



EVER GREEN

Ever Green Submersible Pump Kit Installation Manual

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INTRODUCTION

Ever Green 3DS solar water pumping systems are high quality products suitable for a wide variety of agricultural and remote water pumping applications including drinking water supply, livestock watering and smaller irrigation uses.

The Ever Green 3DS pumping system delivers water economically, cleanly and reliably and is backed by a comprehensive 2-year warranty.



WARNING

Indicates a hazardous situation which, if not avoided, can result in death or serious injury or moderate injury.



CAUTION

Indicates a hazardous condition which, if not avoided, can result in minor or moderate injury.

All systems are fully compliant with:

AS/NZS 1170.2: 2011

Wind actions

AS/NZS 4509.1: 2009

Stand-alone power systems -
Safety and installation

AS/NZS 4509.2: 2010

Stand-alone power systems -
System design

AS/NZS 5033: 2012

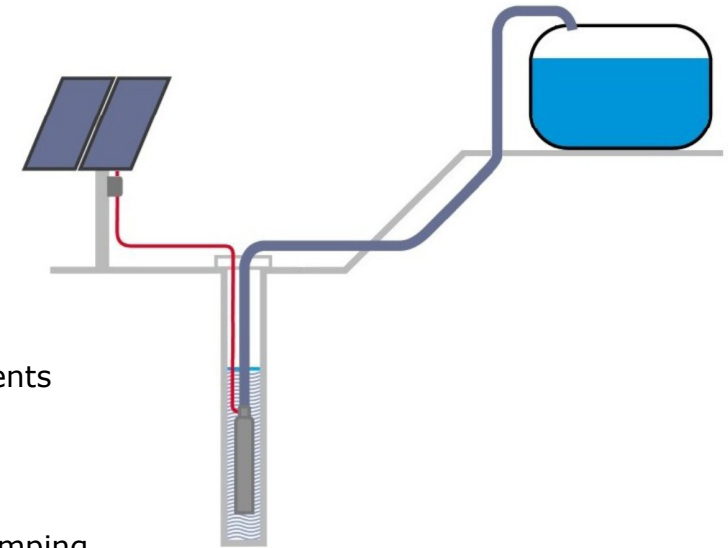
Installation and safety requirements
for photovoltaic (PV) arrays

AS/NZS 3000: 2007

Electrical installations

The Ever Green 3DS range of pumping systems have been specifically designed to pump water efficiently using solar power.

Each solar water pumping system consists of solar modules, pole mounted solar panel frame, MPPT controller, DC isolator, sensors and associated cables providing the user with an easy to install solution.



SAFETY AND INSTALLER RESPONSIBILITIES

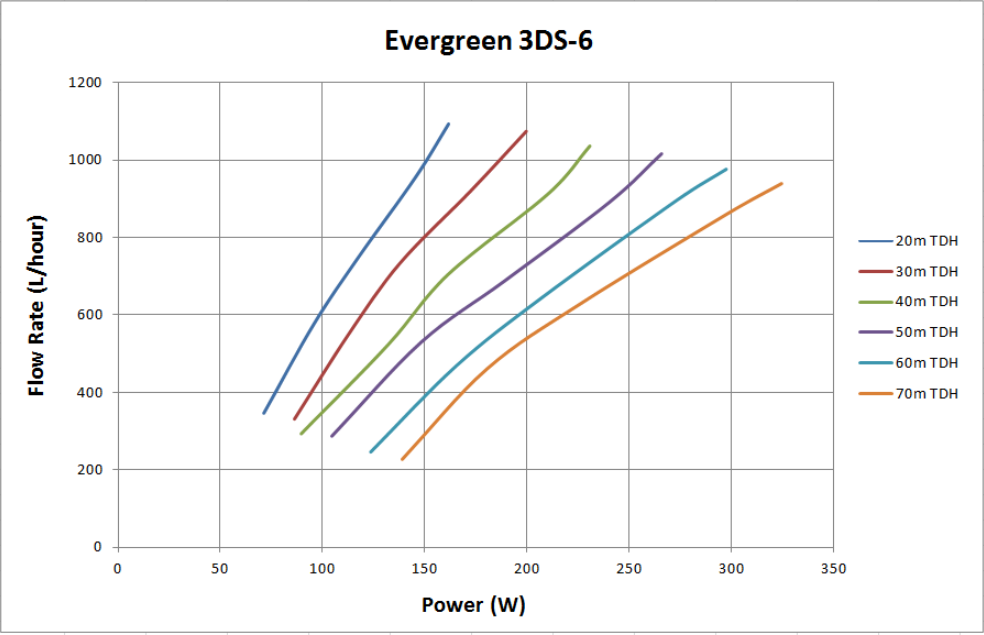
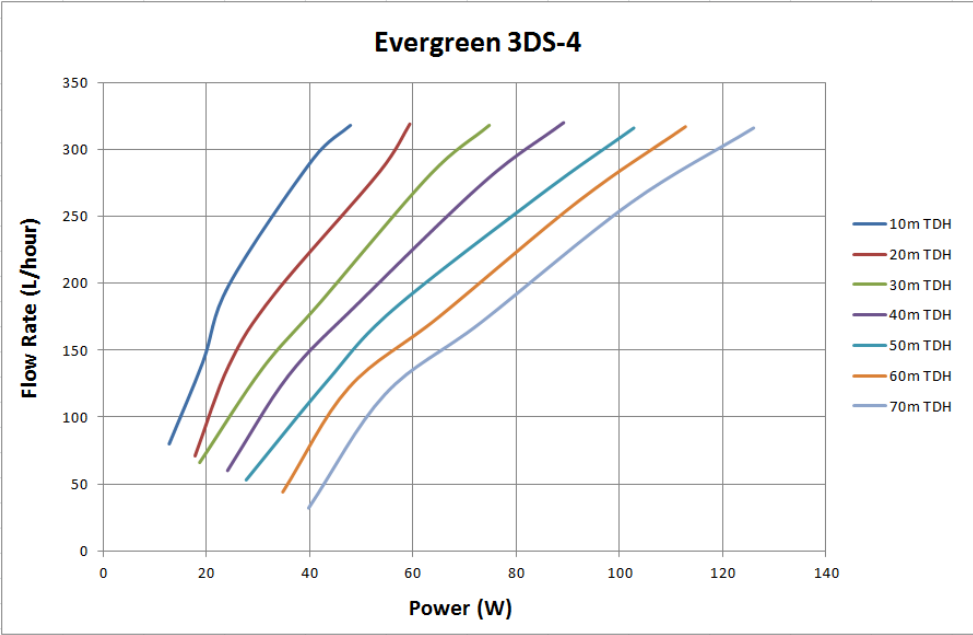
It is critically important that the safety practices are observed when installing the Ever Green submersible pumping kits.

- Do not roughly handle any components in the pumping kit.
- Do not bring any components into contact with sharp or heavy objects.
- Do not modify any components in any way. The exchange of bolts, drilling of holes, bending or any other physical changes not described in standard installation procedure may void the warranty.
- It is the installer's responsibility to verify the suitability of the site of which the pumping kit is to be installed. Installation in unsuitable areas will void the warranty, and could result in death or serious injury.

TECHNICAL SPECIFICATIONS—OVERVIEW

Pump		3DS-4	3DS-6
Nom. pump diam.	(inches)	4	6
Actual. pump diam.	(inches)	3.7	5.5
Pump outlet diam.	(inches)	1	1.5
Max. total dynamic head	(m)	70	70
Max. flow rate	(L/hour)	320	1100
Rated MPPT voltage	(V)	40—75	110—140
Nom. motor power	(W)	360	600
Panel configuration		2xREC245	3xDaqo200
Min. operating temp	(°C)	-20	-20
Max. operating temp	(°C)	50	50

TECHNICAL SPECIFICATIONS—PUMP PERFORMANCE



COMPONENTS

Ever Green 3DS Submersible Pump Kit

- Designed to transfer water efficiently and reliably from water sources such as a bores, dams, rivers or creeks.
- Plug & play design ensures complete package is easy to assemble and eliminates the need for an electrician.
- 6-inch pump allows for flow rates of up to 1100 litres/hour and a total dynamic head of up to 70 metres.
- 4-inch pump allows for flow rates of up to 320 litres/hour and a total dynamic head of up to 70 metres.
- Positive displacement 3-piston design is more efficient than equivalent helical rotor pump.
- Low friction piston / seal design ensures that pump will start earlier and finish later in the day compared to other products.
- High and/or low water level sensors to protect the unit from pumping dry bores or full water storage.
- Comprehensive 2 year warranty provides the customer with complete peace of mind.

PoleLock SLP Framing System

- Panels can be mounted in wind regions A and B (most of Australia — non cyclonic regions).
- Suitable for terrain categories 2, 3 & 4 (sites with few obstructions, or built up areas).
- Appropriate for level or near level ground.
- Fully compliant with AS/NZS 1170.2:2011 – Wind actions.
- Australian manufactured and backed by a 10-year warranty.
- Installation information can be found at sunlock.com.au

Daqo DQ200MFA Solar Panels

- High quality and efficient mono-crystalline solar modules.
- Compliant with IEC 61215 / 61730.
- Certified by TUV, UL/CUL, CEC and Golden Sun.
- Guaranteed positive tolerances of 0 – 3% ensures power output reliability.
- 10 year limited product warranty as well as a 25-year limited power warranty.
- See www.dqsolar.com for details.

REC245PE-BLK Solar Panels

- High quality and efficient poly-crystalline solar modules.
- Compliant with IEC 61215 / 61730.
- Certified by CE, TUV, MCS, CEC.
- Guaranteed positive tolerances of 0 – 5% ensures power output reliability.
- 10 year limited product warranty as well as a 25-year linear power output warranty.
- See www.recgroup.com for details.

INSTALLATION PROCEDURE

1. Digging the post hole

- Ensure the location is suitable for a pole mounted solar installation and no buildings / trees are shading the modules.
- Dig the hole in undisturbed, natural ground.

4" pump kit (2 panel frame):

- 450mm diameter pier – 1400mm depth
- 600mm diameter pier – 1200mm depth

6" pump kit (3 panel frame):

- 450mm diameter pier – 1500mm depth
- 600mm diameter pier – 1300mm depth

Refer to the PoleLock installation manual for further details at www.sunlock.com.au

2. Cementing the post

- Drill a hole in the base of the mounting pole, insert an M12 bolt / rod and fasten.

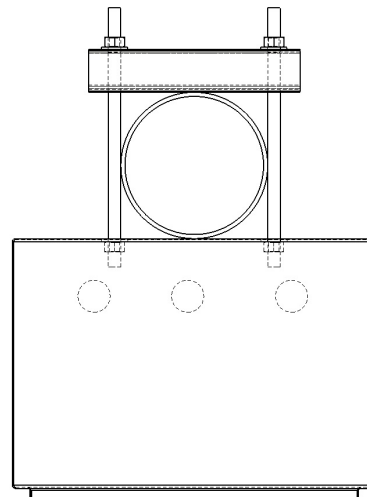
The 2-panel frame requires a 100 DN DuraGal pole (114.3mm outer diameter / 4.5mm wall thickness).

The 3-panel frame requires a 125 DN DuraGal pole (141.3mm outer diameter / 5mm wall thickness).

- Place the pole into the hole ensuring that the pole sits on a 100mm base of gravel.
- Fill with required amount of 25 MPa concrete.
- Ensure that the pole is orientated plumb and let the concrete set.

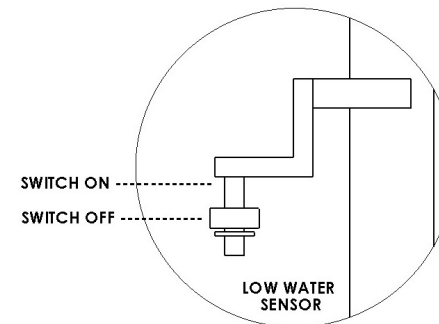
3. Install the controller enclosure to the pole

- Using the supplied brackets, fasten the enclosure to the pole ensuring that the enclosure is mounted at an appropriate height.



4. Attaching accessories to the pump

- Thread the fitting / pipe onto the head of the submersible pump ensuring a tight fit. Ensure Teflon tape is wrapped around the fitting.
- Attach the stainless steel safety cable through the eyelets on the pump.
- Thread the supplied air bleed hose and fitting to the head of the pump ensuring the fitting is wrapped with Teflon tape prior to assembly.
- Fasten the low water sensor to the poly pipe just above the threaded fitting ensuring that the float can move up and down.
- Tape together all cables, pipes and hoses to prevent fouling.



5. Lowering pump assembly into the bore

- Carefully lower the pump assembly into the bore ensuring no parts catch on the inside of the bore casing.

6. Assembling framing to the mounting pole

Follow the instructions in the PoleLock installation manual ensuring that the frame is set to the desired inclination angle for the given site.

7. Mounting solar panels to the framing

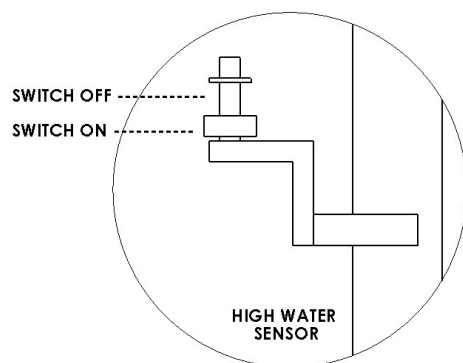
Ensure that the concrete has set prior to installation.

- Install each of the modules onto the PoleLock frame with the supplied clamps. Each modules junction box should be positioned directly adjacent to each other ensuring that the cables have enough length to connect to each other in series.

INSTALLATION PROCEDURE TROUBLESHOOTING

8. Wiring the cabling between the panels, controller assembly and pump assembly.

- Using the supplied MC4 extension cables, connect the panels and controller assembly following the wiring diagram.
- Ensure that the high water level cable and sensor is secured in an appropriate location on the water storage tank (6" pump only)



- Ensure that the system is properly connected prior to the DC isolator being switched ON.
- Bury all cabling running between the pole-mounted frame, bore and water storage tank and infill with soil.

Symptom	Possible Cause	Correction Measure
No / limited Water flow	Low voltage	Check solar array for shading / orientation
	Clogged pump filter	Raise pump from bore and check for blockages
	Excessive pump depth	Ensure pump is within correct operating depth
	Restriction in hose	Ensure hose isn't kinked or pinched
	Leaking hose fittings	Check the condition of the hose fittings / clamps and replace if necessary
	Worn piston rings	Replace rings / unit as required
No water flow	Loose electrical connections	Check the system is wired according to the wiring diagram Check the condition of all connectors / cables
	No power to the controller	Switch the DC isolator to the ON position
	Storage tank is full	Check water storage level
	Lack of water in the bore	Check low level water sensor

CONTROLLER OPERATION

After power is provided to the controller and the switch is turned on, the POWER light will illuminate.

The RUN light will turn green and the pump will begin to start pumping water.

If an error is detected in the system, the ERROR light will illuminate and the pump will cease to operate.

Ever Green 3DS-4

- POWER
 - CONTROLLER IS OFF
 - CONTROLLER IS ON
- RUN
 - PUMP IS STOP
 - PUMP IS WORKING
- ERROR
 - SYSTEM IS NORMAL
 - SYSTEM IS ERROR
- FULL
 - TANK IS NOT FULL
 - TANK IS FULL

Ever Green 3DS-6

- POWER
 - CONTROLLER IS OFF
 - CONTROLLER IS ON
- RUN
 - PUMP IS STOP
 - PUMP IS WORKING
- ERROR
 - SYSTEM IS NORMAL
 - SYSTEM IS ERROR
- FULL
 - TANK IS NOT FULL
 - TANK IS FULL
- LACK
 - WELL IS NORMAL
 - LACK IS LACK WATER

SENSOR OPERATION

Low water level sensor (4" and 6" pumps)

When the water level in the bore drops below the low level sensor, the LACK light will illuminate and the system will automatically stop working to prevent any damage to the pump.

The system will begin pumping again, 1 minute after the water level rises above the low level sensor.

High water level sensor (6" pump only)

When the water level in the storage tank rises above the high level sensor, the FULL light will turn illuminate and the system will automatically stop working to prevent overflow.

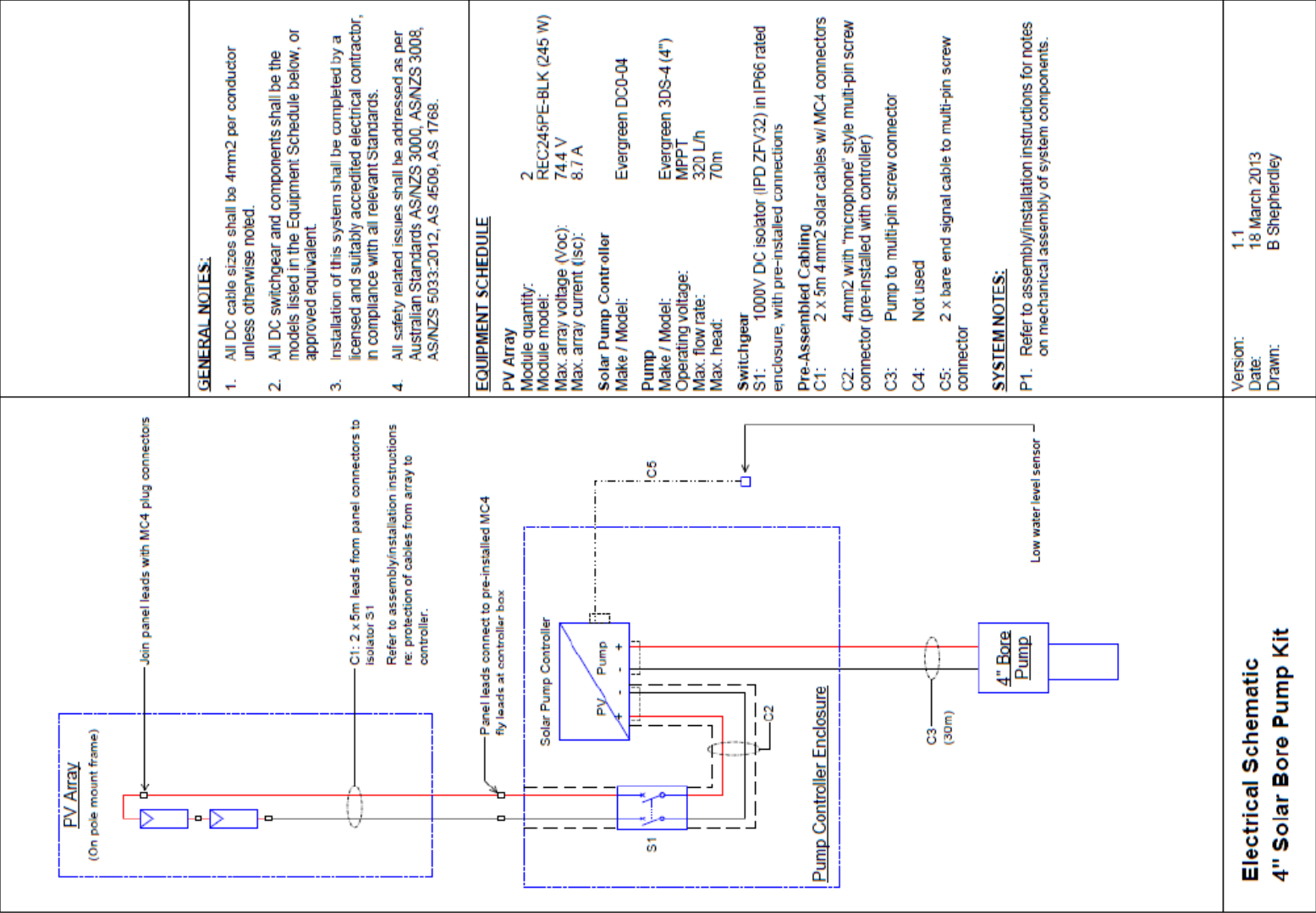
The system will begin pumping again, 1 minute after the water level drops below the high level sensor.

NOTE: The level sensor/s can be removed from the system if there is no need to monitor the water levels.

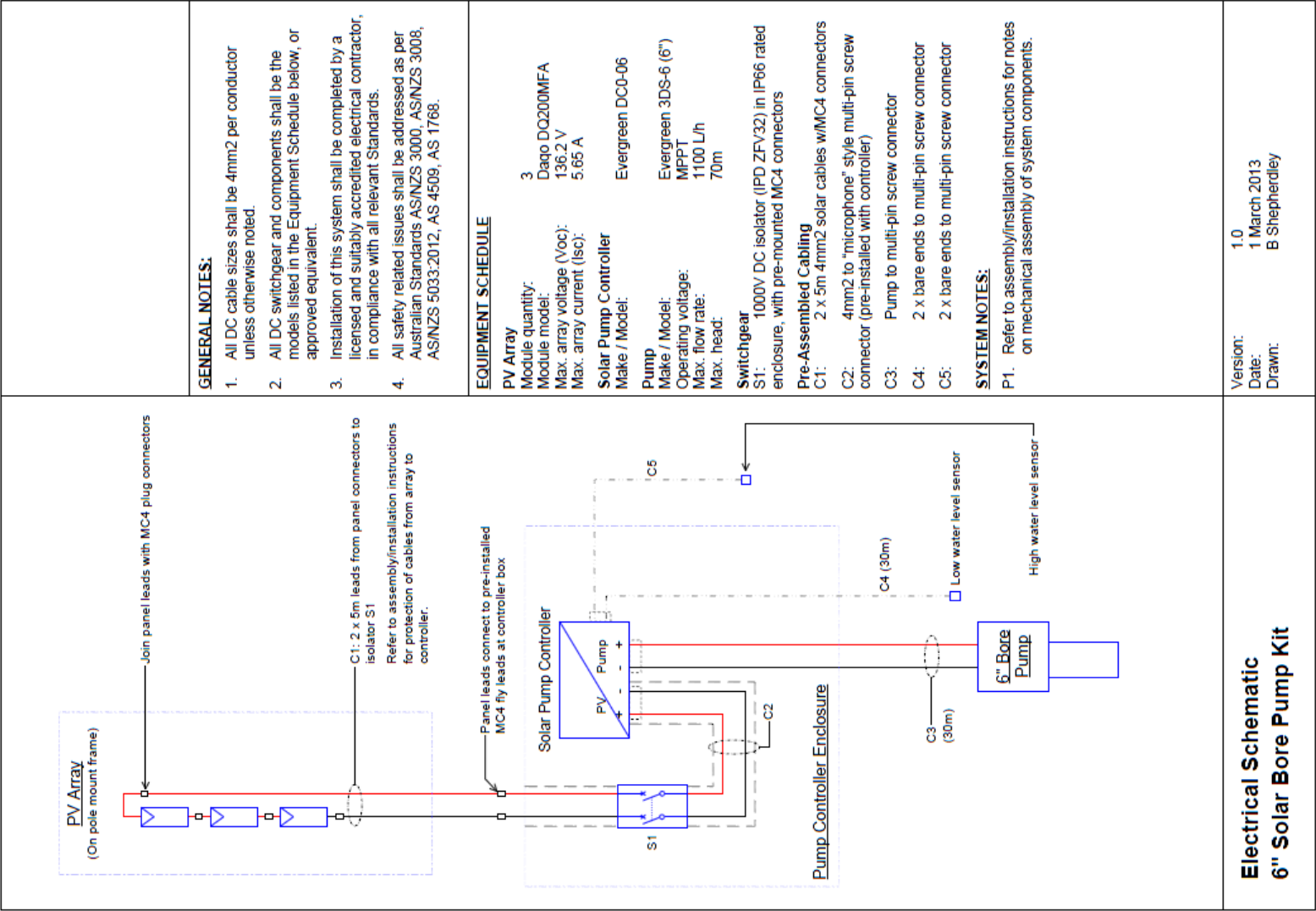
If the level sensor/s are required, ensure that they are installed in the correct orientation.

NOTE: Ignore the anti-freeze feature on the pump controller.

WIRING DIAGRAM—EVER GREEN 3DS-4



WIRING DIAGRAM—EVER GREEN 3DS-6



WARRANTY AGAINST DEFECTS

Energy Matters Pty Ltd (trading as Energy Matters and Apollo Energy) (**Energy Matters**) is the manufacturer of its Ever Green 3DS solar water pumping system (the Ever Green 3DS System).

Energy Matters warrants, on the terms set out below, that the Ever Green 3DS System will be free from defects in materials and workmanship for a period of 2 years from the date on which the Ever Green 3DS System is purchased from Energy Matters (**Warranty against Defects**).

Transferability

Our Warranty against Defects is only provided to the original purchaser of the Ever Green 3DS System from Energy Matters (**Purchaser**) or, where the Purchaser is an installer or builder who on-supplies the Ever Green 3DS System to another party, to that other party (**End-User**). Our Warranty against Defects is not otherwise transferable.

Making a claim

If you believe that the Ever Green 3DS System is defective and you are an End-User, you may either make a claim against the installer from whom you purchased the Ever Green 3DS System or you may make a claim against us directly.

In order to make a claim against us, you must post, fax or email us a notice, using the contact details set out below. In your notice you must provide:

- details of why you believe the Ever Green 3DS System is defective;
- a copy of your invoice, receipt or any other document which provides proof of purchase;

- details of how we should contact you.

Remedies

If we determine that the Ever Green 3DS System is defective and the defect is not a major failure then, if possible, we will try to repair the defective Ever Green 3DS System. If this is not possible, we will provide a replacement Ever Green 3DS System at our expense.

If we determine that the Ever Green 3DS System is defective and the defect is a major failure then you have the option of:

- rejecting the Ever Green 3DS System and obtaining a refund;
- rejecting the Ever Green 3DS System and obtaining a replacement Ever Green 3DS System at our expense;
- keeping the Ever Green 3DS System and receiving compensation for the difference between the actual value of Evergreen 3DS System and the amount paid for the Ever Green 3DS System.

All return freight costs incurred during the warranty process are to be paid by the customer.

Your obligations

In order to have the benefit of our Warranty against Defects:

- if you are a Purchaser, you must have paid all amounts owed by you to Energy Matters in relation to the purchase of the Ever Green 3DS System;
- you must have complied with all reasonable instructions of Energy Matters (whether written or verbal) in relation to the transport, installation, care, repair and use of the Ever Green 3DS System;
- you must not have misused, neglected, damaged or modified the Ever Green 3DS System.

Exclusions

Our Warranty against Defects does not include:

- damage caused to the Ever Green 3DS System during shipment or storage of the Ever Green 3DS System by a party other than Energy Matters;
- damage caused to the Ever Green 3DS System during installation by a party other than Energy Matters;
- damage caused by 'Acts of God', vermin, animals or pests or by other causes or acts outside Energy Matters' reasonable control; or
- normal wear and tear, including normal weathering.

Jurisdiction

Our Warranty against Defects is to be construed in accordance with the laws of Victoria and any disputes will be determined by the exclusive jurisdiction of the courts of Victoria.

CONSUMER GUARANTEES

In addition to our Warranty against Defects, the Ever Green 3DS System also comes with guarantees that cannot be excluded under the Australian Consumer Law (**Consumer Guarantees**).

In the event that the Ever Green 3DS System fails to satisfy a Consumer Guarantee, you are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the Ever Green 3DS System repaired or replaced if the Ever Green 3DS System fails to be of acceptable quality and the failure does not amount to a major failure.

Please note that in addition to the rights and remedies set out in this document, you may also have other rights and remedies available to you under the law.

CONTACT DETAILS

Energy Matters Pty Ltd (trading as Energy Matters and Apollo Energy)

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