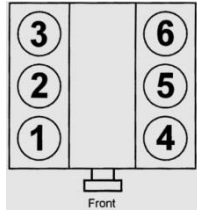


CRITICAL MODULE WITH MORE THAN 1 FUSES SUPPLYING POWER TO IT
N3/10 Engine ECM/ECU aka Engine computer.

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Cylinder numbers

Fuse no 27. 7.5amps. From **30z**. Direct to N3-10 ECM pin 16, connector block F.

*Other fuses where ECM is switching at negative/ground and fuses are **via Relay N**, Engine Circuit 87M. The relay N is commanded (coil 85 or 86) by negative voltage, by the ECM N3/10 pin 27, connector block F. So, all the fuses below : F25, F24, F23 and F22 are 12V+ positive feed direct to sensors/components and the ECM switched the ground or negative side only.*

Fuse 25. 15 amps. For **Z7/73z1** Circuit 87 connector sleeve.

This fuse is very tricky visually. It is pin out no 10 from N10/1. In M276.8 (3.0 TT) N3/10 ECM specific schematic pe07.08-p-2101-97daq, this fuse is not shown as a fuse, but is shown only as pin 10 out of N10/1 connected to connector sleeve **Z7/73z1** single 2.5mm wire becoming 3 of 1.5mm wires into N3/10 pin 1,3 and 5 at Connector block **F**. I believe this fuse is for some sensors +5V reference via regulators, example MAP, Temperature-s and those low power ones.

Main ground for ECM is W16/5, 3 of 1.5mm wires into Con-**F** pin 2, 4 and 6, where if for LHD car the W16/5 is supposedly at firewall behind the brake booster. For RHD car W16/5 is at firewall behind the main battery.

Fuse no 24. 15amps. For **Z7/35z1** Circuit 87 M1e connector sleeve, feeding :

01. Ignition Coils cylinder 4, 5 and 6 (T1/4 , T1/5 & T1/6). Ground for Power is W11 at cylinder head, but Ground for sensing is from Z6z2 which its final destination is ground W16/5. 4 wires.
02. Left Intake Camshaft Hall sensor (B6/4). Ground is Z7/44z1, Con-M pin 70, ECM direct. 3 wires.
03. Left exhaust Camshaft hall sensor(B6/6). Ground is Z7/44z1, Con-M pin 70, ECM direct. 3 wires.
04. Left intake Camshaft solenoid (Y49/4). Ground is its signal, Con-M pin 47 ECM direct. 2 wires.
05. Left exhaust Camshaft Solenoid (Y49/6). Ground is its signal, Con-M pin 6. ECM direct. 2 wires.

Fuse no 23. 20amps, for **Z7/38z1** Circuit 87 M1i connector sleeve, feeding :

01. Ignition Coils cylinder 1, 2 and 3 (T1//1, T1/2 & T1/3).Ground for Power is W11 at cylinder head, but Ground for sensing is from Z6z1 which its final destination is ground W16/5. 4 wires.
02. Right intake Camshaft Hall sensor (B6/5). Ground is Z7/44z2, Con-M pin 70 ECM direct. 3 wires.
03. Right exhaust Camshaft Hall sensor (B6/7). Ground is Z7/44z2, Con-M pin 70 ECM direct. 3 wires.
04. Right Intake Camshaft Solenoid (Y49/5). Ground is its signal, Con-M pin 54, ECM direct. 2 wires.
05. Right Exhaust Camshaft Solenoid (Y49/7). Ground is its signal, Con-M pin 46. ECM direct. 2 wires.

CRITICAL MODULE WITH MORE THAN 1 FUSES SUPPLYING POWER TO IT - Continuation

N3/10 Engine ECM/ECU aka Engine computer.

Fuse no 22. 15amps for **Z7/36** & **Z7/36z1** circuit 87 M2e connector sleeve, feeding :

01. Purge control valve (Y58/1), fuel vapor. Ground is its signal, Con-F pin 43, ECM direct. 2 wires.
02. Coolant circulation pump relay (K60), 4 wires. Ground from Con-F pin 31, ECM direct, but the Coolant pump itself M45 (2 wires) gets ground from W2, fender's metal.
Fuse 22 here is only supplying power (Relay pin 85/86) for the coil/control of K60, not power (Relay pin 30) of M45. Power of M45 comes from Rear SAM fuse 87.
03. Left bypass air switchover valve (Y101/1). Ground is its signal, Con-M pin 23. ECM direct. 2 wires.
04. Right bypass air switchover valve (Y101/2). Ground is its signal, Con-M pin 79. ECM direct. 2 wires.
However, it goes via intermediate connector X26 no 4, pin 10 for its signal and X26 no 4, pin 9 for power from Z7/36z1 splice.
05. Engine oil pump valve (Y130). Ground is its signal, CON-M pin 81 ECM direct. 2 wires.
However, it goes via intermediate connector X26 no 4, pin 8 for its signal and X26 no 4 pin 7 for power from Z7/36z1 splice.
06. Boost pressure control transducer (Y31/5). Ground is its signal, Con-M pin 31. ECM direct. 2 wires
07. Coolant Thermostat Heating Element (R48). Ground is its signal, Con-M pin 30. ECM direct.
08. (G3/4r1) Right Wide Band oxygen sensor **heater** (*note: only the heater*) upstream of CAT.
Ground is its signal, Con-M pin 55, ECM direct. So this is Bank 1 sensor 1.
NOTE : The Oxygen sensor element itself G3/4b1 , its 4 other wires are all direct to ECM Con-M pin 91, 67, 90 and 66. 2 wires for heater and 4 wires for oxygen sensor element, total 6.
09. (G3/3r1) Left Wide Band oxygen sensor **heater** (*note: only the heater*) upstream of CAT.
Ground is its signal, Con-M pin 80, ECM direct. So this is Bank 2 sensor 1.
NOTE : The Oxygen sensor element itself G3/3b1 , its 4 other wires are all direct to ECM, Con-M pin 93, 69, 92 and 68. 2 wires for heater and 4 wires for oxygen sensor element, total 6.
10. (G3/5r1) Left Narrow Band oxygen sensor **heater** (*note: only the heater*) downstream of CAT
Ground is its signal, Con-M pin 72, ECM direct. So this is Bank 2 sensor 2.
NOTE : The Oxygen sensor element itself G3/5b1 , its signal is to Con-M pin 41 and its ground is by Z7/44z2 splice which its final connection is Con-M pin 70 ECM direct. Oxygen sensor itself is like a mini galvanic battery , so it does not need power. 2 wires for heater and 2 wires for oxygen sensor element, total 4.
11. (G3/6r1) Right Narrow Band oxygen sensor **heater** (*note: only the heater*) downstream of CAT.
Ground is its signal, Con-M pin 21, ECM direct. So this is Bank 1 sensor 2.
NOTE : The Oxygen sensor element itself G3/6b1 its signal is to ECM from Con-M pin 16 and its ground is by Z7/44z2 splice which its final connection is Con-M pin 70 ECM direct. Oxygen sensor itself is like a mini galvanic battery , so it does not need power. 2 wires for heater and 2 wires for oxygen sensor element, total 4.

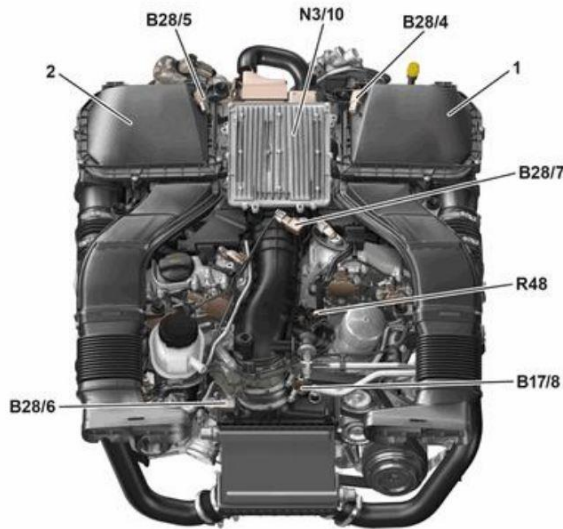
CRITICAL MODULE WITH MORE THAN 1 FUSES SUPPLYING POWER TO IT - Continuation
N3/10 Engine ECM/ECU aka Engine computer.

Sensors which are directly powered by ECM 5 volts power supply and not using direct fuse from Front SAM :

Overview of new features/modifications with introduction of new V-engine M276 with turbocharging

View of the engine from above

1	Left air filter housing	B28/6	Pressure sensor upstream of throttle valve
2	Right air filter housing	B28/7	Pressure sensor downstream of throttle valve
B17/8	Charge air temperature sensor	R48	Coolant thermostat heating element
B28/4	Pressure sensor downstream of left cylinder bank air filter	N3/10	ME-SFI [ME] control unit
B28/5	Pressure sensor downstream of air filter		



SN00.00-P-0095A

01. **B28/4** Pressure sensor downstream of left cylinder bank air filter. At filter housing. 5V power from ECM Con-M pin 17 which is then spliced as Z5/2z1 for multiple sensors. Ground is to splice Z7/44z1 which its final destination is to ECM Con-M pin 70. Its signal is to ECM Con-M pin 39.

02. **B28/5** Pressure sensor downstream of right cylinder bank air filter. At filter housing. 5V power from ECM Con-M pin 17 which is then spliced as Z5/2z1 for multiple sensors. Ground is to splice Z7/44z2 which its final destination is to ECM Con-M pin 70. Its signal is to ECM Con-M pin 14.

03. **B28/6** Pressure sensor upstream of throttle valve. At aftercooler. 5V power from ECM Con-M pin 17 which is then spliced as Z5/2z1 for multiple sensors. Ground is to splice Z7/44z1 which its final destination is to ECM Con-M pin 70. Its signal is to ECM Con-M pin 15.

Note : It is not confirmed yet if the driver supplying 5V are two separate units, or only 1 unit. Their outputs are at ECM Con-M pin 17 (Z5/2z1) and pin 44 (Z7/41z1)

CRITICAL MODULE WITH MORE THAN 1 FUSES SUPPLYING POWER TO IT - Continuation
N3/10 Engine ECM/ECU aka Engine computer.

Sensors which are directly powered by ECM 5 volts power supply and not using direct fuse from Front SAM – continuation :

04. **B28/7** Pressure sensor upstream of throttle valve. This is MAP sensor at intake manifold. 5V power from ECM Con-M pin 19 which is then spliced as **Z7/41z1** for multiple sensors. Its ground or negative is via splice Z7/43z1 which its final connection is to ECM Con-M pin 44. Its signal is to ECM Con-M pin 65.

05. **B70** Crankshaft position sensor.
5V power from ECM Con-M pin 19 which is then spliced as **Z7/41z1** for multiple sensors. Its ground or negative is via splice Z7/43z1 which its final connection is to ECM Con-M pin 44. Its signal is to ECM Con-M pin 83.

06. **B4/25** Fuel Rail Pressure and Temperature sensor. At Bank 2 fuel rail.
5V power from ECM Con-M pin 19 which is then spliced as **Z7/41z1** for multiple sensors. Its ground or negative is via splice Z7/43z1 which its final connection is to ECM Con-M pin 44. Its pressure signal is to ECM Con-M pin 13
Its temperature signal is to ECM Con-M pin 64

07. **B11/4** Coolant temperature sensor, at rear of engine Bank 2 (LEFT), close to firewall.
Ground is to splice Z7/44z1 which its final destination is to ECM Con-M pin 70.
Its signal is to ECM Con-M pin 88. Two wire sensor.

08. **B17/8** Charge air temperature sensor. At Aftercooler.
Ground is to splice Z7/44z1 which its final destination is to ECM Con-M pin 70.
Its signal is to ECM Con-M pin 89. Two wire sensor.

Other sensors/devices connected to ECM. Voltage used is unknown at this point in time.
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09. **M16/6** Throttle body. 6 wires.

10. **A16/1** Knock Sensor at Bank 1, right bank. 2 wires.

11. **A16/2** Knock Sensor at Bank 2, Left bank. 2 wires.

12. **S43** Low Oil Level Switch. Single wire into ECM, device other wire is grounded inside oil pan.

13. **M4/7** Cooling Fan, PWM signal only, Con-F pin 18. Single wire from ECM.

14. **B4/4** Fuel Vapor Purging Pressure Sensor. My car is not equip with it, albeit wiring diagram shows it is there and the connector is available in engine wiring harness, the actual sensor itself is not installed by MB. 3 wires.

15. **B37** Accelerator Pedal Sensor. 5 wires.

16. **N118** Fuel Pump Module get its engine/ECM ON signal from ECM Con-F pin 17.

Other sensors/devices connected to ECM. Voltage used unknown at this point in time - Continuation

17. **N2/10** Rear SAM get engine/ECM ON signal from ECM Con-F pin 21 which is also spliced to **Z51/19 which is Engine Management Crash Signal Connector Sleeve**
18. **G2** Alternator. Alternator's LIN is from ECM, from ECM Con-F pin 71 but via X26 no 4 pin 4.

Summary of shared grounds, or splices of sensors/devices direct to ECM

Z7/44z2 & Z7/44z1 from ECM Con-M pin 70, serving 9+ sensors.

Z7/41z1 from ECM Con-M pin 19, serving only 3 sensors.

ECM Con-M pin 70		Supply Voltage	To Z7/44z1, for		Supply Voltage
To Z7/44z2, for					
1	B6/5 - Right intake Camshaft Hall sensor	12V	B6/4 - Left Intake Camshaft Hall sensor	12V	1
2	B6/7 - Right exhaust Camshaft Hall sensor	12V	B6/6 - Left exhaust Camshaft hall sensor	12V	2
3	B28/5 - Pressure sensor downstream of right cylinder bank air filter. At filter housing	5V	B11/4 - Coolant temperature sensor, at rear of engine Bank 2 (LEFT), close to firewall	5V	3
4 to 8	If stratified engine : 5 more sensors		B17/8 - Charge air temperature sensor. At Aftercooler	5V	4
			B28/6 - Pressure sensor upstream of throttle valve. At aftercooler	5V	5
			B28/4 - Pressure sensor downstream of left cylinder bank air filter. At filter housing	5V	6

ECM Con-M pin 19		Supply Voltage
To Z7/41z1, for		
1	B28/7 - Pressure sensor upstream of throttle valve. This is MAP sensor at intake manifold	5V
2	B70 - Crankshaft position sensor.	5V
3	B4/25 - Fuel Rail Pressure and Temperature sensor. At Bank 2 fuel rail	5V

Main ground for ECM is Con-F pin 2, 4 & 6, all 3 wires go to W16/5.