Photovoltaics

# Solutions for Photovoltaic Utility Scale Systems

Operate large-scale PV systems more efficiently

Weidmüller

# Solutions for your PV value chain

## Weidmüller is a solution provider for connectivity cabinets and communication infrastructure



**Tested & proven**
Our PV boxes are designed and tested to withstand extreme climate fluctuations. See for yourself in our video straight from our lab.

# Our offering

**Connection & Combination**
Connection & Combination of PV strings from field or array

**Protection**
Protection against surges and touching

**Monitoring**
Monitoring of string perfomance and component status

# Your benefits at a glance

**Standard models available in stock**
Tailor-made solutions with only 4 weeks of delivery time

**5 years warranty**
We increase the warranty period due to the high quality of our combiner boxes

**Spare parts on stock**
Easy supply for O&M companies

**Easy commisioning & maintenance**
Products designed to reduce installation time and cost as well as future maintenance

**Logistic savings**
Global production locations allow cost- and time-optimised production and supply

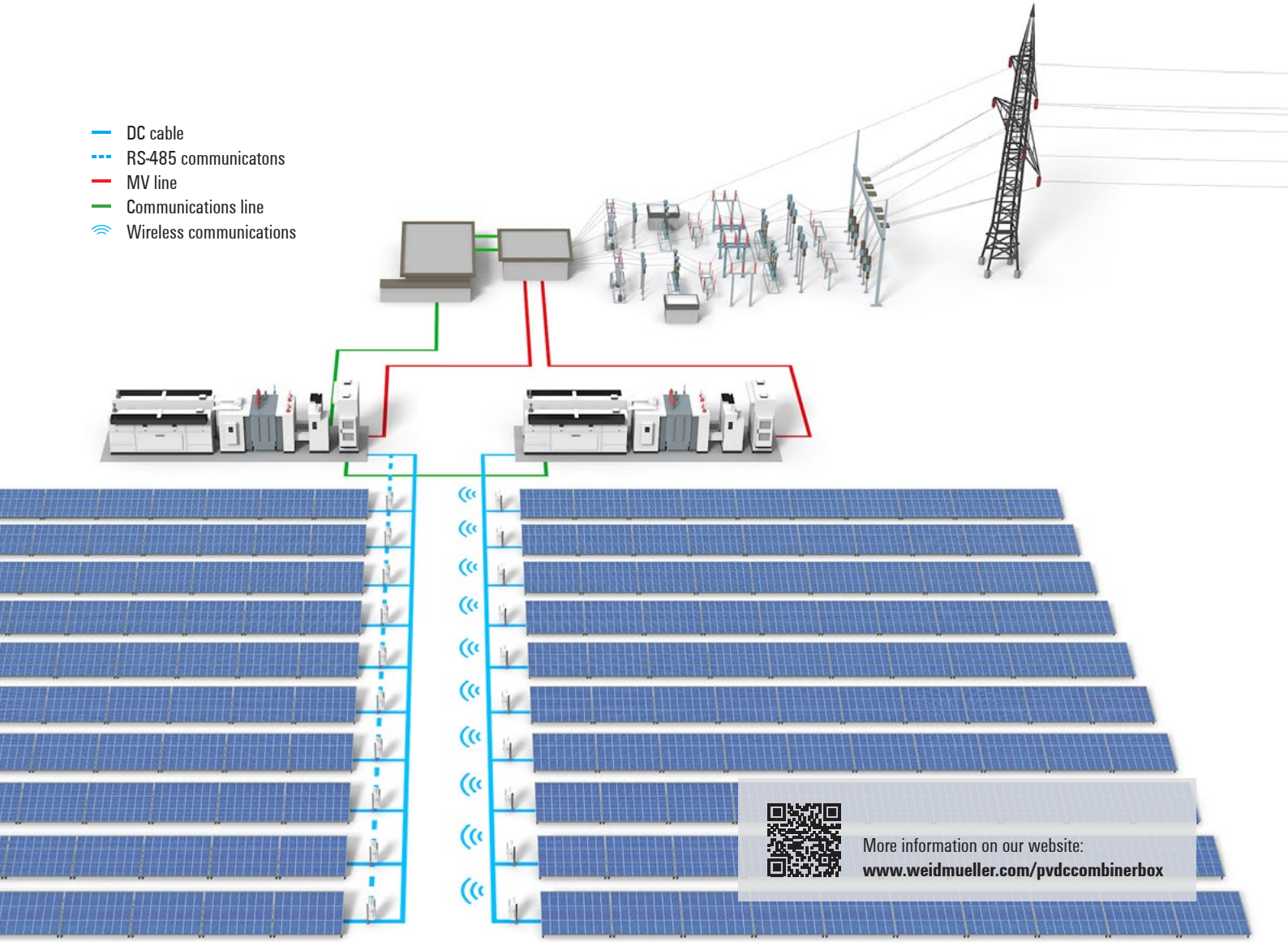
**Online selection tool**
Online tool to choose the best model for each application

# 1.1 PV DC Combiner Boxes
## Central Inverter Concept

### Bundle, protect and combine PV strings efficiently

Our DC combiner boxes offer users the possibility to integrate short-circuit and overvoltage protection, as well string monitoring solutions (I,V, T and SPD and switch isolator status), for PV systems using central inverters with PV panels in trackers and fix tilt systems.

Weidmüller offers a trackrecord of DC combiner boxes higher than 250.000 units sold in all climate regions of the planet for more than 15 years.The experience and expertise in the DC engineering is used to provide high-end solutions covering the CAPEX and OPEX needs of the customer. Models equipped with string monitoring provide additional performance with voltage, current and temperature mesurement as well as SPD health and DC switch status. This helps to improve PR of plants and optimises the ROI.




More information on our website:
**www.weidmueller.com/pvdccombinerbox**

## Key features & benefits

- **Optimised design –** By using advanced simulation 3D softwares, the product variants have been designed and tested to operate at the maximum mechanical and thermal effiency in the most compact housing size.
- **All technical data available online with 1-click –** Weidmüller offers web tools to support on the selection of the best model for your application. Technical data and certifications are available in the Weidmüller online catalogue.
- **Cost-optimised variants –** With the new product line cost optimised models with special accessories were designed which cover the most common applications in PV power plants.
- **Longer lifetime –** DC engineering expertise implemented in designs to allow longer lifetime and higher performance under extreme climatic conditions.
- **Better LCOE and ROI –** roduct trackrecord, bankability and reputation of our solutions simplify product due diligences, insurance contracts and even to increase value of the asset in case it is sold in the future.

### Technical data: PV DC Combiner Boxes

| | |
|---|---|
| **Main application features** | |
| Inputs | from 8 to 32 |
| Outputs | 1-2 |
| Operating ambient temperature | -20°C up to 50°C |
| DC earthing system | Floating, negative grounded or positive grounded |
| Installation location | Protected outdoors |
| Altitude above the sea level | up to 2000m (standard) higher altitude on demand |
| **Main electrical features** | |
| Rated DC voltage | from 1000 V DC up to 1500 V DC |
| Rated DC current per input | up to 48 A |
| Maximum fuse size | up 35 A for 10x85 mm<br>up 75 A for 22x58 mm |
| Portection against overcurrent | gPV fuses according to IEC 60269-6 |
| Fuses | On both poles or on one pole |
| Switch disconnector | Yes |
| Switch disconnector rating | up to 500 A (other options on demand) |
| **Enclosure** | |
| Enclosure material | GFRP (Glass Fiber Reinforced Polyester) |
| Enclosure shape | Portrait or Landscape |
| Enclosure fixing system | Wall mounted, pedestal or piling fixation |
| Degree of protection | IP65 |
| Form factor | Cabinet with hinged door |
| Polycarbonate protection plate | Yes (optional) |
| **Surge protections** | |
| Surge protection device | Type I+II or Type II |
| Auxiliary contacts | Yes (optional) |
| Surge protection on RS-485 ports | Yes (optional) |
| **String monitoring** | |
| String monitoring device | Yes (optional) |
| Main monitored parameters | Voltage, current, temperature, SPD status, switch isolator status and auxiliary alarms |
| Voltage measurement | from 200 V DC up to 1500 V DC |
| Current measurement | up to 50 A per string/input |
| Communication port | RS-485 or wireless (LoRAWAN) |
| Protocol | Modbus/RTU |
| Power supply for string monitoring device | DC/DC converter (self powered string monitoring) |
| **Others** | |
| Input connectors | WM4 C PV connectors or cable glands (other options on demand) |
| **Standards** | |
| Standards | IEC 61439-2 ED 3 / EN61439-2:2021 |

# 1.2 PV Floating DC Combiner Boxes
## Floating Solar Installations

### Collect, protect and monitor DC strings in extreme environments

The lack of land requires the development of new locations for PV systems. In this case, water surfaces are particularly suitable because of the low shading and the cooling effect of the water. However, the ambient conditions place high demands on the generator connection boxes.

Our PV DC Floating Combiner Boxes are designed for use in floating PV systems on freshwater surfaces and equipped with central inverters. They comply with IEC-61439 (ed. 2) and withstand high humidity, corrosive atmosphere and exposure to sunlight. We offer a wide range of plug & play variants from 8 to 24 inputs - with comprehensive protection and suitable covering solutions.and DC switch status. This helps to improve PR of plants and optimises the ROI.


### Key features & benefits

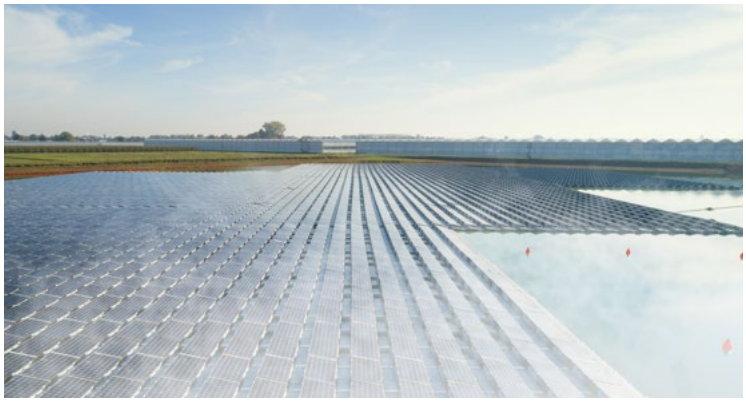
- **Absorbing aluminum alloy sunshade –** The specially developed aluminum 5457 (with magnesium) sunshade absorbs incident solar radiation and heat. Its surface finishing increases the reflection index and efficiently deflects the incident radiation. This reduces the temperature inside the combiner box very effectively.
- **Reliable sealing function –** The aluminum cover is fixed to the enclosure door with stainless steel blind rivets. The rivets are located outside the area of the door seal, so that the sealing function according to IP65 is reliably guaranteed at all times.
- **Ensured ventilation –** An air gap between the door housing and the aluminum alloy cover ensures constant air convection. In this way, the combiner box and its components are reliably cooled.
- **Optimum watertightness –** Multivia cable glands ensure optimum watertightness. They reduce the number of mechanical parts and make the entire construction more robust.

More information on our website:
**www.weidmueller.com/pvfloating**

**Ensured quality**
Watch our video and see how our PV Floating DC Combiner Boxes are manufactured.

## Easy connection - low maintenance

Due to the pre-assembled Aluminium cover, our combiner boxes do not require any additional preparation work during installation. The innovative PV connection makes the entire solution plug-and-play.Our combiner boxes are made of GFRP and therefore do not need to be repainted regularly. A decisive advantage over metal housings.



**Suitable for high humidity**
PV-DC floating combiner boxes are specially designed for Severity Class B environments according to IEC 61439 (ed. 2). Therefore, they are suitable for operation in extremely humid and corrosive environments.

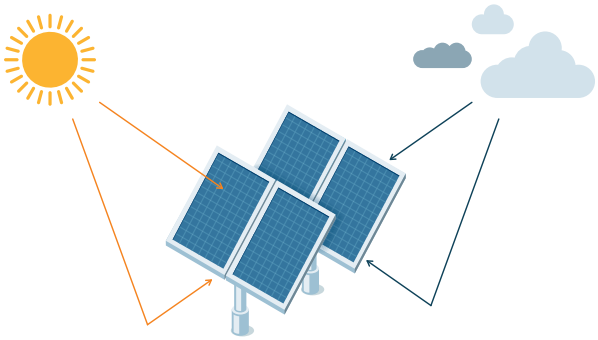
**Suitable for direct sunlight**
PV-DC floating combiner boxes can be operated in direct sunlight without the need to install an additional sunshield. The pre-mounted aluminum cover improves the performance of the system.

**Suitable for PV systems in freshwater**
The PV DC Floating Combiner Boxes can be operated in floating PV systems on freshwater surfaces. They have been extensively tested and are certified for long-term operation under these specific environmental conditions.

# 1.3 PV DC Combiner Boxes for High Power Panels
## Central Inverter Concept & High voltages

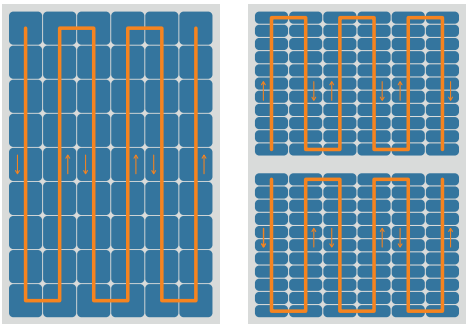
### Compact and durable solutions for bifacial half-cell modules

Bifacial solar panels have solar cells on both the front and the back of the panel. This allows the solar energy to be collected on the back of the panel and increases the energy yield of the solar energy system. Our four new PV-DC combination boxes for bifacial half-cell modules allow a higher current consumption due to the fuse holders used.



### Space optimized and higher reliability

Increasing the power of PV panels (mono and bifacial) with half-cut cells leads to a rise of current in the strings. The need for higher rated fuses is then mandatory and requires a new approach to system design. Our new designs of PV DC high current combiner boxes offer easy adaptation and time saving for new developments.



### Key features & benefits

- **Standard options in stock ready to order –** A wide range of solutions, available for immediate order from stock to fit into the installation concepts with the brands of PV modules presented above. Variants: With 6 and 8 inputs, with fuse protection in (+/-) poles and with gPV fuses from of 22x58 mm format and a rated current per fuse between 35 A up to 75 A.
- **Overvoltage protections –** With several configurations, Weidmüller offers the VPU surge protection series for 1500 V DC systems with up to 11 kA Isc and Type I+II or Type II variants.
- **Optimised design –** Through the use of advanced 3D simulation software, the product variants have been designed and tested to operate with maximum mechanical and thermal efficiency in the most compact enclosure possible.
- **Special Fuse protection –** Weidmüller fuses (WSFL) and fuse holders (WSFH) have been specially developed for this new architecture. Rated currents of 35 to 75 A per input enable the connection of single and double strings.

## Ordering data for DC Combiner Boxes

### PV DC Combiner Boxes

| Type | Inputs | Fuse Protection | Max Fuse Rate | Max Isc | Fuse Included | String Monitoring | Type of enclosure | Enclosure Size | Max Oper. Temp | Order No. |
|---|---|---|---|---|---|---|---|---|---|---|
| PV 212S0F3CXXV000TXPX15PWW | 12 | Both Poles | 30 A | 17 A | No | No | Portrait | 747 x 536 x 300 mm | 45°C | **8000112693** |
| PV 212S0F3CXXV000TA1PA15PWW | 12 | Both Poles | 30 A | 17 A | No | Yes | Portrait | 847 x 636 x 300 mm | 45°C | **8000115422** |
| PV 214S0F3CXXV000TXPX15PWW | 14 | Both Poles | 32 A | 20 A | No | No | Portrait | 847 x 636 x 300 mm | 45°C | **8000124304** |
| PV 216S0F4CXXV000TXPX15LWW | 16 | One Pole | 25 A | 16 A | No | No | Landscape | 536 x 747 x 300 mm | 40°C | **8000078885** |
| PV 216S0F3CXXV000TXPX15PWW (*) | 16 | Both Poles | 32 A | 19.5 A | No | No | Portrait | 835 x 635 x 300 mm | 45°C | **8000124309** |
| PV 216S0F3CXXV000TXPX15LWW | 16 | Both Poles | 30 A | 18 A | No | No | Landscape | 636 x 847 x 300 mm | 45°C | **8000119547** |
| PV 216S0F3CXXV000TAPX15LWW (*) | 16 | Both Poles | 25 A | 14 A | No | Yes | Landscape | 636 x 847 x 300 mm | 45°C | **8000093503** |
| PV 216S0F3CXXV000TXPX15PWW | 16 | Both Poles | 25 A | 14 A | No | No | Portrait | 747 x 536 x 300 mm | 45°C | **8000078118** |
| PV 218S0F3CXXV000TXPX15PWW | 18 | Both Poles | 30 A | 18 A | No | No | Portrait | 835 x 635 x 300 mm | 45°C | **8000124306** |
| PV 220S0F4CXXV000TXPX15PWW | 20 | One Pole | 25 A | 14 A | No | No | Portrait | 747 x 536 x 300 mm | 45°C | **8000078883** |
| PV 220S0F4CXXV000TAPX15PWW | 20 | One Pole | 30 A | 18 A | No | Yes | Portrait | 835 x 635 x 300 mm | 45°C | **8000093501** |
| PV 220S0F3CXXV000TXPX15LWW | 20 | Both Poles | 30 A | 17 A | No | No | Landscape | 636 x 847 x 300 mm | 45°C | **8000119548** |
| PV 220S0F3CXXV000TXPX15PWW (*) | 20 | Both Poles | 30 A | 17 A | No | No | Portrait | 835 x 635 x 300 mm | 45°C | **8000124332** |
| PV 220S0F3CXXV000TA1PA15LWW (*) | 20 | Both Poles | 25 A | 15 A | No | Yes | Landscape | 636 x 847 x 300 mm | 45°C | **8000119550** |
| PV 224S0F3CXXV000TXPX15LWW | 24 | Both Poles | 25 A | 14 A | No | No | Landscape | 636 x 847 x 300 mm | 45°C | **8000078884** |
| PV 224S0F3CXXV000TXPX15PWW (*) | 24 | Both Poles | 25 A | 14 A | No | No | Portrait | 847 x 636 x 300 mm | 45°C | **8000078882** |
| PV 224S0F3CXXV000TAPX15PWW | 24 | Both Poles | 25 A | 13 A | No | Yes | Portrait | 847 x 636 x 300 mm | 45°C | **8000093500** |
| PV 224S0F3CXXV000TAPX15LWW (*) | 24 | Both Poles | 25 A | 14 A | No | Yes | Landscape | 636 x 847 x 300 mm | 45°C | **8000093502** |
| PV 224S0F4CXXV000TXPX15PWW | 24 | One Pole | 25 A | 14 A | No | No | Portrait | 847 x 636 x 300 mm | 45°C | **8000068263** |
| PV 224S0F3CXXV000TXPX15PWW | 24 | Both Poles | 30 A | 17.5 A | No | No | Portrait | 1056 x 852 x 350 mm | 45°C | **8000124311** |
| PV 224S0F3CXXV000TA1PA15PWW | 24 | Both Poles | 30 A | 17.5 A | No | Yes | Portrait | 1056 x 852 x 350 mm | 45°C | **8000124310** |
| PV 232S0F4CXXV003TXPX15PWW | 32 | One Pole | 20 A | 10 A | No | No | Portrait | 847 x 636 x 300 mm | 50°C | **8000060710** |

### PV Floating DC Combiner Boxes

| Type | Inputs | Fuse protection | Rated voltage | String monitoring | Type of enclosure | Enclosure size | Qty. | Order No. |
|---|---|---|---|---|---|---|---|---|
| PV 216S0F3CXXV003T7P015PFJP | 16 | Both Poles | 1500 V DC | Integrated Monitoring System | Portrait | 847 x 636 x 300 mm | 1 | **8000057079** |
| PV 216S0F3CXXV003TXPX15PFJP | 16 | Both Poles | 1500 V DC | No | Portrait | 847 x 636 x 300 mm | 1 | **8000057080** |
| PV 218S0F0C15V003TXPX15PFWW | 18 | Both Poles | 1500 V DC | No | Portrait | 847 x 636 x 300 mm | 1 | **8000057083** |
| PV 220S0F3CXXV003TXPX15PFJP | 20 | Both Poles | 1500 V DC | No | Portrait | 847 x 636 x 300 mm | 1 | **8000057081** |
| PV 224S0F1C15V003TXPX15PFWW | 24 | One Pole | 1500 V DC | No | Portrait | 847 x 636 x 300 mm | 1 | **8000057088** |
| PV 224S0F1C15V003T7P015PFWW | 24 | One Pole | 1500 V DC | Integrated Monitoring System | Portrait | 847 x 636 x 300 mm | 1 | **8000057085** |
| PV 224S0F3CXXV003TXPX15PFJP | 24 | Both Poles | 1500 V DC | No | Portrait | 847 x 636 x 300 mm | 1 | **8000057077** |

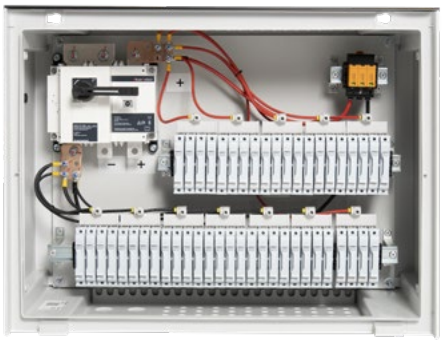
### PV DC Combiner Boxes for High Power Panels

| Type | Inputs | Rated voltage | Max Isc per input | String monitoring | Enclosure size | Qty. | Order No. |
|---|---|---|---|---|---|---|---|
| PV 206S0F3CXXV000TXPX15LWW | 6 | 1500 V DC | 22 A | No | 636 x 847 x 300 mm | 1 | **8000081269** |
| PV 208S0F3CXXV000TXPX15LWW | 8 | 1500 V DC | 21 A | No | 747 x 536 x 300 mm | 1 | **8000081271** |
| PV 208S0F3CXXV000TXPX15LWW | 8 | 1500 V DC | 32 A | No | 636 x 847 x 300 mm | 1 | **8000081272** |
| PV 206S0F3CXXV000TAPA15LWW | 6 | 1500 V DC | 25 A | Integrated Monitoring System | 636 x 847 x 300 mm | 1 | **8000101211** |
| PV 208S0F3CXXV000TAPA15LWW | 8 | 1500 V DC | 25 A | Integrated Monitoring System | 636 x 847 x 300 mm | 1 | **8000101212** |
| PV 210S0F3CXXV000TAPA15LWW | 10 | 1500 V DC | 25 A | Integrated Monitoring System | 636 x 847 x 300 mm | 1 | **8000101213** |
| PV 212S0F3CXXV000TAPA15PWW | 12 | 1500 V DC | 25 A | Integrated Monitoring System | 1056 x 852 x 350 mm | 1 | **8000101214** |
| PV 210S0F3CXXV000TAPA15PWW | 10 | 1500 V DC | 48 A | Integrated Monitoring System | 1056 x 852 x 350 mm | 1 | **8000101215** |

# 1.4 PV DC Combiner Boxes variants for 1 MPPT inverters

## String Inverter Concepts with 1 MPPT

### Efficient and optimized solution for 1 MPPT string inverters



1 MPPT solar string inverters are being rapidly adopted as an efficient solution for large rooftop or utility scale projects. Under constant and even sunlight conditions 1 MPPT string inverters perform as efficiently as multi MPPT inverters. PV DC Combiner boxes for 1 MPPT inverters provide a compact solution to combine, protect and monitor all strings providing power to inverter DC side.

### Reduced number of MPPT's

Under the competitive landscape of the PV Solar industry new string inverter solutions have appeared. Single MPPT's string inverters provide a robust and reliable solution with reduced electronic components and complexity needed for multiple MPPT inverters. Our new PV DC Combiner boxes, allow different inverter manufacturers to introduce a complete solution with an optimized design with Weidmueller's quality standards.

**Inverter Brands**

KACO new energy. Fronius Ingeteam SMA SUNGROW

### Key features & benefits

- **Standard options in stock ready to order –** A wide range of solutions, available for immediate order from stock to fit into the installation concepts with 1 MPPT string inverter. Variants: With from 7 to 20 inputs, with fuse
- **Solutions for 1000 V DC and 1500 V DC**
- **Overvoltage protection –** With several configurations, Weidmüller offers the VPU surge protection series for 1500 V DC systems with up to 11 kA Isc and Type I+II or Type II variants.
- **Optimized design –** Through the use of advanced 3D simulation software, the product variants have been designed and tested to operate with maximum mechanical and thermal efficiency in the most compact enclosure possible.
- **Special Fuse protection –** Weidmüller fuses (WSFL) and fuse holders (WSFH) have been specially developed for this new architecture.

## Ordering data for DC Combiner Boxes variants for 1 MPPT inverters

### PV DC Combiner Boxes for Kaco/Sungrow/Ingeteam (1500 V DC)

| Type | Inputs | Fuse Protection | Max Fuse Rate | Isc | Fuse included | String monitoring | Type of enclosure | Enclosure size | Max oper. temp | Qty. | Order No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PV 212S0F3CXXV100TXPX15LWW | 12 | Both Poles | 30 A | 19 A | No | No | Landscape | 636 x 847 x 300 mm | 45°C | 1 | **8000096019** |
| PV 212S0F3CXXV100T9P015LWW | 12 | Both Poles | 30 A | 19 A | No | Yes | Landscape | 636 x 847 x 300 mm | 45°C | 1 | **8000096020** |
| PV 215S0F3CXXV100TXPX15LWW | 15 | Both Poles | 30 A | 19 A | No | No | Landscape | 636 x 847 x 300 mm | 45°C | 1 | **8000096023** |
| PV 215S0F3CXXV100T9P015LWW | 15 | Both Poles | 30 A | 19 A | No | Yes | Landscape | 636 x 847 x 300 mm | 45°C | 1 | **8000096024** |
| PV 216S0F3CXXV100TXPX15LWW | 16 | Both Poles | 25 A | 14 A | No | No | Landscape | 636 x 847 x 300 mm | 45°C | 1 | **8000096025** |
| PV 216S0F3CXXV100T9P015LWW | 16 | Both Poles | 25 A | 14 A | No | Yes | Landscape | 636 x 847 x 300 mm | 45°C | 1 | **8000096026** |
| PV 220S0F3CXXV100TXPX15LWW | 20 | Both Poles | 25 A | 14 A | No | No | Landscape | 636 x 847 x 300 mm | 45°C | 1 | **8000096027** |
| PV 220S0F3CXXV100T9P015LWW | 20 | Both Poles | 25 A | 14 A | No | Yes | Landscape | 636 x 847 x 300 mm | 45°C | 1 | **8000096028** |

### PV DC Combiner Boxes for Fronius (1000 V DC)

| Type | Inputs | Fuse Protection | Max Fuse Rate | Isc | Fuse Included | String monitoring | Type of enclosure | Enclosure size | Max oper. temp | Qty. | Order No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PV 207S0F3CXXV100TXPX10PDE | 07 | Both Poles | 32 A | 19 A | No | No | Portrait | 747 x 536 x 300 mm | 50°C | 1 | **8000111135** |
| PV 207S0F3CXXV100TA1PA10PDE | 07 | Both Poles | 32 A | 19 A | No | Yes | Portrait | 847 x 636 x 300 mm | 50°C | 1 | **8000111136** |
| PV 211S0F3CXXV100TXPX10PDE | 11 | Both Poles | 32 A | 19 A | No | No | Portrait | 747 x 536 x 300 mm | 50°C | 1 | **8000111137** |
| PV 211S0F3CXXV100TA1PA10PDE | 11 | Both Poles | 32 A | 19 A | No | Yes | Portrait | 847 x 636 x 300 mm | 50°C | 1 | **8000111138** |

# 1.5 Enclosure Accessories

## Enhanced protection and durability for PV Combiner Boxes

### Secure Mounting & Environmental Protection

Fixation accessories and protective canopies are essential for photovoltaic (PV) installations, ensuring that PV DC Combiner Boxes are securely mounted and protected against dust, moisture, and harsh environmental conditions. These durable, weather-resistant components safeguard critical electrical parts, helping to reduce maintenance needs and extend the overall system lifespan. With Weidmüller's deep expertise in solar PV, these solutions are designed to optimise system efficiency while meeting strict safety and performance standards.

### Key features & benefits

- **Secure mounting –** Fixation accessories ensure stable and reliable installation of PV DC Combiner Boxes in various site conditions.
- **Environmental protection –** Protective canopies shield against dust, rain, UV exposure, and other challenging environmental factors.
- **Extended system lifetime –** Durable materials and weather-resistant construction reduce wear on components and minimise maintenance over time.
- **Optimised efficiency –** All accessories are developed with Weidmüller's solar engineering standards to enhance overall system reliability and performance.
- **High safety standards –** Designed and tested to comply with demanding safety and operational requirements in PV applications.

## Ordering data for Enclosure Accessories

### Enclosure Accessories

| Accessory Name | Type of Accessory | Material | Type of enclosure | Enclosure Brand | Enclosure Size | Order No. |
|---|---|---|---|---|---|---|
| PK FIXATION KIT NSYPLM108 M8 | Mounting kit for pile | St-235 Zn Plated | Portrait | Schneider Electric | 1056 x 852 x 350 mm | **8000127909** |
| PK FIXATION KIT NSYPLM75 M8 | Mounting kit for pile | St-235 Zn Plated | Portrait | Schneider Electric | 747 x 536 x 300 mm | **8000127908** |
| PK FIXATION KIT NSYPLM86 M8 | Mounting kit for pile | St-235 Zn Plated | Portrait | Schneider Electric | 847 x 636 x 300 mm | **8000107421** |
| PK FIXATION KIT NSYPLM810 M8 | Mounting kit for pile | St-235 Zn Plated | Landscape | Schneider Electric | 852 x 1056 x 350 mm | **8000127907** |
| PK FIXATION KIT NSYPLM57 M8 | Mounting kit for pile | St-235 Zn Plated | Landscape | Schneider Electric | 536 x 747 x 300 mm | **8000127906** |
| PK FIXATION KIT NSYPLM68 M8 | Mounting kit for pile | St-235 Zn Plated | Landscape | Schneider Electric | 636 x 847 x 300 mm | **8000127905** |
| SUNLIGHT COVER SCH86 ALU | Cover for floating PV DC CB | AL-5754 | Portrait | Schneider Electric | 847 x 636 x 300 mm | **4000004848** |
| SUNLIGHT COVER SCH108 ALU | Cover for floating PV DC CB | AL-5754 | Portrait | Schneider Electric | 1056 x 852 x 350 mm | **4000004854** |
| SUN CANOPY 68/108 1,5MM DX51D | Canopy for ground-mounted PV DC CB | DX51D+Z275 | Both | Schneider Electric | 636x847 / 1056 x 852 x 350 mm | **4000009126** |
| SUN CANOPY 57/86 1.5MM DX1D | Canopy for ground-mounted PV DC CB | DX51D+Z275 | Both | Schneider Electric | 536x747/ 847 x 636 x 300 mm | **4000010116** |
| SUN CANOPY 75 1.5MM DX1D | Canopy for ground-mounted PV DC CB | DX51D+Z275 | Portrait | Schneider Electric | 747 x 536 x 300 mm | **4000010117** |
| SUN CANOPY 810 1.5MM DX1D | Canopy for ground-mounted PV DC CB | DX51D+Z275 | Landscape | Schneider Electric | 1056 x 852 x 350 mm | **4000010118** |
| PK KIT PEDESTAL PEM86 | Pedestal for ground-mounted PV DC CB | GFRP | Portrait | Schneider Electric | 847 x 636 x 300 mm | **8000036664** |
| PK KIT PEDESTAL PEM108 | Pedestal for ground-mounted PV DC CB | GFRP | Portrait | Schneider Electric | 1056 x 852 x 350 mm | **8000041457** |

# 1.6 Cable Ties and Cable Support for Trackers

## Secure and reliable cable management for solar installations

### Securing Solar Power for the Future

In solar farms, where exposure to sun and wind challenge every connection, cable management becomes crucial. With miles of cables carrying energy across the installation, the focus isn't just on organization –it's on long-term security. Weidmüller's cable management solutions ensure that cables are securely fastened, resilient to extreme weather, and optimized for durability, providing peace of mind throughout the life of the system.

### Key features & benefits

- **UV-resistant plastic cable ties –** Designed to securely hold cables ranging from 25mm to 380mm in diameter, these ties withstand harsh UV exposure, ensuring lasting reliability and durability.
- **Robust stainless steel cable ties –** For tougher environments, these ties manage cables between 50mm and 370mm in diameter, offering secure and durable performance where plastic solutions fall short.
- **Advanced cable support for solar trackers –** Specialized solutions for securing cables to torque tubes in solar trackers. Built for dynamic environments, these supports maintain long-term performance even in challenging conditions.

## Ordering data for Cable Ties and Cable Support for Trackers

### Weather-resistant plastic Cable Tie (UV resistant) – black color
**Material: PA 66 with UV-resistant additives. Flammability: UL94 V2. Operating temperature: -40°C to 85°C.**

| Description | Maximum bundling diameter (mm) | Minimum breaking tension (N) | QTY | Order No. |
|---|---|---|---|---|
| Cable ties, 2.5 x 98 mm | 21 | 80N | 100 | **2659370000** |
| Cable ties, 3.5 x 140 mm | 32 | 130N | 100 | **2659320000** |
| Cable ties, 4.8 x 200 mm | 50 | 220N | 100 | **2659340000** |
| Cable ties, 4.5 x 290 mm | 78 | 220N | 100 | **2659350000** |
| Cable ties, 7.5 x 365 mm | 100 | 540N | 100 | **2659360000** |


### Uncoated stainless-steel clamp
**Material: Stainless Steel AISI 316L. Operating temperature: -80°C to 538°C.**

| Description | Maximum bundling diameter (mm) | Minimum breaking tension (N) | QTY | Order No. |
|---|---|---|---|---|
| Cable ties, 4.6 x 200 mm | 50 | 778 | 100 | **2791400000** |
| Cable ties, 4.6 x 360 mm | 100 | 778 | 100 | **2791410000** |
| Cable ties, 4.6 x 520 mm | 150 | 778 | 100 | **2791420000** |
| Cable ties, 4.6 x 680 mm | 200 | 778 | 100 | **2791430000** |
| Cable ties, 4.6 x 840 mm | 250 | 778 | 100 | **2791440000** |
| Cable ties, 7.9 x 200 mm | 50 | 1112 | 100 | **2791450000** |
| Cable ties, 7.9 x 360 mm | 100 | 1112 | 100 | **2791460000** |
| Cable ties, 7.9 x 680 mm | 150 | 1112 | 100 | **2791480000** |
| Cable ties, 7.9 x 840 mm | 200 | 1112 | 100 | **2791490000** |

### Polyester Coated stainless steel clamp
**Material: Stainless Steel AISI 316L. Operating temperature: -80°C to 538°C.**

| Description | Maximum bundling diameter (mm) | Minimum breaking tension (N) | QTY | Order No. |
|---|---|---|---|---|
| Cable ties, 4.6 x 259 mm | 50 | 445 | 100 | **1015250000** |
| Cable ties, 4.6 x 521 mm | 150 | 445 | 100 | **1015280000** |
| Cable ties, 4.6 x 681 mm | 200 | 445 | 100 | **1015290000** |
| Cable ties, 4.6 x 840 mm | 250 | 445 | 100 | **1015300000** |
| Cable ties, 7.9 x 201 mm | 50 | 1112 | 100 | **1015310000** |
| Cable ties, 7.9 x 362 mm | 100 | 1112 | 100 | **1015320000** |
| Cable ties, 7.9 x 681 mm | 150 | 1112 | 100 | **1015340000** |

### Tracker cable support

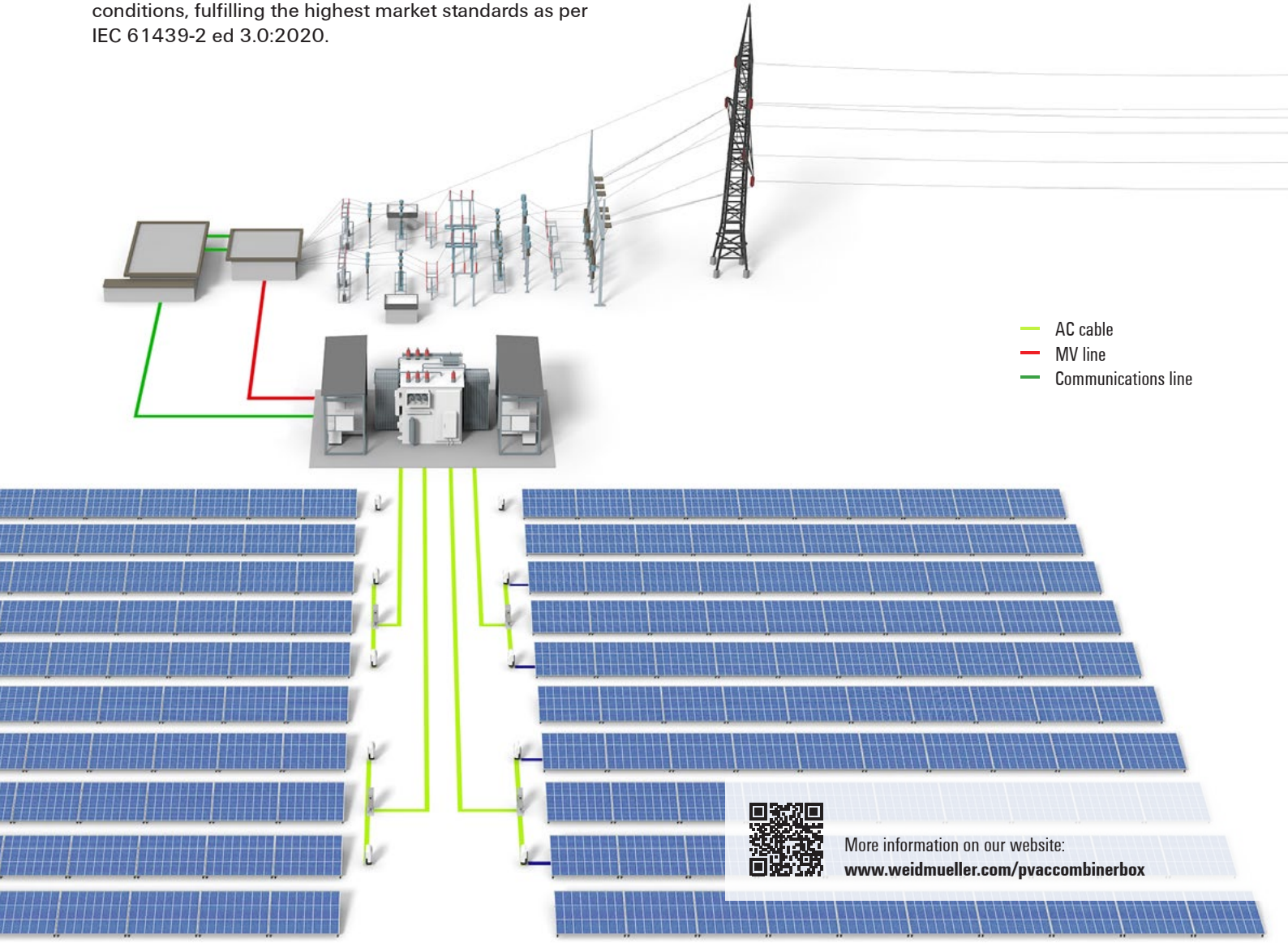
| Description | Support thickness | Coating | Tracker | Order No. | Max Op. Temp | Order No. |
|---|---|---|---|---|---|---|
| Tracker Cable Support MT-303-3 GEO | 3 mm | Geomet 800 B | NextTracker | 4000010681 | +45 °C | **8000157248** |
| Tracker Cable Support MT-303-3 ELEC | 3 mm | ZN CS3 | NextTracker | 4000010682 | +45 °C | **8000157249** |
| Tracker Cable Support MT-303-4 GEO | 4 mm | Geomet 800 B | NextTracker | 4000010683 | +45 °C | **8000157254** |
| Tracker Cable Support MT-303-4 ELEC | 4 mm | ZN CS3 | NextTracker | 4000010684 | +45 °C | **8000112715** |
| Tracker Cable Support MT-305 ELEC | 4 mm | ZN CS3 | Soltec - STI | 4000010685 | +45 °C | **8000157250** |

# 1.7 PV AC Combiner Boxes
## String Inverter Concept

### Bundle and protect PV string inverters in utility-scale systems reliably and economically

For solar installations in the PV industry, reliability and availability are paramount. In systems with string inverters, our AC combiner boxes provide optimal short-circuit and overvoltage protection. Furthermore, each string inverter can be easily isolated from the system to do maintenance tasks.

The new PV AC Combiner boxes have been designed for PV systems with string inverters in trackers or fix tilt systems.The product portfolio is suitable for inverters from 60 kW up to 200 kW and support voltages of 400 V, 690 V or 800 V AC. The combiner boxes allow to collect from 2 up to 6 string inverters in one single cabinet. They withstand ambient temperatures from -20 up to +50°C to operate in hardest climate conditions, fulfilling the highest market standards as per IEC 61439-2 ed 3.0:2020.




More information on our website:
**www.weidmueller.com/pvaccombinerbox**

## Key features & benefits

- **Optimised design –** By using advanced simulation 3D softwares, the product variants have been designed and tested to operate at the maximum mechanical and thermal effiency in the most compact housing size.
- **Technical data available online with 1-click –** We offer web tools to support the selection of the best model for the application. Technical data and certifications are available in the Weidmüller online catalogue.
- **Very resistant to short-circuits –** Designed to operate in solar power plants with high requirements of short cuircuit current.

### Technical data: PV AC Combiner Boxes

| | |
|---|---|
| **Application data** | |
| Installation location | Protected outdoors |
| Altitude above the sea level | up to 2000m (standard) higher altitude on demand |
| Operating ambient temperature | -20°C up to 50°C |
| **Electrical characteristics** | |
| Rated voltage | 400V AC - 690 V AC - 800 V AC |
| Number of inputs (inverters) | from 2 up to 6 |
| Rated current per Input (Inc) | 85 A up to 200 A |
| Rated frequency (Hz) | 50Hz |
| Short circuit strenght | 120kA |
| Fuse link factir form | NH-00 / NH-01 |
| Fuse link rating | 85 A up to 250 A |
| Number of outputs | 1 |
| Protection class | Class II |
| Overvoltage protection | Type II or Type I+II |
| Earthing system | TN-S / TN-C |
| **Enclosure** | |
| Enclosure material | Glass Fiber Reinforced Polyester |
| Enclosure IP rating | IP65 |
| Enclosure fixing system | Wall mounted or pedestal |
| Form factor | Cabinet with hinged door |
| Polycarbonate protection cover | Yes |
| **Inputs** | |
| Input cable | 4x70mm$^2$ or 4x95mm$^2$ |
| Input cable gland | M50 |
| **Outputs** | |
| Output cable | 1 x 240mm$^2$ |
| Output cable gland | M40 |
| **Others** | |
| Main switch disconnector | Yes (optional) |
| **Standards** | |
| Compliant standards | IEC 61439-2 ED 3 |

### Ordering data: PV AC Combiner Boxes

| Type | Inputs | Outputs | Rated voltage | Fuse-link rated current | Monitoring | Type of enclosure | Enclosure size | Qty. | Order No. |
|---|---|---|---|---|---|---|---|---|---|
| PV 40601S2V1C0A1ES | 6 | 1 | 400 V AC | 100 A | No | Landscape | 850 x 1000 x 350 mm | 1 | **8000069105** |
| PV 40301S2V1C2A1ES | 3 | 1 | 400 V AC | 160 A | No | Portrait | 1000 x 800 x 300 mm | 1 | **8000069106** |
| PV 40401S2V1C1A1ES | 4 | 1 | 400 V AC | 125 A | No | Portrait | 1000 x 800 x 300 mm | 1 | **8000069107** |
| PV 40401S2V3C0A0ES | 4 | 1 | 690 V AC | 100 A | No | Portrait | 800 x 600 x 300 mm | 1 | **8000069108** |
| PV 40201S2V3C1A0ES | 2 | 1 | 690 V AC | 125 A | No | Portrait | 800 x 600 x 300 mm | 1 | **8000069109** |
| PV 40201S2V4C0A0ES | 2 | 1 | 800 V AC | 100 A | No | Portrait | 800 x 600 x 300 mm | 1 | **8000069110** |
| PV 40201S2V4C2A0ES | 2 | 1 | 800 V AC | 160 A | No | Portrait | 800 x 600 x 300 mm | 1 | **8000069111** |

# 1.8 PV AC SWITCH Boxes

## Essential Protection for Utility-Scale Solar Inverters

### Role of AC Switch Boxes in Solar Installations

AC Switch Boxes play a critical role in utility-scale solar photovoltaic (PV) systems, ensuring both operational efficiency and safety. Specifically designed for use with utility-scale string inverters, these boxes provide a reliable means of isolating the AC output from the inverter. This isolation is essential during maintenance, emergency shutdowns, or grid disconnections, enabling operators to perform tasks without risking damage to the system or electrical hazards. By enabling safe and efficient AC disconnection, AC Switch Boxes help protect both the equipment and the personnel working on the system. Their functionality is key to ensuring that utility-scale PV systems operate smoothly, with minimal downtime, and in compliance with stringent safety standards.


### Key features & benefits

- **Reliability and safety features –** Integrated load-break switches or circuit breakers capable of handling high voltage and current, ensuring compliance with electrical safety standards and enhancing system flexibility.
- **Durable and weather-resistant design –** Housed in rugged enclosures with IP-rated protection, these switch boxes are built to endure harsh environmental conditions, making them ideal for outdoor use.
- **Enhancing maintenance and grid stability –** Providing a secure and centralized AC disconnection point, these boxes streamline maintenance, minimize downtime, and contribute to grid stability and operational efficiency in large solar projects.

| Type | Rated Voltage | Rated Current | # of poles | Compatible Inverters | Type of enclosure | Enclosure Size (mm) | Max Oper. Temp | Order No. |
|---|---|---|---|---|---|---|---|---|
| PV 403SXV4NHXXC5S01VXA0PWW | 800 V AC | 315 A AC | 3 | Huawei SUN2000 175 KTL-H0<br>Huawei SUN2000 185 KTL-INH0<br>Huawei SUN2000 185 KTL-INH1<br>Huawei SUN2000 190 KTL<br>Huawei SUN2000 196 KTL-H0<br>Huawei SUN2000 200 kTL -H2<br>Huawei SUN2000 215 kTL – H0<br>SunGrow SG 125CX<br>SunGrow SG 250HX | Portrait | 747 x 536 x 300 mm | 45°C | **8000145928** |
| PV 403SXV4NHXXC6S01VXA0PWW | 800 V AC | 400 A AC | 3 | Huawei SUN2000 250 KTL<br>Huawei SUN2000 280 KTL<br>Huawei SUN2000 300 KTL<br>Huawei SUN2000 330 KTL<br>SunGrow SG 285HX<br>SunGrow SG 320HX<br>SunGrow SG 333HX<br>SunGrow SG 350HX | Portrait | 847 x 636 x 300 mm | 45°C | **8000145929** |

# 2.1 PV String Monitoring System
## Monitoring solutions

### Modular PV string monitoring system for up to 32 strings

In ground-mounted photovoltaic systems, the electrical parameters of the PV strings must be constantly monitored. This is the only way owners and operators can maintain the performance and yield of their systems in the long term. The new PV String Monitoring System is integrated into the DC combiner boxes of plants with central inverters. It is designed to monitor the current and voltage of the individual strings as well as the current SPD and breaker status in the combiner box. Due to its modular design, the system can monitor up to 32 strings and measure up to 50 A per string. It is powered by plant current, can communicate wirelessly, and has low heat emission. All versions of the system can be powered either by 1500V DC or 24V DC, regardless of the selected communication method. Additionally, fiber optic communication options are available alongside the standard configurations.

**Compact and powerful**
It can monitor up to 32 strings and measure up to 50 A per string.

**Wireless communication capability**
The system can transmit data either via RS-485 cable or wirelessly to the SCADA system.

**Modular design**
It allows monitoring of up to 3-string inputs as well as high-power and bifacial solar panels.

### Key features & benefits

- PV String Monitoring System (SMS) allows to control & monitor major string parameters, enhancing solar production of a solar plant
- Monitoring of major combiner box variables (string current & voltage, switch & SPD status, temperature, etc.)
- Monitor up to 32 strings (single, double or triple)
- String current monitoring up to 50 A for new high-power and bifacial solar panels
- Voltage string monitoring up to 1500 V (also suitable for 1000 V PV solar systems)
- Flexible power supply: Can be powered by 1500V DC or 24V DC
- Hall effect sensor monitoring with low power/heat dissipation, ensuring long-term performance of PV DC Combiner Box components
- 99% measurement accuracy for all monitored variables
- Multiple communication options: RS-485, fiber optic, and optional wireless LoRaWAN® (for complete PV DC combiner box solutions only)

## Technical data: PV String Monitoring System

| | |
|---|---|
| **Application data** | |
| Installation location | Protected outdoors |
| Altitude above the sea level | up to 2000m (standard) higher altitude on demand |
| Operating ambient temperature | -20°C up to 70°C |
| **Electrical characteristics** | |
| Operating voltage | 1000V DC to 1500V DC |
| Voltage supply | from 200V up to 1500V |
| Number of inputs | from 8 up to 32 |
| Available modules | 8 channels and 12 channels |
| String Current measurement range | up to 50 A |
| Measurement accuracy | 1% |
| Power supply | integrated DC/DC converter |
| Measurement technology | Hall effect sensors |
| Number of digital inputs | 2 |
| **Communications** | |
| Communication technology | RS-485, Optic Fibre or wireless (LoRAWAN) |
| Communication protocol | Modbus RTU / LoRAWAN |
| Surge protection communication port | Yes |
| Overcurrent protection | Yes |
| BaudRate | 19200 bps (default) |
| Modbus timeout | 1 second |
| Measurement variables | Voltage, current, temperature, SPD status, switch isolator status and auxiliary alarms |
| **Standards** | |
| Standards | EN 61326-1:2013<br>EN 62311:2020<br>EN 62109-1:2010 |

## Ordering data: PV String Monitoring System

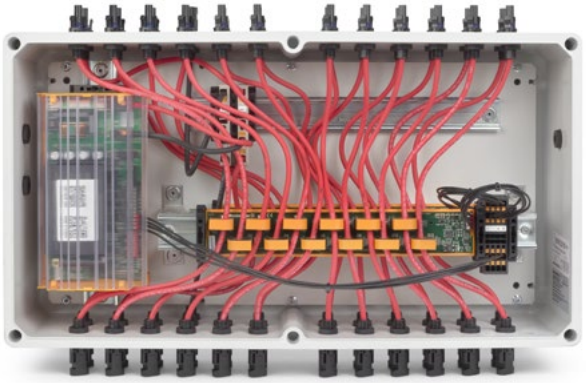
| Type | Type of unit | Operating voltage | Communication type | Number of monitored channels | Max current/ channel | Measurement technology | Number of digital inputs | Qty. | Order No. |
|---|---|---|---|---|---|---|---|---|---|
| SOLAR SMS MASTER | Master – main board | <1500 V DC | RS-485 / Modbus RTU | Controls up to 32 channels | - | N/A | 2 | 1 | **4000002958** |
| SOLAR SMS SLAVE 8IN25A | Slave – current sensor board | – | RS-485 / Modbus RTU | 8 inputs | 25 A | Hall effect | – | 1 | **4000002959** |
| SOLAR SMS SLAVE 12IN25A | Slave – current sensor board | – | RS-485 / Modbus RTU | 12 inputs | 25 A | Hall effect | – | 1 | **4000002961** |
| SOLAR SMS SLAVE 8IN50A | Slave – current sensor board | – | RS-485 / Modbus RTU | 8 inputs | 50 A | Hall effect | – | 1 | **4000003982** |
| SOLAR SMS SLAVE 12IN50A | Slave – current sensor board | – | RS-485 / Modbus RTU | 12 inputs | 50 A | Hall effect | – | 1 | **4000003983** |
| SOLAR SMS MASTER OPTIC FIBRE PRO | Master – main board | <1500 V DC | Fibre Optic/Modbus RTU | Controls up to 32 Channels | – | N/A | 2 | 1 | **4000010509** |
| SOLAR SMS MASTER 24VDC PRO | Master – main board | 24 Vdc | RS-485/Modbus RTU | Controls up to 32 Channels | – | N/A | 2 | 1 | **4000010651** |
| SOLAR SMS MASTER LORAWAN PRO | Master – main board | <1500 V DC | LoRa/LoRaWAN | Controls up to 32 Channels | – | N/A | 2 | 1 | **4000010652** |
| SOLAR SMS MASTER LORAWAN 24VDC PRO | Master – main board | 24 Vdc | LoRa/LoRaWAN | Controls up to 32 Channels | – | N/A | 2 | 1 | **4000010653** |

# 2.2 PV Retrofit Boxes with LoRaWAN® Communication

## Smart monitoring solutions for existing PV power plants

### Upgrade Monitoring without Major Modifications

Weidmüller's PV Retrofit Boxes offer a smart solution to enhance string-level data acquisition in existing photovoltaic (PV) power plants without the need for expensive infrastructure changes or major system overhauls. These retrofit boxes are designed to integrate seamlessly with older PV systems, enabling modern, real-time monitoring and performance optimization without disrupting ongoing operations. By retrofitting older systems with Weidmüller's advanced monitoring solutions, operators can gain valuable insights into the performance of individual strings, detect faults more effectively, and improve overall system efficiency – while avoiding the high costs and complexities of a full system upgrade.



### Key features & benefits

- **Expertise in PV communication –** Built on Weidmüller's extensive experience in both photovoltaic and industrial communication technologies, these retrofit boxes offer reliable, scalable solutions for improving monitoring and performance.
- **Seamless wireless data collection with LoRaWAN® –** LoRaWAN® technology ensures efficient data collection from PV strings, even from non-monitored combiner boxes, minimizing installation complexity and eliminating the need for extensive cabling.
- **Simplified deployment & lower maintenance costs –** By reducing the need for additional communication cabling, PV Retrofit Boxes streamline installation and lower long-term maintenance costs while improving fault detection, asset management, and system analytics.
- **Centralized data management with u-control –** The u-control data logger aggregates data via Modbus TCP, providing seamless integration with SCADA systems and offering advanced analytics for optimized plant performance.
- **A smart, future-ready upgrade –** Designed for long-term performance, Weidmüller's PV Retrofit Boxes are cost-effective and scalable, making them a smart investment for enhancing the efficiency and reliability of your PV plant.

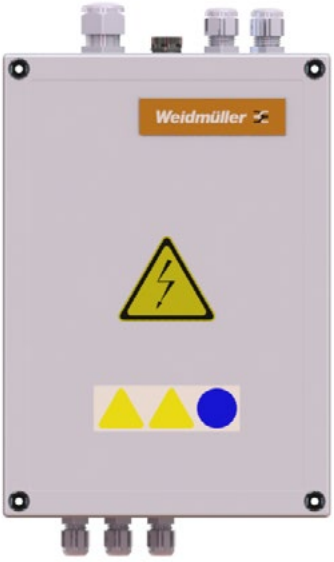
| Description | Inputs | Max. Current Measurement | Cable input (*) | Enclosure Size | Max Op. Temp | Order No. |
|---|---|---|---|---|---|---|
| PV 208SXFXCXXVX00TA3PA15LWW | 8 | 23 A | CG | 558 x 302 x 210 mm | +45ºC | **8000157248** |
| PV 208SXFXCXXVX01TA3PA15LWW | 8 | 23 A | WM4 C | 558 x 302 x 210 mm | +45ºC | **8000157249** |
| PV 212SXFXCXXVX00TA3PA15LWW | 12 | 19 A | CG | 558 x 302 x 210 mm | +45ºC | **8000157254** |
| PV 212SXFXCXXVX01TA3PA15LWW | 12 | 25 A | WM4 C | 558 x 302 x 210 mm | +45ºC | **8000112715** |
| PV 216SXFXCXXVX00TA3PA15LWW | 16 | 16 A | CG | 558 x 302 x 210 mm | +45ºC | **8000157250** |
| PV 216SXFXCXXVX01TA3PA15LWW | 16 | 16 A | WM4 C | 558 x 302 x 210 mm | +45ºC | **8000112718** |
| PV 224SXFXCXXVX00TA3PA15LWW | 24 | 13 A | CG | 558 x 302 x 210 mm | +45ºC | **8000157251** |
| PV 224SXFXCXXVX01TA3PA15LWW | 24 | 13 A | WM4 C | 558 x 302 x 210 mm | +45ºC | **8000122018** |
| PV 232SXFXCXXVX01TA3PA15LWW | 32 | 11 A | WM4 C | 558 x 302 x 210 mm | +45ºC | **8000157252** |
| PV 232SXFXCXXVX00TA3PA15LWW | 32 | 11 A | CG | 558 x 302 x 210 mm | +45ºC | **8000157253** |

# 2.3 Advanced DC Harnessing

## Smart string monitoring for central inverter systems

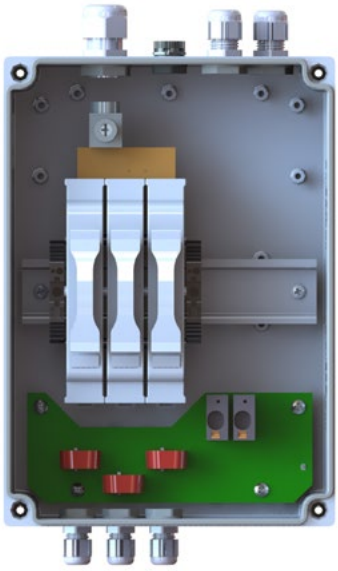
### The Challenge

In large-scale solar farms utilizing central inverters, DC harnesses are crucial for collecting energy from multiple PV strings. However, the absence of real-time monitoring at the string level can lead to undetected issues, such as blown fuses or cable degradation. These problems, if left unchecked, can cause significant energy losses, system inefficiencies, and potentially costly repairs. Without visibility into the performance of each individual string, operators may face unanticipated downtime and increased operational costs. Ensuring early detection and resolution of such issues is vital for maintaining system performance and maximizing energy yield in these large-scale installations.




### Key features & benefits

- **String-level monitoring** – Provides detailed insights into individual string performance, detecting issues such as fuse failures to prevent energy losses.
- **LoRaWAN wireless communication –** Ensures secure, long-range data transmission without the need for complex wiring, simplifying the installation process.
- **Faster fault detection –** Minimizes downtime by enabling rapid identification of issues, ensuring that the system operates at peak efficiency.
- **Easy integration –** Fully compatible with both new and retrofitted harness systems, making it a versatile solution for a range of PV installations.
- **Improved O&M efficiency** – Supports predictive maintenance, helping to reduce the need for site visits and enhancing overall operational efficiency.



# 2.4 PV Communication Boxes
## Plant Communication

### Connecting photovoltaic power plants through reliable and safe industrial communications

We combine extensive experience with photovoltaic projects and industrial communication to create a complete portfolio of PV communication cabinets for PV power plants.

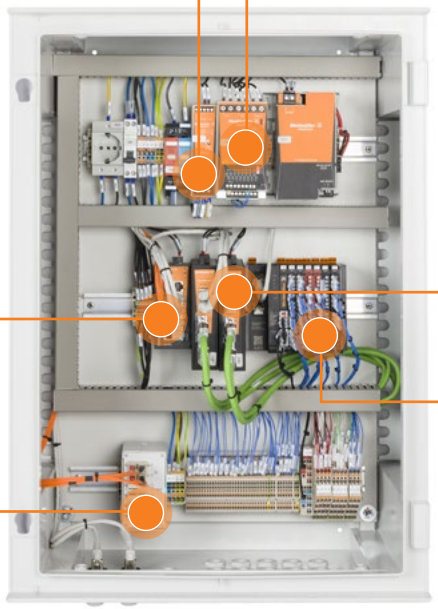
Our portfolio offers certified and ready-to-use cabinets for PV power plants that meet the specific environmental, electrical and data transmission requirements according to customer specifications. Weidmüller can customise the communication infrastructure requirements of the PV power plant, enabling perfect data collection for the plant owner, ultimately improving the long-term investment.

### Key features & benefits

- Safe function due to optimal protection
- Maximum availability due to integrated energy backup
- Highly reliable industry standard with built-in communication protocols
- High cost-effectiveness through modular designs based on standard references
- TCP/RS cards for RS485 field buses
- IP certification for outdoor or indoor use

**Power supply**
24 VDC @ 3 ADC

**Battery & UPS**
Battery 24 VDC @ 3.4 Ah
UPS 24 VDC @ 20 A/10 A



**RJ-45 Switch & Fibre-optic Converter**
IE managed switch 6x RJ-45 ports
2x SC Multi-mode ports

**2 x Serial / Ethernet converter**
Serial / Ethernet converter
2x RJ45
2x DB9 for RS-485

**Fibre-optic patch panel box**
6x SC Multi-mode fibre-optic ports

**u-control with multiple I/O**
u-control controller
16x Digital inputs
4x Analogue inputs
8 GB data storage

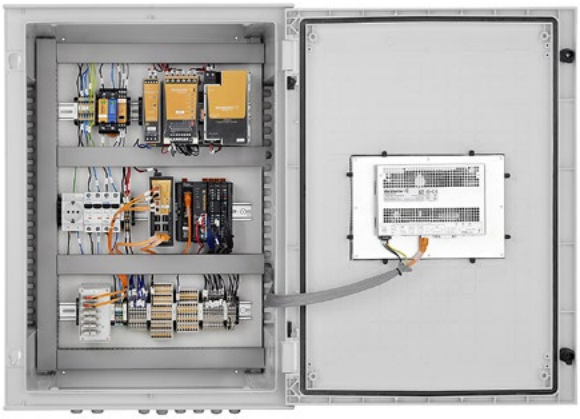
**Other designs on request**
Simply contact us and describe the application and the requirements for the PV Communication Box. We will then provide you with a custom-fit design and quote:
**www.weidmueller.com/pvcommunicationbox**

# 2.5 PV Weather Boxes
## Plant Communication

### Increase your energy production, monitor your system output

To ensure optimal performance of photovoltaics systems, continuous and precise monitoring is essential. Environmental factors directly influence the efficiency of solar modules, which is why real-time data collection is crucial to maximising energy output and identifying potential system efficiencies early on.

Our PV weather stations provide reliable and accurate measurements of all critical meteorological parameters, including ambient and module temperature, solar radiation (global horizontal and module field level). Wind speed and direction, precipitation level, relative humidity and air pressure. These high-precision sensors provide a comprehensive analysis of weather conditions that affect PV performance, enabling proactive system adjustments and performance optimisation. Our weather stations are designed to meet customer-specific requirements. They have certified enclosures that can withstand even harsh environmental conditions. Flexible integration with SCADA systems and various data acquisition platforms is achieved using industry-standard communication protocols such as Modbus RTU and TCP. Advanced data transfer options, including wireless connectivity, guarantee seamless remote monitoring.



**We use the best-known brands of weather sensors**
The PV weather stations from Weidmüller integrate the best-known weather sensors on the market. The systems are extremely robust and protected against all weather conditions.

Hukseflux Thermal Sensors · KIPP & ZONEN · EVEN SENSOR SOLUTIONS · IMT TECHNOLOGY · LAMBRECHT meteo AN aem BRAND · Lufft

### Key features & benefits

- Reliable function due to optimal protection
- Maximum availability due to integrated power backup
- High cost-effectiveness through modular designs based on standard references
- IP certification for outdoor or indoor use
- Connection of the required weather sensors via modular I/O cards
- Robust construction and protection against all weather conditions
- Sensors are included in the scope of delivery

## PV Weather Boxes
### Plant Communication

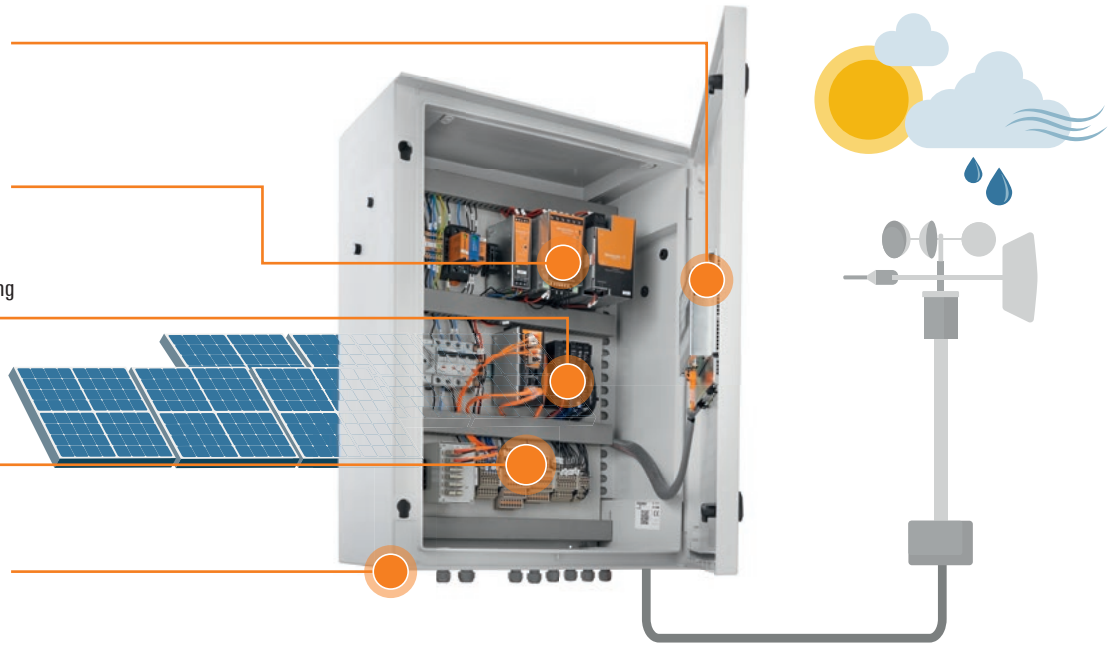
Robust and durable capacitive multi-touch panel monitor for data visualisation and HMI

Safe switching, protection and integrated energy back-up

Modular I/O cards for connecting sensors to manage digital/ analogue signals

Modular designs based on standard references

IP degree certified for outdoor or indoor solutions



**PREMIUM Versions On Grid**

| Specification | 8000094711<br>PV WC1I1RXPXG1SXM2S6WW | 8000157322<br>PV WC1IXRXPXG1SXM2S6WW |
|---|---|---|
| Controller Web-based | ● | |
| IE Network Managed Switch 6x RJ45 / 2x SC Multi-mode | ● | ● |
| Serial/Ethernet converter and Modbus TCP/RTU gateway | ● | ● |
| UPS control unit 24V 20 A/10 A | ● | ● |
| Battery 24 V 3,4 AH | ● | ● |
| AC Single-phase Type I SPD | | |
| Ethernet Data Interface SPD | ● | ● |
| RS-485 Data Interface SPD | ● | ● |
| Enclosure Shape | Portrait | Portrait |
| Enclosure Size (mm) | 747 x 536 x 300 | 747 x 536 x 300 |
| IP Degree | IP66 | IP66 |
| Operating Ambient Temperature | - 20 ºC .. +50°C | - 20 ºC .. +50°C |

**Premium Version Hybrid On Grid - Off Grid**

| Specification | 8000144152<br>PV WC1IXRXPXG1SXM4S6WW |
|---|---|
| Controller Web-based | ● |
| Serial/Ethernet converter and Modbus TCP/RTU gateway | |
| Battery Regulator (*) | ● |
| AC Single-phase Type I SPD | |
| Ethernet Data Interface SPD | ● |
| RS-485 Data Interface SPD | |
| Enclosure Shape | Portrait |
| Enclosure Size (mm) | 847 x 636 x 300 |
| IP Degree | IP66 |
| Operating Ambient Temperature | - 20 ºC .. +50°C |

- On-grid/off-grid behaviour with battery and PV panel support (battery and PV panel not included).
- Battery solar charger is compatible with several common lead-based battery technologies such as AGM, Gel, OPzS, OPzV, traction batteries, lithium and other battery chemistries.
- Weather station autonomy of 60 hours (with a limitation of 5 sensors connected) can be achieved with a standard battery of lithium 100AH and 100W PV panel (available PN 8000148396).
- Different battery capacity and PV panels configuration are possible to achieve longer battery autonomy (with PV panel support).

## LITE Versions

| Specification | 8000113427<br>PV WC1IXRXPXG1SXMXS6WW | 8000113428<br>PV WC1IXRXPXG2SXMXS6WW |
|---|---|---|
| Controller Web-based | ● | ● |
| Serial/Ethernet converter and Modbus TCP/RTU gateway | ● | |
| AC Single-phase Type I SPD | ● | ● |
| Ethernet Data Interface SPD | ● | ● |
| RS-485 Data Interface SPD | ● | ● |
| Enclosure Shape | Portrait | Portrait |
| Enclosure Size (mm) | 530 x 430 x 200 | 530 x 430 x 200 |
| IP Degree | IP66 | IP66 |
| Operating Ambient Temperature | - 20 ºC .. +50°C | - 20 ºC .. +50°C |

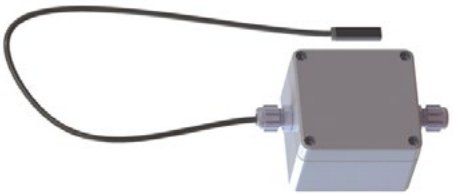
## Ordering data: PV Weather Boxes

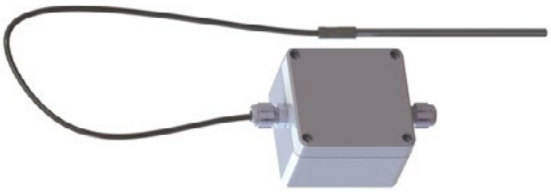
| Description | Type | Order No. |
|---|---|---|
| PYRANOMETER SMP10A KIPP-ZONEN | PYRANOMETER | 4000007576 |
| PYRANOMETER SR30-M2-D1-05 HUKSEFLUX | PYRANOMETER | 4000005453 |
| PYRANOMETER SPN1 DELTA-T | PYRANOMETER | 4000007575 |
| PYRANOMETER SMP12 KIPP-ZONEN | PYRANOMETER | 4000007577 |
| PYRANOMETER SUN-E 2ND STD LAMBRECHT | PYRANOMETER | 4000006021 |
| AMBIENT TEMPERATURE RK330-01ADA2500 RIKA | AMBIENT TEMPERATURE | 4000007572 |
| AMBIENT TEMPERATURE TAMBSI IMT-SOLAR | AMBIENT TEMPERATURE | 4000007659 |
| AMBIENT TEMP TAEXTRS485MB IMT-SOLAR | AMBIENT TEMPERATURE | 4000005459 |
| MODULE TEMPERATURE RK220-01CEA25000 RIKA | MODULE TEMPERATURE | 4000007574 |
| MODULE TEMPERATURE TMODULSI IMT-SOLAR | MODULE TEMPERATURE | 4000007660 |
| MODULE TEMP TMRS485MB IMT-SOLAR | MODULE TEMPERATURE | 4000005452 |
| SOILING MONITOR DUSTIQ KIPP-ZONEN | SOLAR IRRADIANCE/SOILING | 4000007578 |
| SOLAR IRRADIANCE SIRS485TC3TMB IMT-SOLAR | SOLAR IRRADIANCE/SOILING | 4000007661 |
| SOLAR IRRADIANCE SIRS485TCTMB IMT-SOLAR | SOLAR IRRADIANCE/SOILING | 4000007580 |
| TOTAL UV RADIOMETER SUV5 KIPP-ZONEN | UV RADIOMETER | 4000007582 |
| COMBINED WIND SENSOR ARCO LAMBRECHT | WIND | 4000007581 |
| RAIN GAUGE RAIN-E-ONE LAMBRECHT | RAIN GAUGE | 4000005450 |
| AIO WEATHER STATION WS601-UMB LUFFT | AIO WEATHER STATION | 4000005458 |
| CABLE 10M-8WIRE SMP/CVF/SUV KIPP-ZONEN | CABLE | 4000007771 |
| CABLE 25M-8WIRE SMP/CVF/SUV KIPP-ZONEN | CABLE | 4000007772 |
| CABLE 50M-8WIRE SMP/CVF/SUV KIPP-ZONEN | CABLE | 4000007773 |
| CABLE 10M-8WIRE DUSTIQ KIPP-ZONEN | CABLE | 4000007774 |
| CABLE 25M-8WIRE DUSTIQ KIPP-ZONEN | CABLE | 4000007775 |
| CABLE 50M-8WIRE DUSTIQ KIPP-ZONEN | CABLE | 4000005457 |
| CABLE 10M-8WIRE CLIMASENSOR-US THIES | CABLE | 4000007588 |
| CABLE 5M-5WIRE SR30-M2-D1-05 HUKSEFLUX | CABLE | 4000007589 |
| CABLE 10M-5WIRE SR30-M2-D1-05 HUKSEFLUX | CABLE | 4000007590 |
| CABLE 20M-5WIRE SR30-M2-D1-05 HUKSEFLUX | CABLE | 4000007571 |
| CABLE 12M-4WIRE LAMBRECHT | CABLE | 4000007591 |
| TELESCOPIC MAST AL 3M LAMBRECHT | FIXATION ELEMENTS | 4000007592 |
| TRIPOD 3-LEG BASE AL LAMBRECHT | FIXATION ELEMENTS | 4000007593 |
| TRAVERSE SET AL PYRANOMETER LAMBRECHT | FIXATION ELEMENTS | 4000007594 |
| POLE BASE SS RAIN-E LAMBRECHT | FIXATION ELEMENTS | 4000007595 |
| BRACKET LARGE PYRANOMETER LAMBRECHT | FIXATION ELEMENTS | 4000007675 |
| POST FIXING PLM75 NSYSFP500 SE | FIXATION ELEMENTS | 4000007719 |
| LIGHTNING ROD LAMBRECHT | FIXATION ELEMENTS | 4000005454 |
| VENTILATION UNIT CVF4 KIPP-ZONEN | ACCESSORIES | 4000005455 |
| GLARE SCREEN KIT KIPP-ZONEN | ACCESSORIES | 4000007579 |
| SOLAR RADIATION SHIELD TAMBSI IMT-SOLAR | ACCESSORIES | 4000007573 |
| CABLE EXTENSION BOX JB-01 IMT-SOLAR | ACCESSORIES | 4000007776 |

# 2.6 MeteoSense
## Precision Monitoring for Solar Power Optimization

### The Importance of Environmental Monitoring in Solar Plants

In utility-scale solar plants, environmental monitoring plays a crucial role in optimizing efficiency and preventing energy losses. Weidmüller's MeteoSense, a specialized sensor family, provides real-time data on ambient and module temperatures, allowing operators to make informed decisions. These insights not only help in maximizing energy production but also extend the lifespan of the equipment by ensuring the system operates within optimal conditions. With MeteoSense, operators can adapt to environmental changes, thereby improving the performance of photovoltaic (PV) installations and increasing overall system reliability.





### Key features & benefits

- **Real-time temperature measurements –** Enhances Maximum Power Point Tracking (MPPT) efficiency and enables predictive maintenance by continuously monitoring ambient and module temperatures.
- **Detects hot spots –** Identifies potential thermal issues, mitigating risks and ensuring safe, reliable operation of the system.
- **High-precision performance –** Delivers accurate temperature readings even in harsh industrial and outdoor environments, making it ideal for utility-scale solar applications.
- **Precision leads to power –** With MeteoSense, every degree counts in optimizing the energy production of the solar plant.
- **MeteoSense Sensor Variants:**
  **ATS PT100 RS485 –** Ambient temperature monitoring for weather forecasting and system optimization.
  **MTS PT100 RS485 –** PV module temperature monitoring to prevent thermal degradation and enhance energy yield.

| Description | Application | Recommended Mounting | Max Altitude (m) | Protection | Order No. |
|---|---|---|---|---|---|
| MeteoSense MTS PT100 RS485 | PV module temperature measurement | Rear side of the module | 2000 | IEC 62208 | **8000161015** |
| MeteoSense ATS PT100 RS485 | Ambient temperature in PV fields | Ventilated radiation shield | 2000 | IEC 62208 | **8000161014** |

# 3.0 PV Components for an effective running system
## Plant Equipment

## PV Connectors

### PV-Stick with SNAP IN connection
No crimping tool, no lost time, no extra effort - the unique PV-Stick uses tried-and-tested SNAP IN technology. The fastest, easiest and safest way to wire up photovoltaic plants – literally in no time.

### WM4 C with crimp connection
Outstanding quality and ease of handling due to modern crimp connection. The WM4 C is suitable for automated assembly as well as for manual installation in the field.

**PV-Stick - Photovoltaic connectors - SNAP IN connection**

| Type | Rated voltage (IEC) Rated current | Connection cross-section min. / max. | Continuous operating temperature min. / max. | Qty. | Order No. |
|---|---|---|---|---|---|
| **Socket** | | | | | |
| PV-STICK+ Qty.10 | 1500 V DC / 30 A | 4 / 6 mm² | -40 °C...+85 °C | 10 | **1303450000** |
| PV-STICK+ Qty.50 | 1500 V DC / 30 A | 4 / 6 mm² | -40 °C...+85 °C | 50 | **1303460000** |
| PV-STICK+ Qty.200 | 1500 V DC / 30 A | 4 / 6 mm² | -40 °C...+85 °C | 200 | **1303470000** |
| **Pin** | | | | | |
| PV-STICK- Qty.10 | 1500 V DC / 30 A | 4 / 6 mm² | -40 °C...+85 °C | 10 | **1303490000** |
| PV-STICK- Qty.50 | 1500 V DC / 30 A | 4 / 6 mm² | -40 °C...+85 °C | 50 | **1303500000** |
| PV-STICK- Qty.200 | 1500 V DC / 30 A | 4 / 6 mm² | -40 °C...+85 °C | 200 | **1303510000** |
| **PV-Stick Set** | | | | | |
| PV-STICK SET | 1500 V DC / 30 A | 4 / 6 mm² | -40 °C...+85 °C | 1 | **1422030000** |

**WM4 C - Crimp connectors**

| Type | Rated voltage / current | Conductor cross-section | Connnection | Qty. | Order No. |
|---|---|---|---|---|---|
| **Box connectors - housing** | | | | | |
| SFGH BOX WM4 C BT | 1500 V DC (IEC) / 35 A | 4 / 6 mm² | M 12 housing cable gland | 100 | **1530640000** |
| BUGH BOX WM4 C BT | 1500 V DC (IEC) / 35 A | 4 / 6 mm² | M 12 housing cable gland | 100 | **1530630000** |
| **Field connector housing** | | | | | |
| SFGH WM4 C BT | 1500 V DC (IEC) / 35 A | 4 / 6 mm² | M 16 housing cable gland | 100 | **1530700000** |
| BUGH WM4 C BT | 1500 V DC (IEC) / 35 A | 4 / 6 mm² | M 16 housing cable gland | 100 | **1530690000** |
| **Crimp contacts** | | | | | |
| BUKO WM4 C BT | Socket contact | 4 and 6 mm² cables | Loose goods for crimping tools | 100 | **1530670000** |
| BUKO WM4 C RL | Socket contact | 4 and 6 mm² cables | Reel packaged goods for automated crimping | 1500 | **1530770000** |
| SFKO WM4 C BT | Pin contact | 4 and 6 mm² cables | Loose goods for crimping tools | 100 | **1530680000** |
| SFKO WM4 C RL | Pin contact | 4 and 6 mm² cables | Reel packaged goods for automated crimping | 1500 | **1530780000** |

**Accessories**

| Type | Description | Qty. | Order No. |
|---|---|---|---|
| SAFETY-CLIP WM4 Qty.10 | Locking clip for PV-Stick prevents opening without tools | 10 | **1328150000** |
| VSSO WM4 C | Sealing cap for protecting PV connectors that are not mated (all connectors) | 100 | **1254870000** |

**PV AC output connectors (suitable for Huawei / Sungrow / SMA)**

| Type | Description | Rated voltage / current | Clamping range min. / max. | Qty. | Order No. |
|---|---|---|---|---|---|
| PV BSS VAPM 5P M | Box coupling 5 pole | 600 V AC / 60 A | 0.2mm²- 16mm² | 1 | **2920100000** |
| PV PS VAPM 5P F | Field connector 5 pole | 600 V AC / 60 A | 0.2mm²- 16mm² | 1 | **2920110000** |
| PV BSS DL | Cover | - | - | 1 | **2920120000** |
| PV PS ULTA | Lock | - | - | 1 | **2920130000** |

# PV Tools

## Reliable photovoltaic installation tools

When installing a photovoltaic system, the installer depends on reliable and smooth-running tools. Weidmüller offers a range of professional tools for this purpose.

### Stripping tools

| Type | Cutting | Stripping | Qty. | Order No. |
|---|---|---|---|---|
| MULTI-STRIPAX PV | 2,5, 4.0 and 6 mm² | 2,5, 4.0 and 6 mm² | 1 | 1190490000 |

### Crimping tools

| Type | Crimping | Description | Qty. | Order No. |
|---|---|---|---|---|
| CTF PV WM4 | 2,5...6 mm² | Crimping tool for Weidmüller photovoltaic connector WM4 C and identical connectors | 1 | 1222870000 |

### Cutting tools

| Type | Maximum cutting performance | Copper finely stranded | Aluminium stranded | Qty. | Order No. |
|---|---|---|---|---|---|
| KT 12 | 25 mm² | 35 mm² | 16 mm² | 1 | 9002660000 |

### Multitool

| Type | Description | Qty. | Order No. |
|---|---|---|---|
| MULTITOOL PV SET | Screw PV-Stick; Check cable diameter for PV-Stick; Put on smart lock for PV-Stick; Open cover for PV Next; Replace SPD cartridge for PV Next; Operate PUSH IN connection; Open control cabinet | 1 | 2771530000 |

### PV Tool bag

| Type | Description | Qty. | Order No. |
|---|---|---|---|
| PV TOOL STICK SET | Tool bag with belt; 30 pcs. PV-Stick + (crimpless PV connector); 30 pcs. PV-Stick - (crimpless PV connector); KT 8 cutting tool; SLICER cable knife; multi-stripax® PV; Multitool for PV sticks; 2 Mammut bags for carrying your PV sticks | 1 | 2936970000 |

# PV Fuses


## gPV cylindrical fuse cartridges

The gPV cylindrical fuse cartridges are designed to provide compact, safe and economical protection of photovoltaic modules. They provide protection against both overload and short circuit.

### gPV fuse cartridges silver-plated contacts for PV applications

| Type | Voltage / Current | Switching capacity | Qty. | Order No. |
|---|---|---|---|---|
| **Fuse 1500V GPV - 10x85** | | | | |
| FUSE WSFL 10X85 15A 1K5V GPV | 1500 V DC / 15 A | 50 kA | 1 | **4000002597** |
| FUSE WSFL 10X85 16A 1K5V GPV | 1500 V DC / 16 A | 50 kA | 1 | **4000002609** |
| FUSE WSFL 10X85 20A 1K5V GPV | 1500 V DC / 20 A | 50 kA | 1 | **4000002610** |
| FUSE WSFL 10X85 25A 1K5V GPV | 1500 V DC / 25 A | 50 kA | 1 | **4000002611** |
| FUSE WSFL 10X85 30A 1K5V GPV | 1500 V DC / 30 A | 50 kA | 1 | **4000005431** |
| FUSE WSFL 10X85 32A 1K5V GPV | 1500 V DC / 32 A | 50 kA | 1 | **4000002612** |
| FUSE WSFL 10X85 35A 1K5V GPV | 1500 V DC / 35 A | 50 kA | 1 | **4000010512** |
| **Fuse 1500V GPV - 22x58** | | | | |
| FUSE WSFL 22X58 30A 1k5V GPV | 1500 V DC / 30 A | 30 kA | 1 | **2873880000** |
| FUSE WSFL 22X58 35A 1k5V GPV | 1500 V DC / 35 A | 30 kA | 1 | **2865970000** |
| FUSE WSFL 22X58 40A 1k5V GPV | 1500 V DC / 40 A | 30 kA | 1 | **4000003732** |
| FUSE WSFL 22X58 50A 1k5V GPV | 1500 V DC / 50 A | 30 kA | 1 | **4000003733** |
| FUSE WSFL 22X58 65A 1k5V GPV | 1500 V DC / 65 A | 30 kA | 1 | **4000003734** |
| FUSE WSFL 22X58 70A 1k5V GPV | 1500 V DC / 70 A | 30 kA | 1 | **2873890000** |
| FUSE WSFL 22X58 75A 1k5V GPV | 1500 V DC / 75 A | 30 kA | 1 | **2870900000** |

### Fuseholder

| Type | Voltage / Current | Form factor | Qty. | Order No. |
|---|---|---|---|---|
| FUSEHOLDER WSFH 10X85 1K5V | 1500 V DC / 32 A | 10 x 85 mm | 10 | **4000002613** |
| FUSEHOLDER WSFH 10X85 1K5V LED | 1500 V DC / 35 A | 10 x 85 mm | 10 | **4000010511** |
| FUSEHOLDER WSFH 22X58 1K5V | 1500 V DC / 80 A | 22 x 58 mm | 6 | **4000003740** |

# Lightning and Surge Protection

## VARITECTOR PU PV for more safety

PV systems are directly exposed to environmental influences because they are always installed in exposed locations. Therefore the probability of lightning strikes and resulting overvoltage is high. The components of unprotected PV systems are again and again considerably damaged.

### VPU I+II / VPU II - lighting and surge protection for PV systems

| Type | Rated voltage / discharge current | Version | Network | Qty. | Order No. |
|---|---|---|---|---|---|
| **Requirements class: Type I+II** | | | | | |
| VPU PV I+II 3 1000 | 1000 V / 40 kA | without remote signalling contact | 2 horizontal pitches | 1 | **2530610000** |
| VPU PV I+II 3 R 1000 | 1000 V / 40 kA | with remote signalling contact | 2 horizontal pitches | 1 | **2530620000** |
| VPU PV I+II 3 1500 | 1500 V / 30 kA | without remote signalling contact | 3 horizontal pitches | 1 | **2530580000** |
| VPU PV I+II 3 R 1500 | 1500 V / 30 kA | with remote signalling contact | 3 horizontal pitches | 1 | **2530590000** |
| **Requirements class: Type II** | | | | | |
| VPU II 2 PV 600V DC | 600 V / 40 kA | without remote signalling contact | 2 horizontal pitches | 1 | **1351340000** |
| VPU II 2 R PV 600V DC | 600 V / 40 kA | with remote signalling contact | 2 horizontal pitches | 1 | **1351370000** |
| VPU PV II 3 1000 | 1100 V / 40 kA | without remote signalling contact | 3 horizontal pitches | 1 | **2530550000** |
| VPU PV II 3 R 1000 | 1100 V / 40 kA | with remote signalling contact | 3 horizontal pitches | 1 | **2530180000** |
| VPU PV II 3 1500 | 1500 V / 30 kA | without remote signalling contact | 3 horizontal pitches | 1 | **2530640000** |
| VPU PV II 3 R 1500 | 1500 V / 30 kA | with remote signalling contact | 3 horizontal pitches | 1 | **2530650000** |

### VPU AC I - lightning protection for PV systems

| Type | Continuous current / lightning impulse current ($I_{imp}$) | Version | Network | Qty. | Order No. |
|---|---|---|---|---|---|
| **Type I arrester - 275 V AC / 25 kA - S-line** | | | | | |
| VPU AC I 3+1 275/25 LCF S 2PE | 275 V AC / 25 kA | without remote signalling contact, leakage current free | TN-C-S, TN-S, TT | 1 | **2726760000** |
| VPU AC I 3+1 R 275/25 LCF S 2PE | 275 V AC / 25 kA | with remote signalling contact, leakage current free | TN-C-S, TN-S, TT | 1 | **2726770000** |

### VPU AC II - surge protection for PV systems

| Type | Continuous current / discharge current ($I_{max}$) | Version | Network | Qty. | Order No. |
|---|---|---|---|---|---|
| **Type II arrester - 300 V AC / 50 kA** | | | | | |
| VPU AC II 3+1 300/50 | 300 V AC / 50 kA | without remote signalling contact | TN-C-S, TN-S, TT | 1 | **2591080000** |
| VPU AC II 3+1 R 300/50 | 300 V AC / 50 kA | with remote signalling contact | TN-C-S, TN-S, TT | 1 | **2591090000** |

# 4.0 Tested quality

## Standard tests and services guaranteeing a long service life

### Trust in approved quality

Our laboratory is accredited according to international standards. It operates independently and is recognised by institutions, registration services, and other institutions and authorities. As a member of the CTDP program, Weidmüller is regularly audited by UL, especially about test methods, quality management and documentation.

All combiner boxes are tested according to IEC-61439-ed-2 and are constructed on the basis of the test results as well as assembled for the specific application. This ensures that each of the requirements of the target application is fully met.

**Your benefits at a glance**

- 5 years warranty
- Laboratory testing
- Comissioning Services
- On-Site Inspection

**Tested & proven**
Our PV boxes are designed and tested to withstand extreme climate fluctuations. See for yourself in our video straight from our lab.

# 5.0 Proven competence
## Reference projects around the globe

The best proof of the quality of our solutions is their worldwide use. More than 250,000 of our photovoltaic combiner boxes are installed in over 100 countries worldwide. They connect 120 million photovoltaic modules. Our reference project database provides an overview.

### Floating dynamic solar park
Dynamic solar islands

- Location: Andijk, Netherlands
- Performance: 22 MWp
- Start-up: 2021
- Solution: 21 PV Floating DC Combiner Boxes

### Suria Sungai Petani
PV Utility Park

- Location: Kuala Muda, Malaysia
- Performance: 116 MW
- Start-up: 2021
- Solution: 437 DC Combiner Boxes

### Droogfontein
PV Utility Park

- Location: South Africa
- Performance: 80 MWp
- Start-up: 2019
- Solution: 450 Combiner Boxes

### Sol do Sertão
PV Utility Park

- Location: Oliveira dos Brejinhos, Brazil
- Performance: 474 MWp
- Start-up: 2021
- Solution: 2,318 DC Combiner Boxes

Discover more reference projects on our website:
**www.weidmueller.com/pv-references**

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## Weidmüller – Your partner in Smart Industrial Connectivity

As experienced experts we support our customers and partners around the world with products, solutions and services in the industrial environment of power, signal and data. We are at home in their industries and markets and know the technological challenges of tomorrow. We are therefore continuously developing innovative, sustainable and useful solutions for their individual needs. Together we set standards in Smart Industrial Connectivity.





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