

Installation Requirements

for **SUNNY CENTRAL 350**



Content

This document describes the dimensions, the minimum clearances to be observed, the quantities of supply and exhaust air required for smooth operation, as well as the cable routing. This technical information is valid for the Sunny Central 350.

1 Mechanical data

The Sunny Central 350 has to be installed in an electrical operating room. With the EVR (extended voltage range) the maximum allowable DC voltage is increased at the device connection in idle operation to 1000 V_{DC}. Several modules can be connected in series with the EVR. This additionally reduces the time expenditure and therefore the installation costs of the photovoltaic generator. The EVR is mounted on the roof of the Sunny Central.

1.1 Size and weight

A1: DC/inverter cabinet

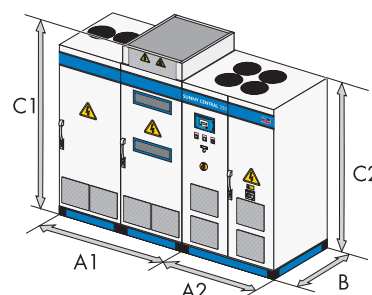
A2: AC cabinet

B: Width

C1: Height with EVR

C2: Height without EVR

The DC/inverter cabinet and the AC cabinet are separate delivery units.



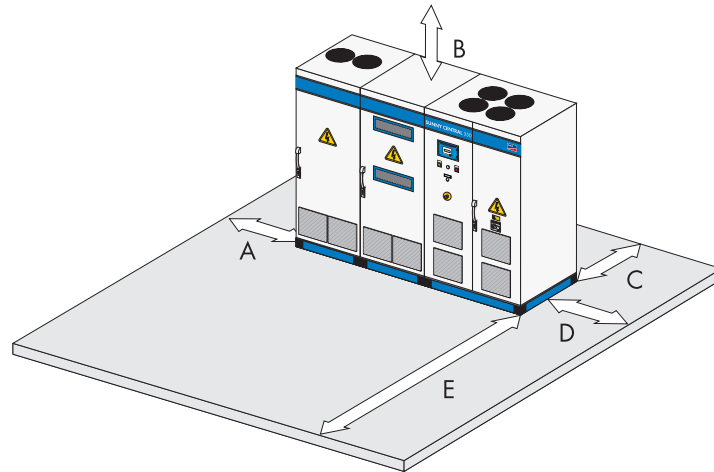
Dimensions

Length A1	Length A2	Width B	Height C1	Height C2
1600 mm	1200 mm	850 mm	2330 mm	2120 mm

Weight

Weight A1	Weight A2	Weight EVR	Total weight without EVR	Total weight with EVR
1100 kg	1700 kg	50 kg	2800 kg	2850 kg

1.2 Minimum Clearance



Regardless of the installation type, the following minimum clearances guarantee a smooth operation of the Sunny Central.

For installation works depending on the type as well as for service works, SMA recommends to provide larger minimum clearances.

Installation without air duct

A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
20	400	50 ^a	0	1100

a.As long as air vents are present in the building wall. Otherwise greater clearances are required.

Installation with air duct

A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
20	0	0	0	1100

The minimum clearances B and C refer to the lower edge of the air duct. The air duct's length depends on the project.

2 Ventilation

Air is supplied through the fan grills on the front side of the inverter. The exhaust air is emitted through the ventilators in the rear wall and roof.

The exhaust air generated by the inverter must be ducted away from the device so that the maximum permissible environmental temperature is not exceeded and / or the warm exhaust air does not unnecessarily heat the installation room. This avoids thermal short circuits. SMA recommends the installation of an exhaust vent on site e.g. by means of an air duct.

2.1 Air quality classification

Environmental requirements for stationary application	Class			
	3S1	3S2	3S3	3S4
a) Sand in the air [mg / m ³]	-	30	300	3000
b) Dust (suspended matter) [mg / m ³]	0.01	0.2	0.4	4.0
c) Dust (fallout) [mg / m ³]	0.4	1.5	15	40
Sites where appropriate measures are taken to keep dust levels to a minimum.	x	x	x	x
Sites where no special measures have been taken to reduce the sand or dust levels and which are not located in the vicinity of sand or dust sources.		x	x	x
Sites near sand and dust sources			x	x
Sites in production halls where sand or dust is present, or sites in geographical locations where the air is prone to high levels of sand and dust.				x

If the required air quality is not available at the installation site of the Sunny Central, then appropriate on-site measures must be taken to meet the stipulated requirements (e.g. installation of extra filters to the building's air intake vents).

2.2 Air volume

For ventilation purposes, the DC/inverter switch cabinet complex is sub-divided into a DC cabinet and an inverter cabinet. The cooling element in the inverter cabinet has a separate ventilation system. Accordingly, different air quantities are required for each respective cabinet unit.

DC / inverter cabinet	AC cabinet	Total volume
3900 m ³ /h	2600 m ³ /h	6500 m ³ /h

2.3 Pressure reserves

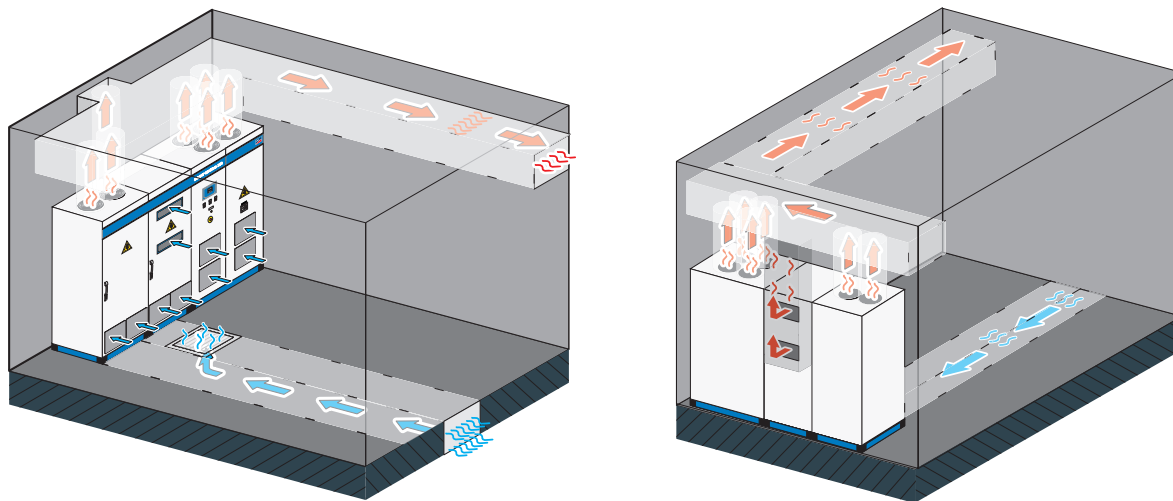
The Sunny Central ventilating fans are designed with the following pressure reserves. These must be observed when the Sunny Central inverters are installed in an electrical equipment room where the exhaust air is discharged to the atmosphere through ventilation ducts.

DC / inverter cabinet	Power units	AC cabinet
none	80 Pa	none

The exhaust air from Sunny Central inverters installed in a station can in general be discharged to the atmosphere through a non-tapered air duct with a cross section of up to 1 m. Additional pressure reserves are not available and must be executed on-site, for instance, by installing extra fans.

2.4 Optimum airflow in an electrical equipment room

Before a Sunny Central is installed in an electrical equipment room, on-site measures must be taken to ensure that supply air and exhaust air are ducted separately and that there is always an adequate supply of fresh air. The exhaust air from the power module at the rear of the Sunny Central must be discharged separately. If the indicated air pressure reserves of the individual cabinet ventilators are not sufficient, additional fans must be installed in the air duct.

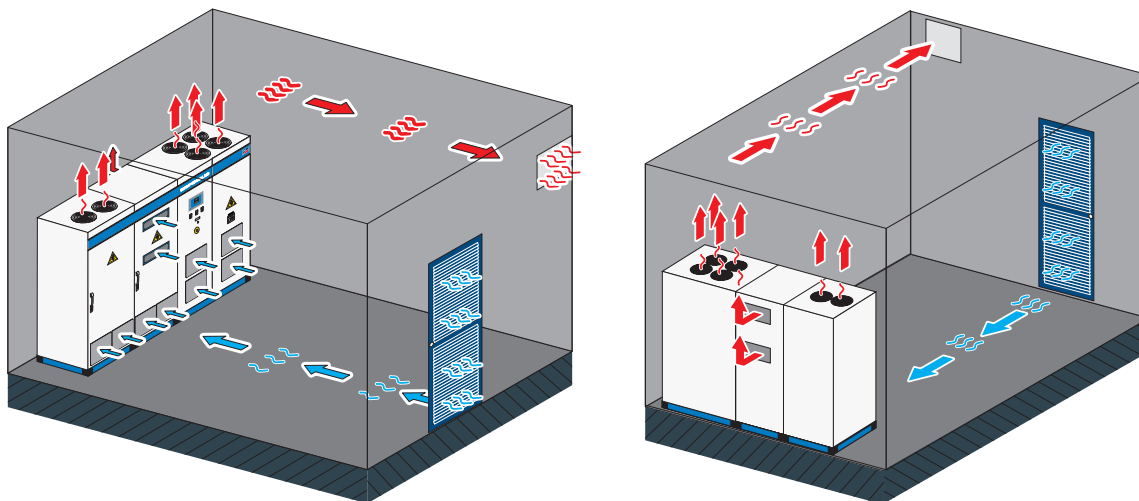


The dimensioning of the ventilation ducts is carried out by an expert.

Ideally, the exhaust air from the power module is directly discharged to the atmosphere through an opening in the wall of the electrical equipment room.

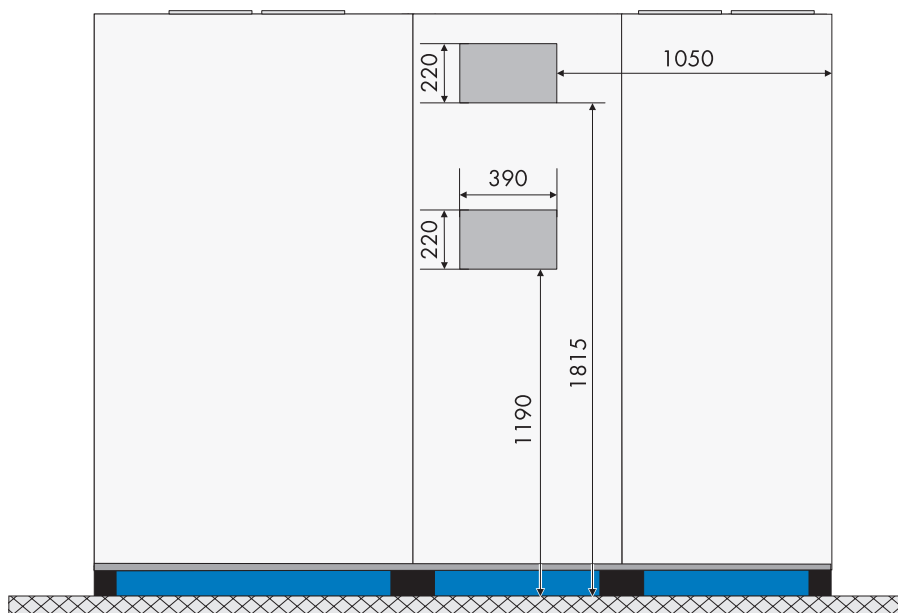
2.5 Airflow in an electrical equipment room without air ducts

As a general rule, exhaust air must be extracted from the individual switch cabinets separately in order to avoid thermal short circuits. In exceptional cases the ventilation of Sunny Central inverters can be effected without ventilation ducts. In this case, it must be ensured that the electrical equipment room is sufficiently ventilated to discharge the exhaust air to the atmosphere.

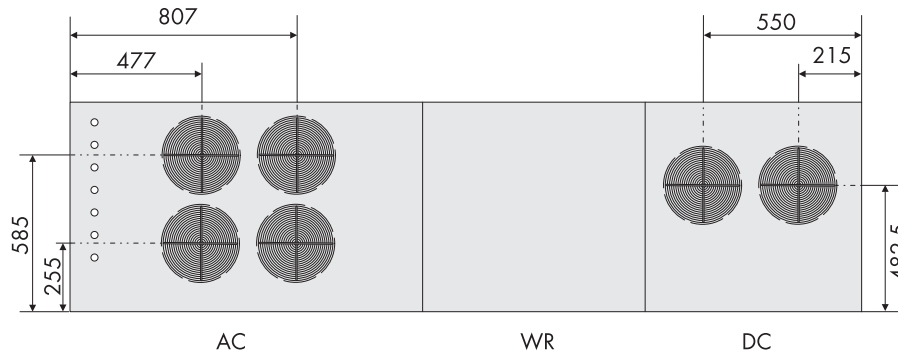


SMA does not recommend this type of installation.

2.6 Dimensions of the exhaust vent in the rear panel



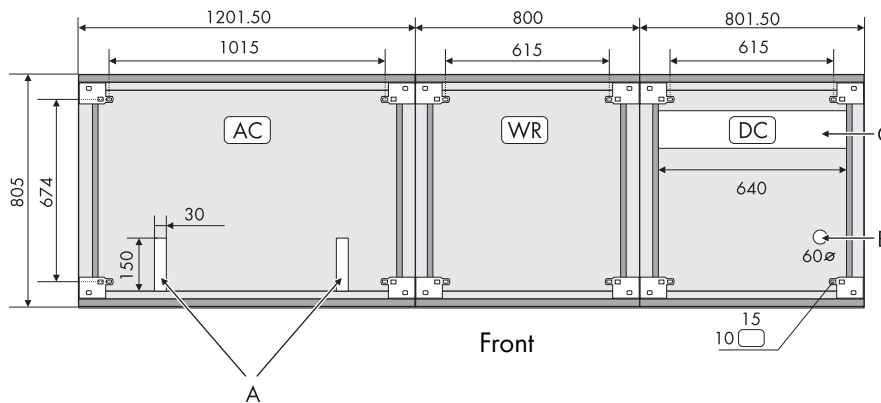
2.7 Dimensions of the exhaust vent in the roof



3 Power Cabling and Anchorage

3.1 Floor apertures

The DC, PE and communication cabling, as well as the internal supply of the Sunny Central is executed through the skirting and base plate. The connection terminals for communication and internal supply are located in the AC cabinet. The floor unit of the DC cabinet is made up of several sliding panels through which the DC and PE cabling is routed. All openings in the floor unit must be plugged. The following diagram shows the anchor points and cable apertures in the floor unit for PE and communication cabling. All entries in mm.



- A Opening for signal cable
- B Opening for team cable
- C Opening for DC cable

4 Cable cross-sectional area and torque

4.1 DC Connection

DC fuses allowing string distribution boxes (e.g. Sunny String-Monitor) to be connected are located in the Sunny Central's DC cabinet. All Sunny Central inverters are equipped as standard with one busbar per potential.

Bus bar

Cable lug	Max. cross-sectional area	Torque
M16	300 mm ²	185 Nm

DC fuses

Cable lug	Max. cross-sectional area	Torque
M10	240 mm ² narrow	32 Nm

4.2 AC Connection

	Cable lug	Max. cross-sectional area	Torque
Phase	3 x M12	240 mm ²	74 Nm
Neutral conductor, grounding conductor	each 1 x M12	240 mm ²	74 Nm

The size of the cable must be adequate to take the maximum PV voltage and must have double or reinforced insulation.