Minds-i

Marz Rover
Self Driving Vehicle

MCK-MRDR-001

Helpful instructional videos available at: mindsirobotics.com
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 no 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® 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@mymindsi.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
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MINDS-i, Inc
22819 East Appleway Avenue
Liberty Lake, WA 99019
USA
### Parts Inventory Page 2

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<td>Badlands 3.8&quot; Tire &amp; Desperado Wheel</td>
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- **MINDS-i Tool**
- **BADLANDS 2.2" TIRE & DESPERADO WHEEL**
- **BADLANDS 3.8" TIRE & DESPERADO WHEEL**
- **HS-645 SERVO**
- **HS-311 SERVO**
- **HSR-1425CR SERVO**
- **90mm Shock**
- **#1 Phillips Screwdriver**
- **87-T Spur**
- **HS-311 Servo**
- **HS-485HB SERVO**
- **HSR-1425CR SERVO**
- **1/4" Flat Wrench**
- **3/32" Allen Wrench**
- **1/16" Allen Wrench**
- **Cross Wrench**
- **0.050" Allen Wrench**
- **1.2" Thread Collar**
- **0.4" Thread Collar**
- **1.2" Thread Collar**
- **2.7V 3000 mAh Battery**
- **7.2V 3000 mAh Battery**
- **5,000 RPM Motor**
- **23,500 RPM Motor**
- **2.0" Thread Collar**
- **1.2" Thread Collar**
- **0.4" Thread Collar**
- **7.2V 3000 mAh Battery**
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<td>8</td>
</tr>
<tr>
<td>#2 WASHER</td>
<td>0</td>
</tr>
<tr>
<td>M3 WASHER</td>
<td>0</td>
</tr>
<tr>
<td>M4 WASHER</td>
<td>0</td>
</tr>
</tbody>
</table>
CONNECTOR ASSEMBLY AND USAGE
HELPFUL INSTRUCTIONAL VIDEOS AVAILABLE AT: www.mymindsi.com

1.5-LOCK

2-LOCK

3-LOCK

PANEL LOCK

2-ROTATE

3-ROTATE
MOTOR CASE ASSEMBLY

- MOTOR CASE A
- MOTOR CASE B
- 6x12x4mm BEARING x2

01

x1 MOTOR CASE A
x1 MOTOR CASE B
x2 6x12x4mm BEARING
02
- 12 -

• MOTOR SHAFT x1
• 87-T SPUR x1
• M3x6mm SCREW x2
• #4 WASHER x2

03
BE SURE TO ALIGN THE SET SCREW WITH THE FLAT SPOT ON THE MOTOR SHAFT THEN TIGHTEN PINION SET SCREW.

MOUNT PINION GEAR FLUSH WITH END OF MOTOR SHAFT

DO NOT TIGHTEN
ADJUST MOTOR SCREWS UNTIL GEARS MESH SMOOTHLY, THEN TIGHTEN

WHEN ALIGNING THE GEARS TOGETHER MAKE SURE THEY ARE ABOUT A PAPER’S THICKNESS APART SO THEY MESH SMOOTHLY. DO NOT LEAVE THEM LOOSE OR PRESS THEM TOO TIGHT TOGETHER OR IT MAY DAMAGE THE GEARS OR PUT TOO MUCH STRESS ON THE MOTOR.
DIFFERENTIAL ASSEMBLY

HELPFUL INSTRUCTIONAL VIDEOS AVAILABLE AT: www.mymindsi.com

BEST FOR: HANDLING

BEST FOR: TRACTION

NOT RECOMMENDED FOR 6x6
02

- PINION GEAR

- 6x12x4mm BEARING

- 10x15x4mm BEARING

03

- DIFFERENTIAL CASE

- 10x15x4mm BEARING
NOTE: Make sure to mark which side the ring gear is on for future reference.

NOTE: Making sure the screw heads are on the same side as the ring gear is an easy way to remember which side it’s on.
CENTER DIFFERENTIAL ASSEMBLY
HELPFUL INSTRUCTIONAL VIDEOS AVAILABLE AT: www.mymindsi.com

- x1 RING GEAR
- x1 DIFFERENTIAL CARRIER
- x1 CARRIER SHAFT
- x4 CARRIER SCREW
- x2 OUTPUT GEAR SHAFT
- x2 SPIDER GEAR
02
x2 PINION GEAR

04
6x12x4mm BEARING

10x15x4mm BEARING

03
x2 CENTER DIFFERENTIAL CASE

x2 10x15x4mm BEARING
NOTE: MAKE SURE TO MARK WHICH SIDE THE RING GEAR IS ON FOR FUTURE REFERENCE.

NOTE: MAKING SURE THE SCREW HEADS ARE ON THE SAME SIDE AS THE RING GEAR IS AN EASY WAY TO REMEMBER WHICH SIDE IT’S ON.
WHEEL & TIRE ASSEMBLY

x6

01

x1 MASHER 3.2" TIRE

x1 VELOCITY WHEEL
NOTE: MAKE SURE BOTH SIDES OF THE TIRE ARE PROPERLY SEATED ON THE RIM.

OPTIONAL: IF YOU WOULD LIKE TO GLUE YOUR TIRES DOWN, PLACE A SMALL BEAD OF CA GLUE BETWEEN THE WHEEL AND TIRE. BE SURE TO PLACE TIRE BEAD BACK ONTO THE RIM PROPERLY.
6x6
(WITH ENCODER)
FRONT AXLE

01

x2 6-DRIVELINE

x2 M5 WHEEL END SHAFT

x4 U-JOINT SET SCREW
02

1. AXLE HOUSING

2. STEERING BRACKET

3. 1.5 LOCK

4. #4-40 x 3/8" SCREW

03

1. STEERING BAR

2. STEERING PLATE

3. #4-40 x 3/8" SCREW
06

- 4 - 32 x 5/8” SCREW
- 4 - #2 WASHER

07

- 4 - 1/2 BEAM
- 2 - 30mm SHOCK
- 2 - #40 x 1 3/8” SCREW
- 2 - # WASHER
- 2 - ROD END BALL
- 6 - CLEARANCE THREAD ADAPTER
- 2 - INTERFERENCE THREAD ADAPTER

- 2 - ROD END BALL
08

x4 12-BEAM
x2 FRONT WHEEL HUB
x2 FRONT WHEEL KNUCKLE
x4 3-ROTATE
x4 6x12x4mm BEARING

09
3/16" BALL STUD

x5

3-ROTATE

x4

32
2 x #4-40 x 3-3/4" THREAD ROD

4 x 23mm BALL CUP

1:1 SCALE

x2

- 33 -
1:1 SCALE
NOTE: REFER TO RADIO CONTROL SYSTEM INSTRUCTION MANUAL FOR PROPER SERVO SET-UP AND ADJUSTMENT
x2 DUAL TRANSITION

x4 1.5-LOCK

14mm WHEEL NUT

2.5x10mm DOWEL PIN
REAR AXLE

- 37 -
02

1. AXLE HOUSING
2. STEERING BRACKET
3. 1.5-LOCK
4. #4-40 x 3/8" SCREW

03

1. STEERING BAR
2. STEERING PLATE
3. #4-40 x 3/8" SCREW
04

- AXLE HOUSING
- SERVO MOUNT
- TRANSITION
- 3-LOCK

05

- HS-485HB SERVO
- SERVO BUSHING
- SERVO BUSHING SLEEVE
3/16" BALL STUD
8 x 4
3-ROTATE
2x #4-40 x 3-3/4" THREAD ROD
4x 23mm BALL CUP

1:1 SCALE
x2
14

1:1 SCALE

= 1:1 SCALE

15

STEERING SERVO HORN

3/16" BALL STUD

#4-40 x 1" THREAD ROD

18mm BALL CUP

1:1 SCALE
NOTE: REFER TO RADIO CONTROL SYSTEM INSTRUCTION MANUAL FOR PROPER SERVO SET-UP AND ADJUSTMENT
18

DUAL TRANSITION

1.5-LOCK

x4

14mm WHEEL NUT

x2

2.5x10mm DOWEL PIN

x2

- 46 -
MIDDLE AXLE

- DRIVELINE
- M5 WHEEL END SHAFT
- U-JOINT SET SCREW

Count:
- DRIVELINE: x2
- M5 WHEEL END SHAFT: x2
- U-JOINT SET SCREW: x4
x2 14mm WHEEL NUT

x2 2.5x10mm DOWEL PIN
NOTICE:

THE ORIENTATION OF THE DIFFERENTIALS IS VERY IMPORTANT. MAKE SURE TO PAY CLOSE ATTENTION TO THE ASSEMBLY OF THE DIFFERENTIALS, ESPECIALLY WHICH SIDE THE RING GEAR IS ON, AS IT DETERMINES THE WHEELS DIRECTION OF ROTATION.

REFER TO THIS DIAGRAM WHEN ATTACHING THE AXLES TO THE FRAME, INSURING THE RING GEARS ARE IN THE APPROPRIATE LOCATIONS. HAVING THE DIFFERENTIALS IN BACKWARD WILL RESULT IN THE WHEELS ROTATING THE WRONG DIRECTION.

IT IS RECOMMENDED THAT YOU MANUALLY CHECK THE ROTATION OF THE DRIVETRAIN BEFORE INSTALLING THE ELECTRONICS. IF THEY ARE NOT ROTATING IN THE PROPER DIRECTION, THE AXLE MUST BE REMOVED AND THE DIFFERENTIAL TURNED UPSIDE-DOWN.
5-PING SENSOR ARRAY
REFER TO RADIO TRANSMITTER MANUAL AND FOLLOWING DIAGRAMS FOR PROPER INSTALLATION AND SET-UP.

USING THE WIRE TIES AND DOUBLE-SIDED TAPE PROVIDED, PLACE THE ELECTRONIC COMPONENTS ON THE FRAME SO THAT THEY ARE SECURE AND OUT OF THE WAY OF MOVING PARTS.
4x4 SUPER CRAWLER
(WITH ENCODER)
13

x2 DUAL TRANSITION

x1 #4-40 x 1-3/8" SCREW

x1 WASHER

x3 CLEARANCE THREAD ADAPTER

x1 INTERFERENCE THREAD ADAPTER

14

x1 8-BEAM

x1 2-LOCK

x2 CLEARANCE THREAD ADAPTER
x4 REPEAT STEPS 13-15
1.2" THREAD COLLAR

#4-40 x 1" SCREW

#4 WASHER

13-BEAM

9-BEAM

2-LOCK

x2

x4

x4

x2

x4
AXLE HOUSING
STEERING BRACKET
1.5-LOCK

STEERING BAR
STEERING PLATE
#4-40 x 3/8" SCREW
AXLE HOUSING

SERVO MOUNT

2-BEAM

3-LOCK

HS-485HB SERVO

SERVO BUSHING

SERVO BUSHING SLEEVE
x4 #2-32 x 5/8" SCREW
x4 #2 WASHER
x8 9-BEAM
x2 FRONT WHEEL HUB
x2 FRONT WHEEL KNUCKLE
x4 3-LOCK
x4 6x12x4mm BEARING

FRONT WHEEL KNUCKLE
FRONT WHEEL HUB
3-LOCK
9-BEAM
6x12x4mm BEARING
#2 WASHER
#2-32 x 5/8" SCREW
33

x2

#4-40 x 2-3/4" THREAD ROD

x4

23mm BALL CUP

1:1 SCALE

x2
35

1:1 SCALE

36
NOTE: REFER TO RADIO CONTROL SYSTEM INSTRUCTION MANUAL FOR PROPER SERVO SET-UP AND ADJUSTMENT
x2 REPEAT STEPS 22-39
M5 NUT
M5 WASHER
BADLANDS 3.8" TIRE & DESPERADO WHEEL
U-JOINT SET SCREW
- 96 -
7-DRIVELINE
x4
x4
x4
x4
x4
x4
x4
x4
x4
x4
x4
x4
x4
x4
5-PING SENSOR ARRAY
REFER TO RADIO TRANSMITTER MANUAL AND FOLLOWING DIAGRAMS FOR PROPER INSTALLATION AND SET-UP.

USING THE WIRE TIES AND DOUBLE-SIDED TAPE PROVIDED, PLACE THE ELECTRONIC COMPONENTS ON THE FRAME SO THAT THEY ARE SECURE AND OUT OF THE WAY OF MOVING PARTS.
Warning!

Before continuing further, please ensure that you do NOT have the battery plugged into the ESC harness.
UGV Systems Setup Checklist

☐ #1 Calibrate Sensors
☐ #2 Upload RoboMagellan6x6 Code
☐ #3 Connecting to the Dashboard
Step #1 Calibrate Sensors:

1. Open Arduino> click open> libraries> MINDS-i-Drone> CalibrateSensors.ino.

2. Make sure you have the correct board (MEGA 2560) and port selected (whatever port says MEGA 2560).

3. A: Click the upload button. B: Once the upload is complete open the serial monitor.
4. With the serial monitor open follow the instructions as prompted. Move the UGV and hold on each face until the column displays an “ok”.

5. Once all of the columns say “ok” you will type a “y” into the top bar and press enter. You have successfully calibrated the accelerometer and compass.

Note: Once you have saved the calibration you will see the screen start to stream out the raw information from the sensors.
Step #2 Upload RoboMagellan6x6 Code:

1. Open Arduino> click open> libraries> MINDS-i-Drone> roboMagellan6x6.ino.

2. Make sure you have the correct board (MEGA 2560) and port selected (whatever port says MEGA 2560).

3. Click the upload button. Once the upload is complete disconnect the UGV from the computer.

4. With the USB cable unplugged and the battery disconnected continue to the next step.

Step #3 Connecting to the Dashboard:

First time only:
- Follow the previous setup instructions
- 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.

Each Use:
- Connect the telemetry radio to the computer
- Turn on your drone
- Press refresh in the dashboard window connection tray
- Select the appropriate serial device from the drop-down
- Press connect
- 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 onboard will be loaded so they can be changed in the telemetry window.

Radio Configuration:
- Make sure appropriate drivers are available
- Start the dashboard and open the Configuration window
- Connect the telemetry radio to the dashboard in the configuration window
- Refresh, Select and connect 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 "Import defaults" to automatically configure it for use with MINDS-i drones
- Press "Save Changes", disconnect, and power cycle the telemetry radio
- Remember to update the settings on both the sending and receiving telemetry radios
Step #3 Connecting to the Dashboard:
First time only:
• Follow the previous setup instructions
• 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

Each Use:
• Connect the telemetry radio to the computer
• Turn on your drone
• Press refresh in the dashboard window connection tray
• select the appropriate serial device from the drop-down
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• You should start seeing telemetry from your drone arrive shortly. Waypoints you have
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• Make the changes you want, or press “Import defaults” to automatically configure it for
  use with MINDS-i drones
• Press “Save Changes”, disconnect, and power cycle the telemetry radio
• Remember to update the settings on both the sending and receiving telemetry radios
Servo Reversing (DXe)

1. To enable servo reversing, hold the left and right gimbal sticks in the upper-inside position as shown while powering on the transmitter.

2. After the Transmitter is powered on, release the sticks and return to center. Use the right gimbal to select the channel or reverse the selected channel.

3. The LED will flash corresponding to the channel being adjusted (see chart to right).

4. The LED will Flash Orange for a channel that is set to Normal direction.

5. The LED will flash Red for a channel that is set to Reverse direction.

6. To select a channel to adjust, move the right gimbal to the left or right. Move the gimbal to the right to select the next channel. Move the gimbal to the left to select the previous channel. The number of flashes will change to indicate the new channel selected.

7. To reverse the channel currently selected, move the right gimbal up or down. The LED will change color, from Orange To Red or Red to Orange, to indicate the new servo direction.

8. When all channel reversing is completed as desired, power off the Transmitter.

9. When the Transmitter is powered on again normally (sticks not in the position above) the Transmitter will operate normally with the new reversing selections.

Transmitter and Receiver Binding

1. Lower the throttle to the lowest position and make sure the transmitter is powered off.

2. Insert the bind plug into the BIND/DATA port.

3. Make sure the receiver is connected to the micro controller.

4. Connect the micro controller to the computer with the USB cable. The receiver’s LED will flash rapidly when the receiver is ready to bind.

5. While pressing the Bind button, power on the transmitter.

6. Release the Bind button after the receiver’s LED stays illuminated. This indicates the receiver is bound to the transmitter.

7. Remove the bind plug from the receiver before powering anything off.
Dashboard Features & Functions

Waypoint Panel
Connection Panel
Data Panel
Terminal
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.


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:

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:

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.

Defines how strongly the drone should attempt to return to the original course between waypoints, versus the direct path from its current location to the target.
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:

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

1. The refresh button will repopulate the dropdown 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 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.
- 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.
Connecting to your Drone

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

Each Flight:

- Connect the telemetry radio to the computer
- Turn on your drone
- Press refresh in the dashboard window connection tray
- Select the appropriate serial device from the drop-down
- Press connect
- 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 onboard will be loaded so they can be changed in the telemetry window.

Radio Configuration

- Make sure appropriate drivers are available
- Start the dashboard and open the Configuration window
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- Make the changes you want, or press “Import defaults” to automatically configure it for use with MINDS-i drones
- Press “Save Changes”, disconnect, and power cycle the telemetry radio
- Remember to update the settings on both the sending and receiving telemetry radios
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 inbetween. 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.
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:
mindsirobotics.com

For the most up to date version of the instructions go to:
mindsirobotics.com/instructions