1 Switches and Dimmers with Measurement and Local Control

Device types from the D2-01-XX group share the same telegram definitions – see the profile D2-01-00 (http://tools.enocean-alliance.org/EEPViewer/profiles/D2/01/00/D2-01-00.pdf). There are several messages distinguished by the Command ID data field. Each type supports only certain commands and functions, e.g. type 0x02 has one dimmable output, type 0x12 has two relay outputs without dimming function or type 0x0B supports energy and power measurements.

The gateway creates a universal interface for all device types from the D2-01-XX group, regardless of the features supported by a particular type.

For a clearer overview of supported features, than the one in D2-01-00, see the definition of D2-01-17 (http://tools.enocean-alliance.org/EEPViewer/profiles/D2/01/17/D2-01-17.pdf).

Following text supposes a NodOn Micro Smart Plug (D2-01-0E) assigned to channel 1.

See also the video about pairing with gateway (the video was taken with BACnet version):
https://www.youtube.com/watch?v=kFMYFyDAUnc&ab_channel=FIRVENA

1.1 Overview

1.1.1 Incoming data

In **RX registers**, two messages (telegrams) are mixed, **status and measurement report**:

Register	Value Name	Range	Value	Dec	Hex
0	Command ID	4:Status Response;7...	4:Status Response	4	0x0004
1	I/O channel (STATUS)	0...31	0	0	0x0000
2	Output value	0...127 %	100%	100	0x0064
3	Power Failure	0:Disabled / not supp...	0:Disabled / not supported (PFD=0)	0	0x0000
4	Over current switch off	0:Ready / not suppor...	0:Ready / not supported	0	0x0000
5	Error level	0:Hardware OK;1:Ha...	3:Not supported	3	0x0003
6	Local control	0:Disabled / not supp...	1:Enabled	1	0x0001
7	I/O channel (MEASUREMENT)	0...31	0	0	0x0000
8	Unit	0:Energy [Ws];1:Ener...	3:Power [W]	3	0x0003
9	Measurement value (MSB)	0...65535	0	0	0x0000
10	Measurement value (LSB)	0...65535	9	9	0x0009
15	Telegram counter	0...65535	19	19	0x0013
16	Telegram age	0...65000 s	31s	31	0x001F

CMD4 – status

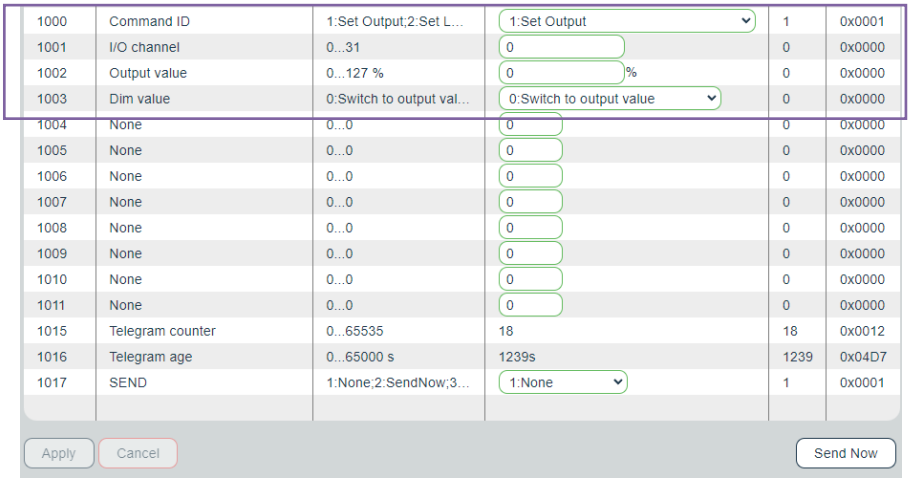
CMD7 – measurement

Registers 1…6 contains data from the status message CMD 4, registers 7…10 from the measurement message CMD 7. The register 0 indicates which CMD was received last.

1.1.2 Outgoing data

In **TX registers** 1000...1014 you prepare data of the message (telegram) you want to transmit, the register **SEND** (1017) is then used to transmit it.

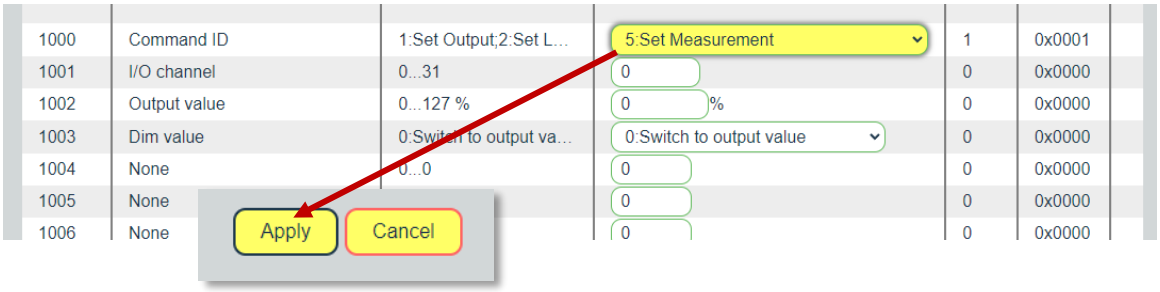
There are several different telegrams identified by **Command ID**, which is always at the first position (TX register 1000). The meaning of TX registers 1001 up changes based on that **Command ID** value (see the table in Edit channel > Values for value names, register address). The default command is CMD1:



CMD1 – set output

Some devices have two or more outputs, here the **I/O Channel** value is used.

In the **Web UI**, outgoing data table, change of the **Command ID** must be confirmed by "Apply" before other values are entered:



1.2 Switching ON/OFF

Register contents:

Address	Value	Name	Description
1000	1	Command ID	Message type Set Output
1001	0	I/O Channel	This is command for output channel 1; value 30 (0x1E) controls all channels
1002	0/100% (OFF/ON)	Output Value	Any value 1…100% switches on
1003	0	Dim Value	Command for dimmer (not supported by D2-01-0E)
1004…1014	0		Not used

SEND:

Write 1017 = 2 (SendNow) => command will be sent.

Or set 1017 = 13 (OnWriteV2), then writing only register 1002 will ON/OFF, the command will be sent whenever the TX register 1002 is written.

1.3 Enable Measurement

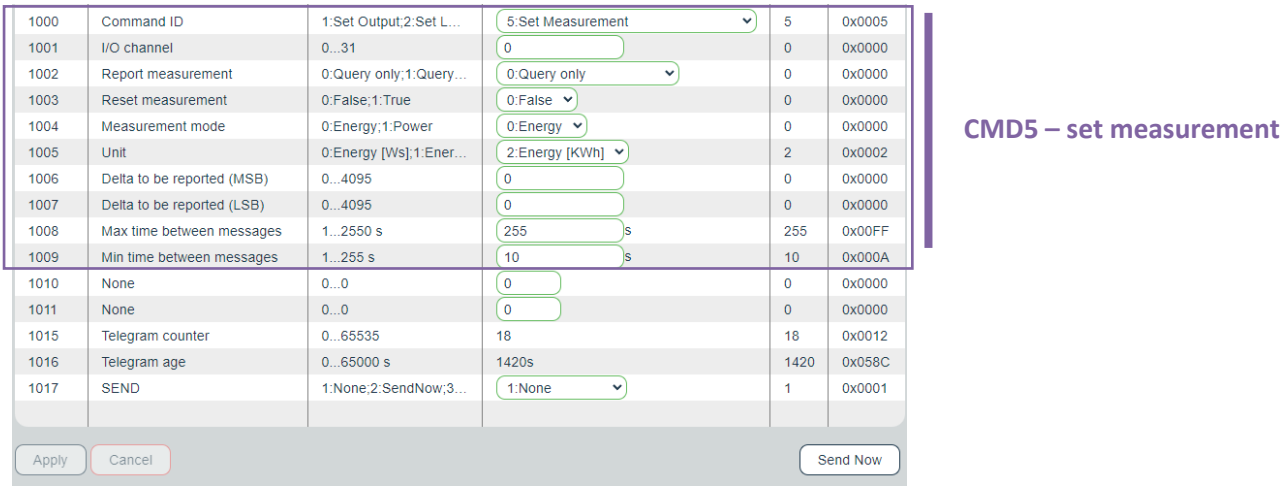
Measurement is configured via EEP telegrams. The **Measurement Value** is 32-bit, divided into upper (MSB) and lower (LSB) word (Measurement value = 256 * MSB + LSB). The meaning of the **Measurement Value** is defined by **Unit**. The meaning may change if both power and energy reporting are used. The power and energy measurements are configured and reported separately.

Incoming data, power 9 Watts:

7	I/O channel (MEASUREMENT)	0...31	0	0	0x0000
8	Unit	0:Energy [Ws];1:Ener...	3:Power [W]	3	0x0003
9	Measurement value (MSB)	0...65535	0	0	0x0000
10	Measurement value (LSB)	0...65535	9	9	0x0009

Setting up the measurement through Modbus interface in Web UI

1. Go to Edit channel -> Values
2. Set Command ID (register 1000) to CMD 5 – Set Measurement
3. Confirm “Apply”
4. The UI gets updated:



CMD5 – set measurement

5. Enter inputs, there are several parameters according to the EEP specification.
6. “Send Now” will transmit the telegram to the actuator.

Note:

Note that there is no feedback about the actual measurement settings in EEP definition, nothing like “Measurement settings query” is defined in EEP.

1.3.1 Query only measurements

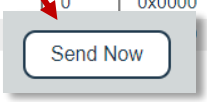
The simplest setup is to use on query reporting.

CMD 5 is used for measurement configuration, CMD 6 for requesting measurement values.

1. **Set power measurement**

Configure the registers as in the table and use “Send Now”:

1000	Command ID	1:Set Output;2:Set L…	5:Set Measurement	5	0x0005
1001	I/O channel	0…31	0	0	0x0000
1002	Report measurement	0:Query only;1:Quer…	0:Query only	0	0x0000
1003	Reset measurement	0:False;1:True	0:False	0	0x0000
1004	Measurement mode	0:Energy;1:Power	1:Power	0	0x0000
1005	Unit	0:Energy [Ws];1:Ene…	4:Power [KW]	2	0x0002
1006	Delta to be reported (MSB)	0…4095	0	0	0x0000
1007	Delta to be reported (LSB)	0…4095	0	0	0x0000
1008	Max time between messages	1…2550 s	255 s	255	0x00FF
1009	Min time between messages	1…255 s	10 s	10	0x000A
1010	None	0…0	0	0	0x0000
1011	None	0…0	0		



2. **Set energy measurement**

1000	Command ID	1:Set Output;2:Set L…	5:Set Measurement	5	0x0005
1001	I/O channel	0…31	0	0	0x0000
1002	Report measurement	0:Query only;1:Quer…	0:Query only	0	0x0000
1003	Reset measurement	0:False;1:True	0:False	0	0x0000
1004	Measurement mode	0:Energy;1:Power	0:Energy	0	0x0000
1005	Unit	0:Energy [Ws];1:Ene…	2:Energy [KWh]	2	0x0002
1006	Delta to be reported (MSB)	0…4095	0	0	0x0000
1007	Delta to be reported (LSB)	0…4095	0	0	0x0000
1008	Max time between messages	1…2550 s	255 s	255	0x00FF
1009	Min time between messages	1…255 s	10 s	10	0x000A
1010	None	0…0	0	0	0x0000
1011	None	0…0	0	0	0x0000

3. **Query power**

1000	Command ID	1:Set Output;2:Set L…	6:Measurement Query	6	0x0006
1001	I/O channel	0…31	0	0	0x0000
1002	Query	0:Query energy;1:Qu…	1:Query power	0	0x0000
1003	None	0…0	0	0	0x0000
1004	None	0…0	0	0	0x0000

4. **Query energy**

1000	Command ID	1:Set Output;2:Set L…	6:Measurement Query	6	0x0006
1001	I/O channel	0…31	0	0	0x0000
1002	Query	0:Query energy;1:Qu…	0:Query energy	0	0x0000
1003	None	0…0	0	0	0x0000
1004	None	0…0	0	0	0x0000

1.3.2 Automatic measurements

1. Set automatic power reporting

This example settings will cause power measurement report in Watts:

- When **Query power** received
- When the power change is over 100 Watts (Delta, register 1006 and 1007) and no report within last 10 seconds (Min time, register 1008)
- Periodically every 600 seconds (Max time, register 1009)

1000	Command ID	1:Set Output;2:Set L…	5:Set Measurement	5	0x0005
1001	I/O channel	0…31	0	0	0x0000
1002	Report measurement	0:Query only;1:Quer…	1:Query / auto reporting	1	0x0001
1003	Reset measurement	0:False;1:True	0:False	0	0x0000
1004	Measurement mode	0:Energy;1:Power	1:Power	1	0x0001
1005	Unit	0:Energy [Ws];1:Ene…	3:Power [W]	3	0x0003
1006	Delta to be reported (MSB)	0…4095	0	0	0x0000
1007	Delta to be reported (LSB)	0…4095	100	0	0x0000
1008	Max time between messages	1…2550 s	600 s	600	0x0258
1009	Min time between messages	1…255 s	10 s	10	0x000A
1010	None	0…0	0	0	0x0000