



Roof mounted solar power plant

Features of the plant:

The main components of the DC section of the power plant are mono-crystalline PV modules Sinski PV SPV180M-24, with nominal power of 180 Wp and voltage of VMPP = 36V. The power plant consists of 840 modules, forming 2 plates, as follows: 1 plate with 520 modules with inclination of 5° and 1 plate with 320 modules with inclination of 11.2°.

The generated electricity is fed to 12 inverters and to each inverter are connected 5 strings, consisting of 14 serially-connected modules.

Both end modules of each string with DC cable 1x4mm² cable are connected to a DC switchboard, equipped with PF10 8A gR fuses - one on each pole. DC switchboard, with DC cable 1x6mm² cable to the inverter input. The cables on the roof are laid in a wire cable tray with cover 60/60mm and 100/35mm for outdoor installation, and under the roof in a perforated cable tray.

For this project were selected SMA Technologies inverters, Sunny Mini Central SMA SMC 11 000 TL model.

They are installed on the wall under the roof - section 2, grouped into three by four and each is connected via a CBT-c 3x16mm² cable to a properly sized circuit breaker into the main switchboard.

An overvoltage protection is provided for the power plant as follows: In the intermediate switchboard - PROTEC C 160/320 (3+1) cathode surge arrester; for each DC switchboard - PV PROTEC C 40/550 DC cathode surge arresters, type 2.

To achieve the necessary parameters of the earthing system 6 earthing devices are provided. The earthing system consists of Al wire with intersection of Ø 8mm, installed on the aluminum structure of the panels using mounting brackets providing sufficiently low transition resistance of the connection. Each earthing device consists of a set of 3 galvanized steel poles with dimensions of 50/50/5 mm, L=1500mm and revision-control box. The connection between the revision-control box and the earthing devices is done with galvanized steel bar 40/4 mm.

For lightning protection system was chosen early streamer emission lightning conductor SCHIRTEC – AESE The shaft height is 3.5 m. The central monitoring and control device is Sunny Web Box. The monitoring and control device is installed in a low voltage switchboard.

Power Plant Specification

Size:	151.20 DC
Commissioned:	2012
Type:	Roof-mounted
Site Area:	1134 m ²
Output:	132 kW
CO ₂ Displacement:	~ metric tons per year
Module Surface Area:	1072 m ²
Modules Used:	Type: SPV 180M-24
Quantity:	840
Angles:	Mounting Tilt: 11.2°, 5°
	Azimuth: -10.4°



Supported by:



5300 Gabrovo, Bulgaria,
Stancionna 14 St.
Phone: +359 (66) 817 404
Fax: +359 (66) 817 407
Email: solar@sts.bg
www.solar.sts.bg

