

PVBOX

BY CONDUCT

PVbox – Generator Connection Boxes for Solar Panel Installations

The PVbox by Conduct Technical Solutions is a fully equipped generator connection box designed for the safe integration of solar panel systems with inverters and AC installations. The system ensures reliable protection against direct and indirect lightning strikes through built-in Type 1+2 surge protection devices (SPD) per MPPT.

When connecting solar panels, compliance with **HD-IEC 60364 standards** is essential:

- Surge protection: Clause 712.534
- Separation of DC and AC circuits: Clause 712.537
- Protection against reverse currents: Clause 712.433.101



Technical Specifications	
Material	High-quality polycarbonate, UV and weather-resistant, providing long-term protection against environmental factors.
Surge Protection	Type 1+2 SPDs.
Connections	Equipped with premium Stäubli MC4 connectors, enabling fast and error-free installation.
Optional Components	DC load disconnectors for direct current interruption. AC load disconnectors for alternating current separation. Additional AC SPD for enhanced surge protection.
Available Standard Models	Specifically designed for inverters from brands such as Huawei, SMA, SolarEdge, Fronius, and Sungrow, ensuring broad compatibility.

Features and Benefits	
Protection Against Lightning Strikes	Provides robust protection against both direct and indirect lightning strikes, safeguarding both DC and AC circuits.
Fire Safety	Seamlessly integrates with the FireSwitch for immediate disconnection of DC circuits in emergency situations.
ICT Protection	Expandable with PVbox DATA, effectively diverting surges from data cables to protect critical ICT infrastructure.
Real-Time Alerts	Compatible with PValarm, delivering instant warnings in case of sabotage, power outages, or cable failures, enabling efficient incident management.
Flexibility	Configurable as a combiner box, with options for battery storage systems and hybrid applications.

Requirements According to HD-IEC 60364	
Surge Protection	According to Clause 712.534, solar panel installations must include surge protection to mitigate the risks of overvoltages.
Separation of DC and AC Circuits	Clause 712.537 requires the separation of DC and AC circuits to ensure safety and system integrity.
Protection Against Reverse Currents	Clause 712.433.101 specifies the need to protect electrical circuits from hazardous reverse currents.

Applications

The PVbox is suitable for residential, commercial, and industrial installations. Use the [PVboxtool](#) to select the appropriate model based on project requirements.

PVbox – Inverter Compatibility

The PVbox is designed as a flexible and versatile solution, compatible with virtually all inverter types, provided the technical specifications of the inverter are known. This information determines how the PVbox is configured to perfectly align with the requirements of the specific installation.

Key Specifications of the Inverter:

When determining the compatibility and configuration of the PVbox, the following aspects are crucial:

- **Voltage Range**
 - Determines the number of strings independently tracked by the inverter. The PVbox is configured accordingly with a matching number of string inputs (IN) and outputs (OUT)..
- **Maximum DC Voltage**
 - The PVbox can be configured for either 1000V or 1500V systems, depending on the inverter's specifications.
- **String Current**
 - String fuse holders are added if the installation exceeds three strings per MPPT and requires protection as per Clause 712.431.4.
- **DC Switch**
 - Based on the inverter and system design, the PVbox can include a DC load disconnect (e.g., S50 for 50A) or a motorised FireSwitch.
- **AC Configuration**
 - If the cable length between the inverter and the main distribution board exceeds 10 metres, an AC surge protection device (Type 1+2 SPD) can be added.
- **Connection Options**
 - MC4 connectors or cable glands are selected based on the inverter's connection requirements.

Configuration Process

When configuring a PVbox, the inverter's specifications are used to:

1. Determine the number of SPDs required.
2. Decide whether string fuse holders are necessary.
3. Determine the presence and type of DC and AC switches.

With the correct information about the inverter (e.g., brand, model, specifications), the PVbox can always be made compatible and function optimally within the installation. The configuration process ensures that the PVbox meets all technical and regulatory requirements for the specific application.

De juiste PVbox vinden voor jouw project?

Use the [PVboxtool](#) to easily select the ideal PVbox and provide your solar panel installation with optimal protection against lightning and overvoltage!

The screenshot displays the CONDUCT Technical Solutions website. At the top, there is a navigation bar with links for Products, Market segment, Knowledge base, About Conduct, and Distributors, along with a search icon. A banner below the navigation bar promotes a free ticket for Solar Solutions Leipzig in January. The main content area features a section titled "ALWAYS THE RIGHT PVBOX FOR YOUR PROJECT" with a description of the PVbox tool's capabilities. To the right of this section is a circular icon with a lightning bolt and a button labeled "Read more about PVbox". Below this, a row of logos for various solar inverter brands is shown: SUNGROW, GROWATT, autarco, solar edge, GOODWE, SOFAR, SOLAX POWER, SMA, HUAWEI, and solis. Further down, a section titled "GET STARTED NOW: FIND THE RIGHT PVBOX WITH THE PVBOXTOOL" includes instructions to select an inverter from a list or choose "Other inverter". Below the instructions are two input fields: "Choose brand" and "Choose inverter", followed by a "Next question >" button.

Ease of Installation

The PVbox is supplied with clear mounting instructions and a plug-and-play configuration. Its high-quality connection technology ensures error-free installations.



Security Solutions

PValarm by Conduct Technical Solutions is a modular security system designed for solar panel installations. It detects and reports sabotage, cable damage, theft, and power outages through immediate alerts and integration options.

PValarm Technical Specifications

- 4 potential-free contacts for signal transmitters.
- Input: 230Vac, minimum 1.8A.
- Output: 24Vdc, 2.5A.
- Complies with: IEC 50131, CE marking, and IEC 62642.
- Mechanical lifespan: 20 million switching cycles.
- Operating temperature: -25°C to +70°C.

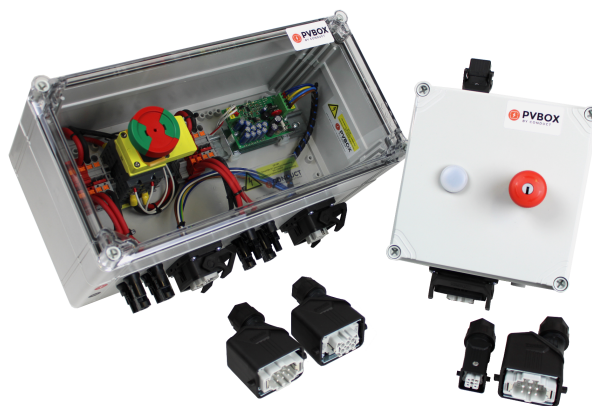
Benefits and Applications

- **Real-time alerts:** Notifications in case of sabotage, power failure, or cable damage.
- **Modular design:** Expandable with additional signal transmitters and integration with building management systems.
- **Integration with PVbox:** Ideal for comprehensive protection of solar panel installations.

PValarm is a certified solution for robust and scalable security of PV systems.

Fire Safety Solutions

The FireSwitch fireman's switch by Conduct provides rapid and safe disconnection of DC circuits, ensuring fire safety and the protection of installations.



Key Features:

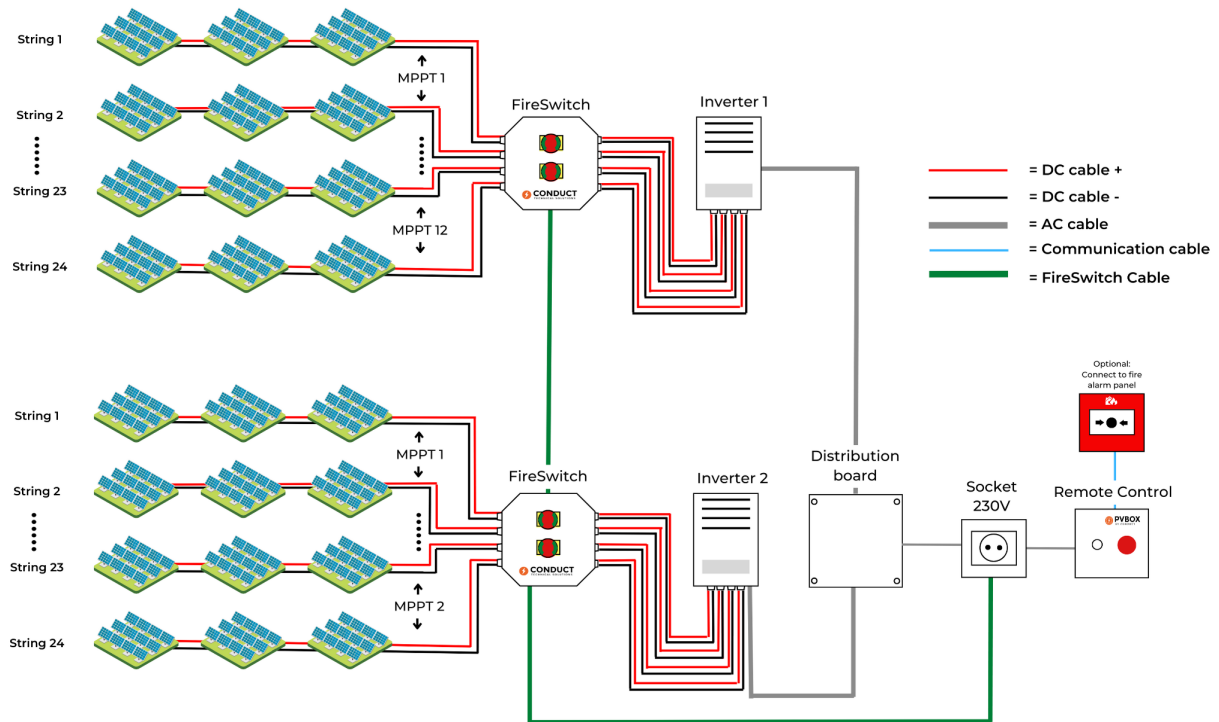
1. **Manual AC Disconnection:** A safety measure compliant with international standards to prevent electrocution.
2. **Automatic DC Disconnection:** Automatically shuts down within 5 seconds of AC power loss or when the internal temperature reaches 100°C.
3. **Direct Placement at PV Modules:** Minimises hazardous DC cabling and enhances safety.

Technical Specifications

Feature	Description
<i>Supports Multiple DC Strings</i>	Easily daisy-chained for expandability.
<i>Automatic Disconnection</i>	Activates during AC failure (>0.5 seconds) or via a manual central emergency switch.
<i>Type 1+2 SPDs</i>	Optional surge protection against lightning and voltage spikes.
<i>Wide Compatibility</i>	Suitable for 1–5 strings per MPPT in residential, commercial, and industrial PV installations.
<i>High Voltage Support</i>	Handles up to 1500V DC, ideal for modern high-voltage PV systems
<i>Santon X-type DC Switch</i>	Includes a 'snap-action' mechanism and self-cleaning contacts for increased durability.
<i>Feedback and Auxiliary Switches</i>	Offers options for monitoring and system integration (NO DC 24V 300mA or 240V 1A AC-13).
<i>Easy Installation</i>	Features knock-outs, cable glands, or prewired MC4 connectors for streamlined setup.

Benefits and Applications:

- Direct DC disconnection ensures safety in emergency situations.
- Simple combination of multiple FireSwitch modules.
- Manual and automatic operation for ease of use.
- Creates a safe working environment for firefighters and technical teams.
- Can be combined with the PVbox for complete protection of installations.



Disclaimer: This is an example setup. Your situation may differ, but we have a solution for that too. Contact us at sales@conduct.nl to discuss the possibilities.

PVbox-Data

An essential system to protect the ICT infrastructure of commercial buildings with solar panels from direct and indirect lightning strikes. Prevents business disruptions and damage caused by overvoltage, with compliant technology and easy integration.



Key Features

- **Surge Protection:** Safeguards data cables and server rooms.
- **Compliance:** Meets IEC 60364:2020 and IEC 62305 standards.
- **Compatibility:** Designed for seamless integration with PVbox.
- **Compact Design:** Easy to install.
- **Versatile Use:** Suitable for ICT and inverter cabling.

Technical Specifications

- **Dimensions:** 200 x 120 x 86 mm
- **Article Number:** DT.1.D1.1IN.1OUT.W
- **Protection:** Diverts overvoltage through the earth cable
- **Application:** ICT infrastructure and server rooms, ideal for use with PVbox

Benefits

- Protects critical ICT systems.
- Compliant with standards and easy to install.
- Compact and versatile.

Applications

- Server rooms and LAN cable protection.
- Ideal for commercial buildings with solar panels and LPS.
- Combine with PVbox for a complete solution.

For more information or support with project customisations, contact Conduct Technical Solutions.

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