Manual Capristo Lambda Simulator Control Suite

(basic version)



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Overview

When you fit a sports exhaust system of Capristo Exhaust Systems GmbH, you will also be fitting a sports catalysator with high flow throughput. A narrow band oxygen sensor (Lambda sensor) is fitted after the catalysator to check the state of the catalysator. Due to the high throughput of exhaust gasses it is possible that the oxygen sensor after the cat. reacts too fast or too much. The ECU of the car is constant monitoring the value of this lambda sensor to determine if the catalysator is still doing its job. If something is not correct, the Check Engine Light will light up in the dashboard.

The Capristo Lambda Simulator is an intelligent microprocessor based device that receives up to four original narrow band oxygen sensor signals, analysis the signal and sends up to four independed dynamically changing and manipulated signal to the ECU. With a correct setup of the device the Check Engine Light will not light up anymore. The behavior of the narrowband oxygen sensor is now simulated the same as in the original exhaust pipe situation! The CLS is a Bluetooth® enabled device, allowing us to make a Bluetooth® connection with the CLS device. With the CLS control Studio software we can monitor the narrow band oxygen sensor signals and make some adjustments to the simulator.

CLS Connection diagram:



Adding a Bluetooth Device / connection

Please follow these steps to add the CLS1 device as an bluetooth device.

- 1. Fit the CLS set (device and cables) in the car with care.
- 2. Switch the car ON so the device will be power up. A red light is ON and the blue light for Bluetooth will slowly blinking. Bluetooth is waiting for a computer or smartphone to connect.

The bluetooth can now be discovered.



^{th®} picture of CLS labels

3. On your computer look at the rightcorner of your desktop. Locate the bluetooth icon



4. Press on it with your left of right mouse button and the next menu will popup.



5. Select "Show Bluetooth Devices"



- 6. This will open a panel with all your Bluetooth connections7. Click on Add Wireless Device

Control Pa	anel 🕨 Hardware and Sound	Bluetooth Devices		
🔠 Views 👻 🖺 Add Wire	eless Device 🛛 😽 Bluetooth S	ettings	1 1	0
Name	Device Category			
0 items				

8. This will show you all available Bluetooth devices. Select Capristo CLS1-XXXX and click on next

6	Pair with a wireless device	e		x	
	Select a wireless dev	ice to pair with this com	nputer	1	
	Name	Device Category			
	Capristo CLS1-FED9	Other Devices			
	What should I do if Windows hasn't discovered my device?				
			Next Can	icel	

9. Select "Enter the device's pairing code"



10. Enter code: 1234, click on next





11. When succesfull connected, you will see the following panel.

12. Click on CLOSE

Connect to CLS1 module

1. Locate icon for CLS on your desktop and start the program





2. Click on this **Live** to find the CLS device



Select Bluetooth Device		14	nd press OK
Name	Device Category		
Capristo CLS1-FED9	Other Devices		
If you don't see the device th setup instructions that came y	at you want to add, make sure tha with the device, and then click Se	it it is turned on. Follow the arch Again.	
Search Again	[OK Cancel	

 CLS control studio searches the correct connection and opens the connection with the device. Please wait for this procedure to connect. Once successfully connected, you will see all values are displayed.



Settings for CLS

Basically 2 settings are important to make.

- 1. What level (voltage) is the lambda signal with original exhaust fitted when car is driving a constant speed of 80 km/h
- 2. What level (voltage) is the lambda signal with original exhaust fitted when throttle is 100% open.

How to determine the level at 80 km/h constant speed?

Simpel, just take your laptop with you in the car which is connected to the CLS device. Drive the car at constant speed of 80 km/h and watch the voltage of the purple indicator. (top voltage is input voltage)

For example: 80 km/h $\rightarrow 0.65$ V



In CLS control studio, grab the black indicator and drag it to the value of 0.65.

Send the new settings to the CLS device by clicking this button [1] (location:left lower corner)

🛞 CLS Control Studio						
	COM21 Capristo Lambda Simulator CLS1 Firmware 1.50 00066648FED9 Capristo CLS1-FED9 MAC: 00066648FED9					
	CLS1 Measurements CLS1 Settings CLS1 Recordings					
	All values in Volts					
	🔍 Lambda 1	Lambda 2	Lambda 3	Lambda 4		
	IN 1.55 Limits	IN 155 Limits	IN Limits	IN Limits		
	5.0	- 5.0		- <u>−</u> 5.0		
	1 4.0	4.0	4.0	4.0		
	e - 3.0	- 3.0	- 3.0	- 3.0		
	- 2.0	- 2.0	- 2.0	- 2.0		
	s - 1.0	- 1.0	- 1.0	- 1.0		
	-i- 0.9 100	- 0.9	- 0.9	- 0.9		
	200 < 0.8 300 ▶ < 0.8	0.8	- <0.8	- < 0.8		
		65 0.7	- 0.7	- 0.7		
	- 0.6	0.6	- 0.6	- 0.6		
	0.5	0.5	0.5	0.5		
	0.4	- 0.4	- 0.4	- 0.4		
		- - 0.3	- - - - - - - - - - -	- <0.3		
	- 0.2		- 0.2	- 0.2		
DATT	- 0.1	0.1	- 0.1	- 0.1		
BATT	- 0.0	0.0		0.0		
	OUT U.B'I	OUT U.B'I				
	2 🔍			All the same		
13.6 V	V		Status: Mixing In	put with setpoint		
5						

When successfully received the green light next to the button will light up.

How to determine value at 100% Throttle?

Drive on a highway at constant speed, e.g. 100 km/h. Now enable 100% just for a couple of second and watch the purple value.





To set the correct setting for Full Throttle, set the max limit value a bit lower than 0.88V in the example. This is done by the slider on the right side



Send the new settings to the CLS device by clicking this button [1] (location:left lower corner)

When successfully received the green light next to the button will light up. $\bigcirc \bigcirc \bigcirc \bigcirc$ If not, the red light will be on and you have to try it again.

The device is ready to simulate the original values.