

Communication protocol description

Profibus DP

NDI xxx/x Profibus DP display is a SLAVE type of device connected into Profibus DP interface.

Conventions:

- 9999 decimal number
- 9999h hexadecimal number
- 11111111b binary number
- "ABCabc" text string
- 'A' ASCII character
- X either bit 0 or 1

1. Communication description

Communication features are specified by GSD file [NdiX08DB.GSD](#). Communication is made of two modules, DATA and STATUS.

2. DATA module

Performs transmission of data which should be displayed and decimal points information.

Byte (offset)	0 – 7	8
Bit No	Display data part (7 bit. ASCII)	DP
0. (LSB)	X	X
1.	X	X
2.	X	X
3.	X	X
4.	X	X
5.	X	X
6.	X	X
7. (MSB)	0	X

Display data part

Contains data to be displayed. Display is primarily suitable for displaying numerical data. The following characters can be used in 7-segment digit displays:

- Digits: '0','1','2','3','4','5','6','7','8','9'
- Alphabet: 'A','b','C','d','E','F','G','H','I','J','L','n','O','P','r','S','t','U','Y'
- Characters: '-' (dash), '?', '@', '_' (underscore), '|', '°' (degree)

Decimal point (DP)

DP represents lighting of decimal points of the display. DP works in binary mode, position is counted from the right to the left, so meaning 0x00 will not light any point, 0x01 will light up at first position (9...99.), 0x02 will light up at second position (9...9.9), 0x03 will light up at first and second position (9...9.9.), 0x04 will light up third position (9...9.99) etc.

3. STATUS module

Performs transmission of additional display data.

Byte (offset)	0	1
Bit No	Flash	Brightness 2 – 100
0. (LSB)	X	X
1.	0	X
2.	0	X
3.	0	X
4.	0	X
5.	0	X
6.	0	X
7. (MSB)	0	0

Flashing

If value FLASH = 0x00, display reading is stable, if FLASH = 0x01, display reading blinks.

Brightness

Brightness of display can be controlled in the range of 2 – 100% (0x02 – 0x64).

4. Message example

Displaying 120.98653 without flashing, 100% brightness.

DATA

Offset	0	1	2	3	4	5	6	7	8
Value	0x31	0x32	0x30	0x39	0x38	0x36	0x35	0x33	0x20

STATUS

Offset	2	3
Value	0x00	0x64