

# 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 $\Omega$ (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 $\Omega$ (ATF temperature 20°C (68°F)) 0.7 — 0.9 k $\Omega$ (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 $\Omega$ (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 $\Omega$ (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 $\Omega$ (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 $\Omega$ (ATF temperature 20°C (68°F)) 0.4 — 0.6 k $\Omega$ (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 $\Omega$ (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 $\Omega$ (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 $\Omega$ (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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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. 2,160 — 2,410 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	1.5 V or less		
Inhibitor switch 2 input	B55	3	Ignition switch ON, "P" range	4.0 — 5.0 V	—	
			Ignition switch ON, "D" range	1.5 V or less		
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. 2,160 — 2,410 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.

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Item	Connector No.	Terminal No.	Measuring condition	Measured value	Resistance between terminal and chassis ground	Remarks
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		
Inhibitor switch 3 input	B55	14	Ignition switch ON, "R" range	4.0 — 5.0 V	—	
			Ignition switch ON, "D" range	1.5 V or less		
Inhibitor switch 4 input	B55	13	Ignition switch ON, "P" range	4.0 — 5.0 V	—	
			Ignition switch ON, "D" range	1.5 V or less		
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	1.5 V or less		
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	—	