

CONTROLLER INSTALLATION GUIDE

INSTALLATION, WIRING & OPERATING INSTRUCTIONS

EDITION 2026

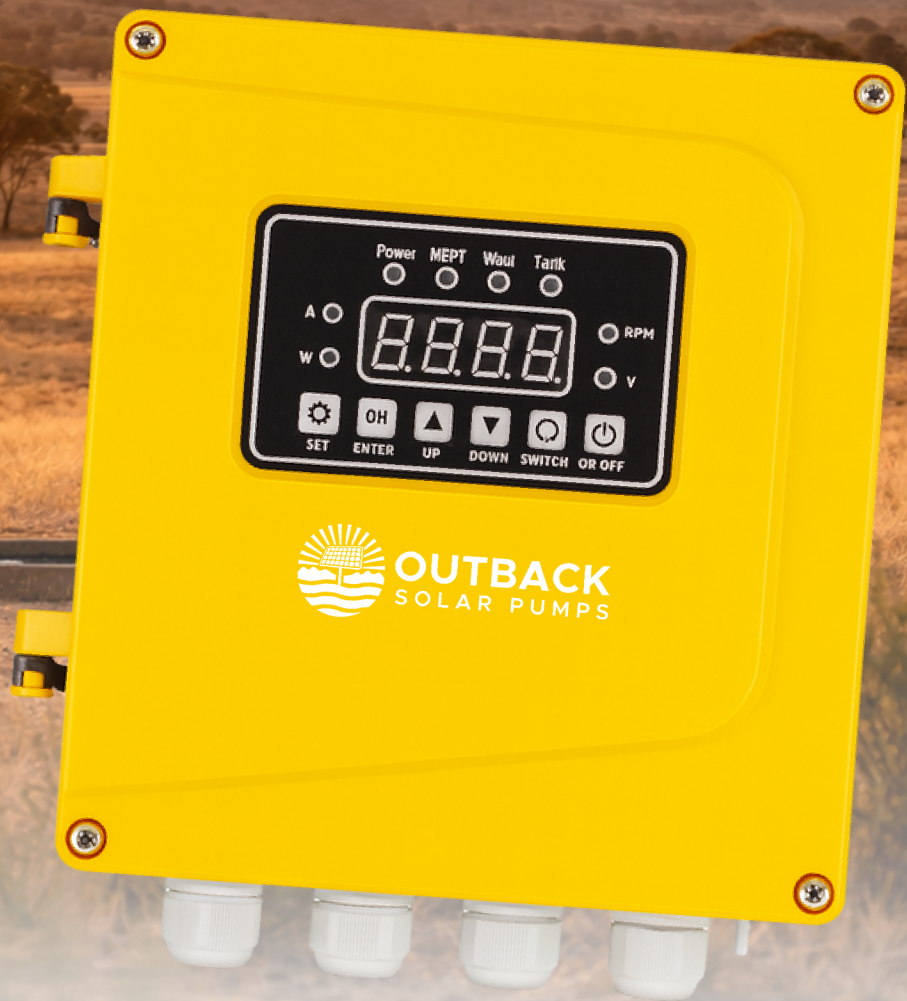


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Controller Installation Guide

INSTALLATION, WIRING & OPERATING INSTRUCTIONS

The Outback Solar Pump Controller is an external MPPT controller designed to operate submersible and surface solar pumps using DC solar power, AC mains, or generator input.

The controller automatically optimises available energy to ensure reliable water delivery under varying solar conditions. When configured in AUTO mode, the controller will prioritise solar power and switch to AC input if solar energy becomes insufficient. This controller is suitable for off-grid and remote installations where grid power may be unreliable or unavailable.

Key Features


- High-efficiency BLDC motor control
- Accepts DC solar input and AC input (single or three-phase depending on model)
- Intelligent MPPT and vector control
- Automatic AC/DC power switching (AUTO mode)
- Digital display for system monitoring
- External controller design (IP65 rated)
- Supports submersible and surface pumps
- Compatible with float/pressure switch

Built-In Protections

- Dry run protection
- Tank full protection
- Over-current protection
- Over-voltage protection
- Under-voltage protection
- Motor stall protection
- Phase loss protection (AC models)
- Over-temperature protection
- Fault code display on screen

Quick Start (Most Installations)

- Controller is factory configured for Outback Solar Pumps
- No parameter changes required
- Default mode: AUTO
- Connect solar → pump → float/pressure switch (if used)
- Power up and confirm RUN LED

 Parameter changes should only be made if site conditions require it.

Installer Tip: Always calculate cold-climate open circuit voltage (Voc) when configuring solar strings to avoid controller over-voltage faults.

Model	Pump Rating	Input Type	Max PV Voc	Max Input	PV Operating Voltage
C0300W	0.3 HP (300W)	Solar / DC	55 V	15 A	30–40 V
C0600W	0.5 HP (600W)	Solar / AC (150–240V)	450 V	10 A	65–300 V
C1000W	0.75 HP (1000W)	Solar / AC (150–240V)	450 V	10 A	100–300 V

Note: Only the controller models listed are supplied with Outback Solar Pump Kits. Electrical input limits must not be exceeded. Solar array configuration must comply with the maximum Voc and operating voltage shown.

Wiring

⚠ IMPORTANT:

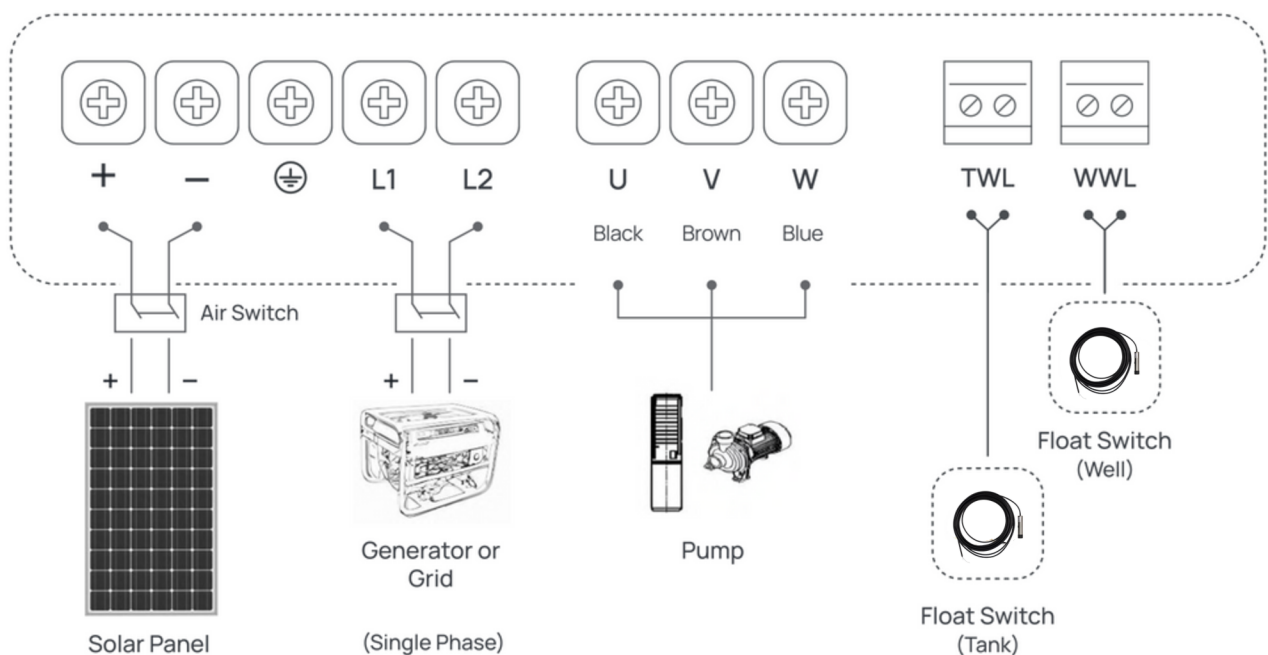
All wiring must be completed with power isolated. Incorrect wiring may cause controller damage or unsafe operation.

6.1 Solar (DC) Input Wiring

- Connect solar panels to the DC INPUT terminals on the controller
- Observe correct polarity (+ / -)
- Use MC4 connectors or suitably rated DC cable
- Ensure total panel voltage and current are within controller limits

Notes:

- Panels may be wired in series or series/parallel as required
- Do not connect panels while the controller is powered on



AC Input Wiring (AC/DC Models Only)

- Connect mains supply to the AC INPUT terminals
- Supply must be protected by an RCD and circuit breaker
- AC input is used as backup power only

Important:

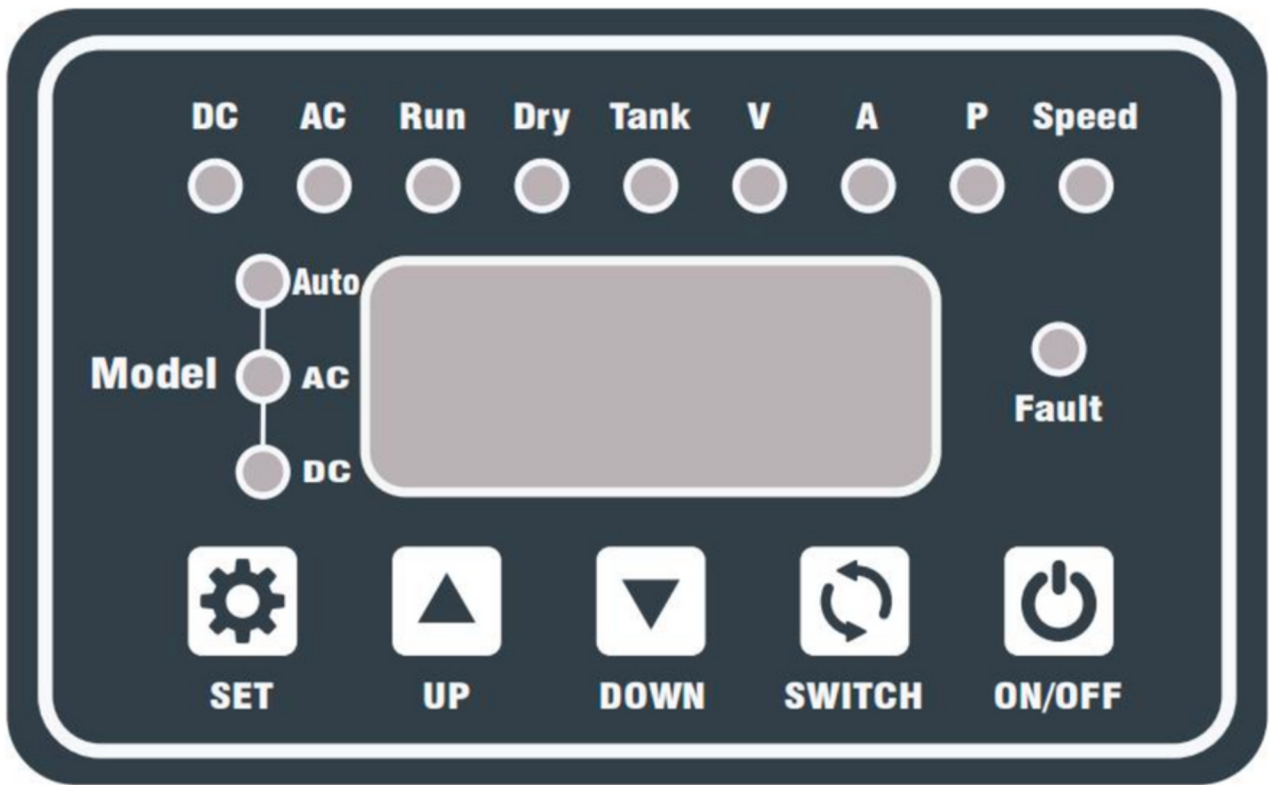
- AC power must not exceed rated voltage
- Only licensed electricians should connect AC supply

Pump Motor Wiring

- Connect pump motor cable to the U / V / W output terminals
- Tighten terminals securely to prevent overheating
- Cable size must suit pump current and cable length

Notes:

- Rotation direction is automatically managed by the controller
- Do not extend motor cables without checking voltage drop



Controller Display & LED Indicators

The front panel provides real-time system feedback:

- **DC LED** – Solar DC power present
- **AC LED** – AC power present
- **RUN LED** – Controller operating
- **DRY LED** – Dry run protection active
- **TANK LED** – Tank full protection active
- **V / A / W LEDs** – Voltage, current, or power display
- **SPEED LED** – Motor speed display
- **FAULT LED** – System fault (code shown on display)

The display cycles between voltage, current, power, and speed using the **SWITCH** button.

Power Supply Modes

The controller can operate in three modes:

- **AUTO Mode:** Automatically selects DC solar first, then switches to AC if solar power is insufficient.
- **DC Mode:** Operates from solar DC power only.
- **AC Mode:** Operates from AC grid or generator input only.

Power mode is selected using the **SET** button.

Note: Default controller settings are pre-configured for Outback Solar Pumps kits and do not require adjustment in most installations. Parameter changes should only be made by qualified installers where site conditions require it.

Parameter Settings (Advanced)

The controller allows advanced parameter adjustment for installers if required.

Key adjustable parameters include:

- Maximum motor speed
- Maximum DC input power
- Dry run recovery time
- Tank full recovery time
- AC runtime before switching back to DC
- High and low voltage protection thresholds

⚠ WARNING

Incorrect parameter changes may cause pump damage, dry running, or controller faults. Outback Solar Pumps does not recommend altering factory settings unless directed by a qualified technician. Factory reset can be performed via the parameter menu if required.

Parameter settings (Programming menu)

Display / button basics (front keypad)

- **SET (short press):** Select power mode AUTO / AC / DC.
- **SET (press & hold 3s):** Displays controller temperature.
- **SWITCH (short press):** Cycles display values V → A → W → Speed.
- **UP + DOWN together:** Reduces the countdown time to startup.

How to enter the parameter menu

1. Press and hold SET + SWITCH together for 3 seconds.
2. After the countdown, H00 will display.

Password (required before changes work)

Default password is H00 = 12 (shown as "H00-12").

Steps

1. From H00, press SET to enter the value.
2. Use UP/DOWN to set H00 = 12
3. Press and hold SET for 3 seconds to SAVE. (This is critical.)

Important

- Short-press SET = back without saving (parameter won't apply).

Changing parameters (H01–H12)

1. After saving H00 = 12, use UP/DOWN to select the parameter (H01...H12).
2. Press SET to enter the value.
3. Adjust with UP/DOWN.
4. Hold SET for 3 seconds to SAVE.

Exit programming

- Short press SWITCH to exit, or it will exit automatically after 2 minutes of no activity.

Restore factory defaults

- Set H00 = 10 and SAVE (hold SET 3 seconds).

Parameter table (H00–H12)

Parameter Code And Default Value Quick Reference Sheet

Code	What it does	Range + Default
H00	10 = Restore factory settings	12 = Password unlock
H01	High voltage protection	0.5–3HP Default: 450V
H02	Low voltage protection	0.5–3HP Default: 50V
H03	Maximum motor speed	Range: 1500–4500 RPM Default: 4500 RPM
H04	Tank full recovery time (TWL)	Range: 30–1800 sec Default: 600 sec
H05	Dry protection recovery time (WWL)	Range: 30–1800 sec Default: 600 sec
H06	Dry protection recovery time (low power)	Range: 300–1800 sec Default: 1800 sec
H07	Maximum DC input power	Contact Manufacturer
H08	Minimum DC power before switching DC → AC	Triggers if DC power stays below H08 for 3 minutes Default: 100W
H09	High temperature protection recovery time	Range: 0–1800 sec Default: 0
H10	Dry protection function (pump type select)	0 = Helical pump 1 = Centrifugal pump
H11	N/A	N/A
H12	AC running time before switching back to DC	Range: 5–120 min Defaults: 10 min
<p>In AUTO mode: if DC is below H08 for 3 minutes, controller switches to AC; after AC runs for H12 minutes, it switches back to DC (if DC voltage is available)</p>		

Alarm & fault codes

Here you will find our range of fault codes, the meaning and what to check.

Code	Meaning	What to check
P50	Low voltage protection	Voltage is below requirement, or power is low causing voltage to drop on startup.
P51	High voltage protection	Voltage exceeds maximum VOC.
P48	Dry protection	Water shortage in well, OR WWL float switch circuit status causing dry alarm
P45	Tank full	TWL tank float input status causing tank full stop
P02	Hardware over current	PCB fault – return to factory for inspection.
P09–P11	Software over current	Controller over current.
P41	Input phase loss	Phase loss of controller input R/S/T.
P43	Output phase loss	Output phase loss U/V/W, loose wiring between motor and controller, abnormal motor cable, or motor damage
P44	Short circuit protection	Short circuit in motor cable, motor, or wiring; check UVW resistance with multimeter. If error remains with motor disconnected, PCB may be shorted.
P46	Stall protection	Pump blocked/jammed; check wet end + bearings; remove jam or repair motor/bearing.
P60	High temperature	Improve ventilation / heat dissipation at controller location.
P20	Abnormal fan	Fan damaged or jammed; clear obstruction or replace fan.
E0	EPROM error	EPROM parameter missing.
E00	Power mode error	Select Mode = AUTO using SET, and ensure AC/DC input terminals are not incorrectly connected.

Controller Dimensions & Mounting

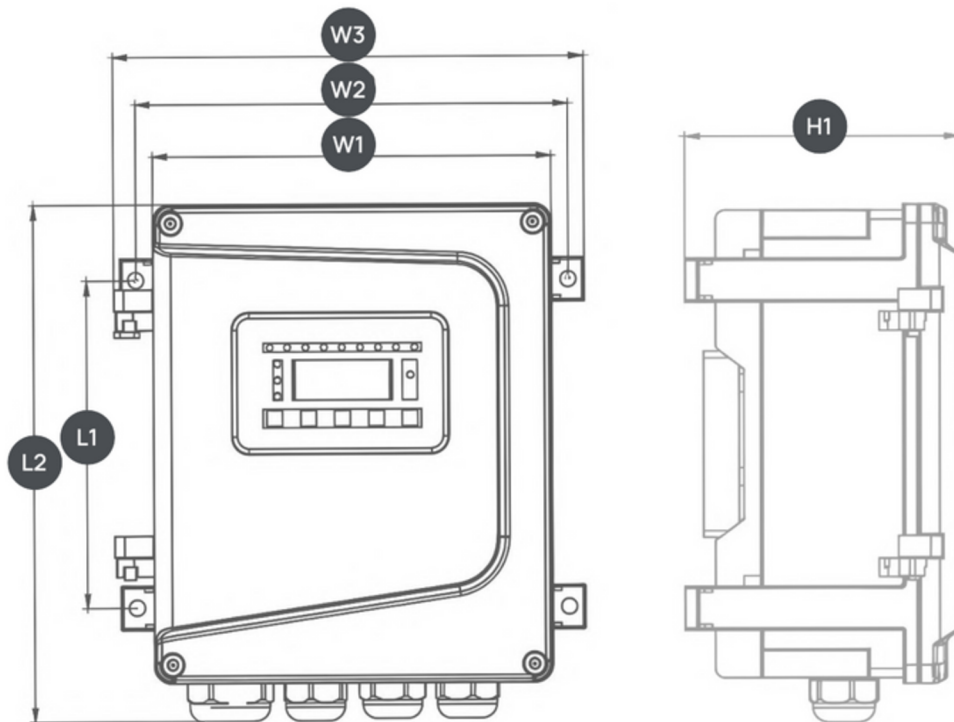
The Outback Solar Pump Controller is designed for wall-mounted installation in outdoor or indoor environments.

Mounting Guidelines:

- Mount vertically on a solid surface
- Allow minimum 150 mm clearance above and below for ventilation
- Do not mount in sealed enclosures
- Avoid direct sunlight where possible

Ingress Protection:

- IP65 rated
- Suitable for outdoor installation when correctly mounted



Controller	W1	W2	W3	H1	L1	L2
0.3-3HP Dimension(mm)	176	191	208	116	141	223

⚠ Installation Reminder

Insufficient ventilation or incorrect mounting orientation may cause overheating and trigger thermal protection faults.



THANK YOU

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