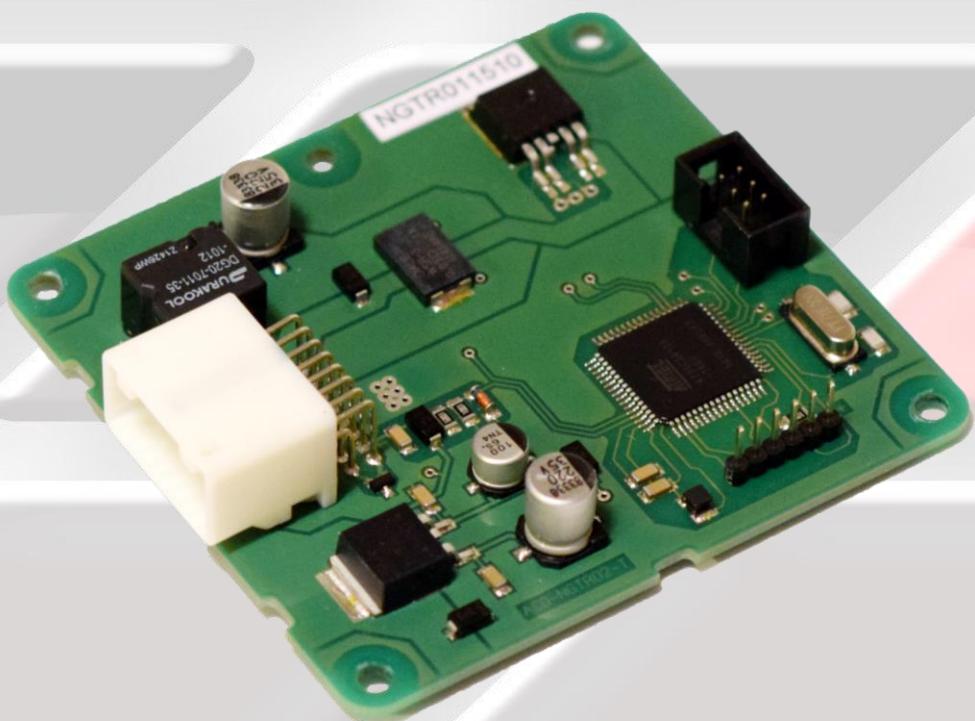


KAPS

INSTRUCTION MANUAL



KAPS Transmissions WORKSHOP MANUAL



DESCRIPTION OF FUNCTIONS OF THE ALL WHEEL DRIVE TRACTION CONTROL SYSTEM FOR NISSAN GTR

The All Wheel Drive Traction Control System (AWD TCS) is very important for controlling vehicles at a high speed and in difficult driving conditions. The AWD TCS is both a road and race system that will enable the Nissan GTR to drive more aggressively without the loss of traction on the wheels.

The AWD TCS is a revolutionary system that utilises all of the available data and sensors in the GTR to adjust the torque split between front and rear wheels to deliver maximum traction!

In high horsepower GTRs, being able to deliver all the power to the wheels while maintaining full traction is the biggest challenge to tuners. Additionally, handling suffers.

The AWD TCS puts the car GTR back on rails! It is fast reacting to minimise slippage and the mapping allows the braking, cornering and acceleration of the GTR all to be improved significantly.

The AWD TCS finally allows you to utilise the GTR's maximum potential with fully customisable maps for all conditions, which no other controller on the market can deliver!

MAIN ADVANTAGES

- 1. Storing capacity of up to 4 created maps right in the AWD TCS unit. Switching over by the toggle button on the vehicle dashboard. Active maps are between 1-4.**
- 2. A possibility to create your own map files.**
- 3. Maximum torque split available between front and rear wheels of 50/50.**
- 4. Burnout mode with differential deactivation.**
- 5. Plug and play**
- 6. No wires or any plastic boxes showing in the interior**

GTR AWD TCS Contents

- 1. Installation and setup**
- 2. Selection of maps**
- 3. Burnout mode**
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- 8. Wheel vs Angle values**
- 9. Diagnostics**
- 10. Setup tab explained**
- 11. Brake Sensitivity**
- 12. Memory ACD Maps**
- 13. Launch control**
- 14. Upload of upgraded firmware**

1. INSTALLATION and SETUP

The GTR AWD TCS does not require specialist setup. There is no setup procedure necessary for compatibility of the AWD TCS unit. It is only necessary upon installation to ensure the ignition and engine is switched off.

Maps can be selected by activating the Torque split screen on the dash.

To install the unit, locate the original ECU under the front passengers seat. It is hidden in the floor under the carpet.

Replace the OEM unit with the KAPS Transmissions GTR AWD TCS unit.

2. SELECTION OF MAPS

CHANGING OF ACTIVE MAP

It is necessary to have the TORQUE SPLIT graph active on the dash.

To change the map, select the left toggle switch DOWN, UP, DOWN, UP. This combination must be done within 2 seconds. This will activate the change map mode.



After the torque split graph will start flashing. The maps are set up as follows:

- Map 1 = Torque split 25%***
- Map 2 = Torque split 50%***
- Map 3 = Torque split 75%***
- Map 4 = Torque split 100%***

Each press of the left toggle switch down will result in the next map being selected.

Once the desired map has been selected, the map will be saved after a few seconds and the torque split will stop flashing.

Note: Maps do not have a constant 25, 50, 75 or 100% torque split between the front and rear wheels. Torque split graph only indicates which map is selected.

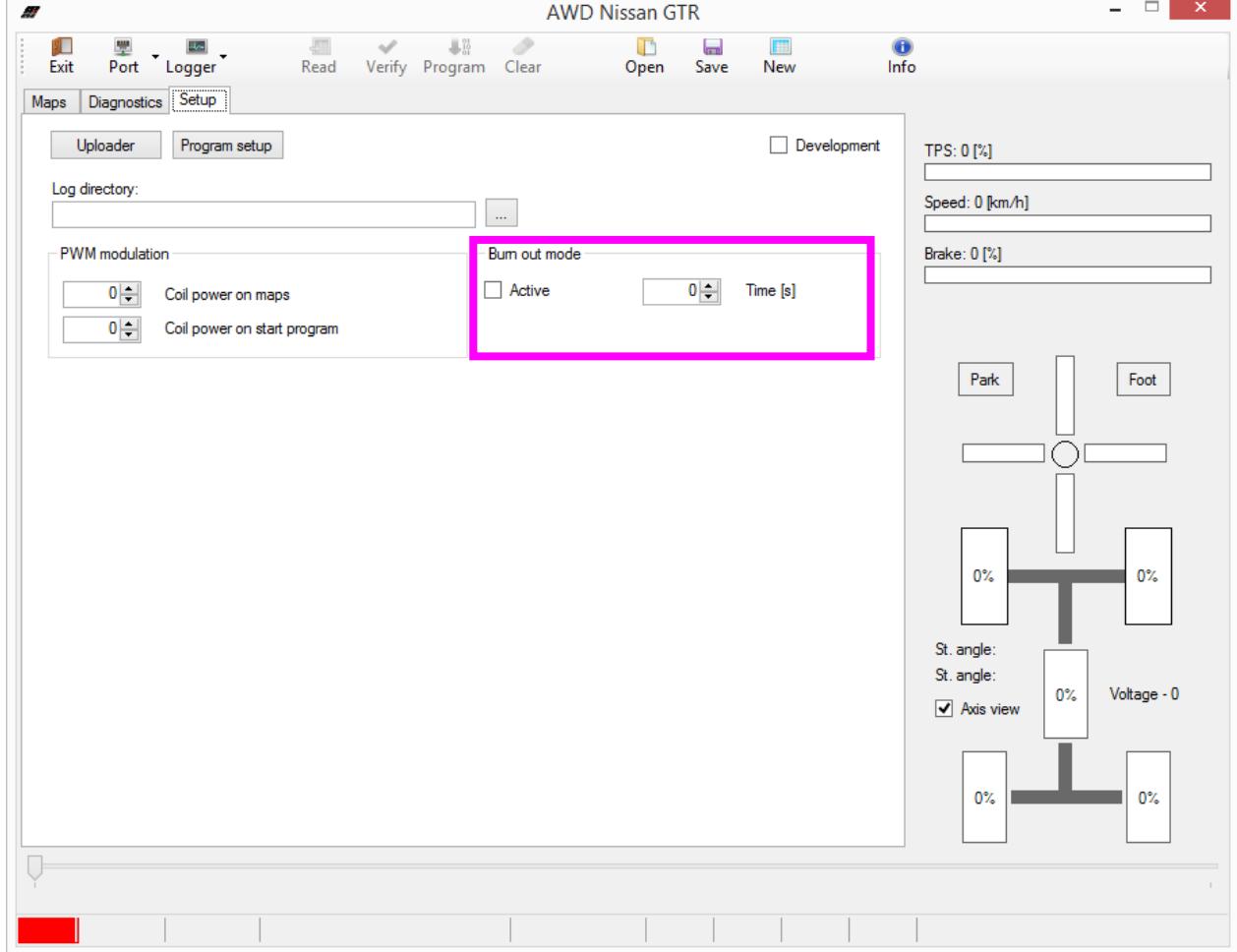
3. BURNOUT MODE

It is possible to completely disable the center differential and drive only the rear wheels. To do this, a map can be created and saved where all values are 0 (zero). Then select this map on the dash for 100% rear wheel drive.

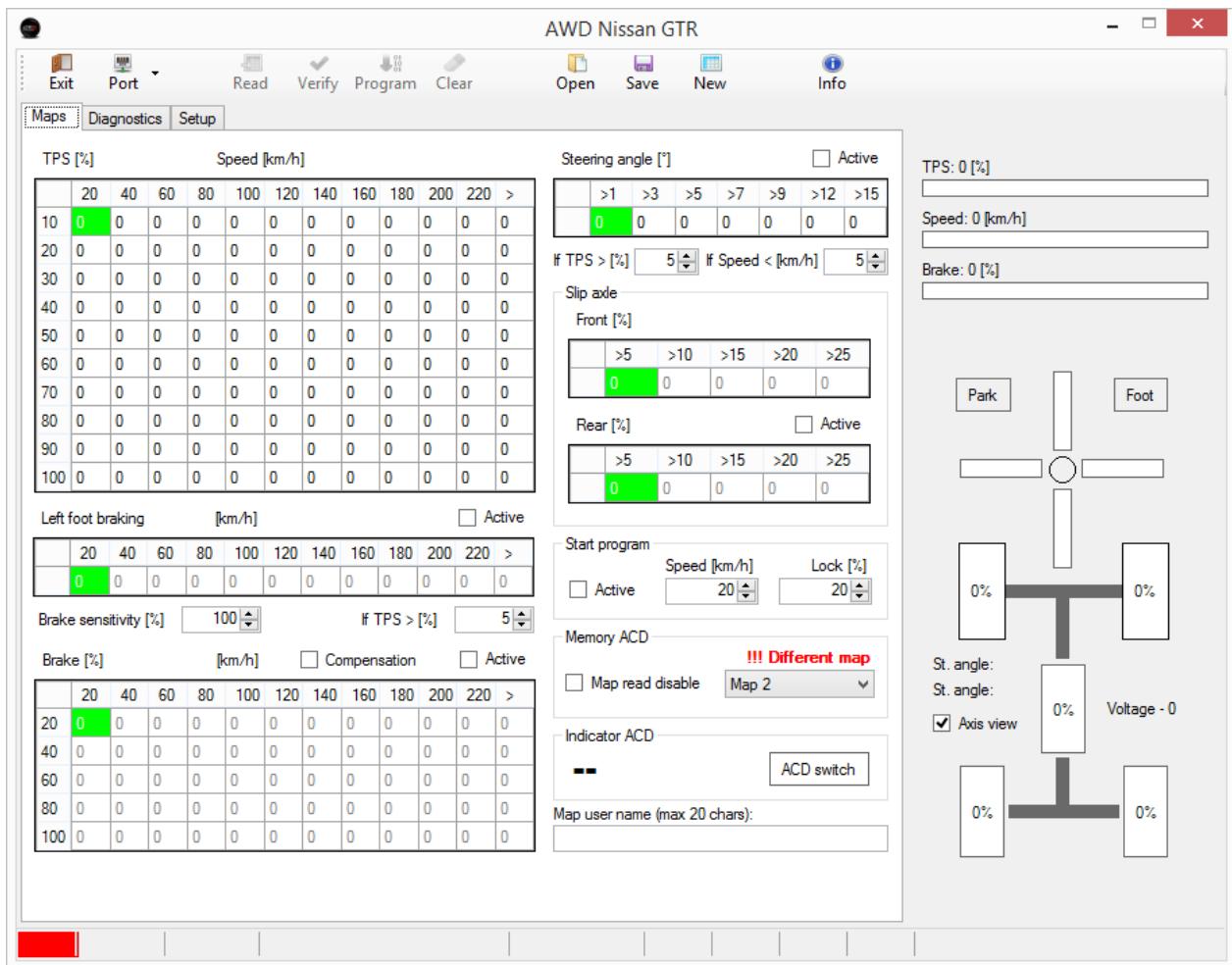
Alternatively, burnout mode is active when the change map mode is active. Before any map has been changed, the differential is switched off so the GTR will be in full rear wheel drive only to make a short burnout. Once the change map mode time elapses, the differential will again default to the previous map that was selected.
[check firmware version for this functionality]

Tick active burnout mode

Set ACTIVE time [seconds]



4. MAP TAB EXPLAINED



Top Left: Main mapping table Speed kmph x TPS%

This table is used to input the primary values for lock of the center differential

Middle Left: Left Foot braking Speed kmph x Foot Brake x TPS

This table is used as a replacement to the main mapping table if both the TPS and Foot Brake Pedal sensor is active. The TPS>% condition field can be toggled to adjust the point of activation of the table.

Bottom Left: Main brake table Speed kmph x Foot Brake%

This table is used as a replacement to the main mapping table and helps fine tune the adjustment of lock based on the pressure applied to the brake pedal

Top Right: Compensation tables Steering Angle, Slip Axle

These tables are used in addition to the main mapping table. Steering angle and slip axle help fine tune the lock on the center differential.

Bottom right: Start program and active map info

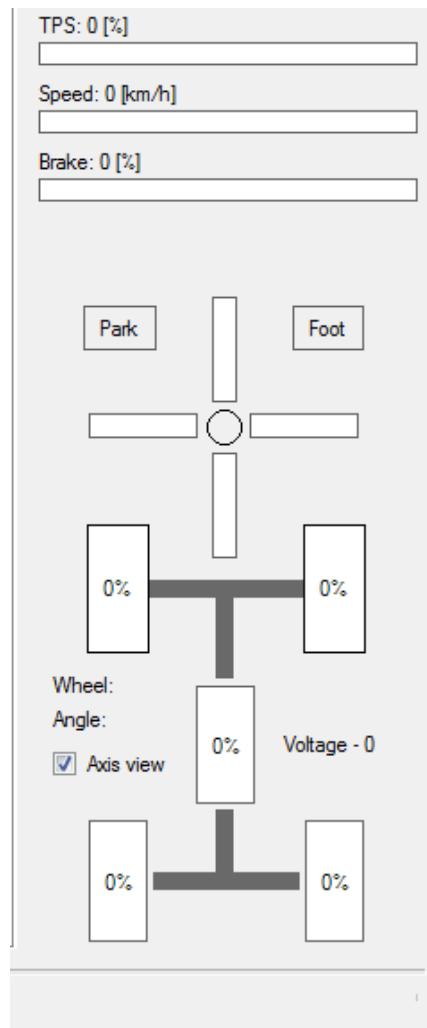
There is a start program feature for launching from a standing start.

Far Right: Live Graphical AWD TCS interface

After the AWD TCS unit is connected to a notebook, the data may be read when driving - graphic representation of the current state of the vehicle (very helpful for completing the notion of how individual sensors work and how they influence the clamp of the centre differential in percentage).

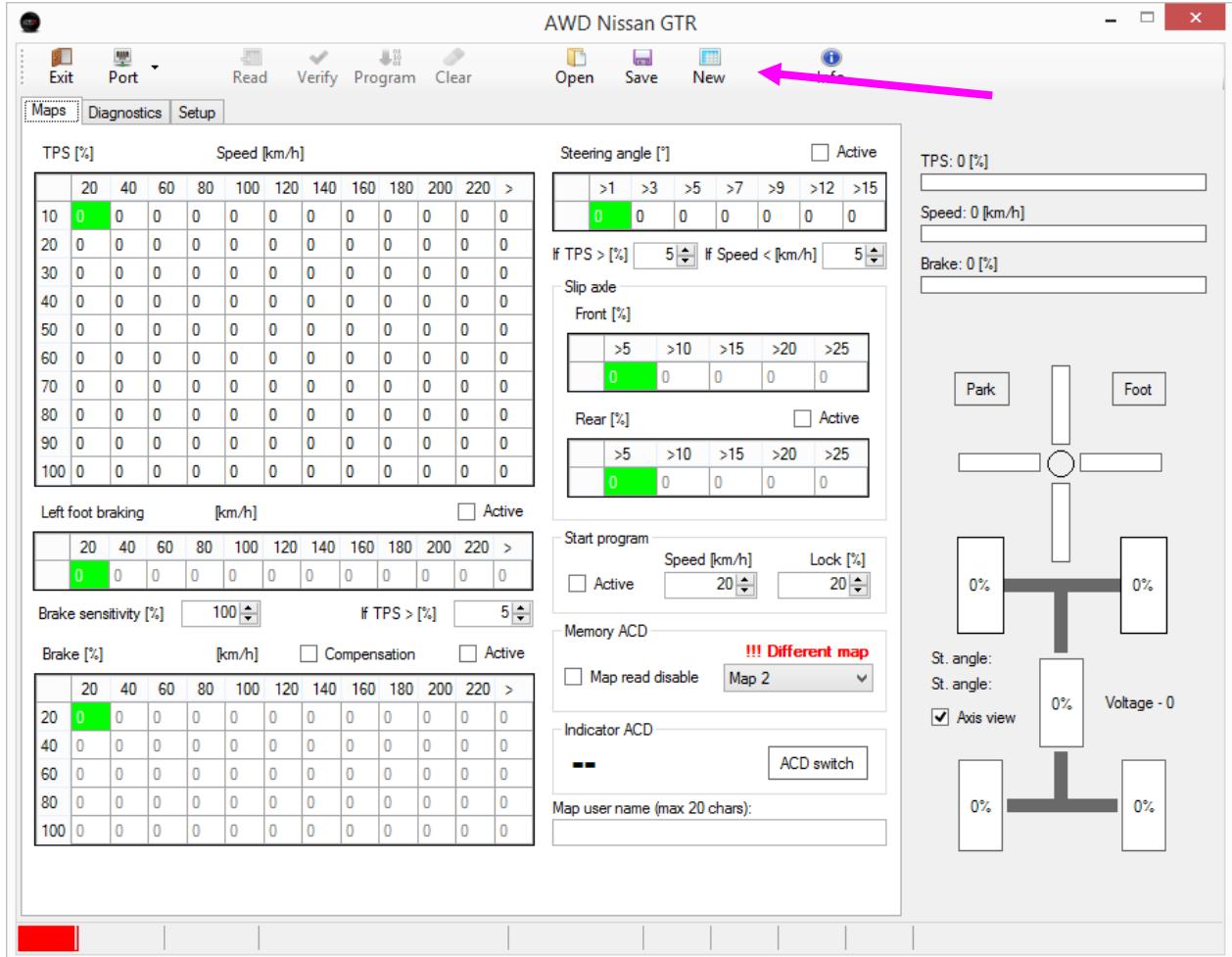
Live Graphical AWD TCS interface

- 1. TPS - indication of the gas pedal position in the range of 0-100%**
- 2. SPEED - indication of the speed of the vehicle (in km/hour)**
- 3. BRAKE - indication of the pressure on the brake**
- 4. PARK - signals the hand brake engagement**
- 5. FOOT - signals the use of brake pedal (brake light sensor)**
- 6. G-sensor - shows the value of longitudinal and lateral overload**
- 7. SLIP indication - shows the slip of individual wheels (0-100%). If you click the AXIS view field, the slip of the fore axle as against the rear axle will be graphically represented**
- 8. % indication - shows the level of clamp of the centre differential in %**



5. CREATING A NEW MAP

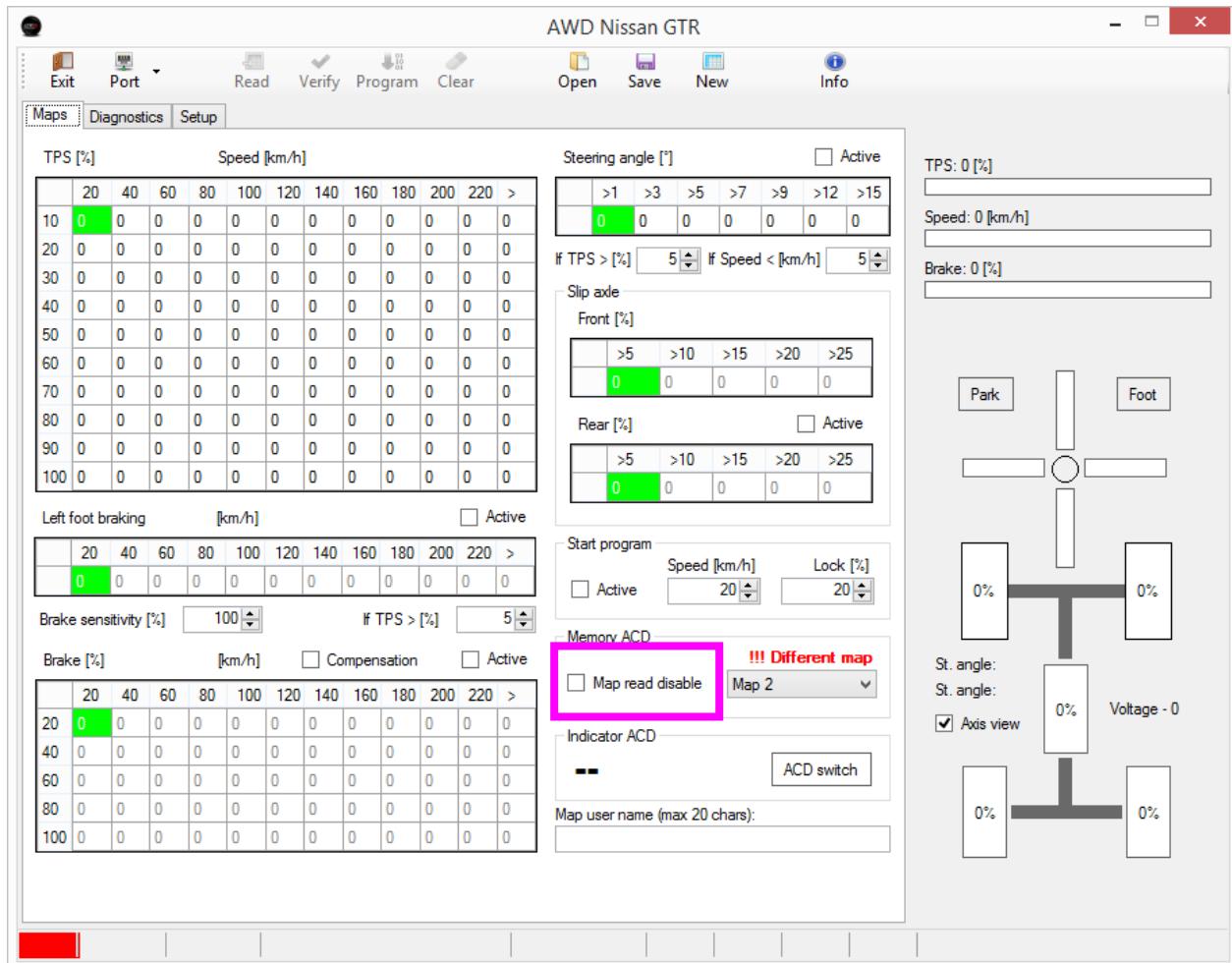
It is necessary to press NEW to create a new map.



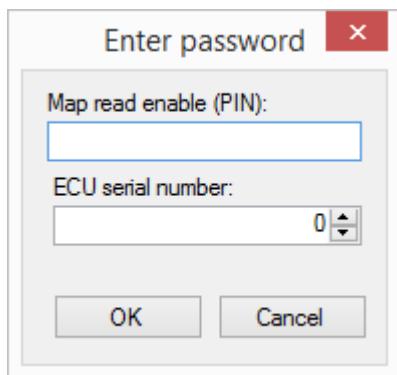
**After this, you can enter new values to the mapping table.
If you wish to edit maps, only overtype the previous data to program.**

6. PASSWORD PROTECTION OF MAPS

To protect a map file from being viewed, check the „MAP READ DISABLE“ box



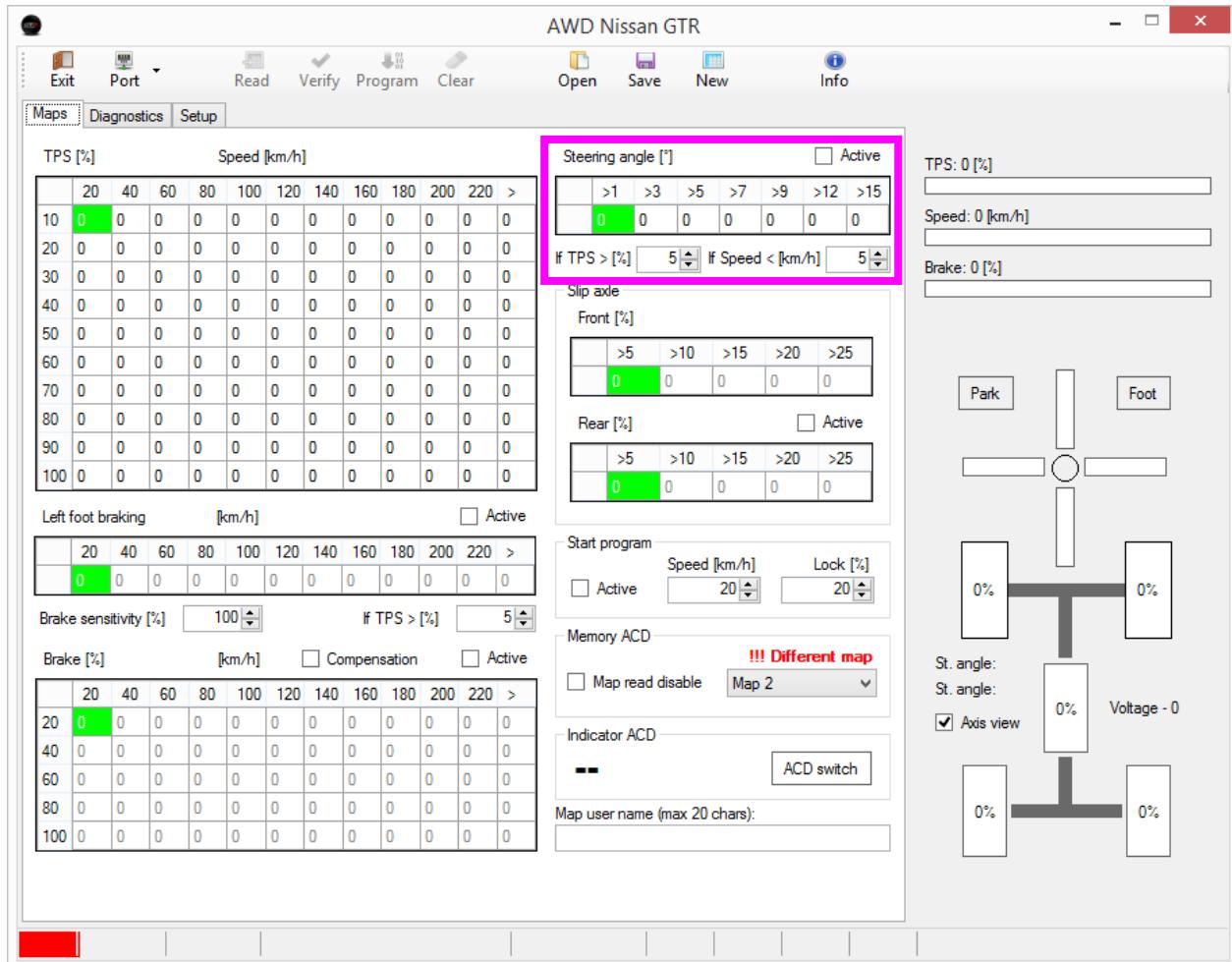
Password is of your choosing as a 4 digit pin code only.



NOTE: The password protection is associated to the map. To lock all maps, you must password protect each individually. Changes are saved only by the Program button. It is possible to add a serial number to the map so the map will run on only the corresponding GTR unit.

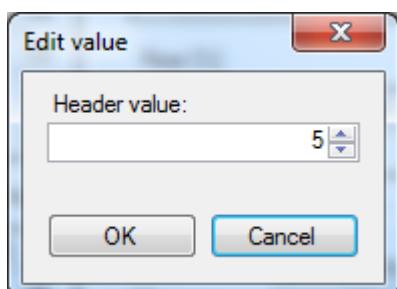
7. STEERING ANGLE PARAMETERS VARIABLE

When the steering angle compensation table is active, it is possible to amend the parameters so the mapping of the steering will become more condensed or more expanded. Minimum value is 1 and maximum value is 30. Default values are >1>3>5>7>9>12>15



Double click on the parameter cell to adjust values and the pop up box will appear.

**NOTE: Any changes you make, you must press the PROGRAM button to save your changes to the ACD computer. If not, changes will be lost.
Alternatively, pressing save will save the map file to an alternative medium.**



NOTE: It is possible to give a value greater than the number to the right. For example:

>1 >3 >8 >7 >9 >12 >15. If this is to occur, the ACD computer will ignore parameters to the right of >8 that are less than 8.

In the example below, >7 will be ignored, but >9, >12 and >15 will still be used.

Steering angle [°]								<input checked="" type="checkbox"/> Active
	>1	>3	>8	>7	>9	>12	>15	
	0	0	0	0	0	0	0	
If TPS > [%]	5	If Speed < [km/h]	5					

The mapping table is active only in the range of the conditioning parameters TPS and speed.

8. WHEEL ANGLE vs STEERING ANGLE values

There are 2 ways of analysing the steering and cornering of the car. That is by Wheel angle and steering angle.

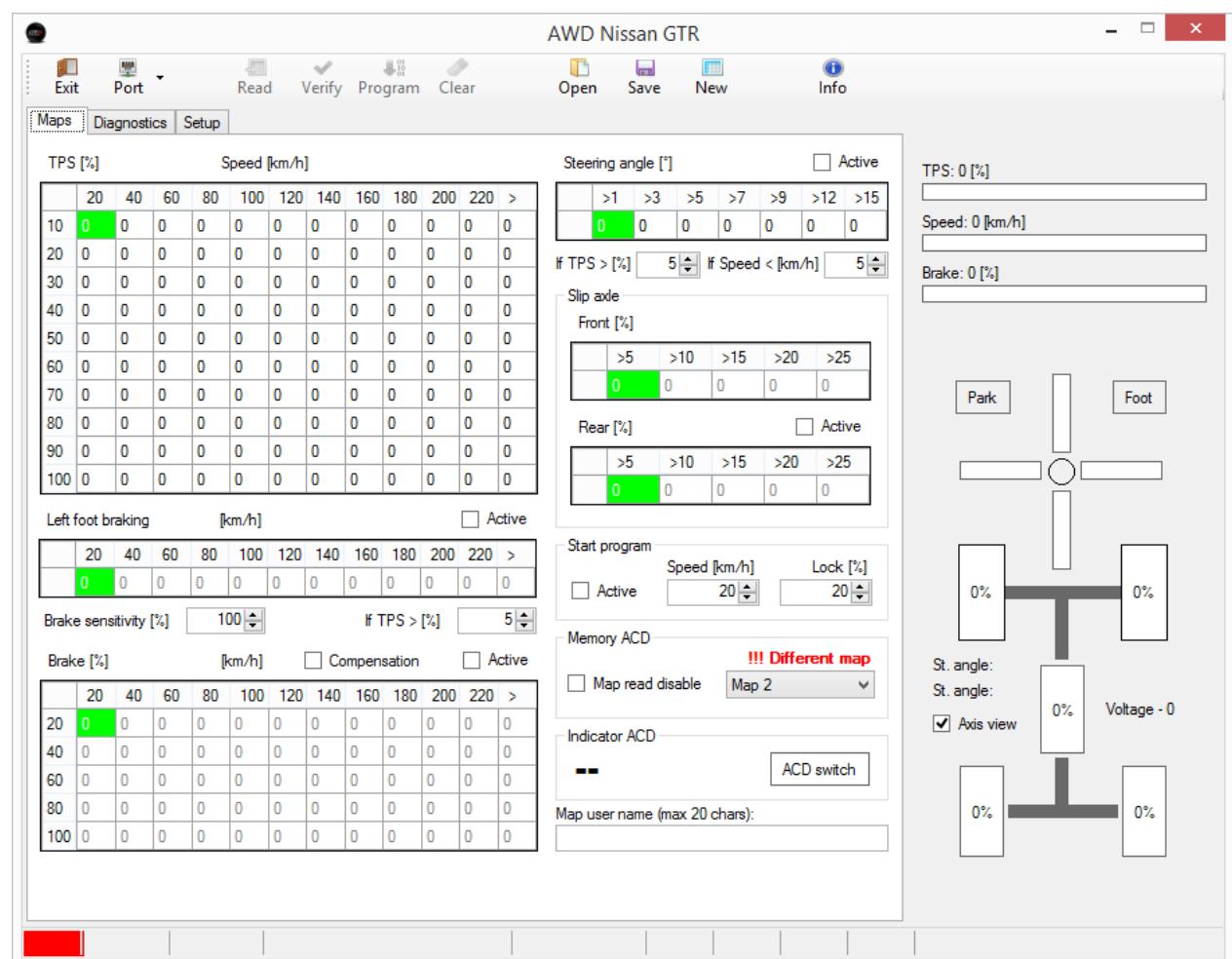
WHEEL ANGLE relates to the steering wheel turn and STEERING ANGLE relates to the angle (°) of the front tyres.

Parameters

WHEEL ANGLE: max scores L420 : R420 (left and right)

STEERING ANGLE: max scores L30 : R30 (left and right)

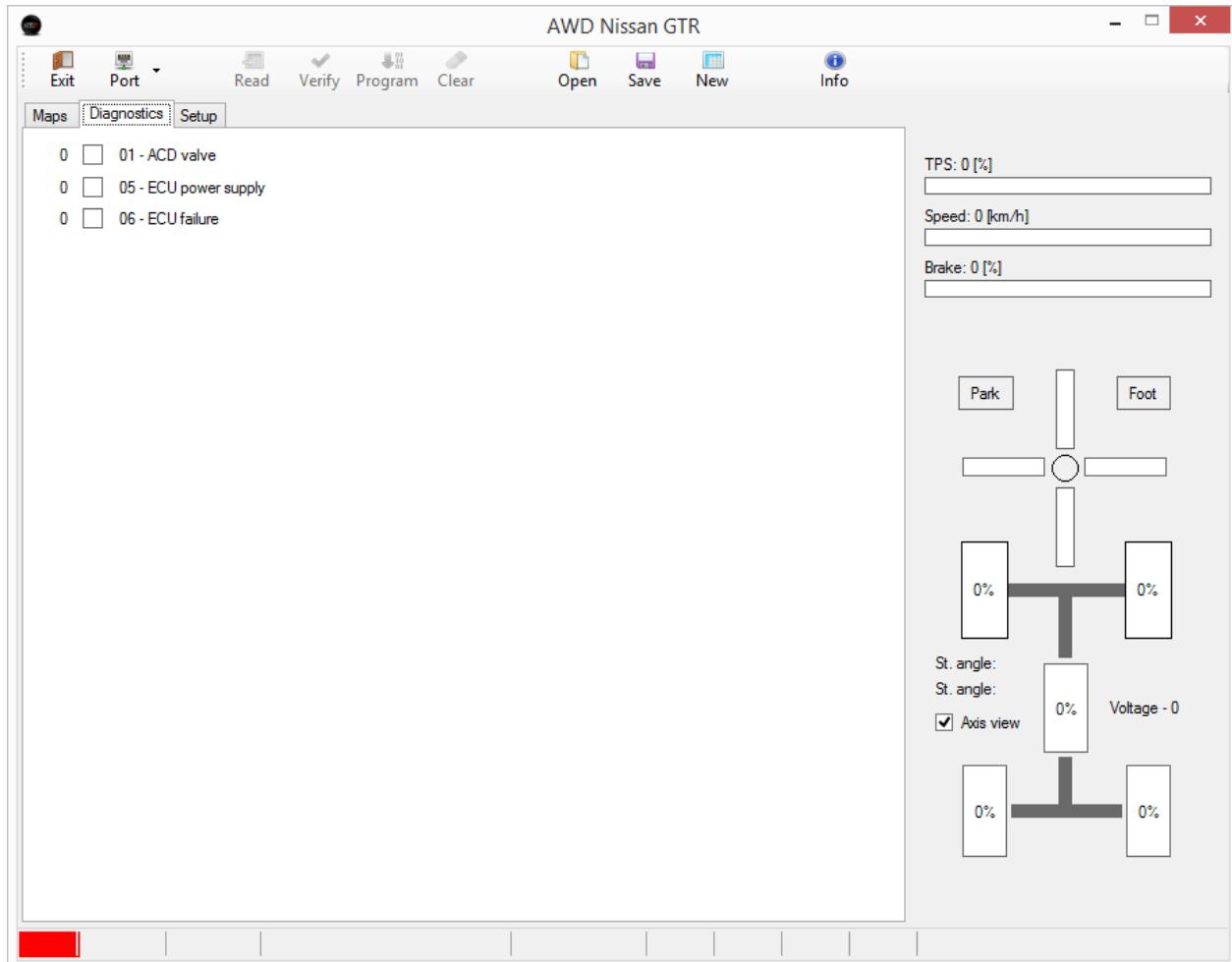
Wheel angle max values determined from GEMS dash +/- 420.



9. DIAGNOSTICS

Should there be any errors in the system, it is possible to diagnose the issue on the diagnostics tab.

The error code is indicated on the display of the control unit by red colour.

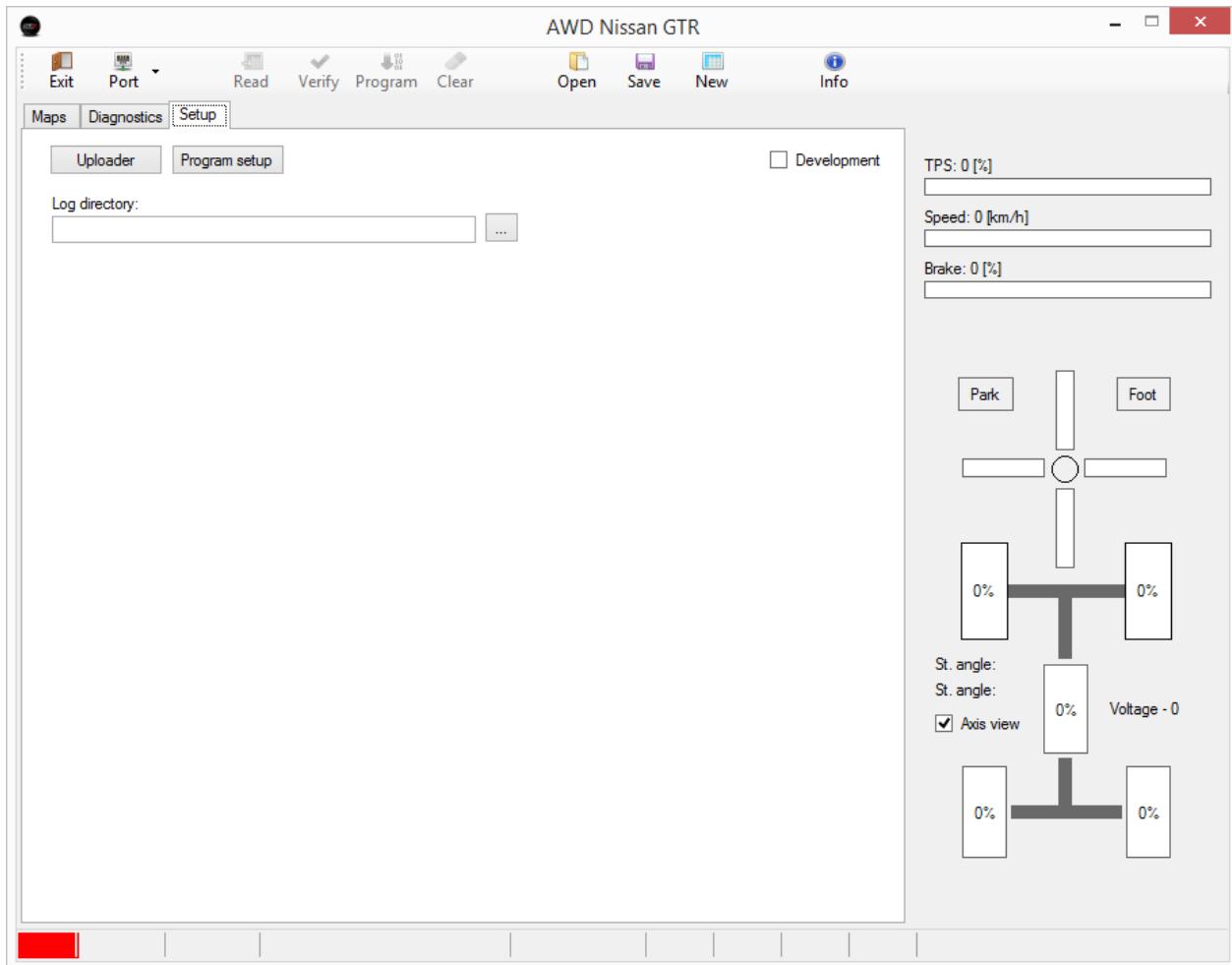


- 01. ACD valve**
- 05. ECU power supply**
- 06. ECU failure - Defective control unit**

Currently error codes are inactive in the software.

10. SETUP TAB EXPLAINED

Setup tab has been simplified.



Uploader button

This is used to upload inside the ACD computer new versions of firmware.

Program Setup

Any changes to the setup tab must be confirmed by pressing the Program setup button. If not, changes will not be saved.

Do not use the development box for any reason. Changes can only be made there if advised by KAPS Transmissions.

11. BRAKE SENSITIVITY

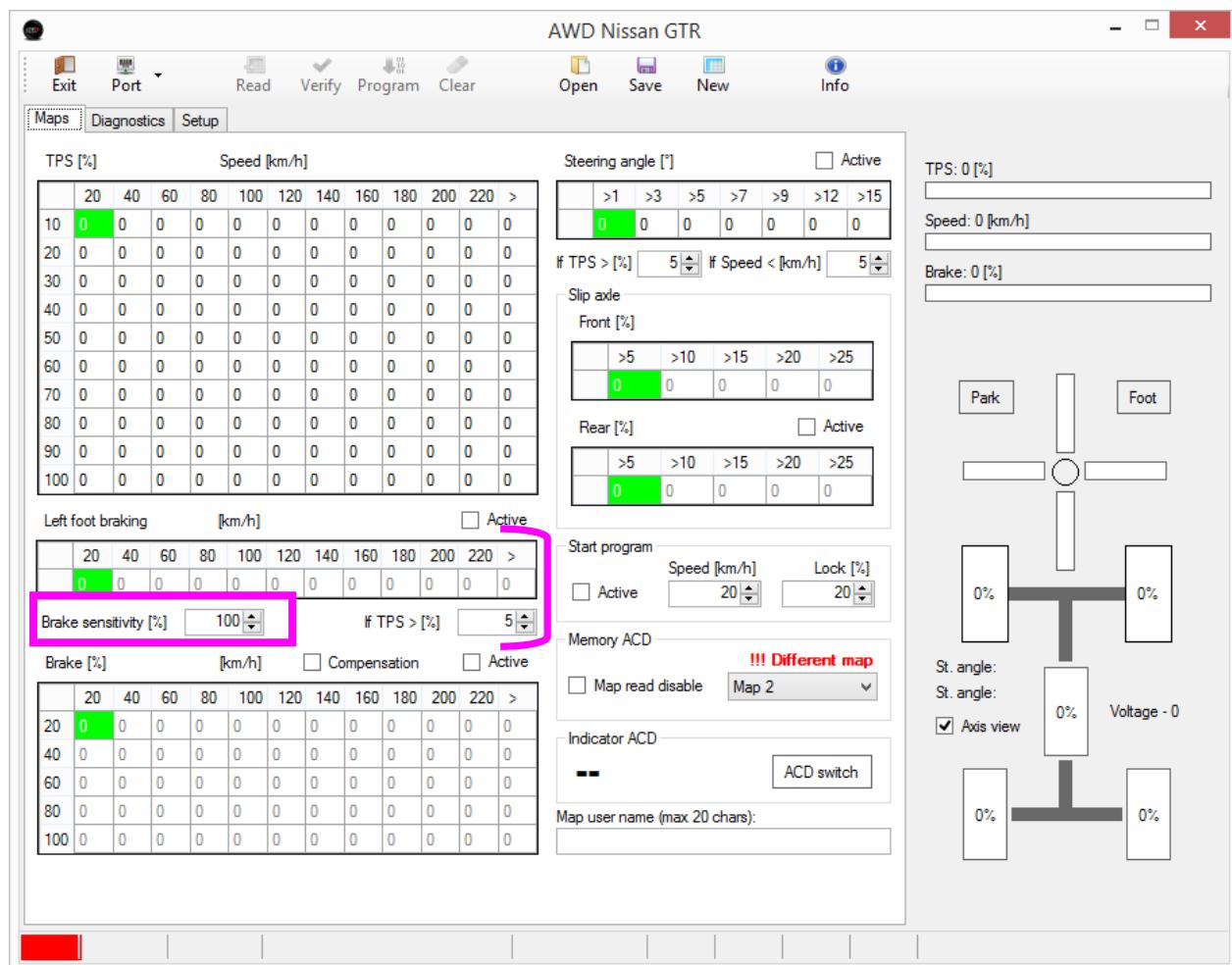
It is possible to change the sensitivity of the brake pedal to suit your car. The brake sensitivity feature is only associated with the main brake table. The level of 100% is the base value for changes to be calculated. Base value of 100% is determined from the maximum stopping power of the GTR on dry tarmac conditions during testing.

The brake sensitivity has a value range from 50%-150%. Should your car have a higher or lower level of grip, then you can adjust the sensitivity accordingly.

For example: Any changes to the setting of the brake sensitivity, the system will recalculate so it will be max 100% brake percentage on the brake mapping table.

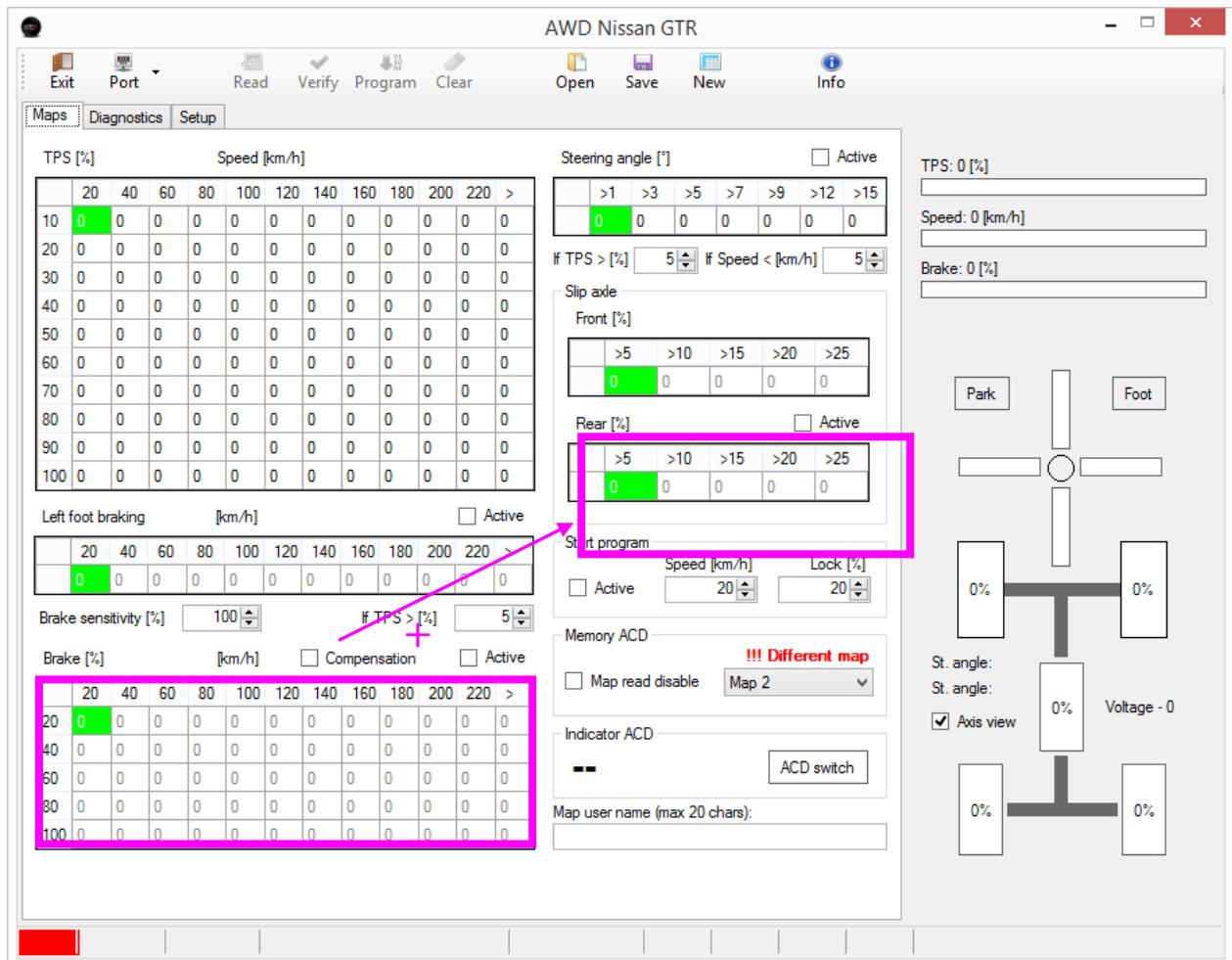
NOTE: The TPS % toggle box is related to the left foot brake table, not the main brake map table.

NOTE: Brake sensitivity is programmed to the selected map only. Each map can have different brake sensitivity.



Compensation Check Box

The „Compensation“ check box associated with the main brake table when ticked, will add into the diff lock the rear axle slippage % mapping values.

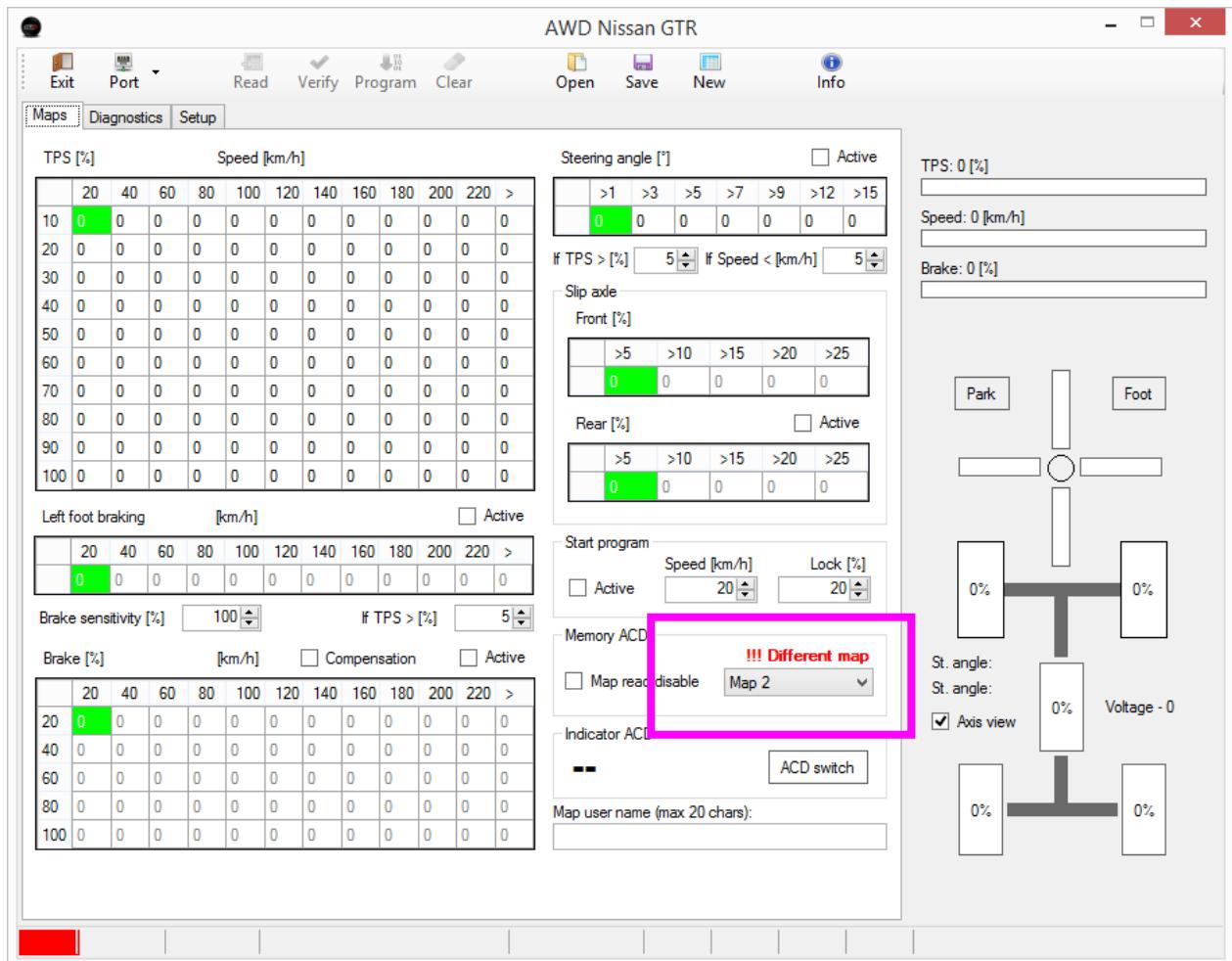


12. MEMORY AWD TCS MAPS

The AWD TCS has a possibility to run with 4 maps.

- Map 1 - 25% Torque split level**
- Map 2 - 50% Torque split level**
- Map 3 - 75% Torque split level**
- Map 4 - 100% Torque split level**

Maps can be saved to a computer and loaded also to additional AWD TCS units. If any values are edited directly inside the AWD TCS unit, it is necessary to press the program button to save those changes.



13.LAUNCH CONTROL

The Launch control sequence is a special feature in the AWD TCS that will lock the differential for maximum grip upon take off.

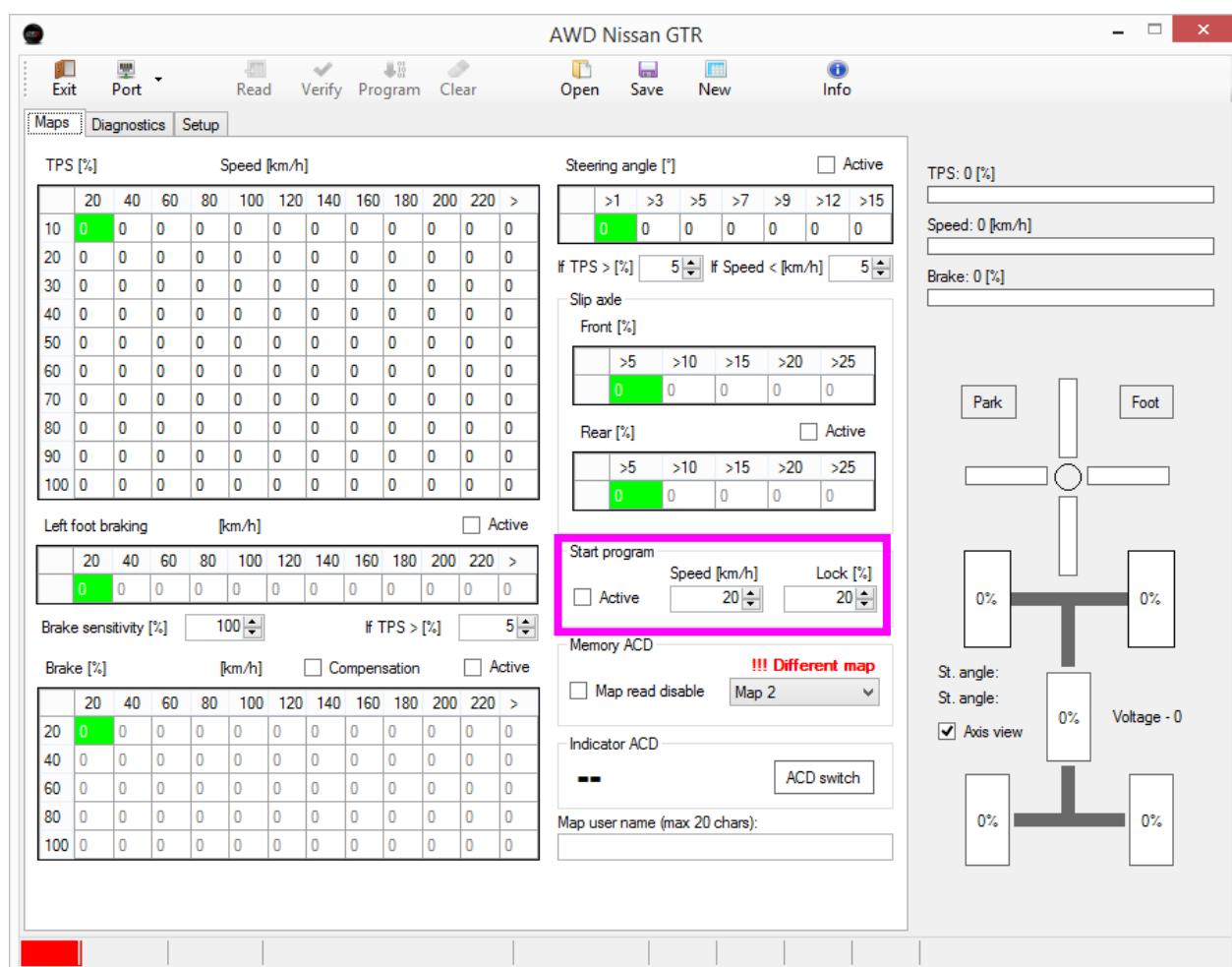
To activate the Launch control, tick the startprogram active box. (Start program is saved on the map only. Each map is tuned individually).

Select the top speed that the start program will deactivate and set the amount of lock that the differential will have during the launch phase.

Program any changes in the software.

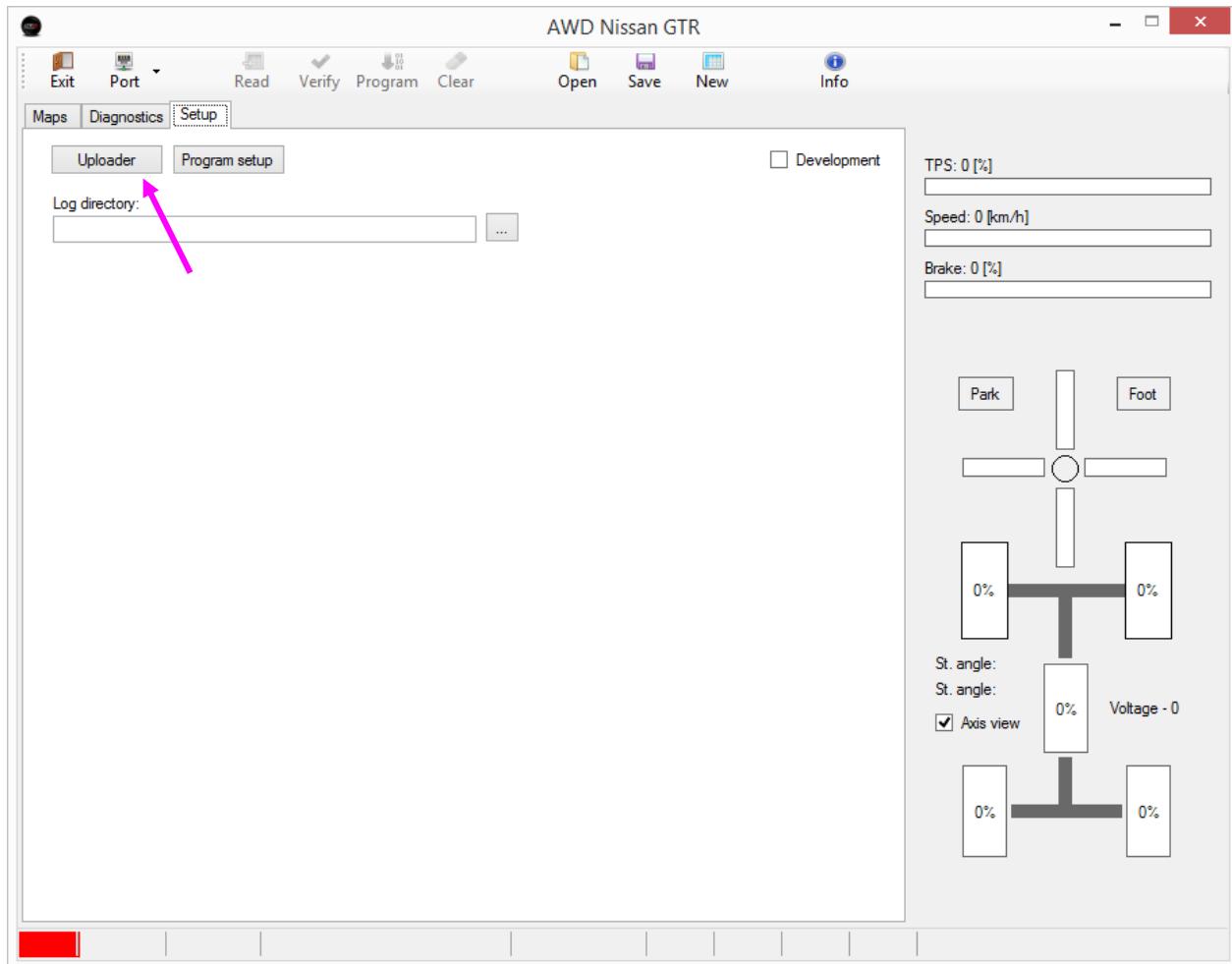
The Launch control is active when the car is stationary (>5kmph) and TPS (throttle) is depressed 80% for approximately 0.5 seconds. The launch control will remain active for 10 seconds if the car remains stationary (>5kmph).

Once the car reaches the programmed speed, launch control sequence will end and revert to the main mapping table. It will also end if the brake is pressed or the steering angle is greater than .



14. UPLOAD OF UPGRADED FIRMWARE

On the setup tab, click the „Uploader“ button.



Select the file sent by KAPS TRANSMISSIONS .upg

