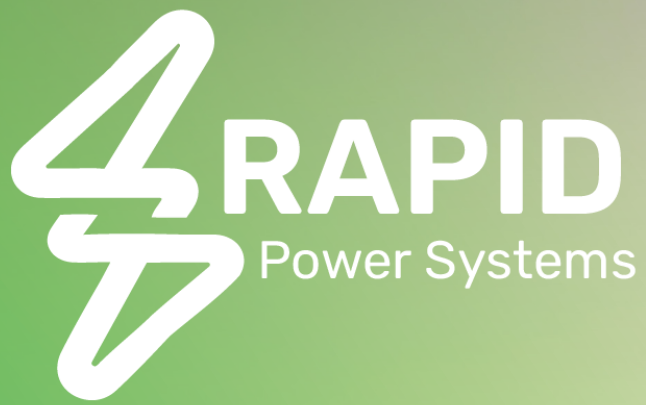




DEPLOYMENT MANUAL: **SOLAR SECURITY TRAILER**

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SOLAR-POWERED SECURITY TRAILER DEPLOYMENT MANUAL

PURPOSE:

This manual provides the correct and safe procedure for deploying a solar-powered security trailer on site, including positioning, solar deployment, electrical start-up, stabiliser setup, and mast raising.

REQUIRED PPE & TOOLS

- Hi-vis clothing, safety boots, gloves
- Hard hat and safety glasses (recommended during mast operation)
- Included wheel chocks (supplied with trailer)
- Site keys / padlock keys for access panels

SAFETY WARNINGS (READ FIRST)

- **CRUSH/PINCH HAZARDS:** Solar panel slides, locking levers, stabiliser legs, and mast sections can pinch hands and fingers. Keep hands clear of moving parts.
- **OVERHEAD HAZARDS:** Confirm the mast will not contact powerlines, trees, roofs, or other structures. Maintain safe clearance at all times.
- **WIND CONDITIONS:** Do not deploy solar panels or raise mast in high winds. If gusts are strong enough to rock the trailer, delay deployment.
- **ELECTRICAL ACCESS:** Only trained personnel should open the electrical enclosure. Keep it closed once breakers are on.



SYSTEM OPERATION AND MAINTENANCE MANUAL

MAJOR SYSTEM COMPONENTS

VICTRON MPPT 150/70-TR

A solar charge controller that converts power from the solar panels into the correct charging voltage for the battery bank. It utilises Maximum Power Point Tracking (MPPT) to maximise solar charging efficiency and supports high charging currents on a 24 V system.

VICTRON SMART CHARGER 24 V 25 A

An AC-powered battery charger used to charge and maintain the 24 V battery system when mains power or a generator is connected. The charger provides controlled multi-stage charging to maximise battery life.

VICTRON CERBO GX

The central system monitoring and control unit. It collects operational data from connected Victron devices and provides local and remote monitoring via the Victron Remote Management (VRM) portal.

VICTRON ORION-TR 24-12 V 10 A

A DC-DC converter used to supply regulated 12 V power from the 24 V battery system while isolating connected devices from voltage fluctuations.

VICTRON SMART BATTERYPROTECT 65 A

An electronic protection device that disconnects connected loads if battery voltage becomes too low or too high, preventing battery damage and protecting sensitive equipment.

VICTRON SMARTSHUNT

A precision battery monitoring shunt that measures battery voltage, current flow, and state of charge. This provides accurate battery information to the Cerbo GX and Victron monitoring applications.

HYDRAULIC MAST PUMP AND RESERVOIR

A hydraulic power unit consisting of an electric pump and fluid reservoir. It provides hydraulic pressure required to raise and lower the mast.

MAST CONTROLLER

A handheld controller used to operate mast movement. Only up and down functions are active on this system.

MAIN ISOLATION SWITCH

A manual electrical isolation switch used to disconnect or connect the battery bank from the entire electrical system. This is the only means of fully isolating the batteries.



POWER DISTRIBUTION AND PROTECTION

SOLAR TOP BREAKER

Protects and isolates the two fixed upper solar panels. This breaker allows the top solar array to be safely disconnected for maintenance or fault isolation.

SOLAR BOTTOM BREAKER

Protects and isolates the two sliding lower solar panels located beneath the top panels. This breaker must be OFF when servicing or mechanically operating the sliding panel assembly.

BATTERY BREAKER

A charge control breaker installed between the MPPT solar charge controller and the battery bank. This breaker is used to enable or disable battery charging from the solar system only. It does not isolate the batteries from the system.

MAIN LOAD BREAKER

Supplies power to the CCTV devices in the top equipment enclosure. This enclosure contains a PoE switch for your CCTV equipment. Your cellular device is normally in this enclosure too but controlled via a 'comms breaker'.

COMMS BREAKER

Supplies power to the communications and monitoring equipment, including the 5G/4G router and Victron Cerbo GX. This breaker is only required when communications or remote monitoring are needed.

SERVER BREAKER

Supplies power to the server/NVR in your trailer.

SPARE DC BREAKER

Currently not in use. This breaker is available for future connections, in most trailers this will be 24VDC.

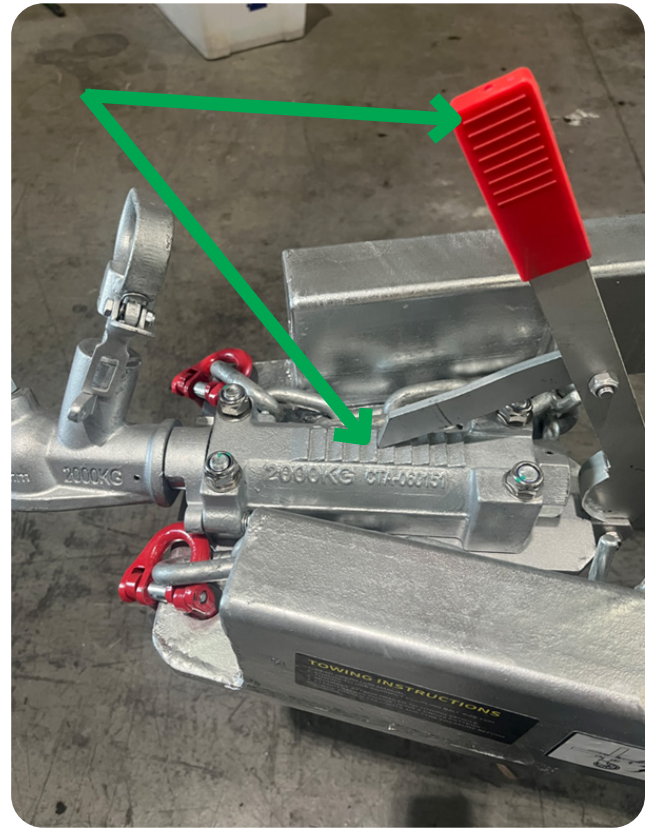


1. POSITIONING, BRAKING & UNHITCHING

1.1 Park the trailer in its final operating position, ensuring:

- Ground is firm and as level as possible.
- Solar panels will have clear sun exposure.
- Mast has safe overhead clearance.

1.2 Apply the trailer handbrake fully.



1.3 Place the included wheel chocks:

- Position chocks firmly against the tyres (front and rear of at least one wheel, or as per site rules).
- Confirm the trailer cannot roll.



1.4 Jockey Wheel:

- Release the clamp: Loosen the jockey wheel clamp or locking bolt.
- Lower the wheel: Slide the jockey wheel down until it reaches the ground.
- Lock in position: Tighten the clamp firmly so the wheel can't move.
- Adjust height: Wind the handle to raise or lower the trailer as required (e.g. to unhitch or level).
- Check stability: Make sure the wheel is vertical and supporting the load safely.



1.5 Unhitch the trailer from the tow vehicle:

- Disconnect safety chains.
- Disconnect electrical plug(s).
- Release coupling and raise jockey wheel until clear.



1.6 Confirm the trailer is stable and cannot move.

2. DEPLOYING THE SOLAR PANELS

(4 Panels Total, 2 Deployable Slide-Out Panels)

NOTE: The trailer carries four solar panels in total, but only two panels are slide-out deployable (one on each side). The other two remain fixed in place.

2.1 RELEASE THE SLIDE-OUT PANELS

2.1.1. Locate the spring-loaded release pin on the underside of the trailer that secures the slide-out panels.



2.1.2. Pull back the release pin to disengage the panels.

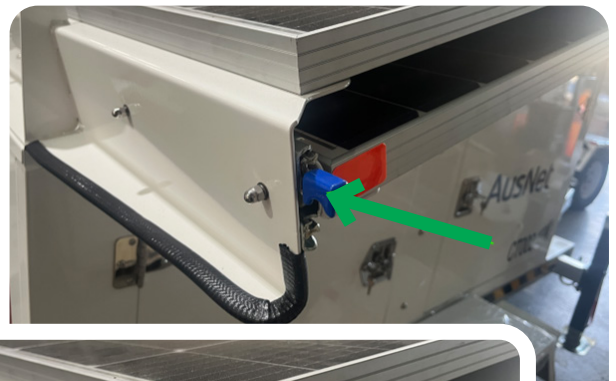
The pin is on a spring and stays attached to the trailer (no need to remove or store it).



2.2 SLIDE OUT AND LOCK BOTH DEPLOYABLE PANELS

2.2.1. Go to the first deployable solar panel (one side of trailer).

2.2.2. At the bottom of the panel, press down the locking lever.



2.2.3. While holding the lever down, pull the solar panel outward until fully extended.

2.2.4. Continue pulling until you feel/hear a click, confirming it has locked in position.

2.2.5. Repeat Steps 1–4 for the second deployable panel on the opposite side.

2.2.6. Once deployed, solar panels to face north for optimal solar charging.

CHECK: Both deployable panels are fully extended, locked, and facing north. The remaining two panels stay fixed.



3. DEPLOYING THE STABILISER LEGS

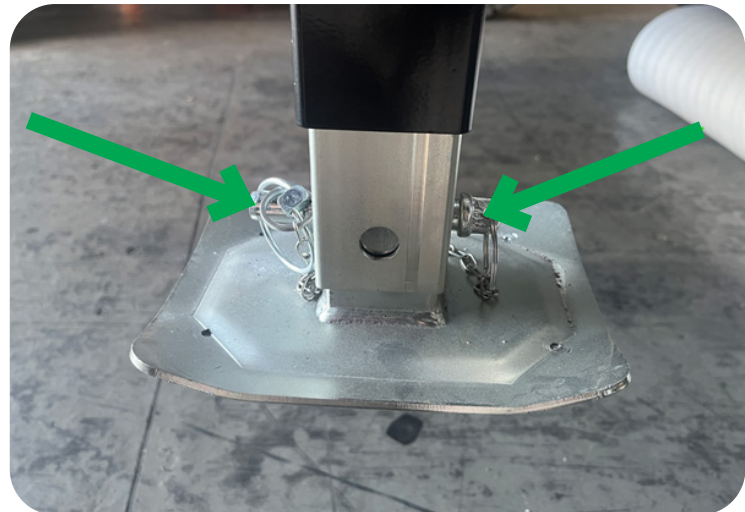
(4 Stabiliser Legs Total)

3.1 Locate the four stabiliser legs (one at each corner).



3.2 For each stabiliser leg:

- Remove the holding pin.
- Extend the leg outward to its operating position.



3.3 Reinsert the holding pin fully to lock the leg in place.



3.4 Once all four legs are extended and pinned, adjust their height:

- Turn the adjustment bolt clockwise to raise the leg.
- Turn the adjustment bolt anticlockwise to lower the leg.



3.5. Adjust each leg until the trailer is level and stable.

CHECK:

- All 4 stabiliser legs are extended and locked with pins fully seated.
- Trailer is level with minimal rocking.



4. RAISING THE MAST

4.1. Ensure the area around and above the mast is clear.

4.2. Using the mast controls, raise the hydraulic mast slowly to the desired height.

4.3. Align the mast locking holes once at height.

4.4. Insert the mast holding pin fully to lock the mast in position.

4.5. Confirm the pin is seated and secured.

CHECK: Mast should hold steady and not drift down. Cameras/lights should be stable.



5. ELECTRICAL START-UP

5.1 Ensure the trailer is safely positioned and all equipment is clear.

5.2 Open the passenger-side access panel. Open the electrical enclosure.

5.3 Place the Main Isolation Switch in the ON position. In case of an electrical fault, you can isolate the system with this switch. Switch ON all required circuit breakers (battery, solar, and load breakers as required).

5.4 If a breaker trips immediately, leave it OFF and report the fault.

5.5 Leave the 12 V DC and 24 V Auxiliary breakers OFF unless additional equipment is connected.

5.6 Close and secure the electrical enclosure.

5.7 Close and secure the passenger-side access panel.

CHECK: System indicators/displays show normal operation.



SHUTDOWN PROCEDURE

1. Switch OFF all circuit breakers to disconnect loads and charging sources.
2. Place the Main Isolation Switch in the OFF position to fully isolate the battery system.



EMERGENCY SHUTDOWN PROCEDURE

In the event of an electrical fault, mechanical failure, or safety risk:

1. Immediately switch OFF all circuit breakers.
2. Place the Main Isolation Switch in the OFF position as soon as possible.
3. Do not restart the system until the cause of the fault has been identified and rectified by qualified personnel.



STORAGE INSTRUCTIONS

Storage With Mains AC Power Connected:

1. Connect the trailer to mains AC power using the external 10 A AC input socket.
2. Place the Main Isolation Switch in the ON position. This is required for the AC charger to operate.
3. The Battery Breaker is not required to be ON for AC charging, as the AC charger is connected directly to the battery bank.
4. If remote monitoring is required, turn the main isolation switch to ON, switch the Comms Breaker to ON to power the 5G/4G router and enable monitoring via the Cerbo GX and VRM portal.
5. All other breakers may remain OFF unless required.



STORAGE WITHOUT MAINS AC POWER CONNECTED:

1. Ensure all circuit breakers are in the OFF position.
2. Place the Main Isolation Switch in the OFF position.
3. Do not enable the Comms Breaker.
4. This configuration prevents unnecessary battery discharge during storage.

BATTERY CHARGE INDICATION

The battery indicator is provided as a general visual guide only. Its indication is calculated from battery voltage and does not accurately represent the true state of charge.

For accurate battery state of charge and system status, refer to the Victron SmartShunt and Cerbo GX either locally or remotely via the VRM portal.



MAST OPERATION

Only mast up and down functions are operational on this system. Pan and tilt functions present on the controller are not functional.

Important Orientation Note: The mast controller is stored upside down in its mounting bracket for transport.

Always remove the handheld controller from the bracket before operation and ensure it is held in the correct upright orientation. Failure to confirm orientation may result in unexpected mast movement.



POST-DEPLOYMENT QUICK CHECKLIST

- | | |
|---|--|
| ☐ Trailer in correct position | ☐ Electrical breakers ON left-to-right, enclosure closed |
| ☐ Handbrake applied | ☐ 4 stabiliser legs extended, pinned, and height-adjusted |
| ☐ Included wheel chocks placed and secure | ☐ Mast raised and holding pin inserted |
| ☐ Spring-loaded solar release pin pulled back | ☐ System operating normally, area clear |
| ☐ 2 deployable solar panels fully extended, clicked/locked, and facing north | |

6. SHUTDOWN / PACK-DOWN (REVERSE PROCEDURE)

6.1. Lower mast fully to stowed position, then remove holding pin once seated.

6.2. Retract stabiliser legs:

- Turn adjustment bolts to raise legs clear of ground.
- Remove holding pins.
- Slide legs fully in.
- Reinsert holding pins to secure for transport.

6.3. Open electrical enclosure and switch breakers OFF right-to-left. Turn isolation switch off. Close trailer door.

6.4. Retract the 2 deployable solar panels:

- Press lever, slide panels fully inward until stowed.
- Ensure spring-loaded release pin re-engages and secures panels.

6.5. Remove the included wheel chocks and stow them in their storage location.

6.6. Release handbrake only when ready to re-hitch.

6.7. Re-hitch trailer:

- Lower coupling onto tow ball and lock
- Reconnect safety chains
- Reconnect electrical plug(s)
- Raise jockey wheel fully

BASIC TROUBLESHOOTING

BREAKER TRIPS IMMEDIATELY:

- Possible overload or fault. Leave breaker OFF.
- Check for obvious cable damage or water ingress.
- Report to maintenance.

SOLAR PANEL WON'T LOCK OUT:

- Confirm spring-loaded release pin is pulled back.
- Pull panel straight outward without twisting.
- Check slide rails for debris.

TRAILER STILL ROCKS AFTER STABILISERS:

- Recheck all 4 legs are pinned.
- Adjust heights again until level.
- Confirm ground is firm (use pads if needed).

MAST WON'T RAISE / LOWERS SLOWLY:

- Confirm breakers are ON.
- Check for obstructions.
- If hydraulic system strains or makes abnormal noise, stop and report.