# EnOcean Equipment Profiles

## REVISION HISTORY

| Ver. | Editor | Change | Date |
|---|---|---|---|
| 2.6.8 | NM | Last xml edition of the EEP-Specification | Dec 31, 2017 |

specification may be used in development of a product or service for sale without being a participant or promoter member of the EnOcean Alliance and/or joint owner of the appropriate joint IPR.

These errata may not have been subjected to an Intellectual Property review, and as such, may contain undeclared Necessary Claims.

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# D2-01: Electronic Switches and Dimmers with Local Control

This EEP family shall be used for bidirectional actuators that control electric loads, e.g. for lightning purposes. Switching and dimming is controlled and high-resolution energy measurement is supported. Local Control, either thru a user interface or thru other measures shall be supported on the actuator. This may include other EnOcean enabled devices taught-in to a device belonging to the EEP family, e.g. a simple rocker switch or more sophisticated devices like occupancy sensors with timing control. The proposed EEP family serves up to 30 output channels and allows controlling them either individually or as a bulk. Extension of this EEP family is possible in different ways:

1. A new device with a different feature mix creates a new TYPE within this EEP family
-> new column in following table

2. An additional feature is added and a new device with a new TYPE is created
-> new column and new line in following table

3. Like 2, but EnOcean communication of the EEP family needs to be extended
-> new column and new line in following table
-> one or more additional messages need to be defined

For teach-in and teach-out UTE (Universal Uni- and Bidirectional Teach-In Procedure for EEP based Communication) shall be used.

| Supported function ... of Type | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 0A | 0B | 0C | 0D | 0E | 0F | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of output channels | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 4 | 8 | 4 | 2 |
| Switching | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Dimming | - | - | X | X | X | X | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - | X |
| Dimming configurable | - | - | - | - | X | X | - | - | - | X | - | - | - | - | - | - | - | - | - | - | - | - | X |
| Pilot wire | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - |
| Local control | X | X | X | X | X | X | - | - | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Local control enable/disable | - | - | - | - | X | X | - | - | X | - | X | X | X | X | X | X | - | - | X | - | - | X | X |
| External Switch / Push Button Control | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | X | - | - | X | X |
| External Switch / Push Button Type | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | X | - | - | X | X |
| Auto OFF Timer | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | X | - | - | X | X |
| Delay OFF Timer | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X | - | - | X | - | - | X | X |
| Taught-in devices enable/disable 2) | - | - | - | - | X | X | - | - | X | X | X | X | X | X | X | X | - | - | X | - | - | - | - |
| User interface day/night mode | - | - | - | - | - | X | - | - | X | - | X | X | X | X | X | X | - | - | X | - | - | X | X |
| Over current reporting | - | - | - | - | X | X | - | - | X | X | - | - | X | - | - | - | - | - | - | - | - | - | - |
| Over current configurable | - | - | - | - | X | X | - | - | X | - | - | - | X | - | - | - | - | - | - | - | - | - | - |
| Energy measurement | X | - | X | - | X | X | X | - | X | X | - | X | X | - | X | - | X | - | - | - | - | - | - |
| Power measurement | - | - | - | - | X | X | - | - | X | X | - | X | X | - | X | - | - | - | - | - | - | - | - |
| Measurement Roll Over 1) | X | - | X | - | - | - | X | - | - | - | - | X | - | - | X | - | X | - | - | - | - | - | - |
| Measurement Auto Scaling 1) | - | - | - | - | X | X | - | - | X | X | - | - | X | - | - | - | - | - | - | - | - | - | - |
| Measurement configurable | - | - | - | - | - | X | - | - | X | X | - | X | X | - | X | - | - | - | - | - | - | - | - |
| Measurement report on query | X | - | X | - | X | X | X | - | X | X | - | X | X | - | X | - | X | - | - | - | - | X | - |
| Measurement auto reporting | - | - | - | - | X | X | - | - | X | X | - | X | X | - | X | - | - | - | - | - | - | - | - |
| Default state configurable | - | - | - | - | - | X | - | - | X | X | X | X | X | X | X | X | - | - | X | - | - | X | - |
| Error level reporting | - | - | - | - | - | X | - | - | X | X | - | - | X | - | - | - | - | - | - | - | - | X | - |
| Power Failure Detection | - | - | - | - | - | - | - | - | - | - | X | X | - | - | - | - | - | - | - | - | - | - | - |
| Power Failure Detection enable/disable | - | - | - | - | - | - | - | - | - | - | X | X | - | - | - | - | - | - | - | - | - | - | - |
| Maximum Dimming Value | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X |
| Minimum Dimming Value | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | X |

1) A device may either support Measurement Roll Over or Measurement Auto Scaling.

2) Enable / disable only effects devices that are taught-in to a device belonging to this EEP family;
it does not effect communication between a device belonging to this EEP family and any other entity where this device has been taught-in by itself.

| RORG | D2 | VLD Telegram |
|---|---|---|
| FUNC | 01 | Electronic Switches and Dimmers with Local Control |
| TYPE | 0C | Type 0x0C |

*Submitter: AVIDSEN*

Description
Intended for heating module with Pilotwire command and Energy Measurement.

Pilot wire includes 6 different modes:
- Off
- Comfort
- Eco
- Anti-freeze
- Comfort-1°C
- Comfort-2°C

Data exchange
Direction: bidirectional
Addressing: broadcast
Communication trigger: event-triggered
Communication interval: at each state change / every 5 minutes
Trigger event: actuator status change, consumption information change
Tx delay: -
Rx timeout: -

Teach-in
Teach-in method: Universal teach-in (UTE)

Security
Encryption supported: no
Security level format: -

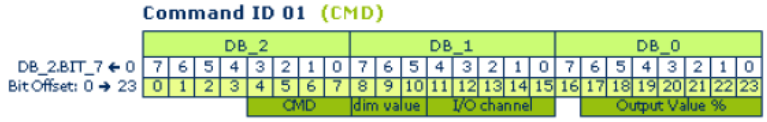
| Supported command | Type 0x0C |
|---|---|
| 0x1 – Actuator Set Output | X |
| 0x2 – Actuator Set Local | X |
| 0x3 – Actuator Status Query | X |
| 0x4 – Actuator Status Response | X |
| 0x5 – Actuator Set Measurement | X |
| 0x6 – Actuator Measurement Query | X |
| 0x7 – Actuator Measurement Response | X |
| 0x8 – Actuator Set Pilot Wire Mode | X |
| 0x9 – Actuator Pilot Wire Mode Query | X |
| 0xA – Actuator Pilot Wire Mode Response | X |

Telegram Definition
The telegrams corresponding to Command IDs: 0x1, 0x2, 0x3, 0x4, 0x5, 0x6 and 0x7 are already defined in EEP V2.6.2 and do not change.

Submitter: Team

### CMD 0x1 - Actuator Set Output

This message is sent to an actuator. It controls switching / dimming of one or all channels of an actuator.




REMARK:
In case an Actuator Set Output message specifies a parameter that is not supported by the addressed device, such device should react as following:
- Channel not supported by device -> ignore message
- Dimming command to switching device -> no change of status
- Dimming command with non-supported speed -> dim with regular speed

RECOMMENDATION:

Dimmers should take things like phase shifting into account to provide dimming based on power consumption (results in brightness for lamps) rather than interpreting percentage values as phase angle only.

| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 4 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | command identifier | Enum:<br>0x01: ID 01 | | |
| 8 | 3 | Dim value | DV | | Enum:<br>0x00: Switch to new output value<br>0x01: Dim to new output value – dim timer 1<br>0x02: Dim to new output value – dim timer 2<br>0x03: Dim to new output value – dim timer 3<br>0x04: Stop dimming<br>0x05...0x07: not used | | |
| 11 | 5 | I/O channel | I/O | | Enum:<br>0x00...0x1D: Output channel (to load)<br>0x1E: All output channels supported by the device<br>0x1F: Input channel (from mains supply) | | |
| 16 | 1 | Not Used (= 0) | | | | | |
| 17 | 7 | Output value | OV | | Enum:<br>0x00: Output value 0% or OFF<br>0x01...0x64: Output value 1% to 100% or ON<br>0x65...0x7E: Not used<br>0x7F: Output value not valid / not applicable | | |

### CMD 0x2 - Actuator Set Local

This message is sent to an actuator. It configures one or all channels of an actuator.

Response Timing: None

RECOMMENDATION:
In case the device implements an internal order for dim timers, this order should be from "dim timer 1" (fast) to "dim timer 3" (slow). The configured time shall always be interpreted for a full range (0 to 100%) dimming.

Command ID 02 (CMD)

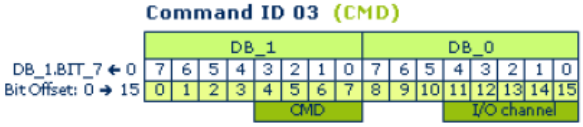
| | DB_3 | | | | | | | | DB_2 | | | | | | | | DB_1 | | | | | | | | DB_0 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DB_3.BIT_7 ← 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Bit Offset: 0 → 31 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| | d/e | | | | CMD | | | | OC | RO | LC | I/O channel | | | | | dim timer 2 | | | | dim timer 3 | | | | d/n | PF | state | | dim timer 1 | | | |
| | | | | | | | | | | | | | | | | | medium | | | | slow | | | | | EEP2.6 | | | fast | | | |

| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 1 | Taught-in devices | d/e | | Enum:<br>0b0: Disable taught-in devices (with different EEP)<br>0b1: Enable taught-in devices (with different EEP) | | |
| 1 | 3 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | Command identifier | Enum:<br>0x02: ID 02 | | |
| 8 | 1 | Over current shut down | OC | | Enum:<br>0b0: Over current shut down: static off<br>0b1: Over current shut down: automatic restart | | |
| 9 | 1 | reset over current shut down | RO | | Enum:<br>0b0: Reset over current shut down: not active<br>0b1: Reset over current shut down: trigger signal | | |
| 10 | 1 | Local control | LC | | Enum:<br>0b0: Disable local control<br>0b1: Enable local control | | |
| 11 | 5 | I/O channel | I/O | | Enum:<br>0x00...0x1D: Output channel (to load)<br>0x1E: All output channels supported by the device<br>0x1F: Input channel (from mains supply) | | |
| 16 | 4 | Dim timer 2 | DT2 | | Enum:<br>0x00: Not used<br>0x01...0x0F: Dim timer 2 [0,5 ... 7,5s / steps 0,5s] | | |
| 20 | 4 | Dim timer 3 | DT3 | | Enum:<br>0x00: Not used<br>0x01...0x0F: Dim timer 3 [0,5 ... 7,5s / steps 0,5s] | | |
| 24 | 1 | User interface indication | d/n | | Enum:<br>0b0: User interface indication: day operation<br>0b1: User interface indication: night operation | | |
| 25 | 1 | Power Failure | PF | | Enum:<br>0b0: Disable Power Failure Detection<br>0b1: Enable Power Failure Detection | | |
| 26 | 2 | Default state | DS | | Enum:<br>0b00: Default state: 0% or OFF<br>0b01: Default state: 100% or ON<br>0b10: Default state: remember previous state<br>0b11: Not used | | |
| 28 | 4 | Dim timer 1 | DT1 | | Enum:<br>0x00: Not used<br>0x01...0x0F: Dim timer 1 [0,5 ... 7,5s / steps 0,5s] | | |

## CMD 0x3 - Actuator Status Query

This message is sent to an actuator. It requests the status of one or all channels of an actuator.

Response Timing:
An Actuator Status Response message shall be received within a maximum of 300ms from the time of transmission of this message. In case no such response is received within this time frame the action shall be treated as completed without result.

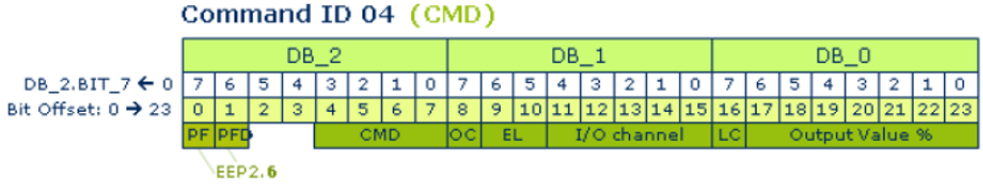



| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 4 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | Command identifier | Enum:<br>0x03: ID 03 | | |
| 8 | 3 | Not Used (= 0) | | | | | |
| 11 | 5 | I/O channel | I/O | | Enum:<br>0x00...0x1D: Output channel (to load)<br>0x1E: All output channels supported by the device<br>0x1F: Input channel (from mains supply) | | |

## CMD 0x4 - Actuator Status Response

This message is sent by an actuator if one of the following events occurs:
- Status of one channel has been changed locally
- Message Actuator Status Query has been received

Response Timing:
This message shall be sent within a maximum of 50ms from the time of reception of the Actuator Status Query message.



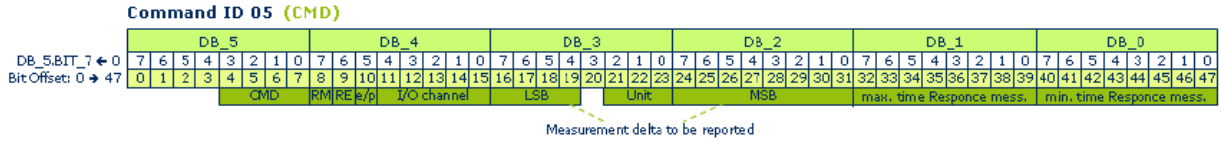

REMARK 1:
In case an Actuator Status Query message specifies a parameter that is not supported by the device being addresses, such device shall ignore the message and shall not answer using the Actuator Status Response message.
REMARK 2:
In case an Actuator Status Query message queries all output channels supported by a device being addresses, such device shall answer per each output channel by using an individual Actuator Measurement Response message.

| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 1 | Power Failure | PF | | Enum:<br>0b0: Power Failure Detection disabled/not supported<br>0b1: Power Failure Detection enabled | | |
| 1 | 1 | Power Failure Detection | PFD | | Enum:<br>0b0: Power Failure not detected/not supported/disabled<br>0b1: Power Failure Detected | | |
| 2 | 2 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | Command identifier | Enum:<br>0x04: ID 04 | | |
| 8 | 1 | Over current switch off | OC | | Enum:<br>0b0: Over current switch off: ready / not supported<br>0b1: Over current switch off: executed | | |
| 9 | 2 | Error level | EL | | Enum:<br>0b00: Error level 0: hardware OK<br>0b01: Error level 1: hardware warning<br>0b10: Error level 2: hardware failure<br>0b11: Error level not supported | | |
| 11 | 5 | I/O channel | I/O | | Enum:<br>0x00...0x1D: Output channel (to load)<br>0x1E: Not applicable, do not use<br>0x1F: Input channel (from mains supply) | | |
| 16 | 1 | Local control | LC | | Enum:<br>0b0: Local control disabled / not supported<br>0b1: Local control enabled | | |
| 17 | 7 | Output value | OV | | Enum:<br>0x00: Output value 0% or OFF<br>0x01...0x64: Output value 1% to 100% or ON<br>0x65...0x7E: Not used<br>0x7F: output value not valid / not set | | |

## CMD 0x5 - Actuator Set Measurement

The command defines values at offset 32 and at offset 40 which are the limits for the transmission periodicity of messages. MIT must not be set to 0, MAT >= MIT.

Response Timing: None

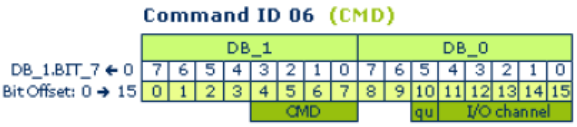



| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 4 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | Command identifier | Enum:<br>0x05: ID 05 | | |
| 8 | 1 | Report measurement | RM | | Enum:<br>0b0: Report measurement: query only<br>0b1: Report measurement: query / auto reporting | | |
| 9 | 1 | Reset measurement | RE | | Enum:<br>0b0: Reset measurement: not active<br>0b1: Reset measurement: trigger signal | | |
| 10 | 1 | Measurement mode | e/p | | Enum:<br>0b0: Energy measurement<br>0b1: Power measurement | | |
| 11 | 5 | I/O channel | I/O | | Enum:<br>0x00...0x1D: Output channel (to load)<br>0x1E: All output channels supported by the device<br>0x1F: Input channel (from mains supply) | | |
| 16 | 4 | Measurement delta to be reported (LSB) | MD_LSB | | 0...4095 | 0...4095 | N/A |
| 20 | 1 | Not Used (= 0) | | | | | |
| 21 | 3 | Unit | UN | | Enum:<br>0x00: Energy [Ws]<br>0x01: Energy [Wh]<br>0x02: Energy [KWh]<br>0x03: Power [W]<br>0x04: Power [KW]<br>0x05...0x07: Not used | | |
| 24 | 8 | Measurement delta to be reported (MSB) | MD_MSB | | 0...4095 | 0...4095 | N/A |
| 32 | 8 | Maximum time between two subsequent actuator messages | MAT | Measurement Response messages [10s] | Enum:<br>1...255: s<br>10...2550<br>0: Reserved | | |
| 40 | 8 | Minimum time between two subsequent actuator messages | MIT | Measurement Response messages [s] | Enum:<br>1...255: s<br>1...255<br>0: Reserved | | |

## CMD 0x6 - Actuator Measurement Query

This message is sent to an actuator. The actuator replies with an Actuator Measurement Response message.

Response Timing:
An Actuator Message Response message shall be received within a maximum of 300ms from the time of transmission of this message. In case no such response is received within this time frame the action shall be treated as completed without result.

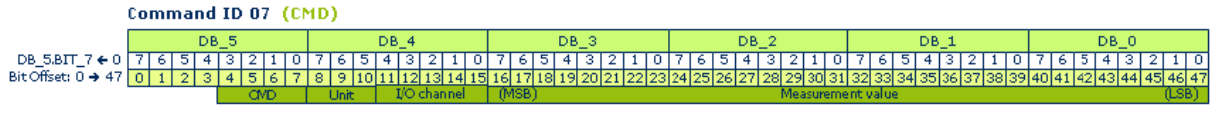



| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 4 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | Command identifier | Enum:<br>0x06: ID 06 | | |
| 8 | 2 | Not Used (= 0) | | | | | |
| 10 | 1 | Query | qu | | Enum:<br>0b0: Query energy<br>0b1: Query power | | |
| 11 | 5 | I/O channel | I/O | | Enum:<br>0x00...0x1D: Output channel (to load)<br>0x1E: All output channels supported by the device<br>0x1F: Input channel (from mains supply) | | |

## CMD 0x7 - Actuator Measurement Response

This message is sent by an actuator if one of the following events occurs:
- Measurement results trigger an automated transmission (see Actuator Set Measurement message)
- Message Actuator Measurement Query has been received

Response Timing:
This message shall be sent within a maximum of 50ms from the time of reception of the Actuator Measurement Query message.




REMARK 1:
In case an Actuator Measurement Query message specifies a parameter that is not supported by the device

addressed, such device shall ignore the message and shall not answer using the Actuator Measurement Response message.
REMARK 2:
In case an Actuator Measurement Query message queries all output channels supported by a device being addresses, such device shall answer per each output channel by using an individual Actuator Measurement Response message.

| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 4 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | Command identifier | Enum:<br>0x07: ID 07 | | |
| 8 | 3 | Unit | UN | | Enum:<br>0x00: Energy [Ws]<br>0x01: Energy [Wh]<br>0x02: Energy [KWh]<br>0x03: Power [W]<br>0x04: Power [KW]<br>0x05...0x07: Not used | | |
| 11 | 5 | I/O channel | I/O | | Enum:<br>0x00...0x1D: Output channel (to load)<br>0x1E: Not applicable, do not use<br>0x1F: Input channel (from mains supply) | | |
| 16 | 32 | Measurement value (4 bytes) | MV | DB3 = MSB / DB0 = LSB | 0...4294967295 | ... | N/A |

### CMD 0x8 - Actuator Set Pilot Wire Mode

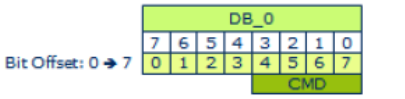
**Command ID 08 (CMD)**

| Bit Offset: 0 → 15 | DB_1 | | | | | | | | DB_0 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| | | | | | CMD | | | | | | | | | PM | | |

| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 4 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | Command identifier | Enum:<br>0x08: ID 08 | | |
| 8 | 5 | Not Used (= 0) | | | | | |
| 13 | 3 | Pilotwire mode | PM | | Enum:<br>0x00: Off<br>0x01: Comfort<br>0x02: Eco<br>0x03: Anti-freeze<br>0x04: Comfort-1<br>0x05: Comfort-2 | | |

### CMD 0x9 - Actuator Pilot Wire Mode Query

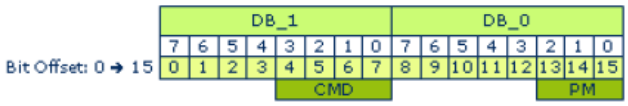
**Command ID 09 (CMD)**




| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 4 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | Command identifier | Enum:<br>0x09: ID 09 | | |

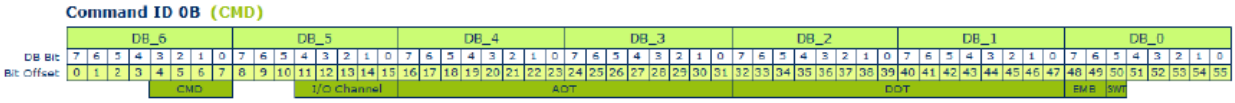
### CMD 0xA - Actuator Pilot Wire Mode Response

**Command ID 0A (CMD)**




| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 4 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | Command identifier | Enum:<br>0x0A: ID 0A | | |
| 8 | 5 | Not Used (= 0) | | | | | |
| 13 | 3 | Pilotwire mode | PM | | Enum:<br>0x00: Off<br>0x01: Comfort<br>0x02: Eco<br>0x03: Anti-freeze<br>0x04: Comfort-1<br>0x05: Comfort-2 | | |

## CMD 0xB - Actuator Set External Interface Settings




| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 4 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | Command identifier | Enum:<br>0x0B: ID 0B | | |
| 8 | 3 | Not Used (= 0) | | | | | |
| 11 | 5 | I/O channel | I/O | | Enum:<br>0x00...0x1D: Output channel (to load)<br>0x1E: All output channels supported by the device<br>0x1F: Input channel (from mains supply) | | |
| 16 | 16 | Auto OFF Timer | AOT | Timer to automatically set OFF output channel when it is set ON | Enum:<br>0x0000: Timer deactivated<br>0x0001...0xFFFE: | 0.1...6553.4 | s |
| | | | | | 0xFFFF: Does not modify saved value | | |
| 32 | 16 | Delay OFF Timer | DOT | Delay timer before setting output channel to OFF value received by radio cmd | Enum:<br>0x0000: Timer deactivated<br>0x0001...0xFFFE: | 0.1...6553.4 | s |
| | | | | | 0xFFFF: Does not modify saved value | | |
| 48 | 2 | External Switch/Push Button | EBM | External interface mode | Enum:<br>0b00: Not applicable<br>0b01: External Switch<br>0b10: External Push Button<br>0b11: Auto detect | | |
| 50 | 1 | 2-state switch | SWT | Switching state | Enum:<br>0b00: Change of key state sets ON or OFF<br>0b01: Specific ON/OFF positions. ON when contacts are closed. OFF when contacts are open. | | |
| 51 | 5 | Not Used (= 0) | | | | | |

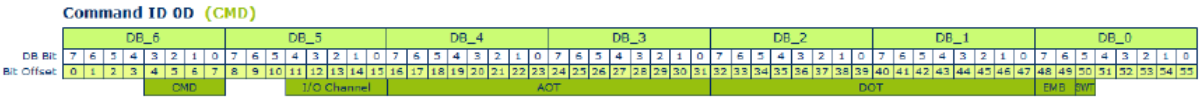
## CMD 0xC - Actuator External Interface Settings Query

**Command ID 0C (CMD)**

| | DB_1 | | | | | | | | DB_0 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DB Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Bit Offset | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| | | | | | CMD | | | | | | | I/O Channel | | | | |

| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 4 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | Command identifier | Enum:<br>0x0C: ID 0C | | |
| 8 | 3 | Not Used (= 0) | | | | | |
| 11 | 5 | I/O channel | I/O | | Enum:<br>0x00...0x1D: Output channel (to load)<br>0x1E: All output channels supported by the device<br>0x1F: Input channel (from mains supply) | | |

## CMD 0xD - Actuator External Interface Settings Response




| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 4 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | Command identifier | Enum:<br>0x0D: ID 0D | | |
| 8 | 3 | Not Used (= 0) | | | | | |
| 11 | 5 | I/O channel | I/O | | Enum:<br>0x00...0x1D: Output channel (to load)<br>0x1E: Not applicable<br>0x1F: Input channel (from mains supply) | | |
| 16 | 16 | Auto OFF Timer | AOT | Timer to automatically set OFF output channel when it is set ON | Enum:<br>0x0000: Timer deactivated<br>0x0001...0xFFFE: | 0.1...6553.4 | s |
| | | | | | 0xFFFF: Does not modify saved value | | |
| 32 | 16 | Delay OFF Timer | DOT | Delay timer before setting output channel to OFF value received by radio cmd | Enum:<br>0x0000: Timer deactivated<br>0x0001...0xFFFE: | 0.1...6553.4 | s |
| | | | | | 0xFFFF: Does not modify saved value | | |
| 48 | 2 | External Switch/Push Button | EBM | External interface mode | Enum:<br>0b00: Not applicable<br>0b01: External Switch<br>0b10: External Push Button<br>0b11: Auto detect | | |
| 50 | 1 | 2-state switch | SWT | Switching state | Enum:<br>0b00: Change of key state sets ON or OFF<br>0b01: Specific ON/OFF positions.<br>ON when contacts are closed.<br>OFF when contacts are open. | | |
| 51 | 5 | Not Used (= 0) | | | | | |

### CMD 0xF / ECID 0x00 - Actuator Set Dimming Limits

This message is sent to the actuator. It controls the maximum and minimum brightness of the channel output. If the actuator receives an out of range dimming value or an error command, the following actions should be performed:

- Channel not supported by device -> ignore the message
- Set dimming minimum value is less than 0% -> The minimum value is set to 0%
- Set dimming maximum value greater than 100% -> The maximum value is set to 100%

Command ID **0xF** / Ext. CID **0x00**

| Data Byte | DB_4 | | | | | | | | DB_3 | | | | | | | | DB_2 | | | | | | | | DB_1 | | | | | | | | DB_0 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DB Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Bit Offset | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| Data | | | | | CMD | | | | ECID | | | | | | | | I/O | | | | | | | | | MAXV | | | | | | | | | MINV | | | | | | | |

| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 4 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | | Enum:<br>0xF: ID F | | |
| 8 | 8 | Extended Command ID | ECID | | Enum:<br>0x00: ID 00 | | |
| 16 | 5 | I/O Channel | I/O | | Enum:<br>0x00...0x1D: Output channel (to load)<br>0x1E: All output channels supported by the device<br>0x1F: Reserved | | |
| 21 | 4 | Not Used (= 0) | | | | | |
| 25 | 7 | Maximum Value | MAXV | | Enum:<br>0x00: Reserved<br>0x01...0x64: Set maximum value<br>0x65...0x7F: Reserved | | |
| 32 | 1 | Not Used (= 0) | | | | | |
| 33 | 7 | Minimum Value | MINV | | Enum:<br>0x00...0x63: Set minimum value<br>0x64...0x7F: Reserved | | |

## CMD 0xF / ECID 0x01 - Actuator Dimming Limits Query

Command ID **0xF** / Ext. CID **0x01**

| Data Byte | DB_2 | | | | | | | | DB_1 | | | | | | | | DB_0 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DB Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Bit Offset | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| Data | | | | | CMD | | | | ECID | | | | | | | | I/O | | | | | | | |

| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 4 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | | Enum:<br>0xF: ID F | | |
| 8 | 8 | Extended Command ID | ECID | | Enum:<br>0x01: ID 01 | | |
| 16 | 5 | I/O Channel | I/O | | Enum:<br>0x00...0x1D: Single channel (to load)<br>0x1E: All output channels supported by the device<br>0x1F: Reserved | | |
| 21 | 3 | Not Used (= 0) | | | | | |

## CMD 0xF / ECID 0x02 - Actuator Dimming Limits Response

Command ID **0xF** / Ext. CID **0x02**

| Data Byte | DB_4 | | | | | | | | DB_3 | | | | | | | | DB_2 | | | | | | | | DB_1 | | | | | | | | DB_0 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DB Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Bit Offset | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| Data | | | | | CMD | | | | ECID | | | | | | | | I/O | | | | | | | | | MAXV | | | | | | | | MINV | | | | | | | |

| Offset | Size | Data | ShortCut | Description | Valid Range | Scale | Unit |
|---|---|---|---|---|---|---|---|
| 0 | 4 | Not Used (= 0) | | | | | |
| 4 | 4 | Command ID | CMD | | Enum:<br>0xF: ID F | | |
| 8 | 8 | Extended Command ID | ECID | | Enum:<br>0x02: ID 02 | | |
| 16 | 5 | I/O Channel | I/O | | Enum:<br>0x00...0x1D: Output channel (to load)<br>0x1E: All output channels supported by the device<br>0x1F: Reserved | | |
| 21 | 4 | Not Used (= 0) | | | | | |
| 25 | 7 | Maximum Value | MAXV | | Enum:<br>0x00: Reserved<br>0x01...0x64: Set maximum value<br>0x65...0x7F: Reserved | | |
| 32 | 1 | Not Used (= 0) | | | | | |
| 33 | 7 | Minimum Value | MINV | | Enum:<br>0x00...0x63: Set minimum value<br>0x64...0x7F: Reserved | | |