



The Solar Barrow

- User Manual -



October 2026

Thank you for choosing The Solar Barrow.

Dear valued customer,

The **Qualiworx Engineering** Team would like to thank you for selecting **The Solar Barrow** as your mobile solar energy solution.

We appreciate the trust that you have placed in our innovative technology. Our team has carefully designed this product to empower YOU and your community, to support sustainable development, and to provide reliable energy access - wherever it is required.

By choosing **The Solar Barrow**, you are not just purchasing a product. You are becoming a part of a larger mission to

- democratize energy access,
- support renewable technologies,
- create economic opportunities,
- and to reduce your carbon footprint.

Your investment supports

- local engineering innovation,
- sustainable development and
- community empowerment.

We are committed to keeping your system running and stand ready for

- comprehensive user support (see contact details below),
- technical assistance and
- ongoing product development.

Should you have any questions, require additional information, or need technical support, please do not hesitate to contact us.

Thank you!

The **Qualiworx Engineering** Team

Contact Information:

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Contents

1	Preliminary Instructions	4
2	Product Overview	4
3	Technical Specifications	5
4	Safety Guidelines	6
5	Charging and Operation	7
6	Maintenance Procedures	10
7	Troubleshooting	11
8	Warranty	11

1 Preliminary Instructions

Critical reading requirement

Before operating **The Solar Barrow**, you **MUST**:

- Carefully read ALL individual component manuals and understand specific guidelines for:
 - Charge controller
 - Battery
 - Inverter
- Keep all manuals in a safe, accessible location.
- Familiarize yourself with each component's unique specifications and safety requirements.

2 Product Overview

The Solar Barrow is a mobile solar power station designed to provide a flexible, renewable energy generation solution.

Key Design Features

- The solar system is mounted on a standard wheelbarrow frame that provides robust mobility, efficiency and security whilst being easy to maintain and repair.
- The innovative solar panel mounting allows for a horizontal and angular positioning of the modules for the best solar yield - at any time of the day and in any season of the year.
- **The Solar Barrow** is a movable and versatile energy system that provides electricity, independently from the location.
- It is ideal for off-grid and mobile applications.
- **The Solar Barrow** generates sustainable power that causes zero noise and greenhouse gas emissions but provides safety, productivity and comfort, instead.
- During the production process of **The Solar Barrow**, a minimum of solid waste is produced. This is due to the system's main materials being wood and aluminium. While wood, as a natural resource, is fully biodegradable, the aluminium cut-offs are being collected and taken to the local recycling system.

3 Technical Specifications

Solar Panels

model	aquaSol 100
max. power output	$P_{out} = 2 \times 100 \text{ W}_{peak}$
voltage at max. power point	$U_{MP} = 40.60 \text{ V}$
current at max. power point	$I_{MP} = 2.47 \text{ A}$
open circuit voltage	$U_{OC} = 49.00 \text{ V}$
short circuit current	$I_{SC} = 2.58 \text{ A}$

Battery

model	Dyness LR1.2
type	lithium-iron-phosphate ($LiFePO_4$)
voltage	12 V
capacity	100 Ah

Charge Controller

model	Victron Energy SmartSolar MPPT 100 30
max. PV open circuit voltage	$U_{PV,oc} = 100 \text{ V}$
max. PV short circuit current	$I_{PV,sc} = 30 \text{ A}$
max. battery current	$I_{battery} = 30 \text{ A}$

Inverter

model	Victron Energy Phoenix 12 800
max. power output	$P_{out} = 800 \text{ VA} (\approx 700 \text{ W})$

Dimensions of The Solar Barrow

max. Length	$l_{max} = 1,350 \text{ mm}$
Width (collapsed panels)	$w_{coll.} = 590 \text{ mm}$
Width (extracted panels)	$w_{extr.} = 1,190 \text{ mm}$
Height (collapsed panels)	$h_{coll.} = 720 \text{ mm}$
Height (extracted panels)	$h_{extr.} = 1,380 \text{ mm}$

4 Safety Guidelines

Warning Categories

- ⚠ General Caution
- 🔋 Battery Safety
- ☀ Solar Panel Handling
- ⚡ Electrical Safety

Essential Precautions

- Prohibited actions:
 - **Do not place any objects on the collapsed panels!**
The glass can break easily!



- Do not submerge in water.



- Avoid extreme temperatures.
- Never disassemble the Solar Barrow.
- Never disassemble internal components.

The electric system of **The Solar Barrow** is not grounded, as this would compromise its mobility. **Do not leave the system exposed to lightning and other extreme weather conditions!**



- Recommended Practices:
 - only connect AC cables according to Southern African standard (Type M)

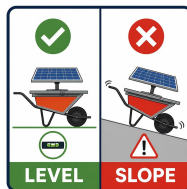


- maintain a clean, dry operating environment
- keep away from unauthorized users

5 Charging and Operation

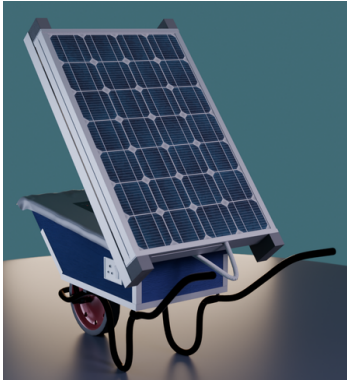
Moving and Positioning of The Solar Barrow

- ⚠️ BEFORE moving **The Solar Barrow**:
 - collapse panels as shown in Figure 2(b)
 - ensure that the inverter is switched off
 - ensure that the fuses are switched off
- always position **The Solar Barrow** on level ground before positioning the panels

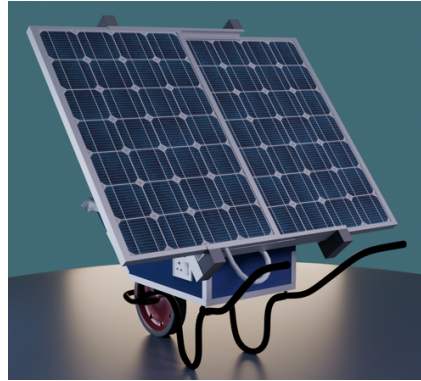


Panel Positioning

- The panels are mounted on sliding rails to allow for horizontal repositioning and to double the solar electricity generation (Figure 1).



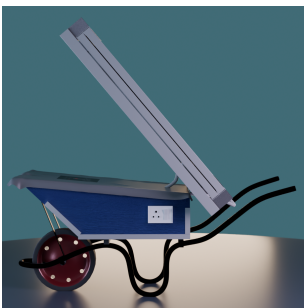
(a)



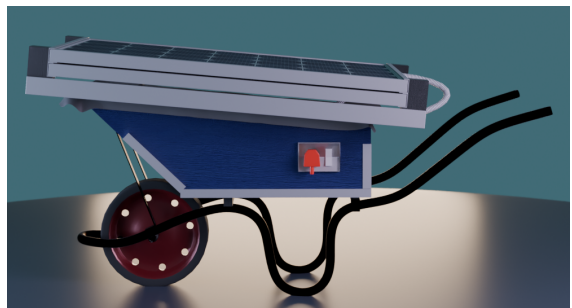
(b)

Figure 1: Horizontal positioning of panels

- The rotational adjustment of the panels provides optimal sun tracking from morning to evening and for all seasons (Figure 2).



(a)



(b)

Figure 2: Rotation of panels

Tip: If you position yourself between the handles of The Solar Barrow and the sun reflects in the middle of the solar panels, the panels are correctly positioned.

Charging Process

- charging source: solar panels ONLY
- charge controller manages energy transfer
- **no alternative charging method permitted**

Optimal Solar Charging

1. Adjust panels for maximum sun exposure (see Figures 1 and 2).
2. Use rail system to adjust panels horizontally (see Figure 1).
3. Rotate panels using hinges for a precise angle adjustment (see Figure 3).
4. Aim for direct, unobstructed sunlight, i.e. avoid shadowing of the solar panels.

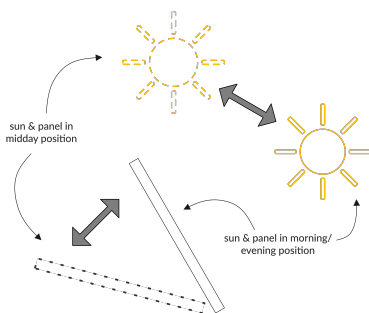


Figure 3: Adjustment of panels for maximum sun exposure

Supported Devices & Appliances

Your Solar Barrow can power devices with a combined power of max. _____ W. **Always ensure that the combined power of all connected devices DOES NOT exceed this value!**

Below is a non-exhaustive list of devices that can be powered:

- smartphones
- tablets
- laptops
- projectors

- monitors
- inkjet printer-scanner units
- lighting
- TV sets
- small appliances (e.g. hair clippers)
- communication devices (e.g. radios)
- charging of car batteries
- charging of 12 V, 18 V and 24 V batteries for cordless power tools
- stick welding machines

Operating Procedure

1. check battery charge level
2. position panels for optimal sun exposure
3. connect compatible cable to device
4. switch on inverter
5. monitor charging and discharging process

6 Maintenance Procedures

Cleaning Protocol

- use soft, moist cloth to remove dust from panels
- use soft, dry cloth to clean electrical connections periodically
- avoid liquid cleaners

Routine Maintenance

- monthly visual inspection
- check cable integrity
- verify panel and battery performance
- lubricate panel rotation
- ensure rail system moves smoothly

7 Troubleshooting

Issue	Diagnostic Steps	Recommended Action
No Power output	Check connections	Restart inverter, verify cable connections
Slow charging	Assess sunlight exposure	Clean panels, adjust positioning

Should the issue persist, contact **Qualiworx Engineering** for technical assistance.

8 Warranty

For all components of the solar system, the manufacturer's warranty applies. These components are:

- solar panels
- batteries
- charge controller
- inverter

For the remaining components of **The Solar Barrow, Qualiworx Engineering** provides a warranty of six months. These components comprise:

- wheelbarrow frame and wheel
- panel mounting
- box

DISCLAIMER:

The warranty does not apply if the setup of **The Solar Barrow** was dismantled or modified in any way.