

# MULTIPLEX COMMUNICATION SYSTEM (LHD)

## SYSTEM OUTLINE

### MULTIPLEX COMMUNICATION SYSTEM

The system is comprised of the communication modes of the body ECU No.1, body ECU No.2, driver door ECU, front passenger door ECU, rear door LH ECU, rear door RH ECU, engine and ECT ECU, combination meter, A/C control assembly, navigation ECU, tilt and telescopic ECU, power seat ECU and moon roof control ECU. The body electrical systems are controlled by a serial communication in which each ECU is linked to another via a single communication line. This system is also equipped with a self-diagnosis function.

The table below shows the systems under the control of the MPX communication system and related ECUs (Communication nodes).

	Body ECU No.1	Body ECU No.2	Driver Door ECU	Front Passenger Door ECU	Rear Door LH ECU	Rear Door RH ECU	Engine and ECT ECU	Combination Meter	A/C Control Assembly	Navigation ECU	Tilt and Telescopic ECU	Power Seat ECU	Moon Roof Control ECU
Power Window	2	2	1	2	2	2	—	—	—	—	—	—	2
Theft Deterrent and Door Lock Control	1	2	2	2	2	2	—	2	—	—	—	—	—
Wireless Door Lock Control	1	2	2	2	2	2	—	—	—	—	—	—	2
Light Auto Turn Off	—	1	2	2	2	2	—	—	—	—	—	—	—
Automatic Light Control	—	1	2	—	—	—	—	1	—	—	—	—	—
Illuminated Entry	—	1	2	2	2	2	—	—	—	—	—	—	—
Key Reminder	—	1	2	—	—	—	—	—	—	—	—	—	—
Luggage Compartment Door Opener	1	—	—	—	—	—	—	—	—	—	—	—	—
Remote Control Mirror	2	2	1	1	—	—	—	—	—	—	—	—	—
Shift Lock	—	1	—	—	—	—	2	—	—	—	—	—	—
Fog Light	—	1	—	—	—	—	—	2	—	—	—	—	—
Memory System	—	—	2	2	—	—	—	—	—	—	2	1	—
Seat Belt Warning	2	2	—	—	—	—	—	1	—	—	—	—	—

1 : Master control      2 : Sub control

## 1. COMMUNICATION OUTLINE

Communication is implemented among the body No.1, No.2, driver door, front passenger door, rear door LH, RH, combination meter, tilt and telescopic, navigation, A/C control assembly, moon roof, power seat, engine and ECT ECUs.

Upon receiving signals from applicable switches such as the door lock control switch or door courtesy light switch, each ECU determines the conditions of the switches as well as of the doors, and after converting this information into digital signals, outputs them to other ECUs via serial data communication. The ECU that receives these digital signals determines the conditions of the switches and doors so that it can implement various controls such as to activate a door lock motor.

However, if there are no changes in the input signals because no doors were opened and no switches were used within **30** seconds, the body ECU interrupts the communication to save electricity. Following this interruption, any changes in the input signals will cause the communication to resume.

For details please refer to the new car features and repair manuals.

## SERVICE HINTS

### BODY ECU NO.2

1-GROUND : Approx. **12** volts with ignition SW at **ON** or **ST** position

8-GROUND : Always approx. **12** volts

11-GROUND : Always continuity

### B5 (A) BODY ECU NO.1

1-GROUND : Approx. **12** volts with ignition SW at **ON** or **ST** position

4-GROUND : Always approx. **12** volts

8-GROUND : Always approx. **12** volts

11-GROUND : Always continuity

(A)15-GROUND : Approx. **12** volts with ignition SW at **ACC** or **ON** position

### D18 (A), D20 (C) DRIVER DOOR ECU

(C) 2-GROUND : Approx. **12** volts with ignition SW at **ON** or **ST** position

(C) 3-GROUND : Always approx. **12** volts

(A) 1-GROUND : Always approx. **12** volts

(C)12-GROUND : Always continuity

### F11 (A), F13 (C) FRONT PASSENGER DOOR ECU

(A) 2-GROUND : Approx. **12** volts with ignition SW at **ON** or **ST** position

(A) 3-GROUND : Always approx. **12** volts

(C) 1-GROUND : Always approx. **12** volts

(A)12-GROUND : Always continuity

### R13 REAR DOOR LH ECU

9-GROUND : Approx. **12** volts with ignition SW at **ON** or **ST** position

15-GROUND : Always approx. **12** volts

14-GROUND : Always approx. **12** volts

25-GROUND : Always continuity

### R14 REAR DOOR RH ECU

9-GROUND : Approx. **12** volts with ignition SW at **ON** or **ST** position

15-GROUND : Always approx. **12** volts

14-GROUND : Always approx. **12** volts

20-GROUND : Always continuity

25-GROUND : Always continuity

# MULTIPLEX COMMUNICATION SYSTEM (LHD)

## ○ : PARTS LOCATION

Code		See Page	Code		See Page	Code		See Page
A16		72 (LHD)	F12	B	76 (LHD)	P13		78 (LHD)
A33		72 (LHD)	F13	C	76 (LHD)	P16		80 (LHD)
B1		68 (LHD)	H20		72 (LHD)	P18	A	80 (LHD)
B5	A	72 (LHD)	I11		72 (LHD)	P19	B	80 (LHD)
B6	A	72 (LHD)	I14		78 (LHD)	P20		80 (LHD)
B7		80 (LHD)	I15		78 (LHD)	P21		80 (LHD)
B8		80 (LHD)	J7		74 (LHD)	P22		80 (LHD)
C10		72 (LHD)	J8		74 (LHD)	P23		80 (LHD)
C11	A	72 (LHD)	J9		74 (LHD)	P24		80 (LHD)
C12	B	72 (LHD)	J10		74 (LHD)	P30		80 (LHD)
C13		72 (LHD)	J13		74 (LHD)	P31		80 (LHD)
D1		72 (LHD)	J14		74 (LHD)	P32		80 (LHD)
D2		72 (LHD)	J15		74 (LHD)	P33		80 (LHD)
D3		76 (LHD)	J16		74 (LHD)	R5		74 (LHD)
D4		76 (LHD)	J18		74 (LHD)	R6		74 (LHD)
D5		76 (LHD)	J19		74 (LHD)	R7		74 (LHD)
D6		76 (LHD)	J21		78 (LHD)	R8		74 (LHD)
D7		76 (LHD)	J22		78 (LHD)	R13		78 (LHD)
D8		76 (LHD)	J23		80 (LHD)	R14		78 (LHD)
D9		76 (LHD)	J24		80 (LHD)	R17		78 (LHD)
D10		76 (LHD)	L1		74 (LHD)	R18		78 (LHD)
D11		76 (LHD)	L4		78 (LHD)	S5		74 (LHD)
D13		76 (LHD)	L5		78 (LHD)	S6		74 (LHD)
D14		76 (LHD)	L6		78 (LHD)	S7		74 (LHD)
D15		76 (LHD)	L7		78 (LHD)	S12		74 (LHD)
D16		76 (LHD)	L8		80 (LHD)	S17		80 (LHD)
D17		76 (LHD)	M2		74 (LHD)	T1		70 (LHD)
D18	A	76 (LHD)	M4		78 (LHD)	T5		74 (LHD)
D19	B	76 (LHD)	P3		74 (LHD)	U1		74 (LHD)
D20	C	76 (LHD)	P6		78 (LHD)	V6		78 (LHD)
D21		76 (LHD)	P8		78 (LHD)	V7		78 (LHD)
E5		68 (LHD)	P9		78 (LHD)	W5		70 (LHD)
E8		68 (LHD)	P10		78 (LHD)	W6		78 (LHD)
E11		72 (LHD)	P11		78 (LHD)			
F11	A	76 (LHD)	P12		78 (LHD)			

## ○ : RELAY BLOCKS

Code	See Page	Relay Blocks (Relay Block Location)
1	54 (LHD)	Engine Room No.1 R/B (Engine Compartment Right)
2	55 (LHD)	Engine Room No.2 R/B (Engine Compartment Left)
4	57 (LHD)	Passenger Side R/B (Right Kick Panel)

**: JUNCTION BLOCK AND WIRE HARNESS CONNECTOR**

Code	See Page	Junction Block and Wire Harness (Connector Location)
1A	58 (LHD)	Engine Room Main Wire and Driver Side J/B (Left Kick Panel)
1B	58 (LHD)	Cowl Wire and Driver Side J/B (Left Kick Panel)
1D	58 (LHD)	Instrument Panel Wire and Driver Side J/B (Left Kick Panel)
1E	58 (LHD)	Floor No.2 Wire and Driver Side J/B (Left Kick Panel)
1F	58 (LHD)	Cowl Wire and Driver Side J/B (Left Kick Panel)
1G	59 (LHD)	
1H		
2B	60 (LHD)	Engine Room Main Wire and Passenger Side J/B (Right Kick Panel)
2D	60 (LHD)	Roof Wire and Passenger Side J/B (Right Kick Panel)
2E	60 (LHD)	Floor No.1 Wire and Passenger Side J/B (Right Kick Panel)
2F	60 (LHD)	Cowl Wire and Passenger Side J/B (Right Kick Panel)
2G	61 (LHD)	
2H		

**: CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS**

Code	See Page	Joining Wire Harness and Wire Harness (Connector Location)
IB1	98 (LHD)	Front Door LH Wire and Cowl Wire (Left Kick Panel)
IC1	98 (LHD)	Floor No.2 Wire and Cowl Wire (Left Kick Panel)
IC2		
IC3		
IE1	98 (LHD)	Instrument Panel Wire and Cowl Wire (Left Side of the Steering Column)
IE2		
II1	100 (LHD)	Engine Room Main Wire and Cowl Wire (Near the Passenger Side R/B)
II2		
II3		
IJ1	100 (LHD)	Instrument Panel Wire and Cowl Wire (Left Side of the Blower Unit)
IJ2		
IK1	100 (LHD)	Front Door RH Wire and Cowl Wire (Right Kick Panel)
IL1	100 (LHD)	Floor No.1 Wire and Cowl Wire (Right Kick Panel)
IL3		
BA1	102 (LHD)	Rear Door LH Wire and Floor No.2 Wire (Under the Center Pillar LH)
BB1	102 (LHD)	Rear Door RH Wire and Floor No.1 Wire (Under the Center Pillar RH)
BC1	104 (LHD)	Floor No.2 Wire and Front Seat LH Wire (Under the Driver's Seat)
BD1	104 (LHD)	Floor No.1 Wire and Front Seat RH Wire (Under the Front Passenger's Seat)

**: GROUND POINTS**

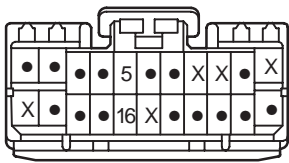
Code	See Page	Ground Points Location
EB	96 (LHD)	Left Fender
IF	98 (LHD)	Left Kick Panel
II	98 (LHD)	Right Side of the Cowl Panel
BJ	102 (LHD)	Rear Floor Partition Panel LH
BK	102 (LHD)	Quarter Panel LH
BL	102 (LHD)	Rear Floor Partition Panel RH
BM	102 (LHD)	Quarter Panel RH

**: SPLICE POINTS**

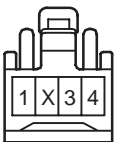
Code	See Page	Wire Harness with Splice Points	Code	See Page	Wire Harness with Splice Points
I1	100 (LHD)	Cowl Wire	B2	102 (LHD)	Roof Wire
I6			B7	104 (LHD)	Front Seat LH Wire

MULTIPLEX COMMUNICATION SYSTEM (LHD)

A16



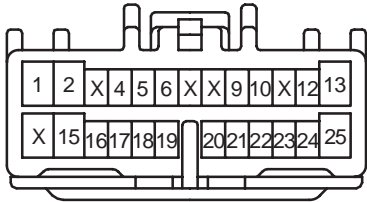
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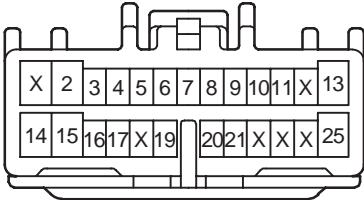
B1 GRAY



B5 (A)



B6 (A)



B7



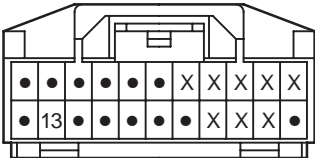
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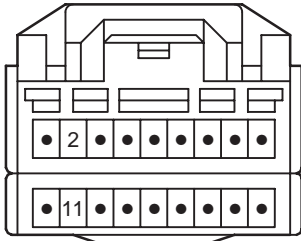
C10



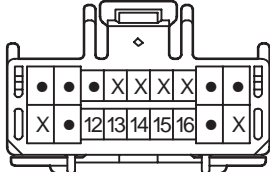
C11 (A)



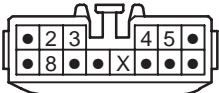
C12 (B)



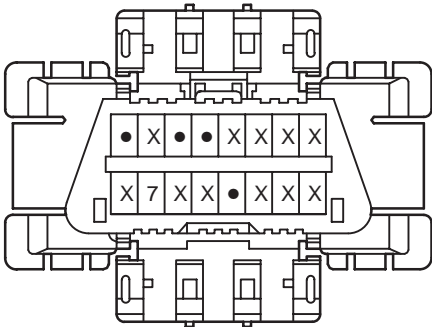
C13



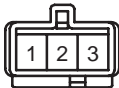
D1 BLUE



D2

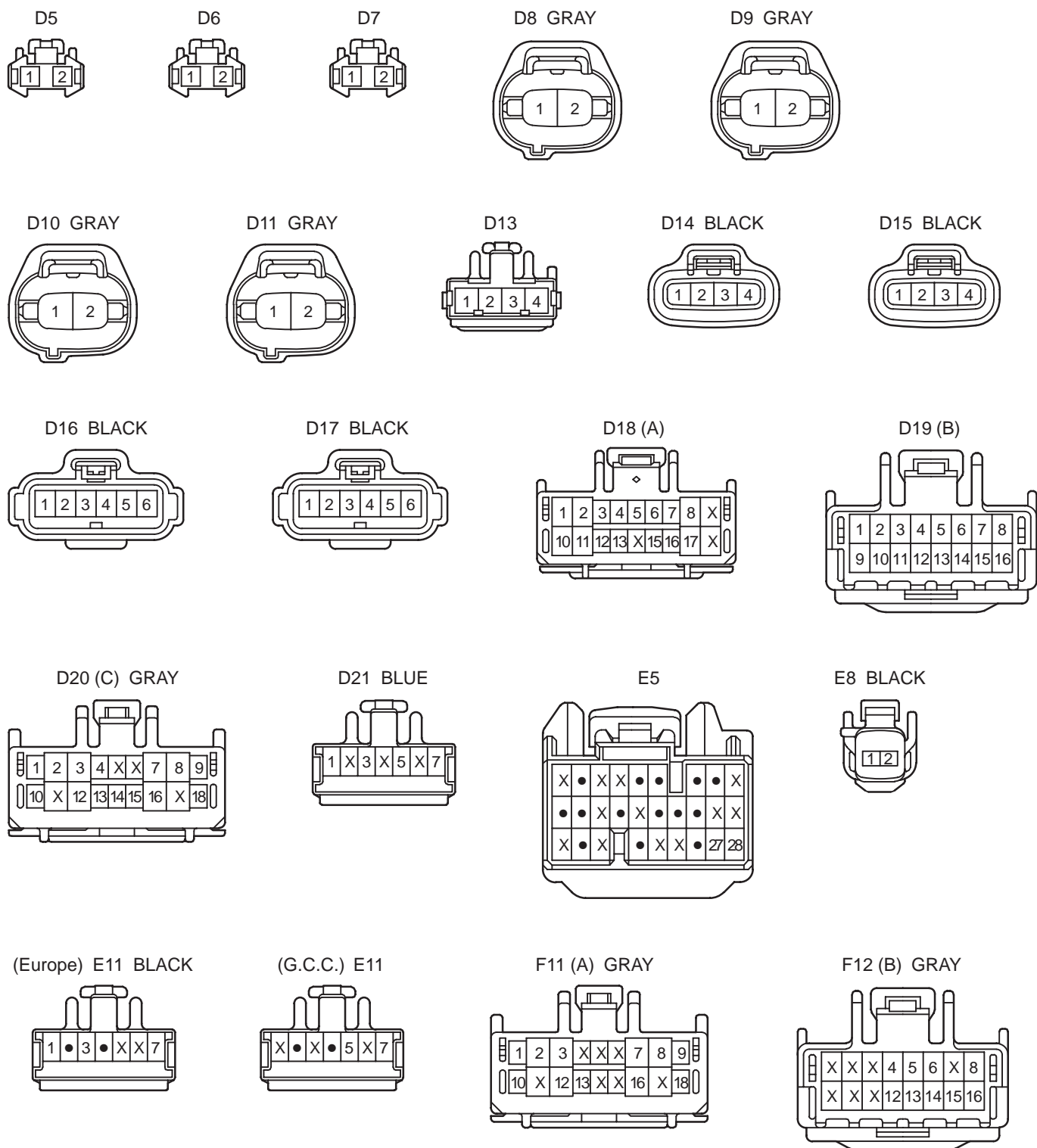


D3



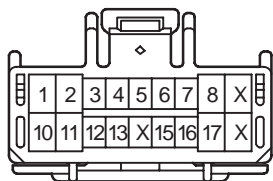
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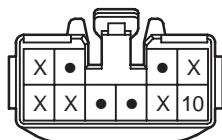


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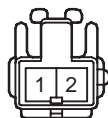
F13 (C) GRAY



H20 BLACK



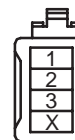
I11



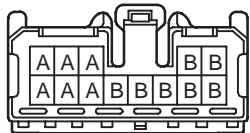
I14



I15

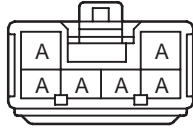


J7 GRAY



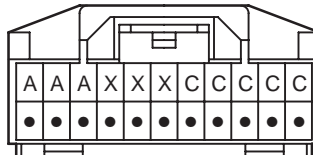
(Hint : See Page 7, 23, 39)

J8



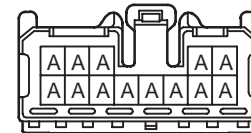
(Hint : See Page 7, 23, 39)

J9



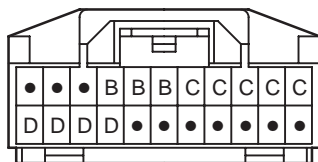
(Hint : See Page 7, 23, 39)

J10 ORANGE



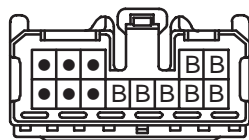
(Hint : See Page 7, 23, 39)

J13



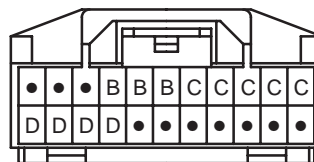
(Hint : See Page 7, 23, 39)

J14 GRAY



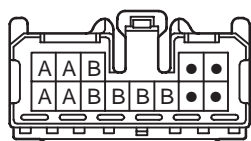
(Hint : See Page 7, 23, 39)

J15



(Hint : See Page 7, 23, 39)

J16



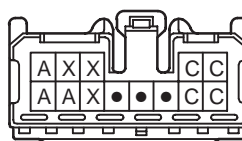
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J18



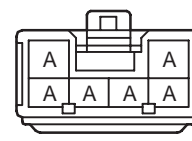
(Hint : See Page 7, 23, 39)

J19 BLUE



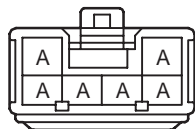
(Hint : See Page 7, 23, 39)

J21



(Hint : See Page 7, 23, 39)

J22



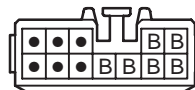
(Hint : See Page 7, 23, 39)

J23



(Hint : See Page 7, 23, 39)

J24

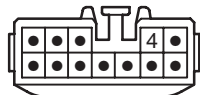


(Hint : See Page 7, 23, 39)

L1



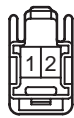
L4



L5 BLACK



L6



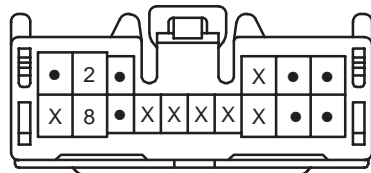
L7 GRAY



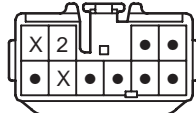
L8



M2 BLUE



M4



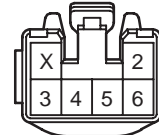
P3



P6



P8







MULTIPLEX COMMUNICATION SYSTEM (LHD)

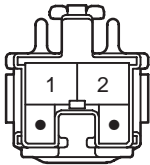
S6 BLACK



S7 BLACK



S12 BLUE



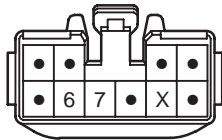
S17 GREEN



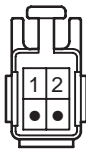
T1 BLACK



T5 GRAY



U1



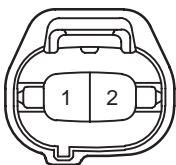
V6



V7



W5 BLACK



W6

