

Correction of use of wide band Lambda Innovate

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IMPORTANT PRELIMINARY

This documentation has been specially updated for the firmware versions of the Challenger ECUs:

- Challenger5 version 2.60 and newer
- Challenger6 version 2.60 and newer
- Challenger7 version 1.20 and newer
- Challenger8 version 2.10 and newer

The document 'Use of Lambda sensor' provided by the installation of these ECUs gave incorrect information on the programming of Innovate modules.

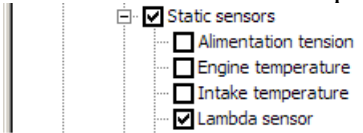
The present document corrects these errors. These corrections are marked in red.

USE OF INNOVATE LAMBDA MODULES

From the new firmware versions of the Challenger given above, it is also possible to use the Innovate modules, but these must be specifically programmed to be adapted to the characteristics of the Sybele ECUs.

I) LINEARISATION MAP OF THE LAMBDA SENSOR:

Go to the Lambda sensor page of the Winjall software ECU tuning:



And set the conversion map in this way:

ECU DISPLAY IN RICHNESS

Here is the **(corrected)** linearization map of the Lambda sensor to set in the ECU:

Lambda conversion		Innovate-MTX		
LINE SCALE	Not defined		Standard interpolation	
COLUMN SCALE	Lambda sensor input level		0 Standard interpolation	
Richness	200	2500	4800	
0	2000	1000	667	

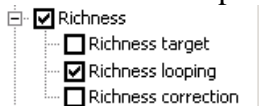
ECU DISPLAY IN LAMBDA

Here is the **(corrected)** linearization map of the Lambda sensor to set in the ECU:

Lambda conversion		Innovate-MTX		
LINE SCALE	Not defined		Standard interpolation	
COLUMN SCALE	Lambda sensor input level		0 Standard interpolation	
Lambda	200	2500	4800	
0	0.500	1.000	1.499	

II) MAP OF HEATING TIME OF THE LAMBDA SENSOR:

And go the Richness looping page of the Winjall software:



And set the map of Max waiting time before start in this way:

Max waiting time before Lambda start correction		Maximum waiting time at engine start in milliseconds		
LINE SCALE	Not defined		Standard int	
COLUMN SCALE	Engine temperature (°C)		-273 Standard int	
	-40	+40	+60	+80
1000	65535	45000	45000	40000

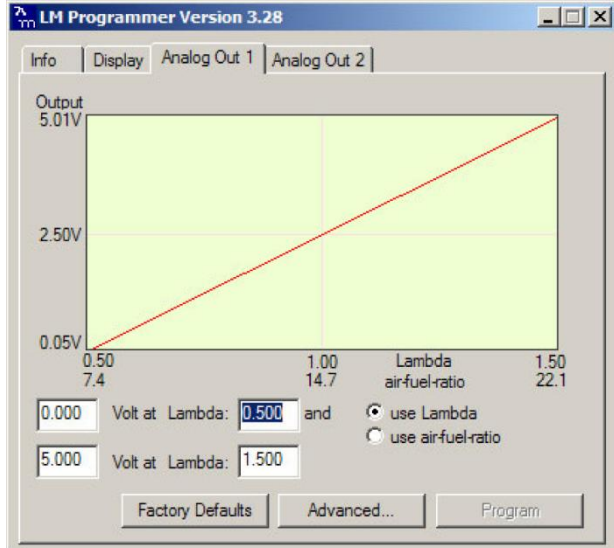
Indeed, the Innovate modules have very long sensor warm-up times and if we do not correctly position the waiting time in this map, the ECU will start using the sensor while it is not yet working, and the richness correction will be bad.

III) PROGRAMMATION OF INNOVATE MODULE WITH THE INNOVATE SOFTWARE:

See the User's manual of your Innovate

ANALOG OUTPUT PROGRAMMING

Select the tab corresponding with the output that you have wired to the ECU (yellow wire for module analog output 1, brown wire for module analog output 2).



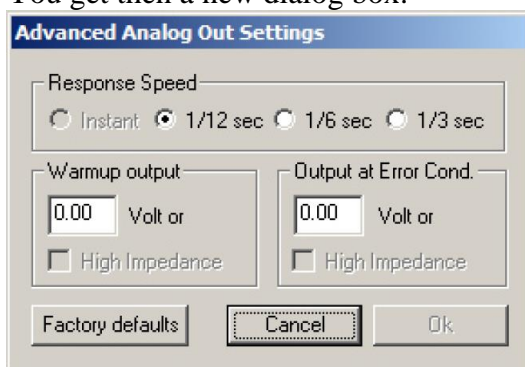
(image of Innovate software)

- 1) Check 'Use Lambda'.
- 2) Then, whether you have programmed Winjall to work in richness or in Lambda,
 - On the first line, fill **0.200** Volts at Lambda **0.500** (corrected)
 - On the second line, fill **4.800** Volts at Lambda **1.500** (corrected)

ADVANCED PROGRAMMING OF ANALOG OUTPUT

In the setup page of the output, click on the button [Advanced]

You get then a new dialog box:



(image of Innovate software)

- 1) Check "Response speed" 1/12 sec or faster if it exists
- 2) In the value "Warmup output" (value while heating), set **2.50** Volts
- 3) In the value "Output at Error Cond" (value on error), set **0.00** Volts

These values will allow the ECU to accurately find the Lambda errors and to help waiting the Lambda sensor heating before use it.