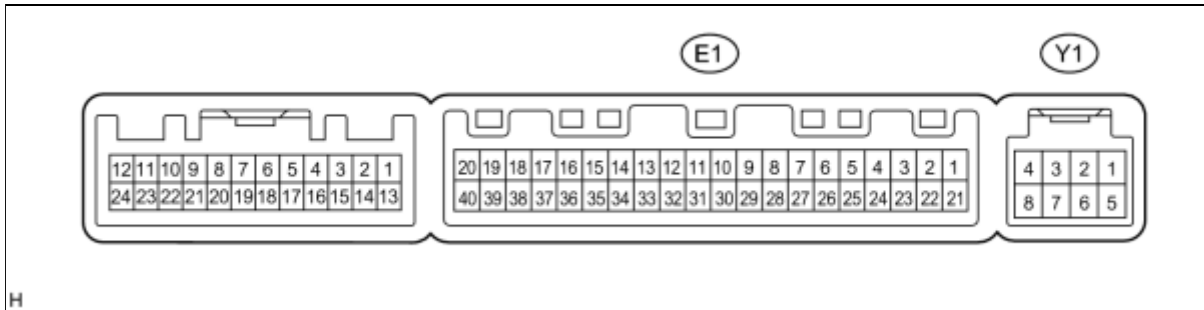


Last Modified: 7-13-2007		1.7 U
Service Category: Vehicle Interior		Section: Heating/Air Conditioning
Model Year: 2008	Model: ES350	Doc ID: RM0000026DR00NX
Title: AIR CONDITIONING: AIR CONDITIONING SYSTEM: TERMINALS OF ECU (2008 ES350)		

TERMINALS OF ECU

1. A/C AMPLIFIER



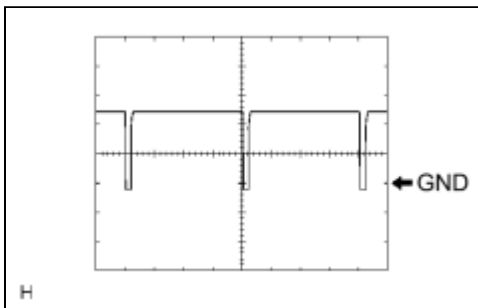
HINT:

Check from the rear of the connector while it is connected to the A/C amplifier.

TERMINAL NO. (SYMBOLS)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
E1-1 (IG+) - E1-14 (GND)	V - W-B	Power source (IG)	Engine switch on (IG)	10 to 14 V
E1-1 (IG+) - E1-14 (GND)	V - W-B	Power source (IG)	Engine switch off	Below 1 V
E1-2 (SOL+) - E1-14 (GND)	W - W-B	A/C compressor operation signal	Engine is running A/C switch: ON Blower switch: LO	Pulse generation (See waveform 1)
E1-5 (TAM) - E1-14 (GND)	G - W-B	A/C ambient temperature sensor signal	Engine switch on (IG) at 25°C (77°F)	1.35 to 1.75 V
E1-5 (TAM) - E1-14 (GND)	G - W-B	A/C ambient temperature sensor signal	Engine switch on (IG) at 40°C (104°F)	0.9 to 1.2 V
E1-6 (DGS) - E1-14 (GND)	LG - W-B	Exhaust gas sensor signal (HC, CO)	After 30 seconds from engine switch on (IG) and sensor is exposed to exhaust gas.	1.0 to 4.5 V
E1-7 (DGS1) - E1-14 (GND)	P - W-B	Exhaust gas sensor signal (NO _x)	After 30 seconds from engine switch on (IG) and sensor is exposed to exhaust gas.	1.0 to 4.5 V
E1-8 (LOCK) - E1-14 (GND)	G - W-B	A/C compressor lock sensor signal	Engine is running Blower switch: LO A/C switch: ON	Pulse generation (See waveform 2)
E1-9 (PRE) - E1-13 (SG-2)	R - L	A/C pressure sensor signal	Start engine, Operate A/C system, Refrigerant pressure: Abnormal pressure (more than 3,140 kPa (32.0 kgf/cm ² , 455 psi))	4.74 V or higher

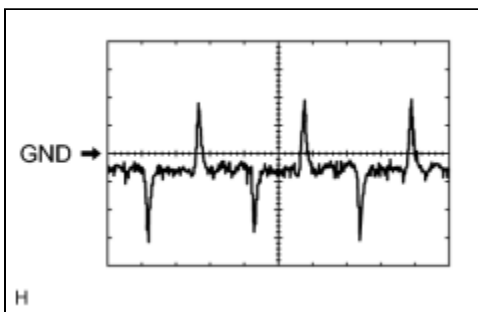
E1-9 (PRE) - E1-13 (SG-2)	R - L	A/C pressure sensor signal	Start engine, Operate A/C system, Refrigerant pressure: Abnormal pressure (less than 196 kPa (2.0 kgf/cm ² , 28 psi))	Below 0.76 V
E1-9 (PRE) - E1-13 (SG-2)	R - L	A/C pressure sensor signal	Start engine, Operate A/C system, Refrigerant pressure: Abnormal pressure (more than 3,140 kPa (32.0 kgf/cm ² , 455 psi) or less than 196 kPa (2.0 kgf/cm ² , 28 psi))	0.76 to 4.74 V
E1-10 (S5-3) - E1-13 (SG-2)	G - L	Power supply for A/C pressure sensor	Engine switch on (IG)	4.5 to 5.5 V
E1-11 (CANH) - E1-12 (CANL)	GR - BR	CAN communication system	CAN communication circuit	Pulse generation
E1-13 (SG-2) - Body ground	L - Body ground	Ground for A/C pressure sensor, A/C ambient temperature sensor, A/C lock sensor	Always	Below 1 V
E1-14 (GND) - Body ground	W-B - Body ground	Ground for main power supply	Always	Below 1 V
E1-20 (MGC) - E1-14 (GND)	B - W-B	A/C compressor magnetic clutch operation signal	Engine switch on (IG) Blower switch: LO A/C switch: OFF	10 to 14 V
E1-20 (MGC) - E1-14 (GND)	B - W-B	A/C compressor magnetic clutch operation signal	Engine switch on (IG) Blower switch: LO A/C switch: ON	Below 1 V
E1-21 (B) - E1-14 (GND)	GR - W-B	Power source (Back-up)	Always	10 to 14 V
E1-23 (BLW) - E1-14 (GND)	R - W-B	Blower motor speed control signal	Engine switch on (IG) Blower switch: ON	Pulse generation (See waveform 3)
E1-29 (TR) - E1-34 (SG-1)	BR - LG	A/C room temperature sensor signal	Engine switch on (IG) Cabin temperature at 25°C (77°F)	1.8 to 2.2 V
E1-29 (TR) - E1-34 (SG-1)	BR - LG	A/C room temperature sensor signal	Engine switch on (IG) Cabin temperature at 40°C (104°F)	1.2 to 1.6 V
E1-32 (TSP) - E1-14 (GND)	Y - W-B	A/C solar sensor signal (for Front passenger side)	Engine switch on (IG) Solar sensor is subjected to electric light.	0.8 to 4.3 V
E1-32 (TSP) - E1-14 (GND)	Y - W-B	A/C solar sensor signal (for Front passenger side)	Engine switch on (IG) Solar sensor is covered with a cloth.	Below 0.8 V
E1-33 (TSD) - E1-14 (GND)	O - W-B	A/C solar sensor signal (for Driver side)	Engine switch on (IG) Solar sensor is subjected to electric light.	0.8 to 4.3 V
E1-33 (TSD) - E1-14 (GND)	O - W-B	A/C solar sensor signal (for Driver side)	Engine switch on (IG) Solar sensor is covered with a cloth.	Below 0.8 V
E1-34 (SG-1) - Body ground	LG - Body ground	Ground for A/C room temperature sensor	Always	Below 1 V
E1-37 (LIN1) -	GR - W-B	LIN communication signal	Engine switch on (IG)	Pulse

E1-14 (GND)				generation
E1-38 (RDFG) - E1-14 (GND)	G - W-B	DEF relay signal	Engine switch on (IG) REAR DEF switch: ON	Below 1 V
E1-38 (RDFG) - E1-14 (GND)	G - W-B	DEF relay signal	Engine switch on (IG) REAR DEF switch: OFF	10 to 14 V
Y1-2 (BUS G) - Body ground	-	Ground for BUS IC	Always	Below 1 V
Y1-3 (BUS) - Y1-2 (BUS G)	-	BUS IC control signal	Engine switch off → on (IG)	Pulse generation
Y1-4 (B BUS) - Y1-2 (BUS G)	-	Power supply for BUS IC	Engine switch off	Below 1 V
Y1-4 (B BUS) - Y1-2 (BUS G)	-	Power supply for BUS IC	Engine switch on (IG)	10 to 14 V
Y1-5 (SGA) - Body ground	-	Ground for evaporator temperature sensor	Always	Below 1 V
Y1-6 (TEA) - Y1-5 (SGA)	-	A/C evaporator temperature sensor signal	Engine switch on (IG) Evaporator temperature at 0°C (32°F)	1.7 to 2.1 V
Y1-6 (TEA) - Y1-5 (SGA)	-	A/C evaporator temperature sensor signal	Engine switch on (IG) Evaporator temperature at 15°C (59°F)	0.7 to 1.3 V



(a) Waveform 1:

ITEM	CONTENTS
Terminal No. (Symbols)	E1-2 (SOL+) - E1-14 (GND)
Tool Setting	5 V/DIV., 500 μs./DIV.
Vehicle Condition	Engine is running A/C switch: ON

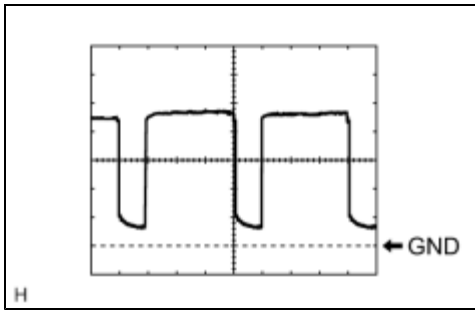


(b) Waveform 2:

ITEM	CONTENTS
Terminal No. (Symbols)	E1-8 (LOCK) - E1-14 (GND)
Tool Setting	200 mV/DIV., 10 ms./DIV.
Vehicle Condition	Engine is running Blower switch: LO A/C switch: ON

(c) Waveform 3:

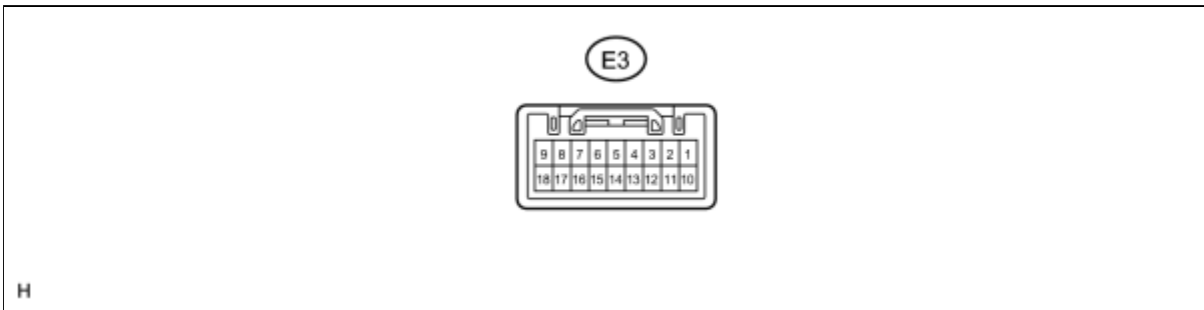
ITEM	CONTENTS
Terminal No. (Symbols)	E1-23 (BLW) - E1-14 (GND)
Tool Setting	1 V/DIV., 500 μs./DIV.



Vehicle Condition

 Engine switch on (IG)
 Blower switch: ON

2. A/C CONTROL ASSEMBLY



HINT:

Check from the rear of the connector while it is connected to the A/C control assembly.

TERMINAL NO. (SYMBOLS)	WIRING COLOR	TERMINAL DESCRIPTION	CONDITION	SPECIFIED CONDITION
E3-1 (+B) - E3-18 (GND)	GR - W-B	Power source (Back-up)	Always	10 to 14 V
E3-2 (IG+) - E3-18 (GND)	V - W-B	Power source (IG)	Engine switch off	Below 1 V
E3-2 (IG+) - E3-18 (GND)	V - W-B	Power source (IG)	Engine switch on (IG)	10 to 14 V
E3-10 (ACC) - E3-18 (GND)	L - W-B	Power source (ACC)	Engine switch off	Below 1 V
E3-10 (ACC) - E3-18 (GND)	L - W-B	Power source (ACC)	Engine switch on (ACC)	10 to 14 V
E3-15 (TX+) - E3-18 (GND)	GR - W-B	LIN communication circuit	Engine switch on (IG)	Pulse generation
E3-18 (GND) - Body ground	W-B - Body ground	Ground for A/C control assembly	Always	Below 1 V

