

KOMODO

Outdoor/ Indoor Mobile- Manipulation Platform

USER MANUAL

KMD1.9602.00

Contents

1. INTRODUCTION	2
1.1 What's Included.....	2
1.2 Hardware Overview.....	2
2. GETTING STARTED	4
2.1 First use	4
2.2 Driving in RC mode	4
2.3 Using the on-board computer to run the robot	5
2.4 Turning the robot OFF	5
3. CHARGING & BATTERY MAINTENANCE	6
3.1 Wheels Maintenance.....	6
4. PAYLOAD INTEGRATION GUIDE	7
5. WARRANTY	8
6. CONTACT	10

1. INTRODUCTION

The Komodo robot is an autonomous mobile robotic platform designed to cope with indoors and outdoors tasks on rough terrain, such as autonomous security patrols, agriculture monitoring, 3D mapping and autonomous navigation.

The Komodo contains customizable manipulators, LIDAR, IMU, GPS and ultrasonic sensors which connect to and controlled by an on-board computer.

Please inquire with RoboTiCan for details. See page 10 for contact information or for more details and usage instructions and tutorials see our ROS wiki page <http://wiki.ros.org/Komodo2>

1.1 What's Included

The Komodo robot pack includes:

- Komodo robot
- 13.2 AH 25.2v LI ION battery pack
- 220V 29VDC 3A LI ION charger
- RC Remote
- Komodo User Manual
- No. 4 allen key
- Ni. 3 allen key

1.2 Hardware Overview

1. Charging Socket
2. Rover Switch
3. Sensors Switch
4. PC Button
5. USB port
6. RJ 45 port
7. HDMI port
8. Rear URF

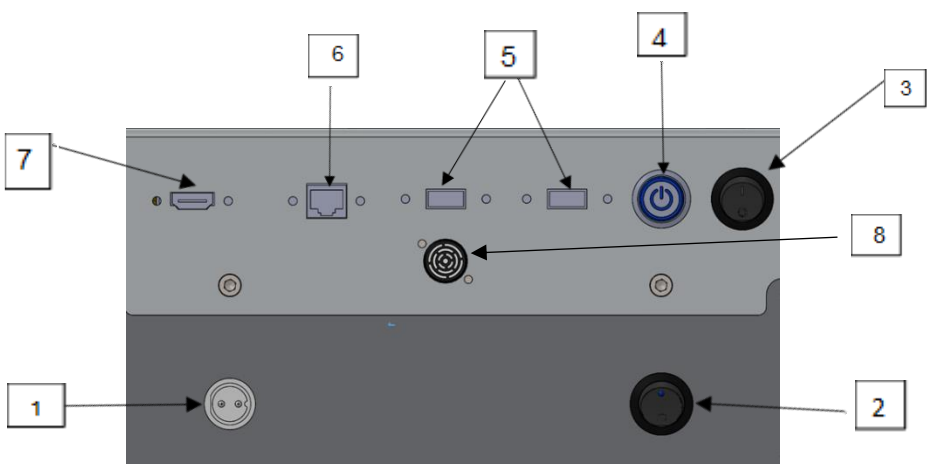
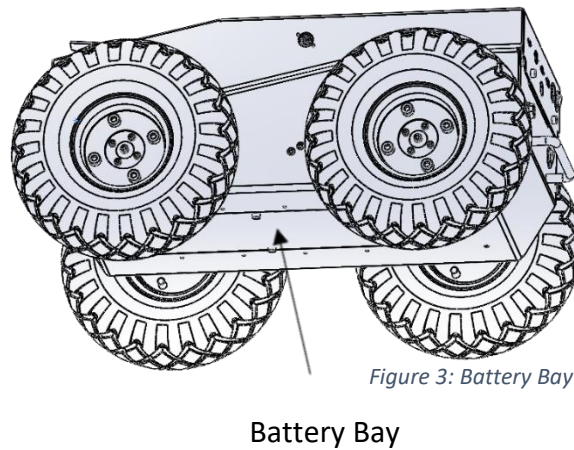
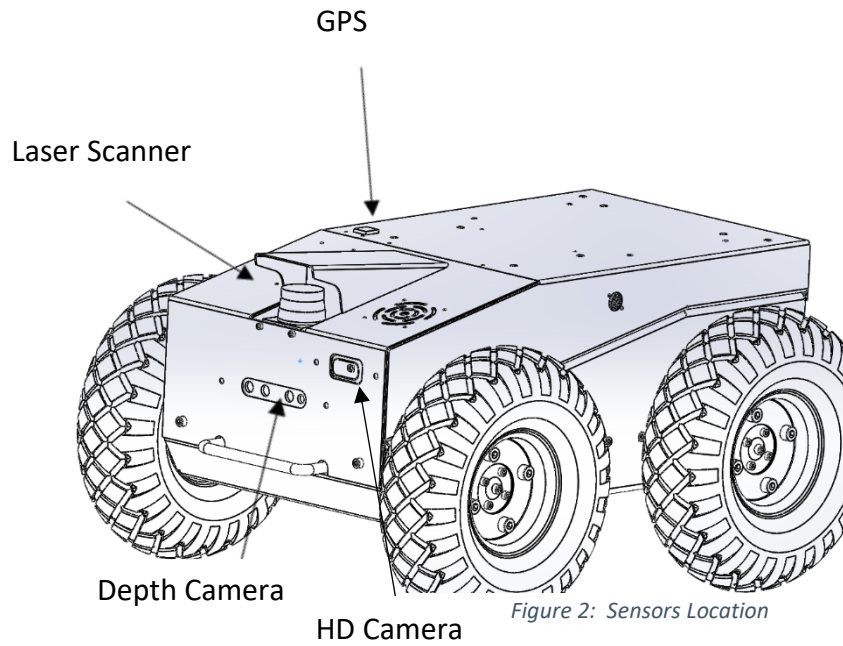


Figure 1: Komodo rear panel



2. GETTING STARTED

2.1 First use

When unpacking the Komodo, the battery needs to be connected. To do so, you will need to open the battery cover on the bottom of the robot by unscrewing 6 screws, using the no. 4 allen key.

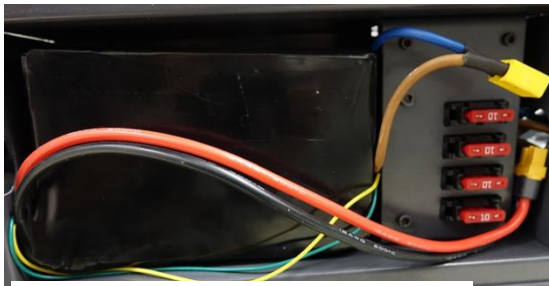


Figure 4: Battery area below Komodo

2.2 Driving in RC mode

To turn the robot on and use it as a remotely controlled vehicle (RC mode) do the following:

- Turn the remote control on using its power slider switch. The indication light on the remote should be lit.
- Turn on the rover switch (2) (Fig 1).

The right joystick will control the robot; push the joystick forward in order for the robot to move forward. The speed of the robot is proportional to the movement of the joystick. Move the joystick to the right or left in order for the robot to turn right or respectively.



Figure 5: Control Unit

2.3 Using the on-board computer to run the robot

In this section we describe the required steps in order to operate the Komodo robot using its onboard computer.

* **We strongly recommend** setting the Komodo on a jack or lever while the wheels are set above the ground when programming the Komodo. Lower the robot to the ground only after checking your code works correctly.

To turn the robot on do the following:

- Connect the robot to the screen, keyboard and mouse by using the back-panel connections and turn on the rover.
- Turn on the rover switch (2), then turn on the sensors switch (3) and then press the PC button (4). From Fig. 1
- If you want to move the robot, you can connect it with remote desktop software, such as TeamViewer, Remina, etc.

**Please make sure all cables are disconnected before moving the Komodo.

While operating the robot for long period of time, one may connect the charger and work directly from the electric outlet and charging at the same time. This allows continuous working without draining battery life.

** Please make sure the Komodo mounted on a jack or lever, while the wheels are Set above the ground, while the charger is connected.

2.4 Turning the robot

In order to extend your robot computer life time, we recommend the following Steps while shutting down your robot:

- If possible, shutdown using the Ubuntu graphic interface or through a terminal session.
- If you don't have access to the computer through a monitor or a remote-control session, press and hold the PC power button (4) (Fig. 1) for a few seconds until the computer shuts down. Then press and hold the sensors switch button (3) (Fig. 1) and then press the rover switch button (2) (Fig. 1).
- **Only when** none of the above methods works, use the power switches to turn the computer off.

3. CHARGING & BATTERY MAINTENANCE

Charging the Komodo is done simply by connecting the charger to a charging jack on the Komodo (1) (Fig. 1), then plug in the power cord.

- Only the supplied charger should be used.
- Do not leave the Komodo charging while unattended.
- The pack must not be stored or operated above 60 °C or below 19 °C.
- The pack must not be punctured or disassembled.

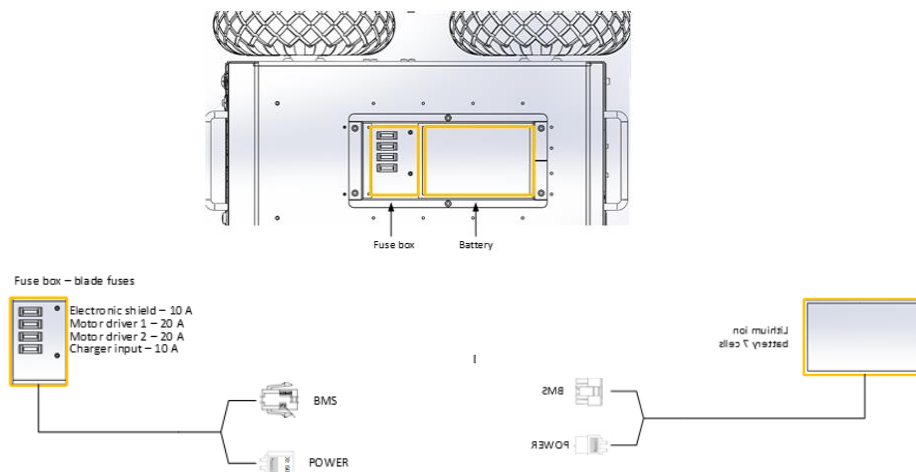


Figure 6: Fuses and Battery

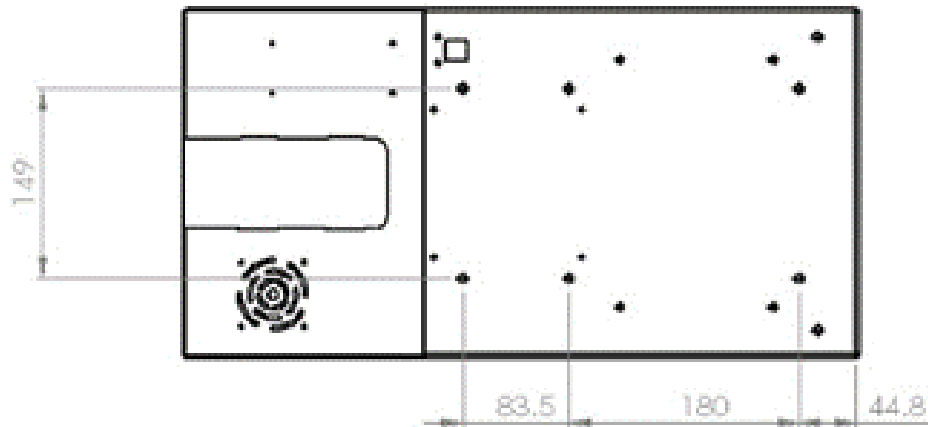
3.1 Wheels Maintenance

Check the air pressure in the wheels once a month. It should not be between 25 to 30 psi. Please tighten the wheels axle nuts after every air pressure checkup.

4. PAYLOAD INTEGRATION GUIDE

The Komodo allows you to connect external payloads to six mounting holes (M5) which are found on the top of the robot.

Payload to be mounted on Komodo is up to 15 kg.



5. WARRANTY

Limited Warranty Coverage:

Subject to the limitations provided below, the Komodo Robot is warranted against defects in materials and workmanship, under normal use, from the date of shipment through the period identified in the purchase quote (one year). If warranty period is not specified then the deliverable is "as is" and no warranty is provided.

Where a warranty is provided, RoboTiCan liability for such warranty is limited to: 100% of the parts necessary to repair the covered defect. Technical support by telephone, e-mail, fax or other means of correspondence during the warranty period for issues covered by warranty is provided at no charge for covered defects.

If travel to a location (other than RoboTiCan facility) is required to address an issue determined to be covered by warranty, parts will be covered but all labor and travel expenses will be billed. Travel will be billed at expenses plus \$50.00 per hour for work time and \$20.00 per hour travel. Determination of warranty coverage is the responsibility of RoboTiCan and cannot be assigned or delegated to any other party. If it is required to ship the robot to RoboTiCan facility for repair or maintenance, the shipping costs will be paid by the customer.

The following are specifically not covered by warranty: (1) failure due to abuse and neglect and/or improper operating environment (including, but not limited to, improper power supply, temperature, humidity, and environmental conditions); (2) down time and related costs due to failure; (3) items such as batteries, and (4) software.

RoboTiCan shall have sole authority to determine type and means of repair in the event of a warranty claim. RoboTiCan shall have the right to require the return of the defective part or system to RoboTiCan, transportation prepaid, to establish the claim. RoboTiCan shall in no event be held liable for repairs or alterations made without RoboTiCan's written consent or approval. RoboTiCan shall not be held responsible for repairs made by others. If unauthorized service is performed, the warranty provided herein shall be void. This warranty is void if the equipment is altered, improperly operated, improperly maintained or payments are not made according to the agreement.

Any additional software requirements or options are the responsibility of the end user. RoboTiCan does not warrant or guarantee the performance or functionality of any software, or that Customer is acquiring the legal right to use any software embedded within, or provided in connection with, reconditioned robots. Any software provided to customer is provided "as is" without warranty of any kind, either express or implied, and RoboTiCan specifically disclaims any warranty of merchantability, fitness for a particular purpose, satisfactory quality, lack of viruses, title, quiet enjoyment, and/or non-infringement with respect to any software. Customer acknowledges and agrees that use of any software provided to customer is at customer's own risk. Customer agrees to indemnify and defend RoboTiCan from and against any liability arising from customer's use of software in connection with products sold to customer hereunder.


Except for the warranties expressly provided herein, all other guarantees, warranties, conditions or representations, either expressed or implied, whether arising under statute, common law, and commercial usage or otherwise, including implied warranties of merchantability and fitness for a particular purpose, are excluded and hereby specifically disclaimed. In addition to writing here RoboTiCan company will not be responsible for any damage, injury, loss of ability to work, disability and even death caused arising directly or indirectly from the use of the product Including the rover module, sensors module or the arm module separately or altogether. RoboTiCan has made no express warranties except as provided herein, and no oral or written information or advice given by RoboTiCan its agents or employees shall create a warranty of any kind or in any way increase the scope of the limited warranty provided herein.


Under no circumstances whatsoever shall RoboTiCan be liable to any person, firm, corporation or other entity for any special, punitive, indirect, or consequential damages, whether for breach of contract, negligence, misrepresentation, or otherwise, and whether resulting in lost profits, loss of interest in money borrowed or invested, impairment of goods, business interruption, work stoppage, or otherwise, in any way arising out of any transaction to which these standard terms apply. RoboTiCan maximum liability for any claim arising hereunder or relating to the products sold to customer hereunder (whether for breach of warranty or otherwise) shall be limited to the obligation to repair the non-conforming product.


Customer agrees that this sale is completely made in the Country of Israel in that the laws of the Israel country shall apply concerning any controversy or claim regarding the equipment. Customer agrees to indemnify and hold harmless RoboTiCan from all claims, damages, liabilities, attorney's fees, and expenses arising from the ownership or use of the equipment.


6. CONTACT

RoboTiCan is committed to quality and product satisfaction. Please contact RoboTiCan for further information or assistance at:

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