

Transmission Control Module (TCM) I/O Signal

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

5. Transmission Control Module (TCM) I/O Signal

A: ELECTRICAL SPECIFICATION



AT-01451

NOTE:

The measurement should be performed after warming up.

Item	Connector No.	Terminal No.	Measuring condition	Measured value	Resistance between terminal and chassis ground	Remarks
P/L solenoid output	B54	9	Engine ON, "P" range, accelerator OFF, brake ON	Approx. 4.0 — 6.0 V	3 — 9 Ω (ATF temperature 20°C (68°F))	Driving frequency 750 — 850 Hz
			Manual mode 1st, accelerator OFF, brake ON	Approx. 2.0 — 4.0 V		
PVIGN power supply	B54	8	Ignition switch ON	Power supply voltage	—	
		7	Ignition switch ON	Power supply voltage	—	
I/C oil pressure switch input	B54	6	—	—	—	The condition of I/C oil pressure switch cannot be read by the tester.
Power GND	B54	5	Always	Approx. 0 V	—	
CAN communication line (+)	B54	4	—	—	—	
CAN communication line (–)	B54	3	—	—	—	
ATF temperature sensor 1 input	B54	2	Ignition switch ON	2.5 — 2.9 V (ATF temperature 20°C (68°F)) 0.8 — 1.0 V (ATF temperature 80°C (176°F))	4.0 — 5.0 k Ω (ATF temperature 20°C (68°F)) 0.7 — 0.9 k Ω (ATF temperature 80°C (176°F))	
Battery power supply	B54	1	Always	Power supply voltage	—	

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Item	Connector No.	Terminal No.	Measuring condition	Measured value	Resistance between terminal and chassis ground	Remarks
I/C solenoid output	B54	18	While driving at 1st-3rd of manual mode	Approx. 5.5 — 7.5 V	3 — 9 Ω (ATF temperature 20°C (68°F))	Driving frequency 750 — 850 Hz
			While driving at 4th or 5th of manual mode	Approx. 0 V		
H & LR/C solenoid output	B54	17	While driving at 2nd of manual mode	Approx. 5.5 — 7.5 V	3 — 9 Ω (ATF temperature 20°C (68°F))	Driving frequency 750 — 850 Hz
			While driving at 3rd-5th of manual mode	Approx. 0 V		
Control valve power supply output	B54	16	Ignition switch ON	Power supply voltage	—	
			Ignition switch OFF	Approx. 0 V		
LC/B solenoid output	B54	15	While driving at 1st-2nd of manual mode	Power supply voltage	5 — 17 Ω (ATF temperature 25°C (77°F))	
			While driving at 3rd-5th of manual mode	Approx. 0 V		
Power GND	B54	14	Always	Approx. 0 V	—	
Analog GND (sensor GND)	B54	13	Always	Approx. 0 V	—	
LC/B oil pressure switch input	B54	12	—	—	—	The condition of LC/B oil pressure switch cannot be read by the tester.
ATF temperature sensor 2 input	B54	11	Ignition switch ON	2.3 — 2.7 V (ATF temperature 20°C (68°F)) 0.6 — 0.8 V (ATF temperature 80°C (176°F))	3.0 — 3.6 k Ω (ATF temperature 20°C (68°F)) 0.4 — 0.6 k Ω (ATF temperature 80°C (176°F))	
PVIGN power supply relay output	B54	10	Ignition switch ON	0 — 1.5 V	—	
Fr/B solenoid output	B54	24	While driving at other than 4th of manual mode	Approx. 4.5 — 6.5 V	3 — 9 Ω (ATF temperature 20°C (68°F))	Driving frequency 750 — 850 Hz
			While driving at 4th of manual mode	Approx. 0 V		
L/U solenoid output	B54	23	When lock-up	Approx. 3.5 — 5.5 V	3 — 9 Ω (ATF temperature 20°C (68°F))	Driving frequency 750 — 850 Hz
			When not lock-up	Approx. 0 V		
D/C solenoid output	B54	22	While driving at 1st or 5th of manual mode	Approx. 5.5 — 7.5 V	3 — 9 Ω (ATF temperature 20°C (68°F))	Driving frequency 750 — 850 Hz
			While driving at 2nd-4th of manual mode	Approx. 0 V		
D/C oil pressure switch input	B54	21	—	—	—	The condition of D/C oil pressure switch cannot be read by the tester.
Subaru Select Monitor communication line	B54	20	—	—	—	
Control GND	B54	19	Always	Approx. 0 V	—	

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Item	Connector No.	Terminal No.	Measuring condition	Measured value	Resistance between terminal and chassis ground	Remarks
H&LR/C oil pressure switch input	B55	8	While driving at 2nd of manual mode	Power supply voltage	—	
			While driving at 3rd-5th of manual mode	Approx. 0 V		
Front vehicle speed sensor input	B55	7	While driving at 2nd and 20 km/h (12 MPH) of manual mode	Approx. 530 — 610 rpm	—	Use the Subaru Select Monitor.
			While driving at 4th and 80 km/h (50 MPH) of manual mode	Approx. 2160 — 2410 rpm		Use the Subaru Select Monitor.
Inhibitor switch 1 input	B55	4	Ignition switch ON, "P" range	4.0 — 5.0 V	—	
			Ignition switch ON, "N" range	Less than 1.5 V		
Inhibitor switch 2 input	B55	3	Ignition switch ON, "P" range	4.0 — 5.0 V	—	
			Ignition switch ON, "D" range	Less than 1.5 V		
Accessory power supply	B55	2	Accessory switch ON	Power supply voltage	—	
			Accessory switch OFF	Approx. 0 V		
Ignition power supply	B55	1	Ignition switch ON	Power supply voltage	—	
			Ignition switch OFF	Approx. 0 V		
Rear vehicle speed sensor input	B55	18	While driving at 2nd and 20 km/h (12 MPH) of manual mode	Approx. 530 — 610 rpm	—	Use the Subaru Select Monitor.
			While driving at 4th and 80 km/h (50 MPH) of manual mode	Approx. 2160 — 2410 rpm		Use the Subaru Select Monitor.
Fr/B oil pressure switch input	B55	17	Ignition switch ON, engine ON, while driving at other than 4th	Approx. 0 V	—	
			Ignition switch ON, engine ON, while driving at 4th	Power supply voltage		
Turbine speed sensor 1 input	B55	16	2nd of manual mode, turbine speed sensor is 2,000 rpm (Read from Subaru Select Monitor)	Approx. 0 rpm	—	Use the Subaru Select Monitor.
			4th of manual mode, turbine speed sensor is 2,000 rpm (Read from Subaru Select Monitor)	Approx. 1,900 — 2,100 rpm		Use the Subaru Select Monitor.
Range lock solenoid output	B55	15	Ignition switch ON, while stopping at "D" range	Approx. Power Supply Voltage –1.2 V	7 — 21 Ω	
			Ignition switch ON, vehicle speed at least 20 km/h (12 MPH)	Approx. 0 V		

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Item	Connector No.	Terminal No.	Measuring condition	Measured value	Resistance between terminal and chassis ground	Remarks
Inhibitor switch 3 input	B55	14	Ignition switch ON, "R" range	4.0 — 5.0 V	—	
			Ignition switch ON, "D" range	Less than 1.5 V		
Inhibitor switch 4 input	B55	13	Ignition switch ON, "P" range	4.0 — 5.0 V	—	
			Ignition switch ON, "D" range	Less than 1.5 V		
Control valve communication line	B55	12	—	—	—	
Back-up light relay output	B55	11	Ignition switch ON, "R" range	1.5 V	90 — 110 Ω (ATF temperature 25°C (77°F))	
			Ignition switch ON, other than "R" range	Power supply voltage		
Ignition power supply	B55	10	Ignition switch ON	Power supply voltage	—	
			Ignition switch OFF	Approx. 0 V		
AWD solenoid output	B55	23	Engine ON, "P" range or "N" range, accelerator OFF	Approx. 0 V	3 — 9 Ω (ATF temperature 20°C (68°F))	Driving frequency 750 — 850 Hz
			Engine ON, "D" range, accelerator OFF, brake ON	Approx. 2.0 — 3.0 V		
Turbine speed sensor 2 input	B55	22	2nd of manual mode, turbine speed sensor is 2,000 rpm (Read from Subaru Select Monitor)	Approx. 1,300 — 1,500 rpm	—	Use the Subaru Select Monitor.
			4th of manual mode, turbine speed sensor is 2,000 rpm (Read from Subaru Select Monitor)	Approx. 1,900 — 2,100 rpm		Use the Subaru Select Monitor.
Control GND	B55	21	Always	Approx. 0 V	—	
Inhibitor switch 3 open circuit monitor input	B55	20	Ignition switch ON, "R" range	4.0 — 5.0 V	—	
			Ignition switch ON, "D" range	Less than 1.5 V		
PN signal output	B55	19	Ignition switch ON, Other than "P" range or "N" range	Power supply voltage	—	ECM should be connected correctly.
			Ignition switch ON, "P" range or "N" range	0 — 1.0 V	—	