

# Transmission Control Module (TCM) I/O Signal

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

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

### A: ELECTRICAL SPECIFICATION

TO **B55**

7	6	5	4	3		2	1
19	18	17	16	15	14	13	12
27	26			25	24		23
35	34			33	32		31

TO **B54**

6	5		4	3	2	1
16	15	14	13	12	11	10
27	26	25	24	23	22	21
35	34	33	32	31		30

AT-03733

**NOTE:**

The measurement should be performed after warming up.

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Item	Connector No.	Terminal No.	Measuring condition	Measured value	Resistance between terminal and chassis ground	Remarks
P/L solenoid output	B54	6	Engine ON, "P" range, accelerator OFF, brake ON	3.5 — 7.5 V	3 — 9 Ω (ATF temperature 20°C (68°F))	Drive frequency: 300 Hz
I/C oil pressure switch input	B54	20	While driving at 1st-3rd of manual mode	6 V or more		
			While driving at 4th or 5th of manual mode	Less than 1.5 V		
Power GND	B54	12	Always	Approx. 0 V	—	
CAN communication line (+)	B55	21	—	—	—	
CAN communication line (-)	B55	20	—	—	—	
ATF temperature sensor 1 input	B54	17	Ignition switch ON ATF oil temperature 20°C (68°F)	3.5 — 4.3 V	2.5 — 7.0 kΩ	When measuring the resistance, be sure to disconnect the connector and perform the measurement with TCM alone.
			Ignition switch ON ATF oil temperature 80°C (176°F)	1 — 2.2 V	0.3 — 0.8 kΩ	
Backup power supply	B55	24	Ignition switch ON	8 V or more	—	
			Ignition switch OFF			
I/C solenoid output	B54	3	While driving at 1st-3rd of manual mode	5 V or more	3 — 9 Ω (ATF temperature 20°C (68°F))	Drive frequency: 300 Hz
			While driving at 4th or 5th of manual mode	Less than 1.5 V		
H & LR/C solenoid output	B54	5	While driving at 2nd of manual mode	5 V or more	3 — 9 Ω (ATF temperature 20°C (68°F))	Drive frequency: 300 Hz
			While driving at 1st, 3rd-5th of manual mode	Less than 1.5 V		
Power GND	B54	13	Always	Approx. 0 V	—	
Analog GND	B54	18	Always	Approx. 0 V	—	
Fr/B solenoid output	B54	4	While driving at other than 4th of manual mode	5 V or more	3 — 9 Ω (ATF temperature 20°C (68°F))	Drive frequency: 300 Hz
			While driving at 4th of manual mode	Less than 1.5 V		
L/U solenoid output	B54	7	When lock-up	3 V or more	3 — 9 Ω (ATF temperature 20°C (68°F))	Drive frequency: 300 Hz
			When not lock-up	Less than 1 V		
D/C solenoid output	B54	1	While driving at 1st or 5th of manual mode	5 V or more	3 — 9 Ω (ATF temperature 20°C (68°F))	Drive frequency: 300 Hz
			While driving at 2nd-4th of manual mode	Less than 1.5 V		
D/C oil pressure switch input	B54	22	While driving at 1st or 5th of manual mode	6 V or more	—	
			While driving at 2nd-4th of manual mode	Less than 1.5 V		
Subaru Select Monitor communication line	B55	8	Ignition switch ON	8 V or more	—	
			Ignition switch OFF	Less than 1 V		
Sensor GND (analog)	B54	16	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	B54	14	While driving at 2nd of manual mode	6 V or more	—	
			While driving at 3rd-5th of manual mode	Less than 1.5 V		
Fwd/B solenoid output	B54	19	While driving at 1st or 2nd of manual mode	5 V or more		Drive frequency: 300 Hz
			While driving at 3rd-5th of manual mode	Less than 1.5 V		
Fwd/B oil pressure switch input	B54	21	While driving at 1st or 2nd of manual mode	Less than 1.5 V		
			While driving at 3rd-5th of manual mode	6 V or more		
Front vehicle speed sensor input	B54	24	While driving at 2nd and 20 km/h (12 MPH) of manual mode	Approx. 500 — 700 rpm	—	Use the Subaru Select Monitor.
			While driving at 4th and 80 km/h (50 MPH) of manual mode	Approx. 2,000 — 2,500 rpm		Use the Subaru Select Monitor.
Inhibitor switch 1 input	B54	8	Ignition switch ON, "P" range	Less than 0.5 V	—	
			Ignition switch ON, "N" range	5 V or more		
Inhibitor switch 2 input	B54	9	Ignition switch ON, "P" range	5 V or more	—	
			Ignition switch ON, "D" range	Less than 0.5 V		
Ignition power supply	B54	27	Ignition switch ON	8 V or more	—	
			Ignition switch OFF	Less than 1 V		
Rear vehicle speed sensor input	B54	23	While driving at 2nd and 20 km/h (12 MPH) of manual mode	Approx. 500 — 700 rpm	—	Use the Subaru Select Monitor.
			While driving at 4th and 80 km/h (50 MPH) of manual mode	Approx. 2,000 — 2,500 rpm		Use the Subaru Select Monitor.
Fr/B oil pressure switch input	B54	15	While driving at other than 4th of manual mode	Less than 1.5 V	—	
			While driving at 4th of manual mode	6 V or more		
Turbine speed sensor 1 input	B54	26	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.
Inhibitor switch 3 input	B54	10	Ignition switch ON, "R" range	5 V or more	—	
			Ignition switch ON, "D" range	Less than 0.5 V		
Control GND1	B55	23	Ignition switch ON	Approx. 0 V		
			Ignition switch OFF			

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Item	Connector No.	Terminal No.	Measuring condition	Measured value	Resistance between terminal and chassis ground	Remarks
Control GND2	B55	22	Ignition switch ON	Approx. 0 V	—	
			Ignition switch OFF			
Inhibitor switch 4 input	B54	11	Ignition switch ON, "P" range	Less than 0.5 V	—	
			Ignition switch ON, "D" range	5 V or more		
Back-up light relay output	B55	13	Ignition switch ON, "R" range	Less than 1 V	90 — 110 Ω (ATF temperature 25°C (77°F))	
			Ignition switch ON, other than "R" range	8 V or more		
AWD solenoid output	B54	2	Engine ON, "P" range or "N" range, accelerator OFF	Less than 1 V	3 — 9 Ω (ATF temperature 20°C (68°F))	Drive frequency: 300 Hz
			Engine ON, "D" range, accelerator OFF, brake ON	2 V or more		
Turbine speed sensor 2 input	B54	25	2nd of manual mode, turbine speed sensor is 2,000 rpm (Read from Subaru Select Monitor)	Approx. 1,200 — 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		
PN signal output	B55	11	Ignition switch ON, Other than "P" range or "N" range	8 V or more	—	
			Ignition switch ON, "P" range or "N" range	Less than 1 V		
Ignition power supply 1	B55	26	Ignition switch ON	8 V or more	—	
			Ignition switch OFF			
Ignition power supply 2	B55	19	Ignition switch ON	8 V or more	—	
			Ignition switch OFF	Less than 1 V		
Ignition power supply 3	B55	18	Ignition switch ON	8 V or more	—	
			Ignition switch OFF	Less than 1 V		
Ignition power supply 4	B55	25	Ignition switch ON	8 V or more	—	
			Ignition switch OFF			