ON-BOARD DIAGNOSIS SYSTEM [ADVANCED KEYLESS ENTRY SYSTEM]

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Outline
- The advanced keyless entry system has an on-board diagnostic function to facilitate system diagnosis.

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- The on-board diagnostic function consists of the following functions: A malfunction detection function, which detects overall malfunctions in the advanced keyless entry system-related parts; a memory function, which stores detected DTCs; a display function, which indicates malfunction locations and status via DTC output; and a PID/data monitoring function, which reads out specific input/output signals and verifies the input/output condition.
- Using the Mazda Modular Diagnostic System (M-MDS), DTCs can be read out and deleted, and the PID/data monitoring function can be activated.

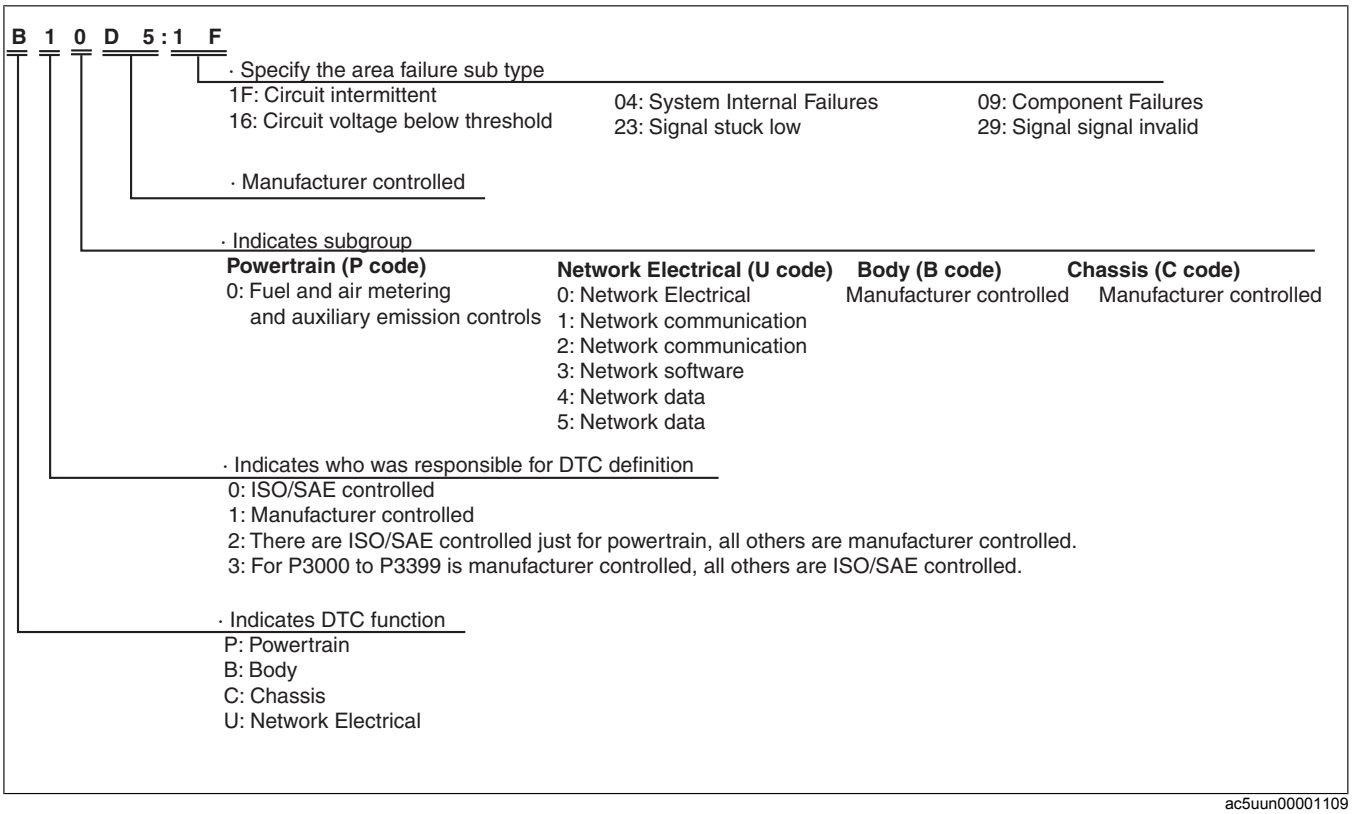
Malfunction detection function
- Detects malfunctions in input/output signals.
- If a malfunction occurs, the start stop unit records the malfunction as a DTC. A recorded DTC can be read by the Mazda Modular Diagnostic System (M-MDS).

×: Applicable
—: Not applicable

DTC No.	KEY warning light (red)	Description	Fail-safe function	Drive cycle	Self test type*1	Memory function
B10C6:1F	On	Keyless antenna (exterior, rear) circuit malfunction	×	—	C, D	×
B10C7:1F	On	Keyless antenna (interior, rear) circuit malfunction	×	—	C, D	×
B10C9:1F	On	Keyless antenna (interior, front) circuit malfunction	×	—	C, D	×
B10D1:23	On	Request switch (LF) circuit malfunction	—	—	C	×
B10D3:23	On	Request switch (RF) circuit malfunction	—	—	C	×
B11C4:23	On	Request switch (liftgate) circuit malfunction	—	—	C	×
B11FD:1F	On	Keyless antenna (exterior, LF) circuit malfunction	×	—	C, D	×
B1210:1F	On	Keyless antenna (exterior, RF) circuit malfunction	×	—	C, D	×
B13C3:04	On	LF control unit internal malfunction	×	—	C	×
B13C3:09	On	LF control unit malfunction	×	—	C	×
B13C3:16	On	LF control unit power supply voltage decrease input	×	—	C	×
B13C3:29	On	Communication error with LF control unit	×	—	C	×

*1 : C: CMDTC self test, D:ODDTC self test

DTC 7-digit code definition
- When related systems or components have failed, the CM stores the DTC of the malfunctioning part in the CM memory, and allows for the retrieval of the store data using scanning tool when necessary. The DTCs are indicated using seven digits. Each digit indicates the following.



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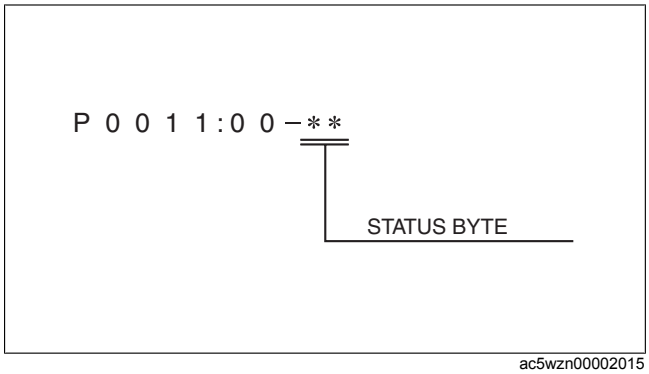
Status byte for DTC

- The status byte is the two digits (two digits after hyphen (-)) after the seven-digit DTC.
- The status byte is a code which indicates the pending code, current/past malfunction status, or warning illumination status.
- The status byte can be read by performing a CMDTC self-test using the Mazda Modular Diagnostic System (M-MDS).
- For details on the status byte, refer to the explanation on the M-MDS when reading the DTC.



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Detection condition for the applicable DTC

DTC	System malfunction location	Detection condition
B10C6:1F	Keyless antenna (exterior, rear) circuit malfunction	The start stop unit detects an open circuit in the keyless antenna (exterior, rear) or a short to ground with the ignition switched off.
B10C7:1F	Keyless antenna (interior, rear) circuit malfunction	The start stop unit detects an open circuit in the keyless antenna (interior, rear) or a short to ground with the ignition switched off.
B10C9:1F	Keyless antenna (interior, front) circuit malfunction	The start stop unit detects an open circuit in the keyless antenna (interior, front) or a short to ground with the ignition switched off.
B10D1:23	Request switch (LF) circuit malfunction	With the ignition switched ON (engine on), the start stop unit detects that the vehicle speed is 5 km/h {3 mph} or more for a continuous 2 min or more and the request switch (LF) is on 7 times or more until the vehicle speed is less than 5 km/h {3 mph}.
B10D3:23	Request switch (RF) circuit malfunction	With the ignition switched ON (engine on), the start stop unit detects that the vehicle speed is 5 km/h {3 mph} or more for a continuous 2 min or more and the request switch (RF) is on 7 times or more until the vehicle speed is less than 5 km/h {3 mph}.

DTC	System malfunction location	Detection condition
B11C4:23	Request switch (liftgate) circuit malfunction	With the ignition switched ON (engine on), the start stop unit detects that the vehicle speed is 5 km/h {3 mph} or more for a continuous 2 min or more and the request switch (liftgate) is on 7 times or more until the vehicle speed is less than 5 km/h {3 mph}.
B11FD:1F	Keyless antenna (exterior, LF) malfunction	The start stop unit detects an open circuit in the keyless antenna (exterior, LF) or a short to ground with the ignition switched off.
B1210:1F	Keyless antenna (exterior, RF) malfunction	The start stop unit detects an open circuit in the keyless antenna (exterior, RF) or a short to ground with the ignition switched off.
B13C3:04	LF control unit internal malfunction	LF control unit internal malfunction detected
B13C3:09	LF control unit malfunction	• The start stop unit detects that the LF State signal of the LF control unit is low for 5 s or more. • With the communication between the start stop unit and LF control unit being performed normally, there is no response from the LF control unit even though there is a signal transmission request from the start stop unit to the LF control unit, and the LF state signal becomes low.
B13C3:16	LF control unit power supply voltage decrease input	With the ignition switched ON (engine off), start stop unit power supply circuit (+B1) voltage of 8.5 V or more or less than 16.5 V and LF control unit power supply circuit voltage of 5 V or more or less than 8.5 V are detected for 5 s or more.
B13C3:29	Communication error with LF control unit	The start stop unit detects communication error with LF control unit 10 times in a series.

Data monitor function

- With the PID/data monitor function, input/output signal monitor items set in the start stop unit can be selected and read out in real-time.

PID	Unit/ Operation	Data contents	Inspection item(s)
LG/ T_LK_SW	Off/On	• Off: Request switch (liftgate) is off. • On: Request switch (liftgate) is on.	Request switch (liftgate)
RQ_SW_LF	Off/On	• Off: Request switch (LF) is off. • On: Request switch (LF) is on.	Request switch (LF)
RQ_SW_RF	Off/On	• Off: Request switch (RF) is off. • On: Request switch (RF) is on.	Request switch (RF)