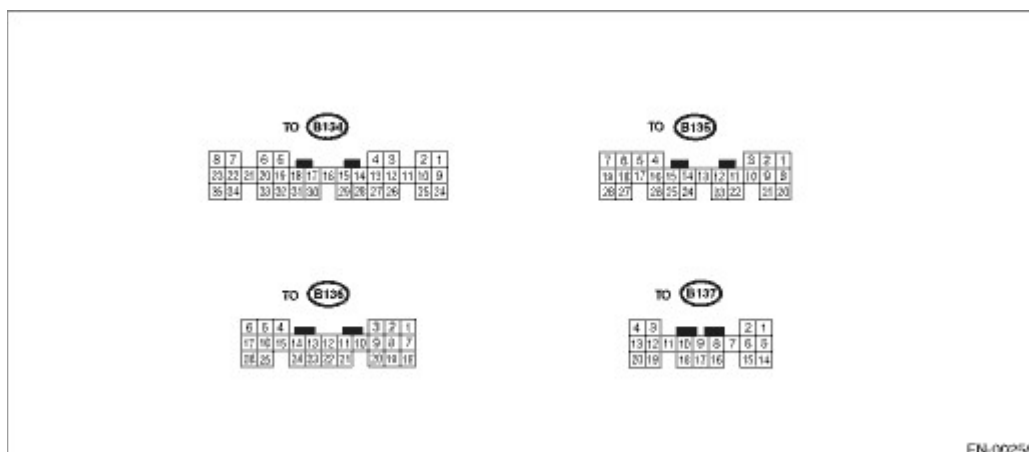


ENGINE (DIAGNOSTICS)(H4SO) > Engine Control Module (ECM) I/O Signal

ELECTRICAL SPECIFICATION



Description		Connector No.	Terminal No.		Signal (V)		Note
					Ignition SW ON (engine OFF)	Engine ON (idling)	
Crankshaft position sensor	Signal (+)	B135	6	7*	0	-7 — +7	Waveform
	Signal (-)	B135	17		0	0	—
	Shield	B135	28		0	0	—
Camshaft position sensor	Signal (+)	B135	7	6*	0	-7 — +7	Waveform
	Signal (-)	B135	18		0	0	—
	Shield	B135	28		0	0	—
Throttle position sensor	Signal	B135	13		Fully closed: 0.2 — 1.0 Fully open: 4.2 — 4.7		—
	Power supply	B135	3		5	5	—
	GND (sensor)	B135	19		0	0	—
Rear oxygen sensor	Signal	B135	14		0	0 — 0.9	—
	Shield	B137	15		0	0	—
	GND (sensor)	B135	19		0	0	—
Front oxygen (A/F) sensor heater	Signal 1	B136	6		10 or more	0 — 14	—
	Signal 2	B136	17		10 or more	0 — 1.0	—
	Shield	B135	23		0	0	—
Rear oxygen sensor heater signal	B136	4		0 — 1.0	0 — 1.0	—	

Description	Connector No.	Terminal No.	Signal (V)		Note	
			Ignition SW ON (engine OFF)	Engine ON (idling)		
Engine coolant temperature sensor	Signal	B135	12	0.8 — 1.4	0.8 — 1.4	After engine is warmed-up.
	GND (sensor)	B135	19	0	0	After engine is warmed-up.
Vehicle speed signal	B137	10	0 or 5	0 or 5	0 or 5	"5" and "0" are repeatedly displayed when vehicle is driven.
Starter switch	B136	20	0	0	0	Cranking: 8 — 14
A/C switch	B136	11	ON: 10 — 13 OFF: 0	ON: 12 — 14 OFF: 0	—	—
Ignition switch	B136	10	10 — 13	12 — 14	—	—
Neutral position switch	MT	B136	21	ON: 12±0.5 OFF: 0	—	The switch is ON when the shift is in neutral position.
	AT	B136	21	ON: 0 OFF: 12±0.5	—	Switch is ON when select lever is shifted into "P" or "N" range.
Test mode connector	B136	3	5	5	5	When connected: 0
Knock sensor	Signal	B135	16	2.8	2.8	—
	Shield	B135	27	0	0	—
Back-up power supply	B135	9	10 — 13	12 — 14	12 — 14	Ignition switch "OFF": 10 — 13
Control module power supply	B135	1	10 — 13	12 — 14	12 — 14	—
	B135	2	10 — 13	12 — 14	12 — 14	—
Sensor power supply	B135	3	5	5	5	—
Ignition control	#1, #2	B134	33	0	1 — 3.4	Waveform
	#3, #4	B134	32	0	1 — 3.4	Waveform
	#1	B134	34	10 — 13	1 — 14	Waveform
Fuel injector	#2	B134	23	10 — 13	1 — 14	Waveform
	#3	B134	22	10 — 13	1 — 14	Waveform
	#4	B134	8	10 — 13	1 — 14	Waveform
	Signal 1	B134	20	—	1 — 14	Waveform
Idle air control solenoid valve	Signal 2	B134	6	—	1 — 14	Waveform
	Signal 3	B134	5	—	1 — 14	Waveform
Fuel pump relay control	Signal 4	B134	19	—	1 — 14	Waveform
		B134	2	11*	0.5 or less	—

Description	Connector No.	Terminal No.		Signal (V)		Note
				Ignition SW ON (engine OFF)	Engine ON (idling)	
				ON: 0.5 or less OFF: 10 – 13		
A/C relay control	B134		9	ON: 0.5 or less OFF: 10 – 13	ON: 0.5 or less OFF: 12 – 14	—
Radiator fan relay 1 control	B134		14	ON: 0.5 or less OFF: 10 – 13	ON: 0.5 or less OFF: 12 – 14	—
Radiator fan relay 2 control	B134		13	ON: 0.5 or less OFF: 10 – 13	ON: 0.5 or less OFF: 12 – 14	A/C model
Self-shutoff control	B136		12	10 – 13	12 – 14	—
Malfunction indicator light	B134		28	—	—	Light "ON": 1 or less Light "OFF": 10 – 14
Engine speed output	B134		10	—	0 – 13 or more	Waveform
Torque control 1 signal	B136		1	5	5	—
Torque control 2 signal	B136		18	5	5	—
Torque control shutoff signal	B136		15	8	8	—
Purge control solenoid valve	B134		29	ON: 1 or less OFF: 10 – 13	ON: 1 or less OFF: 12 – 14	—
Fuel level sensor	B135		25	0.12 – 4.75	0.12 – 4.75	—
EGR solenoid valve	Signal 1	B134	18	0 or 10 – 13	0 or 12 – 14	—
	Signal 2	B134	17	0 or 10 – 13	0 or 12 – 14	—
	Signal 3	B134	16	0 or 10 – 13	0 or 12 – 14	—
	Signal 4	B134	15	0 or 10 – 13	0 or 12 – 14	—

Description	Connector No.	Terminal No.	Signal (V)		Note
			Ignition SW ON (engine OFF)	Engine ON (idling)	
AT diagnostic input signal	B137	19	1 or less ↔ 4 or more	1 or less ↔ 4 or more	Waveform
Small light switch	B137	20	ON: 0 OFF: 10 – 13	ON: 0 OFF: 12 – 14	—
Blower fan switch	B137	13	ON: 0 OFF: 10 – 13	ON: 0 OFF: 12 – 14	—
Rear defogger switch	B137	4	ON: 0 OFF: 10 – 13	ON: 0 OFF: 12 – 14	—
Front oxygen (A/F) sensor signal 1	B136	13	—	2.05 – 2.25	—
Front oxygen (A/F) sensor signal 2	B136	22	—	1.75 – 1.95	—
Manifold absolute pressure sensor	B135	15	4.0 – 4.8	1.1 – 1.9	—
Intake air temperature sensor	B137	6	3.15 – 3.33	3.15 – 3.33	Intake air temperature: 25°C (77°F)
Air assist injector solenoid valve	B134	12	ON: 1 or less OFF: 10 – 13	ON: 1 or less OFF: 12 – 14	—
Immobilizer input/output	B137	17	Less than 1 ↔ more than 4	Less than 1 ↔ more than 4	—
Immobilizer input/output	B137	18	Less than 1 ↔ more than 4	Less than 1 ↔ more than 4	—
Power steering switch	B136	9	ON: 1 or less OFF: 10 – 13	ON: 1 or less OFF: 12 – 14	—
Front wiper signal	B137	11	ON: 0 or 10 – 13 OFF: 0	ON: 0 or 12 – 14 OFF: 0	—
Generator control	B136	25	0 – 6.5	0 – 6.5	—

Description	Connector No.	Terminal No.	Signal (V)		Note
			Ignition SW ON (engine OFF)	Engine ON (idling)	
SSM/GST communication line	B137	16	1 or less ↔ 4 or more	1 or less ↔ 4 or more	—
GND (sensor)	B135	19	0	0	—
Ground (injector)	B134	35	0	0	—
GND (ignition system)	B136	26	0	0	—
GND (power supply)	B134	7	0	0	—
GND (control system)	B137	14	0	0	—
	B135	21	0	0	—
Ground (oxygen sensor heater 1)	B136	5	0	0	—
Ground (oxygen sensor heater 2)	B136	16	0	0	—

*: without immobilizer