

Programming of the Powerlink – Encoder

To parametrize the connected measuring system, a 32-bit data word (Bit0 – Bit31) must be transmitted to the encoder. The encoder evaluates this data word and executes the selected parameter setting. After this procedure, the data word must be set to "0" and the encoder operates in his normal operation mode. Additionally, the parameter value of the encoder can be read, see below.

Structure of the data word:

- Bit 31: Error bit, the encoder responses to each parameter setting. If the command can not be executed, the data word will be sent back and additionally the error bit is set.
- Bit 30: Read data: Bit30 = 0, Write data: Bit30 = 1
- Bit 26-29: Selection of the function for the parameter setting
- Bit 0-25: Data bits
 Bit30 = 1: Entry of the parameter data for the selected writing function
 Bit30 = 0: Entry of the parameter data for the selected reading function

Meaning of the bits 26 - 31:

Read parameter

Function	Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	hex
Adjustment	0	0	0	0	0	1	0x04000000
Counting direction	0	0	0	0	1	0	0x08000000
Measuring length in steps	0	0	0	0	1	1	0x0c000000
Number of revolutions	0	0	0	1	0	0	0x10000000
Output code	0	0	0	1	0	1	0x14000000

If the reading operation was successful, the encoder answers with the bit variant (Bit 26 – 31) sent before. Additionally, in the bits 0 – 25 the data of the selected read function are contained. If an error occurs, Bit31 (error bit) in the returned response will be set.

Counting direction: Data (Bit 0 – Bit 25) = 0: increasing
 Data (Bit 0 – Bit 25) = 1: decreasing

Output code: Data (Bit 0 – Bit 25) = 0: Binary
 Data (Bit 0 – Bit 25) = 1: Gray

Write parameter

Parameter value must be written into the bits 0 – 25.

Function	Bit 31	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	hex
Adjustment	0	1	0	0	0	1	0x44
Counting direction	0	1	0	0	1	0	0x48
Measuring length in steps	0	1	0	0	1	1	0x4c
Number of revolutions	0	1	0	1	0	0	0x50
Output code	0	1	0	1	0	1	0x54

If the writing operation was successful, the encoder answers with the bit variant (Bit 0 – 31) sent before. If an error occurs, Bit31 (error bit) in the returned response will be set.

Counting direction: Data (Bit 0 – Bit 25) = 0: increasing
 Data (Bit 0 – Bit 25) = 1: decreasing

Output code: Data (Bit 0 – Bit 25) = 0: Binary
 Data (Bit 0 – Bit 25) = 1: Gray

Encoder max. values

Steps per revolution: 8192 = 13 bit
 Number of revolutions: 4096 = 12 bit, results indirectly about the entry of the measuring length
 Measuring length in steps = Steps per revolution x Number of revolutions = 33.554.432 = 25 bit



In case of programmings larger than the given encoder max. values the encoder will be set automatically to his max. values.

Sequence:

Send data word with desired function, see above.
 Clear data word only then, if the sent data word was received again (error condition: error bit 31 = 1, reading function: data bits = 0-25). Set data word to "0", so that the normal bus function is available again. If several changes are made after each other, then between the programming commands a "0" in the data word must be transmitted.