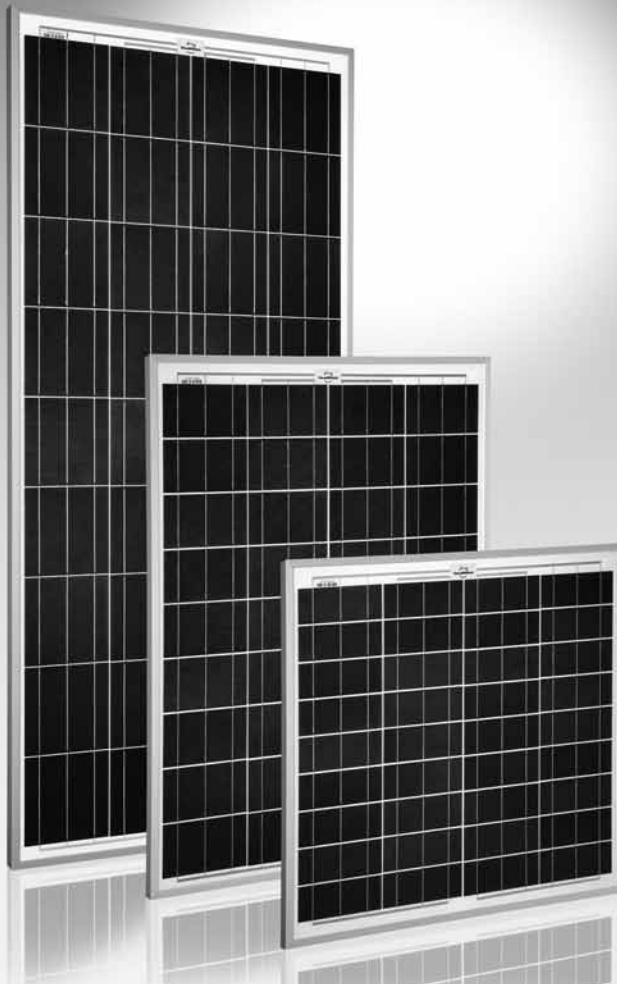


Sunmodule®

Benutzerinformation - User Instructions - Indicaciones para el usuario -
Informations pour l'utilisateur



09/2014

Sunmodule SW xxx poly R6A
Sunmodule SW xx poly RGA
Sunmodule SW xx poly RGP
Sunmodule SW xx mono RHA
Sunmodule SW xx poly RIB
Sunmodule SW xx poly RMA
Sunmodule SW xx poly RNA

DANGER!

⚠ Electric shock

The connection of several modules in series creates increased voltage and may impose danger. Do not insert electrically conducting parts into connectors! Do not install solar modules and wiring with wet connectors! Make sure to work with dry tools and under dry working conditions!

⚠ Work on live parts

When working on wiring, use and wear protective equipment (insulated tools, insulated gloves, etc.)!

WARNING!

⚠ Arcing

Modules generate direct current (DC) when exposed to light. When breaking a closed circuit, a dangerous arc may be generated. Do not cut any live wires.

⚠ Safe installation

Do not carry out installation work in strong winds. Secure yourself and other persons to prevent falls. Secure work materials against dropping. Ensure a safe working environment so as to prevent accidents.

⚠ Fire prevention/explosion prevention

Modules must not be installed in the vicinity of highly flammable gases, vapors or dusts (e.g. filling stations, gas tanks, paint spraying equipment). The safety instructions for other system components must also be followed. Make sure to comply with local standards, building regulations and accident prevention regulations during installation. For roof installation, modules must be mounted on a fire-resistant base material.

ATTENTION

Do not use damaged modules. Do not dismantle modules. Do not remove any parts or nameplates installed by the manufacturer. Do not apply paint or adhesives on the back side. Do not work on modules with sharp objects.

Unpacking and intermediate storage

Do not use the junction box as a handle. Do not place modules roughly on hard surfaces or on their corners. Do not place modules on top of each other. Do not step or stand on modules. Do not place any objects on modules. Do not work on modules with sharp objects. Store modules in a dry place. Leave modules in original packaging until ready to install.

Assembly

- Recommended angle of inclination for photovoltaic operated stand-alone systems/year-round use.

Latitude	Fixed angle of inclination
0° - 15°	15°
15° - 25°	equal to the latitude
25° - 30°	Latitude + 5°
30° - 35°	Latitude + 10°
35° - 40°	Latitude + 15°
over 40°	Latitude + 20°

- 📍 Your local photovoltaic dealer can give you information about a suitable installation location and method.

Grounding of the module and frame

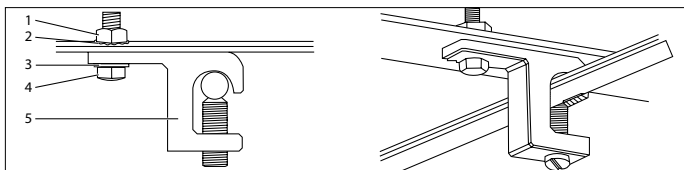
We recommend ensuring the functional grounding of the module metal frame. If an exterior lightning protection system is already provided, the PV system has to be integrated into the protection system against direct lightning stroke. Local standards shall be observed.

Grounding in the US and Canada

Grounding hardware can be installed utilizing a lay-in lug, bolt with serrated washer, washer and nut. The lug must be a tin-coated copper lug, silver in color. Do NOT use a bare copper lug, which is brown. Any grounding method and components listed according to NEC requirements are also acceptable in the US and Canada.

Table: Recommended components for grounding in the US and Canada

Item	Manufacturer/Description	Tightening torque
Bolt (1)	#10-32, SS	25 lbf-in (2.9 Nm)
Serrated washer (2)	M5, SS	
Washer (3)	ID 9/64", OD 3/8", SS	
Nut (4)	#10-32, SS	
Lay-In lug (5)	IlSCO GBL-4DBT (E34440)	35 in-lb, 4-6 AWG stranded 25 in-lb, 8 AWG stranded 20 in-lb, 10-14 AWG sol/str



General Information

This module is rated for use in application class A according to IEC 61730. For the electrical ratings please refer to the datasheet. Under normal conditions, a photovoltaic module is likely to experience conditions that produce more current and/or voltage than reported at standard test conditions. Accordingly, the values of ISC and VOC marked on this module should be multiplied by a factor of 1.25 when determining component voltage ratings, conductor current ratings, fuse sizes, and size of controls connected to the PV output."

Underwriters Laboratories Information (U.S. and Canada)

The solar module electrical characteristics are within +/-10% of the module label indicated values of Isc, Voc and Pmpp under Standard Test Conditions (irradiance of 100 mW/cm², AM 1.5 spectrum, and a cell temperature of 25°C/77°F). Under normal conditions, a photovoltaic module is likely to experience conditions that produce more current and/or voltage than reported at standard test conditions. Accordingly, the values of Isc and Voc marked on this module should be multiplied by a factor of 1.25 when determining component voltage ratings, conductor capacities, fuse sizes, and size of controls connected to the PV output. Refer to section 690-8 of the National Electric Code (NEC) for an additional multiplying factor of 125% (80% de-rating) which may be applicable. Over-current protection shall be in accordance with the requirements of Article 240 of the NEC. Intended wire to be used: Listed PV Wire, AWG 12, outer diameter 7.1±0.2mm, rated min. 90°C dry/wet, 600V. PV Connectors: Type PV-KBT4/6II-UR and type PV-KST4/6II-UR are suitable for the output cable. Cable conduits should be used in locations where the wiring is accessible to children or small animals. Modification or tampering of diodes by unqualified personnel is not permitted. Please consult a SolarWorld Service Center for additional information regarding diode replacement/repair.

To reduce the operating temperature the module must be mounted with a minimum standoff height of 4 in (10 cm) above any surface.

In Canada the installation shall be in accordance with CSA C22.1, Safety Standard for Electrical Installations, Canadian Electrical Code, Part 1.

Suitable ambient conditions

The module is intended for use in moderate climatic conditions. The module must not be exposed to focused light. The module must neither be immersed in water or be exposed to continuous wetting (e.g. by fountains). Exposure to salt or sulfur (sulfur sources, volcanoes) implies a risk of corrosion. The module must not be used for maritime (e.g. boats) purposes. The module must not be exposed to extraordinary chemical loads (e.g. emissions from manufacturing plants). If the modules are installed on stables, a distance of 3 ft/1 m to ventilation openings shall be ensured.

Appropriate usage

Make sure that the module meets the technical requirements of the overall system. Other system components should not exert any adverse mechanical or electrical influences on the module. Modules may bend under high loads. For this reason, sharp-edged mounting elements or other sharp objects (e.g. cable ties on mounting sections must not be mounted near the module back side. When wiring in series, use only modules of the same amperage rating, when wiring in parallel, use only modules of the same voltage. The modules must not be operated at a higher voltage than the permissible system voltage. For system documentation, please note the model and serial number.

Optimum installation

In order to avoid performance losses, all modules connected in series should be arranged with the same orientation and tilt angle. The modules should be installed in an all-season shade free area. Even partial shading results in yield losses and should be avoided. Proper ventilation of the module underside will prevent heat build-up that reduces performance. Artificially concentrated sunlight shall not be directed on the module.

Mounting

The modules must be securely installed at a minimum of 4 locations on the frame. Mounting is only allowed in designated areas. These designated areas for mounting are located on the module long sides. They are located between 1/8 of the module length and 1/4 of the module length, measured from the module corner. Mounting the module on its narrow sides is not sufficient. In regards to "Top-Down" mounting methods, the maximum clamping pressure is 50 N/mm² (72.5 psi). Do not drill any holes into the module. Use corrosion-proof mounting material. For more details see mounting drawings and details shown on the last page.

Recommendation: Sunfix supporting profile, Sunfix (end) clamp 1.44 in (34 mm), frame tightening torque: 177 in-lb (20 Nm)

Electrical connection

Use only rated copper solar wire and appropriate connectors. Ensure that they are in perfect electrical and mechanical condition. Connectors may only be connected under dry conditions. Make sure to avoid loose connections in a plugged connection. Only singlecore solar wires may be used for connecting the modules. Wires should be attached to the installation system by means of UV-resistant cable ties. Exposed wires should be protected against sunlight and damage by suitable precautions (e.g. conduits). Check that wiring polarity is correct prior to commissioning the system.

Body	Conductor	Diameter	Voltage	Diode	Max. Series Fuse
IEC	12-14 AWG (2.5 - 4 mm ²)	5.5 - 7.8 mm	1000 V _{DC}	SL1011	15 A
UL	12 AWG (4 mm ²)	7.1 ± 0.2 mm	600 V _{DC}	SL1011	15 A

Cleaning

On principle, the modules do not need much cleaning if the tilt angle is sufficient (> 15°; self-cleaning by rain). If soiling occurs, we recommend cleaning the modules with plenty of water (hose) without the addition of cleaning agents but application of a soft cleaning device (sponge). Never scrape or rub off dirt; this may result in micro-scratches.

Maintenance

We recommend regular inspections of the system to ensure that:

1. All fixtures are securely tightened and corrosion-free;
 2. Wiring is securely connected, properly arranged and free of corrosion;
 3. Cables are free of damage;
- Please also observe applicable standards.

Disclaimer of liability

SolarWorld AG does not guarantee the operational capability and functionality of modules if the instructions contained in the present user information are not complied with. Since compliance with this guide and the conditions and methods of installation, operation, use and maintenance of the modules are not checked or monitored by SolarWorld AG, SolarWorld AG accepts no liability for damage arising through improper use or incorrect installation, operation, use or maintenance. Furthermore, liability for infringements of patent law or of other third party rights arising from the use of the modules is excluded unless we are automatically liable by law.

CABLE INSTALLATION GUIDE

GEFAHR!

⚠ Stromschlag
Werden mehrere Module in Serie geschaltet so summieren sich die Spannungen und stellen eine Gefahr dar. Keine elektrisch leitenden Teile in die Stecker und Buchsen einführen! Solarmodule und Leitungen nicht mit nassen Steckern und Buchsen montieren! Werkzeuge und Arbeitsbedingungen müssen trocken sein!

⚠ Arbeiten unter Spannung
Bei Arbeiten an den Leitungen Sicherheitsausrüstung (isolierte Werkzeuge, Isolierhandschuhe etc.) verwenden!

DANGER!

⚠ Electric shock
The connection of several modules in series results in the adding up of voltage and imposes danger. Do not insert electrically conducting parts into connectors! Do not fit solar modules and wiring with wet connectors! Make sure to work with dry tools and under dry working conditions!

⚠ Work on live parts
When working on wiring, use and wear protective equipment (insulated tools, insulated gloves, etc.)!

¡PELIGRO!

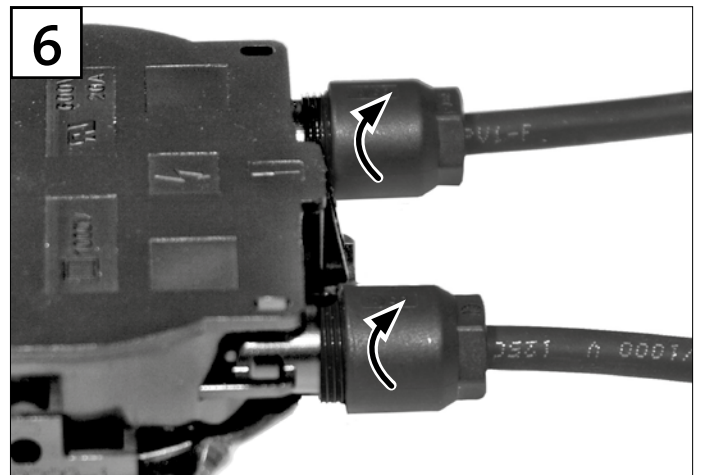
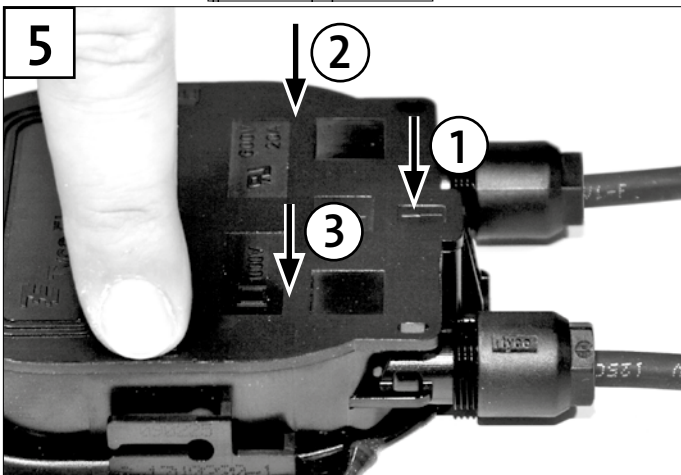
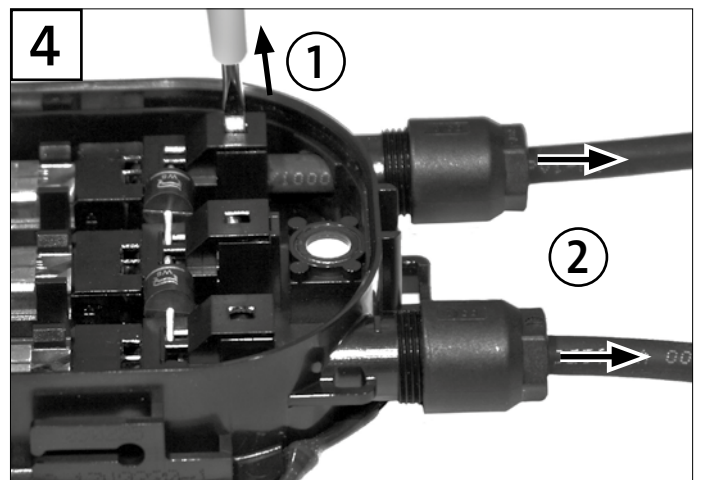
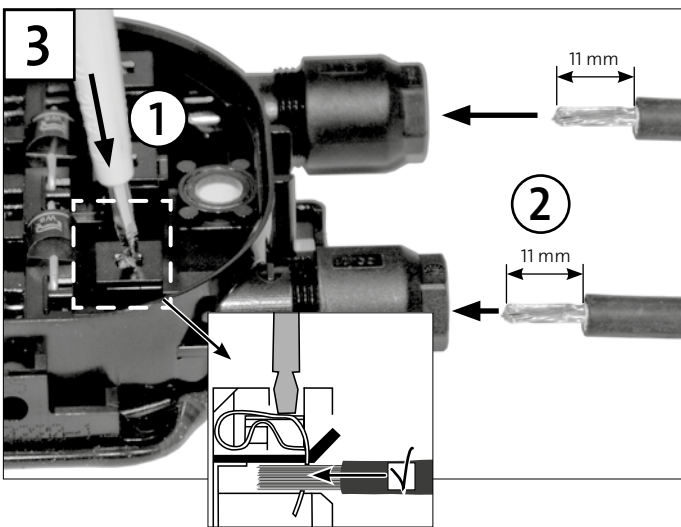
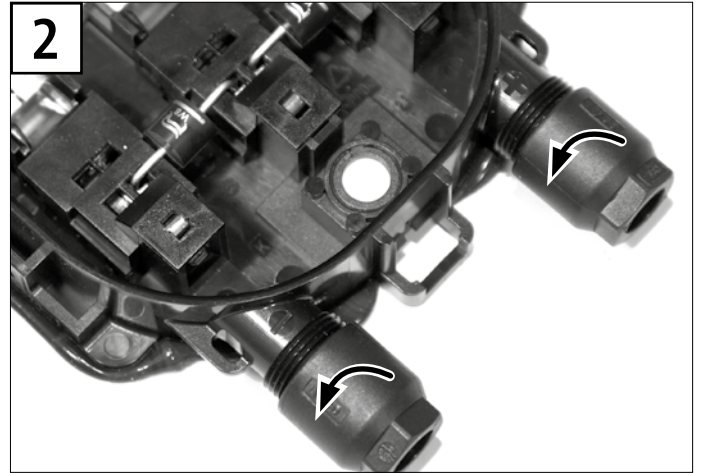
⚠ Descarga eléctrica
Si se conectan varios módulos en serie, las tensiones se suman y ello constituye un riesgo. ¡No introduzca ninguna pieza conductiva en los enchufes y clavijas! ¡No instale los módulos, ni enchufe los conectores estando húmedos! ¡Las herramientas tienen que estar secas, así como las condiciones de trabajo!

⚠ Trabajo con tensión
¡Al trabajar con los cables, utilice equipamiento de seguridad (herramientas y guantes aislantes)!

DANGER !

⚠ Électrocution
Lorsque plusieurs panneaux sont connectés en parallèle, les courants se cumulent et présentent un danger. Ne pas introduire des pièces électro-conductrices dans les fiches et douilles ! Ne montez pas les panneaux solaires et les câbles avec des douilles et fiches humides ! Les outils et les conditions de travail doivent être à sec !

⚠ Travail sous tension
Lorsque vous effectuez des travaux sur les câbles, utilisez les équipements de protection (outils isolés, gants isolés, etc.) !

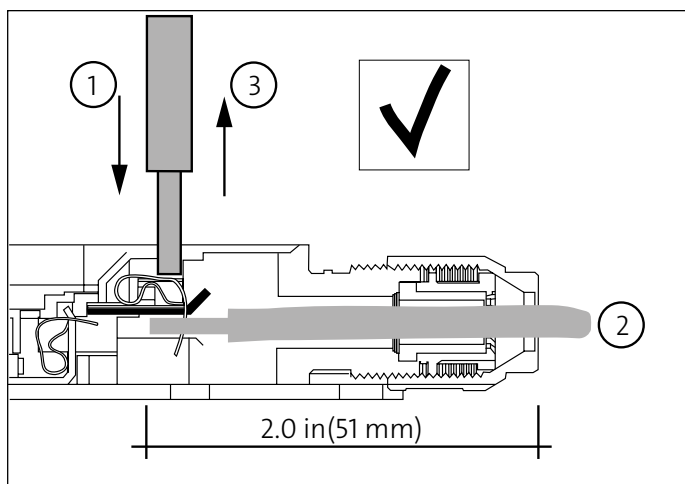


DE ANLEITUNG

- ① Um die Anschlussdose zu öffnen benutzen Sie einen Schlitzschraubendreher mit 3,5 mm breiter Klinge. Führen Sie den Schraubendreher in die markierte Lasche des Deckels und hebeln Sie diesen aus.
- ② Öffnen Sie die beiden Muttern der Kabelverschraubung, wenn diese werkseitig nicht geöffnet sind.
- ③ Isolieren Sie das Kabel auf einer Länge von 11 mm ab. Drücken Sie mit dem Tyco-Werkzeug 1579007-2 (alternativ: 3,5 mm Schlitzschraubendreher) auf die Anschlussklemme und halten Sie diese unten. Führen Sie das Kabel in die Anschlussdose und achten Sie auf einen korrekten Sitz in der Kabelaufnahme und die Polarität. Wiederholen Sie die Installation mit dem zweiten Anschlusskabel.
- ④ Entlasten Sie die Klemme, kontrollieren Sie den korrekten Sitz des Kabels indem Sie leicht an diesem ziehen. Die mittlere unbelegte Anschlussklemme ist bei korrekter Installation stärker zu sehen.
- ⑤ Schließen Sie den Deckel der Anschlussdose. Drücken Sie diesen rundum an.
- ⑥ Ziehen Sie die Mutter der Kabeldurchführung mit 1,3 – 1,5 Nm fest. Die Dose ist hierdurch IP65 geschützt und das Kabel fest fixiert. Hierzu wird die Benutzung einer geschlitzten Nuss, mit der Schlüsselweite 13 empfohlen.

EN INSTRUCTION

- ① To open the junction box, use a screwdriver with a 9/64" (3.5 mm) wide flat head. Insert the screwdriver into the marked opening lug. Gently unlock lug and release lid. Do not pull the lid out at once.
- ② Open cable gland nut, if not already factory-provided.
- ③ Strip 0.44 in (11 mm) of insulation from cable. Use Tyco-Tool 1579007-2 (alternative: 9/64" (3.5 mm) flat-head screwdriver) to press and hold down terminal clamp. Push cable through cable gland and lead it to terminal clamp. Pay attention to polarity. Repeat with second cable. Ensure the correct plug-in depth of 2.0 in (51 mm) for cable to junction box.
- ④ Removal of tool causes a clamping connection. Check by pulling the cable. After proper installation the top end of cable spring is deeper compared to the middle idle cable spring.
- ⑤ After engaged lid at top end push the lid over entire perimeter 1-3.
- ⑥ Tighten cable gland to a torque of 11.5 – 13.3 lbf-in (1.3 – 1.5 Nm) to ensure IP65 protection and fixation of cable. For this is recommended the use of a slotted socket wrench with wrench size of 13mm.

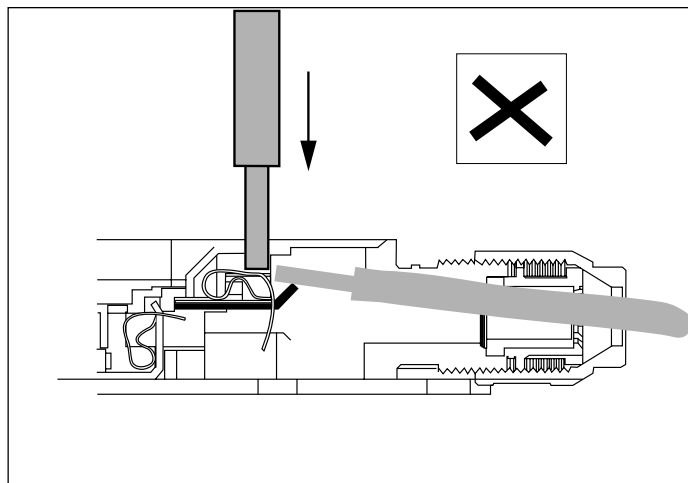


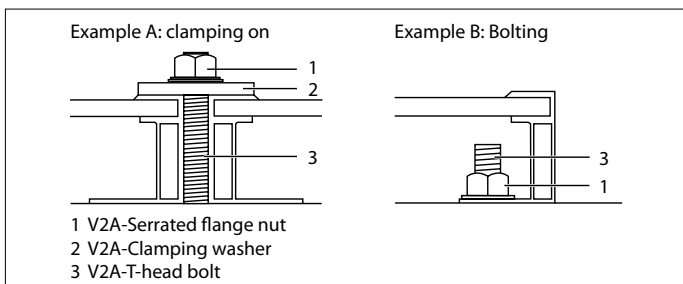
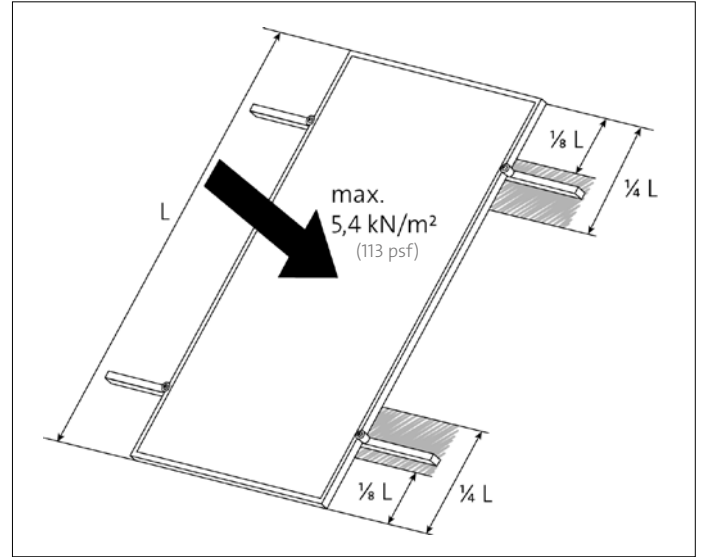
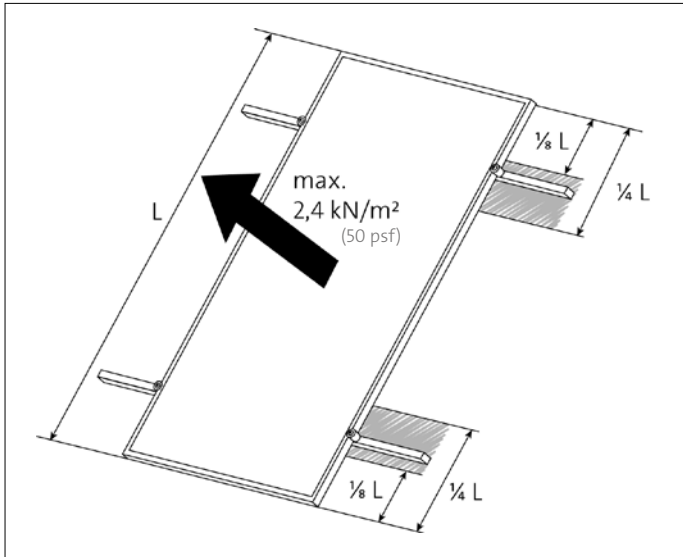
ES INSTRUCCIONES

- ① Abra la caja de conexión mediante un destornillador plano de 3,5 mm. Inserte la punta en la pestaña marcada y haga palanca para abrir la tapa. No arranque la tapa con fuerza.
- ② Abra los prensaestopas para poder introducir los cables.
- ③ Pele 11mm. el aislamiento de los extremos de los cables. Presione hacia abajo la clema de presión con la punta del destornillador e introduzca los cables. Preste especial atención a la correcta polaridad.
- ④ Deje de presionar la clema y compruebe que los cables han quedado bien sujetos, tirando de ellos. La clema de presión central quedará en una posición superior respecto a las otras.
- ⑤ Cierre la tapa de la caja de conexión presionando en todo el perímetro 1-3.
- ⑥ Apriete los prensaestopas (par de apriete entre 1,3 y 1,5 Nm) para asegurar una protección IP65 de la caja y una fuerte fijación del cableado.

FR INSTRUCTIONS

- ① Pour ouvrir la boîte de jonction utilisez un tournevis à tête plate d'une largeur de 3,5mm. Insérez le tournevis dans l'orifice indiqué. Agitez la languette jusqu'à ce que le crochet d'encliquetage libère le couvercle. Ne pas soulever le couvercle d'un seul coup.
- ② Desserrez l'écrou si ce n'est pas déjà fait en usine.
- ③ Enlevez l'isolation des câbles sur 11mm. Appuyez et maintenez en position basse le serre-fils à l'aide d'un outil Tyco 1579007-2 (ou à défaut d'un tournevis à tête plate d'une largeur de 3,5mm). Faites passer le câble à travers le presse-étoupe pour l'amener jusqu'au serre-fils. Respectez la polarité. Répétez avec le deuxième câble.
- ④ Le retrait de l'outil ou du tournevis permet une connexion par pression. Vérifiez en tirant sur le câble.
- ⑤ Après avoir posé le couvercle, exercez une pression sur tout le périmètre 1-3.
- ⑥ Serrer le presse-étoupe avec un couple de serrage dans la plage (1.3 -1.5Nm) pour assurer la protection IP65 et la fixation du câble





SH5006	Hammerkopfschraube M8x49 A2	DE
	Head bolt M8x49 A2	EN
	Tornillo de cabeza de martillo M8x49 A2	ES
	Corps boulon, tête rect. M8x49 A2	FR
SA5079	Klemmscheibe D=36mm	DE
	Connection disc D=36mm	EN
	Arandela de sujeción D=36mm	ES
	Rondelle de serrage D=36mm	FR
SK5012	Flanschmutter M8 A2	DE
	Flange nut M8 A2	EN
	Tuerca de brida M8 A2	ES
	Écrou de la bride M8 A2	FR
SA5087	Klemme Profilabschluss 33,5 mm	DE
	Clamp profile end 33,5 mm	EN
	Borne de extremo de perfil 33,5 mm	ES
	Borne fermeture de profilé 33,5 mm	FR

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