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Fieldbus Testmaster

Universal test and diagnostics program for Profibus DP and Modbus Slaves

Operating instructions

part number: 179548_EN
release: 03
date: 24.08.2012

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History

File version	Date	Changes
0	2007-06-07	Translated ERN/JMO/STE
1	2010-10-04	Adding new Fieldbus Testmaster features (BARD)
2	2010-10-27	Complete correction. (BARD)
3	2012-08-22	Added modbus hardware adapter, new company address

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1 Introduction

1.1 General instructions

Fieldbus Testmaster is a test- and diagnostics program for Profibus DP and Modbus slaves. It can be used to establish a connection to a slave and to exchange cyclic data according the process image to remotely operate the slave.

The following functions are supported:
- Indication of all devices, which are connected to Profibus (Live List)
- Data exchange with Profibus and Modbus slaves
- Slaves remote control via free definable signals from the slaves process image

1.2 Security advices

Read this introduction carefully before commissioning. Failure to follow them may lead to personal injury or material damage. Furthermore any claim under guarantee can expire. If the actuators are used improperly, no liability is assumed.

Read and consider also the installation, operating and service instructions as well as the *safety and application information for actuators* before use.

Fieldbus Testmaster is a test- and diagnostics tool. Never use this tool in a running system or a running process! The user is responsible for the compliance with relevant safety regulations. We assume no liability in case of personal injury or material damage caused by improper use.

As on most supported bus interface connections the bus parameters are predetermined by the program, the use in an existing bus topology is excluded.
Establish a peer-to-peer connection between Master and Slave for testing.

1.3 System requirements

To use this software tool, the following system requirements are necessary:

Software:
- Windows 2000
- Windows NT 4.0 / SP6
- Windows XP SP2
- Windows 7
- Internet Explorer 6.0
- .NET Framework 2.0

Hardware (recommended):
- Min. 1200Mhz CPU
- Min. 512MB RAM

2 Installation

2.1 General requirements

Before installing the Fieldbus Testmaster you have to make sure, that Microsoft .NET Framework 2.0 or higher is installed on the target system.

2.2 PC connection for Modbus

The Fieldbus Testmaster needs for the integration into the Modbus a serial port (COM-Port).

As an alternative you can use an USB to RS485 adapter. The following type is in use by DREHMO:

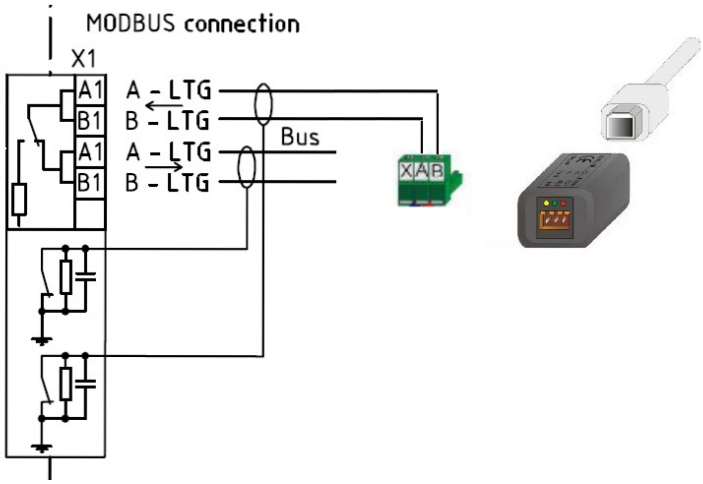
- Company Nientech, USB-482-Mini/OP

2.2.1 Application hints for Nientech USB-485-Mini

The use of the device driver package recommended by the adapter manufacturer Nientech is not possible in combination with the DREHMO Bluetooth or IRII adapter solutions. In the download area of the DREHMO homepage www.drehmo.com, a USB adapter driver package is available. The Nientech USB-485-Mini device is supported after the installation of this driver package.

After successful installation of the driver package and connection of the device, a COM port is emulated, that has to be specified in the FBTestmaster extra menu options.

The marking of the signal lines on the USB-RS485-mini interfaces is vice versa to the DREHMO notation. Terminal A has to be connected with terminal B and vice versa.



2.3 PC connection for Profibus

The Fieldbus Testmaster needs a master unit to establish a connection in a Profibus system. The following Profibus interfaces are supported:

- Siemens CP5511/CP5512 with access via FLD/SCI interface
- Siemens CP5611/CP5613 with access via FLD/SCI interface
- Softing PROFICard (PCMCIA) with access via API/SDK interface
- Softing PROFIBoard (ISA) with access via API/SDK interface
- Softing PROFIUSB (USB) with access via API/SDK interface
- Softing FG100/300 (Ethernet) with access via API/SDK interface
- Ifak system isProUSBx12 with access via API/SDK interface

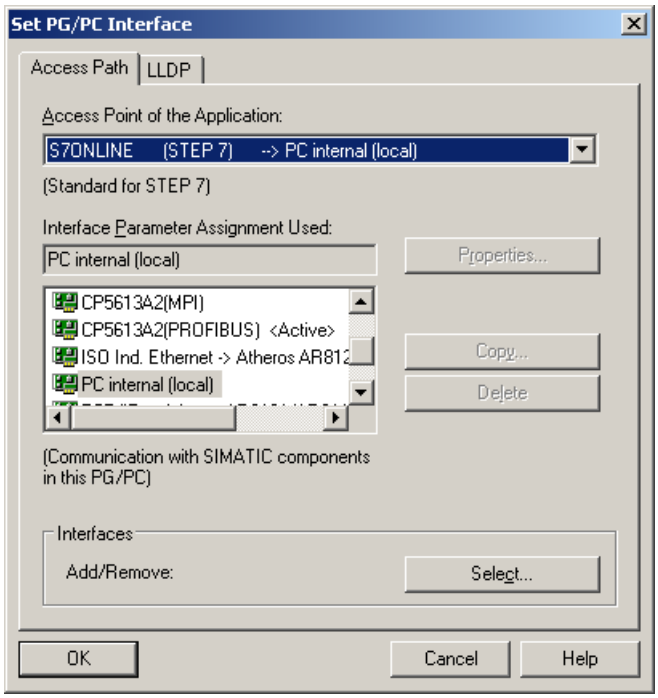
The driver units and the interfaces of the used master unit should be installed before the Fieldbus Testmaster installation.

2.3.1 Application hints for Simatic NET CP

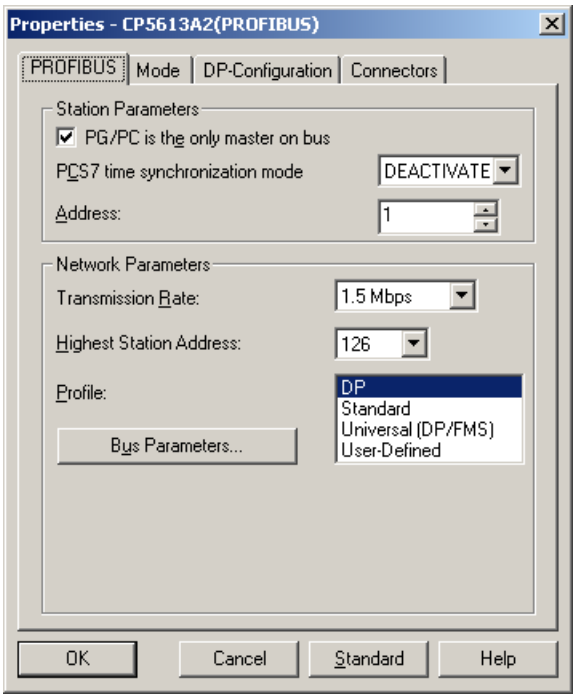
Please follow the manufacturer's installation guide for the installation of the corresponding driver units/interfaces.

After the installation was successful, the following Icon will be shown in the system control panel:

Double-click the symbol to setup the *Set PG/PC-Interface*.



Use the button *Properties* to adjust the settings of the master unit.

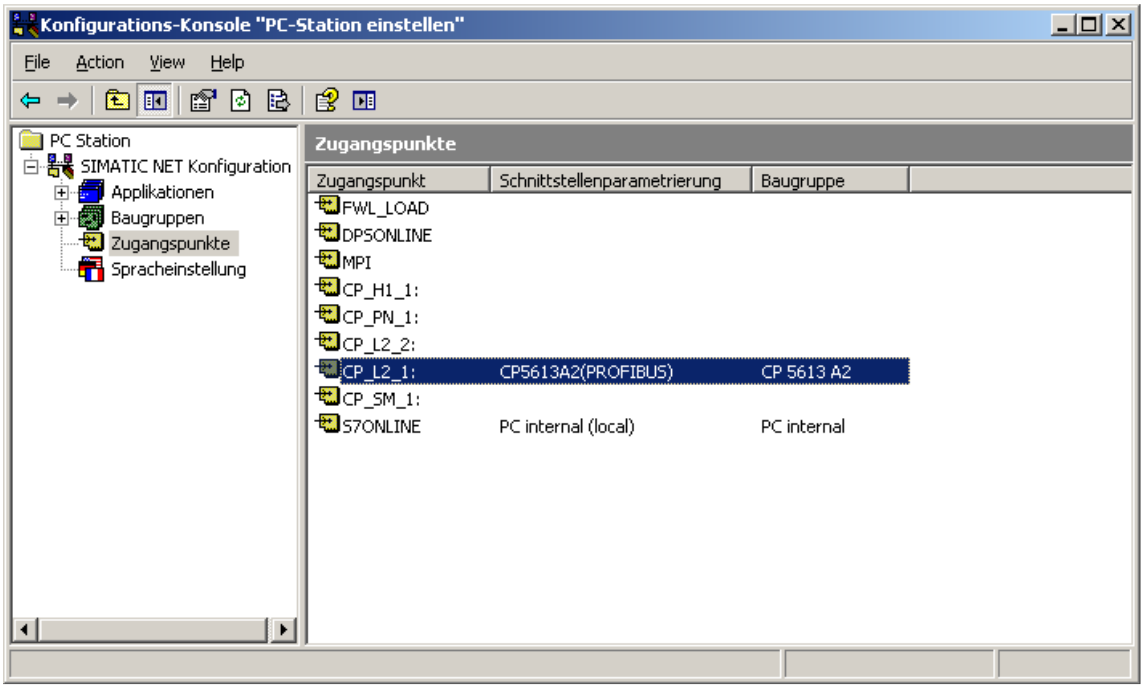


Here you can configure the master unit address and transmission speed.

Note: The check mark "*PG/PC is the only master on bus"* should be activated. Otherwise the CP cannot synchronize to the Profibus network.

To enable the Fieldbus Testmaster access to the unit, the service access point has to be correctly adjusted.

This will be done via the program setting "*PC-Station*", which you can find under "*Simatic->Simatic Net->Settings"*.



Important: The service access point configuration of the master unit has to be identical to the configuration in the Fieldbus Testmaster. Otherwise no communication can be established.

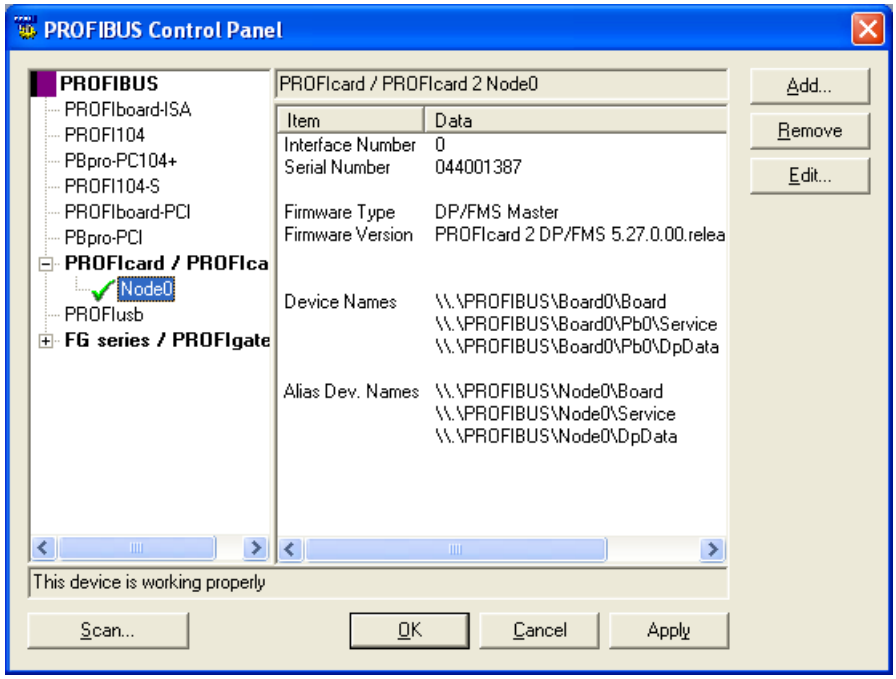
Possible service access points of the Fieldbus Testmaster are *"CP_L2_1:"* and *"CP_L2_2:"*

2.3.2 Application hints for Softing ProfiXXX Card with API/SDK

Please follow the manufacturer's installation guide for the installation of the corresponding driver units/interfaces.

After installation, the following Icon will be shown in the system control panel:

Double-click the icon to open the Softing Profibus Control Panel:



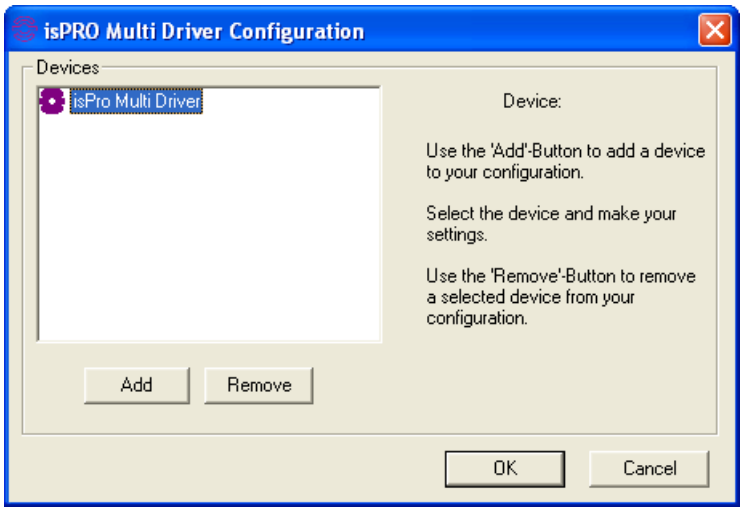
In case that the master board is marked with a red cross instead of a green check mark, the adjustments of the IO Port, the DP RAM address or the interrupt are wrong and must be corrected.

The unit number, labeled as *Interface Number,* has to comply with the number which is adjusted in the Fieldbus Testmaster program settings. Otherwise a correct communication is impossible. You can specify a range from 0 to 9.

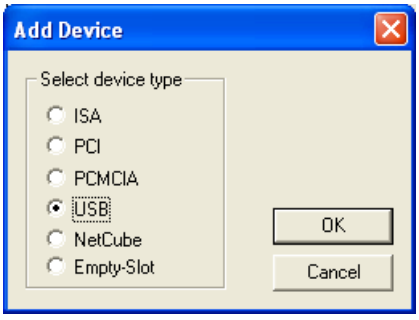
2.3.3 Application hints for Ifak System isPRO USBx12

Please follow the manufacturer's installation guide for the installation of the corresponding driver units/interfaces.

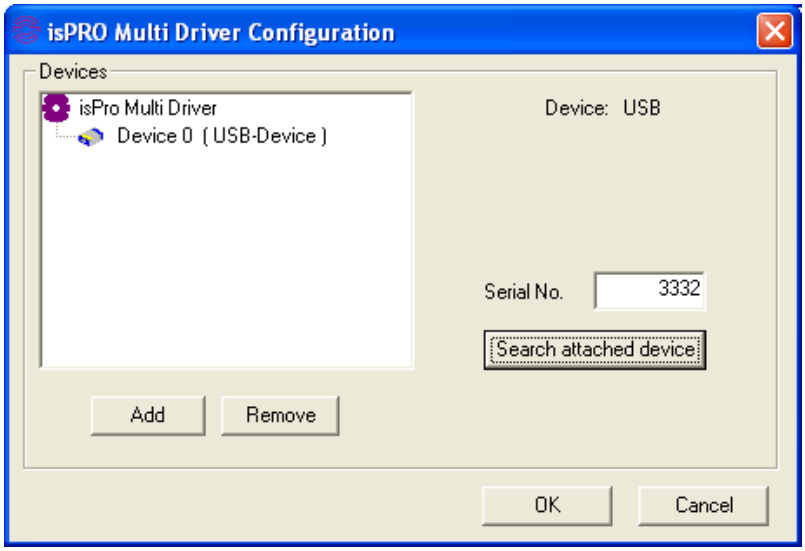
The unit drivers configuration will be done via the program "*isPRO configurator*". This program will be started via *"Start->Ifak system-> isPRO Multi driver"*.



To add a new interface unit, click the "*Add"*-Button.



The select the desired type of the added device (e.g. USB) and confirm with *OK*. The device will be included into the device list.



Select the new added device in the device list and use the button "*Search attached device"*. If the installation was correct and the device connected to the computer, the serial number of the particular device will be indicated now.

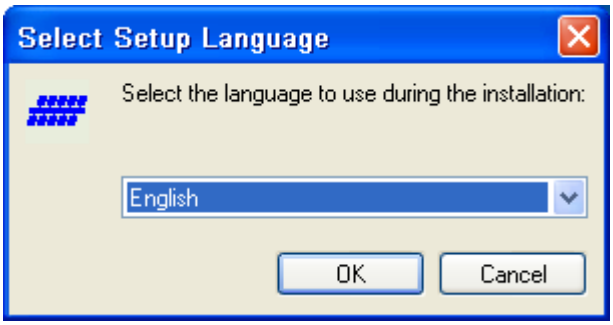
The unit number, in our example "*Device 0",* has to be identical to the Fieldbus Testmaster settings. Otherwise a correct communication is impossible. You can specify a range from 0 to 9.

2.4 Executing the FBTestmaster setup program

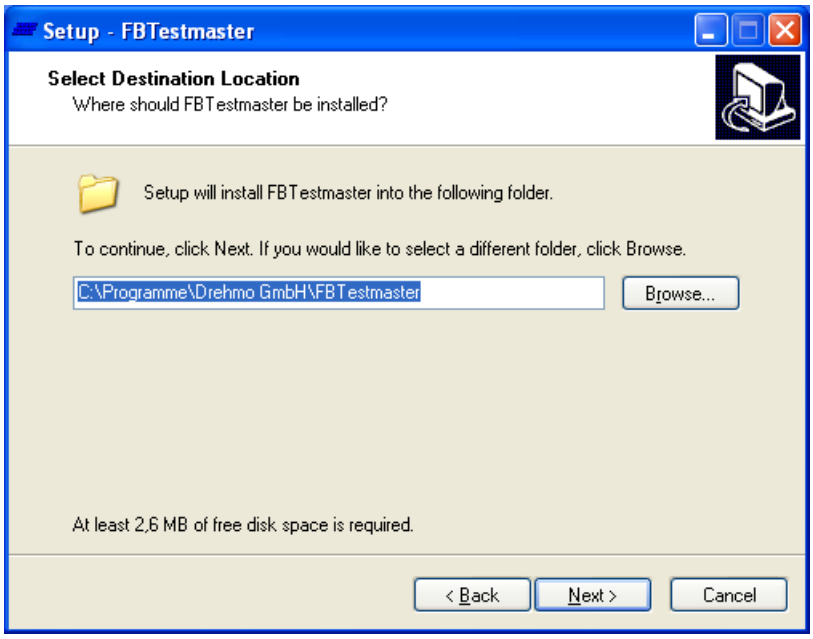
Note: Please check if your system fulfills the given requirements before starting the installation.

Insert the Setup-CD into the CD-Rom drive. When installing from another medium, navigate with the Windows explorer to the folder where the installation files have been copied to. Start the setup-program **FBTestmaster_Setup_X_XX_XXXX.EXE** to install the Fieldbus Testmaster. X is used as placeholder for the version of the setup-program.

The setup-program will start. Choose the language in the pop-up window and confirm with *OK.*

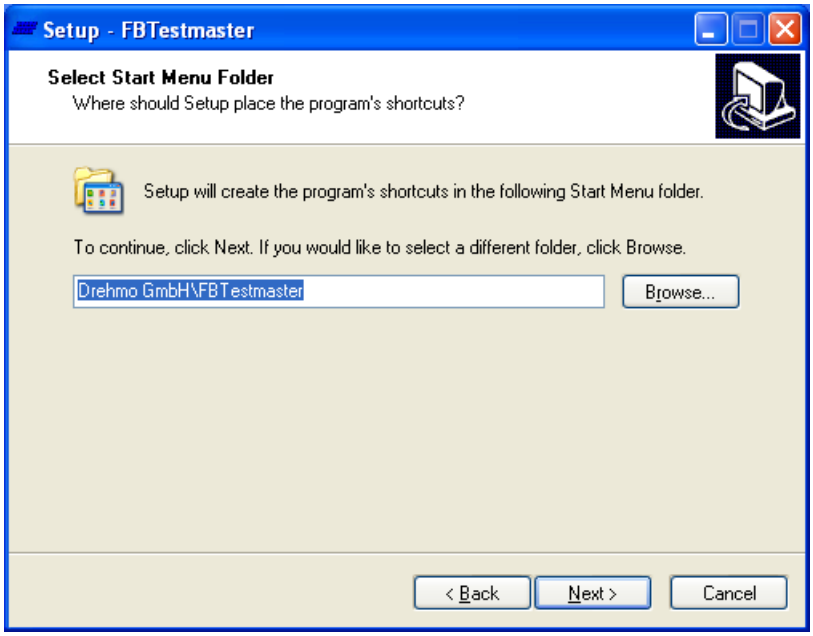


Confirm the following information window (without figure) by pressing the *Next >* button. Then a window with the software-license agreement appears. It has to be accepted before it is possible to continue by pressing the *Next>* button.

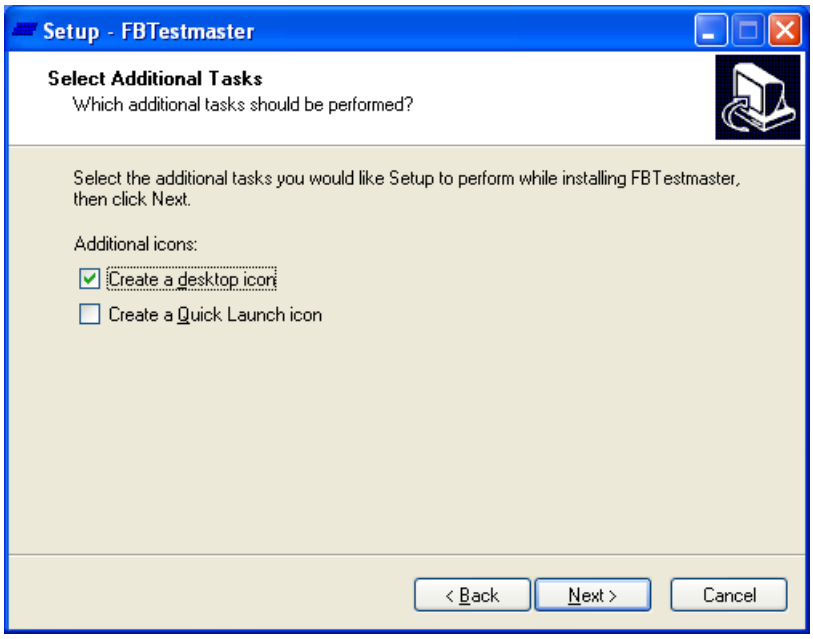


Select the desired folder and confirm your choice with *Next >*.

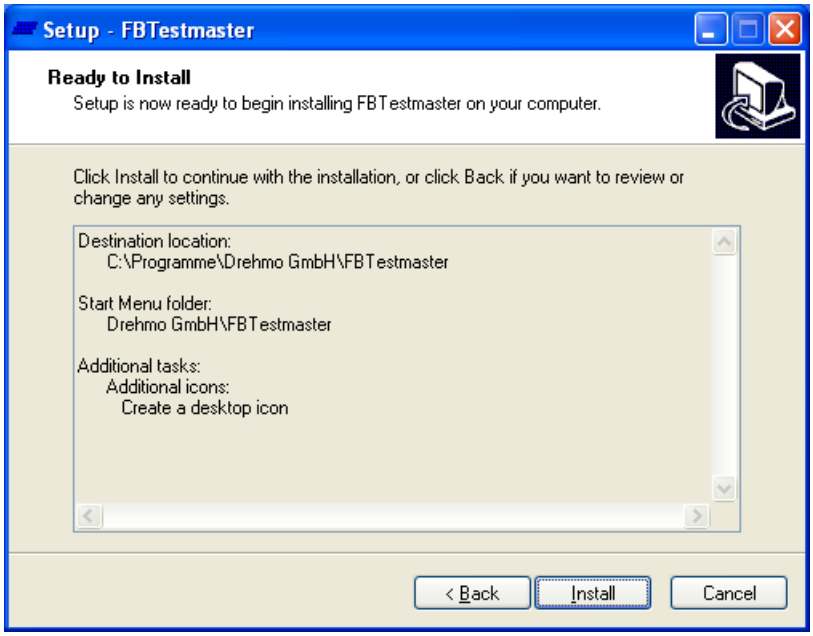
Following it is possible to confirm the program's shortcuts in the start menu:



Confirm your settings with *Next >*. The next window allows you to select additional functions.

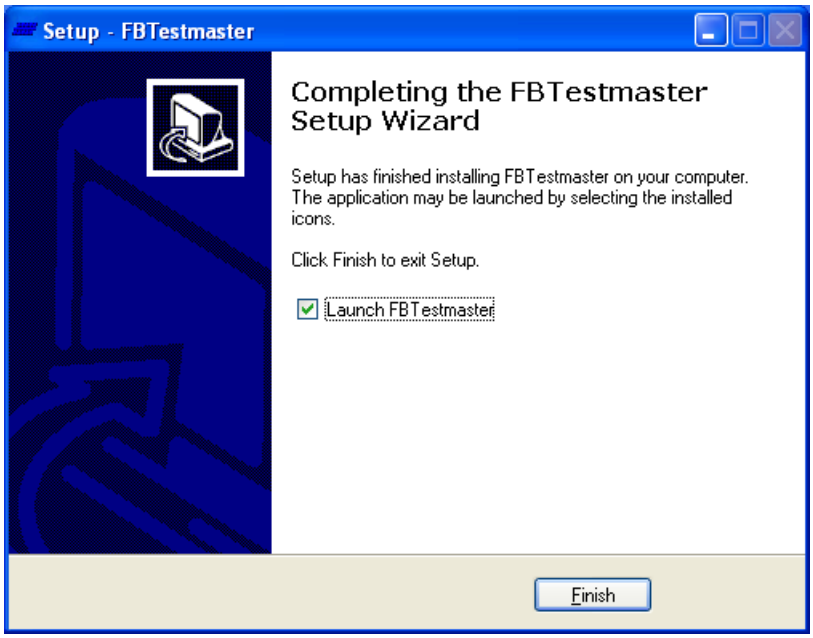


It is possible to control the settings in the following window. After pressing *Install* the installation starts:



All required components will be installed.

After the installation is successfully finished, the following window appears:



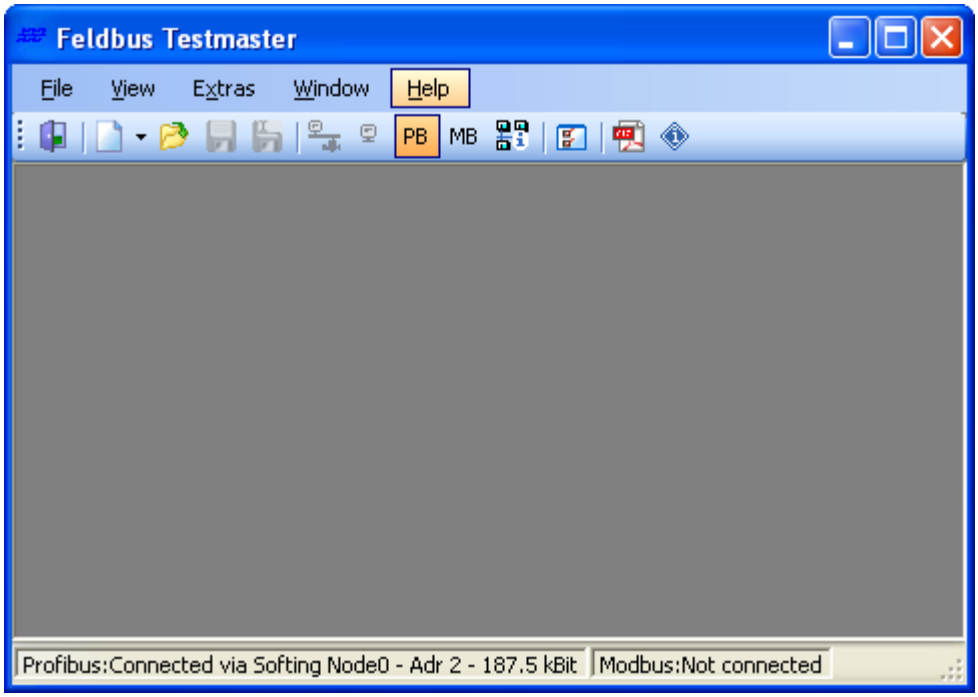
Press the *Finish*-Button to complete the installation.

Now the Fieldbus Testmaster can be started via start menu, the desktop icon or the quick launch bar.

3 Operation and menu structure

3.1 User interface

The Fieldbus Testmaster is a multi-document application. Every slave is displayed in a separate slave definition window.



3.2 Menu bar

3.2.1 Menu File

New

Creates a new slave definition window. You can choose between a Profibus and a Modbus slave definition window.

Open workspace …

Opens a previously saved workspace. In this workspace all opened slave definition windows, their positions, and sizes are stored. *(File extension: *.PWX)*

Open…

Opens a single slave definition window, which has been saved before with *Save* or *Save as... (File extension: *.PSX for Profibus/*.PSY for Modbus)*

Save workspace as…

Saves the current workspace with a new file name and the file extension *.PWX.

Save

Saves the active slave definition window as an XML-file with the file extension *.PSX for Profibus slaves and *.PSY for Modbus slaves.

Save as…

Saves the active slave definition window with a new file name.

Recently opened files

Shows a list of the last opened slave definition files. The list should help to find the last saved files more quickly.

Recently opened workspaces

Shows a list of the last opened workspaces. The list should help to find the last saved workspaces more quickly.

Close

Terminates the program and closes the main window as well as all subordinate windows.

3.2.2 Menu View

Toolbar

Shows or hides the tool bar of the main window.

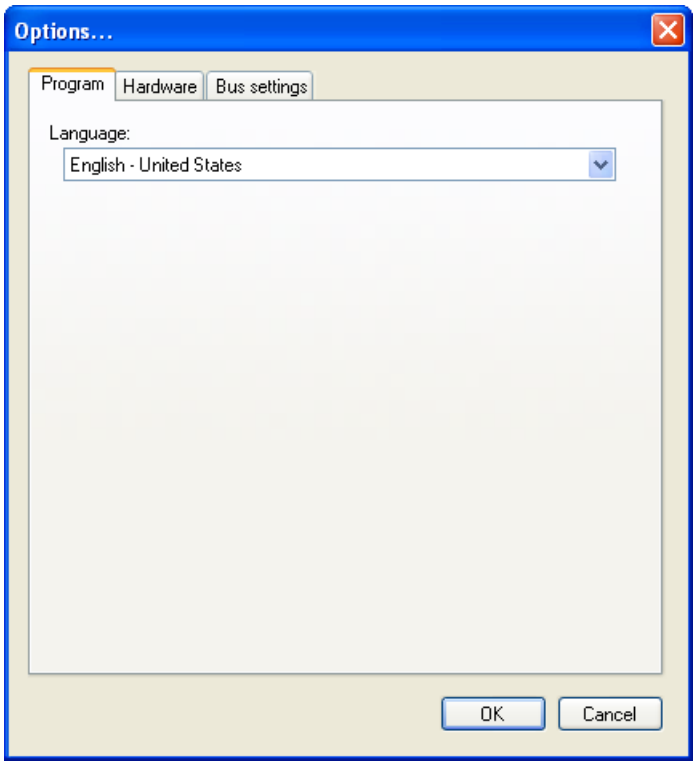
Status bar

Shows or hides the status bar of the main window.

3.2.3 Menu Extras

Options

Shows the options dialog to make some settings according to the user's needs.



Program Set the desired language for the application

Hardware Here you can configure the necessary hardware settings for your Profibus or Modbus connection.

For a Profibus connection you must select the desired master module and specify the additional module settings.
To determine which adjustment is necessary for the particular hardware, please consult the installation instruction of the hardware.

For a Modbus connection you must choose a COM-Port, connection speed, parity, timeout and retries.

Bus settings Set here the bus specific parameters for communication.

If a Simatic NET CP interface is used for the connection, the bus settings have to be done via the set pg/pc interface applet within the system control panel.

3.2.4 Menu Window

In the menu window several operation elements of the MDI-window can be arranged. Every particular function should be well known and is not further described here.

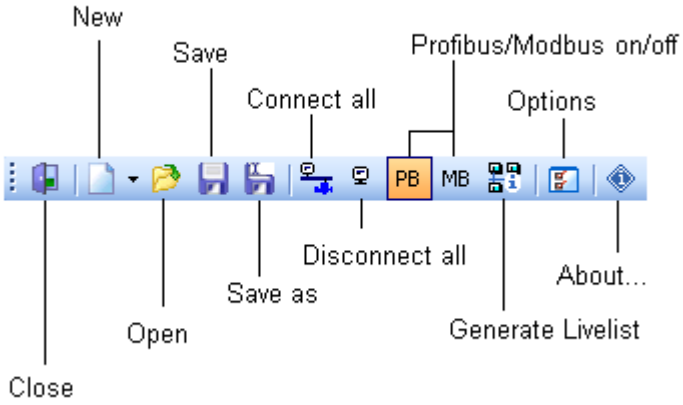
3.2.5 Menu Help

Information about…

Use this dialogue to check the program information, e.g. the version.

3.3 Tool bar

Analogue to the menu items you have fast access to specific functions using the tool bar.



Furthermore the tool bar offers the following functions in addition to the described functions in the chapter menu bar:

Connect all

All currently opened slave definition windows are connected and the communication to these slaves is established.

Disconnect all

All currently opened slave definition windows are disconnected and the communication to the slaves is aborted.

Generate Livelist

Generates a list of all currently accessible Profibus devices.

In this window the addresses of all devices (including the Master) connected to the Profibus are listed. Use this function for a fast overview for all connected devices.

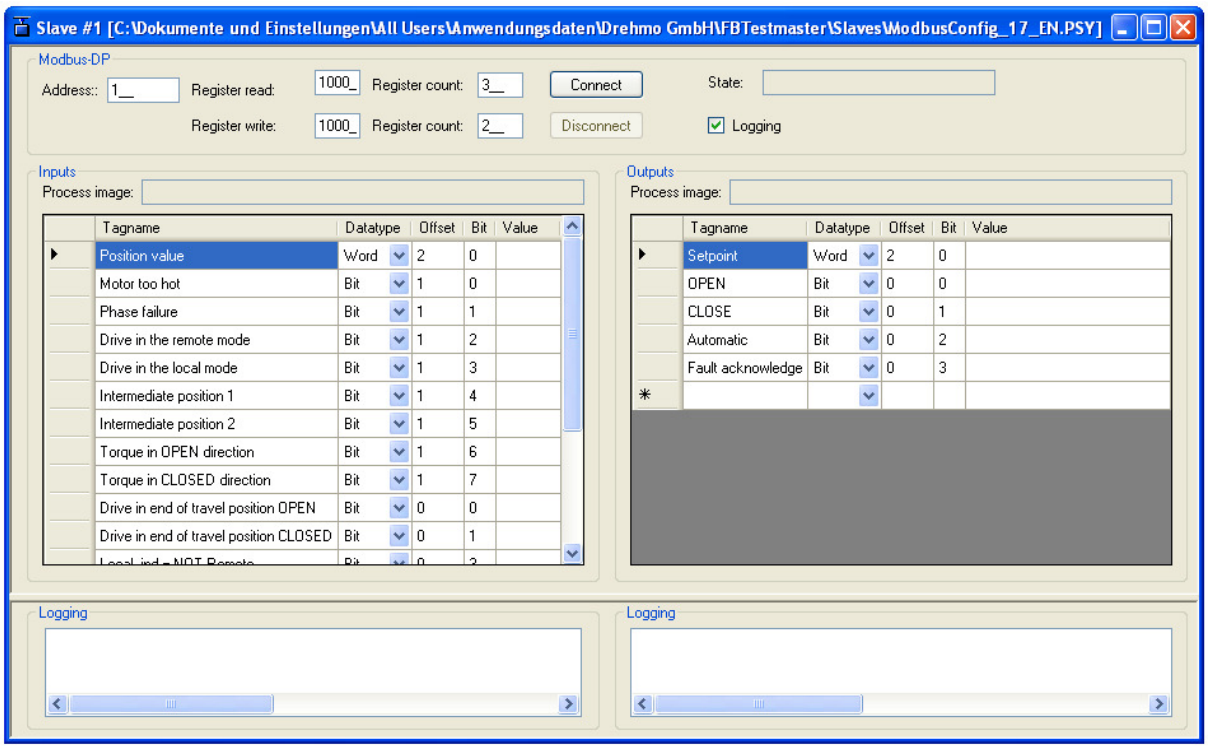
The list will additionally indicate whether the device found is a master station (control unit, e.g. PLC or PC) or a slave (e.g. DREHMO-actuator).
If no device is listed, you might encounter a short circuit on the Profibus or an error with the wiring.
If only the master station is listed, there is a short circuit on the Profibus or the termination is incorrect (the terminators are not powered).

3.4 Slave definition window

3.4.1 Elements of the slave definition window

The slave definition window contains all relevant information of a Profibus or Modbus slave. You can adjust all parameters which are otherwise defined in a GSD-file. Additionally you can combine a range of bits from the process image as a predefined data type.

Note: Some templates for slave definitions are automatically installed by the setup to the target system, e.g. definitions for Matic C and i-matic.



The slave definition window contains the following components:

General:

Connect Starts the acyclic communication with a slave.

Disconnect Stops the acyclic communication with a slave.

Inputs Either open an existing template to display the information received from a DREHMO actuator or use this table to define signals. The signals are defined with their position in the process image using Byte (Offset) and Bit, additional with the length of the information. The length can be set to Bit, Byte, Word (2 Byte), Integer (2 Byte signed), or Real (4 Byte).

Outputs Either use an existing template to display the information sent to a DREHMO actuator or use this table to define signals. The signals are defined with their position in the process image using Byte (Offset) and Bit, additional with the length of the information. The length can be set to Bit, Byte, Word (2 Byte), Integer (2 Byte signed), or Real (4 Byte).

Double-click onto a signal value to change it.

Profibus specifically:

Status Indicates the current connection status.

Blank	The master is not connected with the slave or is still establishing a connection.
NOT_READY_DIAG	The slave is not configured correctly and does not exchange data with the master. However, the extended diagnostics is transmitted.
READY_DIAG	The slave is configured correctly and exchanges data with the master. However, the extended diagnostics is transmitted.
READY	The slave is configured correctly and exchanges data with the master.
NOT_PRESENT	No device with the set address can be found.

Address Address of the DP-slave in the range of 0 to 126. The adjusted address has to comply with the address in the DP-slave and may be only used once in a Profibus line.

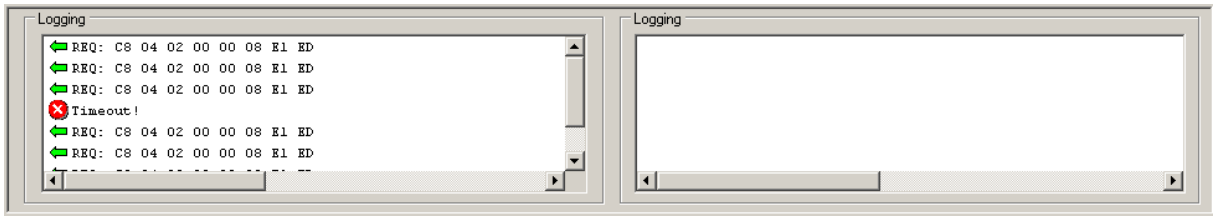
Parameter Ident number of the device. This number is used within the ChkParam telegram during establishing a connection. Refer to the attached list of valid connection parameters for DREHMO actuators.

Configuration The appropriate configuration of the SetConfig telegram. This telegram defines the used process image.

UserPrm User Parameter Data, which the master expects from the slave during establishing a connection.

Modbus specifically:

Status	Current status of the connection. Here is the status of the connection shown Blank: The master is not connected to the slave or it is in connection. CONNECTED: The slave was parameterized correctly and is in data exchange with the master. NOT CONNECTED: No slave can be found at the chosen bus address
Address	Address of the Modbus slave in the range of 0 to 247. The adjusted address has to comply with the address of the slave and may be used only once in a Modbus line.
Read Register	Starting address of the slaves input register.
Register number	Sets the input register count which should be read. An input register corresponds to a data word or 2 bytes.
Register writing	Starting address of the slaves output register.
Register number	Sets the input register count which should be read. An output register corresponds to a data word or 2 Byte
Logging	Activates the log mode. Now all send and received Modbus telegrams are additionally shown in raw data format:



3.4.2 Profibus Slave parameter from DREHMO Slaves

Description	Parameter	Konfiguration	UserPrm
Matic C with Profibus interface	0686	2111	0000000000
Matic C with basic DMC-14 Profibus interface process image PPO01	0C27	97A3	000000
Matic C with line redundant DMC-14 Profibus interface process image PPO01	0C27	97A3	000000
Matic C with Master/Slave redundant DMC-14 Profibus interface process image PPO01	0C26	97A3	000000
i-matic with basic Profibus interface process image PPO01	0825	99A3	000000
i-matic with line redundant Profibus interface process image PPO01	0825	99A3	000000
i-matic with Master/Slave redundant Profibus interface - process image PPO01	0824	99A3	000000
i-matic with basic Profibus interface process image PPO03	0825	97A3	000000
i-matic with line redundant Profibus interface process image PPO03	0825	97A3	000000
i-matic with Master/Slave redundant Profibus interface - process imagePPO03	0824	97A3	000000
i-matic with basic Profibus interface process image PPO05	0825	9EA3	000000
i-matic with line redundant Profibus interface process image PPO05	0825	9EA3	000000
i-matic with Master/Slave redundant Profibus interface - process image PPO05	0824	9EA3	000000