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

UL 508 Disconnect Switches—Front Operated

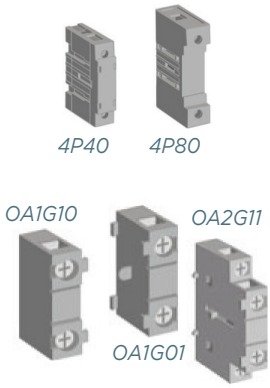
M163

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					
	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**					
	Limited to one additional pole per switch	4P40	4P40	4P40	4P80	4P80
	Door mounted switch 4th poles are left-side mounted	4P40DM	4P40DM	4P40DM		
	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	TS40-3	TS40-3	TS40-3	TS63-3	TS63-3
	4-pole (Add this to the 3-pole shroud)	TS40-1	TS40-1	TS40-1	TS63-1	TS63-1
	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 continous @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.

*** Auxilliary contact OA2G11 simultaneously functions with main contacts.

TECHNICAL DATA ACCORDING TO UL/cULus													
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**	
Maximum Operating Voltage			V	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	
Mechanical endurance			operations	20 000		20 000		20 000		20 000		20 000	
Terminal lug kits				Integral		Integral		Integral		Integral		Integral	
Wire range			AWG	18-8		18-8		18-8		14-4		14-4	
Torque		Wire tightening	lb. in	7		7		7		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

TECHNICAL DATA ACCORDING TO UL/cULus								
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**
TECHNICAL DATA ACCORDING TO IEC 60947-3								
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	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
...with minimum conductor cross section		Cu		4 mm²	6 mm²	10 mm²	16 mm²	25 mm²
Rated operational current, AC-21A		up to 415 V	A	16	25	40	63	80
		440...690 V	A	16	25	40	63	80
Rated operational current, AC-22A		up to 415 V	A	16	25	40	63	80
		440...690 V	A	16	25	40	63	80
Rated operational current, AC-23A		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
		690 V	A	10	11	12	20	20
Rated operational current / poles in series, DC-21A		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
		750 V		16 A/8	25 A/8	25 A/8	-	-
Rated operational current / poles in series, DC-23A		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/4	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
		750 V		16 A/8	16 A/8	16 A/8	-	-
Rated operational power, AC-23A (These values are given for guidance and may vary acc. to the motor manufacturer)		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
		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
Rated breaking capacity, AC-23A		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
		690 V		80 A	88 A	96 A	160 A	160 A
Rated breaking capacity/ poles in series, DC-23A		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
		750 V		64 A/8	64 A/8	64 A/8	-	-
Rated conditional short-circuit current I_q (r.m.s.) and corresponding max. Allowed cut-off current Îc of fuse. The cut-off current Î$_c$ referes to values listed by fuse manufacturers (single phase test acc. To IEC60269)	I_q 50kA, ≤415V Max. OFA fuse size	Î$_c$		6.5 ka	6.5 kA	6.5 kA	13 kA	13 kA
		gG/aM		40 A/32 A	40 A/32 A	40 A/32 A	100 A/80 A	100 A/80 A
	I_q 100kA, 500V Max. OFA fuse size	Î$_c$		-	-	-	17 kA	17 kA
		gG/aM		-	-	-	100 A/80 A	100 A/80 A
	I_q 10kA, 690V Max. OFA fuse size	Î$_c$		-	-	-	-	-
		gG/aM		-	-	-	-	-
	I_q 50kA, 690V Max. OFA fuse size	Î$_c$		4 kA	4 kA	4 kA	11 kA	11 kA
		gG/aM		25 A/16 A	25 A/16 A	25 A/16 A	80 A/63 A	80 A/63 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	2.1
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 mm²	0.75...10 mm²	0.75...10 mm²	1.5...35 mm²	1.5...35 mm²
				18-8 AWG	18-8 AWG	18-8 AWG	14-4 AWG	14-4 AWG
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.