

H BMW M57 wiring (E46/E39)

The first generation BMW M57 engines had ECUs similar to the Mercedes Benz OM613 engine, using the same connectors but the pinout is very different although there are shared features. Most functions are mirrored between connector 3 and connector 4 when comparing the BMW and Mercedes arrangements.

The injector loom on these engines is identical to the OM613 so they should use a DID1 ECU with plug-and-play pinout. This chapter describes wiring of these engines to the DID1 ECU, component by component.

H.1 Component wiring

Power and grounds

This is identical between the DID1 and the BMW ECU. Connector 1 pins 3, 4 and 5 are ground and pins 1, 7 and 8 are connected to switched +12V from the main relay. The BMW is a bit odd in that it provides power to pins 1 and 8, and then pin 7 is used to feed voltage back to the transmission controller, but this arrangement works fine with the DID1 also.

Main relay

The BMW controls the main relay by grounding an output on connector 1 pin 9 (brown wire). This wire should get its terminal replaced by the smaller type and inserted into connector 3/46 on the DID1.

Ignition switch

BMW provides ignition switch positive voltage to connector 4/26 (green/violet wire). This wire must be relocated to connector 3/31 or 2/13 on the DID1. (DID1 units with a serial number lower than 200 must use 2-13, 200 and up can use either)

Changeover valve for swirl flaps (B2365)

Connects to pin 3/25 on BMW ECU (brown/black wire). Usually not connected to DID1.

Changeover valve for engine mount (B2231)

Connects to pin 3/8 on BMW ECU (brown/violet wire). Usually not connected to DID1.

Changeover valve for EGR (B2244)

Connects to pin 3/10 on BMW ECU (brown/grey wire). Usually not connected to DID1.

Air mass sensor (B6217)

Not necessary, but can be connected as follows. Recommend ignoring this sensor and fit an air temperature sensor after the intercooler instead.

Device pin	Wire colour	Function	OEM pin	DID1 pin
1	blue/white	airbox temperature signal	3/29	4/23 analog in 3
2		+12V supply	in harness	
3	black	return	3/3	4/34
4	red/yellow	+5V supply	3/1	4/18
5	yellow	0-5V signal	3/2	4/24 analog in 5

Presupply pressure sensor (B2355)

A sensor monitoring feed pressure from electric lift pump, not strictly necessary but can be connected as follows:

Device pin	Wire colour	Function	OEM pin	DID1 pin
1	yellow	+5V supply	2/9	3/18
2	white/brown	return	2/10	3/19
3	black/white	0-5V signal	2/17	3/17 analog in 11

Camshaft position sensor (B6219)

Device pin	Wire colour	Function	OEM pin	DID1 pin
1	yellow	supply voltage	in harnesss	4/3
2		logic level frequency signal	3/4	
3	brown	return	3/17	4/2

Crankshaft position sensor (B2013)

Device pin	Wire colour	Function	OEM pin	DID1 pin
1	black	frequency signal	3/6	4/26
2	yellow	return	3/31	4/37
	shield	shield	3/19	4/34

Glow plug relay (K2283)

Device pin	Wire colour	Function	OEM pin	DID1 pin
6	black/yellow	feedback	3/52	n/c
11	black/red	negative switched control	3/12	4/38 output 12

MAP sensor (B2014)

Device pin	Wire colour	Function	OEM pin	DID1 pin
1	blue/yellow	0-5V signal	3/15	4/6 analog in 6
2	brown/green	return	3/16	4/7
3	white	+5V supply	3/14	4/8

Rail pressure sensor (B2261)

Device pin	Wire colour	Function	OEM pin	DID1 pin
1	brown/green	return	3/20	4/4
2	blue/black	0-5V signal	3/33	4/14 analog in 4
3	white/yellow	+5V supply	3/35	4/13

Coolant temperature sensor

Note that this appears to be a 4 pin device on these early engines, two sensor elements in one but only one sensor element connects to the engine control ECU.

Device pin	Wire colour	Function	OEM pin	DID1 pin
3	grey/blue	signal	3/28	4/36 analog in 2
4	brown/green	return	3/32	4/27

Turbocharger control solenoid (B2264)

Device pin	Wire colour	Function	OEM pin	DID1 pin
2	grey/violet	low side PWM signal	3/23	4/33 output 6

Alternator (G6524)

Not connected to the DID1 but shown here for clarity. Pin 1 is a blue wire that connects to BMW ECU pin 3/50, its function is a charge indicator lamp. Must connect to a charge indicator lamp to enable normal charging. Bridge to the blue wire going to pin 4/1 on BMW ECU if using BMW wiring harness, this wire goes to the instrument cluster.

Pin 2 is a blue/green wire that connects to BMW ECU pin 3/24, its function is an alternator load signal and no connection is required.

Rail pressure control valve (B2262)

Device pin	Wire colour	Function	OEM pin	DID1 pin
2	brown/blue	low side PWM signal	3/38	4/21 output 3

Oil level sensor (B6254)

This is a grey/brown wire going to pin 3/40 on the BMW ECU.

Bridge to white/green wire on pin 4/21 or maybe connect to ECU.

To be tested.

Device pin	Wire colour	Function	OEM pin	DID1 pin
3	grey/brown	pulse width coded signal	3/40	4/15 digital in 6

Oil pressure switch (B2008)

This is a brown/green wire going to pin 3/41 on the BMW ECU.
 Bridge to brown/green wire on pin 4/11. No connection to DID1
 necessary.

Electric fan (M9)

Device pin	Wire colour	Function	OEM pin	DID1 pin
2	black/green	low side PWM signal	4/4	3/52 output 8

Pedal position sensor (R10)

Device pin	Wire colour	Function	OEM pin	DID1 pin
1	brown/green	return	4/7	3/8
2	brown	return	4/12	3/23
3	yellow/white or yellow/green	+5V supply	4/14	3/5
4	white	primary signal	4/8	3/10 analog in 0
5	yellow	+5V supply	4/9	3/18
6	grey/yellow or white/green	secondary signal	4/13	3/9 analog in 1

Lift pump relay (K96)

Device pin	Wire colour	Function	OEM pin	DID1 pin
4	black/violet	low side switching signal	4/10	3/12 output 9

H.2 Original ECU pinout

Connector location views

Number	X-pin, colour	Description
X2411	9-pin, black	Plug connector Digital diesel electronics control unit Module 1
X2412	24-pin, black	Plug connector Digital diesel electronics control unit Module 2
X2413	52-pin, black	Plug connector Digital diesel electronics control unit Module 3
X2414	40-pin, black	Plug connector Digital diesel electronics control unit Module 4
X2415	9-pin, black	Plug connector Digital diesel electronics control unit Module 5

Pin assignments at plug connector X2411

Pin	Type	Description /Signal type	Connection /Measuring notes
1	E	Voltage supply Terminal 15	Fuse carrier, engine electronics
2		Not used	
3	E/A	Diagnostic link TXD	Transmission control unit
4	M	Signal, lock front passenger's door	Ground connector
5	M	Signal, lock front passenger's door	Ground connector
6	M	Signal, lock front passenger's door	Ground connector
7	A	Terminal 15	Transmission control unit
8	E	Voltage supply Terminal 15	Fuse carrier, engine electronics
9	E	Activation, main relay	DDE relay

Pin assignments at plug connector X2412

Pin	Type	Description /Signal type	Connection /Measuring notes
1		Not used	
2		Not used	
3	E/A	CAN bus low	Transmission control unit
4	E/A	CAN bus high	Transmission control unit
5		Not used	
6		Not used	
7		Not used	
8	A	Activation, engine mount	Electrical changeover valve, engine mount
9	A	Supply Presupply pressure sensor	Presupply pressure sensor
10	M	Ground Presupply pressure sensor	Presupply pressure sensor
11		Not used	
12		Not used	
13		Not used	
14		Not used	
15		Not used	
16		Not used	
17	E	Signal Presupply pressure sensor	Presupply pressure sensor
18		Not used	
19		Not used	
20		Not used	
21		Not used	
22		Not used	
23		Not used	
24		Not used	

Pin assignments at plug connector X2413

Pin	Type	Description /Signal type	Connection /Measuring notes
1	A	Supply Air mass sensor	Air mass sensor
2	E	Signal Air mass sensor	Air mass sensor
3	M	Ground Air mass sensor	Air mass sensor
4	E	Signal Hall-effect sensor, camshaft 1	Hall-effect sensor, camshaft 1
5		Not used	
6	E	Signal Speed (rpm) sensor	Speed (rpm) sensor
7		Not used	
8		Not used	
9		Not used	

10	E	Signal Solenoid valve, exhaust gas recirculation	Solenoid valve, exhaust gas recirculation
11		Not used	
12	E	Signal Preheater relay	Preheater relay
13		Not used	
14	A	Supply Boost pressure sensor	Boost pressure sensor
15	E	Signal Boost pressure sensor	Boost pressure sensor
16	M	Ground Boost pressure sensor	Boost pressure sensor
17	M	Ground Hall-effect sensor, camshaft 1	Hall-effect sensor, camshaft 1
18		Not used	
19	M	Shield, speed (rpm) sensor	Speed (rpm) sensor
20	M	Ground Rail pressure sensor	Rail pressure sensor
21		Not used	
22		Not used	
23	A	Supply Solenoid valve, supercharger control	Solenoid valve, supercharger control
24	E	Alternator load signal	Alternator
25	A	Signal Electric changeover valve, swirl flaps	Electric changeover valve, swirl flaps
26		Not used	
27		Not used	
28	E	Signal Coolant temperature sensor	Coolant temperature sensor
29	E	Signal Intake air temperature	Air mass sensor
30		Not used	
31	M	Ground Speed (rpm) sensor	Speed (rpm) sensor
32	M	Ground Coolant temperature sensor	Coolant temperature sensor
33	E	Signal Rail pressure sensor	Rail pressure sensor
34		Not used	
35	A	Supply Rail pressure sensor	Rail pressure sensor
36		Not used	
37		Not used	
38	A	Supply Rail pressure control valve	Rail pressure control valve
39		Not used	
40	E	Signal Oil level sensor	Oil level sensor
41	E	Signal Oil pressure switch	Oil pressure switch
42		Not used	
43		Not used	
44		Not used	
45		Not used	
46		Not used	
47		Not used	
48		Not used	
49		Not used	
50	E	Signal Battery charge indicator lamp	Alternator
51	E	Voltage signal, terminal 30h	Starter
52	E	Signal Preheater relay	Preheater relay

Pin assignments at plug connector X2414

Pin	Type	Description /Signal type	Connection /Measuring notes
1	A	Battery charge indicator lamp signal (terminal 61)	Instrument cluster control unit
2	A	Voltage signal, terminal 30h	Instrument cluster control unit
3		Not used	
4	E	Signal Electric fan	Electric fan
5		Not used	
6		Not used	
7	M	Ground Pedal position sensor	Pedal position sensor
8	E	Signal Pedal position sensor	Pedal position sensor
9	A	Supply Pedal position sensor	Pedal position sensor
10	E	Signal Fuel pump relay 1	Fuel pump relay 1
11	A	Signal Oil pressure indicator lamp	Instrument cluster control unit
12	M	Ground Pedal position sensor	Pedal position sensor

13	E	Signal Pedal position sensor	Pedal position sensor
14	A	Supply Pedal position sensor	Pedal position sensor
15		Not used	
16		Not used	
17	A	Engine speed signal output (TD)	Diagnostic connector
18		Not used	
19		Not used	
20	A	Activation Auxiliary heater	Auxiliary heater
21	A	Signal Oil level sensor	Light switching centre control unit
22	E	Rear right speed signal	ABS/ASC unit ABS/DSC unit
23	E	Signal Clutch switch	Clutch switch
24	E	Signal Brake light switch	Brake light switch
25		Not used	
26	A	Voltage supply Terminal 15	Fuse F29
27	E	Data link MFL	Volute spring
28	E	Brake light test signal	Brake light switch
29	E	A/C compressor signal	Relay, A/C compressor
30		Not used	
31	E	Signal Auxiliary heater	Heating and A/C control module
32	E/A	Signal Diagnostic link TXD	Diagnostic connector
33	E/A	Communication line (EWS)	Electronic immobiliser control unit
34		Not used	
35		Not used	
36	E/A	CAN bus high	Connector, CAN bus
37	E/A	CAN bus low	Connector, CAN bus
38	M	Ground Coolant outlet temperature sensor	Coolant outlet temperature sensor
39	E	Signal Coolant outlet temperature sensor	Coolant outlet temperature sensor
40		Not used	

Pin assignments at plug connector X2415

Pin	Type	Description /Signal type	Connection /Measuring notes
1	A	Supply, injectors 4-6	U422 Voice input
2		Not used	
3	A	Signal, injector 6	Injector 6
4	A	Supply, injectors 1-3	U407 Basic interface telephone
5	A	Signal, injector 1	Injector 1
6	A	Signal, injector 4	Injector 4
7	A	Signal, injector 3	Injector 3
8	A	Signal, injector 2	Injector 2
9	A	Signal, injector 5	Injector 5