![MTS SENSORS logo]

**Profibus - DP
Master
Simulator**

... the measurable Difference

Preface

The Profibus-DP master simulator can be used for evaluation of bus sections and Profibus slaves. The simulator consists of an interface converter with the relevant operating software. It adapts the signal from the serial PC output (RS232) to Profibus (RS485), thus permitting easy data exchange with the Profibus slaves. It can be used also for adjusting the sensor slave address.

1 How to connect
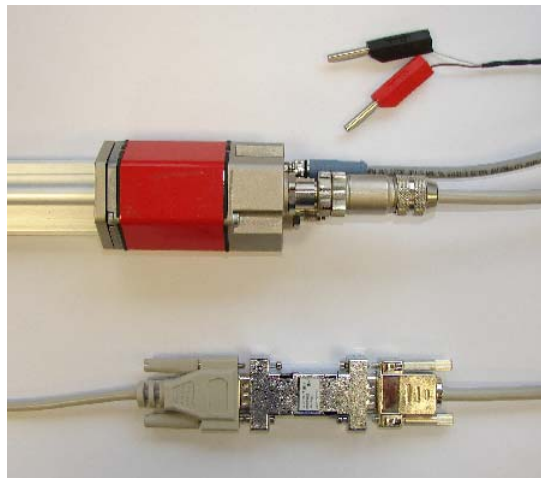
Connecting D53 separate 24VDC power with M8 connector and M12 Bus Line
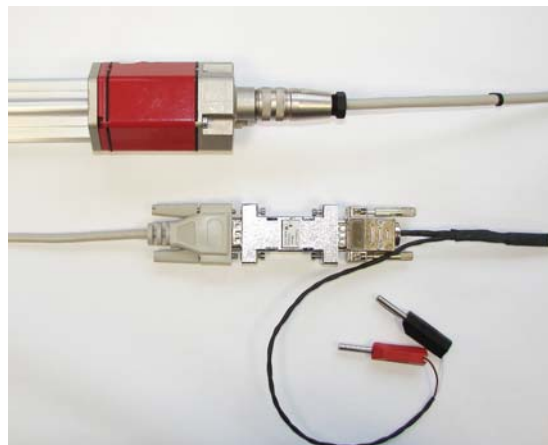
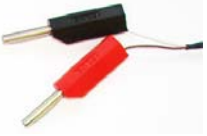Connecting D63 Simatic ET200 supplying the Power together with the Bus Line.

The sensor needs a voltage of 24 V DC and feed the Master simulator with its internal 5V DC voltage, which is implemented for the active bus termination and available at the female connector.

The connection Cable:

The Length of the cable should not extend a view meters because of the ground connection. Privilege a shielded cable.

The data transmitting Rate is 19260 Baud over the RS485
We take the +5V from the Sensor internal supply. This feeds normally the active termination resistors in the Termination Plug of the Bus segment.

Mastersimulator	Signal	Temposonic Profibus D63	Temposonic Profibus D53
Sub-D -9 female	**Type**	6-pin M16 male MTS No. STC09131H06PG9	5 Pin M12 B-Code male MTS No. 560 884
3	**Red** RxD/TxD-P	2	4
8	**Green** RxD/TxD-N	1	2
6	**Sensor VP .** +5V	4	1
5	**Sensor GND .** 0V	3	3
Separat Power	**Power ext.** +24VDC 200mA	5	Separat M8 Power
	Power ext. 0V	6	

2 Software Installation

The install shield will guide you throw the procedure. The screen shots where made with version 4.2.16

Operation system:
Windows 98
Windows 2000
Windows XP
Windows NT4
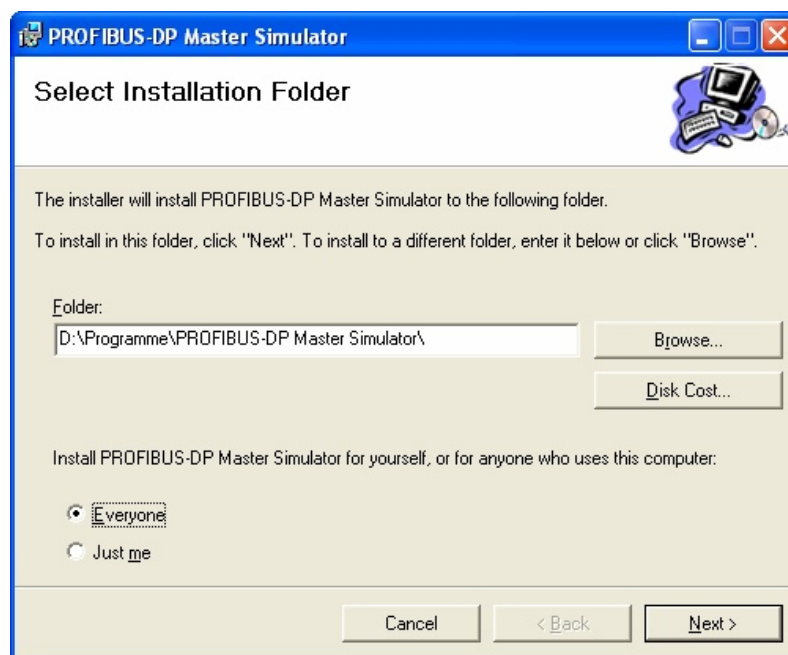
Serial Port required:
If you don't have a serial connection at your computer you may use a **USB to serial** converter. Please buy one of those devices how serve the Hardware Protocol using the CTS (Clear to send) and DTR (Data transmit ready) Signal.
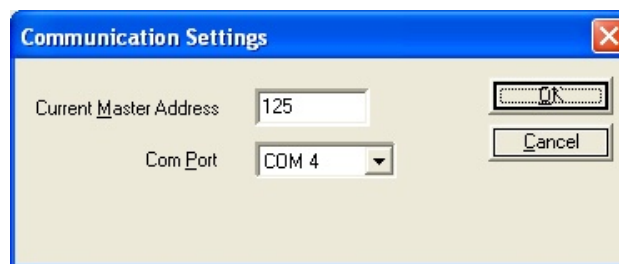
2 Start UP

After start the program displays this window:
In the communicator window the **Current Slave Address** must be set to the actual Profibus Node Address of the sensor.
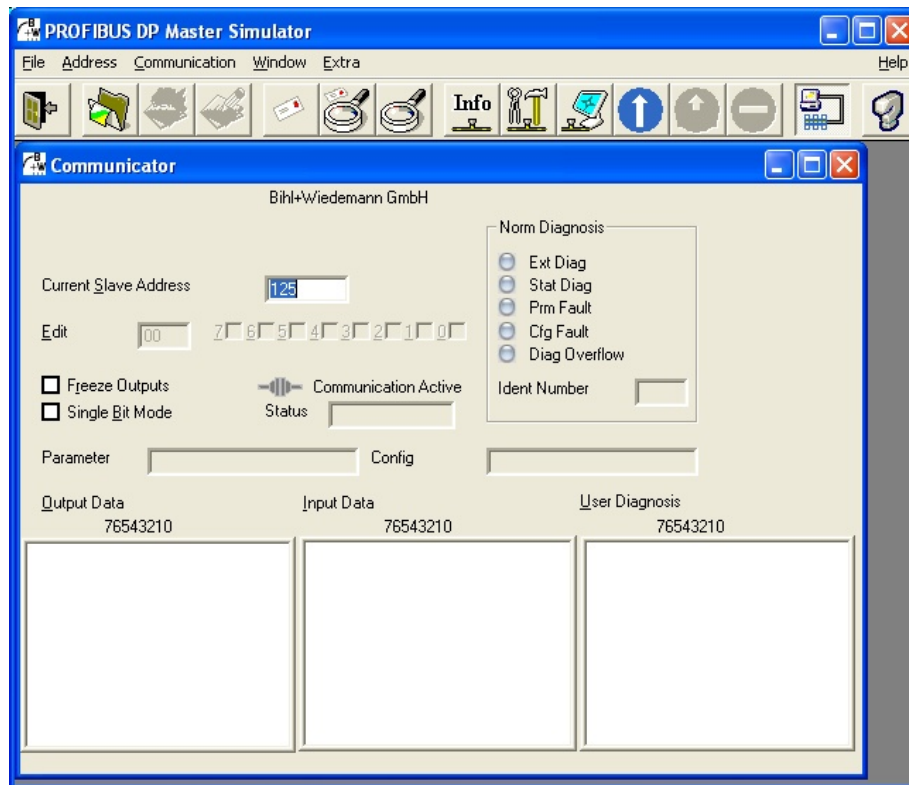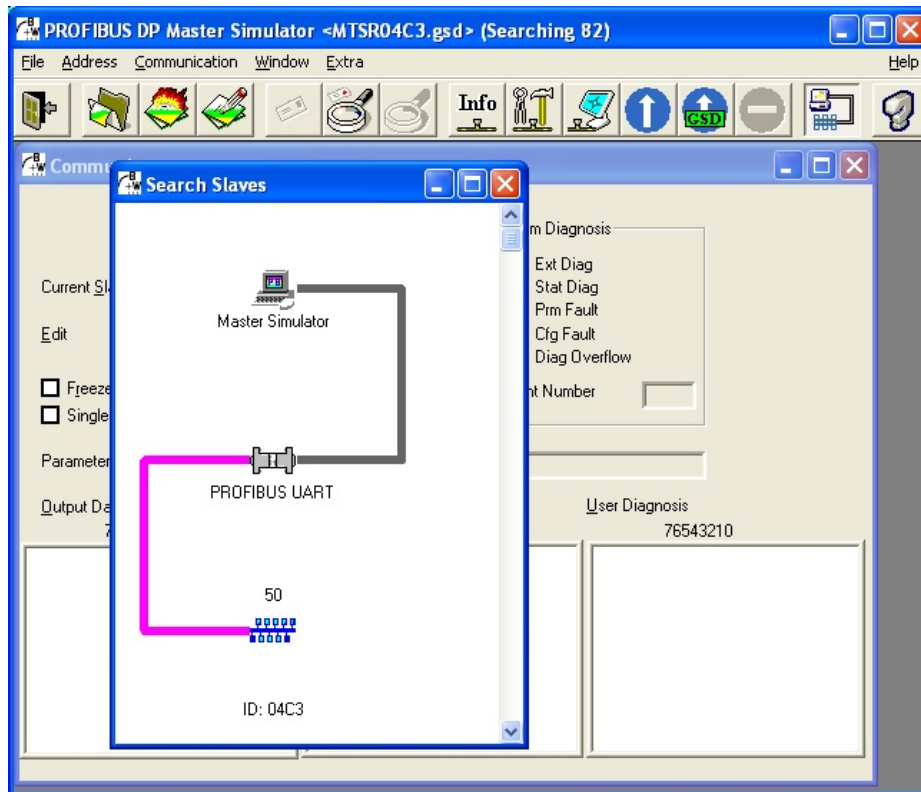

The used **Com Port,** which the simulator is connected to, must be selected.

3 Set Slave Address

The precaution of changing the device address is to know the actual address. We can find it by using the Addressable Device Search first. This Temposonics device answers with the product Identity: 04C3 and the Node Address 50 decimal.

It is also possible to change the slave address in the **Communicator Window**. Then the actual and new address must be entered in the form. Then start the exchange at *Address > Change Profibus Slave Address*.

4 Load GSD Data

The Folder "Profibus GSD-Disk R-Series" contain the Device Description MTSR04C3.GSD (English language is default) and the MTSR04C3.GSG (German), which are needed to configure a standard Profibus DP System. Application for all Temposonics(R) Sensors with the indication:

- MTS R-Series P101 Profibus DP Multi Magnet
- MTS R-Series P102 Profibus DP single Magnet
- MTS R-Series P104 Profibus DP Multi Magnet additional Features

The Folder "Profibus GSD-Disk R-Series P103" contains the Device Description MTS079D.GSD (English) and the MTS079D.GSG (German), which is needed to configure a standard Profibus DP application for all Temposonics(R) Sensors with the indication:

- MTS R-Series P103 Profibus DP Multi Magnet with speed

The Folder Profibus GSD-Disk EB342 contains the Device Description MTSG0539.GSD (English) and the MTSG0539.GSG (German), which are needed to configure a standard Profibus DP System for the Temposonics(R) Interface module with the indication:

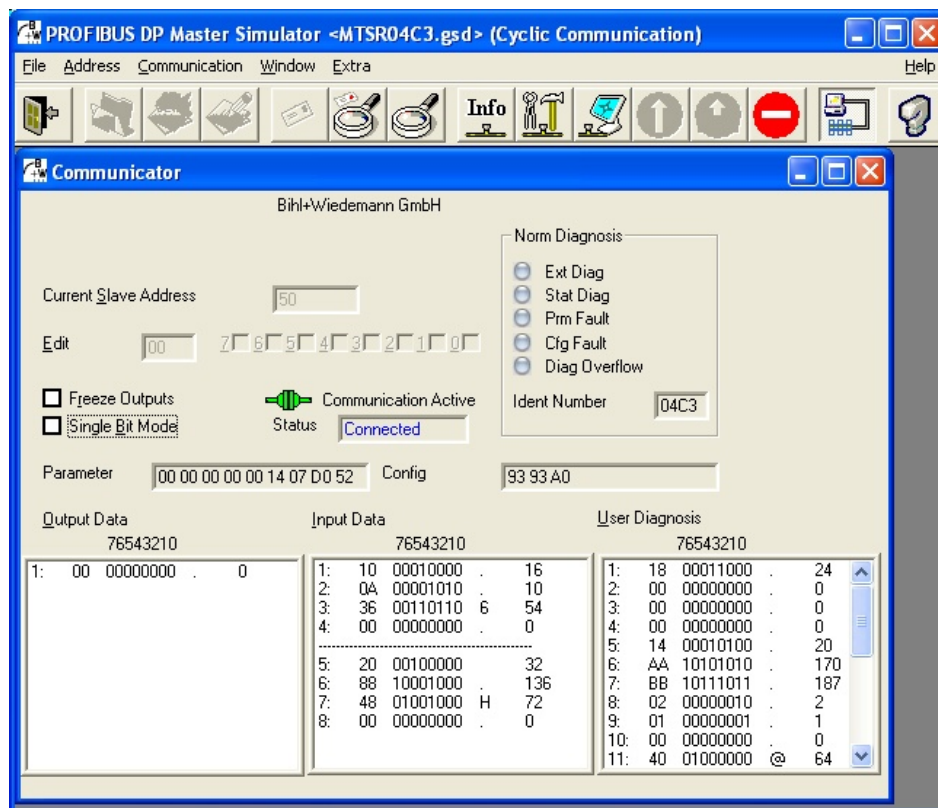- MTS EB342-0101   Profibus DP Interface with four MTS Start-Stop Sensors
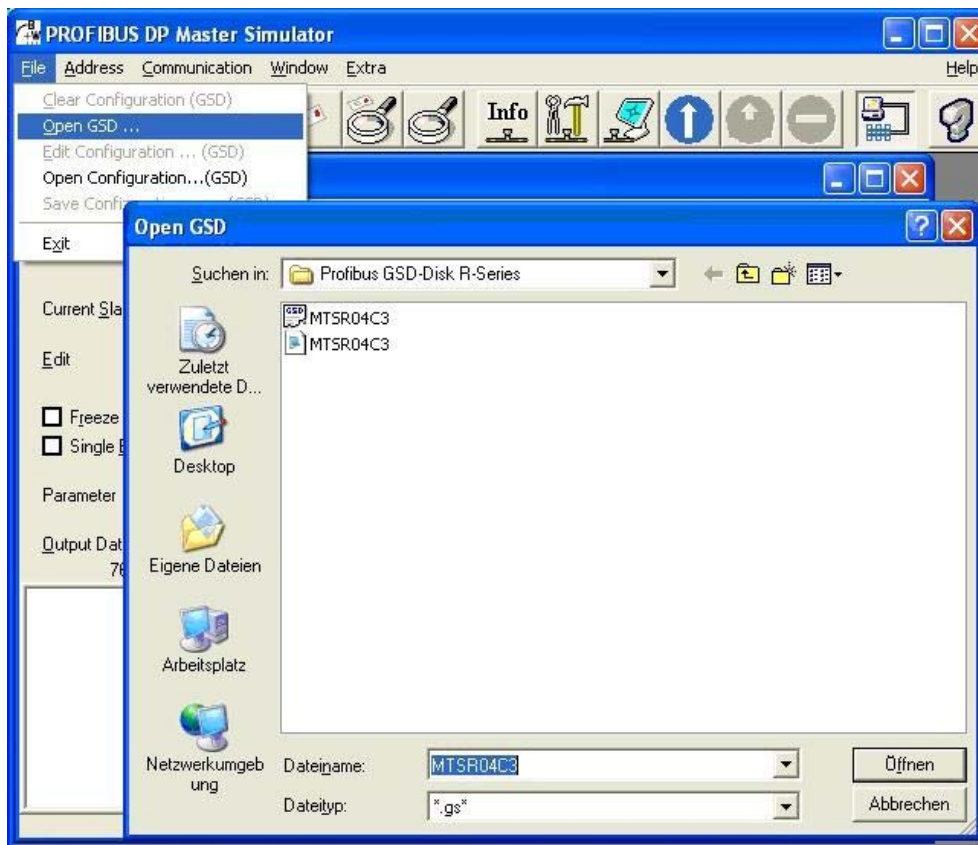
3 How to start

Choose number of magnets first and click insert to current configuration.
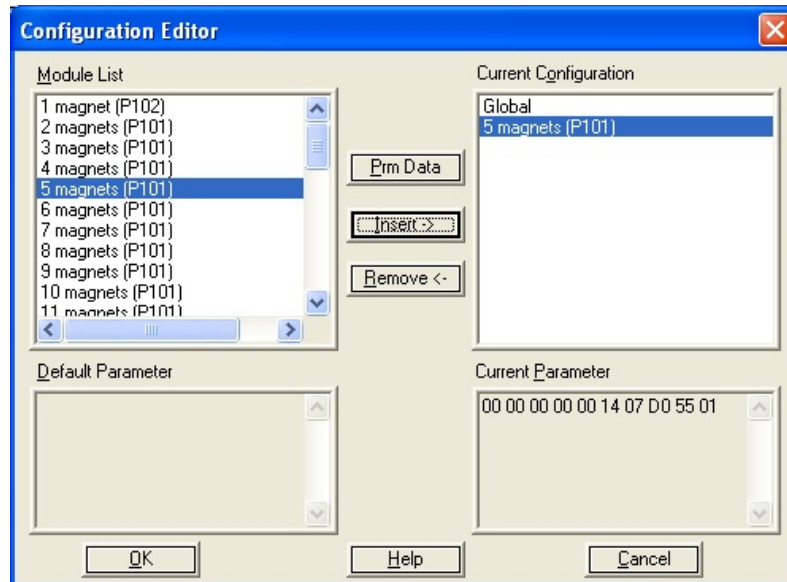
Click ok and start the Data Exchange with **Communication** > **Start with GSD**.

The communication to the sensor can be cancelled by using **Communication**>**Stop** .

The changes of the output data can have affect on a connected actor in the Profibus network. Beware of any machine movement. If we use only Sensors we could click easily yes on this warning.

All numbers excepting the Node Address are in Hexadecimal syntax.

The **Output Data** Field displays the simulator shows the data Byte, going from the Master to the Sensor. When operating without preset the output is just one byte long.

The **Input Data** Field displays the Byte the sensor transmits to the master.
For each magnet there will be four bytes measured values.

For example: 10 A1 B2 03

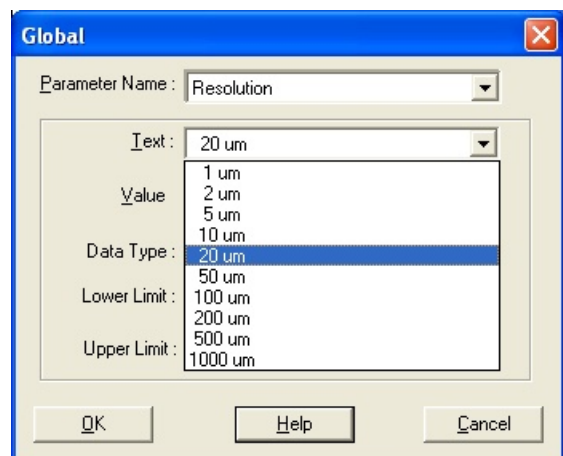| BYTE No.	Hex	Function	
1	10	status byte	Magnet 1 ok *10* or not ok *18*
2	A1	position	Low Byte
3	B2	position	Medium Byte
4	03	position	High Byte

In the status byte the four most significant bytes describes the number of the magnet. Bit 3 will be set to high, when an error occurs, i.e. the magnets are too close together, or the magnet leaves the measuring length.

3 Changes Parameter

Click on *File > Edit Configuration..(GSD)* to select the other parameters for testing.
This text information's are loaded before with the GSD file.
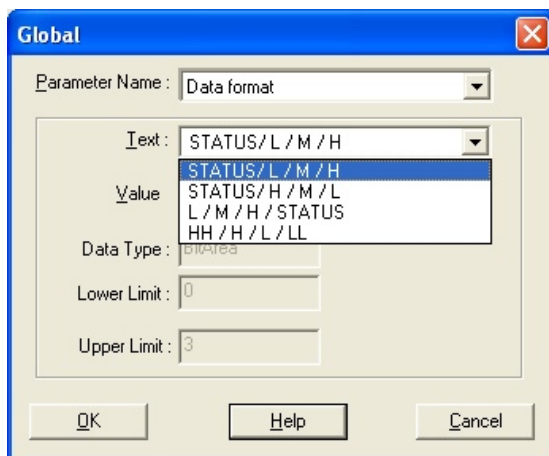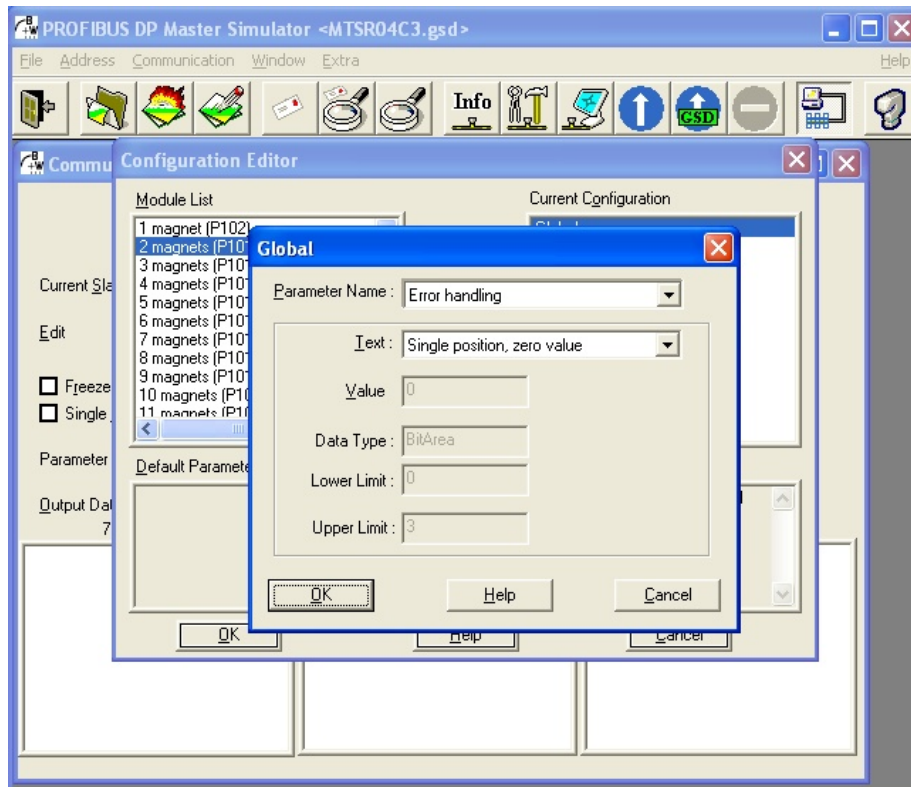
Change the Data Format to the dedicated order   Change the Resolution to the step width you expect

3 Check the Diagnostic

The _**User Diagnosis**_ shows different user parameters from the sensor.
These data accommodate to the octets 7 to 69 in the instruction manual.

The general diagnosis data from the octets 1 to 6 will not be represented here.
They are particularly present in the norm diagnosis.

Depending on the number of magnets and the use of preset the user diagnosis data
may vary from a number of 18 to 69.
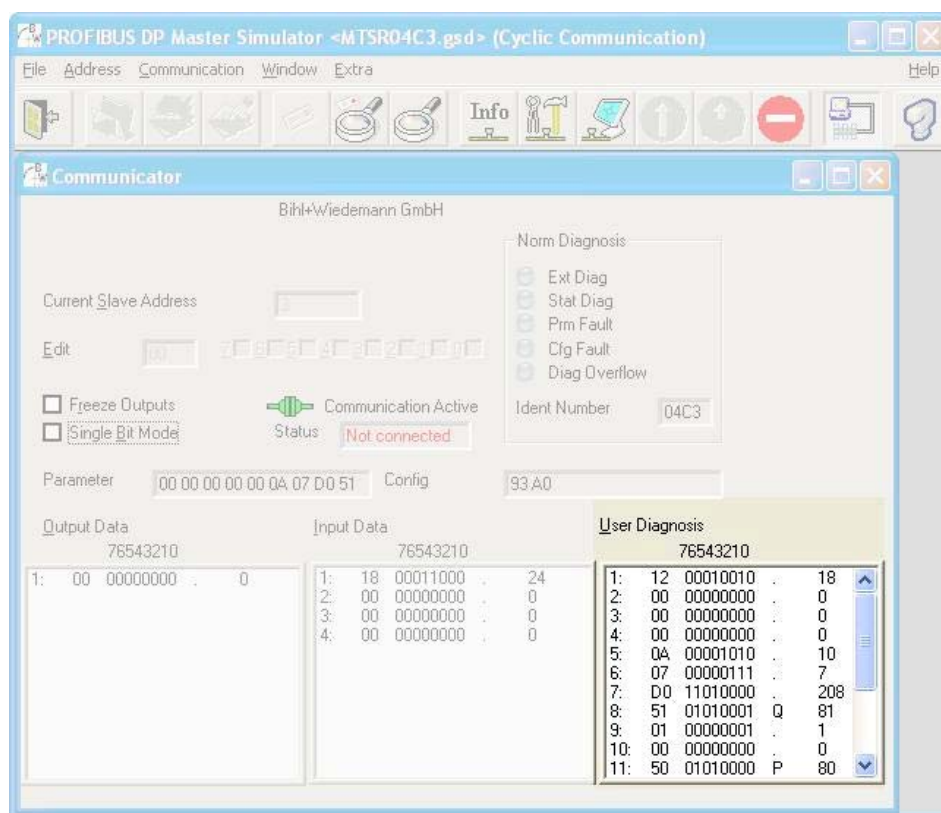
15	Length of the diagnostic data (in Byte:; hex coded)
00	Reserved
00	Error handling, Measuring direction forward, data in Intel-format (Status byte first)
00 0A	Resolution 10 µm
07 D0	Cycle time (used only at synchronous mode, not implemented yet)
51	Number of magnets (51 = 1 magnet, 5A = 10 magnets)
21	Preset (01 = without Preset)
00 05	Stroke length 05 00 mm
38 03 28	S/N (Fabrication #): 00 28 03 38
00	
32 02 28	Speed of sensing pulse (Gradient): 28 02,32 m/s
1B 71 00	Preset value: 1 magnet (24 Bit , unsigned)

4 setting up preset Function

The Preset Function allows the displacement of the Zero position individual for each Magnet.
You have to choose the number of magnets and the Preset in the
*File > edit configuration* first.

Then the Magnet selection comes with the Control Byte, witch is send permanently from the PLC to the Sensor.

Additional the positive Flank of Bit2superior1 in this Byte forth the sensor to subtract the demand value from the actual Position and to build the offset. The calculated Preset Value remains permanently in the Sensor.
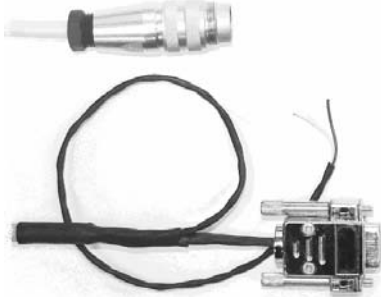
The demand Preset Value can either be positive or negative in a well defined Format:

32hex	0011 0010b	Control Byte Magnet3, Preset flank
AAhex	1010 1010b	L-Byte Preset demand
BBhex	1011 1011b	M-Byte Preset demand
CChex	1100 1100b	H-Byte Preset demand
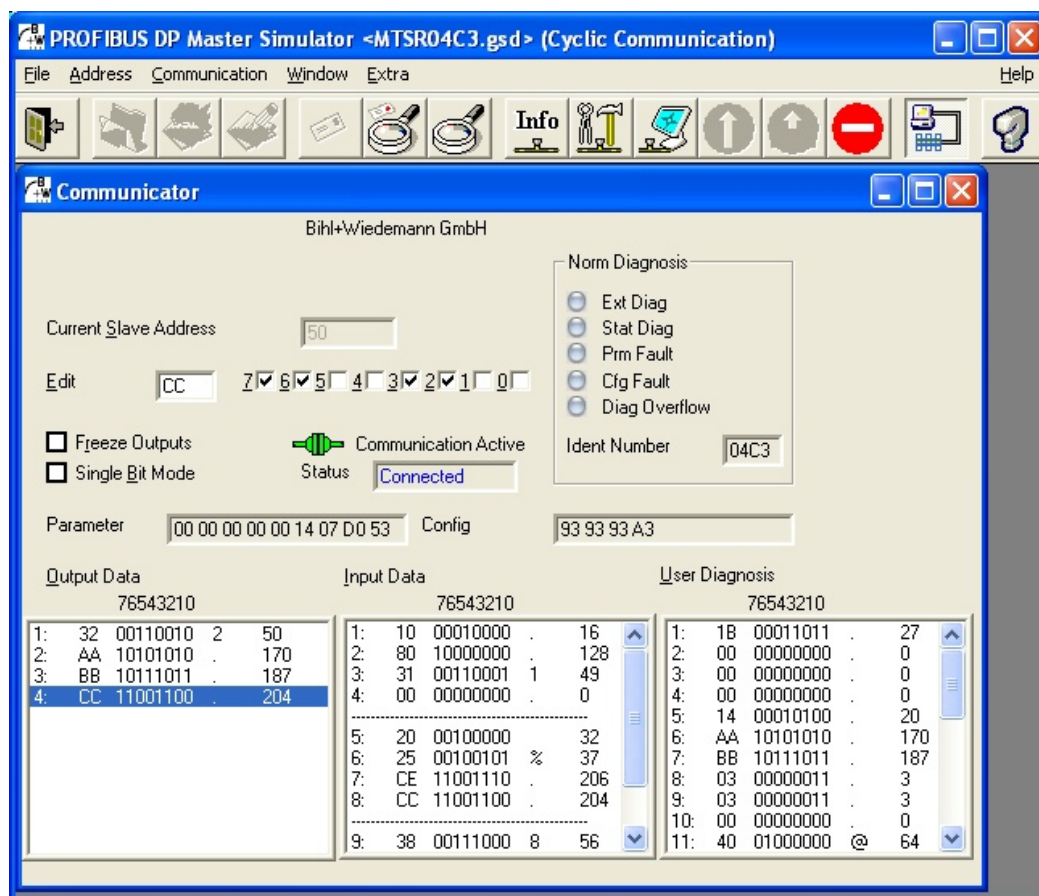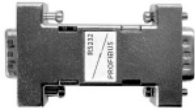
MTS Part Number : 401 727
Profibus DP Mastersimulator

MTS Part Number: 401726
two meter Cable connecting
Mastersimulator with the Sensor D63

MTS Part Number: 252383
two meter Cable connecting
Mastersimulator with the Sensor D53