



Perfect Tuning MaxxECU Plug & Play patch harness User Manual

1989-1992 Toyota Supra 7M-GTE with gray connector)

Hardware Revision 1

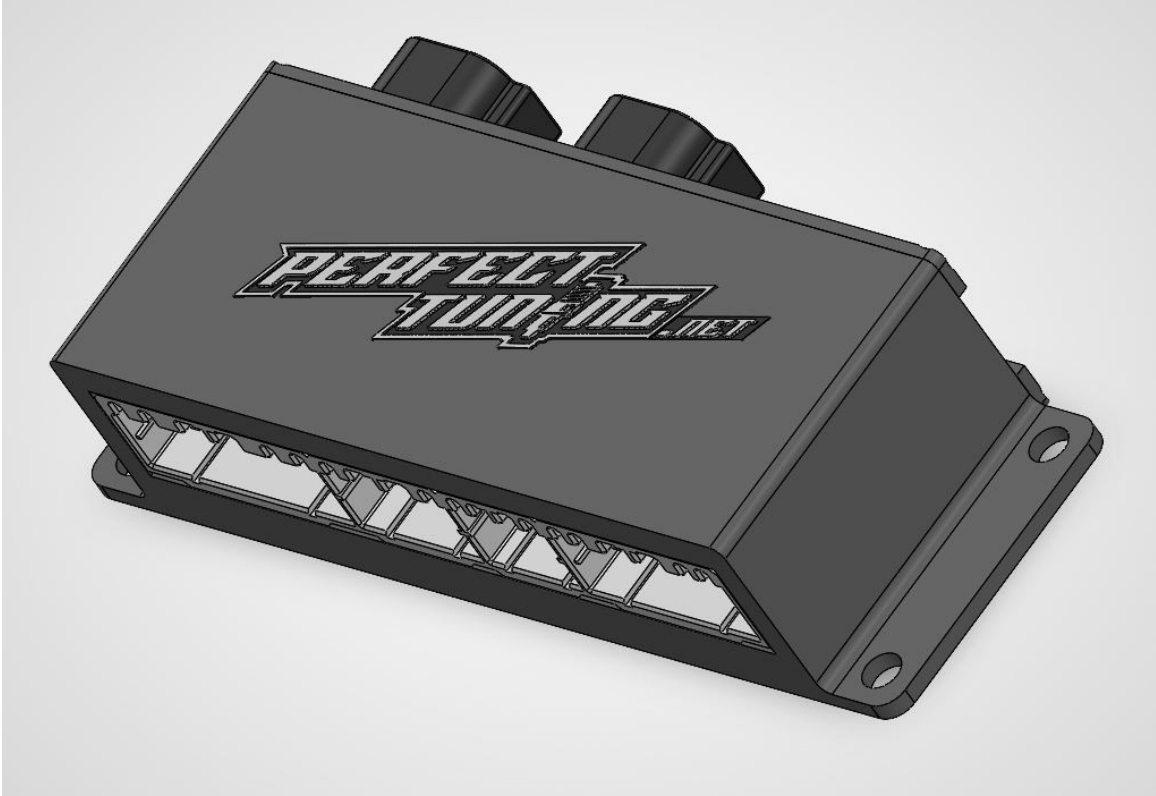


Table of contents

Links

Step 1

Step 2

Step 3 - Setup & Configuration

Testing power on

Calibrate the TPS (throttle position sensor)

Calibrate the Wideband

Timing Sync

Step 4 - Troubleshooting

Expansion Connectors

Wideband connector and controller

USB Connector

Crimping wires

Inputs and outputs

List of inputs and outputs

Injector outputs
Semi-Sequential to Full Sequential Injection Conversion
Ignition (spark) outputs
Full Sequential Ignition Conversion
Knock sensors inputs
A/C Control
Launch control / Flat-Shift / 2-step / Antilag
Internal Bluetooth module
Internal Data logging
Internal MAP and Barometric sensor
Internal Bosch LSU 4.9 wideband controller (optional)
Traction control
Boost Control
Base map
Electronic controlled automatic transmission (ECT).
12 Month Limited Warranty
Contact
Accessories:

Warning

All parts are sold for OFF ROAD RACE-ONLY ground-vehicle use only, or vehicles that predate any federal and state emissions control requirements. Aftermarket EFI/EMS systems are not for sale or use on pollution controlled vehicles.

Race parts are inherently dangerous and may cause injury or damage if improperly modified or altered before use. Perfect Tuning will not be held liable for and will not pay you for any injuries or damage caused by misuse, modification, redesign, or alternation of any of our products. Perfect Tuning will not be held in any way responsible for any incidental or consequential damages including direct or indirect labor, towing, lodging, garage, repair, medical, or legal expense in any way attributable to the use of any item in our catalog or to the delay or inconvenience caused by the necessity of replacing or repairing any such item.

All supplied Perfect Tuning calibrations, Wizards and other tuning information are offered as potential starting points only. IT IS THE RESPONSIBILITY OF THE ENGINE TUNER TO ULTIMATELY CONFIRM IF THE CALIBRATION IS SAFE FOR ITS INTENDED USE. Perfect Tuning holds no responsibility for any engine damage that results from the misuse or mistuning of this product!

Refer to the MaxxECU documentation at: <https://maxxECU.com/webhelp/>

Installation of MaxxECU MTune

- Download at <https://www.maxxECU.com/downloads>

Software for Android devices

- **MDash**
- RealDash provides some really nice dashes and will work with the BT module or USB cable.

Software for Apple devices (iPhone, iPad)

- [RealDash](#) provides some really nice dashes.

Installation

Connecting the Plug and Play Harness

Step 1

- Disconnect the positive terminal from the Battery
- The factory ECU is located over the glove box. Remove the glove box and plastic cover over the glove box.



Step 2

- Install the MAP Sensor vacuum hose/tube to the MaxxECU unit. Connect the vacuum tube to the port behind the intake manifold near the firewall. Ideally nothing else should be connected to this port except the map sensor.
- Default configuration uses the onboard 4 bar (44 psi) map sensor. It is also possible to use external MAP sensor on any spare analog input

Removal of AFM

- A aftermarket Intake Air Temperature sensor (IAT) will need to be installed as the factory AFM also has this sensor included in the housing. As a replacement we recommend the MaxxECU 1/8 NPT Open Element air temp sensor.
- Disconnect the MAF/AFM connector (close to the air filter)
- Locate pin 1 (brown) and 2 (light green) and connect the new IAT sensor to these wires. Polarity is not important (the sensor is a variable resistor).
- You will need to install the sensor somewhere in the air flow stream before the turbo or ideally after the intercooler.



Step 3 - Setup & Configuration

Testing power on

- Turn the key ON position and listen carefully for the fuel pump to activate and prime for 3 seconds. If successful the MaxxECU is functional.
 - Connect USB cable and open MTune software.
 - ECU will be detected automatically.
 - You are now connected to your MaxxECU.

Calibrate the TPS (throttle position sensor)

- Ensure you are connected.
- Go to **Inputs, Sensors (CLT, IAT, TPS)** then click on **Get Current Voltage** for the closed throttle while **NOT** touching the gas pedal. Now with the gas pedal fully pressed, click on **Get Current Voltage** for the open voltage.
- Calibrate the IAT (intake air temperature) and CLT (coolant temperature) if not using the factory one

Calibrate the Wideband

If a wideband sensor is used, calibration is recommended.

Timing Sync

*** IMPORTANT *** Check the timing and Check It Again!

This step is very crucial for both engines! **YOU CAN DAMAGE OR DESTROY YOUR ENGINE** if this step is not followed correctly.

- **7M-GTE** engine timing signal is generated from the CPS (cam position sensor) signals and the CPS can move and are not as reliable as modern sensors. This step is here to ensure that the timing is synchronized with the engine.
- In MTune, go to Inputs, **Trigger/Home Inputs**, check **Lock ignition angle**. Set **Ignition lock angle to 10 BTDC**
- Start the engine. Check with a timing light if the timing is right. If not, adjust **First Tooth Angle** so 10 degrees is shown with the timing light.
- Rev the engine and ensure that the timing **stays** at 10 degrees.

Step 4 - Troubleshooting

- If the engine doesn't start press on the gas pedal over 70% during cranking. This activates the flood clear mode and completely stops gas injection.

*Please note that the 7M-GTE cold start injector that is NOT driven by the MaxxECU. This will inject a small quantity of gas and it's not possible to stop it from the ECU. Should you wish to disable this you must disconnect the connector at the injector under the intake manifold.

- Ensure that the **Crank** and **Cam** synchronization is good.
 - Capturing a **Trigger logger** greatly helps in diagnosing problematic engine sync. This log will display the crank triggers, 7m-GTE requires 23 short lines before 1 long line should appear.
- Ensure that the spark plugs are firing and you can check the timing while cranking.

- PerfectTuning does offer remote paid tuning and setup assistance, please [contact us](#) for more information.

Expansion Connectors 8 pins

Pin	Name	Description
1	12v	Switched 12v from B+
2	PGND	Power Ground
3	5v	5v output
4	SGND	Sensor Ground
5	AIN4	Analog input 4
6	GPO 7	GPO7 Or DIN 3
7	GPO6	
8	GPO8	Tach output

CAN bus Connector 4 pins

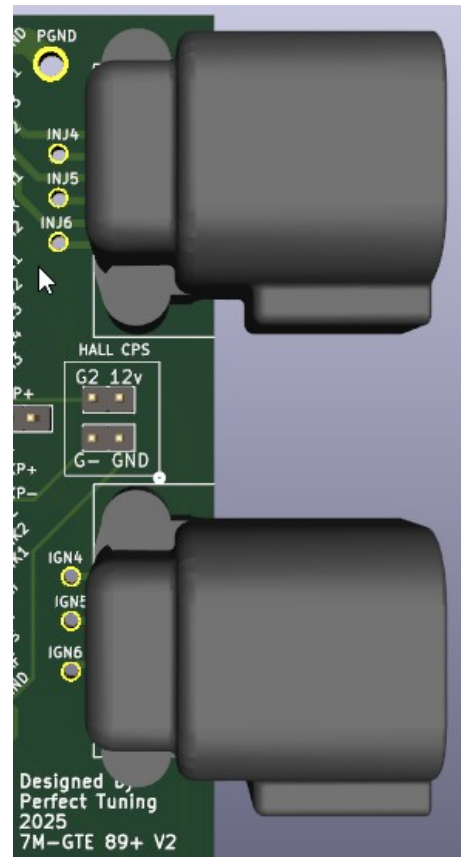
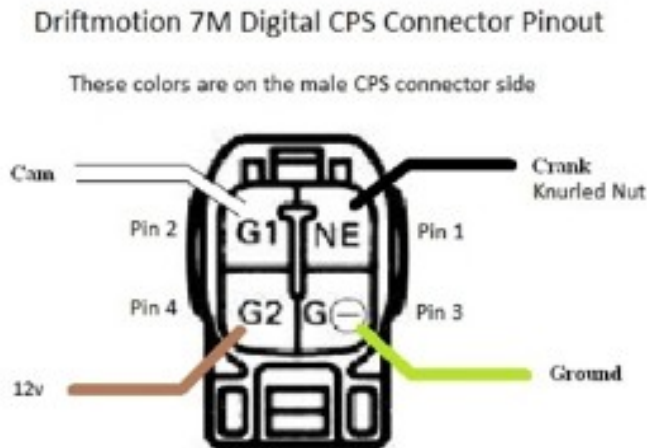
Pin	Name	Description
1	CANH	Canbus High
2	CANL	Canbus Low
3	12v	
4	PGND	Ground

Wideband Connector 6 pins

Pin	Name	Description
1	WBO2 IP	Pin G3
2	WBO2 COM	F3
3	WBO2 HTR	GPO 9
4	12v	
5	WBO RCAL	G4
6	WBO2 VS	F4

Digital CPS Conversion

With the installation of 2 jumpers on the patch harness circuit board, a digital CPS conversion is really easy.



Installing the jumper between G2 and 12v, 12v will be provided on the G2 wire.

Installing the jumper between G- and GND, G- will be grounded to sensor ground.

Semi-Sequential to Full Sequential Injection Conversion

- The advantage of full sequential injection is smoother idle and slightly better fuel economy. This will not affect horsepower.

The expansion 6 pins connectors on the patch harness allow a direct connection to the injectors.

Connector required is a Deutsch DT 6 pins connector (DT06-6S).

The numbers in red are the injectors outputs. Output 1-2-3 are also internally connected to Injector #10, #20 and #30.



Ignition (spark) outputs

- MaxxECU uses 5v logic level to drive an external ignition module or logic level coil packs. Do not connect ignition outputs directly to the negative terminal of an ignition coil. This will damage the MaxxECU. We recommend the 6 channel igniter module (see Accessories) to drive directly coils. Maximum current is 200mA per channel. Unused ignition outputs may be used as general purpose outputs.

Full Sequential Ignition Conversion

- Is it possible to get rid of the factory Toyota multiplex igniter and convert to a fully sequential ignition on the 7M-GTE. There is a lot of options like using the 1JZ/2JZ-GTE non vvti coil on plug with a 1JZ/2JZ-GTE igniter, or using 1ZZFE pen coils with internal ignitor or GM LQ9 or R35 coil on plug with internal ignitor.

The expansion connector on in the middle of the patch harness is for sequential ignition conversion.

Numbers are the spark outputs in relation to engine cylinders.

Outputs 1-2-3 are also internally connected to IGT, IGDA, IGDB.



Knock sensors inputs

- The factory knock sensors are connected to the MaxxECU.
- 7M-GTE bore = 83mm and resonance frequency = 6.9 kHz

For more information, refer to the MaxxECU user manual.

A/C Control

- The MaxxECU is connected to the A/C input on the 7M-GTE and the A/C Clutch is not controlled by the MaxxECU and is controlled by the climate control module. To control the A/C Clutch, manual wiring is required.

Launch control / Flat-Shift / 2-step / Antilag

- It uses the factory clutch switch pin **NSW**. It's connected to the **Digital In 1** so it will reflect the actual voltage on the NSW pin.
- If the **NSW** pin cannot be used it's possible to use any other digital input like the any **Digital Inputs** from the expansion connector. Connect this pin to ground to enable the launch control with a clutch switch or a push button.

Internal Bluetooth module

- The MaxxECU Street and Race has an internal Bluetooth module inside for wireless communication.

Internal Data logging

- It is possible to record logs in this internal memory.

Internal MAP and Barometric sensor

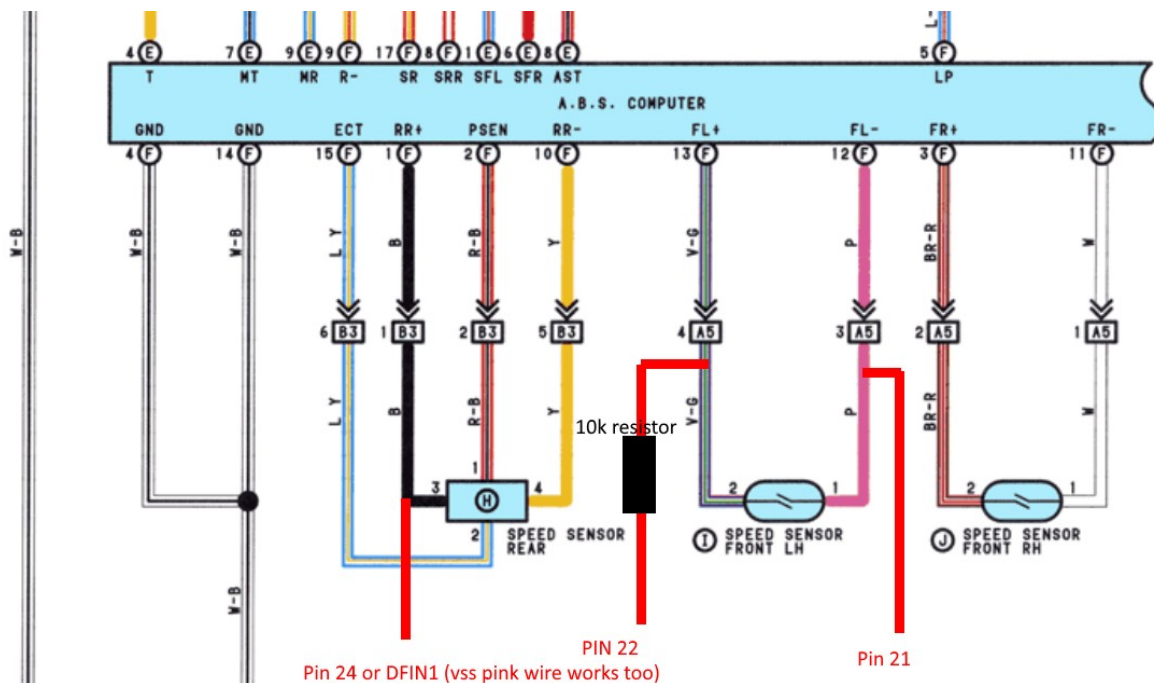
- There is a 4 bar (44 psi of boost maximum) map sensor inside the MaxxECU. There is no barometric sensor and it must be added externally if needed.

Internal Bosch LSU 4.9 wideband controller (optional)

- The MaxxECU can control Bosch 4.2 or 4.9 sensors or use external wideband controller.

Traction control

- The MaxxECU includes many types of traction control algorithms. More information is available in the online documentation.
- If your car is equipped with an ABS system, it's possible to tap the front and rear wheel speed sensor signal. The signal needs to be connected to the digital input as they are digital frequency inputs. The front ABS sensors are VR sensors. The factory R154 ABS ring on the mk3 supra is a Hall Effect sensor which can be wired directly to one of the digital frequency inputs.



Boost Control

- Connect the boost control valve to any of the outputs.
- Wire one side of the solenoid to 12v and the second the PWM output of choice.
- Refer to <https://store.perfecttuning.net/> for an electric boost solenoid.

Base map

- All MaxxECU PNP comes with a default base map that is able to start and run your engine but tuning **will be required**. Basemap is not loaded by default.

Electronic controlled automatic transmission (ECT).

- The MaxxECU does not control the automatic transmission directly, but can replicate the signals sent from the factory 7M-GTE ECU to the ECT ECU. This way, it's possible to control an automatic transmission

12 Month Limited Warranty

- Perfect Tuning warrants to the consumer that all products will be free from defects in material and workmanship for a period of twelve (12) months from date of the original purchase. Products that fail within this 12-month warranty period will be repaired or replaced at Perfect Tuning's option, when determined by Perfect Tuning that the product failed due to defects in material or workmanship. This warranty is limited to the repair or replacement of the Perfect Tuning part. In no event shall this warranty exceed the original purchase price of the Perfect Tuning part nor shall Perfect Tuning be responsible for special, incidental or consequential damages or cost incurred due to the failure of this product. Warranty claims to Perfect Tuning must be transportation prepaid and accompanied with dated proof of purchase. This warranty applies only to the original purchaser of the product and is non-transferable. All implied warranties shall be limited in duration to the said 12-month warranty period. Improper use or installation, accident, abuse, unauthorized repairs or alterations voids this warranty. Perfect Tuning disclaims any liability for consequential damages due to breach of any written or implied warranty on all products manufactured by Perfect Tuning. Warranty returns will only be accepted by Perfect Tuning when accompanied by a valid Return Merchandise Authorization (RMA) number. Product must be received by Perfect Tuning within 30 days of the date the RMA is issued. Oxygen sensors are considered wear items and are not covered under warranty. Please note that before Perfect Tuning can issue an RMA for any electronic product, it is first necessary for the installer or end user to contact the us at support@perfecttuning.net to discuss the problem. Under no circumstances should a system be returned or a RMA requested before the above process transpires. Perfect Tuning will not be responsible for electronic products that are installed incorrectly, installed in a non-approved application, misused, or tampered with. Any Perfect Tuning

electronics product can be returned for repair if it is out of the warranty period. There is a minimum charge of \$50.00 for inspection and diagnosis of Perfect Tuning electronic parts. Parts used in the repair of Perfect Tuning electronic components will be extra. Perfect Tuning will provide an estimate of repairs and receive written or electronic authorization before repairs are made to the product

Contact

- Questions and general technical support to help@perfecttuning.net.
- We do offer remote tuning.

Accessories:

- Multiple Widebands are available. Please visit [PerfectTuning](#) for more information.
- Fast response GM intake air temperature sensor (open element IAT)
- GM intake air temperature sensor or coolant temperature sensor (close element).
- Exhaust gas temperature sensor. Up to 1250 Celsius with interface board.
- USB-Serial cable for computer or Android device.
- Resistor box for low impedance injectors
- 6 channel igniter box to direct drive coil packs.

Visit [PerfectTuning](#) for more information or contact us at help@perfecttuning.net.