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## **OTDC disconnect switches**

Robust and reliable solution for Energy Storage Systems



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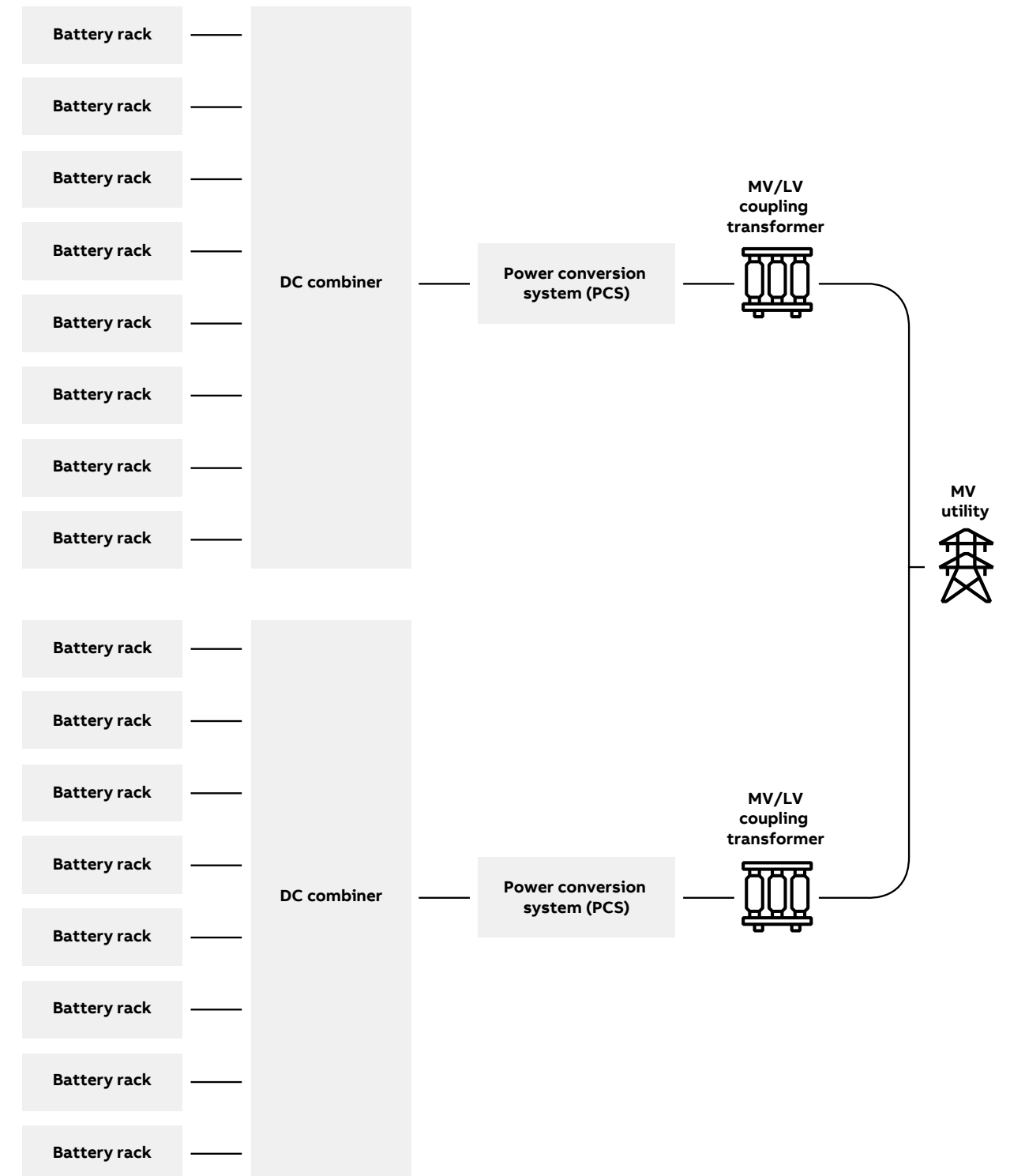


# Disconnect switches in Energy Storage Systems

Disconnect switches can be used in three different levels of an Energy Storage System (ESS): battery racks, combiners and Power Conversion Systems (PCS).

The most suitable switch to use depends on the size of the ESS, and whether the topology is behind or in front of the meter. Utility scale ESS (>1 MW) have “front of the meter” topology. ESS commercial and industrial (0.1-1 MW) and residential (<100 kW) ESS have “behind the meter” topologies.

Example of 4 MWh BESS



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## **OTDC disconnect switches**

### Gearing up your installation

OTDC disconnects provide a robust and reliable switching and isolation for your Energy Storage System. Their efficient design makes your operations smoother and more sustainable.

## High performance

Robust operation and long lifetime

### Robust operation in a wide variety of applications

The complete OTDC portfolio from 16 to 1000 A complies with all the international standards: IEC 60947, UL98B, UL508i and CCC. OT\_-135 disconnectors for no-load operation uses available for 1600...4000 A, IEC and CCC certified.



OTDC disconnect switches from 100 to 600 A can connect and disconnect DC circuits with significant overcurrents and handle bidirectional current flow.

OTDC disconnect switches have been tested with and without fuses to fulfill higher short circuit level requirements. Now OTDC can reach up to 40 kA short circuit level with fuses.

\*) More higher ratings please consult.

**Certified according to  
UL98B & UL508i**

**Short circuit current  
up to  
40 kA \*)  
with fuses**

### Reliability - exceptional mechanical endurance

The mechanical endurance of OTDC disconnect switches from 100 A up to 1000 A is 10 000 mechanical operation cycles, which is up to 90% higher than other existing products in the market.

**10 000  
Operating cycles**

### High thermal capacity

When selecting DC Switch in different DC applications there are many aspects to consider, like enclosure size, cable size, type of connection (busbars or lugs), and ambient temperature inside the enclosure. These have an impact on the thermal capacity of the switch.

OTDC disconnect switches have a high thermal capacity, to minimize the derating required in high ambient temperatures. We provide a detailed reference table for the OTDC thermal ratings, based on testing results.

**No derating needed  
up to  
75°C  
in enclosure**

# OTDC disconnect switches

Product recommendations for battery racks



16...32 A  
Up to 600 VDC



- Compact with high thermal capacity
- Short circuit rating 5 kA
- Base, door and DIN-rail mounting



100...250 A  
Up to 1500 VDC



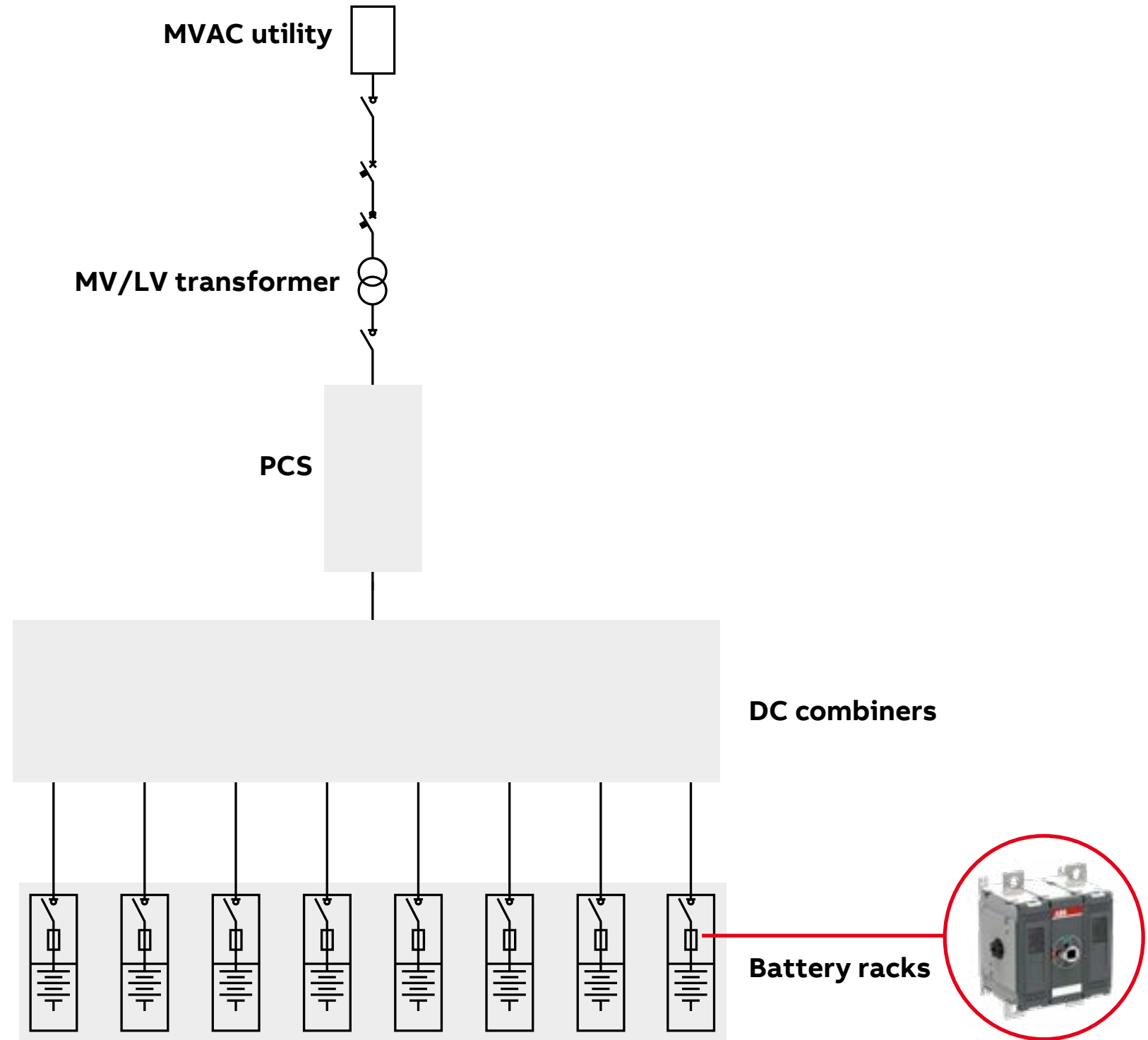
- Compact 2P switch
- Short circuit rating 10 kA
- Tested with fuses up to 30 kA, 1 ms
- 10 000 mechanical operating cycles
- Connect and disconnects DC circuits with significant overcurrents and handle bidirectional current flow



250...600 A  
Up to 1500 VDC



- Compact 2P switch
- Short circuit rating 10 kA
- Tested with fuses up to 30 kA, 1 ms
- 10 000 mechanical operating cycles
- Connect and disconnects DC circuits with significant overcurrents and handle bidirectional current flow



# OTDC disconnect switches

## Product recommendations for DC combiners



100...250 A  
Up to 1500 VDC



- Compact 2P switch
- Short circuit rating 10 kA
- Tested with fuses up to 30 kA, 1 ms
- 10 000 mechanical operating cycles
- Connect and disconnects DC circuits with significant overcurrents and handle bidirectional current flow



250...600 A  
Up to 1500 VDC



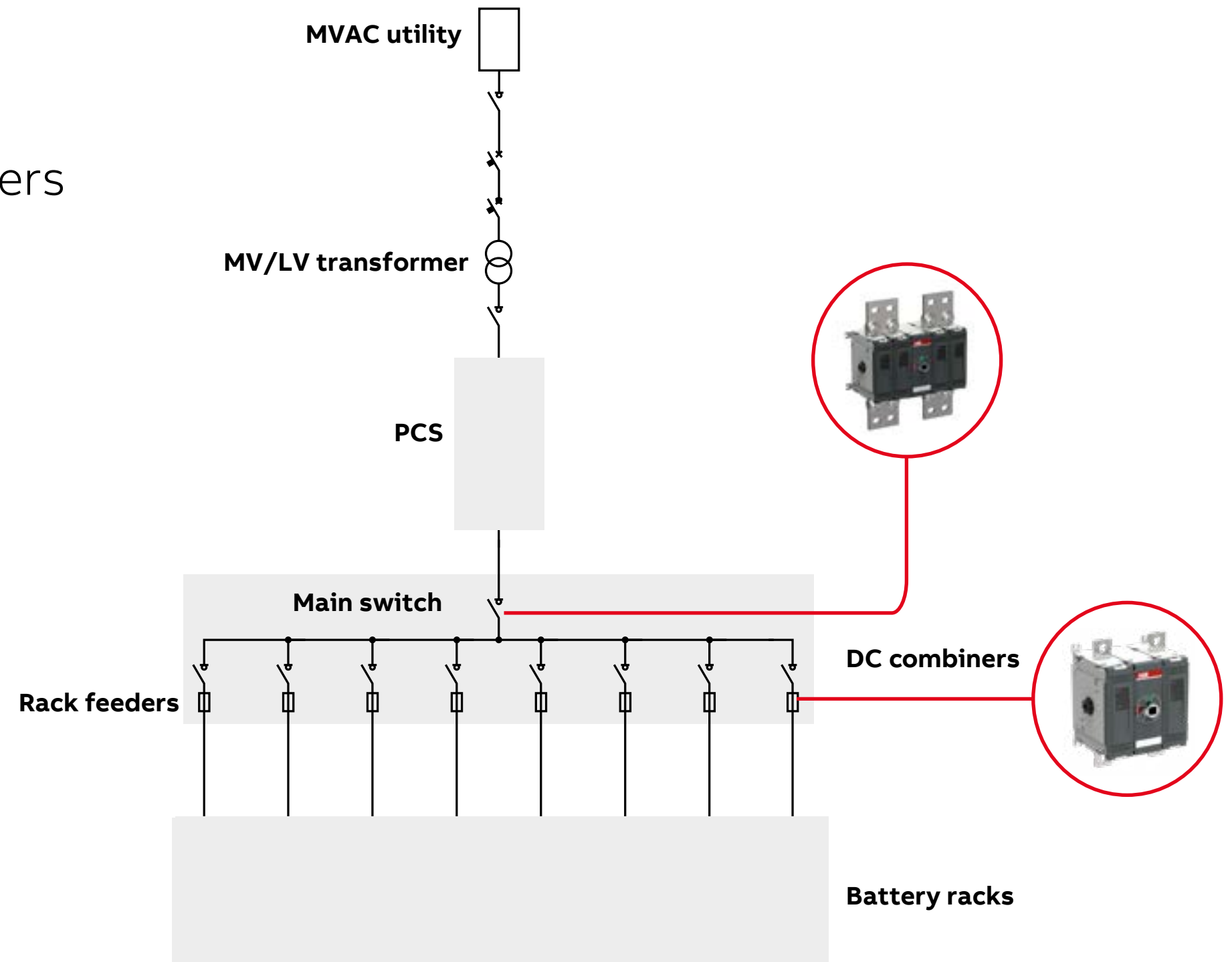
- Compact 2P switch
- Short circuit rating 10 kA
- Tested with fuses up to 30 kA, 1 ms
- 10 000 mechanical operating cycles
- Connect and disconnects DC circuits with significant overcurrents and handle bidirectional current flow



800...1000 A  
Up to 1500 VDC



- Robust and compact design
- DC-PV2 ratings for 800 A
- Short circuit rating 40 kA



# OTDC disconnect switches

Product recommendations for Power Conversion Systems (PCS)



**250...600 A**  
Up to 1500 VDC



- Compact 2P switch
- Short circuit rating 10 kA
- Tested with fuses up to 30 kA, 1 ms
- 10 000 mechanical operating cycles
- Connect and disconnects DC circuits with significant overcurrents and handle bidirectional current flow



**800...1000 A**  
Up to 1500 VDC



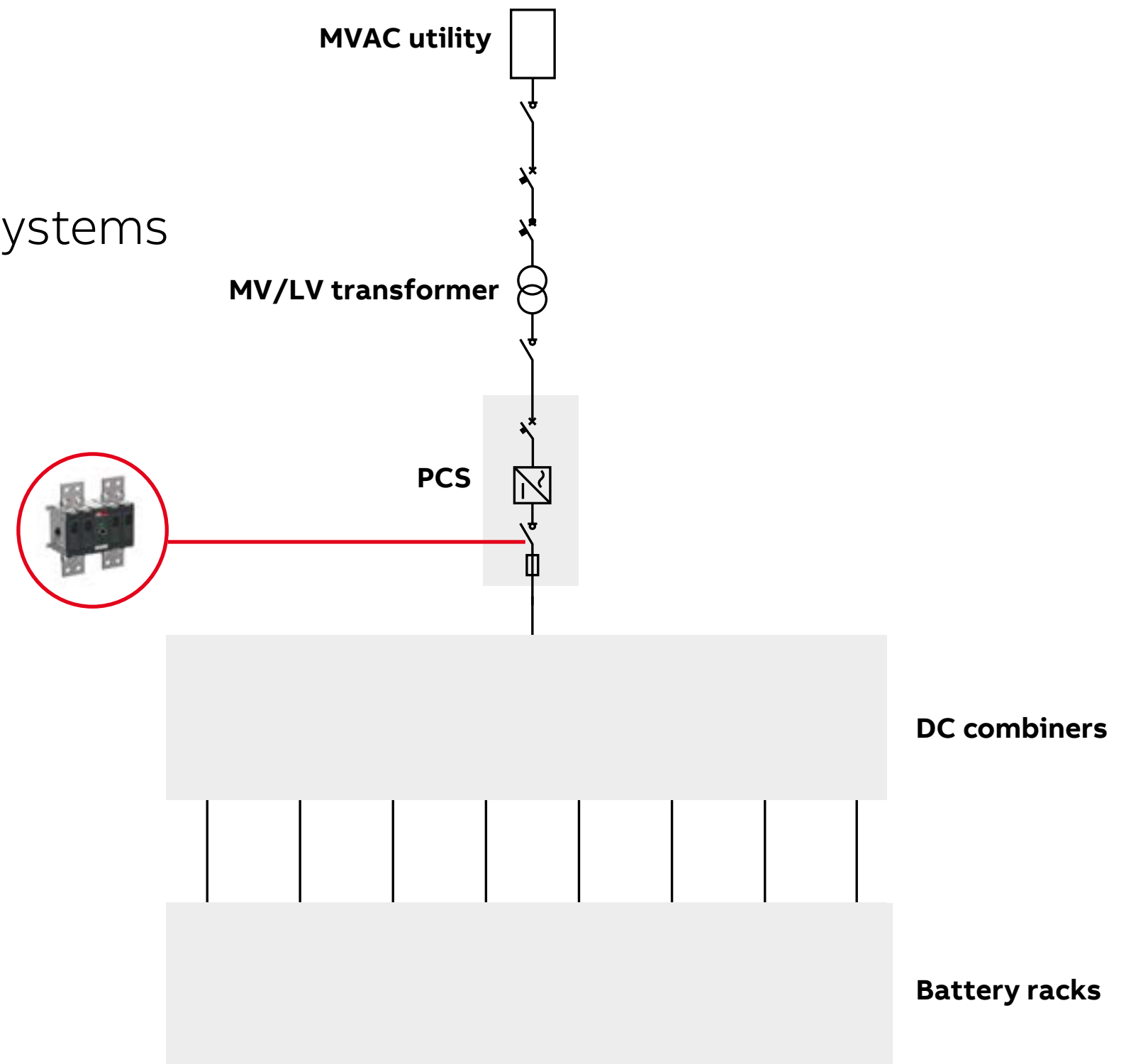
- Robust and compact design
- DC-PV2 ratings for 800 A
- Short circuit rating 40 kA



**1600...4000 A**  
Up to 1500 VDC



- No operation under load, DC-20
- High I<sub>cw</sub> up to 100 kA and impressive max. let-through peak currents
- Robust design with reliable isolation
- Motor operated versions available in the offering
- UL approval possible within end solution, please contact ABB





## Technical data for OTDC XS Series

All the products are UL approved. For more details, please contact ABB.



Technical data in accordance to UL508I for photovoltaic disconnect switches OTDC16...32U  
Suitable for use in photovoltaic systems in accordance with article 690 of the NEC

Switch size				OTDC16U	OTDC25U	OTDC32U
UL Listed	Standard			UL508i	UL508i	UL508i
Rated ambient temperature			°C	-20...+60	-20...+60	-20...+60
Rated current / Poles in series	600 V	1 circuit	A	16/2P	25/2P	
		2 circuits	A	16/2Px2	25/2Px2	32/2Px2
		3 circuits	A	16/2Px3		
Short circuit rating	600 V		kA	5	5	5
Protection type	Max. fuse size, RK5 fuse		A	80	80	80
Wire range				AWG 12-6	AWG 12-6	AWG 12-6
Technical data according to IEC 60947	See IEC table for type <sup>1)</sup>			OTDC16U	OTDC25U	OTDC32U

1) See Switch-disconnectors OTDC catalog.

# OTDC disconnect switches

## Technical data for OTDC S2.0 Series

All the products are UL approved. For more details, please contact ABB.



Technical data in accordance to UL98B for photovoltaic disconnect switches OTDC100UG\_...250UG\_-ESS  
Suitable for use in photovoltaic systems in accordance with article 690 of the NEC

Switch size		OTDC100UG_-ESS	OTDC200UG_-ESS	OTDC250UG_-ESS	
UL Listed	Standard	UL98B	UL98B	UL98B	
Rated ambient temperature		°C -20...+50	-20...+50	-20...+50	
Rated current <sup>1)</sup>	1000 V	1 circuit 2P (1P+, 1P-) A	100	200	250
		2 circuits 4P (2P+, 2P-) A	100	200	250
	1500 V	1 circuit 2P (1P+, 1P-) A	100	200	250
		2 circuits 4P (2P+, 2P-) A	100	200	250
Short circuit rating Required protection <sup>2)</sup>	1500 V	R.M.S. -value kA	10 Any	10 Any	10 Any
Short circuit rating Required protection <sup>3)</sup>	1500 VDC Max. ETI fuse size gPV, L/R= 1ms	kA A	30 100	30 200	30 250
Mechanical lug			OZXA 100	OZXA 200	OZXA 252
Wire range			AWG 14-2/0	AWG 4-300MCM	2 X AWG 14-2/0
Tightening torque		lb-in.	35-50	200	120
Technical data according to IEC 60947	See IEC table for type <sup>4)</sup>		OTDC160G_	OTDC250G_	OTDC250G_

<sup>1)</sup> For more detailed derating please consult us. Installation condition may influence on the derating. The given deratings are references based on specific test setup.

<sup>2)</sup> Any suitable PV fuse or PV circuit breaker.

<sup>3)</sup> 100 A Fuse manufacturer, size and type: ETI, Cat.no 004110 followed by 562, 593 or 608.

200 A Fuse manufacturer, size and type: ETI, Cat.no 004110 followed by 565, 596, 611, 566, 597 or 612.

250 A Fuse manufacturer, size and type: ETI, Cat.no 004110 followed by 567, 598 or 613.

<sup>4)</sup> See Switch-disconnectors OTDC catalog.

# OTDC disconnect switches

## Technical data for OTDC M Series

All the products are UL approved. For more details, please contact ABB.



Technical data in accordance to UL98B for photovoltaic disconnect switches OTDC250...1000UF\_-ESS  
Suitable for use in photovoltaic systems in accordance with article 690 of the NEC

Switch size		OTDC250UF_-ESS	OTDC320UF_-ESS	OTDC400UF_-ESS	OTDC800UF_22-ESS	OTDC1000UF_22-ESS			
UL listed	Standard	UL98B	UL98B	UL98B	UL98B	UL98B			
Rated ambient temperature without de-rating <sup>1)</sup>		°C	-20...+50 °C	-20...+50 °C	-20...+50 °C	-20...+50 °C			
Rated current	1000 V 1500 V	1 circuit	2P	A	250	320	400	800 <sup>3)</sup>	1000 <sup>3)</sup>
Short circuit rating	1500 V	R.M.S. -value	kA	10	10	10	40	40	
Required protection				Any <sup>4)</sup>	Any <sup>4)</sup>	Any <sup>4)</sup>	Any <sup>4)</sup>	Any <sup>4)</sup>	
Short circuit rating	1500 V		kA	30	30	30	-	-	
Required protection	Max. ETI fuse size gPV, L/R= 1 ms		A	400 <sup>2)</sup>	400 <sup>2)</sup>	400 <sup>2)</sup>	-	-	
Mechanical lug				OZXA 402	OZXA 402	OZXA 402	OZXA 804	OZXA 804	
Wire range	MCM			2x AWG 6-300MCM	2x AWG 6-300MCM	2x AWG 6-300MCM	4x AWG 2-600MCM	4x AWG 2-600MCM	
Terminal tightening torque			lb-in.	275	275	275	500	500	
Technical data according to IEC 60947	See IEC table for type <sup>5)</sup>			OTDC 315F_-ESS	OTDC 400F_-ESS	OTDC 500F_-ESS	OTDC 800F_22-ESS	OTDC 1000F_22-ESS	

<sup>1)</sup> For more detailed derating please consult us. Installation condition may have an influence on the derating. The given deratings are references based on specific test setup.

<sup>2)</sup> Fuse manufacturer, size and type: ETI, 400 A, Cat.no 004110 followed by 632, 637 or 642. More details from the fuse manufacturer catalog.

<sup>3)</sup> 4-pole-types with 2-poles in parallel \_22 models, OTDCKIT800FS11 is included in the package and installation is mandatory.

<sup>4)</sup> Any suitable PV fuse or PV circuit breaker.

<sup>5)</sup> See Switch-disconnectors OTDC catalog.

# OT disconnect switches

## Technical data for OT disconnects

OT disconnects for 1600 A up to 4000 A are IEC & CCC certified.  
UL approval possible within end solution, please contact ABB.



Manual OT\_-135



Motorized OTM\_-135

### OT1600-2500

Switch types		OT1600E02-135	OT1600E04-135, OT1600E22-135	OT1600E04-135	OT1600E22-135	OT2500E02-135	OT2500E04-135, OT2500E22-135	OT2500E04-135, OT2500E22-135
Number of poles		2	4	4	4	2	4	4
Connection type		1	2	3	3	1	2	3
DC-20B rating, 1500 V	A	1600	1600	2500	2500	2500	2500	4000
AC-20B rating, 1000 V	A	1600	1600	2500	2500	2500	2500	4000
Rated short-time withstand current, Icw 0.3 s	Support distance 150 mm (with busbars)	kA	50	50	65	65	-	-
	Support distance 180 mm (with busbars)	kA	-	-	-	-	80	80
	Support distance 400 mm (with cables)	kA	36	36	50	50	-	-
Max. let-through peak current when protected with fuses or circuit Breaker	Support distance 150 mm (with busbars)	kA	110	110 (*120)	140	176	-	-
	Support distance 180 mm (with busbars)		-	-	-	-	176	176
	Support distance 400 mm (with cables)	kA	76	76	105	105	-	-
Max. let-through energy when protected with fuses or circuit breaker	Support distance 150 mm (with busbars)	MA2s	88	88 (*154)	210	339	-	-
	Support distance 180 mm (with busbars)		-	-	-	-	363	363
	Support distance 400 mm (with cables)	MA2s	43	43	115	115	-	-

# OTDC disconnect switches

## Ordering information for OTDC XS Series



OTDC16-32US2

Rated operational current [A]			Single packed				
UL 508i	IEC 60947-3, DC-21B		Number of circuits	Circuit	Number of poles	Type	Order code
600 VDC	660 VDC	1000 VDC					
<b>Base or DIN-rail mounting</b>							
16	16	10	1	2a, 2b	2	OTDC16U2	1SCA134369R1001
25	25	16	1	2a, 2b	2	OTDC25U2	1SCA134375R1001
16	16	10	2	4a, 4c	4	OTDC16U4	1SCA134370R1001
25	25	16	2	4a, 4c	4	OTDC25U4	1SCA134377R1001
32	32	20	2	4a, 4c	4	OTDC32U4	1SCA136703R1001
16	16	10	3	7a,7e	6	OTDC16U6	1SCA134371R1001
<b>Door mounting</b>							
16	16	10	1	2a, 2b	2	OTDC16UT2	1SCA134387R1001
25	25	16	1	2a, 2b	2	OTDC25UT2	1SCA134388R1001
16	16	10	2	4a, 4c	4	OTDC16UT4	1SCA134390R1001
25	25	16	2	4a, 4c	4	OTDC25UT4	1SCA134391R1001
32	32	20	2	4a, 4c	4	OTDC32UT4	1SCA136705R1001
16	16	10	3	7a,7e	6	OTDC16UT6	1SCA134580R1001

OTDC16...32U include IP20 protected terminal clamps.

# OTDC disconnect switches

Ordering information for S2.0 and M Series



OTDC100...250U\_11-ESS



OTDC250...400UF\_11-ESS

## UL Ordering information

Voltage [VDC]	Rated operational current [A]		Number of circuits	Circuit <sup>1)</sup>	Number of poles	Type	Single package Order code
	UL98B	IEC60947-3					
<b>Front operated, mechanism between the poles</b>							
1500	100	160	1	2a, 2b	2	OTDC100UGV11-ESS	1SCA161979R1001
1500	200	250	1	2a, 2b	2	OTDC200UGV11-ESS	1SCA161992R1001
1500	250	250	1	2a, 2b	2	OTDC250UGV11-ESS	1SCA161999R1001
1000	250	315	1	2a, 2b	2	OTDC250UF11-ESS	1SCA158161R1001
1000	320	400	1	2a, 2b	2	OTDC320UF11-ESS	1SCA158185R1001
1000	400	500	1	2a, 2b	2	OTDC400UF11-ESS	1SCA158210R1001
1000	800	800	1	6c, 6g	4	OTDC800UF22-ESS	1SCA161283R1001
1000	1000	1000	1	6c, 6g	4	OTDC1000UF22-ESS	1SCA161291R1001
1500	250	800	1	2a, 2b	2	OTDC250UFV11-ESS	1SCA158167R1001
1500	320	630	1	2a, 2b	4	OTDC320UFV11-ESS	1SCA158191R1001
1500	400	800	1	2a, 2b	4	OTDC400UFV11-ESS	1SCA158216R1001
1500	800	800	1	6c, 6g	4	OTDC800UFV22-ESS	1SCA161285R1001
1500	1000	1000	1	6c, 6g	4	OTDC1000UFV22-ESS	1SCA161293R1001

\* Please consult us for 1000 VDC types for the 100...250 A range and bulk package options.

# OT disconnectors

## Ordering information



OT2500E02P-135

Number of poles	Rated operational current DC-20B, Connection type 1 and type 2	Rated operational current DC-20B, Connection type 3	Product type	Order number
2	1600 A	-	OT1600E02P-135	1SCA159246R1001
4	1600 A	2500 A	OT1600E04P-135	1SCA159252R1001
4	1600 A	2500 A	OT1600E22P-135	1SCA159249R1001
2	1600 A	-	OT1600E02K-135	1SCA159245R1001
4	1600 A	2500 A	OT1600E04K-135	1SCA159251R1001
4	1600 A	2500 A	OT1600E22K-135	1SCA159248R1001
2	2500 A	-	OT2500E02P-135	1SCA160394R1001
4	2500 A	4000 A	OT2500E04P-135	1SCA160397R1001
4	2500 A	4000 A	OT2500E22P-135	1SCA160400R1001
2	2500 A	-	OT2500E02K-135	1SCA160393R1001
4	2500 A	4000 A	OT2500E04K-135	1SCA160396R1001
4	2500 A	4000 A	OT2500E22K-135	1SCA160399R1001

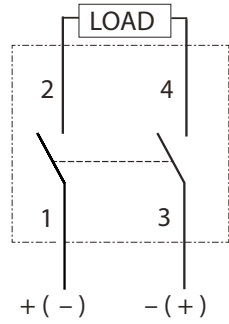
UL approval possible within end solution, please contact ABB.  
Motor operated versions available, please contact ABB.

# OTDC disconnect switches

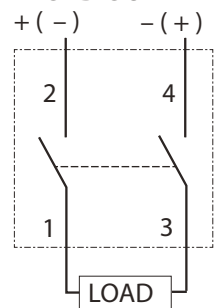
## Circuits

### Single circuit 2a, 2b

2-pole, 4-wire, 1-circuit

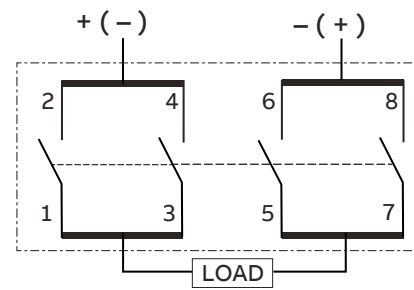


2-pole, 4-wire, 1-circuit  
REVERSED SUPPLY

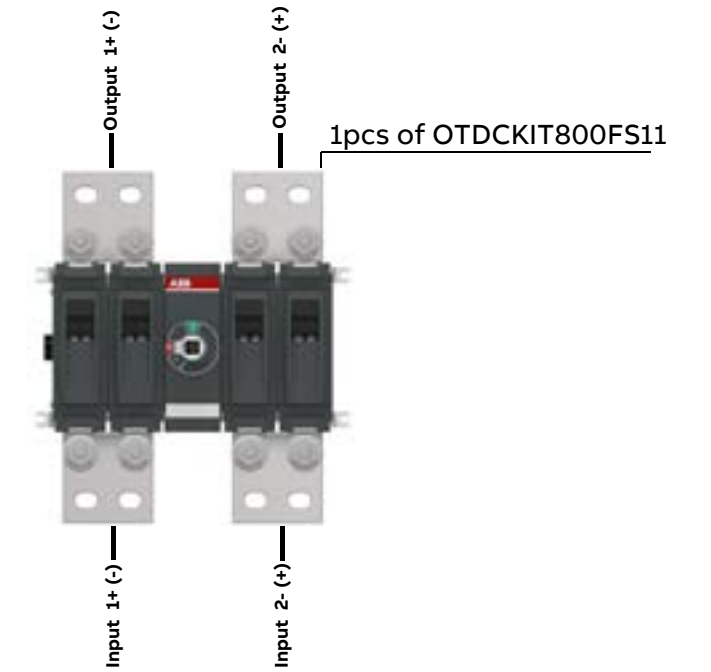
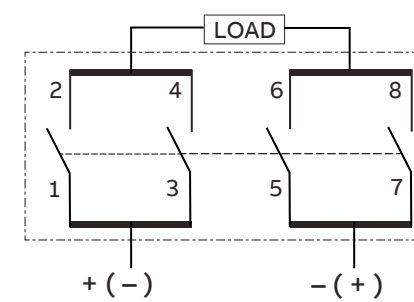


### Single circuit 6c, 6g

4-pole, 4-wire  
1-circuit  
SUPPLY



4-pole, 4-wire  
1-circuit  
REVERSED SUPPLY





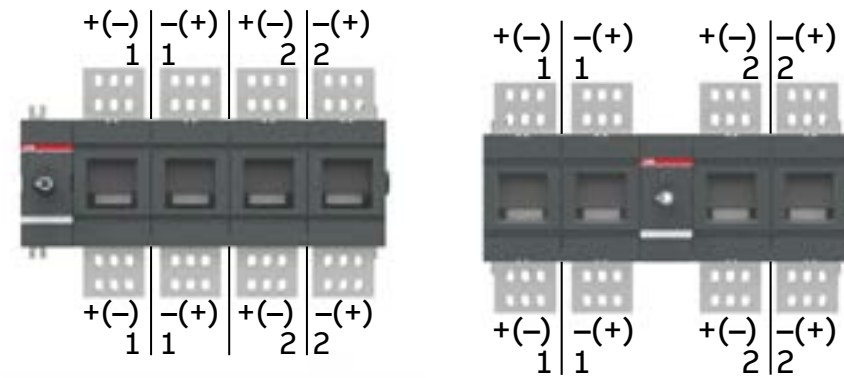
# OT disconnectors

## Circuits

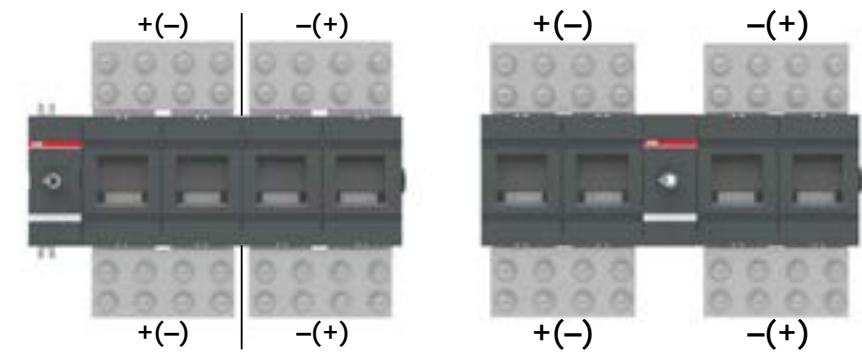
—  
**Connection type 1**  
OT1600...2500E02-135



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**Connection type 2**  
OT1600...2500E04-135  
OT1600...2500E22-135

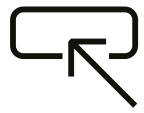


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**Connection type 3**  
OT1600...2500E04-135  
OT1600...2500E22-135



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## Additional resources



Do you need additional information?  
Visit our websites to find out more

OTDC disconnect switch website



OT disconnectors 1600...4000 A, DC-20



Low Voltage Solutions for Energy Storage Systems (ESS) website



E-configure selector tool



Certificates



Drawings



**A B B**