



# **FE3-BUS Protocol-Description Version 3.00**

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# FE3-BUS

## Protocol-Description

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## **DATA INTERFACE RS485, PROTOCOL DESCRIPTION V3.03**

The communication between the PC and the device is always incited by the 'MASTER', the PC., It demands certain data to be transmitted or certain actions to be executed by means of a transmission telegram. The device reacts with a reply telegram and possibly carries out the request.

Transmission parameters:

9600	baud
8	data bits
PARITY EVEN	if DIP-switch #6 of the device address is 'ON'
	otherwise
NO PARITY	
1	stop bits

The transmission is in ASCII-format, the telegrams are secured by a checksum (hexadecimal, only capital letters) and concluded with the ETX-sign (03h). A device does not react to faulty checksums or incomplete telegrams. No additional signs such as 'SPACE' or CR-LF are permitted in the protocol.

As from protocol version 3.00 all reference values and parameters which are transmitted from the PC to the device are checked for validity and ignored by the device if they do not conform and are subsequently answered with NAK.

All values to be transmitted are preceded by zeros. Negative values always have the sign first (i.e. **-010** for -10)

### ***CHECKSUM CALCULATION***

The checksum is calculated by adding the ASCII-values of all previous characters in the telegram. The last two characters of this number, hexadecimally speaking, are transmitted as a checksum in capitals. The device forms checksum for the answer in exactly the same way, however, not with confirmations such as 'ACK' or 'NAK'.

### ***TIME BEHAVIOUR***

Depending on the type of device, the max. answer time is approximately 120ms. If no answer from the controller arrives after 200ms the telegram should be transmitted up to twice before a system alarm is triggered on the PC. This repeat transmission has proved itself to be a reliable way of achieving a fault-free data transmission.

### **WRITE MODE IN THIS PROTOCOL DESCRIPTION**

The telegram contents described here are in bold print.  
Telegrams from the PC to the device are additionally underlined.  
Variables in the telegrams are shown in small letters.  
These are to be considered as place holders for values required by the user.

( **gg** always stands for the device address, input would be 01 02  
**kk** always stands for channel number, input would be 01 02  
**pp** always stands for parameter number.

Special labelling for **pp**:

**ØØ** = Reference value (as parameter number 0 !)  
**II** = Actual value  
**YY** = Control output  
**SS** = Status

**www** stands for a four digit variable numerical value  
**cc** always comprises the calculated checksum )

ETX corresponds to a transmitted 03h and is written here with {etx} .  
ACK (ACKnowledge) corresponds to a transmitted 06h, written here as {ack}.  
NAK (NegativeAcknowledge) corresponds to a transmitted 15h, written here as {ack}.

**TELEGRAM CONTENTS****1. CHANNEL SPECIFIC TELEGRAMS**

These apply only to one respective zone of the device and have the following layout:

**Transmit value to controller**

**GggKkkPpp=wwwcc{etx}**

to set the value www.

the device then answers with

**Ggg{ack}{etx}** when the value was successfully set

or with

**Ggg{nak}{etx}** if the value was not accepted (poss. violation of  
marginal value)

**Call up value from controller**

**GggKkkPpp=cc{etx}**

to inquire about parameter value  
pp of the channel kk.

the device then replies with

**Ggg=wwwcc{etx}**  
whereby www shows the desired value.

**Request zone status:**

**GggKkkPSS=cc{etx}**

The device answer is once again

**Ggg=wwwcc{etx}**

whereby *www* contains the status of the zone, this can be seen BIT

by BIT:

Bit 0 = 1	Zone ok, otherwise
Bit 1 = 1	-L- Alarm
Bit 2 = 1	-H- Alarm
Bit 3 = 1	-E- Alarm
Bit 4 = 1	-S- Alarm
Bit 5 = 1	-HLP- Alarm
Bit 6 = 1	Manual Mode
Bit 7 = x	not used
Bit 8 = x	not used
Bit 9 = x	not used
Bit 10=x	not used
Bit 11=x	not used
Bit 12=x	not used

**Special form for fast protocol of all zones**

**GggKALPpp=cc{etx}**

the device then answers with the transmission of the parameter *pp* of all zones at once in a single telegram.

**Ggg=xxxxyyyy....zzzzcc{etx}**

xxxx = value of zone 1,

yyyy = value of zone 2,

zzzz = value of the last zone

**2. DEVICE SPECIFIC TELEGRAMS**
**List of device specific commands**

Abbrev.	Definition	R=read, W=write P=Program *) - =Reserve	Index
DS1	DIP-switch 1	R / W	5
DS2	DIP-switch 2	R	6
DS3	DIP-switch 3	R	7
SER	Serial number	R	8
AZ #	AZ-Software variation	R	9
HIW	Upper operational value	R/W	11
PRV	Protocol version	R	12
VER	Software version	R	13
KAN	Number of zones	R	18
PRO	Reference value program	R/W	19

## 2) Mnemonic script

These refer to all zones of the device and have the following format:

**Ggg?xxx=wwwcc{etx}** for setting values  
the device then answers with

**Ggg{ack}{etx}** if value was successfully set

or with

**Ggg{nak}{etx}** if the value was not accepted  
(poss. threshold violation)

**Ggg?xxx=cc{etx}** for requesting values

the device then answers

**Ggg=wwwcc{etx}** whereby www shows the desired value.

**xxx** stands for the name according to the above table.

**EXAMPLES:**

On device 10, channel 5 should be set to the reference value 50.

the PC transmits:

**G10K05P00=00500A{etx}**

the controller replies

**G10{ack}{etx}**

From device 8, the actual value should be requested from channel 11

the PC transmits:

**G08K11PII=7B{etx}**

the controller replies

**G08=0120AF{etx}** (120 ° actual value)

**DRIVER SOFTWARE:**

**FELLER ENGINEERING** stocks driver software for the PC which operates under MS-DOS and in which a connection is made between the user program and the FE3-bus. The user program can be written in any of the common program languages. Drivers are available for the RS485/422 interface, in this case especially in connection with the **FELLER** RS485 PC-plug-in card, and also for the RS232 interface.