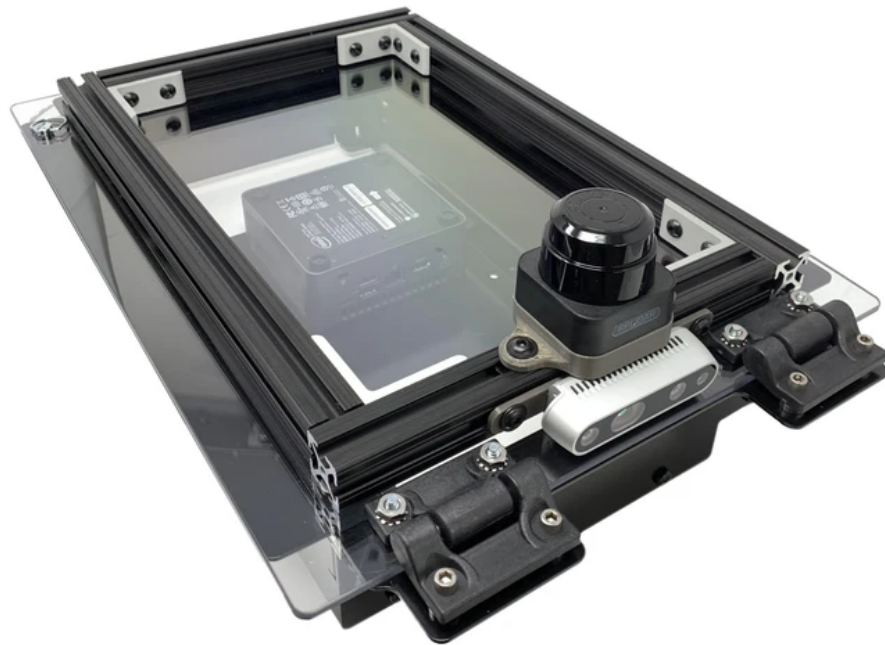




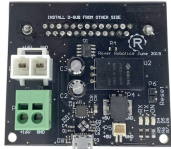




R&D Payload V2 Manual



Revision History

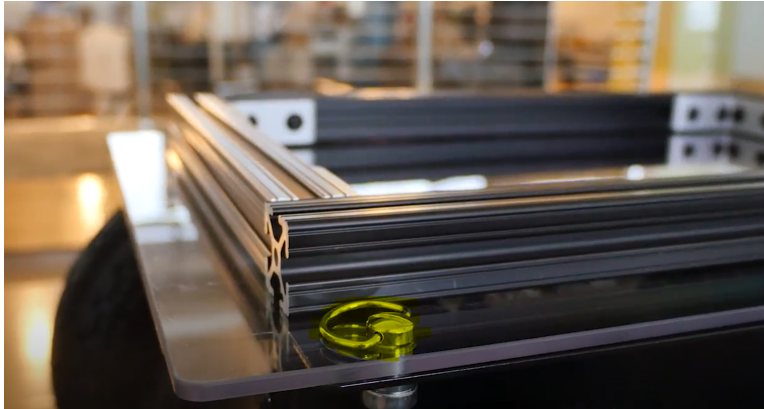
Version	Date	Notes
1.0.0	8/4/2020	Initial Release
1.1.0	8/31/2020	Change from Xbox 360 to PS4 controller
1.2.0	9/7/2021	Add Rover Zero details

What's included

	Description	Qty
	Interface Board (if ordered with a Rover Pro)	1
	16V Power Cable (if ordered with a Rover Pro)	1
	USB Cable	1
	M5 Screws	8
	PS4 Controller	1

1) Opening the R&D V2 Payload

The R&D payload V2 includes two quarter turn fasteners. Twist both 90 degrees counterclockwise to allow the lid to be opened.



2) Securing the payload to the robot

Use the x8 included M5 screws to secure the payload to the robot in the following highlighted locations



Warning: Using less than 8 screws increases risk of damaging the chassis



3) Wiring the payload

ROVER PRO

- a) Plug the interface board into payload port 1 of the robot
- b) Connect the power and USB cables to the interface board and the computer.



ROVER ZERO

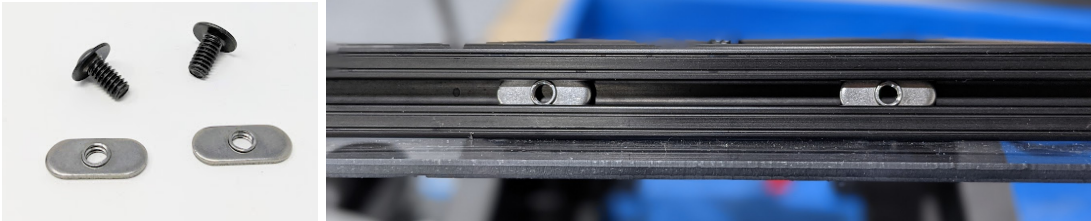
- a) Plug the barrel Jack coming from the Rover Zero into the power input of the computer and plug the USB cable into one of the USB ports



4) Mounting Sensors (RPLidar or Realsense)

Insert the two included T-Slot Framing Inserts (McMaster 47065T905) into the aluminum extrusion as shown below.

It's best to have the side with the raised circle facing outwards because it will align with the extrusion and prevent the insert from tipping during the next step.



Align the holes in the 3D printed mounting bracket with the inserts and use the two included 1/4-20 screws (McMaster 91355A081) to fasten it down.



Pass the USB cable through the cable gland and tighten it down to prevent water and dust ingress. If only one cable is passed through, heat shrink tubing can be added to the cable to increase its diameter which will provide a better seal.



5) Power on the Rover and PS4 Controller

Once the R&D payload is securely mounted, power the robot on by plugging in the battery. The R&D payload computer will automatically boot up and start ROS. Then power on the PS4 controller by hitting the button in the center called the PS button.



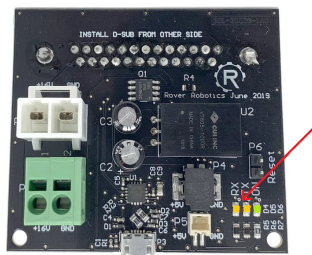
After 30-60 seconds you should see the LED on the PS4 controller turn solid blue.



You should now be able to drive your robot around (See next page for controls).

ROVER PRO ONLY

When everything has booted properly you should see the amber RX and TX lights on the interface board start blinking.



6) Driving Controls

Turn on the PS4 controller by holding the center button for 1 second. The PS4 controller is pre-synced with the payload. The LED on the back will appear solid blue once it connects to the payload. To turn the controller off, hold the center button for 10 seconds.



7) Modifying the system

Computer Credential

Username: rover

Password: rover

The system uses two systemd services to start processes on bootup.

/etc/systemd/system/roscore.service

*starts roscore

/etc/systemd/system/roverrobotics.service

*runs roslaunch

If you want to restart ROS use the following two commands:

sudo systemctl restart roverrobotics.service

You can check error messages by running the command:

systemctl status roverrobotics.service

To add additional nodes to be launched add them to the launch file specified in

/usr/sbin/roverrobotics

We recommend considering the following ROS packages

http://wiki.ros.org/robot_localization

<http://wiki.ros.org/gmapping>

http://wiki.ros.org/move_base

Good luck and happy Roving :)