# Hyperspace TCU Ver 3.6 Settings

This is not a detailed manual. It is only a quick explanation to the settings in the same order as is found in the Android software. This manual has all the possibilities of the software but it may not be visible for your product. On the left of this PDF document there will be an Index file which will help you get to the part you seek as quickly as possible.

Throughout this settings manual there are Hyperlinks that will guide you to an online document with detailed explanations on that feature. All these documents are available under Online Manuals from the Spitronics Website. For wiring information use the online Wiring diagrams for each product. It can be found at Manuals/Online Manuals/TCU/*(Product Name).*

The software manuals are based on the PC Software but it is the same settings as the Android version.

Start-Up Screen

For more detailed explanation look in the TCU Home Screen Manual
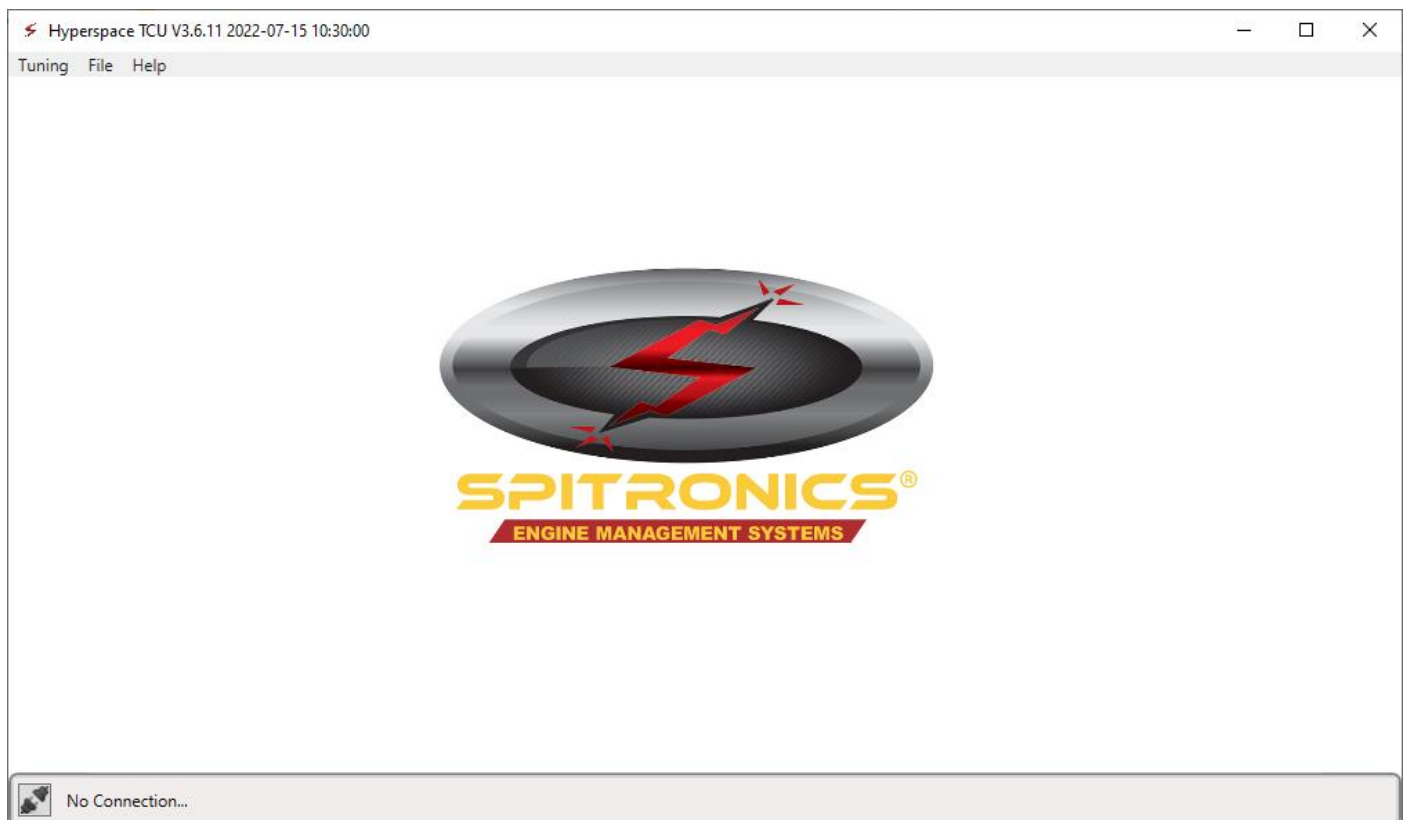
If you open the software without a live device connected, you will come to the main pallet or screen which forms the framework of the Hyperspace software. It looks the same for all the devices. From here you can open map files, connect to devices and set basic settings required for the software to operate.
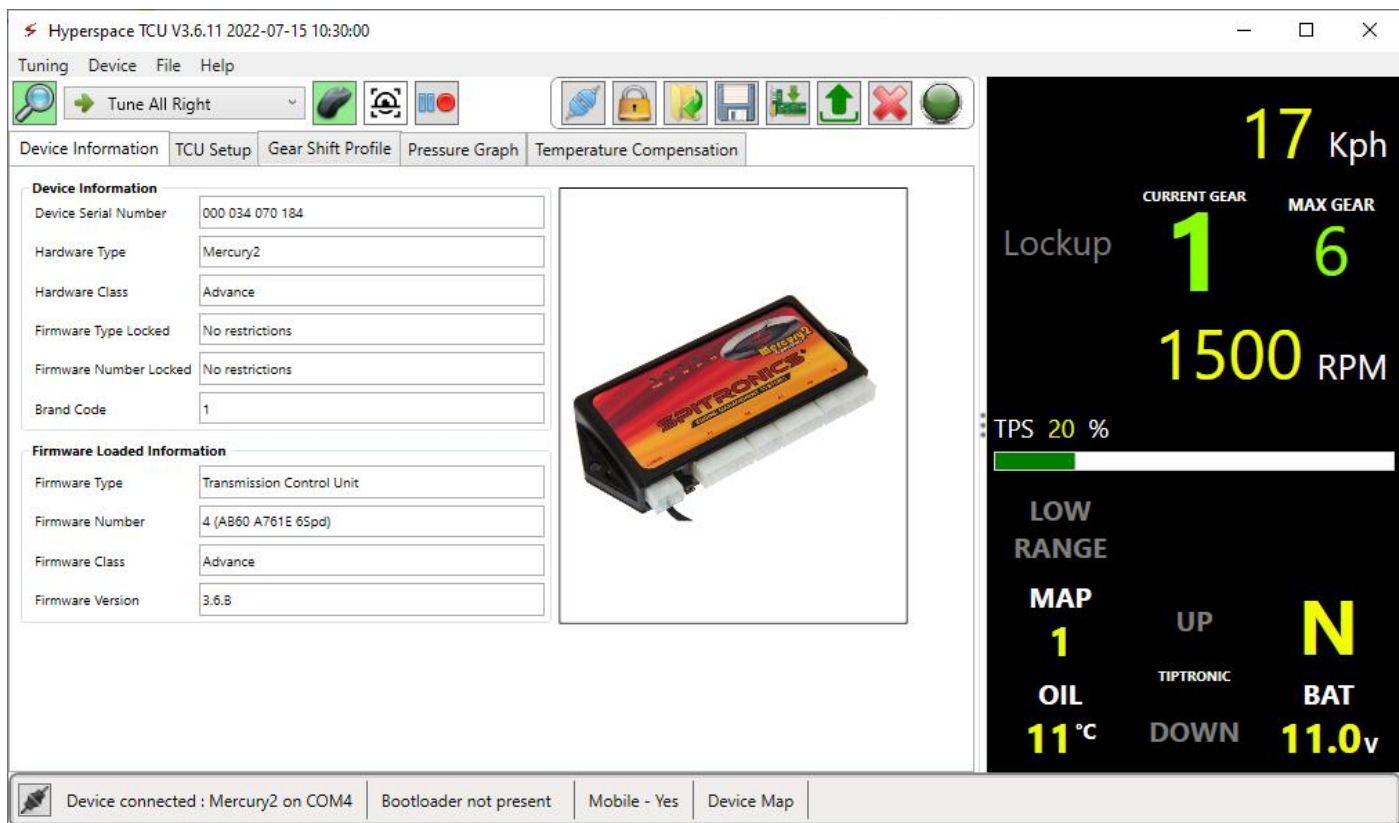
Once you connected to a Device you will get a screen like this.

Top Toolbar
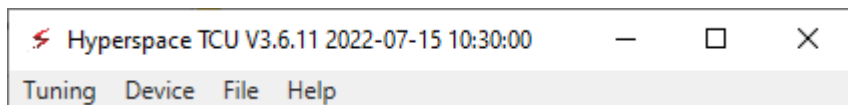
Notice the Version and Date in the name. this will help dealers to see if you have the latest software installed.

Like any Windows program you will find standard menus and buttons which relate to program settings and preferences. Offline Map files could also be selected and edited with the file button.
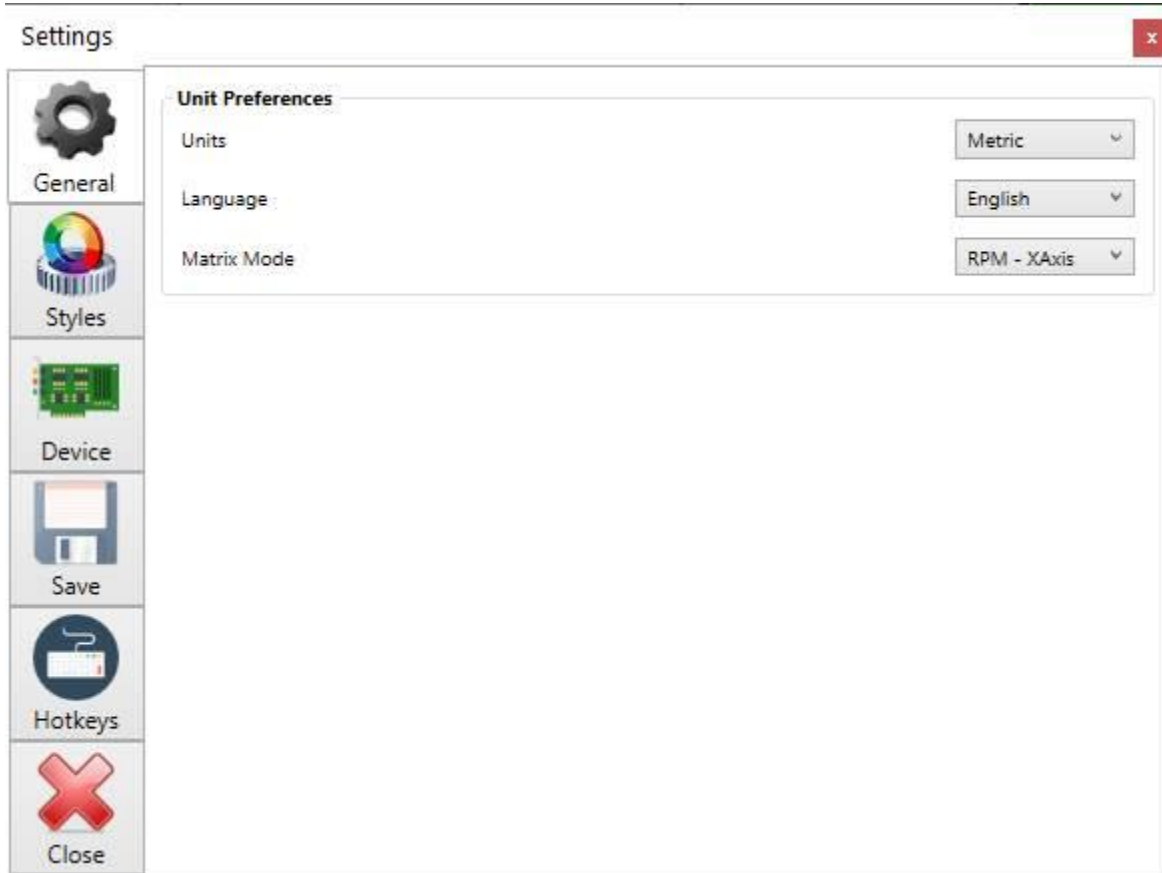
Tuning Menu
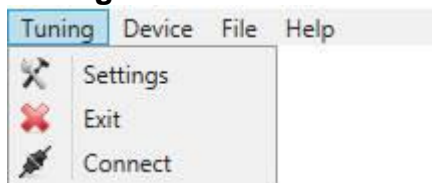
Settings is to set up units, software and device communications and auto map save settings.
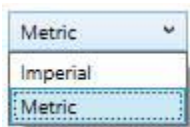**Exit** is to quit the software.
Connect is to connect or dis-connect to the TCU,
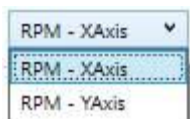
General

Unit selection

Select Metric or Imperial units.

Language
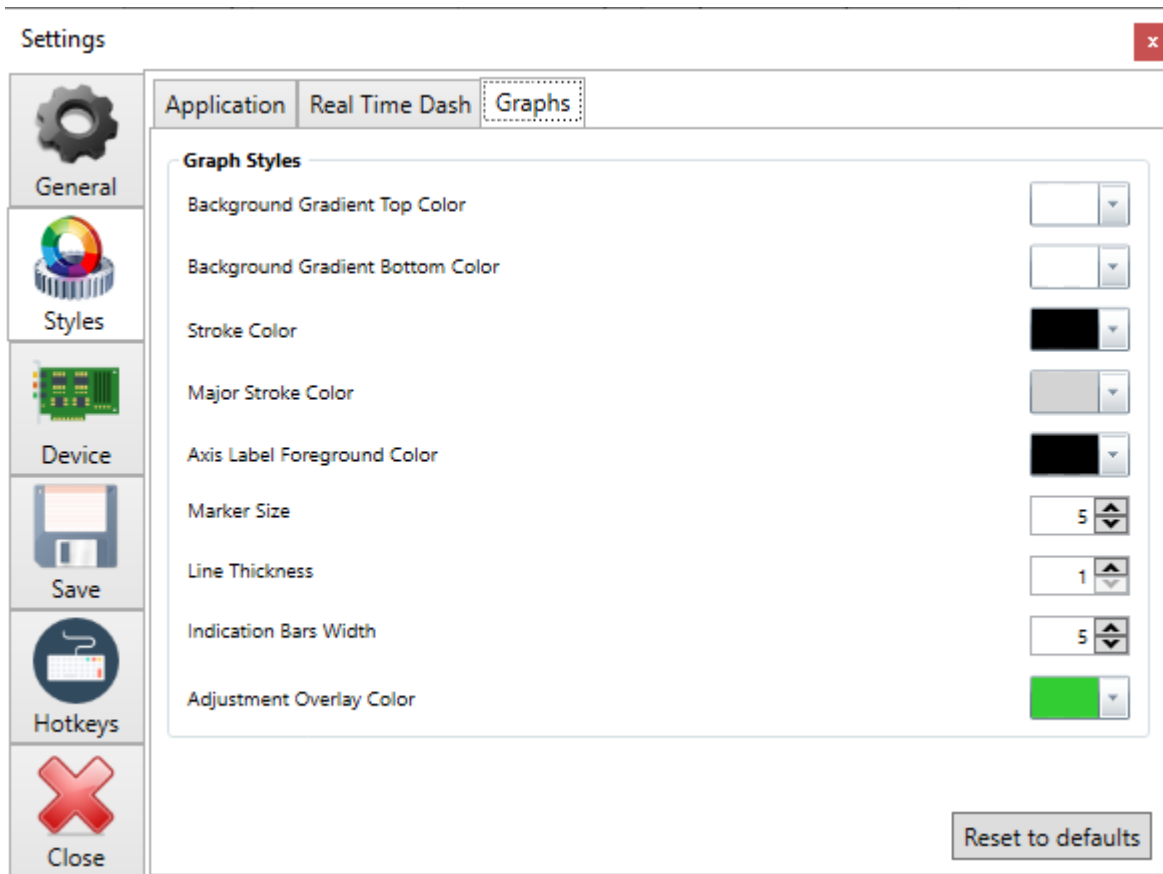Select Language if it is available.

Matrix Mode

Select the RPM Axis you prefer for matrix tuning.

Styles
Custom your own tuning pallet to suit the collars and font size that works for you. Remember these settings is saved in the Config file. If you upgrade versions, then rename your Config file to carry your settings over.
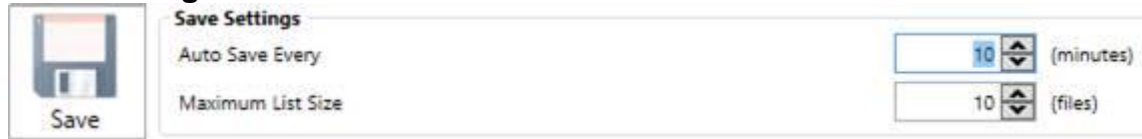
Device Settings

Max Poll error count:
This is the time it takes to read the real time values from the device via the Blue Tooth serial port.

Blue Tooth Delay

This setup will add a delay that some blue tooth modules will require to operate. Leave it at zero if not used.
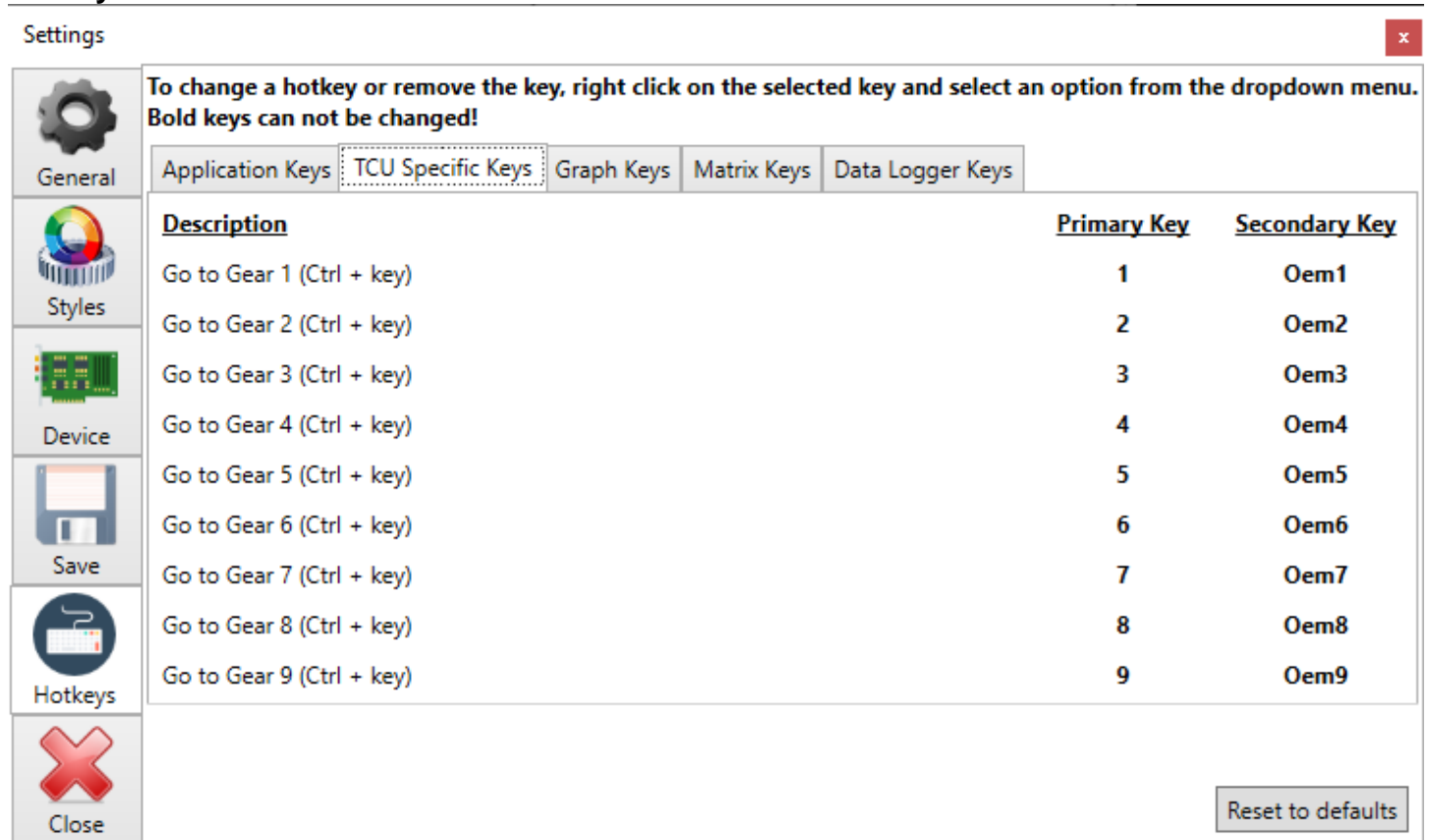
Save Settings

The software will do **Auto saves** at time intervals. The intervals can be adjusted here. It will also have a max display list on the open file menu. Then the software will also make a backup copy of each download to TCU and it is called **Device Saves**. File location for these maps is in the folder where the Hyperspace is saved on the hard disk.

Hotkeys

These settings let you customize quick keyboard keys to fast track moving between screens and functions. They are completely customizable. In the factory we will set up basic keys for your convenience. You may restore to default when you chose to. Remember these settings is saved in the Config file. If you upgrade versions, then rename your Config file to carry your settings over.

Close Button

Close will save your selections in the Config file and go back to the tuning pallet.

Connection to Device
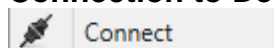
Use this button to connect or disconnect to a device.

Device
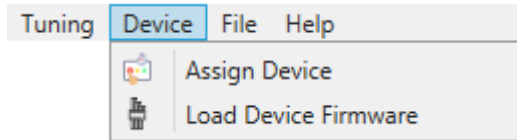
Assign Device

For your convenience Assign Device is built into the Hyperspace Tuning Software. If a system is upgraded or activated on the Portal, the customer only need to have internet connection to activate his system. When you click Assig and there is an active allocation on the Portal, this message will appear.

Load Device Firmware

Mercury2 still use the USB Debug Adapter to load firmware. This message will not be visible. See that section in another document.

Orion2 has a built in Bootloader and you may load firmware from the Hyperspace tuning software. This firmware is only saved on the Internet so you will have to have a live internet connection.

File Menu
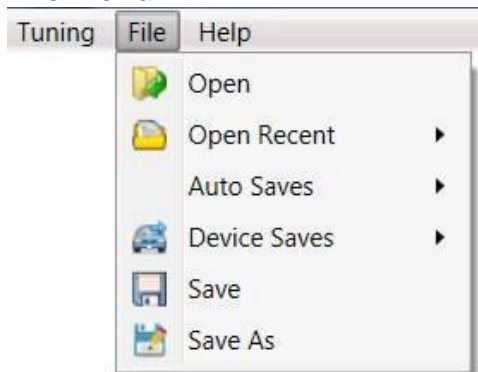
This menu is to open the different saved maps or to save a map from a device onto the pc. The software will save periodic files in Auto Saves folder and also when you do a Device save it will make a copy in the *Device Save folder.*

Help Menu
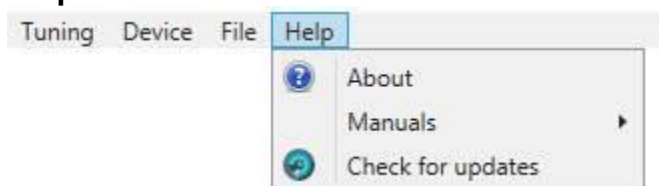
This menu holds information.

About

About will indicate all the release fixes and changes between versions released.

Manuals

It also unlocks the embedded manual and will save a copy of it in the Hyperspace folder where the software was saved initially.

Check for Updates

You may also update the software from this menu. If it up to date then this message will appear.

TCU Toolbar

TCU Toolbar Shortcut Buttons guide you to basic operations. Some buttons have a keyboard hotkey to make it easy to activate them. The hotkey is in the title block of each button description. Green background means activated on some of them.

Hide button - H

This button is used to show all lines on a graph or hide the ones that is not selected. It is handy if graphs are on top of each other to see each one separately.

Easy tune - E

This is a very handy feature if you have to lift graph dots simultaneously. There are different algorithms. That will only move dots from the tuning bar.
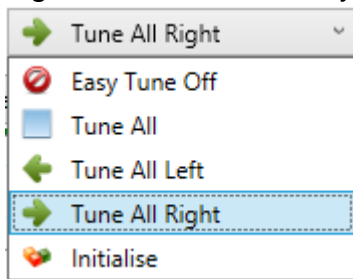
Initialize will make the whole line the same value as where the green tune bar cross
When easy tune is on then SHIF-Z will initialize every dot with the same selection to the same value as the bar.

Mouse on - M

This is handy to use mouse tuning on the graphs or disable it for arrow tuning.

Real-Time tracking - R

This is a very handy tool to move the green tuning bar with the real time bar of a graph. It is used with or without Easy Tune to adjust the same value that the device use at that time.

Data Logger

This feature is used for logging signal and tuning on the road.

Connect Button

This indicates if the unit is connected. If you click on it then it will toggle to the other option.

Map Lock Option

This is handy to lock tuning maps so that the customer cannot change parameters. It is also a feature to clone the device with calibrations from another device. *See the sub folder for explanation on its operation.*

Open Map file

This is to load a Map file from the hard disk into the device.

Save Map file

This is to save a Map file from the device onto the hard disk.

Save to device

If you made changes you can save them permanently in the flash with these buttons. You can also press CTRL-S for save or click on the yellow flashing LED.

Upload device memory

This is used with the simulator and when firmware is flashed to the device. It will refresh the software with restarting it.

Quit button

Enough said

Communication LED

This indicates the status of the device.
Flashing green means the device flash memory and PC memory are the same. No save is required.
Flashing yellow means you have changed parameters in the device but you have not made them permanent by saving to the flash memory.
Flashing red means no communication to the device.

Device Information

The device information screen displays vital information regarding the Spitronics TCU that has been connected. Note: Firmware is the program that is loaded into the TCU to make the electronics operate in a specific way. This is normally Firmware file which is loaded into the product by a USB debug programmer or BootLoader. Software is the tuning interface that runs on the computer and it is used to tune the product's parameters.

Device Information

Device Serial Number
There is a unique number assigned to each product. It is saved on maps and recognized by the database on its status etc.

Hardware Type
Displays which type of device has been connected to the software. In this case an Mercury2 Transmission Control Unit.

Hardware class
Displays the Hardware class of the product that has been connected to the software. The hardware class will determine which firmware can be uploaded onto the product. This feature allows the unit to open certain or all functions of the electronics. The amount of features determines the price of the unit. This feature can be changed over on the internet to allow for remote upgrades of the unit. The hardware classes are as follows:
1. Micro
2. Basic
3. Standard
4. Intermediate
5. Advance
6. Ultimate
7. Commercial
8. Racing

Firmware Type Locked

This block will indicate which type of firmware are allowed on the unit. If it indicates *No Restriction,* it means that any Type of Firmware for Mercury2 can be programmed into the unit like ECU, TCU TxW etc. This feature is for sponsored units or specials which was approved by the manufacturer.

Firmware Number Locked

This block will indicate which firmware number in the firmware range are allowed on the unit. If it indicates *No Restriction,* it means that any firmware number for Mercury2 can be programmed into the unit. This feature is for sponsored units or specials which was approved by the manufacturer.

Brand Code

This represent a specific brand like Spitronics which is 1. Devices may also be rebranded to large distributors which means this code will change. Once a brand is changed the unit will only connect to the software of that brand. This will bring exclusivity to that brands customers.

Firmware Loaded Information

Firmware Type

This block will indicate which type of firmware are loaded on the unit like ECU, TCU TxW etc.

Firmware Number

This block will indicate which firmware number is loaded and a short description.

Firmware Class

Displays the class of the firmware that has been downloaded onto the device. Each firmware program supplied will have a certain class according to the features used. You may load any firmware for a specific product into the unit as long as the firmware class does not outrank the hardware class of the device. The firmware classes are as follows:

1. Micro
2. Basic
3. Standard
4. Intermediate
5. Advance
6. Ultimate
7. Commercial
8. Racing

Firmware Version

This block displays the software version as well as the firmware version that is loaded into the device. In the example 3.6 is the software version which is required to communicate with the device and B is the firmware version.

The firmware version no effect on the software version. Always use the latest versions available.

Software Version

⚡ Hyperspace TCU V3.6.11 2022-07-15 10:30:00

On the top bar you will find the product software version. Note that version 3.6 will be standard with the Firmware version 3.6.

The first 3 is version 3 PC Software.

The second 6 is the protocol version between the PC software and the firmware. When new features are programmed into the unit, this protocol version will change in the PC software and in the Firmware.

The .11 at the end is a sub version and has no effect on the firmware. This version will indicate corrective or improved PC software. Always use the latest version available.

Real-Time Display
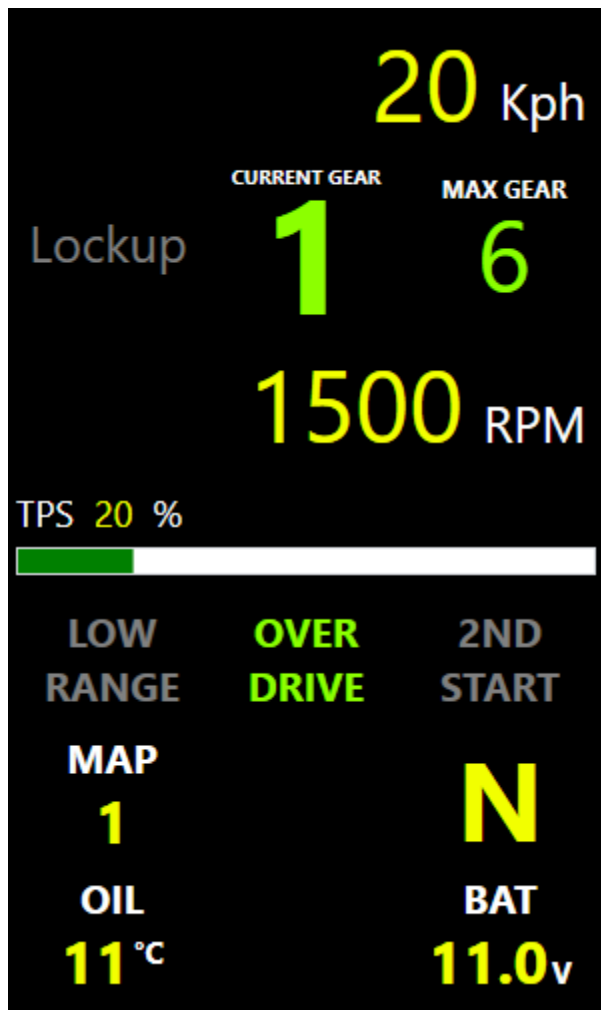
This block displays all the analogue sensor values as they change in the TCU. You may change the appearance of some of the signals as well as the colors in the settings tab. Double click on certain fields will toggle between 2 types of views. Below is a description of the meaning of each signal.

Speedometer
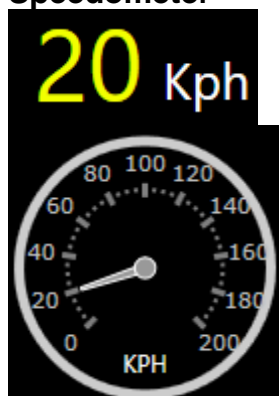
This is the Speedometer value displayed in Kph. For Mph change it at the Settings tab.

Lockup
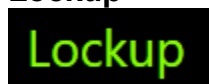
This value displays lockup status. Green for engaged and grey for released.

Current Gear

This value displays gear which is currently engaged by the TCU.

MAX Gear

This value displays the maximum gear allowed by the TCU. This is a driver setting in Tiptronic modes.

RPM

This value indicates engine revolutions per minute.

Throttle Position Sensor

This value displays the amount of throttle pedal which is applied by the driver.

Low Range

This displays the status of the low range lever. Green is engaged and grey is disengaged.

Overdrive Switch

This displays the status of the overdrive selection switch. Green is engaged and grey is disengaged.
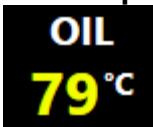
2nd Start Switch

This displays the status of the 2nd Start selection switch. Green is engaged and grey is disengaged.

Map or Tune indicator

This displays the current map that is selected. The TCU can hold up to 4 maps.

Oil Temperature Sensor

This value displays the current TCU oil temperature if the box has a sensor.

Tiptronic Buttons Up and Down

This value displays the status of the tiptronic push buttons. Green is pressed and grey when released.

Shifter Lever Sensor

This value displays the current shifter lever position like PRND21 etc.
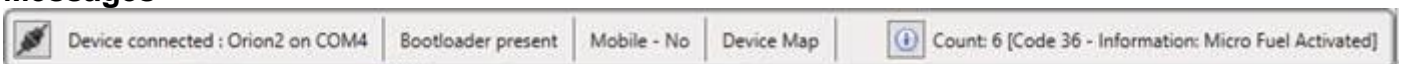
Battery Voltage

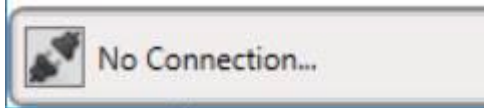This value displays battery voltage that is connected to the TCU.

Status Bar Display

Messages

This block at the bottom of the software displays all kinds of status, information and fault codes. Below is a description on types of messages.
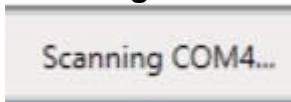
Connection to Device

When no device is connected, the connection button may be open and an indication that no device is recognized. If you use a different USB cable, you may need to click on the connect button to tell the software to search other Comms ports as well. Once a port is found with a recognized device the software will lock onto that port to minimise start up times. It will then display the device type and COM port as below.


Scanning

At bottom right corner is connection information. This will indicate which Comms Port is being polled for a device. If you have changed the USB cable to another one, then this Comms Port may not be the Port number that the software remembered. Click on the Connect button then the software will look on all the available Ports for a device. Once a device is found, this will be saved in the Config file to cut down on start time for the next connection.

Bootloader
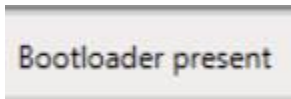
Orion2 has a BootLoader to load firmware. This indication will show if it is active on that device. This means firmware can be loaded by the USB cable. Bluetooth cannot be used to load firmware. Mercury2 does not have a Bootloader and requires the Firmware Programmer.

Mobile Capable

This message indicates if the unit is mobile software capable or not. Some mobile applications will run only if this is set. Contact your supplier for activation.

Random Messages
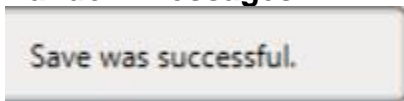
The software will also give occasional indications on tasks like if the map was saved successful or not.

Error Codes

The TCU software has only a few Error, Warning and Information codes displayed in the Status tool bar at the bottom. These codes will help the tuner to find problems during startup and tuning, also to see if the TCU is functioning correctly. Some of the functions on the TCU will indicate to the tuner what is happening. He can then see if these functions are operating correctly.

The codes are displayed at the right hand bottom corner. The code list will display a list of accumulating codes so that the tuner can see what the codes were and in which order. The bottom

indication will only show the last code. Also note that a code is only updated once, until it disappears and when it appears again the code will be logged again. This is to prevent the list from being too long. This does not apply to the angle sensor error codes during cranking. They will increment the counter as each one occurs.

Press the ''**C**'' key to clear the error codes. This is handy as you will not be able to see is the code is still present or if it was only listed once.

Selection Refreshed

This feature is initiated by the firmware to force the software to refresh its database. It happens when the tuner makes selections that are not legal for that specific firmware or when GP outputs are re-arranged by the features. The software will refresh and change the setting of the tuner to a safe level or disable other features. The messages below will then appear:
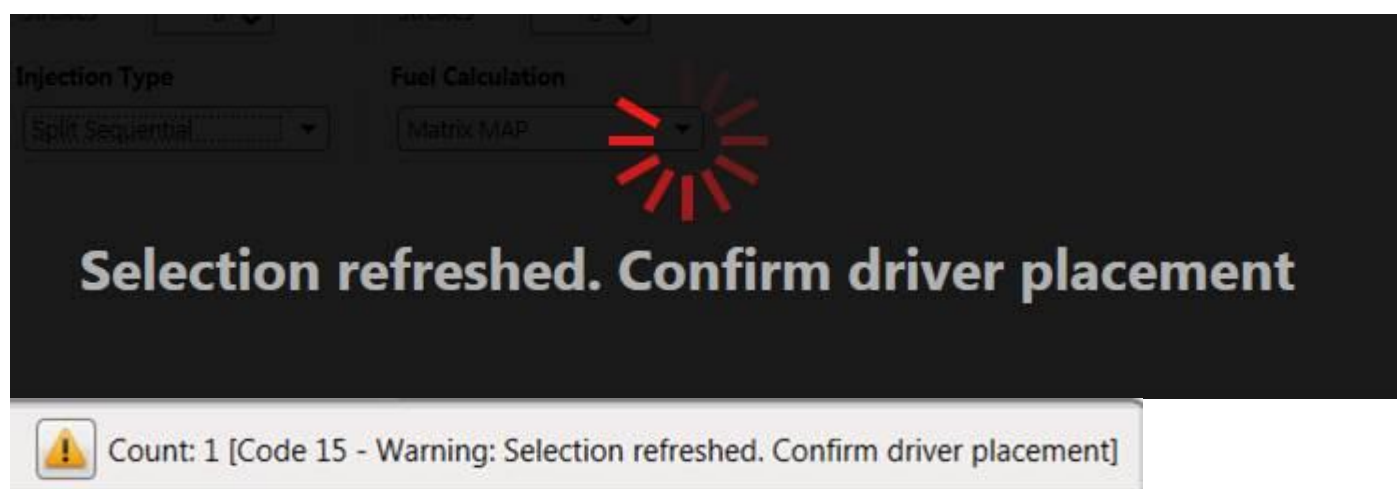
TCU firmware do not shift drivers around so no need to go through the setup again. .

General Settings

For more detailed explanation look in the General Settings Manual

Map Information

The Map information screen, **Name Model** and **Transmission**, contains info for the TCU application for a specific vehicle. This helps the tuner to recognize previous work and tuning data. It is saved in the TCU and also in PC maps. It does not affect any tuning on the engine.

Map no – The firmware consists of 4 maps for different transmission setups or tuning algorithms. This is only an indication and the map cannot be forced on this page. The map is determined by the Map Selection switch that is selected. Map no on the TCU software is also displayed in the real-time data. Maps can be changed on the fly. Map 1 and 2 as well as 3 and 4 can be changed while driving. From 2 to 3 the vehicle must be stationary. This is a failsafe for high and low range applications.

NB!! Note that the sensor calibrations can only be done in Map number 1.

General Purpose Outputs

There are two or more general purpose GP outputs to configure for several different functions. These outputs can be configured to use the analogue signals and switch a relay on or off when certain limits have been reached.
Example: RPM for a shift light, Oil temperature to control a fan relay or Shifter to switch a reverse alarm on etc.

This is a generic block so you first need to select which output will be used.

Now select a signal to be used as an output.

RPM – RPM/min 100rpm increments
Speed – road speed at 1 Km/h increments
TPS – percentage at 1% increments
Oil Temperature – degrees at 1°C increments
Gear – select a number of gears
Shifter – select a number from the bottom line representing the following shifter positions:

1	2	3	4	D	N	R	P
1	2	3	4	5	6	7	8

Map No – select a Map from 1 to 4

The appropriate limit values are set in the min and max blocks.

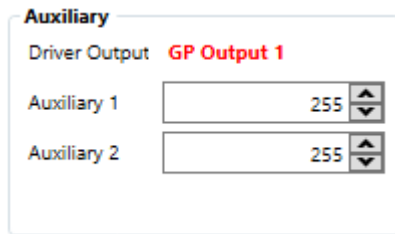**Note!** If you don't use these outputs, select *Not Used* so that valuable processor time can be saved.

Speedometer Output

This feature is used for Speedometer Calibration. This is handy for engine conversions.
You can adjust the number of output pulses per prop shaft revolution. You can also do a fine calibration on the speedo. Always start with a calibration value of 100. Then adjust the Pulses till you are as close to the value as possible. Then go to calibration and make a Percentage adjustment to get it to read accurate. Speedos usually read a bit over to compensate for Tyre wear and keep the driver in the limits.

This signal is a critical setting which means it is saved separate from the 4 maps. It can only be calibrated in MAP 1 and does not change when other maps are loaded in the TCU. The Clone function will alter this calibration to the Clone map.
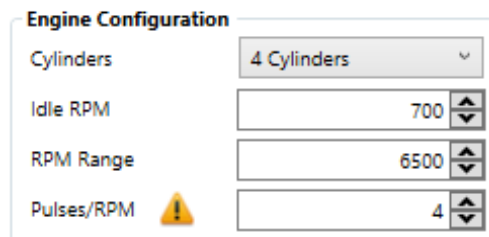
Auxiliary Output

These registers are custom settings which is used for development mostly and explained in special instructions. When a new transmission is developed it may require new settings that is not placed in the software. Most standard firmware will blank out these settings.

Engine Settings

For more detailed explanation look in the Engine Settings Manual.

Engine Configuration

Cylinders – Number of cylinders on the engine can be selected in this block. It is not used by the current firmware but reserved for future development of different firmware.

Idle RPM – Idle RPM of the engine can be typed in this block. It is used by the firmware to release the lockup clutch if the revs fall below this value plus 200 RPM. Example if you select 800 the lockup will release below 1000 RPM's.
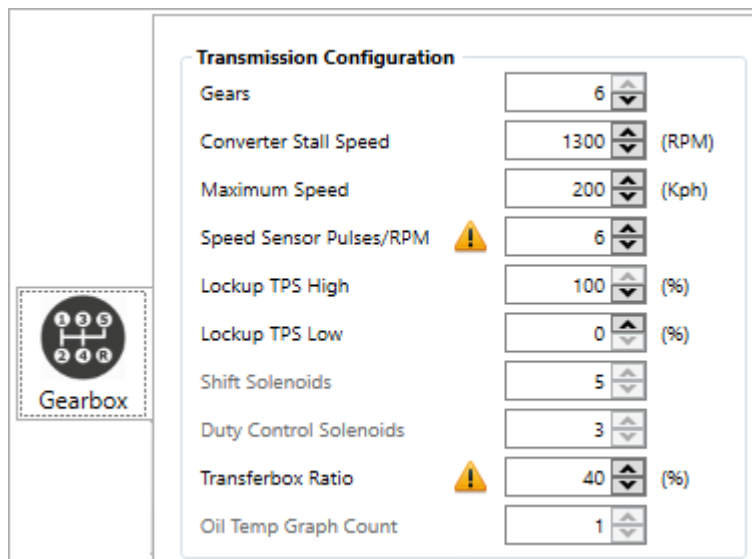
Engine Max RPM – Maximum RPM of the engine can be typed in this block. It is used to scale the gear profile graphs so that the whole graph can be used for tuning. It also calibrates the maximum scale of the analogue RPM gauge.

Pulses / RPM – This setting is the number of RPM pulses per engine revolution that the TCU receives. It is used for correct revolution calculation and display. Example: If you connect to a 36-1 gear then enter 35 pulses per rpm.
This signal is a critical setting which means it is saved separate from the 4 maps. It can only be calibrated in MAP 1 and does not change when other maps are loaded in the TCU. The Clone function will alter this calibration to the Clone map.

Transmission Settings

For more detailed explanation look in the [Transmission Settings](#) Manual

Gears
This setting tells the software how many forward gears are allowed for the specific Map. The user may select any number up to the maximum number of gears for that specific transmission. This is handy for low range or towing where you do not want to engage overdrive or too high gear.

Converter Stall Speed
This setting is used in some firmware programs to control the lockup minimum engage RPM's.

Maximum Speed
This setting is mainly used to adjust the maximum speed calibration of the analogue speedometer display.

Speed Sensor Pulses / RPM
This setting is the number of pulses per one prop shaft revolution received from the Speed sensor. It is used for correct speedometer calculation in conjunction with the Speedometer Calibration value. You may see this as a course adjustment but the main advantage is that uneven pulses may be used like a 36-1 gear where you would then use a value of 35 pulses. For finer calibration you need to adjust the speedometer calibrate at the sensor settings page.

This signal is a critical setting which means it is saved separate from the 4 maps. It can only be calibrated in MAP 1 and does not change when other maps are loaded in the TCU. The Clone function will alter this calibration to the Clone map.

Lockup TPS Low
When the TPS value drop below this setting in %, the lockup will be disengaged. This will smooth the down shifting of the Transmission. This features can be set 0% and 100% to deactivate it if you require the lockup to stay on.

Lockup TPS High
When the TPS value rise more than this setting in %, the lockup will be switched disengaged. This will protect the TCC with hi torque engines. This features can be set 0% and 100% to deactivate if you require the lockup to stay off or on.

Shift Solenoids

This setting tells the software how many shift solenoids the transmission has. In most firmware programs this setting is forced and cannot be changed.

Duty Control Solenoids

This setting tells the software how many control solenoids the transmission has. In most firmware programs this setting is forced and cannot be changed.

Transfer Box Ratio

This setting tells the software what the transfer gearbox ratio is so that when low range is selected the speed settings on the gear profiles can be adjusted.

This signal is a critical setting which means it is saved separate from the 4 maps. It can only be calibrated in MAP 1 and does not change when other maps are loaded in the TCU. The Clone function will alter this calibration to the Clone map.
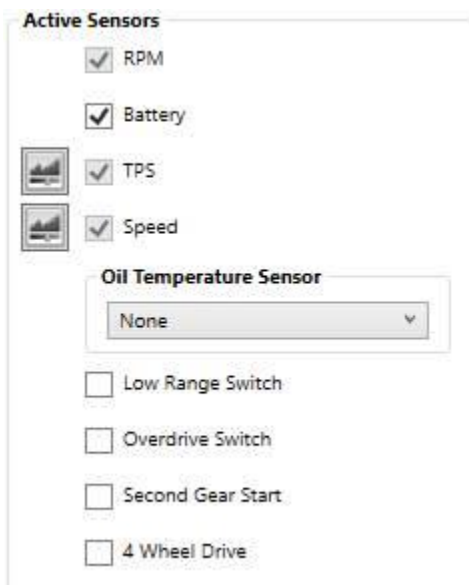
Oil Temp Graph Count

This setting tells the software how many oil temperature graphs is active. In most firmware programs this setting is forced and cannot be changed.

Sensor Settings

This page is used to select, setup and calibrate sensors and features. Se the sections below.

Active Sensors

For more detailed explanation look in the Sensor Settings Manual.

This block let the tuner select the different sensors that is used for his application. Not all the sensors are used but each one has different features that makes the transmission perform at its best. If a sensor is not used, leave the block unchecked. This will free up valuable processor time. Also make sure the wiring to that sensor is properly isolated as there is power on the leads that could short circuit, damaging the TCU as a result. Some of the sensors cannot be altered or will be forced on or off by the firmware.

NB! Note that all these calibrations must be made in Map 1 as they will be the same in the other Maps,

Calibration

Some of the inputs can be calibrated by clicking on the calibrate button. This allows for a wider range of sensors to be used in the software.

RPM Sensor

This input is forced on and essential to the operation of the TCU.

Battery

This input is not used in the TCU control parameters at this stage but merely an indication for the tuner.
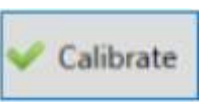
TPS

This sensor indicates to the TCU what the driver's intent is. It is also used for features such as kick down, lockup control and smooth shifting. It is not possible to control the transmission without this sensor. This signal normally is connected from the ECU. For the TCU to operate correctly this sensor needs to be calibrated.

Click on the calibrate button left of the TPS check box and do the following procedure:
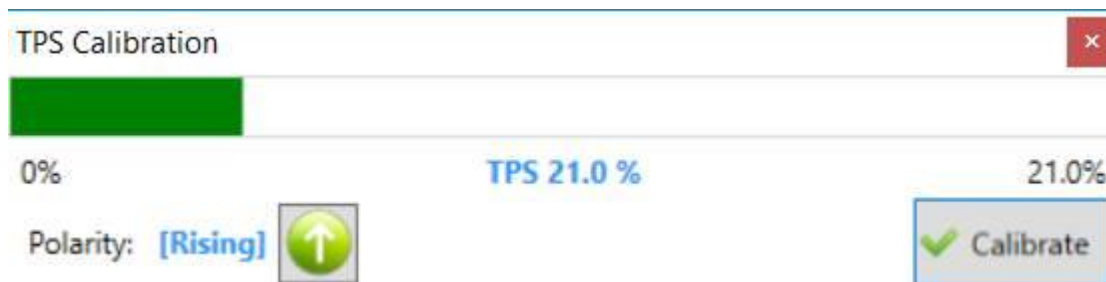
Now press button and Press the fuel pedal in completely and release the pedal completely. The *Min* and *Max* values will be indicating the range of the TPS.
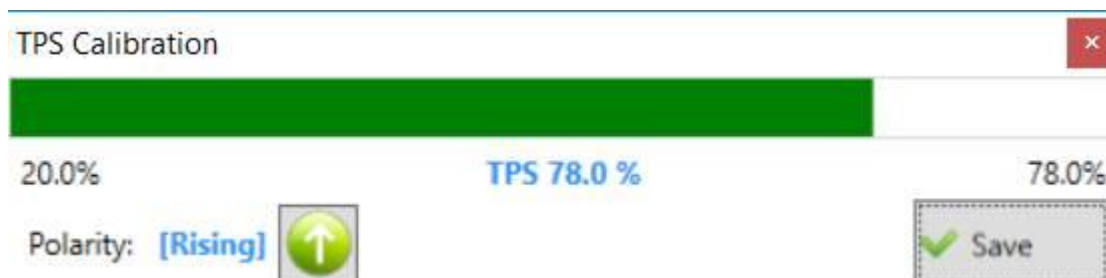
The TPS value must increase with throttle depression. If it is decreasing, click on *Polarity* to select

Polarity: [Rising]

rising or falling edge. This feature is normally used where the original TCU is still connected and wiring cannot be altered. In this case you connect only the TCU TPS signal wire to the ECU TPS signal wire. Do not connect the ground or 5 volt signal wires but isolate them to prevent shorts.

Click the *Save* button. You may now test the TPS signal by pressing the pedal in and releasing it.

The TPS real time value should operate from 0 to 100%. Then click on the *Save to TCU* button to make the changes permanent.

Speed
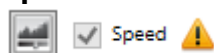
☑ Speed ⚠

 This sensor indicates road speed to the TCU. It is also used for features such as kick down, gear down and smooth shifting. It is not possible to control the engine without this sensor. This signal is normally connected at the back of the transmission to measure prop shaft rotation. This sensor is set up in 2 parts. Firs input the number of pulses per one prop shaft rotation in the

Speed Sensor Pulses/RPM ⚠ [6] block. Click on the calibrate ☑ Speed ⚠ button left of the Speed check box.

Speed Calibration ✕

Offset Value [110]

Speed: 124 kph ✓ Ok

Change the offset value till the speed value reads the same as the car, speedometer or as a GPS

reading. Click the *OK* button. Then click on the *Save to TCU* button to make the changes permanent. If you are not sure what the pulses value is then start with a 110 value here and adjust the speed sensor pulses/RPM till the speed is as close to real speed. Then do offset value again. If the offset value is very low or very high, then speed calculation becomes erratic.

Oil Temperature Sensor

Oil Temperature Sensor
2K ▾
None
2K
10K

Oil Temperature Sensor ⚠
2K ▾
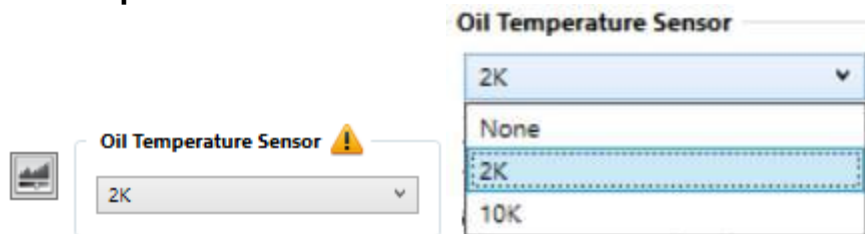
This sensor indicates transmission oil temperature to the TCU. It is not used in all TCU firmware but it does help to smooth shifting when the transmission is cold. There are 2 selections for different sensors. Normally 2k or 10k which alter the sensor calibration. Note that this does use a different wire in the harness as well. Select None if it is not used.

This sensor can be calibrated slightly but it is only an offset adjustment to make it accurate at a critical temperature. Most firmware is pre calibrated for that sensor on the TCU. Click on the calibrate button.

Oil Temperature Calibration

Offset Value   100

Oil Temperature: 29 °C   ✔ Ok

Now adjust the offset value to match your accurate thermometer. Click the *OK* button. Then click on the *Save to TCU* button to make the changes permanent.

Low Range Switch

☑ Low Range Switch [Negative] ⚠   LOW RANGE

This feature indicates to the TCU when low range is selected. This will do an automatic adjustment on the speed values entered in the gear shift profiles. The arrow will select the signal logic for low range. Note that light on the real-time bars must be green when low range is engaged.

Set the ratio for the transfer box in the   Transferbox Ratio   ⚠   40   (%)   block. Check the wiring diagrams to connect it properly.

Overdrive Switch

☑ Overdrive Switch [Off]   OVER DRIVE

Overdrive function was used on the older vehicles to select between top gear and the gear below that. It share the input of the Tiptronic Up button. This function will disable tiptronic function.

Second Gear Start

☑ Second Gear Start [Off]   2ND START

This function is very handy in snow or slippery roads to minimise torque in 1st gear and also used in low range driving. This function will disable tiptronic function.

4 Wheel Drive

☑ 4 Wheel Drive [Negative]

This feature is required for certain transmissions with 4x4 control like Subaru. It may also open a graph for PWM control.

Shift Base Algorithm

This block is for future use on specific firmware. Current firmware can only base calculations for profiles on the RPM signal with Speed limits implemented. In future firmware will be developed for speed base calculations.

Tiptronic Settings

For more detailed explanation look in the Tiptronic Settings Manual.

Each TCU has the ability to wire 2 push button switches for Tiptronic functions. When the Map is set to operate in Tiptronic mode, these buttons will give the driver the option to shift the transmission manually to his command. These 2 inputs can also be changed to function as overdrive and 2nd gear start buttons.
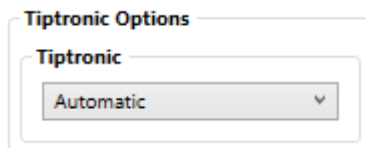
This block gives the tuner options on how he would like to set up the tiptronic operation and LED indication for each Map. This is useful for modes like towing, racing and low range. If it is used as automatic only without buttons, select Not used. These modes may be set up differently for each of the 4 maps.
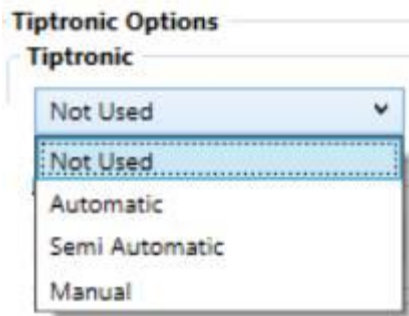
Automatic
In this mode the driver merely select the maximum gear allowed for the TCU. The rest function as normal. The setting on real-time display is the MAX Gear. The driver will feel in control as down shifts are immediate if it is safe and allowed by the TCU. Upshifts however will function on normal shift points.

Semi-automatic

This feature is more direct and will shift the transmission directly if safe shift can be performed. This mode is ideal for towing where it is difficult to set the transmission up for different loads. This requires changes on the profile maps to give tiptronic more control on gears selected. Safe shift algorithms by the TCU will still override low and high engine rpm shifts.

Manual

This mode is completely manual. It is used for off-road driving or Dyno tuning. The driver can select the gear while standing still and then the transmission will pull off in that gear. This is useful in sand and snow when the driver need to pull off in 2nd gear. The transmission will stay in that gear even if the engine over-rev. This is useful in 4x4 mode where a steep slippery hill must be crossed or in the dunes where wheel spin must be kept on momentum. The lockup clutch remains in automatic mode and will only engage under low load conditions. Remember that when driving in loose sand or on the Dyno. The transmission may over-heat due to the lockup that is not engaged and creating heat in the circulating oil. You may need to back off the power to engage the lockup and then put the power back on.

Shifter Sensor

For more detailed explanation look in the Shifter Sensor Manual.
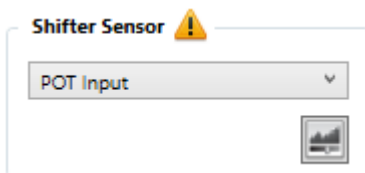
This block will set up the type of shifter position sensor on different transmissions. Some will be blanked out by the firmware and other will leave the installer choices on his method of wiring. Note that the TCU is mostly concern in reverse so that it will prevent shifting gears as the shift solenoids as this action will put some transmissions in neutral or lock mode which can be detrimental.
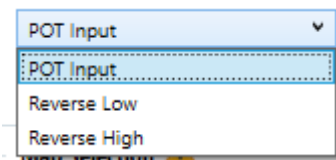
Pot Input

This selection is used when all the shifter positions are required. Some transmissions has a potentiometer output and other a serial or parallel switch combination. For these switches you need to install the serial or parallel digital to analogue converter boards from Spitronics.

Reverse Low

This setting is used where a switch is mounted on the shifter which gives a ground signal when reverse is selected. Note that the software will only indicate drive or reverse.

Reverse High

This setting is used where the signal is connected to the reverse light between the switch and the bulb. It is a positive signal that switch on the reverse lights. The bulbs need to be working as they act as pull down resistors. Note that the software will only indicate drive or reverse.

 Click on this button to enter calibration mode.

If your shifter or transmission has only 3 positions, 3 & 4 will be hidden.

Put the Shifter in Park. As a test you can go through all the positions to position up to 1st in sequence to see if the real time value change significantly. Note that the value must change for each position of the shifter. Some shifters have the same value in park and neutral then only park will be indicated on the software.
Put the Shifter in Park and click on P. It will become green. Go through the other positions R, N, D, 2 & 1. Put the Shifter in Park again and click **Save & Close**. Then click the save to TCU button to make the calibration permanent.

Map Selection

For more detailed explanation look in the Map Selection Manual.

The TCU has the feature of setting up to 4 different Maps for the transmission. This can be normal Automatic mode, Towing Mode, Tiptronic Mode, Racing Mode, low range mode etc.

Calibration button will only be visible in map 1. If it is not, then select 1 Map and this will force the TCU to map one. After calibration select 2 or 4 MAP and save to device. switch TCU off and on and it will now go to all the other maps. load each map when it is selected.
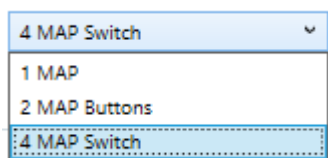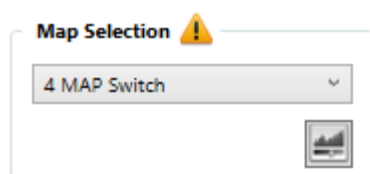
1 Map
This is for standard cars where the driver only need automatic mode.

2 Map buttons
This mode has 2 Maps and require the Tiptronic buttons to be installed. Pressing the Down button for 2 seconds will switch to Map number 2. Pressing the Up button for 2 seconds will switch to Map back to number 1. Note that the software will disconnect and then reconnect. It may take a couple of seconds. This is to read the new data from flash memory in the TCU. The TCU will do this in less

than a second though. It can be done while driving. Also note that the TCU will default to Map 1 on startup.

4 Map Switch
This mode requires a rotary 4 Map switch to be installed on the TCU. Each position will activate the relevant Map to be used. Note that Map 1 and 2 may be changed while driving also 3 and 4. But 2 to 3 or 3 to 2 will only change when the car is stationary. Should you switch to them while driving, nothing will happen until the speed is 0 km/h. Note that the TCU will start in the Map where the switch is positioned. This switch must be calibrated to suit different styles and versions of the Map selection switch. Note that this calibration is always in mode one and is saved in the TCU. Loading other maps will not alter the calibration. If this button is not available, it is either Pre Ver 3.2 firmware or the TCU is currently on a Map greater than 1. In the last case click on *1 Map* do the calibration and then click on *4 Map Switch* before you save the data to TCU. The older versions were preprogrammed and could not be changed.

 Click on this button to enter calibration mode.

Put the Map switch in position 1. As a test you can go through all the positions to position 4 to see if the real time value change significantly.

Put the Map switch in position 1 and click on 1. It will become green. Go through the other positions 2, 3 & 4. Put the map switch in position 1 again and click *Save & Close*. Put the Switch selection to
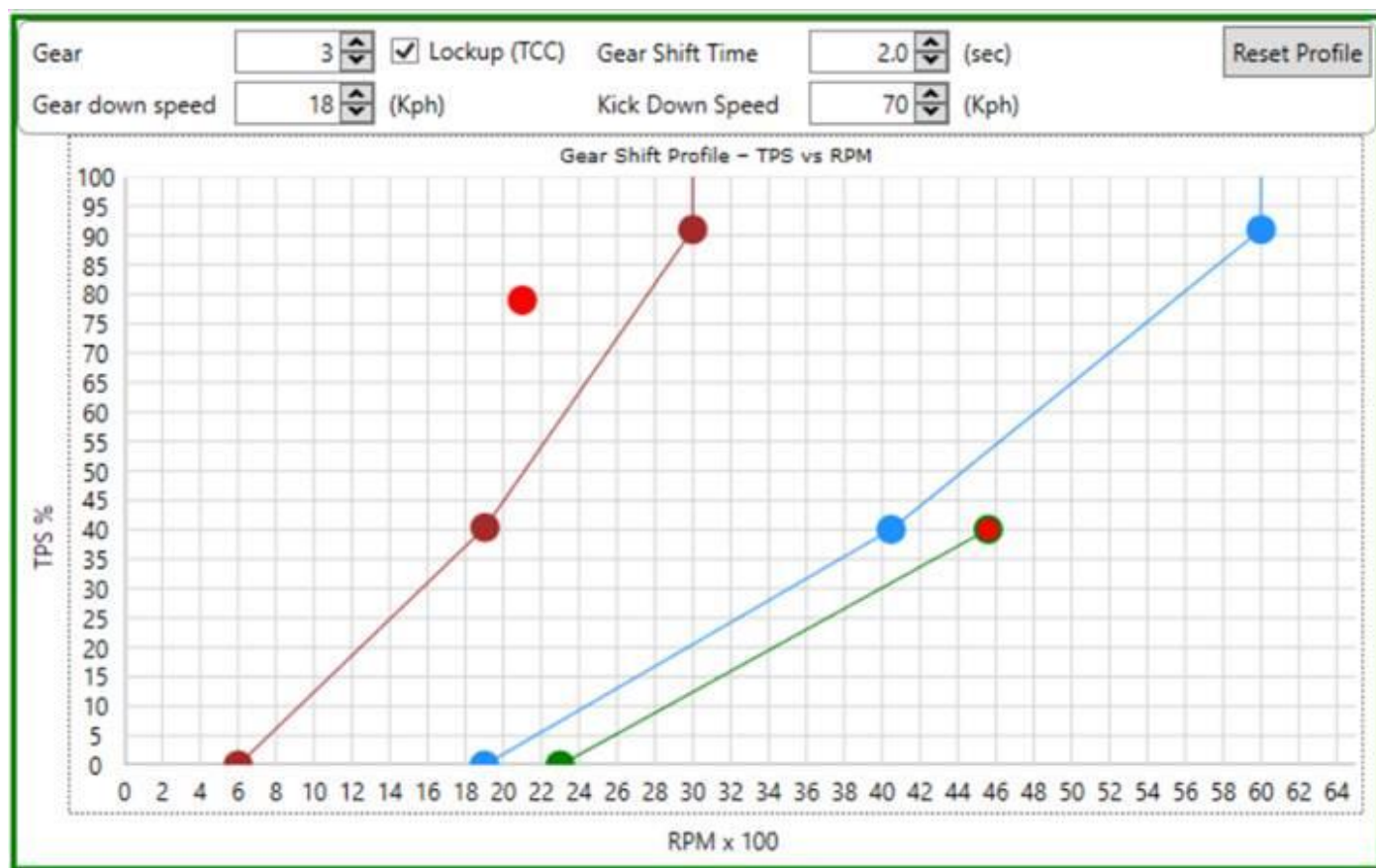
4 Map Switch again. [4 MAP Switch ▾] Then click to make the calibration permanent.

Note that the other Maps may not have data in and then the software will indicate *Setup data could not be read*. In this case click on *Cancel* and load a map into that Map memory.

Gear Shift Profile

For more detailed explanation look in the Gear Shift Profile Manual.

These profiles are used to set up each gear to shift on its own pattern and according to certain criteria. This feature will let the installer set up the TCU for custom drive trains to the desire of his customer. The up and down shift algorithms can be manipulated with ease.

Marker

This Red circle is called the Marker. It is a graphical point on the graph that indicates the crossing point of the vertical TPS signal with the horizontal RPM signal. It let the user see where the crossing point is and when it passes the shift lines.

Brown Down Shift Line
When the marker moves over to the left of this line a down shift will occur. This is usually when the RPM's drop too low in a gear or the throttle is pressed and the engine needs a lower gear to accelerate.

Blue Up Shift Line
When the marker moves over to the right of this line an up shift will occur. This is usually when the RPM's increase too high in a gear or the throttle is release after the required speed is achieved. Then the engine needs a higher gear to coast.

Gear Number and Lockup.

This block indicates which gear's profile are being adjusted. If you click the arrows it will select between the profiles. The lockup check box will indicate to the TCU that you want to engage lockup clutch in the torque converter for this gear. Note that lower gears normally have too little time to use this feature. The standard is usually the top 2 or 3 gears. You may select it in tiptronic off-road in each gear as you spend some time in it. Note that not all transmissions have the lockup available in lower gears.

Gear Down Speed

Gear down speed   18 ⬍ (Kph)

This block is used to force a down shift to the lower gear when the road speed falls below this value.

Gear up speed   10 ⬍ (Kph)

In first gear this value is used as an upshift limit.

Gear Shift Time

Gear Shift Time   2.0 ⬍ (sec)

This block is used to give the transmission time to complete a shift before the next shift will be made. The reason is that the transmission is mechanical and it takes up to 2 seconds to complete a shift procedure.

### Kick Down Speeds.

Kick Down Speed   70 ⬍ (Kph)

This block is used to limit a shift down above this speed to prevent over revving.

Reset Profile

Reset Profile

This helps the tuner to put all the dots on the tuning pallet if no map is loaded in the TCU. They are not necessary placed where they should be.

Pressure Graph

For more detailed explanation look in the [Pressure Graph](#) Manual.
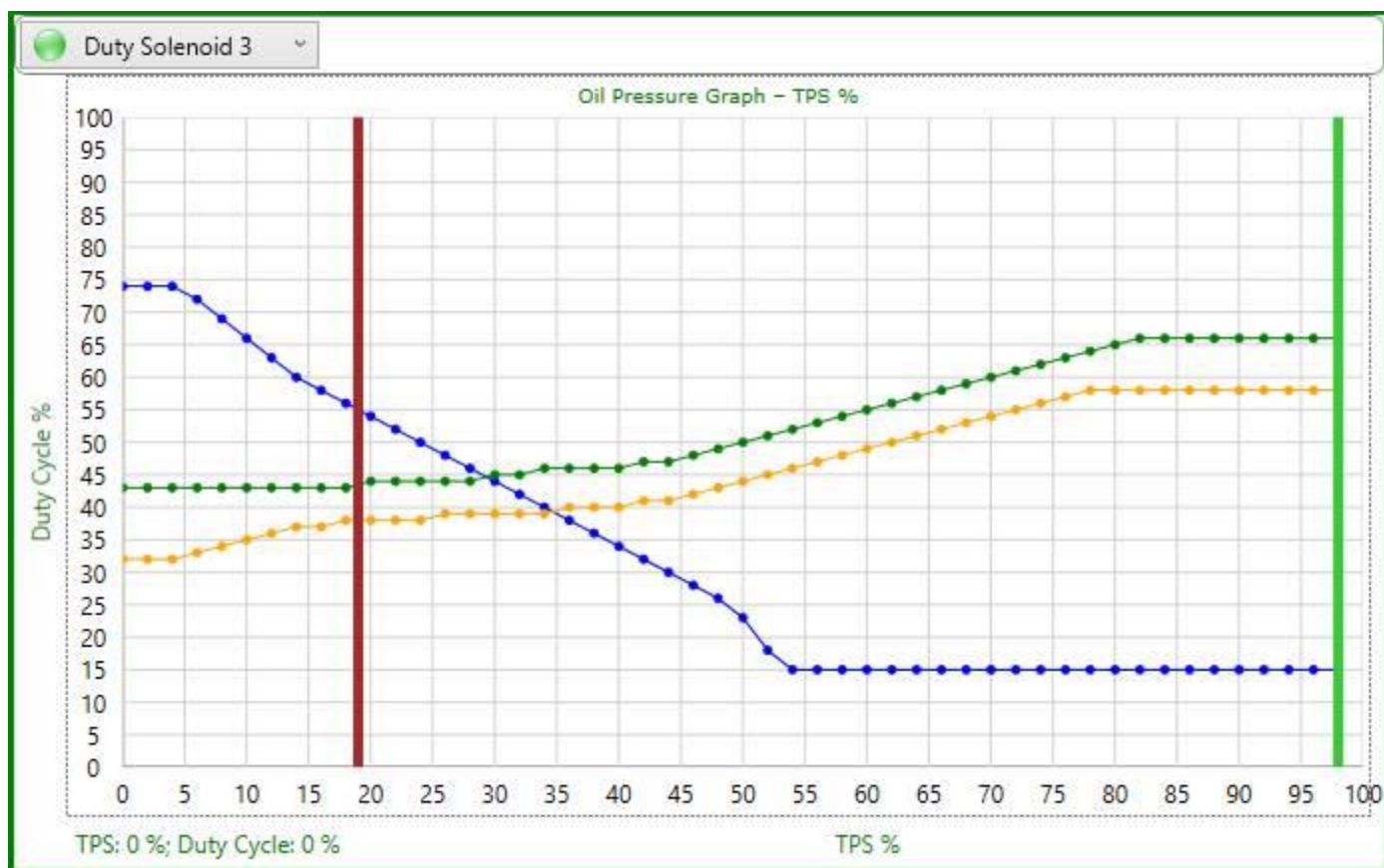
This graph will determine the line pressure which acts on the clutches. This pressure is a pulse width modulation signal and is calculated according to the throttle position.

Duty solenoid 1

This is usually for the line pressure. The higher the Duty Cycle, the less the line pressure will be on the clutches. Never go higher than around 70% Duty Cycle at light throttle as this may damage some control solenoids. Always go for the lowest value without the shift being too harsh. If you feel slippage during shift, back off the throttle immediately and decrease the graph setting at that TPS value. These clutches are not made to endure slippage and will damage permanently.

Duty solenoid 2 & 3

These lines are used for firmware specific transmissions and has different meanings. See the Specific Instructions for each transmission.

Graph selector

Click on the dropdown menu to select a graphs to tune. You may press the "T" button to toggle between them. The "H" button will hide or show all 3. Note that some firmware will only allow 1 graph to be available.

Temperature Compensation

For more detailed explanation look in the Temperature Compensation Manual.
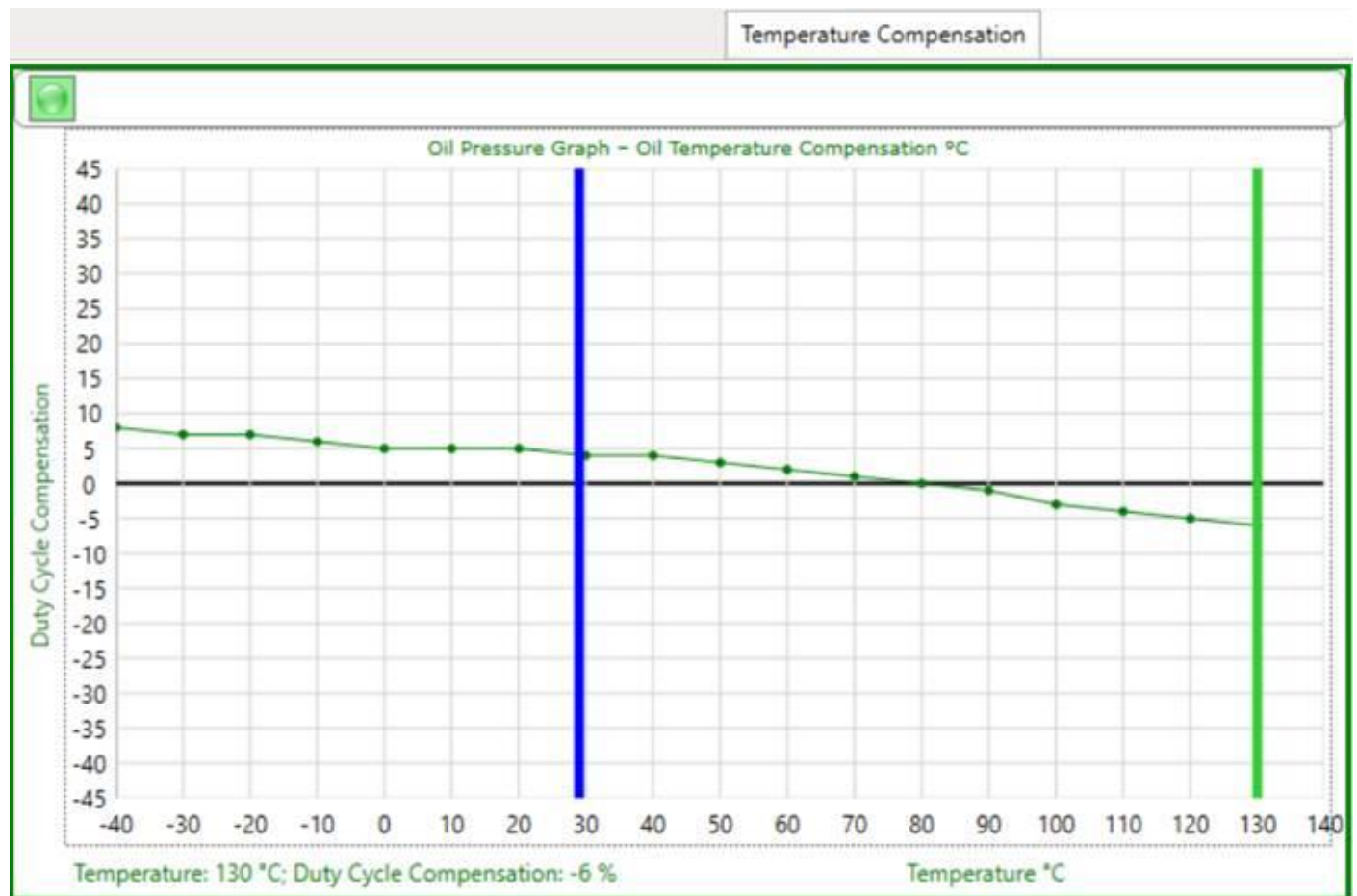
This graph is used to compensate line pressure with temperature. A cold transmission will shift harder. Depending on specific firmware this graph will compensate either line pressure or shift control pressure. The example above is line pressure. If it is for shift pressure the graph may have a rising slope. See the Specific Instructions for each transmission.

When tuning a transmission from the start disable the temperature sensor. Then afterwards enable it and modify this graph when it is cold so that it could shift softly. Don't go too soft as it may slip in some cases. Note that this graph should cross the zero line at working temperature.