

Allen-Bradley DH485

Allen-Bradley DH485 communication protocol

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Supported device types and versions

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

Communication line configuration

- Communication line category: **KMFB02 Allen-Bradley DH485**.
- Line parameters (a *DH485* tab):
 - The address of the station in the range of 0 to 31. It is the address used by the [D2000 KOM](#) process on the DH485 bus (through KMFB02 card). No other device on the DH485 bus may 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 bus. The devices with a higher address than this parameter cannot communicate. This parameter should be configured identically to all SLCs or other devices that are connected to DH485 bus.
 - 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. The following station parameters can be defined:

Table 1

Keyword	Full name	Meaning	Unit	Default value
MIT	Max Insert Time	The maximum time during which the communication process tries to send a request for data. After this time had elapsed, the request that was not answered is ignored (and a communication error is marked on a line).	ms	10000
MTT	Max Trans Time	Maximum waiting time for response to the request from SLC. After this time had elapsed, the response is considered to be lost (and a communication error is marked on a line).	s	20
BR	Block Read	Enables to read data in blocks, which is faster.	YES /NO	NO
BL	Block Length	The maximum length of the 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>I</i> and <i>O</i> 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 keyword with the valid value has not been found in the parameter string, the default value is used.

Note:
The parameter BR enables the block reading. It is used for speedup of communication. Some problems may occur if an I/O tag with a non-existent address is configured (an address that does not exist in SLC). SLC will not send any data and if a non-existent address is read in a block together with other I/O tags, so these I/O tags will no have value either. [D2000 KOM](#) writes an error:

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

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

I/O tag configuration

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

The address of the I/O tag is a text in an SLC-500 format. 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	- an element number in the file (required)
.field	- a 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" - the file number, if it is different from the default number 0,
"e" - the number of an 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 the Output type are read-only.

File type - Input

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

"n" - the file number, if it is different from the default number 1,
"e" - the number of an element in a file,
"s" - the number of sub-element (0..255),
"b" - the bit number (0..15).

Example:

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

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

File type - Status

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

"n" - the file number, if it is different from the default number 2,
"e" - the number of an element in a file,
"b" - the bit number (0..15).

Example:

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

Note: As for 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" - the file number, if it is different from the default number 3,
"e" - the number of an element in a file,
"b" - the bit number (0..15).

Example:

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

File type - Timer

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

"n" - the file number, if it is different from the default number 4,
"e" - the number of an element in a file,
"b" - the 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" - the file number, if it is different from the default number 5,
"e" - the number of an element in a file,
"b" - the 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" - the file number, if it is different from the default number 7,

"e" - the number of an element in a file,

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

Example:

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

File type - Float

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

"n" - the file number, if it is different from the default number 8,

"e" - the number of an element in a 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. If it is already 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](#)