XEDE Processor
Instruction Manual

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The XEDE Processor

Introduction

ChipTorque's XEDE Processor is a sophisticated tuning tool designed to deliver increased power and torque, optimal throttle response, improved fuel economy and smoother acceleration.

The concept of ChipTorque's XEDE Processor began as a solution to the need to re-tune vehicles whose engine management systems had migrated from the previously standard performance chip. The XEDE Processor was created by Lachlan Riddel and his in-house Research & Development team.

The XEDE Processor is an interceptor style Engine Management System. It generates changes in fuel and ignition by changing the factory ECUs load and crank reference input signals. The XEDE Processor then uses the factory control of coils and injectors to deliver the fuel and timing. It has additional functions of boost control, water spray control or potentially any other on/off or PWM function including injector drive for an additional injector.

All XEDE Processors are supplied with a base map selected from ChipTorque's program database based on the vehicle's modifications. XMAP software can be downloaded for free and allows you to fully custom tune the vehicle's parameters if needed.

How It Works

The XEDE Processor is wired or connected into a vehicle's factory wiring loom and intercepts the signals travelling to the ECU. By intercepting the crank reference signal we can advance or retard timing. By intercepting the load signals, e.g. analogue voltage of an Air Flow Meter, we can make the mixtures richer or leaner by giving a higher or lower load signal to the ECU.

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Benefits

Most factory parameters are retained

- ➔ Cold start functions
- ➔ Idle control
- ➔ Knock sensor functions
- ➔ Closed loop control
- ➔ Limp home operating strategies
- ➔ Fan and Air Conditioner controls
- ➔ Immobiliser functions

Fast Tuning in Real Time

With multiple decades of experience tuning engine management systems from Australia, Europe and USA, Lachlan and his design team incorporated what they believe to be the best functions from the engine management systems at the time into the XEDE's tuning software – XMAP. This means fast, intuitive, on-screen tuning in real time.

Base Tuning Maps Supplied

All XEDE's are supplied with a base map/s to give you a great start point for your tuning.

Not Processor Specific

Can be tuned to auto/manual, series1/series2 regardless of current software in the factory ECU.

Cost Effective Tuning Solution

- ➔ No contracts/subscriptions
- ➔ XMAP software available as a free download from ChipTorque's website
- ➔ Cheaper and easier than using an aftermarket engine management system
- ➔ Can be tuned at any time, in the car, anywhere

Customer Support

- ➔ Ongoing local R&D
- ➔ Expanding product range
- ➔ Installation & tuning phone support available

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Suitable Applications

ChipTorque recommends taking the following into consideration when deciding if the XEDE Processor is a suitable option for programming your vehicle.

- ➔ Vehicle's current modifications
- ➔ Vehicle's planned future modifications
- ➔ Camshafts
- ➔ Injector size
- ➔ Boost level
- ➔ Expectations
- ➔ Budget

The XEDE Processor does have limitations. An interceptor unit cannot:

- ➔ Increase rev limits
- ➔ Adjust commanded idle speed
- ➔ Easily increase speed limits
- ➔ Easily change gear shift points
- ➔ Facilitate injector changes greater than 30%

Always feel free to contact ChipTorque for advice on the best solution.

Specifications

- ➔ Maximum of 4800 adjustments
- ➔ 0.1% full scale accuracy on MAF, MAP and TPS adjustments
- ➔ Degree accuracy on timing adjustments
- ➔ Support for hall and reluctor type crank and/or cam timing signals
- ➔ Support for analogue or frequency MAF and MAP/load signals
- ➔ Internal Storage space for up to 12 tuning maps
- ➔ One additional 10-bit analog input
- ➔ User configurable load axis, input and output variables, adjustment range, and math function for each map
- ➔ Two unique Tuning map banks
- ➔ Two high current outputs for boost control, water spray or auxiliary injector, etc.
- ➔ Remotely installable bi-colour status LED
- ➔ Fully sealed, rugged and lightweight quality housing

How To Tune With The XEDE Processor

Introduction

It is important to understand that the XEDE Processor is an interceptor style of Engine Management System, sometimes referred to as a piggy-back system. As such there are certain fundamental rules and principles that must be adhered to when attempting to tune an existing engine management system using an XEDE.

The Basics

The XEDE integrates with an existing (usually factory) Engine Management System. The operation of the XEDE is to modify the signals (Voltage or Frequency and Crankshaft Reference signals) before the main PCM/ECU sees the signals. By changing the values of these signals, the resultant outputs from the PCM will be changed. If, for example, you effectively reduce the voltage that the PCM sees on the MAP sensor wire at Full Load, the PCM will see a signal that equates to less load. Using this modified input signal, the PCM will open the injectors for less time as it expects the engine is under less load and therefore requires less fuel.

Changes are made in the Maps on the screen and provided the XEDE is on-line, the changes will be made immediately in the XEDE. When there is a difference between the data stored in the XEDE's *RAM* and the data on screen, an error message will be displayed.

Uploading the data will load the data from the screen into the XEDE's *RAM*. It will remain there, active, unless the XEDE power is removed, i.e. if the ignition is turned off. Before completion of tuning, or at any time during the tuning, the data must be "burned" to the XEDE, making it permanent in the XEDE *ROM*.

While the engine is running, temporary changes can be tested in the XEDE without changing the permanently stored (burned) data by using the upload function but not burning the data before disconnecting the laptop from the XEDE.

Best Practice Procedure

1. Connect cables to laptop
2. Open XMap software
3. Turn ignition on
4. Press F8 to download and show all Maps
5. Alt-F / Save As to save the existing file before making any changes
6. Make changes and tune as appropriate
7. Alt-F / Save As to save as a new file name
8. Ctrl-U to upload (if necessary)
9. Ctrl-B to burn to XEDE
10. Ignition off
11. Exit software
12. Disconnect laptop

Glossary of Basic Terms

AFR	Air/Fuel Ratio as measured using a 'Wide Band' style O2 exhaust gas sensor and meter.
Map	The editable Table / Grid of data in the XMAP software.
MAP	The Manifold Absolute Pressure as derived from the MAP sensor.

Key Shortcuts: (In order of usage)

F8	Download and show all Maps
Ctrl-U	Upload the data on-screen into the XEDE
Ctrl-B	Burn (make permanent) the uploaded data into the XEDE memory
Spacebar	Move the cursor to the current active point or cell.
Right mouse click	Activate Edit Menu options
F11	Align Graphs with Maps

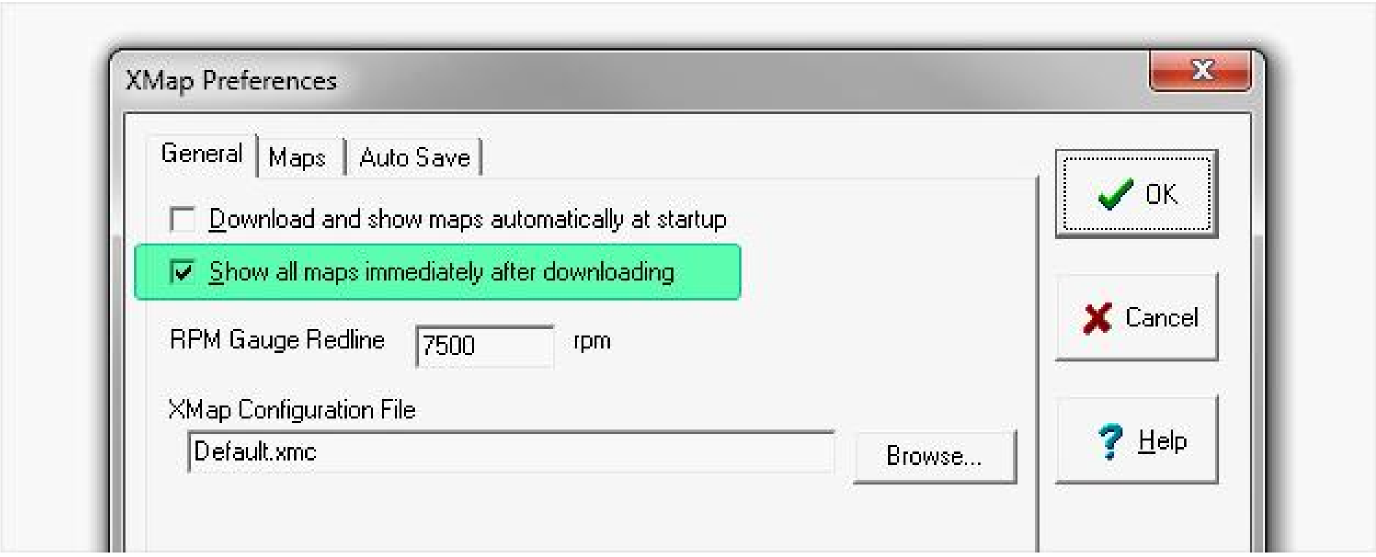
Connecting To The XEDE

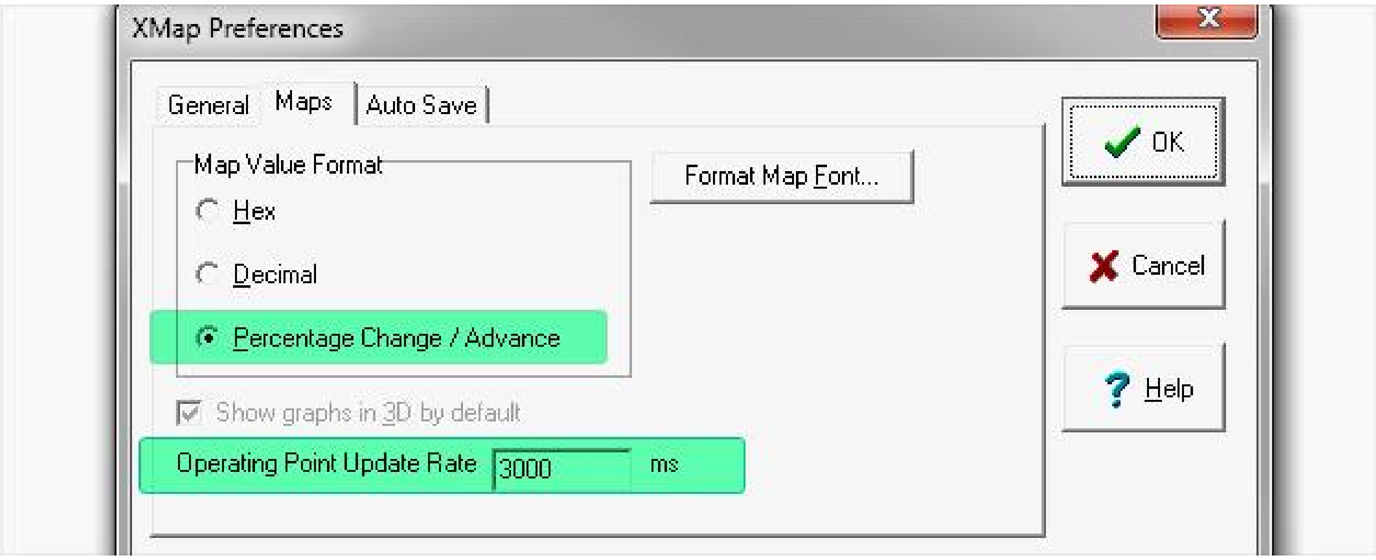
Comms Setup

The XEDE communicates with the laptop using the XMap software and a serial port. The serial port can be specified (even if it is a USB or PCMCIA adapted serial port) from the options menu under Comms Setup.

Preferences

Some basic preferences can be set up from the Preferences under the File menu.
Important ones that avoid common errors are:





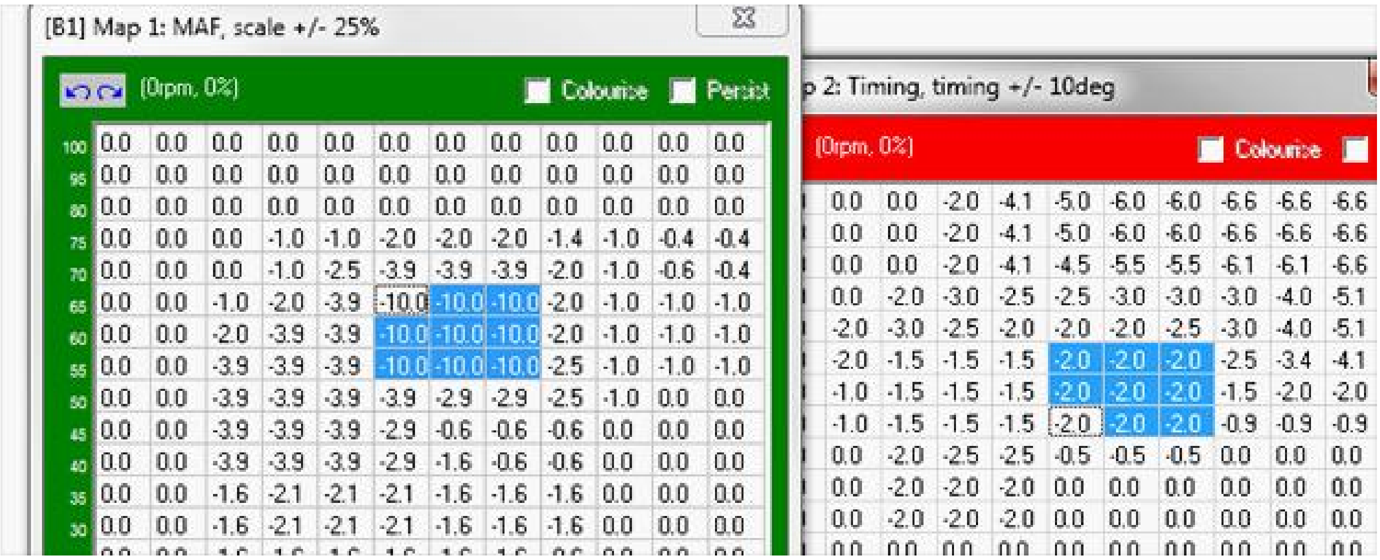
Modifying Fuel

The XEDE modifies the fuel delivery by changing the load variable before the PCM sees the result. The load variable might be MAP (Manifold Absolute Pressure) or MAF signal (Mass of Air Flow). Lowering the value (ie -10%) will lower the amount of fuel delivered as the PCM reads a lower load signal. Increasing the value (ie +10%) will increase the amount of fuel delivered as the PCM reads a higher load signal. This should work as stated for MAF systems.

In a MAP (speed/density) based system, on a naturally aspirated engine, the load value cannot exceed the value for atmospheric pressure or the PCM is likely to set an error (faulty map sensor – voltage too high). In order to achieve more fuel delivery in this application it would be necessary to mechanically increase (bigger injector or more fuel pressure) the total fuel delivery and decrease the load signal everywhere other than where the extra fuel is needed.

It is extremely important to remember that in changing the load variable, as described above, the fuel delivery is changed. But at the same time, the PCM is given signals which would equate to less load and the PCM's original program is likely to have more ignition advance at these loads. The normal procedure for safe tuning then, is to start with say, -2° (minus two degrees) in the high load section of the timing map and then use the fuel style (MAF or MAP) map to lean out the fuel mixtures to an appropriate value, then re-advance the ignition timing if possible.

For example -10% in the MAF table may add 4° (4 degrees) more advance, however the engine only requires two more degrees of advance. So for this point the MAF table value will be -10% and the timing table value will be -2° (minus 2 degrees). Note that this is 2° (2 degrees) more advanced than the standard PCM program had at this point.



100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75	0.0	0.0	0.0	-1.0	-1.0	-2.0	-2.0	-2.0	-1.4	-1.0	-0.4	-0.4
70	0.0	0.0	0.0	-1.0	-2.5	-3.9	-3.9	-3.9	-2.0	-1.0	-0.6	-0.4
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35	0.0	0.0	-1.6	-2.1	-2.1	-2.1	-1.6	-1.6	-1.6	0.0	0.0	0.0
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0.0	0.0	-2.0	-4.1	-4.5	-5.5	-5.5	-6.1	-6.1	-6.6
0.0	-2.0	-3.0	-2.5	-2.5	-3.0	-3.0	-3.0	-4.0	-5.1
-2.0	-3.0	-2.5	-2.0	-2.0	-2.0	-2.5	-3.0	-4.0	-5.1
-2.0	-1.5	-1.5	-1.5	-2.0	-2.0	-2.0	-2.5	-3.4	-4.1
-1.0	-1.5	-1.5	-1.5	-2.0	-2.0	-2.0	-1.5	-2.0	-2.0
-1.0	-1.5	-1.5	-1.5	-2.0	-2.0	-2.0	-0.9	-0.9	-0.9
0.0	-2.0	-2.5	-2.5	-0.5	-0.5	-0.5	0.0	0.0	0.0
0.0	-2.0	-2.0	-2.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	-2.0	-2.0	-2.0	0.0	0.0	0.0	0.0	0.0	0.0

Modifying Timing Values

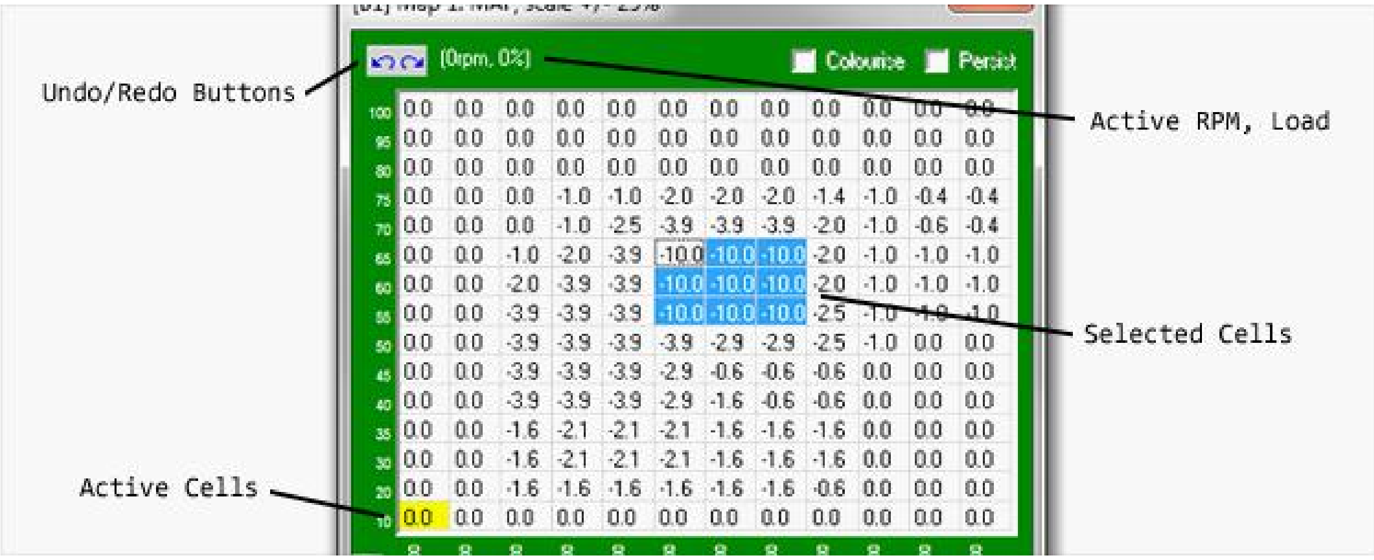
The XEDE relies on modifying the crankshaft reference signal (whether from the distributor or a crank angle sensor) before it is read by the PCM, in order to change the effective ignition timing. This means that all things related to this crank angle reference are also likely to be moved, provided that the original engine management (PCM) software is configured to do so. Importantly, these can include variable camshaft timing.

If the timing signal is advanced by, say, 5° (5 degrees) then the ignition timing will be advanced by 5°, however in an engine with variable camshaft timing it is likely that the camshaft timing will be advanced by 5° also because the entire crank angle reference signal is now 5° further advanced. This may be either advantageous or disadvantageous but needs to be kept in mind when tuning an engine with infinitely variable cam timing. Aside from the above point, tuning the engine's timing is achieved by adding or subtracting (advancing or retarding) a number of degrees from the car's original ignition curve at any given point.

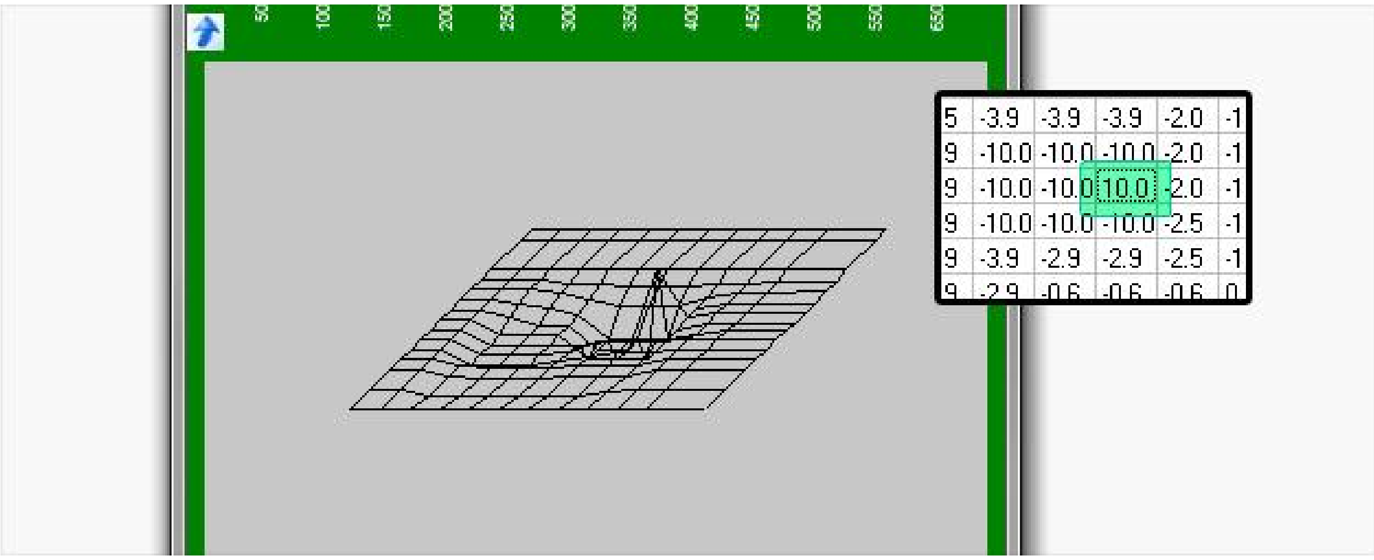
The XMAP software and XEDE hardware perform extremely detailed interpolation between operating points in the maps. It is entirely viable to have -5 (minus five) in one point and +5 (plus five) in an adjacent point. The interpolation software will generate a smooth, proportionally linear (three dimensional) ramp between the points.

Screen Functions

When the XMAP software is communicating with an XEDE via the comms cable each map will show, at the top of the map display, an RPM and load value (x and y axis for the map) in real time. Also in each map a yellow highlighted block will show the current position within the map. Beside the real-time display on each map are the undo and redo buttons which will undo or redo one change per button press.



The graphic (3D) display is best used as a guide to mis-typing. This is particularly good for finding a negative instead of a positive value; or vice versa.



Editing a Map

There are several ways to change the values in a map. In order to edit the values in a particular map, that map must be active (ie. in the Active Window). Click anywhere in the required map with the mouse or use key combinations Alt-1; Alt-2; Alt-3 etc. will cycle through the maps to activate. (i.e. Hold down the ALT key and press the 1, 2 or 3 key etc. at the same time.)

Navigating within the Active Map

1. Use the mouse to click on an individual cell. The cell will highlight with dots on the border of the cell.
2. Use the Arrow keys to move the Active Cell around within the map.

Editing a cell

1. Type the value directly into the cell. To type a negative value, put a minus sign before the value.
2. Right mouse click in the cell to bring up a window of options for editing the point or the whole map.
    - 2.1. The value can be scaled with a + or – percentage
    - 2.2. The value can have an offset added (including a negative offset)
    - 2.3. The value can be entered (filled) directly
    - 2.4. The value can be zeroed

Editing a block or area

1. To select a block or area of the map hold the shift key and use the arrow keys to mark (highlights in blue) an area.
2. Left mouse click and drag to mark a block.
    - 2.1. Right mouse click in the block
    - 2.2. Use Alt-e to activate the Edit menu.
    - 2.3. From the Edit menu the modification options will be available including Fill, Offset, Percentage or Interpolate through an axis. Interpolating through the x then the y axis will interpolate through a plane or marked block.

NOTE: The Edit menu has options to edit the whole active map or Selection to edit the marked block. It is important to activate selection, not map if you wish to operate only on the marked block.

HINT: To edit at the current point, hit the spacebar to take the cursor to the current active cell(s) in the Map.

Inserting a row or column

To insert a new axis point, right mouse click on the cell just above the required insertion point, click Insert column or row and select the Load or RPM Value to insert.

Editing the Axis values

A number of important possibilities are available when editing or creating a Map. Right mouse click in the Map of choice and select ***Edit Map***. This will bring up the edit window with several options.

Editing the RPM Points or Load Points

Directly enter the values into the ***RPM Points*** and ***Load Points*** lists. The minimum RPM spacing between adjacent points is 100RPM.

Changing the Load Variable

The ***Load Variable*** can be different for different maps in a map bank. The Load Variable will normally be the primary Load Variable for the PCM ie. MAP if MAP based or MAF if primarily MAF based. It can also be TPS or another input.

NOTE: A combination of variables can be used in two maps to generate a complex axis. This will be discussed later under “Nested or Complex Map Functions”.

Changing the Math function

For most maps, the ***Math Function*** should be set as Scale (Multiply) and obviously the ignition timing change map should be set to Timing Change. The scale function literally applies a multiplier to the current value. Eg. A 2 volt input signal with a +10% scale value in the map will output 2.2 volts. There is similarly Offset (Add) which will add a percentage to the value. Adding a (–) Negative percentage will obviously decrease the values by the amount.

Setting the ***Output Variable*** to Pulse Width will allow direct setting of Pulse Width Output (in percentage of total) for the outputs on XEDE Pin B8 and B9. See “PWM Outputs” for more detail.

Setting the ***Math Function*** to Absolute Output will allow direct output of 0-5 volt analogue voltage or if ***Output Variable*** is PWM0 will output duty cycle for controlling a solenoid valve i.e. Wastegate control for boost.

Output Scaling

Output Scaling is accessed from ***Features Menu* → *Output Scaling…***

Output scaling allows a global change to be applied to an individual analogue voltage or frequency. This is useful for an increase in injector size, for example, i.e. Multiplying the Map sensor input voltage by 0.945, will globally allow for a slightly larger injector by providing a lower load signal to the ECU under all operating conditions. Obviously there are bounds outside of which the ECU will not accept such input changes.

Output Clamps

Output Clamps are accessed from the ***Features Menu* → *Output Clamps…***

Output clamps allow a voltage or frequency clamp to be applied to any of the output variables, meaning that regardless of how high the input value gets, or how much more is applied to the value through the Map tables, the value will not exceed the clamp. 2.73 volts in the example above for AN0 and AN1; and 3.94 volts for AN2.

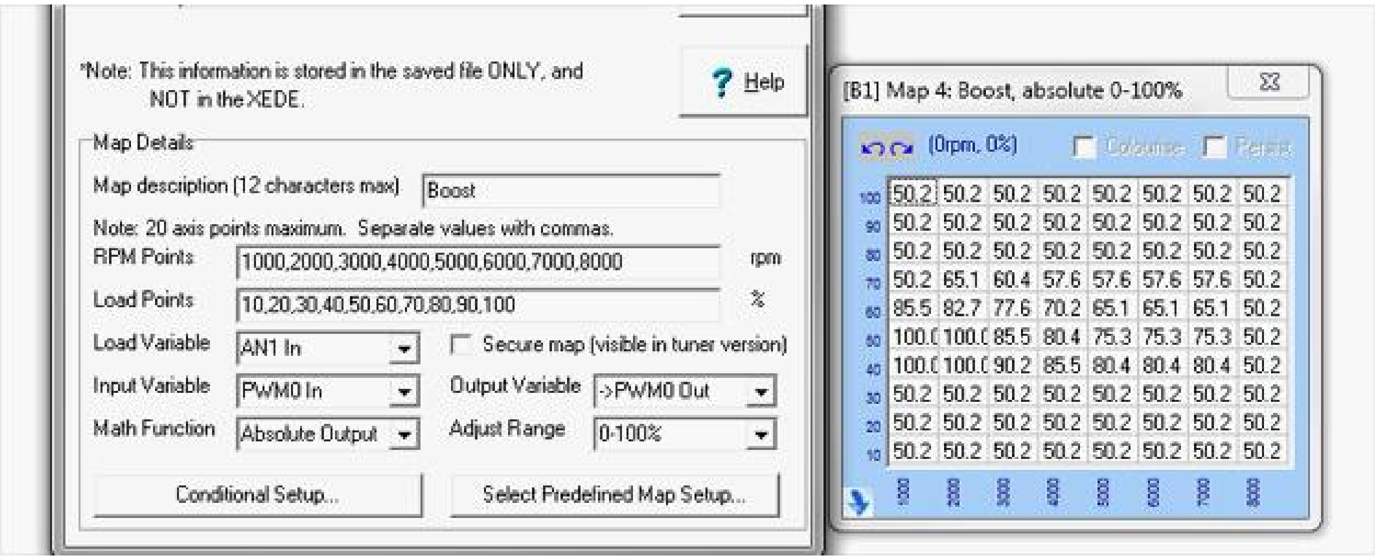
PWM Outputs

The XEDE has two possible PWM Outputs.

Wastegate Solenoid (Boost) Control

When the ***Output Variable*** is set to PWM0 out and the ***Math Function*** is set to Absolute Output, the value in the table will be the duty cycle output to the solenoid valve connected to Black Connector Pin 6.

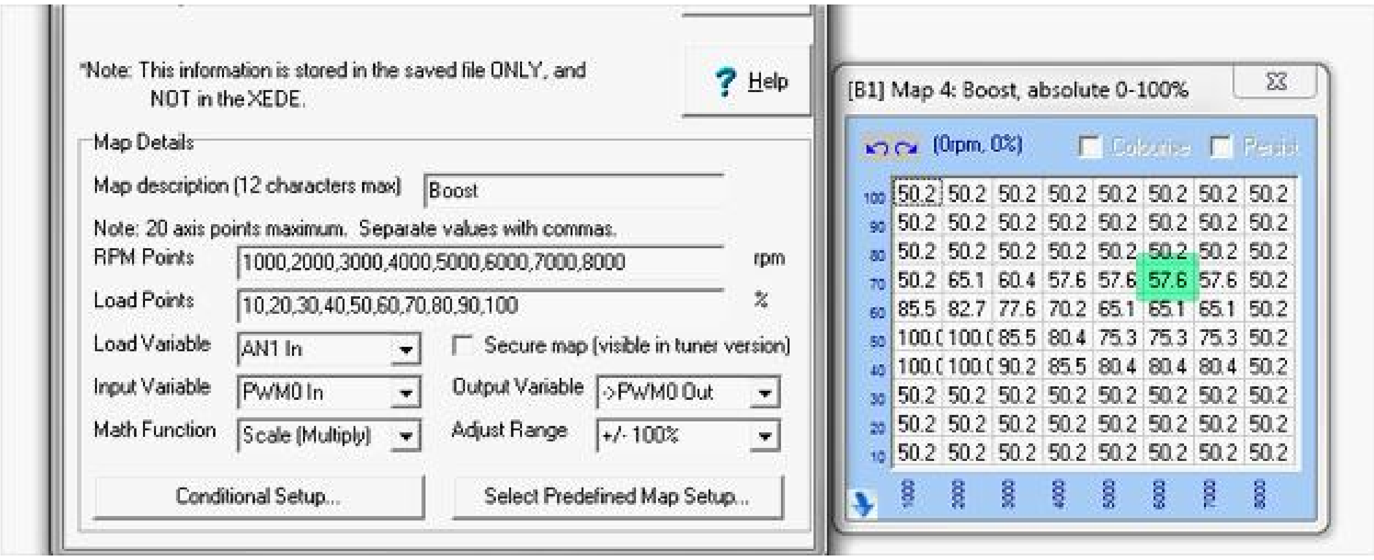
NOTE: This is a grounding output (i.e. it grounds the earth side of the solenoid on Black Connector Pin 6 to Black Connector Pin 5 which must be connected to chassis earth). This is a separate high current earth connection to the normal XEDE earth connection on Grey Connector Pin 6. It ***must NOT*** be connected to Grey Connector Pin 6; otherwise interference will occur causing false trigger events.



NOTE: When set to Absolute Output or Pulse Width, the input variable will be disregarded (it can be anything). The operating frequency for this output is set under ***Features Menu → Miscellaneous → Wastegate Solenoid.***

Wastegate Solenoid (Boost) Control (continued)

For systems that already have boost control, i.e. Subaru WRX, the configuration is often best done by using a scaled ***Math Function*** on the original measured Wastegate Duty Cycle Input. For example, the factory ECU's boost control duty cycle will be measured by the XEDE on Black Connector Pin 1 (usually blue wire / white trace) and output to Black Connector Pin 6 (usually blue wire) plus any additional scaling from the table, as in the example below. i.e. at 6,000 RPM and 70% load, 57.6% more duty cycle will be added to what the factory ECU is outputting.



The Wastegate Solenoid Frequency is adjusted separately from the table under ***Features Menu → Miscellaneous.*** The frequency is set in Hertz. Subaru solenoids are normally 14 Hertz. Ford BA XR6 Turbo solenoids are normally 32 Hertz.

Auxiliary Injector Control

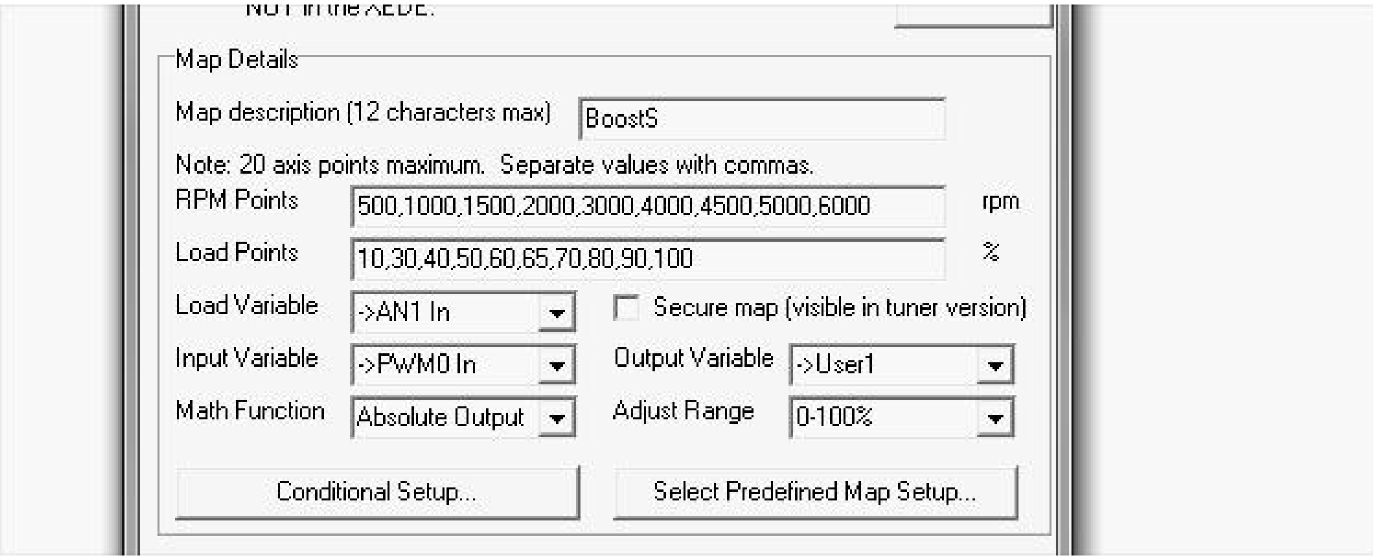
Setting the Math Function to Pulse Width and the output variable to Inj0 Out will make a table for control of injector duty as a percentage. A hardware change needs to be added to the circuit board of the XEDE for this function to operate. Contact ChipTorque for details before use.

Nested or Complex Map Functions

Maps may be nested so that an output result is the combination of say (2) consecutive MAPS. This is perhaps best demonstrated with an example: to achieve a semi-closed loop boost control with TPS modification, you could use two nested MAPS like the following from a Ford XR6T

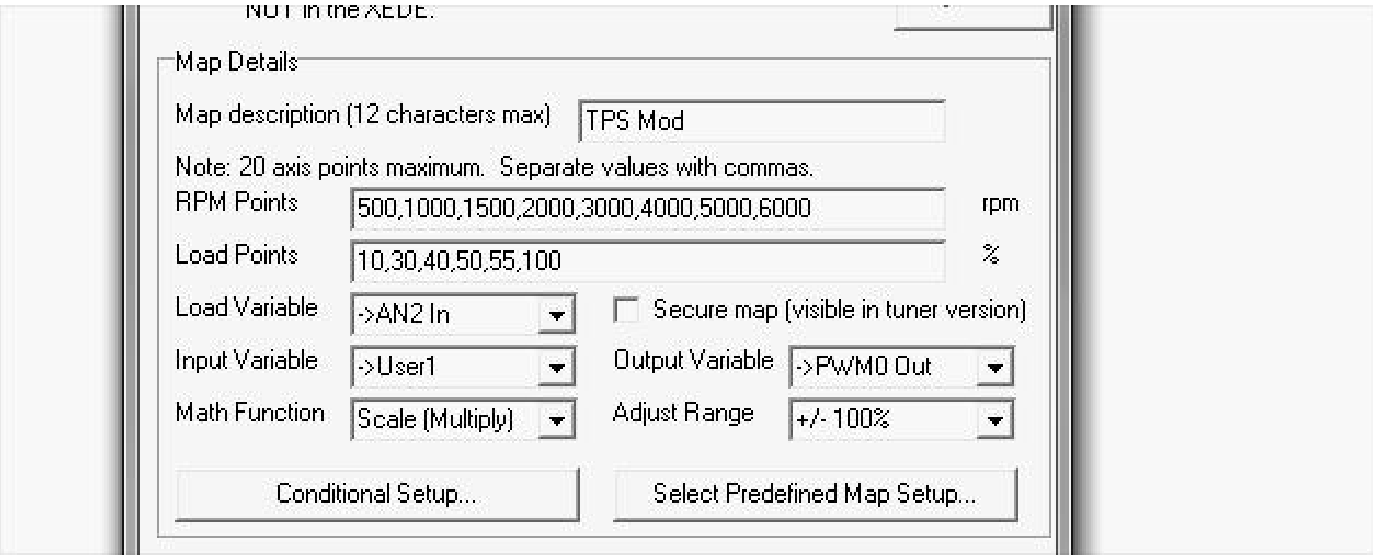
1. Edit the Wastegate Solenoid Map (BoostS)

   Right click anywhere in the map and select ***Edit this map…***
   Load Variable is "Y axis" of the map, ie. AN1 is manifold pressure in this example (MAP).
   Input Variable is ignored if ***Math Function*** is Absolute Output.
   Set ***Math Function*** to Absolute Output to set absolute duty cycle output.
   Set ***Output Variable*** to temporary variable User 1.



2. Edit the TPS modifier Map

Right click anywhere in the map and select ***Edit this map…***
Load Variable, "Y axis" of the map is set to TPS. AN2 in this case.
Input Variable is set to temporary variable User 1 (from **BoostS**).
Set ***Output Variable*** to PWM0 Out.
Math Function is set to Scale and ***Adjust Range*** is set to ±100%. ie. Can have 100% more or 100% less than the input value. Zero would be no change. The input value is the output value from **BoostS** which was temporarily stored in User 1.

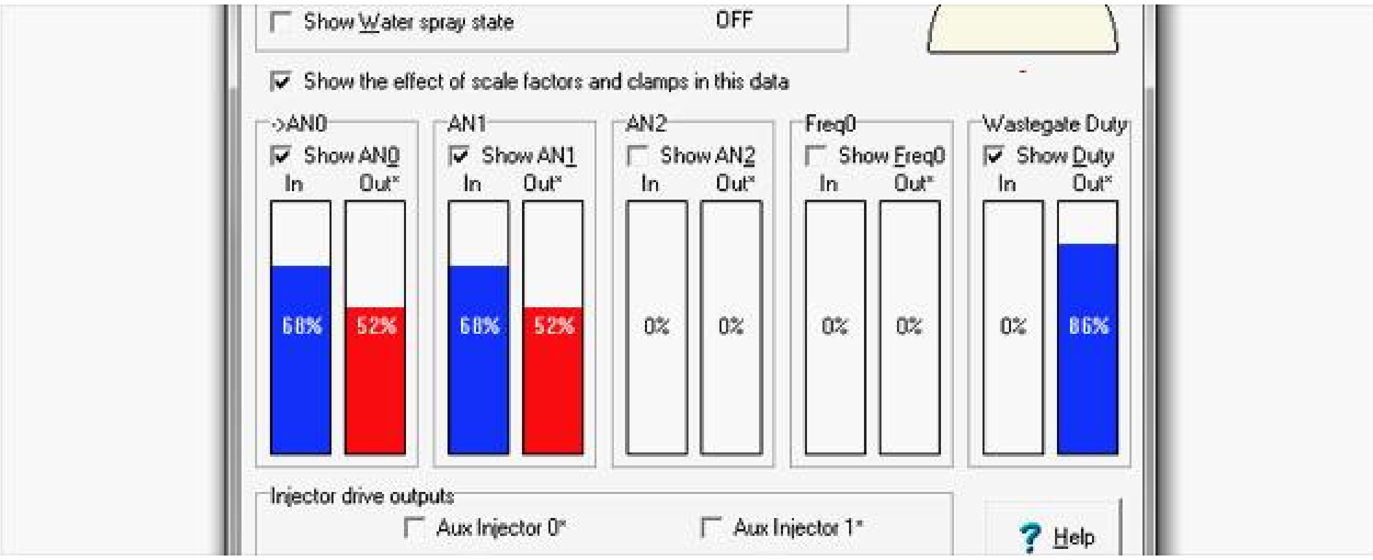


The actual PWM0 Output then is, in this case, the duty cycle for the boost control solenoid. It is derived from the output of **BoostS** and effectively modified to reduce boost (duty cycle) at low TPS values.

In the example, no matter what duty cycle is output from **BoostS**, the result will be zero duty cycle for TPS values of less than 30% (minus 100% of any duty cycle set). The two Maps are nested so that the actual output is derived from the functions of both Maps operated consecutively. When using the nested functions like this, the intermediate variable should be one of the User variables User1 – User8. These are not input or output but assign the output of one Map into the input of the next. They are temporary variables allowing nested control.

Live Data Display

A useful way to visually see the changes as they are applied to the load variables, is the Live Data Display screen, ***Diagnosis Menu* → *Live Data Display...*** Select the items to be displayed, the bar graphs will display the value as a percentage of total measurable value. If an output clamp is set and the value reaches that clamp, the Bar Graph will turn red.



Data Logging

The XMap software can generate datalog files to assist with the tuning. The files are saved in a .csv format meaning they can be opened in MS Excel and edited or analysed or graphed using the standard Excel capabilities. This is particularly useful for checking the correlation between current RPM, current MAP value and current Wastegate duty cycle, for example.

Accessed in ***Diagnosis Menu* → *Data Logging...***

Installation

In most cases, the XEDE Processor is supplied with a generic wire-in harness. Proper installation/wiring techniques are required to ensure vehicle safety and product warranty is maintained when fitting.

If you do not have sufficient skills/experience with automotive wiring, ChipTorque recommends having the XEDE Processor installed by a qualified Automotive Electrician.

Recommended tools for XEDE installation.

- ➔ Open barrel splice crimps
- ➔ Splice crimping tool eg. Utilux No.61
- ➔ Wire strippers/pliers
- ➔ Insulation tape
- ➔ Heat shrink tubing
- ➔ Heat gun/lighter

Wiring

Crimping/Splicing

A crucial part of wiring an XEDE is reliable fitment using the suggested crimps. **DO NOT** use scotch locks! Multiple excellent YouTube tutorials exist showing how to properly splice with open barrel splice crimps.

Insulation

Insulating the join is important to prevent shorts between other joins and body work. We suggest using good quality heat shrink tubing where appropriate, otherwise quality electrical tape where heat shrink won't fit.
Hint: Roll tape backwards around a nylon tube or the centre of a Bic pen to work in tight spaces.

Additional Functions/Wiring

Dual Maps

This section describes how to program and use dual map banks in the XEDE Processor.

Map Banks

A map bank is a collection of tuning maps stored in the XEDE. When you save a tuning program to disc, you are saving the current map bank. The XEDE supports 2 map banks, selectable by the user via a toggle switch.

Number of Maps

The XEDE can store up to 12 maps in total. This means a map bank can consist of up to 12 maps, but to use dual banks, they must be divided so the total number in both banks is 12 or less. It is easiest to have the same number of maps in each bank, as it is less confusing to the tuner.

Required Maps

In each bank, there must be a tuning map for each intercepted signal for the vehicle to function correctly. For example, if the XEDE intercepts MAF, MAP, crank angle sensor, TPS, and Wastegate Solenoid drive, there must be at least a map for each of these. If the TPS is intercepted and you do not include a TPS map for example, the TPS output will be undefined, and will cause the vehicle to run poorly, if at all.

If there are no maps at all in a map bank, the standard set of signals (MAF, MAP, timing, TPS, Wastegate) will be passed through unaltered, as if the XEDE was not there. In this case, the LED will be solid red.

Wiring

In its default state, the XEDE uses map bank 0, as is the case with no bank switching wires connected. When the map bank switch is shorted to XEDE ground (Grey Connector Pin 6 (NOT CHASSIS GROUND)), map bank 1 is loaded into memory.

The map bank switch pin is located in the BLACK XEDE connector, on pin 10. Grounds can be located in the GREY connector, on pins 4 and 6 (splicing required). Do not use a chassis ground point for the ground connection as these can often be noisy enough to cause erroneous bank switching.

Use a toggle switch located on the dash or other convenient access point to short the bank switch pin to XEDE ground. You may want to conceal this switch if one of the banks is a valet mode or security program.

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Programming the Map Banks

If starting with a new XEDE or one that has maps in bank 0 only, download the maps from bank 0, switch over to bank 1, and upload/burn the bank 0 maps into bank 1. Then tune each bank individually.

Each bank is programmed totally independently of the other, with the exception of the bank description, which is common to both.

If there are no maps in the currently enabled bank, the XEDE LED will turn red when vehicle power is turned on; this is normal, and lets the user know that the XEDE is performing no tuning function. In this state, a map bank can be uploaded and burned using XMAP Software.

When changing from one valid bank to another, the XEDE LED will turn orange for a second or so while the new bank is loaded into memory, and then green to indicate a successful transfer. The current map bank status is displayed in the status bar of XMAP Software, if connected.

NOTE: While changing banks the tuning Maps will be bypassed but output scaling and clamps will still operate.

To use and edit bank 0: set the switch to bank 0 (wires NOT shorted together). All download, upload, tuning, and burning operations you do here will apply only to bank 0.

To use and edit bank 1: set the switch to bank 1 (wires shorted together). All download, upload, tuning, and burning operations you do here will apply only to bank 1.

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Intercooler Water Spray

This section describes how to connect and configure intercooler water spray output in the XEDE Processor. This output can also be configured to drive a cam adjustment such as VTEC.

Application

Under certain heavy driving conditions, spraying a small amount of water on the front / top of the intercooler can assist in raising the cooling efficiency of the intercooler, reducing the temperature of the air inside. Cooler air means higher air density, which means higher mass air flow. More air mass means more fuel can be combusted efficiently and therefore more power if tuned correctly.

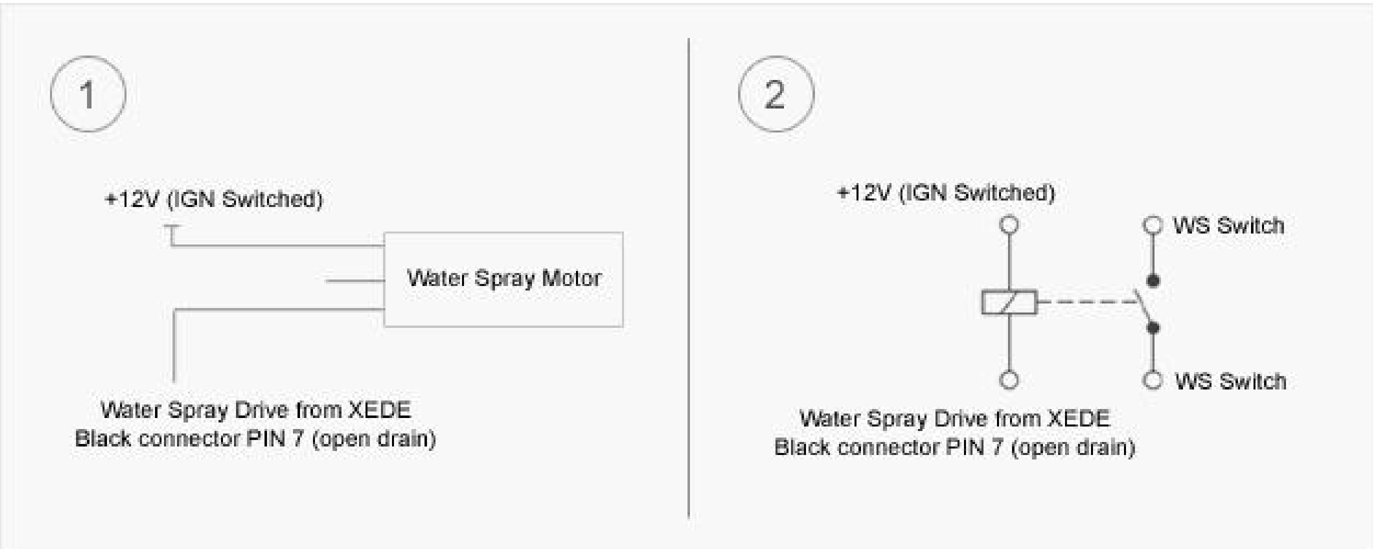
Operation

The XEDE turns the water spray on at a preset user-definable operating point, above a certain RPM and engine load. There are two definable stages where this can occur, to cover the two cases of high RPM and low load, and low RPM and high load. Once turned on, the water spray will stay on for a preset minimum time. When turned off, the water spray will stay off for a preset minimum time.

Connection Options

1. Allows the XEDE to drive the water spray motor directly, without the need for a relay.
2. Uses a relay to either close a switch that already exists for water spray (as in the Subaru WRX STi), or apply power to the motor.

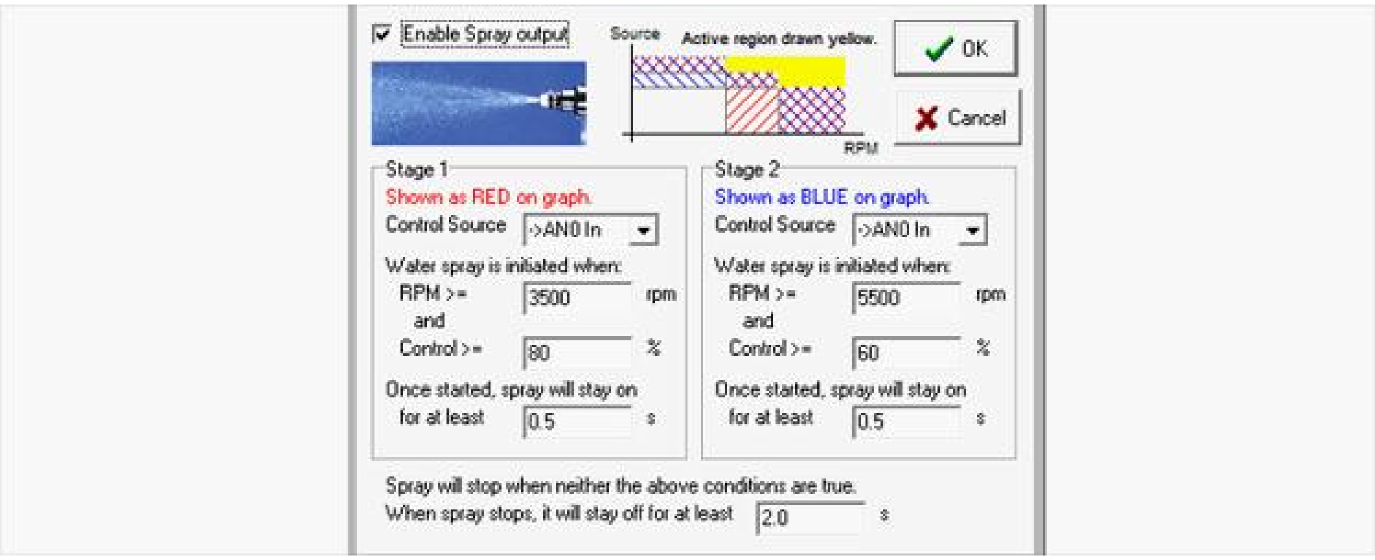
Pins 5 and 8 of the XEDE Connector ‘B’ are connected internally in the XEDE, so if pin 5 is already tied to chassis ground for Wastegate solenoid drive, the connection on pin 8 is not required.



Programming Intercooler Water Spray

Every XEDE is shipped with the intercooler water spray feature enabled, with a default set of parameters that should be sufficient as a starting point, so no further adjustment is required for it to function.

The water spray settings can be adjusted through the XMAP ***Features Menu*** → ***Water Spray…***



Adjust the RPM and MAP points and minimum on time for each stage. The minimum off time applies to both stages. The graph shows the region where the water spray will turn on, indicated by the solid yellow area. The output will be active when, in EITHER stage 1 or 2, RPM and MAP are above the set point for that stage, at the same time.

NOTE: The XEDE has no means of detecting when the water reservoir is empty. To prevent possible overheating of the water spray motor, check the water level regularly particularly after extended periods of heavy driving.

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