Special Documentation
S700

Ethernet Interface Converter

Endress+Hauser
People for Process Automation

Described product
Product name: S700 Ethernet Interface Converter

Manufacturer
Endress+Hauser SICK GmbH+Co. KG
Bergener Ring 27
01458 Ottendorf-Okrilla
Germany

Legal information

Original document
This document is an original document of Endress+Hauser SICK GmbH+Co. KG.

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Contents

1 About this document

This document describes handling the interface converter for control of the S700 via Ethernet.

1.1 Additional documentation / information

This document is a supplement to the Operating Instructions of the S700 product family.

These documents are available for download at ***www.endress.com/s700***.

Furthermore, the Operating Instructions of the following component apply:

Component	Manufacturer
FL COMSERVER UNI 232/422/485	Phoenix Contact

2 Safety instructions

- This document is only complete in conjunction with the Operating Instructions of the corresponding analyzer. Read and observe the safety instructions and warnings contained therein.
- Do not put the device into operation until this document and the Operating I)nstructions have been read and understood. Contact Endress+Hauser customer service if you have any questions.
- The standards and directives of the Declaration of Conformity used are specified with the respective device.
- Keep this document together with the Operating Instructions for reference and pass it on to a new owner.

2.1 Intended use

The interface converter enables the use of Modbus TCP and remote control via MARC2000.

2.2 Qualification of the user

The device may only be operated by authorized persons who, based on their training on, and knowledge of the specific device, as well as knowledge of the relevant regulations can assess the tasks given and recognize the hazards involved.

3 Product description

Two application cases can be realized using the “Interface converter Ethernet” option.

3.1 Application case 1 - Virtual serial interface

In this application case, the interface converter provides the serial interface of the S700 available to remote PCs via the network. An additional program which can be downloaded from PhoenixContact is required for use.

Once the connection has been established, the virtual serial port of the accessing PC can be used for the following tasks:

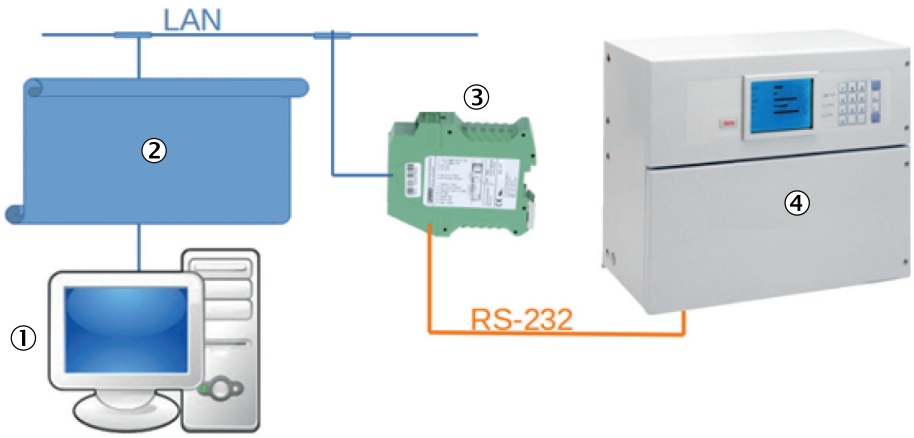
- Remote control of the device via Endress+Hauser “MARC2000” software
- After activating the Modbus ID in the S700: Communication with the device via Modbus RTU

With an existing Meeting Point Router (MPR) from Endress+Hauser, remote maintenance by Support is also possible without setting up a virtual port.

Functional principle

A COM port redirector driver is installed on the PC, which provides a virtual COM port. The driver connects to the IP of the FL-COM server via the network connection when the virtual COM port is opened and sends the serial data to the FL-COM server via the network. The FL-COM Server “translates” the data received back to serial RS232 format and then uses the this serial connection to communicate with the S700.

The Figure below shows the setup with description.



1 PC with LAN connection
2 Virtual Com port (driver)
3 FL-COM-Server
4 S700 (Figure may differ)

Fig. 1: Application case - Virtual serial interface

3.2 Application case 2 - Modbus TCP gateway

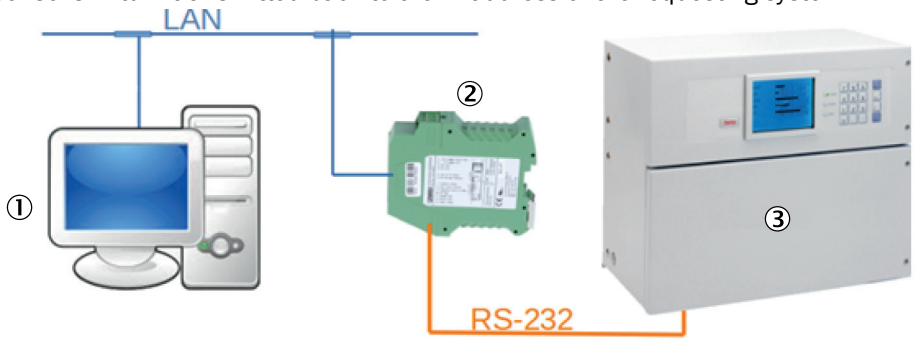
In this application case, the interface converter is used to translate the Modbus RTU (serial) protocol to Modbus TCP Client (Ethernet) (gateway). This makes the S700 Modbus accessible for higher-level systems via Ethernet. In contrast to serial communication, it is also possible for several systems to access each other simultaneously.

The following tasks can be implemented:

- Integration of the S700 in Modbus TCP communication networks

Functional principle

The interface converter is operated in “Modbus/TCP” operating mode. Port 502 is opened at the set IP address of the interface converter and the interface converter is then available as Modbus TCP server. The content of incoming Modbus TCP requests is extracted and the message forwarded to the device whose ID is contained in the telegram. The device's response is in turn transmitted back to the IP address of the requesting system.



1 PC with LAN connection
2 FL-COM-Server
3 S700 (Figure may differ)

Fig. 2: Application case - Modbus TCP gateway

4 Usage

4.1 Preparations

Additional preparation for housing variants S710 / S711

1. Mount the COM server on the top-hat rail.
2. Connect the 24 V power supply to the terminal.
3. Connect the SIDOR/S700 to the serial interface with the standard cable (Part No.: 2135520).

Preparations for all housing variants

4. Connect the converter with Ethernet cable directly to a PC for configuration.

4.2 Change the IP address

1. Change the IP address on the PC to 192.168.0.100.
2. Open the web browser to access the web interface and enter the IP address of the FL-COM-Server (Standard: 192.168.0.254).
3. Call up menu item “General configuration”-”IP”.
4. Log in with password “private”.
5. Change the setting according to the internal specifications.

To prevent communication problems, it is recommended to assign a static IP address.

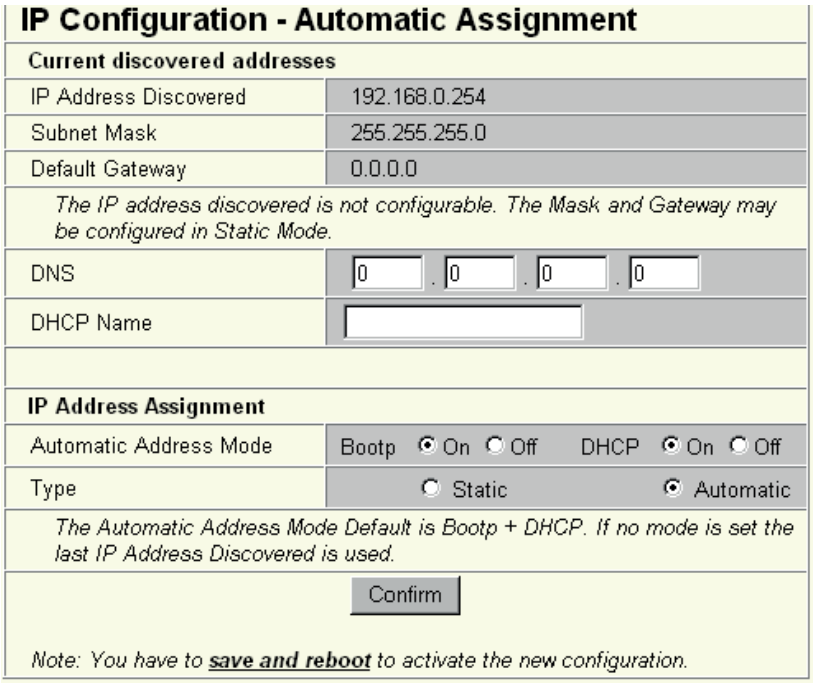


Fig. 3: IP Configuration - Automatic assignment

The menu shown displays the current IP parameters and addressing mechanism. To change the IP parameters via the web based management, the “Static” selection must be activated.

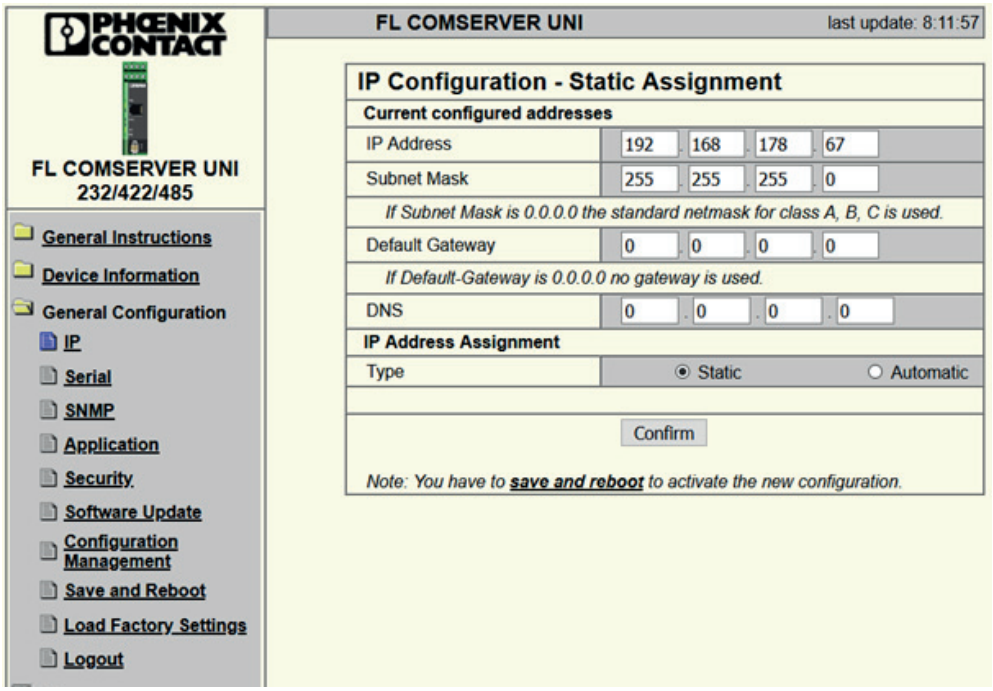


Fig. 4: IP Configuration - Static Assignment

4.3 Change the password

1. Navigate to “General Configuration” - “Security”
2. Specify the current password to then assign a new password. The password for write access is “private” on delivery.

The password must be between four and twelve characters long.

The password is transmitted over the network without encryption.

If the password is not known, an emergency access via the serial interface is available. With the help of e.g. Hyperterminal, the device can be reset to the delivery state.

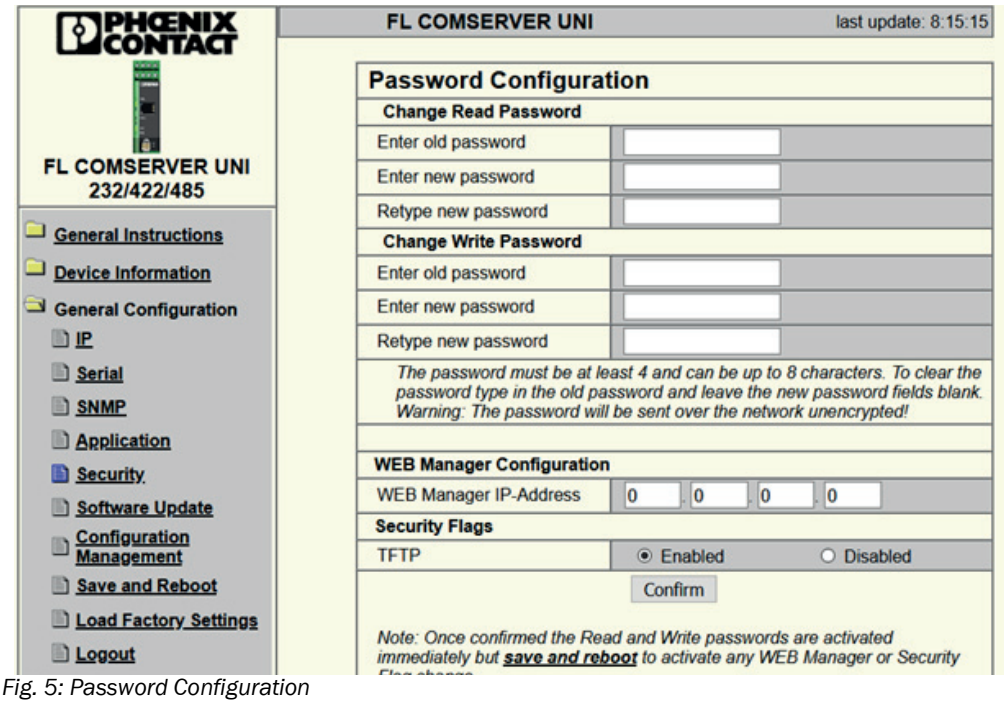


Fig. 5: Password Configuration

4.4 Settings for Application case 1 - Virtual serial interface

4.4.1 Setting

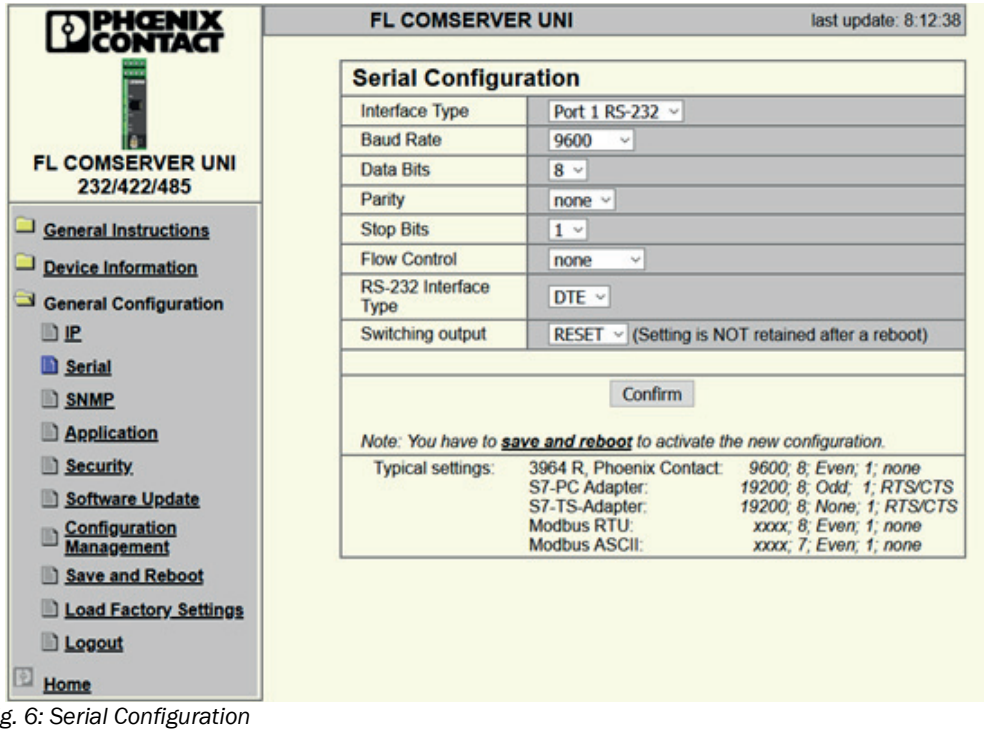


Fig. 6: Serial Configuration

1. Navigate to “General Configuration” - “Serial”
2. Set the serial interface as shown in the Figure.

3. Confirm with “Confirm”.

The configuration of the serial parameters must correspond to the configuration set in the S700.

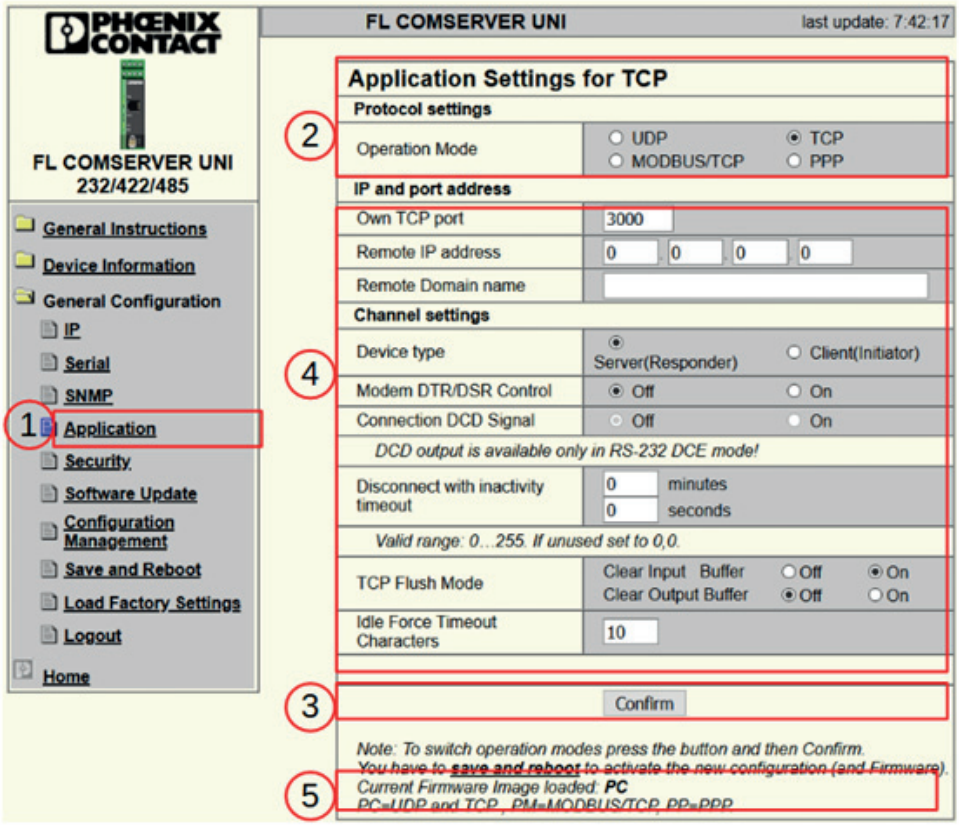


Fig. 7: Application Settings for TCP

4. Navigate to “General Configuration” - “Application” (1).
5. Under “Protocol settings for TCP” (2), change the Operation Mode to TCP.
6. Confirm with “Confirm” (3).

The web interface is created dynamically depending on the Operation Mode. Therefore, it may be necessary to activate “Save” and “Reboot” (see Fig. 8) after changing the Operation Mode, so that the menu is displayed in (4).

7. After the restart, the corresponding operating mode “PC” for TCP is displayed in the lower field of the configuration (5).

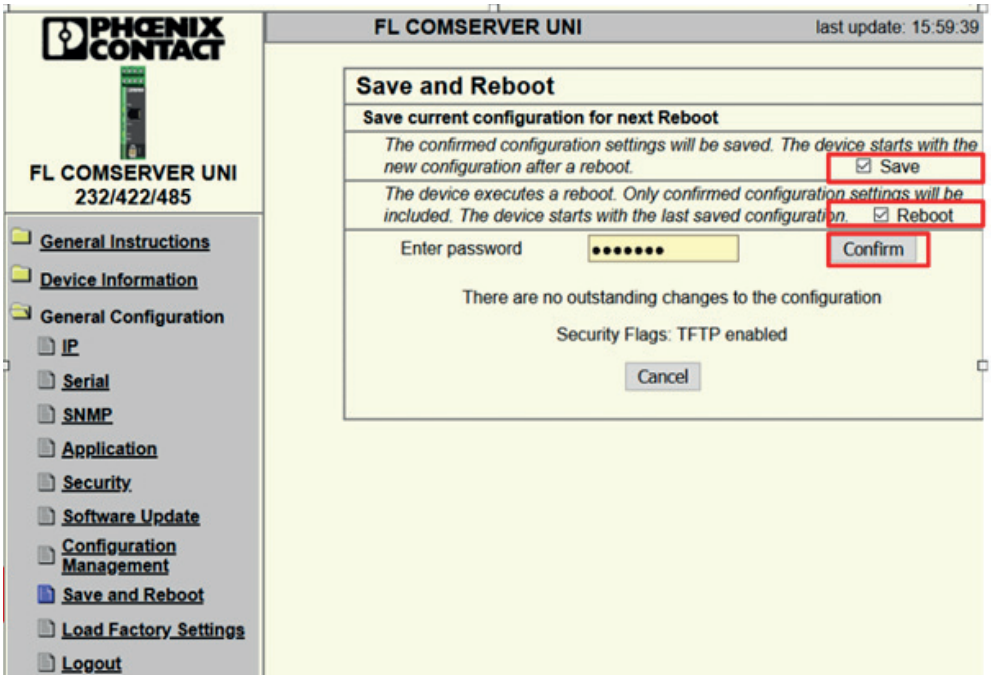


Fig. 8: Save and Reboot

8. After complete configuration: Permanently save and activate the settings with the “Save and Reboot” routine. Enter the password to confirm the entry.

4.4.2 Set up the COM Port

1. Download FL-COM-Port Redirector 1.50 from PhoenixContact and install it with administrator rights.

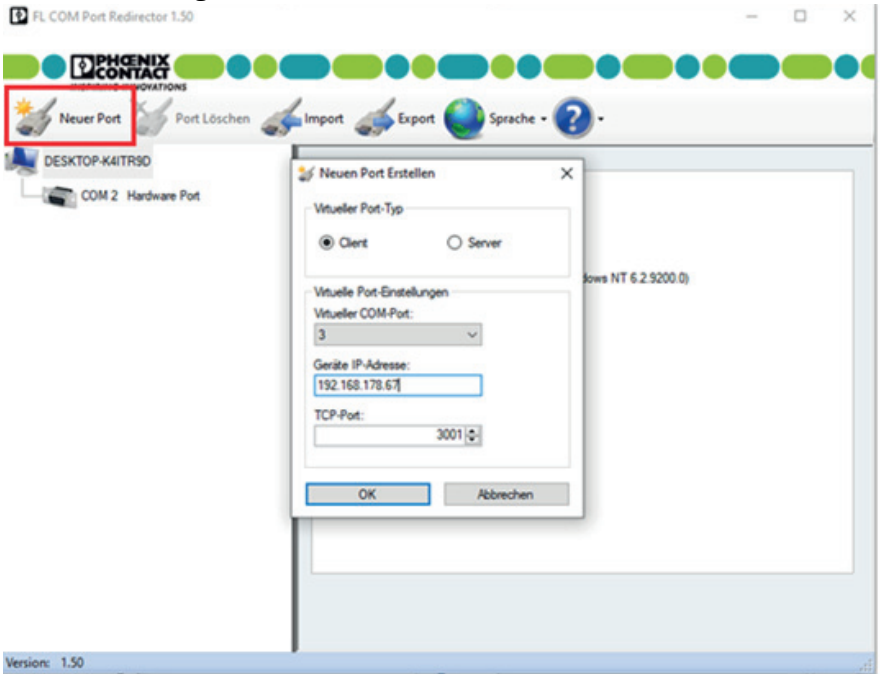


Fig. 9: Creating the virtual *COM-Port*

2. After starting the FL COM-Port Redirector 1.50, create a new virtual COM-Port.
3. Set the mode to “Client” (see Fig. 9).

4. Select a free port number (for remote control with MARC2000, the port number must be in the range 1-6).
5. Enter the IP of the FL-COM-Server under “Device IP address”.
6. Leave the TCP port at 3001.

4.4.3 Set up the remote control with MARC2000

1. Download MARC2000 from ***www.endress.com/downloads*** and install.
2. Start MARC2000.
3. Navigate to “Options” - “Interface Parameters”
4. Set the “COM-port” defined in Section “Set up the COM Port”.

Fig. 10: Interface parameters

5. Navigate to “Run” - “PC Control”.
6. Create a connection.

» Content is displayed in the black area.

7. The analyzer can now be operated via the virtual keypad.

Fig. 11: MARC2000 configuration

4.5 Settings for Application case 2 - Modbus Gateway

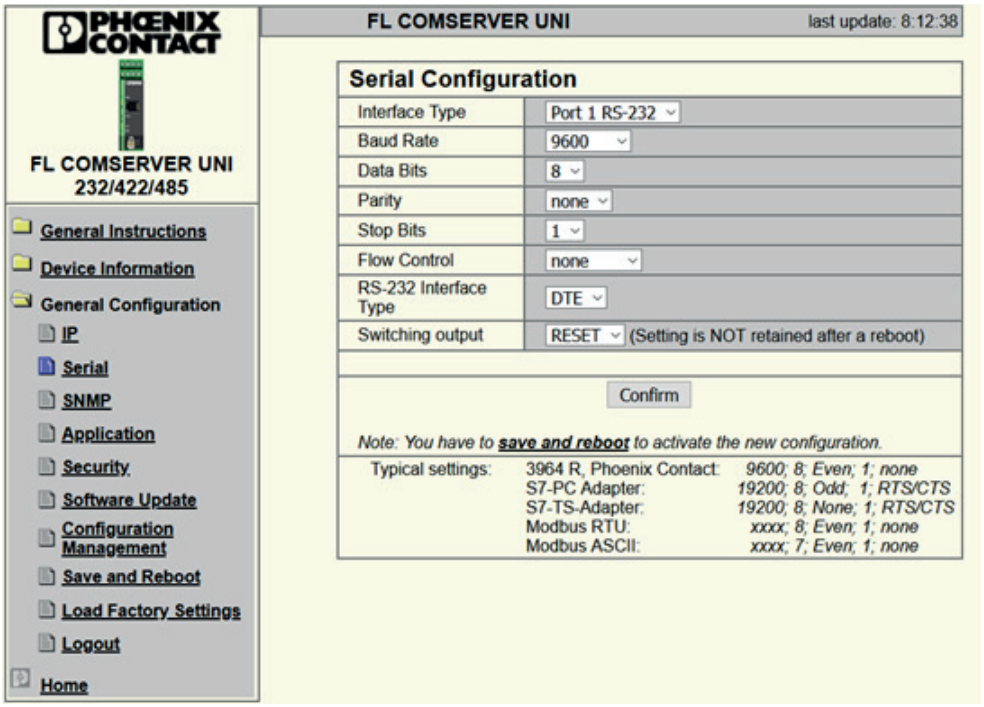


Fig. 12: Serial Configuration

1. Navigate to “General Configuration” - “Serial”
2. Set the serial interface as shown in the Figure.
3. Confirm with “Confirm”.

> The configuration of the serial parameters must correspond to the configuration set in the S700.

4. Navigate to “General Configuration” - “Application”
5. Under “Protocol settings for TCP”, change the Operation Mode to “MODBUS/TCP”.
6. Confirm with “Confirm”.

> The web interface is created dynamically depending on the Operation Mode. Therefore, it may be necessary to activate “Save” and “Reboot” (see Fig. 8) after changing the Operation Mode so that the menus are displayed.

7. After the restart, the corresponding operating mode “PM” for “MODBUS/TCP” is displayed in the lower field of the configuration.
8. Under “Channel Settings” - “Device Type”, select the option “Slave”.
9. Under “Protocol”, select the “RTU” option.
10. Under “Slave Remote TCP”, enter 502.
11. Confirm with “Confirm”.
12. Use the link to switch to the “Save and Reboot” menu.
13. Confirm by entering the password and pressing “Confirm”.
14. After the restart, the device can be accessed under the selected IP address on Port 502 for Modbus TCP requests.

> The “ID” in the Modbus TCP request must correspond to that of the S700 (setting in menu 6421), because it is a gateway

> For address assignment, function codes and restrictions, consult the S700 Operating Instructions (remote control with Modbus).

4.6 Emergency configuration

If the possibility for a WBM device configuration via network is not available, e.g. because the set static IP address is unknown, it is possible to use the serial emergency access.

For this purpose, local access to the device and a PC with terminal program must be connected to the RS-232 interface.

4.6.1 Function scope

The following are available for emergency configuration:

- Configuration of the IP address / activation of the BootP mechanism
- Deleting all settings (incl. passwords) and resetting to factory settings
- Loading new firmware
- Complete device configuration by loading a file

4.6.2 Procedure

1. Connect the FL COM SERVER UNI to a serial COM port of a PC.
2. Open a terminal program, e.g. Hyperterminal in the Windows start menu under “Programs” - “Accessories” - “Communication” - “Hyperterminal“.
3. Configure the interface (e.g. COM 1) under “File” - “Properties” to 9600 bit/s; No parity; 1 stop bit; No flow control.

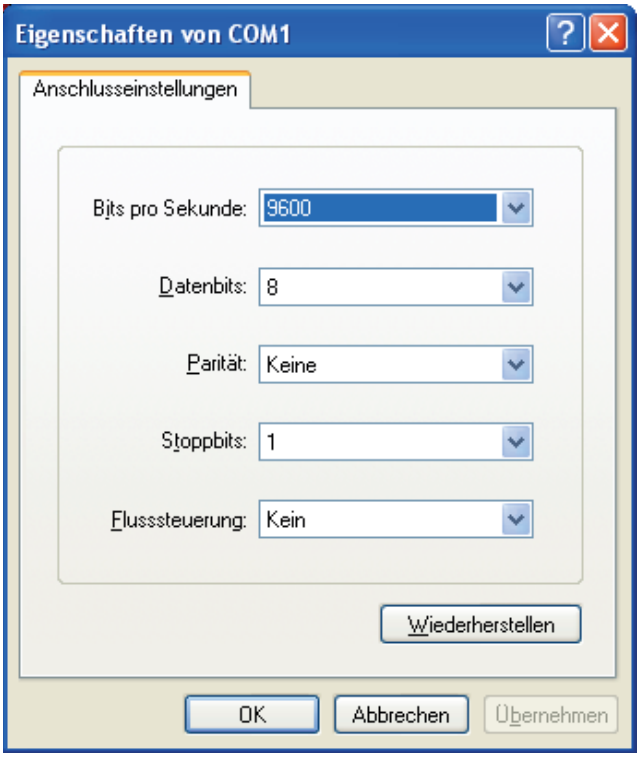


Fig. 13: Menu “Properties” in Windows hyperterminal

4. Confirm the settings with “OK” and close the menu.
5. Check the settings in the status bar of the hyperterminal.

Fig. 14: Status bar in Windows hyperterminal

6. Perform a power reset on the FL COM SERVER UNI while holding down the X key on the keyboard.

7. As soon as a response from the FL COM SERVER UNI appears on the screen, press the Enter key within 3 seconds. The following Figure appears:

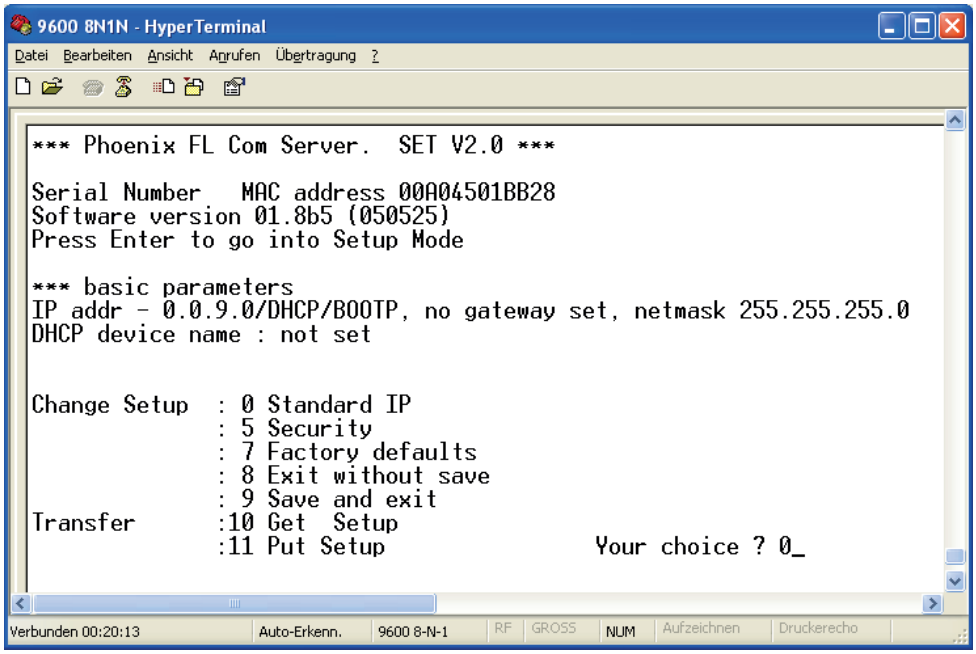


Fig. 15: Serial setup menu

8. Select the desired option by entering the digit and confirm by pressing the Enter key.

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