Weidmüller

Technical Bulletin

Terminal Blocks Approved for PV Applications

WW1003, August 2010

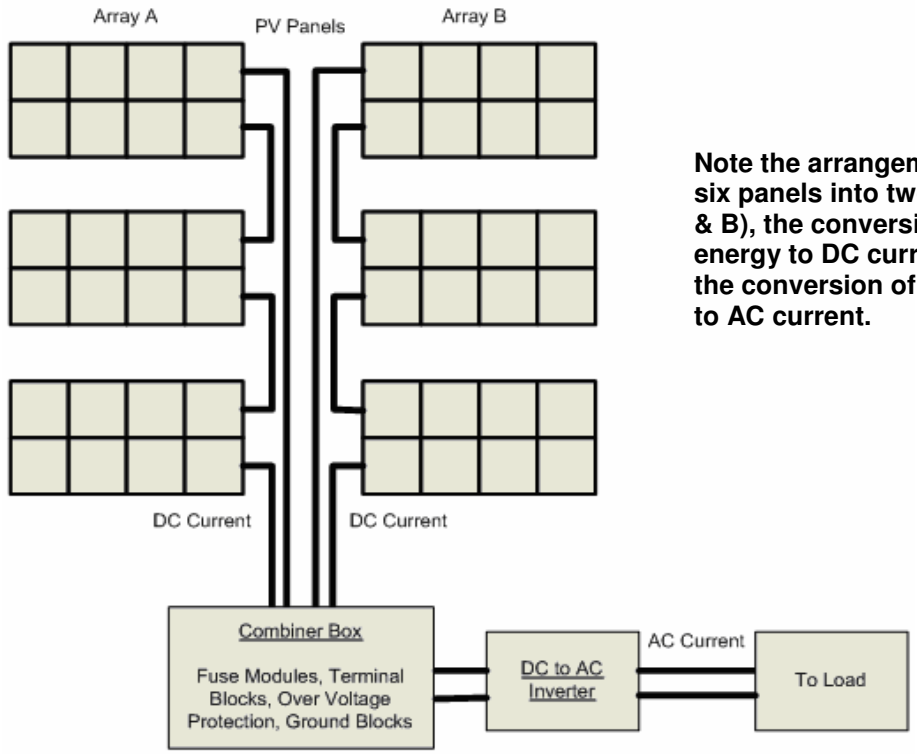
Weidmuller Terminal blocks provide a safe and reliable solution for solar photovoltaic applications.

Weidmuller has subjected our terminal blocks to insulation testing geared specifically for solar photovoltaic applications, ensuring our terminals can withstand a continuous voltage of 1,000 VDC under all climatic conditions.

What is a solar photovoltaic (PV) system?

The purpose of a solar photovoltaic (PV) system is to convert solar energy that may be available in varying degrees for a matter of hours each day, into electrical energy that can be utilized when, where and at the rate it is required. To maximize the power generated by the PV system, solar panels that convert solar energy to DC electricity are connected in series or in parallel to create solar arrays. Arrays are connected to a DC to AC converter (Solar Inverter) via a combiner box. The combined voltage from the arrays within the combiner box may be as high as 1000VDC in some global applications (600 VDC for NAFTA applications requiring UL certification). It is absolutely critical that connectivity components used within the combiner box are able to safely and reliably withstand these voltages (please see example below).

Example:



Note the arrangement of the six panels into two arrays (A & B), the conversion of solar energy to DC current, and the conversion of DC current to AC current.

By: Heidi Kellum, Product Marketing Specialist – Standard Connectivity 08/10/10

Why is insulation testing specifically for PV applications necessary?
Standard insulation tests performed on terminals do not detect low-energy (partial) discharges that can slowly work through an insulation line, ultimately causing a defect. In addition, insulation lines react differently to partial discharge tests for DC voltage than to partial discharge tests for AC voltage. Therefore, only terminal blocks which have passed a partial discharge test for direct current voltage, like the method used by Weidmuller, are suitable for safe use in photovoltaic systems.

Due to the fact that features of the terminal, such as the dimension or insulation thickness, cannot be used to determine the terminal block's qualification for 1,000 VDC applications, Weidmuller has created a list of terminals approved for this type of application (see Approved Parts Listing below).

Approved Parts Listing:
The following have been subjected to a partial discharge test for DC voltage and have been approved by Weidmuller for use in 1,000 VDC applications*:

Part No.	Description	Part No.	Description
1608620000	ZDU 6	**1028380000**	WFF 35 BL
1608630000	ZDU 6 BL	**1028400000**	WFF 70
7907410000	ZDU 6/3AN	**1029400000**	WFF 70/AH
7907420000	ZDU 6/3AN BL	**1028480000**	WFF 70 BL
1767690000	ZDU 10/3AN	**1028500000**	WFF 120
1767700000	ZDU 10/3AN BL	**1029500000**	WFF 120/AH
1141860000	ZDK 4-2, 1000 V	**1028580000**	WFF 120 BL
1020100000	WDU 4	**1028600000**	WFF 185
1020180000	WDU 4 BL	**1029600000**	WFF 185/AH
1020200000	WDU 6	**1028680000**	WFF 185 BL
1020280000	WDU 6 BL	**1028700000**	WFF 300
1020300000	WDU 10	**1029700000**	WFF 300/AH
1020380000	WDU 10 BL	**1028780000**	WFF 300 BL
1820550000	WDU 95N/120N	**1809110000**	ST 4000/S M8
1790130000	WF 5	**1809120000**	ST 4000/S M8 F
1780850000	WF 6	**1809130000**	ST 4000/S M10
1780860000	WF 8	**1809140000**	ST 4000/S M10 F
1780870000	WF 10	**1809150000**	ST 4000/L M10
1780880000	WF 12	**1809160000**	ST 4000/L M10 F
1789770000	WF 6/2BZ	**1809170000**	ST 4000/L M12
1789780000	WF 8/2BZ	**1809180000**	ST 4000/L M12 F
1789790000	WF 10/2BZ	**1137790000**	WSI 25 10x38
1028300000	WFF 35	**1137780000**	WSI 25 10x38/LED
1029300000	WFF 35/AH		

*** Weidmuller has tested and approved the products above for 1,000 VDC applications; however, the UL and CSA approvals may indicate a lower tolerance. Please refer to data sheets for UL and CSA approvals.**

If you have questions, please do not hesitate to contact your local Weidmuller representative or Weidmuller technical support department.

By: Heidi Kellum, Product Marketing Specialist – Standard Connectivity 08/10/10

Sincerely,

Heidi Kellum
Product Marketing Specialist