

Parans SP2.1 is the second version of the unique and award-winning Parans Solar Panel for transport of sunlight into buildings.



Introduction

Parans SP2.1 employs 62 pivot-suspended optical fresnel lenses that follow the solar path and focus incident sunlight into optical fibers. The optical fibers are bundled into four flexible optical cables that transport the collected sunlight up to 20 meters. Parans SP2.1 can be installed on both roofs and facades which generates a wide range of installation possibilities.

Solar Tracking

The solar tracking in Parans SP2.1 represents a significant technology improvement. A new sun sensor, based on a PSD chip, has been developed and assures increased accuracy in detection and tracking of the sun in a large variety of weather conditions. The software combines input from the sensors with historical data of the solar path from each day that the panel has been installed. This allows for alignment of the lenses towards the sun even on cloudy days, so that sunlight can be harvested as soon as the sky is clear.

Function Description

The sunlight output from Parans SP2.1 depends on the sunlight conditions and the length of the fiber optic cables. The light transport is immediate, it cannot be stored and is not transformed. If a cloud passes by for example, the same shadow will be cast indoors and if the sunlight is tinted red in the evening so will the light output. For light to be able to flow through an optical fiber, it must enter from an angle which lies within the fiber's acceptance angle. In practice, this means that only the parallel light rays of direct sunlight can be efficiently collected. The light output on cloudy days is therefore little or none depending on the thickness of the clouds.

Performance

At direct incident sunlight at 100 000 lux, the sunlight output, or luminosity, from Parans SP2.1 is 3000 +/- 300 lumens. The transmission in the optical cables is 95,5% per meter, which means for example that 63% luminosity remains after 10 m.

Installation

Parans SP2.I is suitable to transport sunlight in all types of buildings and rooms. It can be installed on both roofs and facades, in already existing buildings and during constructions. Request your complete installation manual from Parans!

Sun Switch

Parans SP2.I is available with a sun switch function that can turn off the sunlight output by making the optical lenses turn away from the sun. The Sun Switch function is controlled by an ordinary electrical switch, such as a light switch. This switch is connected to the Parans Switch Hub which is the physical product that is delivered when ordering the sun switch function. Up to five solar panels can be connected to the same Switch Hub and thus controlled by the same switch.

Cables

From Parans SP2.I come four optical cables, one power supply cable and one data communication cable. All cables are connected to the panel at production and are not detachable. The cables exit the solar panel through a water tight aperture and are protected in a robust yet flexible, corrugated hose in PP-plastic. This hose is to be opened up and shortened at the point where the cables divide indoors. The maximum length of the the optical cables is 20 meters.

Materials Used

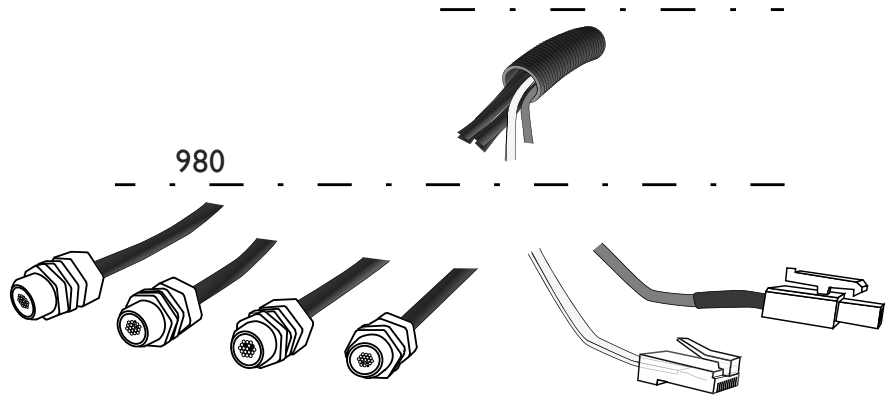
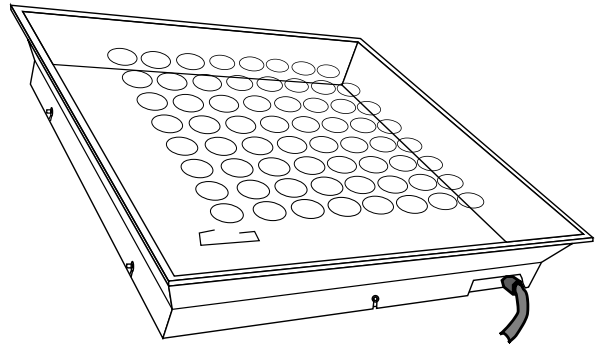
See table below for the materials used. The electronics used comply to the RoHS-standards (Restriction on Hazardous Substances).

Specifications	
Dimensions	980 x 980 x 180 mm
Weight solar panel	30 kg
Weight optical cable	273 g / m
Power Supply	AC 100 - 250 V
Power Consumption	0 - 6 W
Operating Temperature	-20°C – 40°C
Luminous Output	3 000 +/- 300 lm*

Materials, Components	Weight (g)
Aluminum EN AW-5754 H22	16 220
Toughened safty glass (EN12150). Antireflective Centro Solar HiTC+	5 120
Zink (alloy ZL 0410)	3 660
Stepping motor Type I6PM-M009-02, MINABEA CO LTD, Thailand	822
Plastic (PMMA)	341
Stainless Steel	148
Electrogalvanized Steel	128
PA6	< 100g
POM - Delrin 500AL NC010	< 100g
Ertalyte TX (PET-P w/ solid lubricant)	< 100g
Silicone, Loctite 5140	< 100g
UV curing glue, Loctite 3103	< 100g
EPDM rubber	< 100g
Nickleplated brass	< 100g

Product Overview

The sketch to the right shows Parans SP2.1 including the four optical cables (left), the power supply cable (middle) and data communication cable (right).



980

Drawing

Outer dimensions:
980 x 980 x 180 mm

