MEVAS - Driver of MEVAS Analyzers User's Manual

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1. MEVAS - Driver of MEVAS Analyzers

1.1. Driver Use

The MEVAS driver is used for data exchange between MEVAS emission computers and an **asix** system computer. The communication is executed by means of serial interfaces. The driver realizes the protocol described in „*Bedienungsanleitung Rechnerschnittstelle MEVAS (vorlaufige Version 1.00). Telegrammverkehr uber eine serielle Schnittstelle. Stand: 26.03.1993"*.

1.2. Declaration of Transmission Channel

A logical channel is a logical connection of a computer and a MEVAS station. The logical channel is defined by placing an appropriate record in the **[ASMEN]** section.

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

logical_name=MEVAS,*COMn, Mevas_Address*

where:

COMn	- number of the serial port to which the network of MEVAS controllers is connected;
Mevas_Address	- number identifying the MEVAS emission computer; the number is assigned on the stage of the MEVAS emission computer parameterization.

Each defined channel may have its own section, the name of which is the logical name of the channel. A given COMn port may also have its own section named **[MEVAS:n]**. Values defined in such section become the default values for individual stations. The default values for individual serial interfaces are taken from the section named **[MEVAS]**. Transmission parameters by means of a serial interface cannot be placed in sections concerning individual stations, i.e. they may be located only in sections [MEVAS] and [MEVAS:n].

1.3. Driver Configuration

The statement of items placed in the application INI file for the MEVAS driver.

☑ ***baud = number***

or

bps= number

Meaning - determines transmission speed.
Default value - 9600
Parameter:

number	- number passed in Bd.

parity = parity_number

Meaning - determines parity.
Default value - n
Parameter:
number - allowed values:
- n - no parity bit,
- o - odd parity check,
- e - even parity check,
- m - mark,
- s - space.

retries = number

Meaning - number of repetitions of missed reading operations from a MEVAS station.
Default value - 3

stop_bits = number

Meaning - determines number of stop bits.
Default value -1
Parameter:
number - allowed values are 1 and 2.

word = number

or

word_length = number

Meaning - word length.
Default value - 8
Parameter:
number - allowed values are from interval 5 to 8.

time_out = number

or

timeout = number

Meaning - waiting time for DMS285 answer.
Default value - 10000
Parameter:
number - number passed in milliseconds.

bad_data_statuses = status1,status2,…,statusN

Meaning - determines numbers of data status, for which the data are found invalid. Status 13 (no data) causes that the data is always treated as invalid, independently of parameter value.

Default value - 0,13

Parameter:

- format: status1, status2, ..., statusN

or the character - (lack of the *bad data* status, except 13).

log = log_file

Meaning - parameter determines the name of file, to which additional diagnostic information will be written.

Default value - lack

alarm_code = alarm_number

Meaning - parameter determines a number of alarm generated by the driver in case of loss and re-establishing a connection with the station. The value of -1 (by default) causes that alarms are not generated. In a situation of connection loss, the following number specifying the cause of connection loss is transmitted together with an alarm code:

0 – complete lack of any answer from the station;
1 – timeout;
2 – line errors (frame, parity, overrun errors);
3 – checksum errors;
4 – other errors;
5 - MEVAS was reset;
6 - timeout on the MEVAS side;
7 – checksum error on the MEVAS side.

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

Default value - -1

simulation = number

Meaning - if the parameter value is 1, then the driver works in simulation mode and does not communicate with the station. Values of all variables are random.

Default value - 0

Refresh1,...,Refresh10= number

Meaning - parameters determine how often the driver has to transfer to the MEVAS station requests of preparing a new data set for later reading. Each parameter corresponds to a definite variable group. The parameter *Refresh1* refers to all variables. The parameter has a

form of two numbers. The first number determines frequency of request sending, the second one determines a shift in time of request sending. For instant, if 60s, 10s is given, then requests of preparing new data may be sent at hours:
12:00:10, 12:01:10, 12:02:10 etc.

The parameter determines only the maximal frequency of request sending. If the driver does not receive requests to read new data from the other components of the **asix** system (ASMEN), then requests to prepare new data are not sent to the MEVAS station.

If the parameter *Refresh1* and one of parameters *Refresh2-Refresh10* has a non-zero value, then the requests to prepare a data collection, defined by this last parameter, will be sent at moments fulfilling criteria defined by both the parameters simultaneously i.e. with a frequency equal to the minimal value of both the parameters.

If the parameter *Refresh1* has value 0,0, then corresponding to them other parameters should have non-zero values. Data read from the MEVAS station – except the D28 data (integrals) – receive a time stamp transferred by the MEVAS station at the moment of receiving a request to prepare a new data collection.

Default value - Refresh1=60s,10s (other parameters have values 0,00).

Parameter:

number - both the numbers have a format *nnn[s|m|g|h]* where *nnn* determines the time and the letter designation determines the base of time (second, minute, hour, hour respectively). If time unit designation is omitted, then the second is assumed.

Round_28= yes/no

Meaning - if the parameter has a value yes, then the time of the D28 data is rounded up to a full hour. The rounding refers only to data with time in form *hh:59:00*. Other time values are not rounded. To switch off the rounding one should give no as the parameter value.

Default value - 15

Round_28_Time = yes/no

Meaning - time in minutes determining the time rounding range of hour integrals. If the integral time is included in the range: the nearest full hour +/- parameter value, then the integral time will be rounded to the nearest full hour. By example, if the parameter value is 15 minutes, then times of integrals from the range 9:45:00 to 10:15:00 will be rounded to 10:00:00. The rounding occurs if the value of parameter *Round_28* is yes.
If the parameter value is 0, then the rounding does not occur.

Default value - 15

Time_Read = number

Meaning - the parameter determines a time interval in seconds, with which the driver updates the station time. The driver cyclically reads the station time with a given interval. The MEVAS station time is used for determining the time, at which requests to prepare new data should be sent to the MEVAS station.

Default value - 3600.

Parameter:

number - time in seconds.

Max_D28_Time = number

Meaning - determines the way of driver reaction to lack of the D28 data (integrals) during historical data completing. It is the time of data lack, in seconds, after which the driver will assume that historical data do not exist and transfer such information to write in the archive. The parameter is used only in the situation when the MEVAS station reports a lack of any values referring to a definite channel and the value type (Knr/Wsl). The parameter does not concern a situation when only a part of possible 52 historical values is not available. In this last case it is assumed that such situation will not change later.

Default value - 4200

Parameter:

number - time in seconds.

EXAMPLE

Examples of the MEVAS driver configuration.

Example 1:

```
[ASMEN]
.....
MVS_1=MEVAS,COM2,3
....

[MEVAS:2]
baud=19200
```

In the example above the station named MVS_1 connected to the COM2 port was defined. The transmission speed of 19200 bps will be used. The station has an identifier of 3.

Example 2:

```
[ASMEN]
.....
MVS_1=DMS285,COM1,1
MVS_2=DMS285,COM2,2
MVS_3=DMS285,COM3,1
```

```
MVS_4=DMS285,COM4,1
MVS_5=DMS285,COM5,4
MVS_6=DMS285,COM6,5
....

[MEVAS]
;Default values for all stations
baud=19200
Invalidity_Status= 1, 6, 14
[MEVAS:3]
;Default values for stations connected to the COM3 port
baud=9600

[MVS_2]
Invalidity_Status= 5

[MVS_3]
Invalidity_Status= 0,13
```

In the example above stations with names form `MVS_1` to `MVS_6` connected to ports from COM1 to COM6 are defined. All serial ports except COM3 will work with a speed of 19200 baud. The COM3 port will work with a speed of 9600 baud. All stations except `MVS_2` and `MVS_3` stations will use invalidity statuses 1, 6 and 14. The `MVS_2` station uses a value of 5 as an invalidity status. The `MVS_3` status does not use any invalidity status – setting parameter „-„ was necessary to change the default values set in the [MEVAS] section.

1.4. Time Stamp

Other data than D28 are transferred by driver to the **asix** system together with a time received from the MEVAS station while executing a request from the MEVAS station to prepare new data for reading. The frequency of sending request is specified by parameters *Refresh1*,..., *Refresh10*.

For data D28 (integrals) the MEVAS stations send a set of maximally 52 values. Each of these values is provided with its own time, which usually has a form of hh:59 (for 1-hour cycle of integration). This time is rounded up by driver to a full hour. The rounding may be turned off by means of parameter *Round_28*. Range of rounding defines a parameter *Round_Time_28*.

Although each D28 datum has its own time, for the variables of this type it is also necessary to send to the MEVAS station a request to prepare new data and if the parameter *Refresh1* has a value of 0,0 then the parameter *Refresh5* must have a not zero value in order to read data correctly (historical data too).

1.5. Defining the Process Variables

The variable definition is based on the MEVAS protocol description.

List of all types of variables is given in the end of this point.

name [.arg1[.arg2[.arg3]]]

where:

argn - may be: number, number preceded by text or text.

Square brackets [and] include parts, which may be absent in a variable definition.

The variable name may be a number of the value described in an appropriate query (of D type) of the communication protocol with the MEVAS system. The number may be preceded by a letter D. Variables defining data of other queries of the protocol are the numbers preceded by the query type e.g. `X1` to `X5` and `S1` to `S5`.

A record <*n..m*> signifies a numerical value from a range n to m. A vertical line „|" signifies that it is allowed to choose one of text on either side of the line.

In the table below all the types of variables are placed. The column *Number of parameter Refresh* specifies, which of parameters from *Refresh2* to *Refresh10* concerns a given variable. The value of variables from `X1` to `X10` is a time of preparing a specific data group by the MEVAS station as a result of the lately sent request. Writing any value to these variables causes sending to the MEVAS station a request of preparing new data for reading.

If the *Status* column contains `Yes`, then a given variable is transferred to the **asix** system with the status defined by the parameter *Invalidity_Statuses*. Such variable is accessed by the MEVAS station together with the status defined by the protocol. This status is converted to a numerical value and compared with values defined by the parameter *Invalidity_Statuses*. If the value of converted status is compatible to one of values defined by the parameter *Invalidity_Statuses*, then the data is regarded as invalid. The data with a status of 13 (no data) is always regarded as invalid.

Table 1. Format of Variable Name.

Format of Variable Name	TYPE	Number of Parameter *Refresh*	Status	Record	Example
[D]1.[Knr|ch]<1..48>	WORD	2			D1.Knr1
[D]2.[Knr|ch]<1..48>	FLOAT	2	Yes		D2.Knr1
[D]2.[Knr|ch]<1..48>.F|VAL	FLOAT	2			D2.Knr1.F
[D]2.[Knr|ch]<1..48>.SS|STS|STA	WORD	2			D2.Knr1.SS
[D]3.[Knr|ch]<1..48>	FLOAT	2	Yes		D3.Knr1
[D]3.[Knr|ch]<1..48>.[F|VAL]	FLOAT	2			D3.Knr1.F
[D]3.[Knr|ch]<1..48>.SS|STS|STA	WORD	2			D3.Knr1.SS
[D]4.[Knr|ch]<1..48>	FLOAT	2	Yes		D4.Knr1
[D]4.[Knr|ch]<1..48>.F|VAL	FLOAT	2			D4.Knr1.F
[D]4.[Knr|ch]<1..48>.S|STS|STA	WORD	2			D4.Knr1.S
[D]4.[Knr|ch]<1..48>.int|i	WORD	2			D4.Knr1.int
[D]5.[Knr|ch]<1..48>	FLOAT	2	Yes		D5.Knr1
[D]5.[Knr|ch]<1..48>.F|VAL	FLOAT	2			D5.Knr1.F
[D]5.[Knr|ch]<1..48>.S|STS|STA	WORD	2			D5.Knr1.S
[D]5.[Knr|ch]<1..48>.int|i	WORD	2			D5.Knr1.int
[D]6.[Knr|ch]<1..48>	FLOAT	2	Yes		D6.Knr1
[D]6.[Knr|ch]<1..48>.F|VAL	FLOAT	2			D6.Knr1.F
[D]6.[Knr|ch]<1..48>.S|STS|STA	WORD	2			D6.Knr1.S
[D]6.[Knr|ch]<1..48>.int|i	WORD	2			D6.Knr1.int
[D]7.[Knr|ch]<1..48>.[int|i|val]	WORD	2			D7.Knr1.int
[D]8.[Knr|ch]<1..48>	FLOAT	2	Yes		D8.Knr1
[D]8.[Knr|ch]<1..48>.F|VAL	FLOAT	2			D8.Knr1.F
[D]8.[Knr|ch]<1..48>.S|STS|STA	WORD	2			D8.Knr1.S
[D]8.[Knr|ch]<1..48>.int|i	WORD	2			D8.Knr1.int
[D]9.[Knr|ch]<1..48>	FLOAT	2	Yes		D9.Knr1
[D]9.[Knr|ch]<1..48>.F|VAL	FLOAT	2			D9.Knr1.F
[D]9.[Knr|ch]<1..48>.S|STS|STA	WORD	2			D9.Knr1.S
[D]9.[Knr|ch]<1..48>.int|i	WORD	2			D9.Knr1.int
[D]10.[Knr|ch]<1..48>	FLOAT	2	Yes		D10.Knr1
[D]10.[Knr|ch]<1..48>.F|VAL	FLOAT	2			D10.Knr1.F
[D]10.[Knr|ch]<1..48>.S|STS|STA	WORD	2			D10.Knr1.S
[D]10.[Knr|ch]<1..48>.int|i	WORD	2			D10.Knr1.int
[D]11.[Knr|ch]<1..48>	FLOAT	2	Yes		D11.Knr1
[D]11.[Knr|ch]<1..48>.F|VAL	FLOAT	2			D11.Knr1.F
[D]11.[Knr|ch]<1..48>.S|STS|STA	WORD	2			D11.Knr1.S
[D]11.[Knr|ch]<1..48>.int|i	WORD	2			D11.Knr1.int
[D]12.[Knr|ch]<1..48>.[F|VAL]	FLOAT	2			D12.Knr1.F
[D]12.[Knr|ch]<1..48>.Ag|cnt	WORD	2			D12.Knr1.Ag
[D]13.[Knr|ch]<1..48>.[F|VAL]	FLOAT	2			D13.Knr1.F
[D]13.[Knr|ch]<1..48>.Ag|cnt	WORD	2			D13.Knr1.Ag
[D]14.[Knr|ch]<1..48>.[F|VAL]	FLOAT	2			D14.Knr1.F

Table 2. Format of Variable Name (continuation).

Format of Variable Name	TYPE	Number of Parameter *Refresh*	Status	Record	Example
[D]16.[Knr|ch]<1..48>.[F|VAL]	FLOAT	2			D16.Knr1.F
[D]16.[Knr|ch]<1..48>.Ag|cnt	WORD	2			D16.Knr1.Ag
[D]17.[Knr|ch]<1..48>.[F|VAL]	FLOAT	2			D17.Knr1.F
[D]17.[Knr|ch]<1..48>.Ag|cnt	WORD	2			D17.Knr1.Ag
[D]18.[Knr|ch]<1..48>.[I|VAL]	WORD	6			D18.Knr1.I
[D]19.[Knr|ch]<1..48>.[F|VAL]	FLOAT	6			D19.Knr1.F
[D]20.[Knr|ch]<1..48>.[F|VAL]	FLOAT	6			D20.Knr1.F
[D]21.[Knr|ch]<1..48>	DWORD	2			D21.Knr1
[D]21.[Knr|ch]<1..48>.val|j|jjjjmm| jjjjjjmm	DWORD	2			D21.Knr1.val
[D]21.[Knr|ch]<1..48>.t|ttttmm| tttttmm	DWORD	2			D21.Knr1.t
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL0|CL0|0	WORD	3			D24.Bnr1.Bsl 1.KL0
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL1|CL1|1	WORD	3			D24.Bnr1.Bsl 1.KL1
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL2|CL2|2	WORD	3			D24.Bnr1.Bsl 1.KL2
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL3|CL3|3	WORD	3			D24.Bnr1.Bsl 1.KL3
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL4|CL4|4	WORD	3			D24.Bnr1.Bsl 1.KL4
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL5|CL5|5	WORD	3			D24.Bnr1.Bsl 1.KL5
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL6|CL6|6	WORD	3			D24.Bnr1.Bsl 1.KL6
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL7|CL7|7	WORD	3			D24.Bnr1.Bsl 1.KL7
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL8|CL8|8	WORD	3			D24.Bnr1.Bsl 1.KL8
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL9|CL9|9	WORD	3			D24.Bnr1.Bsl 1.KL9
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL10|CL10|10	WORD	3			D24.Bnr1.Bsl 1.KL10
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL11|CL11|11	WORD	3			D24.Bnr1.Bsl 1.KL11
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL12|CL12|12	WORD	3			D24.Bnr1.Bsl 1.KL12
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL13|CL13|13	WORD	3			D24.Bnr1.Bsl 1.KL13
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL14|CL14|14	WORD	3			D24.Bnr1.Bsl 1.KL14
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL15|CL15|15	WORD	3			D24.Bnr1.Bsl 1.KL15
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ] <1..3>.KL16|CL16|16	WORD	3			D24.Bnr1.Bsl 1.KL16

Table 3. Format of Variable Name (continuation).

Format of Variable Name	TYPE	Number of Parameter *Refresh*	Status	Record	Example
[D]14.[Knr|ch]<1..48>.Ag|cnt	WORD	2			D14.Knr1.Ag
[D]15.[Knr|ch]<1..48>.[F|VAL]	FLOAT	2			D15.Knr1.F
[D]15.[Knr|ch]<1..48>.Ag|cnt	WORD	2			D15.Knr1.Ag
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL17|CL17|17	WORD	3			D24.Bnr1.Bsl 1.KL17
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL18|CL18|18	WORD	3			D24.Bnr1.Bsl 1.KL18
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL19|CL19|19	WORD	3			D24.Bnr1.Bsl 1.KL19
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL20|CL20|20	WORD	3			D24.Bnr1.Bsl 1.KL20
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL21|CL21|21	WORD	3			D24.Bnr1.Bsl 1.KL21
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL22|CL22|22	WORD	3			D24.Bnr1.Bsl 1.KL22
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL23|CL23|23	WORD	3			D24.Bnr1.Bsl 1.KL23
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL24|CL24|24	WORD	3			D24.Bnr1.Bsl 1.KL24
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL25|CL25|25	WORD	3			D24.Bnr1.Bsl 1.KL25
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL26|CL26|26	WORD	3			D24.Bnr1.Bsl 1.KL26
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL27|CL27|27	WORD	3			D24.Bnr1.Bsl 1.KL27
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL28|CL28|28	WORD	3			D24.Bnr1.Bsl 1.KL28
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL29|CL29|29	WORD	3			D24.Bnr1.Bsl 1.KL29
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL30|CL30|30	WORD	3			D24.Bnr1.Bsl 1.KL30
[D]24.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.KL31|CL31|31	WORD	3			D24.Bnr1.Bsl 1.KL31
[D]25.[Bnr|Bl]<1..96>.[Bsl|Typ]<1..3>.Kl|cl<1..31>	WORD	3			D25.Bnr1.Bsl 1.Kl1
[D]26.[Bnr|Bl]<1..96>	DWORD	3			D26.Bnr1
[D]26.[Bnr|Bl]<1..96>.TOT|TOTAL|h|hhhhmm|hhhhhmm	DWORD	3			D26.Bnr1.TOT
[D]26.[Bnr|Bl]<1..96>.ACT|A|aaaamm|aaaaamm	DWORD	3			D26.Bnr1.ACT
[D]26.[Bnr|Bl]<1..96>.CNT|u|uuu	WORD	3			D26.Bnr1.CNT
[D]27.[Bnr|Bl]<1..96>	DWORD	3			D27.Bnr1
[D]28.[Wnr]<1..52>.[Knr|ch]<1..48>.Wsl<1..3>	FLOAT	5	Yes		D28.Wnr1.Knr1.Wsl1
[D]28.[Wnr]<1..52>.[Knr|ch]<1..48>.Wsl<1..3>.F|VAL	FLOAT	5			D28.Wnr1.Knr1.Wsl1.F
[D]28.[Wnr]<1..52>.[Knr|ch]<1..48>.Wsl<1..3>.Hs|STS|STA	WORD	5			D28.Wnr1.Knr1.Wsl1.Hs

Table 4. Format of Variable Name (continuation).

Format of Variable Name	TYPE	Number of Parameter *Refresh*	Status	Record	Example
[D]28.[Wnr]<1..52>.[Knr|ch]<1..48>.Wsl<1..3>.TIM|TIME	WORD	5			D28.Wnr1.Knr1.Wsl1.TIM
[D]28.[Wnr]<1..52>.[Knr|ch]<1..48>.Wsl<1..3>.SEC	WORD	5			D28.Wnr1.Knr1.Wsl1.SEC
[D]29.<1..16>.day	WORD	4			D29.1.day
[D]29.<1..16>.year	WORD	4			D29.1.year
[D]29.<1..16>.YSEC	DWORD	4			D29.1.YSEC
[D]29.<1..16>.DSEC	DWORD	4			D29.1.DSEC
[D]30	DWORD	9			D30
[D]31.s	WORD	Lack			D31.s
[D]31.p	WORD	Lack			D31.p
[D]32.[Egnr]<1..100>.Lnr|no	WORD	Lack	Yes		D32.Egnr1.Lnr
[D]32.[Egnr]<1..100>.Knr|ch	WORD	10	Yes		D32.Egnr1.Knr
[D]32.[Egnr]<1..100>.Hk	WORD	10	Yes		D32.Egnr1.Hk
[D]32.[Egnr]<1..100>.Gk	WORD	10	Yes		D32.Egnr1.Gk
[D]32.[Egnr]<1..100>.[F|VAL]	FLOAT	10	Yes		D32.Egnr1.F
[D]32.[Egnr]<1..100>.time|t	DWORD	10	Yes		D32.Egnr1.time
[D]33.[Knr|ch]<1..48>.[F|VAL]	FLOAT	2			D33.Knr1.F
[D]34.[Knr|ch]<1..48>.[F|VAL]	FLOAT	2			D34.Knr1.F
[D]35.[Knr|ch]<1..48>	FLOAT	2	Yes		D35.Knr1
[D]35.[Knr|ch]<1..48>.F|VAL	FLOAT	2			D35.Knr1.F
[D]35.[Knr|ch]<1..48>.S|STS|STA	WORD	2			D35.Knr1.S
[D]35.[Knr|ch]<1..48>.int|i	WORD	2			D35.Knr1.int
S1.start	WORD	N/A			S1.start
S1.end	WORD	N/A			S1.end
S2.start	WORD	N/A			S2.start
S2.end	WORD	N/A			S2.end
S3.start	WORD	N/A			S3.start
S3.end	WORD	N/A			S3.end
S4.start	WORD	N/A			S4.start
S4.end	WORD	N/A			S4.end
S5.start	WORD	N/A			S5.start
S5.end	WORD	N/A			S5.end
X1	DWORD	N/A		Yes	X1
X2	DWORD	N/A		Yes	X2
X3	DWORD	N/A		Yes	X3
X4	DWORD	N/A		Yes	X4
X5	DWORD	N/A		Yes	X5
X6	DWORD	N/A		Yes	X6
X7	DWORD	N/A		Yes	X7
X8	DWORD	N/A		Yes	X8
X9	DWORD	N/A		Yes	X9
X10	DWORD	N/A		Yes	X10

Table 5. List of Data Statuses.

Number	Status Character According to Protocol	Description Following the Protocol
0	A	Anlage AUS – Device OFF
1	S	Storung EIN – Failure ON
2	W	Wartung – Maintenance
3	w	Wartung manuell – Manual maintenance
4	T	Test
5	P	Plausibilitat AUS – Plausibility OFF
6	M	Verrechnungsfehler – Allocation error
7	E	Ersatzwertsteuerung EIN – Replacement value control ON
8	s	Ersatzwertsteuerung Storung – Failure of replacement value control
9	u	ungultig Anfahrbetrieb – invalid startup
10	U	ungultig (durch Anlage-AUS oder Klassenblockweschel) – invalid (by device OFF or class block changes)
11	*	nich belegt – not occupied
12	?	unknown status
13	********	No data (only for D28 and D32)

1.6. Historical Data

An access to historical data is possible for the D28 type. The data are available from the current day beginning (maximum 52 values). The data for the last hour of the previous day are available only in the period 23:59-00:05 (circa). It means that a pause in communication in this period results an irreparable loss of values for the last hour of a day. The current values of the data (integral) should be obtained by using a D28 variable with the parameter *Wnr1*.

2. List of Tables