



**ECU MASTER, LCA80, LCP80, LCP90, ACP90 - J1939 protocol**

PGN (CAN ID [hex])	Message	SPN	Byte	Resolution, Offset	Range	Direction	Period
<b>61444 (0x0CF00400)</b> MASTER/ LCA/ LCP/ ACP	<b>Electronic Engine Controller #1: EEC1</b> Engine Speed	190	4,5	0.125RPM /bit, 0RPM	0 to 8031.875RPM	TX/RX	10ms
<b>61443 (0x0CF00300)</b> MASTER	<b>Electronic Engine Controller #2: EEC2</b> Accelerator Pedal Position Percent Load At Current Speed	91 92	2 3	0.4% /bit, 0% 1% /bit, 0%	0 to 100% 0 to 250%	TX	50ms
<b>65262 (0x18FEEE00)</b> MASTER	<b>Engine Temperature #1: ET1</b> Engine Coolant Temperature Engine Fuel Temperature Engine Oil Temperature 1 Engine Intercooler Temperature	110 174 175 52	1 2 3,4 7	1°C /bit, -40°C 1°C /bit, -40°C 0,03125 /bit, -273°C 1°C /bit, -40°C	-40 to 210°C -40 to 210°C -273 to 1735°C -40 to 210°C	TX	1s
<b>65263 (0x18FEEF00)</b> MASTER	<b>Engine Fluid Level / Pressure #1: EFP1</b> Fuel Delivery Pressure Engine Oil Level Engine Oil Pressure Crankcase Pressure Coolant Pressure Coolant Level	94 98 100 101 109 111	1 3 4 5,6 7 8	4kPa /bit, 0kPa 0.4% /bit, 0% 4kPa /bit, 0kPa 1/128kPa /bit, -250kPa 2kPa /bit, 0kPa 0.4% /bit, 0%	0 to 1000kPa 0 to 100% 0 to 1000kPa -250 to 251.99kPa 0 to 500kPa 0 to 100%	TX	500ms
<b>65271 (0x18FEF700)</b> MASTER	<b>Vehicle Electrical Power: VEP</b> Electrical Potential	168	5,6	0.05V /bit, 0V	0 to 3212.75V	TX	1s
<b>65270 (0x18FEF600)</b> MASTER	<b>Inlet / Exhaust Conditions #1: IEC1</b> Boost Pressure Intake Manifold 1 Temperature Air Inlet Pressure Exhaust Gas Temperature	102 105 106 173	2 3 4 6,7	2kPa /bit, 0kPa 1°C /bit, -40°C 2kPa /bit, 0kPa 0,03125 /bit, -273°C	0 to 500kPa -40 to 210°C 0 to 500kPa -273 to 1735°C	TX	500ms
<b>65266 (0x18FEF200)</b> MASTER	<b>Fuel Economy (Liquid): LFE</b> Throttle Position	51	7	0.4% /bit, 0%	0 to 100%	TX	50ms
<b>65269 (0x18FEF500)</b> MASTER	<b>Ambient Conditions: AMB</b> Barometric Pressure Air Inlet Temperature	108 172	1 6	0.5kPa /bit, 0kPa 1°C /bit, -40°C	0 to 125kPa -40 to 210°C	TX	1s
<b>65272 (0x18FEF800)</b> MASTER	<b>Transmission Fluids: TF</b> Transmission Oil Level Transmission Oil Pressure Transmission Oil Temperature	124 127 177	2 4 5,6	0.4% /bit, 0% 16kPa /bit, 0kPa 0,03125 /bit, -273°C	0 to 100% 0 to 4000kPa -273 to 1735°C	TX	1s
<b>65253 (0x18FEE500)</b> MASTER	<b>Engine Hours, Revolutions: HOURS</b> Total Engine Hours	247	1-4	0.05hr /bit, 0hr	0 to 210,554,060.75 hr	TX	1s
<b>00000 (0x0C000003)</b> MASTER	<b>Torque/Speed Control #1: TSC1</b> Requested Speed/Speed Limit	898	2,3	0.125RPM /bit, 0RPM	0 to 8031.875RPM	RX	10ms
<b>65350 (0x0CFF4611)</b> MASTER	<b>User Engine Control</b> Engine Start Engine Kill		1,1 5,1	1 -> START 1 -> KILL	0 to 1 0 to 1	RX	10ms
<b>61455 (0x18F00F00)</b> MASTER/ LCA/ LCP	<b>Aftertreatment Outlet Gas #1: AOG1</b> Aftertreatment Outlet Lambda Aftertreatment Outlet O2 Aftertreatment Sensor Temperature Aftertreatment Actual Step	520193 3227 520194 520195	1,2 3,4 5,6 7,8	0.000390625 /bit, 0 0.00051% /bit, -12% 0.03125°C /bit, -273°C 1 Step /bit, 0	0 to 25.6 -12 to 21% -273 to 1735°C 0 to 65535	RX/TX	50ms
<b>65298 (0x4FF1200)</b> MASTER/ ACP	<b>Desired position: ACP</b> Valve Position Demand	2551	1,2	1/81.92% /bit, 0%	0 to 100%	RX/TX	20ms

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	V8.0-0: First edition
	V8.42-0: Added CANopen
	V8.45-0: Added ACP90 message



ECU MASTER and LAMBDA controller - CANopen protocol								
PDO (CAN ID [hex])	Message	SPN	Byte	Resolution, Offset	Range	Direction	Period	
<b>GUARD (0x700 + ADR)</b> MASTER & LAMBDA	<b>NODE GUARD #1: NG</b> HEART BIT		1.8		0 to 1	TX	50ms	
<b>PDO1 (0x180 + ADR)</b> MASTER	<b>Electronic Engine Controller #1: EEC1</b> Engine Speed Electrical Potential Air Inlet Temperature Air Inlet Pressure Boost Pressure	190 168 172 106 102	1,2 3 5 6 7	0.125RPM /bit, 0RPM 0.05V /bit, 0V 1°C /bit, -40°C 2kPa /bit, 0kPa 2kPa /bit, 0kPa	0 to 8031.875RPM 0 to 3212.75V -40 to 210°C 0 to 500kPa 0 to 500kPa	TX	25ms	
<b>PDO2 (0x280 + ADR)</b> MASTER	<b>Engine Fluid Level / Pressure #1: EFP1</b> Engine Coolant Temperature Coolant Level Coolant Pressure Engine Oil Temperature 1 Engine Oil Level Engine Oil Pressure	110 111 109 175 98 100	1 3 4 5,6 7 8	1°C /bit, -40°C 0.4% /bit, 0% 2kPa /bit, 0kPa 0,03125 /bit, -273°C 0.4% /bit, 0% 4kPa /bit, 0kPa	-40 to 210°C 0 to 100% 0 to 500kPa -273 to 1735°C 0 to 100% 0 to 1000kPa	TX	50ms	
<b>PDO1 (0x180 + ADR)</b> LAMBDA	<b>Aftertreatment Outlet Gas #1: AOG1</b> Aftertreatment Outlet Lambda Aftertreatment Outlet O2 Aftertreatment Sensor Temperature Aftertreatment Actual Step	520193 3227 520194 520195	1,2 3,4 5,6 7,8	0.000390625 /bit, 0 0.000514% /bit, -12% 0.03125°C /bit, -273°C 1 Step /bit, 0	0 to 25.6 -12 to 21% -273 to 1735°C 0 to 65535	TX	50ms	

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