

# 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)	On
		A/C switch OFF	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	Stop
		Cranking allowed	Permit
		Cranking not allowed	Prohibit
	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"> <li>Lighting switch OFF (Except for Canada)</li> <li>Lighting switch AUTO (Only when the illumination judgement by auto light system is OFF) (For Canada)</li> </ul>	On
		Lighting switch 2ND	Off
COOLING FAN REQ	Engine running		0 – 100%
FR WIPER REQ	Receives invalid CAN signal		NG
	Ignition switch ON	Front wiper HI operation	HIGH
		Front wiper LO operation	LOW
		Front wiper forced termination	STOP
		Front wiper stopped	RETURN
HIGH BEAM REQ	Lighting switch 2ND	Lighting switch HI	On
		Lighting switch LO	Off

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"> <li>Lighting switch OFF (Except for Canada)</li> <li>Lighting switch AUTO (For Canada)</li> </ul>		Off
POSITION LIGHT REQ	Lighting switch 1ST		On
	<ul style="list-style-type: none"> <li>Lighting switch OFF (Except for Canada)</li> <li>Lighting switch AUTO (For Canada)</li> </ul>		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

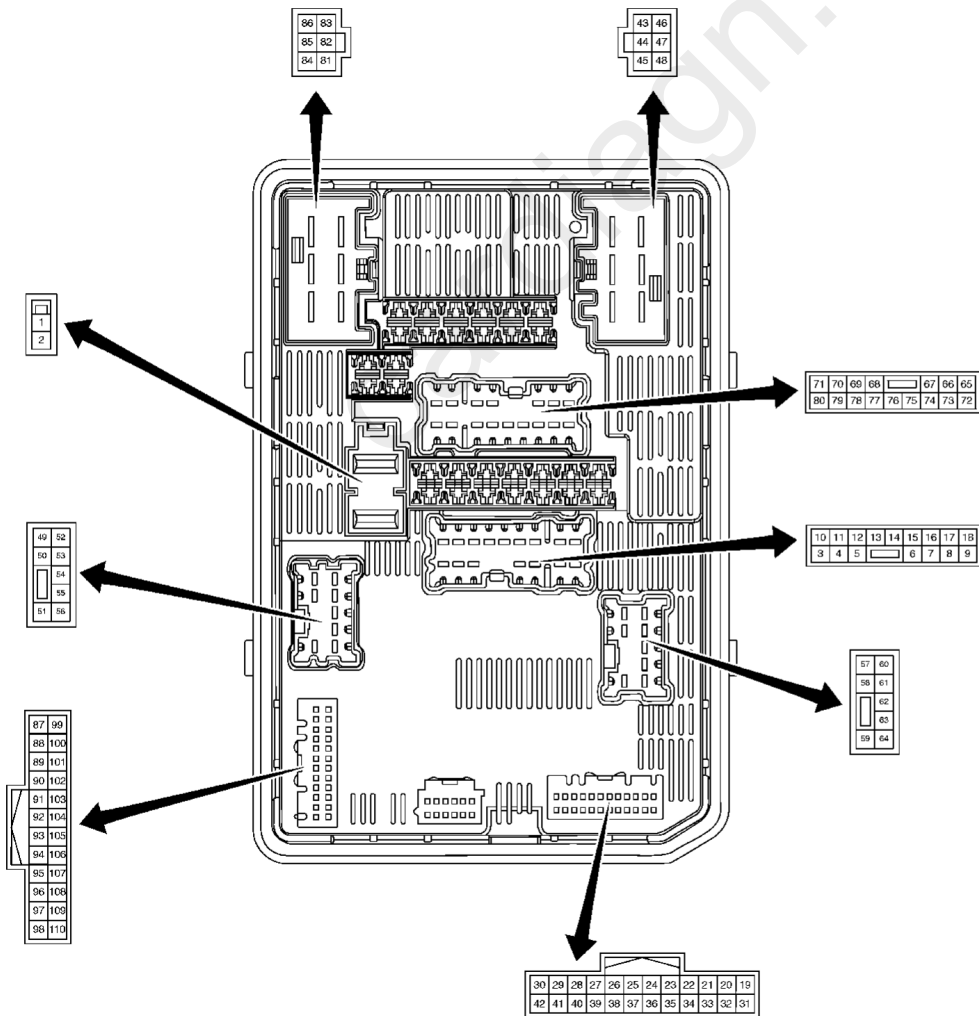
Monitor	Condition		Value/Status
COMP ECV CURRENT	Engine running	A/C switch ON (A/C compressor is operating)	0.00 A – 1.00 A
		A/C switch OFF	0.00 A
Starter&starter cont relay stat	Starter relay and starter cut relay are ON		On, On
	Transmits invalid CAN signal		invalid
	Starter relay is ON		On, Off
	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"> <li>Battery: Full charge</li> <li>Engine Idling</li> </ul>		(–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"> <li>Lighting switch OFF (Except for Canada)</li> <li>Lighting switch AUTO (For Canada)</li> </ul>		0.0%

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

Monitor	Condition		Value/Status
Parking/DTRL (LH) output (LIN)	Engine running and parking brake is released	<ul style="list-style-type: none"> <li>Lighting switch OFF (Except for Canada)</li> <li>Lighting switch AUTO (Only when the illumination judgement by auto light system is OFF) (For Canada)</li> </ul>	100.0%
		Lighting switch 2ND	6.0%
	Engine stop	<ul style="list-style-type: none"> <li>Lighting switch OFF (Except for Canada)</li> <li>Lighting switch AUTO (Only when the illumination judgement by auto light system is OFF) (For Canada)</li> </ul>	0.0%
Parking/DTRL (RH) output (LIN)	Engine running and parking brake is released	<ul style="list-style-type: none"> <li>Lighting switch OFF (Except for Canada)</li> <li>Lighting switch AUTO (Only when the illumination judgement by auto light system is OFF) (For Canada)</li> </ul>	100.0%
		Lighting switch 2ND	6.0%
	Engine stop	<ul style="list-style-type: none"> <li>Lighting switch OFF (Except for Canada)</li> <li>Lighting switch AUTO (Only when the illumination judgement by auto light system is OFF) (For Canada)</li> </ul>	0.0%
Headlight HI (RH) req (LIN)	Lighting switch 2ND	Lighting switch LO	Close
		Lighting switch HI	Open
Headlight LO (RH) req (LIN)	<ul style="list-style-type: none"> <li>Lighting switch OFF (Except for Canada)</li> <li>Lighting switch AUTO (For Canada)</li> </ul>		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


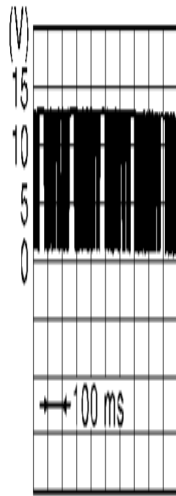
Monitor	Condition	Value/Status
NMB T LIGHT RH CIRC RETRY	Retry of tail light RH power supply circuit is permitted.	0 – 20
NMB T LIGHT RH CIRC SHORT	Tail light RH power supply circuit detects over current.	0 – 5
NMB F FOG LH CIRC RETRY	Retry of front fog light LH power supply circuit is permitted.	0 –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

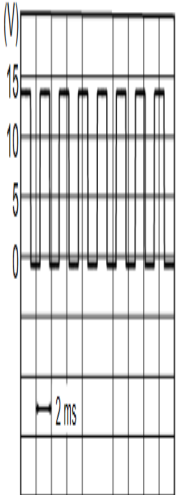
Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/Output			
1 (W)	Ground	Battery power supply	Input	Ignition switch OFF		6 – 16 V
2 (L)	Ground	Battery power supply	Input	Ignition switch OFF		6 – 16 V
4 (R)	Ground	Tail light LH power supply	Output	<ul style="list-style-type: none"> <li>Lighting switch OFF (Except for Canada)</li> <li>Lighting switch AUTO (For Canada)</li> </ul>		0 – 1 V
				Lighting switch 1ST		6 – 16 V
5 (Y)	Ground	Front window washer relay control	Output	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	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	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	Horn OFF		6 – 16 V
				Horn ON		0 – 1 V
11 (BR)	Ground	Ignition power supply	Output	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"> <li>Lighting switch OFF (Except for Canada)</li> <li>Lighting switch AUTO (For Canada)</li> </ul>		0 – 1 V
				Lighting switch 1ST		6 – 16 V
19 (LG)	Ground	Ignition power supply	Output	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	0 – 1 V
					Other than above	6 – 16 V
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	0 – 1 V
					Front wiper switch HI	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	Front wiper switch OFF	0 – 1 V
					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	0 – 1 V
					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	0 – 1 V
					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	0 – 1 V
					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	6 – 16 V
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	Electrical control valve  <b>note</b> Select "HVAC TEST" in "Actuator Test" mode of "HVAC".	Duty ratio: 0% (MODE5 or MODE6)	0 – 1 V
					Duty ratio: 40% (MODE3 or MODE4)	
					Duty ratio: 80 – 90% (MODE1, MODE2 or MODE7)	6 – 16 V
106 (V)	Ground	Cooling fan control module control	Output	Engine running		0 – 16 V
107 (G)	Ground	Cooling fan relay control	Output	Engine running	Cooling fan stop	6 – 16 V
					Cooling fan operated	0 – 1 V