CAN Communication Specification for FMS

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Protocol used:
SAE J1939, ISO 11898 on network "ExtFMS".

Data length code and unspecified bits in the PGN data field
All transmitted CAN messages shall have the data length code (DLC) set to
8 bytes, unless other specified.

This CAN specification only lists the data field bits and bytes that have parameter assignments. Any bits of the PGN data field that are not assigned to a parameter are not shown, but shall be accounted for as unspecified. All unspecified bits within the transmitted message data length must be filled with a value of one (1). The unspecified bits are available for assignment to parameters at some future time.

CAN message priority bits
The three CAN message priority bits are used to optimize message latency for transmission onto the bus only. They should be globally masked off by the receiver (ignored). The priority of any received message can be from highest, 0 (000_2), to lowest, 7 (111_2). The priority used for transmit messages should at all times be as specified in this document.

For signals which have ranges for the parameter value Error, this range is represented with the first valid value in the range (i.e. for a 2 byte signal the Error range 0xFExx (65024 – 65279) the Error value would be 0xFE00). This corresponds to current implementation practices.

For signals which have ranges for the parameter value Not Available/Not Requested, this is represented with the last valid value in the range (i.e. for a 2 byte signal the Not Available range 0xFFxx (65280 – 65535) the Not Available value would be 0xFFFF). This thus corresponds to a not implemented signal.

If not specified the ranges staring at 2 byte values FB00 and FC00 and corresponding, are assumed not to be used and ranges to follow J1939 standard definitions

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2.1 Name extensions

Extensions for messages sent to/from more than one device:

Extension	From	To
APS	0x30 (Air Processing System)	
CMS	0x47 (Chassis management System)	
E	0x00 (Engine)	
F	0x2F (Suspension Management)	
FMS	0x25 (Fleet Management System)	
FMS -> FF	0x25 (Fleet Management System)	0xFF (Global)
ICL	0x17 (Instrument Cluster)	
K	0x27 (Coordinator)	
RD	0x10 (Retarder)	
T	0x03 (Gearbox)	
TCO	0xEE (Tachograph)	
Unknown	0xFE (Unknown port)	

2.2   Message summary

Message	Send	Receive
Messages on network "ExtFMS"		
Received messages: PDU1, Destination Address; 0xFF / Global / FF		
TP_CM(Transport Protocol - Connection Mgmt) - FMS -> FF		18ECFF25
TP_DT(Transport Protocol - Data Transfer) - FMS -> FF		18EBFF25
Received messages: PDU2		
AIR1(Air Supply Pressure) - APS		18FEAE30
AIR1(Air Supply Pressure) - FMS		18FEAE25
AlternatorSpeed(Alternator Speed) - FMS		18FED525
AmbientConditions(Ambient Conditions) - FMS		18FEF525
AmbientConditions(Ambient Conditions) - K		18FEF527
ASC4(Air Suspension Control 4) - F		18FE582F
ASC4(Air Suspension Control 4) - FMS		18FE5825
AT1T1I(Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Information) - FMS		18FE5625
CruiseControlVehSpeed(Cruise Control/Vehicle Speed) - E		18FEF100
CruiseControlVehSpeed(Cruise Control/Vehicle Speed) - FMS		18FEF125
CVW(Combination Vehicle Weight) - FMS		18FE7025
DashDisplay(Dash Display) - CMS		18FEFC47
DashDisplay(Dash Display) - FMS		18FEFC25
DI_cyclic(Driver's Identification) - FMS		18ECFF25 18EBFF25 (FE6B)
DoorControl1(Door Control 1) - FMS		18FE4E25
DoorControl1(Door Control 1) - Unknown		18FE4EFE
DoorControl2(Door Control 2) - FMS		18FDA525
DoorControl2(Door Control 2) - Unknown		18FDA5FE
EEC1(Electronic Engine Controller 1) - E		0CF00400
EEC1(Electronic Engine Controller 1) - FMS		0CF00425
EEC2(Electronic Engine Controller 2) - E		0CF00300
EEC2(Electronic Engine Controller 2) - FMS		0CF00325
EngineHoursRevolutions(Engine Hours, Revolutions) - E		18FEE500
EngineHoursRevolutions(Engine Hours, Revolutions) - FMS		18FEE525
EngineTemp(Engine Temperature 1) - E		18FEEE00
EngineTemp(Engine Temperature 1) - FMS		18FEEE25
ERC1(Electronic Retarder Controller 1) - FMS		18F00025
ERC1(Electronic Retarder Controller 1) - RD		18F00010
ETC2(Electronic Transmission Controller 2) - FMS		18F00525
ETC2(Electronic Transmission Controller 2) - T		18F00503
FMSStandardInterface(FMS-standard Interface Identity/Capabilities) - FMS		1CFDD125
FuelConsumption(Fuel Consumption (Liquid)) - E		18FEE900
FuelConsumption(Fuel Consumption (Liquid)) - FMS		18FEE925

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Message	Send	Receive
FuelEconomy(Fuel Economy (Liquid)) - E		18FEF200
FuelEconomy(Fuel Economy (Liquid)) - FMS		18FEF225
HiResVehicleDist(High Resolution Vehicle Distance) - FMS		18FEC125
HiResVehicleDist(High Resolution Vehicle Distance) - TCO		18FEC1EE
HRLFC(High Resolution Fuel Consumption (Liquid)) - FMS		18FD0925
ServiceInformation(Service Information) - FMS		18FEC025
TCO1(Tachograph) - FMS		0CFE6C25
TCO1(Tachograph) - TCO		0CFE6CEE
TelltaleStatus(Telltale Status) - FMS		18FD7D25
TelltaleStatus(Telltale Status) - ICL		18FD7D17
TimeDate(Time/Date) - FMS		18FEE625
TimeDate(Time/Date) - ICL		18FEE617
VehicleId_10000(Vehicle Identification 10000ms) - FMS		18ECFF25 18EBFF25 (FEEC)
VehicleWeight_1000(Vehicle Weight 1000ms) - FMS		18FEEA25

2.3 Denominations

Tmin   - Minimum period between two messages [ms]
Tmax   - Maximum period between two messages [ms]
Byte   - Parameter starts from this byte.
Bit   - Parameter starts from this bit (byte = 1-8) in the given byte.
Length - Length of the parameter in bits.

2.4 Network: ExtFMS

2.4.1 Received messages: PDU1, Destination Address; 0xFF / Global / FF

2.4.1.1 TP_CM (Transport Protocol - Connection Mgmt) - FMS -> FF

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18ECFF25	1000	10000	00EC00	6	When Active	0	0		25	FF	Std

See J1939-21 for details. Transmission repetition rate: Per the Parameter Group Number to be transferred.

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	8	**ControlByteTP_CM (Control Byte, Transport Protocol)**		1	0	0 - 255		
	X				Destination Specific Request_To_Send (RTS)	0x10					
	X				Destination Specific Clear_To_Send (CTS)	0x11					
	X				End_of_Message Acknowledge(END)	0x13					
	X				BroadcastAnnounceMessage(BAM)	0x20					
	X				ConnectionAbort(ABO)	0xFF					
	X	2	1	8	**TPCM_ABO_ConnectionAbortReason (Connection Abort Reason)**		1	0	0 - 250		1)
	X				Already in one or more connection managed sessions and cannot support another.	0x01					
	X				System resources were needed for another task so this connection managed session was terminated.	0x02					
	X				A timeout occurred and this is the connection abort to close the session.	0x03					
	X				Error	0xFE					
	X				NotAvailable	0xFF					
	X	2	1	16	**TPCM_BAM_TotalMessageSize (Total Message Size)**		1	0	0 - 64255	byte	2)
	X	2	1	8	**TPCM_CTS_NumberOfPackets (Number Of Packets that can be sent)**		1	0	0 - 255		3)
	X	2	1	16	**TPCM_END_TotalMessageSize (Total Message Size)**		1	0	0 - 64255	byte	4)
	X	2	1	16	**TPCM_RTS_TotalMessageSize (Total Message Size)**		1	0	0 - 64255	byte	5)
	X	3	1	8	**TPCM_CTS_NextPacket (Next packet number to be sent)**		1	0	0 - 255		6)
	X	4	1	8	**TPCM_BAM_TotalNumberOfPackets (Total Number Of Packets)**		1	0	0 - 255	counts	7)
	X	4	1	8	**TPCM_END_TotalNumberOfPackets (Total Number Of Packets)**		1	0	0 - 255	counts	8)
	X	4	1	8	**TPCM_RTS_TotalNumberOfPackets (Total Number Of Packets)**		1	0	0 - 255	counts	9)
	X	5	1	8	**TPCM_RTS_MaximumNumberOfPackets (Maximum Number Of Packets)**		1	0	0 - 255	counts	10)

	X	6	1	24	**TPCM_ABO_PGNumber (Parameter Group Number Of The Packeted Message)**		1	0	0 - 16777215	PGN	11)
	X	6	1	24	**TPCM_BAM_PGNumber (Parameter Group Number Of The Packeted Message)**		1	0	0 - 16777215	PGN	12)
	X	6	1	24	**TPCM_CTS_PGNumber (Parameter Group Number Of The Packeted Message)**		1	0	0 - 16777215	PGN	13)
	X	6	1	24	**TPCM_END_PGNumber (Parameter Group Number Of The Packeted Message)**		1	0	0 - 16777215	PGN	14)
	X	6	1	24	**TPCM_RTS_PGNumber (Parameter Group Number Of The Packeted Message)**		1	0	0 - 16777215	PGN	15)

Note 1) (If multiplexor = 0xFF)
Note 2) 9 to 1785 (2 bytes), zero to 8 and 1786 to 65535 not allowed. (If multiplexor = 0x20)
Note 3) 2 to 255 (1 byte), zero and 1 not allowed. This value shall be no larger than the value in byte 5 of the RTS message. (If multiplexor = 0x11)
Note 4) 9 to 1785 (2 bytes), zero to 8 and 1786 to 65535 not allowed. (If multiplexor = 0x13)
Note 5) 9 to 1785 (2 bytes), zero to 8 and 1786 to 65535 not allowed. (If multiplexor = 0x10)
Note 6) 1 to 255 (1 byte), zero not allowed. (If multiplexor = 0x11)
Note 7) 2 to 255 (1 byte), zero and 1 not allowed. (If multiplexor = 0x20)
Note 8) 2 to 255 (1 byte), zero and 1 not allowed. (If multiplexor = 0x13)
Note 9) 2 to 255 (1 byte), zero and 1 not allowed. (If multiplexor = 0x10)
Note 10) 2 to 255 (1byte), zero through 1 are not allowed. 0xFF no limits exists. (If multiplexor = 0x10)
Note 11) Byte 6=LSB, Byte 7= Mid, Byte 8=MSB. (If multiplexor = 0xFF)
Note 12) Byte 6=LSB, Byte 7= Mid, Byte 8=MSB. (If multiplexor = 0x20)
Note 13) Byte 6=LSB, Byte 7= Mid, Byte 8=MSB. (If multiplexor = 0x11)
Note 14) Byte 6=LSB, Byte 7= Mid, Byte 8=MSB. (If multiplexor = 0x13)
Note 15) Byte 6=LSB, Byte 7= Mid, Byte 8=MSB. (If multiplexor = 0x10)

2.4.1.2 TP_DT (Transport Protocol - Data Transfer) - FMS -> FF

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18EBFF25	50	200	00EB00	6	On Request	0	0		25	FF	Std

See J1939-21 for details.

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	8	**SequenceNumber (Sequence Number)**		1	0	0 - 255	count	
	X	2	1	8	**Byte1 (Data Transfer Byte1)**		1	0	0 - 255		
	X	3	1	8	**Byte2 (Data Transfer Byte2)**		1	0	0 - 255		
	X	4	1	8	**Byte3 (Data Transfer Byte3)**		1	0	0 - 255		
	X	5	1	8	**Byte4 (Data Transfer Byte3)**		1	0	0 - 255		
	X	6	1	8	**Byte5 (Data Transfer Byte5)**		1	0	0 - 255		
	X	7	1	8	**Byte6 (Data Transfer Byte6)**		1	0	0 - 255		
	X	8	1	8	**Byte7 (Data Transfer Byte3)**		1	0	0 - 255		

2.4.2 Received messages: PDU2

2.4.2.1 AIR1 (Air Supply Pressure) - APS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEAE30	1000	1000	00FEAE	6	Cyclic	0	0	AE	30		Std

Sender	Reciver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	8	**PneumaticSupplyPress (Pneumatic Supply Pressure)**		8	0	0 - 2000	kPa	
					Error	0xFE					
					NotAvailable	0xFF					
		2	1	8	**ParkingTrailerAirPressure (Parking and/or Trailer Air Pressure)**		8	0	0 - 2000	kPa	
					Error	0xFE					
					NotAvailable	0xFF					
	X	3	1	8	**ServiceBrakeAirPressure1 (Service Brake Air Pressure, Circuit1)**		8	0	0 - 2000	kPa	
	X				Error	0xFE					
	X				NotAvailable	0xFF					
	X	4	1	8	**ServiceBrakeAirPressure2 (Service Brake Air Pressure, Circuit2)**		8	0	0 - 2000	kPa	1)
	X				Error	0xFE					
	X				NotAvailable	0xFF					
		5	1	8	**AuxilarySupplyPressure (Auxiliary Equipment Supply Pressure)**		8	0	0 - 2000	kPa	
					Error	0xFE					
					NotAvailable	0xFF					
		6	1	8	**AirSuspensionSupplyPress (Air Suspension Supply Pressure)**		8	0	0 - 2000	kPa	
					Error	0xFE					
					NotAvailable	0xFF					
		7	1	2	**AirCompressorStatus (Air Compressor Status)**		1	0	0 - 3		
					CompressorNotActive	0x00					
					CompressorActive	0x01					
					Error	0x02					
					NotAvailable	0x03					
		8	1	8	**PowertrainCircuitSupplyPressure (Powertrain Circuit Supply Pressure)**		8	0	0 - 2000	kPa	
					Error	0xFE					
					NotAvailable	0xFF					

Note 1) Rear Circuit

2.4.2.2 AIR1 (Air Supply Pressure) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEAE25	1000	1000	00FEAE	6	Cyclic	0	0	AE	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	8	**PneumaticSupplyPress (Pneumatic Supply Pressure)**		8	0	0 - 2000	kPa	
					Error	0xFE					
					NotAvailable	0xFF					
		2	1	8	**ParkingTrailerAirPressure (Parking and/or Trailer Air Pressure)**		8	0	0 - 2000	kPa	
					Error	0xFE					
					NotAvailable	0xFF					
	X	3	1	8	**ServiceBrakeAirPressure1 (Service Brake Air Pressure, Circuit1)**		8	0	0 - 2000	kPa	
					Error	0xFE					
	X				NotAvailable	0xFF					
		4	1	8	**ServiceBrakeAirPressure2 (Service Brake Air Pressure, Circuit2)**		8	0	0 - 2000	kPa	1)
					Error	0xFE					
	X				NotAvailable	0xFF					
		5	1	8	**AuxilarySupplyPressure (Auxiliary Equipment Supply Pressure)**		8	0	0 - 2000	kPa	
					Error	0xFE					
					NotAvailable	0xFF					
		6	1	8	**AirSuspensionSupplyPress (Air Suspension Supply Pressure)**		8	0	0 - 2000	kPa	
					Error	0xFE					
					NotAvailable	0xFF					
		7	1	2	**AirCompressorStatus (Air Compressor Status)**		1	0	0 - 3		
					CompressorNotActive	0x00					
					CompressorActive	0x01					
					Error	0x02					
					NotAvailable	0x03					
		8	1	8	**PowertrainCircuitSupplyPressure (Powertrain Circuit Supply Pressure)**		8	0	0 - 2000	kPa	
					Error	0xFE					
					NotAvailable	0xFF					

Note 1) Rear Circuit

2.4.2.3 AlternatorSpeed (Alternator Speed) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FED525	1000	1000	00FED5	6	Cyclic	0	0	D5	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	16	**AlternatorSpeed (AltSpeed)**		0.5	0	0 - 32127.5	rpm	
	X	3	1	2	**Alternator1Status (Alternator 1 Status)**		1	0	0 - 3		
					AlternatorNotCharging	0x00					
					AlternatorCharging	0x01					
					Error	0x02					
	X				NotAvailable	0x03					
	X	3	3	2	**Alternator2Status (Alternator 2 Status)**		1	0	0 - 3		
					AlternatorNotCharging	0x00					
					AlternatorCharging	0x01					
					Error	0x02					
	X				NotAvailable	0x03					
	X	3	5	2	**Alternator3Status (Alternator 3 Status)**		1	0	0 - 3		
					AlternatorNotCharging	0x00					
					AlternatorCharging	0x01					
					Error	0x02					
	X				NotAvailable	0x03					
	X	3	7	2	**Alternator4Status (Alternator 4 Status)**		1	0	0 - 3		
					AlternatorNotCharging	0x00					
					AlternatorCharging	0x01					
					Error	0x02					
	X				NotAvailable	0x03					

2.4.2.4 AmbientConditions (Ambient Conditions) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEF525	1000	1000	00FEF5	6	Cyclic	0	0	F5	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	8	**BarometricPressure (Barometric Pressure)**		0.5	0	0 - 125	kPa	
					Error	0xFE					
					NotAvailable	0xFF					
		2	1	16	**CabInteriorTemperature (Cab Interior Temperature)**		0.03125	-273	-273 - 1734.96875	deg	
					Error	0xFE00					
					NotAvailable	0xFF00					
	X	4	1	16	**AmbientAirTemperature (Ambient Air Temperature)**		0.03125	-273	-273 - 1734.96875	deg	
					Error	0xFE00					
	X				NotAvailable	0xFF00					
		6	1	8	**AirInletTemperature (Air Inlet Temperature)**		1	-40	-40 - 210	deg	
					Error	0xFE					
					NotAvailable	0xFF					
		7	1	16	**RoadSurfaceTemperature (Road Surface Temperature)**		0.03125	-273	-273 - 1735	deg	
					Error	0xFE00					
					NotAvailable	0xFF00					

2.4.2.5 AmbientConditions (Ambient Conditions) - K

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEF527	1000	1000	00FEF5	6	Cyclic	0	0	F5	27		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	8	**BarometricPressure (Barometric Pressure)**		0.5	0	0 - 125	kPa	
					Error	0xFE					
					NotAvailable	0xFF					
		2	1	16	**CabInteriorTemperature (Cab Interior Temperature)**		0.03125	-273	-273 - 1734.96875	deg	
					Error	0xFE00					
					NotAvailable	0xFF00					
	X	4	1	16	**AmbientAirTemperature (Ambient Air Temperature)**		0.03125	-273	-273 - 1734.96875	deg	
	X				Error	0xFE00					
	X				NotAvailable	0xFF00					
		6	1	8	**AirInletTemperature (Air Inlet Temperature)**		1	-40	-40 - 210	deg	
					Error	0xFE					
					NotAvailable	0xFF					
		7	1	16	**RoadSurfaceTemperature (Road Surface Temperature)**		0.03125	-273	-273 - 1735	deg	
					Error	0xFE00					
					NotAvailable	0xFF00					

2.4.2.6 ASC4 (Air Suspension Control 4) - F

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FE582F	100	100	00FE58	6	Cyclic	0	0	58	2F		Std

Should only be sent if the Pressure Values on CAN parameter has been activated.

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	16	**BellowPressFrontAxleLeft (BellowPressFrontAxleLeft)**		0.1	0	0 - 6425.5	kPa	1)
	X				Error	0xFE00					
	X				NotAvailable	0xFF00					
	X	3	1	16	**BellowPressFrontAxleRight (BellowPressFrontAxleRight)**		0.1	0	0 - 6425.5	kPa	2)
	X				Error	0xFE00					
	X				NotAvailable	0xFF00					
	X	5	1	16	**BellowPressRearAxleLeft (BellowPressRearAxleLeft)**		0.1	0	0 - 6425.5	kPa	3)
	X				Error	0xFE00					
	X				NotAvailable	0xFF00					
	X	7	1	16	**BellowPressRearAxleRight (BellowPressRearAxleRight)**		0.1	0	0 - 6425.5	kPa	4)
	X				Error	0xFE00					
	X				NotAvailable	0xFF00					

Note 1) Indicates 'Bellow Pressure Tag Axle 2 Left' when sent from auxiliary ELC system.

Note 2) Indicates 'Bellow Pressure Tag Axle 2 Right' when sent from auxiliary ELC system.

Note 3) Indicates 'Bellow Pressure Tag Axle 1 Left' OR 'Bellow Pressure Dolly Left' when sent from auxiliary ELC system.

Note 4) Indicates 'Bellow Pressure Tag Axle 1 Right' OR 'Bellow Pressure Dolly Right' when sent from auxiliary ELC system.

2.4.2.7 ASC4 (Air Suspension Control 4) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FE5825	100	100	00FE58	6	Cyclic	0	0	58	25		Std

Should only be sent if the Pressure Values on CAN parameter has been activated.

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	16	**BellowPressFrontAxleLeft (BellowPressFrontAxleLeft)**		0.1	0	0 - 6425.5	kPa	1)
					Error	0xFE00					
	X				NotAvailable	0xFF00					
	X	3	1	16	**BellowPressFrontAxleRight (BellowPressFrontAxleRight)**		0.1	0	0 - 6425.5	kPa	2)
					Error	0xFE00					
	X				NotAvailable	0xFF00					
	X	5	1	16	**BellowPressRearAxleLeft (BellowPressRearAxleLeft)**		0.1	0	0 - 6425.5	kPa	3)
					Error	0xFE00					
	X				NotAvailable	0xFF00					
	X	7	1	16	**BellowPressRearAxleRight (BellowPressRearAxleRight)**		0.1	0	0 - 6425.5	kPa	4)
					Error	0xFE00					
	X				NotAvailable	0xFF00					

Note 1) Indicates 'Bellow Pressure Tag Axle 2 Left' when sent from auxiliary ELC system.

Note 2) Indicates 'Bellow Pressure Tag Axle 2 Right' when sent from auxiliary ELC system.

Note 3) Indicates 'Bellow Pressure Tag Axle 1 Left' OR 'Bellow Pressure Dolly Left' when sent from auxiliary ELC system.

Note 4) Indicates 'Bellow Pressure Tag Axle 1 Right' OR 'Bellow Pressure Dolly Right' when sent from auxiliary ELC system.

2.4.2.8 AT1T1I (Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Information) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FE5625	1000	1000	00FE56	6	Cyclic	0	0	56	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	8	**Aftertr1DieselExhtFluidTankLevel (Aftertreatment 1 Diesel Exhaust Fluid Tank Level)**		0.4	0	0 - 100	%	
	X				Error	0xFE					
	X				NotAvailable	0xFF					
		2	1	8	**Aftertr1DieselExhFluidTankTemp (Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature)**		1	-40	-40 - 210	deg	
					Error	0xFE					
					NotAvailable	0xFF					
		3	1	16	**Aftertr1DieselExhFluidTankLevel2 (Aftertreatment 1 Diesel Exhaust Fluid Tank Level 2)**		0.1	0	0 - 6425.5	mm	
					Error	0xFE00					
					NotAvailable	0xFFFF					
		5	1	5	**Aftertr1DieselExhFluidTankLevelPrelFMI (Aftertreatment 1 Diesel Exhaust Fluid Tank Level Preliminary FMI)**		1	0	0 - 31		
					Above normal (most severe)	0x00					
					Below normal (most severe)	0x01					
					Data erratic	0x02					
					Voltage above normal	0x03					
					Voltage below normal	0x04					
					Current below normal	0x05					
					Current above normal	0x06					
					Mechanical system not responding	0x07					
					Abnormal frequency	0x08					
					Abnormal update rate	0x09					
					Abnormal rate of change	0x0A					
					Root cause not known	0x0B					
					Bad intelligent device	0x0C					
					Out of calibration	0x0D					
					Special intstructions	0x0E					
					Above normal (least severe)	0x0F					
					Above normal (moderately severe)	0x10					
					Below normal (least severe)	0x11					
					Below normal (moderatels severe)	0x12					
					Received network data in error	0x13					
					Data Drifted High	0x14					
					Data Drifted Low	0x15					
					NotAvailable	0x1F					

		5	6	3	**AftertrSelectCatReductionOperatorInducementAct (Aftertreatment Selective Catalytic Reduction Operator Inducement Active)**		1	0	0 - 7		
					Off	0x00					
					OnSolid	0x01					
					Reserved	0x02					
					Reserved	0x03					
					OnFastBlink	0x04					
					Reserved	0x05					
					Reserved	0x06					
					NotAvailable	0x07					
		6	1	5	**Aftertr1DieselExhFluidTank1TempPrelFMI (Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Temperature Preliminary FMI)**		1	0	0 - 31		
					Above normal (most severe)	0x00					
					Below normal (most severe)	0x01					
					Data erratic	0x02					
					Voltage above normal	0x03					
					Voltage below normal	0x04					
					Current below normal	0x05					
					Current above normal	0x06					
					Mechanical system not responding	0x07					
					Abnormal frequency	0x08					
					Abnormal update rate	0x09					
					Abnormal rate of change	0x0A					
					Root cause not known	0x0B					
					Bad intelligent device	0x0C					
					Out of calibration	0x0D					
					Special intstructions	0x0E					
					Above normal (least severe)	0x0F					
					Above normal (moderately severe)	0x10					
					Below normal (least severe)	0x11					
					Below normal (moderatels severe)	0x12					
					Received network data in error	0x13					
					Data Drifted High	0x14					
					Data Drifted Low	0x15					
					NotAvailable	0x1F					
		6	6	3	**AftertrSCROperatorInducementSeverity (Aftertreatment SCR Operator Inducement Severity)**		1	0	0 - 7		
					DriverWarning	0x00					
					InducementLevel1	0x01					
					InducementLevel2	0x02					
					InducementLevel3	0x03					
					InducementLevel4	0x04					
					InducementLevel5	0x05					
					TemporaryOverrideOfInducement	0x06					
					NotAvailable	0x07					
		7	1	8	**Aftertr1DieselExhFluidTankHeater (Aftertreatment 1 Diesel Exhaust Fluid Tank Heater)**		0.4	0	0 - 100	%	
					Error	0xFE					
					NotAvailable	0xFF					
		8	1	5	**Aftertr1DieselExhFluidTank1HeaterPrelFMI (Aftertreatment 1 Diesel Exhaust Fluid Tank 1 Heater Preliminary FMI)**		1	0	0 - 31		
					Above normal (most severe)	0x00					
					Below normal (most severe)	0x01					

					Data erratic	0x02					
					Voltage above normal	0x03					
					Voltage below normal	0x04					
					Current below normal	0x05					
					Current above normal	0x06					
					Mechanical system not responding	0x07					
					Abnormal frequency	0x08					
					Abnormal update rate	0x09					
					Abnormal rate of change	0x0A					
					Root cause not known	0x0B					
					Bad intelligent device	0x0C					
					Out of calibration	0x0D					
					Special intstructions	0x0E					
					Above normal (least severe)	0x0F					
					Above normal (moderately severe)	0x10					
					Below normal (least severe)	0x11					
					Below normal (moderatels severe)	0x12					
					Received network data in error	0x13					
					Data Drifted High	0x14					
					Data Drifted Low	0x15					
					NotAvailable	0x1F					

2.4.2.9 CruiseControlVehSpeed (Cruise Control/Vehicle Speed) - E

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEF100	100	100	00FEF1	6	Cyclic	0	0	F1	00		Std

S e n d e r	R e c e i v e r	B y t e	B i t	L e n g t h	Explanation	S t a t e	Resolution	Offset	Operating range Data range	Unit	N o t e
		1	1	2	**TwoSpeedAxleSwitch (Two Speed Axle Switch)**		1	0	0 - 3		
					LowSpeedRange	0x00					
					HighSpeedRange	0x01					
					Error	0x02					
					NotAvailable	0x03					
	X	1	3	2	**ParkingBrakeSwitch (Parking Brake Switch)**		1	0	0 - 3		1)
	X				ParkingBrakeNotSet	0x00					
	X				ParkingBrakeSet	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
		1	5	2	**CruiseCtrlPauseSwitch (Cruise Control Pause Switch)**		1	0	0 - 3		
					Off	0x00					
					On	0x01					
					ErrorIndicator	0x02					
					TakeNoAction	0x03					
		1	7	2	**ParkBrakeReleaseInhibitRequest ()**		1.0	0	0 - 3		
					ParkBrakeReleaseIsNotInhibited	0x00					
					ParkBrakeReleaseIsInhibited	0x01					
					Error	0x02					
					Unavailable	0x03					
	X	2	1	16	**WheelBasedVehicleSpeed (Wheel Based Vehicle Speed)**		0.00390625	0	0 - 250.99609375	km/h	
	X				Error	0xFE00					
	X				NotAvailable	0xFFFF					
	X	4	1	2	**CruiseCtrlActive (Cruise Control Active)**		1	0	0 - 3		
	X				CruiseControlSwitchedOff	0x00					
	X				CruiseControlSwitchedOn	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
		4	3	2	**CruiseCtrlEnableSwitch (Cruise Control Enable Switch)**		1	0	0 - 3		
					CruiseControlDisabled	0x00					
					CruiseControlEnabled	0x01					
					Error	0x02					
					NotAvailable	0x03					
	X	4	5	2	**BrakeSwitch (Brake Switch)**		1	0	0 - 3		
	X				BrakePedalReleased	0x00					

X				BrakePedalDepressed	0x01					
X				Error	0x02					
X				NotAvailable	0x03					
X	4	7	2	**ClutchSwitch (Clutch Switch)**		1	0	0 - 3		
X				ClutchPedalReleased	0x00					
X				ClutchPedalDepressed	0x01					
X				Error	0x02					
X				NotAvailable	0x03					
	5	1	2	**CruiseCtrlSetSwitch (Cruise Control Set Switch)**		1	0	0 - 3		
				CruiseControlActivatorNotInPosition-Set	0x00					
				CruiseControlActivatorInPosition-Set	0x01					
				Error	0x02					
				NotAvailable	0x03					
	5	3	2	**CruiseCtrlCoastSwitch (Cruise Control Coast (Decelerate) Switch)**		1	0	0 - 3		
				CruiseControlActivatorNotInPosition-Coast	0x00					
				CruiseControlActivatorInPosition-Coast	0x01					
				Error	0x02					
				NotAvailable	0x03					
	5	5	2	**CruiseCtrlResumeSwitch (Cruise Control Resume Switch)**		1	0	0 - 3		
				CruiseControlActivatorNotInPosition-Resume	0x00					
				CruiseControlActivatorInPosition-Resume	0x01					
				Error	0x02					
				NotAvailable	0x03					
	5	7	2	**CruiseCtrlAccelerateSwitch (Cruise Control Accelerate Switch)**		1	0	0 - 3		
				CruiseControlActivatorNotInPosition-Accelerate	0x00					
				CruiseControlActivatorInPosition-Accelerate	0x01					
				Error	0x02					
				NotAvailable	0x03					
	6	1	8	**CruiseCtrlSetSpeed (Cruise Control Set Speed)**		1	0	0 - 250	km/h	
				Error	0xFE					
				NotAvailable	0xFF					
X	7	1	5	**PTOState (PTO State)**		1	0	0 - 31		
X				Off/Disabled	0x00					
X				Hold	0x01					
X				RemoteHold	0x02					
X				Standby	0x03					
X				RemoteStandby	0x04					
X				Set	0x05					
X				Decelerate/Coast	0x06					
X				Resume	0x07					
X				Accelerate	0x08					
X				AccelerateOverride	0x09					
X				PreprogrammedSetSpeed1	0x0A					
X				PreprogrammedSetSpeed2	0x0B					
X				PreprogrammedSetSpeed3	0x0C					
X				PreprogrammedSetSpeed4	0x0D					
X				PreprogrammedSetSpeed5	0x0E					
X				PreprogrammedSetSpeed6	0x0F					
X				PreprogrammedSetSpeed7	0x10					

X				PreprogrammedSetSpeed8	0x11					
X				NotAvailable	0x1F					
		7	6	3	**CruiseCtrlState (Cruise Control States)**		1	0	0 - 7	
					Off/Disabled	0x00				
					Hold	0x01				
					Accelerate	0x02				
					Decelerate/Coast	0x03				
					Resume	0x04				
					Set	0x05				
					AcceleratorOverride	0x06				
					NotAvailable	0x07				
		8	1	2	**IdleIncrementSwitch (Idle Increment Switch)**		1	0	0 - 3	
					Off	0x00				
					On	0x01				
					Error	0x02				
					NotAvailable	0x03				
		8	3	2	**IdleDecrementSwitch (Idle Decrement Switch)**		1	0	0 - 3	
					Off	0x00				
					On	0x01				
					Error	0x02				
					NotAvailable	0x03				
		8	5	2	**EngineTestModeSwitch (Engine Test Mode Switch)**		1	0	0 - 3	
					Off	0x00				
					On	0x01				
					Error	0x02				
					NotAvailable	0x03				
		8	7	2	**EngineShutdownOverrideSwitch (Engine Shutdown Override Switch)**		1	0	0 - 3	
					Off	0x00				
					On	0x01				
					Error	0x02				
					NotAvailable	0x03				

Note 1) Information from a pressure switch in the parking brake lever. 'Parking brake not set' send with pressure over 6 bar. Values 2 or 3 disables the VDC function.

2.4.2.10 CruiseControlVehSpeed (Cruise Control/Vehicle Speed) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEF125	100	100	00FEF1	6	Cyclic	0	0	F1	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	2	**TwoSpeedAxleSwitch (Two Speed Axle Switch)**		1	0	0 - 3		
					LowSpeedRange	0x00					
					HighSpeedRange	0x01					
					Error	0x02					
					NotAvailable	0x03					
		1	3	2	**ParkingBrakeSwitch (Parking Brake Switch)**		1	0	0 - 3		1)
					ParkingBrakeNotSet	0x00					
					ParkingBrakeSet	0x01					
					Error	0x02					
	X				NotAvailable	0x03					
		1	5	2	**CruiseCtrlPauseSwitch (Cruise Control Pause Switch)**		1	0	0 - 3		
					Off	0x00					
					On	0x01					
					ErrorIndicator	0x02					
					TakeNoAction	0x03					
		1	7	2	**ParkBrakeReleaseInhibitRequest ()**		1.0	0	0 - 3		
					ParkBrakeReleaseIsNotInhibited	0x00					
					ParkBrakeReleaseIsInhibited	0x01					
					Error	0x02					
					Unavailable	0x03					
	X	2	1	16	**WheelBasedVehicleSpeed (Wheel Based Vehicle Speed)**		0.00390625	0	0 - 250.99609375	km/h	
					Error	0xFE00					
	X				NotAvailable	0xFFFF					
		4	1	2	**CruiseCtrlActive (Cruise Control Active)**		1	0	0 - 3		
					CruiseControlSwitchedOff	0x00					
					CruiseControlSwitchedOn	0x01					
					Error	0x02					
	X				NotAvailable	0x03					
		4	3	2	**CruiseCtrlEnableSwitch (Cruise Control Enable Switch)**		1	0	0 - 3		
					CruiseControlDisabled	0x00					
					CruiseControlEnabled	0x01					
					Error	0x02					
					NotAvailable	0x03					
		4	5	2	**BrakeSwitch (Brake Switch)**		1	0	0 - 3		
					BrakePedalReleased	0x00					

				BrakePedalDepressed	0x01					
				Error	0x02					
X				NotAvailable	0x03					
	4	7	2	**ClutchSwitch (Clutch Switch)**		1	0	0 - 3		
				ClutchPedalReleased	0x00					
				ClutchPedalDepressed	0x01					
				Error	0x02					
X				NotAvailable	0x03					
	5	1	2	**CruiseCtrlSetSwitch (Cruise Control Set Switch)**		1	0	0 - 3		
				CruiseControlActivatorNotInPosition-Set	0x00					
				CruiseControlActivatorInPosition-Set	0x01					
				Error	0x02					
				NotAvailable	0x03					
	5	3	2	**CruiseCtrlCoastSwitch (Cruise Control Coast (Decelerate) Switch)**		1	0	0 - 3		
				CruiseControlActivatorNotInPosition-Coast	0x00					
				CruiseControlActivatorInPosition-Coast	0x01					
				Error	0x02					
				NotAvailable	0x03					
	5	5	2	**CruiseCtrlResumeSwitch (Cruise Control Resume Switch)**		1	0	0 - 3		
				CruiseControlActivatorNotInPosition-Resume	0x00					
				CruiseControlActivatorInPosition-Resume	0x01					
				Error	0x02					
				NotAvailable	0x03					
	5	7	2	**CruiseCtrlAccelerateSwitch (Cruise Control Accelerate Switch)**		1	0	0 - 3		
				CruiseControlActivatorNotInPosition-Accelerate	0x00					
				CruiseControlActivatorInPosition-Accelerate	0x01					
				Error	0x02					
				NotAvailable	0x03					
	6	1	8	**CruiseCtrlSetSpeed (Cruise Control Set Speed)**		1	0	0 - 250	km/h	
				Error	0xFE					
				NotAvailable	0xFF					
	7	1	5	**PTOState (PTO State)**		1	0	0 - 31		
				Off/Disabled	0x00					
				Hold	0x01					
				RemoteHold	0x02					
				Standby	0x03					
				RemoteStandby	0x04					
				Set	0x05					
				Decelerate/Coast	0x06					
				Resume	0x07					
				Accelerate	0x08					
				AccelerateOverride	0x09					
				PreprogrammedSetSpeed1	0x0A					
				PreprogrammedSetSpeed2	0x0B					
				PreprogrammedSetSpeed3	0x0C					
				PreprogrammedSetSpeed4	0x0D					
				PreprogrammedSetSpeed5	0x0E					
				PreprogrammedSetSpeed6	0x0F					
				PreprogrammedSetSpeed7	0x10					

				PreprogrammedSetSpeed8	0x11						
	X				NotAvailable	0x1F					
		7	6	3	**CruiseCtrlState (Cruise Control States)**		1	0	0 - 7		
					Off/Disabled	0x00					
					Hold	0x01					
					Accelerate	0x02					
					Decelerate/Coast	0x03					
					Resume	0x04					
					Set	0x05					
					AcceleratorOverride	0x06					
					NotAvailable	0x07					
		8	1	2	**IdleIncrementSwitch (Idle Increment Switch)**		1	0	0 - 3		
					Off	0x00					
					On	0x01					
					Error	0x02					
					NotAvailable	0x03					
		8	3	2	**IdleDecrementSwitch (Idle Decrement Switch)**		1	0	0 - 3		
					Off	0x00					
					On	0x01					
					Error	0x02					
					NotAvailable	0x03					
		8	5	2	**EngineTestModeSwitch (Engine Test Mode Switch)**		1	0	0 - 3		
					Off	0x00					
					On	0x01					
					Error	0x02					
					NotAvailable	0x03					
		8	7	2	**EngineShutdownOverrideSwitch (Engine Shutdown Override Switch)**		1	0	0 - 3		
					Off	0x00					
					On	0x01					
					Error	0x02					
					NotAvailable	0x03					

Note 1) Information from a pressure switch in the parking brake lever. 'Parking brake not set' send with pressure over 6 bar. Values 2 or 3 disables the VDC function.

2.4.2.11 CVW (Combination Vehicle Weight) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FE7025	10000	10000	00FE70	6	Cyclic	0	0	70	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	16	**PoweredVehicleWeight (PoweredVehicleWeight)**		10	0	0 - 642550	kg	
					Error	0xFE00					
					NotAvailable	0xFFFF					
	X	3	1	16	**GrossCombinationVehicleWeight (GrossCombinationVehicleWeight)**		10	0	0 - 642550	kg	
	X				Error	0xFE00					
	X				NotAvailable	0xFFFF					

2.4.2.12 DashDisplay (Dash Display) - CMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEFC47	1000	1000	00FEFC	6	Cyclic	0	0	FC	47		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	8	**WasherFluidLevel (Washer Fluid Level)**		0.4	0	0 - 100	%	
					Error	0xFE					
					NotAvailable	0xFF					
	X	2	1	8	**FuelLevel (Fuel Level)**		0.4	0	0 - 100	%	
	X				Error	0xFE					
	X				NotAvailable	0xFF					
		3	1	8	**FuelFilterDiffPressure (Fuel Filter Differential Pressure)**		2	0	0 - 500	kPa	
					Error	0xFE					
					NotAvailable	0xFF					
		4	1	8	**EngineOilFilterDiffPressure (Engine Oil Filter Differential Pressure)**		0.5	0	0 - 125	kPa	
					Error	0xFE					
					NotAvailable	0xFF					
		5	1	16	**CargoAmbientTemperature (Cargo Ambient Temperature)**		0.03125	-273	-273 - 1735	deg	
					Error	0xFE00					
					NotAvailable	0xFF00					
		7	1	8	**FuelLevel_2 (Fuel Level 2)**		0.4	0	0 - 100	%	
					Error	0xFE					
					NotAvailable	0xFF					

2.4.2.13 DashDisplay (Dash Display) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEFC25	1000	1000	00FEFC	6	Cyclic	0	0	FC	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	8	**WasherFluidLevel (Washer Fluid Level)**		0.4	0	0 - 100	%	
					Error	0xFE					
					NotAvailable	0xFF					
	X	2	1	8	**FuelLevel (Fuel Level)**		0.4	0	0 - 100	%	
					Error	0xFE					
	X				NotAvailable	0xFF					
		3	1	8	**FuelFilterDiffPressure (Fuel Filter Differential Pressure)**		2	0	0 - 500	kPa	
					Error	0xFE					
					NotAvailable	0xFF					
		4	1	8	**EngineOilFilterDiffPressure (Engine Oil Filter Differential Pressure)**		0.5	0	0 - 125	kPa	
					Error	0xFE					
					NotAvailable	0xFF					
		5	1	16	**CargoAmbientTemperature (Cargo Ambient Temperature)**		0.03125	-273	-273 - 1735	deg	
					Error	0xFE00					
					NotAvailable	0xFF00					
		7	1	8	**FuelLevel_2 (Fuel Level 2)**		0.4	0	0 - 100	%	
					Error	0xFE					
					NotAvailable	0xFF					

2.4.2.14 DI_cyclic (Driver's Identification) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18ECFF25 18EBFF25 (FE6B)	10000	10000	00FE6B	6	Cyclic	0	0	6B	25	FF	Std

When no driver card is inserted in the tachograph, it is transmitted with ID 18FE6BEE, when one or more cards are inserted the message is transmitted using BAM and TP.DT. This message will not be sent by any paper disc tachograph.

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	8	**Driver1Identifier (Driver 1 Identifier)**		1	0	0 - 0	ASCII	1)
	X	2	1	8	**Delimiter1 (Delimiter)**		1	0	0 - 0	ASCII '*'	2)
	X	3	1	8	**Driver2Identifier (Driver 2 Identifier)**		1	0	0 - 0	ASCII	3)
	X	4	1	8	**Delimiter2 (Delimiter)**		1	0	0 - 0	ASCII '*'	4)

Note 1) Length m

Note 2) Start at byte m

Note 3) Length n, start at byte m+1

Note 4) Start at byte m+1+n

2.4.2.15 DoorControl1 (Door Control 1) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FE4E25	100	100	00FE4E	6	Cyclic	0	0	4E	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	4	**PositionOfDoors (Position of Doors)**		1	0	0 - 15		
					AtLeast1DoorIsOpen	0x00					
					ClosingLastDoor	0x01					
					AllDoorsClosed	0x02					
					Error	0x0E					
	X				NotAvailable	0x0F					
	X	1	5	2	**Ramp_WheelchairLiftStatus (Ramp/Wheel Chair Lift Status)**		1	0	0 - 3		
					InsideBus	0x00					
					OutsideBus	0x01					
					Error	0x02					
	X				NotAvailable	0x03					
	X	1	7	2	**Status2OfDoors (Status 2 of Doors)**		1	0	0 - 3		
					AllBusDoorsAreDisabled	0x00					
					AtLeast1BusDoorEnabled	0x01					
					Error	0x02					
	X				NotAvailable	0x03					
		2	1	2	**DoorMalfunction (Door Malfunction)**		1.0	0.0	0 - 3		
					False	0x00					
					True	0x01					
					Error	0x02					
					NotAvailable	0x03					
		2	3	2	**DoorOpen (Door Open)**		1.0	0.0	0 - 3		
					False	0x00					
					True	0x01					
					Error	0x02					
					NotAvailable	0x03					
		2	5	2	**DoorPressureLow (Door Pressure Low)**		1.0	0.0	0 - 3		
					False	0x00					
					True	0x01					
					Error	0x02					
					NotAvailable	0x03					
		2	7	2	**SensingStripInDoorTriggered (Sensing Strip In Door Triggered)**		1.0	0.0	0 - 3		
					False	0x00					
					True	0x01					
					Error	0x02					
					NotAvailable	0x03					

		3	1	2	EmergencyExitOpen (Emergency Exit Open)		1.0	0.0	0 - 3		
					False	0x00					
					True	0x01					
					Error	0x02					
					NotAvailable	0x03					
		3	3	2	DriverGateOpen (Driver Gate Open)		1.0	0.0	0 - 3		
					False	0x00					
					True	0x01					
					Error	0x02					
					NotAvailable	0x03					

2.4.2.16 DoorControl1 (Door Control 1) - Unknown

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FE4EFE	100	100	00FE4E	6	Cyclic	0	0	4E	FE		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	4	**PositionOfDoors (Position of Doors)**		1	0	0 - 15		
	X				AtLeast1DoorIsOpen	0x00					
	X				ClosingLastDoor	0x01					
	X				AllDoorsClosed	0x02					
	X				Error	0x0E					
	X				NotAvailable	0x0F					
	X	1	5	2	**Ramp_WheelchairLiftStatus (Ramp/Wheel Chair Lift Status)**		1	0	0 - 3		
	X				InsideBus	0x00					
	X				OutsideBus	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	1	7	2	**Status2OfDoors (Status 2 of Doors)**		1	0	0 - 3		
	X				AllBusDoorsAreDisabled	0x00					
	X				AtLeast1BusDoorEnabled	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
		2	1	2	**DoorMalfunction (Door Malfunction)**		1.0	0.0	0 - 3		
					False	0x00					
					True	0x01					
					Error	0x02					
					NotAvailable	0x03					
		2	3	2	**DoorOpen (Door Open)**		1.0	0.0	0 - 3		
					False	0x00					
					True	0x01					
					Error	0x02					
					NotAvailable	0x03					
		2	5	2	**DoorPressureLow (Door Pressure Low)**		1.0	0.0	0 - 3		
					False	0x00					
					True	0x01					
					Error	0x02					
					NotAvailable	0x03					
		2	7	2	**SensingStripInDoorTriggered (Sensing Strip In Door Triggered)**		1.0	0.0	0 - 3		
					False	0x00					
					True	0x01					
					Error	0x02					
					NotAvailable	0x03					

		3	1	2	**EmergencyExitOpen (Emergency Exit Open)**		1.0	0.0	0 - 3		
					False	0x00					
					True	0x01					
					Error	0x02					
					NotAvailable	0x03					
		3	3	2	**DriverGateOpen (Driver Gate Open)**		1.0	0.0	0 - 3		
					False	0x00					
					True	0x01					
					Error	0x02					
					NotAvailable	0x03					

2.4.2.17 DoorControl2 (Door Control 2) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FDA525	100	100	00FDA5	6	Cyclic	0	0	A5	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	2	**LockStatusOfDoor1 (Lock Status Of Door 1)**		1	0	0 - 3		
					Unlocked	0x00					
					Locked	0x01					
					Error	0x02					
	X				NotAvailable	0x03					
	X	1	3	2	**OpenStatusOfDoor1 (Open Status Of Door 1)**		1	0	0 - 3		
					DoorClosed	0x00					
					DoorOpened	0x01					
					Error	0x02					
	X				NotAvailable	0x03					
	X	1	5	2	**EnableStatusOfDoor1 (Enable Status Of Door 1)**		1	0	0 - 3		
					DoorDisabled	0x00					
					DoorEnabled	0x01					
					Error	0x02					
	X				NotAvailable	0x03					
	X	1	7	2	**LockStatusOfDoor2 (Lock Status Of Door 2)**		1	0	0 - 3		
					Unlocked	0x00					
					Locked	0x01					
					Error	0x02					
	X				NotAvailable	0x03					
	X	2	1	2	**OpenStatusOfDoor2 (Open Status Of Door 2)**		1	0	0 - 3		
					DoorClosed	0x00					
					DoorOpened	0x01					
					Error	0x02					
	X				NotAvailable	0x03					
	X	2	3	2	**EnableStatusOfDoor2 (Enable Status Of Door 2)**		1	0	0 - 3		
					DoorDisabled	0x00					
					DoorEnabled	0x01					
					Error	0x02					
	X				NotAvailable	0x03					
	X	2	5	2	**LockStatusOfDoor3 (Lock Status Of Door 3)**		1	0	0 - 3		
					Unlocked	0x00					
					Locked	0x01					
					Error	0x02					
	X				NotAvailable	0x03					

X	2	7	2	**OpenStatusOfDoor3 (Open Status Of Door 3)**		1	0	0 - 3		
				DoorClosed	0x00					
				DoorOpened	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	3	1	2	**EnableStatusOfDoor3 (Enable Status Of Door 3)**		1	0	0 - 3		
				DoorDisabled	0x00					
				DoorEnabled	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	3	3	2	**LockStatusOfDoor4 (Lock Status Of Door 4)**		1	0	0 - 3		
				Unlocked	0x00					
				Locked	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	3	5	2	**OpenStatusOfDoor4 (Open Status Of Door 4)**		1	0	0 - 3		
				DoorClosed	0x00					
				DoorOpened	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	3	7	2	**EnableStatusOfDoor4 (Enable Status Of Door 4)**		1	0	0 - 3		
				DoorDisabled	0x00					
				DoorEnabled	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	4	1	2	**LockStatusOfDoor5 (Lock Status Of Door 5)**		1	0	0 - 3		
				Unlocked	0x00					
				Locked	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	4	3	2	**OpenStatusOfDoor5 (Open Status Of Door 5)**		1	0	0 - 3		
				DoorClosed	0x00					
				DoorOpened	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	4	5	2	**EnableStatusOfDoor5 (Enable Status Of Door 5)**		1	0	0 - 3		
				DoorDisabled	0x00					
				DoorEnabled	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	4	7	2	**LockStatusOfDoor6 (Lock Status Of Door 6)**		1	0	0 - 3		
				Unlocked	0x00					
				Locked	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	5	1	2	**OpenStatusOfDoor6 (Open Status Of Door 6)**		1	0	0 - 3		
				DoorClosed	0x00					
				DoorOpened	0x01					

				Error	0x02					
X				NotAvailable	0x03					
X	5	3	2	**EnableStatusOfDoor6 (Enable Status Of Door 6)**		1	0	0 - 3		
				DoorDisabled	0x00					
				DoorEnabled	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	5	5	2	**LockStatusOfDoor7 (Lock Status Of Door 7)**		1	0	0 - 3		
				Unlocked	0x00					
				Locked	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	5	7	2	**OpenStatusOfDoor7 (Open Status Of Door 7)**		1	0	0 - 3		
				DoorClosed	0x00					
				DoorOpened	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	6	1	2	**EnableStatusOfDoor7 (Enable Status Of Door 7)**		1	0	0 - 3		
				DoorDisabled	0x00					
				DoorEnabled	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	6	3	2	**LockStatusOfDoor8 (Lock Status Of Door 8)**		1	0	0 - 3		
				Unlocked	0x00					
				Locked	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	6	5	2	**OpenStatusOfDoor8 (Open Status Of Door 8)**		1	0	0 - 3		
				DoorClosed	0x00					
				DoorOpened	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	6	7	2	**EnableStatusOfDoor8 (Enable Status Of Door 8)**		1	0	0 - 3		
				DoorDisabled	0x00					
				DoorEnabled	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	7	1	2	**LockStatusOfDoor9 (Lock Status Of Door 9)**		1	0	0 - 3		
				Unlocked	0x00					
				Locked	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	7	3	2	**OpenStatusOfDoor9 (Open Status Of Door 9)**		1	0	0 - 3		
				DoorClosed	0x00					
				DoorOpened	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	7	5	2	**EnableStatusOfDoor9 (Enable Status Of Door 9)**		1	0	0 - 3		

				DoorDisabled	0x00					
				DoorEnabled	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	7	7	2	**LockStatusOfDoor10 (Lock Status Of Door 10)**		1	0	0 - 3		
				Unlocked	0x00					
				Locked	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	8	1	2	**OpenStatusOfDoor10 (Open Status Of Door 10)**		1	0	0 - 3		
				DoorClosed	0x00					
				DoorOpened	0x01					
				Error	0x02					
X				NotAvailable	0x03					
X	8	3	2	**EnableStatusOfDoor10 (Enable Status Of Door 10)**		1	0	0 - 3		
				DoorDisabled	0x00					
				DoorEnabled	0x01					
				Error	0x02					
X				NotAvailable	0x03					

2.4.2.18 DoorControl2 (Door Control 2) - Unknown

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FDA5FE	100	100	00FDA5	6	Cyclic	0	0	A5	FE		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	2	**LockStatusOfDoor1 (Lock Status Of Door 1)**		1	0	0 - 3		
	X				Unlocked	0x00					
	X				Locked	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	1	3	2	**OpenStatusOfDoor1 (Open Status Of Door 1)**		1	0	0 - 3		
	X				DoorClosed	0x00					
	X				DoorOpened	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	1	5	2	**EnableStatusOfDoor1 (Enable Status Of Door 1)**		1	0	0 - 3		
	X				DoorDisabled	0x00					
	X				DoorEnabled	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	1	7	2	**LockStatusOfDoor2 (Lock Status Of Door 2)**		1	0	0 - 3		
	X				Unlocked	0x00					
	X				Locked	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	2	1	2	**OpenStatusOfDoor2 (Open Status Of Door 2)**		1	0	0 - 3		
	X				DoorClosed	0x00					
	X				DoorOpened	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	2	3	2	**EnableStatusOfDoor2 (Enable Status Of Door 2)**		1	0	0 - 3		
	X				DoorDisabled	0x00					
	X				DoorEnabled	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	2	5	2	**LockStatusOfDoor3 (Lock Status Of Door 3)**		1	0	0 - 3		
	X				Unlocked	0x00					
	X				Locked	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					

					Name	Value					
	X	2	7	2	**OpenStatusOfDoor3 (Open Status Of Door 3)**		1	0	0 - 3		
	X				DoorClosed	0x00					
	X				DoorOpened	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	3	1	2	**EnableStatusOfDoor3 (Enable Status Of Door 3)**		1	0	0 - 3		
	X				DoorDisabled	0x00					
	X				DoorEnabled	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	3	3	2	**LockStatusOfDoor4 (Lock Status Of Door 4)**		1	0	0 - 3		
	X				Unlocked	0x00					
	X				Locked	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	3	5	2	**OpenStatusOfDoor4 (Open Status Of Door 4)**		1	0	0 - 3		
	X				DoorClosed	0x00					
	X				DoorOpened	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	3	7	2	**EnableStatusOfDoor4 (Enable Status Of Door 4)**		1	0	0 - 3		
	X				DoorDisabled	0x00					
	X				DoorEnabled	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	4	1	2	**LockStatusOfDoor5 (Lock Status Of Door 5)**		1	0	0 - 3		
	X				Unlocked	0x00					
	X				Locked	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	4	3	2	**OpenStatusOfDoor5 (Open Status Of Door 5)**		1	0	0 - 3		
	X				DoorClosed	0x00					
	X				DoorOpened	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	4	5	2	**EnableStatusOfDoor5 (Enable Status Of Door 5)**		1	0	0 - 3		
	X				DoorDisabled	0x00					
	X				DoorEnabled	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	4	7	2	**LockStatusOfDoor6 (Lock Status Of Door 6)**		1	0	0 - 3		
	X				Unlocked	0x00					
	X				Locked	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	5	1	2	**OpenStatusOfDoor6 (Open Status Of Door 6)**		1	0	0 - 3		
	X				DoorClosed	0x00					
	X				DoorOpened	0x01					

X				Error	0x02				
X				NotAvailable	0x03				
X	5	3	2	**EnableStatusOfDoor6 (Enable Status Of Door 6)**		1	0	0 - 3	
X				DoorDisabled	0x00				
X				DoorEnabled	0x01				
X				Error	0x02				
X				NotAvailable	0x03				
X	5	5	2	**LockStatusOfDoor7 (Lock Status Of Door 7)**		1	0	0 - 3	
X				Unlocked	0x00				
X				Locked	0x01				
X				Error	0x02				
X				NotAvailable	0x03				
X	5	7	2	**OpenStatusOfDoor7 (Open Status Of Door 7)**		1	0	0 - 3	
X				DoorClosed	0x00				
X				DoorOpened	0x01				
X				Error	0x02				
X				NotAvailable	0x03				
X	6	1	2	**EnableStatusOfDoor7 (Enable Status Of Door 7)**		1	0	0 - 3	
X				DoorDisabled	0x00				
X				DoorEnabled	0x01				
X				Error	0x02				
X				NotAvailable	0x03				
X	6	3	2	**LockStatusOfDoor8 (Lock Status Of Door 8)**		1	0	0 - 3	
X				Unlocked	0x00				
X				Locked	0x01				
X				Error	0x02				
X				NotAvailable	0x03				
X	6	5	2	**OpenStatusOfDoor8 (Open Status Of Door 8)**		1	0	0 - 3	
X				DoorClosed	0x00				
X				DoorOpened	0x01				
X				Error	0x02				
X				NotAvailable	0x03				
X	6	7	2	**EnableStatusOfDoor8 (Enable Status Of Door 8)**		1	0	0 - 3	
X				DoorDisabled	0x00				
X				DoorEnabled	0x01				
X				Error	0x02				
X				NotAvailable	0x03				
X	7	1	2	**LockStatusOfDoor9 (Lock Status Of Door 9)**		1	0	0 - 3	
X				Unlocked	0x00				
X				Locked	0x01				
X				Error	0x02				
X				NotAvailable	0x03				
X	7	3	2	**OpenStatusOfDoor9 (Open Status Of Door 9)**		1	0	0 - 3	
X				DoorClosed	0x00				
X				DoorOpened	0x01				
X				Error	0x02				
X				NotAvailable	0x03				
X	7	5	2	**EnableStatusOfDoor9 (Enable Status Of Door 9)**		1	0	0 - 3	

X				DoorDisabled	0x00					
X				DoorEnabled	0x01					
X				Error	0x02					
X				NotAvailable	0x03					
X	7	7	2	**LockStatusOfDoor10 (Lock Status Of Door 10)**		1	0	0 - 3		
X				Unlocked	0x00					
X				Locked	0x01					
X				Error	0x02					
X				NotAvailable	0x03					
X	8	1	2	**OpenStatusOfDoor10 (Open Status Of Door 10)**		1	0	0 - 3		
X				DoorClosed	0x00					
X				DoorOpened	0x01					
X				Error	0x02					
X				NotAvailable	0x03					
X	8	3	2	**EnableStatusOfDoor10 (Enable Status Of Door 10)**		1	0	0 - 3		
X				DoorDisabled	0x00					
X				DoorEnabled	0x01					
X				Error	0x02					
X				NotAvailable	0x03					

2.4.2.19   EEC1 (Electronic Engine Controller 1) - E

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
0CF00400	20	20	00F004	3	Cyclic	0	0	04	00		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	4	**EngineRetarderTorqueMode (Engine and Retarder Torque Mode)**		1	0	0 - 15		
					LowIdleGovernor (default mode)	0x00					
					AcceleratorPedal	0x01					
					CruiseControl	0x02					
					PTOGovernor	0x03					
					RoadSpeedGoverning	0x04					
					ASRControl	0x05					
					TransmissionControl	0x06					
					ABSControl	0x07					
					TorqueLimiting	0x08					
					HighSpeedGovernor	0x09					
					BrakeSystem	0x0A					
					RemoteAccelerator	0x0B					
					ServiceProcedure	0x0C					
					NotDefined	0x0D					
					Other	0x0E					
					NotAvailable	0x0F					
		1	5	4	**ActualEngine_PercTorqueHighRes (Actual Engine - Percent Torque High Resolution)**		0.125	0	0 - 0.875	%	1)
					NotAvailable	0x08					
					NotAvailable	0x09					
					NotAvailable	0x0A					
					NotAvailable	0x0B					
					NotAvailable	0x0C					
					NotAvailable	0x0D					
					NotAvailable	0x0E					
					NotAvailable	0x0F					
		2	1	8	**DriversDemandEngine_PercTorque (Drivers Demand Engine - Percent Torque)**		1	-125	-125 - 125	%	
					Error	0xFE					
					NotAvailable	0xFF					
	X	3	1	8	**ActualEngine_PercTorque (Actual Engine - Percent Torque)**		1	-125	-125 - 125	%	
	X				Error	0xFE					
	X				NotAvailable	0xFF					
	X	4	1	16	**EngineSpeed (Engine Speed)**		0.125	0	0 - 8031.88	rpm	
	X				Error	0xFE00					
	X				NotAvailable	0xFF00					
		6	1	8	**SAofCntrlDevForEngControl (Source Address Of Controlling Device For Engine Control)**		1	0	0 - 255		

				Error	0xFE						
				NotAvailable	0xFF						
		7	1	4	**EngineStarterMode (Engine Starter Mode)**		1	0	0 - 15		
				startNotRqed	0x00						
				starterActiveGearNotEngaged	0x01						
				starterActiveGearEngaged	0x02						
				strtFnshdStrtrNtActvAftrHvngBnA	0x03						
				strtrInhbtdDToEngAlreadyRunning	0x04						
				strtrInhbtdDTEngNtReadyForStart	0x05						
				strtrInhbtdDTDrvlnEnggdOthrTrns	0x06						
				strtrInhbtdDToActiveImmobilizer	0x07						
				strtrInhbtdDueToStarterOvertemp	0x08						
				1011Reserved	0x09						
				starterInhibitedReasonUnknown	0x0C						
				error	0x0E						
				NotAvailable	0x0F						
		8	1	8	**EngineDemandPercentTorque (Engine Demand - PercentTorque)**		1	-125	-125 - 125	%	
				Error	0xFE						
				NotAvailable	0xFF						

Note 1) Bit pattern 1000-1111 = NotAvailable

2.4.2.20 EEC1 (Electronic Engine Controller 1) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
0CF00425	20	20	00F004	3	Cyclic	0	0	04	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	4	**EngineRetarderTorqueMode (Engine and Retarder Torque Mode)**		1	0	0 - 15		
					LowIdleGovernor (default mode)	0x00					
					AcceleratorPedal	0x01					
					CruiseControl	0x02					
					PTOGovernor	0x03					
					RoadSpeedGoverning	0x04					
					ASRControl	0x05					
					TransmissionControl	0x06					
					ABSControl	0x07					
					TorqueLimiting	0x08					
					HighSpeedGovernor	0x09					
					BrakeSystem	0x0A					
					RemoteAccelerator	0x0B					
					ServiceProcedure	0x0C					
					NotDefined	0x0D					
					Other	0x0E					
					NotAvailable	0x0F					
		1	5	4	**ActualEngine_PercTorqueHighRes (Actual Engine - Percent Torque High Resolution)**		0.125	0	0 - 0.875	%	1)
					NotAvailable	0x08					
					NotAvailable	0x09					
					NotAvailable	0x0A					
					NotAvailable	0x0B					
					NotAvailable	0x0C					
					NotAvailable	0x0D					
					NotAvailable	0x0E					
					NotAvailable	0x0F					
		2	1	8	**DriversDemandEngine_PercTorque (Drivers Demand Engine - Percent Torque)**		1	-125	-125 - 125	%	
					Error	0xFE					
					NotAvailable	0xFF					
		3	1	8	**ActualEngine_PercTorque (Actual Engine - Percent Torque)**		1	-125	-125 - 125	%	
					Error	0xFE					
	X				NotAvailable	0xFF					
	X	4	1	16	**EngineSpeed (Engine Speed)**		0.125	0	0 - 8031.88	rpm	
					Error	0xFE00					
	X				NotAvailable	0xFF00					
		6	1	8	**SAofCntrlDevForEngControl (Source Address Of Controlling Device For Engine Control)**		1	0	0 - 255		

				Error	0xFE					
				NotAvailable	0xFF					
		7	1	4	**EngineStarterMode (Engine Starter Mode)**		1	0	0 - 15	
					startNotRqed	0x00				
					starterActiveGearNotEngaged	0x01				
					starterActiveGearEngaged	0x02				
					strtFnshdStrtrNtActvAftrHvngBnA	0x03				
					strtrInhbtdDToEngAlreadyRunning	0x04				
					strtrInhbtdDTEngNtReadyForStart	0x05				
					strtrInhbtdDTDrvlnEnggdOthrTrns	0x06				
					strtrInhbtdDToActiveImmobilizer	0x07				
					strtrInhbtdDueToStarterOvertemp	0x08				
					1011Reserved	0x09				
					starterInhibitedReasonUnknown	0x0C				
					error	0x0E				
					NotAvailable	0x0F				
		8	1	8	**EngineDemandPercentTorque (Engine Demand - PercentTorque)**		1	-125	-125 - 125	%
					Error	0xFE				
					NotAvailable	0xFF				

Note 1) Bit pattern 1000-1111 = NotAvailable

2.4.2.21 EEC2 (Electronic Engine Controller 2) - E

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
0CF00300	50	50	00F003	3	Cyclic	0	0	03	00		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	2	**APLowIdleSwitch (Accelerator Pedal Low Idle Switch)**		1	0	0 - 3		
					AcclPedalNotInLowIdleCondition	0x00					
					AccelPedalInLowIdleCondition	0x01					
					Error	0x02					
					NotAvailable	0x03					
		1	3	2	**APKickdownSwitch (Accelerator Pedal Kickdown Switch)**		1	0	0 - 3		
					KickdownPassive	0x00					
					KickdownActive	0x01					
					Error	0x02					
					NotAvailable	0x03					
		1	5	2	**RoadSpeedLimitStatus (Road Speed Limit Status)**		1	0	0 - 3		
					Active	0x00					
					NotActive	0x01					
		1	7	2	**AccelPedal2LowIdleSwitch (Accelerator Pedal 2 Low Idle Switch)**		1	0	0 - 3		
					AcclPedalNotInLowIdleCondition	0x00					
					AccelPedalInLowIdleCondition	0x01					
					Error	0x02					
					NotAvailable	0x03					
	X	2	1	8	**AcceleratorPedalPosition (Accelerator Pedal Position)**		0.4	0	0 - 100	%	
	X				Error	0xFE					
	X				NotAvailable	0xFF					
	X	3	1	8	**PercentLoadAtCurrentSpeed (Percent Load At Current Speed)**		1	0	0 - 250	%	
	X				Error	0xFE					
	X				NotAvailable	0xFF					
		4	1	8	**RemoteAccelerator (Remote Accelerator Pedal Position)**		0.4	0	0 - 100	%	
					Error	0xFE					
					NotAvailable	0xFF					
		5	1	8	**AccelPedalPos2 (Accelerator Pedal Position 2)**		0.4	0	0 - 100	%	
		6	1	2	**VhclAccelerationRateLimitStatus (Vehicle Acceleration Rate Limit Status)**		1	0	0 - 3		
					LimitNotActive	0x00					
					LimitActive	0x01					
					Reserved	0x02					
					NotAvailable	0x03					

		6	3	2	**MomEngMaxPowEnableFeedb (Momentary Engine Maximum Power Enable Feedback)**			1	0	0 - 3		
					Disabled	0x00						
					Supported	0x01						
					Reserved	0x02						
					Don'tCare	0x03						
		6	5	2	**DPFThermalManagementActive (DPF Thermal Management Active)**			1	0	0 - 3		
					DPF Thermal Management is not ac	0x00						
					DPF Thermal Management is active	0x01						
					Reserved	0x02						
					Don't care	0x03						
		6	7	2	**SCRThermalManagementActive (SCR Thermal Management Active)**			1	0	0 - 3		
					SCR Thermal Management is not ac	0x00						
					SCR Thermal Management is active	0x01						
					Reserved	0x02						
					Don't care	0x03						
		7	1	8	**ActMaxAvailEngPercTorq (Actual Maximum Available Engine - Percent Torque)**			0.4	0	0 - 100	%	
					Error	0xFE						
					NotAvailable	0xFF						
		8	1	8	**EstPumpingPercTorque (Estimated Pumping - Percent Torque)**			1	-125	-125 - 125	%	
					Error	0xFE						
					NotAvailable	0xFF						

2.4.2.22 EEC2 (Electronic Engine Controller 2) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
0CF00325	50	50	00F003	3	Cyclic	0	0	03	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	2	**APLowIdleSwitch (Accelerator Pedal Low Idle Switch)**		1	0	0 - 3		
					AcclPedalNotInLowIdleCondition	0x00					
					AccelPedalInLowIdleCondition	0x01					
					Error	0x02					
					NotAvailable	0x03					
		1	3	2	**APKickdownSwitch (Accelerator Pedal Kickdown Switch)**		1	0	0 - 3		
					KickdownPassive	0x00					
					KickdownActive	0x01					
					Error	0x02					
					NotAvailable	0x03					
		1	5	2	**RoadSpeedLimitStatus (Road Speed Limit Status)**		1	0	0 - 3		
					Active	0x00					
					NotActive	0x01					
		1	7	2	**AccelPedal2LowIdleSwitch (Accelerator Pedal 2 Low Idle Switch)**		1	0	0 - 3		
					AcclPedalNotInLowIdleCondition	0x00					
					AccelPedalInLowIdleCondition	0x01					
					Error	0x02					
					NotAvailable	0x03					
	X	2	1	8	**AcceleratorPedalPosition (Accelerator Pedal Position)**		0.4	0	0 - 100	%	
					Error	0xFE					
	X				NotAvailable	0xFF					
		3	1	8	**PercentLoadAtCurrentSpeed (Percent Load At Current Speed)**		1	0	0 - 250	%	
					Error	0xFE					
	X				NotAvailable	0xFF					
		4	1	8	**RemoteAccelerator (Remote Accelerator Pedal Position)**		0.4	0	0 - 100	%	
					Error	0xFE					
					NotAvailable	0xFF					
		5	1	8	**AccelPedalPos2 (Accelerator Pedal Position 2)**		0.4	0	0 - 100	%	
		6	1	2	**VhclAccelerationRateLimitStatus (Vehicle Acceleration Rate Limit Status)**		1	0	0 - 3		
					LimitNotActive	0x00					
					LimitActive	0x01					
					Reserved	0x02					
					NotAvailable	0x03					

		6	3	2	**MomEngMaxPowEnableFeedb (Momentary Engine Maximum Power Enable Feedback)**			1	0	0 - 3		
					Disabled	0x00						
					Supported	0x01						
					Reserved	0x02						
					Don'tCare	0x03						
		6	5	2	**DPFThermalManagementActive (DPF Thermal Management Active)**			1	0	0 - 3		
					DPF Thermal Management is not ac	0x00						
					DPF Thermal Management is active	0x01						
					Reserved	0x02						
					Don't care	0x03						
		6	7	2	**SCRThermalManagementActive (SCR Thermal Management Active)**			1	0	0 - 3		
					SCR Thermal Management is not ac	0x00						
					SCR Thermal Management is active	0x01						
					Reserved	0x02						
					Don't care	0x03						
		7	1	8	**ActMaxAvailEngPercTorq (Actual Maximum Available Engine - Percent Torque)**			0.4	0	0 - 100	%	
					Error	0xFE						
					NotAvailable	0xFF						
		8	1	8	**EstPumpingPercTorque (Estimated Pumping - Percent Torque)**			1	-125	-125 - 125	%	
					Error	0xFE						
					NotAvailable	0xFF						

2.4.2.23 EngineHoursRevolutions (Engine Hours, Revolutions) - E

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEE500	1000	1000	00FEE5	6	Cyclic	0	0	E5	00		Std

S e n d e r	R e c e i v e r	B y t e	B i t	L e n g t h	Explanation	S t a t e	Resolution	Offset	Operating range Data range	Unit	N o t e
	X	1	1	32	**TotalEngineHours (Total Engine Hours)**		0.05	0	0 - 210554060.75	hr	
	X				Error	0xFE0000 00					
	X				NotAvailable	0xFF0000 00					
		5	1	32	**TotalEngineRevolutions (Total Engine Revolutions)**		1000	0	0 - 4211081215000	r	
					Error	0xFE0000 00					
					NotAvailable	0xFF0000 00					

2.4.2.24 EngineHoursRevolutions (Engine Hours, Revolutions) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEE525	1000	1000	00FEE5	6	Cyclic	0	0	E5	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	32	**TotalEngineHours (Total Engine Hours)**		0.05	0	0 - 210554060.75	hr	
					Error	0xFE000000					
	X				NotAvailable	0xFF000000					
		5	1	32	**TotalEngineRevolutions (Total Engine Revolutions)**		1000	0	0 - 4211081215000	r	
					Error	0xFE000000					
					NotAvailable	0xFF000000					

2.4.2.25 EngineTemp (Engine Temperature 1) - E

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEEE00	1000	1000	00FEEE	6	Cyclic	0	0	EE	00		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	8	**EngineCoolantTemperature (Engine Coolant Temperature)**		1	-40	-40 - 210	deg	
	X				Error	0xFE					
	X				NotAvailable	0xFF					
		2	1	8	**FuelTemperature (Fuel Temperature)**		1	-40	-40 - 210	deg	
					Error	0xFE					
					NotAvailable	0xFF					
		3	1	16	**EngineOilTemperature (Engine Oil Temperature)**		0.03125	-273	-273 - 1735	deg	
					Error	0xFE00					
					NotAvailable	0xFF00					
		5	1	16	**TurboOilTemperature (Turbo Oil Temperature)**		0.03125	-273	-273 - 1735	deg	
					Error	0xFE00					
					NotAvailable	0xFF00					
		7	1	8	**EngineIntercoolerTemperature (Engine Intercooler Temp)**		1	-40	-40 - 210	deg	
					Error	0xFE					
					NotAvailable	0xFF					
		8	1	8	**EngineIntercoolerThermOpening (Engine Intercooler Thermostat Opening)**		0.4	0	0 - 100	%	
					Error	0xFE					
					NotAvailable	0xFF					

2.4.2.26 EngineTemp (Engine Temperature 1) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEEE25	1000	1000	00FEEE	6	Cyclic	0	0	EE	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	8	**EngineCoolantTemperature (Engine Coolant Temperature)**		1	-40	-40 - 210	deg	
					Error	0xFE					
	X				NotAvailable	0xFF					
		2	1	8	**FuelTemperature (Fuel Temperature)**		1	-40	-40 - 210	deg	
					Error	0xFE					
					NotAvailable	0xFF					
		3	1	16	**EngineOilTemperature (Engine Oil Temperature)**		0.03125	-273	-273 - 1735	deg	
					Error	0xFE00					
					NotAvailable	0xFF00					
		5	1	16	**TurboOilTemperature (Turbo Oil Temperature)**		0.03125	-273	-273 - 1735	deg	
					Error	0xFE00					
					NotAvailable	0xFF00					
		7	1	8	**EngineIntercoolerTemperature (Engine Intercooler Temp)**		1	-40	-40 - 210	deg	
					Error	0xFE					
					NotAvailable	0xFF					
		8	1	8	**EngineIntercoolerThermOpening (Engine Intercooler Thermostat Opening)**		0.4	0	0 - 100	%	
					Error	0xFE					
					NotAvailable	0xFF					

2.4.2.27 ERC1 (Electronic Retarder Controller 1) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18F00025	100	100	00F000	6	Cyclic	0	0	00	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	4	**EngineRetarderTorqueMode (Engine and Retarder Torque Mode)**		1	0	0 - 15		
					No request (default mode)	0x00					
					Operator selection	0x01					
					Cruise Control	0x02					
					PTO Governor	0x03					
					Road Speed Governing	0x04					
					ASR Control	0x05					
					Transmission Control	0x06					
					ABS Control	0x07					
					Torque Limiting	0x08					
					High Speed Governor	0x09					
					Brake System	0x0A					
					Remote accelerator	0x0B					
					NotDefined	0x0C					
					White smoke limiting	0x0D					
					Other	0x0E					
	X				TakeNoAction	0x0F					
		1	5	2	**RetarderEnableBrakeAssistSwtch (Retarder Enable - Brake Assist Switch)**		1	0	0 - 3		
					RetarderBrakeAssistDisabled	0x00					
					RetarderBrakeAssistEnabled	0x01					
					Error	0x02					
					NotAvailable	0x03					
		1	7	2	**RetarderEnableShiftAssistSwtch (Retarder Enable - Shift Assist Switch)**		1	0	0 - 3		
					RetarderShiftAssistDisabled	0x00					
					RetarderShiftAssistEnabled	0x01					
					Error	0x02					
					NotAvailable	0x03					
	X	2	1	8	**ActualRetarderPercentTorque (Actual Retarder Percent Torque)**		1	-125	-125 - 125	%	1)
					Error	0xFE					
	X				NotAvailable	0xFF					
		3	1	8	**IntendedRetarderPercentTorque (Intended Retarder Percent Torque)**		1	-125	-125 - 125	%	
					Error	0xFE					
					NotAvailable	0xFF					
		4	1	2	**EngineCoolantLoadIncrease (Engine Coolant Load Increase)**		1	0	0 - 3		
					NoEngineCoolantLoadIncrease	0x00					
					EngineCoolantLoadIncrease	0x01					
					Reserved	0x02					

					TakeNoAction	0x03				
		4	3	2	**RetarderRqingBrakeLight (Retarder Requesting Brake Light)**		1	0	0 - 3	
					NotActive	0x00				
					Active	0x01				
					Reserved	0x02				
					TakeNoAction	0x03				
		4	5	2	**RetarderRoadSpeedLimitSwitch (Retarder Road Speed Limit Switch)**		1	0	0 - 3	
					Road speed limiting by retarder is disabled	0x00				
					Road speed limiting by retarder is enabled. The road speed that the retarder will limit will be determined when the switch transitions from 00 to 01	0x01				
					Error	0x02				
					NotAvailable	0x03				
		4	7	2	**RetarderRoadSpeedExceededStatus (Retarder Road Speed Exceeded Status)**		1	0	0 - 3	
					Road speed limiting by retarder is disabled	0x00				
					Road speed limiting by retarder is enabled. The road speed that the retarder will limit will be determined when the switch transitions from 00 to 01	0x01				
					Error	0x02				
					NotAvailable	0x03				
		5	1	8	**SAofControllingDevice (Source Address Of Controlling Device For Retarder Control)**		1	0	0 - 253	
					Error	0xFE				
					TakeNoAction	0xFF				
		6	1	8	**DrvrsDmandRetarderPercentTorque (Drivers Demand Retarder Percent Torque)**		1	-125	-125 - 125	%
	X	7	1	8	**RetarderSelectionNonEng (Retarder Selection Non Engine)**		0.4	0	0 - 100	%
		8	1	8	**ActlMxAvlblRtarderPercentTorque (Actual Max Available Retarder Percent Torque)**		1	-125	-125 - 125	%

Note 1) 0%=> retarder not braking, <0%=>retarder braking

2.4.2.28 ERC1 (Electronic Retarder Controller 1) - RD

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18F00010	100	100	00F000	6	Cyclic	0	0	00	10		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	4	**EngineRetarderTorqueMode (Engine and Retarder Torque Mode)**		1	0	0 - 15		
	X				No request (default mode)	0x00					
	X				Operator selection	0x01					
	X				Cruise Control	0x02					
	X				PTO Governor	0x03					
	X				Road Speed Governing	0x04					
	X				ASR Control	0x05					
	X				Transmission Control	0x06					
	X				ABS Control	0x07					
	X				Torque Limiting	0x08					
	X				High Speed Governor	0x09					
	X				Brake System	0x0A					
	X				Remote accelerator	0x0B					
	X				NotDefined	0x0C					
	X				White smoke limiting	0x0D					
	X				Other	0x0E					
	X				TakeNoAction	0x0F					
		1	5	2	**RetarderEnableBrakeAssistSwtch (Retarder Enable - Brake Assist Switch)**		1	0	0 - 3		
					RetarderBrakeAssistDisabled	0x00					
					RetarderBrakeAssistEnabled	0x01					
					Error	0x02					
					NotAvailable	0x03					
		1	7	2	**RetarderEnableShiftAssistSwtch (Retarder Enable - Shift Assist Switch)**		1	0	0 - 3		
					RetarderShiftAssistDisabled	0x00					
					RetarderShiftAssistEnabled	0x01					
					Error	0x02					
					NotAvailable	0x03					
	X	2	1	8	**ActualRetarderPercentTorque (Actual Retarder Percent Torque)**		1	-125	-125 - 125	%	1)
	X				Error	0xFE					
	X				NotAvailable	0xFF					
		3	1	8	**IntendedRetarderPercentTorque (Intended Retarder Percent Torque)**		1	-125	-125 - 125	%	
					Error	0xFE					
					NotAvailable	0xFF					
		4	1	2	**EngineCoolantLoadIncrease (Engine Coolant Load Increase)**		1	0	0 - 3		
					NoEngineCoolantLoadIncrease	0x00					
					EngineCoolantLoadIncrease	0x01					
					Reserved	0x02					

					TakeNoAction	0x03					
		4	3	2	**RetarderRqingBrakeLight (Retarder Requesting Brake Light)**		1	0	0 - 3		
					NotActive	0x00					
					Active	0x01					
					Reserved	0x02					
					TakeNoAction	0x03					
		4	5	2	**RetarderRoadSpeedLimitSwitch (Retarder Road Speed Limit Switch)**		1	0	0 - 3		
					Road speed limiting by retarder is disabled	0x00					
					Road speed limiting by retarder is enabled. The road speed that the retarder will limit will be determined when the switch transitions from 00 to 01	0x01					
					Error	0x02					
					NotAvailable	0x03					
		4	7	2	**RetarderRoadSpeedExceededStatus (Retarder Road Speed Exceeded Status)**		1	0	0 - 3		
					Road speed limiting by retarder is disabled	0x00					
					Road speed limiting by retarder is enabled. The road speed that the retarder will limit will be determined when the switch transitions from 00 to 01	0x01					
					Error	0x02					
					NotAvailable	0x03					
		5	1	8	**SAofControllingDevice (Source Address Of Controlling Device For Retarder Control)**		1	0	0 - 253		
					Error	0xFE					
					TakeNoAction	0xFF					
		6	1	8	**DrvrsDmandRetarderPercentTorque (Drivers Demand Retarder Percent Torque)**		1	-125	-125 - 125	%	
		7	1	8	**RetarderSelectionNonEng (Retarder Selection Non Engine)**		0.4	0	0 - 100	%	
		8	1	8	**ActlMxAvlblRtarderPercentTorque (Actual Max Available Retarder Percent Torque)**		1	-125	-125 - 125	%	

Note 1) 0%=> retarder not braking, <0%=>retarder braking

2.4.2.29 ETC2 (Electronic Transmission Controller 2) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18F00525	100	100	00F005	6	Cyclic	0	0	05	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	8	**SelectedGear (Selected Gear, - rev, + forw, 0 neut, 126 park)**		1	-125	-125 - 125		
					Park	0xFB					
					Error	0xFE					
	X				NotAvailable	0xFF					
		2	1	16	**ActualGearRatio (Actual Gear Ratio)**		0.001	0	0 - 64.255		
					Error	0xFE00					
					NotAvailable	0xFF00					
		4	1	8	**CurrentGear (Current Gear, - rev, + forw, 0 neut, 126 park)**		1	-125	-125 - 125	Gear	
					Park	0xFB					
					Error	0xFE					
	X				NotAvailable	0xFF					
		5	1	16	**TransmissionRqstedRange (Transmission Requested Range)**		1	0	0 - 255	Ascii	1)
					Error	0x00					
					D	0x2044					
					N	0x204E					
					R	0x2052					
					NotAvailable	0xFFFF					
		7	1	16	**TransmissionCurrentRange (Transmission Current Range)**		1	0	0 - 255	Ascii	2)
					Error	0x00					
					D	0x2044					
					N	0x204E					
					R	0x2052					
					NotAvailable	0xFFFF					

Note 1) Signal contains two ascii signs (0-255 per byte).
Note 2) Signal contains two ascii signs (0-255 per byte).

2.4.2.30   ETC2 (Electronic Transmission Controller 2) - T

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18F00503	100	100	00F005	6	Cyclic	0	0	05	03		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	8	**SelectedGear (Selected Gear, - rev, + forw, 0 neut, 126 park)**		1	-125	-125 - 125		
	X				Park	0xFB					
	X				Error	0xFE					
	X				NotAvailable	0xFF					
		2	1	16	**ActualGearRatio (Actual Gear Ratio)**		0.001	0	0 - 64.255		
					Error	0xFE00					
					NotAvailable	0xFF00					
	X	4	1	8	**CurrentGear (Current Gear, - rev, + forw, 0 neut, 126 park)**		1	-125	-125 - 125	Gear	
	X				Park	0xFB					
	X				Error	0xFE					
	X				NotAvailable	0xFF					
		5	1	16	**TransmissionRqstedRange (Transmission Requested Range)**		1	0	0 - 255	Ascii	1)
					Error	0x00					
					D	0x2044					
					N	0x204E					
					R	0x2052					
					NotAvailable	0xFFFF					
		7	1	16	**TransmissionCurrentRange (Transmission Current Range)**		1	0	0 - 255	Ascii	2)
					Error	0x00					
					D	0x2044					
					N	0x204E					
					R	0x2052					
					NotAvailable	0xFFFF					

Note 1) Signal contains two ascii signs (0-255 per byte).
Note 2) Signal contains two ascii signs (0-255 per byte).

2.4.2.31 FMSStandardInterface (FMS-standard Interface Identity/Capabilities) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
1CFDD125	10000	10000	00FDD1	7	Cyclic	0	0	D1	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	2	**FMSStandardDiagnosticsSupported (FMS-standard Diagnostics Supported)**		1	0	0 - 3		
	X				DiagnosticsIsNotSupported	0x00					
	X				DiagnosticsIsSupported	0x01					
	X				Reserved	0x02					
	X				TakeNoAction	0x03					
	X	1	3	2	**FMSStandardRequestsSupported (FMS-standard Requests Supported)**		1	0	0 - 3		
	X				OnRequestModeIsNotSupported	0x00					
	X				OnRequestModeIsSupported	0x01					
	X				Reserved	0x02					
	X				TakeNoAction	0x03					
	X	2	1	32	**FMSStandardSWVersionSupported (FMS standard SW Version Supported)**		1	0	0 - 4211081215	ASCII	
	X				Error	0xFE0000 00					
	X				NotAvailable	0xFF0000 00					

2.4.2.32   FuelConsumption (Fuel Consumption (Liquid)) - E

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEE900	1000	1000	00FEE9	6	Cyclic	0	0	E9	00		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	32	**TripFuel (Trip Fuel)**		0.5	0	0 - 2.10554e+009	L	
					Error	0xFE000000					
					NotAvailable	0xFF000000					
	X	5	1	32	**TotalFuelUsed (Total Fuel Used)**		0.5	0	0 - 2105540607.5	L	1)
	X				Error	0xFE000000					
	X				NotAvailable	0xFF000000					

Note 1) This signal may not be available if a gas engine is used

2.4.2.33　FuelConsumption (Fuel Consumption (Liquid)) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEE925	1000	1000	00FEE9	6	Cyclic	0	0	E9	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	32	**TripFuel (Trip Fuel)**		0.5	0	0 - 2.10554e+009	L	
					Error	0xFE000000					
					NotAvailable	0xFF000000					
	X	5	1	32	**TotalFuelUsed (Total Fuel Used)**		0.5	0	0 - 2105540607.5	L	1)
					Error	0xFE000000					
	X				NotAvailable	0xFF000000					

Note 1) This signal may not be available if a gas engine is used

2.4.2.34 FuelEconomy (Fuel Economy (Liquid)) - E

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEF200	100	100	00FEF2	6	Cyclic	0	0	F2	00		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	16	**FuelRate (Fuel Rate)**		0.05	0	0 - 3212.75	L/h	1)
	X				Error	0xFE00					
	X				NotAvailable	0xFF00					
	X	3	1	16	**InstantaneousFuelEconomy (Instantaneous Fuel Economy)**		0.00195313	0	0 - 125.5	km/L	2)
	X				Infinite (e.g. during engine motoring). NOTE! Scania deviation from J1939	0xFAFF					
	X				Infinite (e.g. during engine motoring)	0xFB00					
	X				Error	0xFE00					
	X				NotAvailable	0xFF00					
		5	1	16	**AverageFuelEconomy (Average Fuel Economy)**		0.00195313	0	0 - 125.5	km/L	
					Error	0xFE00					
					NotAvailable	0xFF00					
		7	1	8	**ThrottlePosition (Throttle Position)**		0.4	0	0 - 100	%	
					Error	0xFE00					
					NotAvailable	0xFF00					

Note 1) This signal may not be available if a gas engine is used

Note 2) This signal may not be available if a gas engine is used

2.4.2.35 FuelEconomy (Fuel Economy (Liquid)) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEF225	100	100	00FEF2	6	Cyclic	0	0	F2	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	16	**FuelRate (Fuel Rate)**		0.05	0	0 - 3212.75	L/h	1)
					Error	0xFE00					
	X				NotAvailable	0xFF00					
	X	3	1	16	**InstantaneousFuelEconomy (Instantaneous Fuel Economy)**		0.00195313	0	0 - 125.5	km/L	2)
	X				Infinite (e.g. during engine motoring). NOTE! Scania deviation from J1939	0xFAFF					
	X				Infinite (e.g. during engine motoring)	0xFB00					
					Error	0xFE00					
	X				NotAvailable	0xFF00					
		5	1	16	**AverageFuelEconomy (Average Fuel Economy)**		0.00195313	0	0 - 125.5	km/L	
					Error	0xFE00					
					NotAvailable	0xFF00					
		7	1	8	**ThrottlePosition (Throttle Position)**		0.4	0	0 - 100	%	
					Error	0xFE00					
					NotAvailable	0xFF00					

Note 1) This signal may not be available if a gas engine is used

Note 2) This signal may not be available if a gas engine is used

2.4.2.36   HiResVehicleDist (High Resolution Vehicle Distance) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEC125	1000	1000	00FEC1	6	Cyclic	0	0	C1	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	32	**HighResolTotalVehicleDistance (High Resolution Vehicle Distance)**		0.005	0	0 - 21055406.075	km	
					Error	0xFE000000					
	X				NotAvailable	0xFF000000					
		5	1	32	**HighResolTripDistance (High Resolution Trip Distance)**		0.005	0	0 - 21055406.075	km	
					Error	0xFE000000					
					NotAvailable	0xFF000000					

2.4.2.37 HiResVehicleDist (High Resolution Vehicle Distance) - TCO

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEC1EE	1000	1000	00FEC1	6	Cyclic	0	0	C1	EE		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	32	**HighResolTotalVehicleDistance (High Resolution Vehicle Distance)**		0.005	0	0 - 21055406.075	km	
	X				Error	0xFE000000					
	X				NotAvailable	0xFF000000					
		5	1	32	**HighResolTripDistance (High Resolution Trip Distance)**		0.005	0	0 - 21055406.075	km	
					Error	0xFE000000					
					NotAvailable	0xFF000000					

2.4.2.38 HRLFC (High Resolution Fuel Consumption (Liquid)) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FD0925	1000	1000	00FD09	6	Cyclic	0	0	09	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	32	**EngineTripFuel (Engine Trip Fuel)**		0.001	0	0 - 4211081.215	L/bit	
					Error	0xFE000000					
					NotAvailable	0xFFFFFFFF					
	X	5	1	32	**HighResEngineTotalFuelUsed (High Resolution Engine Total Fuel Used)**		0.001	0	0 - 4211081.215	L/bit	
	X				Error	0xFE000000					
	X				NotAvailable	0xFFFFFFFF					

2.4.2.39 ServiceInformation (Service Information) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEC025	1000	1000	00FEC0	6	Cyclic	0	0	C0	25		Std

If the message is missing on the Vehicle CAN-bus it's created and sent on the FMS-bus with SA = 25h.

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
		1	1	8	**ServiceComponentIdentificationA (ServiceComponentIdentificationA)**		1	0	0 - 250	ID	
					Error	0xFE					
	X				NotAvailable	0xFF					
	X	2	1	16	**ServiceDistance (ServiceDistance)**		5	-160635	-160635 - 160640	km	
	X				Error	0xFE00					
	X				NotAvailable	0xFF00					
		4	1	8	**ServiceComponentIdentificationB (ServiceComponentIdentificationB)**		1	0	0 - 250	ID	
					Error	0xFE					
					NotAvailable	0xFF					
		5	1	8	**ServiceDelay_CalendarTimeBased (ServiceDelay_CalendarTimeBased)**		1	-125	-125 - 125	weeks	
					Error	0xFE					
					NotAvailable	0xFF					
		6	1	8	**ServiceComponentIdentificationC (Service Component Identification C)**		1	0	0 - 250	ID	
					Error	0xFE					
					NotAvailable	0xFF					
		7	1	16	**SrvceDelay_OperationalTimeBased (Service Delay/Operational Time Based)**		1	-32127	-32127 - 32128	hr	
					Error	0xFE00					
					NotAvailable	0xFF00					

2.4.2.40 TCO1 (Tachograph) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
0CFE6C25	20	20	00FE6C	3	Cyclic	0	0	6C	25		Std

Se ISO16844 for information about TCO1. ISO16844-4 for CAN interface, ISO16844-7 for parameter specification.

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	3	**Driver1WorkingState (Driver 1 Working State)**		1	0	0 - 7		
					Rest	0x00					
					Availability	0x01					
					Work	0x02					
					Drive	0x03					
					101Reserved	0x04					
					Error	0x06					
	X				NotAvailable	0x07					
	X	1	4	3	**Driver2WorkingState (Driver 2 Working State)**		1	0	0 - 7		
					Rest	0x00					
					Availability	0x01					
					Work	0x02					
					Drive	0x03					
					101Reserved	0x04					
					Error	0x06					
	X				NotAvailable	0x07					
	X	1	7	2	**VehicleMotion (Vehicle Motion)**		1	0	0 - 3		
					VehicleNotInMotion	0x00					
					VehicleInMotion	0x01					
					Error	0x02					
	X				NotAvailable	0x03					
	X	2	1	4	**Driver1TimeRelatedStates (Driver 1 Time Related States)**		1	0	0 - 15		
					Normal/NoLimitsReached	0x00					
					Limit1: 15MinBefore4.5H	0x01					
					Limit2: 4.5HReached	0x02					
					Limit3: 15MinBefore9H	0x03					
					Limit4: 9HReached	0x04					
					Limit5: 15MinBefore16H	0x05					
					Limit6: 16HReached	0x06					
					WeeklyDrivingTimePreWarningActive	0x07					
	X				WeeklyDrivingTimeWarningActive	0x08					
	X				2WeeksDrivingTimePreWarningActive	0x09					
	X				2WeeksDrivingTimeWarningActive	0x0A					
	X				Driver1CardExpiryWarningActive	0x0B					
	X				NextMandatoryDriver1CardDownloadWarningActive	0x0C					
					Other	0x0D					
					Error	0x0E					
	X				NotAvailable	0x0F					

	X	2	5	2	**DriverCardDriver1 (Driver Card, Driver 1)**			1	0	0 - 3		
					DriverCardNotPresent	0x00						
					DriverCardPresent	0x01						
					Error	0x02						
	X				NotAvailable	0x03						
	X	2	7	2	**Overspeed (Overspeed)**			1	0	0 - 3		
					NoOverspeed	0x00						
					Overspeed	0x01						
					Error	0x02						
	X				NotAvailable	0x03						
	X	3	1	4	**Driver2TimeRelatedStates (Driver 2 Time Related States)**			1	0	0 - 15		
					Normal/NoLimitsReached	0x00						
					Limit1: 15MinBefore4.5H	0x01						
					Limit2: 4.5HReached	0x02						
					Limit3: 15MinBefore9H	0x03						
					Limit4: 9HReached	0x04						
					Limit5: 15MinBefore16H	0x05						
					Limit6: 16HReached	0x06						
					1100Reserved	0x07						
					Other	0x0D						
					Error	0x0E						
	X				NotAvailable	0x0F						
	X	3	5	2	**DriverCardDriver2 (Driver Card, Driver 2)**			1	0	0 - 3		
					DriverCardNotPresent	0x00						
					DriverCardPresent	0x01						
					Error	0x02						
	X				NotAvailable	0x03						
	X	4	1	2	**SystemEvent (System Event)**			1	0	0 - 3		
					NoSystemEvent	0x00						
					SystemEvent	0x01						
					Error	0x02						
	X				NotAvailable	0x03						
	X	4	3	2	**HandlingInformation (Handling Information)**			1	0	0 - 3		
					NoHandlingInformation	0x00						
					HandlingInformation	0x01						
					Error	0x02						
	X				NotAvailable	0x03						
	X	4	5	2	**SystemPerformance (Tachograph Performance)**			1	0	0 - 3		
					NoSystemPerformance	0x00						
					SystemPerformance	0x01						
					Error	0x02						
	X				NotAvailable	0x03						
	X	4	7	2	**DirectionIndicator (Direction Indicator)**			1	0	0 - 3		
					Forward	0x00						
					Reverse	0x01						
					Error	0x02						
	X				NotAvailable	0x03						
		5	1	16	**TachoOutputShaftSpeed (Tachograph Output Shaft Speed)**			0.125	0	0 - 8031.88	rpm	
					Error	0xFE00						

				NotAvailable	0xFF00						
	7	1	16	**TCOVehSpeed (Tachograph Vehicle Speed)**		0.00390625	0	0 - 250.99609375	km/h	1)
				Error	0xFE00						
X				NotAvailable	0xFF00						

Note 1) This signal is the primary source of vehicle speed.

2.4.2.41 TCO1 (Tachograph) - TCO

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
0CFE6CEE	20	20	00FE6C	3	Cyclic	0	0	6C	EE		Std

Se ISO16844 for information about TCO1. ISO16844-4 for CAN interface, ISO16844-7 for parameter specification.

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	3	**Driver1WorkingState (Driver 1 Working State)**		1	0	0 - 7		
	X				Rest	0x00					
	X				Availability	0x01					
	X				Work	0x02					
	X				Drive	0x03					
	X				101Reserved	0x04					
	X				Error	0x06					
	X				NotAvailable	0x07					
	X	1	4	3	**Driver2WorkingState (Driver 2 Working State)**		1	0	0 - 7		
	X				Rest	0x00					
	X				Availability	0x01					
	X				Work	0x02					
	X				Drive	0x03					
	X				101Reserved	0x04					
	X				Error	0x06					
	X				NotAvailable	0x07					
	X	1	7	2	**VehicleMotion (Vehicle Motion)**		1	0	0 - 3		
	X				VehicleNotInMotion	0x00					
	X				VehicleInMotion	0x01					
	X				Error	0x02					
	X				NotAvailable	0x03					
	X	2	1	4	**Driver1TimeRelatedStates (Driver 1 Time Related States)**		1	0	0 - 15		
	X				Normal/NoLimitsReached	0x00					
	X				Limit1: 15MinBefore4.5H	0x01					
	X				Limit2: 4.5HReached	0x02					
	X				Limit3: 15MinBefore9H	0x03					
	X				Limit4: 9HReached	0x04					
	X				Limit5: 15MinBefore16H	0x05					
	X				Limit6: 16HReached	0x06					
	X				WeeklyDrivingTimePreWarningActive	0x07					
	X				WeeklyDrivingTimeWarningActive	0x08					
	X				2WeeksDrivingTimePreWarningActive	0x09					
	X				2WeeksDrivingTimeWarningActive	0x0A					
	X				Driver1CardExpiryWarningActive	0x0B					
	X				NextMandatoryDriver1CardDownloadWarningActive	0x0C					
	X				Other	0x0D					
	X				Error	0x0E					
	X				NotAvailable	0x0F					

	X	2	5	2	**DriverCardDriver1 (Driver Card, Driver 1)**			1	0	0 - 3		
	X				DriverCardNotPresent	0x00						
	X				DriverCardPresent	0x01						
	X				Error	0x02						
	X				NotAvailable	0x03						
	X	2	7	2	**Overspeed (Overspeed)**			1	0	0 - 3		
	X				NoOverspeed	0x00						
	X				Overspeed	0x01						
	X				Error	0x02						
	X				NotAvailable	0x03						
	X	3	1	4	**Driver2TimeRelatedStates (Driver 2 Time Related States)**			1	0	0 - 15		
	X				Normal/NoLimitsReached	0x00						
	X				Limit1: 15MinBefore4.5H	0x01						
	X				Limit2: 4.5HReached	0x02						
	X				Limit3: 15MinBefore9H	0x03						
	X				Limit4: 9HReached	0x04						
	X				Limit5: 15MinBefore16H	0x05						
	X				Limit6: 16HReached	0x06						
	X				1100Reserved	0x07						
	X				Other	0x0D						
	X				Error	0x0E						
	X				NotAvailable	0x0F						
	X	3	5	2	**DriverCardDriver2 (Driver Card, Driver 2)**			1	0	0 - 3		
	X				DriverCardNotPresent	0x00						
	X				DriverCardPresent	0x01						
	X				Error	0x02						
	X				NotAvailable	0x03						
	X	4	1	2	**SystemEvent (System Event)**			1	0	0 - 3		
	X				NoSystemEvent	0x00						
	X				SystemEvent	0x01						
	X				Error	0x02						
	X				NotAvailable	0x03						
	X	4	3	2	**HandlingInformation (Handling Information)**			1	0	0 - 3		
	X				NoHandlingInformation	0x00						
	X				HandlingInformation	0x01						
	X				Error	0x02						
	X				NotAvailable	0x03						
	X	4	5	2	**SystemPerformance (Tachograph Performance)**			1	0	0 - 3		
	X				NoSystemPerformance	0x00						
	X				SystemPerformance	0x01						
	X				Error	0x02						
	X				NotAvailable	0x03						
	X	4	7	2	**DirectionIndicator (Direction Indicator)**			1	0	0 - 3		
	X				Forward	0x00						
	X				Reverse	0x01						
	X				Error	0x02						
	X				NotAvailable	0x03						
		5	1	16	**TachoOutputShaftSpeed (Tachograph Output Shaft Speed)**			0.125	0	0 - 8031.88	rpm	
					Error	0xFE00						

				NotAvailable	0xFF00					
	X	7	1	16	**TCOVehSpeed (Tachograph Vehicle Speed)**		0.00390625	0	0 - 250.99609375	km/h	1)
	X				Error	0xFE00					
	X				NotAvailable	0xFF00					

Note 1) This signal is the primary source of vehicle speed.

2.4.2.42 TelltaleStatus (Telltale Status) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FD7D25	1000	1000	00FD7D	6	Cyclic	0	0	7D	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	4	**TelltaleBlockID (Telltale Block Identifier)**		1	0	0 - 0		
	X				Don'tCare	0x0F					
	X	1	5	3	**TelltaleStatus1 (Telltale Status 1)**		1	0	0 - 0		
					Off	0x00					
					Condition Red	0x01					
					Condition Yellow	0x02					
					Condition Info	0x03					
					Reserved	0x04					
					Reserved	0x05					
					Reserved	0x06					
	X				NotAvaliable	0x07					
	X	2	1	3	**TelltaleStatus2 (Telltale Status 2)**		1	0	0 - 0		
					Off	0x00					
					Condition Red	0x01					
					Condition Yellow	0x02					
					Condition Info	0x03					
					Reserved	0x04					
					Reserved	0x05					
					Reserved	0x06					
	X				NotAvaliable	0x07					
	X	2	5	3	**TelltaleStatus3 (Telltale Status 3)**		1	0	0 - 0		
					Off	0x00					
					Condition Red	0x01					
					Condition Yellow	0x02					
					Condition Info	0x03					
					Reserved	0x04					
					Reserved	0x05					
					Reserved	0x06					
	X				NotAvaliable	0x07					
	X	3	1	3	**TelltaleStatus4 (Telltale Status 4)**		1	0	0 - 0		
					Off	0x00					
					Condition Red	0x01					
					Condition Yellow	0x02					
					Condition Info	0x03					
					Reserved	0x04					
					Reserved	0x05					
					Reserved	0x06					
	X				NotAvaliable	0x07					

	X	3	5	3	**TelltaleStatus5 (Telltale Status 5)**		1	0	0 - 0		
					Off	0x00					
					Condition Red	0x01					
					Condition Yellow	0x02					
					Condition Info	0x03					
					Reserved	0x04					
					Reserved	0x05					
					Reserved	0x06					
	X				NotAvaliable	0x07					
	X	4	1	3	**TelltaleStatus6 (Telltale Status 6)**		1	0	0 - 0		
					Off	0x00					
					Condition Red	0x01					
					Condition Yellow	0x02					
					Condition Info	0x03					
					Reserved	0x04					
					Reserved	0x05					
					Reserved	0x06					
	X				NotAvaliable	0x07					
	X	4	5	3	**TelltaleStatus7 (Telltale Status 7)**		1	0	0 - 0		
					Off	0x00					
					Condition Red	0x01					
					Condition Yellow	0x02					
					Condition Info	0x03					
					Reserved	0x04					
					Reserved	0x05					
					Reserved	0x06					
	X				NotAvaliable	0x07					
	X	5	1	3	**TelltaleStatus8 (Telltale Status 8)**		1	0	0 - 0		
					Off	0x00					
					Condition Red	0x01					
					Condition Yellow	0x02					
					Condition Info	0x03					
					Reserved	0x04					
					Reserved	0x05					
					Reserved	0x06					
	X				NotAvaliable	0x07					
	X	5	5	3	**TelltaleStatus9 (Telltale Status 9)**		1	0	0 - 0		
					Off	0x00					
					Condition Red	0x01					
					Condition Yellow	0x02					
					Condition Info	0x03					
					Reserved	0x04					
					Reserved	0x05					
					Reserved	0x06					
	X				NotAvaliable	0x07					
	X	6	1	3	**TelltaleStatus10 (Telltale Status 10)**		1	0	0 - 0		
					Off	0x00					
					Condition Red	0x01					
					Condition Yellow	0x02					
					Condition Info	0x03					
					Reserved	0x04					
					Reserved	0x05					

				Reserved	0x06						
X				NotAvaliable	0x07						
X	6	5	3	**TelltaleStatus11 (Telltale Status 11)**		1	0	0 - 0			
				Off	0x00						
				Condition Red	0x01						
				Condition Yellow	0x02						
				Condition Info	0x03						
				Reserved	0x04						
				Reserved	0x05						
				Reserved	0x06						
X				NotAvaliable	0x07						
X	7	1	3	**TelltaleStatus12 (Telltale Status 12)**		1	0	0 - 0			
				Off	0x00						
				Condition Red	0x01						
				Condition Yellow	0x02						
				Condition Info	0x03						
				Reserved	0x04						
				Reserved	0x05						
				Reserved	0x06						
X				NotAvaliable	0x07						
X	7	5	3	**TelltaleStatus13 (Telltale Status 13)**		1	0	0 - 0			
				Off	0x00						
				Condition Red	0x01						
				Condition Yellow	0x02						
				Condition Info	0x03						
				Reserved	0x04						
				Reserved	0x05						
				Reserved	0x06						
X				NotAvaliable	0x07						
X	8	1	3	**TelltaleStatus14 (Telltale Status 14)**		1	0	0 - 0			
				Off	0x00						
				Condition Red	0x01						
				Condition Yellow	0x02						
				Condition Info	0x03						
				Reserved	0x04						
				Reserved	0x05						
				Reserved	0x06						
X				NotAvaliable	0x07						
X	8	5	3	**TelltaleStatus15 (Telltale Status 15)**		1	0	0 - 0			
				Off	0x00						
				Condition Red	0x01						
				Condition Yellow	0x02						
				Condition Info	0x03						
				Reserved	0x04						
				Reserved	0x05						
				Reserved	0x06						
X				NotAvaliable	0x07						

2.4.2.43 TelltaleStatus (Telltale Status) - ICL

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FD7D17	1000	1000	00FD7D	6	Cyclic	0	0	7D	17		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	4	**TelltaleBlockID (Telltale Block Identifier)**		1	0	0 - 0		
	X				Don'tCare	0x0F					
	X	1	5	3	**TelltaleStatus1 (Telltale Status 1)**		1	0	0 - 0		
	X				Off	0x00					
	X				Condition Red	0x01					
	X				Condition Yellow	0x02					
	X				Condition Info	0x03					
	X				Reserved	0x04					
	X				Reserved	0x05					
	X				Reserved	0x06					
	X				NotAvaliable	0x07					
	X	2	1	3	**TelltaleStatus2 (Telltale Status 2)**		1	0	0 - 0		
	X				Off	0x00					
	X				Condition Red	0x01					
	X				Condition Yellow	0x02					
	X				Condition Info	0x03					
	X				Reserved	0x04					
	X				Reserved	0x05					
	X				Reserved	0x06					
	X				NotAvaliable	0x07					
	X	2	5	3	**TelltaleStatus3 (Telltale Status 3)**		1	0	0 - 0		
	X				Off	0x00					
	X				Condition Red	0x01					
	X				Condition Yellow	0x02					
	X				Condition Info	0x03					
	X				Reserved	0x04					
	X				Reserved	0x05					
	X				Reserved	0x06					
	X				NotAvaliable	0x07					
	X	3	1	3	**TelltaleStatus4 (Telltale Status 4)**		1	0	0 - 0		
	X				Off	0x00					
	X				Condition Red	0x01					
	X				Condition Yellow	0x02					
	X				Condition Info	0x03					
	X				Reserved	0x04					
	X				Reserved	0x05					
	X				Reserved	0x06					
	X				NotAvaliable	0x07					

X	3	5	3	**TelltaleStatus5 (Telltale Status 5)**			1	0	0 - 0		
X				Off	0x00						
X				Condition Red	0x01						
X				Condition Yellow	0x02						
X				Condition Info	0x03						
X				Reserved	0x04						
X				Reserved	0x05						
X				Reserved	0x06						
X				NotAvaliable	0x07						
X	4	1	3	**TelltaleStatus6 (Telltale Status 6)**			1	0	0 - 0		
X				Off	0x00						
X				Condition Red	0x01						
X				Condition Yellow	0x02						
X				Condition Info	0x03						
X				Reserved	0x04						
X				Reserved	0x05						
X				Reserved	0x06						
X				NotAvaliable	0x07						
X	4	5	3	**TelltaleStatus7 (Telltale Status 7)**			1	0	0 - 0		
X				Off	0x00						
X				Condition Red	0x01						
X				Condition Yellow	0x02						
X				Condition Info	0x03						
X				Reserved	0x04						
X				Reserved	0x05						
X				Reserved	0x06						
X				NotAvaliable	0x07						
X	5	1	3	**TelltaleStatus8 (Telltale Status 8)**			1	0	0 - 0		
X				Off	0x00						
X				Condition Red	0x01						
X				Condition Yellow	0x02						
X				Condition Info	0x03						
X				Reserved	0x04						
X				Reserved	0x05						
X				Reserved	0x06						
X				NotAvaliable	0x07						
X	5	5	3	**TelltaleStatus9 (Telltale Status 9)**			1	0	0 - 0		
X				Off	0x00						
X				Condition Red	0x01						
X				Condition Yellow	0x02						
X				Condition Info	0x03						
X				Reserved	0x04						
X				Reserved	0x05						
X				Reserved	0x06						
X				NotAvaliable	0x07						
X	6	1	3	**TelltaleStatus10 (Telltale Status 10)**			1	0	0 - 0		
X				Off	0x00						
X				Condition Red	0x01						
X				Condition Yellow	0x02						
X				Condition Info	0x03						
X				Reserved	0x04						
X				Reserved	0x05						

X				Reserved	0x06					
X				NotAvaliable	0x07					
X	6	5	3	**TelltaleStatus11 (Telltale Status 11)**		1	0	0 - 0		
X				Off	0x00					
X				Condition Red	0x01					
X				Condition Yellow	0x02					
X				Condition Info	0x03					
X				Reserved	0x04					
X				Reserved	0x05					
X				Reserved	0x06					
X				NotAvaliable	0x07					
X	7	1	3	**TelltaleStatus12 (Telltale Status 12)**		1	0	0 - 0		
X				Off	0x00					
X				Condition Red	0x01					
X				Condition Yellow	0x02					
X				Condition Info	0x03					
X				Reserved	0x04					
X				Reserved	0x05					
X				Reserved	0x06					
X				NotAvaliable	0x07					
X	7	5	3	**TelltaleStatus13 (Telltale Status 13)**		1	0	0 - 0		
X				Off	0x00					
X				Condition Red	0x01					
X				Condition Yellow	0x02					
X				Condition Info	0x03					
X				Reserved	0x04					
X				Reserved	0x05					
X				Reserved	0x06					
X				NotAvaliable	0x07					
X	8	1	3	**TelltaleStatus14 (Telltale Status 14)**		1	0	0 - 0		
X				Off	0x00					
X				Condition Red	0x01					
X				Condition Yellow	0x02					
X				Condition Info	0x03					
X				Reserved	0x04					
X				Reserved	0x05					
X				Reserved	0x06					
X				NotAvaliable	0x07					
X	8	5	3	**TelltaleStatus15 (Telltale Status 15)**		1	0	0 - 0		
X				Off	0x00					
X				Condition Red	0x01					
X				Condition Yellow	0x02					
X				Condition Info	0x03					
X				Reserved	0x04					
X				Reserved	0x05					
X				Reserved	0x06					
X				NotAvaliable	0x07					

2.4.2.44 TimeDate (Time/Date) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEE625	1000	1000	00FEE6	6	Cyclic	0	0	E6	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	8	**Seconds (Seconds)**		0.25	0	0 - 62.5	s	
					Error	0xFE					
	X				NotAvailable	0xFF					
	X	2	1	8	**Minutes (Minutes)**		1	0	0 - 250	mins	
					Error	0xFE					
	X				NotAvailable	0xFF					
	X	3	1	8	**Hours (Hours)**		1	0	0 - 250	hr	
					Error	0xFE					
	X				NotAvailable	0xFF					
	X	4	1	8	**Month (Month)**		1	0	0 - 250	months	
					Error	0xFE					
	X				NotAvailable	0xFF					
	X	5	1	8	**Day (Day)**		0.25	0	0 - 62.5	days	
					Error	0xFE					
	X				NotAvailable	0xFF					
	X	6	1	8	**Year (Year)**		1	1985	1985 - 2235	years	
					Error	0xFE					
	X				NotAvailable	0xFF					
		7	1	8	**LocalMinuteOffset (Local Minute Offset)**		1	-125	-125 - 125	mins	
					Error	0xFE					
					NotAvailable	0xFF					
		8	1	8	**LocalHourOffset (Local Hour Offset)**		1	-125	-125 - 125	hr	
					Error	0xFE					
					NotAvailable	0xFF					

2.4.2.45 TimeDate (Time/Date) - ICL

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEE617	1000	1000	00FEE6	6	Cyclic	0	0	E6	17		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
X		1	1	8	**Seconds (Seconds)**		0.25	0	0 - 62.5	s	
	X				Error	0xFE					
	X				NotAvailable	0xFF					
X		2	1	8	**Minutes (Minutes)**		1	0	0 - 250	mins	
	X				Error	0xFE					
	X				NotAvailable	0xFF					
X		3	1	8	**Hours (Hours)**		1	0	0 - 250	hr	
	X				Error	0xFE					
	X				NotAvailable	0xFF					
X		4	1	8	**Month (Month)**		1	0	0 - 250	months	
	X				Error	0xFE					
	X				NotAvailable	0xFF					
X		5	1	8	**Day (Day)**		0.25	0	0 - 62.5	days	
	X				Error	0xFE					
	X				NotAvailable	0xFF					
X		6	1	8	**Year (Year)**		1	1985	1985 - 2235	years	
	X				Error	0xFE					
	X				NotAvailable	0xFF					
		7	1	8	**LocalMinuteOffset (Local Minute Offset)**		1	-125	-125 - 125	mins	
					Error	0xFE					
					NotAvailable	0xFF					
		8	1	8	**LocalHourOffset (Local Hour Offset)**		1	-125	-125 - 125	hr	
					Error	0xFE					
					NotAvailable	0xFF					

2.4.2.46 VehicleId_10000 (Vehicle Identification 10000ms) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18ECFF25 18EBFF25 (FEEC)	10000	10000	00FEEC	6	Cyclic	0	0	EC	25	FF	Std

Message it is transmitted using BAM and TP.DT.

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	8	**VehicleIdentification (Vehicle Identification)**		1	0	0 - 0	ASCII	1)
	X	2	1	8	**Delimiter (Delimiter)**		1	0	0 - 0	ASCII '*'	2)

Note 1) Length m bytes

Note 2) Start at byte m

2.4.2.47 VehicleWeight_1000 (Vehicle Weight 1000ms) - FMS

Identifier	Tmin	Tmax	PGN	Default Priority	Message Type	DPext	DP	Group Extension	Source	Destination	Standard/ proprietary
18FEEA25	1000	1000	00FEEA	6	Cyclic	0	0	EA	25		Std

Sender	Receiver	Byte	Bit	Length	Explanation	State	Resolution	Offset	Operating range Data range	Unit	Note
	X	1	1	8	**AxleLocation (Axle Location)**		1	0	0 - 255		1)
	X				NotAvailable	0xFF					
	X	2	1	16	**AxleWeight (Axle Weight)**		0.5	0	0 - 32127.5	kg	
	X				Error	0xFE00					
	X				NotAvailable	0xFF00					
		4	1	16	**TrailerWeight (Trailer Weight)**		2	0	0 - 128510	kg	
					Error	0xFE00					
					NotAvailable	0xFF00					
		6	1	16	**CargoWeight (Cargo Weight)**		2	0	0 - 128510	kg	
					Error	0xFE00					
					NotAvailable	0xFF00					

Note 1) The low order 4 bits represent a position number, counting left to right when facing in the direction of normal vehicle travel (forward). The high order 4 bits represent a position number, counting front to back on the vehicle.