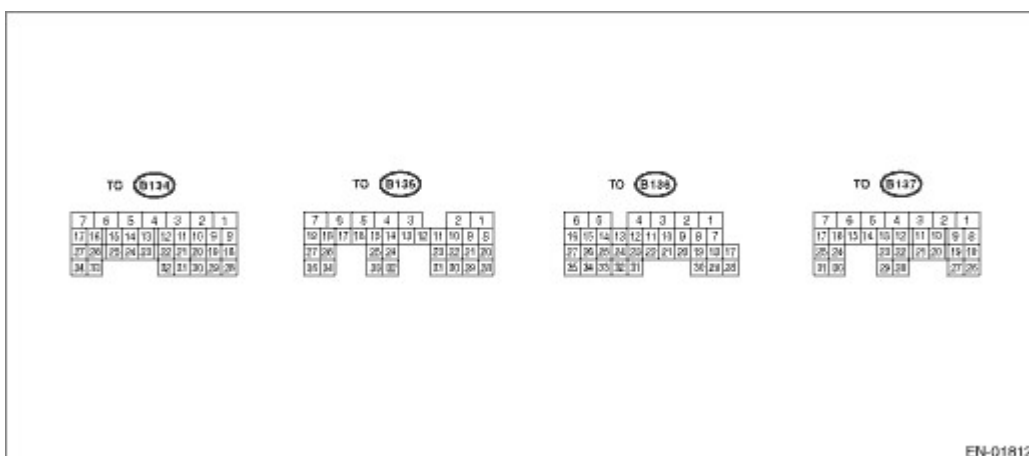


ENGINE (DIAGNOSTICS)(H4DOTC) > Engine Control Module (ECM) I/O Signal**ELECTRICAL SPECIFICATION**

EN-01812

Description		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (engine OFF)	Engine ON (idling)	
Crankshaft position sensor	Signal (+)	B134	13	0	-7 — +7	Waveform
	Signal (-)	B134	14	0	0	—
	Shield	B134	24	0	0	—
Rear oxygen sensor	Signal	B135	4	0	0 — 0.9	—
	Shield	B135	1	0	0	—
	GND (sensor)	B135	30	0	0	—
Front oxygen (A/F) sensor heater	Signal 1	B136	2	0 — 1.0	—	Waveform
	Signal 2	B136	3	0 — 1.0	—	Waveform
Rear oxygen sensor heater signal		B136	4	0 — 1.0	—	Waveform
Engine coolant temperature sensor	Signal	B134	34	1.0 — 1.4	1.0 — 1.4	After engine is warmed-up.
	GND (sensor)	B134	29	0	0	After engine is warmed-up.
Vehicle speed signal		B136	13	0 or 5	0 or 5	"5" and "0" are repeatedly displayed when vehicle is driven.
Air flow sensor	Signal	B135	26	—	0.3 — 4.5	—
	Shield	B135	35	0	0	—
	GND	B135	34	0	0	—
Intake air temperature sensor signal		B135	18	0.3 — 4.6	0.3 — 4.6	—

Description		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (engine OFF)	Engine ON (idling)	
Tumble generator valve position sensor RH	Signal	B134	26	Fully closed: 3.8 — 4.9 Fully open: 0.2 — 0.9		—
	Power supply	B134	19	5	5	—
	GND (sensor)	B134	29	0	0	—
Tumble generator valve position sensor LH	Signal	B134	16	Fully closed: 3.8 — 4.9 Fully open: 0.2 — 0.9		—
	Power supply	B134	19	5	5	—
	GND (sensor)	B134	29	0	0	—
Tumble generator valve RH (open)		B137	22	0 or 10 — 13	0 or 12 — 14	Waveform
Tumble generator valve RH (closed)		B137	23	0 or 10 — 13	0 or 12 — 14	Waveform
Tumble generator valve LH (open)		B137	12	0 or 10 — 13	0 or 12 — 14	Waveform
Tumble generator valve LH (closed)		B137	13	0 or 10 — 13	0 or 12 — 14	Waveform
Wastegate control solenoid valve		B137	27	0 or 10 — 13	0 or 12 — 14	Waveform
Starter switch		B136	32	0	0	Cranking: 8 — 14
A/C switch		B136	24	ON: 10 — 13 OFF: 0	ON: 12 — 14 OFF: 0	—
Ignition switch		B135	19	10 — 13	12 — 14	—
Neutral position switch		B136	31	ON: 10 — 13 OFF: 0	ON: 12 — 14 OFF: 0	—
Test mode connector		B135	27	10 — 13	12 — 14	When connected: 0
Knock sensor	Signal	B134	15	2.8	2.8	—
	Shield	B134	25	0	0	—
Back-up power supply		B135	5	10 — 13	12 — 14	Ignition switch "OFF": 10 — 13
Control module power supply		B134	7	10 — 13	12 — 14	—
		B135	2	10 — 13	12 — 14	—
Sensor power supply		B134	19	5	5	—
Ignition control	#1	B137	18	0	12 — 14	Waveform
	#2	B137	19	0	12 — 14	Waveform
	#3	B137	20	0	12 — 14	Waveform
	#4	B137	21	0	12 — 14	Waveform
Fuel injector	#1	B137	8	10 — 13	1 — 14	Waveform

Description	Connector No.	Terminal No.	Signal (V)		Note	
			Ignition SW ON (engine OFF)	Engine ON (idling)		
#2	B137	9	10 — 13	1 — 14	Waveform	
#3	B137	10	10 — 13	1 — 14	Waveform	
#4	B137	11	10 — 13	1 — 14	Waveform	
Fuel pump control unit	Signal 1	B136	12	0 or 5	0 or 5	Waveform
	Signal 2	B135	33	10 — 13	12 — 14	—
A/C relay control	B136	9	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 12 — 14	—	
Radiator fan relay 1 control	B136	18	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 12 — 14	—	
Radiator fan relay 2 control	B136	29	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 12 — 14	Model with A/C only	
Malfunction indicator light	B136	11	—	—	Light "ON": 1 or less Light "OFF": 10 — 14	
Engine speed output	B136	22	—	0 — 12 or more	Waveform	
Purge control solenoid valve	B137	29	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 12 — 14	Waveform	
Manifold absolute pressure sensor	Signal	B134	6	1.7 — 2.4	1.1 — 1.6	—
	Power supply	B134	19	5	5	
	GND (sensor)	B134	29	0	0	
Fuel level sensor	B135	10	0.12 — 4.75	0.12 — 4.75	—	
Small light switch	B135	15	ON: 0 OFF: 10 — 13	ON: 0 OFF: 12 — 14	—	
Blower fan switch	B135	16	ON: 0 OFF: 10 — 13	ON: 0 OFF: 12 — 14	—	
Rear defogger switch	B135	14	ON: 0 OFF: 10 — 13	ON: 0 OFF: 12 — 14	—	
Power steering oil pressure switch	B134	33	10 — 13	ON: 0 OFF: 12 — 14	—	
Front oxygen (A/F) sensor signal (+)	B135	9	2.8 — 3.2	2.8 — 3.2	—	
Front oxygen (A/F) sensor signal (-)	B135	8	2.4 — 2.7	2.4 — 2.7	—	
Front oxygen (A/F) sensor shield	B135	1	0	0	—	
SSM/GST communication line	B136	16	1 ← → 4	1 ← → 4	—	
GND	B137	1	0	0	—	

Description		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (engine OFF)	Engine ON (idling)	
		B137	2	0	0	—
		B137	3	0	0	—
		B134	5	0	0	—
		B137	7	0	0	—
GND (ignition system)		B137	6	0	0	—
		B137	26	0	0	—
Camshaft position sensor (LH)	Signal (+)	B134	21	0 — 0.9	ON: 0 OFF: 4.7 — 5.3	Waveform
	Signal (-)	B134	22	0	0	—
Camshaft position sensor (RH)	Signal (+)	B134	11	0 — 0.9	ON: 0 OFF: 4.7 — 5.3	Waveform
	Signal (-)	B134	22	0	0	—
Electronic throttle control	Main	B134	18	0.64 — 0.72 Fully open: 3.96	0.64 — 0.72 (After engine is warmed-up.)	Fully closed: 0.6 Fully open: 3.96
	Sub	B134	28	1.51 — 1.58 Fully open: 4.17	1.51 — 1.58 (After engine is warmed-up.)	Fully closed: 1.48 Fully open: 4.17
	Power supply	B134	19	5	5	—
	GND (sensor)	B134	29	0	0	—
Electronic throttle control motor (+)		B137	5	Duty waveform	Duty waveform	Drive frequency: 500 Hz
Electronic throttle control motor (-)		B137	4	Duty waveform	Duty waveform	Drive frequency: 500 Hz
Electronic throttle control motor power supply		B136	1	10 — 13	12 — 14	—
Electronic throttle control motor relay		B136	21	ON: 0 OFF: 10 — 13	ON: 0 OFF: 12 — 14	When ignition switch is turned to ON: ON
Oil flow control solenoid (LH)	Signal (+)	B137	15	ON: 10 — 13 OFF: 0	ON: 12 — 14 OFF: 0	—
	Signal (-)	B137	14	0	0	—
Oil flow control solenoid (RH)	Signal (+)	B137	17	ON: 10 — 13 OFF: 0	ON: 12 — 14 OFF: 0	—
	Signal (-)	B137	16	0	0	—

Description	Connector No.	Terminal No.	Signal (V)		Note	
			Ignition SW ON (engine OFF)	Engine ON (idling)		
Accelerator pedal position sensor	Main sensor signal	B135	23	Fully closed: 1 Fully open: 3.5	Fully closed: 1 Fully open: 3.5	—
	Main power supply	B135	21	5	5	—
	GND (main sensor)	B135	29	0	0	—
	Sub sensor signal	B135	31	Fully closed: 1 Fully open: 3.5	Fully closed: 1 Fully open: 3.5	—
	Sub power supply	B135	22	5	5	—
	GND (sub sensor)	B135	30	0	0	—
Cruise control main switch	B135	12	ON: 0 OFF: 10 — 13	ON: 0 OFF: 12 — 14	—	
Cruise control main light	B135	6	ON: 0 OFF: 10 — 13	ON: 0 OFF: 12 — 14	—	
Clutch switch	B136	25	When clutch pedal is depressed: 0 When clutch pedal is released: 10 — 13	When clutch pedal is depressed: 0 When clutch pedal is released: 12 — 14	—	
SET/COAST switch	B135	24	ON: 10 — 13 OFF: 0	ON: 12 — 14 OFF: 0	—	
RESUME/ACC switch	B135	13	ON: 10 — 13 OFF: 0	ON: 12 — 14 OFF: 0	—	
Brake switch 1	B135	20	When brake pedal is depressed: 0 When brake pedal is released: 10 — 13	When brake pedal is depressed: 0 When brake pedal is released: 12 — 14	—	
Brake switch 2	B135	28	When brake pedal is depressed: 10 — 13	When brake pedal is depressed: 12 — 14	—	

Description		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (engine OFF)	Engine ON (idling)	
				When brake pedal is released: 0	When brake pedal is released: 0	
Secondary air pipe pressure sensor	Signal	B134	27	1.7 – 2.4	1.1 – 1.6	—
	Power supply	B134	19	5	5	
	GND (sensor)	B134	29	0	0	
Secondary air combination valve relay 1		B136	30	ON: 0 OFF: 10 – 13	ON: 0 OFF: 12 – 14	—
Secondary air pump relay		B136	8	ON: 0 OFF: 10 – 13	ON: 0 OFF: 12 – 14	—