

PV Next String Combiner Box



de Bedienungsanleitung..... 3

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1 About this documentation


1.1 Target group


These operating instructions are intended for the operator of the photovoltaic system (PV system) and for all persons handling the product during its life cycle.


The required knowledge of this group of persons is defined in the safety chapter.

1.2 Symbols and notes

The warnings contained in the documentation are divided into hazard categories.




	DANGER
	<p>Imminent risk to life!</p> <p>Notes with the signal word "DANGER" warn you of situations which will result in serious injury or death if you do not observe the specified instructions.</p>

	WARNING
	<p>Danger to life!</p> <p>Notes with the signal word "WARNING" warn you of situations which may result in serious injury or death if you do not observe the specified instructions.</p>


	CAUTION
	<p>Risk of injury!</p> <p>Notes with the signal word "CAUTION" warn you of situations which may result in injury if you do not observe the specified instructions.</p>

ATTENTION	
Material damage!	
Notes with the signal word "ATTENTION" warn you about hazards which may result in damage to property.	

The situation-dependent warnings may contain the following warning symbols:

Symbol	Meaning
	Warning of dangerous electrical voltage
	Warning of electrostatically charged components
	Mandatory: Observe the documentation

Additional formatting is used in the rest of the text which has the following meaning:

 Sections of text next to this arrow contain information which is not related to safety, but which provides important information regarding correct and effective work.

- ▶ All instructions can be identified by the black triangle next to the text.
- Lists are indicated with dashes.



- ▶ Store the instructions such that they are available at all times. Do not store the instructions in the product enclosure. The document is available to download from Weidmüller Website.
<https://www.weidmueller.com/pvnext>
- ▶ Also refer to the inverter manufacturer's documentation.


2 Safety

This section includes general safety notes for handling the product. Specific warnings for specific tasks and situations are given at the appropriate places in the documentation. Failure to observe the safety notes and warnings can result in physical injury and property damage.

2.1 General safety note

- Before carrying out any work on the product, it must be switched off and free of dangerous voltage (see section 2.2). This reduces the risk of electric shocks or arcing.
- The product is not suitable for use in potentially explosive atmospheres. Work on the PV Next String Combiner Box can produce sparks that can ignite a potentially explosive air mixture.
- The approved environmental conditions for the installation site must be observed.
- The operator must ensure that the product is not accessible to unauthorised persons.
- No combustible or electrically conductive materials may be stored inside the enclosure.
- The PV Next String Combiner Box must not be operated with damaged cables or connectors, as they may cause electric shock, short circuit or fire. Do not touch damaged areas and ensure the system is not live. Have the system checked and repaired by a specialist.
- Fuse links must not be removed or inserted under load as this may result in life-threatening arcing.
- Suitable personal protective equipment must be worn during all work on the product.
- During installation and maintenance work, make sure that no moisture can penetrate into the enclosure.
- The PV system must be designed in such a way that all components are operated exclusively within their permissible operating range.
- Local installation regulations must be observed.
- If a fault in the product cannot be remedied by the measures described in these instructions, you must return the product to Weidmüller. Weidmüller does not provide a guarantee if the product has been tampered with.
- The outputs of the PV Next String Combiner Box must never be connected to the inverter (load) while it is live. Even when the inverter is switched off, charging the internal capacitors can lead to dangerous arcing.
- Never touch exposed live parts or cables.
- Do not disconnect PV connectors under load.
- Disconnect the inverter before carrying out any maintenance work. Inverters contain capacitors that store life-threatening voltages. Wait until the capacitors are discharged.
- Follow the operating instructions of the inverter you are using. Contact the manufacturer for more information and advice.

2.2 Switching off and on safely

	DANGER
	<p>Risk of fatal electric shock when touching live DC cables and live parts in the opened product!</p> <p>PV systems can generate dangerous voltages. Before starting work, ensure that the PV system and devices are disconnected from the mains and from the PV generators.</p> <p>► Before carrying out any work on the product, it must be disconnected from the power supply and secured against being switched on again.</p>

Switching off safely

- Make sure there is no voltage before you open the PV Next String Combiner Box. Proceed exactly in this order:
 1. Switch off the inverter.
 2. Switch the switch-disconnector of the PV Next String Combiner Box or of the inverter to the off-position.
 3. Disconnect all string cables to the inputs of the PV Next String Combiner Box. Both the positive and negative connections must be disconnected.
- You can now open the PV Next String Combiner Box.

Switch on once all work has been completed:

- Close the PV Next String Combiner Box with the cover.
- Check the voltage, polarity and absence of earth faults of the string cables.
- Reconnect the string cables to the connectors on the underside of the PV Next String Combiner Box.
 - Pay attention to the correct polarity and assignment of the string cables.
 - Only connect string cables with identical open-circuit voltages.
- Switch the inverter on again using the switch-disconnector on the output side.

2.3 Intended use

The PV Next String Combiner Box is intended to be installed in the DC connection between photovoltaic modules and inverters. Any other use is considered improper. Modifications to the product and the installation of further components are only permitted if recommended by Weidmüller. Observance of the documentation is also part of the intended use.

2.4 Personnel



All activities described in this document may only be carried out by specialists and instructed persons with the following qualifications:

- Knowledge of the functionality and principle of PV systems
- Training in handling dangers and risks during installation and handling electrical devices and systems
- Knowledge of applicable standards and guidelines
- Knowledge and observance of these operating instructions and the safety instructions contained therein

It is a common practice in the sector to apply the five safety rules contained in standard EN 50110. In all cases, qualified electricians must analyse each system individually to determine the best approach to safety.

The five safety rules are the following:

1. Disconnect the system completely from the power supply
2. Secure against re-connection
3. Check that the system is not live
4. Carry out earthing and measures against short-circuiting.
5. Provide protection against adjacent live parts

2.5 Legal notice

The product is CE compliant according to Directive 2014/35/EU (Low Voltage Directive).

The product meets the requirements of IEC 61439-2:2011 and the integrated surge protection meets the requirements of EN 50539-11:2015, EN 50539-12:2014.

2.6 Warnings on the product

The following warnings are attached to the cover of the PV Next String Combiner Box as a sticker:



The symbols must be clearly visible throughout the service life of the product. If the legibility decreases, the operator of the system must arrange for the warning sticker to be replaced.

3 Product description

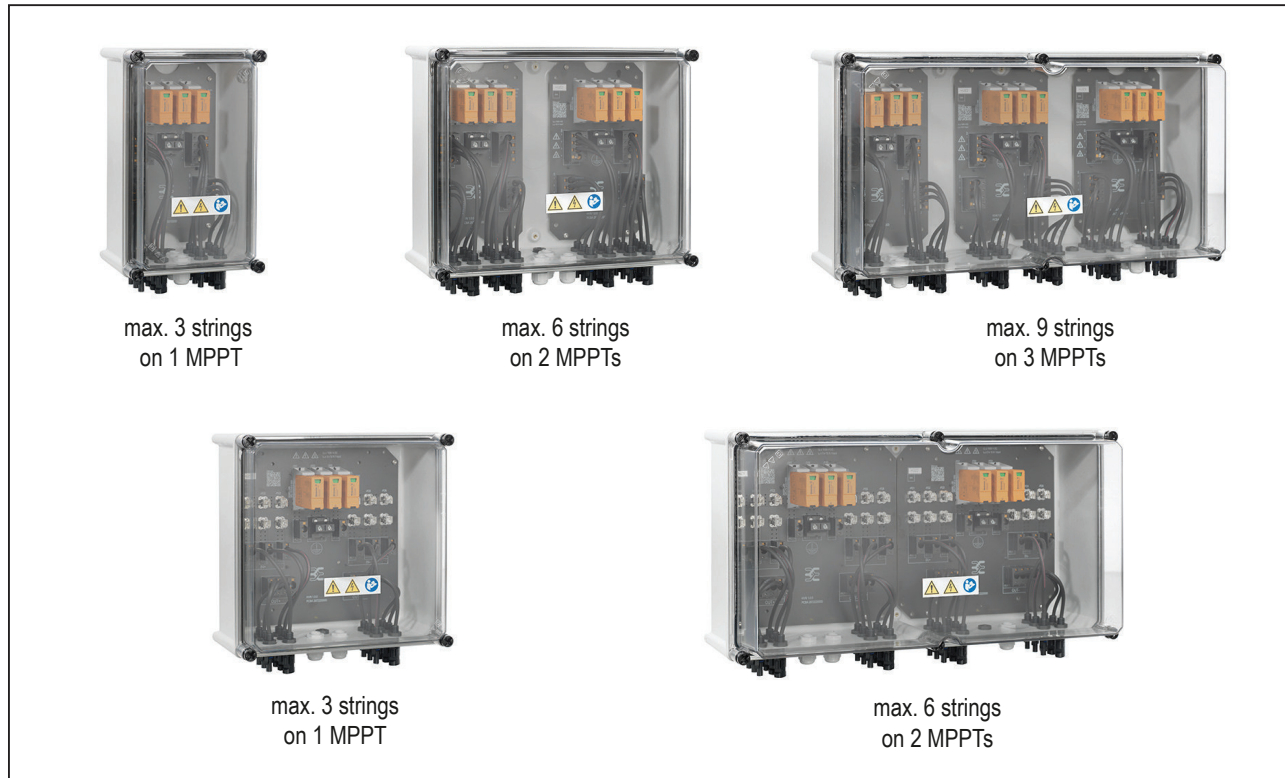


Figure 3.1 Overview of the variants (only models with PV-connectors shown, without optional switches or cable glands)

3.1 Product overview

The Weidmüller PV Next String Combiner Boxes are standardised string combiners with which photovoltaic string cables in private or commercial PV systems can be connected safely and easily to the inverters.

The product family is comprised of three power variants without string protection and two power variants with string protection (gPV fuse links) to protect against impermissibly high return currents.

Depending on the design of the PV system, up to six electrically isolated Maximum Power Point Trackers (MPPT) can be connected.

Per MPPT, each PV Next String Combiner Box contains a replaceable DC surge protection of type I/II or type II. The boxes are optionally equipped with a switch-disconnector. The connections to string cables and inverters are made either with PV connectors on the underside of the enclosure or via a direct connection within the enclosure.

The type designation of your product can be found on the type plate inside the enclosure.

Product description

Order No.	Type
2683110000	PVN1M1I3SXFV1O0TXPX10
2683140000	PVN1M1I3S0FXV1O0TXPX10
2683170000	PVN1M1I3SXFV1O1TXPX10
2683200000	PVN1M1I3S0FXV1O1TXPX10
2683120000	PVN1M2I6SXFV1O0TXPX10
2683150000	PVN1M2I6S0FXV1O0TXPX10
2683180000	PVN1M2I6SXFV1O1TXPX10
2683210000	PVN1M2I6S0FXV1O1TXPX10
2683030000	PVN1M1I3SXF3V1O0TXPX10
2683050000	PVN1M1I3S0F3V1O0TXPX10
2683070000	PVN1M1I3SXF3V1O1TXPX10
2683090000	PVN1M1I3S0F3V1O1TXPX10
2683040000	PVN1M2I6SXF3V1O0TXPX10
2683060000	PVN1M2I6S0F3V1O0TXPX10
2683080000	PVN1M2I6SXF3V1O1TXPX10
2683100000	PVN1M2I6S0F3V1O1TXPX10
2683130000	PVN1M3I9SXFV1O0TXPX10
2683160000	PVN1M3I9S0FXV1O0TXPX10
2683190000	PVN1M3I9SXFV1O1TXPX10
2683220000	PVN1M3I9S0FXV1O1TXPX10
2683310000	PVN1M1I3SXFV2O0TXPX10
2683340000	PVN1M1I3S0FXV2O0TXPX10
2683370000	PVN1M1I3SXFV2O1TXPX10
2683400000	PVN1M1I3S0FXV2O1TXPX10
2683320000	PVN1M2I6SXFV2O0TXPX10
2683350000	PVN1M2I6S0FXV2O0TXPX10
2683380000	PVN1M2I6SXFV2O1TXPX10

Order No.	Type
2683410000	PVN1M2I6S0FXV2O1TXPX10
2683230000	PVN1M1I3SXF3V2O0TXPX10
2683250000	PVN1M1I3S0F3V2O0TXPX10
2683270000	PVN1M1I3SXF3V2O1TXPX10
2683290000	PVN1M1I3S0F3V2O1TXPX10
2683240000	PVN1M2I6SXF3V2O0TXPX10
2683260000	PVN1M2I6S0F3V2O0TXPX10
2683280000	PVN1M2I6SXF3V2O1TXPX10
2683300000	PVN1M2I6S0F3V2O1TXPX10
2683330000	PVN1M3I9SXFV2O0TXPX10
2683360000	PVN1M3I9S0FXV2O0TXPX10
2683390000	PVN1M3I9SXFV2O1TXPX10
2683420000	PVN1M3I9S0FXV2O1TXPX10
2737440000	PVN1M1I6SXF3V1O1TXPX10
2737480000	PVN1M1I6S0F3V1O1TXPX10
2737490000	PVN1M1I6SXF3V2O1TXPX10
2737500000	PVN1M1I6S0F3V2O1TXPX10
2737520000	PVN1M1I6SXF3V1O0TXPX10
2737530000	PVN1M1I6S0F3V1O0TXPX10
2737540000	PVN1M1I6SXF3V2O0TXPX10
2737550000	PVN1M1I6S0F3V2O0TXPX10
2737580000	PVN1M2I4SXFV1O1TXPX10
2737590000	PVN1M2I4SXFV1O0TXPX10
2737600000	PVN1M4I8SXFV1O1TXPX10
2737610000	PVN1M4I8SXFV1O0TXPX10
2737620000	PVN1M6I12SXFV1O1TXPX10
2737630000	PVN1M6I12SXFV1O0TXPX10

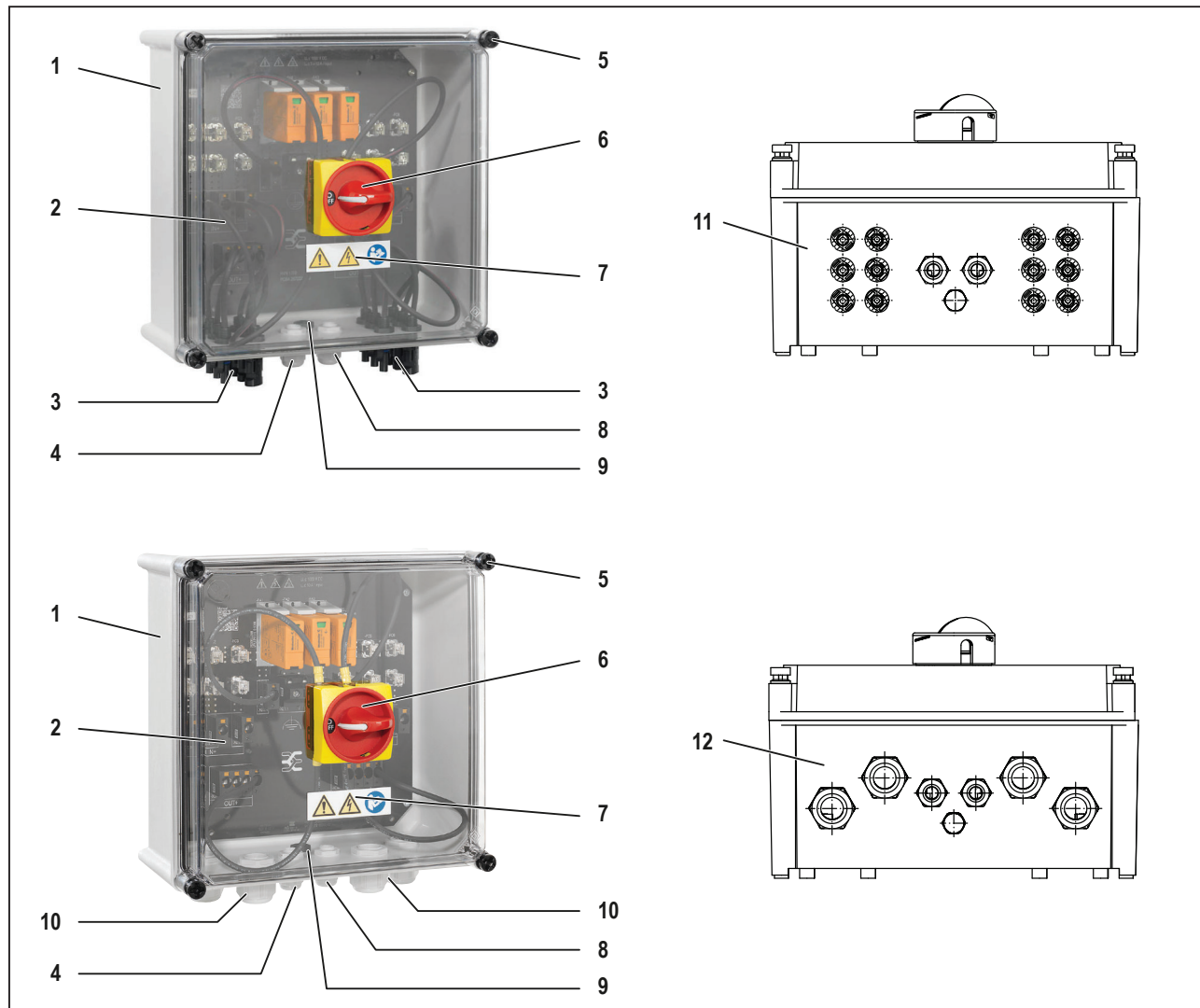


Figure 3.2 Product overview (example) and view from below

- 1 Enclosure base part (type plate on the inside)
- 2 Enclosure cover
- 3 PV connectors for string inputs and outputs
- 4 Cable gland for functional earth
- 5 Mounting screws for cover
- 6 Switch-disconnector (optional)
- 7 Stickers with warning symbols
- 8 Cable gland for remote signalling contact surge protection
- 9 Pressure equalisation element
- 10 Cable glands for string inputs and outputs
- 11 Variant with PV connectors, bottom side
- 12 Variant with cable glands, bottom side

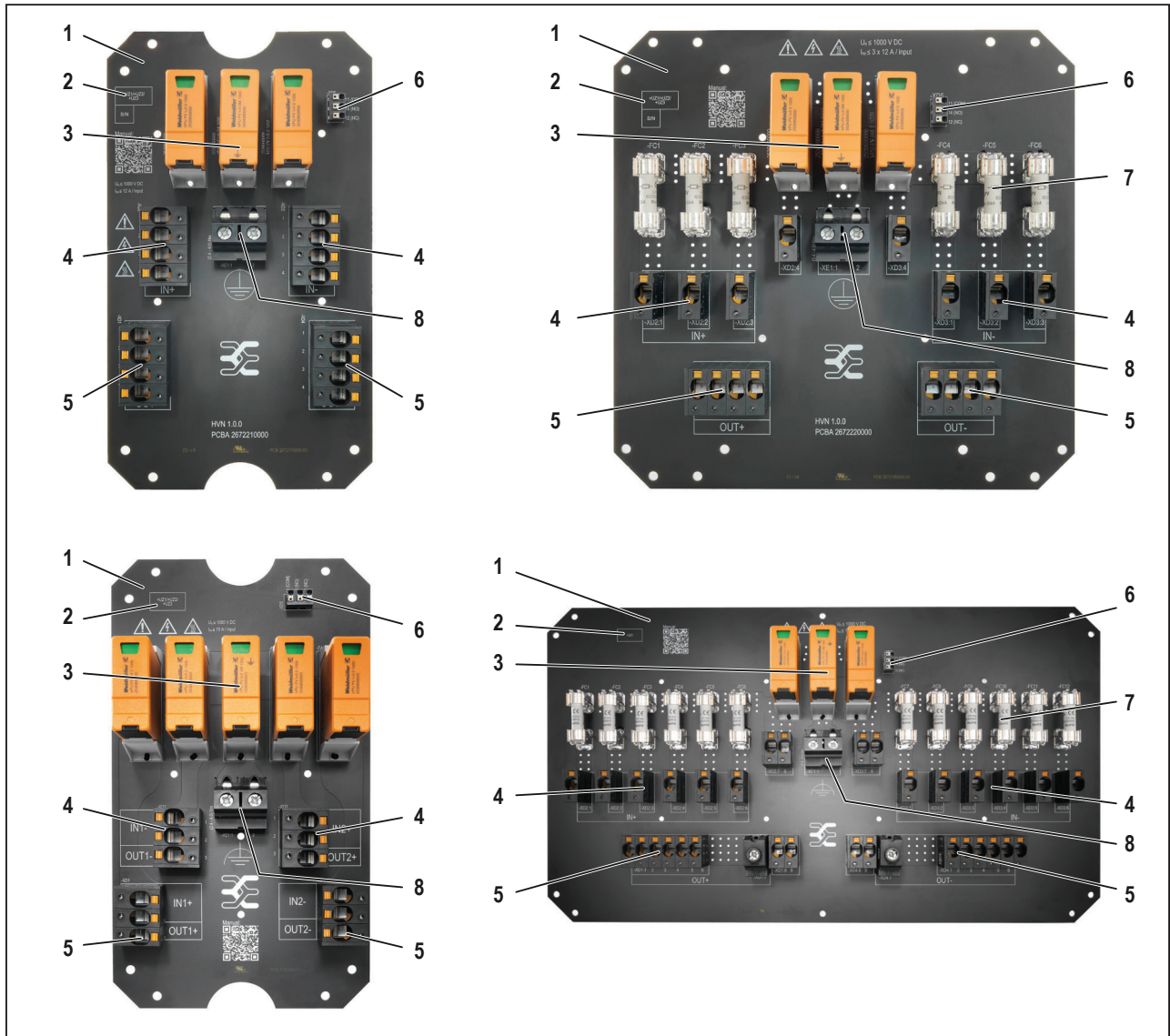


Figure 3.3 Overview of the components (examples, right: variant with fuse links)

- 1 Printed circuit board (PCB)
- 2 Equipment identifier
- 3 Surge protection
- 4 DC PCB terminal for string input
- 5 DC PCB terminal for output to the inverter
- 6 Remote signalling contact surge protection
- 7 Fuse links
- 8 PCB terminal for functional earth

3.2 Enclosure



Figure 3.4 Enclosure (example)

The enclosure base part of the PV Next String Combiner Box is made of glass-fibre reinforced polyester (GFRP), the transparent cover is made of polycarbonate. The enclosure corresponds with protection class IP65 (according to IEC 60529). The label with warning symbols must be legible at all times.

3.3 Switch-disconnector (optional)



Figure 3.5 Switch-disconnector

The making and breaking capacity of the switch-disconnector (according to the IEC 60947-3) has been selected to assure that it can switch the circuit at full load at the maximum operating temperature.

3.4 Connections

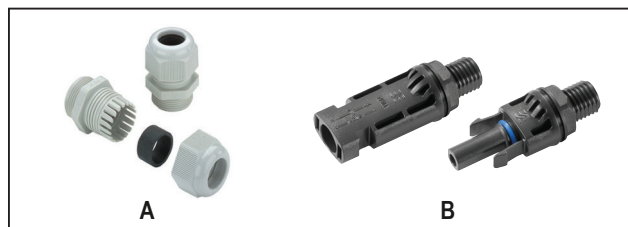


Figure 3.6 Cable glands (A) and PV connectors (B)

The PV Next String Combiner Box is equipped with cable glands (A) and optionally with PV connectors (B). PV connectors reduce installation and maintenance time. The connectors meet the requirements of the DIN EN 50521 standard.

3.5 SL SET PV next seal set

The combiner box is supplied with one bag per PCB/MPPT containing the SL SET PV next seal set (Order No. 2729230000). enthalten. The seal set consists of the following parts:

- 4 x multiple sealing insert 3 x 7,0 mm
- 8 x blind pin $\varnothing 7 \times 28$ mm
- 2 x reducing sealing insert 9–16 mm

3.6 Surge protection device



Figure 3.7 Surge protection device

The surge protection device complies with IEC 61643-32 Type I+II or Type II.

3.7 PCB terminals



Figure 3.8 PCB terminal with PUSH IN function

The PUSH IN PCB terminals enable faster and safer connection of the DC cables and require no maintenance. We recommend using a slotted screwdriver 0.8 mm x 4 mm (Weidmüller Order No. 9008340000) to operate the pusher.

3.8 Fuse holder with fuse link (optional)



Figure 3.9 Fuse holder with fuse link

Each fuse holder is covered with a silver layer and supplied with a spring. This ensures a long life contact between the fuse link and the fuse holder.

The fuse links with gPV fuses according to IEC 60269-6:2010 protect the PV string cables against overcurrent. The fuse links are equipped with silver-coated end caps for the lowest possible contact resistance.

3.9 Surge protection according to DIN EN 50539-12

The use of the PV Next String Combiner Box as surge protection according to DIN EN 50539-12:2014 depends on the distance between the PV generators and the inverter.

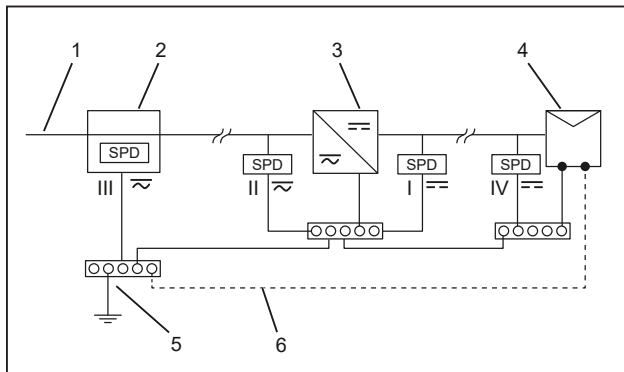


Figure 3.10 Surge protection in the PV system

- 1 Mains connection
- 2 Main distribution
- 3 PV inverter
- 4 PV generator
- 5 Earthing system
- 6 Additional earthing connection

Outer lightning protection system present	Separation distance $S \geq 0.7 \dots 1.0$ m fulfilled	Cable length $l_2 < 10$ m	In front of the inverter	Behind the PV generators
-	-	-	Type II	Type II
-	-	x		-
-	-	-		Type II
-	-	x		-
x	x	-	Type II	Type II
x	x	x		-
x	x	-		Type II
x	x	x		-
x	-	-	Type I	Type I
x	-	x		
x	-	-		
x	-	x		

DIN EN 50539-12: Requirements for surge voltage arresters depending on application



Observe the cross-sections of the functional earth cable required in DIN EN 50539-12:2014:
 Type II: minimum 6 mm² or equal to the cross-section of the active conductor if this is greater than 6 mm².
 Type I: minimum 16 mm² or equal to the cross-section of the active conductor if this is greater than 16 mm².

3.10 Regarding the LPL



Choose the products in a way that they meet the lightning protection level (LPL) at the installation site.

Please ask your building insurance company for the appropriate LPL.

LPL	10/350 μ s	8/20 μ s
LPL I	$I_{imp} \geq 5$ kA, $I_{total} \geq 10$ kA	$I_n \geq 10$ kA, $I_{total} \geq 20$ kA
LPL II	$I_{imp} \geq 3,75$ kA, $I_{total} \geq 7,5$ kA	$I_n \geq 7,5$ kA, $I_{total} \geq 15$ kA
LPL III/IV	$I_{imp} \geq 2,5$ kA, $I_{total} \geq 5$ kA	$I_n \geq 5$ kA, $I_{total} \geq 10$ kA

3.11 Technical data

General data	
MPPT suitable for connection	1 ... 6
String inputs per MPPT	2 ... 6
Outputs per MPPT	1 ... 6
Permissible ambient temperature in operation	-20°C ... +50°C, see type plate
Permissible ambient temperature for storage and transport	-20°C ... +70°C
Relative humidity for storage and transport	5 to 50%
Permissible height above sea level	3,000 m (without switch-disconnector: 4,000 m)
Input connectors enclosure	PV connectors (type WM4 C) or cable glands
Input connections string cables	PUSH-IN (up to 16 mm ² conductor cross-section)
Enclosure	
Enclosure base part	GFRP (glass-fibre reinforced polyester), free from halogens
Enclosure cover	Polycarbonate, transparent
Enclosure mounting	Wall mounting
Degree of protection according to IEC 60529	IP65 for the entire product
Seal material	Polyurethane
Impact resistance	IK08 (IEC 62208), IK10 (IEC 62262)
Flammability rating according to UL94	V-2
Cover attachment	Cross-head screws (Nylon)
Screws for wall mounting (not included)	∅ 4.8 mm, head: ∅ 9.5 mm, e.g. ISO 14585
Connections	
PV connectors (WM4 C), connectable wire cross-sections	4 mm ² ... 6 mm ²
PV connectors (WM4 C), stripping length	8 mm ± 1 mm
DC PCB terminals string input, output and switch-disconnector, connectable conductors	2.5 mm ² to 16 mm ² solid, stranded, with/without wire-end ferrule
DC PCB terminal string input, output and switch-disconnector, stripping length	18 mm ± 1 mm
PCB terminal remote signalling contact, connectable wire cross-section	0.25 mm ² ... 1.5 mm ² with/without wire-end ferrule
PCB terminal remote signalling contact, stripping length	≤ 0.75 mm ² : 10 mm ± 1 mm; 1.5 mm ² : 7 mm ± 1 mm
PCB terminal for functional earth, connectable conductor	6 mm ² ... 16 mm ² solid, 6 mm ² ... 25 mm ² stranded, with wire-end ferrule max. 16 mm ²
PCB terminal for functional earth, stripping length	15 mm ± 1 mm
Torques and clamping ranges	
PCB terminal for functional earth	2.4 ... 4 Nm
Cable gland M16 cap nut	3.0 Nm ± 0.2 Nm
Clamping range cable gland M16	5 ... 7 mm
Cable gland M25 cap nut	8.0 Nm ± 0.2 Nm
Clamping range cable gland M25	5 ... 7 mm, (triple reducing insert) 9 ... 16 mm (single reducing insert)
Cover attachment screws	1.5 Nm ± 0.15 Nm
Switch-disconnector (optional)	1.7 Nm

Product description

Electrical data		
Maximum input voltage	1,000 V DC	
Maximum current per string input (I_{nc})	10 ... 15 A DC, see type plate	
Maximum short-time withstand current per string input	$1.25 \times I_{nc}$	
Maximum current per PV connector	35 A DC	
Maximum current per MPPT	30 ... 90 A DC	
Maximum current per spring terminal	50 A DC	
Overvoltage category according to IEC 60644-1	III (8 kV pulse strength)	
Pollution degree within the box	2	
Surge protection	Type I+II	Type II
PV system voltage, max. U_{cpv}	1.1 kV	
I_{mp} (10/350 μ s)	6,25 kA (2IN1 = 3.125 kV)	–
Discharge current I_n/I_{max} (8/20 μ s)	20 kA / 40 kA	
I_{total} (10/350 μ s)	12,5 kA (2IN1 = 6.25 kV)	–
Overall leakage current I_{total} (8/20 μ s)	50 kA	
Short-circuit resistance I_{scpv}	11 kA	
Protection level U_p at 20 kA (8/20 μ s) +/-, -/PE, +/PE	≤ 3.8 kV	
U_{res} at 15 kA / 5 kA	3.5 kV / 3 kV	
Remote signalling contact	24 V / max. 100 mA; 48 V / max. 200 mA	
Standards	EN 50539-11:2015, EN 50539-12:2014	
Spare arrester	2530600000 (outside) 2534300000 (middle)	2530660000
Switch-disconnector (optional)		
Type of protection	Front: IP66, rear: IP20	
Category	DC PV-2	
Pollution degree internal	2	
Electrical service life in case of short-circuit, with rated current 16 A/contact	At least 300 switching cycles	
Pulse strength	8 kV	
Switching current per pole at 700 V / 800 V / 1000 V	40 A DC / 30 A DC / 20 A DC	
Maximum switching voltage	1,500 V DC	
Maximum short-circuit current	5 kA at 1,500 V DC	
Conductors that can be connected	2 x 2.5 mm ² ... 6 mm ² solid and stranded with wire-end ferrule	
Stripping length	12 mm \pm 1 mm	
Standards	EN 60947-3:2017	



Please refer to the data sheet enclosed with the product.

4 Transport and storage

4.1 Transport



- ▶ Observe the total weight and use appropriate transportation equipment.

4.2 Unpacking the delivery

ATTENTION

The product can be destroyed!

The connectors and the cable glands on the enclosure bottom can be damaged.

- ▶ Always place the product on the rear side after unpacking.

- ▶ Check whether the product contained in the packaging corresponds with your order.
- ▶ Check that the delivery is complete and is not damaged. For the scope of delivery, see the enclosed data sheet and dispatch documents.



Do not install the device if you have noticed a problem or damage!



If you have not received the product you ordered, or if the delivery is incomplete or damaged, please contact your Weidmüller representative or distributor.

4.3 Storage

For longer storage periods, the approved environmental conditions must be observed (see "Technical data").

ATTENTION

The product can be destroyed!

The connectors and the cable glands on the enclosure bottom can be damaged.

- ▶ Always store the product so that it lies flat on the rear side.



If dirt, moisture or damage has occurred to the product during storage, you must not use the product. Contact your Weidmüller representative or distributor.

5 Installation

5.1 Installation site

The PV Next String Combiner Box is suitable for protected outdoor installation. For safe operation and to avoid damage to the product, the following requirements must be observed when selecting the installation site.

- The installation site must not be located in an environment where flammable liquids, gases or dusts may be present. Work on the PV Next String Combiner Box can produce sparks that can ignite a potentially explosive air mixture.
- Direct exposure to sunlight and precipitation over long periods of time, as well as excessively high or low temperatures, can damage the product and shorten its service life. Select an installation site where the product is protected from rain and direct sunlight.
- The environment must be free of gases which, in combination with humidity, have an aggressive effect on surfaces (e.g. ammonia).
- The installation site must be chosen such that the product is easily accessible for installation work and subsequent maintenance, and can be worked on safely.
- The site for wall mounting must be sufficiently load-bearing and must not be made of combustible material.
- Unauthorised persons must not have access to the product.
- The PV Next String Combiner Box and all cables must be mounted and installed in such a way that they cannot be damaged by rodents.
- Observe the permissible ambient conditions. The temperature range is indicated on the label inside the combiner box.
- The PV Next String Combiner Box must be mounted on a flat wall. Unevenness can cause the enclosure to warp and leak.
- The distance from adjacent objects should be at least 250 mm, ideally 400 mm. This ensures sufficient cooling of the enclosure and free access for maintenance work.

Orientation

The PV Next String Combiner Box is designed for wall mounting in vertical orientation. PV connectors and cable glands must face downwards. The forward or backward inclination should not exceed 20°.

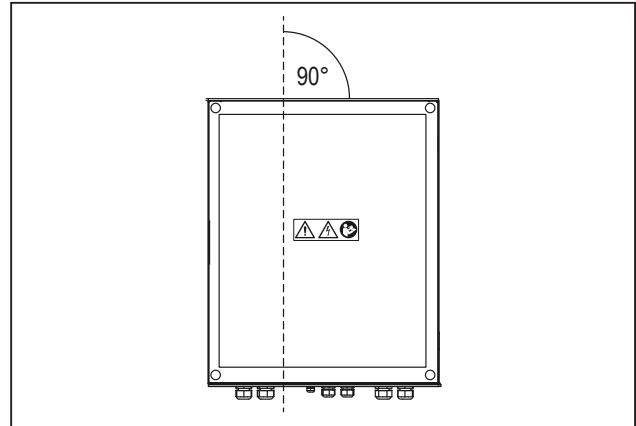


Figure 5.1 Vertical orientation

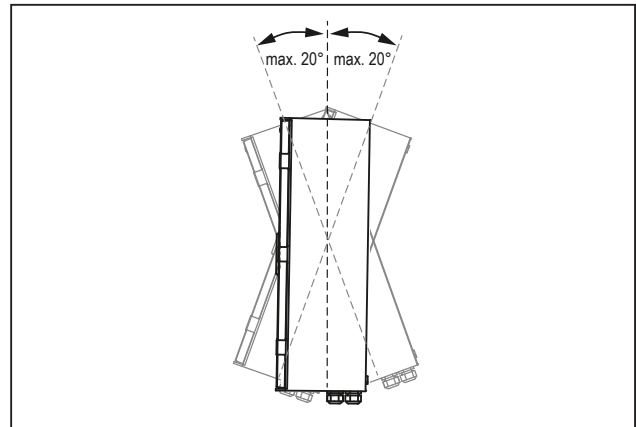


Figure 5.2 Maximum permissible forward or backward inclination



- The PV Next String Combiner Box must not be suspended under a ceiling.

5.2 Mounting the product



During installation, make sure that no moisture, dust or foreign objects can penetrate into the product.

ATTENTION

Damage to property due to unsuitable screws!

If the diameter of the screw or screw head is too small or too large, the screw may become wedged in the mounting hole and damage the enclosure. For the same reason, countersunk screws are unsuitable.

- ▶ For wall mounting, use screws with the properties described below.

Half-round head screws or cylinder head screws are suitable, e.g. according to DIN 7049, DIN 7981 or ISO 14585.

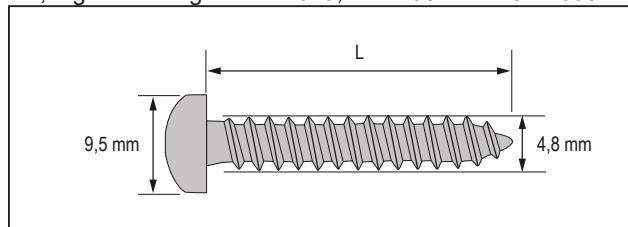


Figure 5.3 Dimensions of the mounting screws

The length X (penetration depth into the wall) must be dimensioned in such a way that a secure hold in the wall is guaranteed.

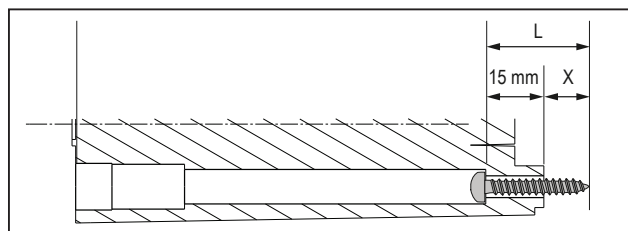


Figure 5.4 Drilling depth for wall mounting

ATTENTION

The product can be destroyed!

The IP protection class described only applies if the enclosure is not damaged.

- ▶ Under no circumstances must you drill any additional holes in the enclosure.
- ▶ Do not change the existing openings under any circumstances.

- ▶ Lift the PV Next String Combiner Box out of the packaging.

- ▶ Measure the exact distance between the fixing holes and mark the positions on the wall (see dimension tables in chapter 5.3).
- ▶ Drill the holes in the wall and insert suitable dowels as required.
- ▶ Remove the enclosure cover from the PV Next String Combiner Box.
- ▶ Screw the PV Next String Combiner Box to the wall through the mounting holes.

Cable entries

The cable glands ensure both the strain relief and the tightness of the cable entries.

- ▶ Always ensure that the correct torques are used.
- ▶ Seal all unused cable entries. For this purpose, please use the accessories from the enclosed SL SET PV next seal set (multiple sealing inserts, reducing sealing inserts, blind pins).

PV connectors

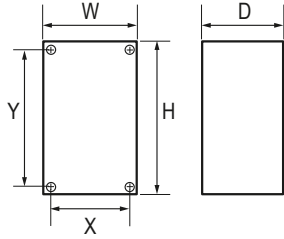
- ▶ If your product is equipped with PV connectors, protect unused connectors with protective caps to prevent dust and moisture from penetrating inside.

Protective caps: VSSO WM4 C (Order No. 1254870000)

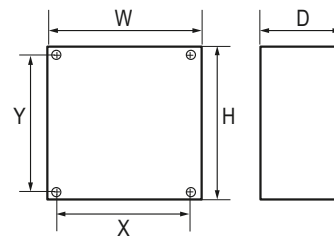


Take care not to cover the pressure equalisation element on the underside of the product. This element significantly reduces the formation of condensation in the enclosure.

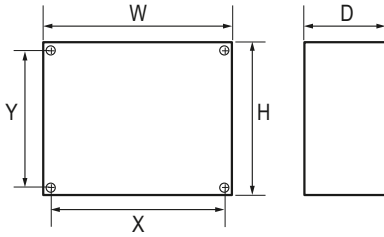
5.3 Enclosure and mounting dimensions



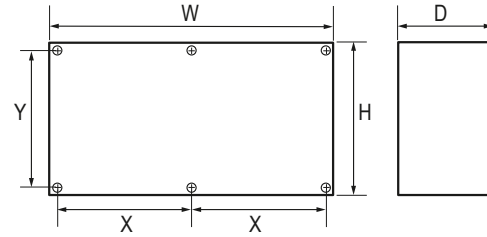
Order No.	Type		mm
2683110000	PVN1M1I3SXFV1O0TXPX10	W	186
2683140000	PVN1M1I3S0FXV1O0TXPX10	H	302
2683170000	PVN1M1I3SXFV1O1TXPX10		
2683200000	PVN1M1I3S0FXV1O1TXPX10	D	175
2683310000	PVN1M1I3SXFV2O0TXPX10	X	166
2683340000	PVN1M1I3S0FXV2O0TXPX10		
2683370000	PVN1M1I3SXFV2O1TXPX10	Y	282
2683400000	PVN1M1I3S0FXV2O1TXPX10		
2737580000	PVN1M2I4SXFV1O1TXPX10		
2737590000	PVN1M2I4SXFV1O0TXPX10		



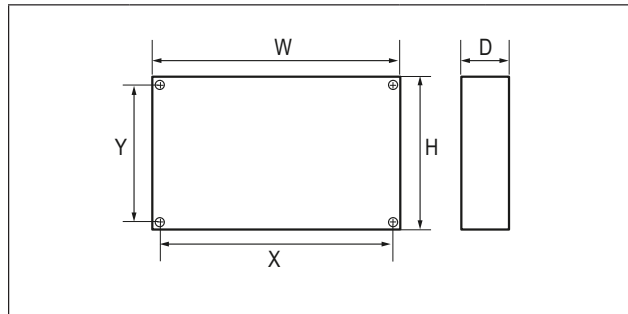
Order No.	Type		mm
2683030000	PVN1M1I3SXF3V1O0TXPX10	W	302
2683050000	PVN1M1I3S0F3V1O0TXPX10	H	302
2683070000	PVN1M1I3SXF3V1O1TXPX10		
2683090000	PVN1M1I3S0F3V1O1TXPX10	D	175
2683230000	PVN1M1I3SXF3V2O0TXPX10	X	282
2683250000	PVN1M1I3S0F3V2O0TXPX10		
2683270000	PVN1M1I3SXF3V2O1TXPX10	Y	282
2683290000	PVN1M1I3S0F3V2O1TXPX10		



Order No.	Type		mm
		W	372
2683120000	PVN1M2I6SXFV1O0TXPX10	H	302
2683150000	PVN1M2I6S0FXV1O0TXPX10		
2683180000	PVN1M2I6SXFV1O1TXPX10	D	175
2683210000	PVN1M2I6S0FXV1O1TXPX10		
2683320000	PVN1M2I6SXFV2O0TXPX10	X	352
2683350000	PVN1M2I6S0FXV2O0TXPX10		
2683380000	PVN1M2I6SXFV2O1TXPX10	Y	282
2683410000	PVN1M2I6S0FXV2O1TXPX10		
2737600000	PVN1M4I8SXFV1O1TXPX10		
2737610000	PVN1M4I8SXFV1O0TXPX10		



Order No.	Type		mm
2683040000	PVN1M2I6SXF3V1O0TXPX10	W	558
2683060000	PVN1M2I6S0F3V1O0TXPX10	H	301
2683080000	PVN1M2I6SXF3V1O1TXPX10		
2683100000	PVN1M2I6S0F3V1O1TXPX10	D	210
2683130000	PVN1M3I9SXFV1O0TXPX10		
2683160000	PVN1M3I9S0FXV1O0TXPX10	X	268
2683190000	PVN1M3I9SXFV1O1TXPX10		
2683220000	PVN1M3I9S0FXV1O1TXPX10	Y	280
2683240000	PVN1M2I6SXF3V2O0TXPX10		
2683260000	PVN1M2I6S0F3V2O0TXPX10		
2683280000	PVN1M2I6SXF3V2O1TXPX10		
2683300000	PVN1M2I6S0F3V2O1TXPX10		
2683330000	PVN1M3I9SXFV2O0TXPX10		
2683360000	PVN1M3I9S0FXV2O0TXPX10		
2683390000	PVN1M3I9SXFV2O1TXPX10		
2683420000	PVN1M3I9S0FXV2O1TXPX10		
2737620000	PVN1M6I12SXFV1O1TXPX10		
2737630000	PVN1M6I12SXFV1O0TXPX10		



Order No.	Type		mm
2737440000	PVN1M1I6SXF3V1O1TXPX10	W	488
2737480000	PVN1M1I6S0F3V1O1TXPX10	H	302
2737490000	PVN1M1I6SXF3V2O1TXPX10		
2737500000	PVN1M1I6S0F3V2O1TXPX10	D	130
2737520000	PVN1M1I6SXF3V1O0TXPX10	X	466
2737530000	PVN1M1I6S0F3V1O0TXPX10		
2737540000	PVN1M1I6SXF3V2O0TXPX10		
2737550000	PVN1M1I6S0F3V2O0TXPX10	Y	281

6 Commissioning

6.1 Preconditions for commissioning

The PV Next String Combiner Box is fully mounted.

- ▶ Before commissioning, check that the product is not damaged.



If the enclosure, printed circuit board or individual components are damaged or heavily soiled, do not operate the product. Contact your Weidmüller representative or distributor.



During commissioning, ensure that no moisture, dust or foreign objects can penetrate into the product.



Two procedures are permitted for installation work:

- Working on live components: Only electricians who are qualified to work on live components may work under voltage. They must comply with local regulations (e.g. personal protective equipment and risk assessment).
- Voltage-free working: Input and output cables must be properly disconnected and secured against being switched on again. Voltage-free work may be carried out by electricians and trained personnel.



- ▶ Refer to the inverter manufacturer's documentation.

The Weidmüller WM4C and PV-Stick PV connectors are compatible with each other. Weidmüller accepts no liability for damage caused by the use of connectors from other manufacturers.

6.2 Commissioning the PV Next String Combiner Box

	DANGER Imminent risk to life! Work on live components may only be carried out by qualified electricians. <ul style="list-style-type: none">▶ Observe the country-specific regulations for working on live components.▶ When working on live components, always use suitable tools and aids that eliminate the risk of electric arcs and electric shocks.
	DANGER Imminent risk to life! Up to 1,000 V DC can be present on live parts. <ul style="list-style-type: none">▶ Make sure that the voltage is not restored until the work has been completed.

- ▶ Switch off the inverter. If there is a switch-disconnector on the inverter, it must be in the off-position.
- ▶ If there is a switch-disconnector on the PV Next String Combiner Box, it must be in the off-position.
- ▶ Insert the functional earth cable and the remote signalling cable into the enclosure.
- ▶ Disconnect the functional earth cable, crimp a wire-end ferrule onto the cable and connect it.
- ▶ Disconnect the wires of the remote signalling cable, crimp the wire end ferrules onto the wires and connect them to the terminal of the remote signalling contact.
- ▶ Check that all cables are connected with the correct polarity.
- ▶ Carry out the further steps according to your product variant.

Variant with cable glands:

- ▶ Remove the caps and the rubber seals from the M25 cable glands for IN+ and OUT+ as well as IN– and OUT–.
- ▶ Insert the new multiple sealing insert (3x7 mm) into each cable gland and fit both caps.
- ▶ If not all openings of the multiple sealing insert are required, seal all openings that are not required with the supplied blind pins (Ø7 x28 mm).
- ▶ If only one output line is provided for OUT+ and OUT–, you can alternatively fit the M25 cable gland using the supplied reducing sealing insert 9–16 mm.
- ▶ Feed the output cable through the cable glands into the enclosure.
- ▶ Strip the output cable and connect it.
- ▶ Connect the output cable to the inverter(s). Refer to the inverter manufacturer's documentation.
- ▶ Ensure that the string cables are free of voltage.
- ▶ Check the absence of voltage using a suitable voltage tester.
- ▶ Insert the string cable.
- ▶ Strip the string cable and connect it.
- ▶ Check that all cables are connected with the correct polarity.
- ▶ Tighten the cap nuts of the cable glands (observe torques).
- ▶ Optional: Insert the fuse links into the fuse holders.
- ▶ Mount the cover of the PV Next String Combiner Box (observe torque).
- ▶ Connect the string cables to the PV generators.
- ▶ Move the switch-disconnector of the PV Next String Combiner Box to the on-position.
- ▶ Switch on the inverter.

Variant with PV connector:

- ▶ Plug the output cables into the output connectors.
- ▶ Connect the output cables to the inverter(s). Refer to the inverter manufacturer's documentation.
- ▶ Check that all cables are connected with the correct polarity.
- ▶ Optional: Insert the fuse links into the fuse holders.
- ▶ Mount the cover of the PV Next String Combiner Box.
- ▶ Plug the string cables into the input connectors.
- ▶ Tighten the cap nuts of the cable glands (observe torques).
- ▶ Move the switch-disconnector of the PV Next String Combiner Box to the on-position.
- ▶ Switch on the inverter.

7 Cleaning

ATTENTION

The product can be destroyed!

The enclosure and cover may be damaged by detergents, scouring agents, solvents and high-pressure cleaners.

- ▶ Use a cloth moistened with clear water for cleaning.
- ▶ Clean the PV Next String Combiner Box at regular intervals so that the warning symbols are always clearly visible.
- ▶ Only clean the exterior of the enclosure when it is closed.
- ▶ Take care not to damage the sticker with warning symbols.

8 Maintenance

The PV Next String Combiner Box is low-maintenance. The connections of all DC cables are designed as maintenance-free, self-adjusting PUSH IN spring-loaded terminals.

- A visual inspection must be carried out once a year.
- More intensive maintenance and inspection of all components must be carried out at least every five years.



During maintenance work, make sure that no moisture, dust or foreign objects can penetrate into the product.



Two procedures are permitted for maintenance work:

- Working on live components: Only electricians who are qualified to work on live components may work under voltage. They must comply with local regulations (e.g. personal protective equipment and risk assessment).
- Voltage-free working: Input and output cables must be properly disconnected and secured against being switched on again. Voltage-free work may be carried out by electricians and trained personnel.

8.1 Annual visual inspection

	DANGER
	<p>Imminent risk to life!</p> <p>Up to 1,000 V DC can be present on live parts. The system must be switched off for this work.</p> <ul style="list-style-type: none"> ▶ Switch off the system as described in chapter 2.2.

- ▶ Check the String Combiner Box, all PV connectors, cable glands and cables for damage.
- ▶ Check the legibility and fixation of the warning symbols on the enclosure cover. The legibility may be impaired by weather conditions or UV radiation.
- ▶ Check the outer control panel of the switch-disconnector for damage.
- ▶ Check the seal in the enclosure cover. It must be undamaged and flexible. A porous seal or cracks can lead to leaks.
- ▶ Check the PCB, the fuse holders and all PCB terminals for damage.
- ▶ Check the earthing connection for tight fit (observe torque).
- ▶ Check the clamping points on the switch-disconnector for tight fit.
- ▶ In the event of damage, contact your Weidmüller representative or distributor.



The fuse holders have a silver layer which can discolour due to oxidation and sulphation. This discoloration does not constitute a technical defect as it does not affect the electrical properties.

8.2 Checking and replacing fuse links

	DANGER
	<p>Imminent risk to life!</p> <p>Fuse links must not be removed or inserted under load. The system must be switched off for this work.</p> <ul style="list-style-type: none"> ▶ Switch off the system as described in chapter 2.2. ▶ Before removing a fuse, make sure that no current is flowing through it. Equalising currents between the string cables can also lead to life-threatening arcing and cause damage to the product. ▶ Ensure that the open circuit voltages of the string cables are identical before you insert the fuse links or connect the string cables to the input terminals. Failure to observe can lead to dangerous arcing due to equalising currents.

ATTENTION	
The product can be destroyed!	
<p>Fuse links with an incorrect surface can damage the product (e.g. nickel or tin coatings).</p> <ul style="list-style-type: none"> ▶ Only use fuse links with silver-plated end caps. 	



Fuse links must be replaced if they are visibly damaged or do not pass the continuity test.

For this work you need suitable tools:

- Fuse change pliers or combination pliers
- Multimeter
- ▶ Remove the cover from the enclosure.
- ▶ Pull the fuse link out of the fuse holder with the tool perpendicular to the PCB, without bending the fuse holder.
- ▶ Check the fuse holder visually for damage and the correct seating of the overspring.
- ▶ If the fuse link has no visible damage, check it with a multimeter in the "continuity" setting (resistance measurement).
 - Continuous fuse links can be reused.
 - Non-continuous fuse links must be replaced.

- ▶ Carefully push the (new) fuse link into the fuse holder using the tool. Take care not to damage the PCB!
- ▶ Make sure that the fuse links are properly seated in the fuse holders by visually checking the position of the fuse link between the clamping jaws of the fuse holder.
- ▶ If you do not want to carry out any further work, close the PV NextString Combiner Box again.

8.3 Checking surge protection arresters

Weidmüller surge protection devices are equipped with replaceable arresters. If an arrester is damaged or has reached the end of its service life, it switches off automatically. The status indicator of the affected arrester turns red.

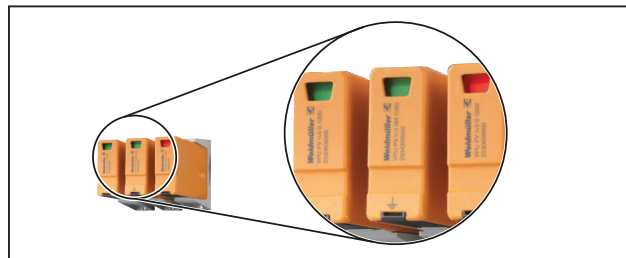


Figure 8.1 Status indicators of the surge protection arresters

At the same time, the remote signalling contact (X1.1) is activated, which can optionally be evaluated by your inverter or data logger. If the remote signalling contact of the surge protection is read by the inverter or a data logger, there is no need to carry out a regular visual check of the surge protection arrester.



Switched off arresters no longer have a protective function and must be replaced immediately.

8.4 Replacing surge protection arresters

	DANGER
	<p>Imminent risk to life!</p> <p>The contacts in the sockets of the surge protection arresters are live. The system must be switched off for this work.</p> <ul style="list-style-type: none"> ▶ Switch off the system as described in chapter 2.2. ▶ Do not reach into the sockets when the arrester is removed.



The surge protection arresters are coded with a pin on the underside. This ensures that only the correct arrester can be plugged into a socket.

- ▶ Only use arresters with identical article numbers.

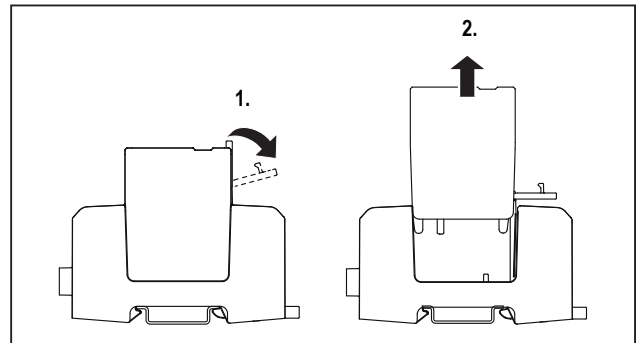


Figure 8.2 Removing surge protection arresters

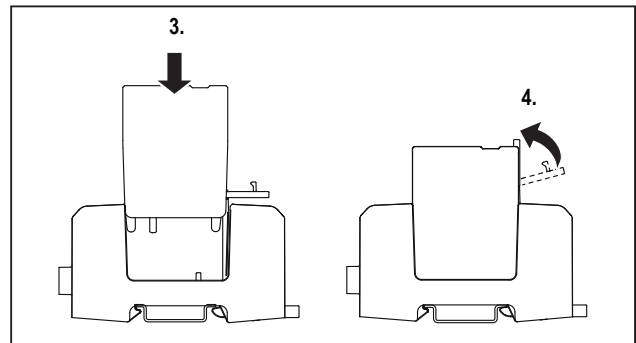


Figure 8.3 Inserting surge protection arresters

- ▶ If you do not want to carry out any further work, close the PV Next String Combiner Box again.

8.5 Checking insulation resistance



Measuring the insulation resistance of plugged-in surge protection arresters leads to an incorrect measurement.

- ▶ Before measuring, remove the surge protection arresters (see chapter 8.4).
- ▶ After the measurement has been completed, reinsert the surge protection arresters into their sockets (see chapter 8.4).
- ▶ If you do not want to carry out any further work, close the PV Next String Combiner Box again.

8.6 Service

If you have questions about the PV Next String Combiner Box, please contact the Weidmüller representative in your country.

Further information about the PV Next String Combiner Box, such as videos, assembly instructions and FAQs, can be found on the Weidmüller website.


www.weidmueller.com/pvnext

8.7 Spare parts and accessories

Product	Usage	Order No.
Mounting brackets	Wall mounting	0360800000
Fuse link 10 mm x 38 mm 1000 V DC gPV, 12 A		7791400462
PV-STICK+ VPE10 (4–6 mm ²)	PV-connector	1303450000
PV-STICK- VPE10 (4–6 mm ²)	PV-connector	1303490000
Dust protection caps VSSO WM4 C (socket and pin)	Dust protection for unused PV-connectors	1254870000
SL SET PV next seal set with 4 x multiple sealing insert 3 x 7,0 mm 8 x blind pin Ø7 x 28 mm 2 x reducing sealing insert 9–16 mm	Sealing the not required openings in cable glands	2729230000
Cutting tool	For PV cables up to 22 mm outer diameter	1157820000
Screw driver 8 mm x 150 mm	Loosening and fixing the cover screws	9008500000
Screw driver 4 mm x 100 mm	Loosening the PUSH IN brackets	9008340000
Screw driver 5,5 mm x 150 mm	Loosening and fixing the functional earth, unlocking the spare arrester of the overvoltage protection	9008350000
Screws	Cover fixing	2690080000
VPU PV I+II 0 1000	Spare arrester for the overvoltage protection (left or right)	2530600000
VPU PV I+II 0M 1000	Spare arrester for the overvoltage protection (middle)	2534300000
VPU PV II 0 1000	Spare arrester for the overvoltage protection	2530660000

9 Decommissioning and disposal

9.1 Decommissioning

	DANGER
	Imminent risk to life! Up to 1,000 V DC can be present on live parts. ▶ Switch off the system as described in chapter 2.2.



▶ Refer to the inverter manufacturer's documentation.

1. Remove the enclosure cover from the PV Next String Combiner Box.
2. Disconnect all connections from the PV Next String Combiner Box.
3. Loosen the screws on the wall mount and remove the product from the wall.

9.2 Disposal

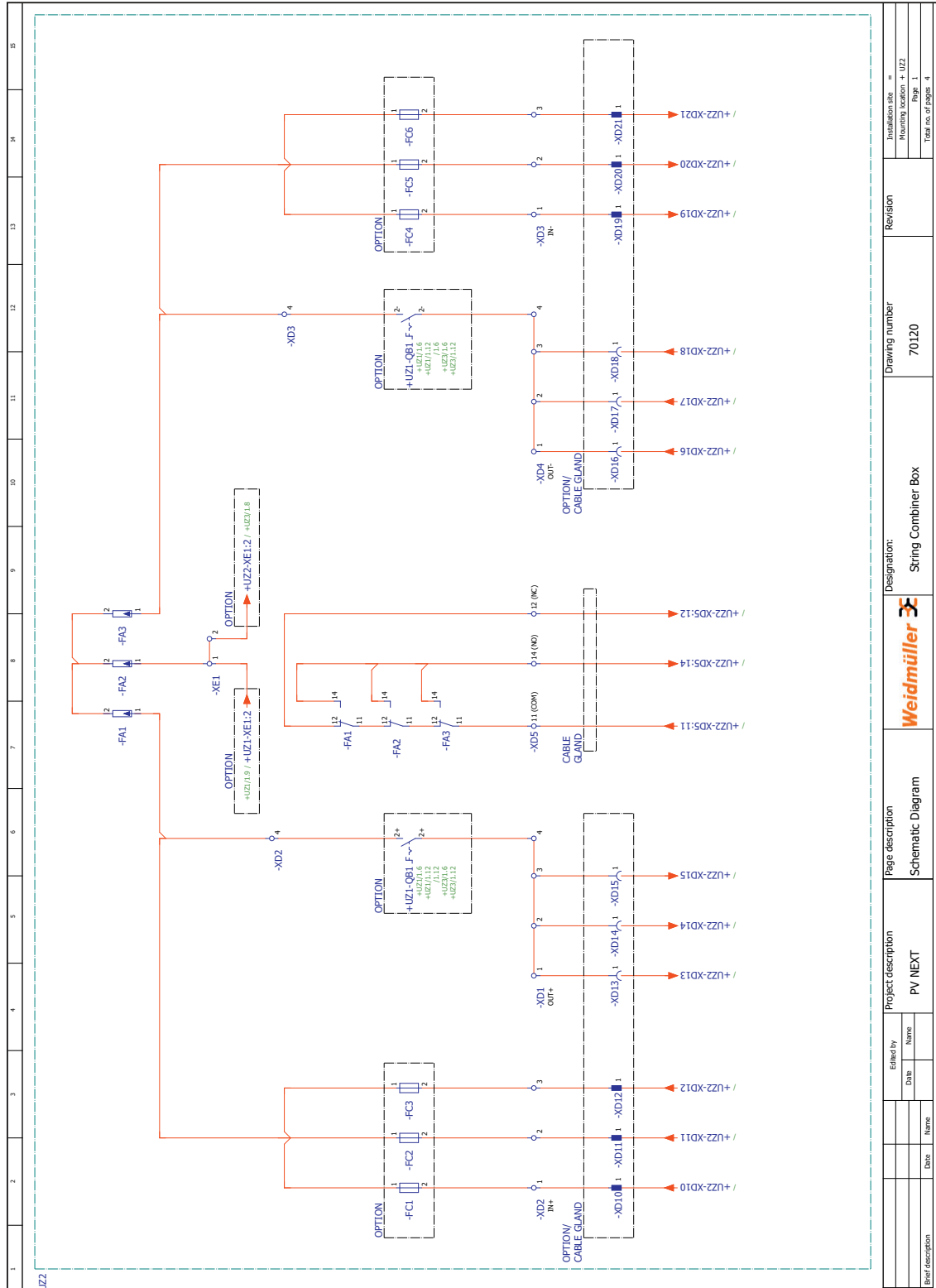


The product contains substances that may be harmful to the environment and human health. In addition, it also contains substances that can be reused through targeted recycling.

Observe the notes for proper disposal of the product. You can find the notes here:
www.weidmueller.com/disposal



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	Electrical connection layout	52



Revision	Installation site = Mounting location = UZ2
Revision	Page 1
Revision	Total no. of pages 4
Drawing number	70120
Designation:	String Combiner Box
Page description	Schematic Diagram
Project description	PV NEXT
Edited by	Date
Drawn by	Date
Checked by	Date
Approved by	Date
Drawn by	Date
Checked by	Date
Approved by	Date

