



Roof mounted solar power plant

Features of the plant:

The PV power plant is built of 378 mono-crystalline modules SPV 180M-24, with nominal power of 180 Wp and voltage of 24 V. The modules are located on 9 separate static structures under 30° to the horizon oriented to the south. On each structure are located on two rows a total of 42 modules, 21 per row. The generated electricity is fed to 9 inverters and to each inverter are connected 3 strings, consisting of 14 serially-connected modules.

Both end modules of each string with DC cable Radox solar cable 1x4mm² type are connected to the inverter input. The cable is for outdoor, mobile or fixed installation and resistant to weather conditions, high and low temperatures and UV radiation. At the inverter input is installed a DC switchboard, fitted with RT 28-32 fuses - one per each pole.

The inverters used for this project are Sunny Mini Central SMC 7 000TL – single-phase with inputs for 4 strings, without transformers and with IP65 level of protection against external weather conditions.

The inverter groups are grouped into two groups of three and from each exits a CBT c 2x16mm² cable and goes to a properly sized circuit breaker into intermediate switchboard. Intermediate switchboards 1, 2 and 3 and the inverters are installed on the north side of the relevant structure. From each inverter exits a CBT-c 4x16mm² cable and goes to a NB1 63A circuit breaker, tripolar with C-curve into the main switchboard. In the main switchboard is provided overvoltage protection with Protec C 120/320(3+0) cathode surge arresters, equipped with circuit breaker – disconnect DZ-158 3P, 125A.

For main fuse of the main switchboard is provided automatic circuit breaker NM1 250S 3P 125A, as well as VIP electrometer, fitted with current transformers TT 125/5A and EK RSTB – controller for monitoring the network parameters.

To achieve the necessary parameters of the earthing system are used 6 earthing devices, combined in a common circuit. The grounding of inverters, main switchboards and all metal non-current-carrying parts is carried out by welding or bolting them to the grounding circuit.

For the implementation of the lightning protection system was chosen early streamer emission lightning conductor SCHIRTEC – AESE, with shaft height of 6.45 meters.

The central monitoring and control device is „Sunny Web Box”, with integrated radiation sensor (pyrometer) and interface for connection of various sensors for measuring of environmental parameters. They are installed in the modules with the same orientation and inclination.

Power Plant Specification

Size:	68.04 DC
Commissioned:	May 2012
Type:	Roof-mounted
Site Area:	1110 m ²
Output:	63 kW
CO₂ Displacement:	~ metric tons per year
Module Surface Area:	483 m ²
Modules Used:	Type: SPV180M-24
	Quantity: 378
Angles:	Mounting Tilt: 30°
	Azimuth: -3°



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