



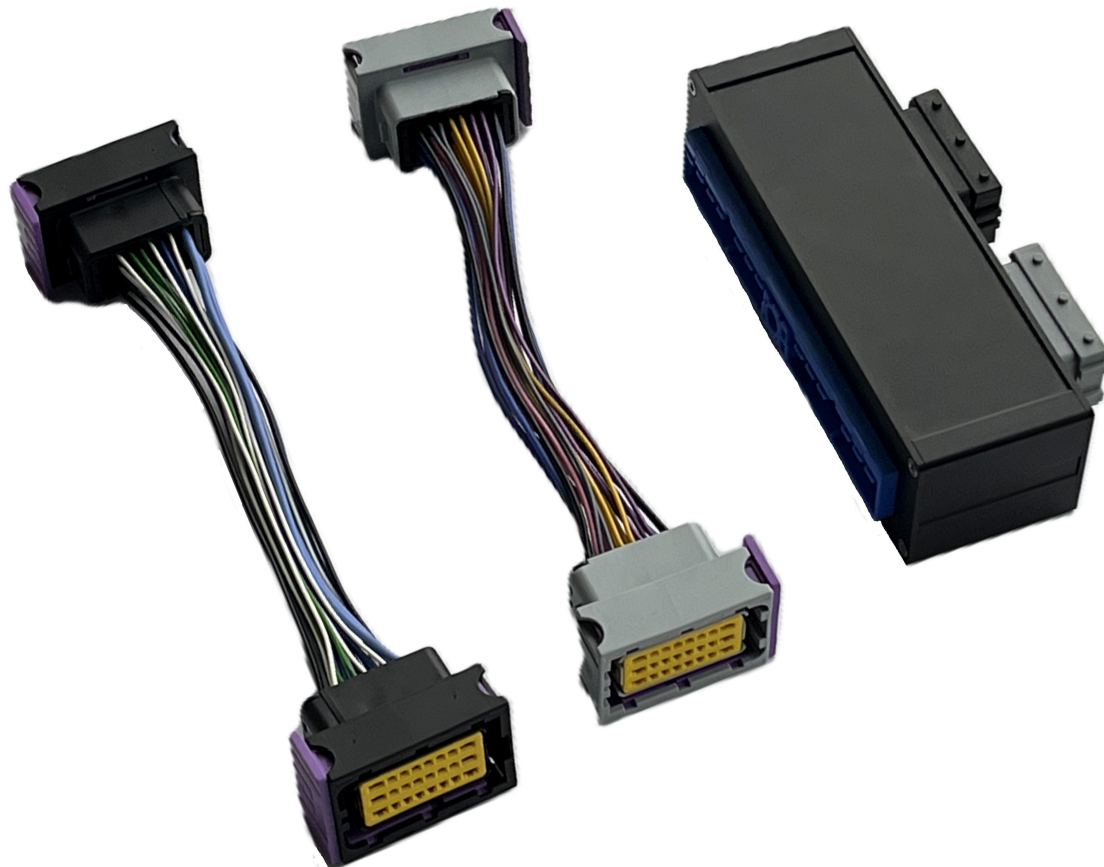
USER MANUAL

Nissan 76 Pin Interconnector

For Nissan RB 20, 25, 26 and SR20

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Contents

1. Introduction.....	3
1.1. Warnings.....	3
1.2. Disclaimer.....	4
1.3. Technical support.....	4
2. Plug and play connector installation.....	5
2.1. Box content.....	5
2.2. Configuration.....	5
2.3. Installation.....	7
3. Pre starting configuration and checks.....	9
3.1. Connecting to Ecumaster EMU Classic Software.....	9
3.2. Additional sensors.....	9
3.3. Sensors.....	10
3.4. Outputs.....	11
4. First Engine startup.....	14
5. Interconnector pinout	15
6. Interconnector pinout	17
7. Document history.....	19

1. Introduction

The adapter allows you to connect the EMU standalone engine management system to the stock engine wiring harness without any cutting or soldering. It is fully compatible with **Ecumaster EMU Classic**. If a calibration file is available, it is already prepared for the factory sensors, injectors, coils, actuators, and solenoids.

1.1. Warnings



Attention:

- The Ecumaster EMU Classic is designed **for motorsport applications only** and **must not** be used on public roads.
- Electronic throttle modules are intended **only for operating stationary engines** (generators, test benches). For safety reasons, do not use electronic throttle modules in vehicles.
- The installation of this device **should be performed only by trained specialists**. Installation by untrained individuals may cause damage to both the device and the engine.
- Incorrect tuning of the Ecumaster EMU Classic can cause **serious engine damage**.
- **Never modify the device's settings while the vehicle is in motion**, as this may cause an accident.
- Ecumaster assumes **no responsibility** for damage caused by incorrect installation and/or tuning of the device.
- To ensure proper use of the Ecumaster EMU Classic and prevent damage to your vehicle, **read these instructions carefully and understand them fully before attempting installation**.

**Important:**

- This manual refers to **firmware version 1.1** of the Ecumaster EMU Classic.
- Modification of tables and parameters should be performed **only by individuals who understand the device and the operation of modern fuel injection and ignition systems**.
- **Never short-circuit** the wires in the engine's wiring harness or the outputs of the Ecumaster EMU Classic.
- All modifications to the engine's wiring harness must be performed **with the negative battery terminal disconnected**.
- It is critical that all connections in the wiring harness are **properly insulated**.
- All signals from variable reluctance sensors and knock sensors **should be connected using shielded cables**.
- The device **must be disconnected before performing any welding** on the vehicle.

1.2. Disclaimer

We put all our effort into proper adapter preparation. The hardware and software have been tested with stock cars, but wiring can vary over the years and across different models.

It is strongly recommended to check the engine wiring before connecting the EMU Classic standalone via the adapter.

Due to wear of electronic and mechanical components, additional inspection is required.

The company does not take responsibility for any damage to the engine or wiring.

1.3. Technical support

Most answers to common questions can be found in the manual or in the EMU Classic software help file.

For any concerns, please contact our customer support or your nearest dealer.

Check for the latest firmware at: www.ecumaster.com/en/download

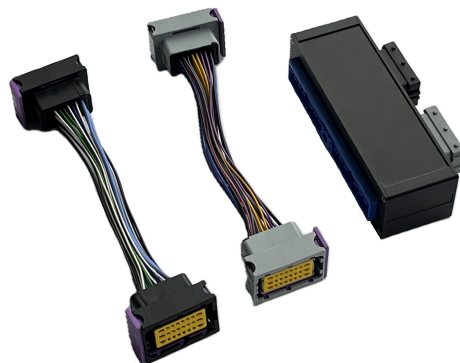
Technical support email: tech@ecumaster.com

Technical support phone: +48 12 3565336

2. Plug and play connector installation

2.1. Box content

1. Adapter PCB in enclosure
2. Wire harness for grey and black connectors



(adapter example photo)

2.2. Configuration

This adapter is universal for **RB20DET**, **RB25DET**, **RB26DETT**, **SR20DET**, and **R34 RB26** engines. Before use, it must be configured internally by selecting the correct solder jumpers.

1. Disassembly

Remove the four Torx T10 screws located on the side of the enclosure facing the factory ECU connector.

Lift off the front panel of the enclosure.

Remove the top cover by sliding it off to expose the PCB.

The configuration jumpers are now accessible. The PCB does not need to be removed from the enclosure.

2. Locate the configuration jumpers

The configuration jumpers are located on the exposed side of the PCB.

You will see a row of two-pad solder jumpers (solder bridges).

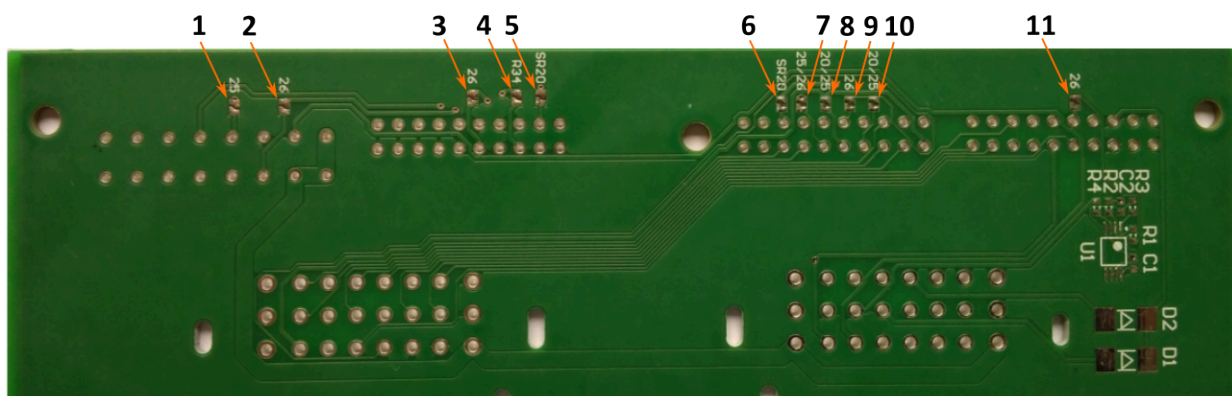
The jumpers are identified by numbers 1–11 as shown in the picture.



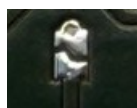
Note:

There are additional white labels printed on the PCB (solder mask), but these markings are used only during manufacturing and may be misleading. Always follow the jumper numbering shown in the picture, not the PCB solder mask.

The picture shows the exact location of all jumper pairs.



Each jumper consists of two small pads placed next to each other.



To activate a jumper, bridge the two pads together with solder.

Do not connect different jumpers together with wires. Only solder the two pads of the same numbered jumper.

3. Solder the required jumpers

Bridge (solder) only the jumpers specified for your engine type:

- **RB20DET:** 8, 10
- **RB25DET:** 1, 7, 8, 10
- **RB26DETT:** 2, 3, 7, 9, 11
- **SR20DET:** 1, 5, 6, 7, 8, 10
- **R34 RB26:** 2, 3, 4, 7, 9, 11

All other jumpers must remain open (unsoldered).

4. Verification

Use a multimeter to confirm that the two pads of each soldered jumper are connected (continuity).

Ensure that jumpers that should remain open do not show continuity.

5. Reassembly

Slide the top cover back onto the enclosure.

Reinstall the front panel.

Tighten the four Torx T10 screws.

2.3. Installation

**Important:**

Before installation, disconnect the negative terminal of the battery!

1. Disconnect the stock ECU and remove it.
2. Connect the adapter to the stock wiring harness.
3. Connect the EMU Classic ECU to the adapter using the wiring harness.
4. Disconnect the air-flow meter (AFM) sensor from the wiring harness. (The EMU Classic uses intake pressure and intake air temperature for load calculation, so the AFM is not required.)
5. Reconnect the negative terminal of the battery.

Connecting the EMU Classic ECU

For the EMU Classic installation, two pre-assembled wiring harnesses are used.

One harness connects to the adapter, and the other connects directly to the EMU Classic ECU.

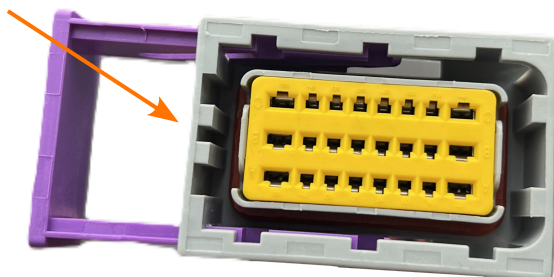
Because the connectors on both harnesses are mirror images, it is important to select the correct end of the harness and ensure that the purple locking element is oriented outward before connection (see the image below).



- **Connector for the adapter:**

Fully open the purple locking element on the connector.

This connector can be identified by the two closely spaced teeth located next to the purple latch.



Insert the connector into the adapter socket.

After insertion, press the purple element to lock the connector securely in place.

- **Connector for the EMU Classic:**

Connect the second connector to the EMU Classic and press the purple element to lock it.

- **Important notes:**

The grey harness must be connected to the grey sockets, and the black harness to the black sockets.

The pinout in the adapter is mirrored relative to the EMU Classic, so the outputs connect directly pin-to-pin between both connectors.

The wires must run in a straight line without twisting or crossing.



Important:

Intake Air Temperature (IAT) Sensor Information

RB20DET, RB25DET, and SR20DET engines are not equipped with an IAT sensor, which is essential for proper fuel mixture calculation. These engines originally use an AFM (airflow meter), which we do not use with the EMU Classic.

To ensure proper operation, you must install an IAT sensor in the intake manifold. You can use the original AFM wires for this purpose. The adapter uses the AFM signal wire and AFM ground wire as the wiring for the new IAT sensor. This means there is no need to run a separate harness.

RB26DETT engines already have a factory IAT sensor, so no additional work is required.

AFM pin	Description	ECU Pin
1	+12 V power supply	
2	Sensor ground	26
3	Intake air temperature signal	27

3. Pre starting configuration and checks

All new EMU units come with the latest official firmware versions. The factory default configuration is loaded, with no base maps and no outputs assigned.

3.1. Connecting to Ecumaster EMU Classic Software

Install the software on your PC and launch the Windows client. Connect the PC to the EMU Classic device using the supplied USB cable.

During the first connection, a window with the device name will appear. By default, it shows the device's unique serial number, which can be renamed. A subdirectory with this name will be created in *My Documents / EMU Classic*. This directory stores configuration files, project data, and logs for the connected EMU Classic unit.

Base calibration maps (for stock, unmodified engines) are included on the supplied CD.

To upload a calibration map and save it in memory, press the F2 key or click the processor icon on the taskbar.

3.2. Additional sensors

The EMU Classic ECU offers various options for installing additional sensors and devices. Additional sensors and extension modules must be connected directly to the EMU Classic, not to the adapter (e.g., WBO sensor, EGT sensor, fuel pressure sensor, DBW module, etc.).

For more information about connecting and configuring sensors, please refer to the manual and the EMU Classic client software help file.

3.3. Sensors

MAP sensor check

The Manifold Absolute Pressure (MAP) sensor is used to measure pressure in the engine's intake manifold. Proper calibration is crucial for correct ignition timing and fuel mixture calculation in the speed-density load algorithm.

Before the first engine start, compare the MAP sensor values to the actual local barometric pressure—they should match. The pressure can be read in the Basic Group Log. When the engine is not running, the pressure should be around 100 kPa (current barometric pressure).



Name	Value	Unit
RPM	384	RPM
MAP	102	kPa
BARO	101	kPa
TPS	0	%
IAT	24	°C
CLT	25	°C
Battery voltage	10,16	V
Oil pressure	0,00	Bar
Oil temperature	0	°C
Fuel pressure	0,00	Bar
Fuel level	0	%
ECU State	CRANKING	
ECU Reset	0	
Tables set	1	

TPS

The Throttle Position Sensor (TPS) is used in various ECU calculations, including acceleration enrichment, the load alpha-n algorithm, boost correction, fuel cut, and idle control. It is important that TPS readings correspond to the actual throttle position: 0% indicates a closed throttle and 100% indicates a fully open throttle.



Name	Value	Unit
RPM	384	RPM
MAP	102	kPa
BARO	101	kPa
TPS	0	%
IAT	24	°C
CLT	25	°C
Battery voltage	10,16	V
Oil pressure	0,00	Bar
Oil temperature	0	°C
Fuel pressure	0,00	Bar
Fuel level	0	%
ECU State	CRANKING	
ECU Reset	0	
Tables set	1	

CLT, IAT

The Coolant Temperature (CLT) sensor and Intake Air Temperature (IAT) sensor are also used in calculations for fuel mixture preparation and proper ignition timing. Sensor readings should correspond to the actual temperature of the coolant and intake air. These readings can be checked in the Basic Group Log window.



Name	Value	Unit
RPM	384	RPM
MAP	102	kPa
BARO	101	kPa
TPS	0	%
IAT	24	°C
CLT	25	°C
Battery voltage	10,16	V
Oil pressure	0,00	Bar
Oil temperature	0	°C
Fuel pressure	0,00	Bar
Fuel level	0	%
ECU State	CRANKING	
ECU Reset	0	
Tables set	1	

3.4. Outputs

The base configuration for the adapter includes dedicated outputs for certain devices, such as the fuel pump, coolant fan, boost solenoid, etc. The proper operation of devices connected to the EMU Classic outputs should be verified before the engine is started for the first time.

Fuel Pump

Open the *Outputs / Fuel Pump* window and select the *Invert output* option. The fuel pump should start operating (its sound should be audible).

Coolant Fan

For low-speed coolant fan operation, open the *Outputs / Coolant Fan* window and select the *Invert output* option. The coolant fan should operate at low speed, and the power steering fan should also start working.

Wide band oxygen sensor (WBO)

Although the factory narrow-band sensor is used, we strongly recommend using a wide-band oxygen sensor.

For proper WBO sensor calibration, the Rcal value must be measured between terminals 2 and 6 of the LSU 4.2 connector.

RB26 GTR – all wheels drive

A special electronic circuit inside the adapter converts the digital signal from the EMU Classic ECU PWM#1 table into the analog signal expected by the ATTESA ECU.

The ATTESA ECU expects 0.4 V at closed throttle and 3.4 V at wide-open throttle.

Correct table values guarantee the expected voltage on pin 56 of the stock wiring.

The PWM#1 table is TPS-based.

Stepper 2B is assigned to the output.

Frequency: 40 Hz

The screenshot displays two windows from the ECU software. The top window, titled "Outputs - PWM #1 table", shows a table of values for the PWM #1 output. The table has 16 columns representing throttle positions (0, 2, 5, 7, 10, 14, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100) and 16 rows representing RPM values (750, 1158, 1566, 1974, 2382, 2789, 3197, 3605, 4013, 4421, 4829, 5237, 5645, 6053, 6461, 6868, 7276, 7684, 8092, 8500). The values in the table are color-coded: red for 0-10%, yellow for 14-20%, green for 25-40%, and blue for 45-100%. The bottom window, titled "Outputs - PWM #1", shows the configuration for the PWM #1 output. It includes a dropdown menu for "Output" set to "Stepper 2B (1A, G11)", a dropdown menu for "X axis" set to "TPS", a text field for "Frequency" set to "40 Hz", and a checkbox for "Disable output if no RPM" which is currently unchecked.

Throttle position (%)	0	2	5	7	10	14	20	25	30	40	50	60	70	80	90	100
8500	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
8092	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
7684	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
7276	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
6868	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
6461	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
6053	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
5645	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
5237	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
4829	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
4421	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
4013	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
3605	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
3197	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
2789	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
2382	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
1974	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
1566	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
1158	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20
750	92	91	88	87	85	82	78	74	70	63	56	49	42	34	27	20

Throttle position (%)

Outputs - PWM #1

PWM #1

Output	Stepper 2B (1A, G11)
X axis	TPS
Frequency	40 Hz
Disable output if no RPM	<input type="checkbox"/>

SR20DET ignition and fuel output configuration

The SR20DET engine shares the pinout with the RB25DET engine, but different cylinder numbers are assigned to different pins. With the wiring already done, only modification of ignition outputs in the Windows Client is necessary for proper engine operation.

Ignition Mapping**SR20DET**

Pin 1 - Ign #1

Pin 2 - Ign #2

Pin 11 - Ign #3

Pin 12 - Ign #4

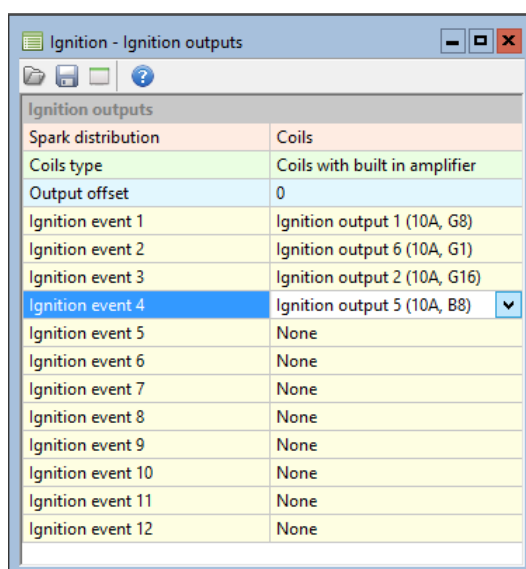
RB26DET

Pin 1 - Ign #1

Pin 2 - Ign #5

Pin 11 - Ign #6

Pin 12 - Ign #2

**Cylinder Mapping**

Cylinder #1 → ignition out #1

Cylinder #2 → ignition out #5

Cylinder #3 → ignition out #6

Cylinder #4 → ignition out #2

Firing order: 1-3-4-2 → ignition outputs should be set to 1-6-2-5**Injector Mapping****SR20DET**

Pin 101 - Inj #1

Pin 110 - Inj #2

Pin 103 - Inj #3

Pin 112 - Inj #4

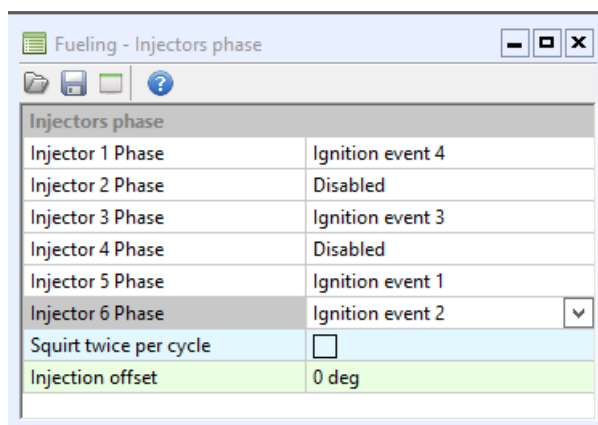
RB26DET

Pin 101 - Inj #1

Pin 110 - Inj #5

Pin 103 - Inj #3

Pin 112 - Inj #6



Cylinder Mapping

Cylinder #1 → injector out #1

Cylinder #2 → injector out #5

Cylinder #3 → injector out #3

Cylinder #4 → injector out #6

Firing order: 1-3-4-2 → injector phase outputs should use 1-3-5-6, and the order should be 4-3-1-2.

4. First Engine startup

After completing all necessary checks and adjustments, the engine is ready to start.

A factory engine with the correct configuration and correct ECU to adapter wiring should start after a few crank rotations. Additional throttle opening may be required during the first start.

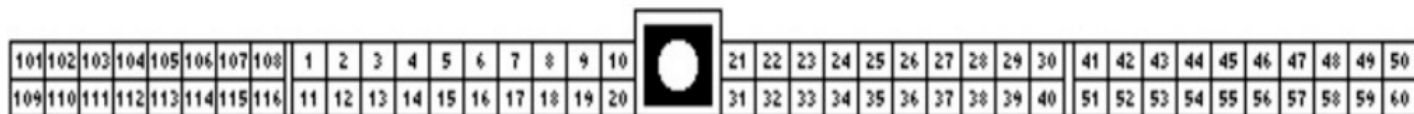
Allow the engine to warm up the coolant to its normal operating temperature. Monitor the coolant temperature throughout the entire warm-up process to avoid engine damage caused by overheating.

Check the log file for any trigger errors. If errors appear, inspect the wiring and the condition of the crankshaft and camshaft sensors. Save the log file and send it to technical support at tech@ecumaster.com. Do not attempt to tune the engine with trigger errors, as this can cause serious engine damage.

Once all verifications have been completed, performance tuning can be performed.

5. Interconnector pinout

Name: Nissan RB20/25/26DETT



Plug as viewed from edge of computer

EMU PIN	EMU Description	R32 R33 RB20DET	R32 R33 RB25DET	R32 R33 RB26DETT	R34 RB26DETT	Description	Wire size
B17	EMU GROUND	50	50	50	50		0,75mm
G17	POWER GROUND	107	107	107	108		0,75mm
G24	POWER GROUND	108	108	108	108		0,75mm
B24	POWER GROUND	116	116	116	116		0,75mm
G18	POWER +12V	45	45	45	8		0,5mm
B18	SENSOR GROUND	30,26	30,26	30	30	26 AFM ground for IAT	0,5mm
G8	IGNITION COIL 1	1	1	1	1		0,75mm
G16	IGNITION COIL 2	12	12	12	12		0,75mm
G9	IGNITION COIL 3	3	3	3	3		0,75mm
B16	IGNITION COIL 4	13	13	13	13		0,75mm
B8	IGNITION COIL 5	2	2	2	2		0,75mm
G1	IGNITION COIL 6	11	11	11	11		0,75mm

EMU PIN	EMU Description	R32 R33 RB20DET	R32 R33 RB25DET	R32 R33 RB26DETT	R34 RB26DETT	Description	Wire size
G7	INJECTOR 1	101	101	101	101		0,75mm
G15	INJECTOR 2	105	105	105	105		0,75mm
G23	INJECTOR 3	103	103	103	103		0,75mm
G6	INJECTOR 4	112	114	114	115		0,75mm
G14	INJECTOR 5	110	110	110	110		0,5mm
G22	INJECTOR 6	114	112	112	112		0,5mm
G21	AUX1			106	106	FPCM PWM signal	0,5mm
G13	AUX2		113	6	6	113 VTC solenoid/ 6 fan	0,5mm
G5	AUX3		25	25	25	Boost solenoid	0,5mm
G20	AUX4	9	9	9	9	A/C clutch relay	0,5mm
G12	AUX5	4	4	4	4	AAC solenoid	0,5mm
G4	AUX6	16	16	16	16	ECCS relay	0,5mm
G2	STEPPER MOTOR #1A	32	32	32	32	MIL	0,5mm
G10	STEPPER MOTOR #1B	18	18	18	18	Fuel pump relay	0,5mm
G3	STEPPER MOTOR #2A	7	7	7	7	Tacho output	0,5mm
G11	STEPPER MOTOR #2B				56	ATTESA 4wd signal	0,5mm
G19	WBO HEATER	115	115	115	115	Oxygen sensor heater	0,5mm

EMU PIN	EMU Description	R32 R33 RB20DET	R32 R33 RB25DET	R32 R33 RB26DETT	R34 RB26DETT	Description	Wire size
B5	WBO VS	29	29	29	29	Oxygen sensor signal	0,5mm
B4	CLT	28	28	28	28	Coolant sensor	0,5mm
B21	IAT	27	27	36	36	27 AFM signal for IAT	0,5mm
B12	TPS IN	38	38	38	38	TPS	0,5mm
B2	KS #1	23	23	23	23	Knock 1-3	0,5mm
B10	KS #2	24	24	24	24	Knock 4-6	0,5mm
B23	+5V	48	48	48	48	+5 tps supply	0,5mm
B14	VSS IN	53	53	53	53		0,5mm
B7	PRIMARY TRIGGER	42	42	42	41		0,5mm
B15	CAMSYNC #1	41	41	41	42		0,5mm
B20	ANALOG #1	46	46	46	46	A/C switch	0,5mm
B3	ANALOG #2		104	104	104	FPCM voltage control	0,5mm

6. Interconnector pinout

Name: Nissan S14 SR20DET

EMU PIN	EMU Description	S14 SR20DET	Description	Wire size
B17	EMU GROUND	50		0,75mm
G17	POWER GROUND	107		0,75mm
G24	POWER GROUND	108		0,75mm

EMU PIN	EMU Description	S14 SR20DET	Description	Wire size
B24	POWER GROUND	116		0,75mm
G18	POWER +12V	45		0,5mm
B18	SENSOR GROUND	30,26	26 AFM ground for IAT	0,5mm
G8	IGNITION COIL 1	1		0,75mm
G16	IGNITION COIL 2	12		0,75mm
B8	IGNITION COIL 5	2		0,75mm
G1	IGNITION COIL 6	11		0,75mm
G7	INJECTOR 1	101		0,75mm
G15	INJECTOR 2	105	Radiator Fan high	0,75mm
G23	INJECTOR 3	103		0,75mm
G6	INJECTOR 4	114	Radiator Fan Low	0,75mm
G14	INJECTOR 5	110		0,5mm
G22	INJECTOR 6	112		0,5mm
G13	AUX2	113	113 VTC solenoid	0,5mm
G5	AUX3	25	Boost solenoid	0,5mm
G20	AUX4	9	A/C clutch relay	0,5mm
G12	AUX5	4	AAC solenoid	0,5mm
G4	AUX6	16	ECCS relay	0,5mm
G2	STEPPER MOTOR #1A	32	MIL	0,5mm
G10	STEPPER MOTOR #1B	18	Fuel pump relay	0,5mm
G3	STEPPER MOTOR #2A	7	Tacho output	0,5mm
G19	WBO HEATER	115	Oxygen sensor heater	0,5mm
B5	WBO VS	29	Oxygen sensor signal	0,5mm
B4	CLT	28	Coolant sensor	0,5mm
B21	IAT	27	27 AFM signal for IAT	0,5mm
B12	TPS IN	38	TPS	0,5mm
B2	KS #1	23	Knock 1-2	0,5mm
B10	KS #2	24	Knock 3-4	0,5mm

EMU PIN	EMU Description	S14 SR20DET	Description	Wire size
B23	+5V	48	+5 tps supplay	0,5mm
B14	VSS IN	53		0,5mm
B7	PRIMARY TRIGGER	42		0,5mm
B15	CAMSYNC #1	41		0,5mm
B20	ANALOG #1	46	A/C switch	0,5mm

7. Document history

Version	Date	Changes
1.0	2019.07.26	Initial release
2.0	2025.12.02	Document layout updated to follow the Ecumaster standard format The structure and text have been refined and improved for better readability and clarity