# Syvecs LTD

V1.2

Porsche 996/997 Turbo

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
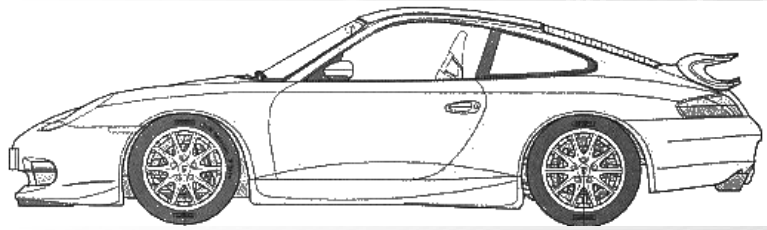
Contents:

1 x Syvecs S7Plus PNP Ecu

Installation

1 .) Remove the Negative Terminal from the battery on the Vehicle which
is found in the front trunk of the car as shown below

2.)   Pull down the back seats in the rear of the cabin

3.) If a subwoofer is present, pull off the Bose speak cover clips and using a torque fitting unscrew each bolt on both sides. Then lift out the Subwoofer and unclip the electrical connector

4.) Lift the carpet to reveal the Ecu Cradle which is removed by 3 x M6 nuts

5.) Remove the OEM Ecu by unclipping the 5 x Connectors and unscrewing the 4 x M6 Bolts in each corner

6.) Next Mount the Syvecs PNP ECU onto the Factory bracket, it will bolt straight into the OEM Location

7.) Plug in the 5 connectors from the OEM Loom into the Syvecs 911 Ecu

8.) If using on a 996 then you can wire a Syvecs Cal Switch for map switching into the 26way ACC connection on the PNP Ecu. On the 997 its done via OEM Functions on the Cruise level which are explained more below
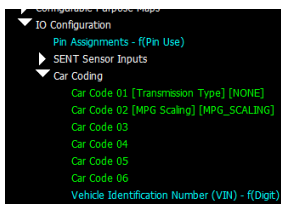

9.) Refit the Ecu Cradle, Carpet and route the Syvecs Ethernet Cable via down the side of the carpet.

10.) Re-Connect the Negative terminal of the Battery

11.) Contact Support@Syvecs.co.uk for a base map and Software basic Manual
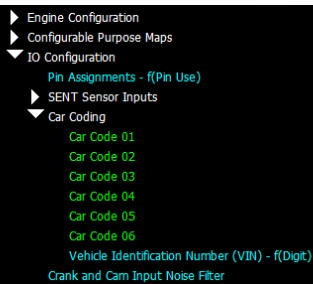
996 Module Coding Setup

```
  Configurable Purpose Maps
▼ IO Configuration
    Pin Assignments - f(Pin Use)
  ▶ SENT Sensor Inputs
  ▼ Car Coding
      Car Code 01 [Transmission Type] [NONE]
      Car Code 02 [MPG Scaling] [MPG_SCALING]
      Car Code 03
      Car Code 04
      Car Code 05
      Car Code 06
      Vehicle Identification Number (VIN) - f(Digit)
```

CarCode 1 is Transmission Type

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0 - Manual

1- TipTronic

```
  ▶ Engine Configuration
  ▶ Configurable Purpose Maps
  ▼ IO Configuration
      Pin Assignments - f(Pin Use)
    ▶ SENT Sensor Inputs
    ▼ Car Coding
        Car Code 01
        Car Code 02
        Car Code 03
        Car Code 04
        Car Code 05
        Car Code 06
        Vehicle Identification Number (VIN) - f(Digit)
      Crank and Cam Input Noise Filter
```

997 Module Coding Setup

CarCode 1 is Car Model -

Cayman = 64
C4S = 66
Turbo = 67
GT2/GT3 V1 = 70
GT2/GT3 V2 = 71

CarCode 2 is Trans Type

Manual Trans = 128
Tiptronic = 129

CarCode 3 set the Module Coding

Most Cars = 255
C4S, Cayman = 229
GT3 V1 = 234

Examples:
Turbo Manual - CarCode 1 = 67 , Car Code 2 = 128 , Car Code 3 = 255
Turbo TipTronic - CarCode 1 = 67 , Car Code 2 = 129 , Car Code 3 = 255

S911 – Torque Control Notes & Tips

Depending on the Software version (firmware version) of the base map or current map present in the ecu, you will find that the torque control is done is different manners.

Firmware which is pre 1.42 **on older S6 kit** uses just one table for adjusting the torque values sent to the Transmission ecu for handling clutch control. This table is called the MBT Torque Estimate table and is based on Primary Load vs RPM. The table can be adjusted live to cater for shifting smoothness and clutch clamping. The Values in the MBT Torque Estimate table are not the final values sent to the TCM as friction loses and other multipliers for airtemp etc are applied so to view the actual value sent, Open up a Gauge for engTrqEstOutputTrans.

Firmware versions which are 1.43 **on S6** and **any S7** now have the ability to automatically calculate torque which from in-house testing significantly improves the drivability of the kit as before where the torque table was set manually against RPM vs Manifold pressure in certain situations manifold pressure has a filling/usage delay which we have found effects shifting in transient states.

In order for this strategy to work accurately a user needs to input a Fuel Consumption amount in the map below.
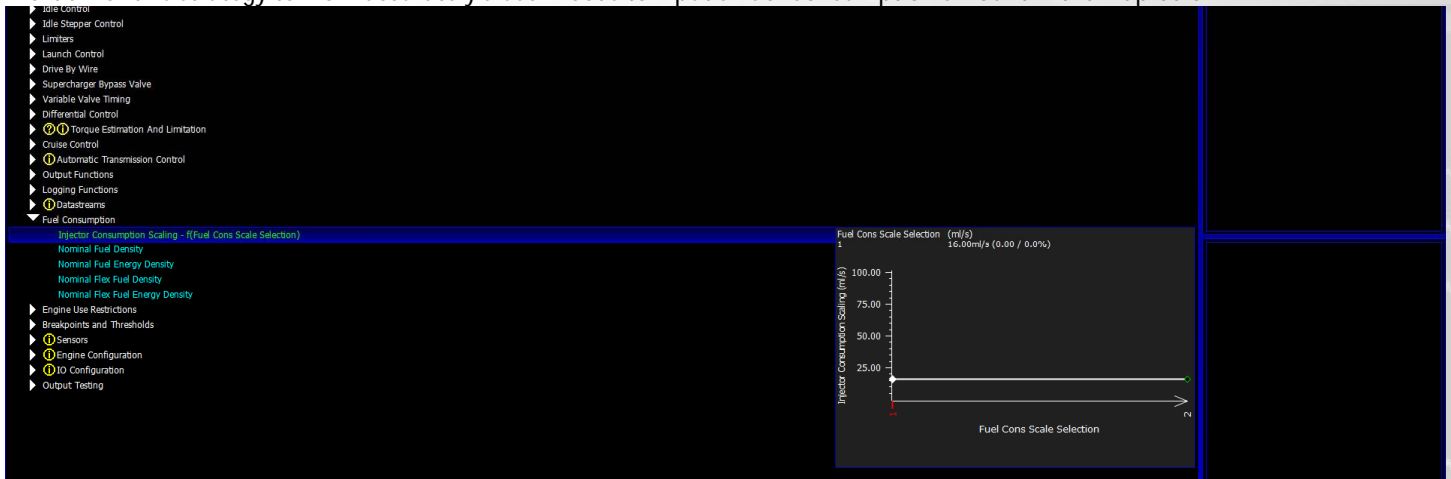
This map is set in ml/s

Generally a good calculation for this is Injector Size in CC / 60 but base fuel pressure has a large effect also so ask you injector manufacture for Torque Control Flow Values if not below.

Some Values already received at different base Fuel Pressures

ID2000 @ 3.5bar = 35
ID1300 @ 3.5bar = 21
Ansu 1100cc @ 3.5bar = 17
Ansu 1650 @ 3.5bar = 25

Tip:

With Either Torque Control estimation method its best to make sure the **engTrqEstOutputTrans** values at idle at around 2-8 Nm. If using firmware 1.43 and above then adjust the thermal efficiency table to achieve this…. If below 1.43 then set this manually in the Estimated MBT Torque table.

S911 - 997 Map/Calibration Switching

Map/Calibration Switching on the S911 Syvecs kit is done via the OEM Cruise control Switches, when the ignition is switched on it will always default to CalSwitch = 1 in Scal which is found in the parameters list on the right hand side when connected to the Ecu.

```
syncState        ######
runMode          ######
runTime          ##########
rpm              #####
tps1             #####
map1             ####
prp1             ####
turboSpeed1      ######
ect1             ######
act1             ######
bap              ####
ccp1             ####
eop1             #####
fp1              #####
relFp1           #####
eot              #####
lam1             #####
egtMax           ####
vbat             #####
btMax            #####
calSwitch        ######
tcSwitch         ######
alsSelectSwitch  ######
launchSelectSwitch ######
calOverrideSwitch ######
calSelect        ######
tcSelect         ######
alsSelect        ######
launchSelect     ######
tuneSwitch       ###
limpMode         ######
engineEnable     ######
```

First pressing the cruise cruise button the end of the stalk will put the car into map switching mode which flashes the cruise control light on the dash. When in this mode pushing the Resume button on the steering wheel up and holding for 2 seconds will make the calibration switch go up by one value each time its pressed and held. As default there are 8 calibration switch options and the user can then assign many tasks to each calibration switch under the Calibration switches section of Scal.

Pushing the stalk button down towards the Off Symbol and holding is used to go back down the Calibration switch positions.

The Boost gauge will display the Calibration Switch Change in Bar format i.e 0.1bar is Cal1, 0.2bar is Cal2

Pulling the lever towards the driver (Speed/Set) activates the Calibration Override Switch in Scal which as default in the base maps jumps to Calibration Switch 9 for activating Rolling Antilag. By pulling back the stalk and going full throttle in manual mode a Antilag strategy will be activated which holds the car back from accelerating but builds boost. Upon releasing the switch the Antilag is disabled and the engine will gain torque instantly to accelerate.

Limp Modes

The Syvecs S911 kit is geared around safety and many Limp become present if certain parameters are not within a set value. The Ecu Light and Gauges present the level of Limp. Levels below:

Cycling the Ignition on the 911 Resets the Limp

Warnings :
Limp Level 1 (no key on -off) is Solid CEL
Limp Level 2 (Key on-Off) is Flashing CEL
Limp Level 3 - Reduce Engine Power Message on Dash

--Level1 Activations--
Limp Switch
Engine Oil Cold Temperature Limp
Engine Coolant Cold Temperature Limp
Sensor Warning Level 1
Limp Switch Actuve
ABS FAULT (Disables Vehcile Speeds and Traction Control)
Sensor Warning
Air Charge
Vbat Too low

--Level2 Activations--
Fuel Pressure Limp
Time Limit
Engine Oil Hot Temperature Limp
Engine Coolant Hot Temperature Limp
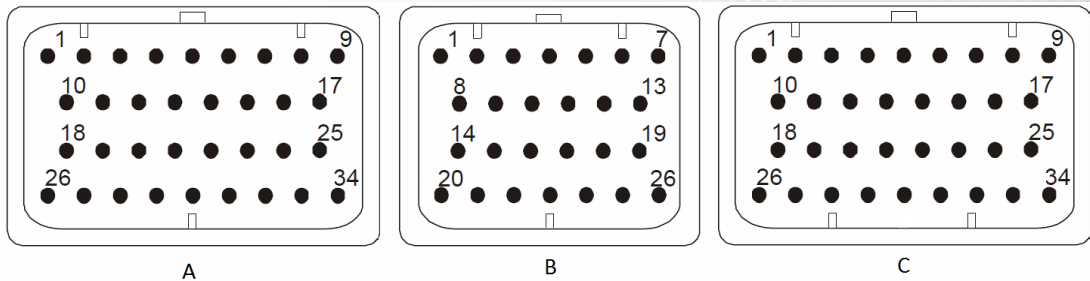Fuel Pressure Limp
Time On Load Limp

Torque Limit Limp
VVT Faliture
Lambda Lean Trip
Sensor Warning Level 2

--Level3 Activations--
Engine Oil Pressure Limp
Crank Case Pressure Limp
Knock Limp
Knock Preignition Limit

PNP Loom - Ecu Pin Assignments

A	DESCRIPTION	CONNECTOR A	
	PART NUMBER	4-1437290-0	
	NOTES:	34 Way - Key1	

Syvecs Description	Syvecs Pinout	Function	911 Notes
PWR CTR OUT	A1		Throttle and Main Relay
H-Bridge1 / SlaveOut1	A2	H-Bridge1	DBW
H-Bridge2 / SlaveOut2	A3	H-Bridge2	DBW
H-Bridge3 / SlaveOut3	A4	H-Bridge3	Valve Lift 1 &2
H-Bridge4 / SlaveOut4	A5	H-Bridge4	
H-Bridge5 / SlaveOut5	A6	H-Bridge5	Engine Fan High
H-Bridge6 / SlaveOut6	A7	H-Bridge6	A/C CLUTCH
H-Bridge7 / SlaveOut7	A8	H-Bridge7	Mil / 996 Rad High
H-Bridge8 / SlaveOut8	A9	H-Bridge8	Wastegate Solenoid or VTG Turbo Output 2
FUEL1	A10	INJECTOR or PWM OUTPUT	Primary Injector 1
FUEL2	A11	INJECTOR or PWM OUTPUT	Primary Injector 2
FUEL3	A12	INJECTOR or PWM OUTPUT	Primary Injector 3
FUEL4	A13	INJECTOR or PWM OUTPUT	Primary Injector 4
FUEL5	A14	INJECTOR or PWM OUTPUT	Primary Injector 5
FUEL6	A15	INJECTOR or PWM OUTPUT	Primary Injector 6
FUEL7	A16	INJECTOR or PWM OUTPUT	Secondary Injector 1 Or VTG Turbo Output
FUEL8	A17	INJECTOR or PWM OUTPUT	Secondary Injector 2 Or Spare Ouput
PWM1 /*FUEL9	A18	PWM OUTPUT	Secondary Injector 3 Or Spare Ouput
PWM2 / *FUEL10	A19	PWM OUTPUT	Secondary Injector 4 Or Spare Ouput
PWM3 / *FUEL11	A20	PWM OUTPUT	Secondary Injector 5 Or Spare Ouput
PWM4 / *FUEL12	A21	PWM OUTPUT	Secondary Injector 6 Or Spare Ouput
PWM5 / *FUEL13	A22	PWM OUTPUT	Fuel Pump
PWM6/ *FUEL14	A23	PWM OUTPUT	Fuel Pump 2 / Rad Fan High
PWM7/ *FUEL15	A24	PWM OUTPUT	VVT1
PWM8 / *FUEL16	A25	PWM OUTPUT	VVT2
IGN1	A26	CYL 1 IGNITION OUTPUT	CYL 1 IGNITION OUTPUT
IGN2	A27	CYL 2 IGNITION OUTPUT	CYL 2 IGNITION OUTPUT
IGN3	A28	CYL 3 IGNITION OUTPUT	CYL 3 IGNITION OUTPUT
IGN4	A29	CYL 4 IGNITION OUTPUT	CYL 4 IGNITION OUTPUT
IGN5	A30	CYL 5 IGNITION OUTPUT	CYL 5 IGNITION OUTPUT
IGN6	A31	CYL 6 IGNITION OUTPUT	CYL 6 IGNITION OUTPUT
PWRGND	A32	POWER GROUND	Starter Output
PWRGND	A33	POWER GROUND	PwrGNd
PWRGND	A34	POWER GROUND	PwrGNd

B		DESCRIPTION	CONNECTOR B	
		PART NUMBER	3-1437290-7	
		NOTES:	26 Way - Key1	
PWRGND	B1	POWER GROUND		
CAN2L	B2			
CAN2H	B3			
KNOCK	B4	KNOCK		
KNOCK 2	B5	KNOCK 2		
PVBAT	B6	CONSTANT 12V		
IVBAT	B7	12v		
LAM1A	B8	Lamv / LamD1+/ LamLun1		
LAM1B	B9	Lami / LamD1- /LamIP1		
LAM1C	B10	LamLIA1		
LAM1D	B11	LamGND / LamLVM1		
LAM1HEATER	B12	LAMBDA HEATER		
IVBAT	B13	12V		
LAM2A	B14	Lamv / LamD1+/ LamLun1		
LAM2B	B15	Lami / LamD1- /LamIP1		
LAM2C	B16	LamLIA1		
LAM2D	B17	LamGND / LamLVM1		
LAM2HEATER	B18	LAMBDA HEATER		
IVBAT	B19	12V		
KLINE	B20	KLINE		
RS232RX	B21	RS232RX		
RS232TX	B22	RS232TX		
LANRX-	B23	Cat5 Pin2		
LANRX+	B24	Cat5 Pin1		
LANTX-	B25	Cat5 Pin6		
LANTX+	B26	Cat5 Pin3		

C		DESCRIPTION	CONNECTOR C	
		PART NUMBER	4-1437290-1	
		NOTES:	34 Way - Key2	
KNOCKGND	C1	KNOCK GROUND		
ANGND	C2	SENSOR GND		
ANGND	C3	SENSOR GND		
ANGND	C4	SENSOR GND		
5V OUT	C5	5V OUT		
5V OUT	C6	5V OUT		
5V OUT	C7	5V OUT		
CAN L	C8	Can Low		
CAN H	C9	Can High		
AN01	C10	BI-POLAR INPUTS	TPS 1B	

AN02	C11	BI-POLAR INPUTS	Crank Position Sensor
AN03	C12	BI-POLAR INPUTS	Cruise Control Switch
AN04	C13	BI-POLAR INPUTS	TPS 1A
AN05	C14	UNI-POLAR INPUTS	Cam Position Sensor
AN06	C15	UNI-POLAR INPUTS	Clutch Switch
AN07	C16	UNI-POLAR INPUTS	Cam2 Position Sensor
AN08	C17	UNI-POLAR INPUTS	Coolant Level
AN09	C18	VOLT-INPUTS	MAP Absolute Sensor
AN10	C19	VOLT-INPUTS	PPS1
AN11	C20	VOLT-INPUTS	PPS2
AN12	C21	VOLT-INPUTS	Maf
AN13	C22	RESISTIVE INPUTS	Engine Coolant
AN14	C23	RESISTIVE INPUTS	Air temp
AN15	C24	RESISTIVE INPUTS	Engine Oil Temp
AN16	C25	RESISTIVE INPUTS	Engine Compartment Temp
EGT1-	C26	EGT1 -	
EGT1+	C27	EGT1 +	
PWR CTR IN	C28	MAIN RELAY INPUT SW	Ignition Switch
AN S1 / Slave An01	C29	UNI-POLAR INPUTS	
AN S2 / Slave An02	C30	UNI-POLAR INPUTS	
AN S3 / Slave An03	C31	UNI-POLAR INPUTS	EGT1
AN S4 / Slave An04	C32	UNI-POLAR INPUTS	EGT2
AN S5 / Slave An05	C33	UNI-POLAR INPUTS	Engine Oil Pressure (997)
AN S6 / Slave An06	C34	UNI-POLAR INPUTS	

Email Support@syvecs.co.uk for a base map to suit your setup.

Plug in Board - Ecu Pin Assignments
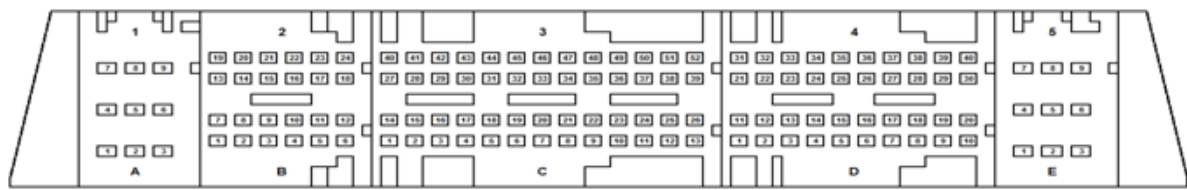
Syvecs Description	911 Pinout Pinout	911 Notes
PWR CTR OUT	D26	Throttle and Main Relay
H-Bridge1 / SlaveOut1	A7	DBW
H-Bridge2 / SlaveOut2	A9	DBW
H-Bridge3 / SlaveOut3	C1, C26	Valve Lift 1 &2
H-Bridge4 / SlaveOut4	C31 or C16 SB	Divertor Valve on 911 or Resonance Flap 2 on GT3 via SB
H-Bridge5 / SlaveOut5	D25	Engine Fan High / Engine Compartment Fan High
H-Bridge6 / SlaveOut6	D27	A/C CLUTCH
H-Bridge7 / SlaveOut7	D31	Mil / 996 Rad High
H-Bridge8 / SlaveOut8	C4	Wastegate Solenoid or VTG Turbo Output 2 911 / Resonace Flap 1 on GT3
FUEL1	C41	Primary Injector 1
FUEL2	C40	Primary Injector 2
FUEL3	C15	Primary Injector 3
FUEL4	C27	Primary Injector 4
FUEL5	C2	Primary Injector 5
FUEL6	C28	Primary Injector 6
FUEL7	C14 & Acc 2	Secondary Injector 1 Or VTG Turbo Output on 911/Sport Exhaust Flap on GT3
FUEL8	Acc 3	Secondary Injector 2 Or Spare Ouput
FUEL9	Acc 4	Secondary Injector 3 Or Spare Ouput
FUEL10	Acc 5	Secondary Injector 4 Or Spare Ouput
FUEL11	Acc 6	Secondary Injector 5 Or Spare Ouput
FUEL12	Acc 7	Secondary Injector 6 Or Spare Ouput
FUEL13	D10	Fuel Pump
FUEL14	D4	Fuel Pump 2 / Rad Fan High
FUEL15	E7	VVT1
FUEL16	E8	VVT2
IGN1	E6	CYL 1 IGNITION OUTPUT
IGN2	E3	CYL 2 IGNITION OUTPUT
IGN3	E9	CYL 3 IGNITION OUTPUT
IGN4	E2	CYL 4 IGNITION OUTPUT
IGN5	E4	CYL 5 IGNITION OUTPUT
IGN6	E1	CYL 6 IGNITION OUTPUT
PWRGND	D33	Starter Output
PWRGND	C32 + ACC1	PwrGNd
PWRGND	A5 & A6	PwrGNd

PWRGND	A4	**LINKED POWER GROUND**
EGT2 +	ACC14	
EGT2 -	ACC15	
KNOCK	C49	
KNOCK 2	C36	
PVBAT	A2	**CONSTANT 12V POWER SUPPLY**
IVBAT	A8	**LINKED 12V FEED - NORMALLY COME FROM MAIN RELAY**
LAM1A	B15	Nernst Cell
LAM1B	B5	Ion Pump
LAM1C		Cal Trim Resistor
LAM1D	B9	Virtual Ground
LAM1HEATER	B19	
IVBAT	ACC13	
LAM2A	B16	Nernst Cell
LAM2B	B24	Ion Pump
LAM2C	ACC22	Cal Trim Resistor
LAM2D	B10	Virtual Ground
LAM2HEATER	B13	
IVBAT		**LINKED 12V FEED - NORMALLY COME FROM MAIN RELAY**
KLINE		KLINE INTERFACE FOR OBDII
RS232RX	ACC18	RS232 RECEIVE
RS232TX	ACC19	RS232 TRANSMIT
LANRX-	ACC23	Orange/White
LANRX+	ACC24	White/Orange
LANTX-	ACC25	Green/White
LANTX+	ACC26	White/Green

KNOCKGND	C50, C37	
ANGND	C9, C17, C25, C46	
ANGND	D7, D12	
ANGND	ACC20	
5V OUT	B22, C7, C10	
5V OUT	D9, D14	
5V OUT	ACC21	
CAN L	B3, D37	
CAN H	B4, D36	
AN01	C24	TPS 1B
AN02	C45	Crank Position Sensor
AN03	D23	Cruise Control Switch
AN04	C8	TPS 1A
AN05	C12	Cam Position Sensor
AN06	D1	Clutch Switch
AN07	C18	Cam2 Position Sensor
AN08	D3	Coolant Level
AN09	C39	MAP Absolute Sensor
AN10	D8	PPS1
AN11	D13	PPS2
AN12	C23	Maf
AN13	C22	Engine Coolant
AN14	C34	Air temp
AN15	C5	Engine Oil Temp
AN16	B21	Engine Compartment Temp
EGT1-	ACC16	
EGT1+	ACC17	
PWR CTR IN	A1	Ignition Switch
AN S1 / Slave An01		ACC8
AN S2 / Slave An02		ACC9
AN S3 / Slave An03		ACC10
AN S4 / Slave An04		ACC11
AN S5 / Slave An05	D35	Engine Oil Pressure (997)
AN S6 / Slave An06		ACC12

Plug in Board 26Way Acc Plug Pinout
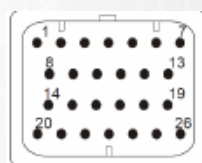
1	Ground		14	Can2L
2	Fuel7		15	Can2H
3	Fuel8		16	EGT1-
4	Fuel9		17	EGT1+
5	Fuel10		18	RS232RX
6	Fuel11		19	RS232TX
7	Fuel12		20	SENSOR GND
8	AN S1 / Slave An01		21	5V
9	AN S2 / Slave An02		22	LAM2C
10	AN S3 / Slave An03		23	LANRX-
11	AN S4 / Slave An04		24	LANRX+
12	AN S6 / Slave An06		25	LANTX-
13	12V		26	LANTX+