



Fieldbus Gateway FG-300 PROFIBUS

Installation guidelines

English

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Partnumber: FG-300/HW#PB

1 General Notes

Please read this document thoroughly from beginning to end before starting installation to protect users from injury and to prevent misuse or damage to the **FG-300 PROFIBUS** fieldbus gateway.

1.1 Scope of Delivery

The scope of delivery comprises the following parts:

- **FG-300 PROFIBUS** fieldbus gateway
- 24V plug connector
- Installation guidelines (this document)

Please check whether the delivery is complete and free of defects before starting installation.

1.2 Safety Notes

Do not open the housing of the **FG-300 PROFIBUS**. It does not contain any parts that need to be maintained or repaired by the user. In the event of a fault or defect, return the unit to the vendor.

Opening the unit will void the warranty!

1.3 Intended Use

The **FG-300 PROFIBUS** has been designed for use in factory, process and building control. The unit must not be used in explosion hazard areas. The permissible ambient conditions given in the Technical Data must be complied with.

The faultless and safe operation of the product requires proper transport, proper storage and installation, and expert operation and maintenance in accordance with the manual.

2 Installation

2.1 Mounting

The **FG-300 PROFIBUS** is intended for mounting on TS35 DIN carrier rails (EN 50022) installed in control cabinets.

The **FG-300 PROFIBUS** is convection-cooled. It therefore needs to be installed in such a way that the ventilating ducts are at the top and bottom of the unit.

Please ensure a ventilation space of at least 30 mm above and below the **FG-300 PROFIBUS**.

2.2 Electric Connection

A schematic of the front panel of the **FG-300 PROFIBUS** is shown in Fig. 1 below.

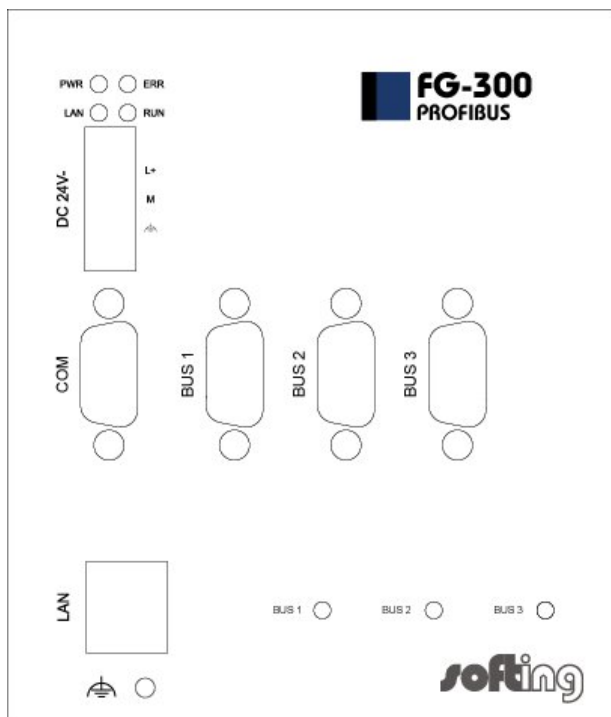


Fig. 1: Front panel of the **FG-300 PROFIBUS**

2.3 Power Supply

The **FG-300 PROFIBUS** is powered by 24 V DC. The power supply plug connector is included in the delivery. The power supply socket connector on the front panel is labeled DC 24V- (see Fig. 1).

The two power supply terminals are labeled L+ and M. L+ must be connected to 24V and M to 0V. The two terminals are provided with an internal reverse-polarity protection. The functional ground terminal is labeled with the ⚡ symbol and must be connected to the protective ground. For use in an environment that is highly subject to electromagnetic interference, an additional ground connection can be provided at the grounding screw below the "LAN" connector.

Proper grounding is prerequisite for compliance with the EMC directives and for ensuring a proper operation.

The power supply is connected to the plug connector via flexible wires with a cross section of 0.75 to 1.5 mm². The ground connection wire must have a cross section of 1.5 mm.

The **FG-300 PROFIBUS** has an internal safety fuse which blows if an overvoltage (of approx. 30V or higher) occurs in the power supply or if a fault occurs in the device. The safety fuse can only be replaced by the device manufacturer.

Important note:

The starting current of the **FG-300 PROFIBUS** may be up to 3A. The power supply must provide this starting current in compliance with the voltage range to ensure a safe startup.

2.4 Ethernet

The Ethernet port has been implemented as a 10Base-T/100Base-TX connection. Using an RJ45 connector, you can connect a twisted pair category 5 cable. The Ethernet port is labeled "LAN".

2.5 COM

The COM port provides an RS-232C serial interface.

At this interface you can configure the **FG-300 PROFIBUS**. To connect the device to the PC, you use a null modem cable (not included in the delivery).

The connection is made using a 9-pin male D-sub connector with the following pin layout:

Pin #	Signal	Description
1	Reserved	Do not connect
2	RXD	Receive Data
3	TXD	Transmit Data
4	Reserved	Do not connect
5	GND	Signal Ground
6	Reserved	Do not connect
7	Reserved	Do not connect
8	Reserved	Do not connect
9	Reserved	Do not connect

Table 1: COM1 pin layout

Important note:

Do not connect anything to the reserved pins.

2.6 PROFIBUS

Depending on the ordered configuration, the **FG-300 PROFIBUS** has up to three PROFIBUS-compliant fieldbus interfaces (in accordance with EN 50170-2). They are labeled "BUS 1", "BUS 2" and "BUS 3". The PROFIBUS interface is electrically isolated up to a voltage of 500V DC.

The connecting element is a 9-pin female D-sub connector with the following pin layout:

Pin #	Signal	Description
1	SHIELD	Housing
2	NC	Not assigned
3	RxD/TxD-P	PROFIBUS signal B/B'
4	/RTS	RTS
5	GND	Ground
6	VCC	Bustermiation power supply (load 10mA max.)
7	NC	Not assigned
8	RxD/TxD-N	PROFIBUS signal A/A'
9	NC	Not assigned

Table 2: PROFIBUS pin layout

2.7 Light-Emitting Diodes (LED)

2.7.1 PWR

The "PWR" LED indicates the power supply status:

This green LED is on when the internal power supply is ensured. If this LED is off, the supply voltage (24 V) is missing or the internal voltage generation is defective. In this case, the unit needs to be returned to the manufacturer for repair.

2.7.2 LAN

The green "LAN" (Local Area Network) LED is on when proper communication (link connection to a hub/switch/NIC) with the Ethernet is possible. It goes off temporarily during transmission.

2.7.3 RUN

The "RUN" LED is on when the device is operational.

2.7.4 ERROR

The "ERROR" LED is off by default.

2.7.5 BUS1, BUS2, BUS3

These green LEDs show the bus activity of the corresponding channel:

- Master: The LED is on as soon as the master has received the token.
- Slave: The LED indicates the status data exchange.

Important note:

The LED may also light up if the bus has not been connected or is defective.

3 **FG-300 PROFIBUS Administration**

3.1 **Built-in Web Server**

Some general information about the device can be queried via the web pages of the built-in web server. This requires a standard web browser on a PC that is connected to the **FG-300 PROFIBUS** via Ethernet. See section 3.3 for configuration of an Ethernet connection between a PC and the **FG-300 PROFIBUS**.

To address the **FG-300 PROFIBUS** in the browser, use its IP address as URL, default: <http://192.168.212.212>.

The home page contains the following links:

- System Status Information
- Diagnostic Information
- Version Information
- GPL Information
- Network-, Device- and RAM Test Configuration
- Firmware Update
- Set Password
- Contact

The information contained in the information pages ” and “Diagnostic Information” is described in chapters 3.2.1 through 3.2.3

The configuration pages allow to modify the IP configuration of the **FG-300 PROFIBUS** (see chapter 3.3).

“Contact” is linked to Softing’s web site and thus not directly related to the **FG-300 PROFIBUS**.

Most web pages are generated dynamically to reflect the current system status. Therefore it may take a short time to build the pages.

3.2.2 Diagnostic Information

3.2.2.1 Test Cases

During start-up of the device, several hardware components of the system are tested. For runtime reasons, the test is divided in several parts. In the first part, which is carried out with each start, the following components are checked:

- Access to RAM
- Checksum test of flash content (firmware)
- PROFIBUS channel test

In addition, all LEDs are briefly switched on during booting for an optical performance test.

The RAM test checks whether the entire RAM memory space can be accessed and whether the data are consistent. During the checksum test, the consistency of the flash memory content is checked. If an error is found during this process, booting cannot be continued. In that case the **FG-300 PROFIBUS** tries to fetch a firmware update from the maintenance server. If the maintenance server is operational and its IP address is stored in the **FG-300 PROFIBUS**, the

FG-300 PROFIBUS downloads the flash memory content from the maintenance server by means of the Bootp/TFTP protocol using the firmware name "fw_fg-300-pb". After a flash memory update, the device configuration data will be lost, but the IP configuration is still valid.

Supplementary RAM tests can be performed by selection of the item 'Enable extended RAM test and reboot' on the Web page 'RAM test configuration' in the 'Configuration' menu. The extended RAM tests cover the following aspects:

- RAM Address Bus
- RAM integrity test

The extended RAM tests will be performed once during the next system restart. Due to the runtime needed to carry out these tests, the system booting time is prolonged.

3.2.2.2 Test Results

If any errors are found during the tests, these will be indicated by the red error LED on the front side of the **FG-300 PROFIBUS** hardware. The LED lights up when the hardware tests are started and is switched off after the tests have been carried out successfully. A flashing error LED indicates that an error occurred but the system can still be booted. In this case, the test result can be queried on the Web pages of the **FG-300 PROFIBUS** via the “Hardware Diagnostics” link, as shown in the following example.

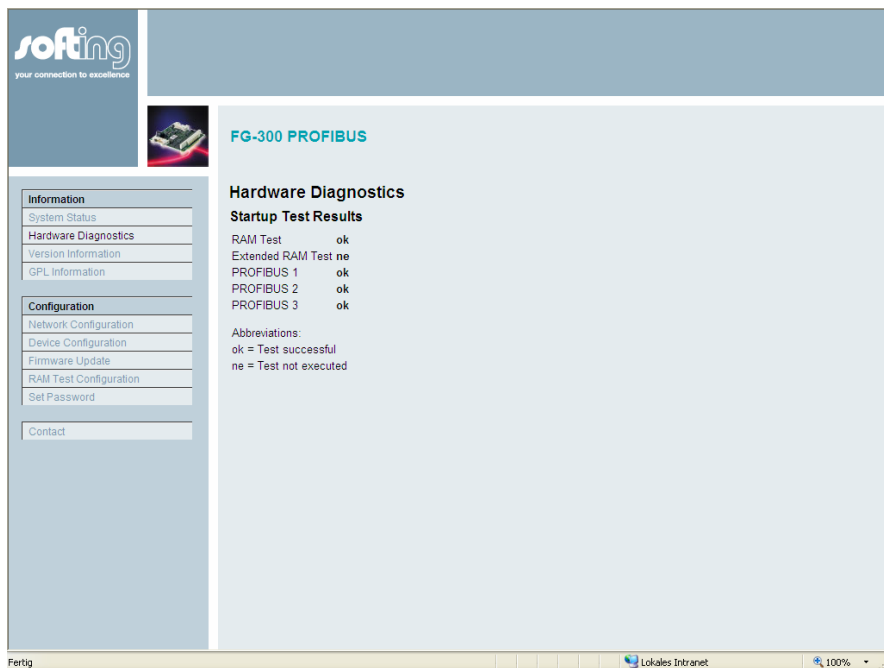


Fig. 3: Hardware Diagnostics Startup Test Results

A severe hardware defect can make system booting impossible. This state is indicated by steady light of the error LED.

3.2.3 Version Information

The **FG-300 PROFIBUS** device consists of a mother board and up to three PROFIBUS PROF1104 boards. All boards as well as the entire device are identified by serial numbers and revisions. Also the software revisions are indicated.

The following figure shows an example of the version information which can be read from the **FG-300 PROFIBUS**.



The screenshot displays the web interface for the FG-300 PROFIBUS device. On the left is a navigation menu with categories: Information, Configuration, and Contact. The main content area is titled 'FG-300 PROFIBUS' and shows the following version information:

Version Information	
Device/System	
Firmware Version	FG-300_PB_V2.02.0.00.release Fri Aug 1 09:37:39 CEST 2008
Serial Number	021200127
Hardware Version	02.00
System Id	FG_300_PB3
Base Module	
Hardware Version	00.16
Serial Number	072904944
PROFIBUS 1	
Serial Number	000901497
Firmware Version	PROF1104 DP/FMS 5.27.0.00.release Jun 30 2004
PROFIBUS 2	
Serial Number	000901560
Firmware Version	PROF1104 DP/FMS 5.27.0.00.release Jun 30 2004
PROFIBUS 3	
Serial Number	001201724
Firmware Version	PROF1104 DP/FMS 5.27.0.00.release Jun 30 2004

The browser's status bar at the bottom shows 'Fertig', 'Lokales Intranet', and '100%' zoom level.

Fig. 4: Version Information

3.3 FG-300 PROFIBUS Configuration

3.3.1 Network Configuration

3.3.1.1 Overview

Although the **FG-300 PROFIBUS** is delivered with a preconfigured IP address (192.168.212.212), it must be assigned an IP address from your LAN address range. Furthermore, subnet mask and gateway IP address must be set accordingly. This information is referred to as 'IP configuration'.

The IP configuration can be changed via Ethernet, the serial port (RS232) or a modem connection by means of a Web Browser (HTTP protocol).

The following table shows the possible configuration functions depending on the type of connection that is used. Those functions will be explained in detail in the following sections.

Type of connection to FG-300 PROFIBUS to be used	Ethernet	Analogue modem	RS-232
Connection establishment	IP directly	dial up	direct connection
Precondition	valid IP configuration	analogue modem	null modem cable
Connection user name	-	FG-300-PB (fixed)	FG-300-PB (fixed)
Connection password	-	FG-300-PB (default)	FG-300-PB (default)
Type of connection protocol	HTTP		
Client Application on PC	Web Browser		
FG-300 PROFIBUS 's IP address	192.168.212.212 (default)		192.168.210.212 (fixed)
Login required	yes		
Login user name	config (fixed)		
Login user password	config (default)		
Supported functions:			
• modification of IP configuration	yes		
• firmware download from a PC	yes		
• modification of password	yes		

Table 3: Configuration functions and interfaces

3.3.1.2 IP Basics

This chapter provides a short introduction to the Internet Protocol (IP) which can be useful in integrating the **FG-300 PROFIBUS** in your Local Area Network (LAN). If you are already familiar with the basics of the Internet Protocol, you may skip this chapter.

IP (Internet Protocol)

The Internet Protocol makes it possible to combine an undefined number of separate networks to an overall network, allowing data exchange between any two network stations in any two subnetworks. The physical characteristics of the networks or of the transmission paths (Ethernet, Token Ring, ISDN, ...) are of no importance. The data will be transferred to the receiver independently of these differences.

IP addresses

Under IP, every network station has a unique Internet address, often called "IP number". This Internet address is a 32-bit value which is written, for better readability, in the form of four decimal numbers (8-bit values) separated by dots (dot notation), e.g. 192.168.1.5. In the future, 128-bit addresses will be used.

The Internet address consists of net ID and host ID, where the net ID is used to identify the network and the host ID to identify the station within a network.

Which part of the IP address belongs to the net ID and which one to the host ID, depends on the size of the network.

For the addressing of normal networks, there are three network classes:

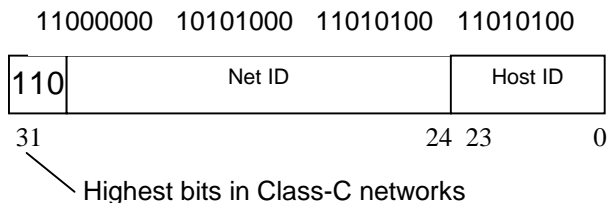
- Class A
- Class B
- Class C

	Address range of the network	Possible number of networks	Possible number of hosts per network
Class A	1.xxx.xxx.xx to 126.xxx.xxx.xxx	127 (2^7)	Approx. 16 million (2^{24})
Class B	128.0.xxx.xxx to 191.255.xxx.xxx	Approx. 16000 (2^{14})	Approx. 65000 (2^{16})
Class C	192.0.0.xxx to 223.255.255.xxx	Approx. 2 million (2^{21})	254 (2^8)

Table 4: Key data of the different network classes

The default IP address setting of the **FG-300 PROFIBUS** corresponds to class C. The first three bytes of the IP address are used to identify the network; the last byte is used for addressing the network station.

IP address [192.168.212.212](#)



Assignment of the host ID to the network station and, consequently, the resulting IP address, can be selected as desired by the network operator (administrator). He must, however, make sure that an IP address is unique throughout the entire network.

Gateway and subnet mask

The net ID indicates whether the receiver to which a connection is to be established, is located in the same network as the transmitter. If this part of the IP address is identical for the transmitter and the receiver, both are located in the same network. If the net IDs are not identical, the receiver is located in a different network.

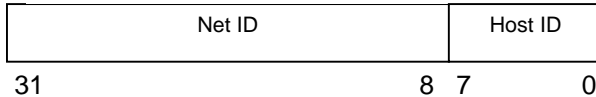
The networks can be connected by gateways/routers.

A network can be divided into subnetworks. The net ID defined by the different network classes is not sufficient for addressing such subnets, however; part of the host ID must be used for addressing the subnetworks. This means that the net ID is enlarged and the host ID is reduced accordingly.

Which part of the IP address is evaluated as a net ID and which one as a host ID, is defined by the subnet mask. Like the IP address, the subnet mask is a 32-bit value represented in dot notation. In binary notation, the part of the subnet mask which corresponds to the net ID is filled with "1" digits; the part corresponding to the host ID is filled with "0" digits.

Subnet mask 255.255.255.0

11111111 11111111 11111111 00000000



With each data packet to be transmitted, the IP driver compares its own IP address with that of the receiver. Those bits of the subnet mask which are filled with 0-digits, are masked off in the IP address.

If the evaluated bits of both IP addresses are identical, both stations are located in the same subnet. If this is not the case, the data packet must be passed to the gateway or router for transfer to the target network.

Gateways or routers are basically simply computers with two network cards. Ethernet data packets received on card A are unpacked by the Ethernet driver, and the IP packet contained in the Ethernet packet is passed to the IP driver. This driver checks whether the target IP address belongs to the subnet connected to card B and the packet can be transferred directly, or whether the IP packet must be passed to another gateway. In this way, a data packet can pass several gateways or routers on its way from one network station to another.

In addition to routers connecting one Ethernet subnet with another one, there are also routers which change the physical medium, e.g. from Ethernet to token ring or ISDN.

Broadcast address

A broadcast address is used to send a message to all stations in a subnetwork. It is recommended to use the highest station address in a subnetwork as broadcast address (i. e. the broadcast address is built by setting all bits of the host ID to "1") . But since the **FG-300 PROFIBUS** does not use the broadcast address, you may omit it.

Host name

An internet-connected machine may be addressed in either of two ways: by its IP address or by its host name. The host name is a symbolic name (string), which can be memorized more easily than an IP address. A Domain Name Service (DNS) is needed to translate a host name to the related IP address.

3.3.1.3 Connecting PC and FG-300 PROFIBUS over Ethernet

The **FG-300 PROFIBUS** is delivered with the preconfigured IP address 192.168.212.212.

Connect the **FG-300 PROFIBUS** to your computer. For a direct connection, a cross-linking cable must be used. This is not necessary if a hub or switch is interconnected.

Note:

Before connecting the **FG-300 PROFIBUS** to your LAN network, make sure that its IP address is not used by another network station.

In the following, establishment of a TCP/IP connection to your **FG-300 PROFIBUS** will be explained. Such a connection makes it possible to change the preconfigured IP address of the **FG-300 PROFIBUS**. No auxiliaries, such as serial cables, are necessary with this method.

1. You will need the following information which can be obtained from your network administrator:
 - IP address for the **FG-300 PROFIBUS**
 - Subnet mask
 - IP address of the default gateway (if available)
 - IP address of maintenance server (if available)

Note:

It is not necessary to configure a default gateway if the computer and the **FG-300 PROFIBUS** are connected to the same subnet.

The maintenance IP address is required to download the **FG-300 PROFIBUS** firmware from a maintenance server. The maintenance server is a TFTP server (Trivial File Transfer Protocol) that contains an image of the flash memory content of the **FG-300 PROFIBUS** (see also section 3.2.2.1). It is also possible to download a new firmware from your computer by means of a browser. In that case it is not necessary to install a maintenance server and to specify its address.

2. Configure your computer in such a way that you have access to the network 192.168.212.0. For this purpose, you may have to assign your host a second IP address (e.g. IP address = 192.168.212.211, net mask = 255.255.255.0, broadcast = 192.168.212.255).

Note:

How to assign a new IP address is described below. You must have administrator rights.

Assignment of a second (local) IP address under Windows XP / 2000

- a. Select "Start" – "Settings" – "Control Panel". Double-click the icon "Network and Dial-up Connections".
- b. Select the LAN connection by double-clicking.
- c. Click on "Properties".
- d. Select the entry "Internet Protocol (TCP/IP)" and click on "Properties".
- e. In the dialog "Internet Protocol (TCP/IP) Properties", the regular (first) IP address, the subnet mask and the standard gateway address are shown. To add a second IP address click the "Advanced..." button.
- f. Click the "Add" button in the "IP Addresses" box.
- g. Enter the IP address and the subnet mask.
- h. Click on "Add"; then confirm all windows with OK till you get back to the window "Network and Dial-up Connection".

Assignment of a second (local) IP address under Windows NT

- a. If you have a Windows NT computer, you can assign a second IP address to the computer in the following manner:
 - b. Select "Start" – "Settings" – "Control Panel" and double-click the "Network" icon.
 - c. Select "TCP/IP Protocol" and "Properties".
 - d. The regular (first) IP address is indicated. To add a second IP address, click the "Advanced..." button.
 - e. Click the "Add" button in the field "IP Addresses".
 - f. Enter an IP address (e.g. [192.168.212.211](#)) and the corresponding sub net mask (255.255.255.0).
 - g. Click the 'Add' button and confirm your entry with 'OK' until the 'Network' menu reappears.
 - h. To accept the entries, the computer must be rebooted.
3. Try to ping the **FG-300 PROFIBUS**. Open a command prompt and enter the following command: 'ping [192.168.212.212](#)'. The **FG-300 PROFIBUS** must respond.
If it does not respond, check whether the **FG-300 PROFIBUS** is correctly connected to the LAN and whether it is switched on. Check also whether your computer is correctly connected to the LAN by a cable. Check whether the computer has been configured with a valid IP address from the subnet 192.168.212.0. Try to ping the second (local) IP address of your computer (in the example, 192.168.212.211). If the local computer does not respond, the second IP address has not been initialized correctly.
4. If you have access to the **FG-300 PROFIBUS** from your computer, you can change its network configuration with a Web browser.

3.3.1.4 Connecting PC and FG-300 PROFIBUS with a serial cable

3.3.1.4.1 Installation

Connect your personal computer and the **FG-300 PROFIBUS** with a serial cable (null modem). The RS-232C connector "COM" is used to connect the **FG-300 PROFIBUS**. The PC is connected by any unassigned COM port.

3.3.1.4.2 Setting up the personal computer

All **FG-300 PROFIBUS** communication settings can be commissioned via the RS-232C connector and a web browser (Internet Explorer, Firefox, etc.). The IP address to be contacted via the RS-232C connector is defined as **192.168.210.212** and cannot be changed.

Installing the standard modem

In order to be able to connect to the **FG-300 PROFIBUS** via the RS-232C connector, a new standard modem has to be installed.

The following are sample instructions for Windows XP / 2000:

1. Double-click the **"My Computer"** icon to open the appropriate window.
2. Double-click the **"Control Panel"** icon to open the appropriate window.
3. Double-click the **"Phone and Modem Options"** icon to open the appropriate window.
4. Select the **"Modems"** tab and click the "Add..." button to add a new modem.
5. Activate the checkbox **"Don't detect my modem; I will select it from a list."** and click **"Next >"** to confirm.
6. Select the following from the picklists **"Manufacturers: (Standard Modem Types)"** and **"Models: Communications cable between two computers"** and click **"Next >"** to confirm.
7. Select the desired COM port and click **"Next >"** to confirm.
8. Click **"Finish"** to confirm the modem installation.
9. Double-click the **"Phone and Modem Options"** icon to open the appropriate window.
10. Select the newly installed modem on the **"Modems"-Tab "Communications cable between two computers"** and click the **"Properties"** button.
11. Select the **"Advanced"** tab and click the **"Change Default Preferences"** button.
12. Verify the **"Hardware Settings"** on the **"Advanced"** tab to be 8 data bits, no parity and 1 stop bit.
13. Change to the **"General"** tab. Change the **"Port speed"** to **"115200"** and the **"Flow control"** to **"None"**. Click **"OK"** to confirm your settings.
14. Finally click **"OK"** to confirm your settings.

Creating a direct networking connection

Now you must set up a direct networking connection.

The following are sample instructions for Windows XP / 2000:

1. Double-click the **"My Computer"** icon to open the appropriate window.
2. Double-click the **"Control Panel"** icon to open the appropriate window. Double-click the **"Network Connections"** icon.
3. Double-click the **"Create a new connection"** icon. Click **"Next >"** to confirm.
4. Select the **"Set up an advanced connection"** option and click **"Next >"** to confirm.
5. Select the **"Connect directly to another computer"** option and click **"Next >"** to confirm.
6. Select the **"Guest"** option to choose the role for your PC and click **"Next >"** to confirm.
7. Enter the connection name in the **"Connection name:"** field. You can enter any name you choose (e.g. "FG-300 PROFIBUS Service Connection"). Click **"Next >"** to confirm the name entered.
8. Select the newly set up device **"Communications cable between two computers"** from the dropdown list and click **"Next >"** to confirm.
9. In the following window, select **"Anyone's use"** to make the connection available for any user. Then click **"Next >"** to confirm.
10. Click **"Finish"** to confirm.
11. Select the new direct connection (e.g. "FG-300 PROFIBUS Service Connection"). Using the right mouse button click **"Properties"**. Then select **"Communications cable between two computers"** from the dropdown list and click the **"Configure..."** button.
12. Select **"115200"** as **"Maximum speed (bps)"**.
13. De-activate all **"Hardware features"** checkboxes and click **"OK"** to confirm the properties.

The new direct networking connection is now set up.

Note!

The newly created **"Direct"** connection has been saved and can be used for any later connection. It can be found in the **"Network Connections"** window.

3.3.1.4.3 Start the connection

1. Switch power off / on of the **FG-300 PROFIBUS**.
2. Double-click the "**FG-300 PROFIBUS Service Connection**" icon to open the appropriate window.
3. In the following "**FG-300 PROFIBUS Service Connection**" window enter:
 - the user name "**FG-300-PB**"
(fixed entry in the **FG-300 PROFIBUS**, cannot be altered!)
 - the password "**FG-300-PB**"
(factory default stored in the **FG-300 PROFIBUS**, can be altered!)
4. Click "**Connect**" to establish the connection to the **FG-300 PROFIBUS**.
5. When the window is closed the connection is successfully established.
6. Start the web browser once the connection is made. Enter the IP address "**192.168.210.212**". This IP address for the RS-232C connection is fixed permanently in the **FG-300 PROFIBUS** and cannot be changed!

If there is no connection, check the connection to the FG-300 PROFIBUS as follows:

1. Open a command prompt "**Start → Run → cmd** "
2. Enter "**ping 192.168.210.212**".
Do you get the answer 192.168.210.212 Bytes=32... ?
 - Yes. The connection is OK. Check your browser settings (If a proxy server is used try to bypass the IP address 192.168.210.212).
 - No. There is no connection to the **FG-300 PROFIBUS**.

3.3.1.4.4 Working with the web browser

The user interface is displayed in the web browser and the **FG-300 PROFIBUS** can be commissioned.



3.3.1.5 Establishing an analogue modem connection

3.3.1.5.1 Installation

To be able to configure the **FG-300 PROFIBUS**, there must be a telephone connection between your personal computer and the **FG-300 PROFIBUS**. For this, you require a commercially available analogue modem and 2 analogue telephone connections, one for your analogue modem and one for the **FG-300 PROFIBUS**'s modem. These connections can also be internal ports of a telephone system.

Setting up the personal computer

All **FG-300 PROFIBUS** communication settings can be commissioned via an analogue modem and a web browser (Internet Explorer, Firefox, etc.). The factory settings of the IP address to be contacted via the analogue modem is (IP = **192.168.212.212**) and can be changed.

Installing an analogue modem

In order to be able to connect to **FG-300 PROFIBUS** via an analogue modem, an analogue modem has to be installed.

The following are sample instructions for Windows XP/2000 to install a Softing modem "FG-MOD ANALOG" (the modem driver is part of the "PROFIBUS Drivers and API" setup, available from Softing's website. This setup should be installed prior to the following instructions):

1. Double-click the "**My Computer**" icon to open the appropriate window.
2. Double-click the "**Control Panel**" icon to open the appropriate window.
3. Double-click the "**Phone and Modem Options**" icon to open the appropriate window.
4. Select the "**Modems**" tab and click the "Add..." button to add a new modem.
5. Activate the checkbox "**Don't detect my modem; I will select it from a list.**" and click "**Next >**" to confirm.
6. Select the following from the picklist "**Manufacturers: Softing AG**" and "**Models: FG-MOD ANALOG V.92**" and click "**Next >**" to confirm.
7. Select the desired COM port of your PC and click "**Next >**" to confirm.
8. Click "**Finish**" to confirm the modem installation.
9. Double-click the "**Phone and Modem Options**" icon to open the appropriate window.
10. Select the newly installed modem on the "**Modems**"-Tab "**FG-MOD ANALOG V.92**" and click the "**Properties**" button.
11. Select the "**Advanced**" tab and click the "**Change Default Preferences**" button.
12. Check the "**Hardware Settings**" on the "**Advanced**" tab to be 8 data bits, no parity and 1 stop bit.
13. Change to the "**General**" tab. Change the "**Flow control**" to "**None**". Click "**OK**" to confirm your settings.

14. Finally click **"OK"** to confirm your settings.

Creating a dial-up networking connection

Now you have to set up a dial-up networking connection.

The following are sample instructions for Windows XP/2000:

1. Double-click the **"My Computer"** icon to open the appropriate window.
2. Double-click the **"Control Panel"** icon to open the appropriate window. Double-click the **"Network Connections"** icon.
3. Double-click the **"Create a new connection"** icon. Click **"Next >"** to confirm.
4. Select the **"Connect to the Internet"** option and click **"Next >"** to confirm.
5. Select the **"I want to set up my Internet connection manually..."** checkbox and click **"Next >"** to confirm.
6. Select the **"Connect using a dial-up modem"** option and click **"Next >"** to confirm.
7. Select the analogue modem to be used and click **"Next >"** to confirm your choice.
8. Enter the connection name in the **"ISP Name"** field. You can enter any name you choose (e.g. "FG-300 PROFIBUS modem connection"). Click **"Next >"** to confirm the name entered.
9. In the following field, specify the telephone number of the **FG-300 PROFIBUS's** local modem.
Please also enter the exchange number if it is required.
The following example shows the meaning of every digit of the number **"00044161xxxxx"**:
 - Position 1 (0 = exchange)
 - Positions 2...5 (0044 = country code, here for UK)
 - Positions 6...8 (161 = area code, here for Manchester)
 - Position 9... (xxxxxx = **FG-300 PROFIBUS** telephone number)
10. Click **"Next >"** to confirm your entries.
11. In the following window, select **"Anyone's use"** to make the connection available for any user. Then click **"Next >"** to confirm.
12. Enter:
 - the user name **"FG-300-PB"**
(fixed entry in the **FG-300 PROFIBUS**, cannot be altered!)
 - the password **"FG-300-PB"**
(factory default stored in the **FG-300 PROFIBUS**, can be altered!)and click **"Next >"** to confirm.
13. Finally click **"Finish"** to complete the new dial-up networking connection.

The newly established dial-up connection has been saved and can be used for any later connection. It can be found in the **"Network and Dial-up Connection"** window.

3.3.1.5.2 Start the connection

1. Double-click the "**FG-300 PROFIBUS modem connection**" icon to open the appropriate window.
2. Click "**Dial**" to confirm the entries.
3. When the window is closed the connection is successfully established.
4. Start the web browser once the connection is made and enter the IP address of the **FG-300 PROFIBUS**. The factory default for the IP address of the analogue modem version of the **FG-300 PROFIBUS** is: "**http://192.168.212.212**". This IP address can be altered as required.

If there is no connection, check the connection to the as follows:

1. Open a command prompt "**Start → Run → cmd** "
2. Enter "**ping 192.168.212.212**".
Do you get the answer 192.168.212.212 Bytes=32... ?
 - Yes. The connection is OK. Check your browser settings (If a proxy server is used try to bypass the IP address 192.168.212.212).
 - No. There is no connection to the **FG-300 PROFIBUS**.

3.3.1.5.3 Working with the web browser

The user interface is displayed in the web browser and the **FG-300 PROFIBUS** can be commissioned.



3.3.1.6 Web based Configuration and Firmware Update

After an IP connection between PC and **FG-300 PROFIBUS** has been set up as described in the previous sections, you may access the **FG-300 PROFIBUS** from your PC by means of a Web Browser (e. g. Microsoft Internet Explorer).

Start your browser with the URL <http://192.168.212.212> (factory default for Ethernet and modem connection), <http://192.168.210.212> (fixed for direct connection) or the currently assigned IP address of the **FG-300 PROFIBUS** respectively. The page "System Status" will be displayed. The menu bar offers four information pages, five configuration pages and the contact page.

The five configuration pages offer the following functions

- Network Configuration
- Device Configuration
- Firmware Update
- RAM Test Configuration
- Set Password

All configuration pages require a login name and a password to execute the functions. The login name is 'config'. The password is 'config' by default, but may be changed.

Network Configuration / Modem Configuration

The **FG-300 PROFIBUS** is shipped with the following default IP configuration:

Login:	config
Password:	config
Host Name:	FG_300_PB
IP Address:	192.168.212.212
Subnet Mask:	255.255.255.0
Maintenance IP Address:	192.168.212.231

You may change the IP configuration according to your needs.

IP address and subnet mask must be present in any case.

You may leave the host name empty. It is reserved for future use and has no meaning in the current release.

It is not necessary to configure a default gateway, if the computer and the **FG-300 PROFIBUS** device are connected to the same subnet.

The maintenance IP address is required to download the **FG-300 PROFIBUS** firmware from a maintenance server. The maintenance server is a TFTP server (Tiny File Transfer Protocol) that contains an image of the flash memory content of the **FG-300 PROFIBUS**. It is also possible to download a new firmware from your PC by means of a browser (as described below). In that case it is not necessary to install a maintenance server and to specify its address.

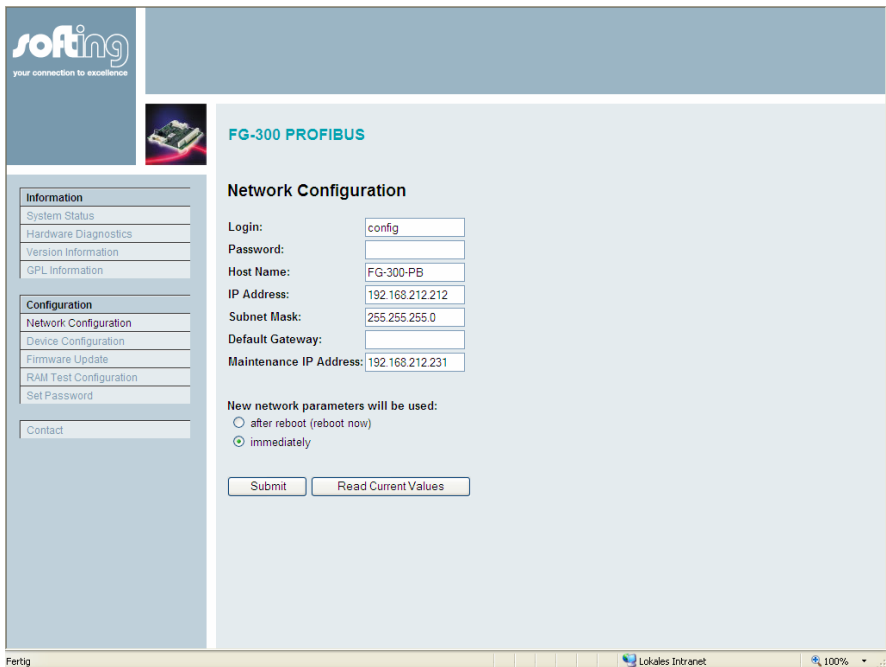


Fig. 5: Network / Modem Configuration

When the entries are complete, click the 'Submit' button. The input values will be checked for consistency.

**Note:**

If you change the IP address of the **FG-300 PROFIBUS**, the IP connection between PC and **FG-300 PROFIBUS** will be lost. You have to use the new IP address to reestablish web access to the **FG-300 PROFIBUS**.

Caution:

If an inconsistent network configuration is used, it may be impossible to connect to the **FG-300 PROFIBUS** again.

Device Configuration

Each PROFIBUS channel (PROFIBUS 1, PROFIBUS 2 and PROFIBUS 3) can operate either as DP/FMS Master or as DP Slave device.

To change the device configuration select the desired operating mode of a PROFIBUS channel and click the 'Submit' button. The successful completion of the change process is indicated by the message 'Success' in the browser window.

Firmware Update

Clicking the 'Select' button opens a file selector box to select the firmware file to be downloaded. You may choose to reset the password to factory defaults. The IP configuration will not be changed.

Click "Download Firmware and Reboot" to start the download process. Firmware download and flash memory update take between one and two minutes. The successful completion of the update process is indicated by the message 'Success' in the browser window.

RAM Test Configuration

This page allows for enabling the extended RAM test (see 'Power-on Self Tests' in section 'Diagnostic Information'). The **FG-300 PROFIBUS** will be rebooted and the extended RAM test will be performed once during that boot sequence. After that, the extended RAM test is disabled again.

Set Password

This page allows for changing the password. You have to enter the current password first and then twice the new password.

4 Technical Data

The following summary provides you with the most important technical data:

- Supply voltage: +24V DC (direct current)
- Supply voltage tolerance: $\pm 10\%$ (incl. ripple)
- Typical current consumption during operation: 0.6A (depending on operating mode)
- Starting current: 3A
- Dimensions (W x H x D): 111 x 135 x 111 (in mm)
- Mounting: TS35 DIN carrier rail (EN 50022)
- Weight (approx.): 0.9 kg
- Protection class: III
- Degree of protection: IP 20
- Degree of contamination: 1
- Ambient temperature during operation: 0°C to 55°C
- Ambient temperature for storage: -20°C to 70°C
- Relative air humidity: max. 90% at +25°C (non-condensing)
- Mechanical resistance: Vibration (EN 60068-2-6)
10 $\leq f \leq$ 57 Hz: 0.075 mm
57 $\leq f \leq$ 150 Hz: 1.0 g
Shock (EN 60068-2-27) 15 g, 11 ms

5 CE Notice

This device complies with the requirements of the EC Directives 89/336/EEC " Electromagnetic Compatibility " (EMC directive).

- Emission: EN 61000-6-2:2001 Generic Emission Standard (industrial environments)
EN 55022:1998 Class A (ITE Product Standard)
EN 55011:1998 Group 1 Class A (ISM Product Standard)
- Immunity: EN 61000-6-2:2001 Generic Immunity Standard (industrial environments)

A Declaration of Conformity in compliance with the above standards has been made and can be inspected at Softing AG on request.



NOTE:

- For compliance with the legal EMC requirements, the other components (AC adapter, PROFIBUS stations, etc.) must also meet these requirements.
- To meet the EMC conditions, the device must be installed and connected in accordance with the Installation Instructions.

Warning!

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC

Note:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.