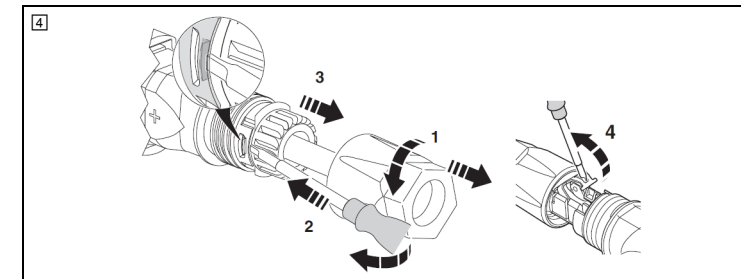
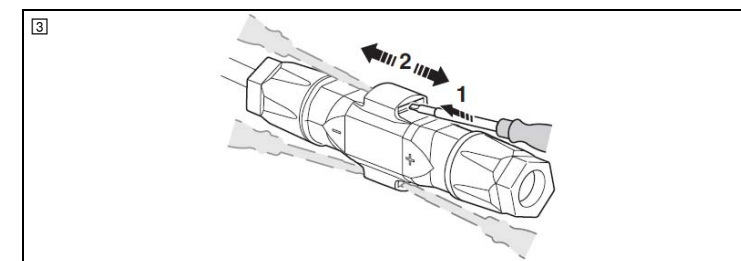
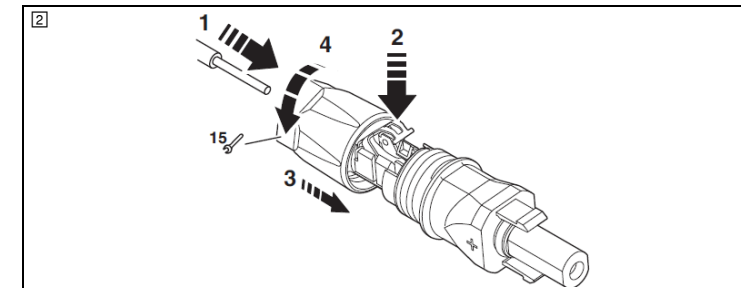
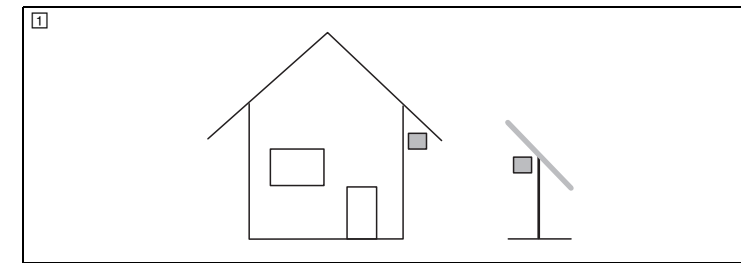



SOL-SC-xST-0-ACDC-xMPPT-xxx1
SOL-SC-xST-0-ACDC-xMPPT-xxx4


Technical Data	
System parameter	see article-specific supplement
System voltage	
Number of string inputs	
Current per string	
Number of outputs	
Number of supported MPP trackers	
Switching capacity	
Safety equipment	
String fuse	
Surge protective device	
Voltage protection level U_p	
Total discharge current I_{Total} (8/20) μ s	
Total discharge current I_{Total} (10/350) μ s	
Cable entry	
Type of cable entry	
Cable cross section string input	
Sealing area string input	
Cable cross section output	
Sealing area output	
Cable cross section grounding	
Sealing area grounding	
General data	
Housing material	
Cover/door material	
Degree of protection	
Protection class	
Dimensions	
Width	
Height	
Depth	
Note on dimensions	
Ambient conditions	
Ambient temperature (operating)	

Pre-assembled string combiner box for the DC and/or AC side of a photovoltaic system

The string combiner box (SCB) is a switchgear combination for use in isolated and grounded PV systems with crystalline modules. You can connect different PV strings to the SCB depending on the version.

The Phoenix Contact switchgear and controlgear assembly may only be operated in accordance with the information in this instruction manual. Do not make any changes, additions or alterations to the switchgear and controlgear assembly. The use of third-party products and components must be recommended and/or approved by Phoenix Contact and reference must be made to the associated technical documentation. The safety risks posed by the switchgear and controlgear assembly must be verified and assessed again following installation in the existing system/in the plant.

Error-free and safe operation of the switchgear and controlgear assembly can only be ensured through correct transport, storage, assembly, mounting, installation, commissioning, operation, and maintenance. The permissible ambient conditions must be observed. All information in the associated documentation must be observed.

If this information is disregarded, there is a risk of electric shock or damage to equipment.

Installation location

- Observe all applicable national laws, ordinances, and regulations for the installation and operation of electrical equipment at the site of operation.
- The switchgear and controlgear assembly has been designed for stationary use and for fixed mounting.
- The switchgear and controlgear assembly must be freely accessible at all times in case of emergency, for operation, and for maintenance work.
- Protect the switchgear and controlgear assembly from direct sunlight.

Only operate the switchgear and controlgear assembly in the approved environment!

Identify the SCB that has been delivered to you on the basis of the type key. Certain sections of this documentation concern optional properties or functions that your SCB may have.

Also observe the accompanying article-specific supplement of your SCB.

Type keys (with example)

SOL-SC -2ST -0- AC/DC - 2MPPT - 1 1 0 1

I	I	I	I	I	I	I	I
A	B	C	D	E	F	G	H

Versions:

A = Number of connected PV strings per MPP tracker

B = System voltage

0 = 1000 V DC

C = Type

AC = AC solution

DC = DC solution

AC/DC = AC/DC solution

D = Number of MPP trackers supported

E = OPTION: surge protection

0 = No surge protection

1 = SPD Class I/II, type 1/2 pluggable surge protective device

2 = SPD Class II, type 2 pluggable surge protective device

3 = SPD Class I/II, type 1/2 surge protective device

F = OPTION: DC switch-disconnector

0 = No DC switch-disconnector

1 = DC switch-disconnector

2 = Fire service switch

G = Protection of PV modules and cables

0 = Without protective device

1 = With lever-type fuse terminal blocks for DC+/DC-

2 = With lever-type fuse terminal blocks for DC+

H = OPTION: type of cable entry / connection technology

0 = Cable gland (2.5 mm² ... 6 mm²)

1 = SUNCLIX connector (IN/OUT)

2 = Cable gland (IN) / SUNCLIX connector (OUT)

3 = SUNCLIX connector (IN) / Cable gland (OUT)

4 = SUNCLIX connector (IN/OUT, 6 mm² ... 16 mm²)

5 = Cable gland (> 6 mm²)

1 Safety notes

WARNING: The SCB may only be connected and maintained by an authorized electrically skilled person.

- During installation, observe the country-specific regulations.
- Always wear your personal protective equipment when working on the SCB.

During startup and maintenance work, proceed in accordance with the five safety rules of DIN EN 50110-1. In general, the rules should be observed in the order indicated below:

- Disconnect safely
- Ensure power cannot be switched on again
- Verify safe isolation from the supply
- Ground and short circuit
- Cover or safeguard adjacent live parts

Once the work is complete, perform the above steps again in reverse order.

DANGER: Dangerous contact voltage

There are two different voltage sources. The connection cables on the photovoltaic system may also be live if a disconnector is open or there is a ground fault.

- Do not touch any live components.
- Switch off the PV system before performing any work.
- Before performing any work on the SCB, switch off the inverter and make sure that there is no reverse voltage from the inverter.
- Never connect or disconnect the connecting cables under load!
- Never open the lever-type fuse terminal blocks under load!
- Ensure that there is no ground fault in the PV system.

WARNING: Risk of burns

Under full load, the internal components or cables can become very hot (> 50 °C).

WARNING:

Protect the SCB against reverse currents from the inverter. Any reverse current may not exceed the specified maximum current of the SCB (see rating plate of SCB).

2 Transport

- The packaging provides information on how to handle the packaged products.
- Secure the SCB during transport.

Checking the delivery

- Check the delivery for transport damage. Damaged packaging is an indicator of potential damage to the SCB that may have occurred during transportation. This could result in a malfunction.
- Submit claims for any transport damage immediately, and inform the manufacturer and/or your supplier as well as the shipping company without delay. Enclose photos which clearly document the damage to the packaging/delivery together with your claim.
- Immediately after delivery, refer to the delivery note to check the completeness of the contents of the packaging.

3 Assembly
WARNING:

- Observe the weight of the SCB. Two people may be required for mounting the system.
- During all work, always wear safety shoes and make sure that there is sufficient space available.
- Check the SCB for external damage. If the SCB is faulty, it must not be used anymore.

3.1 Installation location requirements
WARNING:

- Install the SCB in a location that may only be accessed by authorized individuals.
- Install the SCB in a wind-protected and weatherproof location (I). Provide sufficient protection against moisture, snow load, and storms. The SCB must be situated under a canopy.
- Select an installation site that is always in shadow. Avoid locations that are exposed to high levels of heat, e.g., from direct sunlight.
- Ensure that air can circulate sufficiently around the SCB housing. To this end, keep sufficient distances, for instance from weather or sun shield panels.

3.2 Mounting the SCB
NOTE:

All the accessories required for mounting and operation are supplied as standard. Only use these parts.

You can achieve improved heat dissipation by increasing the distance between the SCB and the mounting rear panel (for example by mounting it on mounting rails or booms).

Procedure:

- Note the distances between the holes in the housing (see article-specific supplement).
- Mark the drill holes on the wall.
- Drill the holes at the markings.
- Insert suitable dowels in the drill holes.
- Open the knockouts for the mounting holes on the housing using a suitable tool.
- Screw in the SCB using suitable screws and washers.
- Seal the opened knockouts by inserting the provided insulation plugs.
- You can also use special wall brackets (not included).

4 Installation
WARNING:

You may only connect the SCB electrically if it is mounted securely.

WARNING: Faulty insulation

Risk of fatal electric shock.

- Only use cables that satisfy the specified installation regulations regarding voltage, current, insulation material, load-carrying capacity, etc.

During connection also observe the accompanying article-specific supplement of your SCB.

4.1 Carrying out grounding and equipotential bonding
Required conductor cross sections and outer diameters:

- OPTION: SPD Class I/II, type 1/2 surge protective device: 16 mm²
- OPTION: SPD Class II, type 2 surge protective device: 6 mm²
- M20 cable gland: 6 mm ... 12 mm

Perform equipotential bonding using state-of-the-art technology. Short cable paths optimize the voltage protection level.

Procedure:

- Insert the cable through the M20 cable gland on the housing.
- Connect the cable to the appropriately labeled terminal point or directly to the surge protective device (see article-specific supplement).
- Tighten the cable gland to 3.3 Nm.
- Seal unused openings with the provided filler plugs to ensure the degree of protection.

4.2 OPTION: DC switch-disconnector > Connect fire service switch, auxiliary contact and emergency stop switch
4.2.1 Connecting fire service switch

- Connect the cables of the power supply (AC 230 V) with the appropriately labeled terminal points in the SCB (see article-specific supplement).

4.2.2 Connecting auxiliary contact of fire service switch
Required conductor cross sections (rigid or flexible):

- 1-conductor connection: 0.75 mm² ... 1.5 mm²
- 2-conductor connection: 0.75 mm² ... 1 mm²
- Use suitable ferrules for flexible cable.

Procedure:

- Strip 6 mm off the wires using a suitable tool. Make sure that none of the individual wires are cut off in doing so.
- Guide the wires into the terminal point provided for this purpose (for contact assignment, see article-specific supplement).
- Tighten the torque connection screws (torque: 1.2 Nm).

4.2.3 Connecting emergency switch-off button

- Connect the cables of the emergency stop switch with the intended terminal points in the SCB (see article-specific supplement). To ensure the undervoltage release, the emergency stop switch must be connected in such a way that it interrupts when the 230 V AC power supply of the fire switch is activated.

NOTE: After a triggering or automatic switch-off of the fire service switch.

4.3 Connecting PV strings and cables to the inverter
WARNING: Risk of electric shock

The conductors may only be connected or released when the power is switched off.

NOTE: Use the SUNCLIX connectors only in combination with a PV1-F solar cable. Safe electrical connection is only possible with this cable. When laying cables, observe the bend radii specified by the manufacturer.

NOTE: Protect the connectors from humidity and dirt.

- Do not immerse the connectors in water.
- Do not install the cable directly on the roofing surface.
- Attach a protective cap (e.g. PV-C PROTECTION CAP, order number 1785430) to connectors that are not plugged in.

Connecting cables to the connector (2)

- Strip 15 mm off the cable using a suitable tool. Make sure that none of the individual wires are cut off in doing so.

- Carefully insert the stripped wire with twisted litz wires all the way in. The wire ends must be visible in the spring.
- Close the spring. Make sure that the spring is snapped in.
- Push the insert into the sleeve.
- Tighten the cable gland to 2 Nm.

Joining connectors

- Observe the polarity. Bring the plug and the socket together. The connection is snapped into place.
- Pull on the coupling to check for proper connection.

Disconnecting the connector (3)

- Insert a bladed screwdriver with a 3-mm-wide blade (e.g. SZF 1-0.6X3.5, order no.: 1204517).
- Leaving the screwdriver inserted, separate the socket and plug from each other.

Remove cable from connector (4)

- Unscrew the cable gland.
- Insert the screwdriver.
- Pry the connection open and pull the sleeve and the insert apart.
- Open the spring using the screwdriver and remove the cable.

4.4 Insulation testing

Before insulation testing, you must disconnect all surge protective devices in the system. Otherwise, incorrect test results are possible. After insulation testing, you must properly reconnect all surge protective devices.

4.5 OPTION DC switch disconnector > switch statuses of fire service switch

Make sure that the switch status indicator of the fire service switch is not blocked (e.g. by foreign objects).

Evaluation of auxiliary contact

The switching status of the fire service switch can be evaluated via the floating N/C contact or N/O auxiliary contact (for contact assignment, see article-specific supplement).

NOTE: The contacts can be loaded with a maximum load of 0.5 A at 250 V DC.

5 Startup

- Check the polarity of the PV strings.
- Check that the SUNCLIX connectors are securely latched.
- If lever-type fuse terminal blocks are used:
 - PV fuses, type FUSE10.3x38...PV, are required for operation. The rated current depends on your requirements and the system limits of the SCB (see article-specific supplement). Insert the PV fuses into the fuse holders of the lever-type fuse terminal blocks.

If DC switch disconnector is used:

- Next, switch on the switch disconnector or fire service switch (position I).

Stick the yellow warning labels on each housing cover.

NOTE: After a triggering or automatic switch-off of the fire service switch, you must manually re-activate the fire service switch.

6 Maintenance

All electrical equipment must be kept in good condition as stipulated by the relevant standards and regulations.

WARNING:

All maintenance work may only be carried out by qualified specialist personnel who are familiar with the necessary safety precautions. Before performing maintenance, read the safety notes in Section 1.

6.1 Maintenance interval

Check the SCB at regular intervals, at least once a year. The maintenance interval also depends on the operating and ambient conditions. Parts and components that are subject to frequent use or loads must be checked at shorter intervals.

6.2 In the case of defects

Any defects to the SCB must be eliminated as soon as they are identified. If a defective electrical system poses an immediate danger, do not continue to operate it.

If there is any risk of damage to equipment or personal injury, the SCB must be stopped immediately. Before it can be started up again, the SCB must be returned to a safe condition.

6.3 Maintenance and cleaning
Space limits/safe mounting/installation location

- Check the space limits at the installation location (recommended: W = 1000 mm, H = 2000 mm, D = 1000 mm). The prescribed space limits for operation and maintenance must be observed to ensure safe use and must be restored if necessary.

- Check that the SCB is securely fixed in the installation location (e.g., screw connection in the case of wall fastening).

- Make sure that the SCB is suitable for the conditions at the installation site (see article-specific supplement).

Housing and seals

- Check the housing for signs of damage.
- Clean the outside surfaces of the housing with a damp cloth and remove any dirt. Do not use any aggressive or corrosive cleaning agents, thinners, abrasive cleaners or hard objects that could damage the surface.
- Check that the housing is sealed and make sure that there is no condensation inside.
- Check all seals for deformation, cracks, and soiling. All seals must be maintained at regular intervals to ensure that the housing offers the appropriate degree of protection.
- Condition all seals with suitable care products.

Cabling and components

- Regularly check all components, cables, terminal points, conductor connections, and markings.
- Check the strain relief of the cables.
- Check that all cable glands are fixed securely and sealed tight.
- Check the cable routing and bending radii. To prevent damage to the cables, make sure that the cables are not bent at excessively sharp angles.
- Check the cables, cable connections, and components for signs of overheating, e.g., discoloration or deformation. If you notice any problems, please contact your subsidiary to agree on further actions. Subsidiary contact information is available at www.phoenixcontact.com. The source of overheating must be identified and the device returned to a safe, correct condition before the device can be recommissioned.
- Check the torque of all connections. Tighten any loose connections taking into account the maximum torque.
- Check that all connectors are seated securely and functioning correctly.

Fire service switch

- Make sure that the switch status indicator of the fire service switch is not blocked (e.g. by foreign objects).