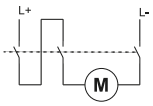
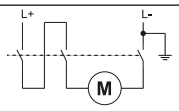
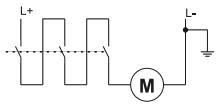
Motorschutz-Leistungsschalter MPW12 und MPW18 - Technische Daten

Typ			MPW12	MPW12i	MPW18	MPW18i
Bestimmungen			IEC/EN 60947, DIN VDE 0660, UL/CSA, BV, EAC			
Bemessungsisolationsspannung U_i nach IEC 60947, DIN VDE0660		V	690			
Bemessungsbetriebsspannung U_e		V	690			
Bemessungsisolationsspannungsfestigkeit U_{imp}		kV	6			
Bemessungsbetriebsfrequenz		Hz	50/60			
Bemessungsbetriebsstrom I_e, max.		A	12		18	
Phasenausfallempfindlichkeit nach IEC/EN 60947-4-1/DIN VDE 0660 T. 102			x	-	x	-
Klimafestigkeit			Feuchte Wärme, konstant nach IEC 60068-2-3			
			Feuchte Wärme, zyklisch nach IEC 60068-2-30			
Umgebungstemperatur	Betriebstemperatur	°C	-20 ... +70			
	Lagertemperatur	°C	-50 ... +80			
	Im Gehäuse	°C	-20 ... +35			
Einbaulage			Beliebig			
Schutzart			IP20			
Berührungsschutz nach DIN VDE 0106 T. 100			Finger- und handrückensicher			
Schocksicherheit nach IEC 60068-2-27		g	15			
Aufstellungshöhe		m	2000			
Überspannungskategorie/Verschmutzungsgrad			III/3			
Bemessungsbetriebsfrequenz		Hz	50 - 60			
Stromverluste, 3-polig, betriebswarm	≤ 4 A	W	7			
	≤ 10 A	W	8			
	≤ 12 A	W	10	-	10	-
	≤ 16 A	W	-	14	-	14
	≤ 18 A	W	-	12	-	12
Lebensdauer, mechanisch		h	100.000			
Lebensdauer, elektrisch		h	100.000			
Max. Schalthäufigkeit S/h			15			
Temperaturkompensation		°C	-20 ... +60	-	-20 ... +60	-
Einstellbare Überlastauslöser x I_u			0,6-1	-	0,6-1	-
Fest eingestellte Kurzschlussauslöser x I_u			13			

Schalten von Gleichstrom

Motorschutz-Leistungsschalter MPW12(i) und MPW18(i) sind auch geeignet zum Schalten von Gleichstrom. Man muss jedoch die maximal zulässige Gleichspannung pro Strombahn beachten. Im Fall höherer Spannungen ist die Reihenschaltung von 2 oder 3 Strombahnen erforderlich. Die Auslösecharakteristik der Überlastauslöser bleibt unverändert. Der Ansprechwert der Kurzschlussauslöser steigt bei Gleichstrom um ungefähr 35 %.

DC - Schaltvermögen (Zeitkonstante t ≤ 5 ms):
Kurzschlussausschaltvermögen I_{cu} = 10 kA
für alle Anschlussarten

Anschluss	Zulässige Gleichspannung	Erläuterungen
	150 V DC	2-poliges Schalten im ungeerdeten System
	300 V DC	2-poliges Schalten im geerdeten System
	450 V DC	1-poliges Schalten im geerdeten System

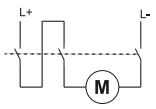
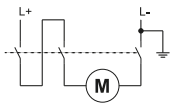
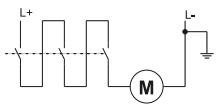
Motorschutz-Leistungsschalter MPW40 bis MPW100 - Technische Daten

Typ			MPW40	MPW40i	MPW80	MPW80i	MPW100
Bestimmungen			IEC/EN 60947, DIN VDE 0660, UL/CSA, BV, EAC				
Bemessungsisolationsspannung U_i nach IEC 60947, DIN VDE0660		V	690				1000
Bemessungsbetriebsspannung U_e		V	690				
Bemessungsisolationsspannungsfestigkeit U_{imp}		kV	6				8
Bemessungsbetriebsfrequenz		Hz	50/60				
Bemessungsbetriebsstrom I_e, max.		A	40		80		100
Phasenausfallempfindlichkeit nach IEC/EN 60947-4-1/DIN VDE 0660 T. 102			x	-	x	-	x
Klimafestigkeit			Feuchte Wärme, konstant nach IEC 60068-2-3				
			Feuchte Wärme, zyklisch nach IEC 60068-2-30				
Umgebungstemperatur	Betriebstemperatur	°C	-20 ... +70				-20 ... +60
	Lagertemperatur	°C	-50 ... +80				
	Im Gehäuse	°C	-20 ... +35		-	-	-
Einbaulage			Beliebig				
Schutzart			IP20				
Berührungsschutz nach DIN VDE 0106 T. 100			Finger- und handrückensicher				
Schocksicherheit nach IEC 60068-2-27		g	15				25
Aufstellungshöhe		m	2000				
Überspannungskategorie/Verschmutzungsgrad			III/3				
Bemessungsbetriebsfrequenz		Hz	50 - 60				
Stromverluste, 3-polig, betriebswarm	≤ 4 A	W	7		-		
	≤ 10 A	W	8		-		
	≤ 16 A	W	12		-		
	≤ 20 A	W	12		-		
	≤ 25 A	W	15		-		
	≤ 40 A	W	11		12		-
	≤ 50 A	W	-		13		-
	≤ 65 A	W	-		13		-
	≤ 75 A	W	-		-		25
	≤ 80 A	W	-		18		-
	≤ 90 A	W	-		-		29
	≤ 100 A	W	-		-		29
Lebensdauer, mechanisch		h	100.000		50.000		
Lebensdauer, elektrisch		h	100.000		25.000		
Max. Schalthäufigkeit S/h			15				25
Temperaturkompensation		°C	-20 ... +60	-	-20 ... +60	-	-20 ... +60
Einstellbare Überlastauslöser x I_u			0,6-1	-	0,6-1	-	0,6-1
Fest eingestellte Kurzschlussauslöser x I_u			13	-	13	-	13

Schalten von Gleichstrom

Motorschutz-Leistungsschalter MPW40, MPW80 und MPW100 sind auch geeignet zum Schalten von Gleichstrom. Man muss jedoch die maximal zulässige Gleichspannung pro Strombahn beachten. Im Fall höherer Spannungen ist die Reihenschaltung von 2 oder 3 Strombahnen erforderlich. Die Auslösecharakteristik der Überlastauslöser bleibt unverändert. Der Ansprechwert der Kurzschlussauslöser steigt bei Gleichstrom um ungefähr 35 %.

DC - Schaltvermögen (Zeitkonstante t ≤ 5 ms):
Kurzschlussausschaltvermögen I_{cu} = 10 kA
für alle Anschlussarten

Anschluss	Zulässige Gleichspannung	Erläuterungen
	150 V DC	2-poliges Schalten im ungeerdeten System
	300 V DC	2-poliges Schalten im geerdeten System
	450 V DC	1-poliges Schalten im geerdeten System

Technical Data

Models		MPW12	MPW18	MPW12i	MPW18i
Maximum rated current In_{max} (Ie)		12 A	18 A	12 A	18 A
Number of poles		3			
Short-circuit release		13 x Ie_{max}			
Rated operational voltage U_e		690 V[1]			
Rated frequency		50/60 Hz			
Rated insulation voltage U_i		690 V			
Rated impulse withstand voltage Uimp		6 kV			
Use category	IEC 60947-2 (circuit breaker)	A			
	IEC 60947-4-1 (motor starter)	AC-3			
Tripping test		Yes			
Overload protection		Yes		No	
Phase failure sensitivity (IEC 60947-4-1)		Yes		No	
Tripping indication		No			
Tripping class (IEC 60947-4-1)		10		-	
Maximum operation per hour	Operations/hour	15			
Altitude (m)		2,000			
Degree of protection (IEC 60529)		IP20			
Mechanical life	Number of operations	100,000			
Electrical life	Number of operations	100,000			
Permissible ambient temperature					
Transport and storage		-50...+80 °C			
Operation[2]		-20...+70 °C			
Temperature compensation (IEC 60947-4-1)		-20...+60 °C		-	
Power dissipation per circuit breaker					
Maximum rated currents In	≤4 A	7 W			
	≤10 A	8 W			
	≤12 A[3]	10 W	-	10 W	-
	≤16 A	-	14 W	-	14 W
	≤18 A	-	12 W	-	12 W
Resistance to impact (IEC 60068-2-27)		15 g			
Standards					
IEC 60947-1		Yes			
IEC 60947-2		Yes			
IEC 60947-4-1		Yes			
Connection					
Type of terminal		Spring	Screws Phillips (Nº 2)	Spring	Screws Phillips (Nº 2)
Tightening torque	N.m	-	1.2...1.7	-	1.2...1.7
	lb.in	-	11...16	-	11...16
Dimensions					
Width (mm)		45			
Height (mm)		100	90	100	90
Depth (mm)		77			

Altitude - Correction Factor

The MPW motor protective circuit breakers do not undergo any change to their specifed performance when applied at an altitude of up to 2,000 meters above sea level. However, as the altitude increases, the atmospheric properties vary in terms of dielectric rigidness and pressure. Therefore, current and voltage correction factors must be applied for altitudes exceeding 2,000 meters, as shown in the following table:

Altitude (above sea level) - h	Rated operational voltage U_e	Current correction factor I_u
h ≤2,000 m	690 V	1 x I_n
2,000< h ≤3,000 m	550 V	0.96 x I_n
3,000< h ≤4,000 m	480 V	0.93 x I_n
4,000< h ≤5,000 m	420 V	0.90 x I_n

Notes: 1) 500 V with plastic enclosure;
2) Reduce current for temperatures exceeding +60 °C (87% to 70 °C);
3) Only available with spring terminal.

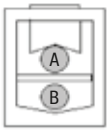
Technical Data

Referene code		MPW40	MPW40i	MPW40t	MPW80	MPW80i	MPW100
Maximum rated current In_{max} (I_e)		40 A		20 A	80 A		100 A
Number of poles		3					
Short-circuit release		13 x Ie_{max}		19 x Ie_{max}	13 x Ie_{max}		
Rated operational voltage U_e		690 V[1)]					
Rated frequency		50/60 Hz					
Rated insulation voltage U_i		690 V					1,000 V
Rated impulse withstand voltage U_{imp}		6 kV					8 kV
Use category	IEC 60947-2 (circuit breaker)	A					
	IEC 60947-4-1 (motor starter)	AC-3					
Tripping test		Yes					
Overload protection		Yes	No	Yes		No	Yes
Phase failure sensitivity (IEC 60947-4-1)		Yes	No	Yes		No	Yes
Tripping indication		Yes					
Tripping class (IEC 60947-4-1)		10	-	10		-	10
Maximum operation per hour	Operations/hour	15					25
Altitude (m)		2,000					
Degree of protection (IEC 60529)		IP20					
Mechanical life	Number of operations	100,000			50,000		
Electrical life	Number of operations	100,000			25,000		
Permissible ambient temperature							
Transport and storage		-50...+80 °C					
Operation[2)]		-20...+70 °C					-20...+60 °C
Temperature compensation (IEC 60947-4-1)		-20...+60 °C	-	-20...+60 °C	-20...+60 °C	-	-20...+60 °C
Power dissipation per circuit breaker							
Maximum rated currents In	≤4 A	7 W			-		-
	≤10 A	8 W			-		-
	≤16 A	12 W			-		-
	≤20 A	12 W			-		-
	≤25 A	15 W			-		-
	≤40 A	11 W			12		-
	≤50 A	-			13		-
	≤65 A	-			13		-
	≤75 A	-			-		25
	≤80 A	-			18		-
	≤90 A	-			-		29
	≤100 A	-			-		29
Resistance to impact (IEC 60068-2-27)		15 g			15		25
Standards							
IEC 60947-1		Yes					
IEC 60947-2		Yes					
IEC 60947-4-1		Yes					
Connection							
Type of terminal		Screws phillips (Nº 2)			Allen (4 mm)		
Tightening torque	N.m	2...2.5			6		
	lb.in	18...22			53		55
Dimensions							
Width (mm)		45			54		70
Height (mm)		97			125		165
Depth (mm)		98			157		171

Notes: 1) 500 V with plastic enclosure.
2) Reduce current for temperatures exceeding +60 °C (87% to 70 °C).

Technical Data

Main Terminal Capacity

Reference code	Type	Number of conductors	Cross-section
MPW12	Rigid cable	 1 or 2	1...1.5 mm² 18...16 AWG
	Cable without terminal[1)]		1...1.5 mm² 18...16 AWG
MPW18	Rigid or flexible cable	1 or 2	1...4 mm² 18...12 AWG
MPW40	Rigid or flexible cable	1 or 2	1...2.5 mm² 2.5...6 mm² 14...8 AWG[1)]
MPW80	**Type**	**1 conductor connection on top only**	**Cross-section**
	Rigid cable		1...35 mm²
	Cable without terminal		1.5...35 mm²
	Cable without terminal		1...35 mm2
	Flexible cable		1.5...35 mm²
			17...2 AWG
	Type	**1 conductor connection on bottom only**	**Cross-section**
	Rigid cable		2.5...35 mm²
	Cable without terminal		6...35 mm²
	Cable without terminal		2.5...35 mm²
	Flexible cable		6...35 mm²
			13...2 AWG
	Type	**Connection of 2 condutors**	**Cross-section**
	Rigid cable	 Conductor on top (A)	1...35 mm²
	Cable without terminal		1.5...35 mm²
	Cable without terminal		1...35 mm²
	Flexible cable		1.5...35 mm²
			17...2 AWG
	Type		**Cross-section**
	Rigid cable	Conductor on bottom (B)	2.5...35 mm²
	Cable without terminal		6...35 mm²
	Cable without terminal		2.5...35 mm²
	Flexible cable		6...35 mm²
			13...2 AWG
MPW100	**Type**	**Number of conductors**	**Cross-section**
	Rigid cable	1	2.5...70 mm²
			12...2/0 AWG
		2	2.5...50 mm²
			12...1/0 AWG
	Rigid cable	1	2.5...50 mm²
			12...1/0 AWG
		2	2.5...35 mm²
			10...2 AWG

Auxiliary Contact Blocks - ACB

Reference	ACBF-11 (S)			ACBS- _ _ (S), TSB			
For use with	MPW12 / MPW18 / MPW40 / MPW80						
Rated insulation voltage Ui	250 V			690 V			
Utilization category	24 V ac	220-230 V ac		24 V ac	230 V ac	400 V ac	690 V ac
AC-15	2 A	0.5 A		6 A	4 A	3 A	1 A
AC-12	2,5 A	2.5 A		10 A	10 A	10 A	10 A
DC-13	24 V dc	48 V dc	60 V dc	24 V dc	110 V dc	220 V dc	440 V dc
	1 A	0.3 A	0.15 A	2 A	0.5 A	0.25 A	0.1 A
Type of terminal	Flat	Spring		Flat		Spring	
Type of screw	Phillips (Nº 2)	-		Phillips (Nº 2)		-	
Tightening torque	1...1.5 N.m (7...10 lb.in)	-		1...1.5 N.m (7...10 lb.in)		-	
Rigid cable	1 or 2 x (0.5...1.5 mm²) 1 or 2 x (0.75...2.5 mm²) 1 or 2 x (18...14 AWG)	1 or 2 x (1...1.5 mm²) 1 or 2 x (18...16 AWG)		1 or 2 x (0.5...1.5 mm²) 1 or 2 x (0.75...2.5 mm²) 1 or 2 x (18...14 AWG)		1 or 2 x (1...1.5 mm²) 1 or 2 x (18...16 AWG)	
Flexible cable		-				-	
Finely stranded with end sleeve[1)]		1 or 2 x (1 mm²) 1 or 2 x (18 AWG)				1 or 2 x (1 mm²) 1 or 2 x (18 AWG)	
Backup fuses gL/gG	10 A						

Technical Data

Auxiliary Contact Block - ACB

Reference code	ACBF-11 MPW100		ACBS-11/ACBS-20/ACBS-02/TSB AT-11 MPW100	
For use with	MPW100			
Utilization category	240 V ac		24 V ac	240 V ac
AC-15	3 A		6 A	4 A
DC-13	24 V dc	220 V dc	24 V dc	220 V dc
	1 A	0.1 A	2 A	0.25 A
Type of screw	Phillips (Nº2)			
Tightening torque	0.8...1.2 N.m (7...10 lb.in)			
Rigid cable	1 (0.5...2.5 mm² / 20...14 AWG)		1 o 2 x (0.5...2.5 mm² / 20...14 AWG)	
Flexible cable	1 (0.5...4 mm² / 20...10 AWG) o 2 (0.75...2.5 mm² / 18...14 AWG)			
Back-up fuses gL/gG	16 A			

Undervoltage Release - URMP

Reference code	URMP	URMP-K_ _ MPW100
For use with	MPW12 / MPW18 / MPW40 / MPW80	MPW100
Operating voltage (enables cir. breaker switch on)	0.85...1.1xUs	
Non-operating voltage (guarantees circuit breaker switch OFF)	0.7...0.35xUs	
Energization consumption	20.2 VA / 13 W	8.5 VA / 6 W
Consumption	7.2 VA / 2.4 W	3 VA / 1.2 W
Max. opening time	20 ms	
Type of terminal	Flat	
Type of screws	Phillips (Nº2)	
Tightening torque	0.8...1.2 N.m (7...10 lb.in)	
Rigid cable	1 o 2 x (0.5...1.5 mm²). 1 o 2 x (0.75...2.5 mm²). 2 x (18...14 AWG)	1 o 2 x (0.5...2.5 mm² / 20...14 AWG)
Flexible cable		1 (0.5...4 mm² / 20...10 AWG) o 2 x (0.75...2.5 mm² / 18...14 AWG)
Back-up fuses gL/gG	10 A	

Notes: 1) Mandatory use (finely stranded cable without end sleeve is not allowed).
2) 8 AWG for flexible cable only.

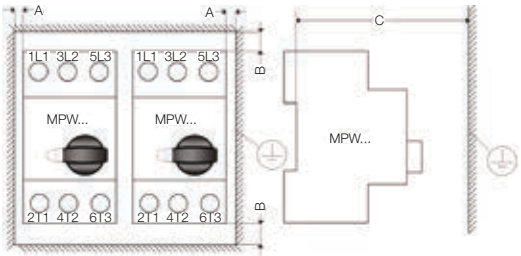
Shunt Release - SRMP

Reference code	SRMP	SRMP-K_ _ MPW100
For use with	MPW12 / MPW18 / MPW40 / MPW80	MPW100
Operating voltage (guarantee circuit breaker switch OFF)	0.7...1.1xUs	
Consumption - Energization	20.2 VA / 13 W	8.5 VA / 6 W
Maximum opening time	20 ms	
Type of terminal	Flat	
Type of screw	Phillips (Nº2)	
Tightening torque	0.8...1.2 N.m (7...10 lb.in)	
Rigid cable	1 o 2 x (0.5...1.5 mm²). 1 o 2 x (0.75...2.5 mm²). 2 x (18...14 AWG)	1 o 2 x (0.5...2.5 mm² / 20...14 AWG)
Flexible cable		1 (0.5...4 mm² / 20...10 AWG) o 2 x (0.75...2.5 mm² / 18...14 AWG)
Back-up fuses gL/gG	10 A	

Mounting Configurations for MPW Motor Protective Circuit Breaker

Live or Grounded Parts Distance to the Circuit Breaker

Description	U_e	Minimum distance between the circuit breaker and live or grounded parts (mm)		
		A	B	C
MPW12 / MPW18	Up to 690 V	9	20	75
MPW40	Up to 500 V	9	30	95
	Up to 690 V	30	50	95
MPW80	Up to 690 V	10	50	150
MPW100	Up to 690 V	30	150	167



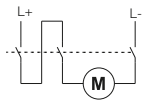
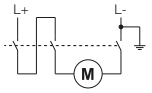
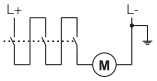
Note: the motor protective circuit breaker can be mounted in any position, but according to IEC 60447 standard, the "On - I" indicator must be to the right, or up.

Technical Data

DC Operation

The MPW12, MPW18, MPW40 and MPW80 can also be used for operating continuous current loads. For such operation it is necessary to connect 2 or 3 poles in series. See recommended circuits and their voltage limits in the table on the right.

Short-circuit breaking capacity Icu = 10 kA for all configurations.

Circuits	Máx. V dc	Notes
	150 V dc	System not grounded; 2 pole series connected
	300 V dc	System grounded; 2 pole series connected
	450 V dc	System grounded; 3 pole series connected