



MCK-DRGY-001


Unmanned Aerial Vehicle Drone Gimbal Rig



Helpful instructional videos available at: mindsieducation.com


MINDS-i® PRODUCT SAFETY INFORMATION

When safety precautions are followed, your MINDS-i® system will provide years of enjoyment. Use care and good sense at all times when operating this product. Failure to use your system in a safe, sensible manner can result in injury or damage to property. You and you alone must insure that the instructions are carefully followed and all safety precautions are obeyed.

- Water can cause the electronics to short out and can cause permanent damage.
- Always turn on the transmitter before turning on the receiver.
- Fully extend the transmitter antenna before operating your vehicle.
- Before turning on your radio system, check to make sure that no one else is running on the same frequency.
-  **CHOKING HAZARD:** Do not allow children under age 3 or any individuals who have a tendency to place objects in their mouths to play with any part of the MINDS-i system, including, but not limited to: connectors, pieces, electronics, radio transmitters, wheels, tires. The system contains small parts which could accidentally be swallowed and cause suffocation.
- When the system is powered and/or in motion, keep fingers, face, tools, loose clothing, hair, and all other body parts away from gears, wheels, etc. Do not wear gloves while operating machinery. Even plastic parts can pinch, cut, or crush.
- The transmitter's antenna could also cause injury if played with violently or pointed towards someone's face.
- Never operate your MINDS-i® system on streets or in any areas where full-size vehicles are.
- Do not pick up your MINDS-i® system when it is in motion.
- Never charge, run or store your MINDS-i® system in a location subject to high temperatures, low temperatures or high humidity.

Do not store in direct sunlight.

- To avoid electronic malfunction, do not allow the vehicle to become wet. Short circuits will produce a very strong electrical current. Should your MINDS-i® system become wet, stop using it immediately.

-  **WARNING!** Electrocutation Hazard. Do not use the materials provided for other than its intended purpose.
- Do not put it into fire.
- Always use recommended batteries. If improper batteries are used, they may become hot, leak and may rupture.
- Do not attempt to recharge non-rechargeable batteries.
- Only batteries of the same equivalent type as recommended are to be used. Do not mix old and new batteries.
- Exhausted batteries are to be removed from the system and replaced with new ones. Recycle all used batteries.
- Do not lick batteries. If battery appears to be leaking or has a crystalline deposit on the outside, dispose of it immediately (wear gloves when handling, preferably nitrile or other non-reactive material).
- Do not run a wire between battery terminals, as wire will get very hot, can be irreparably damaged or explode.
- Make sure the batteries are installed with the correct polarity as shown. Do not disassemble your batteries. Never allow them to become hot or to burn. To avoid short-circuits, avoid getting them wet. Do not short circuit batteries.
- If liquid from inside the batteries contacts your skin or clothes, wash them with water. If leaked battery fluid gets into your eyes, flush them immediately with cool water and seek medical attention. Do not rub eyes.
- Always wear safety glasses to protect your eyes. Note that normal glasses, while usually made of impact-resistant plastic, will not afford sufficient protection from shrapnel or flying debris.
- Always wear close-toed shoes to protect your feet from heavy or sharp objects, which might be dropped.
- If you have long hair, keep it tied back or under a hat to avoid it becoming caught in moving parts.
- The MINDS-i® system contains small parts. Do not ingest. Do not insert into any orifice (e.g. nostrils, ears, etc).
- The system contains metal parts. Cutting or bending can cause parts to break; resulting in sharp edges which can cut skin.
- Battery disposal. Do not throw batteries into the trash, especially rechargeable batteries. Contact your local waste disposal office for information on battery disposal. Batteries should be stored as directed by your local hazardous materials disposal office until pickup (usually in a hard sided waterproof, non-conductive container, e.g. a plastic bucket).



WARNING! IMPORTANT! RESPONSIBLE ADULT SUPERVISION IS REQUIRED FOR CHILDREN UNDER THE AGE OF 14. THIS PRODUCT IS NOT DESIGNED FOR UNSUPERVISED USE BY CHILDREN YOUNGER THAN 14 YEARS OLD.

All pictures descriptions and specifications found in this instruction manual are subject to change without notice.

MINDS-i® maintains no responsibility for inadvertent errors in this manual. Visit mindsieducation.com for the latest updates and information.

MINDS-i® is a high-performance Construction/RC/Robotics System, which is NOT intended for use on the public roads or congested areas where its operation may conflict with or disrupt pedestrian or vehicular traffic. Read all enclosed information before operating. Fully illustrated, step-by-step instructions describe adjustment, operation, and required maintenance procedures. MINDS-i® should not be operated in a crowd, or without adequate space. In an effort to continually upgrade our products, MINDS-i® reserves the right to make improvements and modifications to this system, which may not be reflected in the photographs and specifications printed on this box. PROPOSITION 65 WARNING: This product contains chemicals known to the State of California to cause cancer and/or birth defects or other reproductive harm.

Terms & Conditions: All orders placed with MINDS-i, Inc (phone, fax, mail, Internet/web & email) constitute the acknowledgment and acceptance of all conditions listed below. All purchases remain the property of MINDS-i®, Inc until paid for in full. All orders shipped to a Washington State address must pay sales tax as required by the Washington State Department of Revenue. In the event that an order placed on our web-site does not calculate sales tax and the order is being shipped to a Washington State address, MINDS-i® will calculate the sales tax when the order is processed and call or email the customer with the new amount. All prices, materials, design, color, contents included with a product and product specifications are subject to change without notice. Some product images may be shown with optional items that are sold separately. Depending on the products ordered and the destination of the order, certain shipping services may not be available. MINDS-i® will not be responsible for pricing errors and may cancel the order. Orders will not be shipped until all Credit Card information is verified and matched. All other orders (check or money order) will not be shipped until payment has been received in full. All unpaid orders will be canceled after 30 calendar days. All weights shown for products are used for shipping calculation only and may not reflect actual weight of the product.

Product Warranty: MINDS-i® warrants to the original buyer that our products are free from defects in materials and workmanship for a period of 120 days from the original date of purchase (original purchase receipt required). This warranty does not cover abuse, misuse, incorrect wiring, modifications, alterations, connector damage, wear and tear or robot competition damage. If the Product is determined to be defective within the warranty period, MINDS-i® or its authorized service provider will, at our sole option, repair or replace any defective parts free of charge, or refund the purchase price. What you must do: Return the Product in its original packaging or packaging affording equal protection, freight prepaid, with proof of purchase, to an authorized MINDS-i® service provider. You are responsible for all shipping charges. For more information, contact MINDS-i® at (509) 252-5767 or info@my minds i.com.

Shipping Errors and Defective Products: Claims for shipping shortages, errors, or defective materials must be in writing and received by MINDS-i® within ten (10) days after receipt of shipment by buyer. Failure to make such claim within the stated period shall constitute an irrevocable acceptance of the goods and an admission that the goods fully comply with all the terms and conditions of the buyer's order.

MINDS-i® is Designed and Manufactured in the United States
Some components are manufactured in China and the Philippines.

Patents US 7,517,270; US 7,410,225; US 7,736,211; US 7,841,923; MX 288350; CN ZL 200680044576.1; Additional Patents Pending.
Trademarks 3,420,137 and 3,487,694
Copyright © 2014 MINDS-i Inc. All rights reserved.

MINDS-i, Inc
22819 East Appleway Avenue
Liberty Lake, WA 99019
USA



UAV DRONE GIMBAL

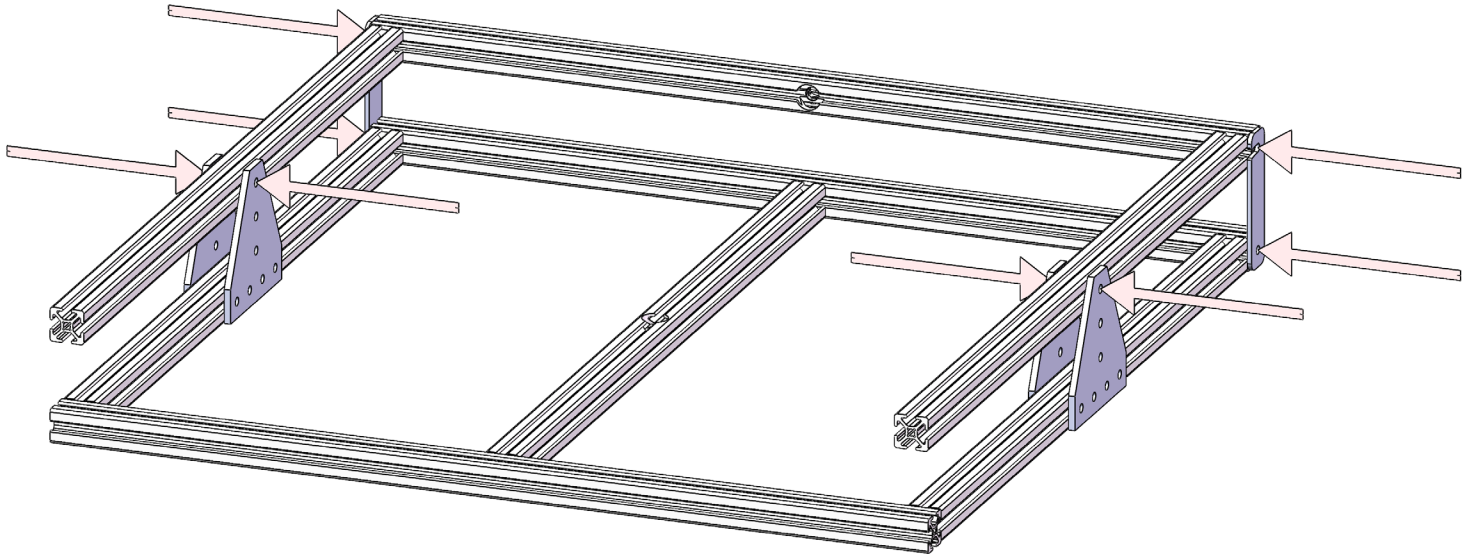
UAV DRONE GIMBAL ASSEMBLY-----	5
PREFLIGHT CHECKLIST & OPERATION GUIDE-----	9
PREFLIGHT SAFETY CHECKLIST-----	11
PREFLIGHT CONTROLS CHECK-----	11
OPERATION & CONTROLS-----	12
POST OPERATION-----	13
TROUBLESHOOTING-----	14
MINDS-I DASHBOARD-----	17
CONNECTING TO THE DASHBOARD-----	18
DASHBOARD FEATURES AND FUNCTIONS-----	19
WAYPOINT PANEL-----	20
CONFIGURATION PANEL-----	21
TELEMETRY-----	22
GRAPHING-----	23
EVENT LOG-----	24
DATA PANEL-----	25
FLIGHT MODES -----	26
CONNECTION / TERMINAL-----	27
MAP VIEW-----	28
TOGGLING MODES / LOG FILES-----	29

UAV Drone Gimbal Assembly



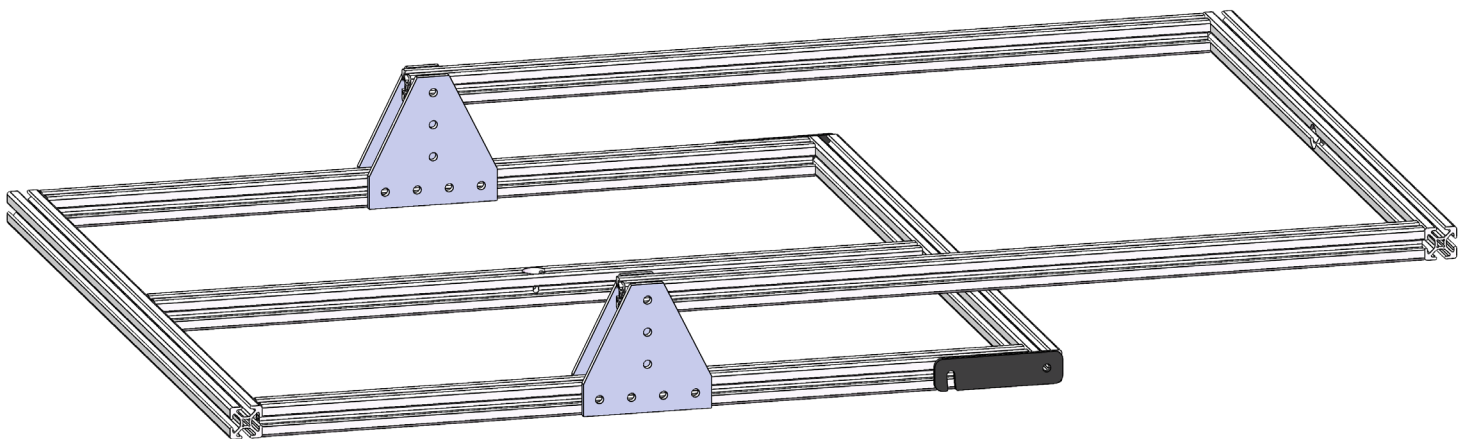
01

With the base on a flat surface, loosen but dont remove the 8 flange bolts holding the upper frame in place.



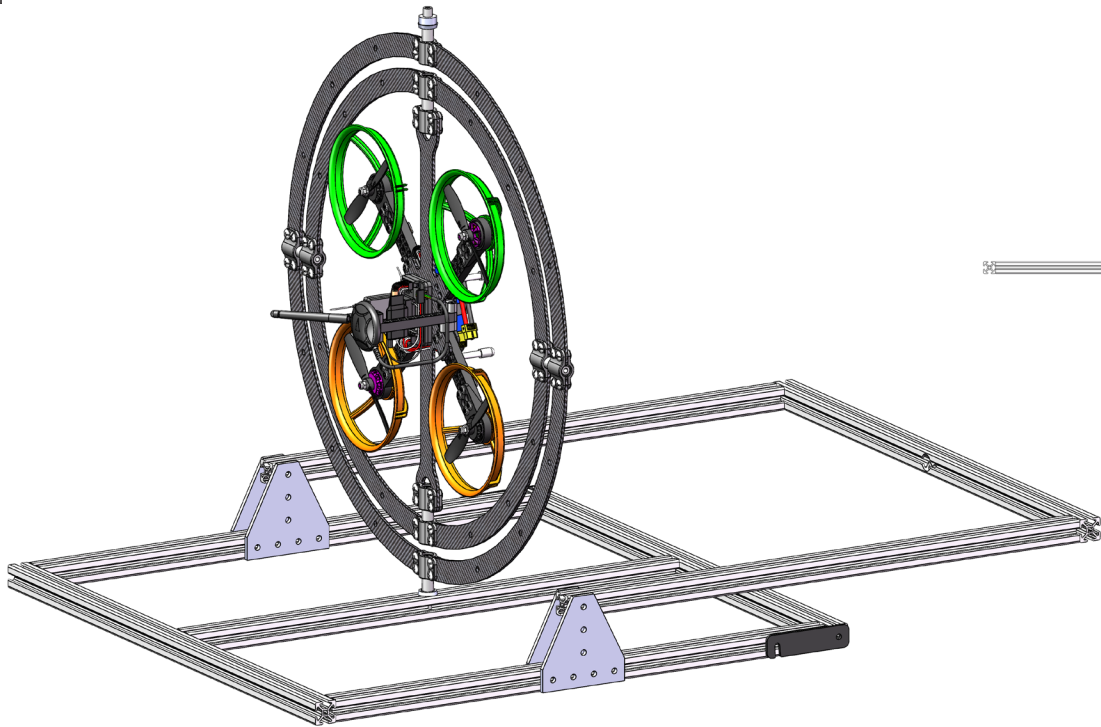
02

With the 8 flange bolts loose slide the upper frame back but dont slide it completely out of the side plates.



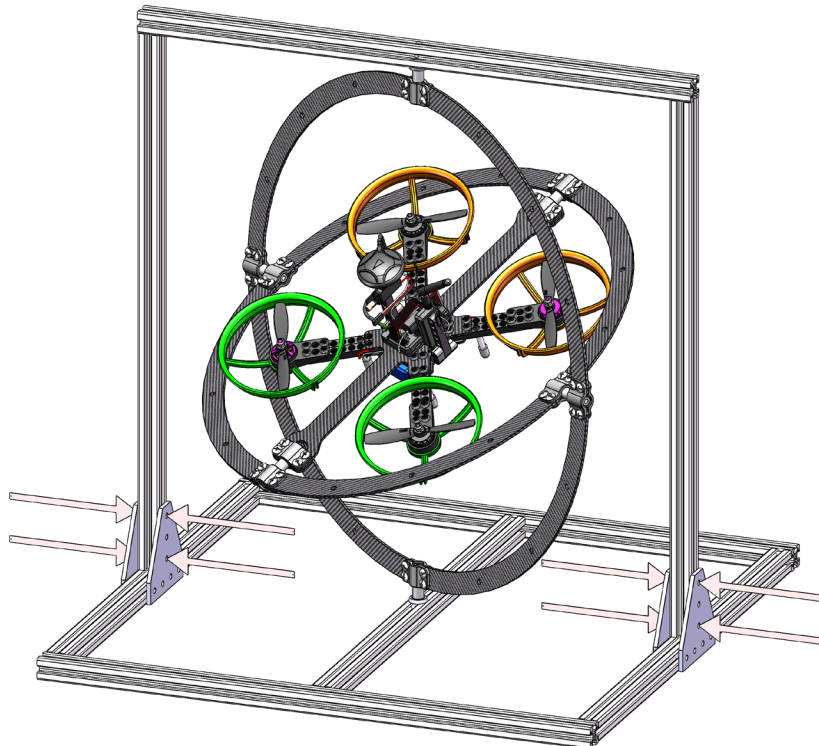
03

Place one of the gimbal pins into the lower frame bearing. Rotate the upper frame perpendicular to the base.



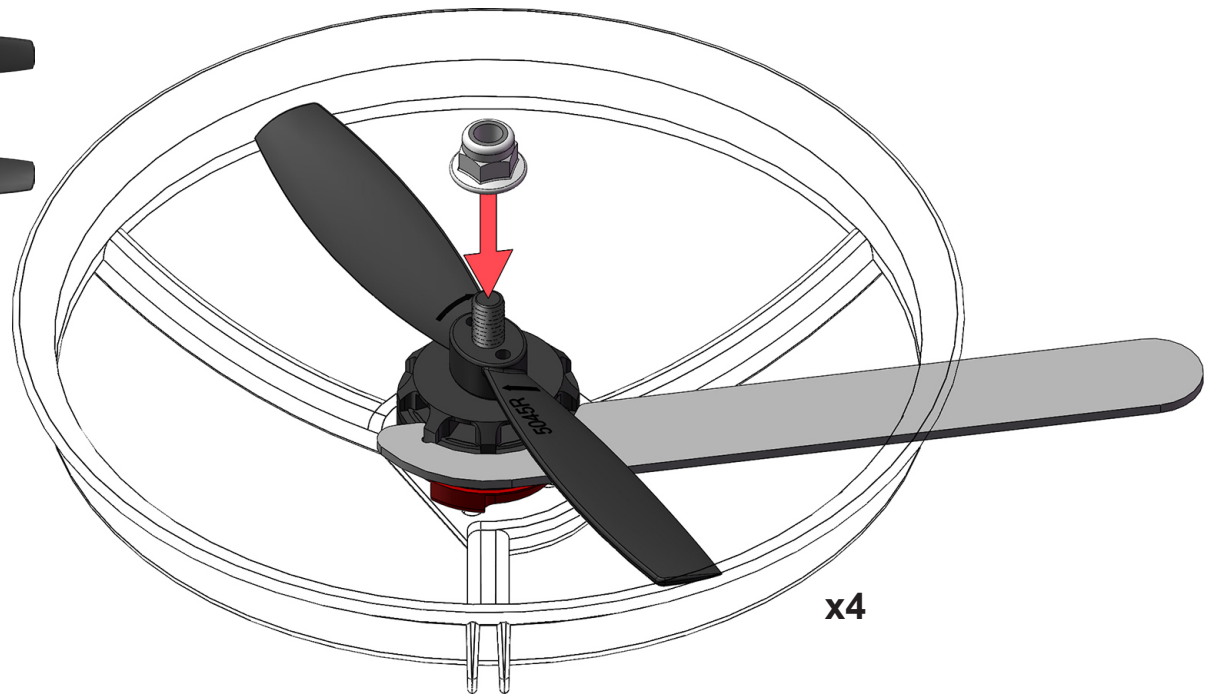
04

While aligning the upper gimbal pin into the upper frame bearing, lower the upper frame down keying the slotted nuts into the sides of the upper frame. Tighten the 8 flange bolts to secure the upper frame of the gimbal.



01

Before each use check that the propeller nuts are tight by using the spanner wrench to hold the motors while tightening the nylon lock nuts down.



Preflight Checklist & Operation Guide



01

Preflight Safety Checklist



Wear Safety Glasses when operating the UAV Gimbal



Make certain the safety ducts are on the drone



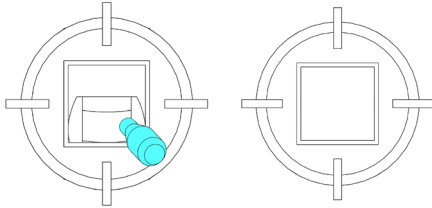
Make certain nothing is broken, no wires are loose and the battery, and other parts, are firmly secured.

02

Preflight Controls Check

01

Set the UAV Gimbal on a flat smooth surface. Follow the “Preflight Safety Checklist”. Turn on the transmitter, plug in the drone’s battery and arm the drone by holding the left stick down and to the right till the propellers spin.



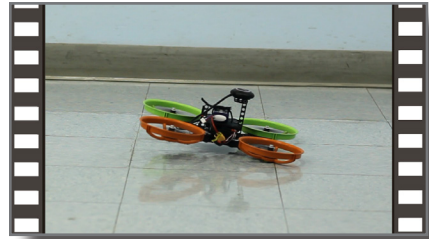
02

Increase the throttle to 50%. The drone should stabilize itself and balance.

See:

[mymindsinc](https://www.youtube.com/channel/UCmYmIinc)

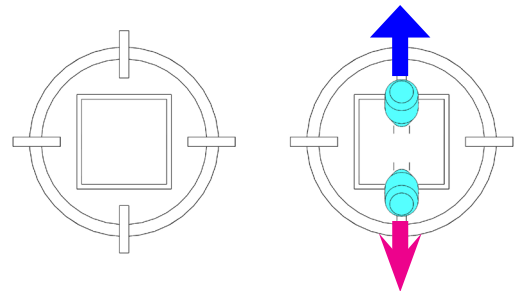
on youtube®



03

Check the pitch by moving the right stick slightly forward and backwards.

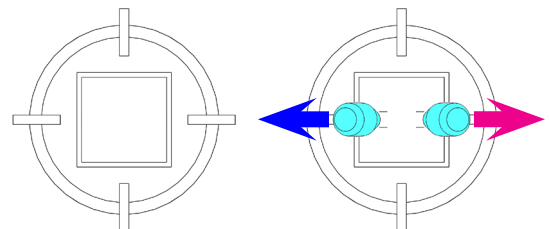
The drone should pitch down slightly when the stick is moved forward and pitch up slightly when the stick is moved backwards.



04

Check the roll by moving the right stick slightly right and left.

The drone should roll slightly to the right and left respectively as the stick is moved.



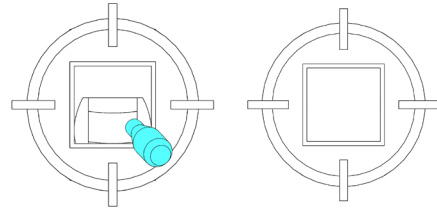
03

Operation & Controls

01 Follow the “Preflight Safety Checklist”

02 Wearing safety glasses, turn the transmitter on, then plug the battery into the drone.

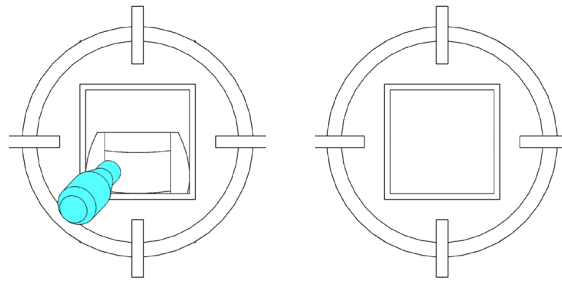
03 With everyone clear of the UAV Gimbal, arm the drone.



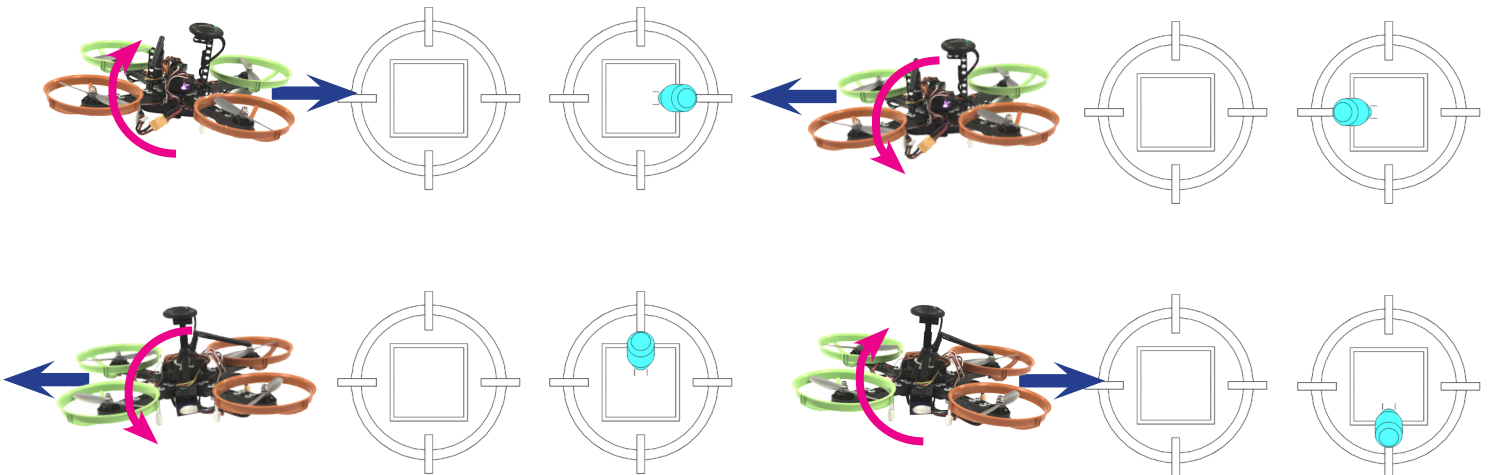
REMEMBER

EMERGENCY SHUT OFF IS: DOWN LEFT THROTTLE

This is also disarm.



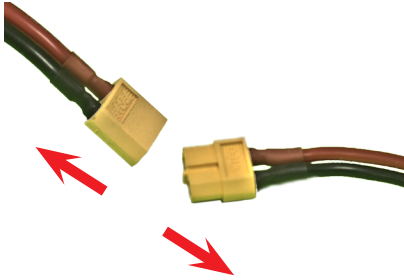
Controls:



04

Post Operation

01 Disconnect the battery from the drone.



02 Turn off the radio **AFTER** the battery is disconnected.



03 The drone will “autoland” if the battery voltage drops too low. **RE-ARMING AND FLYING THE DRONE AFTER AN AUTOLAND CAN DAMAGE THE BATTERY. DAMAGED BATTERIES CAN CATCH FIRE/EXPLODE IF CHARGED!!!**



Troubleshooting

UNPLUG BATTERY BEFORE HANDLING DRONE!



Drone won't arm (props won't spin.)

Possible Cause

- Not waiting long enough for arm
- Transmitter is off (no menu screen visible)
- Battery is not fully charged (or dead)
- Battery on drone not connected
- Time out

- Yaw axis swapped (Drone will arm when stick is in bottom LEFT position instead of bottom RIGHT position).

Solution

- Count to 15 sec before releasing stick
- Turn the transmitter on
- Swap battery for fully charged battery
- Connect the battery
- Disconnect the battery, turn the transmitter off then back on. Try again.
- Make certain that the radio is set correctly. **Check that the failsafe is set as described by pg38 step 20!** Then follow pg40.

REMOVE PROPELLERS BEFORE TRYING THE BELOW

- Transmitter is not bound: (RX) battery indicator on screen shows a "?".
- Software flight check failed (ex. compass "HMC5883L" problem).
- Software not loaded correctly or battery was unplugged too soon during step 3 of the "Flight Controller Programming".
- Sensor calibration: step 2 of "Flight Controller Programming" was not performed or not completed.
- Bad or loose wiring / connections.

- Reset the transmitter following the steps from page 36 onward. **Make certain that the failsafe is set (pg38 step20)!**
- Update all software to most current version. If instructed, or if external GPS was not provided, follow the instructions on pg26.
- Reset the software on the drone by performing steps 3 & 4 of the "Flight Controller Programming" section again. Wait the full 40 seconds after plugging in the battery for step 3.
- Starting with step 1 perform ALL steps in the section "Flight Controller Programming" in sequence listed.
- Check that the drone is wired correctly and that the power module is connected firmly. Check that the ESC's are not damaged or loose.



Drone vibrates excessively, flips when tested on rack, or does not respond correctly to controls.

Possible Cause

- Loose components.
- Propellers are installed on the wrong hubs.
- ESC's/motors are mounted on the wrong arms.

Solution

- Check that the propellers are firmly secured by the nuts. Check that all connectors on the frame are secure. Check that the battery is firmly secured to the frame.
- Check that the clockwise propellers are mounted on the clockwise motors and the counter-clockwise propellers are mounted on the counter-clockwise motors.
- Flip the drone over and look at the "CW"/"CCW" labels on the ESC's. Each diagonal should have a pair. See step 5 of the "UAV Airframe Build".

REMOVE PROPELLERS BEFORE TRYING THE BELOW

- Bad PID tuning in software.
- ESC's/motors are wired to the wrong pins on the Flight Controller.

- Update to latest software version of Minds-i-Drone libraries and repeat step 4 of "Flight Controller Programming".
- Take the drone apart and check that the wiring matches steps 5,9 & 17 in the "UAV Airframe Build".



Drone won't level or tilts/drifts severely during flight.

Possible Cause

- Flight controller is mounted at a angle, and/or was not calibrated since mounting.

Solution

- **REMOVE PROPS**, redo the "Programming Flight Controller" section starting with step 1.



Drone's flight is stable but it does not respond correctly to controls.

Possible Cause

- Radio channels are not reversed properly
- Old version of the "quadcopter" sketch where pitch and roll are reversed.

Solution

- Check the radio menus from "Setup the Transmitter".
- Update to latest version of software.



Drone won't take off.

Possible Cause

- Low battery voltage
- Wrong flight mode.

- Wrong minimum voltage value in the software.

Solution

- Swap out battery with fully charge battery
- Unplug the drone's battery. Turn the transmitter off and on again following pg35. Retry arm & fly.
- Update to latest version of the Minds-i-Drone library. **REMOVE PROPS** & repeat step 4 of "Flight Controller Programming".



CalibrateSensors fails during "Flight Controller Programming".

Possible Cause

- Compass problem (HMC5883L error) due to new GPS module using clone.
- Compass problem (HMC5883L error) due to no GPS module.
- USB connection problem: Scrolling values in "Serial Monitor" stop without any other message.

Solution

- Update to latest software version of Minds-i-Drone libraries and reload CalibrateSensors. Retry...
- Follow the steps on pg26 to use the internal compass with the jumper.
- Unplug the USB cable & plug it back in. Then redo step 2. Preferably use a new USB cable if problem persists.



Problems do not resolve or other problem.

Contact Customer Service

- Email: info@my minds i.com
-
- Phone: (509) 252-5767
-
- Web: mindsieducation.com

D R O N E S

MINDS-i[®]

STEM INTEGRATED ROBOTICS

MINDS-i Dashboard

MINDS-i dashboard

Refresh Connect

Configuration

elevation

+ -

Telemetry

Graph

Event Log

< Robot >

Lat: 0.0

Lng: 0.0

Alt: 0.0

New Enter

Save Load

Set Target

Looping On

Lat: 0.0
Lng: 0.0
Dir: 0.0
Ptc: 0.0
Rol: 0.0
MPH: 0.0
Vcc: 0.0

Alt: 0
Sea: 0
Mph: 0.0
Vcc: 0.0

Radio Status


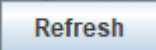

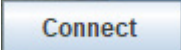
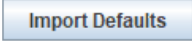
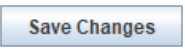
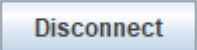
Welcome!

Connecting to the Dashboard:

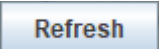


First time only:

- Follow the setup instructions in the MINDS-i Drone Library repository for your drone
- Make sure appropriate drivers are available for your telemetry radios
 - If you are running windows, a driver installation button is available in the configuration menu. Other operating systems frequently work without modification.
- Configure your Telemetry Radios

Telemetry Radio Configuration

- Make sure appropriate drivers are available
- Start the dashboard and open the  window
- Plug the telemetry radio into the computer with the USB cable
- Click , Select  and  to the telemetry radio Radios will come with a default of 56700 baud, but after configuration they will connect at 9600 baud
- Make the changes you want, or press  to automatically configure it for use with MINDS-i drones
- Press , , and power cycle the telemetry radio
- Remember to update the settings on both the sending and receiving telemetry radios

Each Flight / Drive:

- Connect the telemetry radio to the computer
- Turn on your drone
- Press  in the dashboard window connection tray
- Select the appropriate serial  device from the drop-down
- Press 
- You should start seeing telemetry from your drone arrive shortly. Waypoints you have already entered will be sent to the drone, and the settings stored on board will be loaded so they can be changed in the telemetry window.

Dashboard Features & Functions

Waypoint Panel

Connection Panel

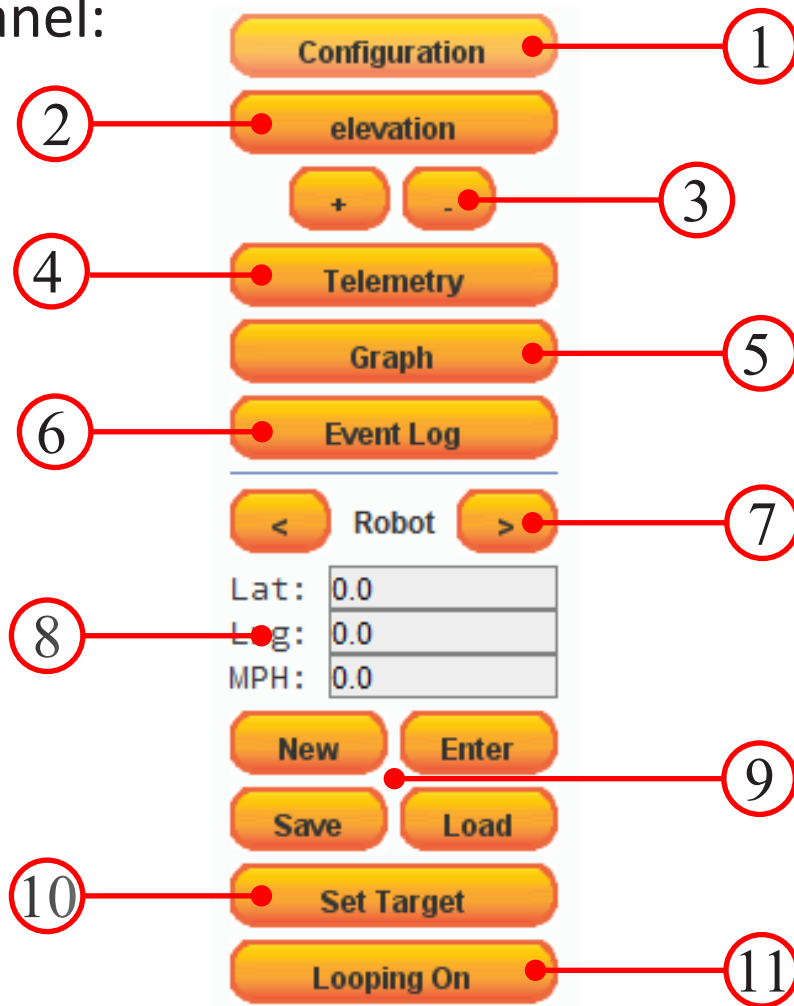
The screenshot displays the MINDS-i dashboard interface. The main window title is "MINDS-i dashboard". The interface is divided into several functional areas:

- Waypoint Panel (Left):** A vertical sidebar containing buttons for "Configuration", "satellite" (with "+" and "-" sub-buttons), "Telemetry", "Graph", and "Event Log". Below these are "Robot" navigation buttons (< and >), input fields for "Lat: 0.0", "Lng: 0.0", and "Alt: 0.0", and action buttons for "New", "Enter", "Save", "Load", "Set Target", and "Looping On".
- Connection Panel (Top Center):** A box containing a "Refresh" button, a dropdown menu, and a "Connect" button.
- Data Panel (Right):** A vertical stack of data displays: a digital readout showing "Alt: 0", "Sea: 0", "Mph: 0.0", and "Vcc: 0.0"; a 3D drone model; a battery level indicator; and a "Radio Status" section with two indicator lights and two small circular gauges.
- Terminal (Bottom Center):** A small window displaying the text "Welcome!".
- Map (Center):** A topographic map of a residential area with labels for "Pumphouse Park", "Meadow Golf Co", "LIBERTY LAKE", "Horseshoes", and "head Course".

Data Panel

Terminal

Waypoint Panel:



1. Configuration: Opens a pop up window with the Telemetry Radio Configuration tool.
2. View Button: This button switches the map between satellite and elevation views.
3. Navigation: Zoom in and out.
4. Telemetry: Opens a window allowing you to select the information that will be recorded in the log as well as all of the adjustable settings for the vehicle.
5. Graph: Opens a pop up window with a live data graphing function.
6. Event Log: Opens up the log for the active session.
7. Waypoint selector: moves the selection up and down the list of waypoints.
8. Waypoint entry: Will be filled with the latitude, longitude and altitude (MultiRotor) or speed (UGV) of selected waypoint. You can also edit the waypoint location information.
9. New & Enter, Save & Load: Used to create save and load the GPS waypoint list as a .gpx file.
10. "Set target": Click set target to redirect the robot to the selected waypoint.
11. Looping Button: Toggles whether or not the robot will stop when it reaches the last waypoint or if it will loop around and drive to the first and on from there.

Configuration:

Configuration

Lat: 0.0
 Lng: 0.0
 MPH: 0.0

--- Radio Configuration ---

COM 100

ID	Name	Value

MINDS-i Dashboard | Version 1.0.0 | 2016-12-28
 Map data courtesy of
 Esri, DigitalGlobe, Earthstar Geographics, CNES/Airbus DS, GeoEye, USDA FSA, USGS, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community
 Maps © www.thunderforest.com, Data © www.open.org/copyright

1. Toggle ground/air mode: Switches between ground and air mode.
2. Driver Installer: Launches the installer for the radio driver.
3. Refresh: Refreshes the serial port list.
4. Com Port List: Shows the open com ports.
5. Baud Rate: Used to set the communication speed.
6. Connect: Connects to the telemetry radio to adjust the settings.
7. Settings Window: Shows all of the radio settings.
8. Import Defaults: Allows you to set all of the options back to default.
9. Save Changes: Saves any settings you have changed.



Telemetry:

Configuration
elevation
+ -
Telemetry
Graph
Event Log
< Robot >
Lat: 0.0
Lng: 0.0
MPH: 0.0
New Enter
Save Load
Set Target
Looping On

The screenshot shows a 'Telemetry' window with a title bar. At the top, there is a 'Set logging period (ms)' field with a value of 250. Below this are two tables. The first table has columns 'name' and 'Value'. The second table has columns 'name' and 'Setting'. Below the second table, there is a text area with setting limits and a description.

name	Value
Latitude	0.0
Longitude	0.0
Yaw/Direction	0.0
Pitch	0.0
Roll	0.0
Ground Speed	0.0
Voltage	0.0

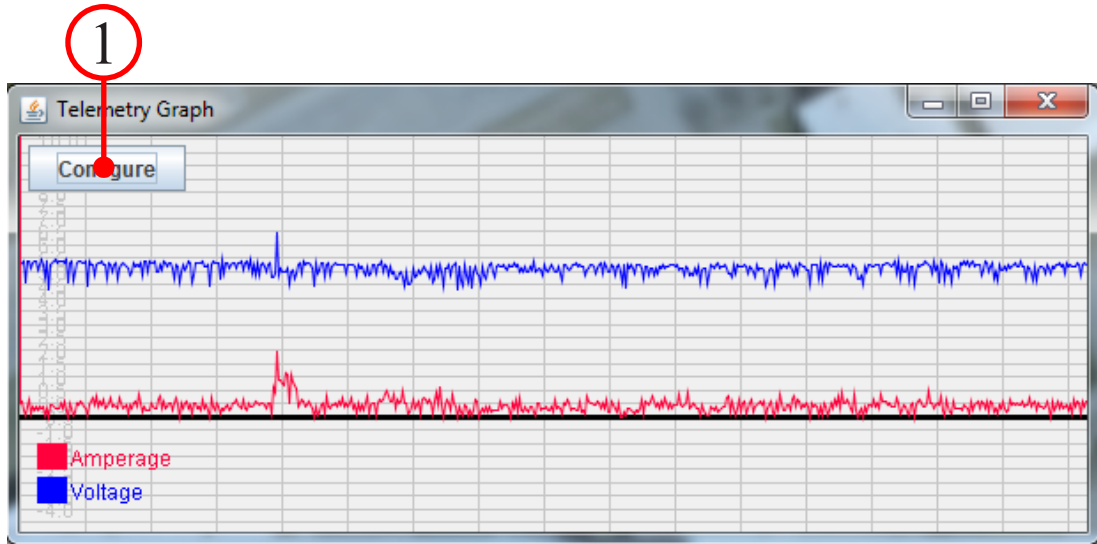
name	Setting
Output Period	0.0
Accel Gain	0.0
Mag Gain	0.0
Att P Term	0.0
Att I Term	0.0
Att D Term	0.0
Att VP Term	0.0
Att VI Term	0.0
Att VD Term	0.0
Yaw P Term	0.0
Yaw I Term	0.0
Yaw D Term	0.0
Yaw VP Term	0.0
Yaw VI Term	0.0
Yaw VD Term	0.0
Hover Throttle	0.0
Throttle Linearity	0.0

min: 5000.0 max: 10000.0 default: 6666.0
Period in milliseconds between reading the imu, calculating orientation, and sending a signal to the ESC's
This value should be between 5000 (200Hz) and 10000(100Hz)
Higher speeds will decrease the processing time left for other tasks, but could lead to a more stable flight

1. Data Log Window: The data log opens in a new window.
2. ID Column: Lists the names of the preset data to be logged as well as the open slots.
3. Value Column: Includes the value for each row of data.
4. Data Log Interval: Period of time between saving data.
5. Setting Names
6. Setting Value: Used definable settings, used to adjust performance
7. Setting limits: Shows operator the minimum, maximum and default value for each setting.
8. Setting Description: Describes what each setting adjusts.

Graph:

Configuration
elevation
+ -
Telemetry
Graph
Event Log
< Robot >
Lat: 0.0
Lng: 0.0
MPH: 0.0
New Enter
Save Load
Set Target
Looping On



The Graph Configuration window includes the following elements:

- 2**: AntiAlias checkbox.
- 3**: Y Scale, Y Center, and X Scale input fields.
- 4**: A table with columns for data names and checkboxes.
- 5**: Checkboxes in the 'Graph?' column of the table.
- 6**: A color selection palette.

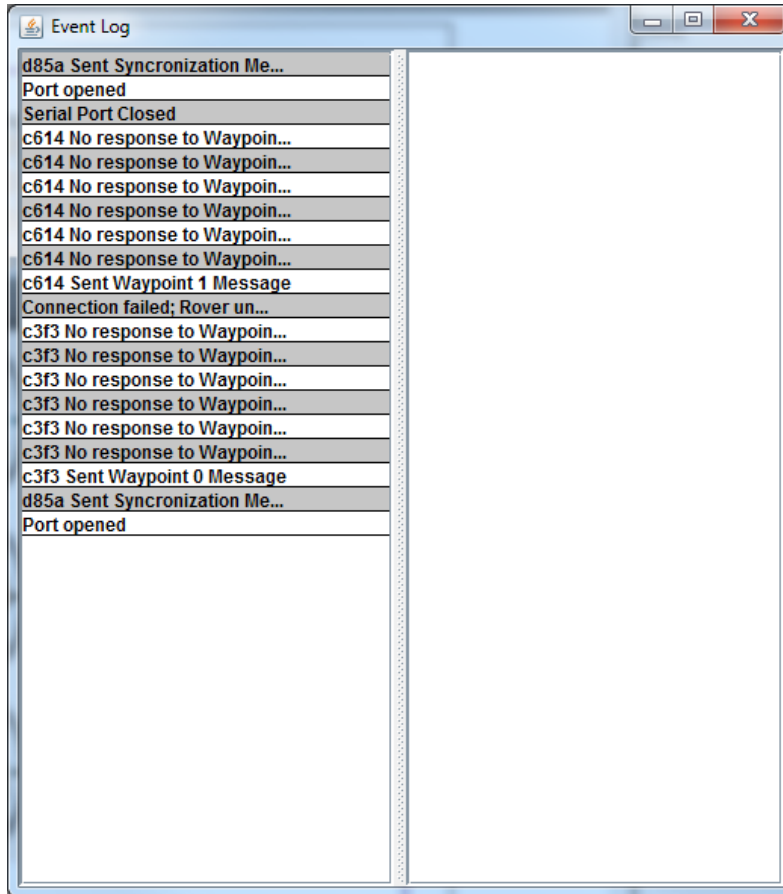
#	Graph?
Latitude	<input type="checkbox"/>
Longitude	<input type="checkbox"/>
Yaw/Direction	<input type="checkbox"/>
Pitch	<input type="checkbox"/>
Roll	<input type="checkbox"/>
Ground Speed	<input type="checkbox"/>
Voltage	<input type="checkbox"/>
Amperage	<input type="checkbox"/>

1. Configure: Opens Graph Configuration.
2. Anti Alias: Used to smooth jagged edges on curved lines and diagonals.
3. Scaling: Adjusts the scale of the graph.
4. Data Name
5. Check Box: User input for the data to be graphed.
6. Color Settings: User selected color for each row of data selected.

Select the check box in the row of the data desired to be graphed then select the color you would like the line to be on the graph, repeat for each row of data.

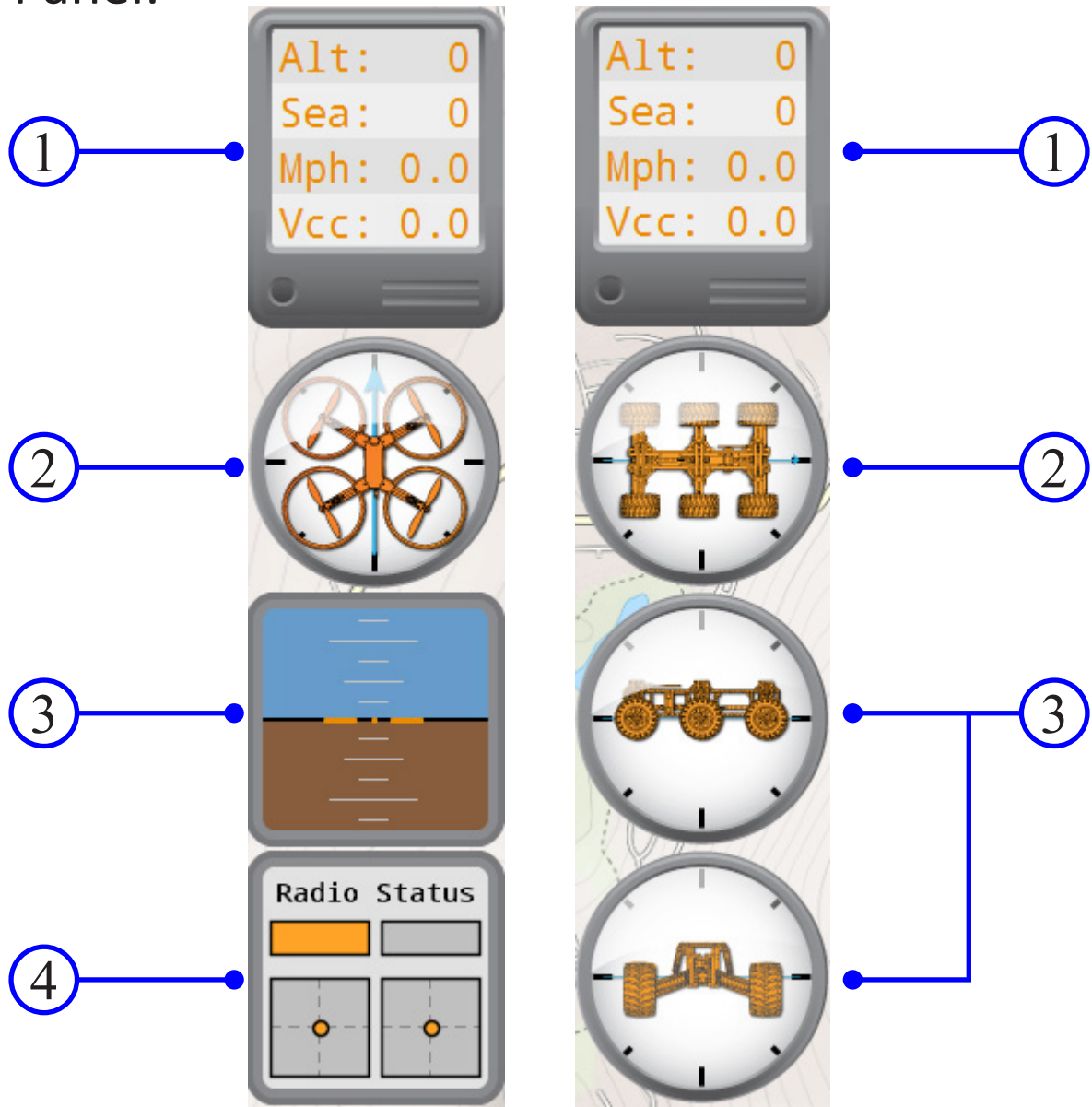
Event Log:

Configuration
elevation
+ -
Telemetry
Graph
Event Log
< Robot >
Lat: 0.0
Lng: 0.0
MPH: 0.0
New Enter
Save Load
Set Target
Looping On



1. Event Log: Lists all attempts of communication between the vehicle and the Dashboard software (successful or not).

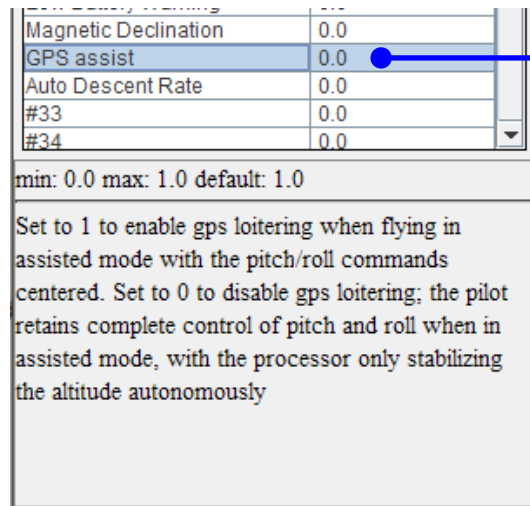
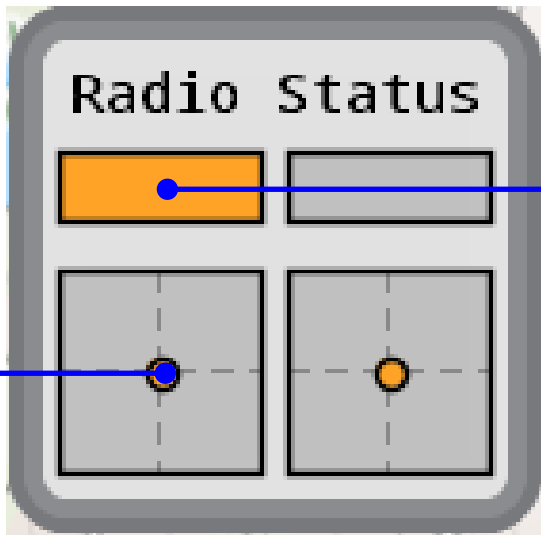
Data Panel:



Data from the robot will populate this panel when connected. A lack of data when connected could indicate a failing connection to the robot, possibly from distance or obstacles blocking the signal.

- ① Altitude (Above Ground), Altitude (Sea Level), Speed (MPH), Battery Voltage (Vcc).
- ② Vehicle Direction (compass heading)
- ③ Vehicle Pitch & Roll (front to back tilt & side to side tilt)
- ④ Radio Status (current position of control sticks)

Flight Modes:



1. Stick Movements: This will show you how the inputs from the radio are being received by the arduino code. You will want to make sure that the stick movements of your controller match the movements of the orange dots. If their movements don't match you will need to either reverse the channel or double check that you have correctly connected the radio receiver to the flight controller.

2. Flight Mode Indicator: This will toggle between the left and right boxes to indicate if the MultiRotor is in Stabilize or Altitude Hold. The box highlighted orange indicates the current flight mode.

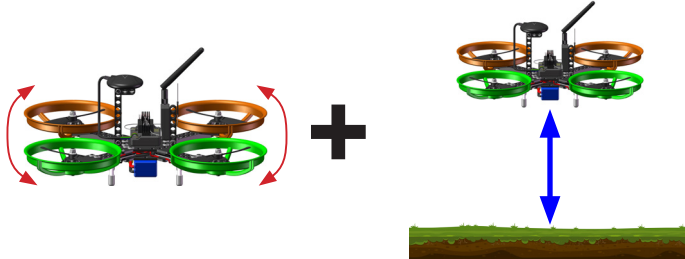
A. Stabilize: Maintains level flight only.



A



B. Altitude Hold: Maintains level flight and holds altitude.

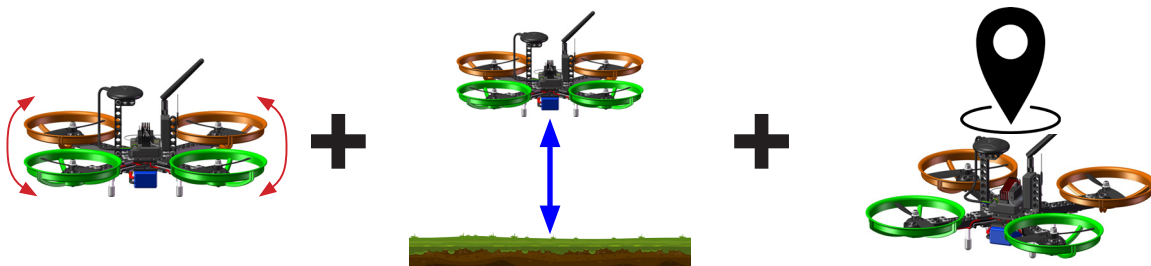


B

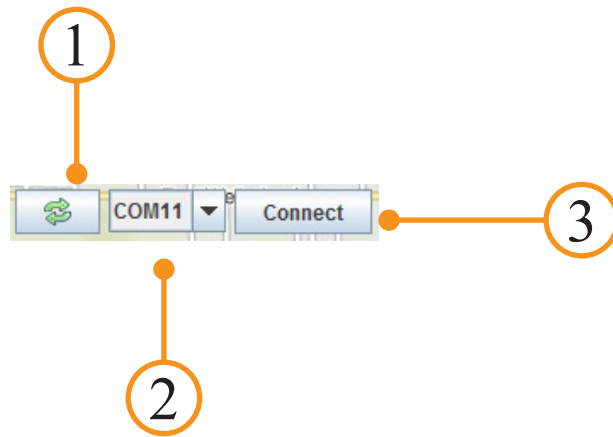


3. GPS Assist (Loiter Mode): Setting this value to 1 will replace Altitude Hold with Loiter Mode. The MultiRotor will hold latitude and longitude while you aren't moving the right stick on the remote.

C. Loiter Mode: Maintains level flight, holds altitude and GPS position.

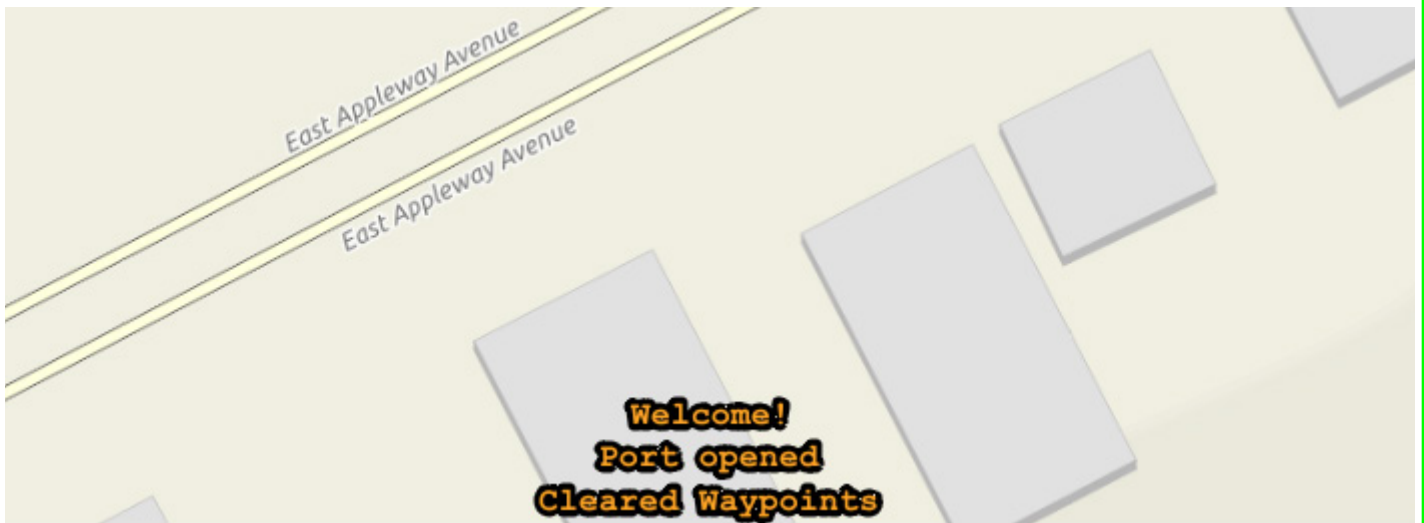


Connection Panel:



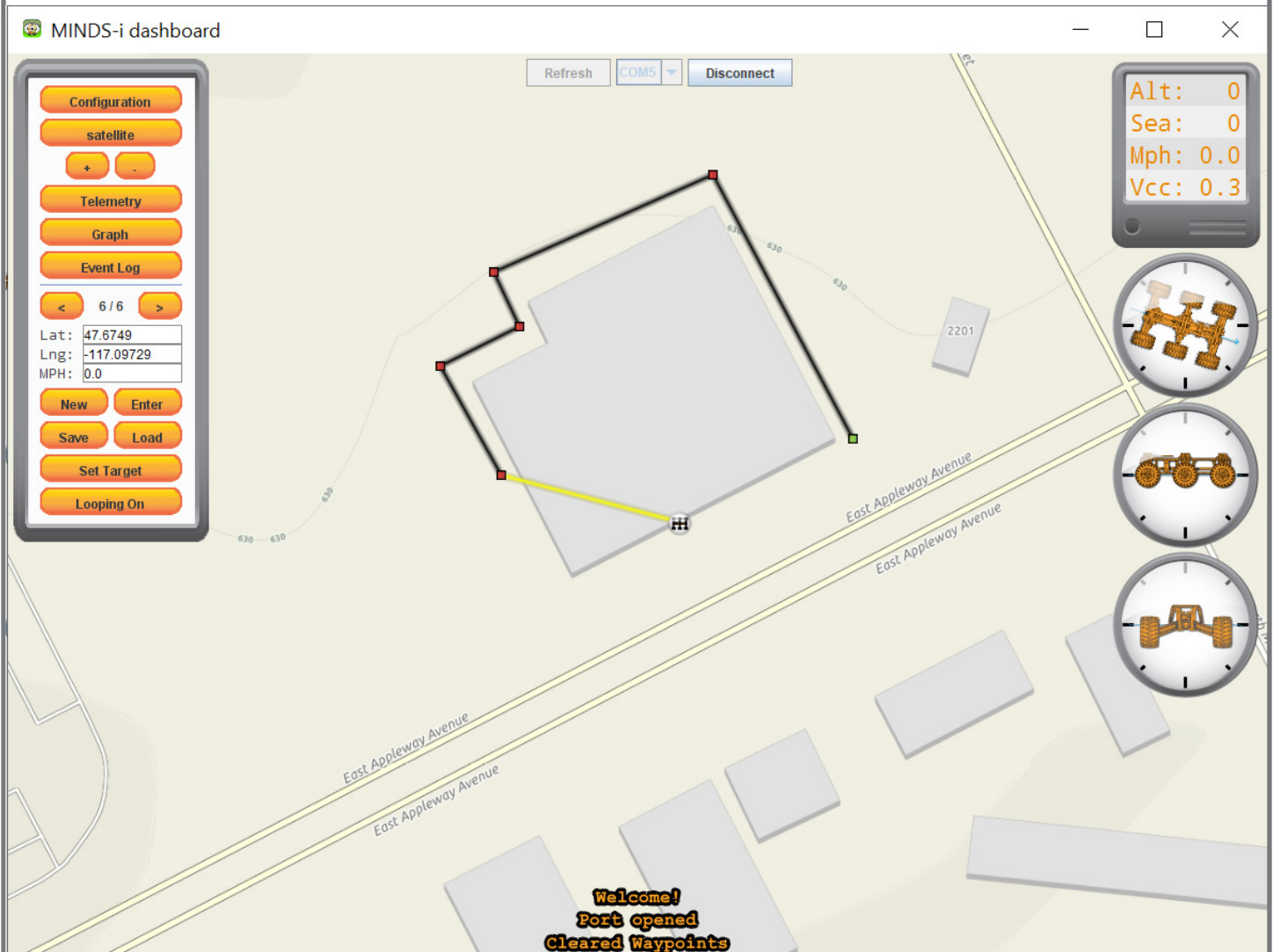
1. The refresh button will repopulate the drop down menu with the currently available serial ports
2. To connect, select the appropriate serial port in the drop down and press connect.
3. When a connection has been established, the “Connect” button will change to say “Disconnect”




Terminal:



- The terminal will display status updates of the communication messages.
- If the dash is forced to give up on a message it will inform you which message did not make it to the robot.
- Malformed or misunderstood messages coming from the robot are signs of a failing connection but not themselves cause for worry.

Map View:



-  The rover will automatically be placed on the map where the GPS indicates it is located
- Click and drag on the map to pan your view
- Scroll on the map or click the  to zoom
- Click on any empty part of the map to add a waypoint to the end of the current path
- Click on any waypoint to select it. The current waypoint will be green 
- Click on a path to “break” it and add a waypoint in the middle
- Right click on a waypoint to remove it from the path
- Click a waypoint and drag to reposition it
- The Yellow line is the direct path from the Drones current location to the next waypoint.

Switching Between Ground and Air Mode

To switch the dashboard between ground drone and air drone mode, Open the configuration window, press “Toggle ground/air mode”, and then restart the dashboard

Artificial Horizon

When in air mode, the artificial horizon widget can be clicked on to open a full size window with altitude and heading overlaid on the right and top edge respectively.

Waypoint Targeting

When in ground mode, clicking the map will place a GPS waypoint at that location that a connected rover will attempt to drive to. To add a waypoint at the end of the path, click on the map. Click on an existing path’s line to “break” it and add a new point in-between. Right click on a point to delete that waypoint

Log Files

The dashboard makes a .log and a .telem file in the log directory each time its run.

.log files contain a record of errors, warnings, and messages received from the robot while its running.

.telem files contain the robots telemetry data storing in CSV format with the first column containing the timestamp that data was stored at, and the remaining columns being each index of telemetry in order.

The frequency that received telemetry is logged can be changed in the telemetry window, accessible from the left navigation box in the dashboard.



*injection-molded
plastic*

For technical questions or to place an order:

Phone: (509) 252 - 5767

Fax: (509) 924 - 2219

Email us at:

info@mymindsi.com

Write to:

ATTN: MINDS-i Inc.

22819 East Appleway Avenue

Liberty Lake, Washington 99019

For the latest from MINDS-i visit:

mindsieducation.com

For technical questions with programming email:

code@mymindsi.com