

PV-Rated Disconnect Switches

UL 98 and IEC-Rated DC Switches

Mersen offers a range of DC disconnect switches especially designed for PV applications, in 2 poles and 2x2 poles configurations for double circuit applications. The technology inside the switch and the visible contacts allow a quick, safe, and reliable DC breaking power at all current levels up to 1000VDC. With a symmetric 2-pole design, the product is ready and simple to install independently of the polarity, with very limited power losses, and with a smaller footprint than competition.

Highlights:

- IEC version and UL version
- Visible contacts
- Compact footprint
- Direct installation for floating polarity configuration
- Jumper bar available for grounded configuration

Applications:

- Medium and large power photovoltaic installations up to 1000VDC
- “Make and break” on load and provide safety isolation at string combiner box level



Ratings:

- Volts** : 1000VDC
Amps : IEC: 100 to 500A
 UL98: 100 to 400A
SCCR : 5 to 10kA for higher ratings

Catalog Number Designation

		MD	100	E	1	1	—	—
Switch	M = Mersen AC Switch MD = Mersen DC Switch							
Ampacity	16 to 1200							
Type	Blank = non-fused UL508 U = non-fused UL98 J = J fused F = NFC fused	E = IEC non-fused CC = CC fused D = DIN fused B = BS-88 fused						
Number of Poles/Left side of Handle	AC: 0, 1, 2, 3, 3N, 4, etc. (N = neutral) DC: 0, 1, 2,3,4							
Number of Poles/Right side of Handle	AC: Blank = < 200A non-fused, 0, 1, 2, 3, 3N, 4, etc. (N = neutral) DC: Blank = < 100A, 0, 1, 2, 3, 4							
Revision	Blank = 0							
Special Configurations	S = side-operated CH = Changeover	DM = door-mounting N = Non-fused switched Neutral						

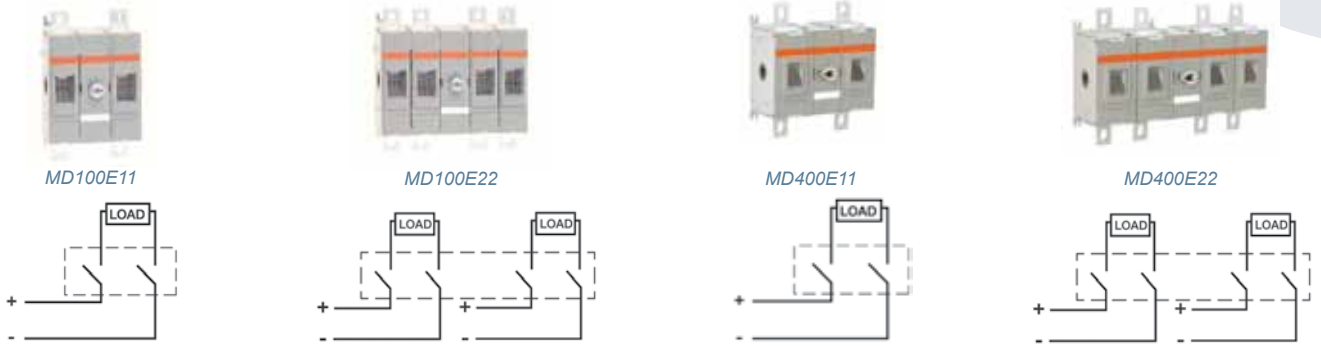
Approvals:

- UL98B File #E466972 WHVA
- IEC 60947-3 CE



PV-Rated Disconnect Switches

IEC-Rated DC Switches



Switch Body

Ampere Rating	100	160	200	250	315	400	500
2-pole Configuration	MD100E11	MD160E11	MD200E11	MD250E11	MD315E11	MD400E11	MD500E11
2x2-pole Configuration	MD100E22	MD160E22	MD200E22	MD250E22	MD315E22	MD400E22	MD500E22

Handles and Shafts



Direct Front Operation Locking Handle							
	HD250	HD250	HD250	HD250	HD400	HD400	HD400

Pistol Style							
	HB65	HB65	HB65	HB65	HB95/ HB125	HB95/ HB125	HB95/ HB125

B=Black. Substitute 'R' for 'B' if a red handle is desired. Ex. HR65

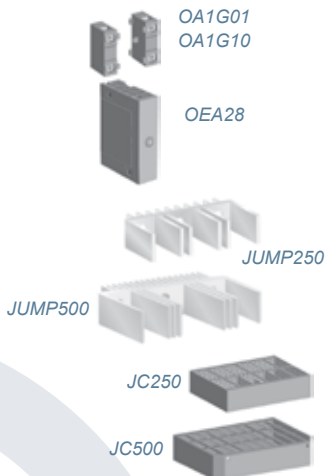
Shafts							
Shaft	SPA__	SPA__	SPA__	SPA__	SFB__	SFB__	SFB__
SPA Lengths: 130, 210, 290, 360, 430 Ex. SPA130. SFB Lengths: 280, 325, 395 Ex. SFB280							

Auxiliary Contacts							
NO Right side mounting	OA1G01	OA1G01	OA1G01	OA1G01	OA1G01	OA1G01	OA1G01
NC left side mounting	OA1G10	OA1G10	OA1G10	OA1G10	OA1G10	OA1G10	OA1G10
Module for SF aux. contacts	OEA28	OEA28	OEA28	OEA28	OEA28	OEA28	OEA28

Short Circuit Link							
	JUMP250	JUMP250	JUMP250	JUMP250	JUMP500	JUMP500	JUMP500

Terminal Shroud for Short Circuit Link							
	JC250	JC250	JC250	JC250	JC500	JC500	JC500

Accessories

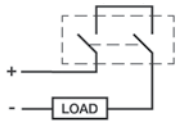


PV-Rated Disconnect Switches

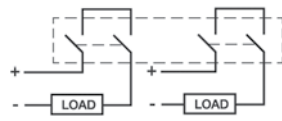
UL98B Listed DC Switches



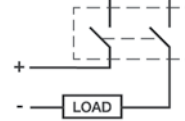
MD100U11



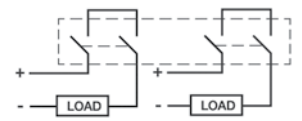
MD100U22



MD400U11



MD400U22



Switch Body

Ampere Rating	100	200	250	320	400
2-pole Configuration	MD100U11	MD200U11	MD250U11	MD320U11	MD400U11
2x2-pole Configuration	MD100U22	MD180U22	MD180U22	MD320U22	MD400U22

Handles and Shafts



HD250



HB65

Direct Front Operation Locking Handle

	HD250	HD250	HD400	HD400	HD400
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Pistol Style

	HB65	HB65	HB95/HB125	HB95/HB125	HB95/HB125
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B=Black. Substitute 'R' for 'B' if a red handle is desired. Ex. HR65

Shafts

Shaft	SPA__	SPA__	SFB__	SFB__	SFB__
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SPA Lengths: 130, 210, 290, 360, 430 Ex. SPA130. SFB Lengths: 280, 325, 395 Ex. SFB280

Auxiliary Contacts

NO Right side mounting	OA1G01	OA1G01	OA1G01	OA1G01	OA1G01
NC left side mounting	OA1G10	OA1G10	OA1G10	OA1G10	OA1G10
Module for SF aux. contacts	OEA28	OEA28	OEA28	OEA28	OEA28

Terminal Shroud for Short Circuit Link

	JC250	JC250	JC500	JC500	JC500
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Accessories



OA1G01
OA1G10



OEA28



JUMP250

JUMP500



JC250



JC500

PV-Rated Disconnect Switches

Technical Data

Technical data according to IEC 60947 for switch-disconnectors									
Switch size		A	MD100E	MD160E	MD200E	MD250E	MD315E	MD400E	MD500E
Rated Insulation voltage U_i	Pollution degree 2	V	1500	1500	1500	1500	1500	1500	1500
	Pollution degree 3	V	1500	1500	1500	1500	1500	1500	1500
Rated impulse withstand	50 Hz 1 min	kV							
		kV	12	12	12	12	12	12	12
Rated thermal current I_{th}	In open air, normal conditions ¹⁾	A	100	160	200	250	315	400	630
	In enclosure 40°C	A	100	160	200	250	315	400	550
	In enclosure 60°C	A	100	160	200	250	315	400	440
...with minimum cable or bar cross section	Cu	mm ²	35	70	95	120	185	240	240
Rated operational current / poles in series DC-21B	1000	V	100 / 2	160 / 2	200 / 2	250 / 2	315 / 2	400 / 2	500 / 2
			100 / 2x2	160 / 2x2	200 / 2x2	250 / 2x2	315 / 2x2	400 / 2x2	500 / 2x2
Rated short-time withstand current, 1000 V, 1 s	R.M.S. -value I_{cw}	kA	5	5	5	5	10	10	10
Rated short circuit making capacity, 1000 V	Peak value I_{cm}	kA	5	5	5	5	10	10	10
Power loss / pole	At rated current	W	2	4	6	9,5	6	9,7	15,1
Cable size	Cu	mm ²							
Terminal bolt size	Metric thread diameter x length	mm	M8x25	M8x25	M8x25	M8x25	M10x30	M10x30	M12x40
Terminal tightening torque	Counter torque required	Nm	15-22	15-22	15-22	15-22	30-44	30-44	50-75

1) Normal conditions defined in IEC 60947-1-6.1

Technical data in accordance to UL98B for switch-disconnectors (suitable for use in photovoltaic systems in accordance with article 690 of the NEC)							
Switch size			MD100U	MD200U	MD250U	MD315U	MD400U
Voltage rating		VDC	1000	1000	1000	1000	1000
Current rating		A	100	200 ¹⁾	250	320	400
Number of poles			2	2 ¹⁾	2	2	2
Rated ambient temperature		°C	-20...+50	-20...+50	-20...+50	-20...+50	-20...+50
Short circuit rating at 1000VDC		kA	5	5	10	10	10
	Class of fuse		Circuit breaker	Circuit breaker	Circuit breaker	Circuit breaker	Circuit breaker
Mechanical endurance	Divide by two for operation cycles	Oper.	4000	4000	2000	2000	2000
Terminal lugs			LUG200 LUG206	LUG200 LUG206	LUG400 LUG800	LUG800	LUG800
Wire range		MCM	#4-300	#4-300	#2-600	#2-600	#2-600
Technical data according to IEC		Same as type	MD160E	MD250E	MD315E	MD400E	MD500E

1) For 4 pole switches (double circuit use), the current rating at 1000 VDC is 180 A.

PV-Rated Disconnect Switches

UL 98B DC-rated Non-Fused switches

Part #	Description	Ref #
MD100U11	DC Switch 100A UL 2p	X1043231
MD180U22	DC Switch 180A UL 4p	Y1043232
MD200U11	DC Switch 200A UL 2p	Z1043233
MD250U11	DC Switch 250A UL 2p	A1043234
MD250U22	DC Switch 250A UL 4p	B1043235
MD320U11	DC Switch 320A UL 2p	C1043236
MD320U22	DC Switch 320A UL 4p	D1043237
MD400U11	DC Switch 400A UL 2p	E1043238
MD400U22	DC Switch 400A UL 4p	F1043239

IEC DC-rated Non-Fused switches

Part #	Description	Ref #
MD100E11	DC Switch 100A IEC 1000V 2p	G1043217
MD160E11	DC Switch 160A IEC 1000V 2p	H1043218
MD200E11	DC Switch 200A IEC 1000V 2p	J1043219
MD250E11	DC Switch 250A IEC 1000V 2p	K1043220
MD100E22	DC Switch 100A IEC 2x1000V 4p	L1043221
MD160E22	DC Switch 160A IEC 2x1000V 4p	M1043222
MD200E22	DC Switch 200A IEC 2x1000V 4p	N1043223
MD250E22	DC Switch 250A IEC 2x1000V 4p	P1043224
MD315E11	DC Switch 315A IEC 1000V 2p	Q1043225
MD400E11	DC Switch 400A IEC 1000V 2p	R1043226
MD500E11	DC Switch 500A IEC 1000V 2p	S1043227
MD315E22	DC Switch 315A IEC 2x1000V 4p	T1043228
MD400E22	DC Switch 400A IEC 2x1000V 4p	V1043229
MD500E22	DC Switch 500A IEC 2x1000V 4p	W1043230

Handles

Part #	Description	Ref #
HB65	Handle black 65mm IP65 NEMA 3R	W1043368
HB65X	Handle black 65mm IP65 NEMA 4X	X1043369
HB95	Handle black 95mm IP65 NEMA 3R	N1043913
HB95X	Handle black 95mm IP65 NEMA 4X	P1043914
HB125	Handle black 125mm IP65 NEMA 3R	A1043372
HB125X	Handle black 125mm IP65 NEMA 4X	B1043373
HD250	Handle direct Switch 250A	W1043391
HD400	Handle direct Switch 400A	X1043392
HR65	Handle red 65mm IP65 NEMA 3R	G1043378
HR65X	Handle red 65mm IP65 NEMA 4X	H1043379
HR95	Handle red 95mm IP65 NEMA 3R	S1043917
HR95X	Handle red 95mm IP65 NEMA 4X	T1043918
HR125	Handle red 125mm IP65 NEMA 3R	K1043381
HR125X	Handle red 125mm IP65 NEMA 4X	L1043382

Shafts

Part #	Description	Ref #
SFB280	Shaft SwitchFuse 12x12x280mm	F1043423
SFB325	Shaft SwitchFuse 12x12x325mm	G1043424
SFB395	Shaft SwitchFuse 12x12x395mm	H1043425
SPA130	Shaft pistol handle 6x6x130mm	V1043919
SPA210	Shaft pistol handle 6x6x210mm	P1043431
SPA290	Shaft pistol handle 6x6x290mm	Q1043432
SPA360	Shaft pistol handle 6x6x360mm	W1043920
SPA430	Shaft pistol handle 6x6x430mm	X1043921

Jumpers

Part #	Description	Ref #
JUMP250	Jumper bar for 250A DC switch.	F1043469
JUMP500	Jumper bar for 500A DC switch.	G1043470
JC250	Jumper cover for JUMP250	H1043471
JC500	Jumper cover for JUMP500	J1043472

