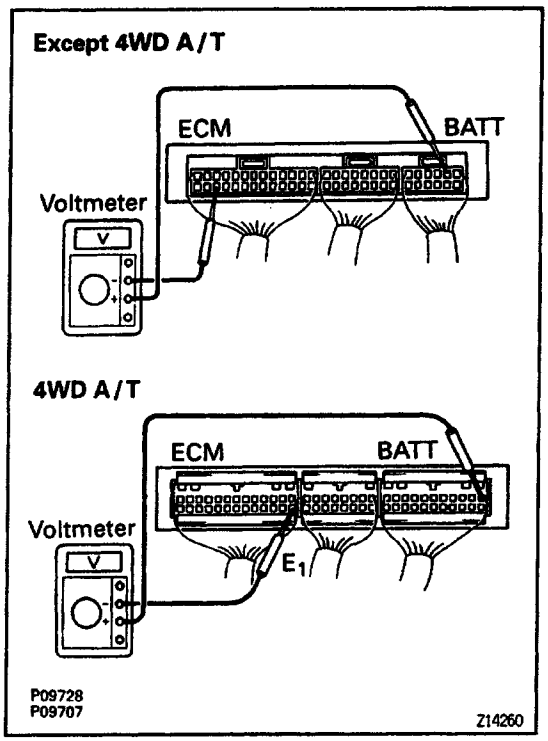
# ENGINE CONTROL MODULE (ECM)

## ECM INSPECTION

HINT: The MFI circuit can be checked by measuring the voltage and resistance at the wiring connectors of the ECM.




**1. INSPECT VOLTAGE OF ECM**

Check the voltage between each terminal of the wiring connectors.

- Turn the ignition switch ON.
- Measure the voltage at each terminal.

HINT:

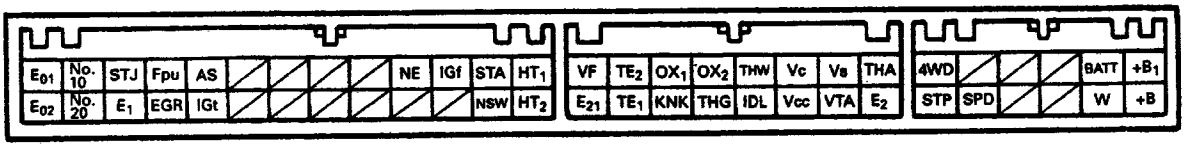
- Do all voltage measurements with the connectors connected.
- Verify that the battery voltage is 1 1 V or more when the ignition switch is ON.

# ECM Voltage Wiring Connectors

| Terminals | Condition | | STD voltage |
|---|---|---|---|
| BATT – $E_1$ | – | | 9 – 14 |
| +B – $E_1$ | Ignition switch ON | | |
| $+B_1$ – $E_1$ | | | |
| IDL – $E_2$ ($E_{21}$) | Ignition switch ON | Throttle valve open | 9 – 14 |
| Vcc – $E_2$ ($E_{21}$) | | – | 4.5 – 5.5 |
| VTA – $E_2$ ($E_{21}$) | | Throttle valve fully closed | 0.3 – 0.8 |
| | | Throttle valve fully open | 3.2 – 4.9 |
| Vc – $E_2$ ($E_{21}$) | Ignition switch ON | – | 6 – 10 |
| Vs – $E_2$ ($E_{21}$) | | Measuring plate fully closed | 0,5 – 2.5 |
| | | Measuring plate fully open | 5 – 10 |
| | Idling | | 2 – 8 |
| THA – $E_2$ ($E_{21}$) | Ignition switch ON | Intake air temperature 20°C (68°F) | 0.5 – 3.4 |
| THW – $E_2$ ($E_{21}$) | Ignition switch ON | Coolant temperature 80°C (176°F) | 0.2 – 1.0 |
| STA – $E_1$ | Ignition switch START position | | 6 – 12 |
| No.10 – $E_{01}$<br>No.20 – $E_{02}$ | Ignition switch ON | | 9 – 14 |
| IGt – $E_1$ | Idling | | 0.7 – 1.0 |
| W – $E_1$ | No trouble (MIL off) and engine running | | 9 – 14 |
| STJ – $E_1$ | Ignition switch START position | Coolant temperature 80°C (176°F) | 6 – 12 |
| STP – $E_1$ | Stop light switch ON | | 7.5 – 14 |

ECM Terminals

Except 4WD A I T

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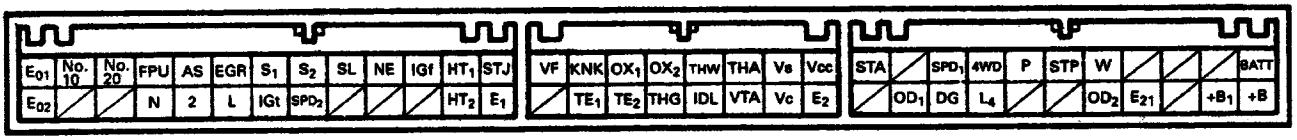


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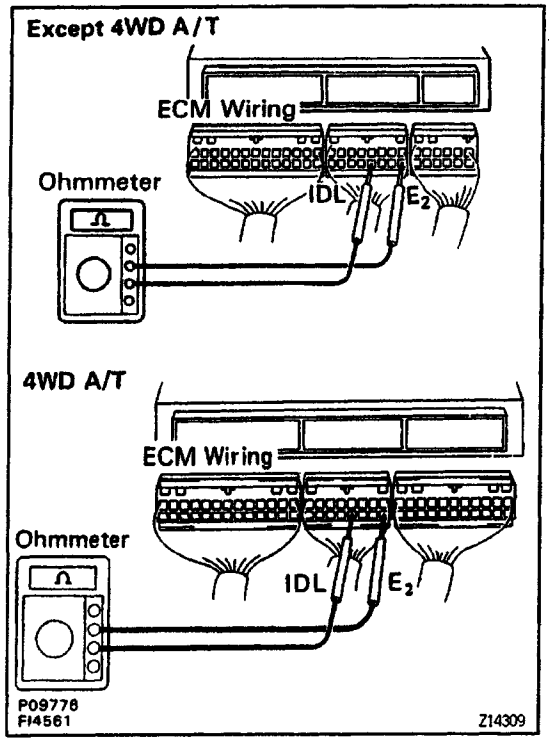



**2. INSPECT RESISTANCE OF ECM**

**NOTICE:**

- Do not touch the ECM terminals.
- The tester probe should be inserted into the wiring connector from the wiring side.

Check the resistance between each terminal of the wiring connectors.

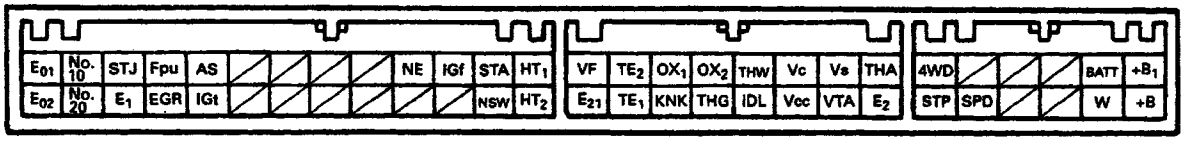
- Disconnect the connectors from the ECM.
- Measure the resistance at each terminal.

# ECM Resistance Wiring Connectors

| Terminals | Condition | Resistance (kΩ) |
|---|---|---|
| IDL – $E_2$ ($E_{21}$) | Throttle valve open | Infinity |
| | Throttle valve fully closed | 2.3 or less |
| VTA – $E_2$ ($E_{21}$) | Throttle valve fully open | 3.1 – 12.1 |
| | Throttle valve fully closed | 0.47 – 6.1 |
| Vcc – $E_2$ ($E_{21}$) | – | 3.9 – 9.0 |
| THA – $E_2$ ($E_{21}$) | Intake air temperature 20˚C (68˚F) | 2 – 3 |
| THW – $E_2$ ($E_{21}$) | Coolant temperature 80˚C (176˚F) | 0.2 – 0.4 |
| +B – $E_2$ ($E_{21}$) | – | 0.2 – 0.4 |
| Vc – $E_2$ ($E_{21}$) | – | 0.1 – 0.3 |
| Vs – $E_2$ ($E_{21}$) | Measuring plate fully closed | 0.02 – 0.4 |
| | Measuring plate fully open | 0.02 – 1.00 |
| Ne – $E_1$ | Cold | 0.185 – 0.275 |
| | Hot | 0.240 – 0.325 |
| STJ – $E_1$ | – | Infinity |
| FPU – $E_1$ | – | Infinity |
| $HT_1$ – $E_1$ | – | Infinity |

ECM Terminals

Except 4WD A / T

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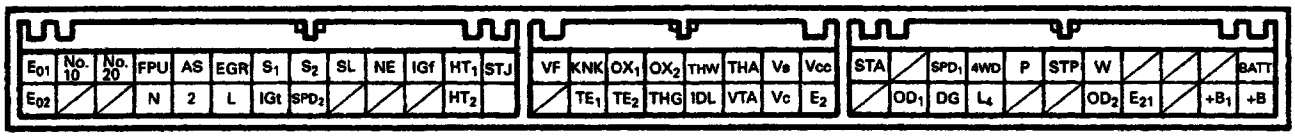


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