

Freeze Frame Data

OBDII Freeze Frame Data

Freeze frame data allows access to emission related values from specific generic parameter identification (PID). These values are stored when an emission related diagnostic trouble code (DTC) is stored in continuous memory. This provides a snapshot of the conditions that were present when the DTC was stored. Once one set of freeze frame data is stored, this data remains in memory even if another emission related DTC is stored, with the exception of misfire or fuel system DTCs. Once freeze frame data for a misfire or fuel system DTC is stored it overwrites any previous data, and freeze frame data is no longer overwritten. When a DTC associated with the freeze frame data is erased or the DTCs are cleared, new freeze frame data can be stored again. In the event of multiple emission related DTCs in memory, always note the DTC for the freeze frame data.

FREEZE FRAME DATA TABLE

Acronym	Description	Measurement Units
APP_D	Accelerator Pedal Position D	%
APP_E	Accelerator Pedal Position E	%
BARO	Barometric Pressure	kPa
CATTEMP11	Catalyst Temperature Bank 1, Sensor 1	Degrees
CATTEMP21	Catalyst Temperature Bank 2, Sensor 1	Degrees
CLRDIST	Distance Since Codes Cleared	Km, mi
ECT	Engine Coolant Temperature	Degrees
EQ_RAT	Commanded Equivalence Ratio	Unit
EQ_RAT11	Lambda Value Bank 1, Sensor 1	Unit
EQ_RAT21	Lambda Value Bank 2, Sensor 1	Unit
EVAPPCT	Commanded Evaporative Purge	%
FLI	Fuel Level Input	%
FRP	Fuel Rail Pressure	kPa
FUELSYS1	Open, Closed Loop 1	OL, CL, OL DRIVE, OL FAULT, CL FAULT
FUELSYS2	Open, Closed Loop 2	OL, CL, OL DRIVE, OL FAULT, CL FAULT
IAT	Intake Air Temperature	Degrees
LFT1	Long Term Fuel Bank 1	%
LFT2	Long Term Fuel Bank 2	%
LOAD	Calculated Load Value	%
MAF	Mass Airflow Rate	g/s
MAP	Manifold Absolute Pressure	Volts, kPa, PSI, in-Hg
O2S11	Bank 1 Upstream Oxygen Sensor (11)	Volts, mA
O2S12	Bank 1 Downstream Oxygen Sensor (12)	Volts
O2S21	Bank 2 Upstream Oxygen Sensor (21)	Volts, mA
O2S22	Bank 2 Downstream Oxygen Sensor (22)	Volts
RPM	Engine RPM	RPM

Acronym	Description	Measurement Units
RUNTM	Run Time	Seconds
SFT1	Short Term Fuel Bank 1	%
SFT2	Short Term Fuel Bank 2	%
SPARKADV	Spark Advance	Degrees
TAC_PCT	Commanded Throttle Actuator	%
TP	Absolute Throttle Position	%
TP_REL	Relative Throttle Position	%
VS	Vehicle Speed	km, h-mph
WARMUPS	Number Of Warmups Since Code Cleared	Units

Some unique PIDs are stored in the keep alive memory (KAM) of the PCM to help in diagnosing the root cause of misfires. These PIDs are collectively called misfire freeze frame (MFF) data. These parameters are separate from the generic freeze frame data stored for every MIL code and are used for misfire diagnosis only. The MFF data could be more useful for misfire diagnosis than the generic freeze frame data. It is captured at the time of the highest misfire rate, not when the DTC is stored at the end of a 200 or 1,000 revolution block (generic freeze frame data for misfire can be stored minutes after the misfire actually occurred).

The MFF PIDs are supported on all vehicles, but may not be available on all scan tools because enhanced PID access may vary by scan tool manufacturer.

MISFIRE FREEZE FRAME PIDS

PID Name	Description	Measurement Units
MFF_EGR	EGR DPFE Sensor At The Time Of Misfire	Volts
MFF_IAT	Intake Air Temperature At The Time Of Misfire	Degrees
MFF_INGEAR	Transmission In Gear At The Time Of Misfire	Yes, No
MFF_LOAD	Engine Load At The Time Of Misfire	%
MFF_PNP	Park/Neutral Position At The Time Of Misfire	Mode
MFF_RNTM	Engine Running Time At The Time Of Misfire	Time
MFF_RPM	Engine RPM At The Time Of Misfire	RPM
MFF_RUN	Engine Running Time At The Time Of Misfire	Time
MFF_SOAK	Engine Off Soak Time At The Time Of Misfire	Time
MFF_TCC_LOCK	Torque Converter Clutch At The Time Of Misfire	Yes, No
MFF_THR_ANG	Throttle Angle At The Time Of Misfire	%
MFF_TP	Throttle Position At The Time Of Misfire	Volts
MFF_TRIP	Number Of Driving Cycles At The Time Of Misfire (At Least One 1,000 Rev Block)	Number of Trips
MFF_VSS	Vehicle Speed At The Time Of Misfire	km, h-mph
MP_LRN	Learned Misfire Correction Profile	Yes, No

Manufacturer Specific Freeze Frame

The manufacturer specific freeze frame data is DTC snapshot data that allows a manufacturer to store vehicle condition information when a DTC sets. This is similar to the OBDII freeze frame functionality that already exists in the PCM. The manufacturer defines the snapshot data to provide the conditions at the time when a fault occurred. Each snapshot is about 40 - 50 PIDs with up to 5 snapshots available for up to 5 different DTCs. The PCM reports the most recent fault conditions for the DTC, and refreshes a maximum of once per operation cycle.

MANUFACTURER SPECIFIC FREEZE FRAME PIDS

PID Name	Description	Measurement Units
APP1	Accelerator Pedal Position Sensor 1	Volts
APP2	Accelerator Pedal Position Sensor 2	Volts
APP_FLT	Accelerator Pedal Position Status	Fault, No Fault
BARO	Barometric Pressure	Pressure, in H2O
CHT_F	Cylinder Head Temperature Status	Fault, No Fault
CHTIL	Cylinder Head Temperature Indicator Lamp	On, Off
ECT	Engine Coolant Temperature	Degrees
ECT_F	Engine Coolant Temperature Status	Fault, No Fault
EGR_F	Exhaust Gas Recirculation Status	Fault, No Fault
EGRPCT	Commanded EGR	Percent
ETC [TAC_PCT]	Commanded Throttle Actuator Control	Percent
ETC_TRIM_LRN	Throttle Angle Trim Value Has Learned	Yes, No
FF_LRND	Flex Fuel Learned	Yes, No
FLI	Fuel Level	Percent
FTP_H2O	Fuel Tank Pressure Input	Pressure
FUELSYS	Fuel System Status	Open Loop, Closed Loop
GEAR	Transmission Gear Status	Gear
IAT	Intake Air Temperature	Degrees
IAT_F	Inlet Air Temperature Status	Fault, No Fault
LOAD	Calculated Engine Load	Percent
LONGFT1	Long Term Fuel Trim Bank 1	Percent
LONGFT2	Long Term Fuel Trim Bank 2	Percent
MAF	Mass Airflow Rate	g/s
MAF_F	Mass Airflow Status	Fault, No Fault
MAP	Manifold Absolute Pressure	kPa, PSI, in-Hg
MAP_F	Manifold Absolute Pressure Sensor Status	Fault, No Fault
MISFIRE	Misfire Malfunction Detection	Yes, No
MP_LRN	Learned Misfire Correction Profile	Yes, No
O2S11	Bank 1 Upstream Oxygen Sensor (11)	Volts
O2S12	Bank 1 Downstream Oxygen Sensor (12)	Volts
O2S21	Bank 2 Upstream Oxygen Sensor (21)	Volts
O2S22	Bank 2 Downstream Oxygen Sensor (22)	Volts
OSS_SRC	Output Shaft Speed	RPM

PID Name	Description	Measurement Units
RPM	Engine RPM	RPM
RPMDSD	RPM Desired	RPM
RUNTM	Run Time	Seconds
SHRTFT1	Short Term Fuel Trim Bank 1	Percent
SPARKADV	Spark Advance	Degrees
TCC	Torque Converter Clutch	Percent
TP1	Throttle Position 1 Voltage	Volts
TP2	Throttle Position 2 Voltage	Volts
TP_F	Throttle Position Sensor Status	Fault, No Fault
TP_REL	Relative Throttle Position	%
TQ_CNTRL	Torque Fuel Spark Limiting Status	Status
VPWR	Vehicle Power Voltage	Volts