

Dynolyze
hub dyno
software manual

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WARNINGS

General Safety info

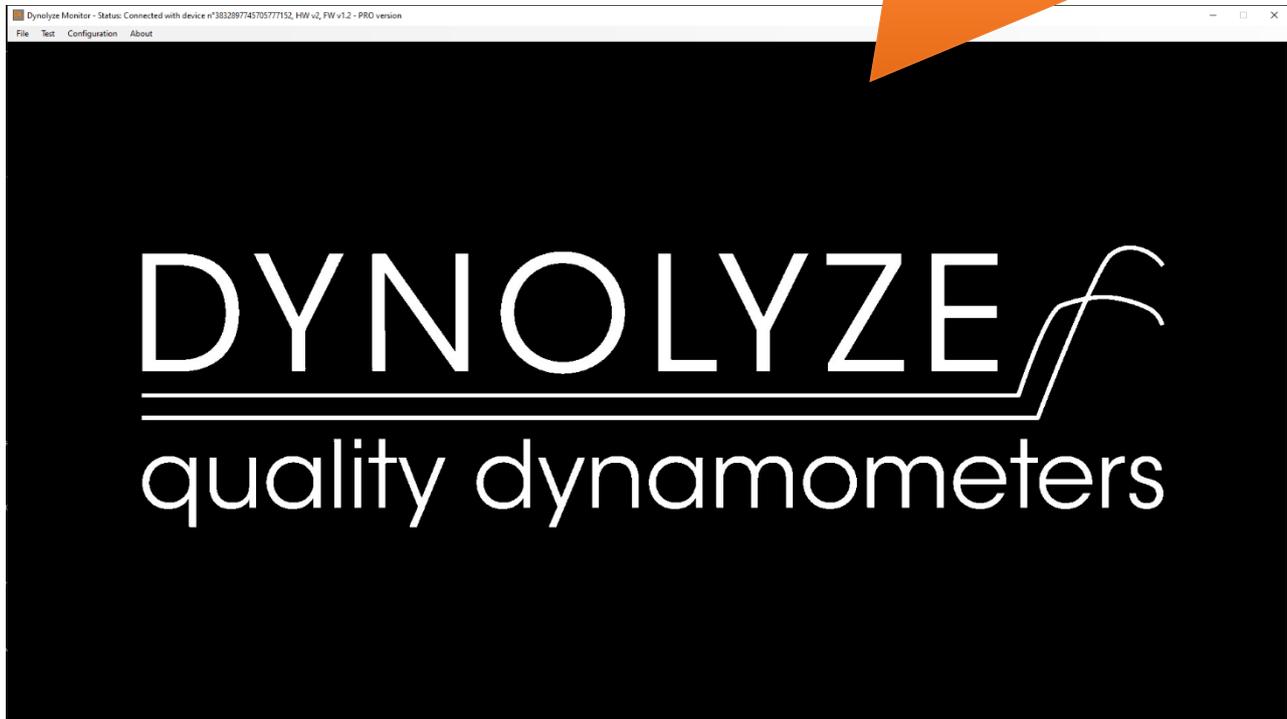


You must read and understand the general user and safety manual before using the machine.

This manual is only about the software features.

1. Home screen and About Menu

This is the home page that you will see when you start Dynolyze Monitor Software



In the top bar you will see that software is connected to dyno control box. If there is a problem with the connection, you will see a flashing text "trying to connect". If this happens make sure the dyno controller is connected and the power is on.

When connected, you will see your unique processor ID number (this is the number that you need to send us if you want to order a new license file)

This shows you the dyno controller hardware (HW) version that you have (HW v2 in this example)

Dynolyze Monitor - Status: Connected with device n°3832897745705777152, HW v2, FW v1.2 - PRO version

File Test Configuration About

This shows you the dyno controller firmware (FW) version that you have (FW v1.2 in this example)

This shows you the dyno PC software type you have (STANDARD or PRO version)

Dynolyze Monitor - Status: Connected with device n°3832897745705777152, HW v2, FW v1.2 - I

File Test Configuration About

Dynolyze Monitor v1.12.0.1

Shows you the exact software version.

IF YOU NEED TO CONTACT TECH SUPPORT PLEASE GIVE THOSE VALUES BECAUSE IN MANY CASES THOSE ARE THE ONES THAT WE ASK IN FIRST ANYWAY!

2. File menu

Open: You can open 3 different tests to compare (note that file No 1 is overwritten when you make a new pull and it also includes all dyno parameters, page setups, PIDs etc)

If you want to make a pull with new car but use last cars setup just leave test nr 1 open and make a new pull and dyno uses "old" setup but you will only see the new test.

Test No 2 and 3 won't change dyno setup when they are opened or closed.

Close: You can close tests No 2 and 3

Save: You can save the test here and you can save the dyno configuration if you want to change it but don't perform a new test.

Print: Print your test report

Exit: Close the program

3. Test menu

File	Test	Configuration	About
	Details		F1
	Real-Time tuning		F2
	Graphs		F3
	Easy-Tune		F4
	RPM and Brake Settings		F5
	End of test comments		F6
	Engine analyze		F7

3.1. Details F1

Vehicle Data

Frontal Area: M2

Air Friction Coeff. Cd.

Weight: KG.

Tire radius: MM.

Tire Drag Coeff. C.

Customer

Name:

Make:

Model:

Session:

Add Vehicle Data to use Drive Simulation (PRO version only)

"Details F1" contains your Customer and Test Data. Keeps your test files well organized.

Customer

Name:

Make:

Model:

Session:

Test Data

Dyno Operator:	test operator
Vin:	wauzzzxxxxxx
Fuel:	panta 102
Gearbox:	sequential
Register:	xxx111
ECU:	bosch
MAP:	base map v1
Turbo:	gtx3071

Or you can select existing folder in dropdown

You can create folders for specific car and customer.
If you Create new customer just push "Create New" button and folder is created.

In "Test Data" field you can set specific data so you know when you open an old test what the set up has been last time.
Those fields are also printed to customer's test report (dyno sheet).

3.2 Real-Time tuning F2

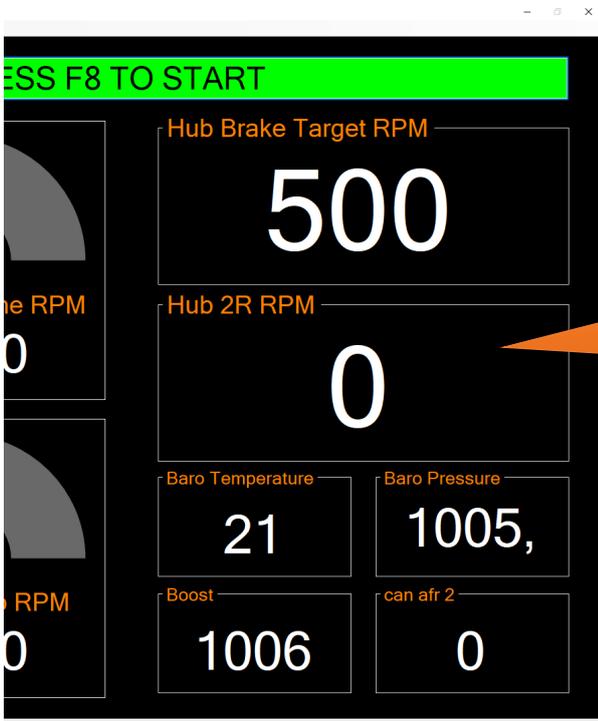
The screenshot shows the Dynolyze Monitor software interface. At the top, a green bar reads "READY FOR TEST - PRESS F8 TO START". The main display area is divided into several sections:

- Power:** A large numeric display showing "NaN".
- Torque:** A large numeric display showing "-6".
- Engine RPM:** A gauge bar showing "NaN".
- Hub RPM:** A gauge bar showing "0".
- CAN Lambda 2:** A large numeric display showing "Error".
- right 2 rpm:** A large numeric display showing "0".
- Boost:** A numeric display showing "994".
- Knock:** A numeric display showing "9".
- Air Temp.:** A numeric display showing "19".
- FuelP.:** A numeric display showing "-1.25".
- Brake Duty:** Four horizontal bars representing Brake 1 Left (%), Brake 1 Right (%), Brake 2 Left (%), and Brake 2 Right (%).

Callouts provide additional information:

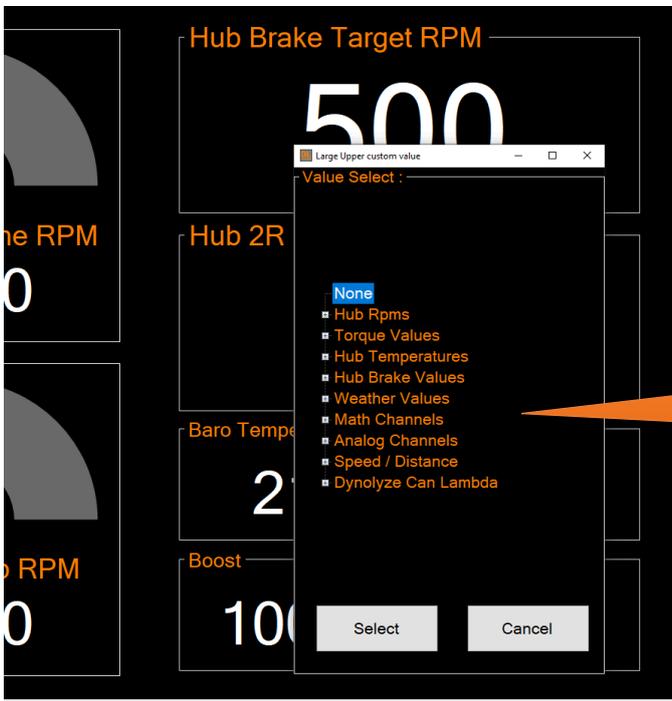
- Real-time hub power:** Points to the Power display.
- Real-time hub torque (divided by gear ratio):** Points to the Torque display.
- Engine RPM gauge bar (can be configured in f5 brake setup menu):** Points to the Engine RPM gauge.
- Hub RPM gauge bar:** Points to the Hub RPM gauge.
- 2 big numeric boxed where you can select what ever available channel in dyno (afr, math channel etc...):** Points to the Power and Torque displays.
- This green bar shows you, that you can start recording by pressing the F8:** Points to the top green bar.
- Brake 1 left/right duty (how much brake capacity is in use 0-100%):** Points to the Brake 1 bars.
- Brake 2 left/right duty (how much brake capacity is in use 0-100%):** Points to the Brake 2 bars.
- Hub RPM gauge bar: this contains 4 bars in one and works like this: if hubs are spinning in +-5 rpm to each others you will see only one green bar, but if hub speeds are more than +-5 you will see also a red bar and you will know that there is speed difference between hubs. DANGER YOU NEED TO STOP DRIVING BECAUSE YOU CAN DESTROY DRIVELINE PARTS!!!** Points to the Hub RPM gauge.
- 4 small numeric boxes (works like the big ones):** Points to the Boost, Knock, Air Temp., and FuelP. displays.

3.3. Real-Time tuning settings



You are able to select what six values you want to be shown here, by clicking right mouse click.

Channels may vary depending on software license version



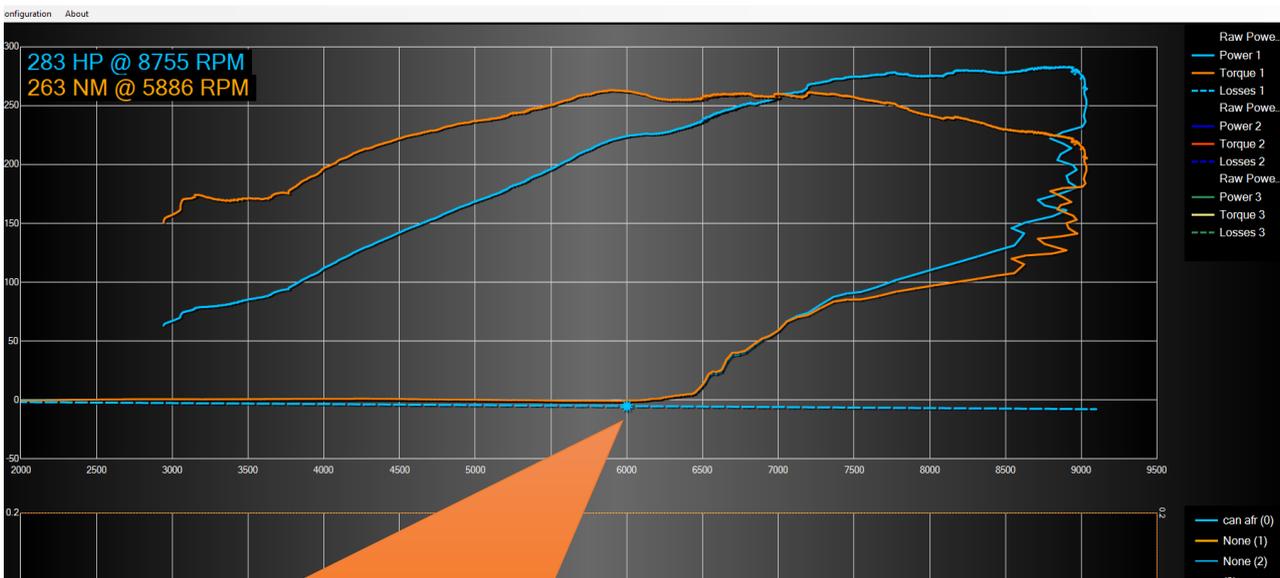
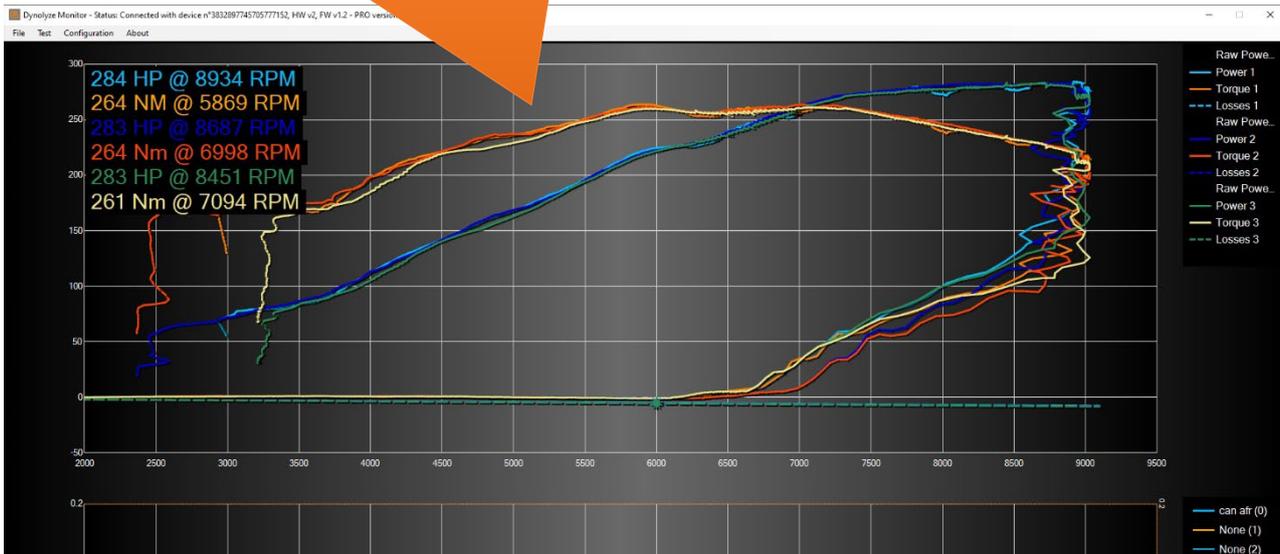
The right mouse click opens this Value Select pop-up menu, from this you can choose the values.

3.4. Graphs F3

You can overlay 3 tests for comparison.

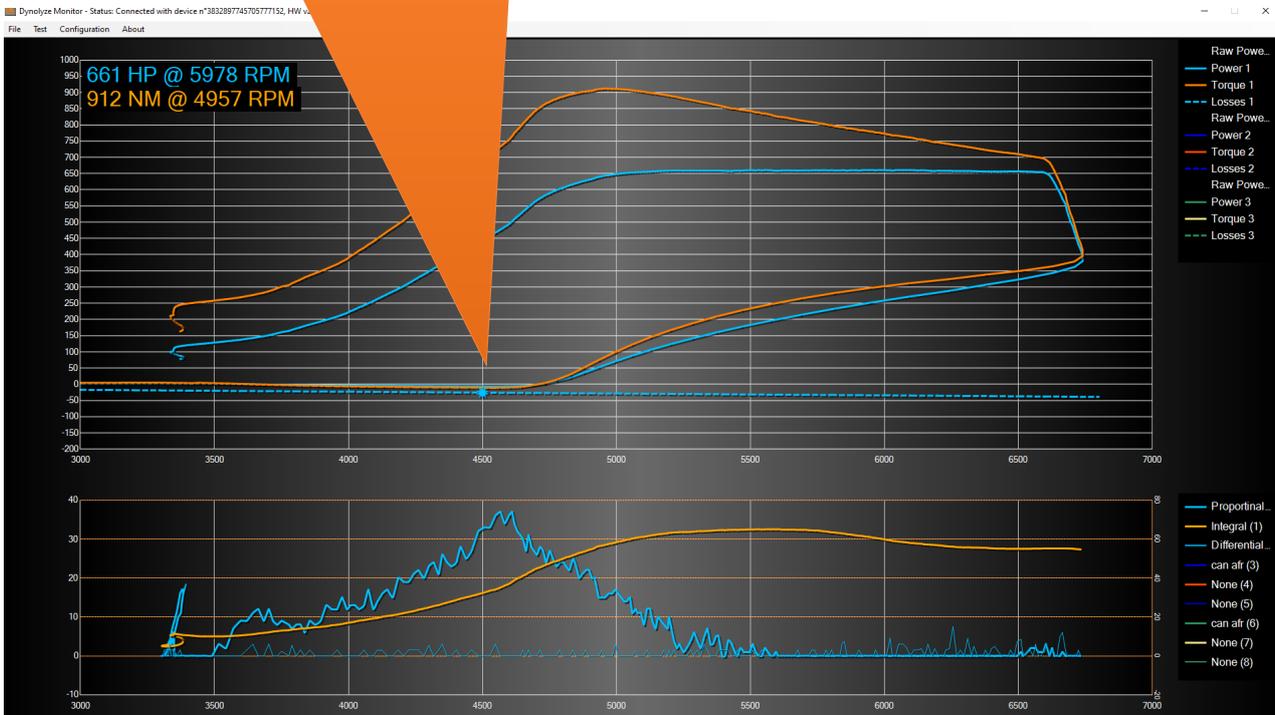
With F9 you can open test No 1, F10 opens test No 2, F11 opens test No 3.

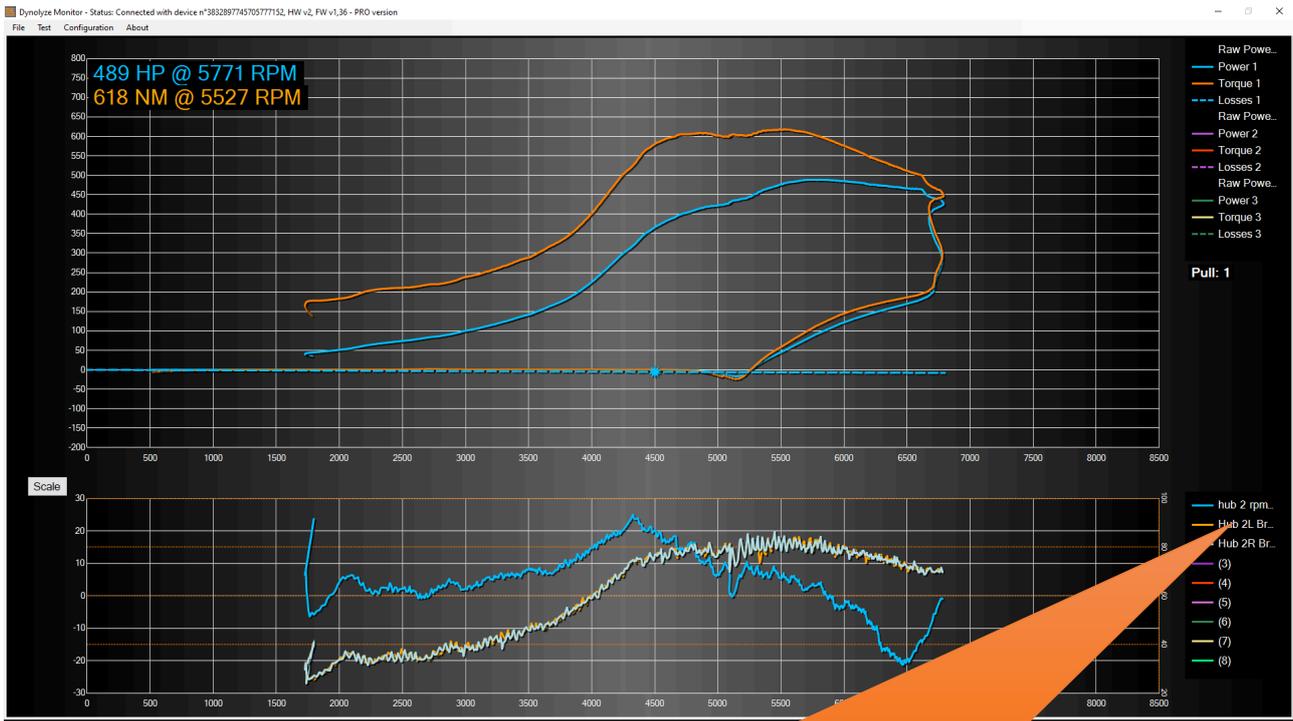
Ctrl + F10 closes test No 2, Ctrl + F11 closes test No 3.



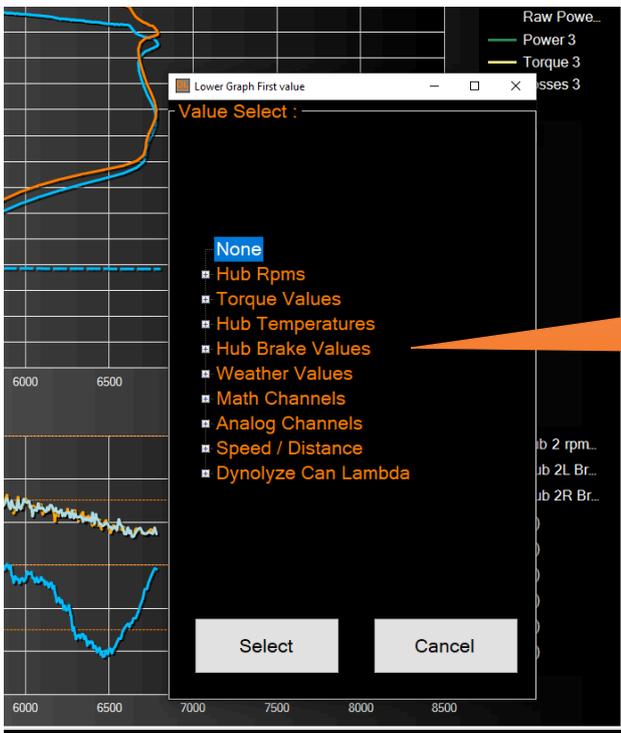
In this test you can see the coast down measurement being active under 6000 RPM (spot in losses curve marks that point). You can change the RPM spot in F5 menu. After 6000 RPM the losses are being calculated.

How to determine the right RPM for coast down losses measurement? Here you can see a clear example of the torque curve, you should set the measurement point at the point when you see the torque curve is stabilized. Your target is to get the torque curve close to 0.





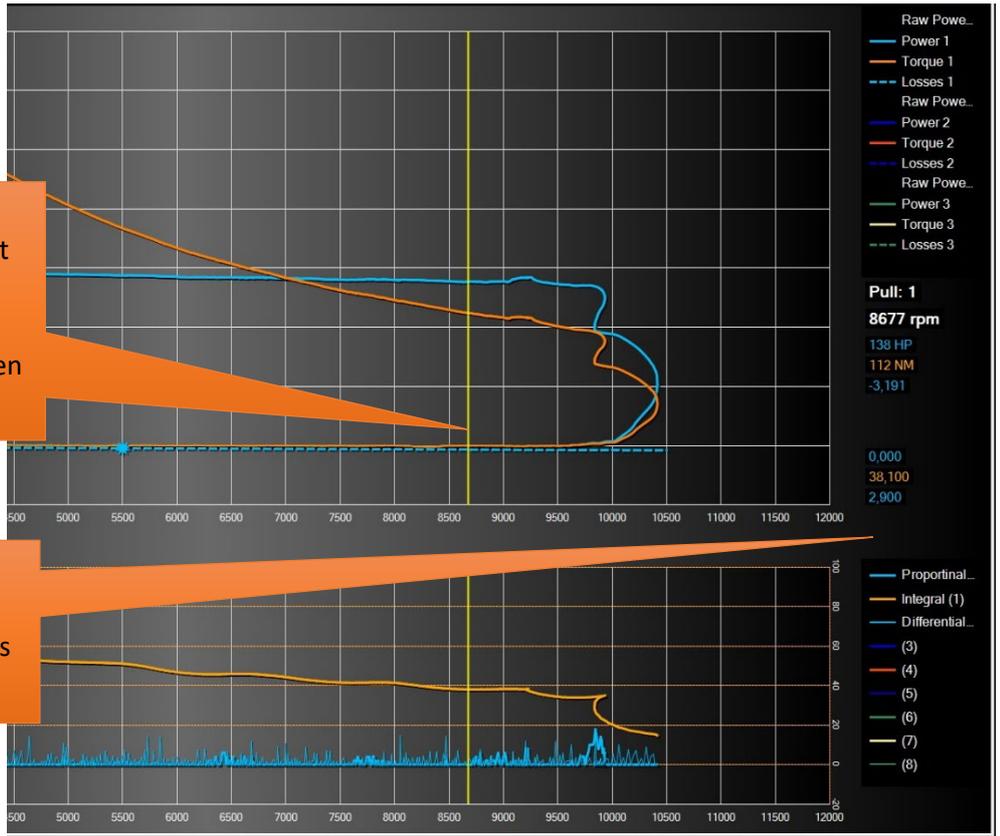
You can select additional data that you want to view. You can select all the available dyno channels by mouse right clicking when the cursor is on top of channel name.



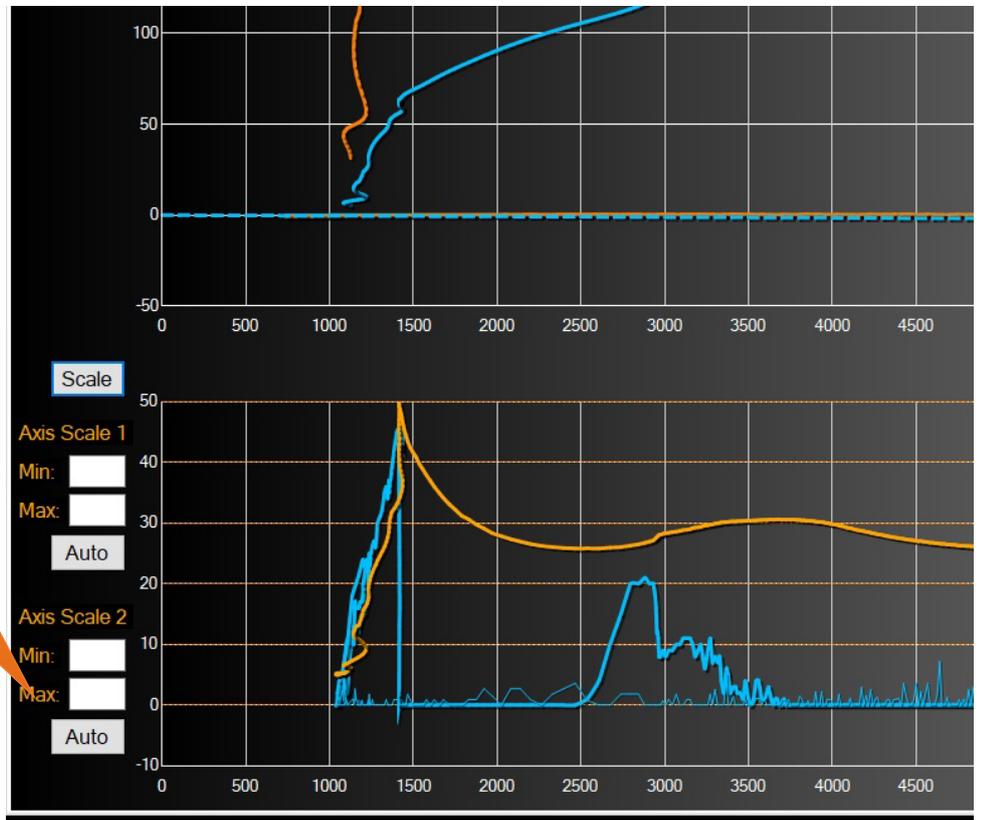
The right mouse click opens this Value Select pop-up menu, from this you can choose the values.

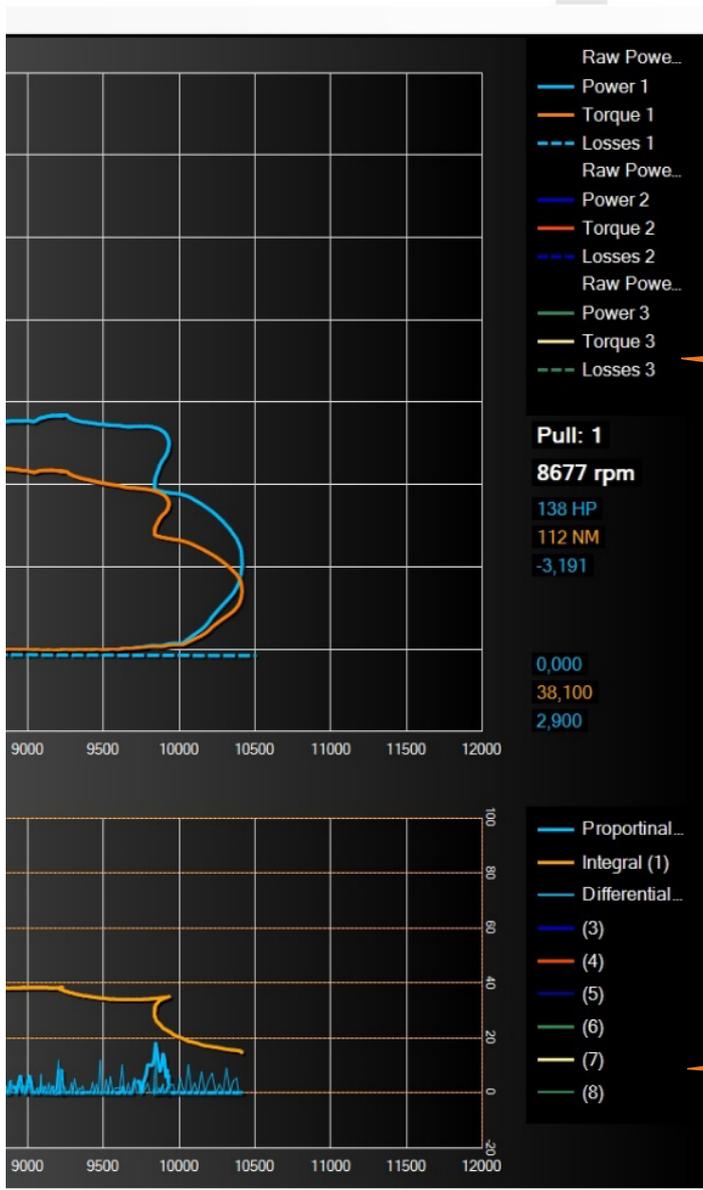
To activate the ruler press and hold left mouse button. To select from which test you want to see the values, click right mouse button and it will change between tests 1, 2 and 3.

With the ruler you can closely inspect the parameters at every RPM. You can see the parameters on the right side.



Scale function. Here you can manually set solid scaling (default is auto scaling).





By clicking the line here, you can hide/show the line from the graph.

If you want to print the sheet without this lower graph, click every line to hide them.

3.5. RPM and Brake settings F5

Brake Control Settings

RPM/sec. sweep rate: it is the rate that you want the dyno lets your engine accelerate when “Ramp” button in remote controller is on.

Drive Simulation: Simulates road acceleration (PRO version only)

RPM steps for manual control: you can set the step test RPM up/down button value. It is used to change target RPM when the brake mode is on but ramp mode is off in remote controller.

The screenshot displays the software's configuration menu with the following sections:

- Brake Control Settings:**
 - RPM/SEC. Sweep: 500 RPM/SEC
 - Drive Simulation:
 - RPM Step for Manual Control: 250
- RPM Channel:**
 - Measured Engine RPM Source: Plex CAN
 - Divide RPM By: 1
 - Measured Real-time RPM: ---
 - Calculated Engine RPM From Hubs Speeds
 - Target Engine Rpm: 3000
 - Total Engine/Hub RPM Ratio: 4,58
 - Calculate Ratio (F12)
 - Calculated Real-time RPM: 0
- Brake Regulation:**
 - PID Proportional Value: 8
 - PID Integral Value: 6
 - PID Derivative Value: 0,18
 - Engine Maximum RPM: 1000
- Other Settings:**
 - Engine Max RPM (used for graph and gauge only): 7500
 - Engine Min RPM (for graph only): 0
 - Eng. Power (graph only, put 0 for auto): 0
 - Calculate losses under this RPM: 5500
 - Do not calculate losses on coast down

Brake Regulation

PID propotional value: it is brake PID propotional value and should only be changed if you know what you are doing.

PID integral value : its brake pid integral value and should only be changed if you know what you are doing.

PID derivate value : its brake pid derivate value and should only be changed if you know what you are doing.

Engine Maximum RPM: it is like an RPM limiter for cars that don't have an RPM limiter in the engine or you don't want to use normal engine max RPM.

RPM channel:

Real time RPM: Can be measured from CAN by Plex Knock Monitor V2. You can divide or multiply RPM reading if necessary. Select None if no external RPM Source is in use. (Plex CAN is PRO software only)

Calculated Engine RPM: here you set your hub RPM/engine RPM ratio.

You can set it manually if you know it (remember that it is overall ratio so gearbox + differential), but software will calculate it for you like this:

Drive steadily for example 3000 engine rpm (look car tacho) with gear what you want to use in test and press F12 or calculate ratio button.

You can change it after test is done but you will get different torque value. When you change it and you go to F6 end of test menu, you will see a reminder message (picture next page).

The screenshot shows a software interface with four main sections:

- Brake Control Settings:**
 - RPM/SEC. Sweep: 500 RPM/SEC
 - Drive Simulation (selected)
 - RPM Step for Manual Control: 250
- RPM Channel:**
 - Measured Engine RPM Source: Plex CAN
 - Divide RPM By: 1
 - Measured Real-time RPM: ---
 - Calculated Engine RPM From Hubs Speeds
 - Target Engine Rpm: 3000
 - Total Engine/Hub RPM Ratio: 4,58
 - Calculate Ratio (F12) button
 - Calculated Real-time RPM: 0
- Brake Regulation:**
 - PID Proportional Value: 8
 - PID Integral Value: 6
 - PID Derivative Value: 0,18
 - Engine Maximum RPM: 1000
- Other Settings:**
 - Engine Max RPM (used for graph and gauge only): 7500
 - Engine Min RPM (for graph only): 0
 - Eng. Power (graph only, put 0 for auto): 0
 - Calculate losses under this RPM: 5500
 - Do not calculate losses on coast down (checkbox checked)

Other Settings:

Engine max RPM (used for graph and gauges only): effects on F3 graph scale and F2 bar gauges, can only be changed after test is done.

Engine min RPM (for graph only): effects on F3 graph RPM axis only, good for high revving race engines if measuring starts for example from 4500 RPM. Can be changed after test is done.

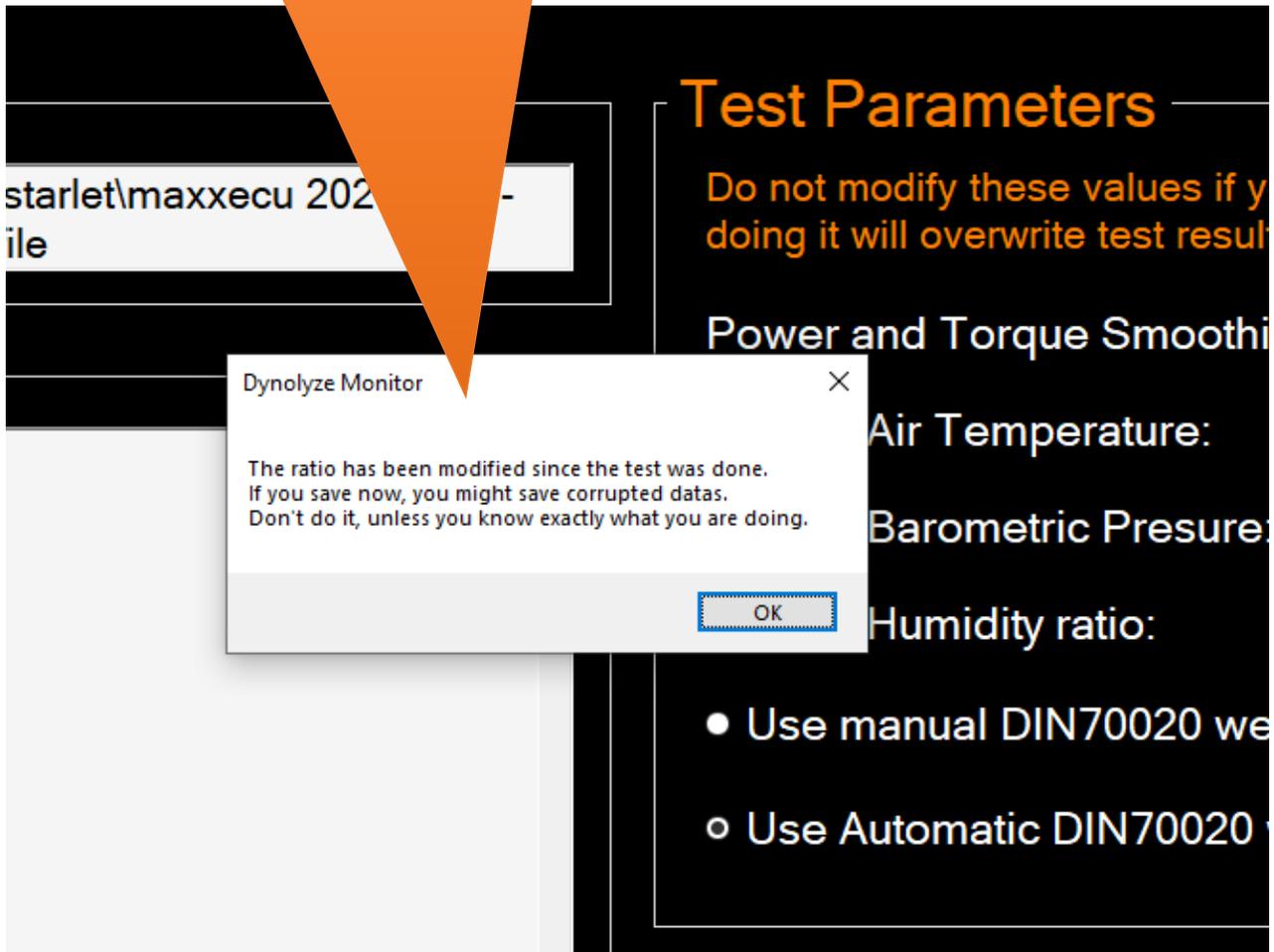
Eng. power (for graph only): effects on power / torque scale in F3, set 0 for auto scaling. Can be changed after test done.

Calculate losses under this RPM: set RPM spot (that you will see in F3 Graphs) where coast down measure starts. (see F3 Graphs instructions in this manual).

Do not calculate losses on coast down: don't use coast down measurement, so F3 shows you hub power instead of engine power. (see F3 Graphs instructions in this manual).

RPM source is calculation where you set your hub RPM/engine RPM ratio.

You can change it after test is done but you will get different torque value. When you change it and you go to F6 end of test menu, you will see this reminder message.



4. End of test comments F6

This menu opens automatically when the power measurement is done.

You will see the folder where your test is saved and the test name.

Power and torque smoothing factor: it will smooth F3 graph screen lines scale is 0-5 and default value is 3. You can change this value after test is done.

The screenshot displays the 'Test Parameters' window. On the left, there is a 'Notes' section with a text area. Above it, the test file path is shown: 'c:\Dynolyze\Datafiles\lehtovirta\mb\lturbolekasato boost\2022-09-06 @13H02min12sec.DynolyzeDatafile'. The 'Test Parameters' section includes a warning: 'Do not modify these values if you dont know what you are doing it will overwrite test result and cannot be rescued !'. Below the warning are several input fields: 'Power and Torque Smoothing Factor' (value: 3), 'Selected correction standard' (value: DIN 70020), 'Manual Air Temperature' (value: 27), 'Manual Barometric Pressure' (value: 1009,4), and 'Manual Humidity ratio' (value: 50). At the bottom, there are radio buttons for 'Use manual weather correction' (selected) and 'Use Automatic weather correction'. A button at the bottom right says 'Save Datafile and go back to Real Time P'.

You can write notes and they are saved in test file so you can open test later and look notes.

Select either DIN 70020 or 80/1269/EWG

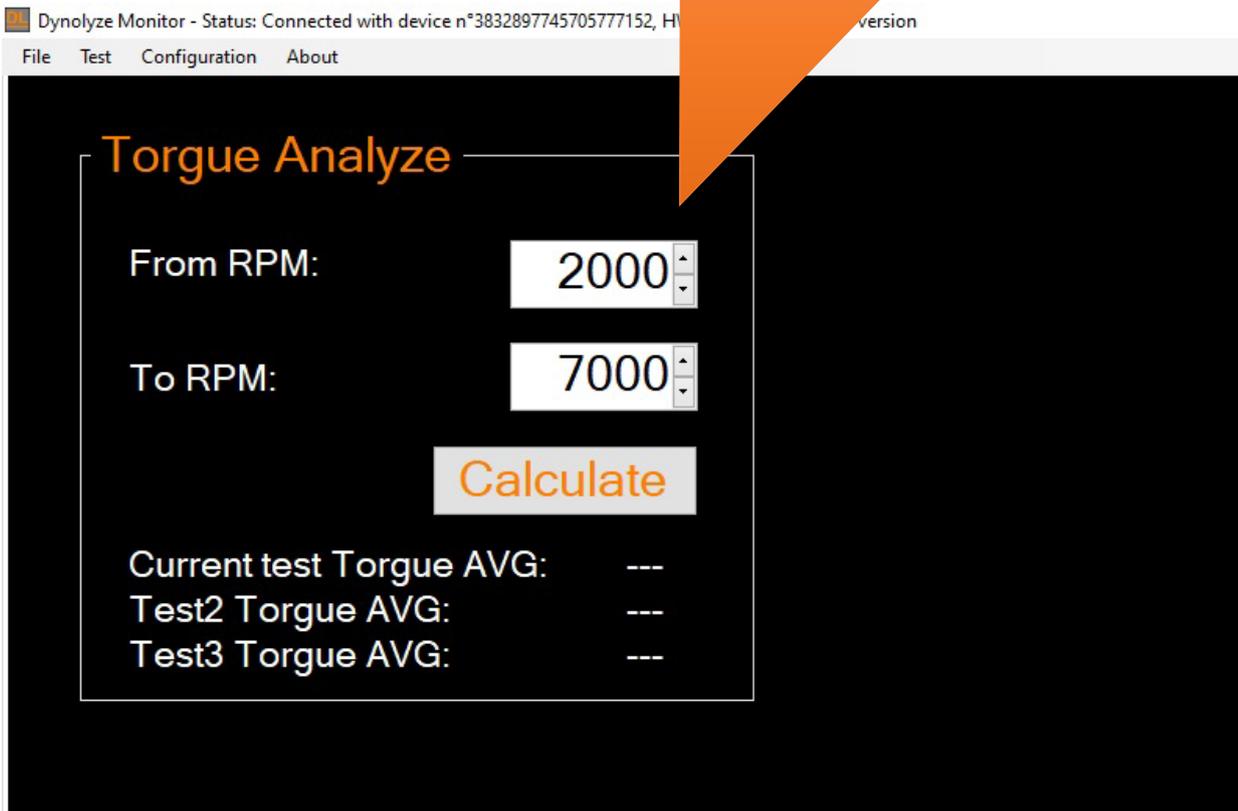
Manual air temperature: here you can see the air temperature what the weather station has measured during the pull. You can change this value if you select use manual weather correction.

Manual barometric pressure: same as temperature but atmospheric pressure value.

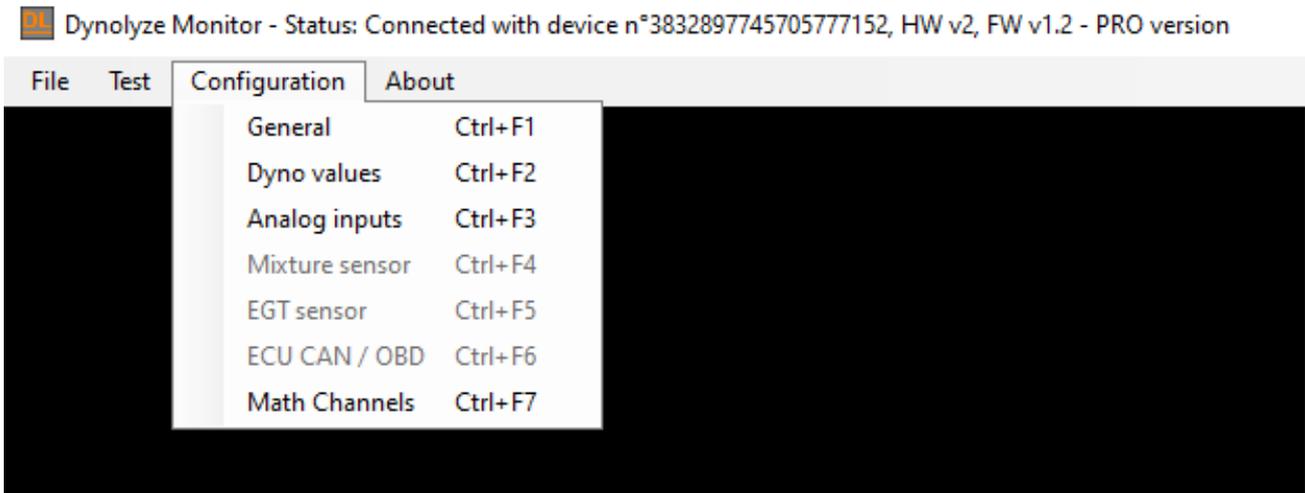
Humidity is not active in v1 weather stations because it's not in use in most common correction factors.

5. Engine analyze F7 (PRO software only)

You can set RPM range to calculate average torque between those values.



6. Configuration menu



5.1. General Ctrl + F1

Set your Company details here. These are printed on the test report.

Manage the units in use.

Company details

Company Name	Dynolyze
Street	syvaojankatu 25
Zip or Post Code and City	15700 lahti
Country	Finland
Phone	+358 44 9728001
Mail	info@dynolyze.eu
Website	www.dynolyze.eu
Logo	Choose Logo

Units

Power:	HP
Torque:	NM
Temperature:	°C
Mixture:	AFR

Dyno Hour counter

Dyno hour counter is coming the future updates.

5.2. Dyno values Ctrl + F2

This page is for specific data for all the connected hubs.

Inertia value: it is inertia compensation value for brake. It is set in the factory please do not change unless tech support asks you to do so.

It will change dyno calibration so be careful!!!

Load cell calibration values: mainly for diagnostic purpose, they are set in factory please do not change unless tech support asks you to do so.

It will affect dyno calibration!!!

Real time load cell raw value: load cell output.

Real time torque value: load cell value converted to nm

Hub	Inertia Value	Raw Value 1	Raw Value 2	Torque Nm	Real Time Load Cell Raw Value	Real Time Torque Value	Real Time RPM Value	Real Time Brake Duty Value	Real Time Brake Temperature Value	Real Time Dynamic Torque Value
Hub 1 Left	5,8	32727	31911	0 0	32808	0.0 Nm	0 rpm	0 %	0 °C	0.0 Nm
Hub 1 Right	5,8	32777	31967	0 0	32795	0.0 Nm	0 rpm	0 %	0 °C	0.0 Nm
Hub 2 Left	3,5	32622	30729	0 360	32782	-30.4 Nm	0 rpm	0 %	0 °C	0.0 Nm
Hub 2 Right	3,5	32749	30524	0 360	32810	-9.9 Nm	0 rpm	0 %	55 °C	0.0 Nm

Real time RPM value: it is actual hub RPM and can be handy if you want to look all hub speeds in RPM format at the same time.

Real time brake duty: same as brake duty in F2 real time screen but numeric between 0-100%

Real time dynamic torque value: is dynamic torque calculation end result.

Real time brake temperature: is brake temperature

5.3. Analog inputs Ctrl + F3

Here we have the setup for 4 analog channels what are standard features in basic dyno controller.
You'll find those input connectors in front plate of controller and they are marked as AN1,2,3,4

Pin 1 is +5v out to sensor

Pin 2 is 0-5v input signal from sensor

Pin3 is sensor ground

You can set name of channel to make it easier to identify the channel.

For sensor calibration you can choose to set 2 voltage points and corresponding sensor value for those points.

The software will automatically linearize spots in between.

If you want to measure temperature, choose the Bosch Temp sensor from the drop-down menu. It is pre-calibrated. You also need an additional adapter cable for Temperature measuring.

Analog Channel 1
Channel / Value Name: Boost
Calibration: Manual 2 point calibration
Voltage: 0,4 4,65
Value: 200 3000
Converted Value = 1006

Analog Channel 2
Channel / Value Name: Knock
Calibration: Manual 2 point calibration
Manual 2 point calibration
Bosch Temp sensor
Value: 9 255
Converted Value = 9

Analog Channel 3
Channel / Value Name: FuelP.
Calibration: Manual 2 point calibration
Voltage: 0,5 4,5
Value: 0 10
Converted Value = -1,25

Analog Channel 4
Channel / Value Name: Analog 4
Calibration: Manual 2 point calibration
Voltage: 0 5
Value: 13 13
Converted Value = 13

Converted value shows sensor output converted value in real time.

5.4 CAN input Ctrl + F6 (PRO software only)

Select Plex Knock Sensor if in use. Set Plex CAN ID to 500.
Also set your Plex CAN communication ID to 500

The screenshot displays two panels on a dark background. The left panel, titled 'CAN ECU-Setup', contains a dropdown menu for 'ECU CAN-Bus Type' set to 'Future feature'. Below it, under 'Live Values:', are several sensor readings: RPM = ---, Throttle Position = ---, Ignition Angle = ---, Engine Load = ---, Engine Coolant Temp = ---, Intake Air Temp = ---, and Map Pressure = ---. The right panel, titled 'Other CAN Devices', has a checked checkbox for 'Plex Knock Sensor' and a 'Base ID' field set to '500'.

Coming in the future updates.

5.4. Math Channels Ctrl + F7

You can type any name you like for the Channel / Value name. The name is shown in all menus in the software for easy identification.

In math channels you can set software to calculate "internal channels" like pressure delta or so.

The screenshot shows the 'Math Channels' configuration screen in the Dynolyze Monitor software. The interface is dark-themed with orange text for labels. It displays five configuration panels for Math Channel 1 through Math Channel 5. Each panel includes a 'Channel / Value Name' field, a 'Formula' section with dropdown menus for mathematical operations, and a 'Constant Decimal (if used)' input field. The 'Math Value After Formula' is shown as 0 for all channels.

Channel Name	Formula	Constant Decimal
can afr	Lambda 2 x Constant	14,7
left 2 rpm	RPM 2 Left + Constant	0
left 2 brake	Brake 2 Left + Constant	0
right 2 brake	Brake 2 Right + Constant	0
(Channel 5 name partially visible)	(Formula partially visible)	(Constant partially visible)

You can "chain" channels like Channel 1 output value is one value in Channel 2 and so on...

Math value after formula shows value in real time so you can make sure you set channel like you want.

6. Remote Control

When you switch on "Brake" button, it will take your constant speed. Then you can fine tune constant speed with rotary switch or buttons.



When you switch on "Ramp" (brake needs to be on) it will start your selected brake program (sweeping up, Drive Simulation etc..). You can set a desired ramp in the Brake Control settings under the menu: "RPM and Brake settings F5"

Fine tuning your constant speed by turning to - or +

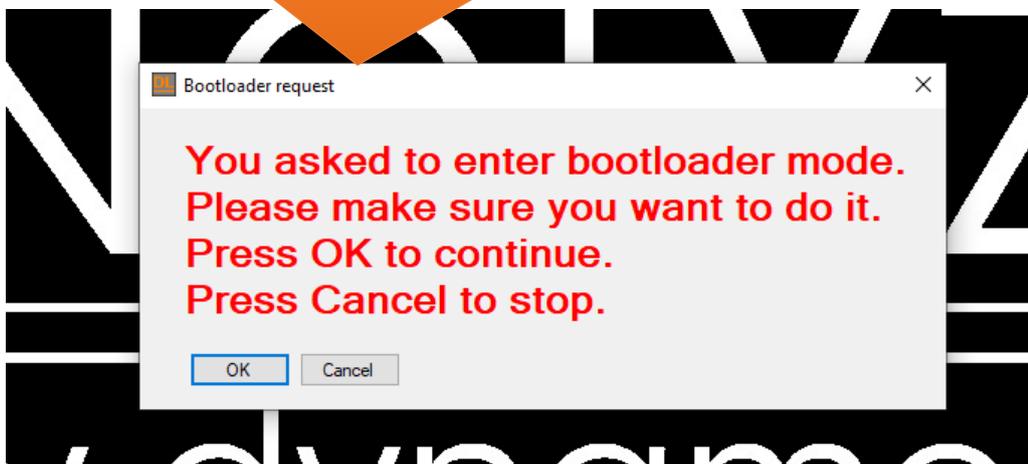
Step buttons for jumping up (and down). You can set a desired step in the Brake Control settings under the menu: "RPM and Brake settings F5".

7. Firmware update

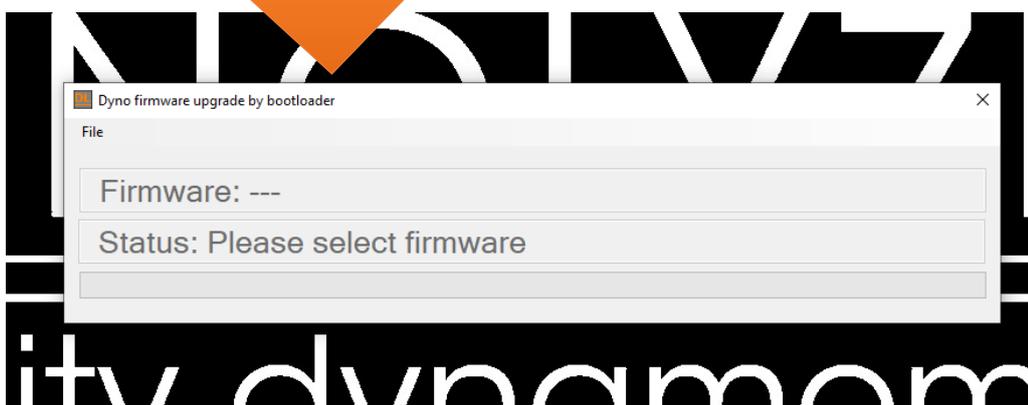
DO NOT USE IT UNLESS TECH SUPPORT HAS ASKED YOU TO DO IT BECAUSE YOU CAN DAMAGE THE DYNO CONTROLLER

You can access to dyno controller boot mode by pressing Ctrl + Shift + F1.

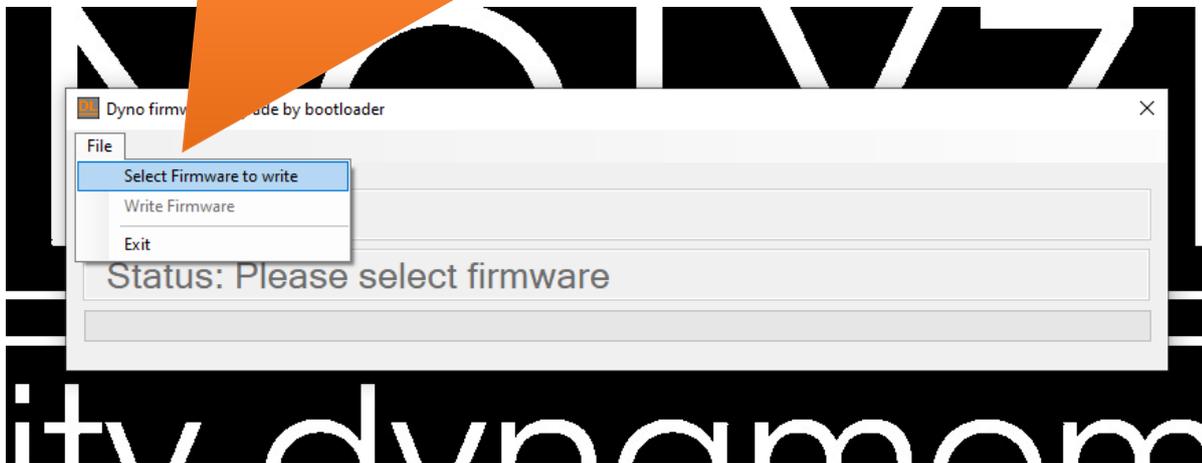
When entering the boot mode, you'll see this request and press OK if you are sure you want to continue.



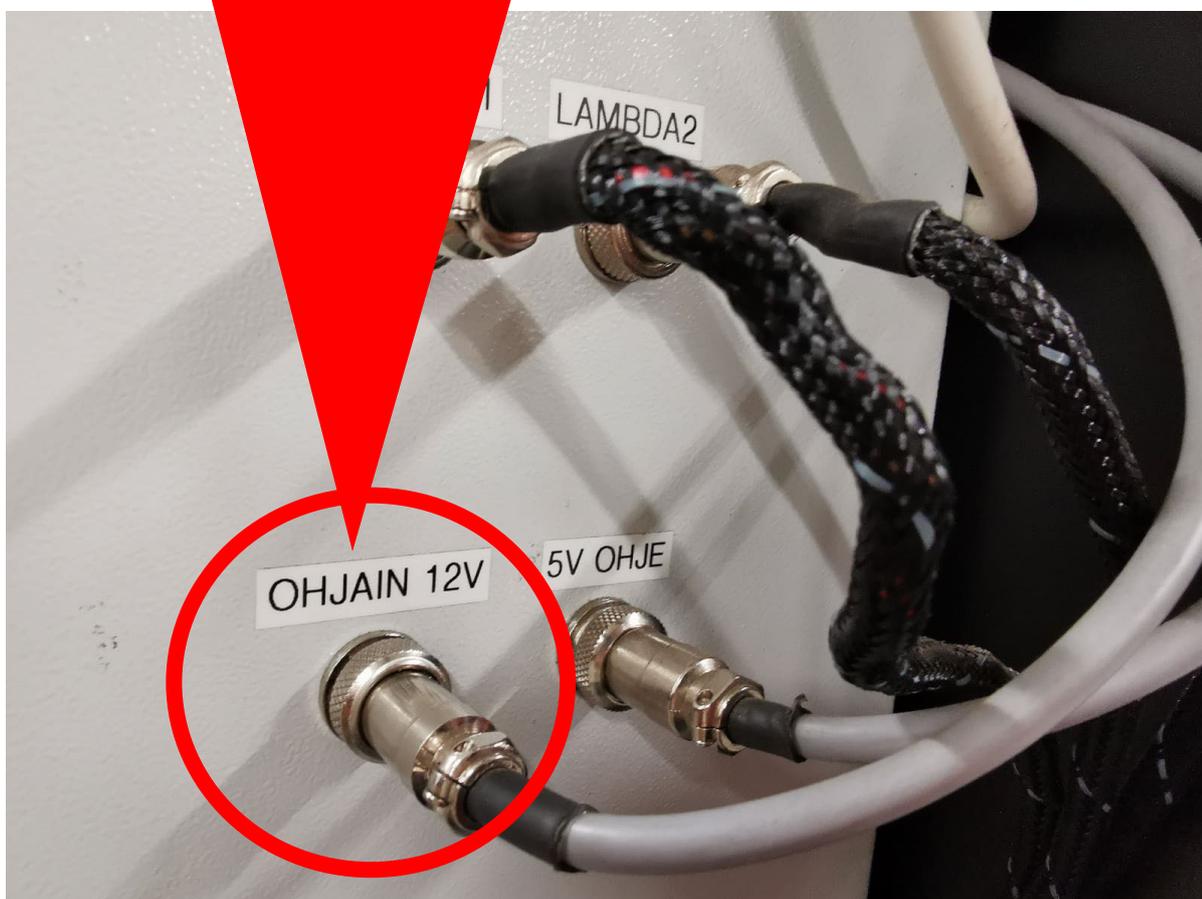
After pressing OK, you'll see this.



Select: File and "Select Firmware to write". Search the file from your computer and then press "Write Firmware".



If you see status message "boot accepted" and it doesn't start writing, please disconnect for at least three seconds and reconnect controller 12V supply connector (some firmware updates require 12V power supply on/off). After reconnection you will see software starts to write new firmware.



It takes about 2 minutes to complete. DO NOT CUT POWER WHEN THE WRITING IS ACTIVE!! IT MAY DESTROY YOUR CONTROLLER.

IF YOU USE THIS FUNCTION WITHOUT PERMISSION FROM TECH SUPPORT AND GET YOUR DYNO CONTROLLER LOCKED, WE WILL CHARGE 100% PRICE OF A NEW CONTROLLER!

If you need more information or notice something abnormal mentioned or not-mentioned in this manual, please contact the manufacturer.

Contact information

Manufacturer: Dynolyze
Syväojankatu 25
15700 Lahti
info@dynolyze.eu
+358 44 9728 001
VAT nr: FI26596009

Attached manuals for supplement of this manual:

Dynolyze hub dynamometer general user and safety manual