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# Syvecs LTD

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## V1.3

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# R35GTR AWD Controller

This document is intended for use by a technical audience and describes a number of procedures that are potentially hazardous. Installations should be carried out by competent persons only.

Syvecs and the author accept no liability for any damage caused by the incorrect installation or configuration of the equipment.

Please Note that due to frequent firmware changes certain windows might not be the same as the manual illustrates. If so please contact the Syvecs Tech Team for Assistance.

[Support@Syvecs.com](mailto:Support@Syvecs.com)



### Contents

- 1 x Syvecs AWD ECU
- 1 x USB Cable
- 1 x BurnOut Switch (Optional)
- 1 x 20k Rotary Potentiometer (Optional)

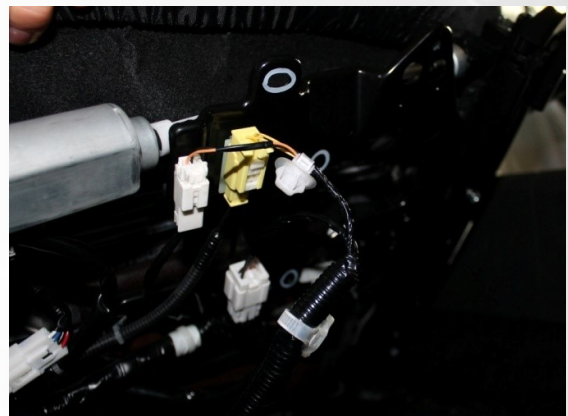
### Installation

First you need to locate the 4WD Ecu on the R35GTR, this is found on the right hand side on the Vehicle under the appropriate seat – LHD Drive cars this is passenger seat, RHD drive cars this is the driver's seat.

Removing the seat is done by unclipping the 4 plastic bolt covers in each corner of the seat and then using a 14mm socket turning the bolts anticlockwise.



Carefully then tilt the seat backwards and unplug the 3 electrical connection.



After this remove the seat from the vehicle.

Next step is to lift the carpet which was below the seat and remove the polystyrene cover.

The 4WD Ecu will then become present as shown below



Unplug the connector going into the ecu and then plug into the female connector housing onto the Syvecs 4WD Controller.

Reverse the steps now for removing the seat and following the controls below for using the product.

## **Controls**

### **RWD Drive Mode / BurnOut**

There is 2 ways to activate the burnout mode on the R35GTR AWD Controller V2

1 . ) First is via activating Snow Mode / Save Mode which is shown here  
This will bring on a 4wd light on the dash to illustrate that RWD Drive mode is active. To switch it back to AWD just turn of Snow Mode / Save Mode

2. ) Second Option is via wiring in a Burnout Switch to AN01 Input on the Syvecs Awd controller (Pin 21). AN01 has a internal 5v pull-up set so the input will sit at 5v, the other side of the Switch needs to be connected to Ground on the chassis or via Ground Pins 1, 2, 25, 26 on the Syvecs AWD Controller.

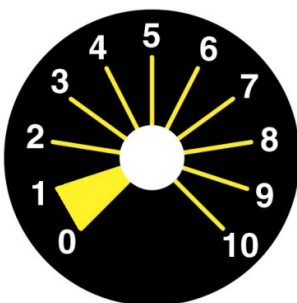


AN01, AN02, 5V and Ground are available on the External 4 way DTM connector.  
When AN01 is less than 3v it will activate 2WD Mode / Burnout Mode.

3.) Optional Burnout Mode options are available in the software from Hazard Switch and Handbrake

### **Live Adjustment Potentiometer**

Users can have the ability to adjust the AWD Duty live via a laptop or with a external potentiometer with the Syvecs AWD Unit. A 20K Rotary Potentiometer can be wired to the AN2 input of the Syvecs Controller and it will apply a multiplier to the Duty. Wiring for the Pot is here --- >



- 0 -1 = No Adjustment (Logic Off)
- 1 -2 = 0.6 Multiplier (Less Duty)
- 2 -3 = 0.7 Multiplier
- 3 -4 = 0.8 Multiplier
- 4 -5 = 0.9 Multiplier
- 5 -6 = 1.0 Multiplier (No Adjustment)
- 6 -7 = 1.1 Multiplier
- 7 -8 = 1.2 Multiplier
- 8 -9 = 1.3 Multiplier
- 9 -10 = 1.4 Multiplier (More Duty)



## External DTM4 Pinout

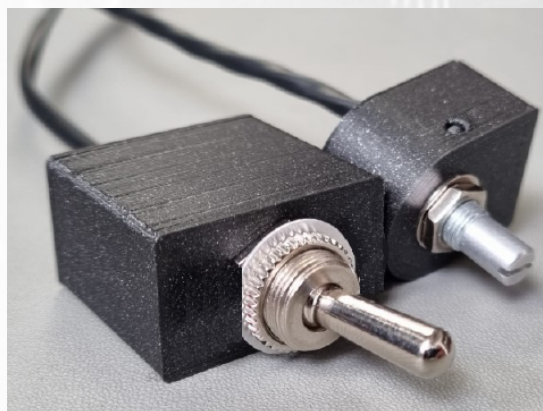
DTM4:

Pin 1 – Ground (Black)

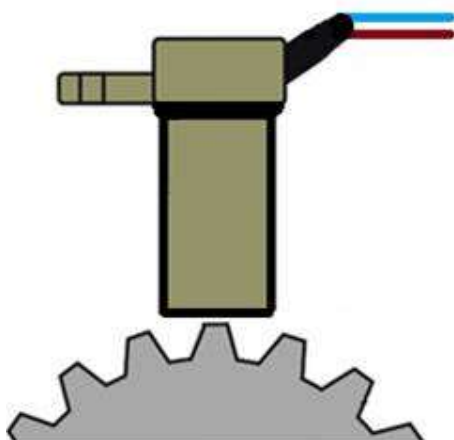
Pin 2 - AN2 (Blue) – AWD 20k Pot

Pin 3 – 5v Out (Red)

Pin 4 - AN01 (Yellow) - Burnout Switch



Burnout Switch – ON = AWD / OFF = 2WD

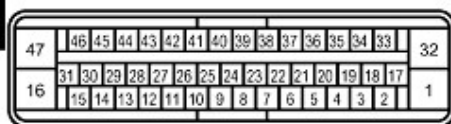


## MagnetoResistive ABS Sensor Support

The Syvecs R35 AWD Controller supports magneto-resistive wheels speed sensors which the factory car use. These can be connected direct to the Syvecs AWD controller via Pins 9 to 12. When doing this another version of code can be loaded into the controller via USB to allow the speed data collected from the sensor to be transmitted on the OEM ABS Can Frames or as Bosch M4 ABS Frames.

This means users can remove the OEM ABS Computer from the car if wanted.

Connect as shown below



Syvecs AWD 26 Way Pin	Function	Nissan E41 ABS Connector Pin
9	FL Speed Signal	45
10	Fr Speed Signal	34
11	Rl Speed Signal	36
12	Rr Speed Signal	43
26	Ground	33, 37, 42, 46



## Calibrations of the AWD ECU

Users have the ability to adjust all the controls of the Syvecs AWD Unit via our Scal program that's part of SSuite. This can be downloaded from <https://www.syvecs.com/software/>

The USB port for communication is found under the main connector which is protected with a Allen key plug. Remove the plug and connect a Micro USB Cable to the AWD Unit and the other side to a Windows Laptop or PC.

Open the Scal software and select **Device - Connect** Tab at the top. This will connect to the device and grab the calibration from it. If the unit has just been updated then no Cal will be present and Users need to program defaults or load a base map.

### **IMPORTANT:**

The AWD Ecu can be connected to and programmed outside of the car as it will power up of the USB cable alone. PLEASE NOTE: If you are connecting the Usb to an Awd Ecu before the Unit is powered up from the car power systems it will enter a bootloader state until a **Device –Connect** is preformed. If wanting to connect to the unit in the car then connect the USB after the Ignition is **ON** or perform a **Device –Connect** first to bring the unit into main code.

Green Maps can be changed live, Blue maps require a **Device – Program** for the calibration change to be flashed into the device.

When all calibration work is done, users must do a **Device – Program** so the green maps which have been changed get flashed and stored in memory.



## Main Code Updates

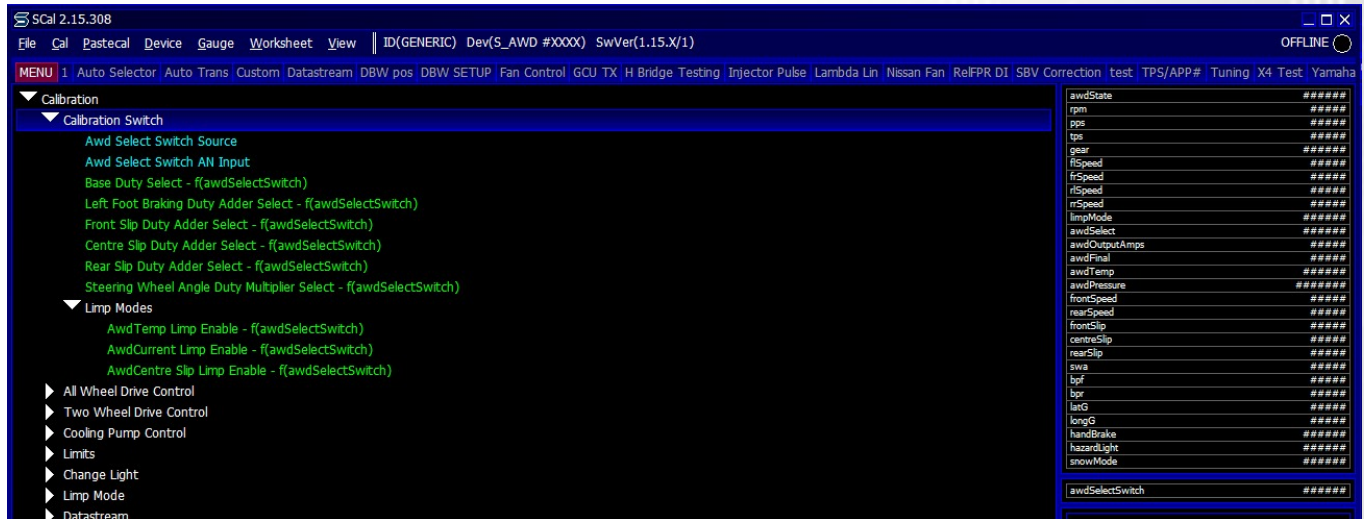
Please watch the help video here - <https://youtu.be/i0j4O9mN82Y>

## Calibration Switching on the AWD ECU

The Syvecs AWD Unit allows for users to be able to adjust many aspects of the control strategies inside the AWD Ecu via either an external switch or via OEM controls / buttons with plug in AWD units.

At the top of the Scal AWD Calibration tree you will find the Calibration Switch section which list all the maps that can be adjusted based on awdSelect position. There is 4 positions available which can be used to adjust multiple duty maps or if limp modes are active.

Users are able to see the active awdSelect position by viewing it via the right item list. Double clicking on the item will bring up a larger gauge.



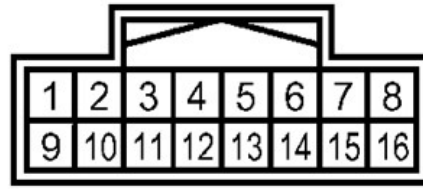
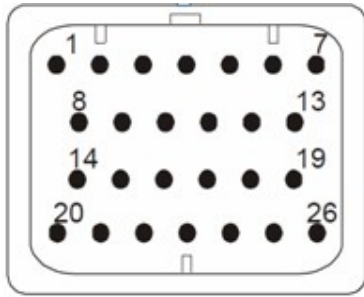
The R35GTR AWD unit sets the awdSelect position based on the follow OEM Trans Modes:

awdSelect 1 = Normal Mode

awdSelect 2 = R Mode

## Syvecs Connector

## R35GTR AWD Connector



Looking into Female Connector from front

<i>Syvecs Description</i>	<i>iO4 Pinout</i>	<i>Car Note</i>	<i>Wire Gauge</i>
PWRGND	A1	Ground	18
PWRGND	A2	AWD Solenoid Negative	18
H-Bridge1	A3	AWD Solenoid Positive	18
H-Bridge2	A4		
H-Bridge3	A5		
H-Bridge4	A6		
12V HC	A7	12v Battery	18
Kline/LinBus	A8		
MagnetoResistive 1	A9	Available for R35GTR ABS +Wire	
MagnetoResistive 2	A10	Available for R35GTR ABS +Wire	
MagnetoResistive 3	A11	Available for R35GTR ABS +Wire	
MagnetoResistive 4	A12	Available for R35GTR ABS +Wire	
12V HC	A13	12v Battery	18
Can0 H (1mb)	A14	Slave Can	
Can0 L (1mb)	A15	Slave Can	
12v IGSW	A16	Ignition Switch Supply	24
Can1 H (500kb)	A17	Can H	24
Can1 L (500kb)	A18	Can L	24
12V HC	A19		
5v Out	A20	5v Supply for Pot	24
AN1	A21	BurnOut Sw - Pull to Ground for ON	24
AN2	A22	Adjustment Potentionmeter	24
AN3	A23		
AN4	A24		
PWRGND	A25	Ground for Pot and BurnOut Sw	24
PWRGND	A26	Ground	18

