

Reference Value

VALUES ON THE DIAGNOSIS TOOL

note	The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to M.U.T.-III SE display items.		
Monitor	Condition		Value/Status
Compressor request 1	Engine running		A/C switch ON (A/C compressor is operating) A/C switch OFF
Easy fill tire alert horn req	Easy fill tire alert ON		On
	Easy fill tire alert OFF		Off
Cranking enable-TCM	Ignition switch ON	Cranking stop required	
		Cranking allowed	
		Cranking not allowed	
	Receives invalid CAN signal		Unavailable value
Cranking enable-ECM	No request		No request
	Cranking stop required		Stop
	Cranking allowed		Permit
	Cranking not allowed		Prohibit
DTRL REQ	Engine running and parking brake is released	<ul style="list-style-type: none"> Lighting switch OFF (Except for Canada) Lighting switch AUTO (Only when the illumination judgement by auto light system is OFF) (For Canada) 	
		Lighting switch 2ND	
COOLING FAN REQ	Engine running		0 – 100%
FR WIPER REQ	Receives invalid CAN signal		NG
	Ignition switch ON	Front wiper HI operation	
		Front wiper LO operation	
		Front wiper forced termination	
	Front wiper stopped		RETURN
HIGH BEAM REQ	Lighting switch 2ND	Lighting switch HI	
		Lighting switch LO	

Monitor	Condition		Value/Status	
Horn request	Receives invalid CAN signal		NG	
	C mode (Horn chirp mode) return horn request		Return	
	Theft warning alarm request		Thft warn	
	Horn chirp request		Hrn chirp	
	Panic alarm request		Panic	
	Horn OFF request		Off	
	No request		No request	
Low beam request	Lighting switch 2ND		On	
	<ul style="list-style-type: none"> Lighting switch OFF (Except for Canada) Lighting switch AUTO (For Canada) 		Off	
POSITION LIGHT REQ	Lighting switch 1ST		On	
	<ul style="list-style-type: none"> Lighting switch OFF (Except for Canada) Lighting switch AUTO (For Canada) 		Off	
IGNITION SW	Ignition switch START		Start	
	Ignition switch ON		On	
	No request		No request	
	Ignition switch OFF		Off	
FRONT FOG LIGHT REQ	Lighting switch 2ND	Front fog light switch ON		On
		Front fog light switch OFF		Off
Shift position	Receives invalid CAN signal		NG	
	Engine running	Manual mode		M
		D range		D
		N range		N
		R range		R
	P range		P	
COMP ECV STATUS	ECV control output	Malfunction		NG
		Normal		OK
BATTERY VOLTAGE	Ignition switch ON		11 V – 14 V	
FR WIPER STOP POSITION	Ignition switch ON	Front wiper stop position		Stop P
		Except front wiper stop position		Active
IGNITION POWER SUPPLY	Ignition switch ON		On	
	Ignition switch OFF		Off	
HOOD SW (CAN)	Close the hood		Close	
	Open the hood		Open	
	Transmits invalid CAN signal		NG	
A/C RELAY	Engine running	A/C switch ON (A/C compressor is operating)		Compressor clutch on
		A/C switch OFF		Off
REVERSE SIGNAL (CAN)	Transmits invalid CAN signal		NG	
	Ignition switch ON	R range		On
		Except R range		Off

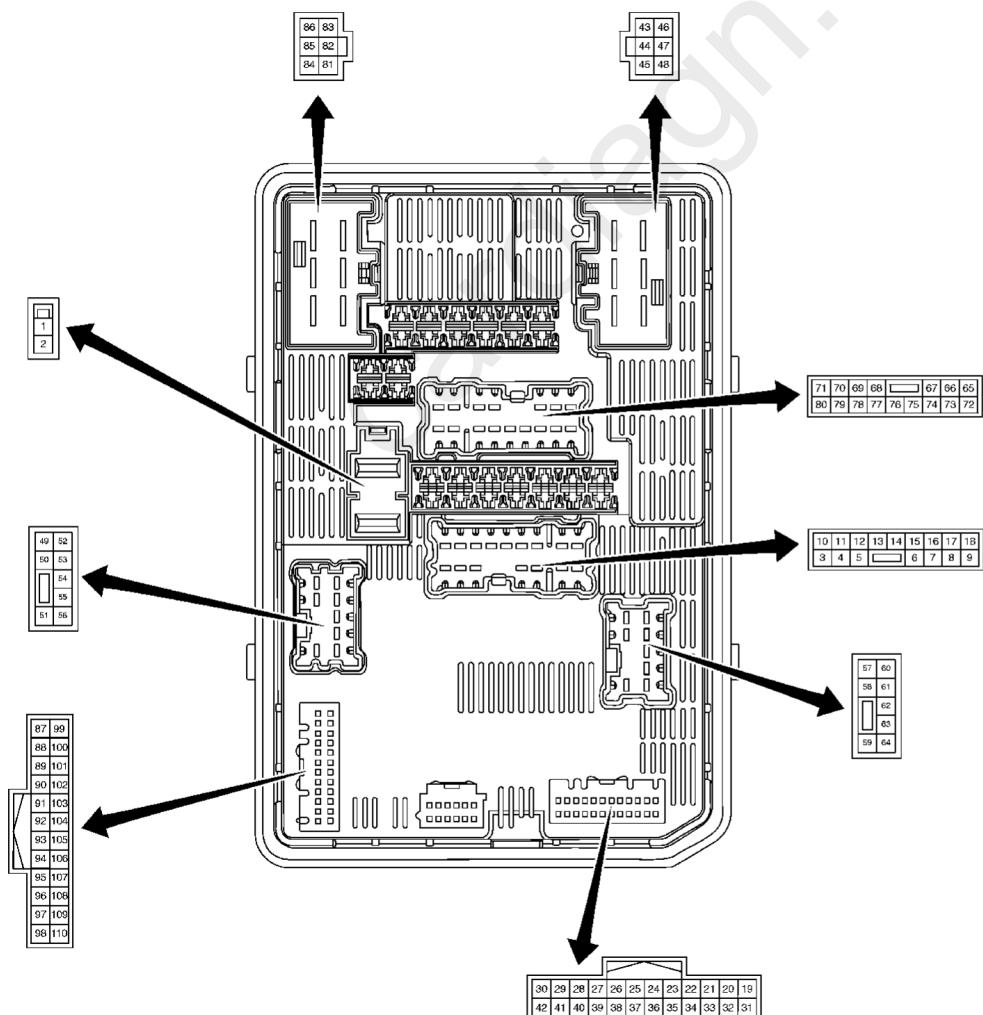
Monitor	Condition		Value/Status
COMP ECV CURRENT	Engine running	A/C switch ON (A/C compressor is operating)	0.00 A – 1.00 A
		A/C switch OFF	0.00 A
Starter&starter cont relay stat	Starter relay and starter cut relay are ON		On, On
	Transmits invalid CAN signal		invalid
	Starter relay is ON		On, Off
	Starter relay and starter cut relay are OFF		Off, Off
Hood switch	Close the hood		Close
	Open the hood		Open
IGN RELAY	Ignition switch ON		Close
	Ignition switch OFF		Open
Cooling fan relay-2	Engine running	Cooling fan operated	ON
		Cooling fan stop	OFF
Compressor	Engine running	A/C switch ON (A/C compressor is operating)	ON
		A/C switch OFF	OFF
Front wiper HI/LO relay	Ignition switch ON	Front wiper HI operated	ON
		Except front wiper HI operated	OFF
Horn relay	Horn ON		ON
	Horn OFF		OFF
Front wiper relay	Ignition switch ON	Front wiper is operating	ON
		Front wiper stop	OFF
Battery current sen value (LIN)	Engine running <ul style="list-style-type: none"> Battery: Full charge Engine Idling 		(-200.00) – (+300.00) A
Headlight warning (LH) (LIN)	Ignition switch OFF (auto ACC status) or ON	Headlight LO (LH): Normal	Close
		Headlight LO (LH): Malfunction	Open
Headlight warning (RH) (LIN)	Ignition switch OFF (auto ACC status) or ON	Headlight LO (RH): Normal	Close
		Headlight LO (RH): Malfunction	Open
Compressor ECV duty	Engine running	A/C switch ON (A/C compressor is operating)	0 – 100%
		A/C switch OFF	0%
Cooling fan relay-3	Engine running		0 – 100%
Front fog light (LH)	Lighting switch 2ND	Front fog light switch ON	100.0%
		Front fog light switch OFF	0.0%
Front fog light (RH)	Lighting switch 2ND	Front fog light switch ON	100.0%
		Front fog light switch OFF	0.0%
Tail light (LH)	Lighting switch 1ST		100.0%
	<ul style="list-style-type: none"> Lighting switch OFF (Except for Canada) Lighting switch AUTO (For Canada) 		0.0%

Monitor	Condition	Value/Status	
	Lighting switch 1ST	100.0%	
Tail light (RH)	<ul style="list-style-type: none"> Lighting switch OFF (Except for Canada) Lighting switch AUTO (For Canada) 	0.0%	
Headlight LO (RH)	Ignition switch OFF (auto ACC status) or ON Ignition switch OFF (not auto ACC status)	100.0% 0.0%	
Headlight LO (LH)	Ignition switch OFF (auto ACC status) or ON Ignition switch OFF (not auto ACC status)	100.0% 0.0%	
Parking light (LH) req (LIN)	<ul style="list-style-type: none"> Lighting switch OFF (Except for Canada) Lighting switch AUTO (For Canada) 	Close	
	Lighting switch 1ST	Open	
DTRL (LH) req (LIN)	Engine running and parking brake is released	Lighting switch 2ND <ul style="list-style-type: none"> Lighting switch OFF (Except for Canada) Lighting switch AUTO (Only when the illumination judgement by auto light system is OFF) (For Canada) 	Close Open
Headlight LO (LH) req (LIN)	<ul style="list-style-type: none"> Lighting switch OFF (Except for Canada) Lighting switch AUTO (For Canada) 	Close	
	Lighting switch 2ND	Open	
Headlight HI (LH) req (LIN)	Lighting switch 2ND	Lighting switch LO Lighting switch HI	Close Open
Parking light (RH) req (LIN)	<ul style="list-style-type: none"> Lighting switch OFF (Except for Canada) Lighting switch AUTO (For Canada) 	Close	
	Lighting switch 1ST	Open	
DTRL (RH) req (LIN)	Engine running and parking brake is released	Lighting switch 2ND <ul style="list-style-type: none"> Lighting switch OFF (Except for Canada) Lighting switch AUTO (Only when the illumination judgement by auto light system is OFF) (For Canada) 	Close Open

Monitor	Condition	Value/Status
Parking/DTRL (LH) output (LIN)	Engine running and parking brake is released	<ul style="list-style-type: none"> • Lighting switch OFF (Except for Canada) • Lighting switch AUTO (Only when the illumination judgement by auto light system is OFF) (For Canada)
	Lighting switch 2ND	6.0%
	Engine stop	<ul style="list-style-type: none"> • Lighting switch OFF (Except for Canada) • Lighting switch AUTO (Only when the illumination judgement by auto light system is OFF) (For Canada)
Parking/DTRL (RH) output (LIN)	Engine running and parking brake is released	<ul style="list-style-type: none"> • Lighting switch OFF (Except for Canada) • Lighting switch AUTO (Only when the illumination judgement by auto light system is OFF) (For Canada)
	Lighting switch 2ND	6.0%
	Engine stop	<ul style="list-style-type: none"> • Lighting switch OFF (Except for Canada) • Lighting switch AUTO (Only when the illumination judgement by auto light system is OFF) (For Canada)
Headlight HI (RH) req (LIN)	Lighting switch 2ND	<u>Lighting switch LO</u> <u>Lighting switch HI</u>
		Close Open
Headlight LO (RH) req (LIN)	<ul style="list-style-type: none"> • Lighting switch OFF (Except for Canada) • Lighting switch AUTO (For Canada) 	Close
	Lighting switch 2ND	Open
T LIGHT LH CIRC MALFUNCTN	Tail light LH power supply circuit reaches the retry upper limit.	0 – 1
NMB T LIGHT LH CIRC RETRY	Retry of tail light LH power supply circuit is permitted.	0 – 20
Fr fog light (LH) circ malfunctn	Front fog light LH power supply circuit reaches the retry upper limit.	0 – 1
T LIGHT RH CIRC MALFUNCTN	Tail light RH power supply circuit reaches the retry upper limit.	0 – 1

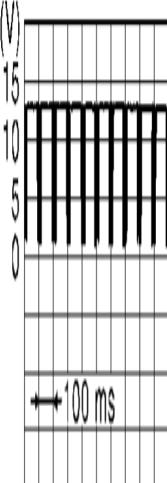
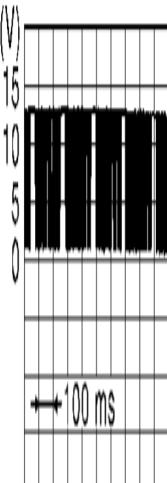
Monitor	Condition	Value/Status
NMB T LIGHT RH CIRC RETRY	Retry of tail light RH power supply circuit is permitted.	0 – 20
NMB T LIGHT RH CIRC SHORT	Tail light RH power supply circuit detects over current.	0 – 5
NMB F FOG LH CIRC RETRY	Retry of front fog light LH power supply circuit is permitted.	0 – 20
NMB F FOG LH CIRC SHORT	Front fog light LH power supply circuit detects over current.	0 – 5
F FOG RH CIRC MALFUNCTN	Front fog light RH power supply circuit reaches the retry upper limit.	0 – 1
NMB F FOG RH CIRC RETRY	Retry of front fog light RH power supply circuit is permitted.	0 – 20
NMB F FOG RH CIRC SHORT	Front fog light RH power supply circuit detects over current.	0 – 5
NMB T LIGHT LH CIRC SHORT	Tail light LH power supply circuit detects over current.	0 – 5

TERMINAL LAYOUT



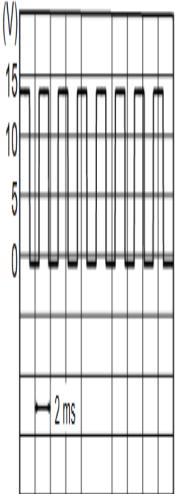
PHYSICAL VALUES

Terminal No. (Wire color)	Description		Condition	Value (Approx.)				
	Signal name	Input/Output						
+	-							
1 (W)	Ground	Battery power supply	Input	Ignition switch OFF 6 – 16 V				
2 (L)	Ground	Battery power supply	Input	Ignition switch OFF 6 – 16 V				
4 (R)	Ground	Tail light LH power supply	Output	<ul style="list-style-type: none"> Lighting switch OFF (Except for Canada) Lighting switch AUTO (For Canada) Lighting switch 1ST 6 – 16 V				
5 (Y)	Ground	Front window washer relay control	Output	<table> <tr> <td>Ignition switch ON</td> <td>Front washer switch OFF 6 – 16 V</td> </tr> <tr> <td></td> <td>Front washer switch ON 0 – 1 V</td> </tr> </table>	Ignition switch ON	Front washer switch OFF 6 – 16 V		Front washer switch ON 0 – 1 V
Ignition switch ON	Front washer switch OFF 6 – 16 V							
	Front washer switch ON 0 – 1 V							
6 (SB)	Ground	Rear window washer relay control	Output	<table> <tr> <td>Ignition switch ON</td> <td>Rear washer switch OFF 6 – 16 V</td> </tr> <tr> <td></td> <td>Rear washer switch ON 0 – 1 V</td> </tr> </table>	Ignition switch ON	Rear washer switch OFF 6 – 16 V		Rear washer switch ON 0 – 1 V
Ignition switch ON	Rear washer switch OFF 6 – 16 V							
	Rear washer switch ON 0 – 1 V							
8 (LG)	Ground	ECM relay power supply	Output	<table> <tr> <td>Ignition switch OFF (More than a few seconds after turning ignition switch OFF) 0 – 1 V</td> </tr> <tr> <td>For a few seconds after turning ignition switch OFF or ignition switch ON 6 – 16 V</td> </tr> </table>	Ignition switch OFF (More than a few seconds after turning ignition switch OFF) 0 – 1 V	For a few seconds after turning ignition switch OFF or ignition switch ON 6 – 16 V		
Ignition switch OFF (More than a few seconds after turning ignition switch OFF) 0 – 1 V								
For a few seconds after turning ignition switch OFF or ignition switch ON 6 – 16 V								
9 (L)	Ground	Horn relay control	Output	<table> <tr> <td>Horn OFF 6 – 16 V</td> </tr> <tr> <td>Horn ON 0 – 1 V</td> </tr> </table>	Horn OFF 6 – 16 V	Horn ON 0 – 1 V		
Horn OFF 6 – 16 V								
Horn ON 0 – 1 V								
11 (BR)	Ground	Ignition power supply	Output	<table> <tr> <td>Ignition switch OFF 0 – 1 V</td> </tr> <tr> <td>Ignition switch ON 6 – 16 V</td> </tr> </table>	Ignition switch OFF 0 – 1 V	Ignition switch ON 6 – 16 V		
Ignition switch OFF 0 – 1 V								
Ignition switch ON 6 – 16 V								
12 (B)	Ground	Ground	—	Ignition switch ON 0 – 1 V				
17 (W)	Ground	Tail light RH power supply	Output	<ul style="list-style-type: none"> Lighting switch OFF (Except for Canada) Lighting switch AUTO (For Canada) Lighting switch 1ST 6 – 16 V				
19 (LG)	Ground	Ignition power supply	Output	<table> <tr> <td>Ignition switch OFF 0 – 1 V</td> </tr> <tr> <td>Ignition switch ON 6 – 16 V</td> </tr> </table>	Ignition switch OFF 0 – 1 V	Ignition switch ON 6 – 16 V		
Ignition switch OFF 0 – 1 V								
Ignition switch ON 6 – 16 V								
22 (P)	Ground	CAN-L	Input/Output	—				
24 (L)	Ground	CAN-H	Input/Output	—				

Terminal No. (Wire color)	Description			Condition	Value (Approx.)
	+	-	Signal name	Input/Output	
31 (B)	Ground	Ground	—	Ignition switch ON	0 – 1 V
33 (BR)	Ground	Front wiper stop position	Input	Ignition switch ON	Front wiper stop position
					Other than above
37 (G)	Ground	LIN (Battery current sensor)	Input/Output	Ignition switch ON	
38 (R)	Ground	LIN (Front combination light)	Input/Output	Ignition switch ON	
43 (LG)	Ground	Ignition power supply	Output	Ignition switch OFF	0 – 1 V
				Ignition switch ON	6 – 16 V
45 (V)	Ground	Front wiper motor HI power supply	Output	Ignition switch ON	Front wiper switch OFF
					Front wiper switch HI
					0 – 1 V
					6 – 16 V

Terminal No. (Wire color)	Description			Condition	Value (Approx.)	
	+	-	Signal name	Input/Output		
46 (W)	Ground	Fuel pump power supply		Output	More than a few seconds after turning ignition switch ON	0 – 1 V
					For a few seconds after turning ignition switch ON or engine running	6 – 16 V
47 (B)	Ground	Ground	—	Ignition switch ON		0 – 1 V
48 (Y)	Ground	Front wiper motor LO power supply		Output	Ignition switch ON	0 – 1 V
					Front wiper switch OFF Front wiper switch LO	6 – 16 V
50 (L)	Ground	LED headlight control module LH control		Output	Ignition switch OFF (not auto ACC status)	0 – 1 V
					Ignition switch OFF (auto ACC status) or ON	6 – 16 V
51 (P)	Ground	Front fog light LH power supply		Output	Lighting switch 2ND	Front fog light switch OFF
					Front fog light switch ON	6 – 16 V
52 (SB)	Ground	Hood switch		Input	Close the hood	0 – 1 V
					Open the hood	6 – 16 V
55 (G)	Ground	Ignition power supply		Output	Ignition switch OFF	0 – 1 V
					Ignition switch ON	6 – 16 V
57 (G)	Ground	Front fog light RH power supply		Output	Lighting switch 2ND	Front fog light switch OFF
					Front fog light switch ON	6 – 16 V
62 (P)	Ground	LED headlight control module RH control		Output	Ignition switch OFF (not auto ACC status)	0 – 1 V
					Ignition switch OFF (auto ACC status) or ON	6 – 16 V
65 (P)	Ground	Compressor power supply		Output	Engine running	A/C switch OFF
					A/C switch ON (A/C compressor is operating)	6 – 16 V
66 (R)	Ground	ECM relay power supply		Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)	0 – 1 V
					For a few seconds after turning ignition switch OFF or ignition switch ON	6 – 16 V
70 (LG)	Ground	Ignition power supply		Output	Ignition switch OFF	0 – 1 V
					Ignition switch ON	6 – 16 V
71 (SB)	Ground	Ignition power supply		Output	Ignition switch OFF	0 – 1 V
					Ignition switch ON	6 – 16 V

Terminal No. (Wire color)	Description		Condition	Value (Approx.)	
	+	-	Signal name	Input/Output	
73 (G)	Ground	ECM relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)	0 – 1 V
				For a few seconds after turning ignition switch OFF or ignition switch ON	6 – 16 V
75 (V)	Ground	ECM relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)	0 – 1 V
				For a few seconds after turning ignition switch OFF or ignition switch ON	6 – 16 V
76 (BR)	Ground	Fuel pump relay control	Input	More than a few seconds after turning ignition switch ON	6 – 16 V
				For a few seconds after turning ignition switch ON or engine running	0 – 1 V
78 (L)	Ground	ECM relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)	0 – 1 V
				For a few seconds after turning ignition switch OFF or ignition switch ON	6 – 16 V
81 (L)	Ground	Battery power supply	Input	Ignition switch OFF	6 – 16 V
83 (G)	Ground	Starter motor power supply	Output	Other than at engine cranking	0 – 1 V
				At engine cranking	6 – 16 V
86 (GR)	Ground	Starter relay power supply	Input	Other than at engine cranking	Less than 4 V (IPDM E/R always outputs the voltage to detect the ON/OFF state of starter cut relay)
				At engine cranking	
93 (LG)	Ground	ECM relay control	Input	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)	6 – 16 V
				For a few seconds after turning ignition switch OFF or ignition switch ON	0 – 1 V

Terminal No. (Wire color)	Description		Condition	Value (Approx.)
	Signal name	Input/Output		
+	-			
98 (Y)	Ground	ECV control	Output	Duty ratio: 0% (MODE5 or MODE6)
				Electrical control valve
				<p>Select "HVAC TEST" in "Actuator Test" mode of "HVAC".</p> <p>note</p> 
106 (V)	Ground	Cooling fan control module control	Output	Duty ratio: 40% (MODE3 or MODE4)
				Duty ratio: 80 – 90% (MODE1, MODE2 or MODE7)
107 (G)	Ground	Cooling fan relay control	Output	Engine running
				<p>Cooling fan stop</p> <p>Cooling fan operated</p>
				6 – 16 V
				0 – 16 V
				6 – 16 V
				0 – 1 V