

UL 508 Non-Fusible

Disconnect Switches

LOW VOLTAGE SWITCHES

M163 – M803



The M-series Load Break Switch is the most compact industrial-grade switch on the market. Capable of making or breaking loads up to 600V (UL), it is suitable as a motor disconnect. Extremely compact and robust, these switches have a variety of mounting options including DIN-rail, base, or door-mounting. A wide assortment of handles, shafts and accessories is available to accommodate any installation requirement.

Catalog number designation			
M Switch M = Mersen AC Switch	80 Ampacity 16-80	3 Number of Poles 	— Special Configurations DM: Door Mounting

RATINGS (UL):

- **Volts:** 600VAC
- **Amps:** 20, 30, 40, 63, and 80A. Suitable as motor disconnect up to 40hp.

FEATURES/BENEFITS:

- Compact
- Robust
- DIN-rail, base, or door mounting
- Choice of handles and shafts
- Padlockable
- Side-mount auxiliary contacts and additional poles
- Double-break, silver-plated, contacts

APPLICATIONS:

- Line-of-sight disconnect
- Electrical isolation
- Branch-circuit switch
- Motor disconnect

APPROVALS:

- UL 508 listed E196672
- IEC 60947-3







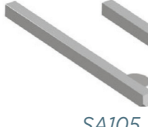





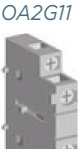


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UL 508 Non-Fusible Disconnect Switches (M163 - M803)

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SWITCHES

UL 508 Disconnect Switches—Front Operated

UL 508 Disconnect Switches—Front Operated						
						
M163	M163DM	M633	M803			
Switch Body	Ampere Rating	20	30	40	63	80
	Base Part #	M163	M253	M403	M633	M803
	Door-Mounted Version	M163DM	M253DM	M403DM		
Handles and Shafts	Direct Front Operation Locking Handle	HD40	HD40	HD40	HD125	HD125
	External Front Operation					
	Minimum recommended handle length	45 mm				
	Selector Style NEMA Type 1, 3R, 12	HSBX, HSRX				
	Shaft—SAxxx (xxx = length in mm)	SA85, SA105, SA120, SA130, SA180, SA250				
	Door mounted version (no shaft required)	HSBPDM, HSRPDM				
	Pistol Style NEMA Type 1, 3R, 12	HB45, HR45, HB65, HR65, HB80, HR80				
	NEMA Type 4, 4X	HB45X, HR45X, HB65X, HR65X, HB80, HB80X				
	NEMA 4X Stainless Steel	HM65X				
	Shaft—SAxxx (xxx = length in mm)	SPA130, SPA210, SPA290, SPA360, SPA430				
	B=Black, R=Black					
Accessories	Fourth Poles	4P40	4P40	4P40	4P80	4P80
	Limited to one additional pole per switch	4P40DM	4P40DM	4P40DM		
	Door mounted switch 4th poles are left-side mounted					
	Neutral Poles					
	Limited to one additional pole per switch	NP40	NP40	NP40	NP80	NP80
	Door mounted switch neutral poles	NP40DM	NP40DM	NP40DM		
	Terminal Shrouds					
	3-pole	TS40-1	TS40-1	TS40-1	TS63-1	TS63-1
	4-pole (Add this to the 3-pole shroud)	TS40-3	TS40-3	TS40-3	TS63-3	TS63-3
	Auxiliary Contacts*					
	NC Right side mounting	OA1G01	OA1G01	OA1G01	OA1G01	OA1G01
	NO left side mounting**	OA1G10	OA1G10	OA1G10	OA1G10	OA1G10
	NO+NC (Mounting on either side)***	OA2G11	OA2G11	OA2G11	OA2G11	OA2G11
	*Rated 2A max continuous @690VAC					
* Minimum switching capacity for the auxiliary contacts OA1G01, OA1G10, OA2G11 is 10mA at a voltage of 24V DC.						
** Auxiliary contact OA1G10 breaks prior to main contacts opening.						
*** Auxiliary contact OA2G11 simultaneously functions with main contacts.						

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TECHNICAL DATA ACCORDING TO UL/cULus													
Part Number	pf= 0.7...0.8	-40° to 40 °C	A	M163		M253		M403		M633		M803	
General Purpose Amp Rating				20	30	40	60	80					
Maximum Operating Voltage			V	600	600	600	600	600	600	600	600	600	600
Max. horsepower rating / motor FLA current	pf= 0.4...0.5 Three phase	240 V	HP/A	5/15.2	7.5/22.0	10/28.0	15/42.0	20/54.0					
		480 V	HP/A	10/14.0	15/21.0	20/27.0	30/40.0	40/52.0					
		600 V	HP/A	10/11.0	20/22.0	25/27.0	30/32.0	40/41.0					
	Single phase	120 V	HP/A	1/16.0	1.5/20.0	2/24.0	2/24.0	2/24.0					
		240 V	HP/A	2/13.2	3/18.7	5/30.8	7.5/40.0	10/57.5					
Short circuit rating with fuse	Maximum fuse size		A	30	60 ²⁾	30	60 ²⁾	30	60 ²⁾	100	150	100	150
	Fuse type	CC	kA	10		10		10					
	Fuse type	J	kA	10	10	10	10	10	10	100		100	
	Fuse type	T	kA	10	10	10	10	10	10	100		100	
	Fuse type	RK1	kA	10		10		10		10	5	10	5
	Fuse type	RK5	kA	5	5	5	5	5	5		5		5
	Fuse type	L	kA										
	Fuse type	H	kA										
Endurances													
Min. electrical endurance, pf. 0.75...0.8			oper. cycles	6 000	6 000	6 000	6 000	6 000	6 000	6 000	6 000	6 000	6 000
Mechanical endurance			operations	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000	20 000
Terminal lug kits				Integral	Integral	Integral	Integral	Integral	Integral	Integral	Integral	Integral	Integral
Wire range			AWG	18-8	18-8	18-8	14-4	14-4	14-4	14-4	14-4	14-4	14-4
Torque		Wire tightening	lb. in	7	7	7	18	18	18	18	18	18	18
		Lug mounting											

TEMPERATURE DERATING

Amb. °C (Min)	Amb. °C (Max)	Thermal current (Ith) derating
35	40	1.00
40	45	0.96
45	50	0.93
50	55	0.89
55	60	0.85

Amb. °C (Min)	Amb. °C (Max)	Thermal current (Ith) derating
60	65	0.80
65	70	0.76
70	75	0.71
75	80	0.65
80	85	0.60

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TECHNICAL DATA ACCORDING TO IEC 60947-3								
Part Number				M163	M253	M403	M633	M803
General Purpose Amp Rating	pf= 0.7...0.8	-40° to 40 °C	A	20	30	40	60	80
Rated insulation voltage and rated operational voltage AC20/DC20	Pollution degree 3	50 Hz 1 min.	V	750	750	750	750	750
Dielectric strength			kV	6	6	6	6	6
Rated impulse withstand voltage			kV	8	8	8	8	8
Rated thermal current and rated operational current AC20/DC20 ...with minimum conductor cross section	Ambient 40 °C ²⁾	In open air		25 A	32 A	40 A	63 A	80 A
	Ambient 40 °C ²⁾	In enclosure		25 A	32 A	40 A	63 A	80 A
	Ambient 60 °C	In enclosure		20 A	25 A	32 A	50 A	63 A
Rated operational current, AC-21A	Cu			4 mm ²	6 mm ²	10 mm ²	16 mm ²	25 mm ²
	up to 415 V	A		16	25	40	63	80
Rated operational current, AC-22A	440...690 V	A		16	25	40	63	80
	up to 415 V	A		16	25	40	63	80
Rated operational current, AC-23A	440...690 V	A		16	25	40	63	80
	up to 415 V	A		16	20	23	63	75
	440 V	A		16	20	23	63	65
	500 V	A		16	20	23	45	58
Rated operational current / poles in series, DC-21A	690 V	A		10	11	12	20	20
	24...48 V ¹⁾			16 A/1	25 A/1	32 A/1	63 A/1	80 A/1
	110 V			16 A/2	25 A/2	32 A/2	63 A/2	80 A/2
	220 V			16 A/3	25 A/3	32 A/3	63 A/3	80 A/3
	440 V			16 A/4	16 A/4	16 A/4	16 A/4	16 A/4
	500 V			16 A/4	16 A/4	16 A/4	16 A/4	16 A/4
	750 V			16 A/8	25 A/8	32 A/8	-	-
Rated operational current / poles in series, DC-22A	24...48 V ¹⁾			16 A/1	25 A/1	32 A/1	63 A/1	80 A/1
	110 V			16 A/2	25 A/2	32 A/2	63 A/2	80 A/2
	220 V			16 A/3	25 A/3	32 A/4	45 A/4	45 A/4
	440 V			10 A/4	10 A/4	10 A/4	10 A/4	10 A/4
Rated operational current / poles in series, DC-23A	750 V			16 A/8	25 A/8	25 A/8	-	-
	24...48 V ¹⁾			16 A/1	25 A/1	32 A/1	63 A/1	80 A/1
	110 V			16 A/2	25 A/2	32 A/2	63 A/2	80 A/2
	220 V			16 A/3	25 A/3	32 A/4	45 A/4	45 A/4
Rated operational power, AC-23A (These values are given for guidance and may vary acc. to the motor manufacturer)	440 V			10 A/4	10 A/4	10 A/4	10 A/4	10 A/4
	750 V			16 A/8	16 A/8	16 A/8	-	-
	220...240 V			3 kW	4 kW	5.5 kW	11 kW	22 kW
	400...415 V			7.5 kW	9 kW	11 kW	22 kW	37 kW
Rated breaking capacity, AC-23A	440...500 V			7.5 kW	9 kW	11 kW	22 kW	37 kW
	690 V			7.5 kW	9 kW	11 kW	15 kW	18.5 kW
	up to 415 V			128 A	160 A	184 A	360 A	640 A
	440 V			128 A	160 A	184 A	360 A	448 A
	500 V			128 A	160 A	184 A	360 A	464 A
Rated breaking capacity/ poles in series, DC-23A	690 V			80 A	88 A	96 A	160 A	160 A
	24...48 V			64 A/1	100 A/1	128 A/1	180 A/1	252 A/1
	110 V			64 A/2	100 A/2	128 A/2	180 A/2	252 A/2
	220V			64 A/3	100 A/4	128 A/4	180 A/4	180 A/4
	440 V			40 A/4	40 A/4	40 A/4	40 A/4	40 A/4
Rated conditional short-circuit current I _c (r.m.s.) and corresponding max. Allowed cut-off current I _c of fuse. The cut-off current I _c refers to values listed by fuse manufacturers (single phase test acc. To IEC60269)	750 V			64 A/8	64 A/8	64 A/8	-	-
	I _c 50kA, ≤415V Max. OFA fuse size	I _c		6.5 ka	6.5 kA	6.5 kA	13 kA	13 kA
	I _c 100kA, 500V Max. OFA fuse size	I _c		40 A/32 A	40 A/32 A	40 A/32 A	100 A/80 A	100 A/80 A
	I _c 10kA, 690V Max. OFA fuse size	I _c		-	-	-	17 kA	17 kA
	I _c 50kA, 690V Max. OFA fuse size	I _c		-	-	-	100 A/80 A	100 A/80 A
Rated short-time withstand current	r.m.s. -value I _{cw}	690 V, 1 s	kA	0.5	0.5	0.5	1	1.5
	Rated short circuit making capacity	Peak value I _{cm}	690 V/500 V	A	0.71	0.71	0.71	1.4
Rated capacitor power (the capacitor ratings are limited by the fuse link.)		400...415 V		6.5 kVar	10 kVar	15 kVar	25 kVar	30 kVar
Power loss / pole	At rated operational current		W	0.3	0.6	1.6	2.8	4.5
Mechanical endurance	Divide by two for operation cycles		Oper.	20 000	20 000	20 000	20 000	20 000
Weight without accessories	3-pole		kg	0.11	0.11	0.11	0.27	0.27
	4-pole		kg	0.15	0.15	0.15	0.35	0.35
Cable size	Cu-wire size suitable for terminal clamps			0.75...10 mm ²	0.75...10 mm ²	0.75...10 mm ²	1.5...35 mm ²	1.5...35 mm ²
Terminal tightening torque	Counter torque required			0.8 Nm	0.8 Nm	0.8 Nm	2 Nm	2 Nm
Operating torque	3-pole switch-disconnector			1 Nm	1 Nm	1 Nm	1.2 Nm	1.2 Nm

1) UL Listed switches are also CSA Approved. 2) Fuse size 70A for RK5.
Below 48 V, two poles in parallel up to M803 are recommended particularly in polluted atmosphere.

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