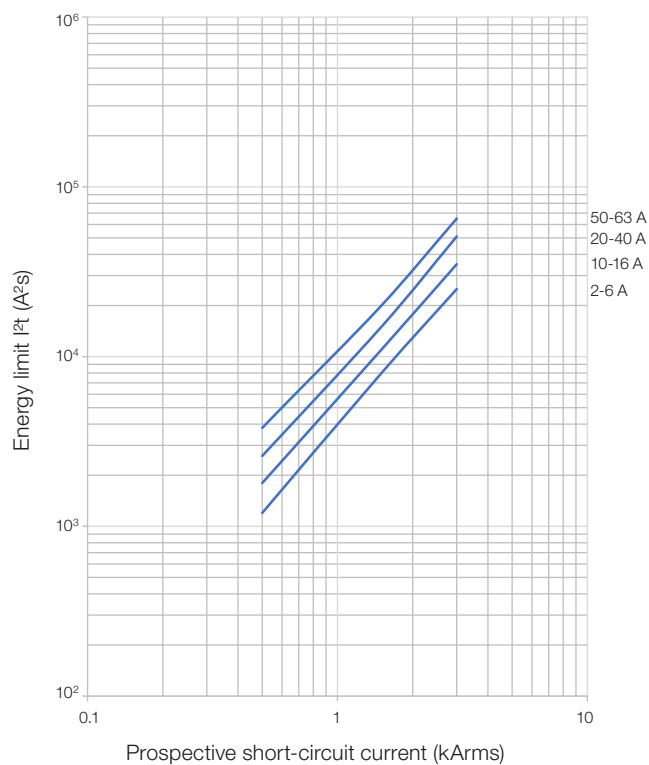
References	Current	Curve	Code
MDWP-C2-4	2 A	C	15265788
MDWP-C4-4	4 A	C	15265789
MDWP-C6-4	6 A	C	15265790
MDWP-C10-4	10 A	C	15265791
MDWP-C16-4	16 A	C	15265792
MDWP-C20-4	20 A	C	15265793
MDWP-C25-4	25 A	C	15265794
MDWP-C32-4	32 A	C	15265795
MDWP-C40-4	40 A	C	15265796
MDWP-C50-4	50 A	C	15265797
MDWP-C63-4	63 A	C	15265838

Characteristics curves MDWP

Energy limit I^2t - 127/220 V
(1 to 4 poles - curves B and C)



Energy limit I^2t - 230/400 V
(1 to 4 poles - curves B and C)



References and codes MDWS

Single-pole miniature circuit breakers

Reference	Current	Curve	Code
MDWS-B2	2 A	B	14354674
MDWS-B4	4 A	B	14449588
MDWS-B6	6 A	B	14449591
MDWS-B10	10 A	B	14449592
MDWS-B16	16 A	B	14449593
MDWS-B20	20 A	B	14449594
MDWS-B25	25 A	B	14449595
MDWS-B32	32 A	B	14449596
MDWS-B40	40 A	B	14449597
MDWS-B50	50 A	B	14449618
MDWS-B63	63 A	B	14449619

Reference	Current	Curve	Code
MDWS-C2	2 A	C	14449620
MDWS-C4	4 A	C	14449621
MDWS-C6	6 A	C	14449622
MDWS-C10	10 A	C	14355128
MDWS-C16	16 A	C	14449623
MDWS-C20	20 A	C	14449624
MDWS-C25	25 A	C	14449625
MDWS-C32	32 A	C	14449662
MDWS-C40	40 A	C	14449664
MDWS-C50	50 A	C	14449665
MDWS-C63	63 A	C	14449666

Reference	Current	Curve	Code
MDWS-D2	2 A	D	14449667
MDWS-D4	4 A	D	14449680
MDWS-D6	6 A	D	14449681
MDWS-D10	10 A	D	14449682
MDWS-D16	16 A	D	14449683
MDWS-D20	20 A	D	14449684
MDWS-D25	25 A	D	14449685
MDWS-D32	32 A	D	14449686
MDWS-D40	40 A	D	14449687
MDWS-D50	50 A	D	14449738
MDWS-D63	63 A	D	14449739

Two-pole miniature circuit breakers

Reference	Current	Curve	Code
MDWS-B2-2	2 A	B	14449884
MDWS-B4-2	4 A	B	14449885
MDWS-B6-2	6 A	B	14449886
MDWS-B10-2	10 A	B	14449887
MDWS-B16-2	16 A	B	14449918
MDWS-B20-2	20 A	B	14449919
MDWS-B25-2	25 A	B	14454314
MDWS-B32-2	32 A	B	14449920
MDWS-B40-2	40 A	B	14449922
MDWS-B50-2	50 A	B	14449923
MDWS-B63-2	63 A	B	14449925

Reference	Current	Curve	Code
MDWS-C2-2	2 A	C	14449927
MDWS-C4-2	4 A	C	14449961
MDWS-C6-2	6 A	C	14449964
MDWS-C10-2	10 A	C	14355129
MDWS-C16-2	16 A	C	14449965
MDWS-C20-2	20 A	C	14449966
MDWS-C25-2	25 A	C	14449967
MDWS-C32-2	32 A	C	14449998
MDWS-C40-2	40 A	C	14449999
MDWS-C50-2	50 A	C	14450000
MDWS-C63-2	63 A	C	14450001

Reference	Current	Curve	Code
MDWS-D2-2	2 A	D	14450002
MDWS-D4-2	4 A	D	14450003
MDWS-D6-2	6 A	D	14450004
MDWS-D10-2	10 A	D	14450005
MDWS-D16-2	16 A	D	14450006
MDWS-D20-2	20 A	D	14450007
MDWS-D25-2	25 A	D	14450028
MDWS-D32-2	32 A	D	14450029
MDWS-D40-2	40 A	D	14450030
MDWS-D50-2	50 A	D	14450031
MDWS-D63-2	63 A	D	14450032

Three-pole miniature circuit breakers

Reference	Current	Curve	Code
MDWS-B2-3	2 A	B	14450955
MDWS-B4-3	4 A	B	14451038
MDWS-B6-3	6 A	B	14451039
MDWS-B10-3	10 A	B	14451040
MDWS-B16-3	16 A	B	14451176
MDWS-B20-3	20 A	B	14451177
MDWS-B25-3	25 A	B	14451198
MDWS-B32-3	32 A	B	14451200
MDWS-B40-3	40 A	B	14451201
MDWS-B50-3	50 A	B	14451202
MDWS-B63-3	63 A	B	14451477

Reference	Current	Curve	Code
MDWS-C2-3	2 A	C	14451708
MDWS-C4-3	4 A	C	14451709
MDWS-C6-3	6 A	C	14451710
MDWS-C10-3	10 A	C	14355130
MDWS-C16-3	16 A	C	14451712
MDWS-C20-3	20 A	C	14451714
MDWS-C25-3	25 A	C	14451715
MDWS-C32-3	32 A	C	14451718
MDWS-C40-3	40 A	C	14451719
MDWS-C50-3	50 A	C	14451720
MDWS-C63-3	63 A	C	14451721

Reference	Current	Curve	Code
MDWS-D2-3	2 A	D	14451722
MDWS-D4-3	4 A	D	14451723
MDWS-D6-3	6 A	D	14451724
MDWS-D10-3	10 A	D	14456319
MDWS-D16-3	16 A	D	14451725
MDWS-D20-3	20 A	D	14451726
MDWS-D25-3	25 A	D	14451758
MDWS-D32-3	32 A	D	14451759
MDWS-D40-3	40 A	D	14451760
MDWS-D50-3	50 A	D	14451761
MDWS-D63-3	63 A	D	14451762

References and code MDWS

Four-pole miniature circuit breakers

Reference	Current	Curve	Code
MDWS-B2-4	2 A	B	14451763
MDWS-B4-4	4 A	B	14452067
MDWS-B6-4	6 A	B	14452178
MDWS-B10-4	10 A	B	14452179
MDWS-B16-4	16 A	B	14452180
MDWS-B20-4	20 A	B	14452181
MDWS-B25-4	25 A	B	14452182
MDWS-B32-4	32 A	B	14452183
MDWS-B40-4	40 A	B	14452184
MDWS-B50-4	50 A	B	14452186
MDWS-B63-4	63 A	B	14452187

Reference	Current	Curve	Code
MDWS-C2-4	2 A	C	14452229
MDWS-C4-4	4 A	C	14452230
MDWS-C6-4	6 A	C	14452231
MDWS-C10-4	10 A	C	14355131
MDWS-C16-4	16 A	C	14452232
MDWS-C20-4	20 A	C	14452233
MDWS-C25-4	25 A	C	14452234
MDWS-C32-4	32 A	C	14452235
MDWS-C40-4	40 A	C	14452236
MDWS-C50-4	50 A	C	14452237
MDWS-C63-4	63 A	C	14452249

Reference	Current	Curve	Code
MDWS-D2-4	2 A	D	14452250
MDWS-D4-4	4 A	D	14452251
MDWS-D6-4	6 A	D	14452252
MDWS-D10-4	10 A	D	14452253
MDWS-D16-4	16 A	D	14452254
MDWS-D20-4	20 A	D	14452255
MDWS-D25-4	25 A	D	14452256
MDWS-D32-4	32 A	D	14452257
MDWS-D40-4	40 A	D	14452268
MDWS-D50-4	50 A	D	14452269
MDWS-D63-4	63 A	D	14452270

Single-pole with neutral miniature circuit breakers

Reference	Current	Curve	Code
MDWS-B6-1P+N	6 A	B	14452422
MDWS-B10-1P+N	10 A	B	14452423
MDWS-B16-1P+N	16 A	B	14452424
MDWS-B20-1P+N	20 A	B	14452426
MDWS-B25-1P+N	25 A	B	14452427
MDWS-B32-1P+N	32 A	B	14452458
MDWS-B40-1P+N	40 A	B	14452459
MDWS-B50-1P+N	50 A	B	14452460
MDWS-B63-1P+N	63 A	B	14452461

Reference	Current	Curve	Code
MDWS-C6-1P+N	6 A	C	14452465
MDWS-C10-1P+N	10 A	C	14355135
MDWS-C16-1P+N	16 A	C	14452466
MDWS-C20-1P+N	20 A	C	14452479
MDWS-C25-1P+N	25 A	C	14452481
MDWS-C32-1P+N	32 A	C	14452482
MDWS-C40-1P+N	40 A	C	14452483
MDWS-C50-1P+N	50 A	C	14452484
MDWS-C63-1P+N	63 A	C	14452486

Reference	Current	Curve	Code
MDWS-D6-1P+N	6 A	D	14452501
MDWS-D10-1P+N	10 A	D	14452502
MDWS-D16-1P+N	16 A	D	14452503
MDWS-D20-1P+N	20 A	D	14452504
MDWS-D25-1P+N	25 A	D	14452505
MDWS-D32-1P+N	32 A	D	14452507
MDWS-D40-1P+N	40 A	D	14452538
MDWS-D50-1P+N	50 A	D	14452539
MDWS-D63-1P+N	63 A	D	14452540

Three-pole with neutral miniature circuit breakers

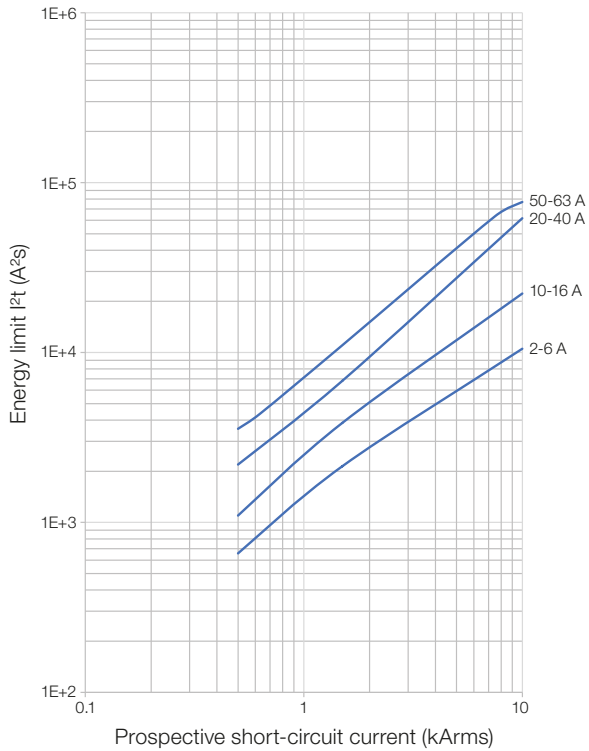
Reference	Current	Curve	Code
MDWS-B6-3P+N	6 A	B	14452659
MDWS-B10-3P+N	10 A	B	14452661
MDWS-B16-3P+N	16 A	B	14452663
MDWS-B20-3P+N	20 A	B	14452664
MDWS-B25-3P+N	25 A	B	14452665
MDWS-B32-3P+N	32 A	B	14452666
MDWS-B40-3P+N	40 A	B	14452667
MDWS-B50-3P+N	50 A	B	14452699
MDWS-B63-3P+N	63 A	B	14452700

Reference	Current	Curve	Code
MDWS-C6-3P+N	6 A	C	14452703
MDWS-C10-3P+N	10 A	C	14355136
MDWS-C16-3P+N	16 A	C	14452704
MDWS-C20-3P+N	20 A	C	14452705
MDWS-C25-3P+N	25 A	C	14452706
MDWS-C32-3P+N	32 A	C	14452707
MDWS-C40-3P+N	40 A	C	14452768
MDWS-C50-3P+N	50 A	C	14452769
MDWS-C63-3P+N	63 A	C	14452830

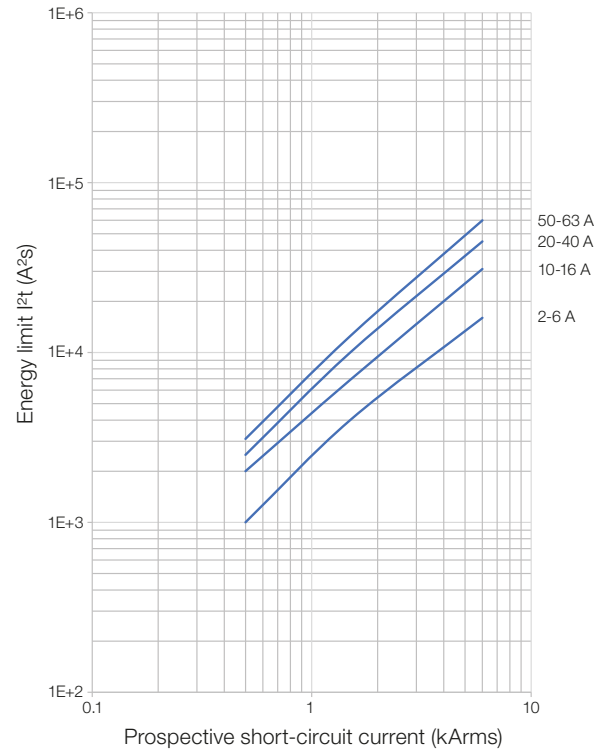
Reference	Current	Curve	Code
MDWS-D6-3P+N	6 A	D	14452833
MDWS-D10-3P+N	10 A	D	14452834
MDWS-D16-3P+N	16 A	D	14452835
MDWS-D20-3P+N	20 A	D	14452836
MDWS-D25-3P+N	25 A	D	14452837
MDWS-D32-3P+N	32 A	D	14452878
MDWS-D40-3P+N	40 A	D	14452879
MDWS-D50-3P+N	50 A	D	14452880
MDWS-D63-3P+N	63 A	D	14452881

Characteristics curves MDWS

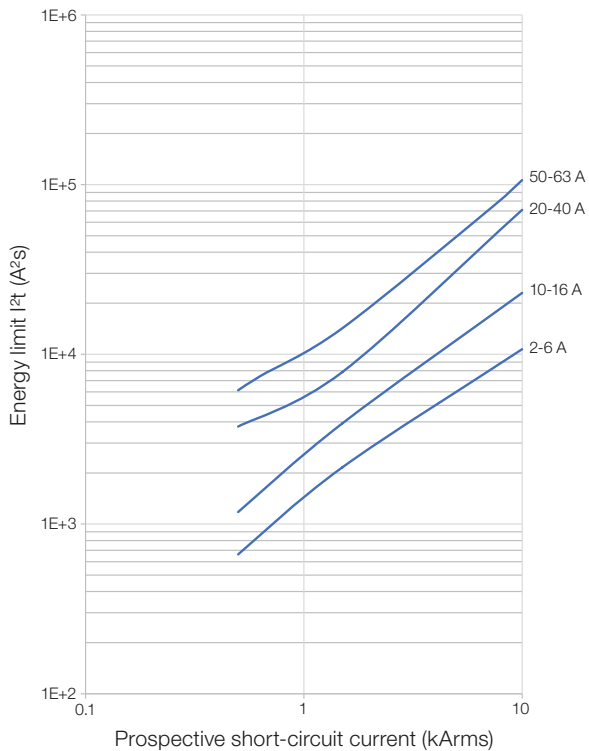
Energy limit I^2t - 127/220 V (1 to 4 poles - curves B and C)



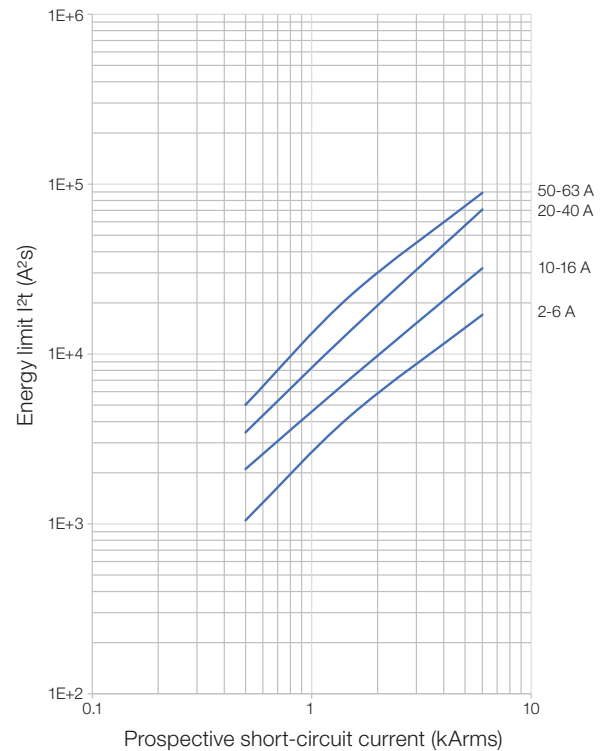
Energy limit I^2t - 230/400 V (1 to 4 poles - curves B and C)



Energy limit I^2t - 127/220 V (1 to 4 poles - curve D)



Energy limit I^2t - 230/400 V (1 to 4 poles - curve D)



Accessories MDWP and MDWS

Padlock



Padlock



Application example

Reference	Application	Padlock diameter	Units per package	Code
MDW-PLW63	MDWP / MDWS	Up to 5 mm	50	11373980

Auxiliary contact block and alarm contact block



Reference	Contact configuration	Application	Type	Units per package	Code
AL-1 MDA	1 NOC	MDWS	Alarm contact	1	14641022
BC-1 MDA	1 NOC	MDWS	Auxiliary contact	1	14641021
Switching capacity of the contacts	AC 12	6 A/240 V _{AC} - 3 A/415 V _{AC}			
	DC 12	6 A/24 V - 2 A/48 V _{DC} - 1 A / 130 V			

Reference	ON	OFF	TRIP
AL-1 MDA			
BC-1 MDA			

Additional functions

	"T" button (Test)		Reset button	
Alarm block (AL-1)		When the main device is open, the "T" button can be used to check the correct operation of the signal circuit, simulating the operation of the main device		It is possible to switch the contact manually using the "RESET" button on the front side
Auxiliary contact block (BC-1)		It is possible to manually switch the contact using the "T" (Test) button on the front side	Not applicable	Not applicable

Accessories MDWP and MDWS

Undervoltage release



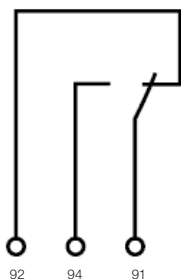
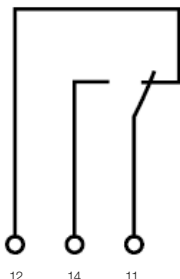
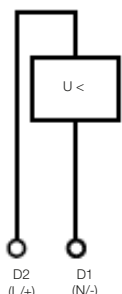
Reference	Voltage	Application	Mounting	Units per package	Code
BS E26 MDA	24 V _{AC} / V _{DC}	MDWS	Left side	1	14641119
BS E27 MDA	48 V _{AC} / V _{DC}	MDWS	Left side	1	14641120
BS E68 MDA	125 V _{AC} / V _{DC}	MDWS	Left side	1	14641121
BS D13 MDA	110 V _{AC}	MDWS	Left side	1	14641122
BS D24 MDA	230 V _{AC}	MDWS	Left side	1	14641123
Actuation	Between 70% and 30% of the voltage at the end				

Shunt release



Reference	Voltage	Application	Mounting	Units per package	Code
BD E03 MDA	24-48 V _{AC} / V _{DC}	MDWS	Left side	1	14641027
BD E69 MDA	100-415 V _{AC} / V _{DC}	MDWS	Left side	1	14641118

Operation description

	Alarm block (AL-1)	Auxiliary contact block (BC-1)	Shunt release (opening - BD)	Undervoltage release (BS)
Type	Device trip indicator	Opening and closing auxiliary contact	Remote opening	Undervoltage opening
Function	Indicates the position of the associated device in case of: electrical failure and action of the auxiliary trip	Indicates the "open" or "closed" position of the associated device	Perform the opening of the associated device when actuated	It causes the associated device to open when the voltage in the shunt release drops (between 70% and 35% of the unit). It prevents the device from restarting until the voltage is restored
Utilization	Remote fault trip	Remote position indication of the associated device	Remote opening	Emergency stop usually via pushbutton; it ensures power supply safety, preventing inadvertent start of machines
Diagram				

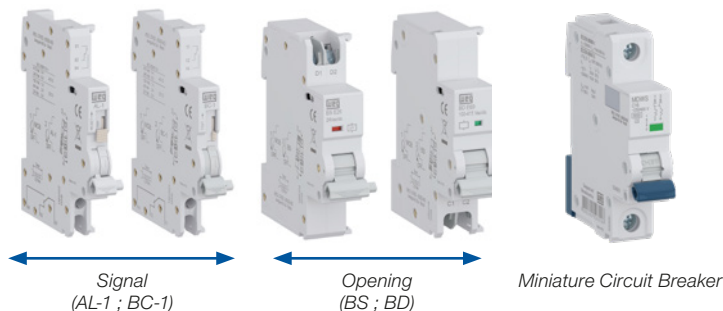
Accessories MDWP and MDWS

Technical characteristics

		Alarm block (AL-1)	Auxiliary contact block (BC-1)	Shunt release (opening - BD)	Undervoltage release (BS)
Standards		IEC 60947-5-1	IEC 60947-5-1	IEC 60947-2	IEC 60947-2
Pollution degree	-	3			
Certification		CE ENEC			
Mechanical status indicator	-	Yes	No	Yes	Yes
Test function	-	Yes	Yes	No	No
Torque	-	0.8 N.m			
Rated insulation voltage	U _i	400 V _{AC}	400 V _{AC}	-	-
Electrical life		10,000		10,000	
Number of contacts		1 NO/NC	1 NO/NC	-	-
Compatibility	-	MDWS			
Operating temperature	°C	-25...+50 °C			
Storage temperature		-40...+85 °C			
Weight	g	32	32	66	66
Solid cable cross-section	mm ²	1 to 4 mm ²			
Stranded cable section	mm ²	1 to 2.5 mm ²			

Association

Signal		Opening		Main device
1 max	Alarm block (AL-1) or Auxiliary contact block (BC-1)	1 max	Shunt release (opening - BD) or Undervoltage release (BS)	MDWS
No		1 max	Shunt release (opening - BD) or Undervoltage release (BS)	
1 max	Alarm block (AL-1) ¹⁾ and Auxiliary contact block (BC-1)	No		
1 max				
2 max	Alarm block (AL-1)	No		
2 max	Auxiliary contact block (BC-1)	No		



Note: 1) If using 2 signaling devices, first install the AL-1 alarm block.

Maximum allowable current (derating) according to ambient temperature and altitude – MDWP and MDWS

The sizing of miniature circuit breakers must be optimized to provide safety and avoid untimely tripping, like premature thermal tripping. In continuous operation, the characteristics of the installation place, such as altitude, ambient temperature and surrounding devices, directly influence the characteristics of the thermal tripping. To avoid undue tripping, the following sizing factors must be taken into account to determine the new rated current of miniature circuit breakers:

- Sizing factor for altitude
- Ambient temperature factor for the place where the miniature circuit breaker will be installed

Sizing factor for altitude

Environments located more than 2,000 meters above sea level have low atmospheric pressure. The lower the atmospheric pressure, the lower the thermal dissipation of the heat generated by the miniature circuit breaker. To compensate for this effect, the following factors must be applied when sizing the product rated current.

Altitude (m)	Rated current factor I_a	Rated voltage factor U_a
2,000	1	1
3,000	0.96	0.88
4,000	0.93	0.78
5,000	0.90	0.68

Ambient temperature factor for the place where the miniature circuit breaker will be installed

The tripping characteristics and the miniature circuit breakers are affected by the ambient temperature. The following table shows the withstand current according to the ambient temperature. When installed inside any enclosure, the temperature inside the enclosure with all surrounding devices connected must be considered as ambient temperature, since the dissipated power of the surrounding devices influences the temperature rise inside the enclosure. In miniature circuit breakers, the following sizing factors must be applied when sizing the product current.

Residential applications (IEC 60898-1)

For residential applications, the rated temperature for the table is 30 °C. The table below shows the rated current with ambient temperature factor from -35 °C to +70 °C.

Sizing of the maximum rated current of the miniature circuit breaker according to the ambient temperature - IEC 60898-1 (Tref = 30 °C)																									
		Ambient temperature (°C)																							
Rated current (A)	Curve	-35		-30		-20		-10		0		10		20		30		40		50		60		70	
		(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)		
2	B/C/D	2.60	1.30	2.52	1.26	2.46	1.23	2.38	1.19	2.28	1.14	2.20	1.10	2.08	1.04	2.00	1.00	1.92	0.96	1.86	0.93	1.76	0.88	1.71	0.85
4	B/C/D	5.20	1.30	5.04	1.26	4.92	1.23	4.76	1.19	4.56	1.14	4.40	1.10	4.16	1.04	4.00	1.00	3.84	0.96	3.76	0.94	3.52	0.88	3.30	0.82
6	B/C/D	7.80	1.30	7.56	1.26	7.38	1.23	7.14	1.19	6.84	1.14	6.60	1.10	6.24	1.04	6.00	1.00	5.76	0.96	5.64	0.94	5.28	0.88	4.94	0.82
10	B/C/D	13.20	1.32	12.70	1.27	12.50	1.25	12.00	1.20	11.50	1.15	11.10	1.11	10.60	1.06	10.00	1.00	9.60	0.96	9.30	0.93	8.90	0.89	8.52	0.85
16	B/C/D	21.12	1.32	20.48	1.28	20.00	1.25	19.20	1.20	18.40	1.15	17.76	1.11	16.96	1.06	16.00	1.00	15.36	0.96	14.88	0.93	14.24	0.89	13.63	0.85
20	B/C/D	26.40	1.32	25.60	1.28	25.00	1.25	24.00	1.20	23.00	1.15	22.20	1.11	21.20	1.06	20.00	1.00	19.20	0.96	18.60	0.93	17.80	0.89	17.03	0.85
25	B/C/D	33.00	1.32	32.00	1.28	31.25	1.25	30.00	1.20	28.75	1.15	27.75	1.11	26.50	1.06	25.00	1.00	24.00	0.96	23.25	0.93	22.25	0.89	21.29	0.85
32	B/C/D	42.56	1.33	41.28	1.29	40.00	1.25	38.72	1.21	37.12	1.16	35.52	1.11	33.92	1.06	32.00	1.00	30.34	0.95	28.60	0.89	26.75	0.84	25.02	0.78
40	B/C/D	53.20	1.33	51.20	1.28	50.00	1.25	48.00	1.20	46.40	1.16	44.80	1.12	42.40	1.06	40.00	1.00	37.85	0.95	35.61	0.89	33.21	0.83	30.97	0.77
50	B/C/D	67.00	1.34	65.50	1.31	63.00	1.26	60.50	1.21	58.00	1.16	56.00	1.12	53.00	1.06	50.00	1.00	46.24	0.92	43.33	0.87	40.23	0.80	37.35	0.75
63	B/C/D	83.79	1.33	81.90	1.30	80.01	1.27	76.86	1.22	73.71	1.17	70.56	1.12	66.78	1.06	63.00	1.00	58.19	0.92	54.16	0.86	49.80	0.79	45.79	0.73

Maximum allowable current (derating) according to ambient temperature and altitude – MDWP and MDWS

An alternative is to use the factors of the following table, multiple by the load current and select the rated current of the miniature circuit breaker.

Sizing of the maximum rated current of the miniature circuit breaker according to the load current - IEC 60898-1 (Tref = 30 °C)												
Ambient temperature (°C)	-35	-30	-20	-10	0	10	20	30	40	50	60	70
Multiplication factor of the load current (k_{a})	0.76	0.77	0.80	0.83	0.87	0.91	0.95	1.00	1.06	1.12	1.19	1.27

Industrial applications (IEC 60947-2)

For residential applications, the rated temperature for the table is 50 °C. The table below shows the rated current with ambient temperature factor from -35 °C to +70 °C.

Sizing of the maximum rated current of the miniature circuit breaker according to the ambient temperature - IEC 60947-2 (Tref = 50 °C)																									
Rated current (A)	Curve	Ambient temperature (°C)																							
		-35		-30		-20		-10		0		10		20		30		40		50		60		70	
		(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)	(A)	(I_n)
2	B/C/D	2.66	1.33	2.63	1.32	2.58	1.29	2.52	1.26	2.46	1.23	2.38	1.19	2.28	1.14	2.20	1.10	2.08	1.04	2.00	1.00	1.92	0.96	1.86	0.93
4	B/C/D	5.32	1.33	5.26	1.32	5.16	1.29	5.04	1.26	4.92	1.23	4.76	1.19	4.56	1.14	4.40	1.10	4.16	1.04	4.00	1.00	3.84	0.96	3.76	0.94
6	B/C/D	7.94	1.32	7.87	1.31	7.71	1.29	7.56	1.26	7.38	1.23	7.14	1.19	6.84	1.14	6.60	1.10	6.24	1.04	6.00	1.00	5.76	0.96	5.64	0.94
10	B/C/D	13.35	1.33	13.21	1.32	12.95	1.30	12.70	1.27	12.50	1.25	12.00	1.20	11.50	1.15	11.10	1.11	10.60	1.06	10.00	1.00	9.60	0.96	9.30	0.93
16	B/C/D	21.52	1.35	21.31	1.33	20.89	1.31	20.48	1.28	20.00	1.25	19.20	1.20	18.40	1.15	17.76	1.11	16.96	1.06	16.00	1.00	15.36	0.96	14.88	0.93
20	B/C/D	26.90	1.35	26.63	1.33	26.11	1.31	25.60	1.28	25.00	1.25	24.00	1.20	23.00	1.15	22.20	1.11	21.20	1.06	20.00	1.00	19.20	0.96	18.60	0.93
25	B/C/D	33.63	1.35	33.29	1.33	32.64	1.31	32.00	1.28	31.25	1.25	30.00	1.20	28.75	1.15	27.75	1.11	26.50	1.06	25.00	1.00	24.00	0.96	23.25	0.93
32	B/C/D	43.38	1.36	42.95	1.34	42.11	1.32	41.28	1.29	40.00	1.25	38.72	1.21	37.12	1.16	35.52	1.11	33.92	1.06	32.00	1.00	30.34	0.95	28.60	0.89
40	B/C/D	53.80	1.35	53.27	1.33	52.22	1.31	51.20	1.28	50.00	1.25	48.00	1.20	46.40	1.16	44.80	1.12	42.40	1.06	40.00	1.00	37.85	0.95	35.61	0.89
50	B/C/D	68.83	1.38	68.15	1.36	66.81	1.34	65.50	1.31	63.00	1.26	60.50	1.21	58.00	1.16	56.00	1.12	53.00	1.06	50.00	1.00	46.24	0.92	43.33	0.87
63	B/C/D	86.06	1.37	85.21	1.35	83.54	1.33	81.90	1.30	80.01	1.27	76.86	1.22	73.71	1.17	70.56	1.12	66.78	1.06	63.00	1.00	58.19	0.92	54.16	0.86

An alternative is to use the factors of the following table, multiple by the load current and select the rated current of the miniature circuit breaker.

Sizing of the maximum rated current of the miniature circuit breaker according to the load current - IEC 60947-2 (Tref = 50 °C)												
Ambient temperature (°C)	-35	-30	-20	-10	0	10	20	30	40	50	60	70
Multiplication factor of the load current (k_{a})	0.74	0.75	0.77	0.78	0.80	0.83	0.87	0.90	0.95	1.00	1.06	1.11

Sizing factor for the influence of surrounding devices (grouping)

When 2 or more miniature circuit breakers are mounted side by side and operate simultaneously, the thermal dissipation of these devices is reduced. In this case, the grouping factor 0.8 must be used to multiply the rated current of the miniature circuit breakers.

Technical characteristics MDW and MDWH

Technical characteristics

Model			MDW	MDWH
Maximum operating voltage U _e			440 V _{AC} /250 V _{DC}	440 V _{AC} /250 V _{DC}
Rated insulating voltage U _i				
Rated impulse withstand voltage U _{imp}			4 kV	-
Frequency			50/60 Hz	
Rated currents I _n			2-125 A	6-125 A
Short-circuit breaking capacity	IEC 60898-1	127/220 V _{AC}	(2-4 A) 1.5 kA, (6-125 A) 5 kA	(6-63 A) I _{cn} / I _{cs} 10 kA (80-125 A) I _{cn} / I _{cs} 6 kA
		230/400 V _{AC}	(2-4 A) 1.5 kA, (6-125 A) 3 kA	(6-63 A) I _{cn} 10 kA / I _{cs} 7.5 kA (80-125 A) I _{cn} / I _{cs} 6 kA
	IEC 60947-2	127/220 V _{AC}	(2-4 A) 3 kA, (6-125 A) 5 kA	15 kA
		230/400 V _{AC}	(2-4 A) 3 kA, (6-125 A) 5 kA	10 kA
		440 V _{AC}	(2-4 A) 3 kA, (6-125 A) 4 kA	7.5 kA
Short-circuit breaking capacity in direct current I _{cw} , according to IEC 60947-2	48 V _{DC}		(6-63 A) 10 kA ¹⁾	(6-63 A) 16 kA ¹⁾
	60 V _{DC}		(6-63 A) 10 kA ¹⁾	(6-63 A) 15 kA ¹⁾
	125 V _{DC}		(6-63 A) 5 kA ¹⁾ and 16 kA ²⁾	(6-63 A) 10 kA ¹⁾ and 15 kA ²⁾
	250 V _{DC}		(6-63 A) 10 kA ²⁾	(6-63 A) 5 kA ¹⁾ and 10 kA ²⁾
Tripping characteristic curves			B (3-5 times I _n)	
			C (5-10 times I _n)	
			D (10-20 times I _n)	
Number of poles			1, 2, 3 and 4P	
Electrical endurance			4,000 cycles	
Mechanical endurance			10,000 cycles	
Ambient temperature ³⁾⁴⁾			-25...+45 °C	
Relative humidity			95%	
Degree of protection			IP20	
Limitation class			1	3
Pollution degree			2	
Connection capacity	MDW (2 to 63 A)		1-25 mm ²	-
	MDW (70 to 125 A)		10-35 mm ²	-
	MDWH (6 A - 63 A)		-	1-25 mm ²
	MDWH (80 A - 125 A)		-	10-35 mm ²
Mounting position			No restriction	
Torque	MDW (2 to 63 A)		2.5 N.m	-
	MDW (70 to 125 A)		3.5 N.m	-
	MDWH (6 A - 63 A)		-	2.0 N.m
	MDWH (80 A - 125 A)		-	3.5 N.m
Connection tool			Phillips screwdriver number 2	
Assembly			DIN rail 35 mm	
Weight (kg)	Single-pole		0.105 (2-63 A); 0.155 (70-125 A)	0.130 (6 - 63); 0.195 (80 - 125)
	Two-pole		0.210 (2-63 A); 0.315 (70-125 A)	0.260 (6 - 63); 0.390 (80 - 125)
	Three-pole		0.315 (2-63 A); 0.475 (70-125 A)	0.390 (6 - 63); 0.585 (80 - 125)
	Four-pole		0.420 (2-63 A); 0.630 (70-125 A)	0.520 (6 - 63); 0.780 (80 - 125)

Notes: 1) Single-pole connection.

2) Two-pole connection in series.

3) Nominal Current based in an enviromental temperature of 30 °C.

4) According the adjustment factors for maximum allowable current on page 24.



1- Single-pole connection



2- Two-pole connection in series

MDW power dissipation (standard IEC 60898)

Rated current range I_n (A)	Maximum dissipated active power per pole (W)
$I_n \leq 10$	3
$10 < I_n \leq 16$	3.5
$16 < I_n \leq 25$	4.5
$25 < I_n \leq 32$	6
$32 < I_n \leq 40$	7.5
$40 < I_n \leq 50$	9
$50 < I_n \leq 63$	13
$63 < I_n \leq 100$	15
$100 < I_n \leq 125$	20

MDWH power dissipation (standard IEC 60898)

Rated current range I_n (A)	Maximum dissipated active power per pole (W)
$I_n \leq 10$	3
$10 < I_n \leq 16$	3.5
$16 < I_n \leq 25$	4.5
$25 < I_n \leq 32$	6
$32 < I_n \leq 40$	7.5
$40 < I_n \leq 50$	9
$50 < I_n \leq 63$	13

References and codes MDW

Single-pole miniature circuit breakers

Reference	Current	Curve	Code
-	-	-	-
-	-	-	-
MDW-B6	6 A	B	10076396
MDW-B10	10 A	B	10076404
MDW-B16	16 A	B	10076412
MDW-B20	20 A	B	10076420
MDW-B25	25 A	B	10076428
MDW-B32	32 A	B	10076436
MDW-B40	40 A	B	10076444
MDW-B50	50 A	B	10076452
MDW-B63	63 A	B	10076460
MDW-B70	70 A	B	11134694
MDW-B80	80 A	B	10076468
MDW-B100	100 A	B	10075742
MDW-B125	125 A	B	11807321

Reference	Current	Curve	Code
MDW-C2	2 A	C	10076381
MDW-C4	4 A	C	10076389
MDW-C6	6 A	C	10076397
MDW-C10	10 A	C	10076405
MDW-C16	16 A	C	10076413
MDW-C20	20 A	C	10076421
MDW-C25	25 A	C	10076429
MDW-C32	32 A	C	10076437
MDW-C40	40 A	C	10076445
MDW-C50	50 A	C	10076453
MDW-C63	63 A	C	10076461
MDW-C70	70 A	C	11134789
MDW-C80	80 A	C	10076469
MDW-C100	100 A	C	10075743
MDW-C125	125 A	C	11807325

Two-pole miniature circuit breakers

Reference	Current	Curve	Code
-	-	-	-
-	-	-	-
MDW-B6-2	6 A	B	10076398
MDW-B10-2	10 A	B	10076406
MDW-B16-2	16 A	B	10076414
MDW-B20-2	20 A	B	10076422
MDW-B25-2	25 A	B	10076430
MDW-B32-2	32 A	B	10076438
MDW-B40-2	40 A	B	10076446
MDW-B50-2	50 A	B	10076454
MDW-B63-2	63 A	B	10076462
MDW-B70-2	70 A	B	11134696
MDW-B80-2	80 A	B	10076470
MDW-B100-2	100 A	B	10075744
MDW-B125-2	125 A	B	11807322

Reference	Current	Curve	Code
MDW-C2-2	2 A	C	10076383
MDW-C4-2	4 A	C	10076391
MDW-C6-2	6 A	C	10076399
MDW-C10-2	10 A	C	10076407
MDW-C16-2	16 A	C	10076415
MDW-C20-2	20 A	C	10076423
MDW-C25-2	25 A	C	10076431
MDW-C32-2	32 A	C	10076439
MDW-C40-2	40 A	C	10076447
MDW-C50-2	50 A	C	10076455
MDW-C63-2	63 A	C	10076463
MDW-C70-2	70 A	C	11134790
MDW-C80-2	80 A	C	10076471
MDW-C100-2	100 A	C	10075745
MDW-C125-2	125 A	C	11807327

Three-pole miniature circuit breakers

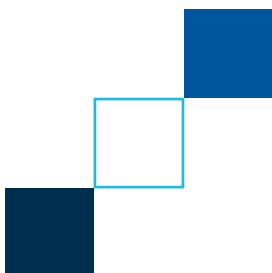
Reference	Current	Curve	Code
-	-	-	-
-	-	-	-
MDW-B6-3	6 A	B	10076400
MDW-B10-3	10 A	B	10076408
MDW-B16-3	16 A	B	10076416
MDW-B20-3	20 A	B	10076424
MDW-B25-3	25 A	B	10076432
MDW-B32-3	32 A	B	10076440
MDW-B40-3	40 A	B	10076448
MDW-B50-3	50 A	B	10076456
MDW-B63-3	63 A	B	10076464
MDW-B70-3	70 A	B	11134697
MDW-B80-3	80 A	B	10077877
MDW-B100-3	100 A	B	10075746
MDW-B125-3	125 A	B	11807323

Reference	Current	Curve	Code
MDW-C2-3	2 A	C	10076385
MDW-C4-3	4 A	C	10076393
MDW-C6-3	6 A	C	10076401
MDW-C10-3	10 A	C	10076409
MDW-C16-3	16 A	C	10076417
MDW-C20-3	20 A	C	10076425
MDW-C25-3	25 A	C	10076433
MDW-C32-3	32 A	C	10076441
MDW-C40-3	40 A	C	10076449
MDW-C50-3	50 A	C	10076457
MDW-C63-3	63 A	C	10076465
MDW-C70-3	70 A	C	11134791
MDW-C80-3	80 A	C	10075739
MDW-C100-3	100 A	C	10075747
MDW-C125-3	125 A	C	11807348

References and codes MDW

Four-pole miniature circuit breakers

Reference	Current	Curve	Code
MDW-C6-4	6 A	C	10076403
MDW-C10-4	10 A	C	10076411
MDW-C16-4	16 A	C	10076419
MDW-C20-4	20 A	C	10076427
MDW-C25-4	25 A	C	10076435
MDW-C32-4	32 A	C	10076443
MDW-C40-4	40 A	C	10076451
MDW-C50-4	50 A	C	10076459
MDW-C63-4	63 A	C	10076467
MDW-C70-4	70 A	C	11134792
MDW-C80-4	80 A	C	10075741
MDW-C100-4	100 A	C	10075749
MDW-C125-4	125 A	C	11807349



References and codes MDWH

Single-pole miniature circuit breakers

Reference	Current	Curve	Code
-	-	-	-
-	-	-	-
MDWH-B6	6 A	B	11422529
MDWH-B10	10 A	B	11422579
MDWH-B16	16 A	B	11422583
MDWH-B20	20 A	B	11422587
MDWH-B25	25 A	B	11422631
MDWH-B32	32 A	B	11422636
MDWH-B40	40 A	B	11422640
MDWH-B50	50 A	B	11422644
MDWH-B63	63 A	B	11422658
MDWH-B80	80 A	B	14848969
MDWH-B100	100 A	B	14848970
MDWH-B125	125 A	B	14848971

Reference	Current	Curve	Code
-	-	-	-
-	-	-	-
MDWH-C6	6 A	C	11422662
MDWH-C10	10 A	C	11422666
MDWH-C16	16 A	C	11422690
MDWH-C20	20 A	C	11422694
MDWH-C25	25 A	C	11422708
MDWH-C32	32 A	C	11422713
MDWH-C40	40 A	C	11422717
MDWH-C50	50 A	C	11422722
MDWH-C63	63 A	C	11422727
MDWH-C80	80 A	C	14849019
MDWH-C100	100 A	C	14849020
MDWH-C125	125 A	C	14849021

Reference	Current	Curve	Code
MDWH-D2	2 A	D	14110145
MDWH-D4	4 A	D	14110146
MDWH-D6	6 A	D	14110022
MDWH-D10	10 A	D	14110082
MDWH-D16	16 A	D	14110086
MDWH-D20	20 A	D	14110102
MDWH-D25	25 A	D	14110107
MDWH-D32	32 A	D	14110114
MDWH-D40	40 A	D	14110122
MDWH-D50	50 A	D	14110127
MDWH-D63	63 A	D	14110141
MDWH-D80	80 A	D	14849032
MDWH-D100	100 A	D	14849033
MDWH-D125	125 A	D	14849034

Two-pole miniature circuit breakers

Reference	Current	Curve	Code
-	-	-	-
-	-	-	-
MDWH-B6-2	6 A	B	11422543
MDWH-B10-2	10 A	B	11422580
MDWH-B16-2	16 A	B	11422584
MDWH-B20-2	20 A	B	11422628
MDWH-B25-2	25 A	B	11422632
MDWH-B32-2	32 A	B	11422637
MDWH-B40-2	40 A	B	11422641
MDWH-B50-2	50 A	B	11422645
MDWH-B63-2	63 A	B	11422659
MDWH-B80-2	80 A	B	14848972
MDWH-B100-2	100 A	B	14848973
MDWH-B125-2	125 A	B	14848974

Reference	Current	Curve	Code
-	-	-	-
-	-	-	-
MDWH-C6-2	6 A	C	11422663
MDWH-C10-2	10 A	C	11422667
MDWH-C16-2	16 A	C	11422691
MDWH-C20-2	20 A	C	11422695
MDWH-C25-2	25 A	C	11422709
MDWH-C32-2	32 A	C	11422714
MDWH-C40-2	40 A	C	11422719
MDWH-C50-2	50 A	C	11422723
MDWH-C63-2	63 A	C	11422728
MDWH-C80-2	80 A	C	14849022
MDWH-C100-2	100 A	C	14849023
MDWH-C125-2	125 A	C	14849024

Reference	Current	Curve	Code
MDWH-D2-2	2 A	D	14110147
MDWH-D4-2	4 A	D	14110168
MDWH-D6-2	6 A	D	14110023
MDWH-D10-2	10 A	D	14110083
MDWH-D16-2	16 A	D	14110098
MDWH-D20-2	20 A	D	14110103
MDWH-D25-2	25 A	D	14110108
MDWH-D32-2	32 A	D	14110116
MDWH-D40-2	40 A	D	14110124
MDWH-D50-2	50 A	D	14110138
MDWH-D63-2	63 A	D	14110142
MDWH-D80-2	80 A	D	14849036
MDWH-D100-2	100 A	D	14849037
MDWH-D125-2	125 A	D	14849118

Three-pole miniature circuit breakers

Reference	Current	Curve	Code
-	-	-	-
-	-	-	-
MDWH-B6-3	6 A	B	11422546
MDWH-B10-3	10 A	B	11422581
MDWH-B16-3	16 A	B	11422585
MDWH-B20-3	20 A	B	11422629
MDWH-B25-3	25 A	B	11422634
MDWH-B32-3	32 A	B	11422638
MDWH-B40-3	40 A	B	11422642
MDWH-B50-3	50 A	B	11422646
MDWH-B63-3	63 A	B	11422660
MDWH-B80-3	80 A	B	14848975
MDWH-B100-3	100 A	B	14848977
MDWH-B125-3	125 A	B	14849018

Reference	Current	Curve	Code
-	-	-	-
-	-	-	-
MDWH-C6-3	6 A	C	11422664
MDWH-C10-3	10 A	C	11422688
MDWH-C16-3	16 A	C	11422692
MDWH-C20-3	20 A	C	11422696
MDWH-C25-3	25 A	C	11422710
MDWH-C32-3	32 A	C	11422715
MDWH-C40-3	40 A	C	11422720
MDWH-C50-3	50 A	C	11422725
MDWH-C63-3	63 A	C	11422729
MDWH-C80-3	80 A	C	14849025
MDWH-C100-3	100 A	C	14849026
MDWH-C125-3	125 A	C	14849027

Reference	Current	Curve	Code
MDWH-D2-3	2 A	D	14110169
MDWH-D4-3	4 A	D	14110170
MDWH-D6-3	6 A	D	14110079
MDWH-D10-3	10 A	D	14110084
MDWH-D16-3	16 A	D	14110099
MDWH-D20-3	20 A	D	14110104
MDWH-D25-3	25 A	D	14110110
MDWH-D32-3	32 A	D	14110118
MDWH-D40-3	40 A	D	14110125
MDWH-D50-3	50 A	D	14110139
MDWH-D63-3	63 A	D	14110143
MDWH-D80-3	80 A	D	14849121
MDWH-D100-3	100 A	D	14849122
MDWH-D125-3	125 A	D	14849123

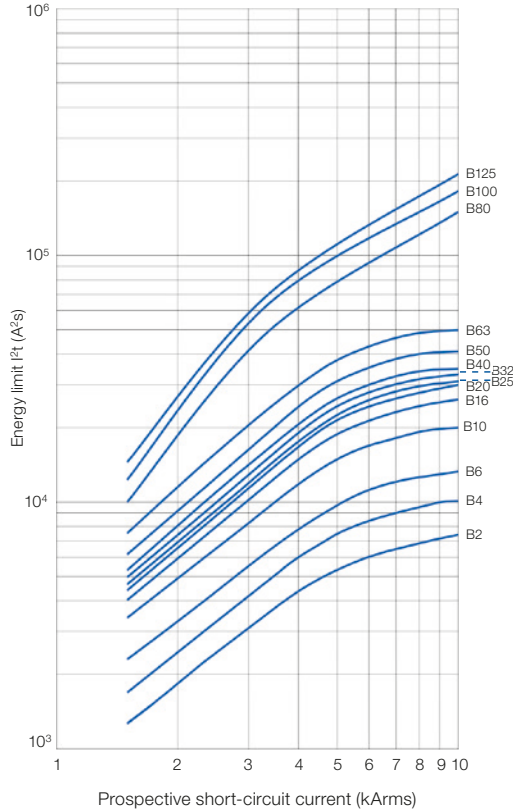
Four-pole miniature circuit breakers

Reference	Current	Curve	Code
-	-	-	-
-	-	-	-
MDWH-C6-4	6 A	C	11422665
MDWH-C10-4	10 A	C	11422689
MDWH-C16-4	16 A	C	11422693
MDWH-C20-4	20 A	C	11422697
MDWH-C25-4	25 A	C	11422711
MDWH-C32-4	32 A	C	11422716
MDWH-C40-4	40 A	C	11422721
MDWH-C50-4	50 A	C	11422726
MDWH-C63-4	63 A	C	11422730
MDWH-C80-4	80 A	C	14849028
MDWH-C100-4	100 A	C	14849029
MDWH-C125-4	125 A	C	14849030

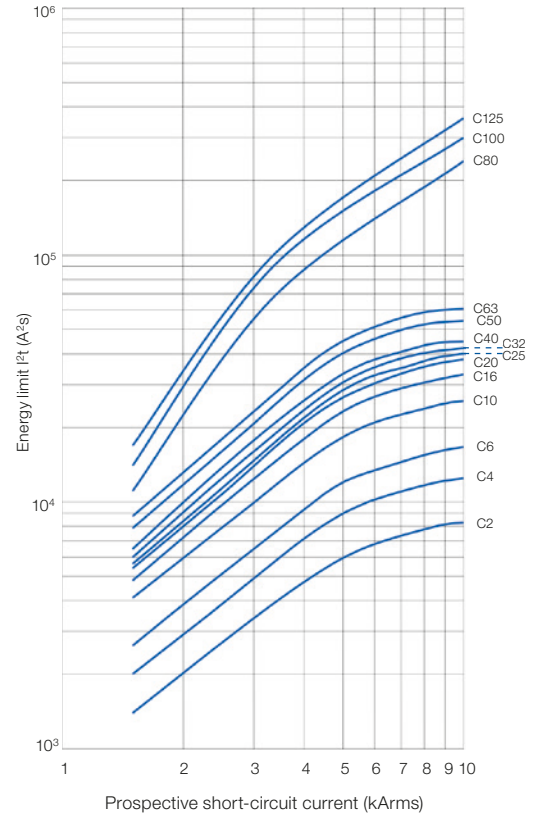
Reference	Current	Curve	Code
MDWH-D2-4	2 A	D	14110171
MDWH-D4-4	4 A	D	14110172
MDWH-D6-4	6 A	D	14110080
MDWH-D10-4	10 A	D	14110085
MDWH-D16-4	16 A	D	14110101
MDWH-D20-4	20 A	D	14110105
MDWH-D25-4	25 A	D	14110112
MDWH-D32-4	32 A	D	14110120
MDWH-D40-4	40 A	D	14110126
MDWH-D50-4	50 A	D	14110140
MDWH-D63-4	63 A	D	14110144
MDWH-D80-4	80 A	D	14849124
MDWH-D100-4	100 A	D	14849125
MDWH-D125-4	125 A	D	14849126

Characteristics curves MDWH

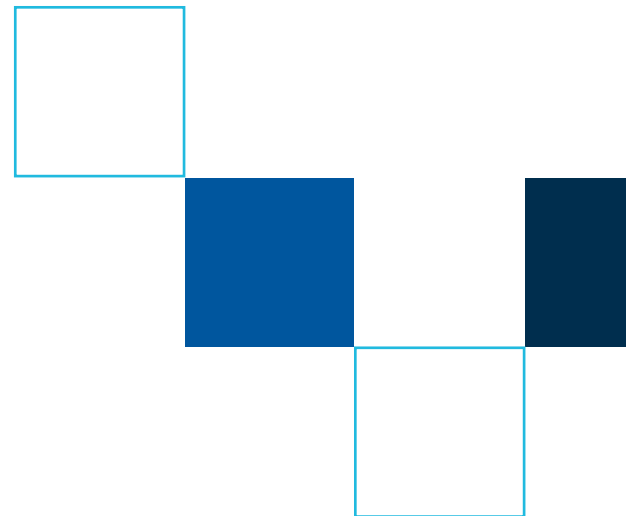
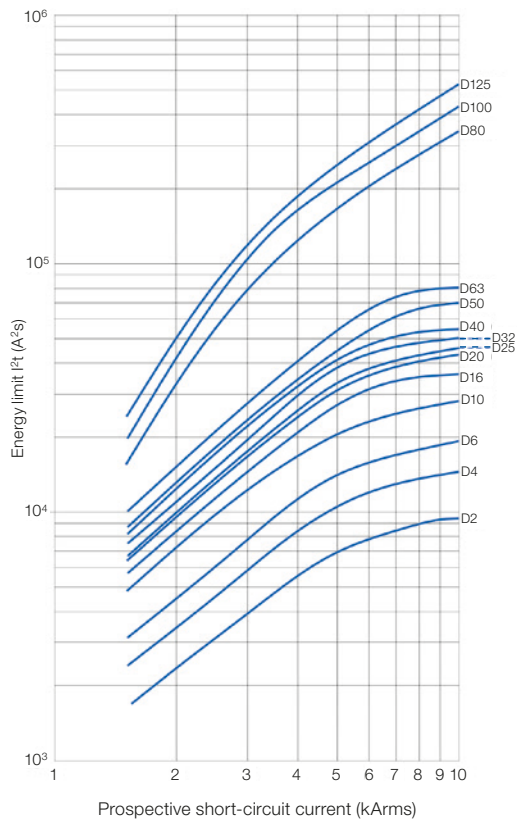
Energy limit I^2t – 230/400 V (1 pole - curve B)



Energy limit I^2t – 230/400 V (1 pole - curve C)



Energy limit I^2t – 230/400 V (1 pole - curve D)



Accessories MDW and MDWH

Padlock



Padlock



Reference	Application	Padlock diameter	Units per package	Code
MDW-PLW63	MDW / MDWH (2-63 A)	Up to 5 mm	50	11373980
MDW-PLW100	MDW (70-125 A)			11373981

Auxiliary contact block MDW¹⁾



Contact block



Reference	Application ¹⁾	Type	Units per package	Code
MDW-BC1	MDW (2-63 A)	1 NOC	1	10261573
MDW-BC2	MDW (70-125 A)		1	10261574
Switching capacity of the MDW-BC1 and MDW-BC2 contacts		AC-14	6 A / 230 V _{AC} - 3 A/400 V _{AC}	
		DC-12	2 A/60 V _{DC} - 1 A/125 V _{DC}	
		DC-13	6 A/24 V _{DC} - 2 A/48 V _{DC}	
Tightening torque on the terminals			0.8 N.m	
Connection capacity			2.5 mm ²	
Weight (kg)			0.040	

Note: 1) Limited to one auxiliary block per circuit breaker.

Auxiliary contact block MDWH¹⁾



Contact block

Reference	Contact configuration	Application	Type	Units per package	Code
MDWH-BC1	1 NOC	MDWH (6-125 A)	Auxiliary contact	1	11882693
MDWH-AL	1 NOC	MDWH (6-125 A)	Alarm contact	1	11894565
MDWH-AX	2 NOC	MDWH (6-125 A)	Auxiliary contact + Alarm contact	1	11894566
Switching capacity of the MDWH-BC1 and MDWH-AL and MDWH-AX		AC-14	5 A/240 V _{AC} - 3 A/400 V _{AC}		
		DC-12	2 A/60 V _{DC} - 1 A/125 V _{DC}		
		DC-13	6 A/24 V _{DC} - 2 A/48 V _{DC}		
Tightening torque on the terminals			0.8 N.m		
Connection capacity			2.5 mm ²		
Weight (kg)			0.040		

Product	Setting	ON	OFF	TRIP
MDWH AX-1	J ²⁾			
MDWH BC1	No setting available			
MDWH AL	No setting available			

Notes: 1) Limited to one auxiliary block per circuit breaker.

2) Setting J contains an auxiliary contact plus an alarm contact.

3) Setting C contains two auxiliary contacts.

Undervoltage release¹⁾



Undervoltage release

Reference	Voltage ²⁾³⁾	Set up	Application	Mounting	Units per package	Code
BS-MDWH 6-125 E25	12 V _{AC} /V _{DC}	0 - 0.3s	MDWH (6-125 A)	Left side	1	11894563
BS MDWH 6-125 E26	24 V _{AC} /V _{DC}	0 - 0.3s	MDWH (6-125 A)	Left side	1	14411257
BS-MDWH 6-125 E31	220 V _{AC} /V _{DC}	0 - 0.3s	MDWH (6-125 A)	Left side	1	11894564

Notes: 1) Limited to one undervoltage release per mini circuit breaker.

1) Pick up voltage 85 to 110% V_n.

2) Drop out voltage 35 to 70% V_n.

Maximum allowable current (derating) according to ambient temperature and altitude – MDW and MDWH

The sizing of miniature circuit breakers must be optimized to provide safety and avoid untimely tripping, like premature thermal tripping. In continuous operation, the characteristics of the installation place, such as altitude, ambient temperature and surrounding devices, directly influence the characteristics of the thermal tripping.

To avoid undue tripping, the following sizing factors must be taken into account to determine the new rated current of miniature circuit breakers:

- Sizing factor for altitude
- Sizing factor due to the influence of adjacent devices (grouping)

Sizing factor for altitude

Environments located more than 2,000 meters above sea level have low atmospheric pressure. The lower the atmospheric pressure, the lower the thermal dissipation of the heat generated by the miniature circuit breaker. To compensate for this effect, the following factors must be applied when sizing the product rated current.

	Altitude (m)	≤ 2,000	≤ 3,000	≤ 4,000	≤ 5,000
Sizing of the miniature circuit breaker maximum rated current	Multiplication factor of the miniature circuit breaker rated current (x_{in})	1	0.98	0.91	0.87
Sizing of the miniature circuit breaker minimum rated current based on the load current	Multiplication factor of the load current (x_{in})	1	1.02	1.10	1.15

	Altitude (m)	2,000	3,000	4,000	5,000
MDWH	Impulse withstand voltage U_{imp} (kV)	5	4.5	4	3.6
	Maximum working voltage (V)	500	480	440	420
MDW	Impulse withstand voltage U_{imp} (kV)	5	4.5	4	3.6
	Maximum working voltage (V)	500	460	420	400

Sizing factor for ambient temperature where the miniature circuit breakers are installed

WEG miniature circuit breakers are calibrated to operate at an ambient temperature of 30 °C. The following table shows the withstand current according to the ambient temperature.

When installed inside any enclosure, the temperature inside the enclosure with all surrounding devices connected must be considered as ambient temperature, since the dissipated power of the surrounding devices influences the temperature rise inside the enclosure.

In miniature circuit breakers, the following sizing factors must be applied when sizing the product current.

Maximum allowable current (derating) according to ambient temperature and altitude – MDW and MDWH

Sizing of the maximum rated current of the miniature circuit breaker according to the ambient temperature											
MDW and MDWH		Ambient temperature (°C)									
Rated current (A)	Curve	-35		-30		-20		-10		0	
		(A)	(x_{in})	(A)	(x_{in})	(A)	(x_{in})	(A)	(x_{in})	(A)	(x_{in})
2	B and C	2.60	1.30	2.52	1.26	2.46	1.23	2.38	1.19	2.28	1.14
4	B and C	5.20	1.30	5.04	1.26	4.92	1.23	4.76	1.19	4.56	1.14
6	B and C	7.80	1.30	7.56	1.26	7.38	1.23	7.14	1.19	6.84	1.14
10	B and C	13.20	1.32	12.70	1.27	12.50	1.25	12.00	1.20	11.50	1.15
16	B and C	21.12	1.32	20.48	1.28	20.00	1.25	19.20	1.20	18.40	1.15
20	B and C	26.40	1.32	25.60	1.28	25.00	1.25	24.00	1.20	23.00	1.15
25	B and C	33.00	1.32	32.00	1.28	31.25	1.25	30.00	1.20	28.75	1.15
32	B and C	42.56	1.33	41.28	1.29	40.00	1.25	38.72	1.21	37.12	1.16
40	B and C	53.20	1.33	51.20	1.28	50.00	1.25	48.00	1.20	46.40	1.16
50	B and C	67.00	1.34	65.50	1.31	63.00	1.26	60.50	1.21	58.00	1.16
63	B and C	83.79	1.33	81.90	1.30	80.01	1.27	76.86	1.22	73.71	1.17
70	B and C	92.40	1.32	91.00	1.30	88.20	1.26	84.70	1.21	81.20	1.16
80	B and C	105.60	1.32	101.60	1.27	100.00	1.25	96.00	1.20	92.00	1.15
100	B and C	132.00	1.32	127.00	1.27	125.00	1.25	120.00	1.20	115.00	1.15
125	B and C	165.00	1.32	158.80	1.27	156.25	1.25	150.00	1.20	143.75	1.15

Sizing of the maximum rated current of the miniature circuit breaker according to the ambient temperature															
MDW and MDWH		Ambient temperature (°C)													
Rated current (A)	Curve	10		20		30		40		50		60		70	
		(A)	(x_{in})	(A)	(x_{in})	(A)	(x_{in})	(A)	(x_{in})	(A)	(x_{in})	(A)	(x_{in})	(A)	(x_{in})
2	B and C	2.20	1.10	2.08	1.04	2.00	1.00	1.92	0.96	1.86	0.93	1.76	0.88	1.71	0.85
4	B and C	4.40	1.10	4.16	1.04	4.00	1.00	3.84	0.96	3.76	0.94	3.52	0.88	3.30	0.82
6	B and C	6.60	1.10	6.24	1.04	6.00	1.00	5.76	0.96	5.64	0.94	5.28	0.88	4.94	0.82
10	B and C	11.10	1.11	10.60	1.06	10.00	1.00	9.60	0.96	9.30	0.93	8.90	0.89	8.52	0.85
16	B and C	17.76	1.11	16.96	1.06	16.00	1.00	15.36	0.96	14.88	0.93	14.24	0.89	13.63	0.85
20	B and C	22.20	1.11	21.20	1.06	20.00	1.00	19.20	0.96	18.60	0.93	17.80	0.89	17.03	0.85
25	B and C	27.75	1.11	26.50	1.06	25.00	1.00	24.00	0.96	23.25	0.93	22.25	0.89	21.29	0.85
32	B and C	35.52	1.11	33.92	1.06	32.00	1.00	30.34	0.95	28.60	0.89	26.75	0.84	25.02	0.78
40	B and C	44.80	1.12	42.40	1.06	40.00	1.00	37.85	0.95	35.61	0.89	33.21	0.83	30.97	0.77
50	B and C	56.00	1.12	53.00	1.06	50.00	1.00	46.24	0.92	43.33	0.87	40.23	0.80	37.35	0.75
63	B and C	70.56	1.12	66.78	1.06	63.00	1.00	58.19	0.92	54.16	0.86	49.80	0.79	45.79	0.73
70	B and C	77.70	1.11	73.50	1.05	70.00	1.00	64.40	0.92	60.20	0.86	54.60	0.78	49.52	0.71
80	B and C	88.00	1.10	84.00	1.05	80.00	1.00	74.40	0.93	69.60	0.87	60.00	0.75	51.72	0.65
100	B and C	110.00	1.10	105.00	1.05	100.00	1.00	93.00	0.93	87.00	0.87	75.00	0.75	64.66	0.65
125	B and C	137.50	1.10	131.25	1.05	125.00	1.00	116.25	0.93	108.75	0.87	93.75	0.75	80.82	0.65

Sizing factor for the influence of surrounding devices (grouping)

When 2 or more miniature circuit breakers are mounted side by side and operate simultaneously, the thermal dissipation of these devices is reduced. In this case, the grouping factor 0.8 must be used to multiply the rated current of the miniature circuit breakers.

Constant long-duration loads

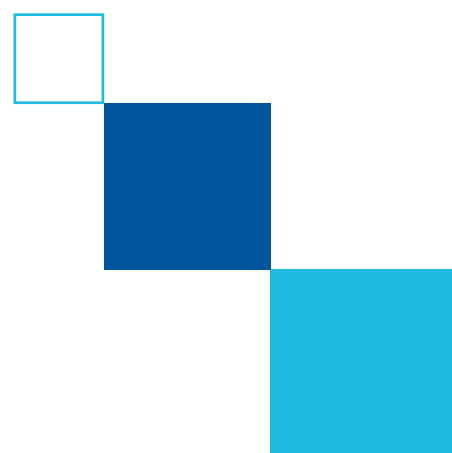
In applications where the rated load will be constantly switched on for periods over one hour, such as solar generation and electric vehicle charging stations, the use of WEG MDWH miniature circuit breakers is recommended.

Maximum allowable current (derating) according to ambient temperature and altitude – MDW and MDWH

Sizing examples

Condition	Altitude factor	Ambient temperature factor	Grouping factor	Calculation	Maximum rated current adjusted
Two-pole MDWH-B40-2 installed alone in an enclosure where, in summer, the internal temperature reaches 50 °C, at 100 m altitude, and applied in photovoltaic generation	1	0.89	1	$40 \text{ A} \times 1 \times 0.89 \times 1 = 35.6 \text{ A}$	35.6 A
Single-pole MDW-B25 installed in a home distribution box, side by side with other miniature circuit breakers, and the box internal temperature reaches 40 °C	1	0.96	0.8	$25 \text{ A} \times 1 \times 0.96 \times 0.8 = 19.2 \text{ A}$	19.2 A
Two-pole MDWH-C50-2 installed at a 4,000 m altitude, inside an enclosure where the internal temperature reaches 60 °C, away from other control and protection devices, and applied in an electric vehicle charging station	0.91	0.8	1	$50 \text{ A} \times 0.91 \times 0.8 \times 1 = 36.4 \text{ A}$	36.4 A

Note: this table is only for sizing circuit breakers according to the installation place. The conductors used in the electrical installation must be sized according to NBR 5410 standard for Brazil.



Maximum allowable current (derating) according to ambient temperature and altitude – MDW and MDWH

To determine the minimum rated current of miniature circuit breakers using the rated load current as reference, use the multiplication factors below.

Sizing factor for altitude

The following table shows the altitude factor for the calculation.

Altitude (m)	≤ 2,000	≤ 3,000	≤ 4,000	≤ 5,000
Multiplication factor of the load current (x_{alt})	1	1.02	1.10	1.15

Sizing factor for ambient temperature where the miniature circuit breakers are installed

The following table shows the altitude factor for the calculation.

Sizing of the miniature circuit breaker minimum rated current based on the load current												
Ambient temperature (°C)	-35	-30	-20	-10	0	10	20	30	40	50	60	70
Multiplication factor of the load current (x_{temp})	0.76	0.77	0.80	0.83	0.87	0.91	0.95	1.00	1.06	1.12	1.19	1.27

Sizing factor for the influence of surrounding devices (grouping)

In installations with 2 or more miniature circuit breakers mounted side by side, multiply the load current by 1.25.

Constant long-duration loads

In applications where the rated load will be constantly switched on for periods over one hour, such as solar generation and electric vehicle charging stations, the use of WEG MDWH miniature circuit breakers is recommended.

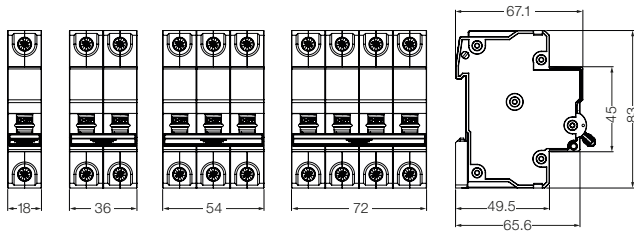
Sizing examples

Condition	Altitude factor	Ambient temperature factor	Grouping factor	Calculation	Recommended miniature circuit breaker
Commercial three-phase photovoltaic generation, with a 29 A load and two parallel circuits, installed side by side at an altitude below 2,000 m, inside an enclosure below a zinc roofing structure which may reach temperatures up to 60 °C in summer	1	1.19	1.25	$29 \text{ A} \times 1 \times 1.19 \times 1.25 = 43.14 \text{ A}$	MDWH-C50-3

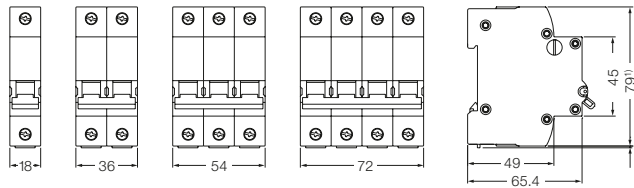
Note: this table is only for sizing circuit breakers according to the installation place. The conductors used in the electrical installation must be sized according to NBR 5410 standard for Brazil.

Dimensions

MDWP / MDWS (2 - 63 A)

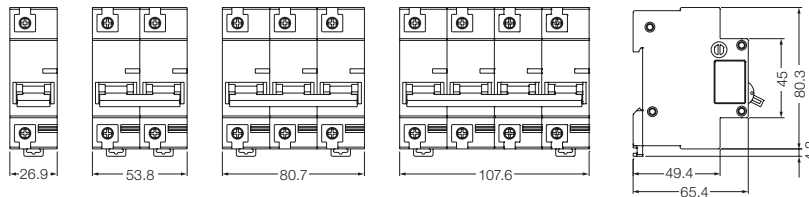


MDWH (2 - 63 A)

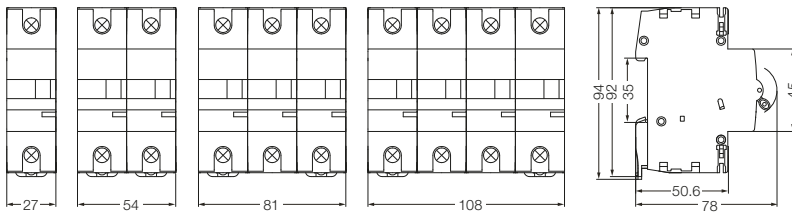


Note: 1) MDWH = 86 mm.

MDW (70 - 125 A)



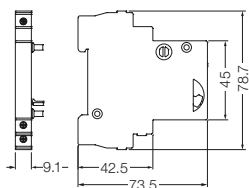
MDWH (80 - 125 A)



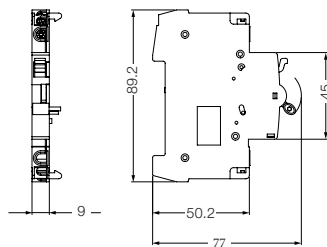
Note: 1) All the dimensions are in millimeters (mm).

Dimensions

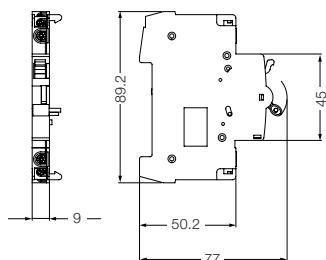
MDW-BC1 / BC2



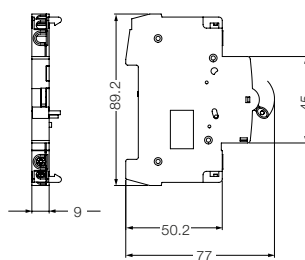
MDWH-AL



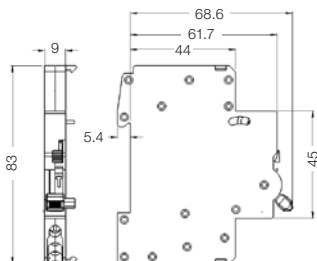
MDWH-AX



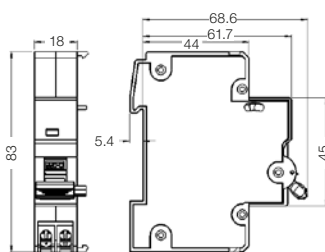
MDWH-BC1



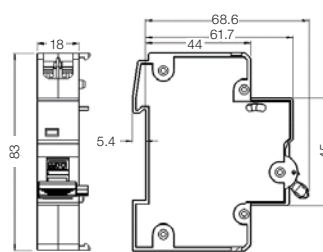
Alarm block (AL-1) auxiliary contact block (BC-1)



Shunt release (opening – BD)



Undervoltage release (BS)



Note: 1) All the dimensions are in millimeters (mm).

Type 2 coordination guide, cascading and selectivity

Association of protection with motor starting components and with different protection devices. Operation and protection of motors and electrical circuits – Coordination, Cascading and Selectivity, see at:



**Access the
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click here**



Overview of circuit breakers

Dimensions (frames)	Currents (A)	Protection Thermomagnetic	Protection Electronic	Breaking capacity I_{cu} @ 380 V _{AC}

Miniature Circuit Breaker

	MDW / MDWP / MDWS MDW	2 to 63 70 to 125	Fixed	-	3
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MDWH Miniature Circuit Breaker

	Frame 1 Frame 2	6 to 63 80 to 125	Fixed	-	10 ¹⁾
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CBW Molded-Case Circuit Breaker

	125 250 650	16 to 125 125 to 250 300 to 650	Fixed and adjustable	-	18 - 36 18 - 36 36 - 65
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DW Molded-Case Circuit Breaker

	160 250 400 800/1000 1600	16 to 160 100 to 250 200 to 400 320 to 1,000 1,250 and 1,600	Fixed and adjustable -	- Adjustable Adjustable	18 - 80 18 - 80 35 - 65 35 - 65 50 - 65
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ACW High-Capacity Molded-Case Circuit Breaker

	100/160 101/161/250 400/630 800	20 to 160 16 to 250 160 to 400 630 to 800	Fixed and adjustable	- Adjustable	85 -150 85 -150 85 -150 100
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ABW and ABWC Air Circuit Breaker

	800/1600 ¹⁾ 2000/2500/3200 4000/5000 6300	320 to 1.600 800 to 3.200 1.600 to 5.000 2.520 to 6.300	-	Adjustable	65 85 100 120
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Global presence

is essential, as much
as understanding
your needs.

Global Presence

With more than 49,000 employees worldwide, WEG is one of the largest electric motors, electronic equipments and systems manufacturers. We are constantly expanding our portfolio of products and services with expertise and market knowledge. We create integrated and customized solutions ranging from innovative products to complete after-sales service.

WEG's know-how guarantees our **MDW — Miniature Circuit Breaker** are the right choice for your application and business, assuring safety, efficiency and reliability.



Availability is to have a global support network



Partnership is to create solutions that suits your needs



Competitive edge is to unite technology and innovation

Learn More

High performance and reliable products to improve your production process.

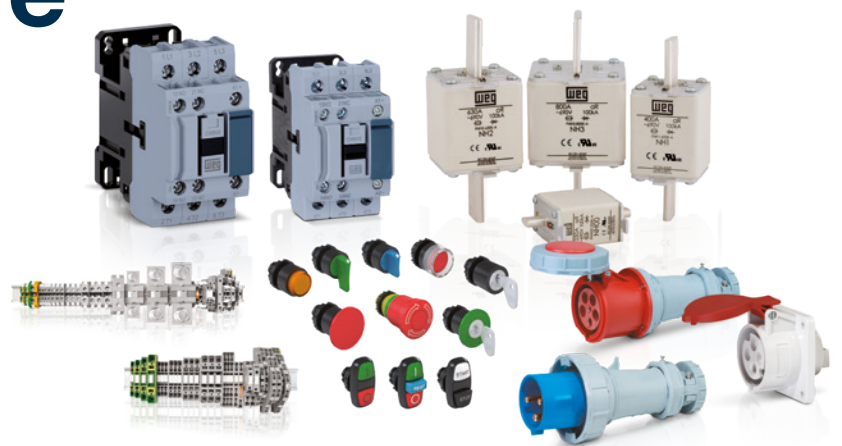
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Cod: 50163783 | Rev: 00 | Date (m/y): 03/2026.

The values shown are subject to change without prior notice.
The information contained is reference values.