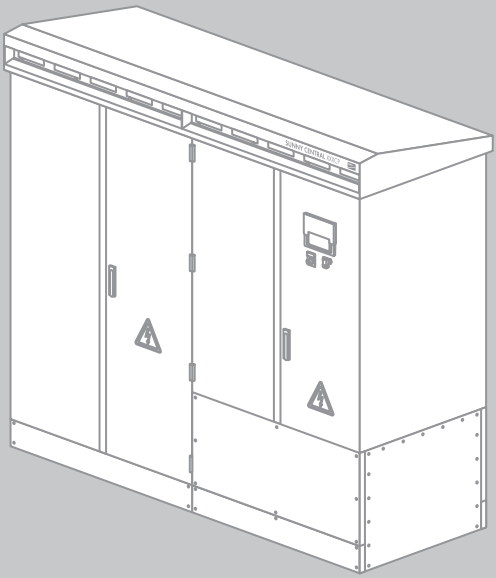
Central Inverter

SUNNY CENTRAL 500CP-JP / 500CP XT / 630CP XT / 720CP XT / 760CP XT / 800CP XT / 850CP XT / 900 CP XT

Maintenance Manual



SCCP-WH-B4-en-20 | 98-4046720 | Version 2.0

EN

Table of Contents

1 Information on this Document

Validity

This document is valid for the following device types:

- SC-500CP-JP
- SC-500CP XT
- SC-630CP XT
- SC-720CP XT
- SC-760CP XT
- SC-800CP XT
- SC-850CP XT
- SC-900CP XT
- SSM
- SSM16-11
- SSM24-11
- SSM8-21
- SSM16-21
- SSM24-21
- Sunny Main Box
- Sunny Main Box Cabinet
- SMA String-Combiner

Target Group

This manual is intended for skilled persons. Only qualified personnel with the appropriate skills are allowed to perform the tasks described in this manual (see Section 2.2 "Qualification of Skilled Persons", page 11).

Additional Information

For additional information on third-party components, please contact the relevant manufacturer.
A maintenance report is enclosed with every inverter. The maintenance report describes the pending maintenance work and the maintenance interval recommended by SMA Solar Technology AG.

Symbols

Symbol	Explanation
⚠ DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury
⚠ WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury
⚠ CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury
NOTICE	Indicates a situation which, if not avoided, could result in property damage
i	Information that is important for a specific topic or goal, but is not safety-relevant
☐	Indicates an essential requirement for achieving a specific goal
☑	Desired result
✖	A problem that might occur

Typography

Typography	Usage	Example
bold	• Display Messages • Elements on a user interface • Operating parameters • Connections • Fuse holders • Elements to be selected • Elements to be entered	• Select the **ExlTrfErrEna** operating parameter and set to **Off**. • Select the **Operating parameters** tab.

Nomenclature

In this manual, the Sunny Central of the CP production series is also referred to as Sunny Central or inverter.

In this manual, the Sunny Central Communication Controller is also referred to as SC-COM.

Abbreviations

Abbreviation	Designation	Explanation
AC	Alternating Current	–
DC	Direct Current	–
ESD	Electrostatic Discharge	–
GFDI	Ground-Fault Detection Interruption	–
PE	Protective Earth	Protective conductor
PV	Photovoltaics	–

2 Safety

2.1 Safety Precautions

Electric shock

High voltages that can cause fatal electric shocks are present in the live components of the inverter.

- All work must be carried out as described in this manual. Observe all safety precautions. Observe all safety precautions in this manual and the inverter installation manual.
- Do not touch any live components of the inverter or the medium-voltage grid. Comply with all applicable safety regulations for handling medium-voltage grids.

In the event of an earth fault, remember that plant components which are presumed earthed may still be live.

- Ensure that no voltage is present before touching any part of the plant.

Operating a damaged inverter can lead to serious injuries from electric shock.

- Only use the inverter when it is working safely and properly and check for visible damage on a regular basis.
- Ensure that all external safety equipment is freely accessible at all times and that regular checks are carried out to ensure that it is fully functional.

Escape Routes

Opening the doors of two inverters located opposite each other blocks the escape route.

- Only open one inverter door at any given time. Maintain the minimum passage width between the open door of the inverter and the next fixed obstacle. The minimum passage width must comply with national standards. In Germany, the minimum passage width is 500 mm.

ESD

By touching electronic components, you can damage or even destroy the inverter through electrostatic discharge (ESD).

- When working on the inverter or handing assemblies, observe the electrostatic discharge safety regulations and wear protective gloves.
- Discharge the electrostatic charge by touching uncoated, earthed enclosure parts (e.g. at the PE connection on the doors). This makes it safe to touch electronic components.

Environmental Influences

Moisture and dust penetration will damage the inverter.

- Do not open the inverter when it is raining or humidity is over 95%.
- Only perform maintenance in a dry and dust-free environment.
- If necessary, use a protective tent such as the SMA service tent.

Observing Torque

Adhere to the torque specifications listed in the circuit diagram and installation manual.

- Contact the SMA Service Line if torque specifications are not given.

Storing Documentation

This manual must be accessible to all service and maintenance personnel at all times.

- Safely store this manual within the immediate area of the inverter.

Warning Signs

Warning signs must be clearly legible at all times.

- Replace warning signs if damaged.

2.2 Qualification of Skilled Persons

The work described in this document must be performed by skilled persons only. Skilled persons must have the following qualifications:

- Knowledge of how an inverter works and is operated
- Training in how to deal with dangers and risks associated with operating and maintaining electrical devices and plants
- Training in the maintenance of electrical devices and plants
- Knowledge of all applicable standards and directives
- Knowledge of and adherence to this document and all safety precautions

2.3 Personal Protective Equipment

After the control voltage has been switched on, personal protective equipment is required for all work performed. The protective equipment must comply with Directive 89/686/EEC. Any protective equipment that is stipulated by law or otherwise required must also be used.

3 Maintenance Intervals

Observing maintenance intervals ensures trouble-free operation of the Sunny Central. Maintenance intervals depend on ambient and operating conditions. Note that cleaning (see Section 6.3 "Cleaning the Ventilation", page 23) and corrosion protection (see Section 6.5.3 "Checking the Surface of the Switch Cabinet", page 33) may be required more frequently depending on the conditions at the installation site. SMA recommends an optical inspection every month to determine maintenance needs. Under normal ambient and operating conditions, the Sunny Central must be fully serviced at the following intervals:

Maintenance under normal ambient and operating conditions:

Description	Interval
Routine maintenance	Every 24 months

Preventative replacement intervals:

Description	Interval
Replacing the 24 V power supply units*	Every 10 years
Replacing the fans of the inverter bridge*	Every 13 years
Replacing the interior fan*	Every 13 years
GFDI/Soft Grounding/ ABB high performance circuit breaker	100 trippings due to short circuit
Surge arrester	If tripped

* Contact the SMA Service Line.

Maintenance intervals

Plant size, location and ambient conditions influence the maintenance intervals.

- If the inverter is subject to adverse ambient conditions, SMA Solar Technology AG recommends shortening the maintenance intervals.

Spare parts

Spare parts can be identified by their reference designation and the circuit diagram. The spare parts list includes the item number of each spare part. For information on a specific item number, please contact the SMA Service Line.

4 Sunny Central CP

4.1 Design of the Inverter

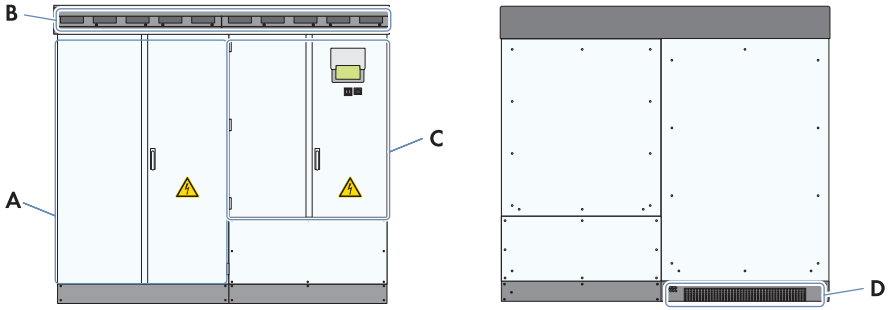


Figure 1: Design of the Inverter

Item	Description
A	Inverter cabinet
B	Insect screen
C	Interface cabinet
D	Ventilation grid

4.2 Type Label

You can identify the inverter by its type label. The type label is located in the interface cabinet and inverter cabinet of the inverter. The serial number is also located on the front of the inverter.

5 Maintenance when Voltage is Present

5.1 Reading Error Messages and Warnings

You can connect a computer via the service interface on the outside of the interface cabinet.

- If an error occurs, read off and resolve the error using the display or the user interface on the SC-COM (see Sunny Central operating manual).

5.2 Checking the DC Switch-Disconnector

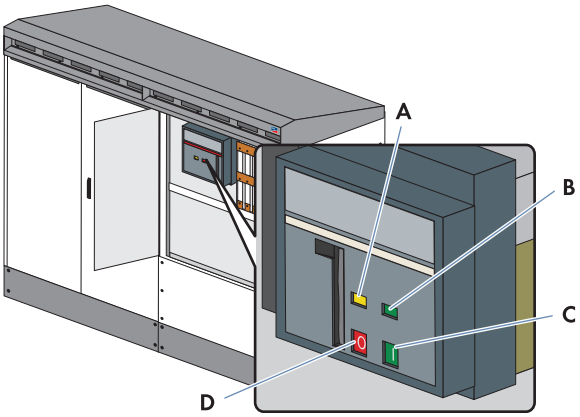


Figure 2: Indicators and switches on the DC switch-disconnector

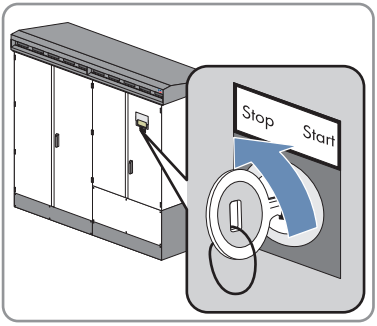
Item	Description
A	Spring status indicator
B	Position indicator
C	ON button
D	OFF button

Requirements:

☐ Control voltage is present.

☐ DC voltage is connected.

1. Switch the inverter to **Stop**.



2. Open the doors of the interface cabinet.
3. Check that the DC switch-disconnector is turned off and indicates the **Off** position.

   If the DC switch-disconnector is not turned off and does not indicate the **Off** position, contact the SMA Service Line.
4. Close the doors of the interface cabinet.
5. Switch the inverter to **Start**.
6. Open the doors of the interface cabinet.
7. Check that the DC switch-disconnector is turned on and indicates the **On** position.

   If the DC switch-disconnector is not turned on and does not indicate the **On** position, contact the SMA Service Line.
8. Switch the inverter to **Stop**.
9. Test the switching operation 3 times.
10. Close the doors of the interface cabinet.

5.3 Checking the Circuit Breakers with Optiprotect (Optional)

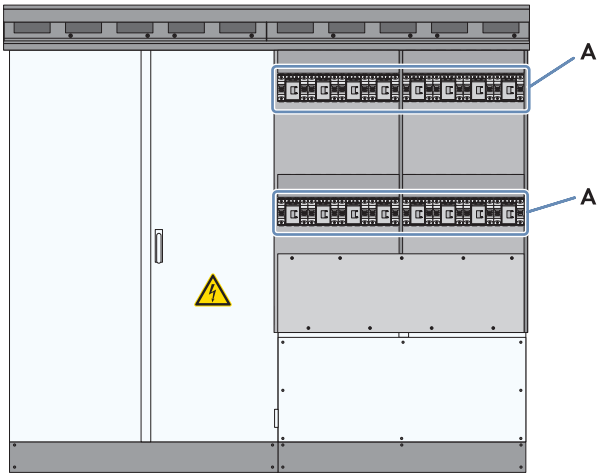


Figure 3: Position of the circuit breakers

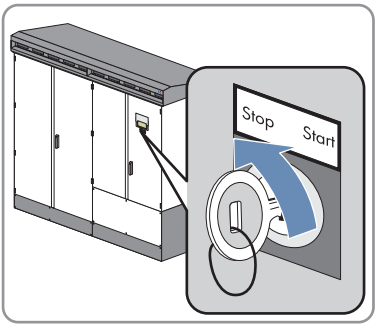
Item	Description
A	Motor-driven circuit breakers

Requirements:

☐ Control voltage is present.

☐ DC voltage is connected.

1. Switch the inverter to **Stop**.



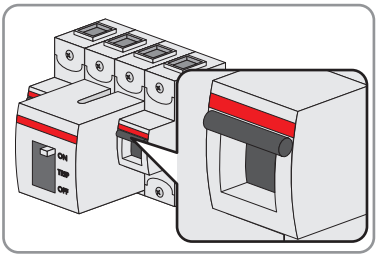
2. Open the doors of the interface cabinet.

3. Switch the inverter to **Start**.

   ☑ The motor-driven circuit breakers are turned on and switch to the **ON** position.

   ✖ Is the circuit breaker not turning on?

   - Contact the SMA Service Line.

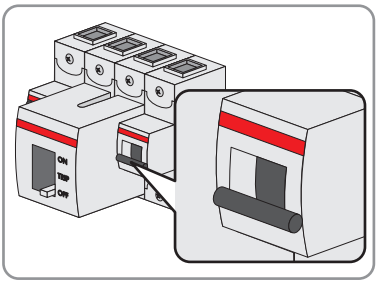


4. Switch the inverter to **Stop**.

   ☑ The motor-driven circuit breakers are turned off and switch to the **OFF** position.

   ✖ Is the circuit breaker not turning off?

   - Contact the SMA Service Line.



5. Test the switching operation 3 times.
6. Close the doors of the interface cabinet.

5.4 AC Circuit Breaker (Optional)

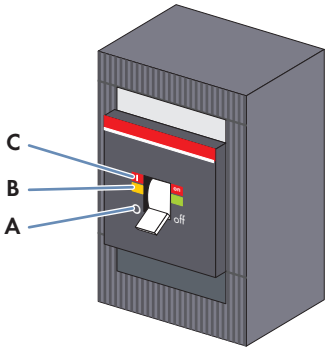


Figure 4: Switch positions of the AC circuit breaker

Item	Description
A	**Off** position
B	**Tripped** position
C	**On** position

Additional maintenance material that is required but not included in the scope of delivery:

☐ A testing device approved by the manufacturer of the AC circuit breaker (e.g. TT1 from ABB).

Procedure:

- Use the testing device to check whether the AC circuit breaker is ready for operation (instructions are included in the manual of the testing device).

  If the AC circuit breaker is not ready for operation, contact the SMA Service Line.

6 Maintenance under Voltage-free Conditions

6.1 Disconnecting the Inverter

⚠ DANGER

Electric shock due to live voltage

The components of the Sunny Central carry a voltage. Touching components of the Sunny Central may result in death or severe injuries.

- Before performing any work on the Sunny Central, disconnect the inverter and ensure that it cannot be reconnected.
- After disconnecting the inverter, wait at least 15 minutes until the inverter capacitors have discharged completely.
- Check that no voltage is present.

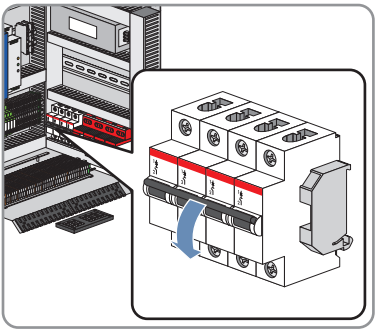
Before doing any maintenance work, disconnect the inverter from all voltage sources as described in this section.

Person authorised to operate the medium-voltage transformer

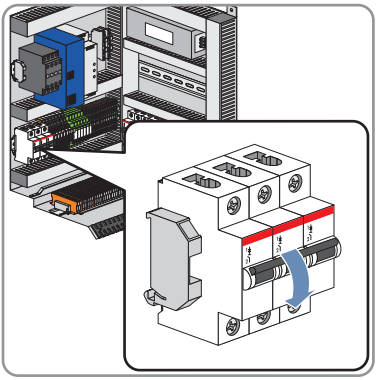
Only a duly authorised person may connect or disconnect the AC voltage of the medium-voltage transformer.

1. Set the inverter key switch to **Stop**.
2. Wait 15 minutes. This allows the capacitors to perform an electric discharge.
3. Externally disconnect the AC voltage of the medium-voltage transformer.
4. Disconnect the DC voltage in the main distributor (e.g. Sunny Main Box) or the sub-distribution (e.g. Sunny String-Monitor).
5. Open the doors of the interface cabinet.
6. Switch off the AC circuit breaker.
7. Disconnect the external voltage supply externally.
8. Disconnect any additional external voltage.

9. Switch off the miniature circuit-breaker of the external voltage supply and, if necessary, disconnect the internal power supply transformer.

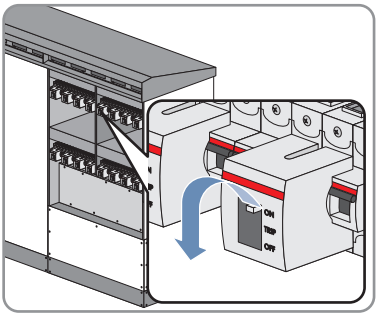


10. Switch off the miniature circuit-breaker of the grid monitoring.

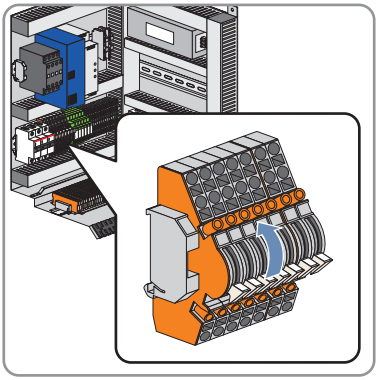


11. If your inverter is equipped with Optiprotect string-current monitoring, ensure that the switches on the motor-driven circuit breakers are in the **OFF** position.

    If this is not the case, set all switches to **OFF**.



12. Open the test and disconnect terminals.



13. Ensure that all poles are free of voltage.
14. Earth and short-circuit the inverter.
15. Cover or safeguard any adjacent live components.

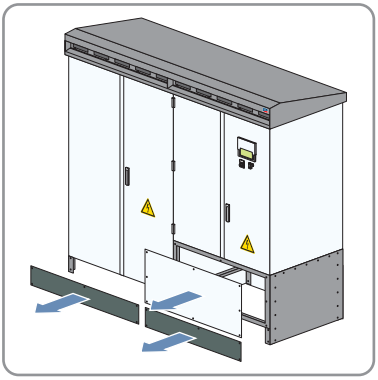
6.2 Removing the Panels

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the inverter (see Section 6.1).

2. Remove the screws from the front panels using a Torx screwdriver.
3. Unfasten the earthing straps from the panels on the interface cabinet.
4. Remove the panels.



5. Remove the protective covers in the connection area.
6. Ensure that all poles are free of voltage:
   - On the DC connection lugs/DC busbars/DC terminals
   - On the AC connection lugs

6.3 Cleaning the Ventilation

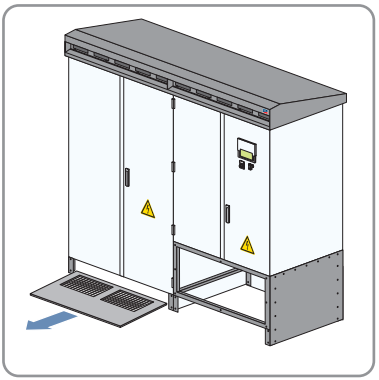
6.3.1 Cleaning the Ventilation Plate

1. **⚠ DANGER**

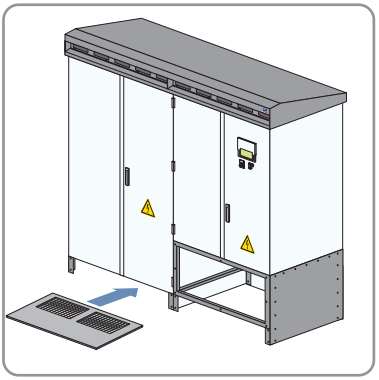
   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the inverter (see Section 6.1).

2. Remove the panels (see Section 6.2).
3. Remove the ventilation plate from the inverter cabinet. Take hold of the underside of the ventilation plate and push upwards in the middle when removing.



4. Clean the ventilation plate with a brush or vacuum.
5. Push the ventilation plate into the inverter cabinet. The ventilation grid in the ventilation plate must face the rear panel.



☑ The ventilation grid must be flush with the inverter enclosure.

✖ Does the ventilation plate not go all the way in?

- Take hold of the underside of the ventilation plate and push upwards in the middle while pushing it in.

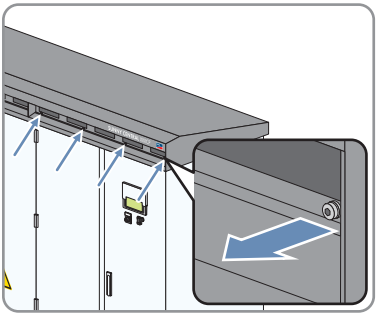
6.3.2 Cleaning the Air Duct and Insect Screens

1. **⚠ DANGER**

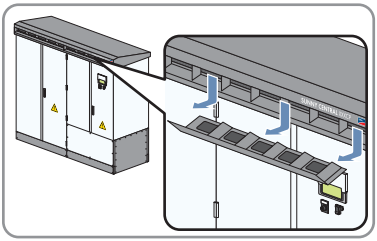
   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the inverter (see Section 6.1).

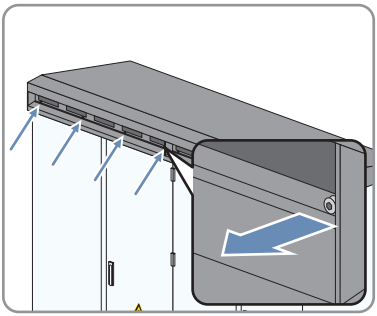
2. Remove the screws from the right-hand side insect screen.



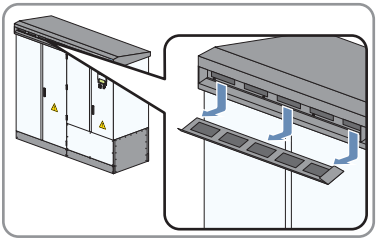
3. Pull the bottom of the right-hand side insect screen forward thus removing the insect screen.



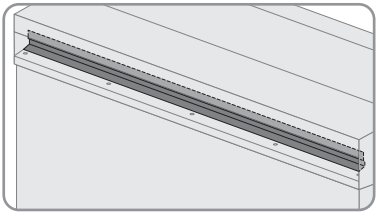
4. Remove the screws from the left-hand side insect screen.



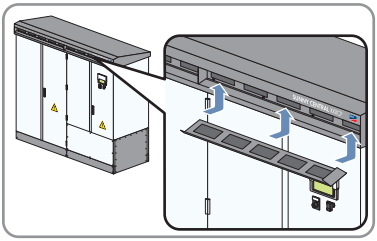
5. Pull the bottom of the left-hand side insect screen forward thus removing the insect screen.



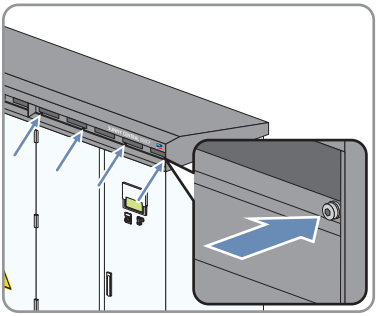
6. Vacuum the air duct from the outside or clean it with a brush.



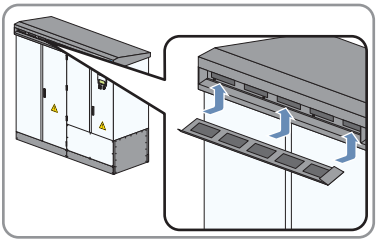
7. Vacuum the insect screens or clean them with a brush.
8. Check the insect screen for visible damage.
   ☑ The insect screens are not damaged.
   ✖ Are the insect screens damaged?
   - Replace the damaged insect screens.
9. Insert the right-hand side insect screen.



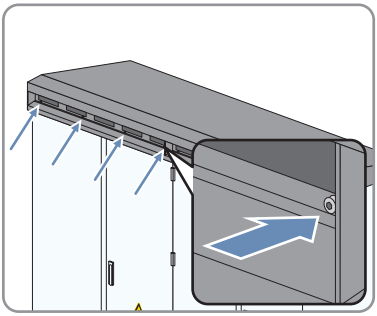
10. Screw the right-hand side insect screen into place.
    Torque: 20 Nm



11. Insert the left-hand side insect screen.



12. Screw the left-hand side insect screen into place.
Torque: 20 Nm.



6.4 Maintaining the Interior of the Switch Cabinet

6.4.1 Checking the Interior of the Switch Cabinet

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the inverter (see Section 6.1).

2. Ensure that the switch cabinet is closed.
3. Remove dirt and dust from the interior of the switch cabinet and from all assemblies (e.g. DC switch-disconnector and AC circuit breaker).
4. Remove moisture.

6.4.2 Checking the Fuses/Disconnecting Blades

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the inverter (see Section 6.1).

2. Check the fuses/disconnecting blades and tension springs for discolouration or changes to their appearance.

   If the fuses/disconnecting blades or tension springs are discoloured or look different, replace them.
3. Check insulation and terminals for discolouration and changes to their appearance.

   If the insulation or terminals are discoloured or look different, contact the SMA Service Line.

6.4.3 Checking the Screw Connections

NOTICE

Damage to screw connections from over-tightening

- Only apply the prescribed torque to tighten loose screw connections. Torque specifications are shown in the circuit diagram of the inverter. Contact the SMA Service Line if specifications are missing.

1. **DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the inverter (see Section 6.1).

2. Check that screw connections on all assemblies (e.g. DC switch-disconnectors and AC circuit breakers) are securely in place.

   If screw connections are loose, tighten them using a torque wrench.

3. Check the insulation and connections for discolouration and changes to their appearance.

   If the insulation and connections are discoloured or look different, contact the SMA Service Line.

6.4.4 Checking the Surge Arrester

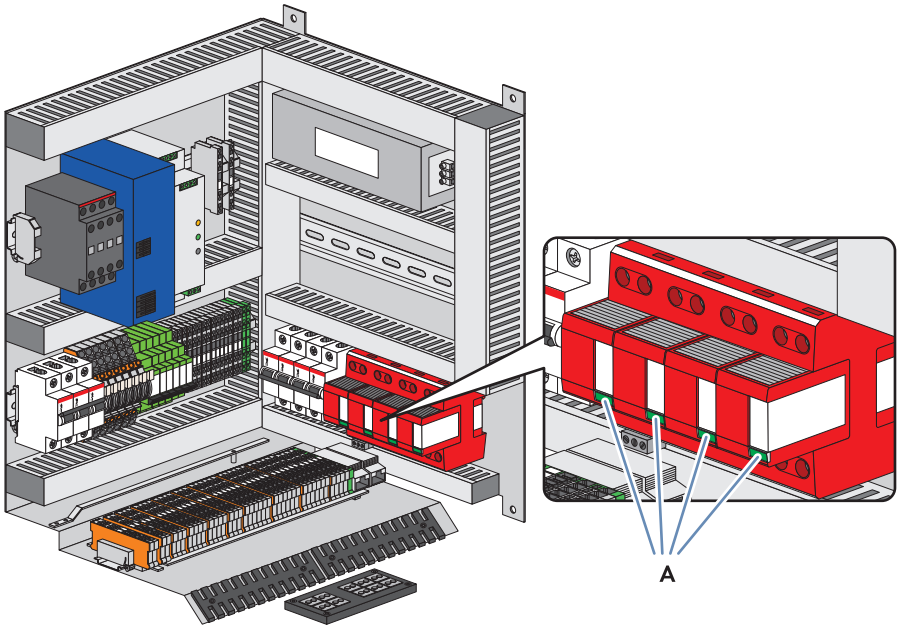


Figure 5: Position of the DEHNventil

Item	Description
A	Ready indicator

Additional maintenance material that is required but not included in the scope of delivery:

☐ A testing device approved by the manufacturer of the surge arrester such as the PM20 by DEHN + SÖHNE GmbH + Co. KG.

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the inverter (see Section 6.1).

2. Check whether the ready indicator is red.

   If the ready indicator is red, replace the surge arrester.

3. Use the testing device to check that the surge arrester is operational (instructions for testing are included in the user manual of the testing device).

   Replace the surge arrester if it is faulty.

6.4.5 Checking the Screw Connections of the Power Cables

NOTICE

Damage to screw connections from over-tightening

- Only apply the prescribed torque to tighten loose screw connections. Torque specifications are shown in the circuit diagram of the inverter. Contact the SMA Service Line if specifications are missing.

1. **DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the inverter (see Section 6.1).

2. Check that all screw connections on the power cables are tight.

   If screw connections are loose, tighten them using a torque wrench.

3. Check the insulation and connections for discolouration and changes to their appearance.

   If the insulation and connections are discoloured or look different, contact the SMA Service Line.

4. Check screw connections for damage and contact elements for corrosion.

   If screw connections are damaged or contact elements are corroded, replace them.

6.4.6 Cleaning Heating Elements of the Low-Temperature Range Option (Optional)

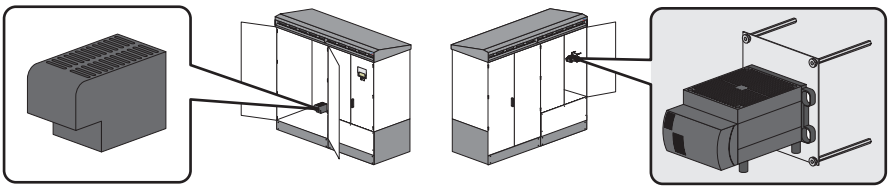


Figure 6: Positions of heating elements

1. **DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the inverter (see Section 6.1).

2. Open the inverter doors.
3. Remove the protective covers of the heating elements.
4. Remove dirt and dust from the heating elements.
5. Remove moisture.
6. Mount the protective covers of the heating elements.

6.4.7 Checking the Labels

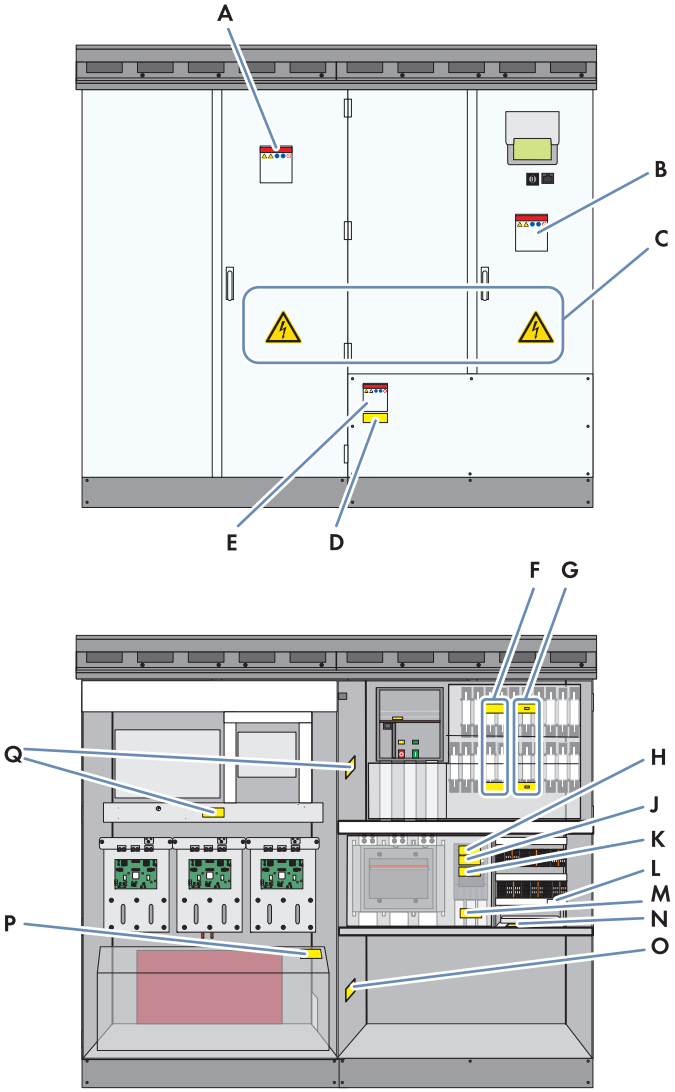


Figure 7: Position of the labels

Item	SMA order number	Description
A	86-004330	Dangerous voltage warning*

Item	SMA order number	Description
B	86-004332	Dangerous voltage warning*
C	86-05200	Dangerous voltage warning
D	86-004345	Risk of short circuit if operated without a transformer*
E	86-004332	Dangerous voltage warning*
F	86-004345	Risk of electric shock from active power source
G	86-108670106	Risk of burns from hot fuses beneath the cover
H	86-0032311	5 safety rules
I	86-10867021	Risk of fire due to insufficient contact
K	86-10867024	Unintended tripping due to modified settings
L	86-0032310	Plant protected by surge arresters
M	86-108670104	Risk of electric shock from active power source
N	86-10867035	Faulty connection leads to destruction of the device
O	86-0099	Position of earthing
P	86-108670105	Risk of burns due to hot components beneath the cover
Q	86-10867022	Dangerous touch voltage even when device is disconnected

* Label is only present on inverters shipped to the USA.

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the inverter (see Section 6.1).

2. Ensure that safety messages and labels are present and undamaged.

   Replace the safety messages and labels if they are missing or illegible. If necessary, you can purchase labels from SMA Solar Technology AG or your specialist dealer using the SMA order number stated above.

6.5 Checking the Switch Cabinet from the Outside

6.5.1 Checking the Door Seals

There are seals on the doors of the inverter.

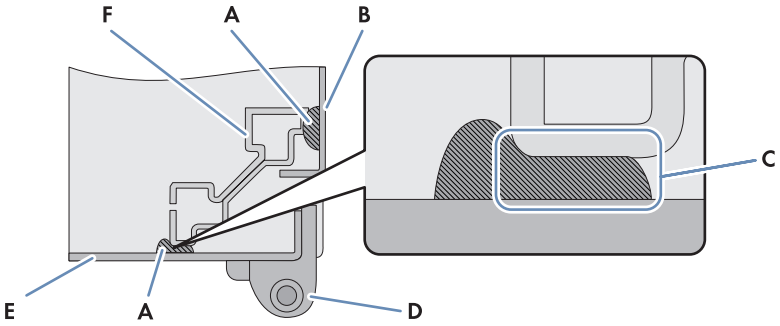


Figure 8: Section drawing with top view of seals (example)

Item	Description
A	Seal
B	Side panel
C	Sealing area
D	Hinge
E	Door
F	Frame construction

Required maintenance material (not included in the scope of delivery):

☐ A suitable, water-free and heat-resistant lubricant.

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the inverter (see Section 6.1).

2. Check whether the seals in the sealing area show signs of damage. Tip: the sealing area is not visible when the door is closed.

   If seals are damaged, contact the SMA Service Line.

3. Maintain the seals using talcum power, petroleum jelly or wax. This prevents frost damage.
4. If the side panels are removed: check whether the seals in the side panels show any signs of damage in the sealing area.

   If seals are damaged, contact the SMA Service Line.

6.5.2 Checking the Latches, Door Stops and Hinges

Required maintenance material (not included in the scope of delivery):

☐ A suitable, water-free and heat-resistant lubricant, e.g. WD 40.

☐ Non-lubricating antifreeze, e.g. PS88.

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the inverter (see Section 6.1).

2. Check that the doors latch easily. Open and shut the doors several times in the process.

   If the doors do not latch easily, lubricate all moving parts of the latch.

3. Check that the doors can be held in place.

   If the doors cannot be held in place, lubricate the door stops.

4. Check that the door hinges move easily.

   If the door hinges do not move easily, lubricate them.

5. Lubricate all moving latch elements and movement points.

6. If the inverter is installed in a region where below-freezing temperatures occur, treat the profile cylinder of the door lock and the key switch with a non-lubricating antifreeze to prevent them freezing over.

6.5.3 Checking the Surface of the Switch Cabinet

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the inverter (see Section 6.1).

2. Check surfaces for signs of damage or corrosion.

   If surfaces are damaged, repair them without delay or within three weeks at the latest.

   If surfaces are corroded, repair them without delay or within three weeks at the latest.

6.5.4 Checking the Switch Cabinet for Corrosion

Required maintenance material (not included in the scope of delivery):

☐ Touch-up sticks, brushes or cans of spray paint or, alternatively, 2K-PUR acrylic paint in the appropriate RAL colour can be used to repair minor surface damage. Observe the relevant instructions of the paint manufacturer.

☐ Touch-up paint or 2K-PUR acrylic paint in the appropriate RAL colour can be used to repair large-area surface damage. Observe the relevant instructions of the paint manufacturer.

Item	RAL colour	Colour scheme
Roof	RAL 7004	Signal grey
Base	RAL 7005	Mouse grey
Enclosure	RAL 9016	Traffic white

☐ Abrasive cloth

☐ Degreaser

1. Remove dirt.
2. To remove small-area surface damage:
   - Sand the surface.
   - Clean the surface using degreaser.
   - Paint the surface.
3. To remove large-area surface damage:
   - Sand the surface.
   - Clean the surface using degreaser.
   - Paint the entire surface.

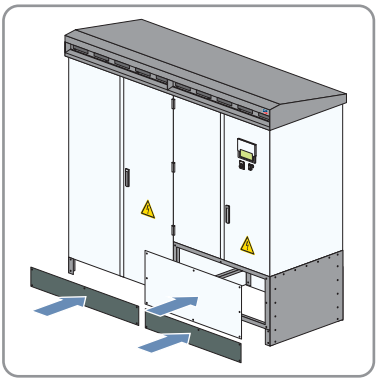
6.6 Mounting the Panels

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the inverter (see Section 6.1).

2. Mount the protective covers.
3. Fasten the earthing straps to the panels on the interface cabinet. Torque: 8 Nm
4. Ensure that the earthing straps are firmly in place.
5. Fasten the panels in place.



6.7 Maintenance after Connecting the Control Voltage

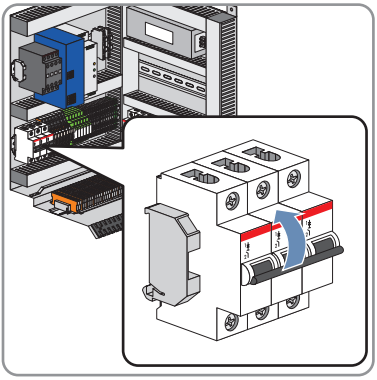
6.7.1 Connecting the Control Voltage

⚠ WARNING

High voltages that can cause fatal electric shocks are present in the live components of the inverter.

- Move the key switch to the **Stop** position and ensure it cannot be reconnected accidentally.
- Do not touch any live components of the inverter or the medium-voltage grid. Comply with all applicable safety regulations for handling medium-voltage grids.

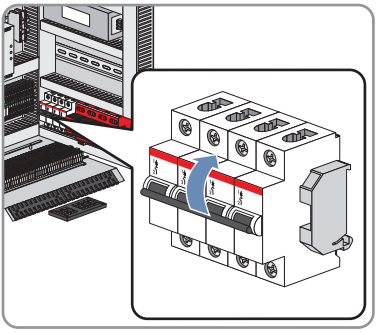
1. Open the doors of the interface cabinet.
2. Switch on the grid monitoring miniature circuit-breaker.



3. Connect additional external voltage.
4. Connect external voltage supply externally.
5. Connect the AC circuit breaker.
6. Connect the DC voltage in the main distribution box or the sub-distribution box.
7. Connect the AC voltage of the medium-voltage transformer externally.

6.7.2 Checking the Fans

1. Open the inverter doors.
2. Switch on the miniature circuit-breaker of the external voltage supply.
   ☑ The fans should start to run.
   ✖ Have the fans failed to start?
   - Contact the SMA Service Line.



3. Close the inverter doors.

6.7.3 Checking the Heating Element and Hygrostat

⚠ CAUTION

Risk of burns due to hot heating elements

During the function test, the heating element will become hot. There is a risk of burns if you touch the heating element if you are not wearing protective gloves.

- Do not touch heating elements with bare hands.
- Wear personal protective equipment.
- Always maintain a safe distance when checking the function of the heating elements.

Low humidity

If the humidity is below 50% you will not be able to perform the function test as the minimum value of the hygrostat is 50%.

Requirements:

☐ The miniature circuit-breaker of the external voltage supply must be switched on.

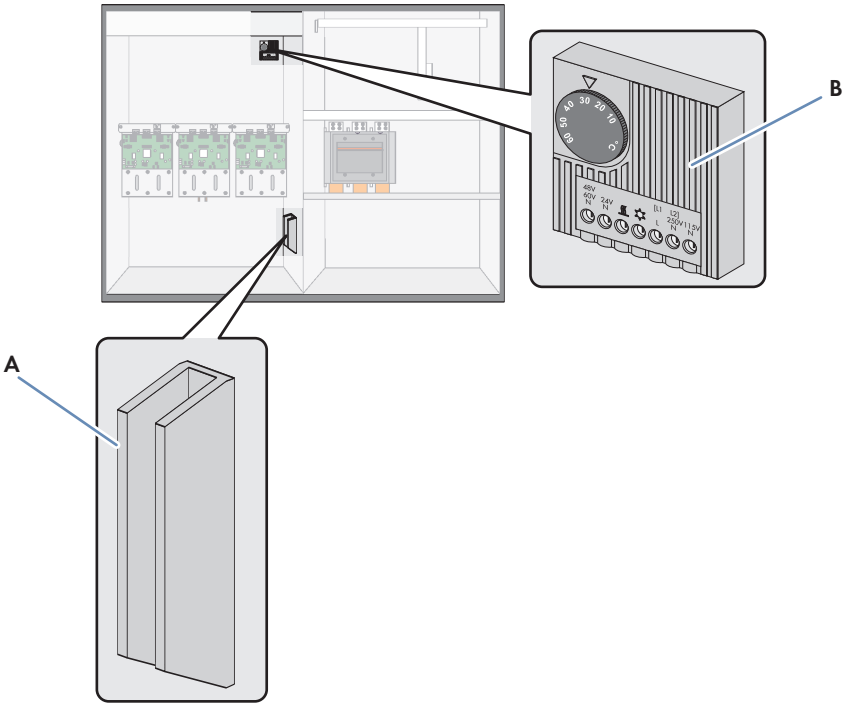


Figure 9: Position of the heating element and hygrostat

Position	Description
A	Heating element
B	Hygrostat

1. Open the inverter doors.
2. Set the hygrostat to the minimum value.
3. Check whether the heating elements are radiating heat after a waiting time of five minutes.
   If the heating elements do not radiate heat, contact the SMA Service Line.
4. Reset the hygrostat to the initial value. The initial value is included in the circuit diagram.
5. Close the inverter doors.

6.7.4 Function Test of Heating Element with Low-Temperature Range Option (Optional)

⚠ CAUTION

Risk of burns due to hot heating elements

During the function test, the heating element will become hot. There is a risk of burns if you touch the heating element if you are not wearing protective gloves.

- Do not touch heating elements with bare hands.
- Wear personal protective equipment.
- Always maintain a safe distance when checking the function of heating elements.

Requirements:

☐ The miniature circuit-breaker of the external voltage supply must be switched on.

☐ There are no disturbances.

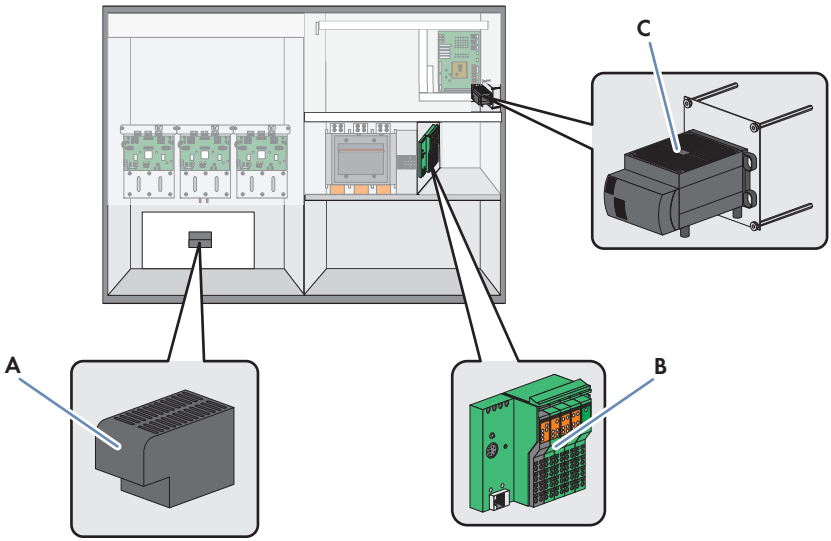
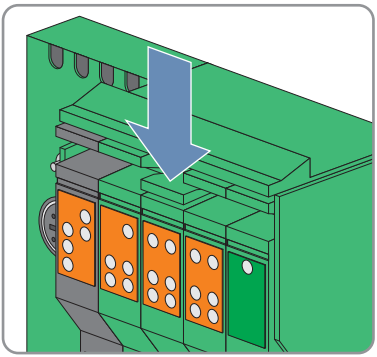


Figure 10: Position of the heating element and controller of the low-temperature option.

Position	Description
A	Heating element with low-temperature range option
B	Temperature control connection plug
C	Heating element with low-temperature range option

1. Switch the Sunny Central to **Stop**.
2. Open the inverter doors.
3. Remove the protective covers of the heating elements.
4. Remove the temperature control connection plug.



☑ A contactor audibly switches off the inverter. After about two minutes, another contactor audibly switches off the control voltage.

✖ Is the contactor switching not audible?

- Contact the SMA Service Line.

5. Check whether the heating elements are radiating heat after a waiting time of five minutes.

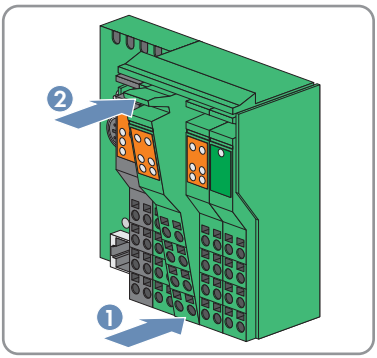
   If the heating element does not radiate heat, contact the SMA Service Line.

6. Insert the temperature control connection plug.

   ☑ A contactor audibly switches on the control voltage. After about two minutes, another contactor audibly switches on the inverter.

   ✖ Is the contactor switching not audible?

   - Contact the SMA Service Line.



7. Mount the protective covers of the heating elements.
8. Close the inverter doors.

7 Maintaining the Accessories

7.1 Maintaining the Sunny String-Monitor SSM / SSM16-11 / SSM24-11

7.1.1 Disconnecting the Sunny String-Monitor

⚠ DANGER

Danger to life from electric shock when touching live components of the Sunny String-Monitor

- Observe the safety rules:
  - Disconnect the device.
  - Ensure that the device cannot be reconnected.
  - Ensure that no voltage or current is present.
  - Cover or safeguard any adjacent live components.
- Maintenance must only be carried out when the device has been turned off and has no voltage supply.
- Only open the isolation terminals when the device is off.
- Only unplug the DC connector when no current is present.

1. If there is a DC circuit-breaker in the Sunny String-Monitor, disconnect it. This ensures that there is no current flowing through the Sunny String-Monitor.
2. If there is no DC circuit-breaker, disconnect the Sunny Central (see installation manual for the Sunny Central).
3. If there are fuses in the Sunny Central, remove them.
4. If there are no fuses in the Sunny Central, remove the fuses from the DC main distributor.
5. Only open the isolation terminals on the Sunny String-Monitor when it is switched off.
6. **⚠ DANGER**

   Danger to life from electric arcs when removing the DC plug connector

   - Only remove all existing DC connectors when the Sunny String-Monitor is switched off.

7.1.2 Maintenance Interval

- Service the SMA String-Combiner every 24 months.

7.1.3 Overview of the Main Components

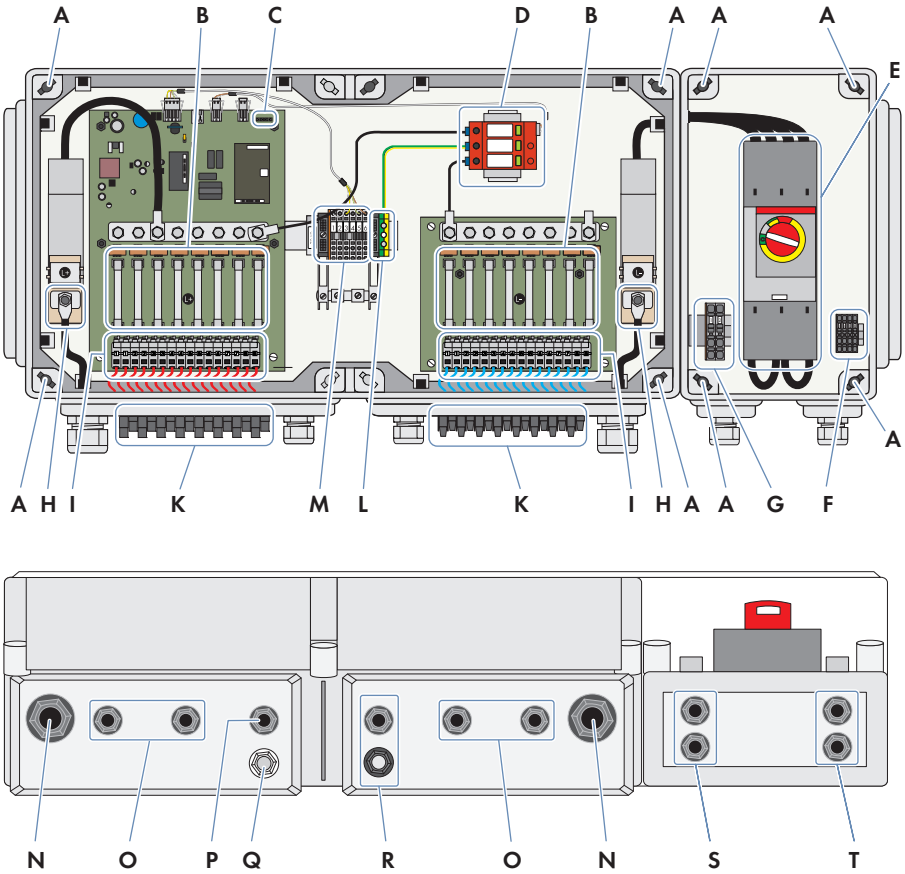


Figure 11: Main components of the Sunny String-Monitor SSM

Item	Description
A	Cover latch
B	DC fuses
C	LEDs for displaying the operating state
D	Surge arrester
E	DC switches
F	Terminals for connecting the signalling cable for the response contact*
G	Terminals for connecting the control of the auxiliary trigger*

Item	Description
H	Stud terminal for connecting the DC main cable
I	Spring terminals for the string connections
K	Plugs for connecting the strings
L	Terminals for the earth connection
M	Terminals for connecting the data cable
N	Cable gland for connecting the DC main cable
O	Cable glands for the string connections
P	Cable glands for the earth connection
Q	Vent plug
R	Cable glands for the communication connection
S	Cable glands for connecting the remote tripping*
T	Cable glands for connecting the response contact*

* optional

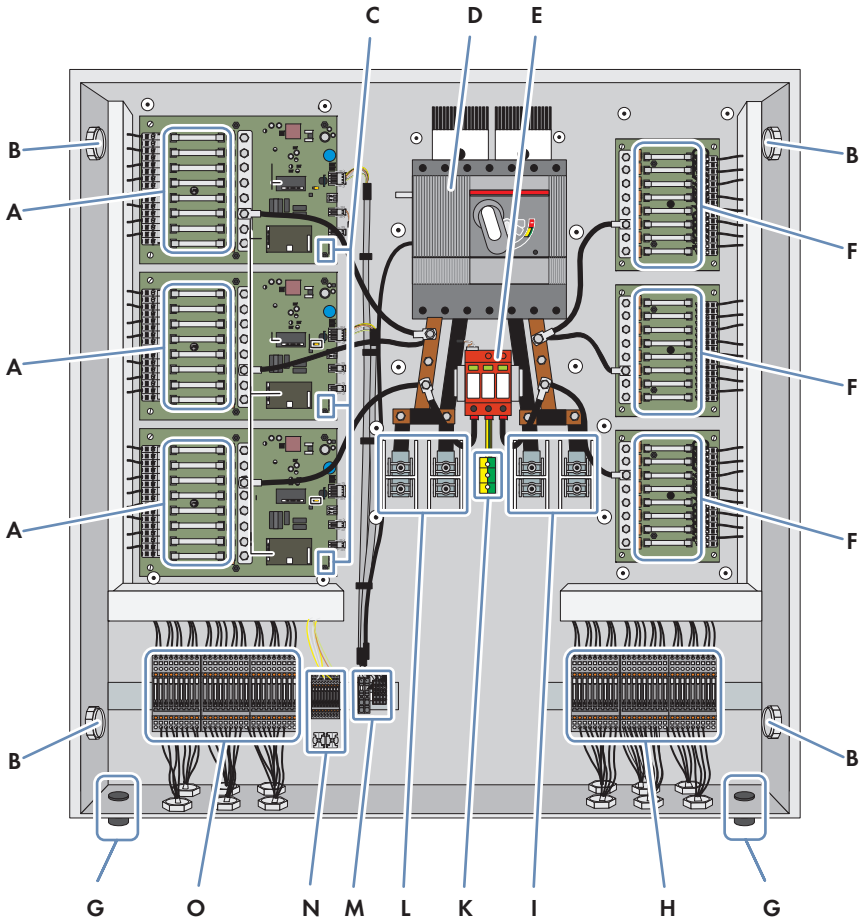


Figure 12: Main components of the Sunny String-Monitor SSM24-11 (example)

Item	Description
A	DC fuses positive pole
B	Vent plug
C	LEDs for displaying the operating state
D	DC switches
E	Surge arrester with ready indicator
F	DC fuses negative pole
G	Drain plugs

Item	Description
H	String connections negative pole
I	DC main line negative pole
K	Earthing terminal
L	DC main line negative pole
M	Terminal for remote tipping (optional)
N	Communication terminal
O	String connections positive pole

7.1.4 Checking the Mounting Location and Installation

- Ensure that the mounting location is accessible.
- Remove all inflammable materials.
- Ensure that the Sunny String-Monitor is securely in place.
- Ensure that the Sunny String-Monitor is not exposed to direct solar irradiation.

7.1.5 Checking the Enclosure

- Check whether the enclosure is damaged.

  If the enclosure is badly damaged or cracked, contact the SMA Service Line for a replacement enclosure.
- Ensure that the vent plugs in the enclosure of the Sunny String-Monitor SSM16/24-11 are intact and clean.
- Inspect the cover latches and cover screws of the Sunny String-Monitor SSM:
  - Check whether the cover latches are worn out.

    If the cover latches are worn out, contact the SMA Service Line.
  - Check whether the cover screws are dirty or damaged.

    If the cover screws are dirty or damaged, clean or replace them.
  - Ensure that the cover is securely in place.
- On the Sunny String-Monitor SSM16/24-11, ensure that the lock is working and intact.
- Check the side vent plugs for dirt.

  Clean or replace the vent plugs if they are very dirty.

7.1.6 Checking the Enclosure Interior

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.1.1).

2. Ensure that the device is watertight.
3. Ensure that the drain plugs and vent plugs are intact and clean.
4. Ensure that there is no condensation water inside the enclosure.

7.1.7 Checking the Base Plate

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.1.1).

2. Ensure that the vent plug on the Sunny String-Monitor SSM is not dirty or damaged.
3. If the vent plug is dirty or damaged, clean or replace it.
4. Ensure that all cable glands are sealed and securely in place.
5. Ensure that the plug connectors are intact and securely in place.

7.1.8 Checking the Covers and Labels

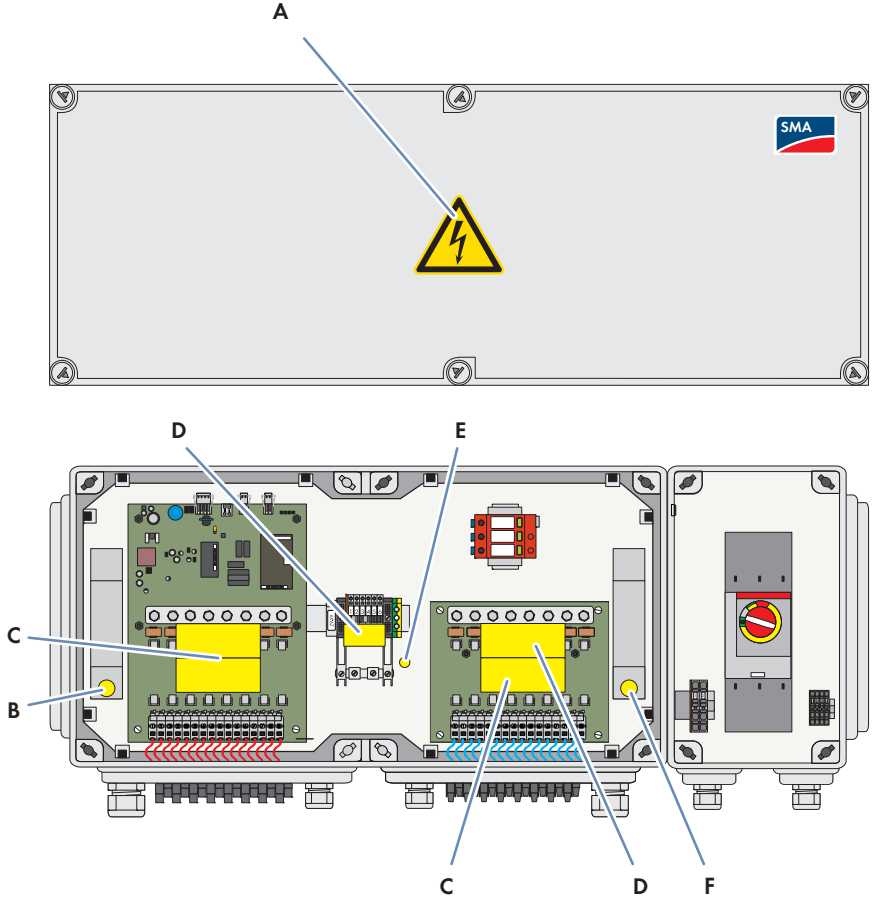


Figure 13: Position of the labels on the Sunny String-Monitor SSM

Item	SMA order number	Description
A	86-0520	Dangerous voltage warning
B	86-0512	Positive pole
C	86-108670101 86-108670103	Damage to the plant due to incorrectly rated fuses Risk of electric shock from active power source
D	86-004610	Faulty connection leads to destruction of the device
E	86-0509	Earthing
F	86-0514	Negative pole

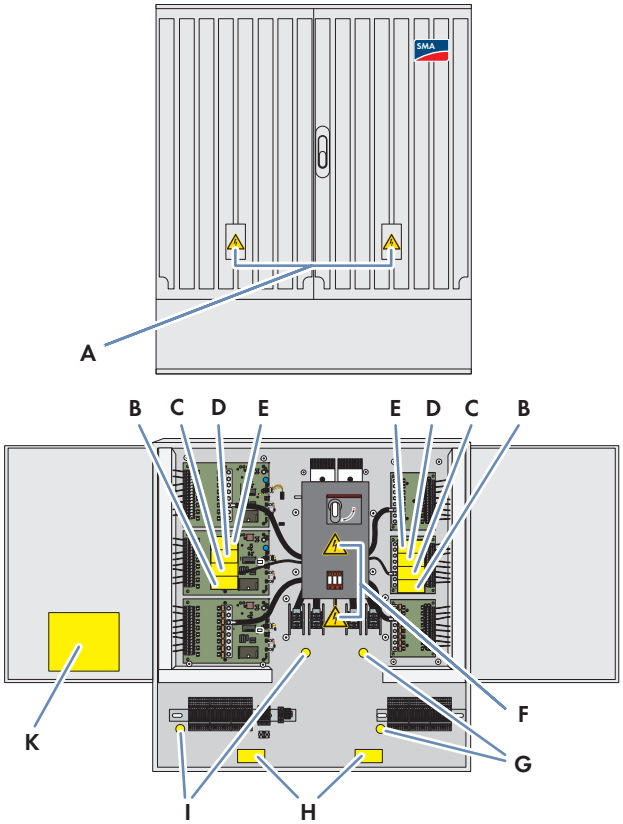


Figure 14: Position of the labels on the Sunny String-Monitor SSM16/24-11 (with SSM24-11 as an example)

Item	SMA order number	Description
A	86-051488	Dangerous voltage warning
B	86-108670101* 86-108670102**	Damage to the plant due to incorrectly rated fuses
C	86-108670106	Risk of burns due to hot components beneath the cover
D	86-108670109	Risk of an electric arc
E	86-108670103	Risk of electric shock from active power source
F	86-051489	Dangerous voltage warning
G	86-0514	Negative pole

Item	SMA order number	Description
H	86-1086701010	SSM isolation terminal – risk of an electric arc (do not remove isolation terminals under load)
I	86-0512	Positive pole
K	86-10868001	External view label for SSM24-11 with cable glands
	86-10868002	External view label for SSM24-11 with DC connector (24 string inputs)
	86-10868003	External view label for SS 24-11 with DC connector (48 string inputs)
	86-10868004	External view label for SSM16-11 with 8x cable gland
	86-10868005	External view label for SSM16-11 with DC connector (16 string inputs)
	86-10868006	External view label for SSM16-11 with DC connector (32 string inputs)

* for SSM16-11
** for SSM24-11

- Ensure that the safety message labels on and inside the device are present and undamaged.
  Replace safety message labels if they are damaged or missing.
- Check that the cover latches are undamaged and securely in place.
  Replace the cover latches if they are damaged or loose.

7.1.9 Checking the Fuses and Fuse Holders

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.1.1).

2. Ensure that the DC fuses and tension springs of the fuse holders are securely in place.

7.1.10 Checking the Screw Connections and Clamp Connections

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.1.1).

2. Ensure that the screw connections of the power cables are securely in place.
3. Ensure that the clamp connections of the photovoltaic strings are securely in place.
4. Ensure that the clamp connections of the optional DC circuit-breaker are securely in place.
5. Check the screw and clamp connections to the insulation and the clamps for discolouration or changes in appearance.

   If the screw and clamp connections are discoloured or look different in any way, replace them.
6. Ensure that the shield clamping saddle is securely in place.

7.1.11 Checking the Surge Arrester

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.1.1).

2. Check whether the ready indicator on the surge arrester is red.

   If the ready indicator is red, replace the protection module.

7.1.12 Checking the Supply Voltage

Required maintenance material (not included in the scope of delivery):

☐ Voltmeter

Requirement:

☐ The miniature circuit-breaker of the voltage supply for the Sunny Central must be switched on.

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

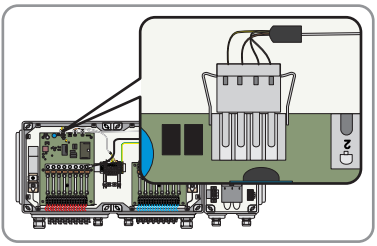
   - Disconnect the Sunny String-Monitor (see Section 7.1.1).

2. Measure the supply voltage between the terminals and the plug connectors.

   ☑ Supply voltage must be at least 30 V.

   ✖ Is the supply voltage less than 30 V?

   - Check the clamp connections. Attach the cable if necessary.



7.1.13 Checking the Earth Connection

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.1.1).

2. Check the earth connection and contact resistance to the earth potential.

7.1.14 Checking the LEDs on the Measurement PCB

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.1.1).

2. If the red LED of the operating status indicator is on, contact the SMA Service Line.

7.2 Maintaining the Sunny String-Monitor SSM8-21 / SSM16-21 / SSM24-21

7.2.1 Disconnecting the Sunny String-Monitor

⚠ DANGER

Danger to life from electric shock when touching live components of the Sunny String-Monitor

- Observe the safety rules:
  - Disconnect the device.
  - Ensure that the device cannot be reconnected.
  - Ensure that no voltage or current is present.
  - Cover or safeguard any adjacent live components.
- Maintenance must only be carried out when the device has been turned off and has no voltage supply.
- Only unplug the DC connector when no current is present.

⚠ WARNING

Risk of burns from touching hot components

- Wear personal protective equipment when working on the device.

Procedure:

1. If there is a DC switch-disconnector, turn it off. This ensures that there is no current flowing through the Sunny String-Monitor.
2. If there is no DC switch-disconnector, disconnect the Sunny Central (see the Sunny Central installation manual).

   If there are fuses in the Sunny Central, remove them (see Sunny Central installation manual).

   or

   If there are no fuses in the Sunny Central, remove the fuses from the DC main distributor.
3. **⚠ DANGER**

   Danger to life from electric arcs when opening fuse holders

   - Only open the fuse holders when the Sunny String-Monitor is switched off.
4. **⚠ DANGER**

   Danger to life from electric arcs when removing the DC plug connector

   - Only remove all existing DC connectors when the Sunny String-Monitor is switched off.

7.2.2 Maintenance Interval

- Service the Sunny String-Monitor every 24 months.

7.2.3 Overview of the Main Components

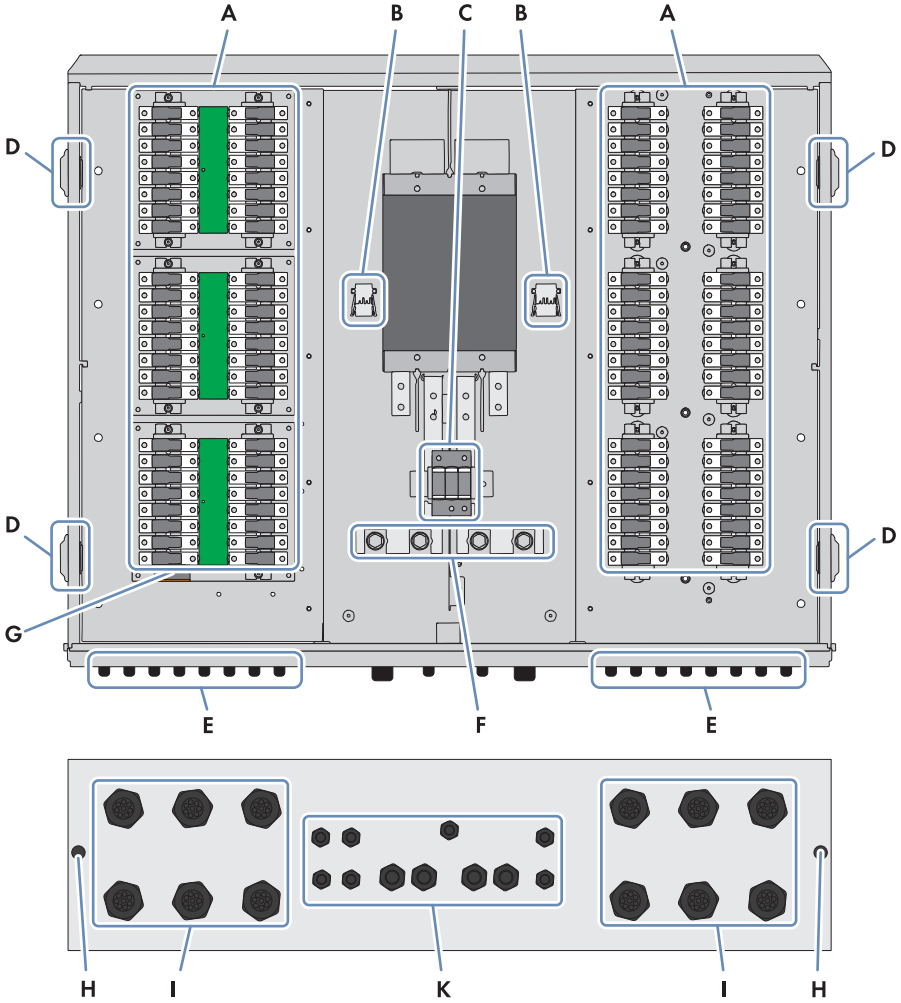


Figure 15: Main components of the Sunny String-Monitor SSMxx-21 (example)

Item	Description
A	Fuse holder

Item	Description
B	Plug connector for signal contact* or remote tripping*
C	Surge arrester
D	Vent plug
E	SUNCLIX DC connector*
F	Terminals* or busbar*
G	Plug connector for data cable
H	Condensation drain
I	Cable glands for the string cable*
K	Cable glands for DC main connection, communication, earthing, signal contact* or remote tripping*

* optional

7.2.4 Checking the Mounting Location and Installation

- Remove all inflammable materials.
- Ensure that the Sunny String-Monitor is securely in place.
- Ensure that the Sunny String-Monitor is not exposed to direct solar irradiation.

7.2.5 Checking the Enclosure

- Check whether the enclosure is damaged.
  Replace the enclosure if it is badly damaged or cracked.
- Ensure that the vent plugs in the enclosure are intact and clean.
- Ensure that the lock is intact and functional.

7.2.6 Checking the Enclosure Interior

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.2.1).

2. Ensure that the device is watertight.
3. Ensure that the drain plugs are intact and clean.
4. Ensure that there is no condensation water inside the enclosure.

7.2.7 Checking the Base Plate

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.2.1).

2. Ensure that all cable glands are sealed and securely in place.
3. Ensure that the DC connectors are intact and securely in place.

7.2.8 Checking the Covers and Labels

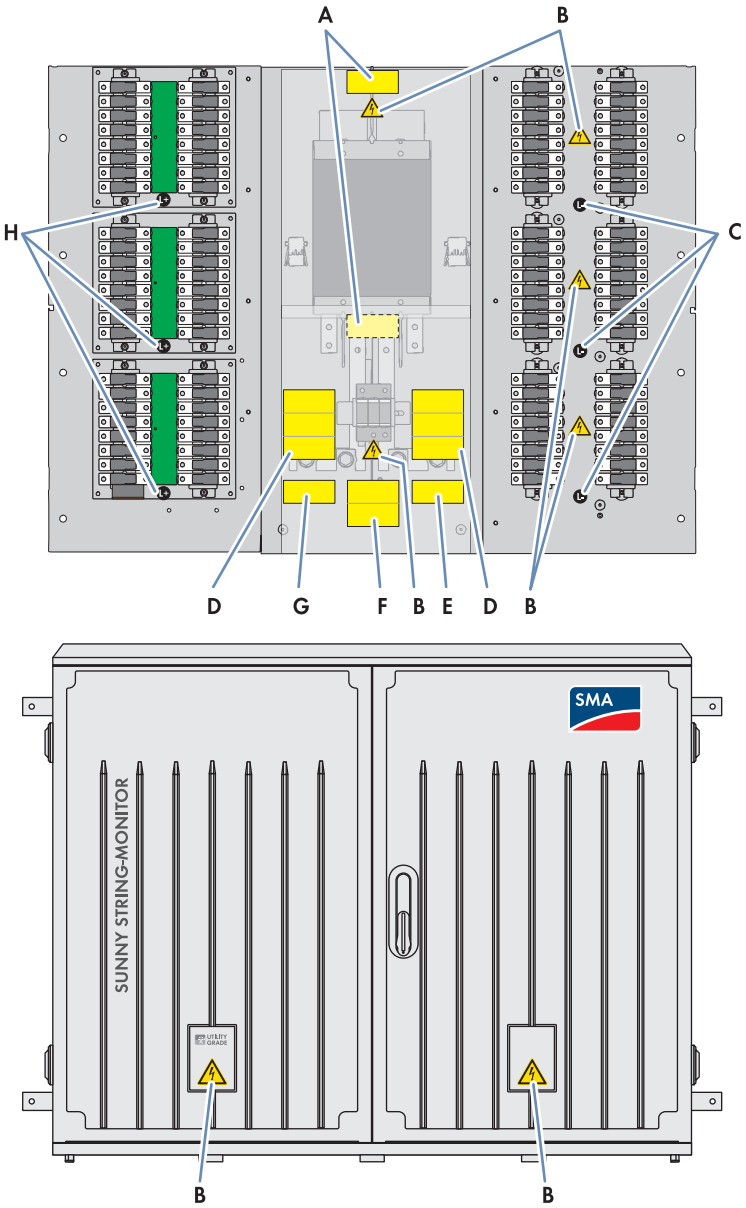


Figure 16: Position of the labels in and on the Sunny String-Monitor SSMxx-21 (example)

Item	SMA order number	Description
A	86-0043673*	Risk of burns due to hot components beneath the cover
B	86-051488	Dangerous voltage warning
C	86-0514	Negative pole (L–)
D	86-0043673*	3 labels with safety messages on fuses and fuse holders
E	86-0043673*	The negative pole in the PV array must be earthed in the inverter
F	86-0043673*	2 labels: Risk of electric shock from active power source **and** Damage to the plant due to incorrectly rated fuses. Maximum output current: 200 A **or** Risk of electric shock from active power source **and** Damage to the plant due to incorrectly rated fuses. Maximum output current: 280 A
G	86-0043673*	The positive pole of the PV array must be earthed in the inverter.
H	86-0512	Positive pole (L+)

* Material number of the label sheet with all safety message labels for all product variants

Procedure:

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.2.1).

2. Ensure that the safety message labels on and inside the device are present and undamaged.

   Replace safety message labels if they are damaged or missing. When doing so, select a label that is correct for the product variant.

3. Check whether the cover latches are undamaged and securely in place.

   Replace the cover latches if they are damaged or loose.

7.2.9 Checking the Fuse Holders

1. **⚠ DANGER**

   Danger to life from electric arcs when opening fuse holders

   - Only open the fuse holders when the Sunny String-Monitor is switched off.

2. Check the fuse holders for discoloration or changed appearance.

   If the fuse holders are discoloured or changed in any way, contact the SMA Service Line.

3. Ensure that each fuse holder opens and closes properly.

7.2.10 Checking the Screw, Terminal and Plug Connections

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.2.1).

2. Ensure that the screw connections of the power cables are securely in place.
3. Check the screw and clamp connections to the insulation and the clamps for discolouration or changes in appearance.

   If the screw and clamp connections are discoloured or look different in any way, replace them.

4. Ensure that the plug connectors are intact and securely in place.

7.2.11 Checking the Surge Arrester

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.2.1).

2. Check whether the ready indicator on the surge arrester is red.

   If the ready indicator is red, replace the protection module.

7.2.12 Checking the Supply Voltage

Required maintenance material (not included in the scope of delivery):

☐ Voltmeter

Requirement:

☐ The miniature circuit-breaker of the voltage supply for the Sunny Central must be switched on.

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.2.1).

2. Measure the supply voltage at the plug connector on the lowest String-Monitor unit.

   ☑ Supply voltage must be at least 30 V.

   ✖ Is the supply voltage less than 30 V?

   - Check the clamp connections. Attach the cable if necessary.

7.2.13 Checking the Undervoltage Release (Optional)

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.2.1).

2. Open the Sunny String-Monitor.
3. Disconnect the voltage at the undervoltage release.
4. Check whether the DC switch-disconnector has switched to the tripped position.

   If the DC switch-disconnector has not switched to the tripped position, contact the SMA Service Line.

5. Switch the voltage at the undervoltage release back on. To switch on the DC switch-disconnector 200 A and 280 A the voltage applied must be more than 85% of the nominal voltage V_N.
6. Switch the DC switch-disconnector to the Off position.
7. Switch the DC switch-disconnector back to the On position.
8. Close the Sunny String-Monitor.

7.2.14 Checking the Earth Connection

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.2.1).

2. Check the earth connection and contact resistance to the earth potential.

7.2.15 Checking the LEDs on the Measurement PCB

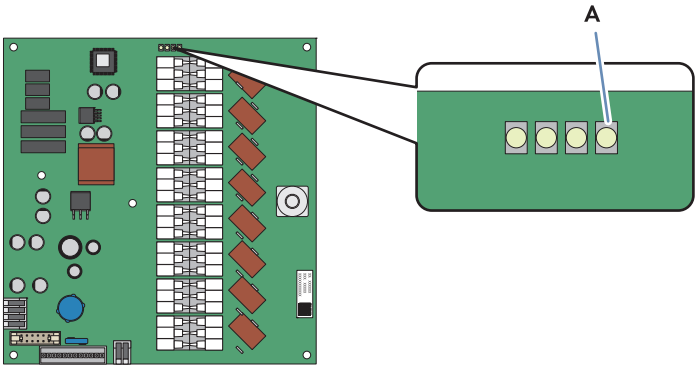


Figure 17: LED error on the String-Monitor unit

Item	Description
A	Error

1. **⚠ DANGER**

   Danger to life from electric shock or electric arc when touching live components

   - Disconnect the Sunny String-Monitor (see Section 7.2.1).

2. If the red **Error** LED on the String-Monitor unit is on, contact the SMA Service Line.

7.3 Maintaining the Sunny Main Box/Sunny Main Box Cabinet

7.3.1 Disconnecting the Sunny Main Box

⚠ DANGER

Danger to life from electric shock when live components of the Sunny Main Box are touched

- Observe the safety rules:
  - Disconnect the device.
  - Ensure that the device cannot be reconnected.
  - Ensure that no voltage or current is present.
  - Cover or safeguard any adjacent live components.
- Maintenance must only be carried out when the device has been turned off and has no voltage supply.

1. If there are DC circuit-breakers in the DC sub-distribution boxes, for example the Sunny String-Monitor, turn off the power to all DC circuit-breakers of the DC sub-distribution boxes that are connected to the Sunny Central (see installation manual of the DC sub-distribution box).
2. If there are no DC circuit-breakers in the DC sub-distribution boxes, for example the Sunny String-Monitor, remove all fuses in the DC sub-distribution boxes connected to the Sunny Central (see installation manual for the DC sub-distribution box).
3. If there are fuses in the Sunny Central, remove them (see Sunny Central installation manual).

7.3.2 Maintenance Interval

- Service the Sunny Main Box every 24 months.

7.3.3 Overview of the Main Components

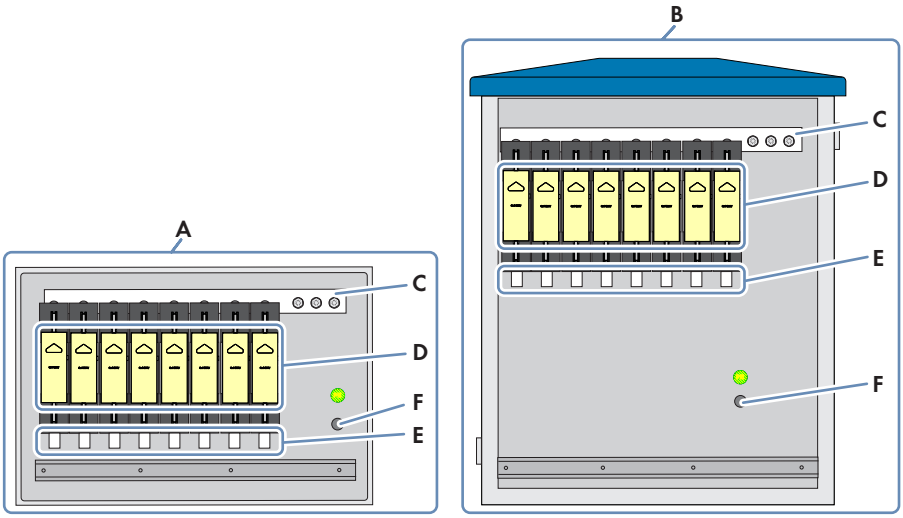


Figure 18: Main interior components

Item	Description
A	Sunny Main Box
B	Sunny Main Box Cabinet
C	DC busbar positive pole or negative pole depending on PV plant
D	DC fuses or disconnecting blades
E	DC inputs positive pole or negative pole depending on PV plant
F	Earthing terminal

7.3.4 Checking the Mounting Location and Installation

- Ensure that the mounting location is accessible.
- Ensure that the Sunny Main Box is securely in place.
- Remove all inflammable materials.
- Ensure that the Sunny Main Box is not exposed to direct solar irradiation.

7.3.5 Checking the Enclosure

- Check whether the enclosure is damaged.
  If the enclosure is damaged, contact the SMA Service Line.
- Ensure that the enclosure is watertight.

7.3.6 Checking the Enclosure Interior

- Check whether the enclosure interior is damaged.

  If the enclosure interior is damaged, contact the SMA Service Line.
- Remove any dirt build-up on the enclosure opening for the connection cables. Replace damaged or unsealed enclosure openings for connection cables.
- Ensure that there is no condensation water inside the enclosure.
- Ensure that the door mechanism is securely in place and sealed.

7.3.7 Checking the Base Plate

- Ensure that the foam on the base plate is intact.

7.3.8 Checking the Covers and Labels

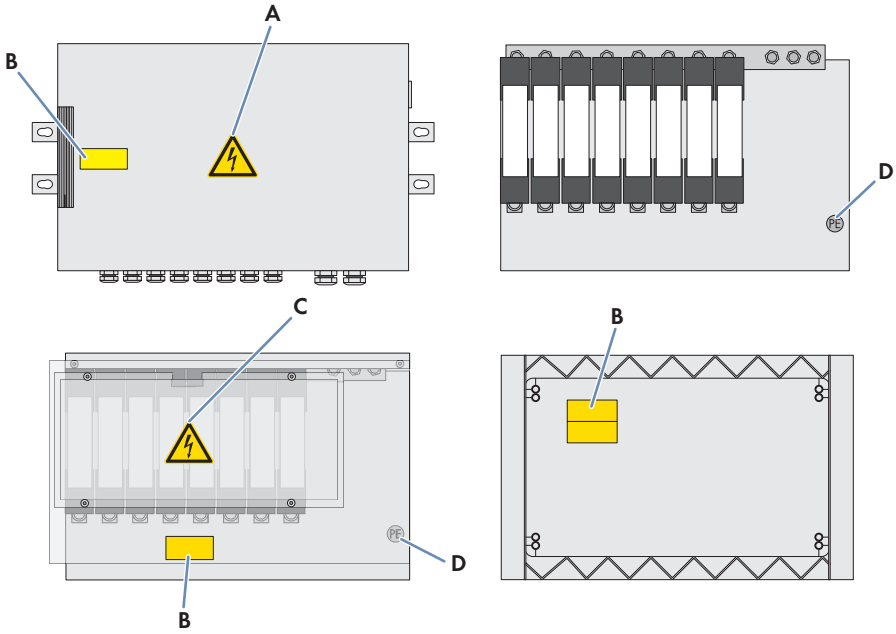


Figure 19: Position of the labels on the Sunny Main Box

Position	SMA order number	Description
A	86-0520	Active power source
B	86-108670103 86-108670109	Risk of electric shock from active power source Risk of an electric arc

Position	SMA order number	Description
C	86-051489	Dangerous voltage
D	86-05081	Protective earth

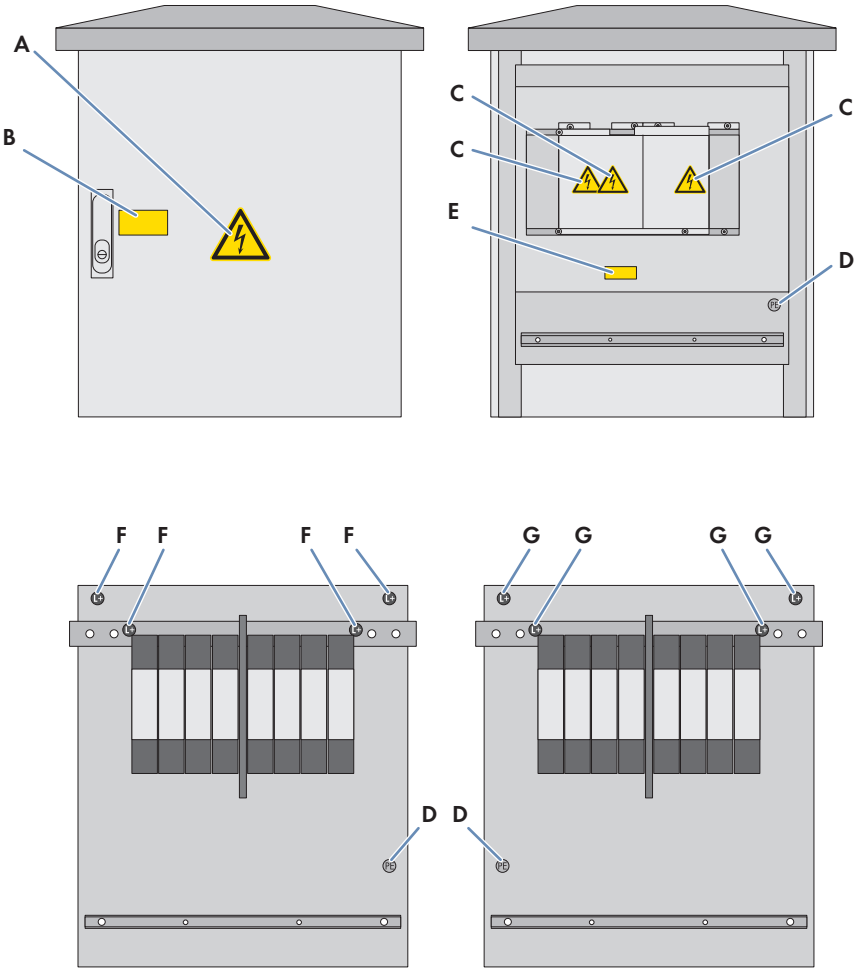


Figure 20: Position of the labels on the Sunny Main Box Cabinet

Position	SMA order number	Description
A	86-0520	Active power source

Position	SMA order number	Description
B	86-108670103 86-108670109	Risk of electric shock from active power source Risk of an electric arc
C	86-051489	Dangerous voltage
D	86-05081	Protective earth
E	86-108670105 86-108670109	Risk of burns Risk of an electric arc
F	86-0512	L+
G	86-0514	L–

- Ensure that the latches of the Plexiglas covers are undamaged and securely in place. Replace the latches if they are damaged or loose.
- Ensure that the safety message labels on and inside the device are present and undamaged. Replace safety message labels if they are damaged or missing.

7.3.9 Checking the Fuses and Fuse Holders

- Ensure that the DC fuses and tension springs of the fuse holders are securely in place. Replace the DC fuses or fuse holders if they are loose.

7.3.10 Checking the Screw Connections and Clamp Connections

- Ensure that the screw and clamp connections are securely in place.
- Ensure that the strain relief of the entire cabling is intact.

7.4 Maintaining the SMA String-Combiner

7.4.1 Disconnecting the SMA String-Combiner

⚠ DANGER

Danger to life due to electric shock

High voltages are present in the live components of the SMA String-Combiner.

- Disconnect the SMA String-Combiner before carrying out any work:
  - Turn off the DC switch-disconnector in the SMA String-Combiner.
  - Remove the DC fuses on the central inverter after switching it off. Use an LV/HRC fuse handle to do this.
  - If the central inverter is equipped with the "Optiprotect" option, switch the miniature circuit-breakers in the central inverter off.
  - Only open the fuse holders in the SMA String-Combiner when it is switched off.
  - Only plug in or unplug the DC connector when it is switched off.

⚠ WARNING

Risk of burns from touching hot components

- Wear safety gloves when working on the device.

1. If there is a DC switch-disconnector in the SMA String-Combiner, disconnect it. This ensures that there is no current flowing through the SMA String-Combiner.

   If there is no DC switch-disconnector, disconnect the Sunny Central (see the Sunny Central installation manual).
2. If there are fuses in the Sunny Central, remove them. Use an LV/HRC fuse handle to do this.
3. If the central inverter is equipped with the "Optiprotect" option, switch the miniature circuit-breakers in the central inverter off.
4. If there are no fuses in the Sunny Central, remove the fuses from the DC main distributor.
5. Only open the fuse holder in the SMA String-Combiner when it is switched off.
6. Disconnect all DC connectors.

7.4.2 Maintenance Interval

- Service the SMA String-Combiner every 24 months.

7.4.3 Checking the Mounting Location and Installation

- Ensure that the mounting location can be freely accessed without the need for additional equipment.
- Ensure that the SMA String-Combiner is securely in place.

7.4.4 Checking the Base Plate

- Check whether the drainage plugs are dirty or damaged.

  Clean or replace the drainage plugs if they are damaged or dirty.
- Ensure that all cable glands are securely in place.
- Ensure that the plug connectors are intact and securely in place.

7.4.5 Checking the Enclosure and Enclosure Interior

- Ensure that the enclosure is undamaged and clean.

  If the enclosure is badly damaged, contact the SMA Service Line.
- Ensure that the door lock is intact and clean.
- Check that the perimeter seals on the door frames are intact.

  If the seals are damaged, replace them.
- Ensure that there is no condensation water inside the enclosure.
- Ensure that all cable glands are sealed.

7.4.6 Checking the String Cables

- Check that the DC connectors are securely in place.

  If the DC plug connectors are loose, reconnect the string cables to the SUNCLIX DC plug connectors (see SMA String-Combiner installation manual)

  Replace the DC connectors if they do not snap in correctly.
- Ensure that the screw terminals are securely attached to the fuse holders.

  If the screw terminals are detached from the fuse holders, reconnect the string cables to the fuse holders (see installation manual of SMA String-Combiner).

7.4.7 Checking the Covers and Labels

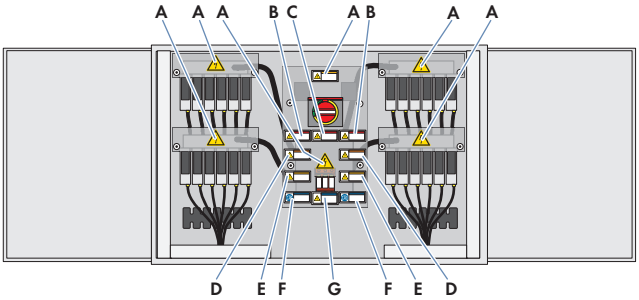


Figure 21: Position of the labels on the SMA String-Combiner

Item	Description
A	Dangerous voltage symbol
B	Risk of electric shock from fuse holder
C	Risk of electric shock under the cover
D	Risk of an electric arc
E	Risk of burns
F	PV array earthing
G	Fuse rating

- Ensure that the safety message labels on and inside the device are present and undamaged.

  Replace safety message labels if they are damaged or missing. The safety message labels can be ordered from SMA using the SMA order number 86-0043660.
- Check that the cover latches are undamaged and securely in place.

  Replace the cover latches if they are damaged or loose.

7.4.8 Checking the Fuses and Fuse Holders

- Ensure that all fuse holders are closed.
- Ensure that the screw connections of the power cables are securely in place.

7.4.9 Checking the Screw Connections and Clamp Connections

- Check that the clamp connections of the string cable are securely in place.
  Replace the clamp connections on the string cable if they are loose.
- Check that the clamp connections on the optional DC switch-disconnector are securely in place.
  Replace clamp connections if they are loose.
- Check the screw and clamp connections to the insulation and the clamps for discolouration or changes in appearance.
  Replace the screw and clamp connections if they are discoloured or look different in any way.

7.4.10 Checking the Surge Arrester

- Check whether the ready indicator on the surge arrester is red.
  If the ready indicator is red, replace the protection module.

8 Contact

If you have technical problems concerning our products, contact the SMA Service Line. We require the following information in order to provide you with the necessary assistance:

- Device type
- Serial number
- Fabrication version
- Installation address with GPS coordinates
- Plant name
- Pictures of the faulty components
- Type and number of the PV modules connected

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Fax: +49 561 9522 3299

E-Mail: SunnyCentral.Service@SMA.de

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