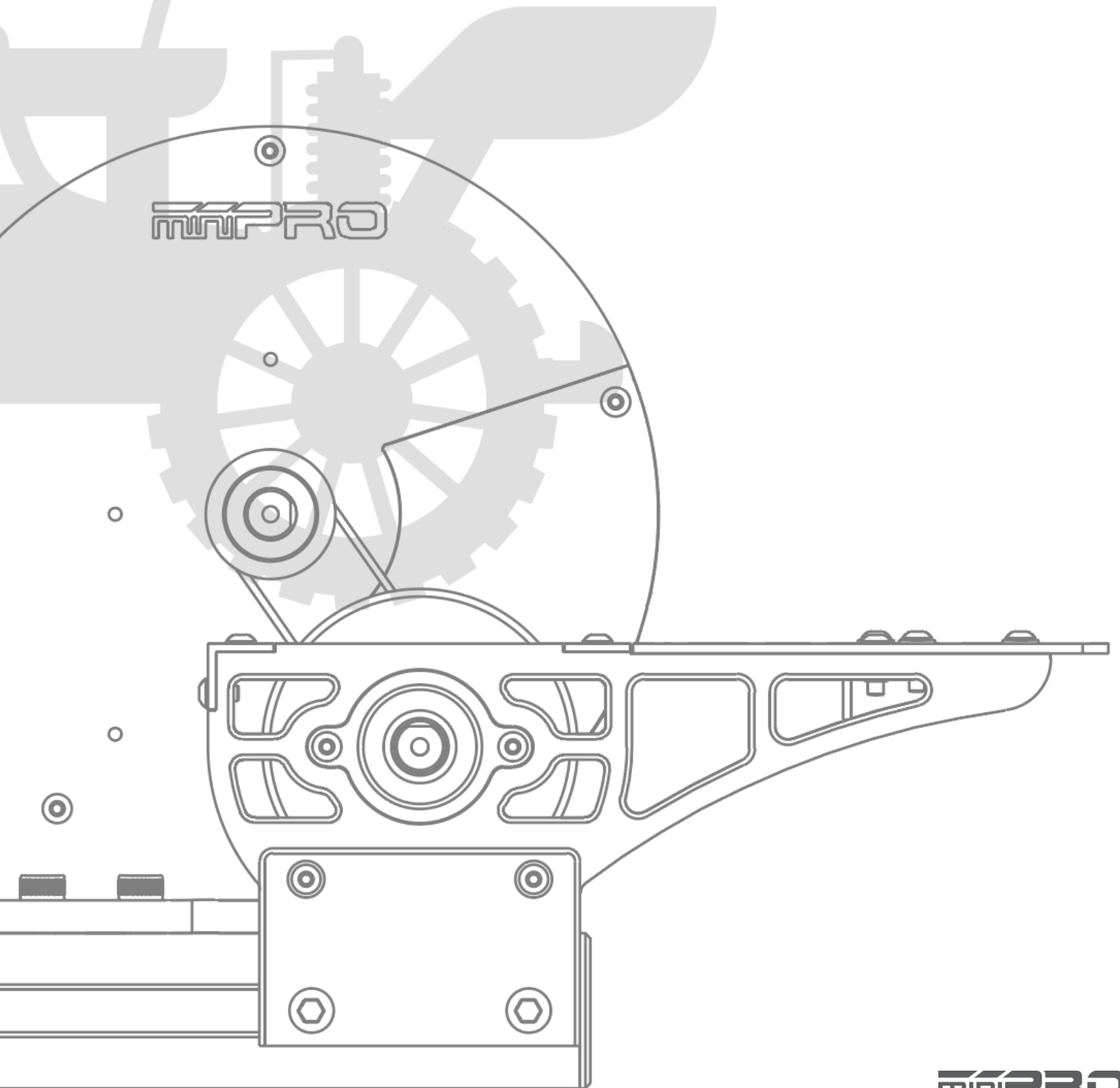


CHASSIS DYNO V2

Instruction Manual

REV1.1



USING THIS GUIDE

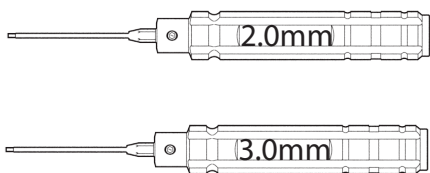
Before Using the Dyno

This dyno is a high-quality analyzing tool intended for persons aged 18 years and older with previous experience building and operating Radio Control vehicles. This is not a toy; it is a precision testing equipment. This dyno is not intended for use by beginners, inexperienced customers, or by children without direct supervision of a responsible, knowledgeable adult. If you do not fulfill these requirements, please return the kit in unused and unassembled form back to the shop where you have purchased it.

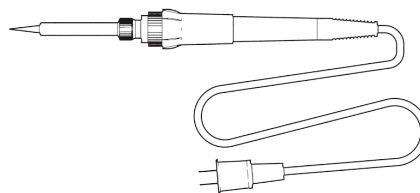
Before building and operating your dyno, YOU MUST read through all of the operating instructions and instruction manual and fully understand them to get the maximum enjoyment and prevent unnecessary damage. Read carefully and fully understand the instructions before beginning assembly. Contents of the box may differ from pictures. In line with our policy of continuous product development, the exact specifications of the dyno may vary without prior notice.

TOOLS REQUIRED

Hex: 2.0mm, 3.0mm

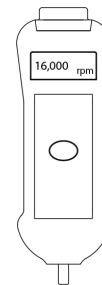


Soldering Iron



* Only for Electric Vehicles

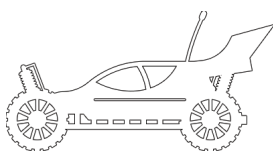
IR Tachometer (Optional)



EQUIPMENT REQUIRED

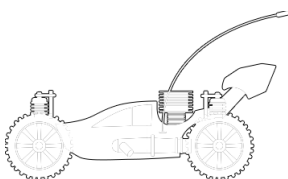
Vehicle

Electric Powered

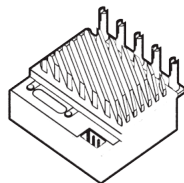


OR

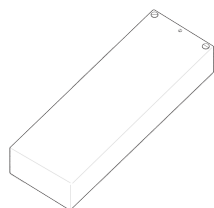
Gas Powered



Electronic Speed Control (ESC)



Battery



* Only for Electric Vehicles

Throttle Controller

R/C Transmitter and Receiver



OR

Servo Tester

OR

ESC Controller Sensor*
(Sold by miniPRO)

* Additional USB port is required.

Windows PC



Operating System: 7, 8, or 10
(1) USB Port for Dyno

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Before Using the Dyno	2
Tools Required.....	2
Equipment Required.....	2
Dyno Feature Highlights.....	6
Assembly Guide	7
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A1 - Voltage & Current Sensor	12
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Software Installation	18
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General Settings	19
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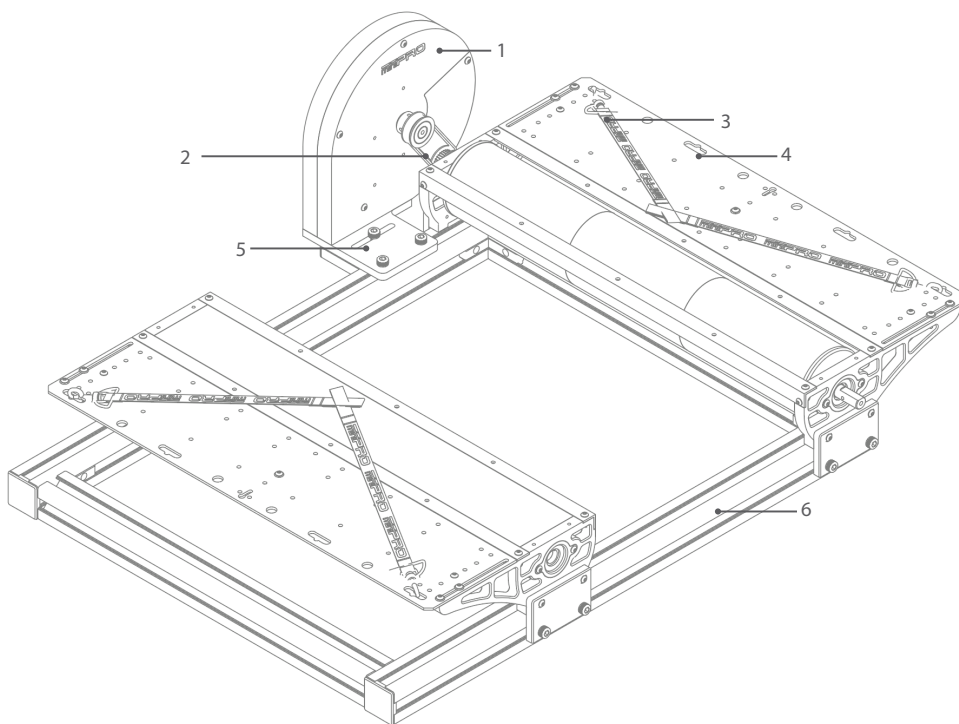
DYNO FEATURE HIGHLIGHTS

This is a universal chassis dynamometer (dyno) that is ready to test gas or electric vehicles out of the box. Featuring an onboard electrical board equipped with an optical rpm sensor that measures motor speeds at up to 50,000 rpm. The board is also equipped with external ports for an external LCD screen, throttle controller, and different types of sensors for measuring voltage, current, and temperature.

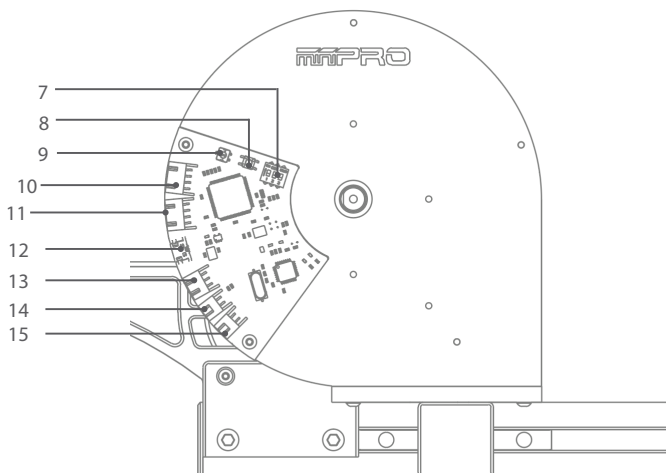
Its adjustable wheelbase and upper deck give the option to test different sizes of vehicles (TC, Truck, Buggies, Motorcycles, etc). A balanced flywheel (inertia mass) is enclosed by a high grade aluminum 6061 cover to provide safety. The flywheel is replaceable, that means you are not limited to the same load when testing your motors.

This dyno is great tool for motor analysis, ESC (boost) adjustment, brushless sensor adjustment, gearing calculation, acceleration testing, kV measuring, voltage drop, current draw, power, and torque output analysis.

1. Flywheel Unit
2. Belt (200T)
3. Belt Straps
4. FR/RR Upper Deck
5. Flywheel Base
6. Extruded Frame



7. RPM sensor calibration
8. Reset
9. Switches
10. LCD Port
11. IR Temp. Sensor Port
12. Micro USB Port
13. Voltage and Current Sensor Port
14. Temp. Port #1
15. Temp. Port #2



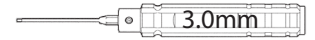
* May not be included in your kit. Please verify the included accessories in your purchased kit.

ASSEMBLY GUIDE

Part I. Frame Assembly

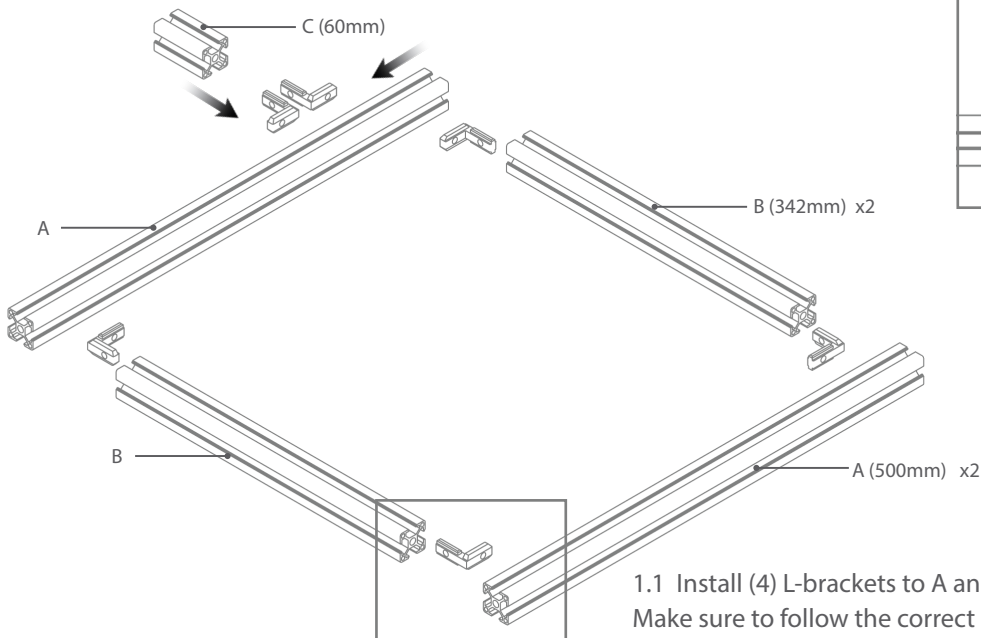
Build Time: 10min

Tools



1 Install L-brackets to the extruded frames

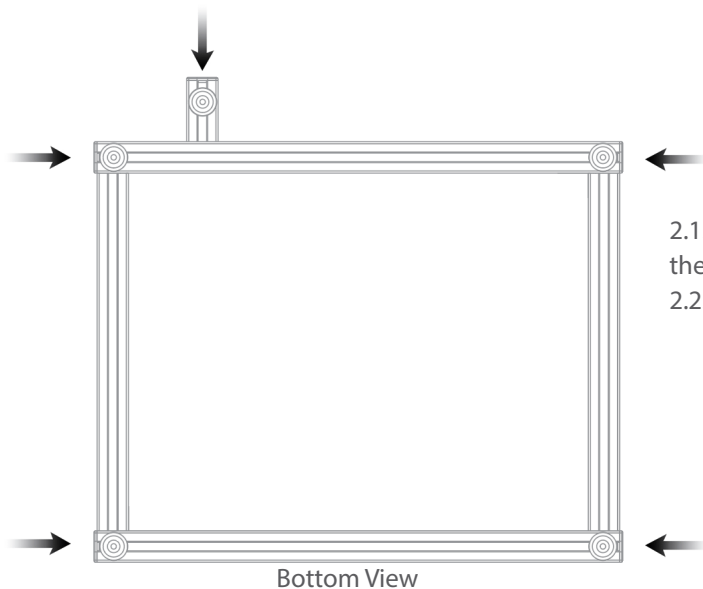
Note: Do not overtighten the screws yet because later it will need adjustment.



1.1 Install (4) L-brackets to A and B extruded frames on all (4) corners. Make sure to follow the correct orientation for each L-bracket. Do not overtighten the screws.

1.2 Install (2) L-brackets to the C extruded frame. Do not overtighten the screws.

2 Install the edge covers and rubber feet



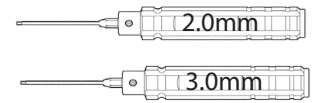
2.1. Install (5) rubber feet with T-nuts at the bottom of the chassis dyno.

2.2. Install the (5) plastic edge covers.

Part II. Roller Holder Assy.

Build Time: 20min

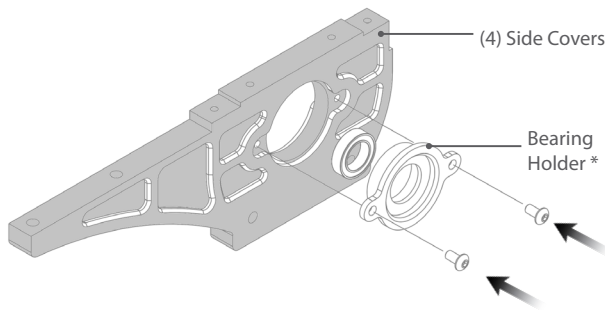
Tools



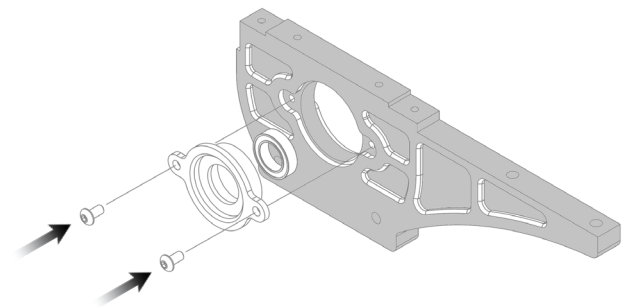
3 Install the bearing holders to the side covers *

Note: Make sure you install (2) left side and (2) right side bearing holders.

(2) Left Side Cover



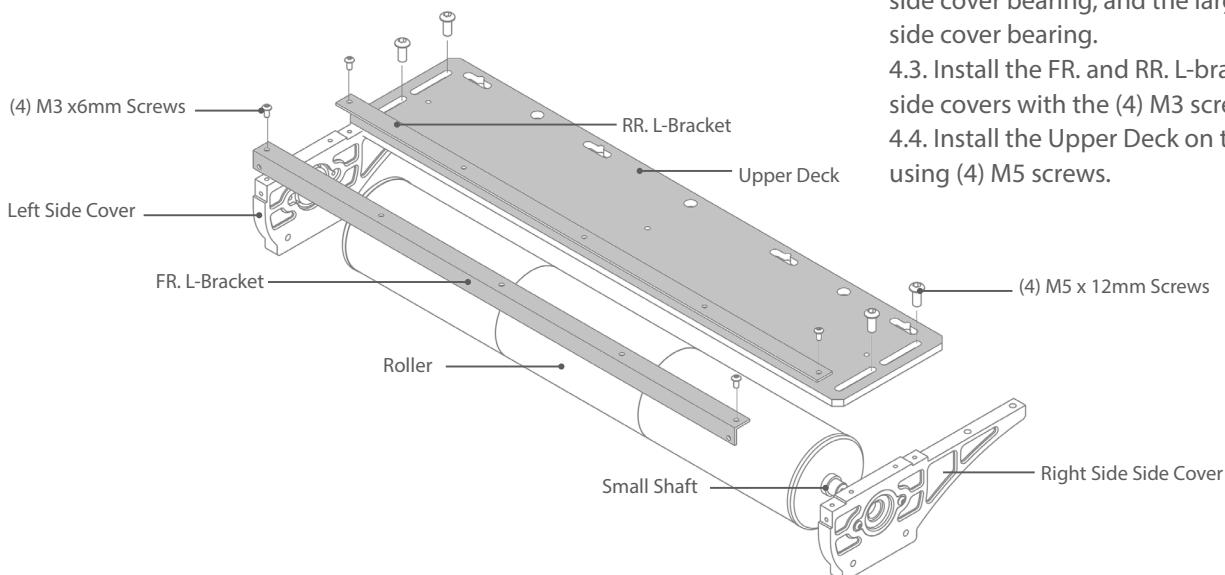
(2) Right Side Cover



- 3.1. Make sure the bearing is installed on the bearing holder.
- 3.2. Install the bearing holder on the Side Cover using (2) M3x6mm hex screws
- 3.3. Repeat the process for the remaining side covers. Make sure you install (2) left side and (2) right side.

4 Install rollers, side covers, upper deck, and L-shape brackets *

Note: Do not overtighten the screws.

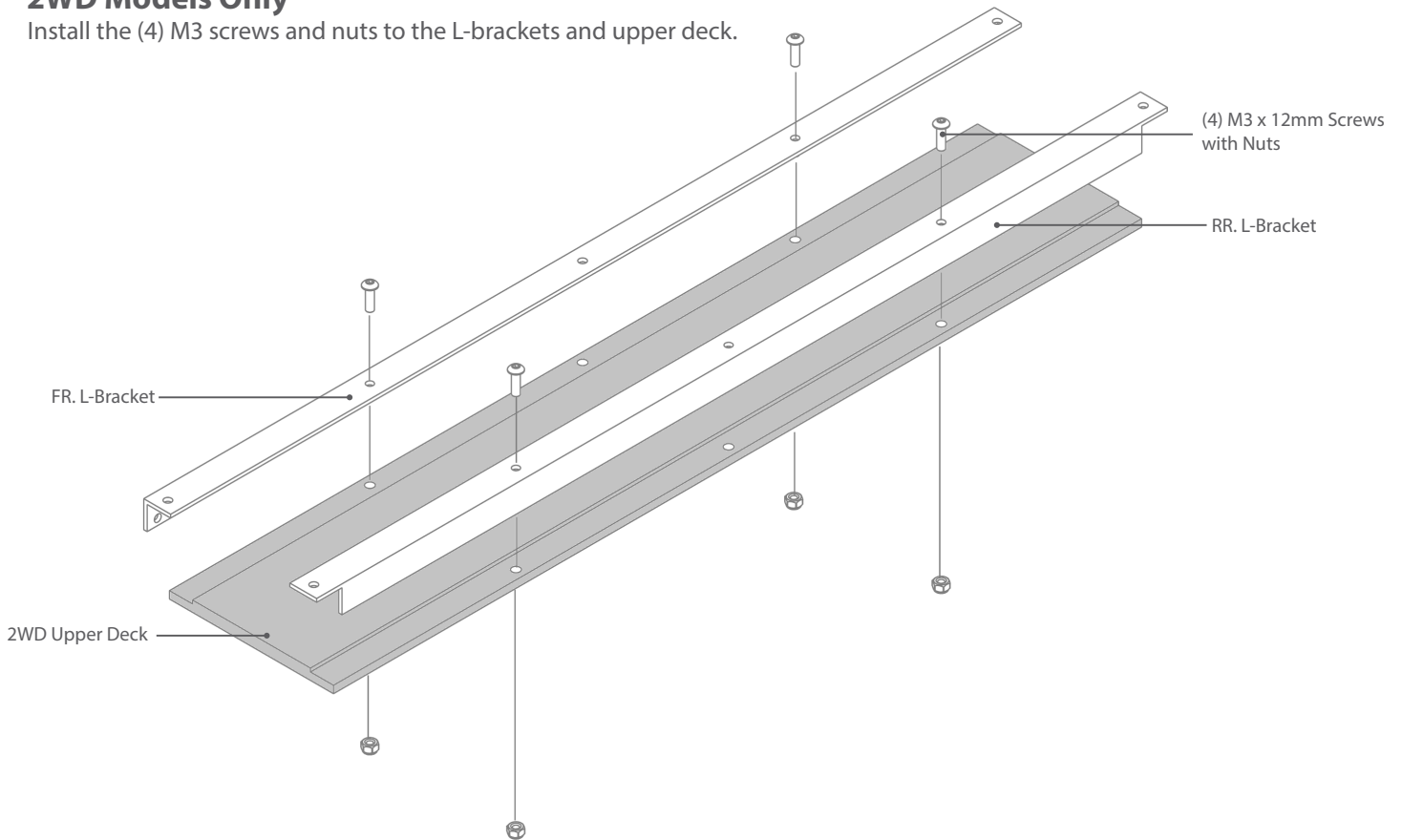


- 4.1. For 2WD Models see page 8 and skip step 4.2.
- 4.2. Insert the roller's smallest shaft on the right side cover bearing, and the larger shaft on the left side cover bearing.
- 4.3. Install the FR. and RR. L-brackets to the both side covers with the (4) M3 screws.
- 4.4. Install the Upper Deck on the side covers using (4) M5 screws.

* For 2WD models, only (2) two bearing holders and (1) one roller are installed.

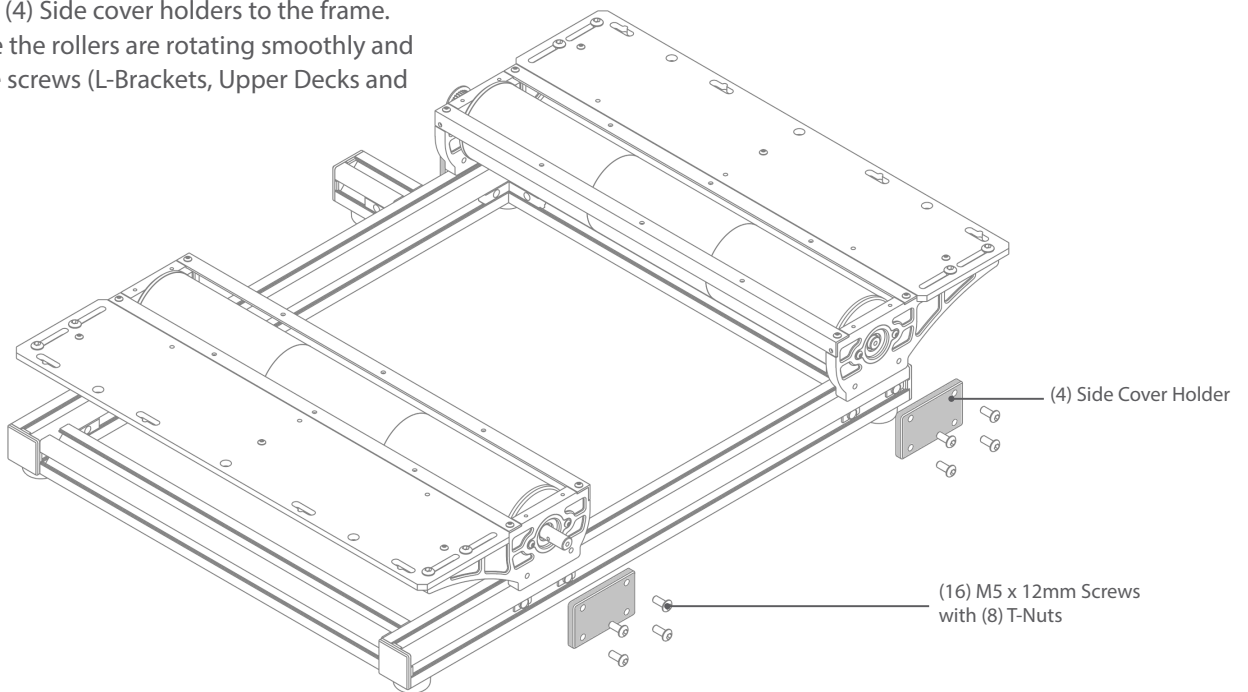
2WD Models Only

Install the (4) M3 screws and nuts to the L-brackets and upper deck.

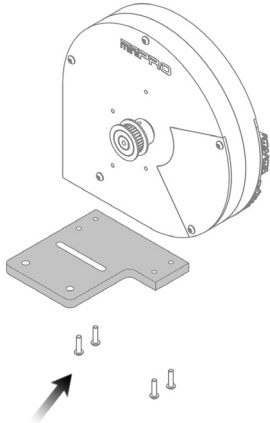


5 Install the Side Cover Holders to the Frame

- 5.1. Install the (4) Side cover holders to the frame.
- 5.2. Make sure the rollers are rotating smoothly and tighten all the screws (L-Brackets, Upper Decks and Frames)



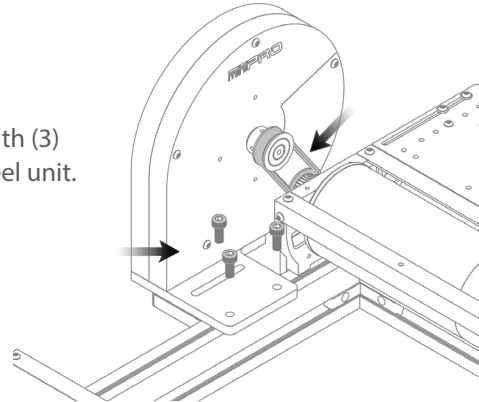
6 Install the Flywheel Base



Install the (4) M3 screws below the flywheel base

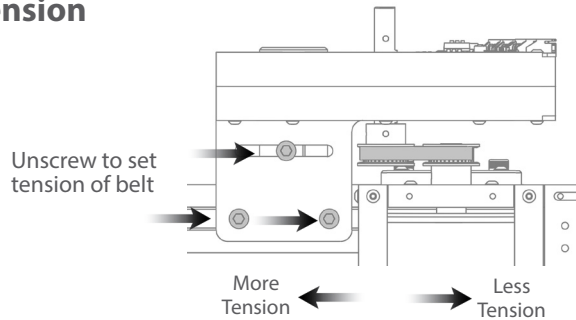
7 Install the Flywheel Assy., Pulley and Belt

Install (4) M5 screws with (3) T-nuts to fix the flywheel unit.



NOTE: If you are using your Motor Dyno Flywheel Assy then you need to remove the belt shield and holder from the dyno.

8 Adjust Belt Tension

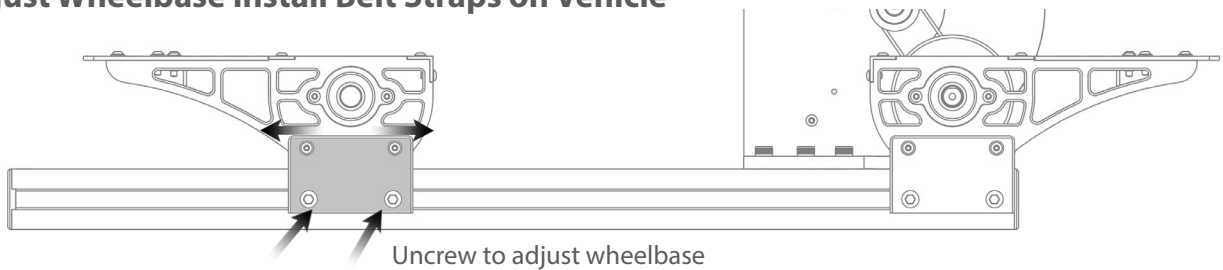


Unscrew to set tension of belt

More Tension ← → Less Tension

NOTE: Make sure you don't apply too much tension (load) to the flywheel unit to damage in the flywheel.

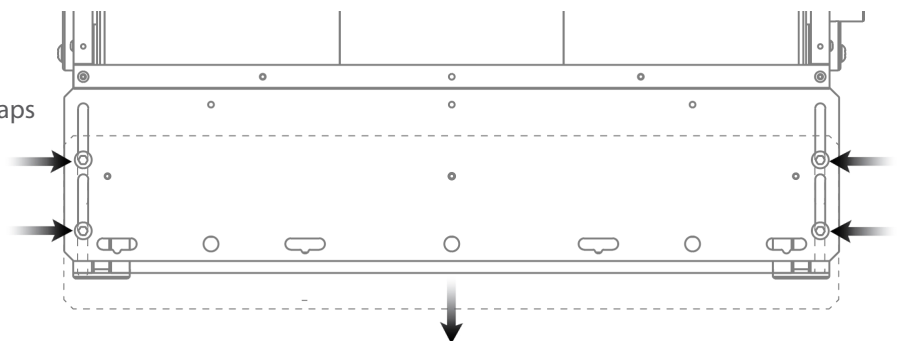
9 Adjust Wheelbase Install Belt Straps on Vehicle



Uncrew to adjust wheelbase

10 Adjust Tension of the Belt Straps

Uncrew to adjust upper deck and tension of the straps



ELECTRONIC CONNECTIONS

MINIPRO H1 Voltage and Current Sensor Connection

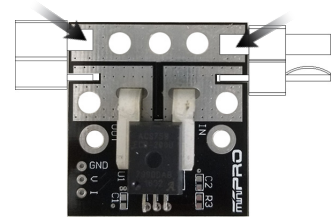
Voltage and Current Sensor Diagram



NOTE: This diagram applies to the 50A, 100A, 150A and 200A sensor.

1

Solder Wires or Connectors



Solder the connectors of your preference OR 14 gauge wires. Try to keep the wires as short as possible to reduce the electrical losses

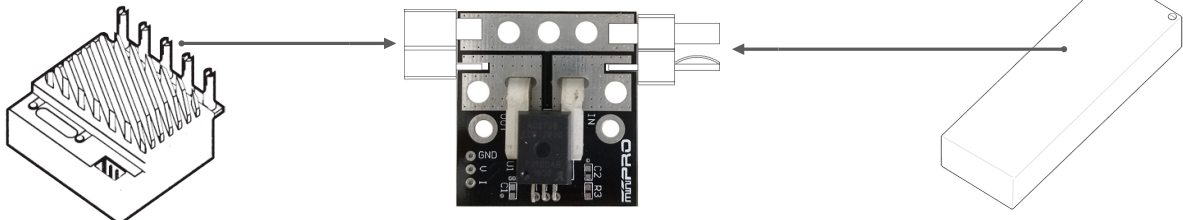
2

Connect Transmitter, Receiver, and ESC to the Motor

Please refer to the ESC, Transmitter, and Receiver manufacturers' instruction manual.

3

Connect Sensor



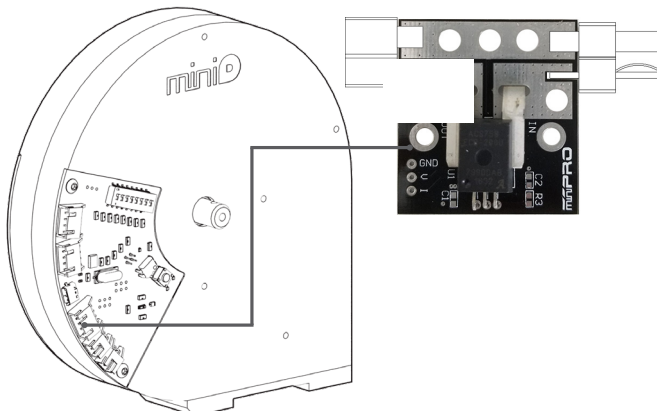
3.1. Connect the ESC's battery port to the sensor's ESC connector. See above sensor diagram for more information.

3.2. Connect the battery to the sensor's battery connector.

3.3. Turn ON the ESC and make sure it powers on. **If the sensor starts to overheat, disconnect the battery immediately.**

4

Connect Sensor to Electronic Board



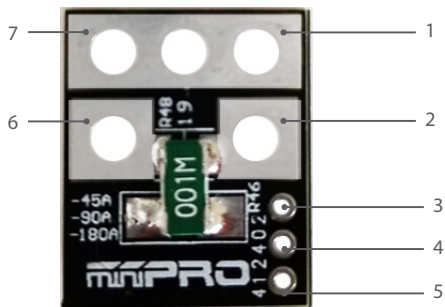
IMPORTANT: You must calibrate the sensor each time the dyno is powered.

Calibration Instructions:

- 4.1. Open the miniPRO for Windows application and connect the dyno to the application.
- 4.2. Connect the power source to the sensor and make sure the ESC is turned off.
- 4.3. Push the reset button from the back of your dyno; and the current should read zero or close.
- 4.4. Power your ESC and you should be ready to start your testing.

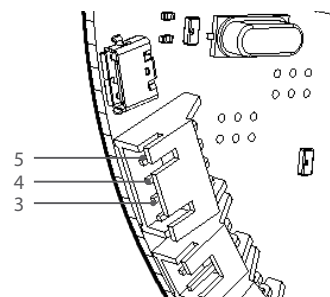
miniPRO A1 Voltage and Current Sensor Connection

Voltage and Current Sensor Diagram

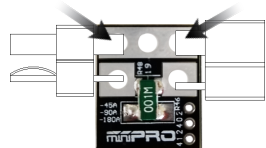


1. (-) ESC Conn. (Black)
2. (+) ESC Conn. (Red)
3. Electronic Board Conn. - Current
4. Electronic Board Conn. - Voltage
5. Electronic Board Conn. - Ground
6. (+) Battery Conn. (Red)
7. (-) Battery Conn. (Black)

Voltage and Current Board Diagram



1 Solder Connector

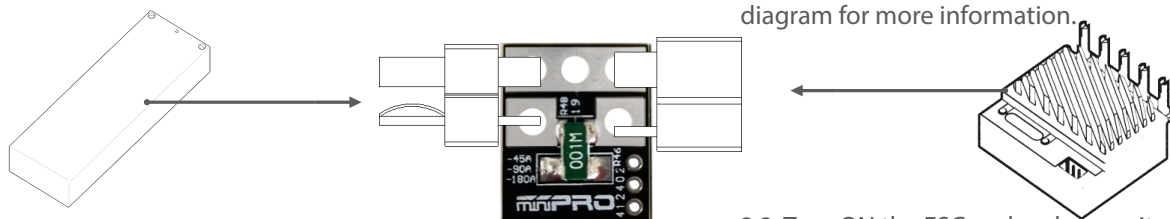


Solder connectors of your preference
OR 14 gauge wires

2 Connect Transmitter, Receiver, and ESC to the Motor

Please refer to the ESC, Transmitter, and Receiver manufacturers' instruction manual.

3 Connect Sensor

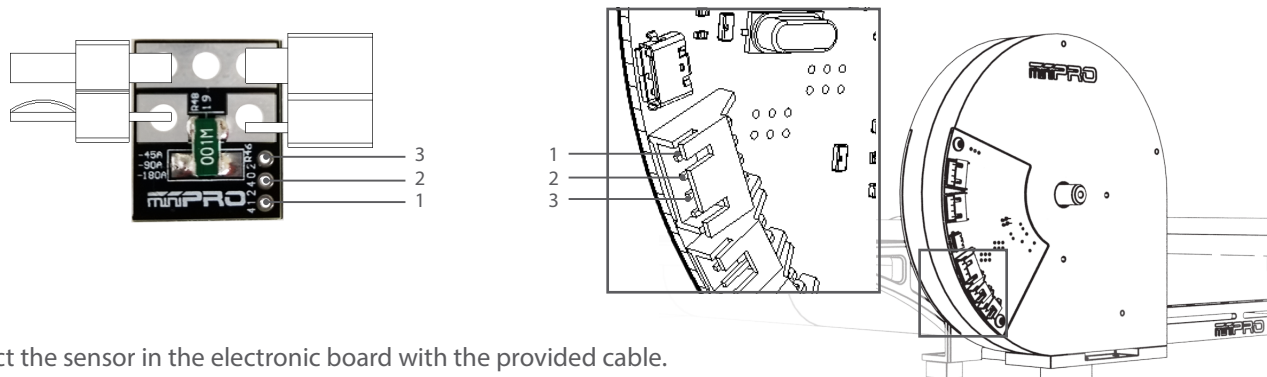


3.1. Connect the battery to the sensor's battery connector.

3.2. Connect the ESC's battery port to the sensor's ESC connector. See above sensor diagram for more information.

3.3. Turn ON the ESC and make sure it powers on. **If the sensor starts to overheat, disconnect the battery immediately.**

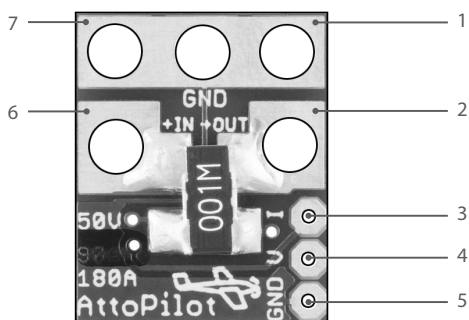
4 Connect Sensor to Electronic Board



Connect the sensor in the electronic board with the provided cable.

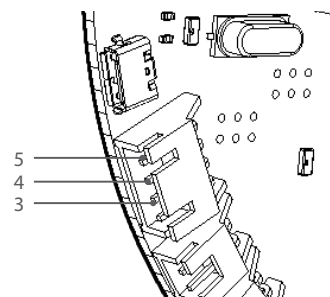
Attopilot Voltage and Current Sensor Connection

Voltage and Current Sensor Diagram

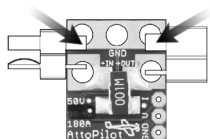


1. (-) ESC Conn. (Black)
2. (+) ESC Conn. (Red)
3. Electronic Board Conn. - Current
4. Electronic Board Conn. - Voltage
5. Electronic Board Conn. - Ground
6. (+) Battery Conn. (Red)
7. (-) Battery Conn. (Black)

Voltage and Current Board Diagram



1 Solder Connector

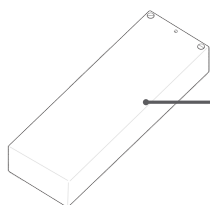


Solder connectors of your preference
OR 14 gauge wires

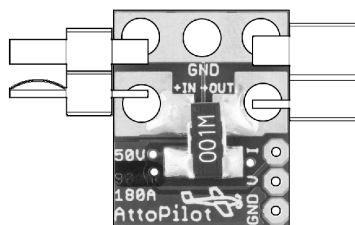
2 Connect Transmitter, Receiver, and ESC to the Motor

Please refer to the ESC, Transmitter, and Receiver manufacturers' instruction manual.

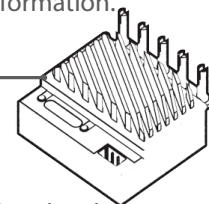
3 Connect Sensor



3.1. Connect the battery to the sensor's battery connector.

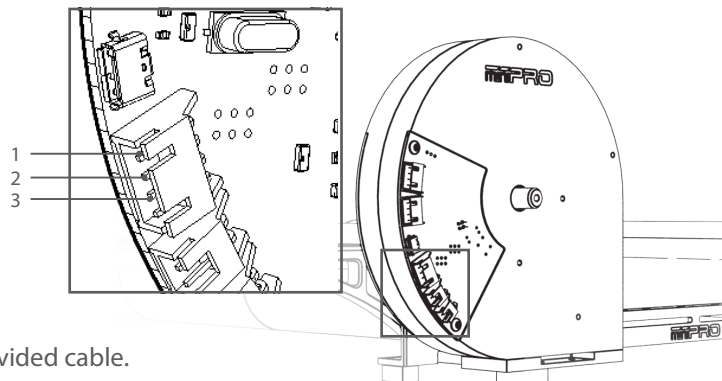
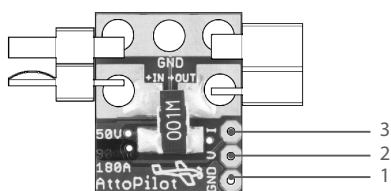


3.2. Connect the ESC's battery port to the sensor's ESC connector. See above sensor diagram for more information.



3.3. Turn ON the ESC and make sure it powers on. **If the sensor starts to overheat, disconnect the battery immediately.**

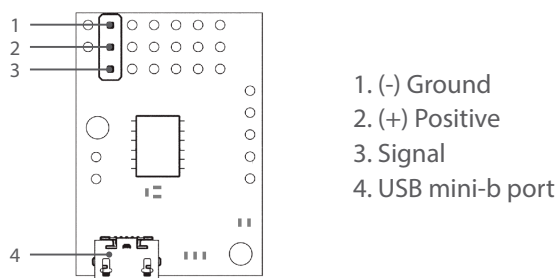
4 Connect Sensor to Electronic Board



Connect the sensor in the electronic board with the provided cable.

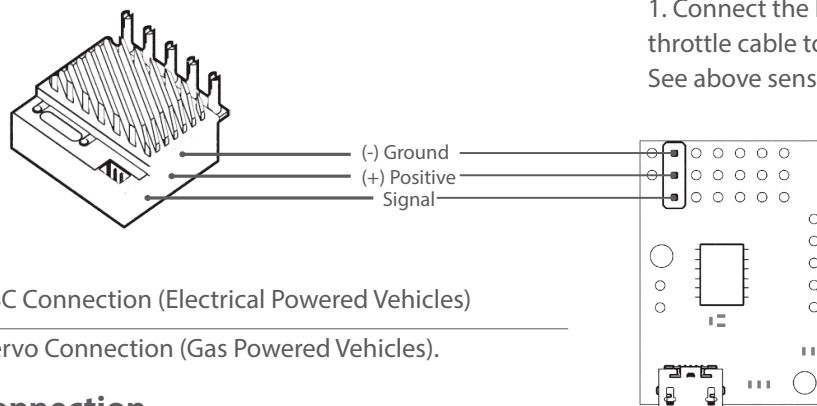
Throttle Controller Sensor Connection

ESC/Servo Controller Diagram



NOTE: This sensor its already been pre-programed to be used with the dyno.

1 ESC Connection

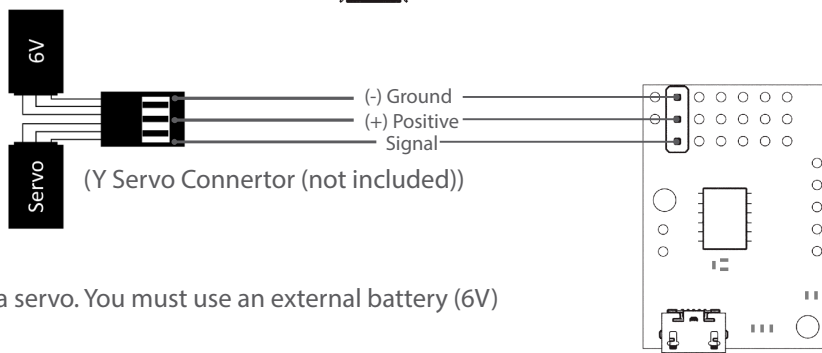
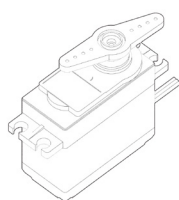


OR

ESC Connection (Electrical Powered Vehicles)

Servo Connection (Gas Powered Vehicles).

Servo Connection



NOTE: The throttle sensor can not power a servo. You must use an external battery (6V) to use the servo.

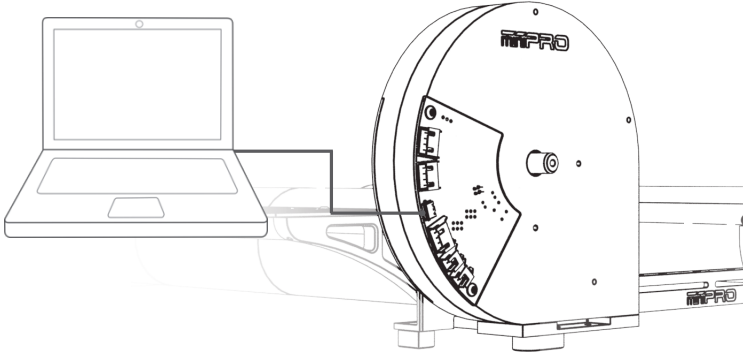
2 Connect the Controller Board to PC

NOTE: To install driver, please refer to page 14 of this manual.

DRIVER INSTALLATION

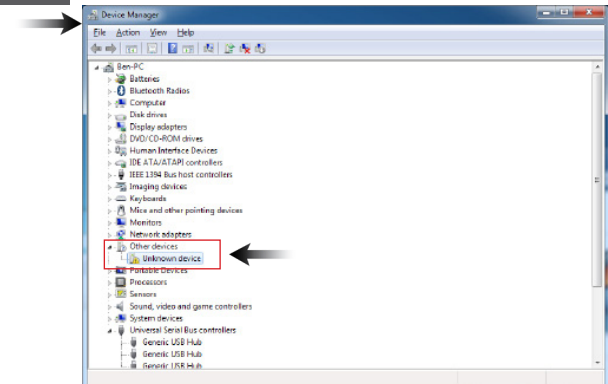
Electronic Board Driver Installation for Windows 7 and 8

1 Download the driver, and connect the dyno to the pc using the micro-b USB cable.



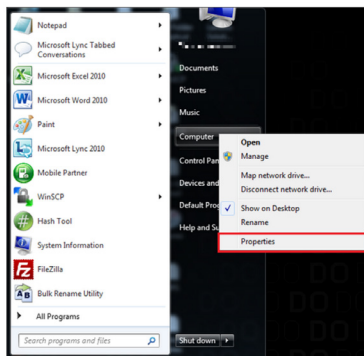
Go to --><https://support.minipro.com/095696-Drivers> and download the latest driver and extract the driver to a new folder.

2 Open the "Device Manager"



NOTE: When you plug the dyno, a new communication port should appear when the driver was installed successfully.

3 To open the "Device Manager"



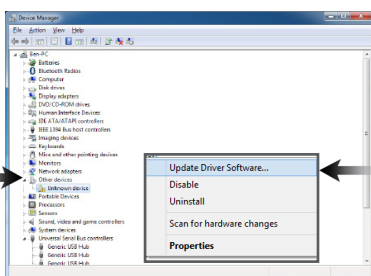
3.1. Go to --> right-click on Computer.

Click Properties

3.2. In the Properties window, click on Device Manager.



4 Select "Other Devices" and right click "Unknown device" and then select "Update Driver Software"



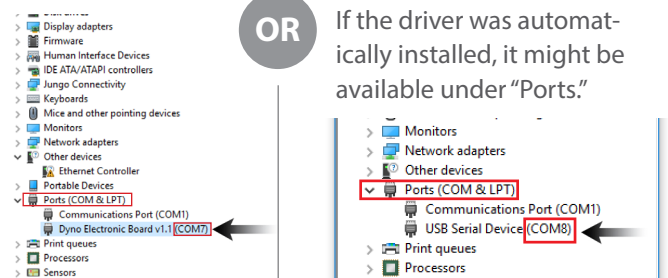
4.1. Select "Browse my computer..."

4.2. Select "Let me pick from a list."

4.3. Select "Have a disk" and locate the driver that was saved earlier.

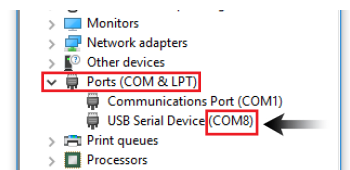
Note: If "Other devices" is not available, then check the USB connection, or otherwise, It might be possible that the driver was already been installed by windows.

5 Take note of the new communication port created by the electronic board driver.



OR

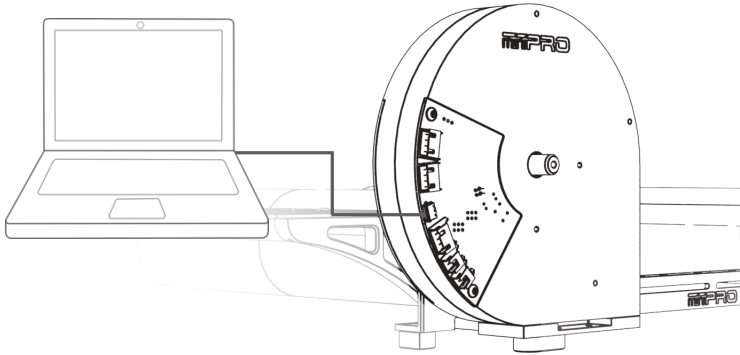
If the driver was automatically installed, it might be available under "Ports."



NOTE: The communication port is required to run the dyno. Above port number may differ from your pc.

Electronic Board Driver Installation for Windows 10

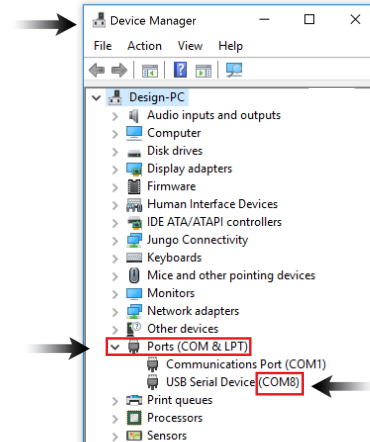
1 Connect the dyno to the pc using the micro-b USB cable.



Go to --><https://support.minipro.com/095696-Drivers> and download the latest driver and extract the driver to a new folder.

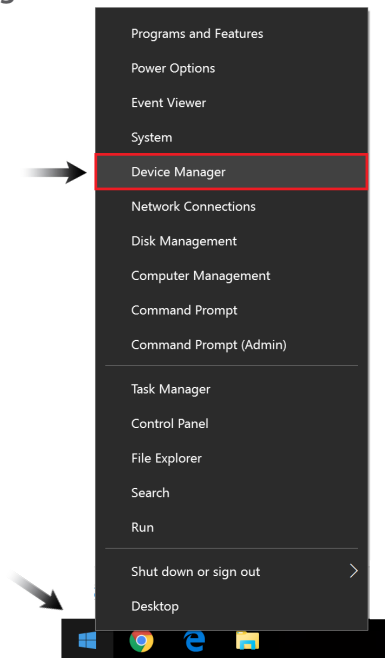
NOTE: The electronic board driver is installed automatically by Windows 10; however, you must update the driver..

2 Verify the driver was automatically installed by opening the “Device Manager.”

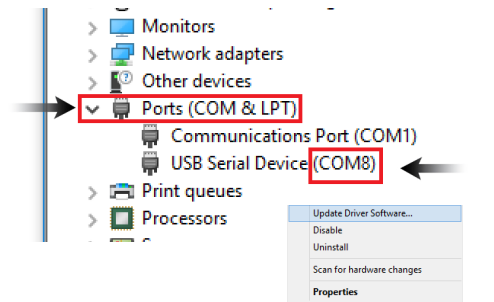


NOTE: When you plug the dyno, a new communication port should appear when the driver was installed successfully.

3 To open the device manager, right-click on the Windows Start Button, and click “Device Manager”



4 Take note of the new communication port created by the electronic board driver.



4.1. Right Click and select “Update Driver Software”

4.2 Select “Browse my computer...”

4.3. Select “Let me pick from a list..”

4.4. Select “Have a disk” and locate the driver that was saved earlier.

NOTE: The communication port is required to run the dyno. Above port number may differ from your pc.

ESC Controller Sensor Driver Installation

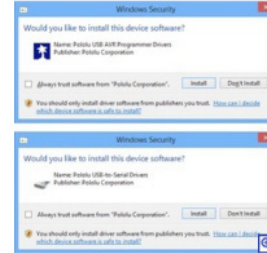
1 Connect the sensor to the pc using the mini-b USB cable.



Go to --><https://support.minipro.com/095696-Drivers>
Download the latest driver and extract the driver to a new folder.

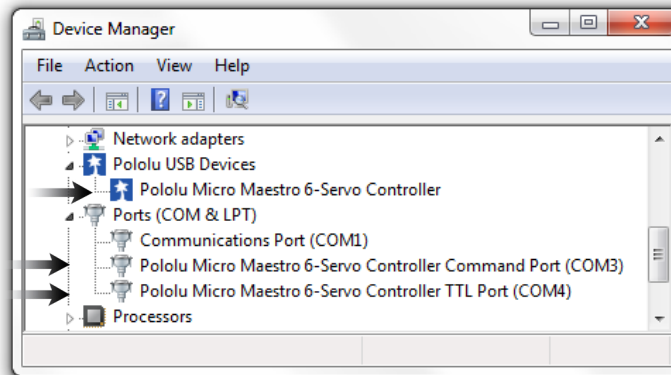
2 Run setup.exe.

The installer will guide you through the steps required to install the sensor.



During the installation, Windows will ask you if you want to install the drivers. Click "Install" (Windows Vista, Windows 7, and later).

3 After installing the drivers and plugging the ESC Controller Sensor in via USB, if you go to your computer's Device Manager, you should see three entries for the Sensor that look like what is shown below:



NOTE: After you completed a pololu driver installation, the two COM ports might not rename automatically. You must right click the COM port and select "Update Driver" on each one, or the sensor won't work properly.

4 Done!

If you have any questions, please go to support.miniprousa.com and submit a ticket.

SOFTWARE INSTALLATION

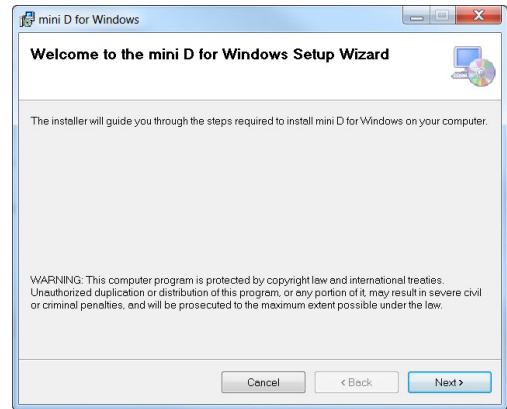
Install the Software

1 Download Software

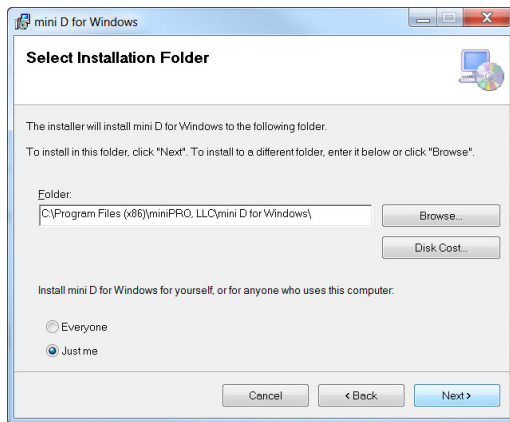
Go to--> <https://support.minipro.com/153753-Dyno-Softwares>

Next, download the latest software and start the installation.

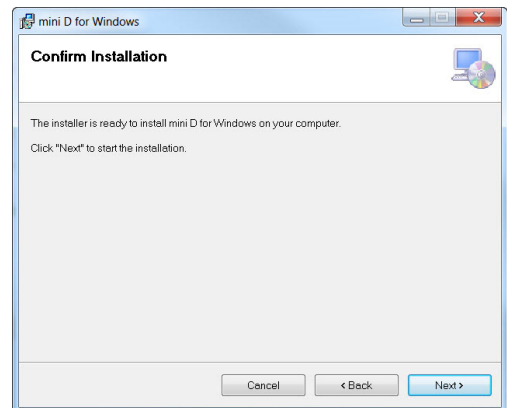
2 Read the Warning Notes and click "Next" if you agree.



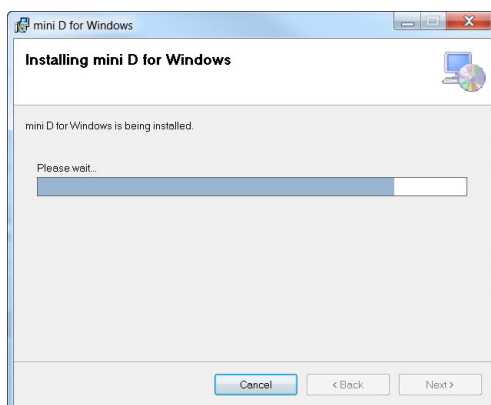
3 Select the location folder where "mini D" will be installed, and then select the person who can use the application. Click "Next."



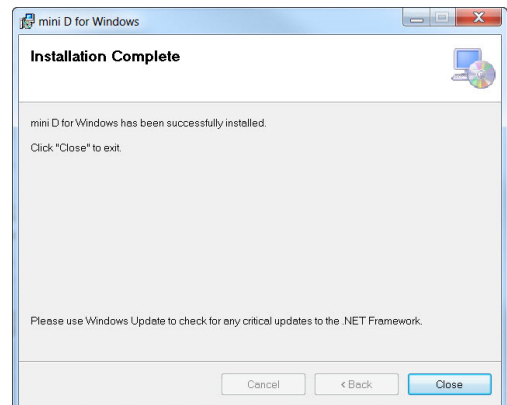
4 Confirm that you want to install "mini D" on your computer, and click "Next" to continue.



5 Wait a few minutes while "mini D" installs on your computer.



6 When installation finishes, click "Close" and you have successfully installed "Mini D" for Windows.



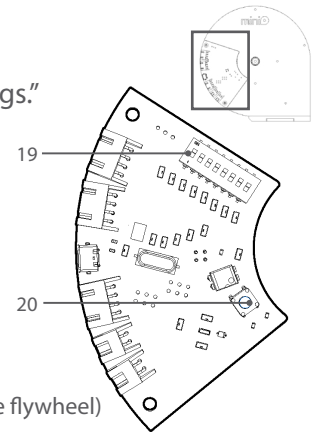
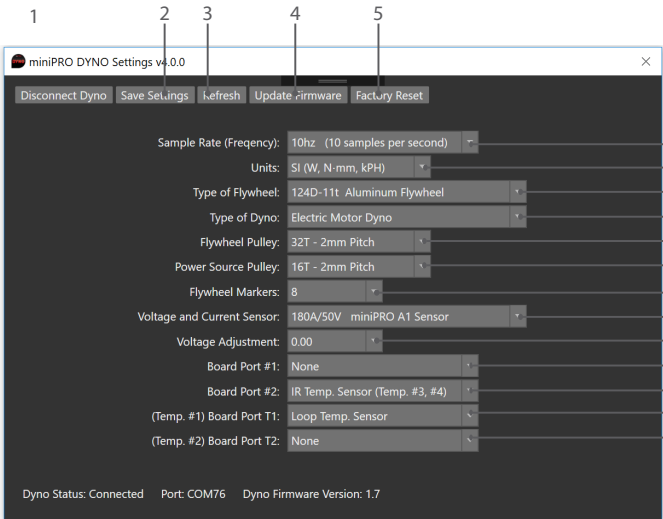
DYNO SETUP

General Settings for Dyno Board

To access the settings of your dyno, you must open the main application and select "Dyno Settings."

1. Connect/Disconnect the dyno to setup mode
2. Save the settings of your dyno
3. Refresh (re-load) the settings of your dyno
4. Update Firmware Icon

5. Factory reset your dyno settings
6. Set sample rate (Frequency)
7. Set the units of your dyno
8. Set the type of flywheel
9. Set the type of dyno
10. Set the flywheel pulley
11. Set the motor pulley (power source)
12. Number of flywheel markers (black tape on the flywheel)
13. Set the current sensor used
14. Voltage Adjustment
15. Port #1: for LCD
16. Port #2: for IR Temp.
17. Port T1: for Loop Temp. Sensor (Temp #1)
18. Port T2: for Loop Temp. Sensor (Temp #2)
19. Setting Switches
20. Reset Button

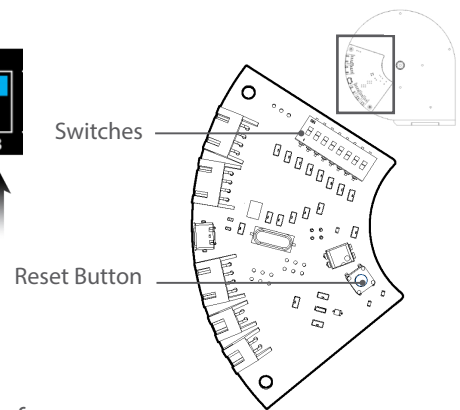
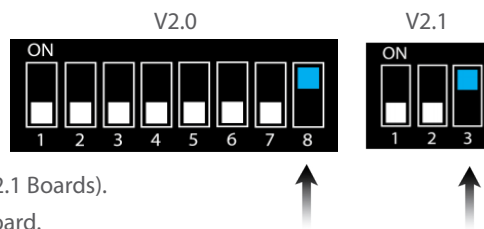


Electronic Board

SETUP MODE

1 Enter Setup Mode

- 1.1. Open the main application
- 1.2. Select "Connect Dyno"
- 1.3. Change *only* Switch #8 to ON (Pin #3 for v2.1 Boards).
- 1.4. Press the Reset button 1-2 times on the board.
- 1.5. The Settings application should load automatically.
- 1.6. (Optional) If the settings application did not load automatically, select "Dyno Settings" and follow the screen instructions.

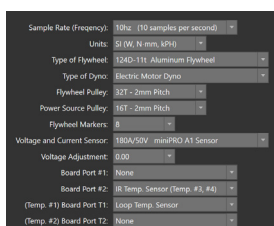


Electronic Board

NOTE: Make sure you have firmware v1.7 or later, and installed the latest application of miniPRO Dyno before you continue.

3 Change your Settings

- 3.1. Select your desired settings
- 3.2. Select "Save" to complete your settings.



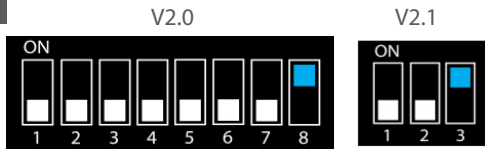
4 Change your Switches

- 4.1. When finished, select "Disconnect."
- 4.2. Change *only* Switch #8 to OFF.
- 4.3. Close the Settings Application.
- 4.4. Done! The main application should load automatically.

FIRMWARE UPDATE

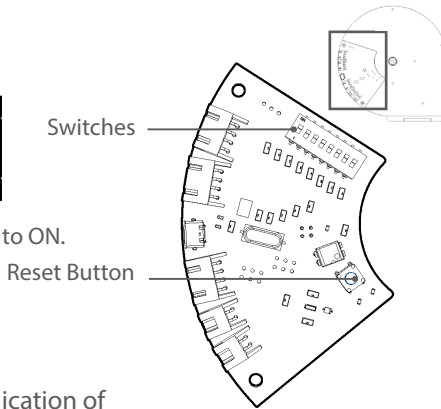
General Guide for Dyno Board

1 Enter Setup Mode



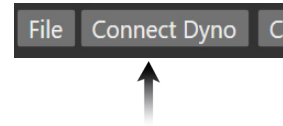
- 1.1. Change *only* Switch #8 (Pin#3 for v2.1 Boards) to ON.
- 1.2. Press the Reset button on the board.
- 1.3. Open miniPRO Application.
- 1.4. Select "Dyno Settings"

NOTE: Make sure you installed the latest application of miniPRO Dyno before you continue.



Electronic Board

2 Establish a Connection



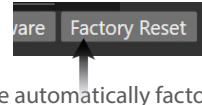
NOTE: Make sure *only* Switch #8 is ON.

3 Update the Firmware of your electronic



- 3.1. Select "Update Firmware."
- 3.2. Locate the latest firmware you like to install.
- 3.3. Select "OK" to continue with the update.
- 3.4. Select "OK" after the update is completed.
- 3.5. A Factory reset must start automatically.
- 3.6. Modify your dyno settings.
- 3.7. Select "Save" to complete your settings.
- 3.8. Select "Disconnect."
- 3.9. Change *only* Switch #8 to OFF, press the reset button and close the application.

4 Perform a Factory Reset



- 4.1. If the automatically factory reset from step 3.5 worked; then go to step no. 5.
- 4.2. Select "Factory Reset."
- 4.3. Select "OK" to continue.
- 4.4. Select "OK" to after factory reset is completed.
- 4.5. Modify your dyno settings.
- 4.6. Select "Save" to complete your settings.
- 4.7. Select "Disconnect."
- 4.8. Change *only* Switch #8 to OFF, press the reset button and close the application.

NOTE: Make sure *only* Switch #8 is ON; otherwise, the factory reset will not be successful.

5 Done!

If you have any questions, please open a support ticket in support.miniprousa.com.

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