

Allen-Bradley DH485

Allen-Bradley DH485 communication protocol

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Supported device types and versions

This protocol supports the communication with Allen-Bradley devices, SLC-500 series. The communication supports a direct connection to DH485 bus through the [communication card KMFB02](#).

Communication line configuration

- Communication line category: **KMFB02 Allen-Bradley DH485**.
- Line parameters (a tab DH485):
 - The address of station in the range of 0 to 31. It is the address under which the communication process is logged on to DH485 bus through KMFB02 card. Any other device on DH485 bus must not use this address.
 - Maximum address of station in the range of 1 to 31. It represents the maximum count of devices which can be connected to DH485. The devices with the higher address cannot communicate. This parameter should be configured identically to all SLC devices or other one that are connected to DH485.
 - Baud rate of DH485 is optional 9600 or 19200 Baud.
 - Maximum packet count means the maximum online semi-finished transactions in communication with SLC devices. The default value is 3. Be careful when you will increase it, and trace the errors on the communication line.

Communication station configuration

- Communication protocol: **Allen-Bradley DH485**.
- The station address is DH485 Node Address in the range of 0 to 31.

Station protocol parameters

[Configuration station](#) dialog window - tab "**Protocol parameters**".

They influence some other optional protocol parameters. There may be defined the following station parameters:

Table 1

Key word	Full name	Meaning	Unit	Default value
MIT	Max Insert Time	Maximum time during which the communication process tries to send a call for data. After the lapse of this time, the request with an error (recorded on a line) that was sent unsuccessfully is ignored.	ms	10000
MTT	Max Trans Time	Maximum waiting time for response to the request from SLC. After the lapse of this time, the response with error (recorded on the line) is considered to be lost.	s	20
BR	Block Read	Enables to read data in blocks, which is faster.	YES /NO	NO
BL	Block Length	Maximum length of block in bytes. The value must be an even number in the range of 2 to 255.	-	120
IOR	IO Reading	The reading of the files of I and O types on SLC 5/02 requires different types of functions than SLC 5/03 and higher. Set YES for SLC 5/02.	YES /NO	NO

A string with the protocol parameters is written as follows:

```
Key_word=value;Key_word=value; ...
```

Example:

```
BR=YES;BL=200
```

If the key word with the valid value has not been find in the initial string, a default value is used.

Note:
The parameter BR enables the block reading. It is useful for speedup of communication. Some problems may occur, if there is configured an I/O tag with the non absent address (it has not any image in SLC). SLC do not send any data and if the required value, containing the absent address, is read in block together with other I/O tags, these I/O tags will have not any value. [D2000 KOM](#) writes an error:

```
Read packet without data, Node: NodeId Type FileType File: FileId Elem: ElemId SubElem: SubElemId
```

From these information you can find out the source of the problem - which addresses (file type) and in which SLC.

I/O tag configuration

Possible I/O tags: **Ai, Ao, Ci, Co, Di, Dout.**

The address of I/O tag is a text in a format SLC-500. The address format is:

[$\$$] X [file] : element [.field] [/bit]

Explanatory notes:

\$	- optional character
X	- file identifier (required - see Table 2)
file	- file number (optional, if it is empty, the default file number is used - see Table 2)
element	- element number in the file (required)
.field	- number of sub-element (optional, it is used only for Output, Input files)
/bit	- bit number (optional, it must be in the range of 0..15)

Table 2

X	File Type	Default file number (file)
O	Output	0
I	Input	1
S	Status	2
B	Binary	3
T	Timer	4
C	Counter	5
N	Integer	7
F	Float	8

File type - Output

[$\$$]O[n]:e[.s] [/b]

"n" - file number, if there is used other than the default number 0,
"e" - number of element in a file,
"s" - number of sub-element (0..255),
"b" - bit number (0..15).

Example:

O:2
\$O0:2/0
O:1.0/1

Note: The files of Output type are read-only.

File type - Input

[$\$$]I[n]:e[.s] [/b]

"n" - file number, if there is used other than the default number 1,
"e" - number of element in file,
"s" - number of sub-element (0..255),
"b" - bit number (0..15).

Example:

```
I:1
$I1:2/0
I:2.0/15
```

Note: The files of Input type are read-only.

File type - Status

[$\$$]S[n]:e[/b]

"n" - file number, if there is used other than the default number 2,
"e" - number of element in file,
"b" - bit number (0..15).

Example:

```
S:0
$S2:40
S:2/15
```

Note: As regards the files of Status type, data can not be written bit-by-bit (input tags with the parameter [/b]).

File type Binary

[$\$$]B[n]:e[/b]

"n" - file number, if there is used other than the default number 3,
"e" - number of element in file,
"b" - bit number (0..15).

Example:

```
B:2
$B3:0
B3:2/1
```

File type - Timer

[$\$$]T[n]:e[/b]

"n" - file number, if there is used other than the default number 4,
"e" - number of element in file,
"b" - optional prefix /EN, /TT, /DN (bit values) or /PRE, /ACC (integer values).

Example:

```
T:2
$T4:0/ACC
```

File type - Counter

[$\$$]C[n]:e[/b]

"n" - file number, if there is used other than the default number 5,
"e" - number of element in file,
"b" - optional prefix /DN, /CU, /CD, /OV, /UN, /UA (bit values) or /PRE, /ACC (integer values).

Example:

```
C:17
$C5:34/DN
```

File type - Integer

[$\$$]N[n]:e[/b]

"n" - file number, if there is used other than the default number 7,

"e" - number of element in file,

"b" - bit number (0..15).

Example:

```
N7:2
$N:0
N27:0/1
```

File type - Float

[$\$$]F[n]:e

"n" - file number, if there is used other than the default number 7,

"e" - number of element in file.

Example:

```
F:0
$F8:0
F29:1
```

Installation of Windows NT driver for KMFB-02 card

When installing a driver of KMFB02 card for the communication Allen-Bradley DH485 follow these steps:

1. Copy the file "KMFB02DH.SYS" into the directory "\WINNT\SYSTEM32\DRIVERS".
2. Import the registers from "KMFB02DH.REG" by a system utility "regedit".
Click on "Start" button in Windows, "Run...", write "regedit" and press Enter key.
In the menu of utility "regedit" click on "Registry" and "Import registry file...". Choose "KMFB02DH.REG".
3. Restart your computer.

Note: KMFB-02 card uses the INT 5 interrupt. When it is occupied, it must be released (INT 5 is not usually used, only for LPT2 or LAN card).

Literature

- "1770-6.5.16, DF1 Protocol and Command Set, Reference Manual", Allen-Bradley - October 1996.

Changes and modifications

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Document revisions

- Ver. 1.0 - February 7, 2001 - Document creating.



Related pages:

[Communication protocols](#)