



***DMS285 - Driver of Protocol for DURAG
DMS 285 Analyzers
User's Manual***

Doc. No. ENP4018
Version: 29-08-2005

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1. DMS285 - Driver of Protocol for DURAG DMS 285 Analyzers

1.1. Driver Use

The DMS285 protocol driver is designed to establish the communication between an **asix** system computer and a DURAG D-MS285 computer for emission monitoring. The driver operates with devices supporting the protocol of version 1.22.

1.2. Declaration of Transmission Channel

A logical channel is a logical connection of a computer and the DMS285 station. The logical channel is defined with use of an appropriate record in the [ASMEN] section.

The full syntax of the item declaring the transmission channel working according to the DMS285 protocol is given below:

logical_name=DMS285,COMn

where:

COMn - number of the serial port to which the network of DMS285 controllers is connected.

1.3. Driver Configuration

Each defined channel may have its own section, the name of which is the logical name of the channel. The given COMn port may also have its own section named [DMS285:n]. The values defined in such section become default ones for particular stations. The default values for particular serial ports are retrieved from the section named [DMS285]. Parameters of transmission via a serial interface can't be placed in the sections concerning particular stations, i.e. they may be placed only in the [DMS285] and [DMS285:n] sections.



name=station_name

Meaning - name of the DMS285 station.
 Default value - by default, a logical channel name is assumed as a station name.
 Parameter:

Station_name - name is completed with spaces to the length of 8 characters.



baud =number

bps=number
 Meaning - determines transmission speed.
 Default value - 9600.
 Parameter:
number - number in Bd.

***parity=parity_parameter***

Meaning - determines parity.

Default value - e.

Parameter:

parity_parameter - default value:

n	- no parity bit,
o	- odd parity check,
e	- even parity check,
m	- mark
s	- space.

***stop_bits =number***

Meaning - determines number of stop bits.

Default value - 1.

Parameter:

number - admissible values are 1 and 2.***word =number******word_length=number***

Meaning - word length.

Default value -8.

Parameter:

number - allowed values are from 5 to 8.***time_out =number******timeout=number***

Meaning - waiting time for answer from DMS285A.

Default value - 10.

Parameter:

number - number in seconds.***Bad_Data_Classes = class1, class2, ..., classN***

Meaning - parameter determines numbers of classes, which cause invalidity of data 44.5K.n and 44.5M.n. The class number is taken up from the variable 44.1.n (Klassenangabe der Konz.).

Default value - lack (-) (class value has no influence on the validity of read data).

Parameter:

class1, class2, ..., classN - numbers of classes.

***Bad_Data_Status = status1, status2, ..., statusN***

- Meaning - parameter determines values of the variable 43.3.n (Zustand des Kanals – Channel state), for which values of variables 43.7K.n, 43.7M.n, 43.9K.n, 43.9M.n, 43.10K.n and 43.10M.n are assumed as invalid.
- Default value - lack (-) (value of the variable 43.3.n has no influence on validity of read data).
- Parameter:
status1, status2, ..., statusN - values of the variable 43.3.n (Zustand des Kanals).

***Bad_Data_Classes2 = class1, class2, ..., classN***

- Meaning - parameter determines numbers of classes, invalidity of data 44.5K.n and 44.5M.n while calculating 48-hour averages. The class number is taken up from the variable 44.1.n (Klassenangabe der Konz.).
- Default value - lack (-) (class value has no influence on the validity of read data).
- Parameter:
class1, class2, ..., classN - numbers of classes.

***Minimal_Measurements =number***

- Meaning - minimal number of measurements required for calculation of a 48-hour average.
- Default value - lack.
- Parameter:
number - number of measurements.

***Archive_type =number***

- Meaning - parameter was deleted in version 1.12.
- Default value - B.
- Parameter:
number - symbol of archive type.

***Max_Time_Difference =number***

- Meaning - determines the maximal difference in seconds between the **asix** system time and DMS295 station time, after exceeding of which warnings will be output to 'Control Panel'. Station time is read only during reading of 43 and 50 type variables.
- Default value - 60.
- Parameter:
number - number in seconds.

***Var_44_1_n = variable_name, channel_number***

- Meaning - name of the variable 44.1.n and archive type, which is saved in the archive and used simultaneously for calculation of 48-hour average 44.105K.n. After the variable name the archive type should be given after a comma. *n* signifies the channel number.
- Default value - lack.
- Parameter:
- variable_name* - determines the name of 44.1.n variable; *n* signifies the channel number.
 - channel_number* - number of the channel.

EXAMPLE

Var_44_1_3 = K3_H_KLAS_Pyl, M.

NOTE

While configuring the variable for ASPAD the option DO_NOT_PACK should be absolutely given!!!

***Var_44_5K_n = variable_name, channel_number***

- Meaning - name of the variable 44.5K.n and archive type, which is saved in the archive and used simultaneously for calculation of 48-hours average 44.105K.n. After the variable name the archive type should be given after a comma. *n* signifies the channel number.
- Default value - lack.
- Parameter:
- variable_name* - determines the name of 44.5K.n variable; *n* signifies the channel number.
 - channel_number* - number of the channel.

EXAMPLE

Var_44_5K_3 = K3_H_KONC_Pyl, M.

NOTE

While configuring the variable for ASPAD the option DO_NOT_PACK should be absolutely given!!!

***Auto_sync = number******Autosync=number***

- Meaning - determines the maximal difference between the **asix** system time and the DMS285 station time, after exceeding of which the driver will set the station time on the **asix** system time. Time synchronization occurs only during data reading from the station. The minimal value of this parameter equals to 10 seconds. If a smaller value is given, then 10 seconds will be assumed.
- Default value - no time synchronization.
- Parameter:

number - number in seconds.



Max_auto_sync = number

MaxAutoSync= number

Meaning - determines the maximal value between the **asix** system time and the DMS285 station time, after exceeding of which the driver will **not** synchronise the station time even if this difference exceeds the value determined by the *AutoSync* parameter.

Default value - 6800.

Parameter:

number - number in seconds.



Log = file_name

Meaning - parameter determines a file name, to which additional diagnostic information will be written. Parameter may be placed only in [DMS285:n] and [DMS285] sections.

Default value - lack.



Time_limiter = number

Meaning - determines the maximal deviation of data time in hours in relation to the current system time, whose exceeding causes a data is found invalid. The time of a data read from DURAG computer must be contained in the time interval current time +- deviation, so that it might be found valid. If the parameter has a value of 0 then data time is not checked.

Default value - 24.

Parameter:

number - number in hours.



Alarm_Code = alarm_number

Meaning - parameter determines the number of alarm generated by the driver in case of loss and re-establishing the connection with the station. The value of -1 (default) causes that the alarms are not generated. In case of connection loss, one of the following number specifying the reason for the dropped connection is relayed with the alarm code:

0 - complete lack of any answer from the station,

1 - timeout,

2 - errors of lines (errors of border, parity, overrun),

3 - errors of checksum,

4 - other errors.

This number determines the status of the end of last attempt made to establish a connection.

Default value - lack.

Parameter:

Alarm_number - alarm number.



Max_history =number

Meaning	- determines a time period, counted from the current moment backwards, for which historical data, stored in the station memory, will be read.
Default value	- 20.
Parameter:	
<i>number</i>	- number in days.

Examples of Driver Configuration

EXAMPLE 1

```
[ASMEN]
.....
KOMIN 2=DMS285,COM2
....

[DMS285:2]
baud=19200
```

In the above example a station named KOMIN 2 is connected to the COM2 port. The transmission speed of 19200 bps will be used.

EXAMPLE 2

```
[ASMEN]
.....
KOMIN 1=DMS285,COM2
KOMIN 2=DMS285,COM2
KOMIN 3=DMS285,COM2
KOMIN 4=DMS285,COM3
KOMIN 5=DMS285,COM3
KOMIN 6=DMS285,COM4
....

[DMS285]
;Default values for all stations
speed=19200
Invalidity_Status= 1, 6, 14

[DMS285:3]
;Default values for stations connected to the COM3 port
speed=9600

[KOMIN 2]
Invalidity_Status= 5

[KOMIN 4]
Invalidity_Status= -
```

In the above example the stations of names from KOMIN 1 up to KOMIN 6 are defined. The stations KOMIN 1, KOMIN 2 and KOMIN 3 are connected to the COM2 port. The stations KOMIN 4 and KOMIN 5 are connected to the COM3 port. The station KOMIN 6 is connected to the COM4 port. All the serial ports except COM3 will work with a speed of 19200 baud. The COM3 port will work with a speed of 9600 baud. All the stations except the stations KOMIN 2 and KOMIN 4 will use invalidity statuses 1, 6 and 14. The station KOMIN 2 uses a value of 5 as an invalidity status. The station KOMIN 4 does not use any invalidity status – setting parameter „-“, was necessary to change the default values set in the [DMS285] section.

1.4. Defining the Process Variables

The variable definition is based on the DMS285 protocol description. The list of all the types of variables is given at the end of this chapter.

$$\text{type.subtype} \left[\begin{array}{c} \text{K} \\ \text{M} \end{array} \right] \left[\text{idx} \right] \left[\begin{array}{c} \text{.Mxx} \\ \text{.subfield} \end{array} \right] \left[\text{.channel} \right]$$

where:

<i>type</i>	- defines information type e.g.: 43 - instantaneous values, 44 - integrals, 17 - parameters;
<i>subtype</i>	- number of given information, e.g. 43 for instantaneous values defines actual current intensity in a given channel;
K,P.	- concentration/flow (only if the subtype contains data for both these categories);
<i>idx</i>	- index - only for indexed variables, e.g. classification; index is a number >= 1;
<i>channel</i>	- channel number; a channel number may be given only for the values related to the channel; in case of general information it should be omitted.
<i>Mxx</i>	- bit mask; <i>xx</i> is a number in hexadecimal code; on the datum received from the station, the AND operation with the number <i>xx</i> is executed;
<i>subfield</i>	- subfield name; for data representing time the following subfields are defined: SEC, MIN, HOUR, DAY, MONTH, YEAR - DWORD type, TIME, DATE, DATETIME - TEXT type.

In order to display values TIME, DATE, DATETIME the object STRING may be applied. The function NOTHING_TEXT must be use as the conversion function. The length of displayed string is given as the counter of elements.

EXAMPLE

An example of variable declaration:

```
ACT_TIME, actual date and time of the station, 43.1.DATETIME.1, CHANNEL-
DMS285, 20,30, NOTHING_TEXT
```

Format of date and time:

dd-mm-rrrr gg:mm:ss.

EXAMPLE

43.11.1	- actual instantaneous value for the analog channel 1
43.1.DAY	- actual time of the station - month day number
43.7K.1	- actual concentration for the channel 1
43.2[2]	- digital inputs 16-23

1.5. Time of Data

The data are transferred by the driver to the **asix** system together with the time of their reception (time of the DMS285 station). In case of other types than the type 43, which does NOT contain actual time, the time is established on the ground of previously received packet of the type 43 (variable 43.1) and time of its reading. The time defined by the variable 44.20 is assigned to the variables 44.1, 44.5K.n and 44.5M.n. The time of the variables of the packet 48 is rounded down to the hour 00:00. The variables of the packet 48 arriving at 00:00 +- 2 min are treated as invalid. The variables 44.105M.n and 44.105K.n have always the time 00:00.

1.6. Historical Data

For the variables 44.5K and 44.5M it is possible to read historical data.

1.7. List of All the Variable Types Supported by DMS285 Driver

See the following tables.

Table 1. List of All the Variable Types Supported by DMS285 Driver.

Name	Type
0.1.n	FLOAT
1.1.n	FLOAT
2.1.n	FLOAT
3.1.n	FLOAT
4.1.n	FLOAT
5.1.n	FLOAT
6.1.n	WORD
6.2.n	WORD
6.3.n	WORD
6.4.n	WORD
6.5K.n	FLOAT
6.5M.n	FLOAT
7.1.n	FLOAT
8.1.n	FLOAT
9.1.n	FLOAT
10.1.n	FLOAT
11.1.n	FLOAT
12.1.n	FLOAT
13.1.n	FLOAT
14.1.n	FLOAT
15.1.n	WORD
16.1.n	DWORD
c – signifies the channel number 1..32	
n – signifies the size number (schadstoff) 1..15	

Table 2. List of All the Variable Types Supported by DMS285 Driver (continuation).

Station Parametrieren	
17.1.n	FLOAT
: Fehlerzustand (x - fehlt)	
18.1.x	WORD
18.2.x	WORD
18.3.x	WORD
18.4.x	WORD
18.5.x	WORD
19.1[x].n	WORD
20.1[x].n	WORD
21.1[1].n - 21.1[3].n	FLOAT
22.1[1].n - 22.1[3].n	FLOAT
23.1[1] - 23.1[16]	BYTE
38.1.n	FLOAT
38.2.n	FLOAT
39.1.n	FLOAT
39.2.n	FLOAT
43.1	WORD
43.2[1] - 43.2.[8]	BYTE
43.3.n	BYTE
43.4.n	FLOAT
43.5.n	FLOAT
43.6.n	FLOAT
43.7K.n	FLOAT
43.7M.n	FLOAT
43.8K.n	FLOAT
43.8M.n	FLOAT
43.9K.n	FLOAT
43.9M.n	FLOAT
43.10.c	FLOAT
43.11.c	FLOAT
43.12.n	WORD
43.13.n	WORD
43.14.n	WORD
43.15.n	WORD
43.16.n	BYTE
43.17[1] - 43.17[18]	BYTE
43.18K.n	FLOAT
43.18M.n	FLOAT
43.19K.n,	FLOAT
43.19M.n	FLOAT

Table 3. List of All the Variable Types Supported by DMS285 Driver (continuation).

Aktueller Stand der Klasseninhalte in Binar	
46.4.n	WORD
46.5.n	DWORD
46.6.n	DWORD
46.8[1].n - 48.8[3].n	WORD
46.9.n	WORD
46.10[1].n - 48.10[21].n	WORD
46.11.n	WORD
46.12.n	WORD
46.13.n	WORD
46.14.n	WORD
46.15.n	WORD
46.16[1].n - 48.16[22].n	WORD
46.17.n	WORD
46.18.n	WORD
46.19.n	WORD
46.20.n	WORD
46.21.n	WORD
46.22.n	WORD
46.23.n	WORD
46.24.n	WORD
46.25.n	WORD
46.26.n	WORD
46.27[1].n - 48.27[21].n	WORD
46.28.n	WORD
46.29.n	WORD
46.30.n	WORD
46.31.n	WORD
46.32.n	WORD
46.33[1].n - 48.33[22].n	WORD
46.34.n	WORD
46.35.n	WORD
46.36.n	WORD
46.37.n	WORD
46.38.n	WORD
46.39.n	FLOAT
46.40.n	FLOAT
46.41.n	FLOAT
46.42.n	FLOAT
46.43.n	FLOAT

Table 4. List of All the Variable Types Supported by DMS285 Driver (continuation).

44.1.n,	BYTE
44.2.n,	FLOAT
44.3.n,	FLOAT
44.4.n,	FLOAT
44.5K.n,	FLOAT
44.5M.n,	FLOAT
44.6K.n,	FLOAT
44.6M.n,	FLOAT
44.7K.n,	FLOAT
44.7M.n,	FLOAT
44.8.n	FLOAT
44.9.n	DWORD
44.10.c	FLOAT
44.11[1] - 44.11[4]	BYTE
44.12K.n	FLOAT
44.12M.n	FLOAT
44.13K.n	FLOAT
44.13M.n	FLOAT
44.14K.n	FLOAT
44.14M.n	FLOAT
44.15[1] - 44.15[8]	BYTE
44.16K.n	FLOAT
44.16M.n	FLOAT
44.17.n	BYTE
44.18.n	BYTE
44.19K.n	BYTE
44.19M.n	BYTE
44.20	WORD
44.21[1] - 44.21[4]	BYTE
44.105K.n,	FLOAT
44.105M.n,	FLOAT
45.1.n	FLOAT
45.2.n	FLOAT
45.3.n	FLOAT
45.4.n	FLOAT
45.5.n	FLOAT
45.6.n	FLOAT
45.7.n	FLOAT
45.8.n	WORD

Table 5. List of All the Variable Types Supported by DMS285 Driver (continuation).

Klasseninhalte beim lt. Tageswechsel in Binar	
47.4.n	WORD
47.5.n	DWORD
47.6.n	DWORD
47.8[1].n - 48.8[3].n	WORD
47.9.n	WORD
47.10[1].n - 48.10[21].n	WORD
47.11.n	WORD
47.12.n	WORD
47.13.n	WORD
47.14.n	WORD
47.15.n	WORD
47.16[1].n - 48.16[22].n	WORD
47.17.n	WORD
47.18.n	WORD
47.19.n	WORD
47.20.n	WORD
47.21.n	WORD
47.22.n	WORD
47.23.n	WORD
47.24.n	WORD
47.25.n	WORD
47.26.n	WORD
47.27[1].n - 48.27[21].n	WORD
47.28.n	WORD
47.29.n	WORD
47.30.n	WORD
47.31.n	WORD
47.32.n	WORD
47.33[1].n - 48.33[22].n	WORD
47.34.n	WORD
47.35.n	WORD
47.36.n	WORD
47.37.n	WORD
47.38.n	WORD
47.39.n	FLOAT
47.40.n	FLOAT
47.41.n	FLOAT
47.42.n	FLOAT
47.43.n	FLOAT

Table 6. List of All the Variable Types Supported by DMS285 Driver (continuation).

Gesamt-Klassinh. b. lt. Tagesw. in Binar	
48.4.n	WORD
48.5.n	DWORD
48.6.n	DWORD
48.8[1].n - 48.8[3].n	WORD
48.9.n	WORD
48.10[1].n - 48.10[21].n	WORD
48.11.n	WORD
48.12.n	WORD
48.13.n	WORD
48.14.n	WORD
48.15.n	WORD
48.16[1].n - 48.16[22].n	WORD
48.17.n	WORD
48.18.n	WORD
48.19.n	WORD
48.20.n	WORD
48.21.n	WORD
48.22.n	WORD
48.23.n	WORD
48.24.n	WORD
48.25.n	WORD
48.26.n	WORD
48.27[1].n - 48.27[21].n	WORD
48.28.n	WORD
48.29.n	WORD
48.30.n	WORD
48.31.n	WORD
48.32.n	WORD
48.33[1].n - 48.33[22].n	WORD
48.34.n	WORD
48.35.n	WORD
48.36.n	WORD
48.37.n	WORD
48.38.n	WORD
48.39.n	FLOAT
48.40.n	FLOAT
48.41.n	FLOAT
48.42.n	FLOAT
48.43.n	FLOAT

2. List of Tables

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