

5.7.1.11 SPN Conversion Method

When this 1-bit field is equal to a zero, the SPN should be converted as it is defined in this document (see definition below for Version 4). The February 1996 version of J1939-73 contained inadequate definitions to assure consistent implementations. Products implementing to February 1996 version of the document will always have this bit set to a one. When this is the case, the SPN is in either Version 1, 2 or 3 format. The original publication of this recommended practice defined that this bit be set to one. This particular implementation is no longer permitted. It provides context for some implementations prior to the adoption of the recommended setting as zero (version 4 definition).

To clarify the ordering of bits and bytes within the SPN parameter (which is 19 bits long) and to keep that ordering consistent with other parameters in J1939-71 and J1939-73, the bit order has been respecified. See Version 4 below for the recommended formatting. Version 4 is required for any device complying with section 5.2.2.1 for emissions related components.

To reduce problems in interpretation of the SPNs the bit between the FMI field and the Occurrence Count field, previously reserved, will be cleared to zero to identify use of the currently specified SPN bit pattern. This bit now comprises an SPN Conversion Method for the purpose of maintaining usability of those implementations that are already in use.

- Data Length: 1 bit
 - Resolution: Not Applicable
 - Data Range: 0 means convert SPNs per the Version 4 definition below
 1 means convert SPNs per Version 1, 2 or 3 specified below.
- The four versions of interpretation are:
1. SPN assumed to be sent most significant bit first
 2. SPN represented as Intel format for most significant 16 bits with 3 least significant bits of 19 bits in with FMI value.
 3. SPN represented as Intel format for all 19 bits (least significant sent first)
 4. SPN represented as Intel format for all 19 bits with the SPN Conversion Method set to 0.
- Type: Status
 - Suspect Parameter Number: 1706
 - Reference: 5.7.1, 5.7.2, 0, 5.7.6, and 5.7.12

Given:

SPN 1208	= 4B8 ₁₆	= 000 00000100 10111000 ₂ (19 bits)
FMI 3	= 3 ₁₆	= 00011 ₂ (5 bits)
OC 10	= A ₁₆	= 0001010 ₂ (7 bits)
CM		= 0 ₂ (1 bit)

Version 1.

DTC																															
Byte 3								Byte 4								Byte 5				Byte 6											
8 most significant bits of 16 most significant bits of SPN (bit 8 most significant)								8 least significant bits of 16 most significant bits of SPN (bit 8 most significant)								3 least significant bits of SPN and the FMI (bit 8 SPN msb and bit 5 FMI msb)															
SPN												FMI				CM	OC														
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
0	0	0	0	0	0	0	0	1	0	0	1	0	1	1	1	0	0	0	0	0	0	1	1	1	0	0	0	1	0	1	0

J1939 Frame Format

Version 2.

DTC																																								
Byte 3								Byte 4								Byte 5								Byte 6																
8 least significant bits of 16 most significant bits of SPN (bit 8 most significant)								8 most significant bits of 16 most significant bits of SPN (bit 8 most significant)								3 least significant bits of SPN and the FMI (bit 8 SPN msb and bit 5 FMI msb)																								
SPN																FMI								CM	OC															
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
1	0	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	1	1	0	0	0	1	0	1	0	

J1939 Frame Format

Version 3.

DTC																																								
Byte 3								Byte 4								Byte 5								Byte 6																
8 least significant bits of SPN (bit 8 most significant)								second byte of SPN (bit 8 most significant)								3 most significant bits of SPN and the FMI (bit 8 SPN msb and bit 5 FMI msb)																								
SPN																FMI								CM	OC															
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
1	0	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	1	0	1	0	0	0	0	1	0	1	0	

J1939 Frame Format

Version 4.*

Recommended Version

*Effective 1996, Version 4 shall be used for all future OBD applications.

DTC																																								
Byte 3								Byte 4								Byte 5								Byte 6																
8 least significant bits of SPN (bit 8 most significant)								second byte of SPN (bit 8 most significant)								3 most significant bits of SPN and the FMI (bit 8 SPN msb and bit 5 FMI msb)																								
SPN																FMI								CM	OC															
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
1	0	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	

J1939 Frame Format

5.7.1.12 Occurrence Count

The 7-bit occurrence count field contains the number of times a fault has been independently detected. The occurrence count is reported as 1 the first time the DTC is detected. The occurrence count is not incremented again, until after the DTC has gone to the previously active state and then back active the DTC state when subsequently detected. At this point the occurrence count would be reported as 2. This continues until the DTC has been independently detected 126 times. The occurrence count shall not be incremented from 126 to 127 -- it shall remain at 126 until cleared by DM3 or DM11. If an occurrence count is not available, then this field should be set to all binary ones (127). The occurrence count is not incremented just due to an ignition key-off and ignition key-on. The diagnostic system shall have monitored the system or component (e.g. DTC) to see that it is no longer malfunctioning in order to declare it previously active.

- Data length: 7 bits
- Resolution: 1 occurrence count/bit
- Data range: 0 to 126 (the value 127 is reserved for indicating not available)
- Type: status
- Suspect parameter number: 1216
- Reference: 5.7.1, 5.7.2, 0, 5.7.6, and 5.7.12

5.7.2 Previously Active Diagnostic Trouble Codes (DM2)

The information communicated is limited to the previously active trouble codes. It is used to notify other components on the network of the diagnostic condition of the transmitting electronic component. The data contains a list of diagnostic codes and occurrence counts for previously active trouble codes. Whenever this message is sent, it should contain all