BOSCH AUTO BOX GS8.87.1 - System Overview

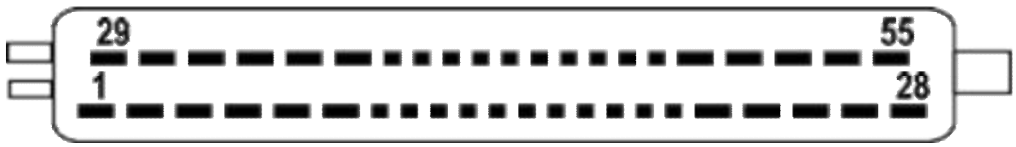
Manufactured by Bosch, this ECU appears to compliment the Motronic M5.2.1 Engine management system. Not being Flash Programmable, there are two near identical systems sub numbered .0 and .1 with the main difference between the two being different shift points, different Gear lever switch inputs, and current gear indicator outputs. This version was fitted to the P38 Range Rover after the 1999 face lift / revamp. It is an adaptive unit, which means that it learns and stores the driving habits of the owner and adapts to suit their driving style as well as overcome variations in engine power, etc which can be reset with this module. This ECU does support some OBDII compliant fault codes as well as a large number of codes outside of the standard which this module accesses.

BOSCH AUTO BOX GS8.87.1 - Known Fitments

Vehicle makes models and variants known or believed to be using this vehicle system, required diagnostic lead and degree of known compatibility.

Vehicle Make	Vehicle Model	Vehicle Variant	Diagnostic Lead	Compatibility Level
Land Rover	Range Rover MKII P38	Petrol 1999 >	Green OBD Lead	Verified

BOSCH AUTO BOX GS8.87.1 - Pin Outs

	
1 - 4	**Not used**
5	**Pressure regulator**
6	**Power ground**

7	**Not used**
8	**Position switch**
9	**Position switch**
10 - 12	**Not used**
13	**Low/high range input**
14	**Output speed sensor**
15	**Output speed sensor screen**
16	**CAN height**
17 - 24	**Not used**
25	**MES line 2**
26	**Battery supply**
27	**Not used**
28	**Electronic ground**
29	**Not used**
30	**Solenoid valve 1**
31	**Diagnostic line**
32	**Solenoid valve 3**
33	**Solenoid valve 2**
34 - 35	**Not used**
36	**Position switch line 1**
37	**Position switch line 3**
38 - 41	**Not used**
42	**Output speed sensor**
43	**Not used**
44	**CAN low**
45	**Mode switch**
46 - 50	**Not used**
51	**MES line 1**
52	**Not used**
53	**Supply, solenoids**
54	**Ignition battery supply**
55	**Not used**

BOSCH AUTO BOX GS8.87.1 - Diagnostic Capabilities - Read Faults/Clear Faults

This function reads the fault code memory. The ECU can self detect up to 47 different problems with itself, its wiring and its associated sensors, storing the respective code if it detects any malfunction or reading outside of pre defined acceptable limits. Not all stored faults may cause the fault warning lamp to illuminate. Click on the Clear Faults to clear the Fault code memory. If these faults return then the issue requires further investigation.

BOSCH AUTO BOX GS8.87.1 - Diagnostic Capabilities (Settings)

Values, configuration settings, and other stored information which can be read from the ECU, edited and then rewritten back. Read settings can also be stored as a standard HTML page for reference. These pages can then later be re loaded and re written back to the ECU. Please note that some values may be read only due to the fact that they are supplied from the ECU's ROM or are internally calculated.

- Manufacturer: Gives the manufacturer of the gearbox.
- Software Level: Gives the level of software currently being used on the gearbox ECU.
- Coding Index: Gives the current standard of coding index used on the gearbox ECU.
- CAN Software Level: Gives the current level of CAN software being used.
- Software Version 1: Gives the software version currently being used.
- Land Rover Part Number: Gives the Land Rover assigned part number.
- Manufacturers Part Number: Gives the manufacturer assigned part number.
- Software number: Gives the software version currently being used.
- Software Version 2: Gives the software version currently being used.
- Tune: Switch between 4.0L, 4.6L or Unknown.
- Vin: Gives the Vehicles VIN number. VIN number can be entered manually

BOSCH AUTO BOX GS8.87.1 - Diagnostic Capabilities (Inputs)

Real time live display of the information the electronic control unit of the selected vehicle system is currently deriving from its input sensors. This is 2 parts, Pressures and General

Pressures

- Upshift 1-2 speed range 1: This reading shows the adaptive pressure value that the ECU has learned for upshifts 1 and 2 in speed range 1.
- Upshift 1-2 speed range 2: This reading shows the adaptive pressure value that the ECM has learned for upshifts 1 and 2 in speed range 2.
- Upshift 1-2 speed range 3: This reading shows the adaptive pressure value that the ECM has learned for upshifts 1 and 2 in speed range 3.
- Upshift 2-3 speed range 1: This reading shows the adaptive pressure value that the ECU has learned for upshifts 2 and 3 in speed range 1.
- Upshift 2-3 speed range 2: This reading shows the adaptive pressure value that the ECU has learned for upshifts 2 and 3 in speed range 2.
- Upshift 2-3 speed range 3: This reading shows the adaptive pressure value that the ECU has learned for upshifts 2 and 3 in speed range 3.
- Upshift 3-4 speed range 1: This reading shows the adaptive pressure value that the ECU has learned for upshifts 3 and 4 in speed range 1.

- Upshift 3-4 speed range 2: This reading shows the adaptive pressure value that the ECU has learned for upshifts 3 and 4 in speed range 2.
- Upshift 3-4 speed range 3: This reading shows the adaptive pressure value that the ECU has learned for upshifts 3 and 4 in speed range 3.
- 1-2 speed range 1 correction: This reading shows the adaptive pressure value that the ECU has learned for upshifts 1 and 2 in speed range 1.
- 1-2 speed range 2 correction: This reading shows the adaptive pressure value that the ECU has learned for upshifts 1 and 2 in speed range 1.
- 1-2 speed range 3 correction: This reading shows the adaptive pressure value that the ECU has learned for upshifts 1 and 2 in speed range 1.
- 2-3 speed range 1 correction: This reading shows the adaptive pressure value that the ECU has learned for upshifts 2 and 3 in speed range 2.
- 2-3 speed range 2 correction: This reading shows the adaptive pressure value that the ECU has learned for upshifts 2 and 3 in speed range 2.
- 2-3 speed range 3 correction: This reading shows the adaptive pressure value that the ECU has learned for upshifts 2 and 3 in speed range 2.
- 3-4 speed range 1 correction: This reading shows the adaptive pressure value that the ECU has learned for upshifts 3 and 4 in speed range 3.
- 3-4 speed range 2 correction: This reading shows the adaptive pressure value that the ECU has learned for upshifts 3 and 4 in speed range 3.
- 3-4 speed range 3 correction: This reading shows the adaptive pressure value that the ECU has learned for upshifts 3 and 4 in speed range 3.

GENERAL

- Throttle position %: This shows the current percentage opening of the throttle position sensor as transmitted to the gearbox ECU from the engine management ECU using the CAN link. This percentage varies with the position of the throttle pedal between zero with the throttle closed to about 80% at fully open.
- Engine torque %: This is the current torque output of the engine relative to the maximum torque available. The value is transmitted to the gearbox ECU from the engine management ECU using the CAN link.
- Torque requested %: This reading shows the amount of torque (as a percentage of nominal torque) being requested from the engine management ECU. Torque will be reduced during gear shifts. This value is transmitted to the gearbox ECU from the engine management ECU using the CAN link.
- Reduced torque %: This display shows the current engine torque output corrected for the amount by which the torque is being reduced. The value is given as a percentage of the maximum torque available from the engine. The value is transmitted to the gearbox ECU from the engine management ECU using the CAN link.
- Friction torque %: This display shows the current amount of engine torque which is being used to overcome engine frictional losses. The value is given as a percentage of

the maximum torque available from the engine. The value is transmitted to the gearbox ECU from the engine management ECU using the CAN link.

- Torque reference Nm: This shows the reference value for maximum torque in Newton metres. The value is transmitted to the gearbox ECU from the engine management ECU using the CAN link.
- Gear switch W: This reading shows the gear state that the ECU is reading from selector line W.
- Gear switch X: This reading shows the gear state that the ECU is reading from selector line X.
- Gear switch Y: This reading shows the gear state that the ECU is reading from selector line Y.
- Gear switch Z: This reading shows the gear state that the ECU is reading from selector line Z.
- Program switch: This reading shows whether the ECU is reading the state of the program selector switch as open or closed.
- High/Low range switch: This reading shows whether the ECU is reading the state of the high/low range switch as being high range or low range.
- Kick down: This reading shows whether kick down is currently active or inactive.
- Shift type: If a gear shift is taking place this reading shows the type of the shift.
- Engine speed (RPM): This is the engine speed measured by the gearbox ECU.
- Turbine speed (RPM): This is the turbine speed in revolutions per minute.
- Output speed (RPM): This is the gearbox output speed in revolutions per minute.
- Battery volts: This reading shows the vehicle battery voltage measured directly by the gearbox ECU.
- Solenoid valve 1: This reading shows whether solenoid valve 1 is currently being driven on. The solenoid valves 1 and 2 control the gear selection as following:
  - First gear: Solenoid 1. 1 OFF, Solenoid 2 ON
  - 2. Second gear: Solenoid 1 ON, Solenoid 2 ON
  - 3. Third gear: Solenoid 1 ON, Solenoid 2 OFF
  - 4. Fourth gear: Solenoid 1 OFF, Solenoid 2 OFF
- Solenoid valve 2: This reading shows whether solenoid valve 2 is currently being driven on. The solenoid valves 1 and 2 control the gear selection as following:
  - First gear: Solenoid 1 OFF, Solenoid 2 ON
  - Second gear: Solenoid 1 ON, Solenoid 2 ON
  - Third gear: Solenoid 1 ON, Solenoid 2 OFF
  - Fourth gear: Solenoid 1 OFF, Solenoid 2 OFF
- Solenoid valve 3: This reading shows the current state of the solenoid valve 3 drive. This valve controls the torque converter lock up.
- Modulator pressure: This value shows the modulation pressure.
- Engine temperature °C: This shows the current temperature of the engine.
- Adaptive program 1: This reading shows whether the adaptive shift program A1 is currently active.

- Adaptive program 2: This reading shows whether the adaptive shift program A2 is currently active.
- Adaptive program 3: This reading shows whether the adaptive shift program A3 is currently active.

BOSCH AUTO BOX GS8.87.1 - Diagnostic Capabilities (UTILITY)

- Reset adaptive values: This causes the GS887X ECU to reset all adaptive values that the ECU has learned from the vehicle. The adaptive values should be reset if the gearbox mechanical components or gearbox ECU have been renewed or rectified.