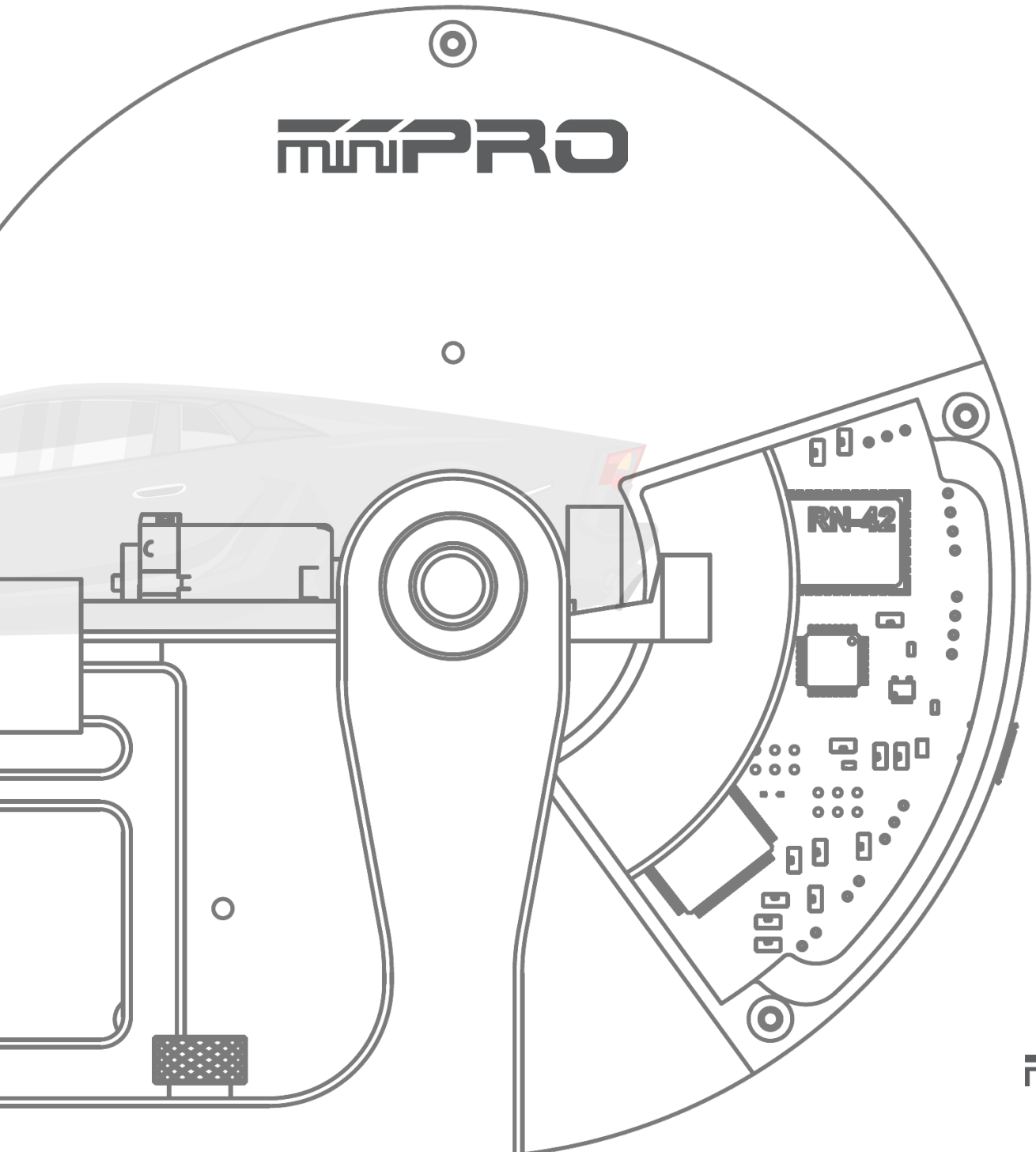
SLOT CAR DYNO

Instruction Manual

V1.2



USING THIS GUIDE

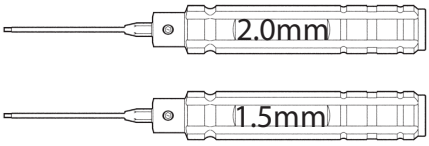
Before Using the Dyno

This dyno is a high-quality motor analyzing tool intended for persons aged 18 years and older with previous experience building and operating RC cars, boats, airplanes, and drones. 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.

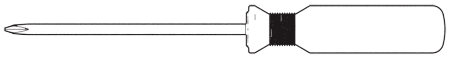
Before building and operating your dyno, YOU MUST read through all of the operating instructions and instruction manual and fully understand them to get the maximum enjoyment and prevent unnecessary damage. Read carefully and fully understand the instructions before beginning assembly. Contents of the 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

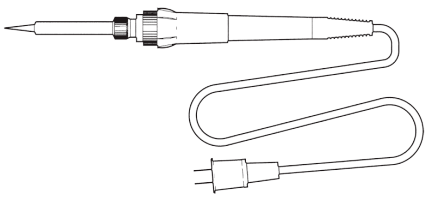
Allen: 1.5mm, 2.0mm



Phillip Screw Driver

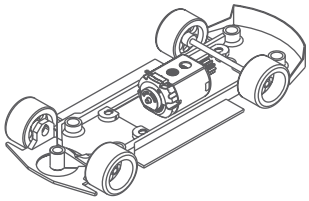


Soldering Iron

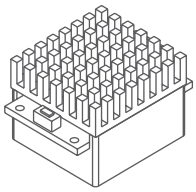


EQUIPMENT REQUIRED

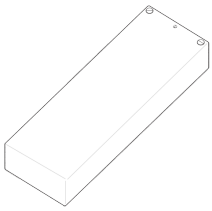
Slot Car



Electronic Speed Control (ESC)

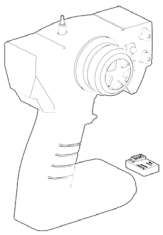


Battery or Power Supply (12V Max)



Throttle Controller

Manual Transmitter



OR

Servo Tester

OR

ESC Controller Sensor*
(Sold by miniPRO)

Windows PC

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

CONTENTS

CONTENTS

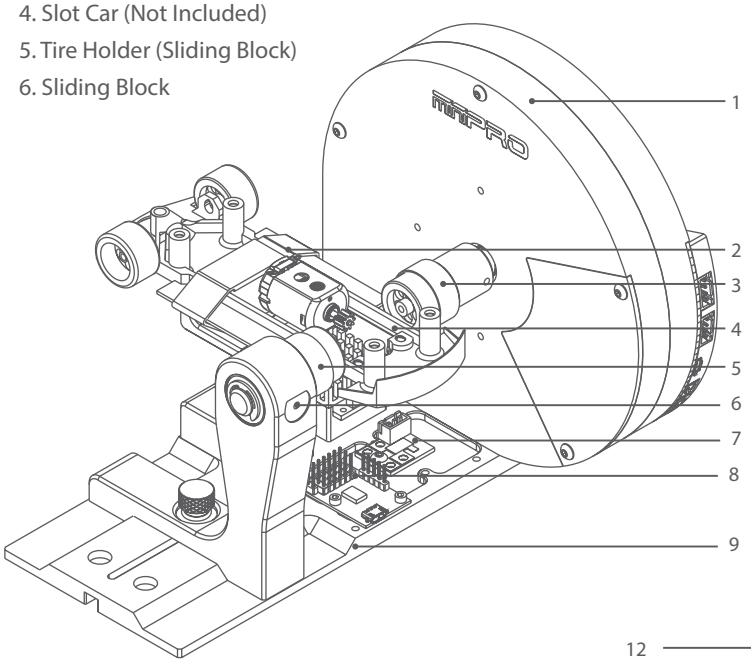
DYNO FEATURE HIGHLIGHTS

This is a slot car inertia dynamometer (dyno) that is ready to test electric slot cars out of the box. Featuring an onboard electrical board equipped with an optical rpm sensor that measures motor speeds at up to 100,000 rpm. The board is also equipped with auxiliary ports for an external LCD screen, throttle controller, and different types of sensors for measuring voltage, current, and temperature.

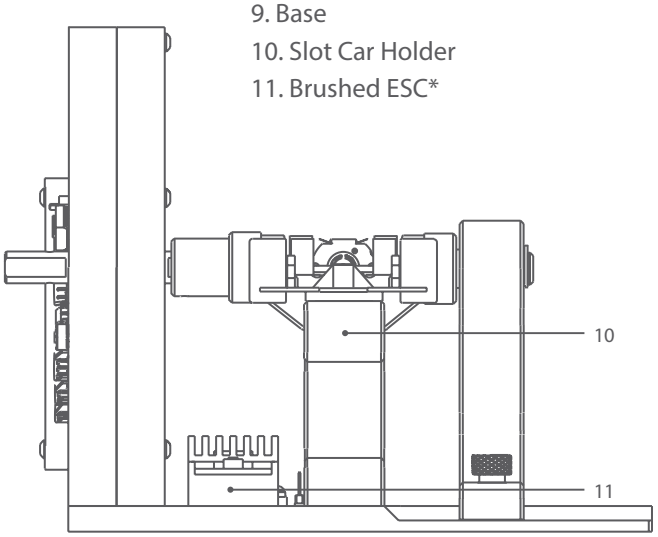
A balanced flywheel (inertia mass) is enclosed by a high grade aluminum 6061 cover to provide safety. The flywheel is replaceable, that means you are not limited to the same load when testing your motors.

This dyno is great tool for motor analysis, gearing calculation, acceleration testing, kV/rpm measuring, voltage drop, current draw, power, and torque output analysis.

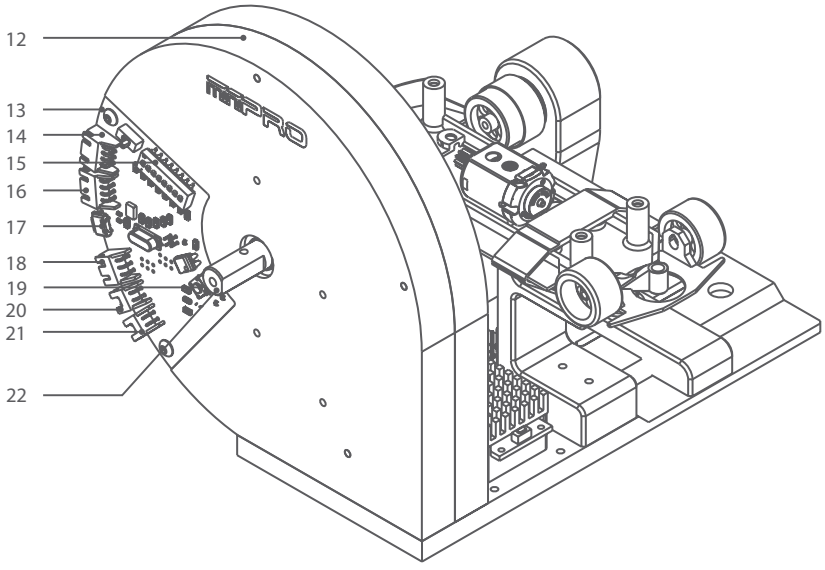
1. Font Flywheel Cover
2. Velcro Strap
3. Tire Holder (Flywheel)
4. Slot Car (Not Included)
5. Tire Holder (Sliding Block)
6. Sliding Block



7. Voltage/Current Sensor*
8. Th. Controller Sensor*
9. Base
10. Slot Car Holder
11. Brushed ESC*



12. Rear Cover
13. Electronic Board
14. Auxiliary Port#1
15. Switches
16. Auxiliary Port#2
17. Micro USB Port
18. Voltage and Current Port
19. Reset Button
20. Temp. Port #1
21. Temp. Port #2
22. Flywheel

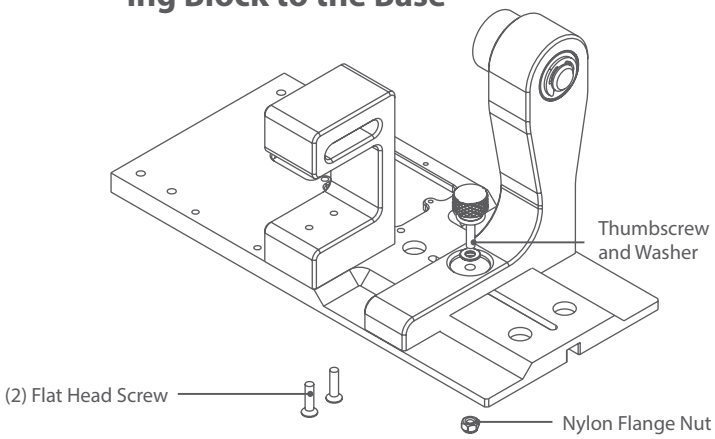


* May not be included in your kit. Please verify the included content in your purchased kit.

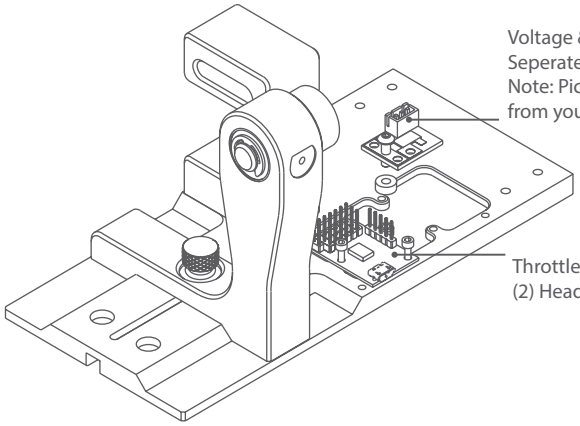
ASSEMBLE THE DYNO

The dyno its already been pre-assembled. All you need to do is install the flywheel unit, base plate, sliding block, slot holder and electronics.

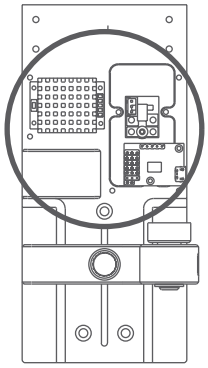
1 Screw on the Slot Car Holder and Sliding Block to the Base



2 Screw on the Sensors

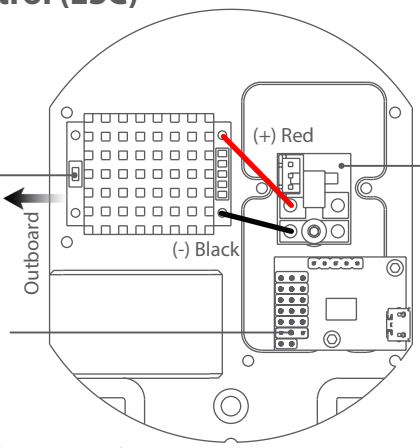


3 Install the Electronic Speed Control (ESC)

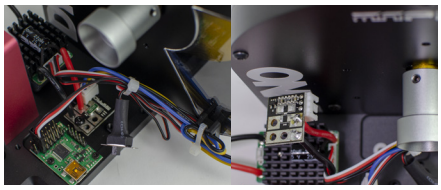


3.1. Make sure the orientation of the ESC matches this diagram (Push Buton is outboard) and use the provided double sided tape to fix ESC on the base once you finish with the soldering.

3.2. Connect the ESC to the Throttle Controller Sensor.



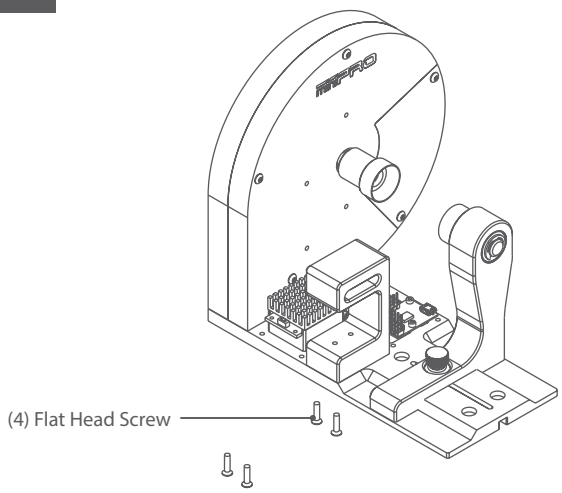
3. 3. Voltage & Current Sensor (Sold Seperately). See Page 8 for Voltage & Current Sensor Installation



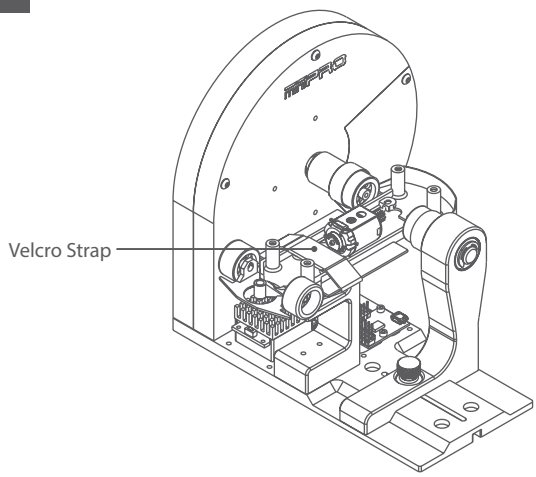
Reference Installation Pictures

NOTE: Please review Electronic Connection Pages for more information

4 Install the Flywheel Unit



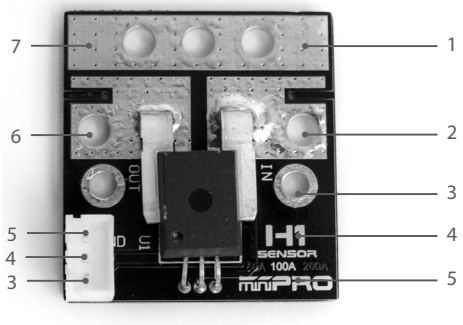
5 Install the Slot Car and Start Testing!



ELECTRONIC CONNECTIONS

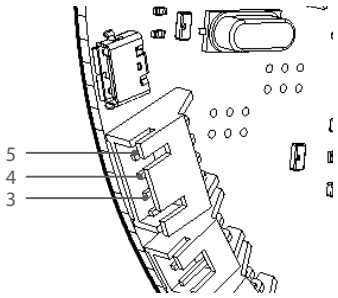
MINIPRO H1 Voltage and Current Sensor Connection

Voltage and Current Sensor Diagram

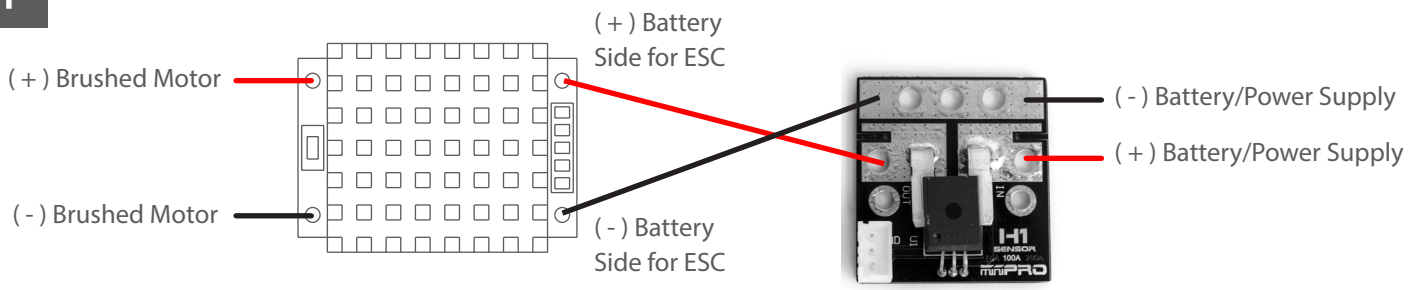


1. (+) Battery Conn. (Red)
2. (+) Battery Conn. (Red)
3. Electronic Board Conn. - Current
4. Electronic Board Conn. - Voltage
5. Electronic Board Conn. - Ground
6. (+) ESC Conn. (Red)
7. (-) ESC Conn. (Black)

Voltage and Current Board Diagram



1 Soldering the Sensor



1.1. Solder the H1 Sensor using the diagram above.

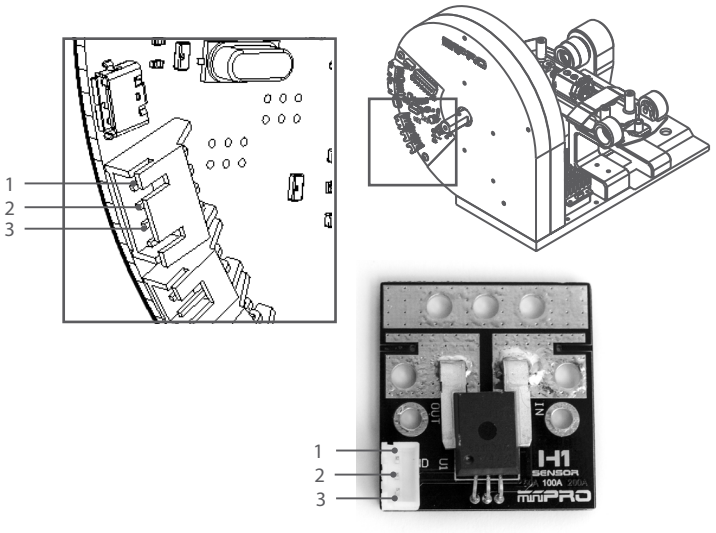
1.2. Connect the ESC to a battery or power supply (5-V to 12V Max) and turn-on the ESC. An LED should be on. If an LED is not on, then please check your soldering connection between the H1 Sensor and the ESC.

1.3. Turn Off ESC and disconnect the power source from the H1 Sensor

2 Connect Sensor to Electronic Board

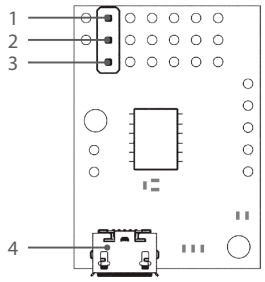
IMPORTANT: You must calibrate the sensor each time the dyno is powered.

Calibration Instructions:
2.1. Open the MINIPRO for Windows application and connect the dyno to the application.
2.2. Connect the power source to the sensor and make sure the ESC is turned off.
2.3. Push the reset button from the back of your dyno; and the current should read zero or close to zero.
2.4. Power your ESC and you should be ready to start your testing.



ESC Controller Sensor Connection

ESC Controller Diagram



1. (-) Ground
2. (+) Positive
3. Signal
4. USB mini-b port

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

1 Connect the Throttle Controller Sensor to the ESC

1.2. Connect the sensor to the PC with a mini-b USB cable.

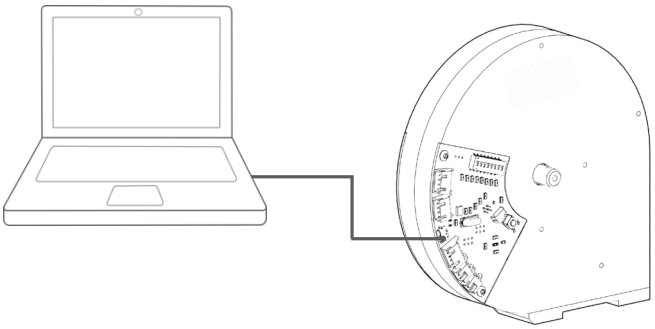
ESC SKU: ESC-45A-5-12V-B

1.1 Connect the ESC's throttle cable to the sensor's throttle port. See above sensor driagram for more information.

DRIVER INSTALLATION

Electronic Board Driver Installation for Windows 7 and 8

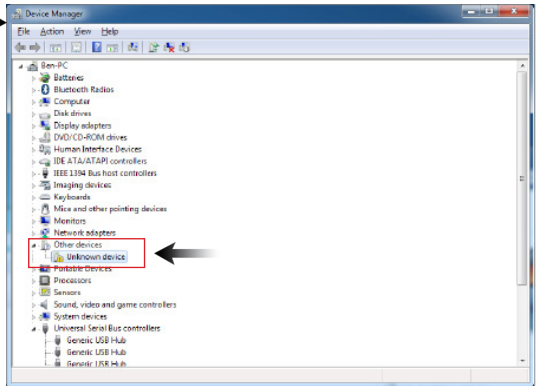
1 Download the driver, and connect the dyno to the pc using the micro-b USB cable.



Go to -->http://minipro.wiki/downloads

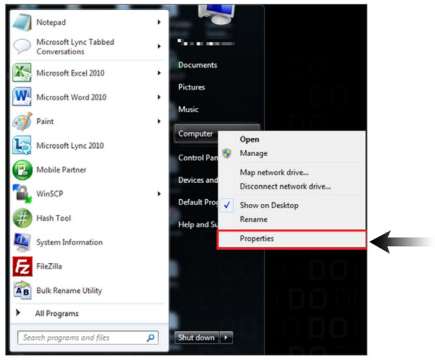
Download the latest driver and extract the driver to a new folder.

2 Open the "Device Manager"



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

3 To open the "Device Manager"

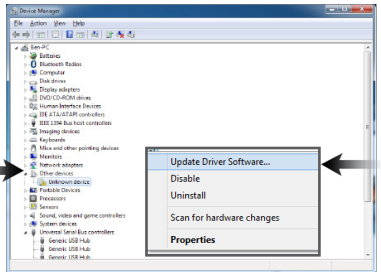


3.1. Go to --> right-click on Computer.

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"



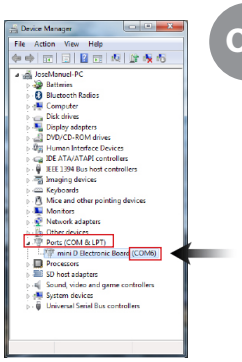
4.1. Select "Browse my computer..""

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

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

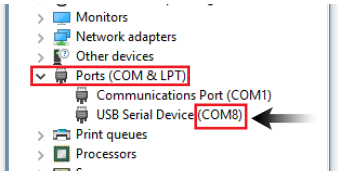
Note: If "Other devices" is not available, then check the USB connection, or otherwise, It might be possible that the driver was already been installed by windows.

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



OR

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

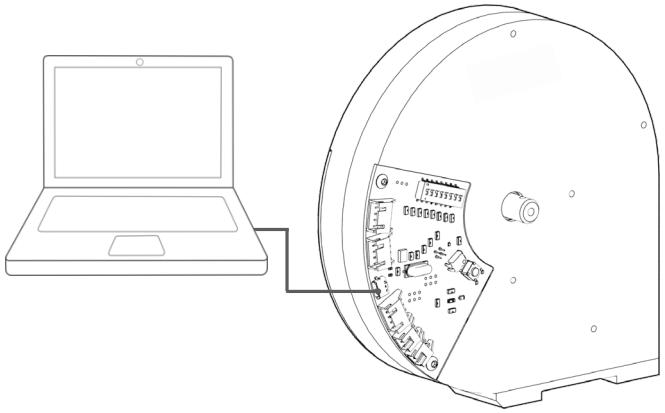


NOTE: The communication port is required to run the dyno. Above port number may differ from your pc.

DRIVER INSTALLATION CONT.

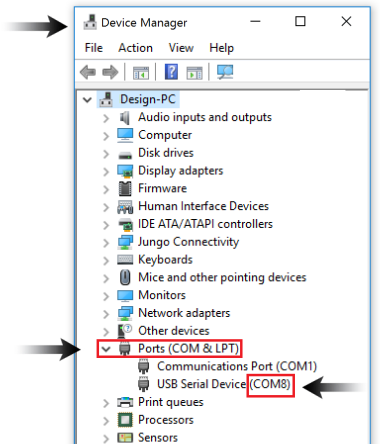
Electronic Board Driver Installation for Windows 10

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



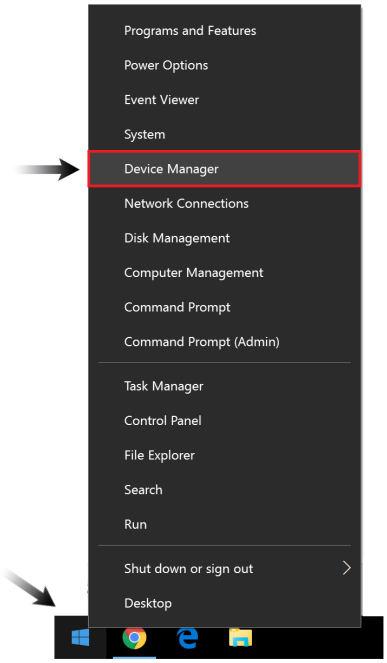
NOTE: It's not necessary to install the electronic board driver. (Only on Windows 10 Operating Systems)

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

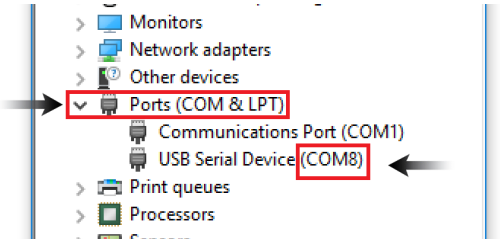


NOTE: When you plug the dyno, a new comunication port should appear when the driver was installed successfully.

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



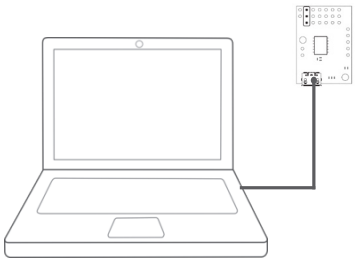
4 Take note of the new comunication port created by the electronic board driver.



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.**

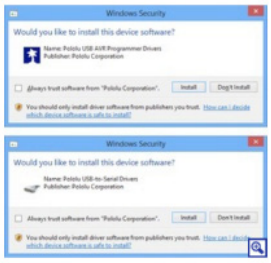


Go to -->http://support.minipro.com/095696-Drivers

Download the latest driver and extract the driver to a new folder.

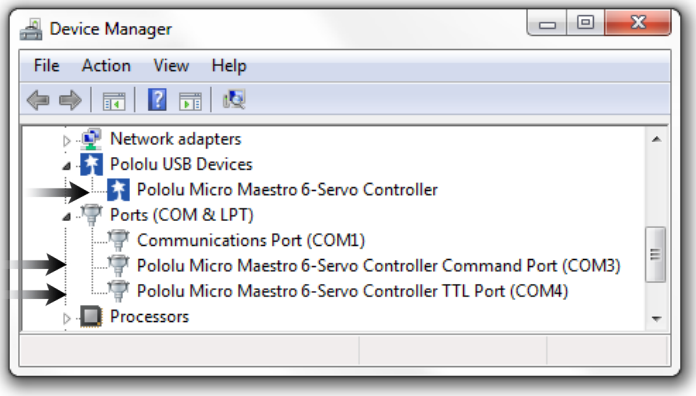
2 **Run setup.exe.**

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.minipro.com and submit a ticket.

SOFTWARE INSTALLATION

Install the Software

1 Download Software

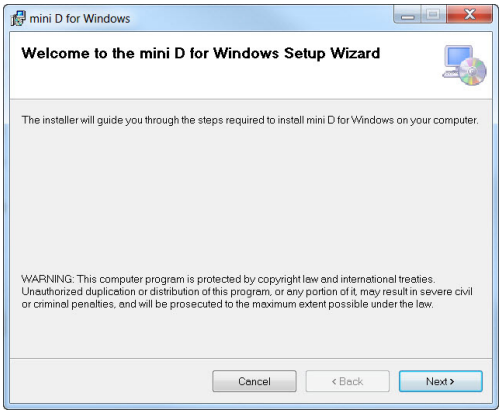
Go to--> http://support.minipro.com

(Downloads->Softwares->Dyno Softwares)

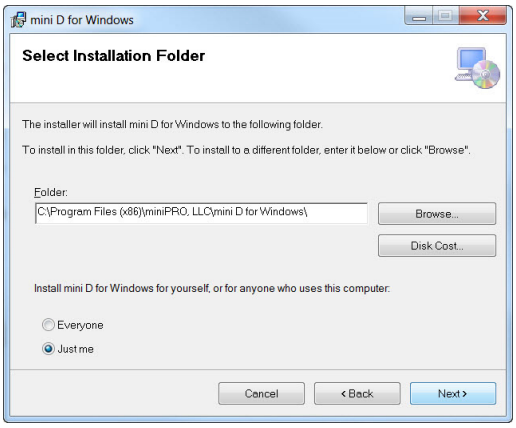
Next, download the latest software and start the installation.

NOTE: You need a serial number to install the application.

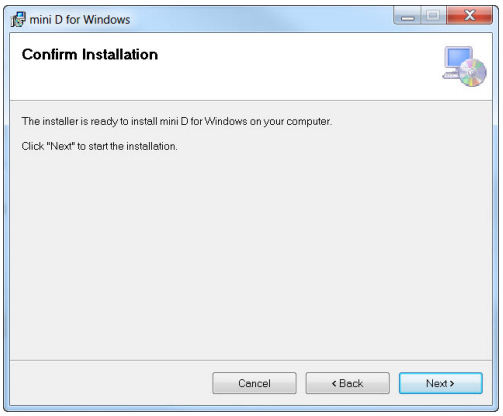
2 Read the Warning Notes and click "Next" if you agree.



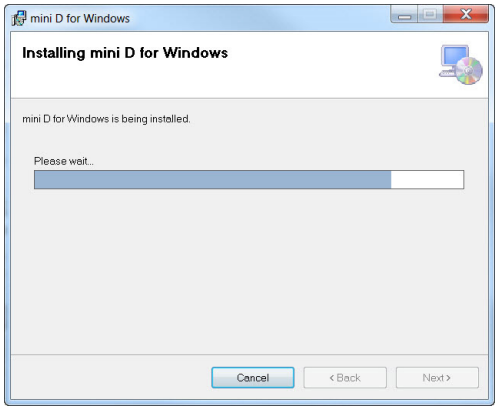
3 Select the location folder where "mini D" will be installed, and then select the person who can use the application. Click "Next."



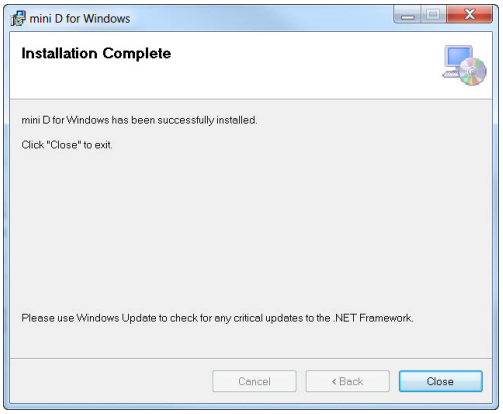
4 Confirm that you want to install "mini D" on your computer, and click "Next" to continue.



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



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

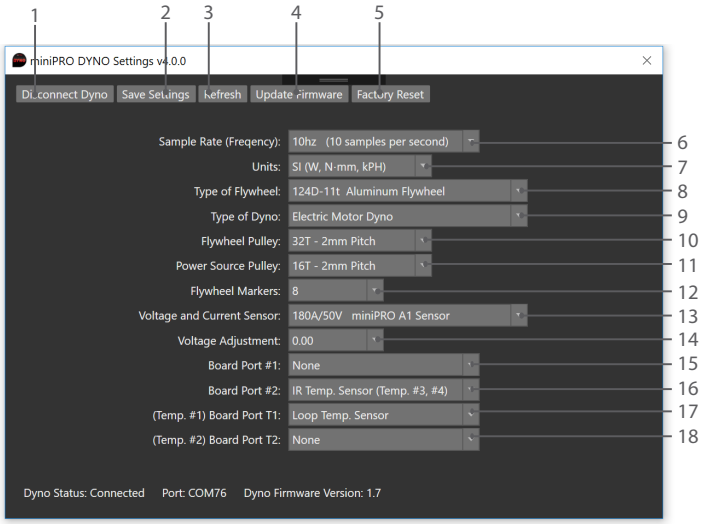


DYNO SETUP

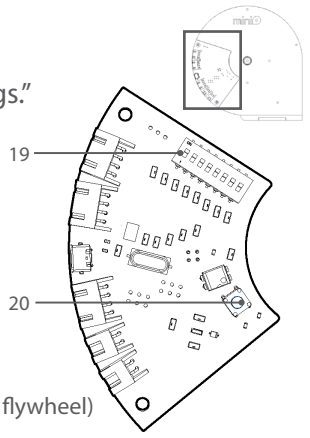
General Settings

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



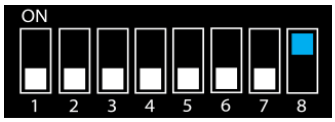
5. Factory reset your dyno settings
6. Set sample rate (Frequency)
7. Set the units of your dyno
8. Set the type of flywheel
9. Set the type of dyno
10 Set the flywheel pulley
11. Set the motor pulley (power source)
12. Number of flywheel markers (black tape on the flywheel)
13. Set the current sensor 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

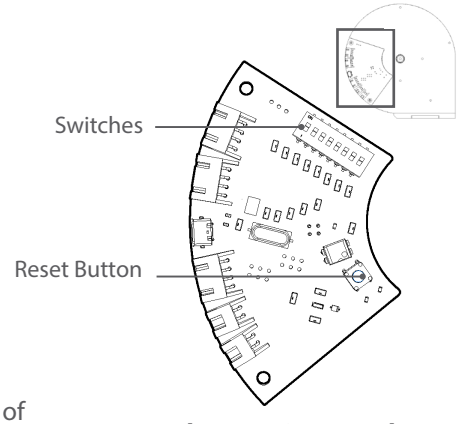
SETUP MODE

1 Enter Setup Mode



1.1. Open the main application
1.2. Select "Connect Dyno"
1.3. Change *only* Switch #8 or #3 to ON.
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.

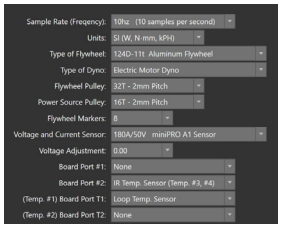
NOTE: Make sure you have firmware v1.7 or later, and installed the latest application of miniPRO Dyno before you continue.



Electronic Board

3 Change your Settings

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



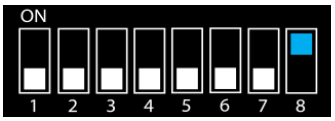
4 Change your Switches

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

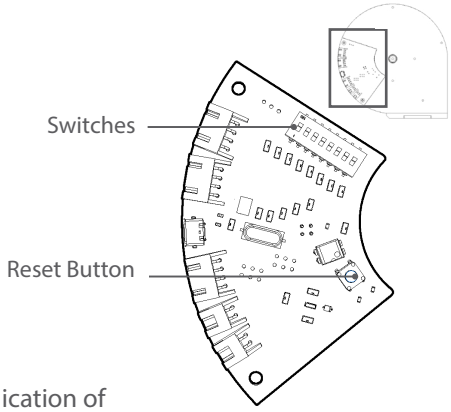
General Guide

1 Enter Setup Mode



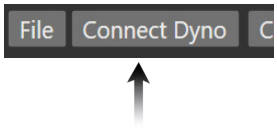
1.1. Change *only* Switch #8 or #3 to ON.
1.2. Press the Reset button on the board.
1.3. Open miniPRO Application.
1.4. Select "Dyno Settings"

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



Electronic Board

2 Establish a Connection

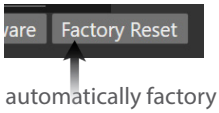


NOTE: Make sure *only* Switch #8 is ON.

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.

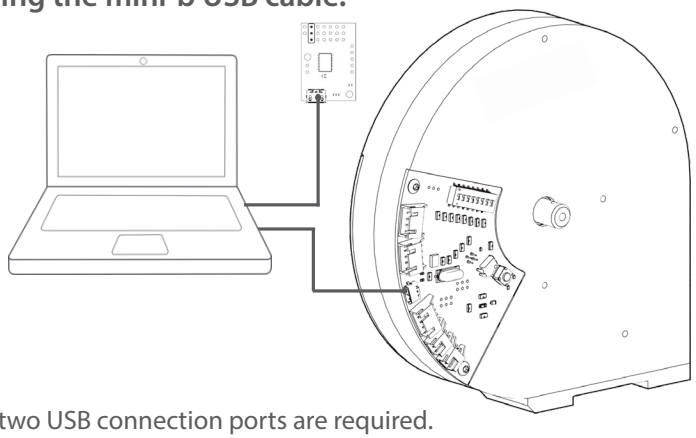
NOTE: Make sure *only* Switch #8 is ON; otherwise, the factory reset will not be successful.

5 Done!

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

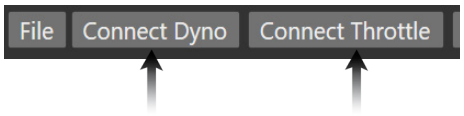
Sequence Mode (Ex. Using Th. Controller Sensor for Servo and ESC)

1 **Connect the dyno to the PC using the micro-b USB cable, and connect the Throttle Controller Sensor to the PC using the mini-b USB cable.**



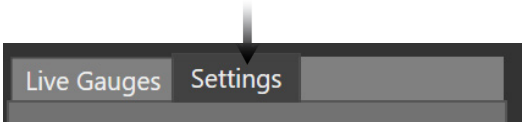
NOTE: (2) two USB connection ports are required.

2 **Open the Application, and select the click "Connect."**

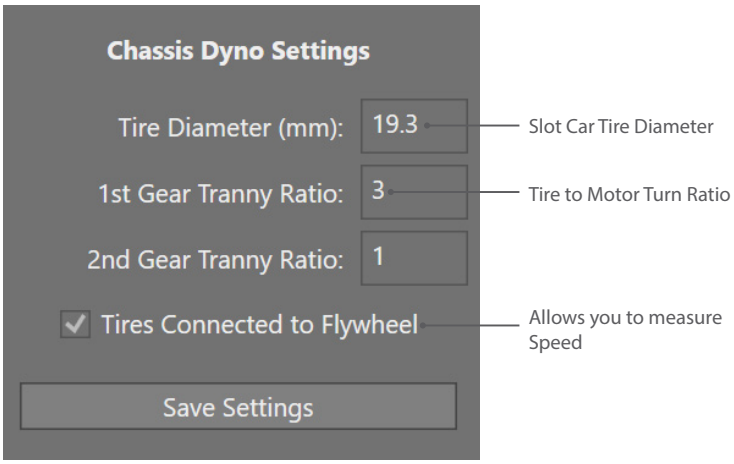


Note: You should hear a "Beep" sound if the ESC is powered.

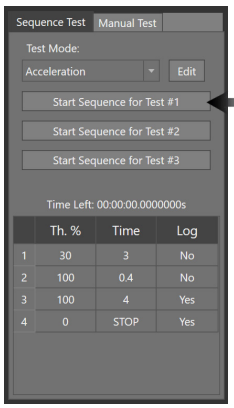
3A **Input your Slot Car Settings**



3.1. Click on "Settings Tab."
3.2. Change the Tire Diameter, 1st Gear Tranny Ratio, and Enable "Tires Connected to Flywheel."
3.3. Click "Save Settings."



4 **Click "Sequence Test Tab" following the Test number you would like the graph**



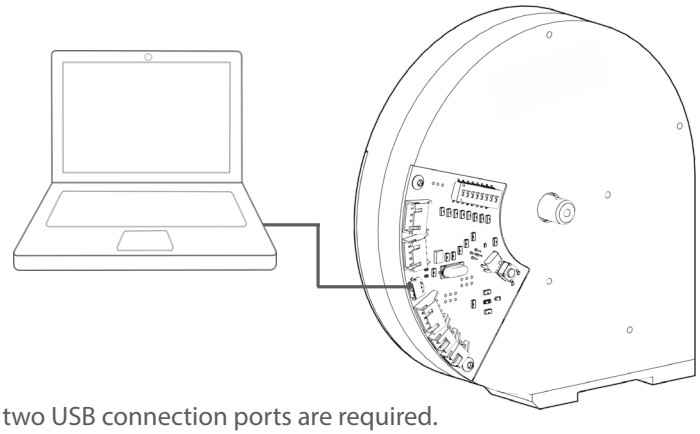
4.1. After you click "Start Sequence for Test #1, 2 or 3" the test will begin.
4.2. You can modify the sequence settings at any time by clicking "Edit"
4.3. Done!

NOTE: You can cancel the Sequence Test at any time by clicking the "STOP" button.

TESTING SLOT CARS

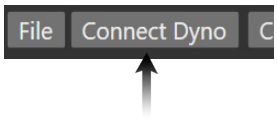
Manual Mode (Ex. Using R/C Transmitter or Servo Tester)

1 Connect the dyno to the PC using the micro USB cable.

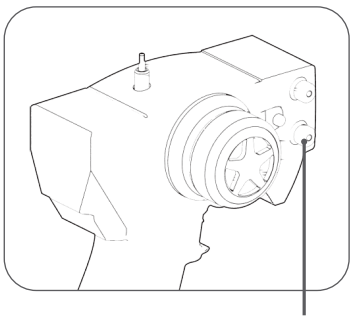


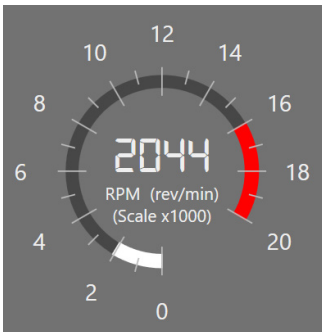
NOTE: (2) two USB connection ports are required.

2 Open the Application, and select the click "Connect."



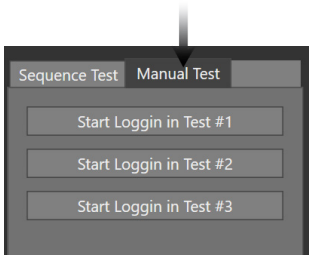
3 Move the motor with your transmitter or servo tester and try to keep a constant RPM.





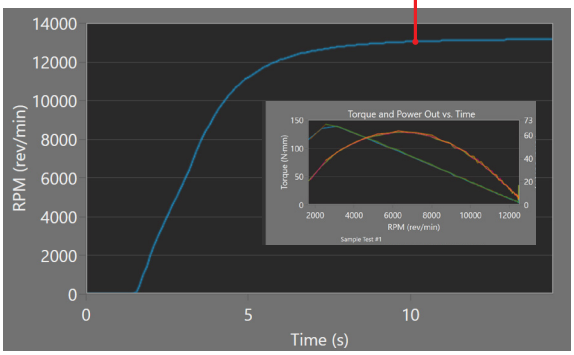
NOTE: By adjusting the throttle trim you can keep a constant RPM.

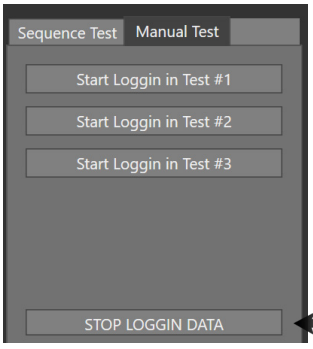
4 Click "Manual Test Tab" following the Test number (Start Loging) you would like the graph to show and quickly increase the throttle to max.



5 When you reach maximum RPM, click "Stop Loggin Data."

Max. RPM as soon torque and power reaches zero.





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