14.Freeze Frame Data Display

A: OPERATION

NOTE:
For detailed operation procedures, refer to “PC application help for Subaru Select Monitor”.

1. HYBRID POWERTRAIN CONTROL SYSTEM

1) On «Main Menu» display, select {Each System Check}.
2) On «Each System Check» display, select {HEV System}.
3) On «HEV System» display, select {Hybrid Powertrain Control System}.
4) On «Hybrid Powertrain Control System» display, select {Freeze Frame Data Display}.

Display	Contents	Unit of measure
Vehicle speed	Vehicle speed calculated by VDC CM (CAN communication data)	km/h
Ambient Temperature	Ambient temperature calculated by combination meter (CAN communication data)	°C
Engine Speed	Engine speed calculated by ECM (CAN communication data)	rpm
Coolant Temperature	Engine coolant temperature calculated by ECM (CAN communication data)	°C
Gear Ratio Actual	Gear ratio calculated by TCM (CAN communication data)	—
A/T Oil Temperature	ATF temperature calculated by TCM (CAN communication data)	°C
Trip Count	Number of times the ignition is ON judged by body integrated unit (CAN communication data)	times
Count	Identification information of synchronization/asynchronization of Trip Count, Time Count	—
Time Count	Detailed time elapsed after the ignition is ON calculated by body integrated unit (CAN communication data)	ms
Ignition switch	Ignition switch status	—
Starter SW	Starter switch status	—
P Range	Parking range status judged by TCM (CAN communication data)	—
R Range	Reverse range status judged by TCM (CAN communication data)	—
N Range	Neutral range status judged by TCM (CAN communication data)	—
D Range	Drive range status judged by TCM (CAN communication data)	—
Accel opening angle	Accelerator opening angle ratio calculated by ECM (CAN communication data)	%
Main Brake Pedal Stroke	Brake stroke calculated by main brake stroke sensor voltage	%
Sub Brake Pedal Stroke	Brake stroke calculated by sub brake stroke sensor voltage	%
Brake Booster Pressure 1	Vacuum pressure calculated by brake vacuum sensor voltage 1	kPa
Brake Booster Pressure 2	Vacuum pressure calculated by brake vacuum sensor voltage 2	kPa
Atmospheric pressure	Atmospheric pressure calculated by ECM (CAN communication data)	kPa
12V Battery Relay Target Mode	12V battery relay commanded status	—
Vacuum Pump Relay Actual	Voltage applied to brake vacuum pump relay	V
HPCM Target Control Mode	Target control mode of HPCM	—
HPCM Current Control Mode	Current control mode of HPCM	—
Drive Motor Inverter Input Voltage	Drive motor inverter input voltage calculated by DMCM (CAN communication data)	V
Drive Motor Output Torque Actual	Drive motor output torque calculated by DMCM (CAN communication data)	Nm
Drive Motor Speed	Drive motor speed calculated by DMCM (CAN communication data)	rpm
ISG Terminal Voltage	Terminal voltage calculated by integrated starter generator (ISG) (LIN communication data)	V
ISG Cranking Status	Cranking demand acceptance status judged by integrated starter generator (ISG) (LIN communication data)	—
ISG Control Mode Actual	Current control mode judged by integrated starter generator (ISG) (LIN communication data)	—

Display	Contents	Unit of measure
DCDC Converter Output Voltage Actual	DC/DC converter output voltage calculated by DMCM (CAN communication data)	V
Electric Oil Pump Motor Speed	Motor speed calculated by electric oil pump (CAN communication data)	rpm
High Voltage Battery SOC	High voltage battery residual quantity calculated by BECM (CAN communication data)	%
High Voltage Battery Total Voltage	High voltage battery voltage calculated by BECM (CAN communication data)	V
High Voltage Battery Discharge Power Limit 1	High voltage battery discharge power limit calculated by BECM (CAN communication data)	kW
High Voltage Battery Charge Power Limit 1	High voltage battery charge power limit calculated by BECM (CAN communication data)	kW
High Voltage Battery Cooling Fan Speed	High voltage battery cooling fan speed calculated by DMCM (CAN communication data)	rpm
BECM Control Status	BECM control mode judged by BECM (CAN communication data)	—
Contactor Close Status	Contactor close status judged by BECM (CAN communication data)	—
12V Engine Restart Battery Voltage	12 volt engine restart battery voltage calculated by 12 volt engine restart battery sensor (LIN communication data)	V
12V Engine Restart Battery SOC	12 volt engine restart battery capacity calculated by 12 volt engine restart battery sensor (LIN communication data)	%
12V Auxiliary Battery Voltage	12 volt auxiliary battery voltage	V
OBD Test Status	Diagnosis status of emission-related diagnosis	—
ECM Fail Safe Request Check	Fail safe request detailed information from ECM	—
TCM Fail Safe Request Check	Fail safe request detailed information from TCM	—
DMCM Fail Safe Request Check	Fail safe request detailed information from DMCM	—
BECM Fail Safe Request Check	Fail safe request detailed information from BECM	—
AUTO/MANUAL Mode Switch	Manual mode switch status judged by TCM (CAN communication data)	—
Brake Pedal Position Learning Status	Brake stroke sensor learning status	—
HPCM Check 20	Detailed information of control	—
HPCM Check 21	Detailed information of control	—
HPCM Check 22	Detailed information of control	—
HPCM Check 23	Detailed information of control	—
HPCM Check 24	Detailed information of control	—
HPCM Check 25	Detailed information of control	—
HPCM Check 40	Detailed information of control	mΩ
HPCM Check 78	Detailed information of control	—
HPCM Check 82	Detailed information of control	—
HPCM Check 125	Detailed information of control	—
HPCM Check 126	Detailed information of control	—
HPCM Check 127	Detailed information of control	—
HPCM Check 128	Detailed information of control	—
HPCM Check 129	Detailed information of control	—
HPCM Check 130	Detailed information of control	—
HPCM Check 133	Detailed information of control	—
HPCM Check 134	Detailed information of control	—
HPCM Check 135	Detailed information of control	—
HPCM Check 136	Detailed information of control	—
HPCM Check 159	Detailed information of control	—
HPCM Check 171	Detailed information of control	—

2. DRIVE MOTOR CONTROL SYSTEM

1) On «Main Menu» display, select {Each System Check}.
2) On «Each System Check» display, select {HEV System}.
3) On «HEV System» display, select {Drive Motor Control System}.
4) On «Drive Motor Control System» display, select {Freeze Frame Data Display}.

Display	Contents	Unit of measure
ECU ACC	Voltage supplied to DMCM	V
Ignition switch	Ignition switch status	—
Ignition Switch Signal (CAN receive)	Ignition switch status detected by HPCM (CAN communication data)	—
Accel opening angle	Accelerator opening angle ratio detected by ECM (CAN communication data)	%
Judgment of Idling	Idle switch status detected by ECM (CAN communication data)	—
Main Brake Pedal Stroke	Main brake stroke sensor status calculated by HPCM (CAN communication data)	%
Engine Speed	Engine speed detected by ECM (CAN communication data)	rpm
Vehicle speed	Vehicle speed calculated by VDC CM (CAN communication data)	km/h
Coolant Temperature	Engine coolant temperature calculated by ECM (CAN communication data)	°C
A/T Oil Temperature	ATF temperature calculated by TCM (CAN communication data)	°C
D Range	Drive range status judged by TCM (CAN communication data)	—
N Range	Neutral range status judged by TCM (CAN communication data)	—
R Range	Reverse range status judged by TCM (CAN communication data)	—
P Range	Parking range status judged by TCM (CAN communication data)	—
Trip Count	Number of times the ignition is ON judged by body integrated unit (CAN communication data)	times
Time Count	Detailed time elapsed after the ignition is ON calculated by body integrated unit (CAN communication data)	ms
Detailed Time Counter	Calculated detailed time elapsed after the ignition is ON	ms
DMCM Check Detailed Code	—	—
Count	Identification information of synchronization/asynchronization of Trip Count, Time Count	—
Drive Motor Torque Target (HPCM)	Drive motor target torque calculated by HPCM (CAN communication data)	Nm
Drive Motor Output Torque Actual	Target drive motor torque	Nm
Drive Motor Torque Upper Limit	DMCM set value	Nm
Drive Motor Torque Lower Limit	DMCM set value	Nm
Drive Motor Speed Target (HPCM)	Target drive motor speed calculated by HPCM (CAN communication data)	rpm
Drive Motor Speed	Drive motor speed	rpm
Drive Motor Inverter Input High Voltage Sensor (Serial)	Drive motor inverter input high voltage (serial)	V
High Voltage Battery Total Voltage	High voltage battery voltage calculated by BECM (CAN communication data)	V
High Voltage Battery Amperage	High voltage battery current calculated by BECM (CAN communication data)	A
Phase U Voltage Target	DMCM output value	%
Phase V Voltage Target	DMCM output value	%
Phase W Voltage Target	DMCM output value	%
Phase U Amperage	Drive motor current	A
Phase U Amperage Sensor Voltage	Current sensor voltage	V
Phase V Amperage	Drive motor current	A
Phase V Amperage Sensor Voltage	Current sensor voltage	V

Display	Contents	Unit of measure
Phase W Amperage	Drive motor current	A
Phase W Amperage Sensor Voltage	Current sensor voltage	V
Drive Motor Amperage Sensor Power Supply Voltage	Current sensor power supply voltage	V
Drive Motor Output Power Actual	Drive motor output	W
High Voltage Battery Temperature (MIN)	The lowest temperature among high voltage battery temperature values detected through multiple sensors by BECM (CAN communication data)	°C
Drive Motor Inverter Temperature A	Drive motor inverter temperature (serial)	°C
Drive Motor Inverter Temperature B	Drive motor inverter temperature (serial)	°C
Drive Motor Inverter Temperature C	Drive motor inverter temperature (serial)	°C
Drive Motor Temperature A	Drive motor temperature	°C
Drive Motor Temperature A Sensor Voltage	Drive motor temperature sensor voltage	V
Drive Motor Temperature B	Drive motor temperature	°C
Drive Motor Temperature B Sensor Voltage	Drive motor temperature sensor voltage	V
Drive Motor Inverter Operation Signal(HPCM)	Drive motor inverter operation request (HPCM) (CAN communication data)	—
Drive Motor Inverter Operation Status	Drive motor inverter operation status	—
Drive Motor Inverter Power Supply Relay Output Signal	Drive motor inverter power supply relay operation signal	—
Drive Motor Inverter Power Supply Relay Output Actual	Monitor signal for drive motor inverter power supply relay operation signal	—
Contactor Signal(HPCM)	Contactor operation request status (HPCM) (CAN communication data)	—
Contactor Weld Diagnosis Status	Contactor stuck closed status judged by BECM (CAN communication data)	—
Contactor Close Status	Contactor close status judged by BECM (CAN communication data)	—
Contactor Close Sequence Status	Contactor status judged by BECM (CAN communication data)	—
Contactor Open Status	Contactor status judged by BECM (CAN communication data)	—
High Voltage Battery Cooling Fan Duty Target (HPCM)	High voltage battery cooling fan duty target calculated by HPCM (CAN communication data)	%
High Voltage Battery Cooling Fan Duty Output	High voltage battery cooling fan duty	%
High Voltage Battery Cooling Fan Speed	High voltage battery cooling fan speed	rpm
DCDC Converter Output Permit Signal (HPCM)	DC/DC converter output permission status calculated by HPCM (CAN communication data)	—
DCDC Converter Output Voltage Target (HPCM)	DC/DC converter output indicate voltage calculated by HPCM (CAN communication data)	V
DCDC Converter Output Voltage Actual	Voltage output at DC/DC converter	V
DCDC Converter Output Amperage	Current output at DC/DC converter	A
DCDC Converter Output Limit Amperage	DC/DC converter set value	A
DCDC Converter Input Voltage	Input high voltage detected at DC/DC converter	V
DCDC Converter Temperature	Temperature calculated at DC/DC converter	°C
DCDC Converter Status Check	DC/DC converter control value	—

Display	Contents	Unit of measure
DCDC Converter Check 1	DC/DC converter control value	—
DCDC Converter Check 2	DC/DC converter control value	—
DCDC Converter Operation Update Signal Count (Serial)	DC/DC converter operation counter	Count
DCDC Converter Output Permit Signal (Serial)	DC/DC converter output permission Serial transmission data (DMCM)	—
DCDC Converter Output Voltage Target (Serial)	DC/DC converter output indicate voltage Serial transmission data (DMCM)	V
DCDC Converter Initialize Completion	DC/DC converter initialize completion status	—
DCDC Converter Serial Check	DC/DC converter serial communication failure	—
Drive Motor Inverter Control Mode Target(HPCM)	Target control mode of drive motor inverter calculated by HPCM	—
Sequence Status Check	DMCM set value	—
Drive Motor Inverter Check	DMCM input value	—
Drive Motor Torque Limit Check	DMCM output value	—
Drive Motor Torque Limit Status	DMCM output value	—
Drive Motor Mechanical Angle Pulse	Drive motor mechanical angle	Pulse
DMCU Check A	DMCM detailed information A	—
DMCU Check B	DMCM detailed information B	—
DMCU Check C	DMCM detailed information C	—
DMCU Check D	DMCM detailed information D	—
System Check 1	Detailed information 1	—
System Check 2	Detailed information 2	—
Drive Motor Control Mode Check 1	DMCM control information 1	—

3. BATTERY ENERGY CONTROL SYSTEM

1) On «Main Menu» display, select {Each System Check}.
2) On «Each System Check» display, select {HEV System}.
3) On «HEV System» display, select {Battery Energy Control System}.
4) On «Battery Energy Control System» display, select {Freeze Frame Data Display}.

Display	Contents	Unit of measure
High Voltage Battery Control Status	BECM control mode	—
High Voltage Battery SOC	High voltage battery residual quantity	%
High Voltage Battery SOH	Battery status subservience parameter of high voltage battery	%
High Voltage Battery Total Voltage	High voltage battery voltage	V
High Voltage Battery Amperage	High voltage battery current	A
High Voltage Battery Charge Power Limit 1	High voltage battery charge control power value	kw
High Voltage Battery Discharge Power Limit 1	High voltage battery discharge control power value	kw
High Voltage Battery Temperature 1	High voltage battery temperature 1	Deg.c
High Voltage Battery Temperature 2	High voltage battery temperature 2	Deg.c
High Voltage Battery Temperature 3	High voltage battery temperature 3	Deg.c
High Voltage Battery Intake Air Temperature	High voltage battery intake temperature	Deg.c
High Voltage Battery Internal Resistance	High voltage battery internal resistance	ohm
HEV System Leakage Resistance (+)	Entire HEV system leakage resistance (+)	kohm
High Voltage Battery Pack Leakage Resistance (+)	High voltage battery internal leakage resistance (+)	kohm
HEV System Leakage Resistance (-)	Entire HEV system leakage resistance (–)	kohm
High Voltage Battery Pack Leakage Resistance (-)	High voltage battery internal leakage resistance (–)	kohm
Trip Count	Number of times the ignition is ON judged by body integrated unit (CAN communication data)	times
Time Count	Detailed time elapsed after the ignition is ON calculated by body integrated unit (CAN communication data)	ms
Count	Identification information of synchronization/asynchronization of Trip Count, Time Count	—
Ignition switch	Ignition switch condition	—
Positive Contactor Status	+ side contactor open/close status	—
Negative Contactor Status	– side contactor open/close status	—
Pre-Charge Contactor Status	Pre-charge contactor open/close status	—
High Voltage Battery Block 1 SOC	High voltage battery block SOC	%
High Voltage Battery Block 2 SOC	High voltage battery block SOC	%
High Voltage Battery Block 3 SOC	High voltage battery block SOC	%
High Voltage Battery Block 4 SOC	High voltage battery block SOC	%

Display	Contents	Unit of measure
High Voltage Battery Block 5 SOC	High voltage battery block SOC	%
High Voltage Battery Block 6 SOC	High voltage battery block SOC	%
High Voltage Battery Block 7 SOC	High voltage battery block SOC	%
High Voltage Battery Block 8 SOC	High voltage battery block SOC	%
High Voltage Battery Block 9 SOC	High voltage battery block SOC	%
High Voltage Battery Block 10 SOC	High voltage battery block SOC	%
High Voltage Battery Block 11 SOC	High voltage battery block SOC	%
High Voltage Battery Block Voltage 1	High voltage battery block voltage	V
High Voltage Battery Block Voltage 2	High voltage battery block voltage	V
High Voltage Battery Block Voltage 3	High voltage battery block voltage	V
High Voltage Battery Block Voltage 4	High voltage battery block voltage	V
High Voltage Battery Block Voltage 5	High voltage battery block voltage	V
High Voltage Battery Block Voltage 6	High voltage battery block voltage	V
High Voltage Battery Block Voltage 7	High voltage battery block voltage	V
High Voltage Battery Block Voltage 8	High voltage battery block voltage	V
High Voltage Battery Block Voltage 9	High voltage battery block voltage	V
High Voltage Battery Block Voltage 10	High voltage battery block voltage	V
High Voltage Battery Block Voltage 11	High voltage battery block voltage	V
High Voltage Battery Voltage 0	High voltage battery block voltage (voltage sensor value)	V
High Voltage Battery Voltage 1	High voltage battery block voltage (voltage sensor value)	V
High Voltage Battery Voltage 2	High voltage battery block voltage (voltage sensor value)	V
High Voltage Battery Voltage 3	High voltage battery block voltage (voltage sensor value)	V
High Voltage Battery Voltage 4	High voltage battery block voltage (voltage sensor value)	V
High Voltage Battery Voltage 5	High voltage battery block voltage (voltage sensor value)	V
High Voltage Battery Voltage 6	High voltage battery block voltage (voltage sensor value)	V
BECM Control Check 24	Detailed information of control	V
BECM Control Check 25	Detailed information of control	V
High Voltage Battery Amperage Sensor Output	High voltage battery current sensor value	A
ECU ACC	Voltage supplied to BECM	V
Drive Motor Inverter Input Voltage	Drive motor inverter input voltage calculated by DMCM (CAN communication data)	V
Contactor Signal (HPCM)	Contactor operation request status judged by HPCM (CAN communication data)	—
Engine Speed	Engine speed calculated by ECM (CAN communication data)	rpm
P Range	Parking range status judged by TCM (CAN communication data)	—

Display	Contents	Unit of measure
Vehicle speed	Vehicle speed calculated by VDC (CAN communication data)	km/h
Drive Motor Inverter Operation Status	Drive motor inverter operation status calculated by DMCM (CAN communication data)	—
Drive Motor Torque Target (HPCM)	Target drive motor torque calculated by HPCM (CAN communication data)	Nm
Drive Motor Output Torque Actual	Drive motor output torque calculated by DMCM (CAN communication data)	Nm
Drive Motor Speed Target (HPCM)	Target drive motor speed calculated by HPCM (CAN communication data)	rpm
Drive Motor Speed	Drive motor speed calculated by DMCM (CAN communication data)	rpm
High Voltage Battery Cooling Fan Duty Target (HPCM)	High voltage battery cooling fan duty target calculated by HPCM (CAN communication data)	%
High Voltage Battery Cooling Fan Speed	High voltage battery cooling fan speed calculated by DMCM (CAN communication data)	rpm
High Voltage Battery Charge Power Limit 2	High voltage battery charge control power value (assist)	—
High Voltage Battery Discharge Power Limit 2	High voltage battery discharge control power value (assist)	—
High Voltage Battery SOC Subservience Parameter 1	Detailed information of control	—
High Voltage Battery SOC Subservience Parameter 2	Detailed information of control	—
High Voltage Battery SOC Subservience Parameter 3	Detailed information of control	—
High Voltage Battery SOC Subservience Parameter 4	Detailed information of control	—
High Voltage Battery SOC Subservience Parameter 5	Detailed information of control	—
High Voltage Battery SOC Subservience Parameter 6	Detailed information of control	—
High Voltage Battery SOC Subservience Parameter 7	Detailed information of control	—
High Voltage Battery SOC Subservience Parameter 8	Detailed information of control	—
High Voltage Battery SOC Subservience Parameter 9	Detailed information of control	—
High Voltage Battery SOC Subservience Parameter 10	Detailed information of control	—
High Voltage Battery SOC Subservience Parameter 11	Detailed information of control	—
System Check 1	Detailed information of control	—
System Check 2	Detailed information of control	—
System Check 3	Detailed information of control	—
System Check 4	Detailed information of control	—
BECM Control Check 1	Detailed information of control	—