
Syvecs LTD

V1.2

Bmw N54

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



Installation

- 1.) Remove the Negative Terminal from the battery on the Vehicle
- 2.) Remove the Window Scuttle Panel as shown below (white arrows) by removing the 10 x 8mm Screws. Then battery harness shown in blue below away from the panel to gain access to the ECU box marked by the green arrow.



- 3.) You will then find two cream colour boxes underneath the panel, On a RHD the OEM DME is found on the Right hand side of the Engine Bay when looking at the engine from the front, LHD (USA, Middle East) its found on the Left .

4.) Remove the lid of the corresponding box to find the DME

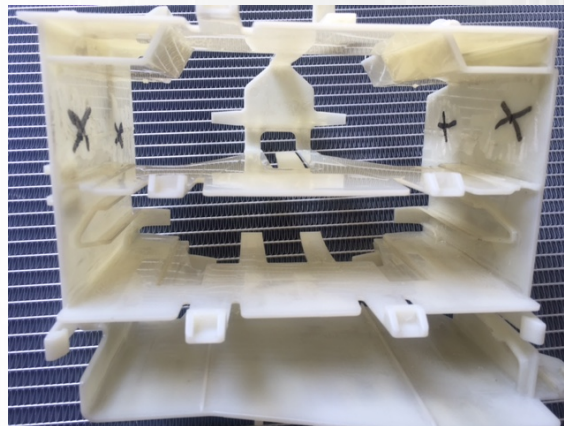
RHD Below



5.) Unplug the 2 black connectors and remove OEM Computer



6.) Remove the OEM Computer holder as shown below



7) Fit the Syvecs Harness, DI Driver and ECU inside the box. Allow the ethernet cable for programming to be easy to access

8.) Replace Negative terminal on Battery

Email Support@Syvecs.com for a base calibration stating your setup - Map Sensor, Fuel Setup, Turbo Setup etc

N54 Kit FAQ and Help

Q) Do you control the OEM BSD Water pump

A) Yes, under output function you will find BWM Water Pump. Here you can adjust the speed in duty from 0-100% based on Water temp and Engine Speed.

The screenshot displays the software interface for configuring the N54 Kit. On the left, a tree view shows the configuration for Fan 7 (PWM) [BMW Water Pump] [BMW_WP]. The selected item is expanded to show various parameters: Output Drive Type, PWM Frequency, Drive Duty X Axis [ectMax] Breakpoints, Drive Duty Y Axis [rpm] Breakpoints, and Drive Duty - f(ectMax,rpm). The graph shows a 3D surface plot of Drive Duty (%) on the vertical axis, with ectMax on the horizontal axis and rpm on the depth axis. The graph shows a complex surface that starts at 0.00% duty at 0.0°C and 300rpm and rises to 100.00% duty at higher temperatures and engine speeds. On the right, a list of variables is shown, including engineEnable, ectMax, rpm, vehicleSpeed, map1, fan1, fan2, fan3Duty_BmwFan, fan4, fan5_NONE, fan6Duty_BmwIntakePum, fan7Duty_BMW_WP, fan8Duty, and airConCtl.

Q) What of the original features will now not work?

A) All original features will function properly

Q) Can we use the OBD port still to Log, Read Codes and Clear them on other ecus on the car like ABS?

A) Yes via any BMW Tools

Q) How do we change calibrations switch positions on the kit

A) This is done via the Cruise Control lever, pushing up changes the Calibration Select up 1 position at a time, then pressing down makes it go down, The current Calibration Select position then gets shown on the RPM Counter on the dash. Pressing the M Button on the Steering wheel activates the Cal Override switch which makes the Calibration Jump to Cal 9, this will invoke a Rolling Antilag limiter. You may add another rotary switch into one of the Spare inputs on the kit for Traction Switch or Calibration switching if no Cruise control stalk is present but if not the Traction Switch position will follow Cal Switch Position meaning you can change Traction levels via the Cruise Switch also.

Q) Can we run flex fuel and add additional inputs and outputs

A) Yes see wiring for the ECU on last page,

A	DESCRIPTION	CONNECTOR A	
	PART NUMBER	4-1437290-0	
	NOTES:	34 Way - Key1	
<i>Syvecs Description</i>	<i>Syvecs Pinout</i>	<i>Function</i>	
PWR CTR OUT	A1	MAIN RELAY OUTPUT	Main Relay
H-Bridge1 / SlaveOut1	A2	H-Bridge1	DBW
H-Bridge2 / SlaveOut2	A3	H-Bridge2	DBW
H-Bridge3 / SlaveOut3	A4	H-Bridge3	DI Pump
H-Bridge4 / SlaveOut4	A5	H-Bridge4	Vano Intake LOW SIDE
H-Bridge5 / SlaveOut5	A6	H-Bridge5	Vano Exhaust LOW SIDE
H-Bridge6 / SlaveOut6	A7	H-Bridge6	ThermoStat!
H-Bridge7 / SlaveOut7	A8	H-Bridge7	Spare Output
H-Bridge8 / SlaveOut8	A9	H-Bridge8	Spare Output
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	Port Injector 1 / Spare Output
FUEL8	A17	INJECTOR or PWM OUTPUT	Port Injector 2 / Spare Output
PWM1 /*FUEL9	A18	PWM OUTPUT	Port Injector 3 / Spare Output
PWM2 /*FUEL10	A19	PWM OUTPUT	Engine Fan - 105hz
PWM3 /*FUEL11	A20	PWM OUTPUT	Port Injector 4 / Spare Output
PWM4 /*FUEL12	A21	PWM OUTPUT	Exhaust Flap / Port Injector 5
PWM5	A22	PWM OUTPUT	Fuel Tank Vent
PWM6	A23	PWM OUTPUT	Wastegate 1
PWM7	A24	PWM OUTPUT	Wastegate2
PWM8	A25	PWM OUTPUT	Port Injector 6 / Spare Output
IGN1	A26	CYL 1 IGNITION OUTPUT	IGN1
IGN2	A27	CYL 2 IGNITION OUTPUT	IGN2
IGN3	A28	CYL 3 IGNITION OUTPUT	IGN3
IGN4	A29	CYL 4 IGNITION OUTPUT	IGN4
IGN5	A30	CYL 5 IGNITION OUTPUT	IGN5
IGN6	A31	CYL 6 IGNITION OUTPUT	IGN6
PWRGND	A32	POWER GROUND	PwrGnd
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	PWRGROUND

CAN2L	B2		
CAN2H	B3		
KNOCK	B4	KNOCK	External Loom
KNOCK 2	B5	KNOCK 2	External Loom
PVBAT	B6	CONSTANT 12V	
IVBAT	B7	12v	
LAM1A	B8	Lamv / LamD1+ / LamLun1	Pin6 on LSU4.9 Connector
LAM1B	B9	Lami / LamD1- /LamIP1	Pin1 on LSU4.9 Connector
LAM1C	B10	LamLIA1	Pin5 on LSU4.9 Connector
LAM1D	B11	LamGND / LamLVM1	Pin2 on LSU4.9 Connector
LAM1HEATER	B12	LAMBDA HEATER	Pin3 on LSU4.9 Connector
IVBAT	B13	12V	
LAM2A	B14	Lamv / LamD1+ / LamLun1	Pin6 on LSU4.9 Connector
LAM2B	B15	Lami / LamD1- /LamIP1	Pin1 on LSU4.9 Connector
LAM2C	B16	LamLIA1	Pin5 on LSU4.9 Connector
LAM2D	B17	LamGND / LamLVM1	Pin2 on LSU4.9 Connector
LAM2HEATER	B18	LAMBDA HEATER	Pin3 on LSU4.9 Connector
IVBAT	B19	12V	
KLINE	B20	Kline	Engine Coolant Pump and Oil Level
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	KNOCKGND	
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	PowerTRain Can
CAN H	C9	Can High	PowerTRain Can
AN01	C10	BI-POLAR INPUTS	Direct Injection Pressure
AN02	C11	BI-POLAR INPUTS	Crank Position Sensor
AN03	C12	BI-POLAR INPUTS	Speed
AN04	C13	BI-POLAR INPUTS	Map Sensor
AN05	C14	UNI-POLAR INPUTS	VVT1In
AN06	C15	UNI-POLAR INPUTS	VVT2Ex
AN07	C16	UNI-POLAR INPUTS	Spare Input
AN08	C17	UNI-POLAR INPUTS	Spare Input

AN09	C18	VOLT-INPUTS	Tps1A
AN10	C19	VOLT-INPUTS	Tps1B
AN11	C20	VOLT-INPUTS	PPSA
AN12	C21	VOLT-INPUTS	PPSB
AN13	C22	RESISTIVE INPUTS	Intake Air Temp
AN14	C23	RESISTIVE INPUTS	Spare Input
AN15	C24	RESISTIVE INPUTS	Coolant Temp
AN16	C25	RESISTIVE INPUTS	Oil Pressure Switc
EGT1-	C26	EGT1 -	
EGT1+	C27	EGT1 +	
PWR CTR IN	C28	MAIN RELAY INPUT SW	12v Ignition
AN S1 / Slave An01	C29	UNI-POLAR INPUTS	Brake Light Sw
AN S2 / Slave An02	C30	UNI-POLAR INPUTS	
AN S3 / Slave An03	C31	UNI-POLAR INPUTS	Clutch SW
AN S4 / Slave An04	C32	UNI-POLAR INPUTS	Spare Input
AN S5 / Slave An05	C33	UNI-POLAR INPUTS	Fuel Pressure
AN S6 / Slave An06	C34	UNI-POLAR INPUTS	Baro pressure

DI Driver			
Pin	Name	Description	
1	INJ1-	Injector 1 Negative	
2	INJ2-	Injector 2 Negative	
3	INJ3-	Injector 3 Negative	
4			
5	INJ5-	Injector 5 Negative	
6	INJ6-	Injector 6 Negative	
7			
8	INJ4-	Injector 4 Negative	
9	GND	Ground	
10	INJ1_IN	Injector 1 Control Input	
11	INJ2_IN	Injector 2 Control Input	
12			
13	INJ1+	Injector 1 Positive	
14	INJ2+	Injector 2 Positive	
15	INJ3+	Injector 3 Positive	
16			
17	INJ5+	Injector 5 Positive	
18	INJ6+	Injector 6 Positive	
19			
20	INJ4+	Injector 4 Positive	
21	GND	Ground	
22	INJ3_IN	Injector 3 Control Input	
23			
24	GND	Ground	
25			
26			
27	IGN	+12 Ignition Switched Supply	
28			
29			
30	CAN H	CAN High	
31	CAN L	CAN Low	
32			
33	INJ4_IN	Injector 4 Control Input	
34	INJ5_IN	Injector 5 Control Input	
35	INJ6_IN	Injector 6 Control Input	