

J1939 Specification MKY45 Daisy-Chain

Setpoint

Setpoint value for the valve.

- PGN: 0x00EF00 (61184)
- DLC: 8
- Priority: 3 (Standard)
- Data:

Byte 1	Byte 2	Byte 3...4	Byte 5...8
0x1 (Fixed)	0x1 (Fixed)	Value	0xFF (Reserved)

Value

- Range: -100...100%
- Scaling: 0.01% / Bit
- Offset: -100%

Example

Set valve setpoint to 25% for the valve with NodeID 0x80 (from Master SA 0x01, Priority 3).

$$Raw\ Value = \frac{25\% - (-100\%)}{0.01\%/Bit} = \frac{125\%}{0.01\%/Bit} = 12500 \rightarrow \mathbf{0x30D4}$$

CAN-ID	DLC	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0x0CEF8001	8	0x01	0x01	0xD4	0x30	0xFF	0xFF	0xFF	0xFF

Current Feedback

Solenoid Current of the valve.

- PGN: 0x00FF10 (65296)
- DLC: 8
- Priority: 6 (Standard)
- Repetition Rate: 100 ms
- Data:

Byte 1...2	Byte 3...8
Current Solenoid-Driver 1	0xFF (Reserved)

Current Solenoid-Driver 1

- Scaling: 1 mA / Bit
- Offset: 0 mA

Example

Valve 1 with NodeID 0x80 sends the current value of 260 mA → 0x0104 (Broadcast, Priority 6).

CAN-ID	DLC	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0x18FF1080	8	0x04	0x01	0xFF	0xFF	0xFF	0xFF	0xFF	0xFF

Diagnostic Message (DM1)

Diagnostic Message (DM1) is transmitted by the device to signal active warnings and faults. The Message is transmitted when a state changes, every 1s and on request according to J1939-73. Data format according to J1939-73 standard.

- PGN: 0x00FECA (65226)
- DLC: 8
- Priority: 6 (Standard)
- Repetition rate: 1s / on change or on request (according to J1939-73)
- Data

Byte 1	Byte 2	Byte 3...5	Byte 5	Byte 6	Byte 7...8
Lamp status	Flash status	SPN (19 Bits)	FMI (5 Bits)	OC (7 Bits), CM (1 Bit)	0xFF (Reserved)

Note: The DTC (Diagnostic Trouble Code) spans from Byte 3...6 (SPN, FMI, OC, CM), a total of 4 Bytes. If multiple errors are active, the DTC will be repeated for each active error/warning (see example).

Lamp status

Bits 2-1: Protect Lamp – not implemented (0x03)

Bits 4-3: Amber Warning Lamp – indicates Warnings

Bits 6-5: Red Stop Lamp – indicates Errors

Bits 8-7: Malfunction Indicator Lamp – not implemented (0x03)

The values are: 0x1 = on / 0x0 = off

Flash status

Not implemented, fixed at 0xFF.

SPN

This 19-Bit number identifies the source of the problem.

Byte 3: Bits 8-1: 8 least significant bits of SPN (MSB at bit 8)

Byte 4, Bits 8-1: second byte of SPN (MSB at bit 8)

Byte 5, Bits 8-6: 3 most significant bits of SPN (MSB at bit 8)

See Chapter *Trouble Codes* for a list of all possible codes.

FMI

The 5-bit FMI (Failure Mode Identifier) defines the type of failure.

Byte 5, Bit 5-1: FMI (MSB at bit 5)

The numbers are according to the J1939-73 document Appendix A.

OC (occurrence counter)

Not implemented.

Byte 6, Bit 7-1: Occurrence Count - fixed at 127 (0x7F)

CM

SPN conversion method.

Byte 6, Bit 8: SPN Conversion Method - fixed at 0x0

Example

No active errors/warnings active on device with NodeID 0x80:

CAN-ID	DLC	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0x18FECA80	8	0xC3	0xFF	0x00	0x00	0x00	0x00	0xFF	0xFF

Device with NodeID 0x81 warns high temperature:

CAN-ID	DLC	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0x18FECA81	8	0xC7	0xFF	0x12	0xF7	0xF0	0x7F	0xFF	0xFF

Device has a high-temperature error and the high-temperature warning active:

CAN-ID	DLC	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
according to TP	10	0xD7	0xFF	0x12	0xF7	0xE0	0x7F	0x12	0xF7
		Byte 9	Byte 10						
		0xF0	0x7F						

To send the whole Data (10 Bytes) the J1939 BAM transport protocol will be used (in this example, only the data is shown, not the whole BAM protocol).

Trouble Codes

Name	Description	SPN	FMI	Severity
Power Supply Error	The supply voltage is below 18 VDC	522001	4	Error
Temperature Error	The electronics CPU temperature is too high (above 115°C)	522002	0	Error
High Temperature / Derating Warning	The electronics CPU temperature has exceeded 110°C. The device is in <i>derating</i> mode and reduces the maximum solenoid current based on the device temperature.	522002	16	Warning
Solenoid Output Short Circuit Error	A short circuit has occurred at the solenoid output	522003	6	Error
Solenoid Output Cable Break	A cable break has occurred at the solenoid output	522004	5	Error

Clear Diagnostic Messages (DM11)

Clear and reset all diagnostic messages. Sent using a Request-PGN.

- PGN: 0x00FED3 (65235)
- Type: Request
- DLC: 3
- Priority: 6 (Standard)
- Repetition rate: on request
- Data:

Byte 1	Byte 2	Byte 3
0xD3	0xFE	0x00

Response Message: Acknowledgement Message PGN 0x00e800 (59392):

Byte 1	Byte 2-4	Byte 5	Byte 6-8
Control Byte 0x00 = ACK 0x01 = NAK	Reserved 0xFF 0xFF 0xFF	Address Acknowledged	Requested PGN 0xD3 0xFE 0x00

Example

Send a Request-PGN with DM11 to request the reset of all active errors on all devices (globally 0xFF) from a diagnostic tool with NodeID 0xF9:

CAN-ID	DLC	Byte 1	Byte 2	Byte 3
0x18EAFF9	3	0xD3	0xFE	0x00

Note: No response is sent for global requests.

Send a Request-PGN with DM11 to request the reset of all active errors on all device with NodeID 0x80 from a diagnostic tool with NodeID 0xFA:

CAN-ID	DLC	Byte 1	Byte 2	Byte 3
0x18EA80FA	3	0xD3	0xFE	0x00

Positive **response from device** with NodeID 0x80 (ACK):

CAN-ID	DLC	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0x18E8FA80	8	0x00	0xFF	0xFF	0xFF	0xFA	0xD3	0xFE	0x00

Negative **response from device** with NodeID 0x80 (NAK):

CAN-ID	DLC	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0x18E8FA80	8	0x01	0xFF	0xFF	0xFF	0xFA	0xD3	0xFE	0x00

Component Identification (CI)

Component Identification (Make, Model, Serial Number). Sent as a response to a Request-PGN.

- PGN: 0x00FEEB (65259)
- Type: Response
- DLC: variable
- Priority: 6 (Standard)
- Repetition rate: on request
- Data:

The fields are ASCII strings, separated by an asterisk * and terminated by an asterisk *

Parameter	Description
Make	Manufacturer name ("Wandfluh AG")
Model	Model designation ("MKY45")
Serial Number	Unique serial number

Example

Response of a Request-PGN with CI. The TP protocol will be used to send the data. For this example, only the final ASCII string is shown:

```
Wandfluh AG*MKY45*20262130001*
```

Software Identification (SOFT)

Software Identification. Sent as a response to a Request-PGN.

- PGN: 0x00FEDA (65242)
- Type: Response
- DLC: variable
- Priority: 6 (Standard)
- Repetition rate: on request
- Data:

The first byte contains the number of software ID fields. The following fields are ASCII strings, each separated and terminated by an asterisk *.

Parameter	Description
Number of Software ID fields	Total number of SOFT fields (1 byte)
Software ID 1	Firmware Version Number ("2.0.0")
Software ID 2	Internal Version-Number

Example

Response of a Request-PGN with SOFT. The TP protocol will be used to send the data.

Byte 1	Field 1	Field 2
2	"2.0.0"	"1"

ASCII String of data:

[0x02]2.0.0*1*

Document History

Date	Description	Author
21.05.2026	Initial Draft	STH
10.06.2026	Corrected <i>not implemented</i> DM1 Lamp status values and updated examples. Clarified when DM1 is sent. Added details and examples for DM11.	STH
22.06.2026	Clarified DM11 response.	STH
29.07.2026	Specified missing Trouble-Code values.	STH
13.08.2026	PGN CI and SOFT added.	STH