Implement successful long-term photovoltaic systems
With connectivity solutions tailored to your requirements
Long-term effectively running systems
Thanks to reliable solutions

Construct photovoltaic systems efficiently and operate them over the long-term economically and without downtime. We achieve this through reliable electrical connectivity and combiner boxes individually assembled for your application.

This combination enables your system to be quickly installed and cost-effectively maintained. Our monitoring systems give you maximum transparency of all system functions. We offer viable, complete solutions of the highest quality comprising connection technology, monitoring and communication, backed by years of experience in the project business.

Our solutions ensure that your systems run efficiently with consistent output – and for less than 1 percent of the total cost.

Put your trust in a reliable partner
We impress with expertise and experience

You know Weidmüller to be a renowned supplier of products and solutions for electrical connectivity, electronics and automation. As a traditional family-owned company we develop and produce key components for the industry. Our designs, products and processes have proven themselves over decades and are used all over the world.

We can also support you in the planning and installation of your photovoltaic systems thanks to our many years of experience and strong commitment. We develop and manufacture tailor-made connection and monitoring solutions, characterised by superb reliability, cost-efficiency and quality, all of which is confirmed by international approvals and country-specific as well as application-specific certificates.

As a customer you benefit from our many years of experience in the photovoltaics industry, our expertise, comprehensive range of services and our global presence. Our photovoltaic specialists accompany your projects in a responsible manner – from initial planning right through to the operation of your system.

With Weidmüller you can put your trust in one of the world’s most successful providers of communication and monitoring solutions for industrial photovoltaic systems.

Let’s connect.
Intelligently bundled and perfectly matched
The best connections for your photovoltaic system

When you buy cheaply, you often end up with higher costs in the long run. This is especially true for the components used in photovoltaic systems. They need to withstand high loads day in, day out, which is why the reliability of even the smallest components are crucially important for the efficiency of the overall system. For example, the premature wear of individual contacts can quickly lead to malfunctions or failures of the entire system, resulting in significant additional costs.

With Weidmüller combiner boxes you significantly reduce the risk of disruptions and failures. We bundle high-quality components to provide innovative solutions which can be individually adapted to your needs. This begins at the system planning stage, because at Weidmüller you get all connection components from a single source.

Once your system is up and running, you benefit from a high level of reliability and access to important information about the status and functioning of your system. This enables you to achieve maximum availability for your systems and carry out maintenance tasks in a targeted and cost-effective manner.

Customer-specific design according to your requirements
Our international project work has made us very familiar with the requirements of the global market. We are well versed in all the standards and guidelines and address each situation according to specific local requirements.

From planning to delivery: you receive comprehensive advice and direct support around the globe.

National standards and requirements for photovoltaic systems can vary enormously. This is why our combiner boxes were designed from the outset by our application engineers to comply with country-specific standards.

Based on the requirements profile, a variety of components can be easily integrated into the design. We attach great importance to efficiency and precision. Everything is implemented with the aim of meeting the highest standards of quality.
In line with your specific needs:
Smart solutions for all levels in the photovoltaic park

We develop and produce the appropriate combiner boxes for all levels of your photovoltaic system. All functional areas, from transmission and fuse protection to monitoring, are matched according to the specific application and covered with our quality products. This provides you with a consistently reliable infrastructure. Rapid and precise error detection and rectification are possible in the event of an emergency.

Communication level
Communication boxes are the link between the individual components of the network and ensure that all collected information is queried and collated. The boxes are usually placed in the vicinity of the inverter and are also able to pool and transmit signals from other devices, such as camera systems or weather stations.

Level 1 Combiner boxes
Combiner boxes bundle the output lines of individual strings and connect them to the inverter or, optionally, with the level-2 combiner box. Protection and monitoring functions can also be integrated. The individual strings can be monitored for performance and all components individually protected against surge damage.

Level 2 Combiner boxes
The combiner boxes on this level bundle the lines from the first level into a single outgoing line. This is connected to the inverter. Here again, protection against surge voltage and external influences is integrated and the operational status can be monitored.
You want to improve your photovoltaic systems’ profitability
We provide solutions for system voltages up to 1,500 V

As a full-range supplier Weidmüller provides a holistic portfolio of specific components, combiner boxes and accessories for PV applications, from standard components to tailor-made solutions.

PV AC combiner boxes
PV Classic combiner boxes
PV Floating DC combiner box
PV Protect
Installation tools
PV Next for string inverters
PV Connectors
Crimp free PV connectors
Surge protection devices
Transclinic string monitoring devices and DC/DC power supplies
System-specific solutions to generate higher added value

Our customised classic combiner boxes – also as standard boxes up to 1,500 V

High degree of protection

Ultra-modern protection mechanisms are used to guarantee the best surge protection. The system meets the requirements of the current photovoltaic standard EN 50539-11.

Developed for easy maintenance

While developing the new combiner box designed for rated voltages of up to 1,500 V, we attached a great deal of importance to reliability and cost effectiveness. Maintenance work is easy to carry out, even after many years of use in the field.

Simplified field wiring

The combiner box is supplied as a ready-to-connect solution to simplify field installations and to save time and money. The integrated Transclinic 16i+ 1K5 monitoring module enables a direct supply from the DC string as an option. A separate feed line is not required.

Monitored and non-monitored solutions

We recommend monitoring each and every string to ensure that your photovoltaic system delivers optimum performance. However, we also provide non-monitored solutions upon request.

Why is string monitoring so important in a system?

The PID effect occurs more and more frequently in photovoltaic modules. In order to be able to quickly detect a drop in the system’s performance, it is advisable to have each and every string reliably monitored. Appropriate countermeasures can be taken at an early stage as a result. Also, faulty switching problems can only be detected if continuous string voltage monitoring is ensured.

As many function-critical components are used in photovoltaic modules and solar inverters, a reliable monitoring system should be implemented from the first commissioning of these products. This helps to ensure preventative system maintenance and to avoid malfunctions during operation.

Long service life

All components are optimised to ensure a long service life. This is achieved through compliance with IP standards and certification according to DIN EN 61439-2. A housing made of glass fibre reinforced polyester provides additional safety and UV resistance.
For photovoltaic large scale systems with string inverters
Our tailor made PV AC combiner boxes portfolio

Weidmüller presents a new range of PV AC Combiner Boxes for large scale systems to fulfil new market trends. This new product portfolio based on tailor-made solutions covers the needs to join and protect from 2 up to 8 string inverters with individual output powers between 33 kW and 80 kW.

AC Combiner Boxes bundle the output lines of the inverter and connect them to the transformer station. Optionally configurations allow earth leakage protection or energy monitoring.

**High protection class**
Pluggable surge protection devices (SPD); type I or II depending on project needs. Optional for 3p or 4p protection.

**Overcurrent protection**
High performance of overcurrent protections.

**Tailor made**
Customer specific solutions to collect and protect the output power of 2 to 8 string inverters to ensure optimal performance and long-term profitability.

**Monitored and non-monitored solutions**
Energy monitoring with communication interfaces for third-party certification of correct energy production of the system and to implement alarms.

**Long service life**
All components are optimised to ensure a long service life. This is achieved through compliance with IP standards and certification according to DIN EN 61439-2. A housing made of glass fibre reinforced polyester provides additional safety and UV resistance.
The lack of available 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 combiner boxes.

Our PV DC floating combiner boxes are designed for use in floating PV systems on freshwater surfaces more than 1 km from the sea and equipped with central inverters. They comply with IEC 61439 (ed. 2) and 60058-2-30 and withstand high humidity, corrosive atmosphere, and intensive exposure to sunlight. We offer a wide range of plug and play variants from 8 to 24 inputs – with comprehensive protection and suitable covering solutions.

Collect, protect, and monitor DC strings in extreme environments
Innovative combiner boxes for floating PV systems

The specially developed PMMA sunshade absorbs incident solar radiation and heat. Its glazed polymer surface increases the reflection index and efficiently deflects the incident radiation. This very effectively reduces the temperature inside the combiner box.

An air gap between the door housing and the PMMA cover ensures constant air convection. In this way, the combiner box and its components are reliably cooled.

The PMMA 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.

More information
www.weidmueller.com/pvfloating

Your special advantages
• Suitable for high humidity environments according to IEC 61439 (ed. 2) and 60058-2-30
• Operation without additional sunshade – even in direct sunlight
• PMMA cover for better reflection of sunlight and increased thermal performance
• Plug-and-play solution for quick, easy, and flexible installation

Suitable for high humidity
PV-DC floating combiner boxes are specially designed for Severity Class B environments according to IEC 61439 (ed. 2) and 60058-2. 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 PMMA cover also 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.

String Monitoring improves O&M activities reducing and the number of trips and site visits to pontoons. Identifying quickly failures at string level with the monitoring systems reduces the total cost of ownership and facilitates the entire operations of the plant throughout its entire lifetime.

Multivia cable glands ensure optimum watertightness. They reduce the number of mechanical parts and make the entire construction more robust.
More efficient wiring of photovoltaic systems

Economy and safety during installation and operation are central requirements in photovoltaics. PV Next is the new generation of standardised, highly scalable combiner boxes for private and commercial photovoltaic applications.

With PV Next, Weidmüller offers the world's first combiner box concept based on a standardised printed circuit board design. The advantages: simplicity, safety, time savings, and cost reduction. The innovative concept covers approximately 95% of today's standard requirements, enabling PV installers to work faster and more cost-effectively. The integrated PUSH IN technology reduces assembly times and minimises the risk of errors and the resulting consequences.

Your special advantages
- Scalable and extensible design
- Easy installation without crimping and without special tools
- Avoidance of wrong connections and reduction of risks

Simplicity + time savings + security = reduction of the total costs of ownership

**Easy**
The unique PCB design allows quick and easy integration of additional functions. For example, a switch can be integrated or a second MPPT can be connected directly to the first Printed Circuit Board.

**Fast**
With the PUSH IN connection technology, PV Next offers the most straightforward and safest connection concept for cabling. The installation can be carried out without crimping and without special tools.

**Safe**
The intuitive design and PUSH IN connection technology make installation safer and quality assurance easier. The risk of screw connections with incorrect torque is eliminated, which is one of the main risks for fires.

Safe
The remote signalling contact enables safe monitoring. Always inside.

Easy
Simple operation with PUSH IN technology. Intuitive and maintenance free.

Fast
Plug & Play with the optional WM4C connections. The alternative are cable glands.

A revolutionary design for the energy revolution
Outstanding efficiency with a standardised, extendable design
The first combiner box with a unique PCB concept

The revolutionary design of PV Next is the key to a fast and safe connection of the strings. The enclosures of our combiner boxes are available in a variety of designs to reduce your workload. All of our more than 50 designs are tested in an accredited laboratory and are fully certified according to EN 51643-32.

Printed Circuit Boards (PCBs)
Each PCB has comprehensive standard equipment:
- State-of-the-art PUSH IN connection technology
- Overvoltage protection as standard – optionally with Type 1/2 or Type 2 arrester
- High EM compatibility due to functional earth
- Integrated remote signalling contact
- Distinct labelling – including QR code for further information

Enclosures
PV Next is available in five different enclosure sizes – each available in two versions suitable for different connection scenarios:
- Plug-and-play solution: Designed as a pre-wired box with WM4C plug connectors
- Self wiring solution: version with cable glands and PUSH IN connection technology for efficient wiring

The standardised concept of PV Next covers a large number of today's requirements for combiner boxes and sets new standards for safety and efficiency. Choose from more than 50 variants that are easy to handle and which can be flexibly scaled. If you require an extension, select the appropriate box from our standard range and add it to your configuration.


Your special advantages
- Fast selection and easy installation due to the standardised concept
- Reduced workload and fewer errors due to PUSH IN connection technology
- Reduction of project duration by avoiding customising
- Immediate availability from stock through standardisation of products

Fuses
Protection of the panels from reverse current

IN Input
3 Inputs each with PUSH IN connections

Functional earth
Earthing both sides for scaling (1MPPT, 2MPPT ...)

OUT Output
3 outputs each with PUSH IN connections

Overvoltage protection
Protection of the panels/inverters from surges

Remote signalling contact

QR-Code
takes you to Manuel

BIG OUT Output
Output with Screw
Up to 35 mm²

2MPPT
one board 2 MPPT, 2 inputs each with PUSH IN connections

Double Y circuit
Protection of the inverters from surges
Protect PV systems optimally against overvoltages
PV Protect

Ready to connect all-in-one solution for your photovoltaic system

PV systems are directly affected by environmental influences because they are installed in exposed locations. This also increases the risk of lightning strikes. According to EN 51643-32, PV systems must be protected against overvoltages to avoid high repair costs and loss of revenue due to system failure.

PV Protect is the solution for optimum protection of the inverter against overvoltages. The ready-to-connect boxes are available for different system voltages and can be supplied with the various arrester types and MPP trackers. Depending on requirements, connection is made via cable glands or WM4C connectors with convenient and reliable PUSH IN connection technology.

More information
www.weidmueller.com/pvprotect

Your special advantages:
• Wide range of product variants
PV Protect is available with different arrester classes (Type I/Il and Type II) and rated voltages (1,000 V/1,500 V). The connection is made either via photovoltaic plug connectors or cable glands – for high flexibility.
• Designed to meet various requirements
PV Protect is compact, robust, and extremely weatherproof. The housing complies with protection class IP67 and protects the sensitive electronics inside, even from harsh environmental influences.
• Mount the box, connect the cable, ready
Thanks to the pre-assembled arresters, the product can be connected quickly and with little effort. The protection of the PV system is ensured immediately. The clear marking of the ports eliminates the possibility of incorrect wiring.

Available in product variants suitable for different applications

Compact, space-saving design

Reliable and maintenance-free PUSH IN connection technology

Cable Gland PG9

WM4 C Connector

Ready to connect solution in protection class IP67
Advanced surge protection for photovoltaic systems
Improved plant performance with VARITECTOR surge protection

Modern photovoltaic energy generation is streamlined to efficiency. Reliable surge protection with future-proof performance is a must to maximise system uptime and profitability. The VARITECTOR PU PV series is designed for use in PV string combiner boxes for generator voltages up to 1,500 V and complies with latest UL and EN standards for global application.

Type I and II protection
Type I and II protection is supported for 1,000 V and 1,500 V systems fully compliant to latest EN/IEC standards.

Maximum short-circuit capability
PV plants, which combine many panels in a string, are efficiently protected up to 11 kA of the prospective short-circuit current. Additional fuses for the SPD are not required.

Slim and pluggable arresters
The surge protection devices are easily pluggable and enable a tool-free, fast and cost-effective replacement.

Safe operation up to 4,000 m
PV plants, also such located in high altitude regions, are reliably protected. An additional risk analysis of deratings is not required for extraordinary locations.
Performant string monitoring with a robust design
Weidmüller Transclinic – reliable even under extreme conditions

Integrated power monitoring provided by the Transclinic monitoring system enables errors to be diagnosed accurately. This means you can optimise specific parts of your system and reduce maintenance costs considerably.

Open data protocol
The open Modbus RTU-RS485 protocol makes it easier to integrate Transclinic into SCADA systems.

Integrated RS-485 SPD protection
Onboard surge protection and field replaceable RS485 transceiver.

Quick error analysis
Status LEDs allow for the rapid checking of the system status. Time-consuming error analyses are things of the past.

Two digital inputs
Permanent surveillance of other equipment such as Over-voltage protections or DC Switches.

Suitable for use in harsh conditions
Designed to work under hard temperature conditions (-25°C to +70°C), high humidity level and at height altitudes above sea level.

User-friendly setup
No Computer or special tools are required to set up the devices in the field. Setup uses RS485-parameters.

Norm compliance

Does string monitoring pay off?
Secure your ROI

Financial and technical security play an important role on the long term evaluation of a Photovoltaic site. String monitoring helps to reach your financial targets giving detailed performance insights.

Every deviation on the planned yield may postpone your break-even date significantly due to long term performance losses caused by e.g. PID or cell breakage, but also necessary new investments to replace failing components. Measurement technology on string level will detect smallest deviations and enable you to take early countermeasures.
Crimp-free wiring
Connections made easy with the PV-Stick

Plug in, twist, power: the easiest way to wire up solar panels

Faster is better. Thanks to the unique PUSH IN technology, our easy-to-handle PV-Stick with its “Type 4” connector face can be installed extremely quickly and easily without the need for a crimping tool. The PV-Stick avoids potential assembly errors by being free of crimp contacts and the need for crimping tools. This cuts installation time by at least 50% – without any loss of quality.

Crimp-free connection

A click tells you the connection has been made. This audible feedback indicates a secure connection.

Simple insulation stripping

The notches in the screw cap indicate how much insulation to strip off.

Ergonomic

The easy-grip design makes assembly easy, even under difficult conditions.

Standards-conformant quality

The PV-Stick is manufactured with proven Weidmüller quality, certified by TÜV and complies with IEC 62852.

Award-winning design

The PV-Stick’s impressive blend of form and function has been recognised by three international juries of experts.

Classic connection system
WM4 C with conventional connector face and proven Weidmüller quality

Our classic system for rapid crimp connections: effective and standard-compliant

The WM4 C is our modern crimp connector. It combines outstanding quality with ease of handling and is available as a field or housing connector. The standard “Type 4” connector face allows it to be used with Weidmüller’s entire range of connectors. As you would expect, the WM4 C is offered with accessories and suitable, high-quality tools to permit safe and reliable wiring.

One-stop shopping
Weidmüller offers a wide range of reliable components for installing photovoltaic plants.

Optimally positioned

The twist protection of the WM4 C housing connector prevents twisting of the plug during the installation in the enclosure.

Wide range of cross-section

4 mm² and 6 mm² cables are handled with one crimp contact.

High current rating

Loads with a rated current of up to 36 A are possible.

Standards-conformant quality

The PV-Stick is manufactured with proven Weidmüller quality, certified by TÜV and complies with DIN IEC 62852.
Know-how and flexibility

The guaranties of our global quality promise

We have been supplying combiner boxes for photovoltaic systems since 2007. As an international company we have development and production sites around the world.

At our Global Application Center in Barcelona we coordinate and test the design of your combiner boxes. Our current design and manufacturing standards are guaranteed around the world by the highest quality standards. Sophisticated logistics ensure maximum punctuality for deliveries. Throughout the project, local specialists provide you with professional and reliable support. This helps us to remain competitive and ensures that your systems are a success.

Design

• Development of individual designs at the Global Application Center in Barcelona
• Detailed coordination of the components used
• Functional testing and design validation prior to mass production

Production

• Installation at a site in the global manufacturing network
• Optimum processes through automatic testing equipment
• Transparency and traceability provided by serial number on each housing

Quality

• Development and assembly process in accordance with the latest requirements of the IEC standard
• Highest standard of quality through 100% inspection of shipped goods
• Each combiner box is delivered with a certificate of quality

Customer benefits

• Just-in-time production and the option of individual delivery agreements
• Straightforward commissioning through comprehensive documentation
• Local service and support from our regional contacts

Our solutions already support more than 17 GWp worldwide
Your photovoltaic systems should be profitable in the long term
We help you throughout your system’s entire lifecycle

Your photovoltaic systems should be built as efficiently as possible and be operated cost-effectively in the long term without any downtime. We achieve this with reliable connectivity, outstanding services and combiner boxes individually assembled for your application.

As a customer, you benefit from our expertise and many years of experience in the photovoltaics industry, the comprehensive range of services and our global presence. Our photovoltaic specialists responsibly support your project from the initial planning meeting to the end of the system lifetime.

Training sessions and consulting services
Our experts help you to plan, commission and maintain your photovoltaic system. Your employees are comprehensively trained by Weidmüller specialists in our online and local workshops. The knowledge shared about products, installation, commissioning and maintenance guarantees a smooth commissioning process.

A service that goes further
We want you to be – and remain – satisfied with your customised solution for a long time. That’s why we continue to provide support long after the project is complete. If necessary, our aftersales service provides you with a wide package of measures that offers you the greatest possible benefits.

- Support with commissioning
- Provision of assembly instructions in several languages
- On-site system analyses
- Remote diagnostics and support during troubleshooting
- Warranty processing
- Spare parts service

Support during commissioning
Our engineers on site provide you with support in the form of valuable information and test procedures to ensure you get perfect performance and reliability out of your systems and to ensure the maximum combiner box lifetime. A valuable range of support services mean you can also rest assured that you’ll benefit from an extended warranty.

Qualified error analyses
Our Transclinic Monitoring System ensures that the performance of your photovoltaic system is optimally monitored. Our system specialists also provide you with support in the form of remote diagnostics and on-site analyses to ensure that your system is ready to operate from a mechanical, electrical and electronic standpoint – and to effectively minimise potential downtimes.
Rijn Capital Chile operates a complex consisting of six photovoltaic systems that work reliably even under extreme conditions. The substantial level of dryness and extraordinary installation height at 2,600 metres above sea level turn what would otherwise be standard technological requirements into a real challenge.

We have further developed our Transclinic 16i+ monitoring system for use at heights of up to 3,000 metres to meet these requirements. So, together with its extended temperature range of –25 °C to +70 °C, our system solution withstands even the harshest environmental conditions.

Location: Chile, Antofagasta
Installed Base: 100 MWp

The Japanese PV market is at the forefront of excellence in the design, construction and maintenance of installations and is an example for those seeking reliability, high quality and excellence in equipment. Photovoltaic solutions from Weidmüller are already in use in all geographical regions of Japan. After more than 7 years as one of the top players in the market, we have exceeded 5GWp capacity with PV combiner boxes and string monitoring solutions.

Location: Japan
Installed Base: 5.0 GWp

The harshest environmental conditions
dryness and an extreme installation height

Quality prevails
A high degree of reliability for challenging markets

Powerful “sunroof”
Connected to the grid in no time at all

Just under a year separated the initial idea and the grid connection of Switzerland’s most powerful rooftop photovoltaic system. Weidmüller’s expertise and experience helped achieve this record-breaking time.

To keep to the ambitious schedule, Weidmüller supplied the first ready-to-connect solutions – including an initial sample – within just two weeks.

Location: Switzerland, Zuchwil
Installed Base: 6.6 MWp

Thanks to our knowledge of technical regulations in Switzerland, we were able to develop solutions for Helion Solar that are fully standard-compliant and carefully configured for the planned system architecture.
You can rely on longevity and resilience
Our laboratory ensures the highest product quality

The components of a photovoltaic system must be able to withstand extreme climatic fluctuations. These include rapid temperature changes, severe weather conditions and constant heat and cold. In all cases, it comes down to guaranteeing availability without compromise over a long period of time and protecting sensitive components from external influences.

During product development, we begin by examining materials, components and systems in terms of their suitability for a specific application.

Special environmental conditions are simulated in our laboratory. These include prolonged UV radiation and weathering as well as reliability and functional tests that match real conditions. Tests include a comprehensive examination of insulation and dielectric strength in order to determine clearance and creepage distances, behaviour under high operating temperatures and much more.

All combiner boxes are constructed on the basis of the test results and assembled for the specific application. This ensures that each of the requirements of the target application is fully met.

Our laboratory is accredited according to international standards. This confirms its independence and recognition by institutions, registration services and other authorities. As a member of the CTDP program Weidmüller is regularly audited by UL with regard to its test methods, quality management and documentation.
PV DC combiner box

Technical data

- Main application features:
  - Inputs: From 8 to 32
  - Outputs: Up to 2000 m (standard)
  - Protection against overcurrent: Floating, negative grounded or positive grounded

- Main electrical features:
  - Rated DC voltage: 1000 V DC or 1500 V DC
  - Maximum fuse size: ≤ 25 Amps (single or double string connection)
  - Earthing system: TN-S – TN-C

- Application data:
  - Altitude above sea level: Up to 2000 m
  - Installation location: Protected outdoors (< 1 km from the sea)

- Others:
  - Communication port: RS-485
  - Voltage measurement: ≤ 1000 V DC or ≤ 1500 V DC

PV AC combiner box

- Technical data

- Main application features:
  - Inputs: WM4 C connectors or Cable glands
  - Outputs: 1-2

- Main electrical features:
  - Rated DC voltage: 1000 V DC or 1500 V DC
  - Maximum fuse size: ≤ 30 Amps (for 10 x 85 mm) and ≤ 25 Amps (single or double string connection)

- Application data:
  - Altitude above sea level: Up to 3000 m
  - Operating ambient temp.: -20 °C to +50 °C

- Others:
  - Power supply for string monitoring device: AC/DC or DC/DC (for self-powered string monitoring)
  - Protocol: Modbus/RTU

PV Classic combiner boxes

- Monitored 1500 V DC CB

- Non Monitored 1500 V DC CB

Order directly
The new Level 1 PV combiner boxes are used to collect the output lines of individual strings and to connect them to an inverter or to a Level 2 combiner box (optional). The intelligent design has been specially adapted for use in floating solar installations. Advanced surge protectors, fuse links, and load break switches ensure reliable operation and optimum protection of the system. The PV combiner boxes meet the requirements of IEC 61439 (ed. 2) and ensure maximum reliability.

- 8 to 32 inputs
- Fuse holder in one or both poles (plus and minus)
- Surge protection device for DC system voltages
- String inputs with cable glands or WM4 6 field connectors (or comparable box connectors)
- Wall mounting with metal lugs or for horizontal installation
- Single string monitoring for up to 16", double string monitoring for more than 16” available

### Technical data

#### Level 1 combiner box for potential-free applications

The intelligent design has been specially adapted for use in floating solar installations. Advanced surge protectors, fuse links, and load break switches ensure reliable operation and optimum protection of the system. The PV combiner boxes meet the requirements of IEC 61439 (ed. 2) and ensure maximum reliability.

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<tr>
<th>Feature</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>1,500 V</td>
<td>Max. String Vac.</td>
</tr>
<tr>
<td>Max. Number of inputs</td>
<td>24</td>
<td>In principle 8 to 24 (most likely 16” and 20”)</td>
</tr>
<tr>
<td>Input type</td>
<td>Single or double string</td>
<td>Modules up to 300 W total output (modules from 60-380 W)</td>
</tr>
<tr>
<td>Polarity protection</td>
<td>1 or 2 pole</td>
<td>Positively polarized protection or vice versa</td>
</tr>
<tr>
<td>Monitoring</td>
<td>yes</td>
<td>Single line monitoring up to 16” (double from 17” to 24”)</td>
</tr>
<tr>
<td>Switch-disconnector</td>
<td>1,500 V – 400 A</td>
<td>Reduces power dissipation in the enclosure</td>
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<tr>
<td>Enclosure</td>
<td>IP protection class</td>
<td>Class II</td>
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<tr>
<td>Cable inputs and outputs</td>
<td>Cable glands – input up to 16 mm², output up to 300 mm²</td>
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</tr>
<tr>
<td>Overvoltage protection level</td>
<td>Class II</td>
<td>Class II available</td>
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#### Technical data

#### PV DC Floating combiner box

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<td>Enclosure</td>
<td>IP protection class</td>
<td>Class II</td>
</tr>
<tr>
<td>Cable inputs and outputs</td>
<td>Cable glands – input up to 16 mm², output up to 300 mm²</td>
<td></td>
</tr>
<tr>
<td>Overvoltage protection level</td>
<td>Class II</td>
<td>Class II available</td>
</tr>
</tbody>
</table>

#### Range of products and combinations

<table>
<thead>
<tr>
<th>Type</th>
<th>Features</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV 216S0F0CFXXV001XXPFWW</td>
<td>16 inputs, 15 A fuse, Z-Ud, fuse protection, 50 °C, Non-Mon</td>
<td>8000057078</td>
</tr>
<tr>
<td>PV 218S0F0CFXXV001XXPFWW</td>
<td>18 inputs, 15 A fuse, Z-Ud, fuse protection, 50 °C, Non-Mon</td>
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<td>PV 216S0F0CFXXV001XTPFWW</td>
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<tr>
<td>PV 216S0F0CFXXV001XXPJP</td>
<td>16 inputs, 15 A fuse, Z-Ud, fuse protection, 50 °C, Non-Mon</td>
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<tr>
<td>PV 220S0F0CFXXV001XXPJP</td>
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<tr>
<td>PV 224S0F0CFXXV001XXPJP</td>
<td>24 inputs, 15 A fuse, Z-Ud, fuse protection, 50 °C, Non-Mon</td>
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<tr>
<td>PV 224S0F0CFXXV001XXPFWW</td>
<td>24 inputs, 15 A fuse, Z-Ud, fuse protection, 50 °C, Mon</td>
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## PV Next combiner boxes

### 2 IN / 1 OUT non-fused Typ I/II

<table>
<thead>
<tr>
<th>Description</th>
<th>Armoiries (SPD)</th>
<th>Connection</th>
<th>Switch empty fuse holder</th>
<th>MFPT</th>
<th>Dimensions</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>hin101500</td>
<td>Typ I Cable gland</td>
<td>1</td>
<td>30x33x175 mm</td>
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<tr>
<td>hin102500</td>
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<tr>
<td>hin103500</td>
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<td>30x33x141 mm</td>
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<tr>
<td>hin104500</td>
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<tr>
<td>hin105500</td>
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<tr>
<td>hin106500</td>
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Note: All items are available from stock.

### 3 IN / 3 OUT non-fused Typ I/II

<table>
<thead>
<tr>
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<th>Armoiries (SPD)</th>
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<th>Switch empty fuse holder</th>
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<th>Order No.</th>
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<tbody>
<tr>
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Note: All items are available from stock.

### 3 IN / 3 OUT fused Typ I/II

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<th>Order No.</th>
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<tbody>
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<tr>
<td>hin104700</td>
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<tr>
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<tr>
<td>hin106700</td>
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Note: All items are available from stock.

### 6 IN / 6 OUT non-fused Typ I/II

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<th>Order No.</th>
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<tr>
<td>hin101800</td>
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<td>hin105800</td>
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<tr>
<td>hin106800</td>
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Note: All items are available from stock.

### 6 IN / 6 OUT fused Typ I/II

<table>
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<th>Dimensions</th>
<th>Order No.</th>
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</thead>
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<tr>
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<tr>
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<td>hin106900</td>
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</tbody>
</table>

Note: All items are available from stock.

### Connection examples

- **1 IN / 1 OUT**
- **3 IN / 3 OUT**
- **3 IN / 1 OUT**
- **6 IN / 6 OUT**

---

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A full scale portfolio for tailored DC and AC protection solutions

Several aspects need to be covered that are related to the type of system (e.g. rooftop systems or utility-scale open space systems). When selecting overvoltage protection measures, a set of regulations have to be observed.

PV systems with external lightning protection
Type II surge protection can be used, provided the separation distance is maintained (usually > 0.7 m to 1 m). If the separation distance is not maintained, a surge protection Type I for DC cabling is required.

PV systems without external lightning protection
This is a common design for which surge protection Type II must be provided for DC cabling.

The figure on the right shows the general architecture of a PV system. The table below is intended to help you select the correct surge protection products according to the specifications of applicable standards in a PV system.

L1 describes the cable length between the main distribution board and PV inverter (AC side) and L2 describes the line length between PV inverter and PV generator (DC side). With a line length > 10 m, an SPD is required on both sides by the standard.

<table>
<thead>
<tr>
<th>External lightning protection system</th>
<th>Observed separation distance</th>
<th>Line length L1 &lt; 10 m</th>
<th>Line length L2 &lt; 10 m</th>
<th>Place of installation AC &lt; 10 m</th>
<th>Place of installation DC &lt; 10 m</th>
<th>Place of installation AC &gt; 10 m</th>
<th>Place of installation DC &gt; 10 m</th>
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</thead>
<tbody>
<tr>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>Type I AC</td>
<td>Type II DC</td>
<td>Type I DC</td>
<td>Type II DC</td>
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<tr>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>Type I AC</td>
<td>Type II DC</td>
<td>Type I DC</td>
<td>Type II DC</td>
</tr>
<tr>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>Type II AC</td>
<td>Type II DC</td>
<td>Type I DC</td>
<td>Type II DC</td>
</tr>
<tr>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>Type II AC</td>
<td>Type II DC</td>
<td>Type I DC</td>
<td>Type II DC</td>
</tr>
<tr>
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<td>yes</td>
<td>no</td>
<td>no</td>
<td>Type I AC</td>
<td>Type II DC</td>
<td>Type I DC</td>
<td>Type II DC</td>
</tr>
<tr>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>Type I AC</td>
<td>Type II DC</td>
<td>Type I DC</td>
<td>Type II DC</td>
</tr>
<tr>
<td>yes</td>
<td>yes</td>
<td>yes</td>
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<td>Type II AC</td>
<td>Type II DC</td>
<td>Type I DC</td>
<td>Type II DC</td>
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<tr>
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<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>Type II AC</td>
<td>Type II DC</td>
<td>Type I DC</td>
<td>Type II DC</td>
</tr>
</tbody>
</table>

Recommendation
Since PV systems are usually installed in unprotected environments (danger from direct lightning strikes) it is always advisable to install type I/II surge protection. This increases also the service life of the protective components used.

VARITECTOR PU

DC protection in 1,000 V applications

DC protection in 1,500 V applications

AC protection for 230 V grids
PV Protect

Ordering data

<table>
<thead>
<tr>
<th>Description</th>
<th>Product description</th>
<th>Type</th>
<th>Voltage</th>
<th>MPPT</th>
<th>Connection</th>
<th>Order No.</th>
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<tbody>
<tr>
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<td>VPU PV BOX CG I+II</td>
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<td>1000</td>
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<td>1</td>
<td>WM4C</td>
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<td>1000</td>
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</table>

Technical data

- Continuous operating temperature: -40 °C to +85 °C
- Protection class (plugged/open): IP 65 / IP 2x
- Rated current: 30 A
- Rated voltage: 1,500 V DC
- Cable diameter: 4 mm² / 6 mm²
- Cable exterior diameter: 5.5 mm to 7.5 mm
- Cable as per standard: 2PfG1169/08.07 & EN 50618:2014
- Pollution degree: II
- Approval: TÜV (IEC 62852)
- Connection system: PUSH IN (Spring terminal connection)

Ordering data

<table>
<thead>
<tr>
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<th>Qty.</th>
<th>Order No.</th>
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WM4 C

Ordering data

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<tr>
<td>SFGH BOX WM4 C BT</td>
<td>100 (in bag)</td>
<td>1530640000</td>
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<tr>
<td>CRIMP CONTACTS WM4 C BT</td>
<td>500 (on roll)</td>
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<td>CRIMP CONTACTS WM4 C RL</td>
<td>500 (on roll)</td>
<td>1530780000</td>
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Technical data

- Continuous operating temperature: -40 °C to +85 °C
- Protection class (plugged/open): IP 65 & IP 67 / IP 2x
- Rated current: 35 A
- Rated voltage: 1,500 V DC
- Cable diameter: 4 mm² / 6 mm²
- Cable exterior diameter: 5.5 ...7.0 mm
- Cable as per standard: 2PfG1169/08.07 & EN 50618:2014
- Thread: M16 / M12
- Pollution degree: II
- Approvals: TÜV (DIN IEC 62852)
- Connection system: PUSH IN

Transclinic 16I+ 1K5 H

Ordering data

<table>
<thead>
<tr>
<th>Type</th>
<th>Order No.</th>
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</thead>
<tbody>
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<td>TRANSCLINIC 16I+ 1K5 H</td>
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Technical data

- Maximum number of strings: 16
- Rated Voltage: ≤ 1500 V DC
- Maximum current per string: 25 A
- Operating temperature: -25 °C…70 °C
- Number of digital inputs: 2
- Communication: RS485 (Modbus/RTU)
- Connection type: PUSH IN

PV-Stick

Ordering data

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<tr>
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<td>BOX WM4 C housing connector</td>
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<tr>
<td>CRIMP CONTACTS WM4 C BT</td>
<td>500 (on roll)</td>
<td>1530770000</td>
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<tr>
<td>CRIMP CONTACTS WM4 C RL</td>
<td>500 (on roll)</td>
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Technical data

<table>
<thead>
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<th>BOX WM4 C housing connector</th>
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</thead>
<tbody>
<tr>
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<td>-40 °C to +85 °C</td>
</tr>
<tr>
<td>Protection class (plugged/open)</td>
<td>-40 °C to +85 °C</td>
</tr>
<tr>
<td>Rated current</td>
<td>35 A</td>
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<tr>
<td>Rated voltage</td>
<td>1,500 V DC</td>
</tr>
<tr>
<td>Cable diameter</td>
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</tr>
<tr>
<td>Cable exterior diameter</td>
<td>5.5 ...7.0 mm</td>
</tr>
<tr>
<td>Cable as per standard</td>
<td>2PfG1169/08.07 &amp; EN 50618:2014</td>
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<tr>
<td>Thread</td>
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Technical data

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<thead>
<tr>
<th>WM4 C field connector</th>
<th>BOX WM4 C housing connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous operating temperature</td>
<td>-40 °C to +85 °C</td>
</tr>
<tr>
<td>Protection class (plugged/open)</td>
<td>-40 °C to +85 °C</td>
</tr>
<tr>
<td>Rated current</td>
<td>35 A</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>1,500 V DC</td>
</tr>
<tr>
<td>Cable diameter</td>
<td>4 mm² / 6 mm²</td>
</tr>
<tr>
<td>Cable exterior diameter</td>
<td>5.5 ...7.0 mm</td>
</tr>
<tr>
<td>Cable as per standard</td>
<td>2PfG1169/08.07 &amp; EN 50618:2014</td>
</tr>
<tr>
<td>Thread</td>
<td>M16 / M12</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>II</td>
</tr>
<tr>
<td>Approvals</td>
<td>TÜV (DIN IEC 62852)</td>
</tr>
<tr>
<td>Connection system</td>
<td>PUSH IN</td>
</tr>
</tbody>
</table>
PV Tools
Reliable installation tools

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

Your benefits:
- High quality for long-term usage
- Long service life
- Easy to use - even under difficult working conditions

SET MULTI-TOOL PV+
Multi-Tool for PV Stick and PV Next

KT12
For cutting PV cables

Multi-Stripax PV
For stripping PV cables

CTF PV WM4
For crimping PV crimp inserts (incl. MC4)

<table>
<thead>
<tr>
<th>Type</th>
<th>Qty</th>
<th>Order No.</th>
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<tbody>
<tr>
<td>SET MULTI-TOOL PV+</td>
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<td>Optional mounting tool</td>
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<td>KT12</td>
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<td>Cutting tool</td>
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<td>Multi-Stripax PV</td>
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<tr>
<td>Wire stripping pliers for PV wires from 2.5 to 6 mm²</td>
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<td>CTF PV WM4</td>
<td></td>
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<tr>
<td>For Weidmüller WM4 photovoltaic connectors and similar plugs</td>
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<td>1222870000</td>
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</tbody>
</table>
Weidmüller – Your partner in 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 Industrial Connectivity.

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