

Low Voltage Products

# SACE Tmax 1000 VDC PV UL 489B

## A complete range up to 1000A

# SACE Tmax PV UL 489B

More and more companies are targeting North America as a key market for photovoltaic applications and requests for products in compliance with North American standards is growing exponentially.

Thanks to its experience with Tmax UL, ABB is proposing a complete range of products in accordance with UL489B, a new standard, whose requirements cover molded case circuit breakers and molded case switches rated up to 1000V DC, intended for use with photovoltaic systems. A complete range of MCCB and MCS is now available up to 1000A for use at 1000V DC, complete with jumpers for a safe, easy and accurate connection of poles in series.



## Features and Benefits

- Jumpers and lugs are included with all breakers and switches for easy installation
- Breakers are up to 50% smaller than competitively sized breakers (Cubic In)
- All current Tmax accessories can be used and are field installable
- Same size as standard Tmax breakers
- All breaker trip units are thermal-mag adjustable
- Multiple connection configurations available

## Tmax PV Molded Case Switches in Compliance with UL489B

	T1N-D/PV	T4N-D/PV	T5N-D/PV	T6N-D/PV	T7N-D/PV
Rating, [A]	100	200	400	600-800	1000
Poles, [Nr]	4	3	3	4	4
Short circuit current withstand, [A]	1000	3000	5000	10,000	15,000
Magnetic override, [A]	-	3000	5000	10,000	-
Rated voltage DC, [V]	1000	1000	1000	1000	1000
Versions	Fixed	Fixed	Fixed	Fixed	Fixed
Terminals	FCCu	FCCuAl	FCCuAl-ES	FCCuAl-EF	FCCuAl
Connections	Jumpers	Jumpers	Jumpers	Jumpers	Jumpers

## Tmax PV Molded Case Circuit Breakers in Compliance with UL 489B

	T4N/PV	T5N/PV	T6N/PV
Rating, [A]	40-200	400	600-800
Poles, [Nr]	3	3	4
Rated voltage DC, [V]	1000	1000	1000
Short Circuit Interrupting Rating [A]	3000	5000	10,000
Trip Unit	TMA	TMA	TMA
Versions	F	F	F
Terminals	FCCuAl	FCCuAl-ES	FCCuAl-EF
Connections	Jumpers	Jumpers	Jumpers

**T1 1000V Photovoltaic Switches**  
**UL 489B up to 100A**

T1N-D/PV 100A 1000V DC according to UL 489B; jumper connections and configurations approved by UL  
 T1N-D/PV is the molded case switch for photovoltaic applications up to 100A and 1000V DC.

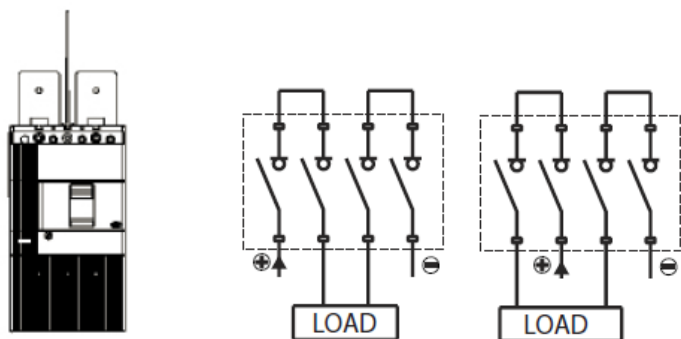
**For 2 poles + 2 poles in series, please use the following ordering code**

Ordering Code	Description
T1PB100DL-4	MCS T1NPVB 100A 4P UL 2+2PS L 1000VDC

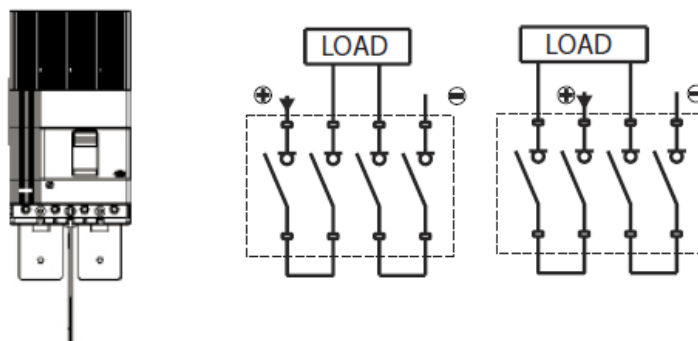
ABB jumpers for pole connections are mandatory when a T1N-D/PV UL is installed.

**Below are the UL approved 2 poles + 2 poles in series configurations for ungrounded systems.**

Lower supply



Upper supply



Only the standard FCCu terminals are compatible.

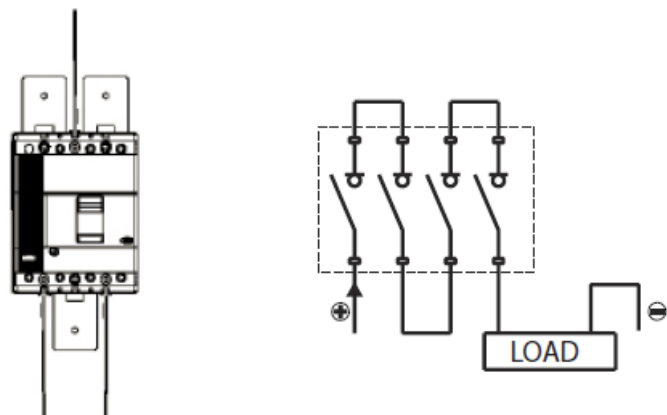
Only the standard FCCu terminals are compatible.

**For 4 poles in series, please use the following ordering code**

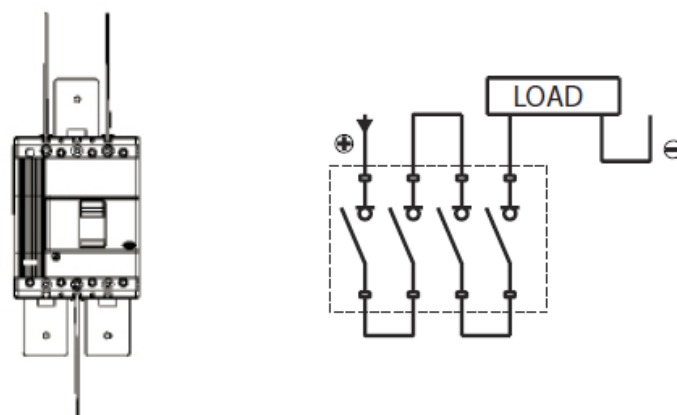
Ordering Code	Description
T1PA100DL-4	MCS T1NPVA 100A 4P UL 4PS L 1000VDC

**Below are the UL approved 4 poles in series configurations for grounded systems.**

Lower supply



Upper supply



Only the standard FCCu terminals are compatible.

Only the standard FCCu terminals are compatible.

**T4 1000V Photovoltaic Breakers & Switches**  
**UL 489B from 40A to 200A**

T4N-D/PV and T4N/PV 200A 1000V DC according to UL489B: jumper connections and configurations approved by UL

T4N-D/PV and T4N/PV are the molded case switch and automatic circuit breakers for photovoltaic applications up to 200A and 1000V DC.

**For 2 poles + 1 pole in series, please use the following ordering codes**

**Breaker**

Ordering Code	Description
T4PB040TL	BKR T4NPVB 40A 3P TM UL 2+1PS L 1000VDC
T4PB050TL	BKR T4NPVB 50A 3P TM UL 2+1PS L 1000VDC
T4PB080TL	BKR T4NPVB 80A 3P TM UL 2+1PS L 1000VDC
T4PB100TL	BKR T4NPVB 100A 3P TM UL 2+1PS L 1000VDC
T4PB125TL	BKR T4NPVB 125A 3P TM UL 2+1PS L 1000VDC
T4PB150TL	BKR T4NPVB 150A 3P TM UL 2+1PS L 1000VDC
T4PB200TL	BKR T4NPVB 200A 3P TM UL 2+1PS L 1000VDC
Ordering Code	Switch Description
T4PB200DL	MCS T4NPVB 200A 3P UL 2+1PS L 1000VDC

**Switch**

Ordering Code	Description
T4PB200DL	MCS T4NPVB 200A 3P UL 2+1PS L 1000VDC

ABB jumpers for pole connections are mandatory when a T4N-D/PV or T4N/PV UL is installed.

**Below are the UL approved 2 poles + 1 pole in series configurations for ungrounded systems.**

**Lower supply**



**Upper supply**

No UL approved solution for 2+1 pole in series with upper supply

Only the FCCuAl terminals that are included in the jumper kit are compatible.

**For 3 poles in series, please use the following ordering codes**

**Breaker**

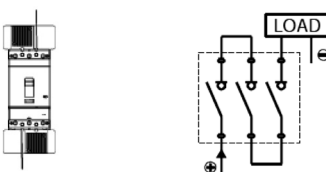
Ordering Code	Description
T4PA040TL	BKR T4NPVA 40A 3P TM UL 3PS L 1000VDC
T4PA050TL	BKR T4NPVA 50A 3P TM UL 3PS L 1000VDC
T4PA080TL	BKR T4NPVA 80A 3P TM UL 3PS L 1000VDC
T4PA100TL	BKR T4NPVA 100A 3P TM UL 3PS L 1000VDC
T4PA125TL	BKR T4NPVA 125A 3P TM UL 3PS L 1000VDC
T4PA150TL	BKR T4NPVA 150A 3P TM UL 3PS L 1000VDC
T4PA200TL	BKR T4NPVA 200A 3P TM UL 3PS L 1000VDC
Ordering Code	Switch Description
T4PA200DL	MSC T4NPVA 200A 3P UL 3PS L 1000VDC

**Switch**

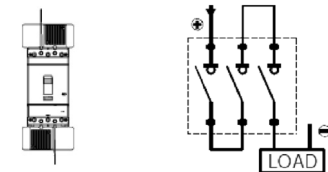
Ordering Code	Description
T4PA200DL	MSC T4NPVA 200A 3P UL 3PS L 1000VDC

**Below are the UL approved 3 poles in series configurations for grounded systems.**

**Lower supply**



**Upper supply**



Only the FCCuAl terminals that are included in the jumper kit are compatible.

Only the FCCuAl terminals that are included in the jumper kit are compatible.

**T5 1000V Photovoltaic Breakers & Switches**  
**UL 489B up to 400A**

T5N-D/PV and T5N/PV 400A 1000V DC according to UL489B: jumper connections and configurations approved by UL

T5N-D/PV and T5N/PV are the molded cases switch and automatic circuit breakers for photovoltaic applications up to 400A and 1000V DC.

**For 2 poles + 1 pole in series, please use the following ordering codes**

**Breaker**

Ordering Code	Description
T5PB400TL	BKR T5NPVB 400A 3P TM UL 2+1PS L 1000VDC
T5PB400TW	BKR T5NPVB 400A 3P TM UL 2+1PS L 1000VDC

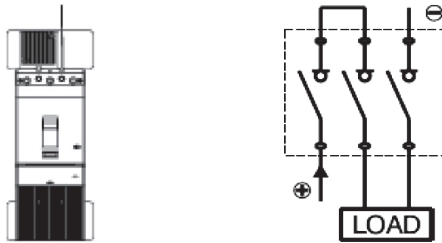
**Switch**

Ordering Code	Description
T5PB400DL	MCS T5NPB 400A 3P UL 2+1PS L 1000VDC
T5PB400DW	MCS T5NPB 400A 3P UL 2+1PS 1000VDC

ABB jumpers for pole connections are mandatory when a T5N-D/PV or T5N/PV UL is installed.

**Below are the UL approved 2 poles + 1 pole in series configurations for ungrounded systems.**

**Lower supply**



**Upper supply**

No UL approved solution for 2+1 pole in series with upper supply

Only the ES or FCCuAI terminals that are included in the jumper kits are compatible.

**For 3 poles in series, please use the following ordering codes**

**Breaker**

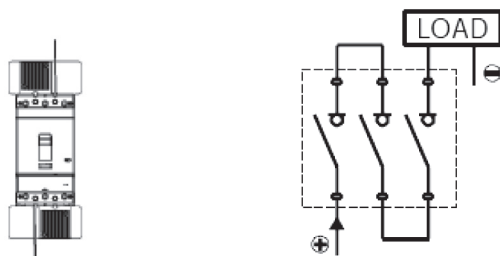
Ordering Code	Description
T5PA400TL	BKR T5NPV 400A 3P TM UL 3PS L 1000VDC
T5PA400TW	BKR T5NPV 400A 3P TM UL 3PS L 1000VDC

**Switch**

Ordering Code	Description
T5PA400DL	MCS T5NPA 400A 3P UL 3PS L 1000VDC
T5PA400DW	MCS T5NPA 400A 3P UL 3PS 1000VDC

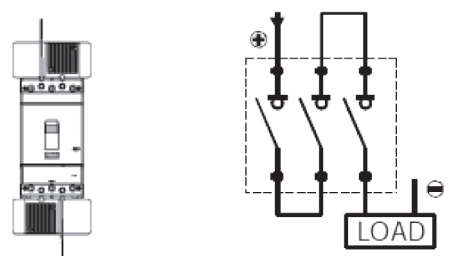
**Below are the UL approved 3 poles in series configurations for grounded systems.**

**Lower supply**



Only the ES or FCCuAI terminals that are included in the jumper kits are compatible.

**Upper supply**



Only the ES or FCCuAI terminals that are included in the jumper kits are compatible.



**T6 1000V Photovoltaic Breakers & Switches**  
**UL 489B from 600A to 800A**

T6N-D/PV and T6N/PV 600/800A 1000V DC according to UL489B: jumper connections and configurations approved by UL

T6N-D/PV and T6N/PV are the molded case switch and automatic circuit breakers for photovoltaic applications up to 800A and 1000V DC.

**For 2 poles + 2 poles in series, please use the following ordering codes**

**Breaker**

Ordering Code	Description
T6PB600TL-4	BKR T6NPVB 600A 4P TM UL 2+2PS L 1000VDC
T6PB800TW-4	BKR T6NPVB 800A 4P TM UL 2+2PS 1000VDC

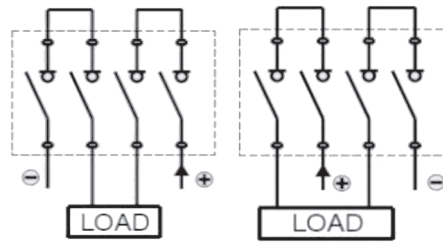
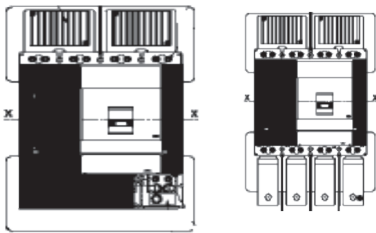
**Switch**

Ordering Code	Description
T6PB600DL-4	MCS T6NPVB 600A 4P UL 2+2PS L 1000VDC
T6PB800DW-4	MCS T6NPVB 800A 4P UL 2+2PS 1000VDC

ABB jumpers for pole connections are mandatory when a T6N-D/PV or T6N/PV UL is installed.

**Below are the UL approved 2 poles + 2 poles in series configurations for ungrounded systems.**

**Lower supply**



**Upper supply**

No UL approved solution for 2+2 pole in series with upper supply

Only the FCCuAl terminals (600A) and EF terminals (800A) that are included in the jumper kit are compatible.

**For four poles in series, please use the following ordering codes**

**Breaker**

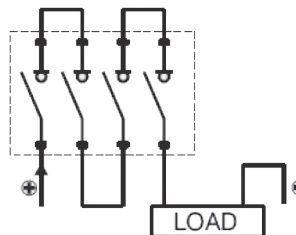
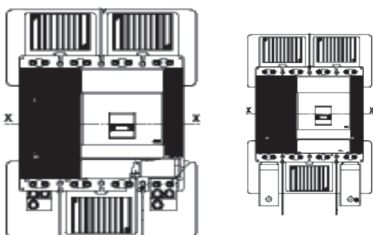
Ordering Code	Description
T6PA600TL-4	BKR T6NPVA 600A TM 4P UL 4PS L 1000VDC
T6PA800TW-4	BKR T6NPVA 800A TM 4P UL 4PS 1000VDC

**Switch**

Ordering Code	Description
T6PA600DL-4	MCS T6NPVA 600A 4P UL 4PS L 1000VDC
T6PA800DW-4	MCS T6NPVA 800A 4P UL 4PS 1000VDC

**Below are the UL approved 4 poles in series configurations for grounded systems.**

**Lower supply**



**Upper supply**

No UL approved solution for 4 pole in series with upper supply

Only the FCCuAl terminals (600A) and EF terminals (800A) that are included in the jumper kit are compatible.

**T7 1000V Photovoltaic Switches**  
**UL 489B up to 1000A**

T7N-D/PV 1000A 1000V DC according to UL489B: jumper connections and configurations approved by UL

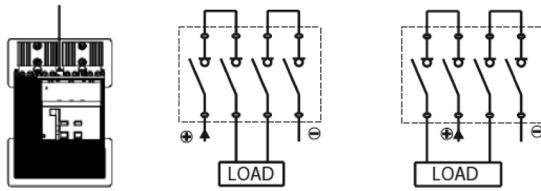
T7N-D/PV is the molded case switch for photovoltaic applications up to 1000A and 1000V DC. It is available in the motorized version only.

**For 2 poles + 2 poles in series, please use the following ordering code**

Ordering Code	Description
T7MPB1000DL-4	MCS T7MNPVB 1000A 4P UL 2+2PS L 1000VDC

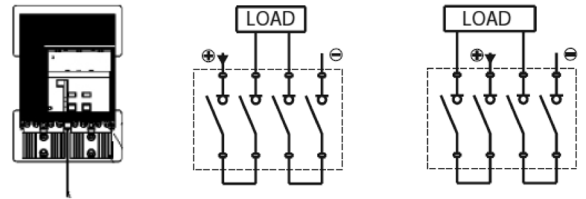
**Below are the UL approved 2 poles + 2 poles in series configurations for ungrounded systems.**

**Lower supply**



Only the FCCuAl terminals that are included in the jumper kit are compatible.

**Upper supply**



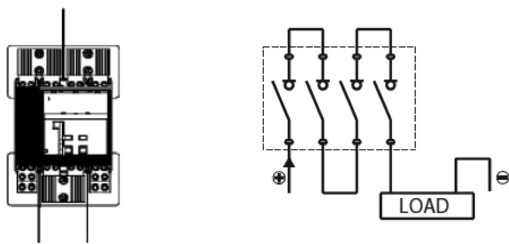
Only the FCCuAl terminals that are included in the jumper kit are compatible.

**For four poles in series, please use the following ordering code**

Ordering Code	Description
T7MPA1000DL-4	MCS T7MNPVA 1000A 4P UL 4PS L 1000VDC

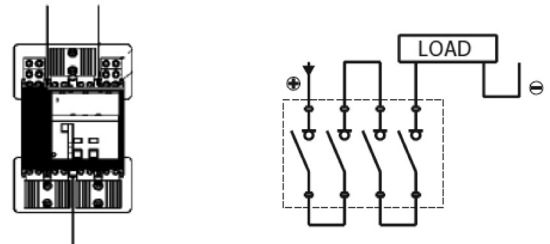
**Below are the UL approved 4 poles in series configurations for grounded systems.**

**Lower supply**



Only the FCCuAl terminals that are included in the jumper kit are compatible.

**Upper supply**



Only the FCCuAl terminals that are included in the jumper kit are compatible.

# Contact us

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### **USA Technical Help**

1 888 385 1221 option 4  
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Monday – Friday

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[www.abb.us/lowvoltage](http://www.abb.us/lowvoltage)

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