

PV Fact Sheet

17 | PV AC Combiner Box special features

How do I find the right variant of AC combiner box?

This fact sheet focuses on photovoltaic installations in solar parks worldwide. One essential part of such an installation is the PV combiner box. These boxes are used to combine several strings and to protect against overvoltage and feature many more functions.

In Weidmüller photovoltaics, we focus on the combiner box, and we have developed a large product catalogue aimed at varied utility scale solutions. The following will focus on the special features that the AC combiner boxes have and give additional information so it will be easier to choose the correct PV family.

What are the special features of PV AC combiner boxes?

In string inverter plants it is possible to have combiner boxes before or after the inverters. The AC combiner box is the one that needs to be used after the string inverters, it needs to be robust to protect all elements both downstream and upstream but accessible for routine maintenance and checks. We have developed this type of combiner box to fulfil all the regulations with the additional value that only Weidmüller can add. The AC combiner boxes have special features, among them we can highlight the following:

- Values of the inverter: One thing to keep in mind is to be aware of the inverter that you have in the plant, most important its voltage and current. For this we have models from 400 VAC, 690 VAC, to 800 VAC, in each voltage we have different products with different currents.
- Fuse links: All our designs have NH fuse links for each phase. The range of the fuses goes from 80 A to 160 A, from NH00 up to NH1, the value of the fuse will depend on the voltage of the combiner box
- Monitorization: Generally, the string inverters have their own devices to monitor both strings and the inverter itself. However, it is possible to add monitorization into the combiner box with an energy meter, this can be used to have a second read of the main values of the inverter and, have a local quick view without using any software or reaching the string inverter.



Image 1. AC combiner box with 6 inputs



Image 2. Example of a NH fuse



Image 3. Weidmüller energy meter

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Additional features of the AC combiner box

- All AC combiner boxes standard have incorporated a Surge Protective Device (SPD) type II, that provide protection against electrical surges and spikes, including those caused directly and indirectly by lightning. Also, it is possible to equip the combiner box with an SPD type I+II, however, this option is only available to the 400 VAC version.
- All the enclosures of the AC combiner boxes are double insulated, which consists of supplementing the functional insulation with a second protective insulation so that, in the event of failure of the first insulation, no accessible metal parts can be exposed to voltage. This can be identified by the symbol of a square inside a square in every label of Weidmüller combiner boxes.
- In our AC combiner box portfolio, we have a wide range of products to suit your needs, among these we have boxes that have compatibility with various brands of inverters that are on the market.
- The AC combiner boxes are equipped with cable glands to protect and fix the inlet cables. The number of cable glands will depend on the number of strings in the box.



Image 4. Weidmüller family of SPDs



Image 5. Example label of a DC combiner box



Image 6. Some brands compatibles with the combiner boxes



Image 7. Cable glands in an AC combiner box