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Bus FMS-Standard
Interface description

Vers. 00.01

07.01.2007

General annotations

- Data might be not available during ignition off / main switch off
- Physical Layer according to ISO 11898 (250kb/s)
- Application Layer according SAE J1939-71 (issued 1994-08, revised 2003-12)
- Data Link Layer according SAE J1939-21
- If there is a discrepancy between definitions in this document and the SAE, the SAE documents are the valid only, except broadcast for PGN 00FEE6 (Time/Date)
- The priority/source address of each partner is different and has to be masked by connected Bus FMS-ECU.
- There is a terminating resistor on the vehicle side. It is necessary to terminate the CAN bus on the connected systems side.
- If the information is delivered the function/data has to be sent according Bus FMS-standard definition.
- If the information is not available the function/data has to be sent as not available according to SAE
- The physical connector is standardized and described in Chapter 3.
- “not used in Bus FMS-standard” means that there might be data sent according SAE but not used in Bus FMS-standard interface. If no information is sent, then it has to be sent as “not available” (don’t care).
- “reserved” means that as long as there is no definition it is sent “FF (not available)”
- Byte 2 to 5 of PGN 00FDD1 indicates the supported Bus-and Truck Version of the FMS-Standard (see example)
- For the door configuration in PGN 00FE4E and PGN 00FDA5 please contact the manufacturer of the vehicle

1 Parameters for FMS gateway (according SAE J1939)

always MSB First

1.1 Cruise Control/Vehicle Speed : CCVS

00FEF1								PGN Hex
65,265								PGN
100 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1					Bit No
Not used in Bus FMS-Standard	Wheel based speed 1/256 km/h Bit gain 0 km/h offset SPN 84	Wheel based speed 1/256 km/h Bit gain 0 km/h offset SPN 84	Clutch switch 00 = pedal released 01 = pedal pressed SPN 598	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Name values values values values SPN
Parking Brake Switch 00 = Parking brake not set 01 = Parking brake set SPN 70			Brake switch 00 = pedal released 01 = pedal depressed SPN 597					Name values values values values values SPN
			Not used in Bus FMS-Standard					
			Cruise control active 00 = switched off 01 = switched on SPN 595					Name values values values values SPN

1.2 Electronic Engine Controller #2 : EEC2

00F003								PGN Hex
61,443								PGN
50 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
	8 7 6 5 4 3 2 1							Bit No
Not used in Bus FMS-Standard	Accelerator pedal position 0,4 % / Bit gain 0 % offset SPN 91	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Name Name values values values values SPN

1.3 Fuel Consumption : LFC

00FEE9								PGN Hex
65,257								PGN
1000 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
				8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	Bit No
Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Total fuel used 0,5 L / Bit gain 0 L offset SPN 250	Total fuel used 0,5 L / Bit gain 0 L offset SPN 250	Total fuel used 0,5 L / Bit gain 0 L offset SPN 250	Total fuel used 0,5 L / Bit gain 0 L offset SPN 250	Name values values values values SPN

1.4 Dash Display : DD

00FEFC								PGN Hex
65,276								PGN
1000 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
	8 7 6 5 4 3 2 1							Bit No
Not used in Bus FMS-Standard	Fuel Level 0,4 % / Bit gain 0 % offset SPN 96	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Name values values values value SPN

1.5 Electronic Engine Controller #1 : EEC1

00F004								PGN Hex
61,444								PGN
20 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
			8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1				Bit No
Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Engine speed 0.125 rpm / Bit gain 0 rpm offset SPN 190	Engine speed 0.125 rpm / Bit gain 0 rpm offset SPN 190	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Name values values values value SPN

1.6 Engine Hours, Revolutions : HOURS

00FEE5								PGN Hex
65,253								PGN
1000 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1					Bit No
Total engine hours 0.05 h / Bit gain 0 h offset SPN 247	Total engine hours 0.05 h / Bit gain 0 h offset SPN 247	Total engine hours 0.05 h / Bit gain 0 h offset SPN 247	Total engine hours 0.05 h / Bit gain 0 h offset SPN 247	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Name values values values values values SPN

1.7 Vehicle Identification : VI

00FEEC								PGN Hex
65,260								PGN
10.000 ms								Rep. Rate
Variable 1-n	Variable 1-n	Variable 1-n	Variable 1-n	Variable 1-n	Variable 1-n	Variable 1-n	Variable 1-n	Byte No
								Bit No
Vehicle identification number ASCII up to 200 characters * = Delimiter SPN 237	**Vehicle identification number ASCII up to 200 characters * = Delimiter SPN 237**	**Vehicle identification number ASCII up to 200 characters * = Delimiter SPN 237**	**Vehicle identification number ASCII up to 200 characters * = Delimiter SPN 237**	**Vehicle identification number ASCII up to 200 characters * = Delimiter SPN 237**	**Vehicle identification number ASCII up to 200 characters * = Delimiter SPN 237**	**Vehicle identification number ASCII up to 200 characters * = Delimiter SPN 237**	**Vehicle identification number ASCII up to 200 characters * = Delimiter SPN 237**	Name Name values values values values SPN

Annotations:

1) If the Vehicle ID is up to 8 Bytes (including) then it is broadcasted with PGN 00FEEC containing the vehicle ID and filled with “FF” at the unused bytes.
2) If the Vehicle ID contains more than 8 Bytes then a TP.CM (PGN 00EC00) with a minimum of two TP.DT (PGN 00EB00) will be used.

1.8 FMS-standard Interface Identity / Capabilities : FMS

00FDD1								PGN Hex
64,977								PGN
10.000 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1				Bit No
Reserved	SW-version supported for trucks Version number in the format ab.cd where this byte represents “a” ASCII SPN 2806	SW-version supported for trucks Version number in the format ab.cd where this byte represents “b” ASCII SPN 2806	SW-version supported for buses and coaches Version number in the format ab.cd where this byte represents “c” ASCII SPN 2806	SW-version supported for buses and coaches Version number in the format ab.cd where this byte represents “d” ASCII SPN 2806	Reserved	Reserved	Reserved	Name values values values values values values values values SPN
Requests supported 00 = request is not supported 01= request is supported 10 = reserved 11 = don´t care SPN 2805								Name values values values values values values values values SPN
Diagnostics supported 00 = diagnostics is not supported 01 = diagnostics is supported 10 = reserved 11 = don´t care SPN 2804								Name values values values values values values values values SPN

1.9 High Resolution Vehicle Distance : VDHR

00FEC1								PGN Hex
65,217								PGN
1000 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1					Bit No
High resolution total vehicle distance 5 m / Bit gain 0 m offset SPN 917	High resolution total vehicle distance 5 m / Bit gain 0 m offset SPN 917	High resolution total vehicle distance 5 m / Bit gain 0 m offset SPN 917	High resolution total vehicle distance 5 m / Bit gain 0 m offset SPN 917	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Name Name values values values values values values SPN

1.10 Tachograph : TCO1

00FE6C								PGN Hex
65,132								PGN
20 ms/50 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1			8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	Bit No.
Drive recognize 00 = Vehicle motion not detected 01 = vehicle motion detected SPN 1611	Overspeed 00 = No overspeed 01 = Overspeed SPN 1614	Not used in Bus FMS-Standard could be sent as “not available” or “don´t care”	Direction indicator 00 = Forward 01 = Reverse SPN 1619	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Tachogr. vehicle speed 1/256 km/h Bit gain 0 km/h offset SPN 1624	Tachogr. Vehicle speed 1/256 km/h Bit gain 0 km/h offset SPN 1624	Name values values values values values SPN
Driv. 2 working state 000 = Rest 001 = Driver available 010 = Work 011 = Drive 110 = Error 111 = not available SPN 1613	Driver 1 card 00 = Card not present 01= Card present SPN 1615	Driver 2 card 00 = Card not present 01= Card present SPN 1616	Tachgraph performance 00 = Normal performance 01 = Performance analysis SPN 1620					Name values values values values values values values values SPN
Driv. 1 working state 000 = Rest 001 = Driver available 010 = Work 011 = Drive 110 = Error 111 = not available SPN 1612	Driv. 1 time rel states 0000 = normal 0001 = 15 min bef. 4 ½ h 0010 = 4 ½ h reached 0011 = 15 min bef. 9 h 0100 = 9 h reached 0101 = 15 min bef. 16 h 0110 = 16h reached 1110 = Error 1111 = not available SPN 1617	Driv 2 time rel. states 0000 = normal 0001 = 15 min bef. 4 ½ h 0010 = 4 ½ h reached 0011 = 15 min before 9 h 0100 = 9 h reached 0101 = 15 min bef. 16 h 0110 = 16h reached 1110 = Error 1111 = not available SPN 1618	Handling information 00 = no handling information 01 = handling information SPN 1621					Name values values values values values values values values values SPN
			System event 00 = no tachogr. Event 01 = tachogr. Event SPN 1622					Name values values values SPN

1.11 Engine Temperature 1 : ET1

00FEEE								PGN Hex
65,262								PGN
1000 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
8 7 6 5 4 3 2 1								Bit No
Engine Coolant Temperature 1 °C / Bit gain - 40 °C offset SPN 110	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Name Name values values values values SPN

1.12 Ambient Conditions : AMB

00FEF5								PGN Hex
65,269								PGN
1000 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
			8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1				Bit No
Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Ambient Air Temperature 0.03125 °C / Bit gain - 273 °C offset SPN 171	Ambient Air Temperature 0.03125 °C / Bit gain - 273 °C offset SPN 171	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Name Name values values values values SPN

1.13 Door Control 1: DC1

00FE4E								PGN Hex
65,102								PGN
100 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
8 7 6 5 4 3 2 1								Bit No.
Status 2 of doors 00 = all bus doors disabled 01 = at least 1 bus door enabled 10 = error 11 = not avialable SPN 3411	Not used in Bus-FMS-Standard	Not used in Bus-FMS-Standard	Not used in Bus-FMS-Standard	Not used in Bus-FMS-Standard	Not used in Bus-FMS-Standard	Not used in Bus-FMS-Standard	Not used in Bus-FMS-Standard	Name values values values values values values values values SPN
Ramp/Wheel chairlift 00 = inside bus 01 = outside bus 10 = Error 11 = not available SPN 1820								Name values values values values values values SPN
Position of doors 0000 = at least 1 door is open 0001 = closing last door 0010 = all doors closed 0011-1101 not defined 1110 = Error 1111 = not avialable SPN 1821								Name values values values values values values values values values values SPN

1.14 Door Control 2: DC2

00FDA5								PGN Hex
64,933								PGN
100 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	Bit No.
Lock Status Door 2 00 = Unlocked 01 = Locked 10 = Error 11 = Not available SPN 3415	Open Status Door 3 00 = Closed 01 = Open 10 = Error 11 = Not available SPN 3419	Enable Status Door 4 00 = Disabled 01 = Enabled 10 = Error 11 = Not available SPN 3423	Lock Status Door 6 00 = Unlocked 01 = Locked 10 = Error 11 = Not available SPN 3427	Open Status Door 7 00 = Closed 01 = Open 10 = Error 11 = Not available SPN 3431	Enable Status Door 8 00 = Disabled 01 = Enabled 10 = Error 11 = Not available SPN 3435	Lock Status Door 10 00 = Unlocked 01 = Locked 10 = Error 11 = Not available SPN 3439	Not defined	Name values values values values values SPN
Enable Status Door 1 00 = Disabled 01 = Enabled 10 = Error 11 = Not available SPN 3414	Lock Status Door 3 00 = Unlocked 01 = Locked 10 = Error 11 = Not available SPN 3418	Open Status Door 4 00 = Closed 01 = Open 10 = Error 11 = Not available SPN 3422	Enable Status Door 5 00 = Disabled 01 = Enabled 10 = Error 11 = Not available SPN 3426	Lock Status Door 7 00 = Unlocked 01 = Locked 10 = Error 11 = Not available SPN 3430	Open Status Door 8 00 = Closed 01 = Open 10 = Error 11 = Not available SPN 3434	Enable Status Door 9 00 = Disabled 01 = Enabled 10 = Error 11 = Not available SPN 3438	Not defined	Name values values values values values SPN
Open Status Door 1 00 = Closed 01 = Open 10 = Error 11 = Not available SPN 3413	Enable Status Door 2 00 = Disabled 01 = Enabled 10 = Error 11 = Not available SPN 3417	Lock Status Door 4 00 = Unlocked 01 = Locked 10 = Error 11 = Not available SPN 3421	Open Status Door 5 00 = Closed 01 = Open 10 = Error 11 = Not available SPN 3425	Enable Status Door 6 00 = Disabled 01 = Enabled 10 = Error 11 = Not available SPN 3429	Lock Status Door 8 00 = Unlocked 01 = Locked 10 = Error 11 = Not available SPN 3433	Open Status Door 9 00 = Closed 01 = Open 10 = Error 11 = Not available SPN 3437	Enable Status Door 10 00 = Disabled 01 = Enabled 10 = Error 11 = Not available SPN 3441	Name values values values values values SPN
Lock Status Door 1 00 = Unlocked 01 = Locked 10 = Error 11 = Not available SPN 3412	Open Status Door 2 00 = Closed 01 = Open 10 = Error 11 = Not available SPN 3416	Enable Status Door 3 00 = Disabled 01 = Enabled 10 = Error 11 = Not available SPN 3420	Lock Status Door 5 00 = Unlocked 01 = Locked 10 = Error 11 = Not available SPN 3424	Open Status Door 6 00 = Closed 01 = Open 10 = Error 11 = Not available SPN 3428	Enable Status Door 7 00 = Disabled 01 = Enabled 10 = Error 11 = Not available SPN 3432	Lock Status Door 9 00 = Unlocked 01 = Locked 10 = Error 11 = Not available SPN 3436	Open Status Door 10 00 = Closed 01 = Open 10 = Error 11 = Not available SPN 3440	Name values values values values values SPN

Remark:

Lock Status: locked -> doors cannot be operated by the driver or a passenger
unlocked -> door may be operated by the driver or a passenger

Enable Status: disabled -> door cannot be opened by a passenger
enabled -> door can be opened by a passenger

Open Status: closed -> door is completely closed
open -> door is not completely closed

1.15 Time / Date : TD

00FEE6								PGN Hex
65,254								PGN
1000 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1			Bit No.
Seconds 0.25 s/Bit 0 Offset SPN 959	Minutes 1 min /Bit 0 offset SPN 960	Hours 1 hr/Bit 0 offset SPN 961	Month 1 month/Bit 0 offset SPN 963	Day 0.25 day/Bit 0 offset SPN 962	Year 1 year/Bit 1985 years offset SPN 964	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Name values values values values values SPN

1.16 Air Supply Pressure : AIR1

00FEAE								PGN Hex
65,198								PGN
1000 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
		8 7 6 5 4 3 2 1	8 7 6 5 4 3 2 1					Bit No.
Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Service Brake Air Pressure Circuit #1 8 kPa/Bit 0 offset SPN 1087	Service Brake Air Pressure Circuit #2 8 kPa/Bit 0 offset SPN 1088	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Name Name values values values values SPN

1.17 Alternator Speed (preliminary) : AS

00FED5								PGN Hex
65,237								PGN
1000 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
		8 7 6 5 4 3 2 1						Bit No.
Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Alternator Status 4 00 = not charging 01 = charging 10 = error 11 = not available SPN 3356	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Name values values values values values values SPN
		Alternator Status 3 00 = not charging 01 = charging 10 = error 11 = not available SPN 3355						Name values values values values values values SPN
		Alternator Status 2 00 = not charging 01 = charging 10 = error 11 = not available SPN 3354						Name values values values values values values SPN
		Alternator Status 1 00 = not charging 01 = charging 10 = error 11 = not available SPN 3353						Name values values values values values values SPN

1.18 Electronic Transmission Controller 2 : ETC2

00F005								PGN Hex
61,445								PGN
100 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
8 7 6 5 4 3 2 1			8 7 6 5 4 3 2 1					Bit No.
Selected Gear 1 gear value/Bit -125 offset negative gear are reverse gears 00000000 = neutral 11111011 = park SPN 524	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Current Gear 1 gear value/Bit -125 offset negative gear are reverse gears 00000000 = neutral 11111011 = park SPN 523	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Not used in Bus FMS-Standard	Name values values values values values values values SPN

1.19 Air Suspension Control 4 : ASC4

00FE58								PGN Hex
65,112								PGN
100 ms								Rep. Rate
Data Byte 1	Data Byte 2	Data Byte 3	Data Byte 4	Data Byte 5	Data Byte 6	Data Byte 7	Data Byte 8	Byte No
8 - 1	8 - 1	8 - 1	8 - 1	8 - 1	8 - 1	8- 1	8 - 1	Bit No.
Bellow Pressure Front Axle Left 0.1 kPa/Bit 0 offset SPN 1725	Bellow Pressure Front Axle Left 0.1 kPa/Bit 0 offset SPN 1725	Bellow Pressure Front Axle Right 0.1 kPa/Bit 0 offset SPN 1726	Bellow Pressure Front Axle Right 0.1 kPa/Bit 0 offset SPN 1726	Bellow Pressure Rear Axle Left 0.1 kPa/Bit 0 offset SPN 1727	Bellow Pressure Rear Axle Left 0.1 kPa/Bit 0 offset SPN 1727	Bellow Pressure Rear Axle Right 0.1 kPa/Bit 0 offset SPN 1728	Bellow Pressure Rear Axle Right 0.1 kPa/Bit 0 offset SPN 1728	Name Name values values values values SPN

2 Examples

2.1 Broadcast Announce Message (BAM) for Vehicle ID longer than 8 Byte

Transport Protocol – Connection Management (TP.CM)

00ECFF								PGN Hex
60,671								PGN
Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte No
								Bit No
Control byte should be filled with (20_{16})	Total message size, number of bytes	Total message size, number of bytes	Total number of packets	Reserved should be filled with FF_{16}	Parameter Group Number of packeted message	Parameter Group Number of packeted message	Parameter Group Number of packeted message	Name Name Name values values values SPN

Transport Protocol – Data Transfer (TP.DT)

00EBFF								PGN Hex
60,415								PGN
Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte No
								Bit No
Sequence Number	Packetized Data	Packetized Data	Packetized Data	Packetized Data	Packetized Data	Packetized Data	Packetized Data	Name values values values values values SPN

In the situation shown in Figure 1, a node indicates to the network that it is about to transfer a multipacket message utilizing the service of the transport protocol.
In this example, the PGN $00FEEC_{16}$ (Vehicle Identification) is being broadcasted to the network.
The length of the Vehicle ID in this example is 17.
The unused bytes in the last TP.DT are filled with FF_{16}.
The originating node first transmits a TP.CM Broadcast Announce Message (BAM) followed by the data packets.
No acknowledgment is performed by any of the responders.

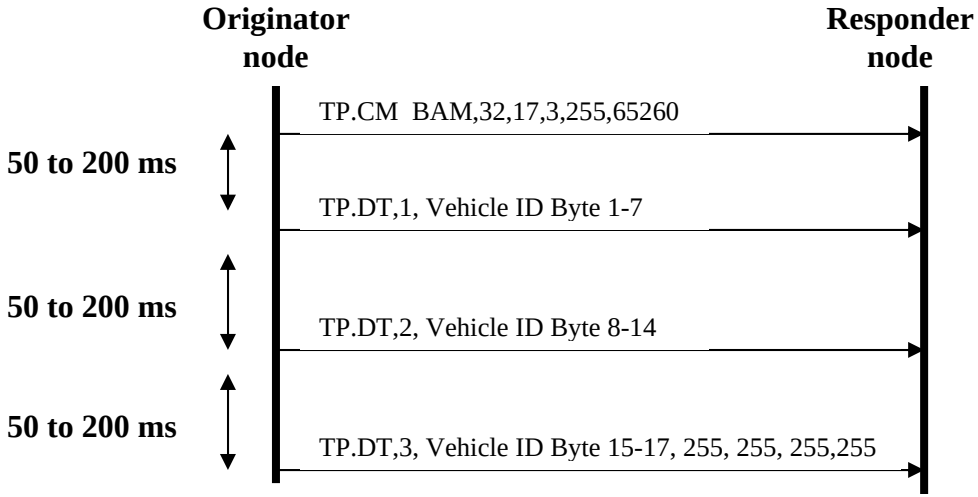


Figure 1

Time (ms)	ID	DLC	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0	PR EC FF SA $_{16}$	8	20 $_{16}$	11 $_{16}$	00 $_{16}$	03 $_{16}$	FF $_{16}$	EC $_{16}$	FE $_{16}$	00 $_{16}$
50	PR EB FF SA $_{16}$	8	01 $_{16}$	Vehicle ID byte 1 – 7						
100	PR EB FF SA $_{16}$	8	02 $_{16}$	Vehicle ID byte 8 – 14						
150	PR EB FF SA $_{16}$	8	03 $_{16}$	Vehicle ID byte 15	Vehicle ID byte 16	Vehicle ID byte 17	FF $_{16}$	FF $_{16}$	FF $_{16}$	FF $_{16}$

PR is Priority (to be masked)

2.2 Example SW Identification for buses and/or trucks

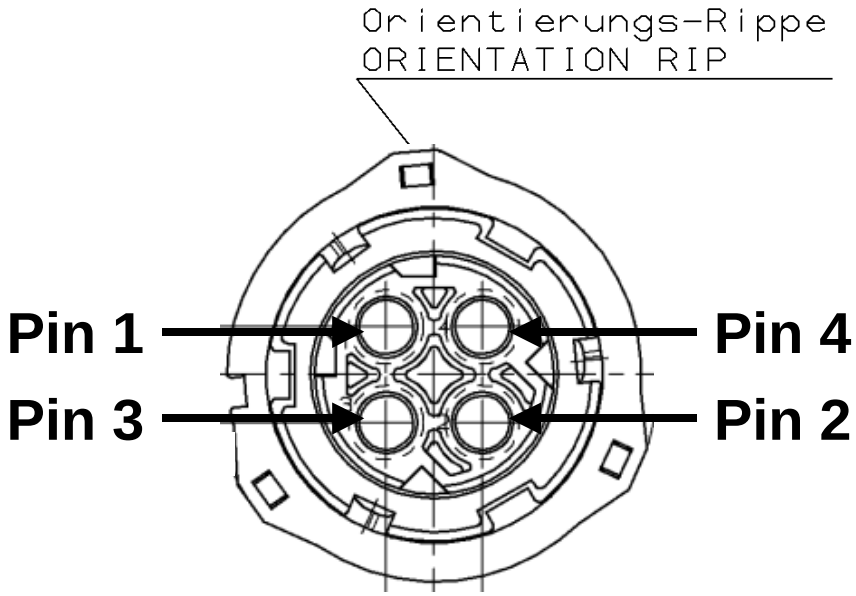
	ID	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Supporting Bus-FMS-Standard Version 01	00 FD D1 $_{16}$	X0 $_{16}$	30 $_{16}$	30 $_{16}$	30 $_{16}$	31 $_{16}$	FF $_{16}$	FF $_{16}$	FF $_{16}$
Supporting Truck-FMS-Standard Version 01	00 FD D1 $_{16}$	X0 $_{16}$	30 $_{16}$	31 $_{16}$	30 $_{16}$	30 $_{16}$	FF $_{16}$	FF $_{16}$	FF $_{16}$
Supporting Bus FMS-Standard Version 01 and Truck FMS-Standard Version 01	00 FD D1 $_{16}$	X0 $_{16}$	30 $_{16}$	31 $_{16}$	30 $_{16}$	31 $_{16}$	FF $_{16}$	FF $_{16}$	FF $_{16}$

Remark: **Byte 2 – Byte 5 are ASCII** **X=reserved and set to F_{16}**
30_{16} = “0” ASCII
31_{16} = “1” ASCII

3 Connector description

DIN 72585 connector
4-Pin male type (vehicle side)

AMP	**Chassis part (vehicle)**		**Coding 1 (black)**
	Housing w/o pin/socket locking		1-967402-1
	Pin (Sn plated)	0-929974-1	0-929974-1
	Seal	828920-1	828920-1
	Cap (for not used connector)		1394277-2
AMP	**FMS side (cable)**		
	Housing		1-967325-1
	Socket (Sn plated)		0-929967-1
	Seal		828920-1
GH	**Chassis part (vehicle)**		
	Housing		18337.000.000
	Pin/socket locking		16052.598.613
	Pin (Sn plated)		26634.201.184
	Seal		14414.627.626
	Cap (for not used connector)		N/A
GH	**FMS side (cable)**		
	Housing		17984.000.002
	Pin/socket locking		16052.598.613
	Socket (Sn plated)		26570.201.184
	Seal		14414.627.626



Pin Layout:

Pin 1	CAN high
Pin 2	CAN low
Pin 3	Option CAN ground
Pin 4	not used by Bus-FMS-Standard