

**General Information**

System Name	Common Rail (4M50T)
SCC	\$EB04
Diagnostic Communication Type	UDS on CAN
OBD-2	X
Communication Speed (250/500kbps)	500kbps
ECU Address (Physical)	\$10
ECU Address (Functional)	\$33
Tester Address	\$F1

**Supported Diagnostic Service**

Diagnostic Service Name	Hex	Support
<b>Diagnostic and Communication Management functional unit</b>		
<b>Diagnostic Session Control</b>	<b>\$10</b>	<b>X</b>
Default Session – Positive Response Required	\$01	X
Extended Diagnostic Session – Positive Response Required	\$03	X
<b>Security Access</b>	<b>\$27</b>	<b>X</b>
Request Seed – Positive Response Required	\$01	X
Send Key – Positive Response Required	\$02	X
<b>Tester Present</b>	<b>\$3E</b>	<b>X</b>
Positive Response Required	\$00	X
No Positive Response Required	\$80	X
<b>Data Transmission functional unit</b>		
<b>Read Data By Identifier</b>	<b>\$22</b>	<b>X</b>
Vehicle Manufacture Specific -Data	\$01 60 - \$CF FF	X
Network Configuration Data For Tractor Trailer Application	\$F0 00 - \$F0 0F	-
Diagnostic Variant Code (Read SCC)	\$F1 0C	X
Hardware Part Number	\$F1 18	X
Software Part Number	\$F1 28	X
ECU Part Number	\$F1 38	X
Hardware Version Information	\$F1 50	-
Software Version Information	\$F1 51	-
Hardware Supplier Identifier	\$F1 54	-
Software Supplier Identifier	\$F1 55	-
Read Software Fingerprint	\$F1 5B	-
ECU Serial Number	\$F1 8C	-
<b>Stored Data Transmission functional unit</b>		
<b>Clear Diagnostic Information</b>	<b>\$14</b>	<b>X</b>
Emission Related Systems	\$000000	-
All Groups / All DTCs	\$FFFFFF	X
Individual DTC	\$XXXXXX	-
<b>Read DTC Information</b>	<b>\$19</b>	<b>X</b>
Report Number Of DTC By Status Mask	\$01	X
Report DTC By Status Mask	\$02	X
<b>Input Output Control functional unit</b>		
<b>Input Output Control By Identifier</b>	<b>\$2F</b>	<b>X</b>
Return Control To ECU	\$00	X
Freeze Current State	\$02	X
Short Term Adjustment	\$03	X
Vehicle Manufacture Specific –Input/Output Control	\$D0 00 - \$DF FF	X

Service Data (Variable data)

Data Identifier	Service Data			Value		Remark
	Byte No	No	Item Name	Conversion	Unit	
0200	1	01	Engine Revolution	X*1	rpm	
	2					
	3	02	LOAD Value	X*1	%	
	4					
0210	1	56	EGR Temperature	X-40	°C	
	2					
	3	0A	Reference Injection Quantity	X*1	%	
	4					
0214	1					
	2					
	3					
	4	10	Intake Air Temperature(EGR)	X-40	°C	
0220	1	20	Atmospheric Pressure	X*2	kPa	
	2	21	Boost Pressure	X*2	kPa	
	3	14	Fuel Temperature (leak)	X-40	°C	
	4					
0221	1	22	Difference pressure across DPF	X*1	kPa	
	2					
	3	23	Exhaust gas pressure	X*1	kPa	
	4					
0230	1	30	Intake Air Temp. (upstream)	X-40	°C	
	2	32	Water Temperature 2	X-40	°C	
	3	31	Water Temperature	X-40	°C	
	4	33	Fuel Temperature(inlet)	X-40	°C	
0240	1	40	Accelerator sensor voltage 1	X*0.02	V	
	2	41	Accelerator sensor voltage 2	X*0.02	V	
	3	42	Accel Pedal Position(unfiltered)	X*1	%	
	4	43	Accel Pedal Position(filtered)	X*1	%	
0250	1	50	Target EGR Valve Position	X*1	%	
	2	51	Actual EGR Valve Position	X*1	%	
	3	24	OXI CAT Temperature	X-40	°C	
	4					
0251	1	52	Target Intake Throttle Position	X*1	%	
	2	53	Actual Intake Throttle Position	X*1	%	
	3	25	DPF Temperature(UpStream)	X-40	°C	
	4					
0252	1	54	Target VGT Position	X*1	%	
	2	55	Actual VGT Position	X*1	%	
	3	26	DPF Temperature(DownStream)	X-40	°C	
	4					
0260	1	60	Air mass flow	x*1000	g/h	
	2					
	3	27	Downstream OXI CAT Temperature	X-40	°C	
	4					
0270	1	28	DPF Related Information	SPECIAL2	—	
	2	16	PTO Adjustment Resistor No.	SPECIAL1	—	
	3	17	Exhaust Gas Flow	X-1000	m3/h	
	4					
0280	1	80	Power Supply Voltage	X*0.5	V	
	2	85	PTO Engine Revolution	X*1	rpm	
	3					
	4	1C	Difference Common Rail Pressure2	X*1	%	
0281	1	82	Q Adjustment Resistor No.	SPECIAL1	—	
	2					
	3					
	4					
0290	1	90	Vehicle Speed	X*1	km/h	
	2					
	3	91	Speed Limiter Reference Speed	X*1	km/h	
	4					
0231	1	1F	Auto Cruise Reference Speed	X*1	km/h	
	2					
	3					
	4					

SPECIAL1

Conversion	Value
01	1
02	2
03	3
04	4
05	5
06	6
07	7
08	8
09	9
0A	10
0B	11
AA	NON

SPECIAL2

Conversion	Value
00	Memory
04	No memory

Service Data (Switch data)

Data Identifier		Service Data		Value		Remark	
Byte No	Bit	No.	Item Name	Bit = 1	Bit = 0		
0300	1	7	A0	Starter SW(S)	ON	OFF	
		6	A1	Starter SW(M)	ON	OFF	
		5	A2	Accel SW	ON	OFF	
		4	A3	Break SW	ON	OFF	
		3	A4	DPF SW	ON	OFF	
		2	A6	Auxiliary Brake SW 1	ON	OFF	
		1	A5	Parking Break SW	ON	OFF	
	0	A7	Clutch SW	ON	OFF		
	2	7					
		6	A8	Neutral SW	ON	OFF	
		5	A9	Idle Up Cancel SW	ON	OFF	
		4	AA	AC SW	ON	OFF	
		3					
		2	AB	Warm up SW	ON	OFF	
		1	AC	Torque Cut SW	ON	OFF	
	0						
	3	7					
		6	AD	PTO SW	ON	OFF	
		5	AE	Diagnosis SW	ON	OFF	
		4					
		3					
		2	AF	Auxiliary Brake Cut SW	ON	OFF	
		1	B0	Auxiliary Brake M/V 1	ON	OFF	
	0						
	4	7	B6	MIL	ON	OFF	
		6	B7	Diagnosis Lamp	ON	OFF	
		5	B8	DPF Indicator Lamp	ON	OFF	
		4	B1	Auxiliary Brake Indicator Lamp	ON	OFF	
3		B2	Glow Relay	ON	OFF		
2		B3	Glow Indicator Lamp	ON	OFF		
1		B4	Starter Safety Relay	ON	OFF		
0	B5	EDU Power Relay	ON	OFF			

DTC Status Mask

DTC Status Mask	Parameter name
\$04	Pending DTCs Same as Mode \$07)
\$08	Confirmed/Stored DTCs

DTC Specification

DTC	DTC Name	Remark
P0002	Fuel system	Fuel Volume Regulator Control Circuit Range/Performance
P0003	Fuel system (Low)	Fuel Volume Regulator Control Circuit Low
P0004	Fuel system (High)	Fuel Volume Regulator Control Circuit High
P0016	Ne SNSR Offset/Backup Mode	Crankshaft Position – Camshaft Position Correlation
P0045	VGT Actuator (Open)	Turbocharger/Supercharger Boost Control Solenoid "A" Circuit/Open
P0046	VGT Actuator (Performance)	Turbocharger/Supercharger Boost Control Solenoid "A" Circuit Range/Performance
P0047	VGT Actuator (Low)	Turbocharger/Supercharger Boost Control Solenoid "A" Circuit Low
P0069	Boost Press SNSR (Correlation)	Manifold Absolute Pressure – Barometric Pressure Correlation
P0078	EXH Brake Cut Signal	Exhaust Valve Control Solenoid Circuit
P0079	Auxillary Brake supply(Low)	Exhaust Valve Control Solenoid Circuit Low
P0087	CRS (Too Low)	Fuel Rail/System Pressure - Too Low
P0088	CRS (Too High)	Fuel Rail/System Pressure - Too High
P0089	MPROP (Over Load)	Fuel Pressure Regulator 1 Performance
P0090	MPROP (Open Circuit)	Fuel Pressure Regulator 1 Control Circuit
P0091	MPROP (Low)	Fuel Pressure Regulator 1 Control Circuit Low
P0092	MPROP (High)	Fuel Pressure Regulator 1 Control Circuit High
P0093	CRS (Fuel Leak)	Fuel System Leak Detected – Large Leak
P0097	INT Air Temp SNSR2(Low)	Intake Air Temperature Sensor 2 Circuit Low
P0098	INT Air Temp SNSR2(High)	Intake Air Temperature Sensor 2 Circuit High
P0101	Airflow Sensor (Plausibility)	Mass or Volume Air Flow "A" Circuit Range/Performance
P0102	Airflow Sensor (Low)	Mass or Volume Air Flow "A" Circuit Low
P0103	Airflow Sensor (High)	Mass or Volume Air Flow "A" Circuit High
P0112	INT Air Temp SNSR (Low)	Intake Air Temperature Sensor 1 Circuit Low
P0113	INT Air Temp SNSR (High)	Intake Air Temperature Sensor 1 Circuit High
P0116	Water Temp SNSR (Plausibility)	Engine Coolant Temperature Sensor 1 Circuit Range/Performance
P0117	Water Temp SNSR (Low)	Engine Coolant Temperature Sensor 1 Circuit Low
P0118	Water Temp SNSR (High)	Engine Coolant Temperature Sensor 1 Circuit High
P011A	Water Temp SNSR	Engine Coolant Temperature Sensor 1/2 Correlation
P0120	TVA SNSR	Throttle/Pedal Position Sensor/Switch "A" Circuit
P0122	Accel Pedal Sensor 1	Throttle/Pedal Position Sensor/Switch "A" Circuit Low
P0123	Accel Pedal Sensor 1	Throttle/Pedal Position Sensor/Switch "A" Circuit High
P0127	Intake Air Temperature Too High	Intake Air Temperature Too High
P0128	Coolant Thermostat	Coolant Thermostat (Coolant Temperature Below Thermostat Regulating Temperature)
P0148	CRS (Fuel Delivery)	Fuel Delivery Error
P0168	Fuel Temperature(High)	Fuel Temperature Too High
P0182	Fuel Temp Sensor (inlet) Low	Fuel Temperature Sensor "A" Circuit Low
P0183	Fuel Temp Sensor (inlet) High	Fuel Temperature Sensor "A" Circuit High
P0191	CRS Pressure SNSR (Plausibility)	Fuel Rail Pressure Sensor "A" Circuit Range/Performance
P0192	CRS Pressure SNSR (Low)	Fuel Rail Pressure Sensor "A" Circuit Low
P0193	CRS Pressure SNSR (High)	Fuel Rail Pressure Sensor "A" Circuit High
P0201	Injector M/V-Cylinder 1(Load)	Injector Circuit/Open – Cylinder 1
P0202	Injector M/V-Cylinder 2(Load)	Injector Circuit/Open – Cylinder 2
P0203	Injector M/V-Cylinder 3(Load)	Injector Circuit/Open – Cylinder 3
P0204	Injector M/V-Cylinder 4(Load)	Injector Circuit/Open – Cylinder 4
P0217	Over Heat	Engine Coolant Over Temperature Condition
P0219	Engine Overrunning	Engine Overspeed Condition
P0222	Accel Pedal Sensor 2	Throttle/Pedal Position Sensor/Switch "B" Circuit Low
P0223	Accel Pedal Sensor 2	Throttle/Pedal Position Sensor/Switch "B" Circuit High
P0226	Throttle Valve Position	Throttle/Pedal Position Sensor/Switch "C" Circuit Range/Performance
P0234	Over Boost	Turbocharger/Supercharger Overboost Condition
P0236	Boost Press SNSR (Plausi)	Turbocharger/Supercharger Boost Sensor "A" Circuit Range/Performance
P0237	Boost Press SNSR (Low)	Turbocharger/Supercharger Boost Sensor "A" Circuit Low
P0238	Boost Press SNSR (High)	Turbocharger/Supercharger Boost Sensor "A" Circuit High
P0251	Common Rail Pressure Defect	Injection Pump Fuel Metering Control "A" (Cam/Rotor/Injector)
P0253	Common Rail Pressure Defect	Injection Pump Fuel Metering Control "A" Low (Cam/Rotor/Injector)
P0254	Common Rail Pressure Defect	Injection Pump Fuel Metering Control "A" High (Cam/Rotor/Injector)
P0261	Injector #1-A (Low)	Cylinder 1 Injector Circuit Low
P0262	Injector #1-A (High)	Cylinder 1 Injector Circuit High
P0263	Injector #1-A (Plausibility)	Cylinder 1 Contribution/Balance
P0264	Injector #2-A (Low)	Cylinder 2 Injector Circuit Low
P0265	Injector #2-A (High)	Cylinder 2 Injector Circuit High
P0266	Injector #2-A (Plausibility)	Cylinder 2 Contribution/Balance
P0267	Injector #3-A (Low)	Cylinder 3 Injector Circuit Low
P0268	Injector #3-A (High)	Cylinder 3 Injector Circuit High
P0269	Injector #3-A (Plausibility)	Cylinder 3 Contribution/Balance
P0270	Injector #4-A (Low)	Cylinder 4 Injector Circuit Low
P0271	Injector #4-A (High)	Cylinder 4 Injector Circuit High

DTC Status Mask

DTC Status Mask	Parameter name
\$04	Pending DTCs \$Same as Mode \$07)
\$08	Confirmed/Stored DTCs

DTC Specification

DTC	DTC Name	Remark
P0272	Injector #4-A (Plausibility)	Cylinder 4 Contribution/Balance
P0299	Turbocharger (Underboost)	Turbocharger/Supercharger Underboost
P0300	Multiple Cylinder Misfire	Random/Multiple Cylinder Misfire Detected
P0301	Cylinder 1 Misfire	Cylinder 1 Misfire Detected
P0302	Cylinder 2 Misfire	Cylinder 2 Misfire Detected
P0303	Cylinder 3 Misfire	Cylinder 3 Misfire Detected
P0304	Cylinder 4 Misfire	Cylinder 4 Misfire Detected
P0335	Engine Revolution SNSR	Crankshaft Position Sensor "A" Circuit
P0339	Engine Revolution SNSR (Plausi)	Crankshaft Position Sensor "A" Circuit Intermittent
P0340	Camshaft Position SNSR	Camshaft Position Sensor "A" Circuit
P0344	Camshaft Position SNSR (Plausi)	Camshaft Position Sensor "A" Circuit Intermittent
P0380	Relay for Glow Relay	Glow Plug/Heater Circuit "A"
P0381	Glow Lamp	Glow Plug/Heater Indicator Circuit
P0383	Relay for Glow Relay	Glow Plug Control Module Control Circuit Low
P0384	Relay for Glow Relay	Glow Plug Control Module Control Circuit High
P0401	EGR Flow (Insufficient)	Exhaust Gas Recirculation Flow Insufficient Detected
P0402	EGR Flow (Excessive)	Exhaust Gas Recirculation Flow Excessive Detected
P0403	EGR1 (Actuator Circuit)	Exhaust Gas Recirculation Control Circuit
P0404	EGR System	Exhaust Gas Recirculation Control Circuit Range/Performance
P0409	EGR1 (Position Sensor)	Exhaust Gas Recirculation Sensor "A" Circuit
P040C	EGR Gas Temp Sensor (Low)	Exhaust Gas Recirculation Temperature Sensor "A" Circuit Low
P040D	EGR Gas Temp Sensor (High)	Exhaust Gas Recirculation Temperature Sensor "A" Circuit High
P0420	Catalyst System	Catalyst System Efficiency Below Threshold
P0425	Catalyst Temp SNSR (Plausi)	Catalyst Temperature Sensor Circuit
P0426	EXH Gas Temp SNSR1(Plausibility)	Catalyst Temperature Sensor Circuit Range/Performance
P0427	EXH Gas Temp SNSR1(Low)	Catalyst Temperature Sensor Circuit Low
P0428	EXH Gas Temp SNSR1(High)	Catalyst Temperature Sensor Circuit High
P0436	Catalyst Temp SNSR (Plausi)	Catalyst Temperature Sensor Circuit Range/Performance
P0437	Catalyst Temp SNSR (Low)	Catalyst Temperature Sensor Circuit Low
P0438	Catalyst Temp SNSR (High)	Catalyst Temperature Sensor Circuit High
P0470	DPF Press SNSR (Plausi)	Exhaust Pressure Sensor "A" Circuit
P0471	DPF Press SNSR (Plausi)	Exhaust Pressure Sensor "A" Circuit Range/Performance
P0472	DPF Press SNSR (Low)	Exhaust Pressure Sensor "A" Circuit Low
P0473	DPF Press SNSR (High)	Exhaust Pressure Sensor "A" Circuit High
P0475	Exhaust Brake PWR (Open)	Exhaust Pressure Control Valve
P0476	Exhaust Brake PWR (Performance)	Exhaust Pressure Control Valve Range/Performance
P0477	Exhaust Brake PWR (Low)	Exhaust Pressure Control Valve Low
P0478	Exhaust Brake PWR (High)	Exhaust Pressure Control Valve High
P047B	DPF Press(Plausi)	Exhaust Pressure Sensor "B" Circuit Range/Performance
P047C	DPF Abs Press SNSR (Low)	Exhaust Pressure Sensor "B" Circuit Low
P047D	DPF Abs Press SNSR (High)	Exhaust Pressure Sensor "B" Circuit High
P0489	EGR Power Supply	Exhaust Gas Recirculation Control Circuit "A" Low
P0490	EGR Power Supply	Exhaust Gas Recirculation Control Circuit "A" High
P0500	Vehicle Speed Sensor	Vehicle Speed Sensor "A"
P0502	Vehicle Speed Sensor (Low)	Vehicle Speed Sensor "A" Circuit Low
P0503	Vehicle Speed Sensor (High)	Vehicle Speed Sensor "A" Intermittent/Erratic/High
P0506	Idle Volume	Idle Air Control System RPM Lower Than Expected
P0507	Idle Volume	Idle Air Control System RPM Higher Than Expected
P0508	Idle Volume & Idle Acc (Low)	Idle Air Control System Circuit Low
P0509	Idle Volume & Idle Acc (High)	Idle Air Control System Circuit High
P0513	Incorrect Immobilizer Key	Incorrect Immobilizer Key
P0544	DPF Temp SNSR(upstream)	Exhaust Gas Temperature Sensor Circuit
P0545	DPF Temp SNSR(upstream)Low	Exhaust Gas Temperature Sensor Circuit Low
P0546	DPF Temp SNSR(upstream)High	Exhaust Gas Temperature Sensor Circuit High
P0548	DPF Temp SNSR(downstream)Low	Exhaust Gas Temperature Sensor Circuit Low
P0549	DPF Temp SNSR(downstream)High	Exhaust Gas Temperature Sensor Circuit High
P0562	Power Supply Voltage (Low)	System Voltage Low
P0563	Power Supply Voltage (High)	System Voltage High
P0571	Brake Switch	Brake Switch "A" Circuit
P0600	CAN Communication	Serial Communication Link
P0605	ECU System(Hardware)	Internal Control Module Read Only Memory (ROM) Error
P0607	ECU System	Control Module Performance
P060B	A/D Converter	Internal Control Module A/D Processing Performance
P0611	No adjustment data of injector	Fuel Injector Control Module Performance
P0615	Starter Safety Relay (Over Load)	Starter Relay Circuit
P0616	Starter Safety Relay (Low)	Starter Relay Circuit Low
P0617	Starter Safety Relay (High)	Starter Relay Circuit High

DTC Status Mask

DTC Status Mask	Parameter name
\$04	Pending DTCs Same as Mode \$07)
\$08	Confirmed/Stored DTCs

DTC Specification

DTC	DTC Name	Remark
P061B	ECU Performance (Calc)	Internal Control Module Torque Calculation Performance
P061C	ECU Performance (Ne)	Internal Control Module Engine RPM Performance
P062B	Abnormal adjustment data of inj	Internal Control Module Fuel Injector Control Performance
P062D	Injector Bank 1	Fuel Injector Driver Circuit Performance
P062E	Injector Bank 2	Fuel Injector Driver Circuit Performance
P062F	ECU System (EEPROM)	Internal Control Module EEPROM Error
P0642	Sensor Supply Voltage 1 (Low)	Sensor Reference Voltage "A" Circuit Low
P0643	Sensor Supply Voltage 1 (High)	Sensor Reference Voltage "A" Circuit High
P0650	MIL	Malfunction Indicator Lamp (MIL) Control Circuit
P0652	Sensor Supply Voltage 2 (Low)	Sensor Reference Voltage "B" Circuit Low
P0653	Sensor Supply Voltage 2 (High)	Sensor Reference Voltage "B" Circuit High
P0657	M/V Voltage (Low)	Actuator Supply Voltage "A" Circuit/Open
P0670	Glow ECU	Glow Plug Control Module Control Circuit/Open
P0671	Glow Plug 1	Cylinder 1 Glow Plug Circuit/Open
P0672	Glow Plug 2	Cylinder 2 Glow Plug Circuit/Open
P0673	Glow Plug 3	Cylinder 3 Glow Plug Circuit/Open
P0674	Glow Plug 4	Cylinder 4 Glow Plug Circuit/Open
P0683	Glow ECU communication	Glow Plug Control Module to PCM Communication Circuit
P0684	Glow ECU communication	Glow Plug Control Module to PCM Communication Circuit Range/Performance
P0685	EDU Relay (Open)	ECM/PCM Power Relay Control Circuit/Open
P0686	EDU Relay (Low)	ECM/PCM Power Relay Control Circuit Low
P0687	EDU Relay (High)	ECM/PCM Power Relay Control Circuit High
P0688	EDU Relay (Over Load)	ECM/PCM Power Relay Sense Circuit/Open
P0698	Sensor Supply Voltage 3 (Low)	Sensor Reference Voltage "C" Circuit Low
P0699	Sensor Supply Voltage 3 (High)	Sensor Reference Voltage "C" Circuit High
P0700	Transmission ECU MIL Request	Transmission Control System (MIL Request)
P0703	Parking Brake Switch	Brake Switch "B" Circuit
P0704	Clutch Switch	Clutch Switch Input Circuit
P081D	Neutral Gear	Neutral Input Circuit
P0830	Neutral Switch	Clutch Pedal Switch "A" Circuit
P0850	Neutral Switch	Park/Neutral Switch Input Circuit
P0852	Parking Brake	Park/Neutral Switch Input Circuit High
P1169	Abnormal adjustment data of AFS	
P1170	Abnormal adjustment data of Q	
P1171	Q Adjustment Resistor (Low)	
P1172	Q Adjustment Resistor (High)	
P1410	Exhaust Absolute Pressure(High)	
P1411	Excessive exhaust Temperature	
P1412	DPF Temp Abnormal1(Auto)(Low)	
P1413	DPF Temp Abnormal2(Auto)(Low)	
P1414	DPF Temp Abnormal3(Auto)(High)	
P1415	DPF Interval Abnormal(Auto)	
P1416	DPF Temp Abnormal1(Manual)(Low)	
P1417	DPF Temp Abnormal2(Manual)(Low)	
P1418	DPF Temp Abnormal3(Manual)(High)	
P1419	DPF Interval Abnormal(Manual)	
P1421	PM accumulation amount level 1	
P1422	PM accumulation amount level 2	
P1423	DPF System	
P1424	PM accumulation amount level 3	
P1430	DPF Regeneration Switch	
P1435	Exhaust Relative Pressure(Low)	
P1440	DPF Temp Abnormal4(Auto)	
P1441	DPF Temp Abnormal4(Manual)	
P1443	DPF Interval Abnormal (Manual)	
P1466	Auxiliary Brake M/V 2 (Plausi)	
P1467	Auxiliary Brake M/V 2 (Low)	
P1468	Auxiliary Brake M/V 2 (High)	
P1475	DPF Pressure Sensor(High)	
P1577	Segment Sensor Supply Voltage	
P1578	Segment Sensor Supply Voltage	
P1632	CAN (EGR1 Time out)	
P1635	CAN (Intake Throttle)	
P1640	CAN Communication(W/G)	
P1660	DPF Lamp Control Circuit(Low)	

DTC Status Mask

DTC Status Mask	Parameter name
\$04	Pending DTCs Same as Mode \$07)
\$08	Confirmed/Stored DTCs

DTC Specification

DTC	DTC Name	Remark
P1700	Torque Cut SW	
P1C01	Inter Cooler Performance	
P2002	DPF MFF	Diesel Particulate Filter Efficiency Below Threshold
P2031	Exhaust Gas Temp	Exhaust Gas Temperature Sensor Circuit
P2032	Exhaust Gas Temp (Low)	Exhaust Gas Temperature Sensor Circuit Low
P2033	Exhaust Gas Temp (High)	Exhaust Gas Temperature Sensor Circuit High
P2080	DOC Temp SNSR	Exhaust Gas Temperature Sensor Circuit Range/Performance
P2084	DOC Temp SNSR(Plausibility)	Exhaust Gas Temperature Sensor Circuit Range/Performance
P2100	TVA (Open)	Throttle Actuator Control Motor Circuit/Open
P2101	TVA (System)	Throttle Actuator Control Motor Circuit Range/Performance
P2102	TVA (Short)	Throttle Actuator Control Motor Circuit Low
P2108	TVA (Controller)	Throttle Actuator Control Module Performance
P2120	Acc Switch	Throttle/Pedal Position Sensor/Switch "D" Circuit
P2121	Acc Sensor 1 (Plausibility)	Throttle/Pedal Position Sensor/Switch "D" Circuit Range/Performance
P2122	Acc Sensor 1 (Low)	Throttle/Pedal Position Sensor/Switch "D" Circuit Low
P2123	Acc Sensor 1 (High)	Throttle/Pedal Position Sensor/Switch "D" Circuit High
P2126	Acc Sensor 2 (Plausibility)	Throttle/Pedal Position Sensor/Switch "E" Circuit Range/Performance
P2127	Acc Sensor 2 (Low)	Throttle/Pedal Position Sensor/Switch "E" Circuit Low
P2128	Acc Sensor 2 (High)	Throttle/Pedal Position Sensor/Switch "E" Circuit High
P2135	TVA SNSR (Voltage)	Throttle/Pedal Position Sensor/Switch "A"/"B" Voltage Correlation
P2138	Acc Sensor Correlation	Throttle/Pedal Position Sensor/Switch "D"/"E" Voltage Correlation
P2139	Accel Pedal and Brake	Throttle/Pedal Position Sensor/Switch "D"/"F" Voltage Correlation
P2146	Injector Bank 1 (Plausibility)	Fuel Injector Group "A" Supply Voltage Circuit/Open
P2147	Injector Bank 1 (Low)	Fuel Injector Group "A" Supply Voltage Circuit Low
P2148	Injector Bank 1 (High)	Fuel Injector Group "A" Supply Voltage Circuit High
P2149	Injector Bank 2 (Plausibility)	Fuel Injector Group "B" Supply Voltage Circuit/Open
P2150	Injector Bank 2 (Low)	Fuel Injector Group "B" Supply Voltage Circuit Low
P2151	Injector Bank 2 (High)	Fuel Injector Group "B" Supply Voltage Circuit High
P2169	Exhaust Valve Act (Open)	Exhaust Pressure Regulator Vent Solenoid Control Circuit/Open
P2170	Exhaust Valve Act (Gnd)	Exhaust Pressure Regulator Vent Solenoid Control Circuit Low
P2171	Exhaust Valve Act (Batt)	Exhaust Pressure Regulator Vent Solenoid Control Circuit High
P2184	Water Temp SNSR2(Low)	Engine Coolant Temperature Sensor 2 Circuit Low
P2185	Water Temp SNSR2(High)	Engine Coolant Temperature Sensor 2 Circuit High
P2187	Low Idle Speed (Low)	System Too Lean at Idle
P2188	Low Idle Speed (High)	System Too Rich at Idle
P2199	EGR Temp Sensor (Correlation)	Intake Air Temperature Sensor 1 / 2 Correlation
P2227	Atm Press SNSR (Plausibility)	Barometric Pressure Circuit Range/Performance
P2228	Atm Press SNSR (Low)	Barometric Pressure Circuit Low
P2229	Atm Press SNSR (High)	Barometric Pressure Circuit High
P2263	VGT System	Turbocharger/Supercharger Boost System Performance
P2279	Intake Pipe Leak	Intake Air System Leak
P2413	EGR System	Exhaust Gas Recirculation System Performance
P2423	Catalyst Efficiency	HC Adsorption Catalyst Efficiency Below Threshold
P2428	DPF Temp Abnormal (High)	Exhaust Gas Temperature Too High
P242F	DPF MFF (Accumulation)	Diesel Particulate Filter Restriction - Ash Accumulation
P2453	DPF Diff SNSR (Plausi) & MFF	Diesel Particulate Filter Differential Pressure Sensor Circuit Range/Performance
P2454	DPF Diff SNSR (Low) & MFF	Diesel Particulate Filter Differential Pressure Sensor Circuit Low
P2455	DPF Diff SNSR (High) & MFF	Diesel Particulate Filter Differential Pressure Sensor Circuit High
P2457	EGR Cooler Performance	Exhaust Gas Recirculation Cooling System Performance
P2458	DPF Regeneration Duration	Diesel Particulate Filter Regeneration Duration
P2459	DPF Regeneration Frequency	Diesel Particulate Filter Regeneration Frequency
P2510	Main Relay (abnormal)	ECM/PCM Power Relay Sense Circuit Range/Performance
P2511	Main Relay (stuck)	ECM/PCM Power Relay Sense Circuit Intermittent
P2533	Starter SW	Ignition Switch Run/Start Position Circuit
P253C	PTO Acc (Low)	PTO Sense Circuit Low
P253D	PTO Acc (High)	PTO Sense Circuit High
P254C	PTO Ne (Low)	PTO Speed Selector Sensor/Switch 1 Circuit Low
P254D	PTO Ne (High)	PTO Speed Selector Sensor/Switch 1 Circuit High
P2562	VGT Position Sensor	Turbocharger Boost Control Position Sensor "A" Circuit
P2563	Boost Pressure Actuator	Turbocharger Boost Control Position Sensor "A" Circuit Range/Performance
P2668	System Lamp	Fuel Mode Indicator Lamp Control Circuit
P2670	MPROP Voltage (Low)	Actuator Supply Voltage "B" Circuit Low
U0001	Powertrain Local CAN Tx Error	
U0002	Powertrain Local CAN Bus Off	
U0019	Low Speed CAN Communication	
U0028	Vehicle Communication Bus A	Vehicle Communication Bus A
U0029	Vehicle Communication Bus Off	Vehicle Communication Bus A Performance
U0101	CAN(A/T ECU)	

Actuator Test

Data Identifier	Actuator Test		Remark
	No	Item Name	
D000	A0	EGR 1	See Application & Session Layer Section8.7.2 (2)
D003	A3	Intake Throttle 1	See Application & Session Layer Section8.7.2 (2)
D004	A4	VGT 1	See Application & Session Layer Section8.7.2 (2)
D005	A5	DPF Regeneration (Manual)	See DID_\$D005(DPF Regeneration) Sheet
D006	A6	DPF Lamp	
D008	A8	EGR,ETV,VGT	See DID_\$D008(EGR,ETV,VGT) Sheet
D00A	AA	Auxiliary Brake M/V 1	
D00B	AB	Auxiliary Brake Indicator Lamp	
D00C	AC	Relay for Glow Relay	
D00D	AD	Glow Indicator Lamp	
D00E	AE	Starter Safety Relay	
D00F	AF	EDU Relay	
D010	B0	MIL	
D011	B1	Diagnosis Lamp	
D012	B2	Fuel Leak Check	
D013	B3	Air Conditioner SW	
D014	B4	Idle Up Cancel SW	
D015	B5	GCU(GLOW PLUG)	
D01A	BB	Injector Test 1	
D01B	BC	Injector Test 2	
D01C	BD	Injector Test 3	
D01D	BE	Injector Test 4	

Case of controlling the DPF Regeneration (Data Identifier: \$D005)

Table1 Input Control Condition for DPF Regeneration

Data Identifier	Control State no. 1	Control State no. 2
DPF Regeneration = \$D005	\$XX: DPF Regeneration Mode Control State - \$00: Controlled by ECU (Normal Operation) - \$01: ON	\$XX: DPF Regeneration Control State - \$00: Controlled by ECU (Normal Operation) - \$01: ON

<Step1: Freeze Current State>

Table2 Report Current State for I/O Local Identifier example (\$D005)

(a) Request Message

Data byte no.	Parameter name	Data value
1	Input Output Control By Identifier Request Service Id	\$2F
2	Data Identifier (MSB)	\$D0
3	Data Identifier	\$05
4	Input Output Control Type (Freeze Current State)	\$02

(b) Response Message - Positive Response

Data byte no.	Parameter name	Data value
1	Input Output Control By Identifier Request Service Id	\$6F
2	Data Identifier (MSB)	\$D0
3	Data Identifier	\$05
4	Input Output Control Type (Freeze Current State)	\$02
5	Control State no. 1 (Current DPF Regeneration Mode Control State =OFF)	\$00
6	Control State no. 2 (Current DPF Regeneration Control State =OFF)	\$00

(c) Response Message - Negative Response

Data byte no.	Parameter name	Data value
1	Negative Response	\$7F
2	Input Output Control By Identifier	\$2F
3	Sub-function = [Negative Response Trouble Code]	\$XX

<Step2: Short Term Adjustment>

Table3 Short Term Adjustment for I/O Local Identifier example (\$D005)

(a) Request Message

Data byte no.	Parameter name	Data value
1	Input Output Control By Identifier Request Service Id	\$2F
2	Data Identifier (MSB)	\$D0
3	Data Identifier	\$05
4	Input Output Control Type (Short Term Adjustment)	\$03
5	Control State no. 1 (Desired DPF Regeneration Mode Control State =ON)	\$01

(b) Response Message - Positive Response

Data byte no.	Parameter name	Data value
1	Input Output Control By Identifier Request Service Id	\$6F
2	Data Identifier (MSB)	\$D0
3	Data Identifier	\$05
4	Input Output Control Type (Short Term Adjustment)	\$03
5	Control State no. 1 (Desired DPF Regeneration Mode Control State =ON)	\$01
6	Control State no. 2 (Desired DPF Regeneration Control State =ON) (After DPF SW = ON on vehicle)	\$01

(c) Response Message - Negative Response

Data byte no.	Parameter name	Data value
1	Negative Response	\$7F
2	Input Output Control By Identifier	\$2F
3	Sub-function = [Negative Response Trouble Code]	\$XX

<Step3: Return Control To ECU>

Table4 Return Control To ECU for I/O Local Identifier example (\$D005)

(a) Request Message

Data byte no.	Parameter name	Data value
1	Input Output Control By Identifier Request Service Id	\$2F
2	Data Identifier (MSB)	\$D0
3	Data Identifier	\$05
4	Input Output Control Type (Return Control To ECU)	\$00

(b) Response Message - Positive Response

Data byte no.	Parameter name	Data value
1	Input Output Control By Identifier Request Service Id	\$6F
2	Data Identifier (MSB)	\$D0
3	Data Identifier	\$05
4	Input Output Control Type (Return Control To ECU)	\$00

(c) Response Message - Negative Response

Data byte no.	Parameter name	Data value
1	Negative Response	\$7F
2	Input Output Control By Identifier	\$2F
3	Sub-function = [Negative Response Trouble Code]	\$XX

**Table1 Input Control Condition for EGR**

Data Identifier	Control State no. 1	Control State no. 2	Control State no. 3	Control State no. 4
EGR,ETV,VGT = \$D008	SXX: EGR,ETV,VGT Control State - S00: Controlled by ECU (Normal Operation) - S01: ON	SXX: EGR Control Percentage - S00: Controlled by ECU (Normal Operation) - SXX: XX %	SXX: EVT Control Percentage - S00: Controlled by ECU (Normal Operation) - SXX: XX %	SXX: VGT Control Percentage - S00: Controlled by ECU (Normal Operation) - SXX: XX %

<Step1: Freeze Current State>

Table2 Report Current State for I/O Local Identifier example (\$D008)

(a) Request Message

Data byte no.	Parameter name	Data value
1	Input Output Control By Identifier Request Service Id	\$2F
2	Data Identifier (MSB)	\$D0
3	Data Identifier	\$08
4	Input Output Control Type (Freeze Current State)	\$02

(b) Response Message - Positive Response

Data byte no.	Parameter name	Data value
1	Input Output Control By Identifier Request Service Id	\$6F
2	Data Identifier (MSB)	\$D0
3	Data Identifier	\$08
4	Input Output Control Type (Freeze Current State)	\$02
5	Control State no. 1 (Current EGR,ETV,VGT Control State =OFF)	\$00
6	Control State no. 2 (Current EGR Valve Position =40%)	\$28
7	Control State no. 3 (Current EVT Valve Position =50%)	\$32
8	Control State no. 4 (Current VGT Valve Position =60%)	\$3C

(c) Response Message - Negative Response

Data byte no.	Parameter name	Data value
1	Negative Response	\$7F
2	Input Output Control By Identifier	\$2F
3	Sub-function = [Negative Response Trouble Code]	\$XX

<Step2: Short Term Adjustment>

Table3 Short Term Adjustment for I/O Local Identifier example (\$D008)

(a) Request Message

Data byte no.	Parameter name	Data value
1	Input Output Control By Identifier Request Service Id	\$2F
2	Data Identifier (MSB)	\$D0
3	Data Identifier	\$08
4	Input Output Control Type (Short Term Adjustment)	\$03
5	Control State no. 1 (Desired EGR,ETV,VGT Control State =ON)	\$01
6	Control State no. 2 (Desired EGR Valve Position =100%)	\$64
7	Control State no. 3 (Desired EVT Valve Position =100%)	\$64
8	Control State no. 4 (Desired VGT Valve Position =100%)	\$64

(b) Response Message - Positive Response

Data byte no.	Parameter name	Data value
1	Input Output Control By Identifier Request Service Id	\$6F
2	Data Identifier (MSB)	\$D0
3	Data Identifier	\$08
4	Input Output Control Type (Short Term Adjustment)	\$03
5	Control State no. 1 (Desired EGR Control State =ON)	\$01
6	Control State no. 2 (Desired EGR Valve Position =100%)	\$64
7	Control State no. 3 (Desired EVT Valve Position =100%)	\$64
8	Control State no. 4 (Desired VGT Valve Position =100%)	\$64

(c) Response Message - Negative Response

Data byte no.	Parameter name	Data value
1	Negative Response	\$7F
2	Input Output Control By Identifier	\$2F
3	Sub-function = [Negative Response Trouble Code]	\$XX

<Step3: Return Control To ECU>

Table4 Return Control To ECU for I/O Local Identifier example (\$D008)

(a) Request Message

Data byte no.	Parameter name	Data value
1	Input Output Control By Identifier Request Service Id	\$2F
2	Data Identifier (MSB)	\$D0
3	Data Identifier	\$08
4	Input Output Control Type (Return Control To ECU)	\$00

(b) Response Message - Positive Response

Data byte no.	Parameter name	Data value
1	Input Output Control By Identifier Request Service Id	\$6F
2	Data Identifier (MSB)	\$D0
3	Data Identifier	\$08
4	Input Output Control Type (Return Control To ECU)	\$00

(c) Response Message - Negative Response

Data byte no.	Parameter name	Data value
1	Negative Response	\$7F
2	Input Output Control By Identifier	\$2F
3	Sub-function = [Negative Response Trouble Code]	\$XX

## Details of Security Access Service

### 1. Access Mode Specification

Access Mode		Security Access Mode	Use
Seed	Key		
\$01	\$02	Protected No-Volatile Parameter Access	Execute Diagnostic Session Service

### 2. Relationship of Seed & Key

Key 1 = Seed 1 - Seed 2 - \$03

Key 2 = Seed 2 + Seed 3 - \$03

Key 3 = Seed 3 + Seed 1 + \$03

Key 4 = Seed 3 - Seed 2 + \$03