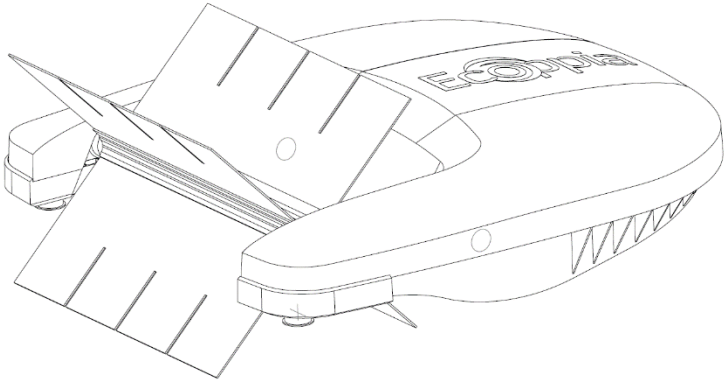
T4-5.3 Robot

User Manual - WP6001_01



Only a qualified and certified Ecoppia worker may operate the T4 robot

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	Name	Date	Signature

Ver.	Change Description	Date	Approved by
01	First edition	11 November 2019	Dgani Eran COO

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1 General

The T4 Robot is designed for cleaning tracker modules systems. During production hours, the robot parks in a designated parking platform, attached to the trackers row. The parking platform consists of 2 solar modules, the robots self-charging mechanism. The parking rotates with the row, tracking the suns position. During midday, the robot shifts sides on the parking platform, positioning itself so the charging poles, on its front, will always lean against the peripheral rail in the parking, allowing its batteries to be charged from the electricity flowing from the parking modules.
After production hours, the row balances to a horizontal position, enabling the T4 robot to leave the parking and clean the row.

2 Safety Instructions – Working in a solar site

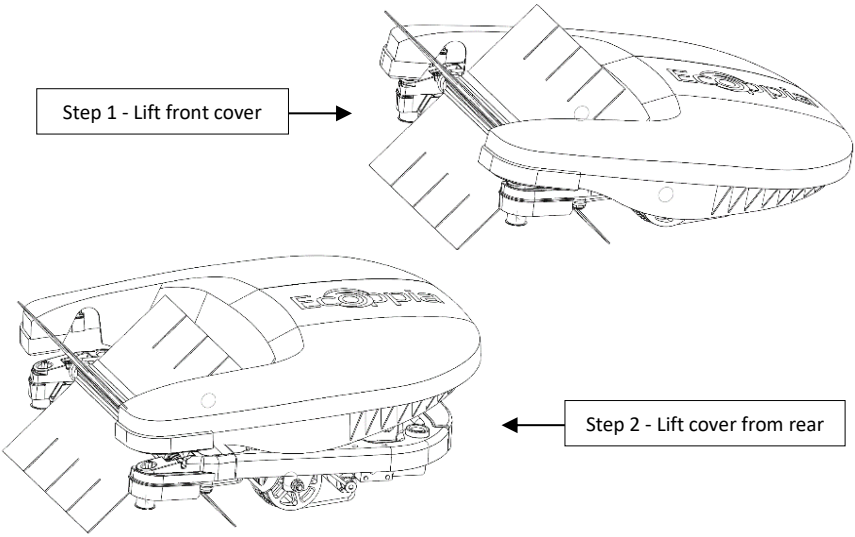
Work is carried out within a solar site, generating electricity in direct current (DC). Throughout production hours, there is constant voltage in all cables deployed on the site.

1. Entry to the site will only take place after you have been instructed by the sites safety supervisor.
2. Do not work below the panels array.
3. Do not make any changes to the solar array.
4. Ensure no damage done to arrays solar modules during T4 installation.
5. Only a trained employee may perform the required operations on the site.
6. For any safety concerns - contact the field safety supervisor.
7. Beware electrocution from solar modules wiring and connections, in case they are damaged or exposed.

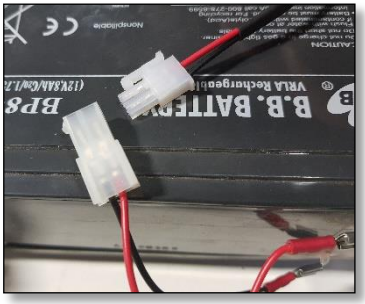
3 Setting Robot on array

1. Open T4 packing box in correct position, with "up" sign in upper direction.
2. Remove robot carefully from box and lay on a clean surface or directly onto docking platform.
3. Position the robot on the WEST docking side, in afternoon hours, while this docking side is accessible.
4. Notice: The T4 robot docking station contains 2 photovoltaic modules, set into the metal docking surface. Both modules generate 12 Volt 2.6-7.3 Ah, transferred to east and west rails on docking platform.
5. Place T4 robot on the tilted docking surface, "charging poles" leaning against western charging docking rod. Ensure that the stopper rail prevents it from rolling off the table.
6. Attention: Do not hold both docking poles on robot while docking/ charging. This will close an electrical circuit and may result minor shock (12V 10Ah)

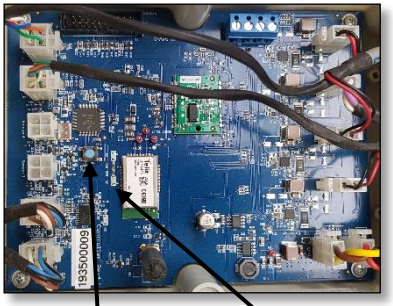
7. Remove T4 robots cover, lifting front bumpers first, carefully releasing them from lower bumpers.



8. Connect T4 battery to black and red related wires. This action will generate the docking magnet to rotate and lock into docking surface. 2 led lights on control card will lite to indicate the connectivity. In case this procedure does not lower the magnet, disconnect, press the reset button and repeat to connect the battery.



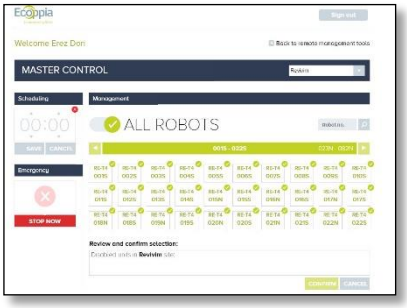
Connect battery to control card wire



9. Replace T4 cover.

4 T4 Digital Setting

10. Configure robot on "Master Control" window and "DCT" (Ecoppia Direct Connection array construction. T4 is configured with site relative software.
11. Enter Robot & row relationship into Salesforce system.



★ Operating Manuals for T4, configuration and data input are available only to Ecoppia technicians and are confidential.

5 T4 Power Consumption

The T4 operates on a 12V battery and has a peak consumption of 7.3Amp with average current consumption of 2.6A while working, 0.1A while parking.
The communication module CC1310 from TI, is powered by a 3.3V power regulator and a maximum current draw of 25.1mA.
References:
TI module: http://www.ti.com/lit/ds/symlink/cc1310.pdf article, note that the part is suitable for systems targeting compliance with FCC CFR47 Part 15 (US) - 5.4 p.16 for power consumption, 5.8 p.25 for maximum transmitted power.

6 FCC Class A Warning

FCC ID: 2AUGO-T4

The FCC wants you to know:
This equipment has been tested and found to comply with the limits of class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause

harmful interference to radio communication.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Wireless notice *(This device complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter).*

7 FCC Regulatory Notices

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause interference
2. This device must accept any interference including interference that may cause undesired operation of the device.

8 FCC Modification Statement

Ecoppia Scientific Ltd. Has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.