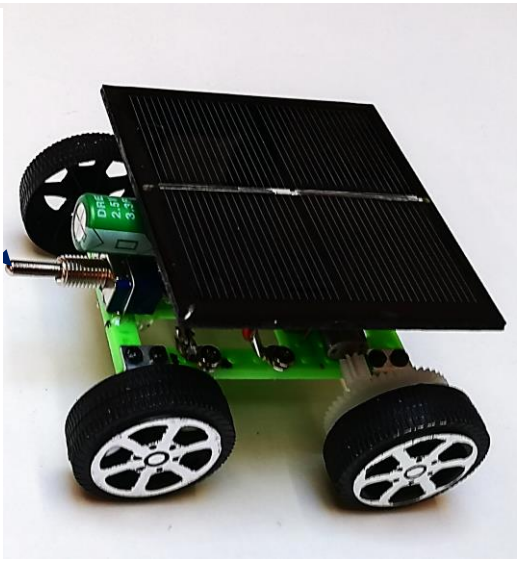
Solar electric mobility
The solar runabout turboSC

Beginner's solar vehicle with solar module and storage capacitor

QR solar runabout turboSC

On the top side the solar module with 1,26 V/ 480 mA at S = 1000 W/m² is located.
On the left-hand side there is the operating switch (charge – off – drive), above it the storage capacitor. On the bottom right the white cogwheels of the gear are visible, behind it the electric motor.
At the soldering eyelets, measurements can be conducted with a multimeter.



With a voltmeter, the module voltage, the short-circuit current, as well as the charging and discharging of the capacitor can be measured at the vehicle and measurement curves can be created. Here the measurement value of 1,20 V is shown during charging.

The solar vehicle SUSE solar runabout turboSC

On the chassis of the well established solar vehicle SUSE solar runabout, a solar module with 2 solar cells in integrated series connection (V_{oc} = 1,26 V / I_{sc} = 480 mA) is mounted on top of a spacer block. On the left-hand side the operating switch with the 3 positions charge – off - drive is visible.
Above the switch the storage capacitor (C= 3,3 F/ V = 2,4 V) is located, it can store the energy amount of 2,62 J delivered by the solar module and use it for driving after switching over.
After switching over, the car drives for about 30 m with this energy, even in poorly lit rooms.
The storage capacitor can be charged either outdoors in the sunshine/daylight or indoors with halogen or red light spot lamps (LED lamps are not usable due to the inapt light spectrum).

Technical Data:

Vehicle
Vehicle length: 85 mm
Vehicle width: 65 mm
Vehicle height: 43 mm

Drive
Mini electric motor
with reduction gear

Solar module
Module dimensions 60 x 60 mm
2 solar cells in internal series connection
V_{oc} = 1,26 V I_{sc} = 480 mA
At standard testing conditions
S = 1000 W/m², T = 25°C, AM = 1,5

Energy storage
Supercapacitor
3,3 F / 2,4 V

The vehicle is available for delivery as a construction kit or a ready-to-use device.

Required tools for the construction kit:
Cross tip screwdriver (included in construction kit), long-nosed pliers, side cutters, soldering station with lead free tin solder. For measurements, a multimeter with lab wires and alligator clips is required.