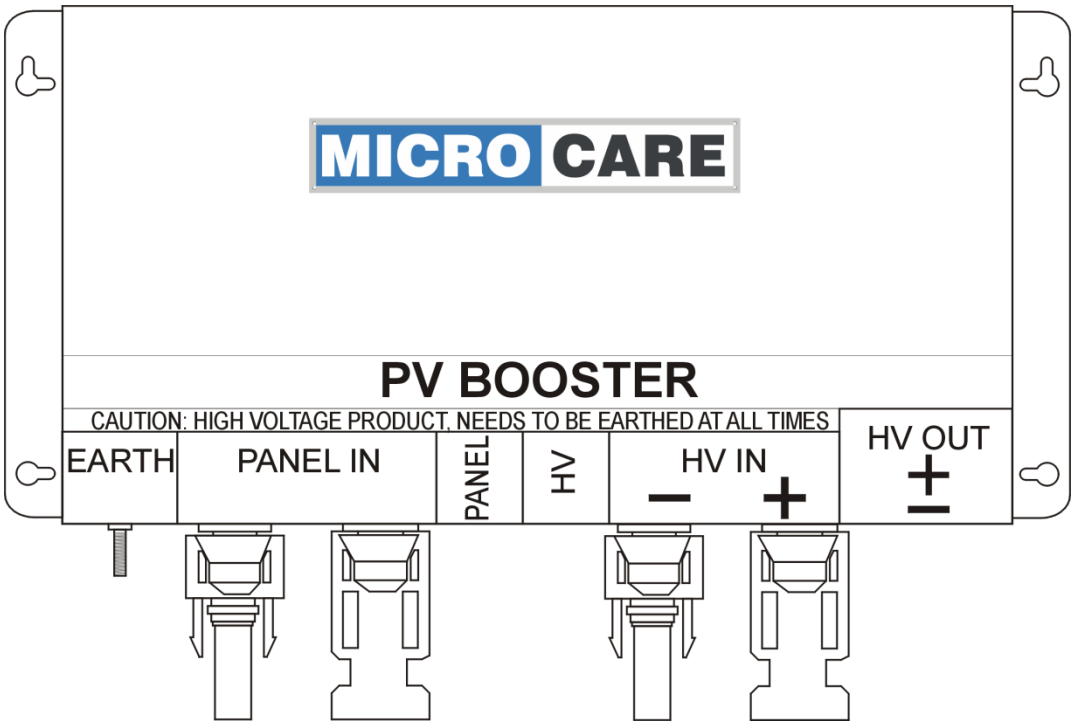
PV
BOOSTER
310/350/550V

User Manual



Manual Version: PVB-2017-1

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1. IMPORTANT INFORMATION AND SAFETY INSTRUCTIONS

- Installers should be qualified electricians or technicians
- The installation information in the manual is for information purposes only.
- Read the instructions carefully before installing and operating the PV Booster.
- Retain the load within the rating to prevent faults.
- Sketches are intended for illustrative purposes only and are not intended to provide an electrical design.
- High voltages are present – With this device even a single PV panel can produce a lethal 800 Volt DC.
- This unit is not a consumer product and should only be handled by qualified electricians.
- Always ground the device to avoid electric shock. A grounding wire connection is provided.
- The inherent current limiting associated with a solar panel is part of the Solar Voltage Booster design.
- Running the unit from a battery or bench supply will cause it to fail, even when lightly loaded.
- Never series the output of individual PV Boosters, as this will increase the output voltage above the isolation specification of the unit and may cause electric shock

WARNING
HIGH VOLTAGES PRESENT **Voltages capable of causing severe injury or death by electrical shock are present in this unit.**

WARNING
Maximum Panel Input Voltage: 10V to 50V **Panel Power: Max 360W**

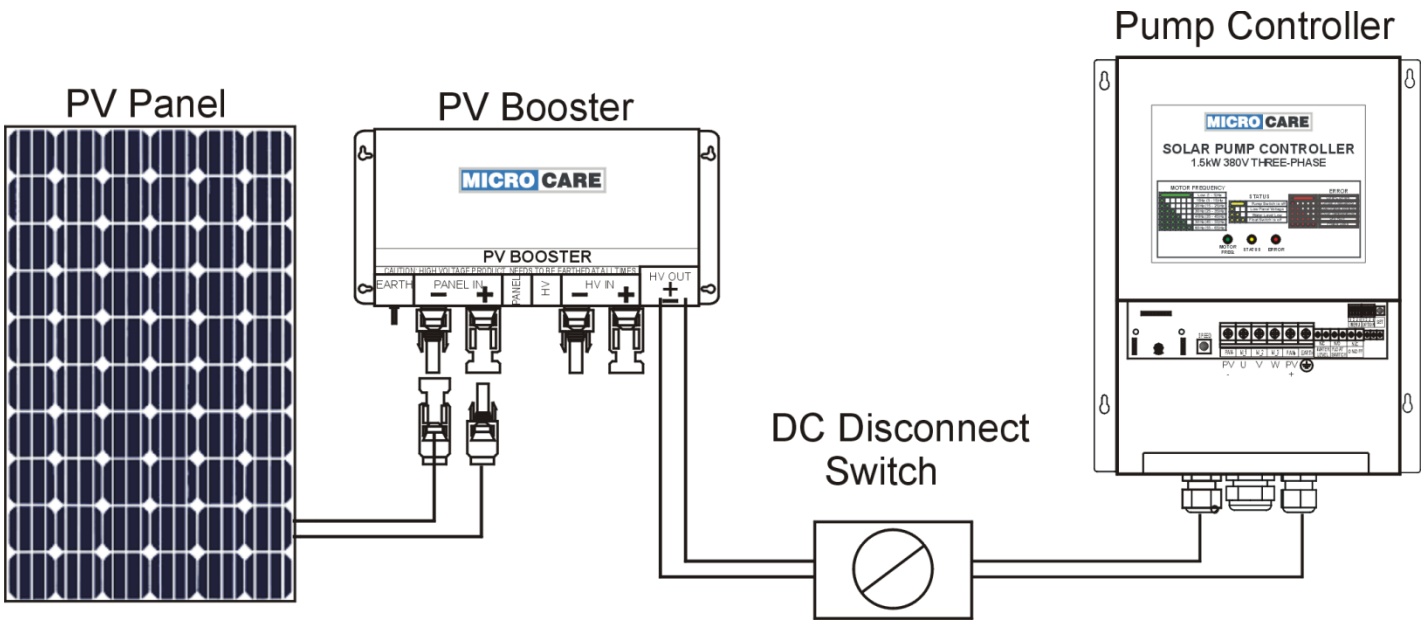
2. INTRODUCTION

2.1 General Description

The Solar Voltage Booster steps up the voltage level of a photovoltaic (PV) panel to the level required for the Microcare pump controller. This allows any number of voltage boosted solar panels to be paralleled, removing the concept of 'array voltage' when designing a solar pump system.

2.2 Key Features

- Solar Voltage Boosters are installed on a per-panel basis.
- Each panel in the array requires an accompanying Booster. This limits the usefulness of the Solar Voltage Booster to 375W, 550W, 750W and possibly 1.1kW installations. After that the costs associated with the addition of Boosters are not currently economical.
- The Solar Voltage Booster is specifically designed for standard 300W (250W to 350W) with a Maximum Power voltage (VMP) of 35V to 40V.
- Only PV Panels with an open circuit voltage (VOC) lower than 50V are supported.
- At higher voltage levels the safety circuits will protect the Booster by short-circuiting the panel input.
- The Solar Voltage Booster is designed for mounting behind an accompanying PV panel.
- Long feed-wires are not supported (longer than 4 meters) and may cause voltage spikes to activate the protection circuits.
- Solar Voltage Booster outputs should be paralleled.
- To this end each Booster is fitted with a high voltage input.
- The high voltage output of one Booster feeds into the high voltage input of the next Booster in the string.

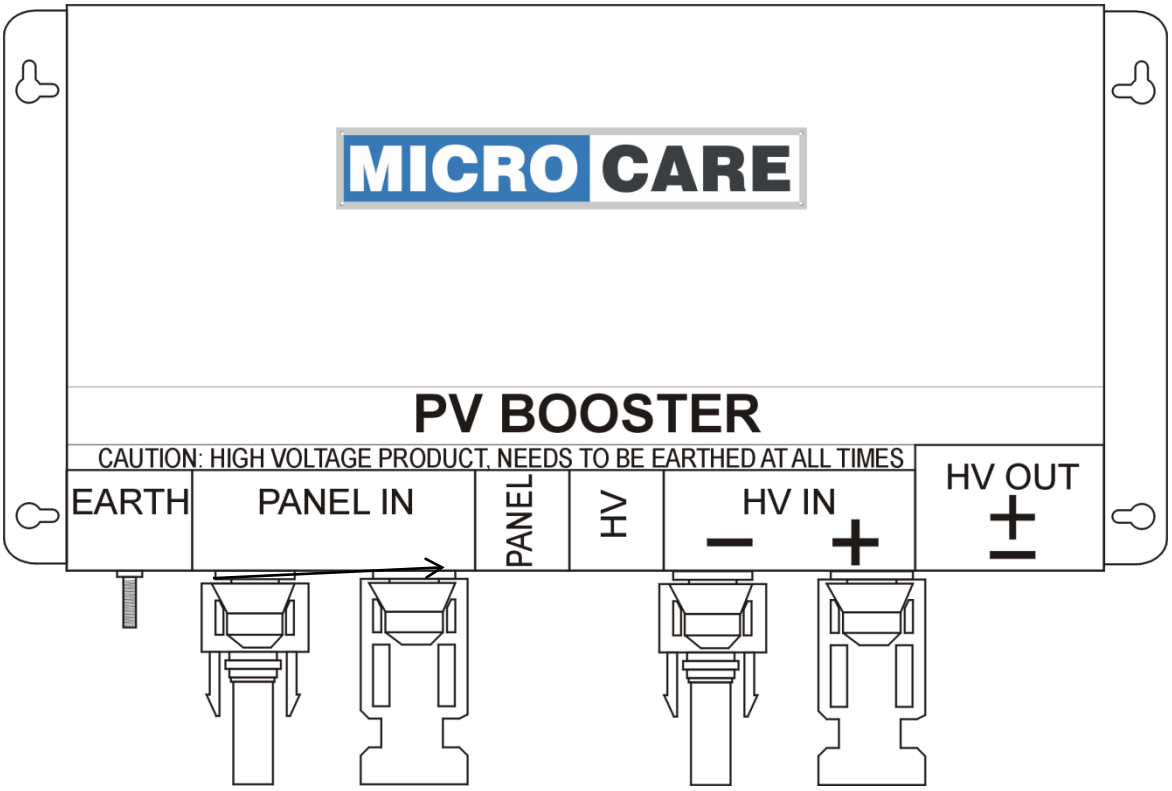


Please Note : Max Panel Input Voltage : 10V to 50V
Panel Power: Max 360W

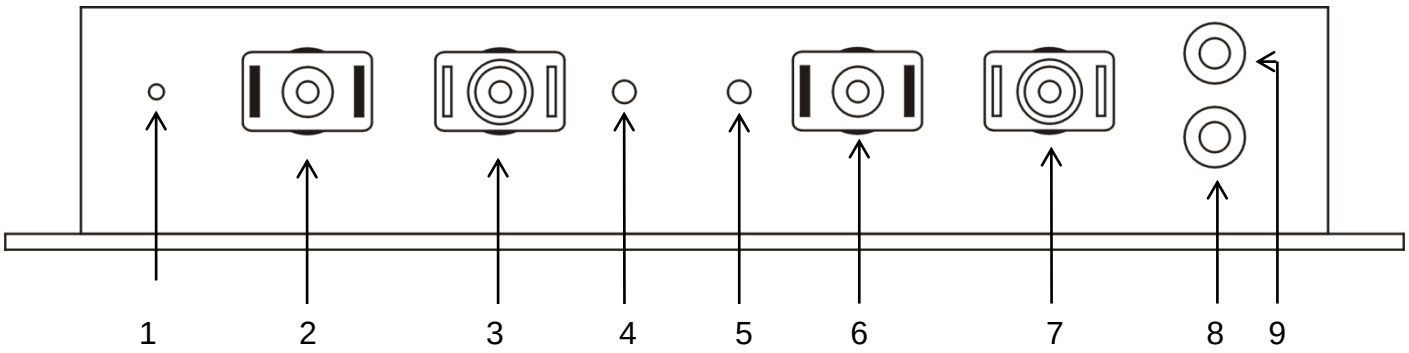
3. PV BOOSTER OVERVIEW

3.1 PV Booster Top View

Figure 3-1



3.2 PV Booster Side View



No	Description
1	Earth Connection
2	Solar Panel Negative Input -
3	Solar Panel Positive Input +
4	Panel LED
5	High Voltage LED
6	High Voltage Input Negative -
7	High Voltage Input Postitive +
8	High Voltage Output Negative -
9	High Voltage Output Positive +

4. PV Booster Sizing Criteria

Panel Input Voltage : 10V to 50V

Panel Power : Max 360W

Panel Voltage Input	310V Model Booster Approximate Output Voltage	350V Model Booster Approximate Output Voltage	550V Model Booster Approximate Output Voltage
Panel VOC - 37V	310VDC	350VDC	550VDC
Panel VOC - 45V	440VDC	440VDC	700VDC
Panel VOC - 50V	415VDC	490VDC	770VDC
Ratio Vin:Vout	1:8,3	1:9,4	1:14,9

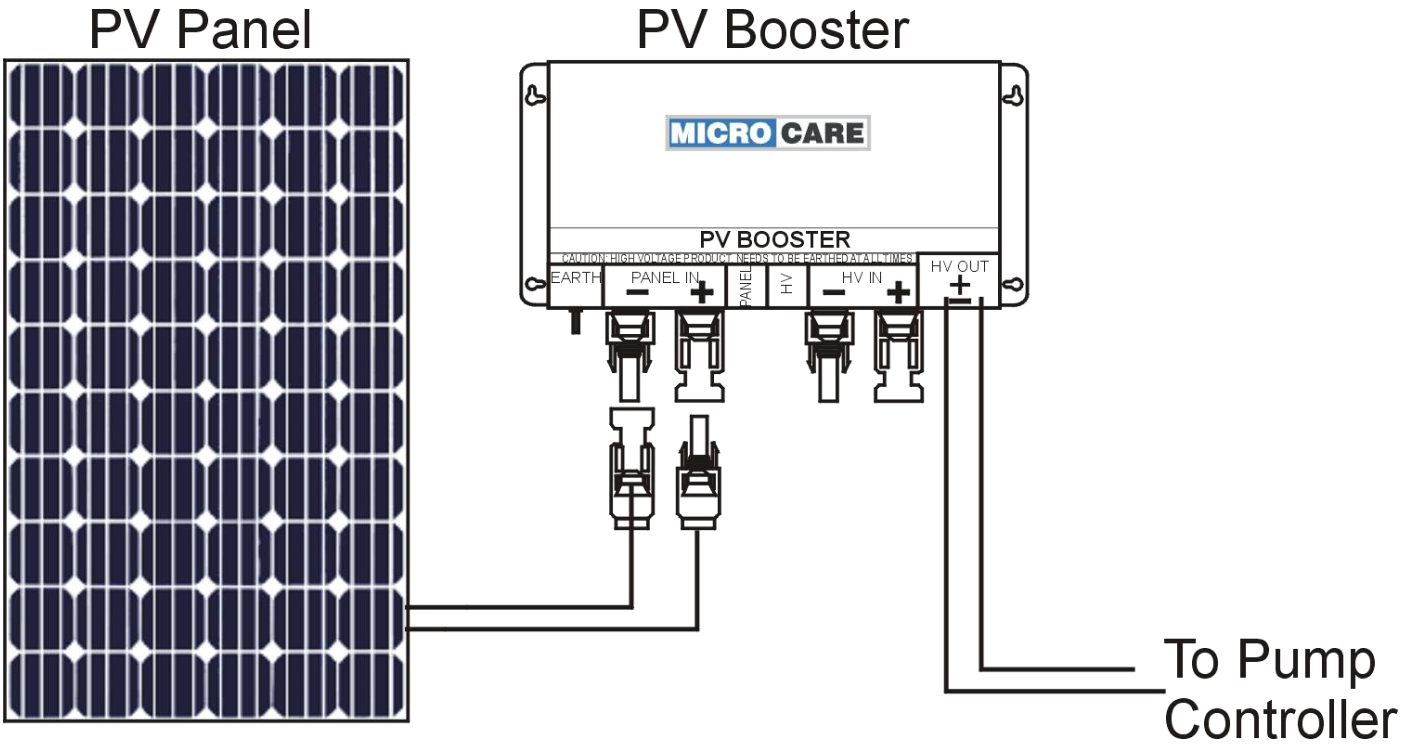
5. PV Booster Installation

Mount the PV Booster to the PV panel by means of screws.

Ensure that the load is disconnected from the solar panels before connecting the booster/s wiring to the panel/s.

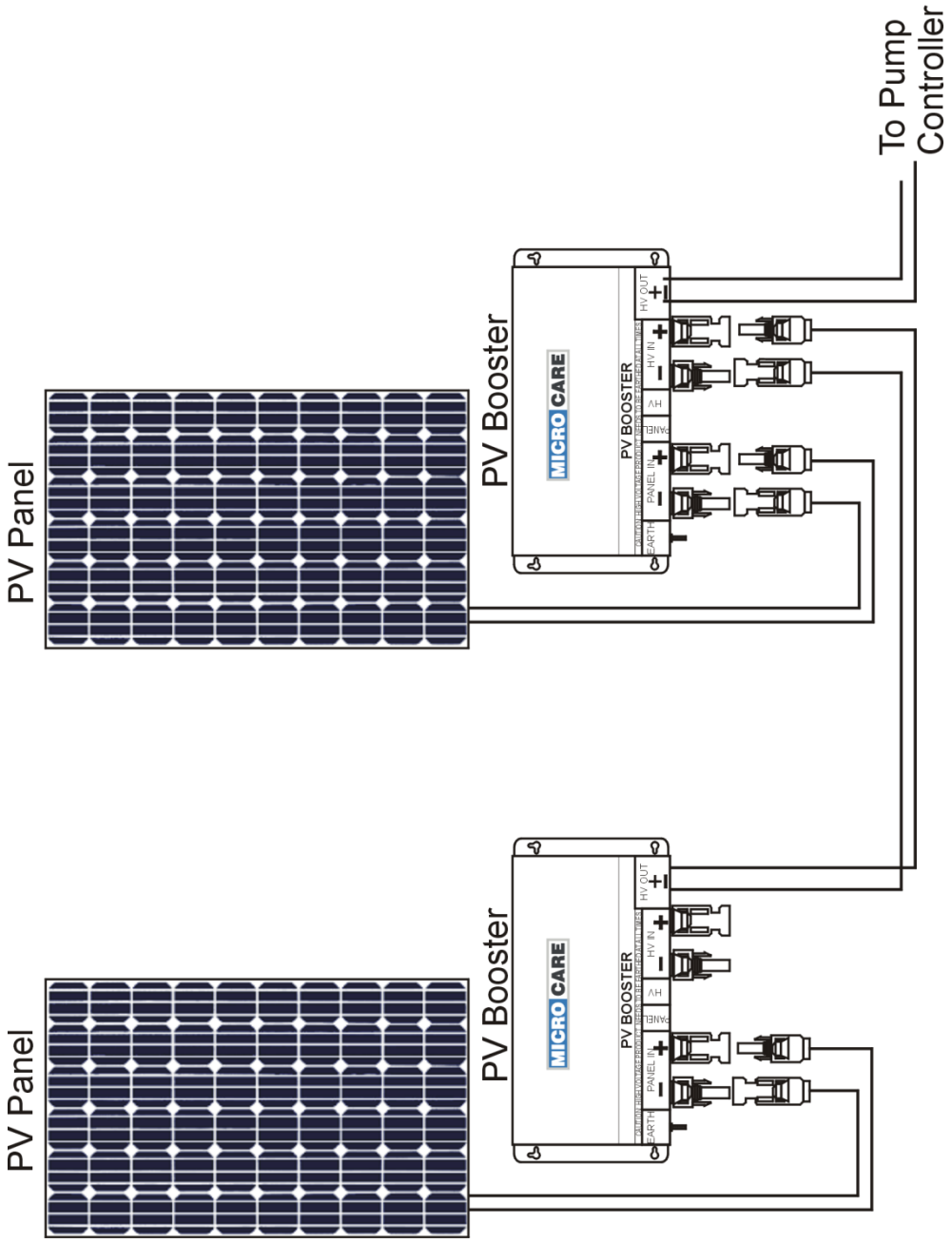
6. PV Booster Wiring – 1 x PV Panel & 1 X PV Booster

Panel Input 37V – Booster Output 350V



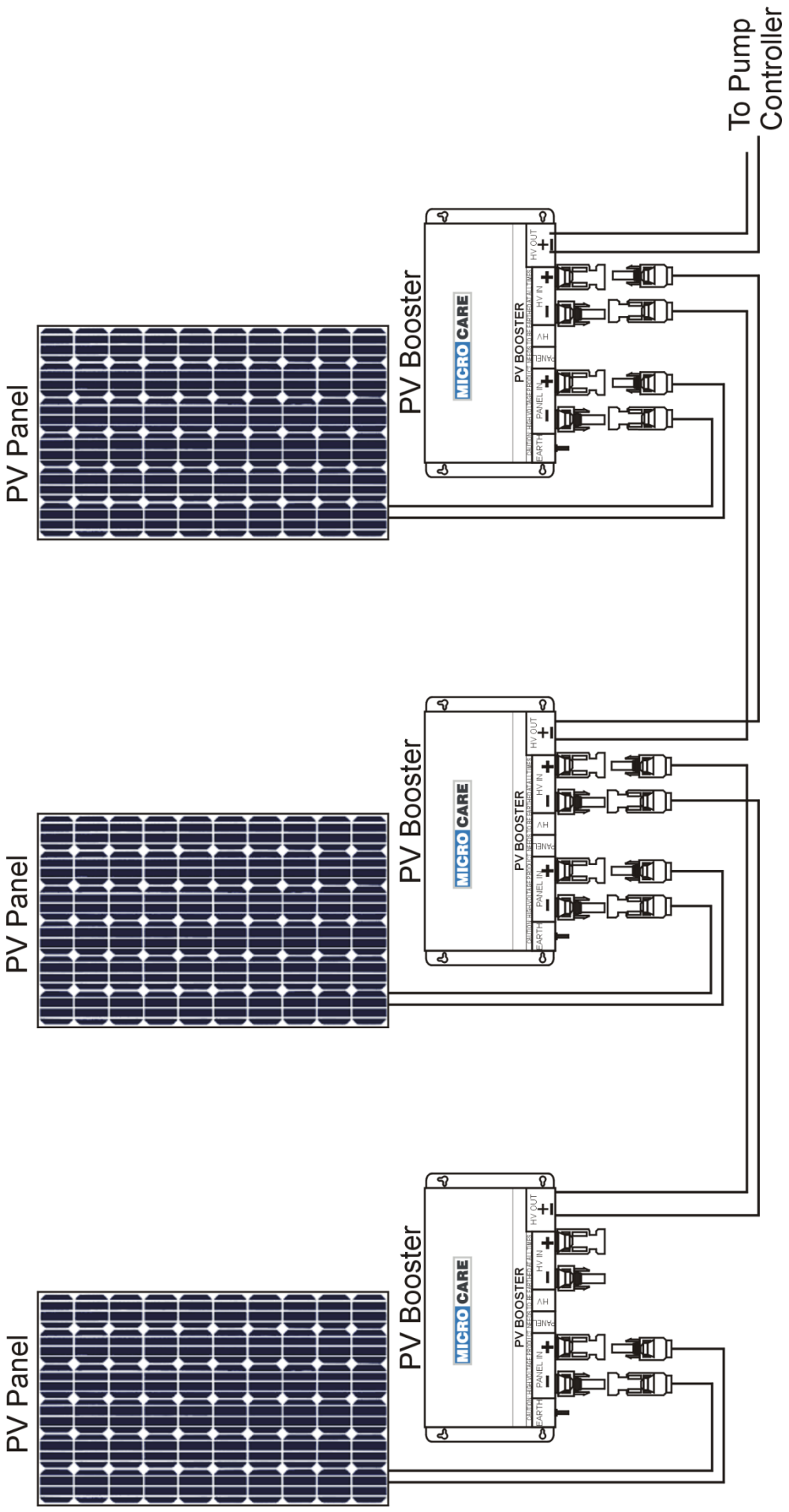
7. PV Booster Wiring – 2 x PV Panels & 2 X PV Boosters

Panel Input 37V – Booster Output 350V



8. PV Booster Wiring – 3 x PV Panels & 3 X PV Boosters

Panel Input 37V – Booster Output 350V



9. PV BOOSTER SPECIFICATIONS

Model	310	350	550
PV VOC Range	20V to 50V	20V to 50V	20V to 50V
PV VMP Range	12V to 40V	12V to 40V	12V to 40V
Output Voltage at 37V input	350V	350V	550V
Voltage multiplication factor	8.3	9.4	14.9
Rated Output Power	360W	360W	360W
Efficiency	95% (over wide range)	95% (over wide range)	95% (over wide range)
Ambient Temp Range	-40°C to 75°C	-40°C to 75°C	-40°C to 75°C
Protection	4.5kA surge protection	4.5kA surge protection	4.5kA surge protection
Dimensions (HxWxD)	70x100x36mm	70x100x36mm	70x100x36mm
Warranty			

10. DESTRIER ELECTRONICS LIMITED CARRY- IN WARRANTY

Destrier Electronics warrants the Panel Booster against defects in workmanship and materials, fair wear and tear accepted, for a period of 1 (one) year from the date of delivery/collection for all equipment and is based on a carry-in basis. Where the installation of the product makes it impractical to carry-in to our workshops, Destrier Electronics reserves the right to charge for travel time and kilometres travelled to and from the site where the product is installed.

During this warranty period, Destrier Electronics will, at its own discretion, repair or replace the defective product free of charge. This warranty will be considered void if the unit has suffered any physical damage or alteration, either internally or externally, and does not cover damages arising from improper use such as, but not exclusive to:

- Reverse of battery polarity.
- Inadequate or incorrect connection of the product and/or of its accessories.
- Mechanical shock or deformation.
- Contact with liquid or oxidation by condensation.
- Use in an inappropriate environment (dust, corrosive vapour, humidity, high temperature, biological infestation.)
- Breakage or damage due to lightning, surges, spikes or other electrical events.
- Connection terminals and screws destroyed or other damage such as overheating due to insufficient tightening of terminals.
- When considering any electronic breakage except due to lightning, reverse polarity, over-voltage, etc. the state of the internal control circuitry determines the warranty.

This warranty will not apply where the product has been misused, neglected, improperly installed, or repaired by anyone else than Destrier Electronics or one of its authorised Qualified Service Partners. In order to qualify for the warranty, the product must not be disassembled or modified. Repair or replacements are our sole remedies. Destrier Electronics shall not be liable for damages, whether direct, incidental, special, or consequential, even caused by negligence or fault. Destrier Electronics owns all parts removed from repaired products. Destrier Electronics uses new or re-conditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Destrier Electronics repairs or replaces a part of a product, its warranty term is not extended. Removal of serial nos. may void the warranty.

All remedies and the measure for damages are limited to the above. Destrier Electronics shall in no event be liable for consequential, incidental, contingent or special damages, even if having been advised of the probability of such damages. Any and all other warranties expressed or implied arising by law, course of dealing, course of performance, usage of trade or otherwise, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited in duration to a period of 1 (one) year from the date of purchase.

Life Support Policy:
As a general policy, Destrier Electronics does not recommend the use of any of its products in life support applications where failure or malfunction of the Destrier Electronics product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness.

Destrier Electronics does not recommend the use of any of its products in direct patient care. Destrier Electronics will not knowingly sell its products for use in such applications unless it receives in writing assurances satisfactory to Destrier Electronics that the risks of injury or damage have been minimised, the customer assumes all such risks, and the Liability of Destrier Electronics is adequately protected under the circumstances.

Caution:
Our products are sensitive. While all care is taken by us to dispatch goods with adequate packaging, Destrier Electronics is not responsible for any damages caused to products after they have left our premises.

11. REGISTRATION OF MY MICROCARE PRODUCT

Product Serial Number: _____

Product Description: _____

Date Purchased _____

Where was the Product Purchased?

Company Name _____

Contact Person _____

Contact Number _____

E-mail Address _____

Installation Company Information:

Company Name _____

Contact Person _____

Contact Number _____

E-mail Address _____

Details of Product Owner

Name & Surname _____

Address _____

City & Province _____

Contact Number _____

E-mail Address _____

Date Installed _____

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