



***DMS500 - Driver of Protocol for DURAG
DMS 500 Analyzers
User's Manual***

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1. DMS500 - Driver of Protocol for DURAG DMS 500 Analyzers

1.1. Driver Use

The DMS500 driver is designed for data exchange between the D-MS500 emission computer and the **asix** system by using serial interfaces. The driver supports devices with implemented company software in versions DMS500 v. 1.23, 1.55, 1.59.

1.2. Declaration of Transmission Channel

The full syntax of declaration of transmission channel operating according to the DMS500 protocol is given below:

logical_name=DMS500,COMn

where:

COMn - number of the serial port to which the DURAG emission computer is connected.

The DMS500 driver is loaded as a DLL automatically.

1.3. Addressing the Process Variables

The definition of process variables is based on the DMS protocol description titled "*Beschreibung der Kommunikation D-EVA mit DMS500*".

The syntax of symbolic address which is used for variables belonging to the DMS500 driver channel is as follows:

type.subtype [K|M] [idx] [.Mxx|.subfield] [.channel]

where:

<i>type</i>	- define the type of information: 43 - instantaneous values, 44 - integrals, 45 - parameters, 46 - classification of analog inputs – current results, 47 - classification of analog inputs – yearly results, 48 - classification of analog inputs – daily results, 56 - classification of digital inputs – current results, 57 - classification of digital inputs – yearly results, 58 - classification of digital inputs – daily results;
<i>subtype</i>	- number of required information; e.g. 13 for instantaneous values defines actual current intensity in a given channel;
<i>K,M</i>	- concentration/flow (only when a subtype contains data for both these categories);
<i>idx</i>	- index - only for indexed variables, e.g. classification; an index is a number bigger or equal to 1;

<i>Mxx</i>	- bit mask; <i>xx</i> is a number in hexadecimal code; on the data received from a DMS computer the AND operation with the number of <i>xx</i> is executed;
<i>Subfield</i>	- subfield name; for time values the following subfields are defined: SEC, MIN, HOUR, DAY, MONTH, YEAR;
<i>Channel</i>	- number of the channel; the channel number may be given only for the variables related to the channel. In case of general data it should be omitted.

EXAMPLES

43.14.1	actual instantaneous value of current for the analog channel 1
43.1.DAY	actual time of DMS computer - number of month day
43.17K.1	actual concentration for the channel 1
46.4K[5].1	actual value of the class 5 (concentration) for the channel 1

1.4. REPORT Special Variable

The special variable **REPORT** is a pseudo-variable of the 16-bit word type. Writing a given value to the REPORT variable causes reading an appropriate report (defined by this value) from the DMS computer. The report will be sent to a place defined in the **REPORT** item.

1.5. Access to Historical Data

The DMS500 driver enables the ASPAD module to access to the following historical data:

44.9K	- class number for concentration,
44.9M	- class number for flow,
44.16K	- concentration value,
44.16M	- flow value.

1.6. Time of Data

The data are transferred to the **asix** system together with time of their retrieving. In case of the type 45, for which the data packet does **not** contain current time (field no. 1 or 10 for types 56,57,58), the time is determined on the ground of previously received packet provided with time and on the ground of the time of its reading. Data packets do not contain the time for the type 45.

1.7. Incorrect Data

For the data 43.14 and 43.15, the DMS computer transfers status data (43.13). If any bit (specified in the protocol description) will be set, then such data is treated as incorrect.

1.8. Driver Configuration

Each defined logical channel has its own section, the name of which must be the same as the logical channel name. The **COMn** port, used by the given logical channel, may also have its own section named **[DMS500:n]**. Values defined in such section become the default values for particular DMS computers. The default values for particular serial interfaces are taken from the section named **[DMS500]**. Transmission parameters through a serial interface can't be placed in sections concerning particular DMS computers.

***Name=computer_name***

- Meaning - the item is used to declare an 8-bit character name of the DMS computer. The name is completed with spaces up to 8-character length.
- Default value - by default, the name of the logical channel is assumed.

***baud=number***

- Meaning - the item is used to declare a transmission speed. The item may be used interchangeably with items: **bod**, **bps**.
- Default value - by default, the transmission speed is equal to 9600 Bd.
- Parameter:
number - transmission speed in bauds.

***parity=check_type***

- Meaning - the item is used to declare the kind of parity check.
- Default value - by default, the parity check is even.
- Parameter:
check_type - identifier of the kind of parity check:
- | | |
|---|------------------|
| n | - no parity bit, |
| o | - parity odd, |
| e | - parity even, |
| m | - mark, |
| s | - space. |

***stop=number***

- Meaning - the item is used to declare a number of stop bits.
- Default value - by default, it is assumed to be 1 stop bit.
- Parameter:
number - number of stop bits: 1 or 2.

***word=number***

- Meaning - the item is used to declare a number of bits in a transmitted character.
- Default value - by default, it is assumed that a character is of 8 bits in length.
- Parameter:
number - number of bits in a character (5 to 8).

***timeout=number***

- Meaning - the item is used to declare waiting time for an answer from the DMS computer.
- Default value - by default, it is assumed 10 seconds.
- Parameter:
number - waiting time for an answer in seconds.

***Auto_sync=number***

- Meaning - the item is used to declare an automatic synchronization of an **asix** system computer clock with a DMS computer clock. The parameter value determines maximal drift of time. The synchronization occurs when this drift limit is exceeded. The time from the DMS computer is received only during reading other data.
- Default value - by default, the time is not synchronized.
- Parameter:
number - 0 (no synchronization) or maximal variance of times, (in seconds), after which the synchronization occurs.

***History_Buffer_Removal=number***

- Meaning - the item is used to declare the time, after which buffers containing historical data that were read for needs of ASPAD are removed.
- Default value - by default, history buffers are removed after 30 minutes.
- Parameter:
number - time (in minutes), after which history buffers are removed.

***Max_History_Buffers=number***

- Meaning - the item is used to declare the maximal number of history buffers containing historical data that were read for needs of ASPAD. One buffer contains historical data for one channel. It is stored in the memory for a period defined in the item *History_Buffer_Removal*. One buffer occupies 30 bytes of memory. If archived data are stored by the DMS computer each 30 minutes then for 24 hours 48 buffers are needed.
- Default value - by default, 50000 buffers are used.
- Parameter:
number - maximal number of buffers for historical data.

***Time_Difference=number***

- Meaning - the item is used to declare the time difference between clock indication of an **asix** system computer and a DMS computer. Even if the time displayed on the DMS computer is the same as the time of the **asix** system computer the time received by means of a serial interface, as a number of seconds from 01.01.1970, may be different from the actual time of the DMS computer.
- Default value - by default, this time is equal 3600 seconds.
- Parameter:
number - time difference in seconds.

**REPORT=name**

- Meaning - the item allows to declare a place where the report read from a DMS computer will be sent by appropriate setting of pseudo-variable *REPORT*. As the purpose place of the report:
- printer name,
 - disk file name
- may be entered.
- Default value - by default, the report transferred from a DMS computer is sent to a printer (LPT1).
- Parameter:
name - printer name or disk file name.

**Max_history=number**

- Meaning - the item allows to declare a period of time counted from the current moment backwards, for which historical data in DMS computer memory will be read.
- Default value - by default, it is a period of 35 days.
- Parameter:
number - time in days.

EXAMPLE 1

In the example a DMS computer named SIERSZA is defined. It is connected to the COM2 port. If the difference between the **asix** system computer time and the DMS computer time will exceed 5 seconds, then a clock synchronization occurs.

```
[ASMEN]
.....
SIERSZA=DMS500,COM2
....

[SIERSZA]
Auto_Sync=50
```

EXAMPLE 2

In the example the DMS computers with the following names are defined:

```
SIERSZA1,
SIERSZA2,
SIERSZA3,
SIERSZA4,
SIERSZA5,
SIERSZA6.
```

The DMS computers named as follows are connected to the COM2 port of the **asix** system computer:

```
SIERSZA1,
SIERSZA2,
SIERSZA3.
```

The DMS computers named as follows are connected to the COM3 port of the **asix** system computer:

SIERSZA4,
SIERSZA5.

The DMS computer named SIERSZA6 is connected to the COM4 port.

The COM2 and COM4 ports work with a speed of 19200 baud. The COM3 port works with a speed of 9600 baud.

The clocks of all DMS computers (except SIERSZA6) are synchronized with the clock of the **asix** system computer when the time difference exceeds 60 seconds. The clock of the DMS computer SIERSZA6 is not synchronized.

Report read by means of the pseudo-variable REPORT are printed on the printer LPT1: An exception is the DMS computer SIERSZA6, the reports of which are stored in the file C:\RAP\SIERSZA6.RAP.

```
[ASMEN].....SIERSZA1=DMS500,COM2SIERSZA2=DMS500,COM2  
SIERSZA3=DMS500,COM2  
SIERSZA4=DMS500,COM3  
SIERSZA5=DMS500,COM3  
SIERSZA6=DMS500,COM4
```

....

```
[DMS500];Default values for all DMS computers DMSbaud=19200Auto_Sync=60  
[DMS500:3];Default value for DMS computers connected to the COM3 port  
baud=9600
```

```
[SIERSZA6]  
Auto_Sync=0  
REPORT=C:\RAP\SIERSZA6.RAP
```

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