

RE:HEAT

Installation Manual

REHEAT PV HEATING CONTROLLER

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Preface







This manual contains information on how to install the REHEAT AFRICA photovoltaic heating controller and system. The installation guideline for both the REHEAT AFRICA Smart and the REHEAT AFRICA Mini is included in this document. The REHEAT AFRICA Smart installation guidelines include instructions on how to adjust the REHEAT AFRICA Display.

This document does not include information on how to use the REHEAT AFRICA system. The ‘User Manual’ can be downloaded from the REHEAT AFRICA website (www.reheat.africa). The technical data specification sheet of the REHEAT AFRICA can also be downloaded for the REHEAT AFRICA website.

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SYMBOLS

Symbol	Explanation
	Indicates a hazardous situation which, if not avoided, will result in death or serious injury
	Indicates a hazardous situation which, if not avoided, can result in death or serious injury
	Indicates a hazardous situation which, if not avoided, can result in minor or moderate injury
	Indicates a situation which, if not avoided, can result in property damage
	Sections describing tasks to be performed by qualified personnel only
	Information that is important for a specific topic or goal, but is not safety-relevant

1. SAFETY

1.1. Intended Use

The *REHEAT AFRICA Controller* is a Smart Switchgear home appliance device. The *REHEAT AFRICA* utilises the direct current of one or more series-connected PV panels to power the heating element of a standard hot water geyser when there is sufficient solar power, otherwise it supplies the heating element with AC mains power.

The *REHEAT AFRICA* product is only suitable for indoor use. (***Indoor Use Only***)

The product must only be operated with PV panels of protection class II, in accordance with IEC 61730, application class A. The PV modules must be suitable for use with this product.

Use this product only in accordance with the enclosed documentation and with the local standards and directives. Any other application may cause injury to persons or lead to property damage.

For safety reasons, it is forbidden to modify the product or install components that are not explicitly recommended or distributed by REHEAT AFRICA for this product. Unauthorized modifications and installations will void all warranty claims.

Any use of the product other than that described in the Intended Use section does not qualify as appropriate.

The enclosed documentation is an integral part of this product. Keep the documentation in a convenient place for future reference and observe the instructions.

The *REHEAT AFRICA's* type label must be permanently attached to the product.

1.2. Skills of Qualified Persons

Only qualified persons are allowed to perform the tasks marked in this document with a warning symbol and the caption "Qualified person". Qualified persons must have the following skills:

- Training in how to deal with the dangers and risks associated with installing and using electrical devices
- Training in the installation and commissioning of electrical devices
- Knowledge of the applicable standards and directives
- Knowledge of and adherence to this document and all safety precautions

1.3. Safety Precautions

This section contains safety precautions that must be observed at all times when working on or with the product.

To prevent personal injury or property damage and to ensure long-term operation of the product, read this section carefully and follow all safety precautions at all times.

DANGER

Danger to life due to high voltages in the REHEAT AFRICA Controller

The REHEAT AFRICA Controller should be mounted, installed and commissioned by qualified persons only. This also applies to troubleshooting.

- Always operate the *REHEAT AFRICA* in a closed state.
- Do not touch exposed cable ends.
- Have the *REHEAT AFRICA* mounted, installed and commissioned by qualified persons only.
- If an error occurs, have it rectified by qualified persons.

DANGER

Danger to life due to high voltages

When exposed to sunlight, the PV array generates dangerous DC voltage which is present in the DC conductors and the live components of the *REHEAT AFRICA Controller*. Touching the DC conductors or the live components can lead to lethal electric shocks.

- Do not touch the DC conductors.
- Do not touch any live components of the *REHEAT AFRICA Controller*.
- Prior to performing any work on the *REHEAT AFRICA controller*, disconnect it from all voltage sources, as described in this document.

DANGER

Danger to life due to electric shock

Touching an ungrounded PV module or an array frame can cause a fatal electric shock.

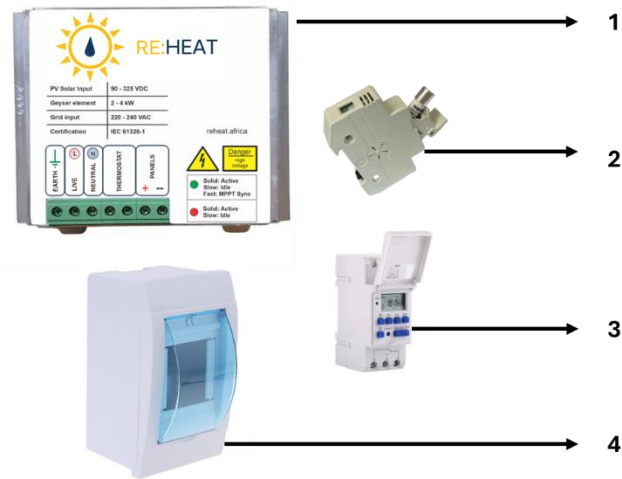
- Connect and ground the PV modules, array frame and electrically conductive surfaces so that there is continuous conduction. Observe the applicable local regulations.

1.4. REHEAT AFRICA CONTROLLER OVERVIEW

The kit content depends on which kit you ordered. Each kit has different contents. There are two different types of kits namely the *REHEAT AFRICA Smart* and the *REHEAT AFRICA Lite*.

1.4.1. Reheat Mini

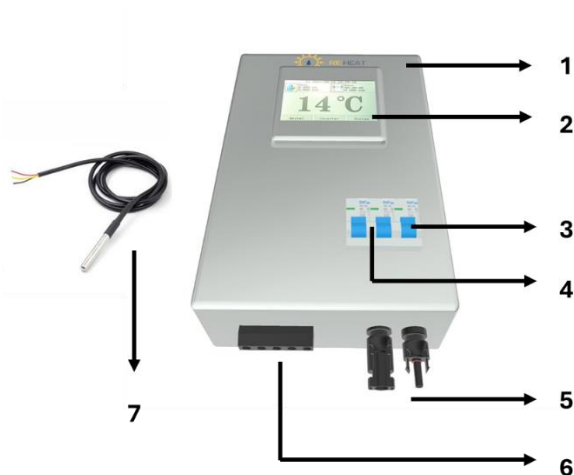
The REHEAT AFRICA Mini kit contains the following components:



NR	COMPONENT	DESCRIPTION
1	Reheat Mini Controller	Reheat Mini controller for smaller water volumes
2	PV fuse holder & fuse	PV Fuse for protection of controller against PV surges
3	DB timer	Digital DB timer for scheduling of AC and or DC load times
4	2/3-way DB box	Distribution Box for installing Fuse holder and Timer

1.4.2. Reheat Smart

The REHEAT AFRICA Smart kit contains the following components:



NR	COMPONENT	DESCRIPTION
1	Coated mild steel enclosure	Protection of controller and harmonics
2	Integrated touchscreen	Touchscreen interface for user control and information
3	PV disconnection Breaker	Switch off/on PV panel array for maintenance
4	2-Pole Transfer Switch	Bypass the Reheat controller if needed/desired
5	MC4 PV connection Terminals	Connection terminals for solar panels
6	5-pin AC connection terminal block	Connection terminals for Eskom AC power/ Geyser
7	PT100 Digital Thermostat Probe	Digital thermostat for temperature readings

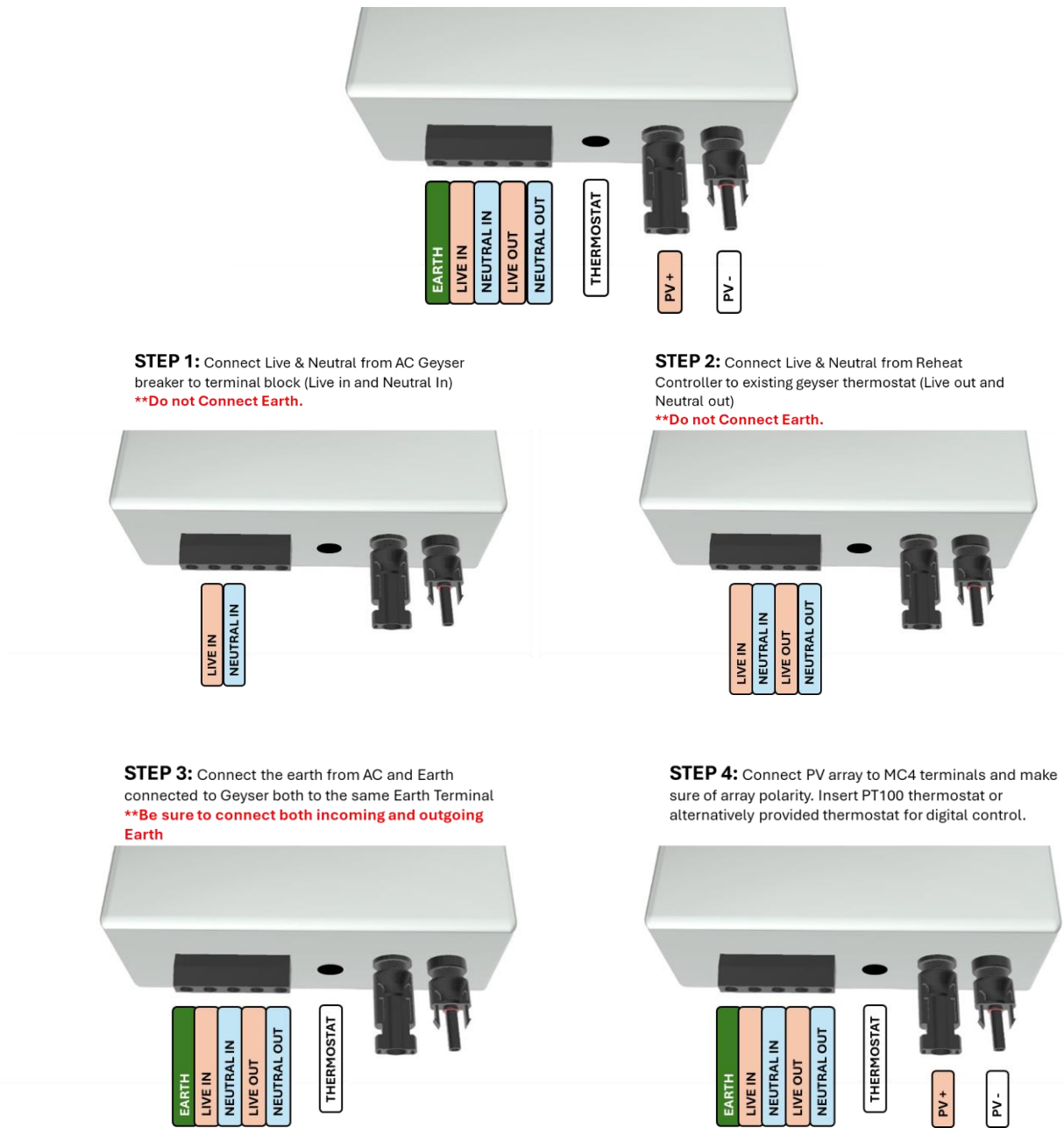
1.5. INSTALLATION GUIDE

1.5.1. Reheat Smart

1. Insure that the AC breaker and isolator for the geyser is in the **OFF** position before attempting the installation.
2. Disconnect the cables from the geyser and attach them to the AC connection of the **REHEAT AFRICA** as shown below. **Do not connect Earth wire at this time.**
3. Using the provided cable, connect one end of the cable to the REHEAT AFRICA Output ports.
4. Connect both earth wires of the cable feeding from the DB and the cable feeding to the geyser, to the EARTH Port on the **REHEAT AFRICA**
5. Connect the cables feeding from the Output port to the actual thermostat of the geyser.
6. After connecting the power, turn the thermostat up to maximum which should be 70^o Celsius for most thermostats. This turns the thermostat into a safety backup.
7. Attach the earth wire to the earth point on the geyser.
8. Make sure the PV breaker is in the OFF position before connecting PV input.
9. Before connecting to the REHEAT AFRICA, use a multi-meter to test the polarities of the solar cables to ensure that the cables have not been inverted when connected to the solar panels.
10. Connect PV input via MC4 PV input terminals.
11. Once the cables are connected and fastened firmly, switch on the PV breaker. This will now give solar power to the system.
13. Switch the isolator and AC Breaker in the DB Board on to provide AC power to the system.
14. Set the timer accordingly.

Connection	Description
Earth	Connected internally to the enclosure to prevent electrical shock.
Live	Connect to the red wire of mains power.
Neutral	Connect to the black wire of mains power.
Element (1)	Connect to existing thermostat. Elements are not polarity sensitive.
Element (2)	Connect to the remaining pole of existing thermostat.
PV+	Connect to the positive end of your PV bank.
PV -	Connect to the negative end of your PV bank.

Figure 1: Overview of connections and steps



1.5.2. Reheat Mini

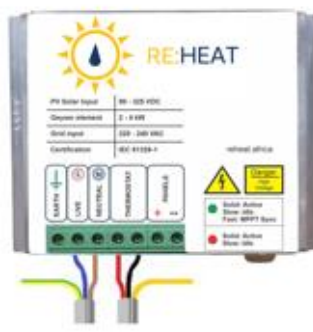
1. Insure that the AC breaker and isolator for the geyser is in the **OFF** position before attempting the installation.
2. Install the Digital DB Timer as per the instructions included in the third-party timer.
3. Disconnect the cables from the geyser and attach them to the AC connection of the **REHEAT AFRICA controller**. **Do not connect Earth wire at this time.**
4. Using the provided cable, connect one end of the cable to the REHEAT AFRICA Output ports.
5. Connect both earth wires of the cable feeding from the DB and the cable feeding to the geyser, to the EARTH Port on the **REHEAT AFRICA**
6. Connect the cables feeding from the Output port to the actual thermostat of the geyser.
7. Attach the earth wire to the earth point on the geyser.

8. Make sure the PV fuse is OPEN before connecting the PV cables.
9. Before connecting to the REHEAT AFRICA, use a multi-meter to test the polarities of the solar cables to ensure that the cables have not been inverted when connected to the solar panels.
10. Connect the PV Positive Line through the Fuseholder with the fuse open.
11. Once the cables are connected and fastened firmly, switch close the PV fuse. This will now give solar power to the system.
15. Switch the isolator and AC Breaker in the DB Board on to provide AC power to the system.
16. Set the timer accordingly.

STEP 1



STEP 2



STEP 3



STEP 4

