NAiS

PROGRAMMABLE CONTROLLER

FP Web-Server

User's Manual

Table of Contents

Chapter 1

Getting Started

1.1 BEFORE YOU START

Please read the following notes on HTML. It will make working with the FP Web-Server easier for you:

Make sure that you have worked through the ***First Steps*** (on page 3-1) before you try out the HTML functions of the FP Web-Server.

In order to use HTML you do not have to be able to tag or program HTML. Various software is at your disposal:

- Word 2000, Frontpage (supplied by the Internet Explorer), Netscape Composer (supplied by the Netscape Navigator) et.al. can serve as editors for creating HTML files.
- The created HTML file will be saved on the FP Web-Server with the help of the Configurator.
- A browser (Netscape Navigator, Internet Explorer) is used to display the .htm file. Recommended are Netscape Navigator version 4.7, 4.75 or 7.0, or Internet Explorer version 5.0 or 5.1 or 7.03. Other versions have not been tested and should not be used.

These software tools provide the logical markup (i.e. text parts are automatically adjusted to any screen format without using a lot of memory) and the easy linking that define HTML.

Please refer to the respective software company for questions on software, not provided by Matsushita, mentioned in this manual (or on the software you chose to work with HTML).

There are two ways to create HTML files:

- **Simple:** You use editors that translate data into HTML automatically. When using these editors, you need no special knowledge about HTML.
- **Advanced:** You create HTML files directly. You need to have knowledge about HTML.

For the FP Web-Server you need to have basic knowledge on how to use HTML.

In case you lack knowledge about HTML, Matsushita provides you with a brief introduction: see ***First HTML Page Including PLC Data*** (on page 10-22). In addition, we have inserted ***examples on HTML*** (see "Description of the HTML Examples" on page 10-3) on the CD (supplied with the FP Web-Server). You can install and modify them easily without knowledge of HTML.

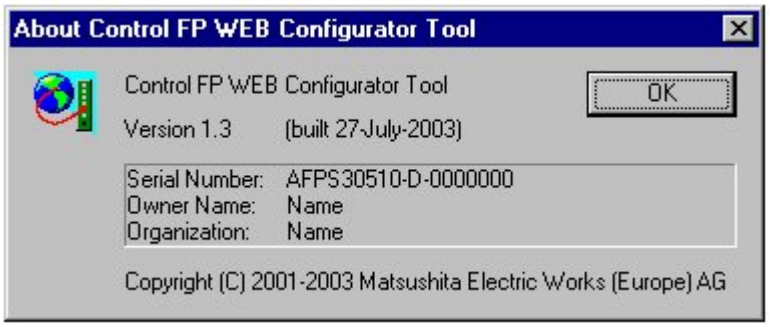
1.2 Product Numbers and Versions

	Product name	Part number
FP Web-Server (Hardware)	FP WEB-SERVER UNIT	FP-WEB (AFP0610)
Configurator Software	Control FP WEB Configurator Tool	FP-WEB-TOOL (AFPS30510)

The information of the following components:

- Control FP WEB Configurator Tool
- Serial number
- Name of owner and organization

can be retrieved from the Configurator with the help of the system menu (click on the icon on the upper left corner) and the "About Box".



Using the system menu you can also minimize the configurator window.

1.3 System Requirements

The FP Web-Configurator tool has the following system requirements:

- MS Windows NT/ XP/ 2000 (or 95/ 98/ ME)
- At least 20MB of available memory
- Color or monochrome monitor
- Internet Explorer version 5.0 or 5.1 is recommended

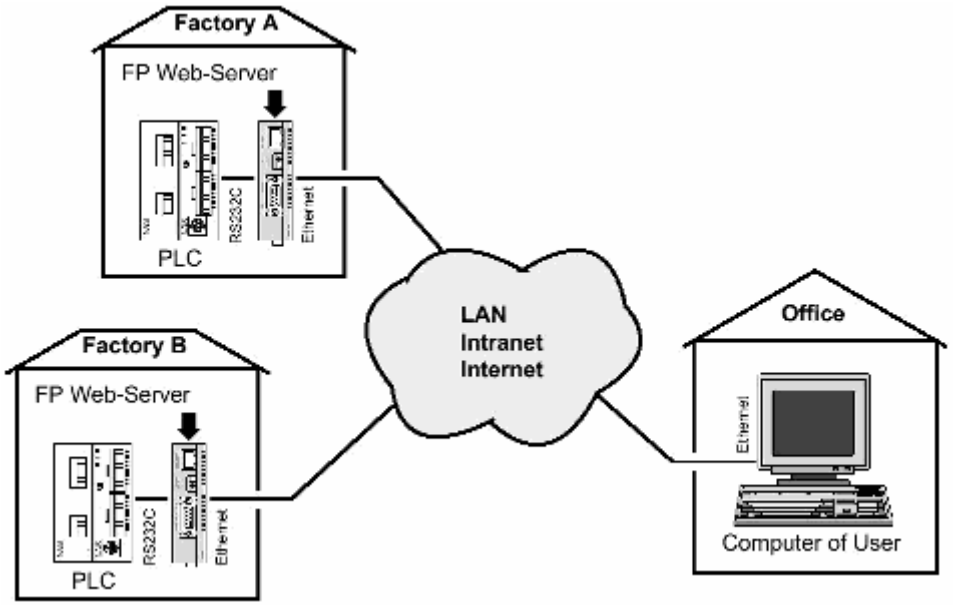
1.4 Advantages and Functions of the FP Web-Server

The multifunctional FP Web-Server unit provides the opportunity to access FP Series PLCs via Ethernet networks (Intranet and Internet) for bi-directional data exchange.

The access can carried out by a computer and a standard browser, such as MS Internet Explorer or Netscape Navigator. You must specify the adjustable IP address of the unit as the target. The HTML page can be generated with standard tools, such as Netscape Composer, Frontpage or MS Word (not supplied with the Configurator).

FP Web-Server Advantages:

- Use standard browser, save Scada software
- Use existing Intranet, save wiring
- Representation of PLC data in HTML pages
- Value input and change of values in the PLC (set value, outputs, internal relays) via HTML pages.
- Password protection for access
- Email send function (alternatively via Internet dialup), e.g. for the alarm function (definition of fixed or variable texts/ addresses)
- Remote programming: remote access via modem (via remote access Server/ Dial-up Networking)
- Data transfer: process control system, PLC programming, telemetry, remote maintenance, monitored state function
- Interfacing RS232C serial data via Ethernet, i.e. two FP Web-Servers are used to send RS232C data via Ethernet
- Modem gateway functions to other PLCs equipped with an FP Web-Server



FP Web-Server Functions:

The FP Web-Server works as an interface between a LAN or a WAN network (Internet/ Intranet) and all PLCs of the FP Series. The following main features are supported:

RS232C/ Ethernet Interface **(see "Generalities on the Ethernet/ RS232C Ports" on page 8-2):**

- RS232C to Ethernet redirection/ conversion
- Programming and visualization tools access via Ethernet
- Optional second, full transparent port

Web-Server **(see "Details on the FP Web-Server's Web Page Functions" on page 7-2):**

- PLC data presented as HTML pages
- Access via standard Internet browser
- HTML entry field for PLC data exchange
- Optional password protection

Email **(see "Email Functions of the FP Web-Server" on page 6-2):**

- PLC can send out an email
- PLC defined or pre-stored email text

- Email sending via Internet dialup

Modem/ Ethernet Gateway **(see "Dial-up Networking Setup for Computer/ FP Web-Server" on page 9-2):**

- FP Web-Server can be dialed up via modem for local or network access
- One remote gateway for multiple FP Web-Servers provided in a local Ethernet network
- Remote password handling

The FP Web-Server comes in an FP0 housing and has the following interfaces, see *Hardware* (see "Introduction" on page 2-2):

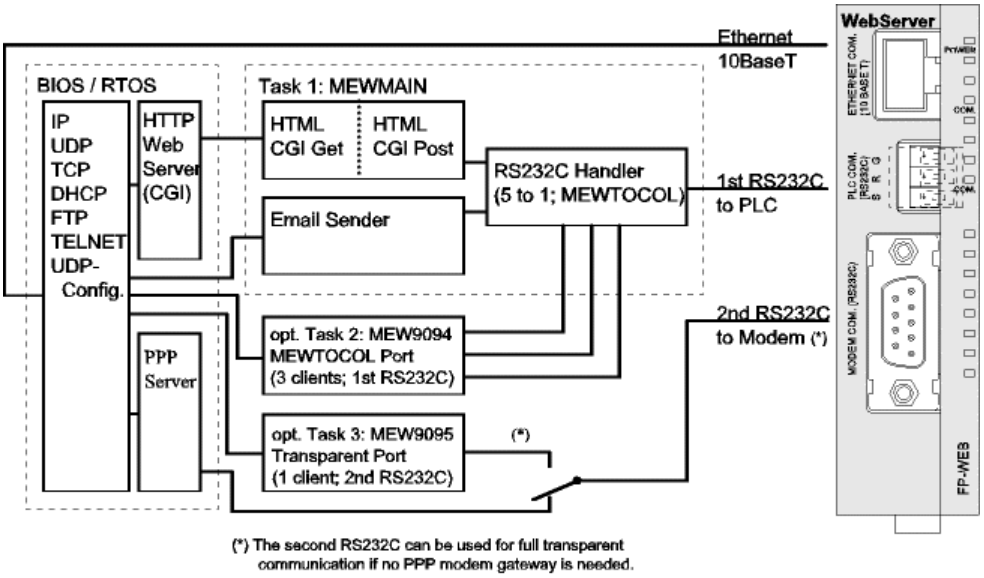
- RS232C interface which can be connected to the PLC (MEWTOCOL protocol)
- Ethernet 10BaseT interface for network connections using the TCP/ IP protocol
- 2nd RS232C interface for an optional modem or for full transparent Ethernet/ RS232C communication

Configurator Software **(on page 4-1)**

A Windows program is supplied to make the configuration and the setup of the FP Web-Server easy. This configuration program is called "Control FP WEB Configurator Tool". It helps the user to quickly set up and change the following items, e.g.:

- Automatic integration of PLC data into HTML pages
- Preparation of pre-stored mail addresses and texts
- TCP/ IP address and parameter configuration (DHCP is also possible)
- Password and security setup

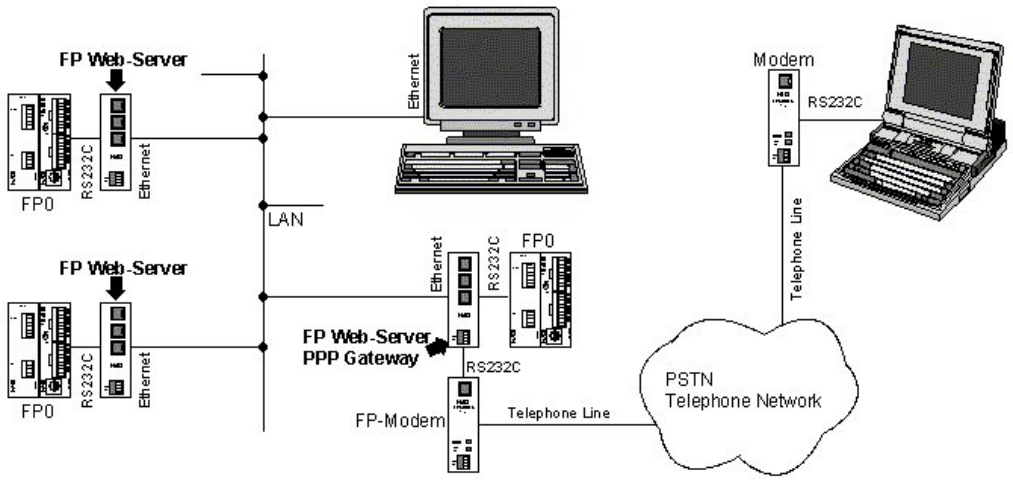
1.5 FP Web-Server Block Diagram



(*) The second RS232C can be used for full transparent communication if no PPP modem gateway is needed.

1.6 System Sample Network

Any combinations of the LAN and the dial-up functions are possible, e.g. an Ethernet network connecting several FP Web-Servers with one FP Web-Server set up as a gateway for the dial-up connections.



Chapter 2

Hardware Description

2.1 Introduction

ATTENTION !

Please read the safety instructions and note in the section with the *Important Notes* (on page 2-8) and the section about the *Mechanical Installation* (on page 2-11) carefully.

The FP Web-Server allows you to connect the Matsushita FP Series PLCs to an Ethernet Network (LAN).

The FP Web-Server works as an Interface between a LAN or a WAN network (Internet/ Intranet) and all PLCs of the FP Series.

The following main features are supported:

- RS232C/ Ethernet Interface (remote programming monitoring and visualization)
- Web-Server (HTTP-Server supplies HTML pages with PLC data <See Note>)
- Email (SMTP protocol)
- Modem/ Ethernet gateway (PPP Server function)
- A Windows program is supplied to make the configuration of the FP Web-Server easy <See Note>.

See above for a more detailed ***overview*** (see "Getting Started" on page 1-1) of the FP Web-Server functions and also find there a block diagram, a list of features and a brief description.

A ***data sheet*** can be found below which also lists the supported standards and protocols.

Comments:

- A standard HTML Editor (not supplied with the FP Web-Server Configurator Tool) is needed for designing the HTML Web pages.
- Recommended are Netscape Navigator version 4.7 or 4.75, or Internet Explorer version 5.0 or 5.1. Other versions have not been tested and should not be used.

2.2 FP Web-Server Unit Package

The FP Web-Server unit package of Matsushita contains:

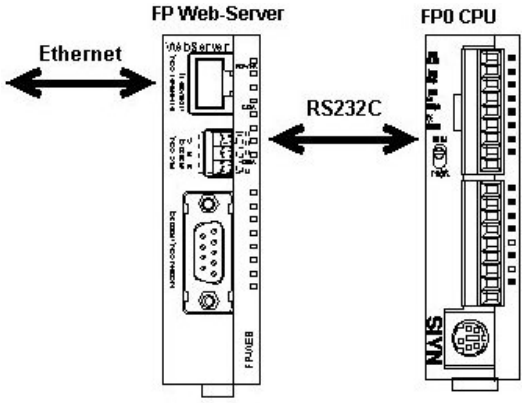
- one FP Web-Server unit
- a 24V DC power cable
- a leaflet providing installation instructions
- Phoenix 3-pin screw terminal

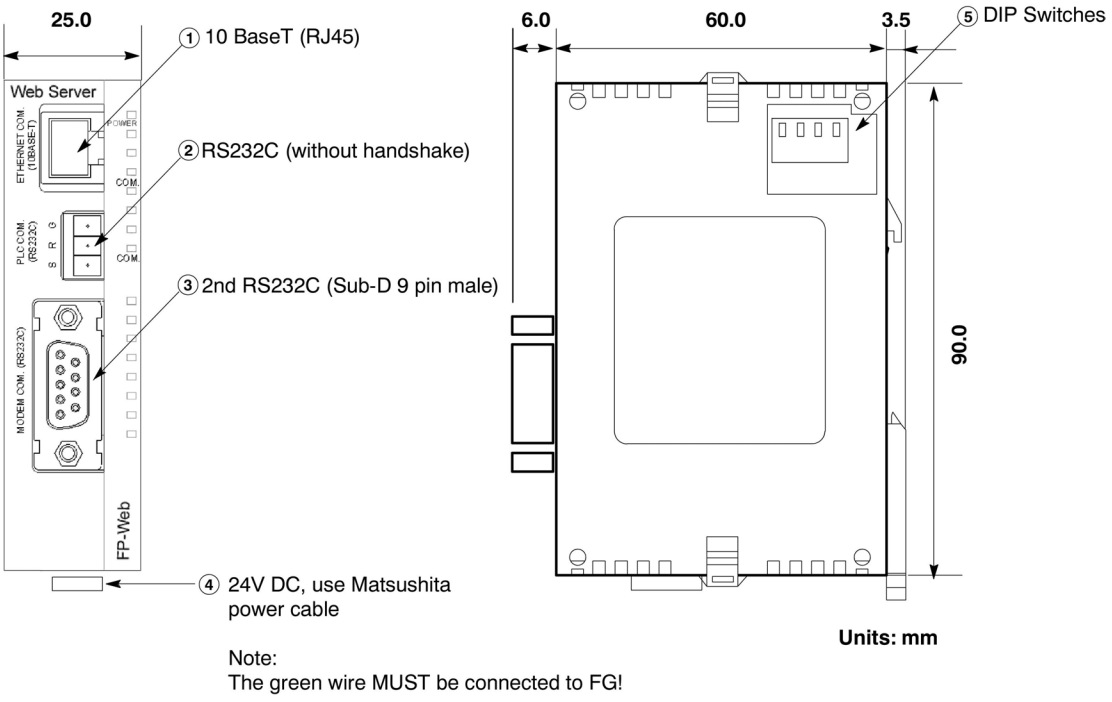
Comments:

- The FP Web-Server network will be configured via the Control FP WEB Configurator Tool.
- The Control FP WEB Configurator Tool can be purchased separately.
- For creating HTML pages a standard HTML editor (not supplied with the Configurator) is required.

2.3 Parts and Functions

Below are two illustrations of the FP Web-Server's parts and their functions:





1) 10BaseT (RJ45)

- Use Standard Ethernet CAT.5

2) RS232C (without handshake)

- Screw terminal. Connects to the PLC.

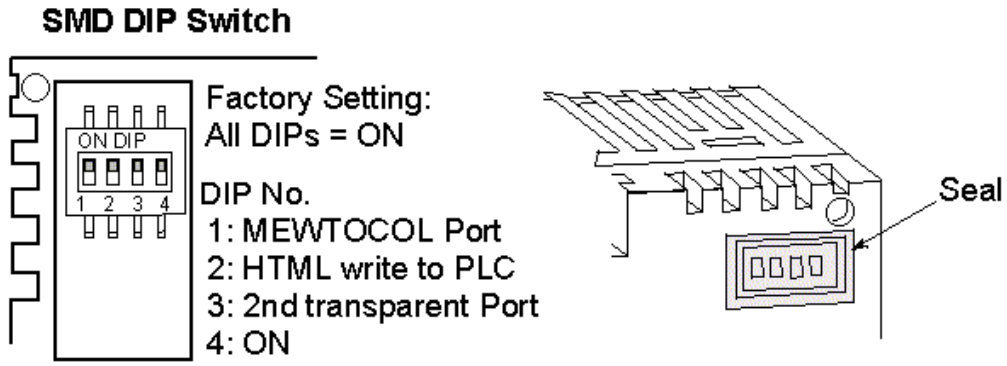
3) 2nd RS232C (SUB-D 9 male)

- Compatible to IBM PC serial port.
- Use standard serial computer cables.
- a) Connects to modem (PPP) or
- b) Transparent communication with 2nd PLC, computer, panel, etc.

4) 24V DC use Matsushita power cable

- brown = +24V DC
- blue = GND
- green = framing ground

5) DIP Switches



2.4 Installation

ATTENTION!

Be sure to install the FP Web-Server unit in locations designed for electrical equipment, e.g. in a closed metal cabinet such as a switch cabinet.

Make sure you are not electrostatically charged before you touch the FP Web-Server or one of its units: the discharge of static electricity can damage parts and equipment.

Please install the FP Web-Server in the following order:

◆ **PROCEDURE**

1. **Mount the unit on the DIN rail on which the FP0 PLC is mounted**

   See also ***Mechanical Installation*** (on page 2-11).

2. **Set operation mode DIP switches**

   DIP 1: MEWTOCOL Port (Ethernet/ RS232C) ON/ OFF

   DIP 2: Submit data in HTML Function to Write data to the PLC ON/ OFF

   DIP 3: 2nd, transparent Port (Ethernet/ RS232C) ON/ OFF

   DIP 4: Not used ON

3. **Before connecting the power supply, please read the information on *Power Supply* (see "Connecting the Power Supply" on page 2-16)**

4. **Connect the Ethernet (10BaseT) with a standard cable**

5. **Connect the PLC via RS232C**

   For the wiring see ***PLC Connection, Modem, Cable Drawings, DIP Switches*** (see "PLC Connection, Cable Drawings, Modem, DIP Switches" on page 10-7) or the "FP Web-Server Leaflet".

6. **Configuration: For the first configuration and how to get started with the Configurator please see *First Steps* (on page 3-1)**

   This is a brief description on how to put an FP Web-Server into operation. For a detailed description please also refer to ***First Steps*** (on page 3-1).

2.5 Technical Data

Feature	Description
Product Number FP Web-Server:	FP-WEB
PLC Connection:	PLC COM: RS232C via 3-pin screw terminal port Plug: Phoenix product: MC1,5/3-ST-3,5 Order Number: 18 40 37 9
Modem Connection / 2nd transparent port:	Modem COM: RS232C via 9-pin SUB-D port, with RTS, CTS Plug: 9-pin SUB-D female
Power Supply:	24V DC Molex35 plug on the bottom side of the unit
Ethernet Connection:	Ethernet: 10BASE-T via RJ 45 female connector
LEDs:	Power, Ethernet COM, PLC Data Exchange
Protocols and Standards:	TCP/IP, UDP/IP, DHCP, FTP, TELNET, HTTP, SMTP, PPP
Flash Memory:	512 KBytes, also see ***Available Memory Calculation*** (see "Available Memory" on page 7-39)
RAM Memory:	512 KBytes
Operating Voltage:	24V DC (10,8 – 26,4V DC supplied by class 2 circuit only)
Current Consumption:	Approx. 95mA at 24V DC, 240mA at 12V DC
Protection Class:	IP20
Ambient Temperature:	0°C to +45°C
Storage Temperature:	-20°C to +70°C
Humidity:	max. 30% to 85% (non-condensing)
Vibration Resistance:	10Hz to 55Hz, 1 cycle per minute with a double amplitude of 0,75mm; 10 minutes every X-, Y-, and Z-axis
Shock Resistance:	min. 10g; 4 times every X-, Y-, and Z-axis
Dimensions:	Height 90mm, Width 25mm, Depth 64mm
Operating Conditions:	Free of corroding gases and excessive influence of dust
CE Conformity:	EMV Standard 89/336/EEC 1989EN 55022/Class B EN 55022/Class B; EN 61000-4-2/A1; EN 61000-4-3 EN 61000-4-4; EN 61000-4-6
UL Approval	UL number "2LD7" (file E232530)

2.6 Important Notes

Please also see the installation sheet "FPWEB_Server_Leaflet" supplied with your FP Web-Server for important notes, cables and installation.

Please read the following notes carefully before installing your FP Web-Server.

NOTES

1. Avoid installing the unit in the following locations:

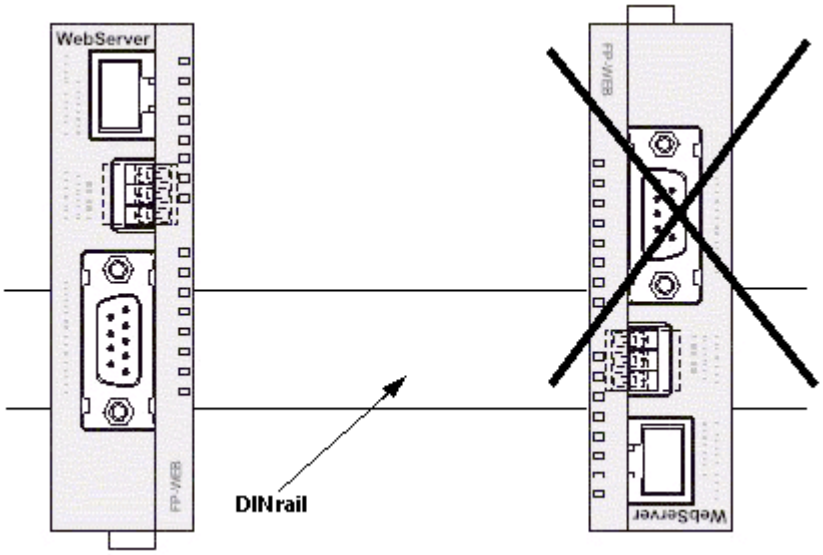
- Ambient temperatures outside the range of 0°C to 55°C/32°F to 131°F
- Ambient humidity outside the range of 30% to 85% RH
- Sudden temperature changes causing condensation
- Inflammable or corrosive gases
- Excessive airborne dust or metal particles
- Fuel, paint thinner, alcohol or other organic solvents or strong alkaline solutions such as ammonia or caustic soda
- Excessive vibration or shock
- Direct sunlight
- Water in any form including spray or mist

2. Avoid noise interference from the following items:

- Influence from power transmission lines, high voltage equipment, power cables, power equipment, radio transmitters, or any other equipment that would generate high switching surges.
- If noise occurs in the power supply line even after the above countermeasures are taken, it is recommended to supply power through an insolated transformer, noise filter, or the like.

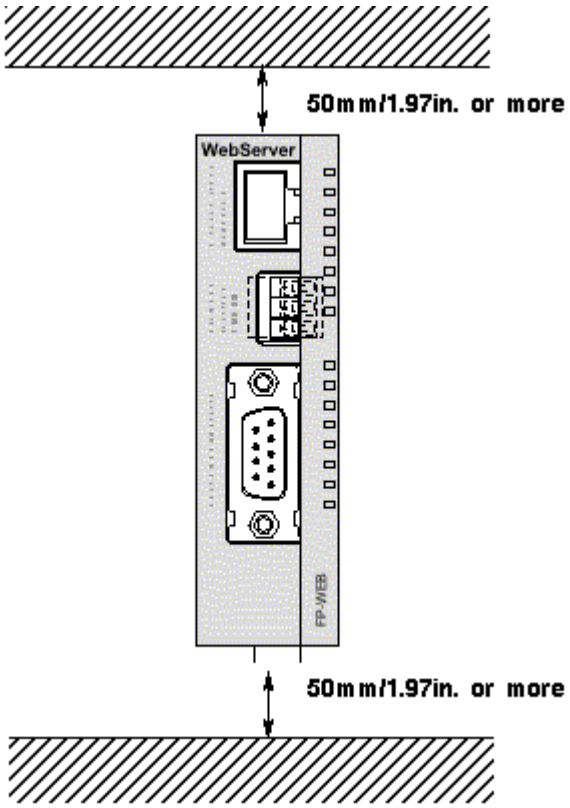
3. Measures regarding heat discharge:

- Always install the unit orientated with the tool port facing outward on the bottom in order to prevent the generation of heat.
- Do not install the unit above devices which generate heat, such as heaters, transformers or large scale resistors.

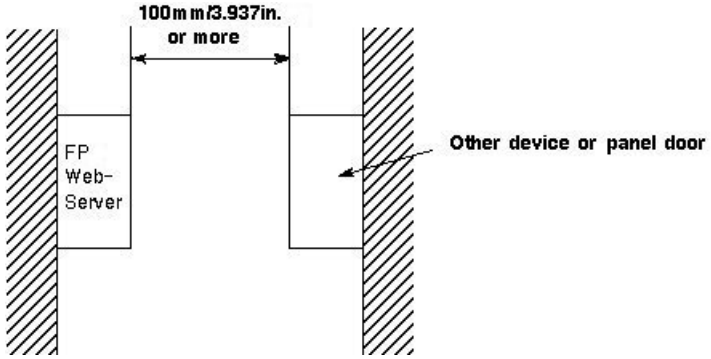


4. Installation space:

- Leave at least 50mm/1.97in. of space between the wiring ducts of the unit and other devices to allow heat radiation and unit replacement.



- Maintain a minimum of 100mm/3.937in. between devices to avoid adverse affects from noise and heat when installing a device or panel door to the front of the FP Web-Server unit.



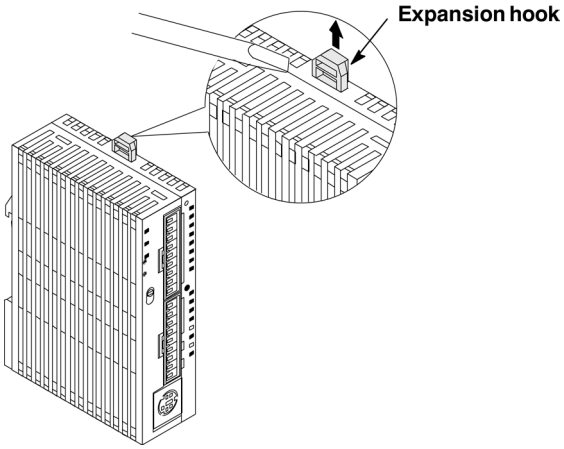
- Keep the first 100mm/3.937in. from the front surface of the FP Web-Server unit open in order to allow room for programming tool connections and wiring.

2.7 Mechanical Installation

a) Adding to FP0:

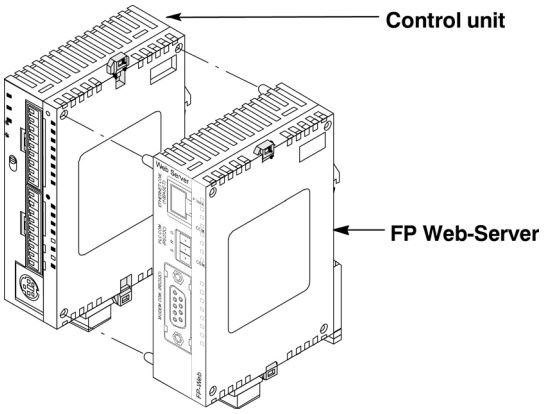
◆ **PROCEDURE**

1. **Raise the expansion hooks on the top and bottom sides of the unit with a screwdriver**



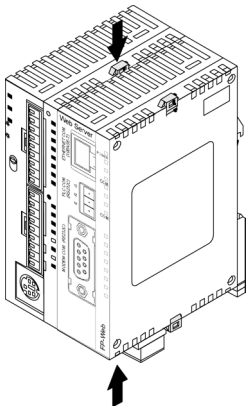
2. **You can align the pins and holes in the four corners of the control unit and expansion unit, and insert the pins into the holes so that there is no gap between the units**

   However you need not necessarily connect the FP Web-Server in this way.



Note:
Make sure that the FP Web-Server is the last unit attached. Otherwise the CPU cannot communicate with the expansion units.

3. **Press down the expansion hooks raised in step 2 to secure the unit**



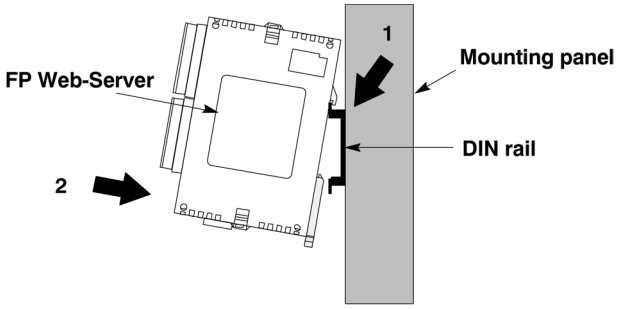
b) Attachment to DIN Rails:

- The FP Web-Server unit enables a one-touch attachment to DIN rails.

◆ **PROCEDURE**

1. **Fit the upper hook of the FP Web-Server onto the DIN rail**

2. **Without moving the upper hook, press on the lower hook to fit the FP Web-Server into position**

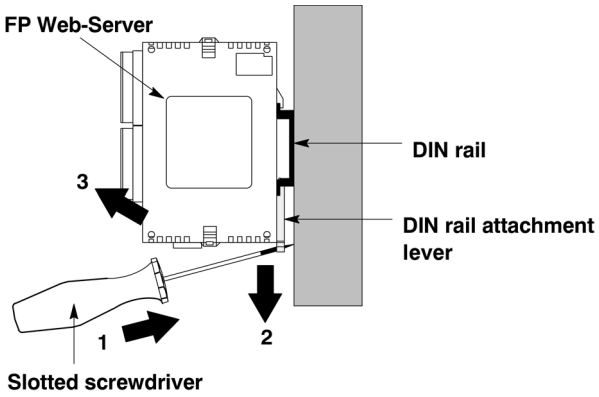


c) Removal from DIN Rail:

- You can easily remove the FP Web-Server as described below.

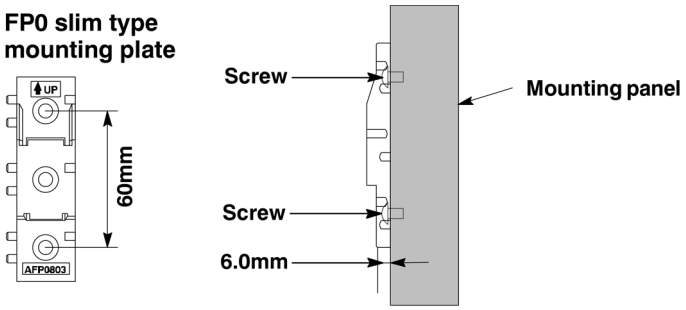
◆ **PROCEDURE**

1. **Insert a slotted screwdriver into the DIN rail attachment lever**
2. **Pull the attachment lever downwards**
3. **Lift up the FP0 unit and remove it from the rail**



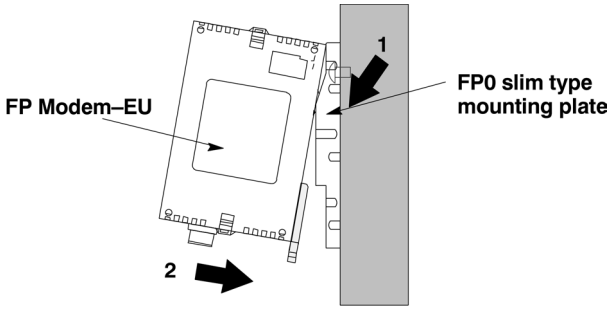
d) Installation Using FP0 Slim Type Mounting Plate

- Use M4 size pan-head screws for attachment of FP0 slim type mounting plate (AFP0803) to mounting panel.



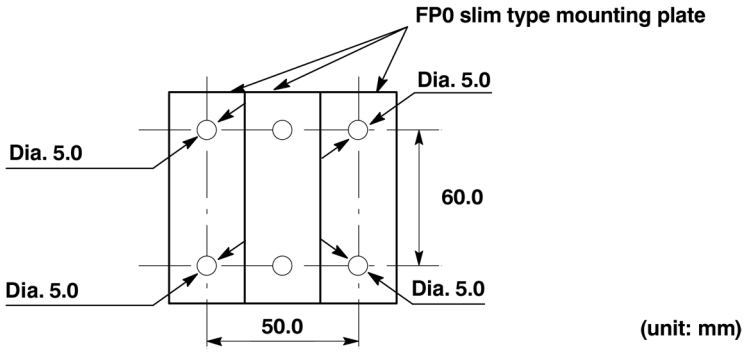
◆ **PROCEDURE**

1. **Fit the upper hook of the FP Web-Server onto the FP0 slim type mounting plate**
2. **Without moving the upper hook, press on the lower hook to fit the FP Web-Server into position**



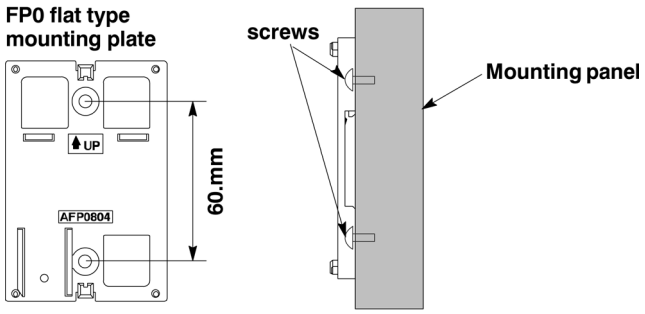
- When using an expansion unit, tighten the screws after joining all of the FP0 slim type mounting plates to be connected. Tighten the screws at each of the four corners.

Example: Two Expansion Units



e) Installation Using FP0 Flat Type Mounting Plate

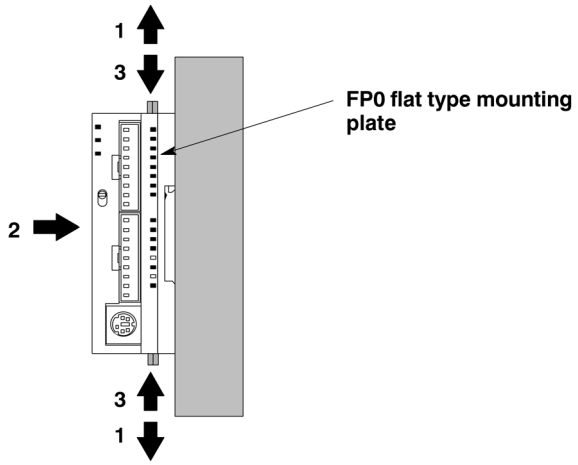
- Use M4 size pan-head screws to attach FP0 flat type mounting plate (AFP0804) and install according to the dimensions shown below.



◆ **PROCEDURE**

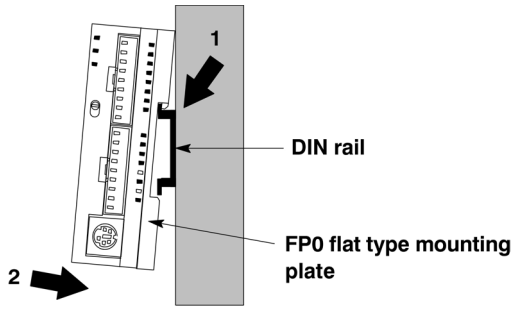
1. **Raise the expansion hooks on the top and bottom of the unit**
2. **Install the FP0 Web-Server on the FP0 flat type mounting plate**

3. **Align the expansion hooks with the plate and press the hooks back down**



◆ **NOTE**

An FP Web-Server with an attached FP0 flat type mounting plate can also be installed sideways on a DIN rail.

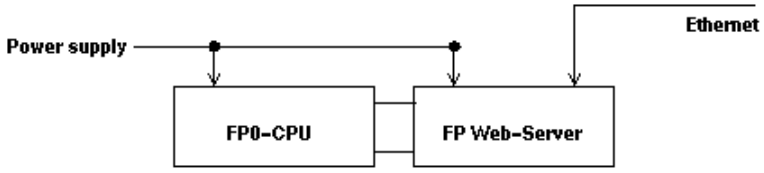


2.8 Connecting the Power Supply

The FP Web-Server unit will turn ON as soon as the power supply has been connected.

◆ **NOTES**

- **When connecting the power supply (class 2 circuit) make sure the polarity (+/-) is correct.**
- **The FP Web-Server unit and the PLC have to be supplied by THE SAME power supply unit.**
- **If power is supplied, the green POWER LED will be ON.**



- **Framing Ground (FG) must be connected.**
- **Please read the** *Important Notes* **(on page 2-8).**
- **Please also read the "FP Web-Server Leaflet" sheet supplied with your FP Web-Server.**

Chapter 3

First Steps

3.1 Generalities on How to Get Started

For an initial demo of the HTTP function of the FP Web-Server you can access the Matsushita Internet demo unit. For carrying out the test you need an Internet browser that can access the Internet.

Please enter the following address: **"http://62.180.233.51/"**

In the following, putting the FP Web-Server into operation for the first time is described.

The subsequent step by step example depicts the general configuration and the use of the integrated Web-Server for displaying HTML pages.

For an expansion of this example with email functions see ***Email Functions of the FP Web-Server*** (on page 6-2).

For details on programming the email support on the PLC see ***PLC Program with Function Block from the Library M_CE_Lib*** (on page 6-7).

For further information on the RS232C/ Ethernet Ports see ***Ethernet/ RS232C Ports*** (see "Generalities on the Ethernet/ RS232C Ports" on page 8-2).

3.2 The Ethernet Network

The FP Web-Server is supplied with a 10BaseT Ethernet connection. This type of Ethernet network uses a pier to pier connection with twisted pair cables. To establish a network, hubs and switches are used to connect the participants in a star-shaped way.

To be able to configure the FP Web-Server, a Windows computer with an Ethernet network interface card has to be connected to the same network as the FP Web-Server. The FP Web-Server can be connected to an existing Ethernet network. It is also possible set up a separate network for the FP Web-Server (plus computer for the configuration).

3.3 Connection of the FP Web-Server

For an initial function test (without the PLC data) the FP Web-Server has to be connected to the Ethernet and it has to be supplied with operating voltage (24V DC and FG). Please make sure that all DIP switches are set to ON, so as not to turn off any function for the initial test (upon delivery of the FP Web-Server all DIP switches are set to ON). For a detailed description of the cables and the DIP switch functions see ***PLC Connection, Cable Drawings, Modem, DIP Switches*** (on page 10-7).

In the second step, the FP Web-Server has to be connected to the PLC (via RS232C). The RS232C setting of the PLC must correspond to that of the FP Web-Server see ***New Project*** (on page 4-5). This setting can be defined in the PLC program (FPWIN Pro) under the system parameter settings.

◆ **NOTE**

Please memorize the ID number you find on the type label of the FP Web-Server. It will be needed for identification later when the configuration is carried out.

3.4 Installatio n of the Configurator Program

To be able to configure the FP Web-Server, a Windows computer with an Ethernet network interface card has to be connected to the same network as the FP Web-Server. The computer must be configured in such a way that it supports the TCP/ IP network protocol see ***TCP/ IP Setup for Configurator/ Browser Operations via LAN*** (see "TCP/ IP Setup for Configurator/Browser Operations via LAN" on page 10-14).

To install the Configurator, start the setup program on the CD and follow the instructions of the installation program "Control FP WEB Configurator Tool". Various ***examples*** (see "Description of the HTML Examples" on page 10-3) and HTML pages are installed along with the Configurator. In addition, the tool **DnsDisp.exe**, which locates DNS addresses of an Internet Service Provider (ISP), is copied to the installation folder.

The Configurator can be started in the Windows start menu under "Programs, NAiS Control, Configurator, FP-WEB".

3.5 Determination of the IP Configuration

Every Ethernet participant must have an individual IP address. This address may not be used a second time in the same network. The IP address consists of 4 numbers (any 0 to 255, see also ***IP and TCP/ IP*** (on page 10-12)). The first numbers define the network address, the other numbers define the participant's address. The IP address of the FP Web-Server can be fixed or it can be allocated dynamically by a DHCP-Server. Also see ***DHCP or Fixed IP Address*** (on page 5-4).

◆ **PROCEDURE**

1. **In a "self set-up" network (e.g. with only one hub) the IP addresses can be assigned by yourself**

   In this case, do not use DHCP. See also ***Setup of an Individual Ethernet LAN*** (on page 10-20).

2. **If the FP Web-Server is to be connected to an existing network, the following data must be obtained from the network administrator:**

   - Is there a DHCP-Server in the network? If NOT:

   - IP address: Which fixed IP address can be assigned to the FP Web-Server?

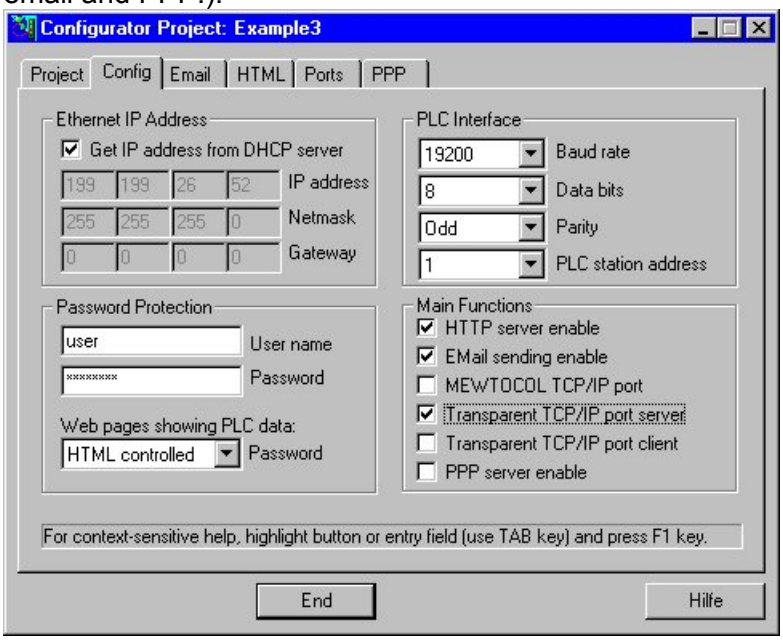
   - Netmask: How is the network address set up (length of the network address and/or the participant's address)?

   - Gateway: What is the gateway's IP address? (0.0.0.0 if there is no gateway to be used).

3.6 Generate a New Configurator Project

After having started the Configurator, a Configurator project can be opened from the local hard drive with ***[OPEN]*** (see "Open Project" on page 4-4). A Configurator project consists of the configuration plus the email texts plus the HTML pages. Upon the initial start the "default_project" is automatically offered with [OPEN]. With [OPEN] you can also load one of the ***examples*** (see "Description of the HTML Examples" on page 10-3) (example1 to 9). You can save it under a new name with ***[SAVE AS]*** (see "Save Project As" on page 4-5). On the "Config" page you can adjust the following most important settings. At least the following inputs have to be made:

- The IP configuration has to be entered accordingly, see also ***Determination of the IP Configuration*** (on page 3-6).
- The RS232C parameter to the PLC may have to be adjusted (19200 8O1 is pre-adjusted).
- It is also recommended to enter an individual user name and a password of your own.
- The HTTP-Server has to be activated for this initial test. (Please turn off email and PPP!):



For the initial test, no other parameters have to be altered. Save the changed project with **[SAVE]** (see "Save Project" on page 4-4).

Comments:

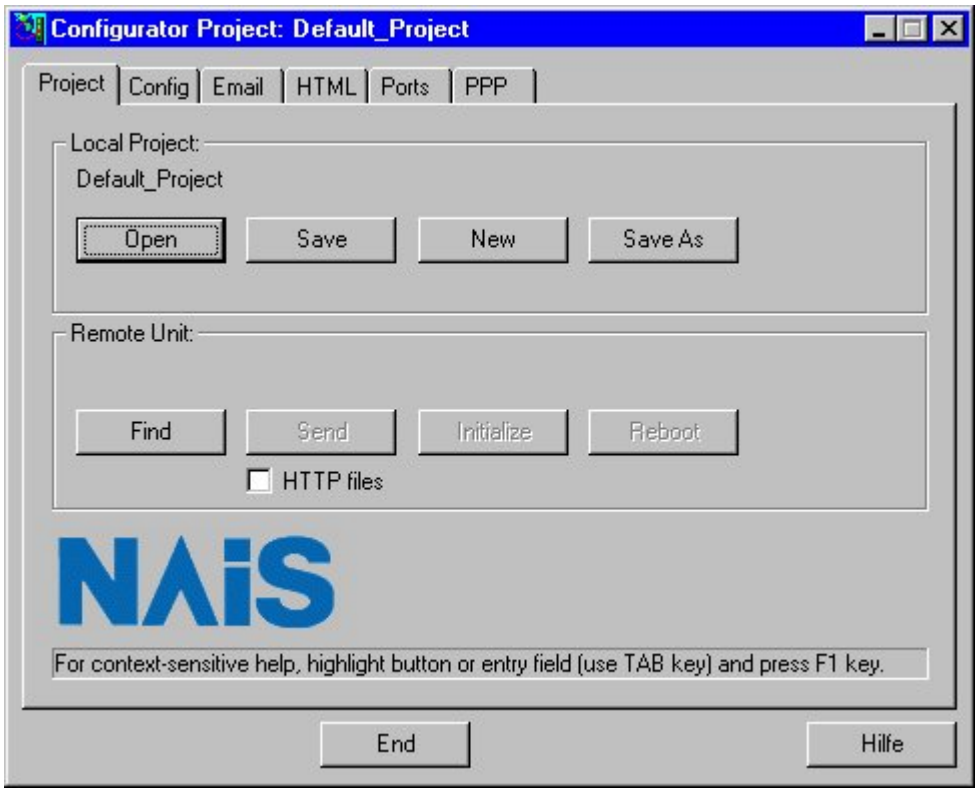
- To receive additional help and information on the various Configurator entries, please move the cursor to the respective input field and press <F1>.
- The "default_project" works without PLC data, i.e. it does not need to be connected to the FP Web-Server. Nevertheless, in case "Example1" is used a PLC should be connected.

3.7 Transfer a Configurator Project to the FP Web-Server

With ***[FIND]*** (see "Find Server Function" on page 4-6) the network is searched for all FP Web-Servers. A list of all FP Web-Servers found will be displayed. Please select the ID number of the respective FP Web-Server (double-click or press <ENTER>).

If the FP Web-Server is put into operation for the first time (or a new version of the Configurator was installed), please initialize the FP Web-Server ONCE before transferring the project, i.e. click ***[INITIALIZE]*** (see "Initialize Unit and Upload Firmware" on page 4-12) and answer the safety request with [YES].

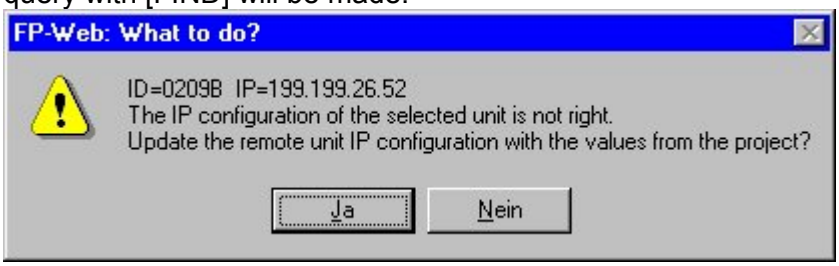
As there are HTML pages required for this initial test, the checkbox "***HTTP Files*** (see "Upload Configuration Including HTML Files" on page 4-10)" should be activated. With ***[SEND]*** (see "Upload Configurator Project to the Remote Unit" on page 4-8) the project (configuration plus HTML pages) can be transferred to the respective FP Web-Server.



Please click ***[REBOOT]*** (see "Reboot Button to Restart the FP Web-Server" on page 4-12) after transmission. Wait a little bit and the click [FIND] again to make sure that the FP Web-Server is online again and to find out which IP address it is using.

Comments:

- Please memorize the IP address for the following tests with the browser below.
- If the FP Web-Server was configured with the wrong fixed IP address, a query with [FIND] will be made.

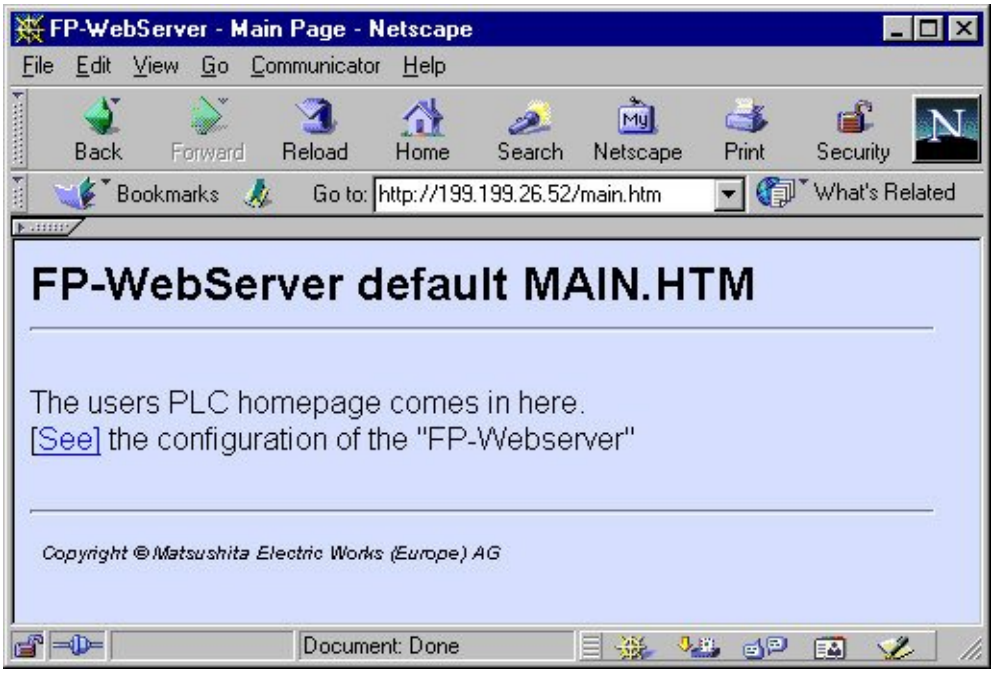


- In this case click [YES]. By doing that the FP Web-Server is set to the IP address entered in the current Configurator project. After a short waiting period, click [FIND] again.
- If the current password of the FP Web-Server is not the same as the password of the project, the user name and the password are asked before transmission and/or restart. ([SEND], [INITIALIZE], [REBOOT]).

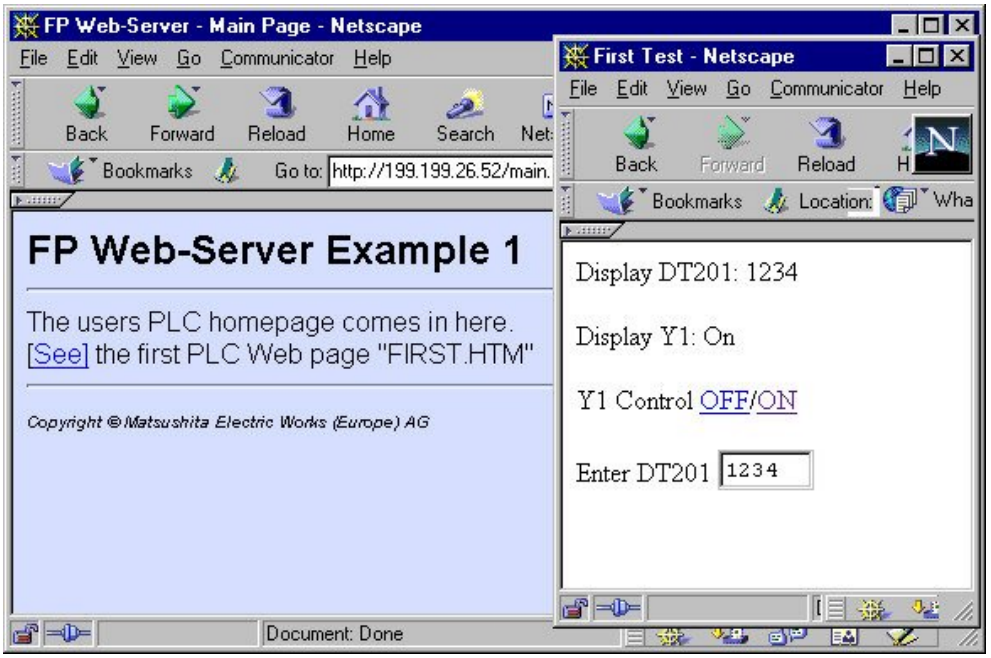
3.8 Internet Browser to Test the FP Web-Server

The HTML pages of the FP Web-Server can be displayed with a standard Internet browser. Start the Internet browser and enter the IP address of the FP Web-Server into the "Location" field.

The HTML page **"MAIN.HTM"** of the FP Web-Server will be displayed. For the "Default_Project" (without PLC data, FP Web-Server may not be connected to a PLC) for example:



Or for "Example1" (with PLC data):



Comments:

- In MAIN.HTM you cannot use PLC data items. Furthermore, it is impossible in MAIN.HTM to use password protection.
- If the FP Web-Server is operated in an office network with a Proxy gateway to the Internet, accessing the FP Web-Server HTML pages might take a long time. In this case, shut off the Proxy function of the browser for this specific IP address of the FP Web-Server. For the browser setup see also ***TCP/IP Setup: Configurator/Browser Operations Via LAN*** (see "TCP/ IP Setup for Configurator/Browser Operations via LAN" on page 10-14).

3.9 Further Information

- ***Details on Web-Server's Web Page Functions*** (see "Details on the FP Web-Server's Web Page Functions" on page 7-2)
- ***The PLC sends Emails (Alarm Emails with FPWIN Pro Library*** (see "Email Functions of the FP Web-Server" on page 6-2)***)***
- ***Details on Ethernet/ RS232C Ports*** (see "Generalities on the Ethernet/ RS232C Ports" on page 8-2)
- ***Dial-up Networking Setup for Computer and FP Web-Server*** (see "Dial-up Networking Setup for Computer/ FP Web-Server" on page 9-2)

Chapter 4

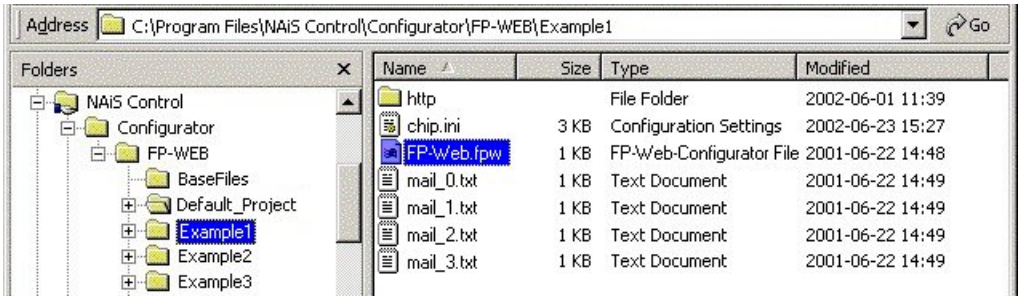
Configurator Software

4.1 General Information on the FP Web-Server Configurator

The FP Web-Server Configurator administers "Configurator projects". These consist of:

- FP Web-Server project file (FP-Web.fpw)
- FP Web-Server configuration (CHIP.INI file)
- Email texts (MAIL_x.TXT files)
- HTTP files (MAIN.HTM; *.HTM; *.GIF; *.JPG ...)

Every "Configurator project" is stored in a separate folder. Email text files, .INI text files and a subfolder "HTTP" in which all in Web pages for the FP Web-Server are stored belong to a project.



There are 3 ways to start the FP Web-Server configurator:

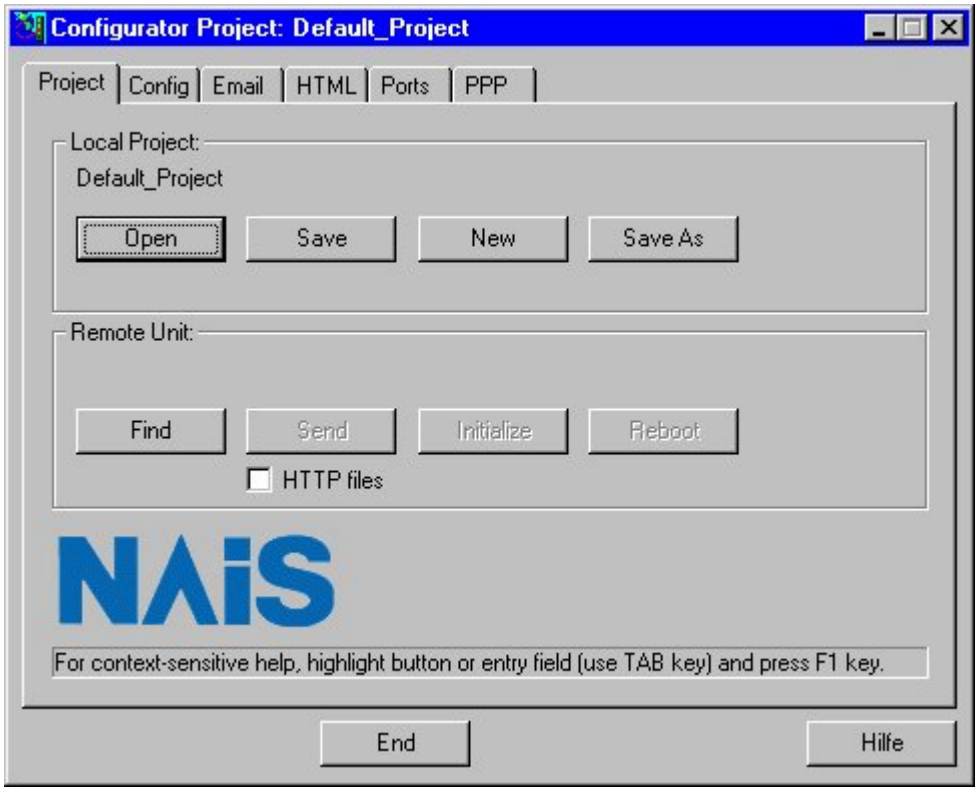
1. Start -> Programs ->NAiS Control/Configurator/FP Web/FP Web Configurator
2. Double-click the project file *.fpw of the project within the file explorer
3. Via a DOS command line that includes the configuration to be opened, e.g. C:\Programs\NAiS Control\Configurator\FP-Web\FP_Web.exe example1/FP-Web.fpw

To administer ([OPEN], [SAVE]...) "Configurator projects", edit the configuration (including email texts and HTTP files) and to control the FP Web-Server (transmission of files, initialization, reboot...), the FP Web-Server Configurator provides the following main components:

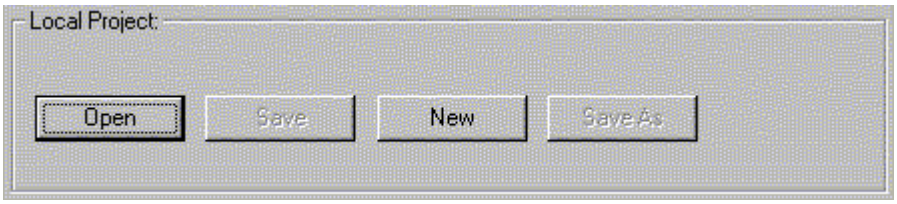
- ***Control Buttons*** (see "Configurator Software" on page 4-1)
- ***Base Configuration*** (on page 5-1)
- ***Email Configuration and Texts*** (see "Email Setup" on page 6-1)

- ***HTTP Files and Editor Call*** (see "HTTP-Server Functions/ Web Pages" on page 7-1)
- ***TCP/RS232C Ports Configuration*** (see "Ethernet/ RS232C Ports" on page 8-1)
- ***PPP-Server Configuration*** (see "PPP-Server Setup" on page 9-1)

In the following sections the individual control buttons of the first page ("project" page) of the Configurator are described in detail:



4.2 Control Buttons for the Administration of the "Configurator Project"



4.2.1 Open Project

Open an existing Configurator project on the local hard drive and load it for processing into the computer's internal memory. Instead of using this button you can also open an existing project by double-clicking the *.fpw file with the file explorer.

After clicking [OPEN], the last project opened will be offered. Upon initially starting the Configurator after its installation, the "default_project" will be offered.

A Configurator project will be saved in its own folder. The name of the Configurator project is equivalent to the folder name.

If the selected folder does not contain a valid Configurator project, you receive the following error message: "This is not a valid project folder."

After opening a Configurator project, the control buttons [SAVE] and [SAVE AS] are released and you can switch over to the Configurator pages "Config", "Email", "HTML", "Ports", "PPP" to edit the parameters therein.

4.2.2 Save Project

Saving an open and possibly changed Configurator project on the local hard drive.

Before a Configurator project can be transferred to an FP Web-Server, an already changed Configurator project must have been saved.

4.2.3 New Project

Create a new Configurator project on the local hard drive. After clicking [NEW], the name of the Configurator project (respectively, the folder in which the Configurator project should be saved) is entered. Do not use spaces when entering the name.

When finished entering the name, please press <ENTER>. Afterwards, select a main folder in which the Configurator project is to be saved, i.e. in which the folder of the Configurator project is to be created. A new project will be created with the default data from the "BaseFiles" folder.

4.2.4 Save Project As

An open Configurator project is saved on the local hard drive under a new name as a new Configurator project. After clicking [SAVE AS] the new name of the Configurator project (i.e. the name of the folder in which the Configurator project should be saved) can be entered.

Do not use spaces when entering the name.

When finished entering the name, please press <ENTER>. Afterwards, select a main folder in which the Configurator project is to be saved and/or in which the folder of the Configurator project is to be created.

4.2.5 Enter New Project Name ([NEW], [SAVE AS])

Entering a new Configurator project's name (i.e. the folder in which the Configurator project should be saved):

Do not use spaces when entering the name.

When finished entering the name, please press <ENTER>. Afterwards, select a main folder in which the Configurator project is to be saved and/or in which the folder of the Configurator project is to be created.

4.3 Control Buttons for FP Web-Server Control

4.3.1 Find Server Function

The Configurator tries to find all FP Web-Servers in the network. A list of all FP Web-Servers found will be displayed. The user can select the FP Web-Server that should be configured.

For this the Configurator software sends an "UDP Broadcast" command via its Ethernet card into the network, e.g.: "FP Web-Servers, report back to the Configurator!" All FP Web-Servers in the same network (in which the computer is also installed and on which the Configurator is running) receive this "UDP Broadcast" command and send their status information back to the Configurator. The status information (ID number, IP address and name of the last Configurator project) is displayed in a list.

A selection from the list can take place by using the mouse or the TAB key and by pressing <ENTER>.

After selecting an FP Web-Server from the list, it will be checked to see that it is functioning properly. See also ***Select From List of Units Found*** (on page 4-7).

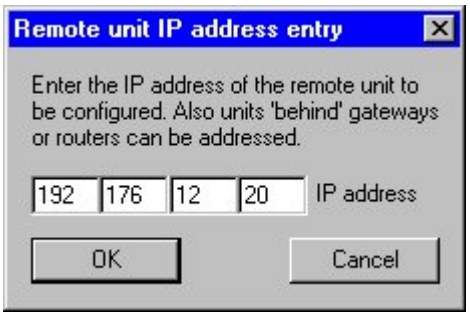
If you do not find the desired FP Web-server in the list, double-click ***Additional units: Manual IP address entry*** (see "Enter IP Address Manually" on page 4-7) to enter an IP address manually.

Comment:

An FP Web-Server using a modem gateway or a router cannot be found with an "UDP Broadcast" because of blocked communication. Such an FP Web-Server (behind a gateway or router) can be configured via TCP communication when the IP address is entered manually at ***Additional units: Manual IP address entry*** (see "Enter IP Address Manually" on page 4-7).

4.3.2 Enter IP Address Manually

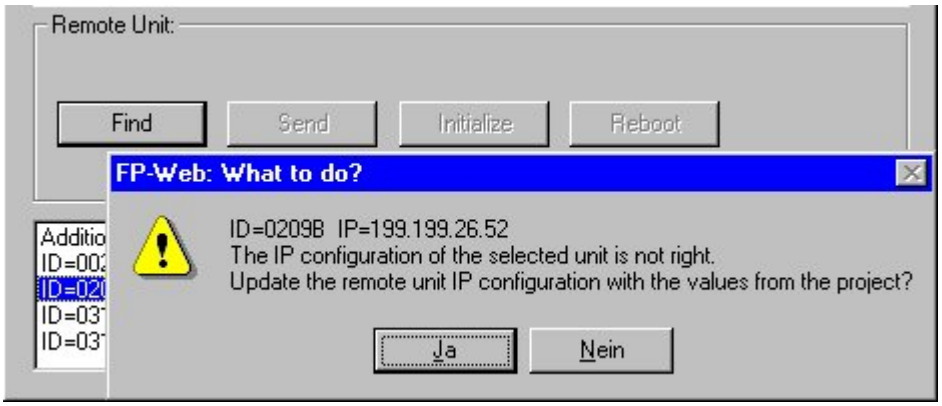
Enter the IP address of the desired FP Web-server manually. The address will be checked and used in case an FP Web-server is found.



4.3.3 Select from List of Units Found

Select of the FP Web-Server from the list of the units found by double-clicking or pressing <ENTER>.

After selecting an FP Web-Server, it will be checked whether this FP Web-Server can be reached via the network with a conventional TCP/ IP connection. If the FP Web-Server selected does not possess a valid IP address for the network, the following message will be displayed:



After clicking [YES], the new IP configuration of the current Configurator project will be transferred to the FP Web-Server via a "UDP Broadcast" command. (The UDP is used because the TCP/ IP transmission of the configuration does not work yet.) After a short waiting period [FIND] can be clicked anew to select the FP Web-Server.

Comment:

The FP Web-Server configured with the help of a "UDP Broadcast" command only reconfigures the IP address. For this reason, do not forget to transfer the other configuration data by clicking [SEND]!

4.3.4 Transfer Configurator Project to the Remote Unit

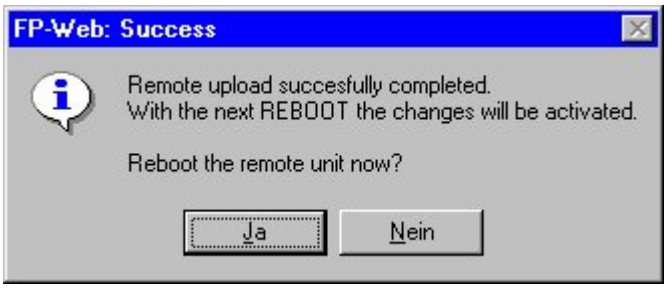
[SEND] transfers the configuration data of the current Configurator project to the FP Web-Server selected. If all HTTP files (HTML and graphic files) are to be transferred simultaneously along with the configuration (parameters and email texts), the checkbox "HTTP Files " should be activated.

If the transfer is successful, the FP Web-Server will be checked for the version of the firmware used. If the latest firmware is not used, you will be asked to download the latest firmware supplied with the configurator tool by clicking [INITIALIZE].

Before transmitting data to the FP Web-Server, a safety request is carried out:

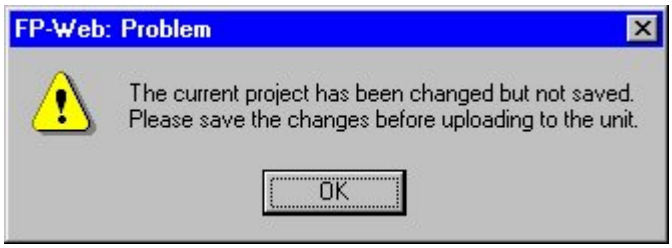
Data transmission to the FP Web-Server starts after clicking [YES], whereupon the existing FP Web-Server settings will be irrecoverably overwritten.

After the transfer is successful the following message allows the unit to be rebooted immediately.



If you do not reboot the unit at this moment, you can click ***[REBOOT]*** (see "Reboot Button to Restart the FP Web-Server" on page 4-12) after data transmission to activate the altered configuration.

For data transmission, a Configurator project has to be opened and a FP Web-Server has to be selected with [FIND]. After having made changes to the configuration data, store the Configurator project by clicking [SAVE] before clicking [SEND] – otherwise you will receive the following error message:



If the current ***Password*** (see "Password for Web Pages Containing PLC Data" on page 5-6) of the FP Web-Server does not correspond to that of the Configurator project, the user name and the password will be requested before data transmission.

If a transmission error occurs, an explanatory text will be displayed along with it. If data transmission could not be carried out completely because of a transmission error, the following error message is displayed at the end of the [SEND] function:

Comments:

- Any communication of the FP Web-Server via Ethernet must be stopped before a new configuration is sent to the FP Web-Server. For example, the FPWIN Pro online mode must be ended before changing the configuration of the FP Web-Server.
- In some cases it might be even necessary to exit and terminate FPWIN Pro completely to be able to release the TCP connections of the "Communication Manager".
- When using the command [SEND] immediately after opening a version 1.0 project with version 1.2 of the FP WEB Configurator Tool you will receive the following message. You should save the project to update static parameters.

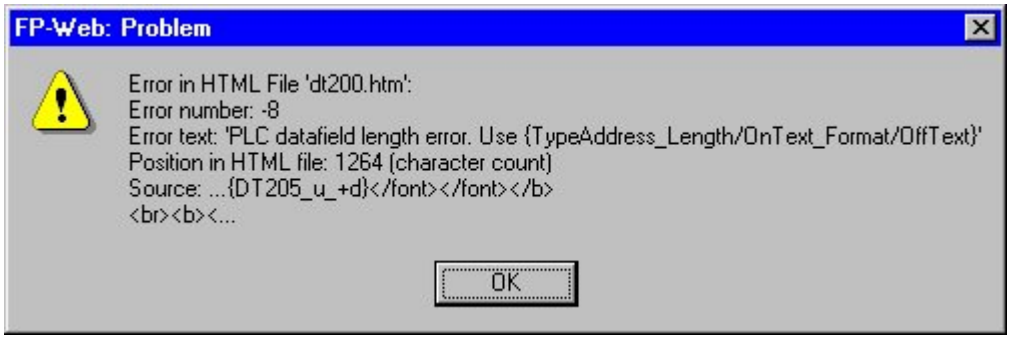
- Accept the message with [OK], save the project and proceed with [SEND]. After completing this procedure you can still open this project with version 1.0.
- [Send] also checks if the unit's firmware needs to be updated. If this is the case, a message is displayed to use [Initialize] to update the firmware.

After the transfer of the project is successful you will receive a message that the upload is complete. Click [YES] to when asked if you want to reboot the remote unit now. All settings are transferred and you do not need to click [REBOOT] after the upload.

4.3.5 Transfer Configuration Including HTML Files

The checkbox "HTTP files" can be activated in order to transfer the configuration (parameters and email texts) and all the HTTP files (HTML and graphic files) simultaneously. The transfer is started by pressing ***[SEND]***.

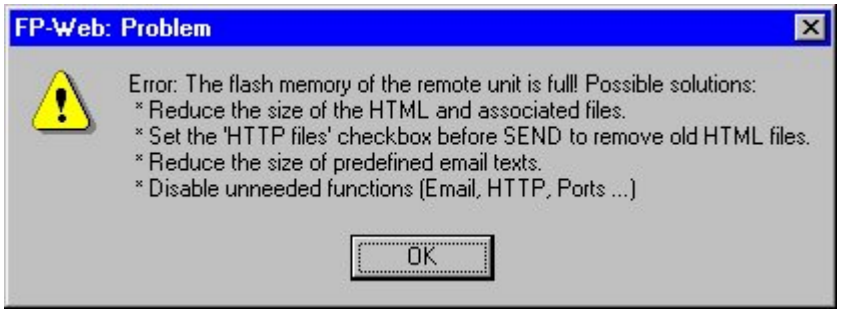
HTML files that contain ***PLC Data Fields*** (see "Data Fields for Displaying PLC Data on HTML Pages" on page 7-10) are compiled automatically before data transmission. In case the formatting errors are diagnosed when the PLC data fields are interpreted, you will receive an error message similar to the following:



and the data transmission is not carried out.

If only the HTTP files have been changed (the configuration has remained unaltered since the last restart of the FP Web-Server), the HTML pages can be accessed immediately, without restarting the FP Web-Server.

If the HTTP files sent to the FP Web-Server exceed the available ***memory*** (see "Available Memory" on page 7-39) you will receive the following message:



Approximately 148kB of the flash memory are available for HTML files. To reduce the memory used, try one of the following solutions:

1. Reduce the size of the HTML and associated files.
2. Set the 'HTTP files' checkbox before clicking [SEND] to remove old HTML files.
3. Reduce the size of predefined email texts or delete unused text files.
4. Disable unused functions (Email, HTTP, Ports ...) in the "Config" tab.
5. To free memory of the FP Web-Server click [Send] again when HTML pages containing PLC data fields are tested and error-free. This will delete the *.MTM files (copy of HTML files when PLC data fields are deleted) that are no longer used on the FP Web-Server.

Comment:

To be able to provide HTML pages for the browser, the HTTP-Server of the FP Web-Server has to be activated. See ***HTTP-Server Enable*** (on page 5-10).

4.3.6 Initialize Unit and Transfer Firmware

Initialization of the selected FP Web-Server (after a safety request has been carried out). The following steps will be executed:

- All data on the FP Web-Server is deleted.
- The current firmware (from the "BaseFiles" folder of the Configurator) is transferred.
- A default configuration (with DHCP, all functions shut off) is transferred.

Afterwards, the respective Configurator project should be transferred with ***[SEND]*** (see "Upload Configurator Project to the Remote Unit" on page 4-8). After that a ***[REBOOT]*** (see "Reboot Button to Restart the FP Web-Server" on page 4-12) should be performed.

If the current ***Password*** (see "Password for Web Pages Containing PLC Data" on page 5-6) of the FP Web-Server does not correspond to that of the Configurator project, the user name and the password will be requested before data transmission.

Comment:

If the FP Web-Server is put into operation for the first time (or a new version of the Configurator was installed), please initialize the FP Web-Server ONCE before transferring the project, i.e. click [INITIALIZE] and answer the safety request with [YES]. If you did not initialize the unit, a message after the next send informs you to update the firmware with [INITIALIZE].

4.3.7 Reboot Button to Restart the FP Web-Server

Reboot the FP Web-Server to make sure that the last configuration changes have been accepted (after having pressed [SEND]). After waiting for about 15 seconds, click on the [FIND] button to determine whether the FP Web-Server is online after rebooting and to find out which IP address it is using.

After rebooting, the current firmware version of the FP Web-Server is detected and displayed, e.g. with hardware version 1.0:

If the current ***Password*** (see "Password for Web Pages Containing PLC Data" on page 5-6) of the FP Web-Server does not correspond to that of the Configurator project, the user name and the password will be requested before the reboot.

4.3.8 Password Window Popping Up Automatically

If the current password of the FP Web-Server does not correspond to that of the Configurator project, the user name and the password will be requested before data transmission/ rebooting (click [SEND], [INITIALIZE], [REBOOT]):

After entering the user name by pressing the <TAB> key or clicking the mouse, you can write into the password field.

It makes no difference whether you use capital letters or small letters when entering the user name and the password. See also ***Default Passwords*** (see "Preinstalled Passwords and Safety Instructions" on page 10-28).

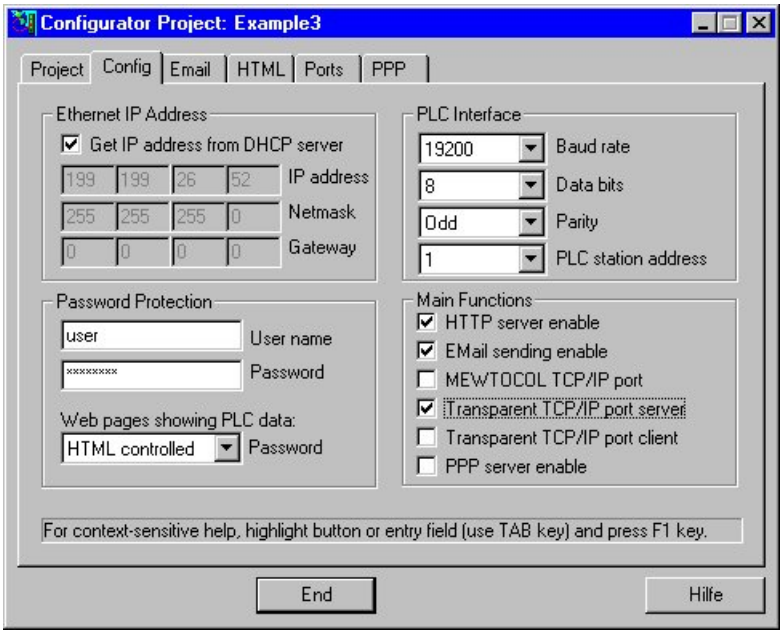
Chapter 5

Base Configuration

5.1 Main Configuration

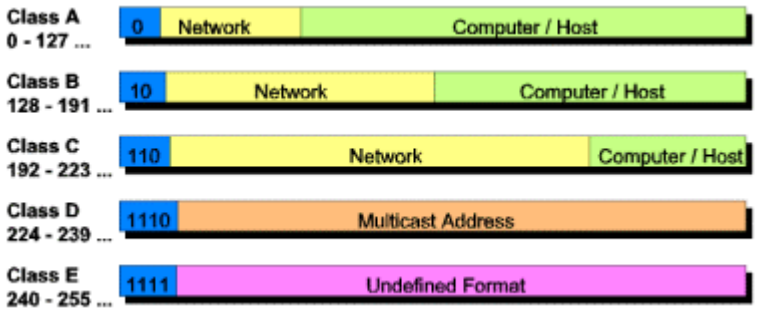
The main settings for the FP Web-Server are adjusted on the "Config" Configurator page. At least the following entries need to be made:

- The IP configuration has to be entered.
- The RS232C parameter to the PLC might have to be readjusted (19200 8O1 is pre-adjusted).
- It is recommended to enter an individual user name and password.
- Depending on which settings are required, the main functions have to be enabled.



5.2 Ethernet IP Configuration

Every Ethernet participant must have an individual IP address. This address may not be used a second time in the same network. The IP address consists of 4 numbers (any 0 to 255, see also ***IP and TCP/ IP*** (on page 10-12)). The first numbers define the network address, the other numbers define the participant's address.



The IP address of the FP Web-Server can be fixed or it can be allocated dynamically by using a DHCP-Server. See also ***DHCP or Fixed IP Address*** (on page 5-4).

◆ **PROCEDURE**

1. **In a "self set-up" network (e.g. with only one hub) the fixed IP addresses can be assigned by yourself**

   See also ***Setup of an Individual Ethernet LAN*** (on page 10-20).

   In many cases a class C network is used. The network is identified by 3 numbers. The participants (Computers, Units, FP Web-Server...) are distinguished by the last number (1 to 254), e.g. 192.168.206.1 to 192.168.206.254.

   In case this network is connected to a second network via a gateway (e.g. the computer for configuration might be in this network), the gateway address also needs to be specified, e.g.:

   Computer in x.y.206.z Network with Netmask 255.255.255.0, using the x.y.206.1 Gateway.

   FP Web-Server in x.y.60.z Network with the following settings:

   - IP Add=x.y.60.31

   - Netmask=255.255.255.0

   - Gateway=x.y.60.1

2. **In case the FP Web-Server should be connected to an existing network, the following data must be requested from the network administrator:**

   - Is there a DHCP-Server in the network? If NOT:

   - IP address: Which fixed IP address can be assigned to the FP Web-Server?

   - Netmask: How is the network address set up (length of the network address and/ or the participant's address)?

   - Gateway: What is the gateway's IP address? (0.0.0.0 if there is no gateway to be used).

5.2.1 DHCP or Fixed IP Address

If a DHCP-Server is used in the network, the FP Web-Server requests and receives its IP configuration (IP address, netmask, gateway IP address) from this DHCP-Server. The DHCP-Server assigns the IP address of the FP Web-Server dynamically. The current address can be detected by clicking ***[FIND]*** (see "Find Server Function" on page 4-6).

The advantage of the DHCP-Server is that no fixed address needs to be requested by the network administrator. The disadvantage is that the IP address might change upon every restart of the FP Web-Server. In such a case the address also has to be readjusted on the client's side (browser, programming tools)!

Comment:

If the FP Web-Server is configured to use a DHCP-Server for starting the FP Web-Server and it cannot find a working DHCP-Server, the FP Web-Server will use the fixed IP address of the configuration instead! Being aware of this, it is a good idea to configure the fixed IP address, the netmask and the gateway address first and to activate the DHCP flag then.

5.2.2 IP Address

If no DHCP-Server is used, the fixed IP address of the FP Web-Server needs to be entered here. For further information on the IP Configuration see also ***Main Configuration*** (on page 5-2).

5.2.3 Netmask

If no DHCP-Server is used, the netmask of the network used needs to be entered here. This netmask assigns the address sections for the network's and/ or the unit's addressing. For further information on the IP Configuration see also ***Main Configuration*** (on page 5-2).

5.2.4 LAN Gateway Setup

If no DHCP-Server is used, the optional IP address of the gateway used in this network has to be entered. If no gateway should be used 0.0.0.0 must be entered there.

If a gateway is used, every unknown IP address (which cannot be found in the local network) is transferred to external networks by the gateway.

For further information on the IP Configuration see also ***Main Configuration*** (on page 5-2).

Comments:

- A gateway is needed if the FP Web-Server should communicate with a computer (Internet browser, Email-Server, FPWIN...) which is located in a different sub-network. See ***Details on the Email-Server*** (see "Generalities on the Email-Server" on page 6-12) for an example configuration.
- If an FP Web-Server is set up as a remote gateway (PPP via modem) the IP address of this particular gateway FP Web-Server has to be entered here. See ***PPP Modem-Server*** (see "Dial-up Networking Setup for Computer/ FP Web-Server" on page 9-2) for detailed information and a setup example.

5.3 Password Protection

5.3.1 User Name and Password

The user name and the password for the following functions of the FP Web-Server are determined here:

- Transmission of the Configuration with [SEND] and [INITIALIZE]
- Reboot and Request for Version with [REBOOT]
- Optional Access to HTML Pages see Password for Web Pages Containing PLC Data.
- PPP-Server Modem Gateway Access
  Note: Do not use capital letters for the user name or the password for the PPP-server connection.

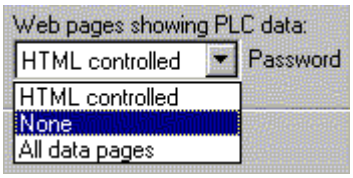
If **no** PPP server function is used it makes no difference whether you use capital letters or small letters when entering the user name and the password. The user name and password must have 1 to 9 characters. **Not** allowed are umlauts, Japanese characters and an empty user name or password entry. See also ***Default Passwords*** (see "Preinstalled Passwords and Safety Instructions" on page 10-28).

After a password change in the Configurator the following steps will activate the new password on the remote FP Web-Server.

- Save Configurator project with [SAVE] to local disc
- [FIND] the remote unit and start configuration upload with [SEND]
- Upon request enter the previous (old) password for remote connection
- After successful configuration upload [REBOOT] remote unit

5.3.2 Password for Web Pages Containing PLC Data

This selection only relates to HTML pages showing PLC data.



All Data Pages	All pages containing PLC data are protected by a password.
None	None of the pages containing PLC data are protected by a password.
HTML Controlled	Only those HTML pages containing the marker {PW} in the HTML text are protected by a password. The marker{PW} is invisible in the browser. Also see ***Activating Password Protection for an Individual HTML Page*** (on page 7-19).

Comments:

- The homepage of the FP Web-Server MAIN.HTM cannot administer PLC data fields and it cannot be protected by a password.
- If you enter a password the browser will memorize until it is restarted, i.e. if you do not exit the browser you have to enter the password only once.
- If you are working with Netscape you also have to end Netscape Composer to force the browser to forget the password just entered.

5.4 PLC Interface

The FP Web-Server receives its data (for the HTML pages, the MEWTOCOL port, email requests) from the PLC via the 3-pin RS232C port with the name "PLC COM." For a detailed description of the cables and the DIP switch functions see ***PLC Connection, Modem, Cable Drawings, DIP Switches*** (see "PLC Connection, Cable Drawings, Modem, DIP Switches" on page 10-7).

The following settings have to correspond to the respective RS232C ports (TOOL or COM port) of the PLC. To do so, open the "Tool Port" or "COM Port" settings in FPWIN Pro under "PLC Config", "System Register" and compare and/or adjust the parameters. The TOOL port of the PLC always uses an odd parity:

No	Item Name	Data	Dimensi	Range	Additional Information
412	COM port selection	Computer-Link		Unused Computer-Link General purpose	Selects the function of communication mode for the COM port.
413	COM port sending data length	8		7 to 8	COM port data length.
413	COM port sending parity check	With-Odd		None With-Odd With-Even	COM port parity check.
413	COM port sending stop bit	1		1 to 2	COM port stop bit.
413	COM port sending terminator	CR		CR CR+LF ETX None	COM port terminator.
413	COM port sending header	No-STX		No-STX STX	COM port header.
414	COM port baud rate	19200		19200 9600 4800 2400 1200 600 300	Specifies the baud rate settings for the COM port
415	COM port unit No.	1		1 to 32	Station number when the COM port is used for computer link communication.
416	COM port modem connection	Disable		Disable Enable	Format modem connection for COM port. Set System Register 413 so that the total number of bits used to send a character adds up to 10 bits.
417	General port receive buffer top value	0		0 to 6144	Starting address of receive buffer in general purpose communication.
418	General port receive buffer capacity	0		0 to 6144	Specifies the number of words to be used as a buffer defined in System Register 417.

5.4.1 PLC RS232C Baud Rate

Baud Rates of 1200 to 115200 BPS must comply with the ***PLC Setting*** (see "PLC Interface" on page 5-8).

The FP0 TOOL Port is preset to 9600 BPS.

5.4.2 PLC RS232C Number of Data Bits

The number of data bits is 7 or 8 depending on the ***PLC Setting*** (see "PLC Interface" on page 5-8).

The FP0 is preset to 8 data bits.

5.4.3 PLC RS232C Parity Bit

What kind of parity there is, if there is a parity, depends on the ***PLC Setting*** (see "PLC Interface" on page 5-8).

The FP0 TOOL Port is preset to the odd parity.

5.4.4 PLC MEWTOCOL Station Address

The MEWTOCOL station address specified here is used by the FP Web-Server for PLC data requests in case of email or HTTP operations. The values from 1 to 64 correspond to the ***PLC Setting*** (see "PLC Interface" on page 5-8) of the RS232C that it used.

The selection EE refers to a universal address ALL PLCs respond to (Never use it in C-net mode!).

The FP0 is preset to MEWTOCOL station address 1.

Upon the request of PLC data for HTML pages, the address adjusted here can be modified by the calling parameter **&A=x** in the "Location" row of the browser. For details see ***Web Pages*** (see "HTTP-Server Functions/ Web Pages" on page 7-1).

5.5 Selection of Main Functions

5.5.1 HTTP-Server Enable

This checkbox enables the HTTP-Server within the FP Web-Server. If HTML web pages are used (with or without PLC data display/ input), this checkbox should be activated.

For the administration of the HTML files of the Configurator project, see ***Configurator HTTP Administration and Functions*** (on page 7-35).

For the definition of PLC data fields in HTML pages, see ***Details on Web-Server Functions and Web Pages*** (see "Details on the FP Web-Server's Web Page Functions" on page 7-2).

5.5.2 Email Sending Enabled

This checkbox on the main configuration page is identical with the email configuration page.

See ***Email Enable/ Disable*** (on page 6-24).

5.5.3 MEWTOCOL TCP/IP Port Enabled

This checkbox on the main configuration page is identical with the configuration page for the ports.

See ***Enable MEWTOCOL Port*** (see "Enable MEWTOCOL Port Server" on page 8-6).

Comment:

Disable the MEWTOCOL port if not used to save the FP Web-Server's memory (see "Available Memory" on page 7-39).

5.5.4 Transparent TCP/IP Port Enabled

You can select between using a ***transparent TCP/IP port server*** (see "Enable Transparent TCP/IP Server Port" on page 8-9) or a ***transparent TCP/IP port client*** (see "Enable Transparent TCP/IP Client Port" on page 8-9).

This checkbox on the main configuration page is identical with the configuration page for the ports.

Comments:

- You can use either the transparent TCP/IP port or the ***Internet email server*** (see "Internet Dialup Settings" on page 6-17) because both need the RS232C port for data exchange.
- If the PPP-Server of the FP Web-Server is active and a modem is connected to the 9-pin RS232C, transparent communication is impossible, i.e. either a transparent RS232C port or a PPP-Server for external modem access (PPP Gateway to the Ethernet) is possible.
- Disable the transparent communication port if it is not used to save the FP Web-Server's memory (see "Available Memory" on page 7-39).

5.5.5 PPP-Server Enabled

This checkbox in the main configuration is identically to the one in the PPP-Server configuration page.

See ***PPP-Server Enable/ Disable*** (on page 9-17).

◆ **NOTE**

If the PPP-Server of the FP Web-Server is active and a modem is connected to the 9-pin RS232C, transparent communication is impossible, i.e. either a transparent RS232C port or a PPP-Server for external modem access (PPP Gateway to the Ethernet) is possible.

Chapter 6

Email Setup

6.1 Email Functions of the FP Web-Server

The FP Web-Server can send out emails, e.g. in case of an alert. An existing Email-Server is used to distribute the emails triggered by the PLC see also ***Details on the Email-Server*** (see "Generalities on the Email-Server" on page 6-12). The PLC can use predefined text messages (stored in the FP Web-Server) as well as variably created email texts (stored as ASCII strings in the PLC). The FP Web-Server informs the PLC if the email has been sent out correctly.

After a predefined time interval (for example every 7 seconds) the FP Web-Server checks an internal relay of the PLC (via MEWTOCOL) to find out if the PLC wants to send out an email. The ***polling interval*** (see "PLC Polling Interval" on page 6-27) between the PLC requests (and the address of the PLC internal relay that starts the sending of the email) can be defined in the Configurator project.

If the HTTP-Server and/or the Ethernet/ RS232C ports are carrying out MEWTOCOL communication with the PLC at the same time, the polling time can take longer than specified in the setup. Especially when carrying out the multi-frame MEWTOCOL commands (PLC program download) via the Ethernet/ RS232C ports, the email polling of the PLC internal relay is delayed.

A) Using an email server via Ethernet LAN:

Please ask your network administrator to clarify the following **requirements**:

- An email SMPT-Server in the LAN is required. See also ***Setup of an Individual Ethernet LAN*** (on page 10-20).
- The address of the Email-Server has to be stated correctly in the Configurator project.
- A defined email address, which is known to the Email-Server, should be assigned to the PLC (respectively the FP Web-Server).

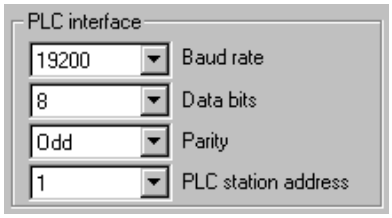
B) Dialing up an email server in the Internet:

- A modem is needed to dial up an ISP
- An email account of an Internet email ISP is needed.

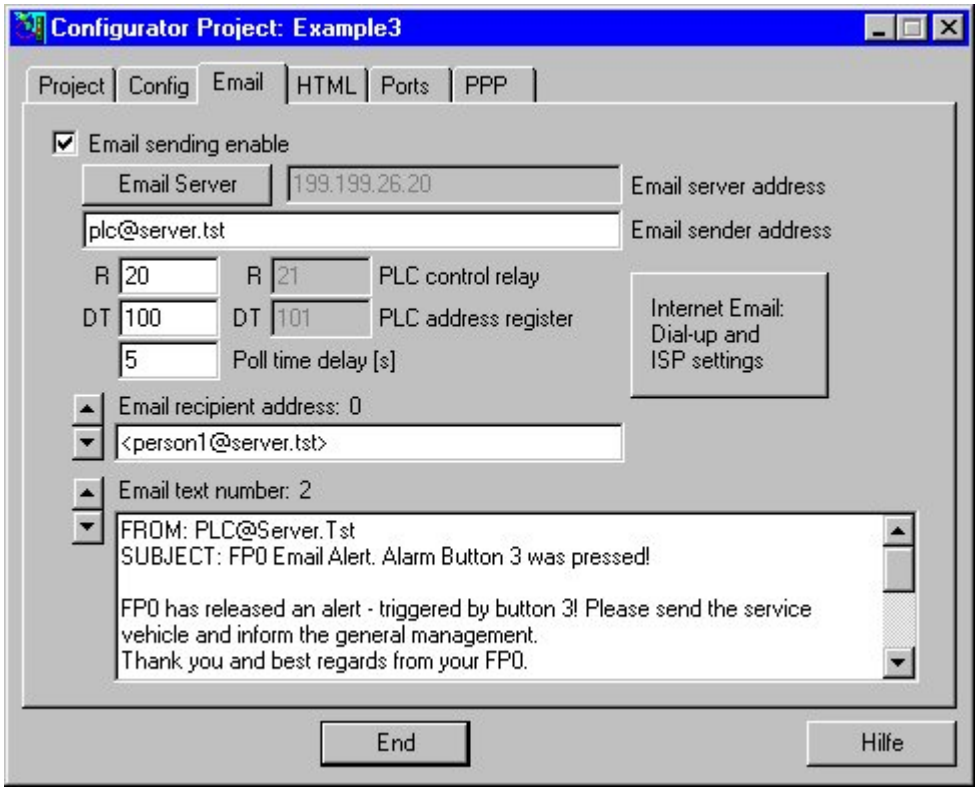
6.1.1 Email Parameters in Configurator Projects

The following settings of the Configurator project concern email functionality (Examples (see "Description of the HTML Examples" on page 10-3) include the Configurator project "Example2" for Ethernet LAN usage and "Example7" for Internet email).

The communication parameter of the RS232C to the PLC for email handling is defined in the Configurator's tab "Config".



Open the "Email" Tab in the Configurator for all further settings:



"Email sending enable":

This setting is used turn the email function of the FP Web-Server on or off. Disable this checkbox if the email function is not used. This saves the FP Web-Server's memory (see "Available Memory" on page 7-39).

[Email Server]

See ***Email Server Settings*** (on page 6-13) for detailed information.

"Email server address":

The name of the server or the IP address configured in the ***Email Server Settings*** (on page 6-13) dialog is shown here.

"Email sender address":

The email sender's address (email address of the PLC, i.e. the FP Web-Server) is defined here. It must be known to the SMPT email server.

◆ **NOTE**

Always enter the email sender's address without <> characters! Japanese characters are not allowed, nor are ASCII characters that contain umlauts.

[Internet Email: Dial-up and ISP settings]

See ***Internet Dial-up Settings*** (see "Internet Dialup Settings" on page 6-17) for detailed information.

"PLC control relay":

- The PLC internal relay Rxy is prompted by the FP Web-Server and is set by the PLC in case an email has to be sent. Rxy is reset by the FP Web-Server after the email has been sent.
- If an error occurs, the Rxy+1 is set by the FP Web-Server after the email transmission. Otherwise the Rxy+1 will be reset.

◆ **NOTE**

This setting also has to correspond to the PLC Program (see "PLC Program with Function Block from the Library M_CE_LIB" on page 6-7).

"DT PLC address register":

- PLC 16-bit DT Address DTzz: For sending the email, the value (**Content**) of the storage location DTzz is read by the FP Web-Server and interpreted as a DT address (**Pointer**), where the string (an FPWIN Pro string with a header) with the recipient's email address begins. If the value of the DTzz lies in the range of 0 to 3, the ***Recipient's Address*** (see "Selection and Input of Predefined Email Recipient's Addresses" on page 6-27) defined in the Configurator project is used.

- DTzz+1: For sending an email, the value (**Content**) of the storage location DTzz+1 is read by the FP Web-Server and interpreted as a DT address (**Pointer**), where the string (an FPWIN Pro string with a header) with the recipient's email address begins. If the value of the DTzz lies in the range of 0 to 3, the ***email text*** defined in the Configurator project is sent (see below).

NOTES

- **Data in the FL range is impossible!**
- **This setting also has to correspond to the PLC Program (see "PLC Program with Function Block from the Library M_CE_LIB" on page 6-7).**

"Poll time delay":

After the time interval has been predefined (for example every 7 seconds), the FP Web-Server checks the internal relay ***PLC Control Relay*** (see "PLC Email Control Relay Register" on page 6-25) of the PLC (via MEWTOCOL) to find out if the PLC wants to send an email.

The "Poll time delay" works in the range of 1 to 60 seconds.

NOTE

This interval has to agree with the "Server_Timeout" definition in the global variables of the PLC Program (see "PLC Program with Function Block from the Library M_CE_LIB" on page 6-7).

"Email recipient address: x":

Predefined email address of the recipient No.0 to No.3: With the [Spin] buttons (arrow up/ down) you can choose among the 4 input fields for the recipient's addresses.

Comments:

- Always enter the predefined email address of the recipient with <> characters!
- Umlauts and Japanese characters are not allowed.
- A recipient's address can be selected by using the numbers 0 to 3 in the ***PLC Program*** (see "PLC Program with Function Block from the Library M_CE_LIB" on page 6-7).

"Email text number: x":

Predefined email texts No.0 to No.3, see also ***Predefined Email Texts on the FP Web-Server*** (on page 6-6):

With the [Spin] buttons (arrow up/ down) you can choose among the 4 input fields for the email text input.

Comment:

A predefined text can be selected by using the numbers 0 to 3 in the ***PLC Program*** (see "PLC Program with Function Block from the Library M_CE_LIB" on page 6-7).

6.1.2 Predefined Email Texts on the FP Web-Server

Up to 4 email texts (0 to 3) can be predefined on the FP Web-Server. These can be selected and sent from the PLC alternatively to the email text string (in the PLC memory). In the first line of the text files, any text concerning the subject can be entered:

SUBJECT: arbitrary text

Afterwards, up to 31950 characters (almost 32kB) of email text can follow. Also the same quantity of characters is allowed when reading email from the PLC.

Comment:

For email text, use only 7-bit ASCII characters. A binary (8-bit) attachment is planned for the next version.

The email texts are saved in ASCII text files as **"mail_x.txt"** in the Configurator project. Whereas **_x** stands for a number from **0** to **3**. If it is absolutely necessary to edit these files outside of the configuration, use a text editor only (Notepad, EditPad...). Do not work with a word processing system, such as WinWord.

e.g.: File **mail_0.txt** from the Configurator project "Example2":

```
SUBJECT: Email Alert
```

```
Hello PLC user,
This is an email alert from your
PLC. Service required.
```

Code words in the first line of the email:

The RFC 822 regulation defines several keywords such as the keyword "Subject", used in the examples above. If you read the RFC regulations, you will find that you can freely define a return address and a date when an email was sent, "Cc", "Bcc", which should also work with the FP Web-Server.

6.1.3 PLC Program with Function Block from the Library M_CE_LIB

The following section describes a PLC program that cooperates with the Configurator project "Example2". By activating the PLC input, the "M_CE_Tst.asc" program sends out an email.

For creating the following PLC program, "NAiS Control FPWIN Pro", the file "M_CE_Tst.asc" (program) and the file "M_CE_Lib.sul" (library) are required. This PLC sample program is thought of as an example for individually developed PLC programs. You can find the library and the program in the installation path "Programs/NAiS Control/Configurator/FP-WEB/FPWIN Pro_Example" of the Configurator.

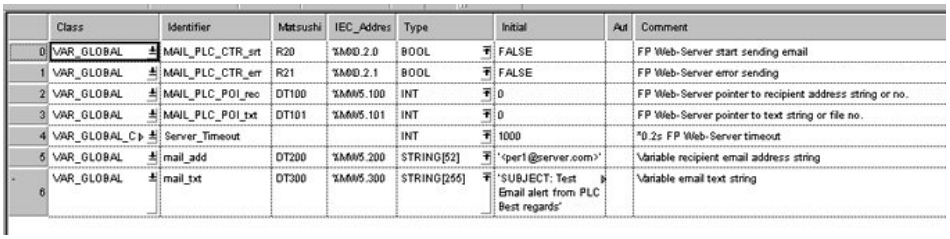
◆ **PROCEDURE**

1. **Copy the files "M_CE_Tst.asc" and "M_CE_Lib.sul" into a new folder**
2. **Start FPWIN Pro and create a new project**
3. **Select the "Library Pool" in the FPWIN Pro Navigator**
4. **Select and install "M_CE_Lib.sul" from the new folder by pressing [Edit], [User Library] and [Install/Create]**
5. **Import the project M_CE_Tst.asc with [Project] and [Import Project]**

   Now the project should already be faultlessly translatable. Do not forget to save it.
6. **Double-click "Libraries" in the FPWIN Pro Navigator to open the Library Pool**
7. **Click with right mouse button on "M_CE_Lib" and select "Open" from context menu**

   Do not enter a password. Open the library with [OK].

8. Double-click "Global Variables" under "M_CE_Lib"



	Class	Identifier	Matsushi	IEC_Addres	Type	Initial	Aut	Comment
0	VAR_GLOBAL	MAIL_PLC_CTR_srt	R20	%M0.2.0	BOOL	FALSE		FP Web-Server start sending email
1	VAR_GLOBAL	MAIL_PLC_CTR_err	R21	%M0.2.1	BOOL	FALSE		FP Web-Server error sending
2	VAR_GLOBAL	MAIL_PLC_POI_rec	DT100	%MW5.100	INT	0		FP Web-Server pointer to recipient address string or no.
3	VAR_GLOBAL	MAIL_PLC_POI_txt	DT101	%MW5.101	INT	0		FP Web-Server pointer to text string or file no.
4	VAR_GLOBAL_C	Server_Timeout			INT	1000		*0.2s FP Web-Server timeout
5	VAR_GLOBAL	mail_add	DT200	%MW5.200	STRING[52]	'<per1@server.com>'		\variable recipient email address string
6	VAR_GLOBAL	mail_txt	DT300	%MW5.300	STRING[255]	'SUBJECT: Test Email alert from PLC Best regards'		\variable email text string

9. The following variables have to be compared and adjusted (where necessary) to the settings of the configurator project

a)

MAIL_PLC_CTR_srt	R20
MAIL_PLC_CTR_err	R21

b)

MAIL_PLC_POI_rec	DT100
MAIL_PLC_POI_txt	DT101

c)

Server_Timeout	50

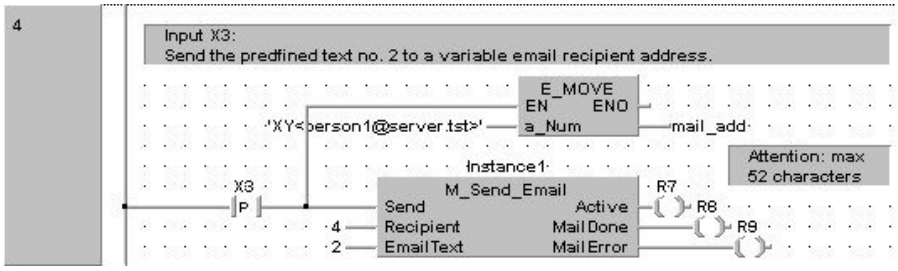
50 * 0,2 = 10s This value needs to significantly exceed the value defined in the poll time delay of the Configurator project! If the FP Web-Server sends an email via Internet dialup the value should be set about 1000s (3 minutes).

d)

The email text stored at the variable 'email_txt' in the PLC can contain theoretically up to 32.000 7-bit ASCII characters but FPWIN Pro allows only a maximum string length of 255 characters. This string length can also be set in the Global Variable List.

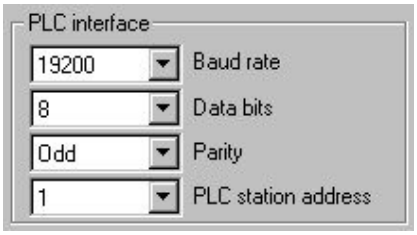
10. Select the program "Email Test" in the "POU Pool" and open the "Body"

It is absolutely necessary to adjust the recipient's email address in network 4. Please use your own email address and do not forget to put the <> brackets around the address.



11. Please make sure that the RS232C parameter of the PLC for the communication with the FP Web-Server is set correctly

The RS232C parameter of the PLC can be adjusted in FPWIN Pro. The RS232C communication parameter of FP Web-Server to the PLC for the email handling is determined in the Configurator "Config" tab, see also ***PLC Interface*** (on page 5-8).



These settings have to correspond to the settings of the respective RS232C ports (TOOL or COM port) of the PLC. To do this, open the "System Register", "Tool Port" or "COM Port" settings in the "PLC Config" and compare and/ or adjust the parameters. The TOOL Port of the PLC always uses an "Odd" Parity:

No	Item Name	Data	Dimensi	Range	Additional Information
412	COM port selection	Computer-Link		Unused Computer-Link General purpose	Selects the function of communication mode for the COM port.
413	COM port sending data length	8		7 to 8	COM port data length.
413	COM port sending parity check	With-Odd		None With-Odd With-Even	COM port parity check.
413	COM port sending stop bit	1		1 to 2	COM port stop bit.
413	COM port sending terminator	CR		CR CR+LF ETX None	COM port terminator.
413	COM port sending header	No-STX		No-STX STX	COM port header.
414	COM port baud rate	19200		19200 9600 4800 2400 1200 600 300	Specifies the baud rate settings for the COM port
415	COM port unit No.	1		1 to 32	Station number when the COM port is used for computer link communication.
416	COM port modem connection	Disable		Disable Enable	Format modem connection for COM port. Set System Register 413 so that the total number of bits used to send a character adds up to 10 bits.
417	General port receive buffer top value	0		0 to 6144	Starting address of receive buffer in general purpose communication.
418	General port receive buffer capacity	0		0 to 6144	Specifies the number of words to be used as a buffer defined in System Register 417.

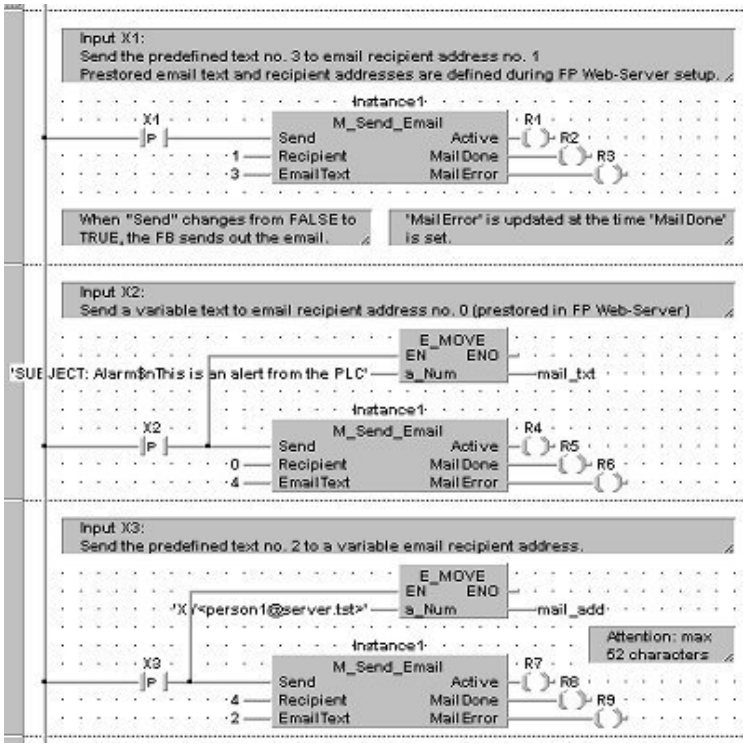
12. Compile the program, transfer it to the PLC and start it

Make sure that the FP Web-Server is connected and online.

13. The program waits for the inputs X1 to X3 and generates the following emails if a positive edge is detected at the input

Nw 2:	Input X1	Code 1:	Email to a recipient's email address (No.1) that was predefined in the Configurator project.
		Code 3:	Email text (No.3) that was defined in the Configurator project.
Nw 3:	Input X2	Code 0:	Email to a recipient's email address (No.0) that was predefined in the Configurator project.
		Code 4:	Email text that was created by the PLC program in "mail_txt". Max. 255 characters! The sequence of characters $n stands for a carriage return (CR LF).
Nw 4:	Input X3	Code 4:	Recipient's email address that was created by the PLC program in "mail_add". Max. 52 characters!

		Code 2:	Email text (No.2) that was defined in the Configurator project.



Output **"Active"**

"Active" indicates if the function block "M_Send_Email" or the FP Web-Server is still busy sending the email.

Output **"MailDone"**

"MailDone" is set as soon as the sending of the email has been completed. Output "Active" is reset simultaneously.

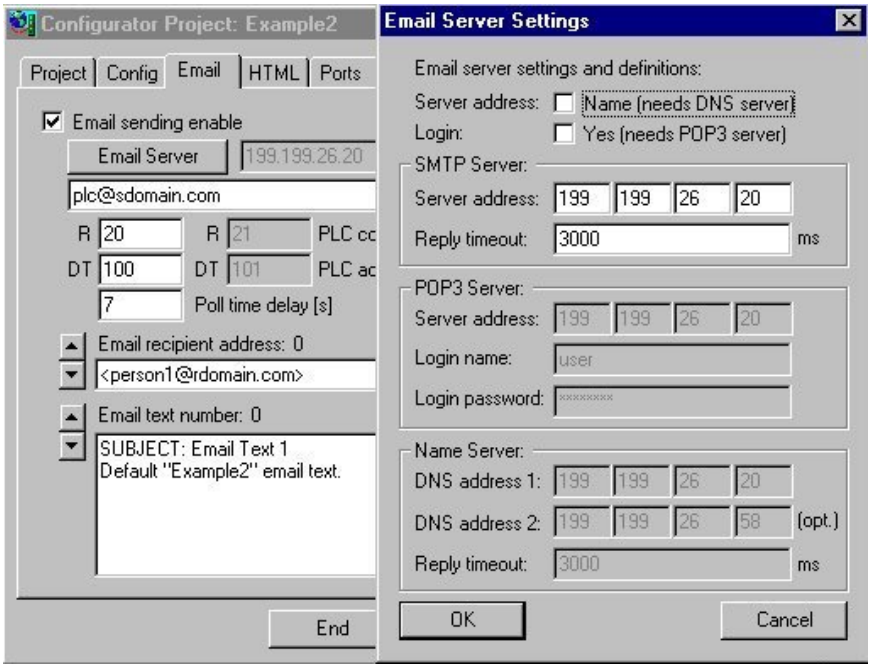
Output **"MailError"**

"MailError" is reset when the function block is activated. It is set together with "MailDone" in case an email transmission error has occurred.

6.1.4 Generalities on the Email-Server

A) Email-Server in the LAN:

The FP Web-Server was developed to cooperate with an Email-Server in your local network. Contact your network administrator for detailed information. Often, Email-Servers also allow the transmission of SMS and FAX via email. To send an email to someone via the Internet, the Email-Server needs to have access to the Internet. This poses no problem if you are using an Email-Server in your LAN that uses the Proxy to the Internet.



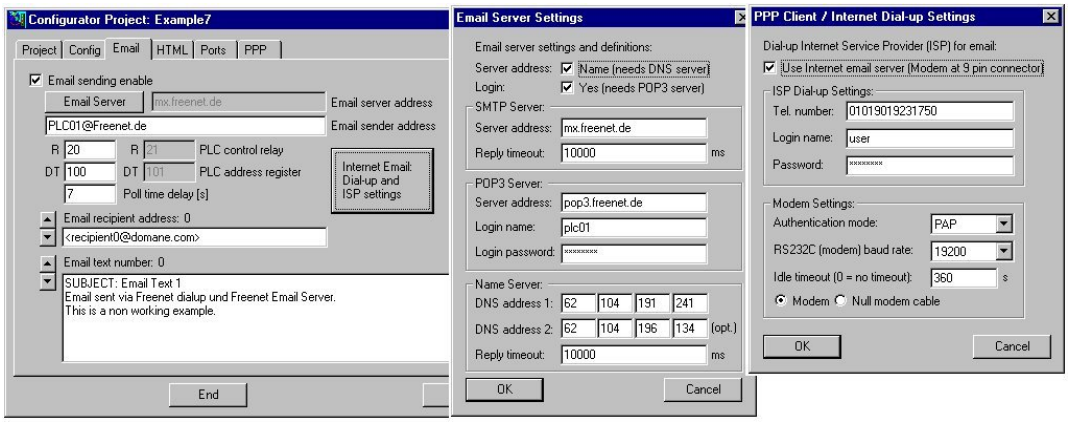
You only need to set the following email server parameters (also see "Example2" of the ***HTML examples*** (see "Description of the HTML Examples" on page 10-3))

- Server IP address (SMTP server)
- Email sender address

These parameters are available from your network administrator. Optional you can use the server name (DNS is required) and you can log in with a POP3. For more detailed information, see ***email server settings*** (on page 6-13).

B) Internet email

The FP Web-Server can also use a modem connected to the 9-pin port to dial up the Internet and send emails via an Internet Service Provider.



When using this function you need a modem (or GSM module) and the following parameters (also see "Example7" of the ***description of HTML examples*** (see "Description of the HTML Examples" on page 10-3)).

- Dialup ISP account and DNS server address, for detailed information refer to ***Internet Dial-up Settings*** (see "Internet Dialup Settings" on page 6-17)
- Two email server names (SMTP and POP3), for detailed information refer to ***email server settings*** (on page 6-13)
- Email account with user name and password, also see email server settings
- Email sender address

These parameters are available at your ISP (for detailed information also see ***email server settings*** (on page 6-13)).

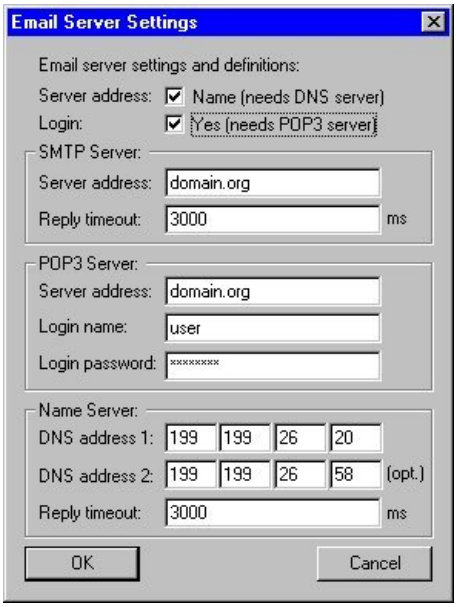
6.1.5 Email Server Settings

There are two possibilities for the configuration:

- Static IP addresses (for LAN recommended)
- Server names (require DNS server IP address)
  This is the recommended configuration for sending email via Internet dial-up. See the following procedure.

◆ **PROCEDURE**

1. **Activate the check boxes "Server address" and "Login" according to the information on the email server used**



Note:

For the server name, the user name and the password only ASCII characters are allowed. Do not use umlauts or Japanese characters.

2. **Enter the name of the email server used**

   When using an internet email server, setting a server name is recommended. In this case the DNS address is also required to automatically link the server's name to its address.

   In case you deactivated the check box "Server address name", enter the ***IP address of the email-Server*** (see "How to Find out the Address of the Email Server" on page 6-16). See ***Details on the Email-Server*** (see "Generalities on the Email-Server" on page 6-12).

3. **Enter Email Server timeout**

   Values from 700ms to 60,000ms are valid. Higher values are recommended for internet servers.

4. **Enter POP3 server address**

   Depending on the check boxes activated, enter the name or the exact IP address of the POP3 server used. This information is provided by your network administrator or the Internet Service Provider.

5. **Enter login name**

If you activated the checkbox "Login", the FP Web-Server logs on the POP3 server with the login name and password given before sending an email. Therefore a POP3 email server is required.
This login function (SMTP after POP3 login) is always necessary when using an internet email server.

If you did **not** activate the check box "Login", no personalized login to an SMTP email server is used when sending an email. Most LAN SMTP server do not require a login.

6. **Enter login password**

7. **Enter the** *DNS addresses* **(see "How to Find out the DNS Addresses" on page 6-15)**

   This is only necessary when you enter the server addresses using the server names. A secondary DNS server is not absolutely required. If only one DNS server is used, enter 0.0.0.0 in the second DNS IP address field. This information is provided by your network administrator or the Internet Service Provider. Also see section, "How to find out the DNS addresses".

8. **Enter DNS timeout**

   Values from 700ms to 60,000ms are valid. Higher values are recommended for internet servers.

Comments on DNS:

- If you use the server names and their DNS addresses, your email configuration remains valid when the email-ISP changes the IP address of the email servers.

6.1.5.1 How to Find out the DNS Addresses

At the time the FP Web-Server establishes a dial-up connection via modem, the DNS servers from the dial-up ISP are to be used. As the FP Web-Server (hardware version 1.0) cannot yet detect the DNS servers used automatically, the IP addresses must be configured manually. To find out the IP addresses of the Dialup-ISP DNS servers a Windows computer can be used:

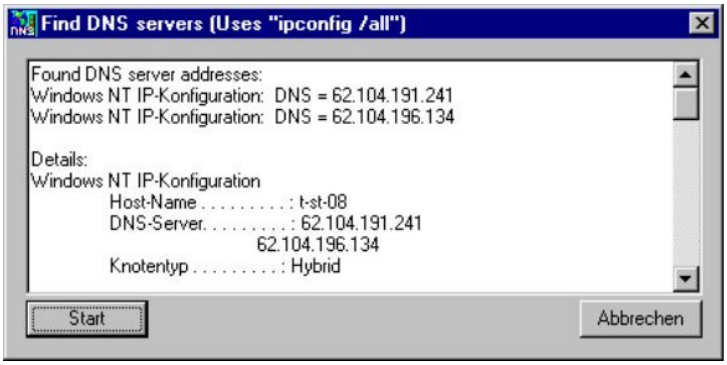
◆ PROCEDURE

1. **Configure and establish a remote network connection to the Internet (via modem)**

2. **Use the DOS command prompt to enter the “IPCONFIG /all” command or**

3. **Use the program “DnsDisp.exe” supplied within your installation folder**

   While online double-click "DnsDisp.exe" within the file explorer. Then click [Start].



Comment:

DnsDisp.exe is based on IPCONFIG, which only runs on WindowsNT, 2000 or XP, i.e. Windows 95, 98 or ME does not show all information. If DnsDisp does not work while online, ensure the folder of your configurator installation is added to the path variable or copy the DnsDisp.exe in a respective folder that is added to the path variable.

6.1.5.2 How to Find out the Address of the Email Server

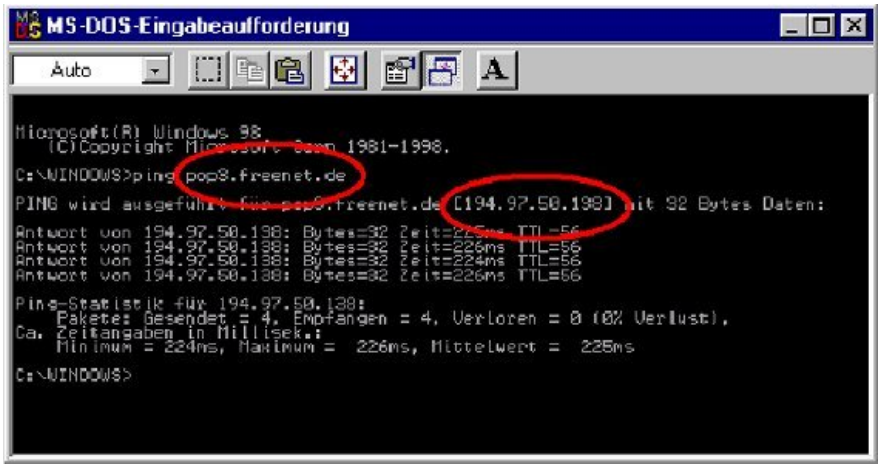
Normally the name of the email servers can be found on the Internet pages of the email-ISP. See sections called ‘Technical details’, ‘Experts’ or ‘How to setup email client program’. Please also make sure that no ASMTP (special encrypted login method) is needed. The FP Web-Server only supports plain ‘SMTP after POP3’ authentication.

If possible it is recommended to find out the names' IP addresses. You can request from the email-ISP or by using a Windows computer:

◆ **PROCEDURE**

1. **Configure and establish a remote network connection to the Internet (via modem)**

2. **At the DOS command prompt, enter the command “PING xyz” which displays the IP address**



'xyz’ indicates where the SMTP (POP3) email server name is.

6.1.6 Internet Dialup Settings

The following step-by-step procedure enables sending emails via internet dialup:

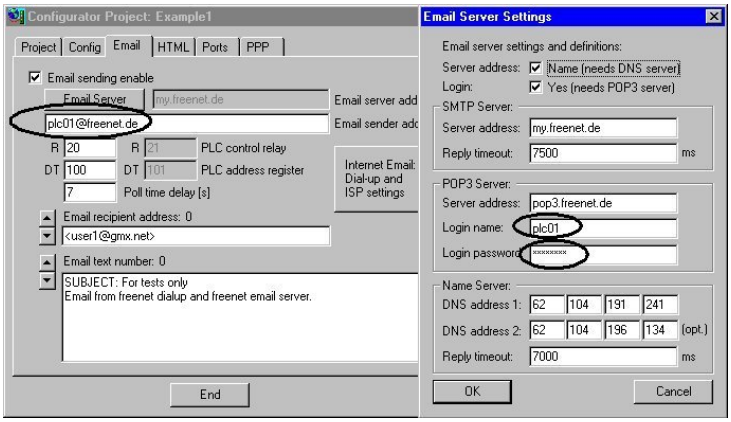
Register an email account with your email ISP

◆ **PROCEDURE**

1. **Enter an email sender address**

2. **Click on [Email Server]**

3. **Enter login name and password**

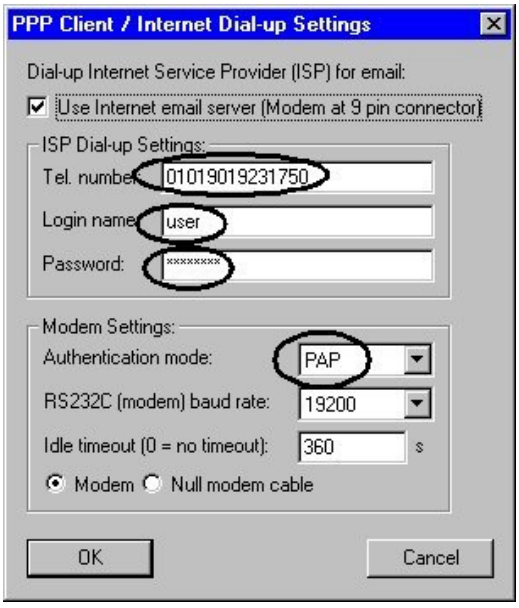


Register an Internet dialup account with your dial-up ISP

◆ **PROCEDURE**

1. **Click on [Internet Email: Dial-up and ISP settings]**

2. **Activate the checkbox "Use Internet email server ..."**



3. **Enter the telephone number for modem dial-up**

   If you use a PBX: Set the string “0w” in front of the number.

4. **Enter login name and password for the dial-up account**

The Authentication method is normally set to "PAP".

5. **Set a baud rate that complies with the modem used**

   The FP Web-Server always connects with the internal settings of 8 bits, none parity and 1 stop bit.

6. **Set the idle timeout**

   The idle timeout can be lowered to approx. 2 minutes (120s). After this interval without data communication the FP Web-Server disconnects from the dial-up ISP and hangs up the modem connection.

7. **For the settings on "Modem" or "Null modem cable", refer to *Modem or Null Modem Cable Selection*(on page 9-20)**

◆ NOTES

- **If the modem connection from a remote client to the PPP server is established and an email is to be sent via Internet dialup by the FP Web-Server, the PPP server connection will be cancelled automatically so that it can call the ISP via modem. After the email is sent to the ISP, the PPP server is enabled again.**

- **For the user name and password only ASCII characters are allowed. Do not use umlauts or Japanese characters.**

- **You can use either the Internet email server (check box is activated) or the** *transparent TCP/IP port* **(see "Configurator Parameters to the Transparent Port" on page 8-8) because both need the RS232C port for data exchange.**

Comments:

- It is possible to dial up one Internet Service Provider (Dial-up ISP) and use the email server(s) from a second ISP (email ISP). But some ISPs will not allow this.
  Using one ISP for both dialup and email is recommended.
- In the Internet the email server(s) are normally addressed with a name rather than with its direct IP address. But for name resolution, the IP address of an Domain Name Server (DNS) is necessary. (FP Web-Server hardware version 1.1 simplifies the DNS usage).
  For easier configuration using the email server(s) IP addresses directly is recommended. (...if it can be acquired and is not changed by the email ISP)

- An SMTP (Simple Mail Transfer Protocol) server is needed to send emails. An Internet SMTP server only allows registered users (registered email sender addresses) to send emails. Additionally some email ISPs protect their SMTP servers with a login procedure. For this a POP3 email server is used to check the user name and password before an email can be sent.
  Most of the time a POP3 login is used.
- You can also set up an FP Web-Server that is configured as a PPP-Server which is dialed up instead of an ISP. This FP Web-Server, i.e. the PPP-Server, works as a dialup gateway for a LAN where an email server can be used to send emails.

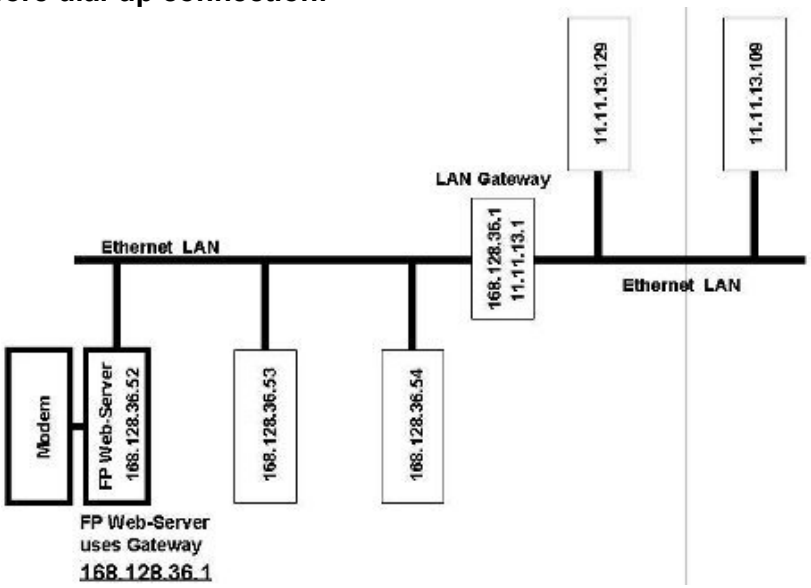
Notes for Advanced Users

- If you use the FPWIN Pro library ”M_CE_Lib” for sending emails you have to increase the idle timeout for Internet dialup operations. In the library delivered with the new version (see installation path ”Programs / NAiS Control / FP-WEB / FPWIN-Pro_Example”) the idle timeout is already set to 3 minutes.

	Class	Identifier	Matsushita	IEC_Addre	Type	Initial	Au	Comment
0	VAR_GLOBAL	MAIL_PLC_CTR_srt	R20	%MX0.2.0	BOOL	FALSE		FP Web-Server start sending email
1	VAR_GLOBAL	MAIL_PLC_CTR_err	R21	%MX0.2.1	BOOL	FALSE		FP Web-Server error sending
2	VAR_GLOBAL	MAIL_PLC_POI_rec	DT100	%MW5.100	INT	0		FP Web-Server pointer to recipient addres:
3	VAR_GLOBAL	MAIL_PLC_POI_txt	DT101	%MW5.101	INT	0		FP Web-Server pointer to text string or file
4	VAR_GLOBAL_CON	Server_Timeout			INT	1000		"0.2s FP Web-Server timeout
5	VAR_GLOBAL	mail_add	DT200	%MW5.200	STRING[52]	'<plc.web@		Variable recipient address string
6	VAR_GLOBAL	mail_txt	DT300	%MW5.300	STRING[52]	'SUBJECT: Email alert ! Best regard		Variable email text string

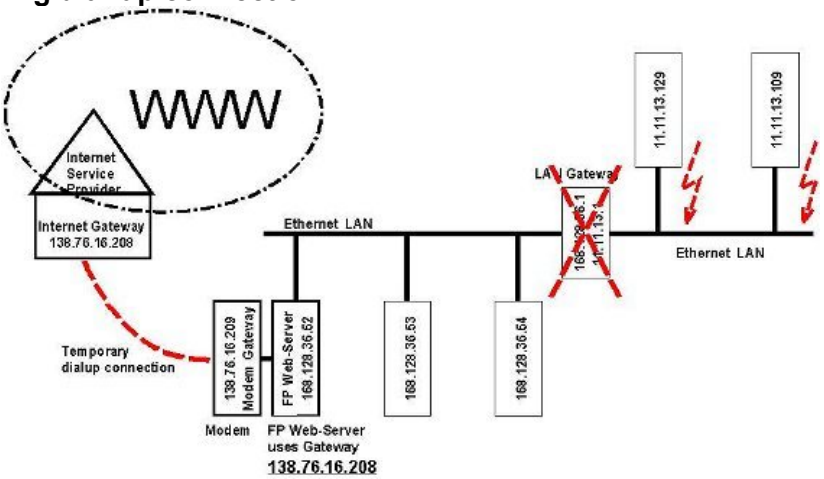
- If your FP Web-Server is configured to use a gateway, i.e. if communication with the FP Web-Server is set up via a gateway, you need to take in account that the FP Web-Server does not use this gateway during an active dialup connection. This means that a TCP port, FPWIN, PCWAY or HTTP communication through the gateway is temporarily interrupted while an Internet email is being sent.

Before dial-up connection:



The FP Web-Server can find all stations shown in the picture above.

During dial-up connection:



Both stations (e.g. 168.128.36.53 and 168.128.36.54 without using the gateway) can communicate with the FP Web-Server during the Internet dialup connection. The other stations (e.g. 11.11.13.129 and 11.11.13.109 that use the gateway) may get communication errors while Internet dialup is active. This is valid for all connection modes of TCP communication, e.g. HTTP, email, port communication and configuration (Telnet, FTP).

- Some email ISPs, e.g. GMX, may block sending emails if the PLC sends too many emails or emails are sent in quick succession. No official documentation or explanation could be found at GMX. It can be assumed that GMX blocks sending 'swamp mail'.

Modem connection and setup

- If a standard computer modem is to be used it also can be connected by a 1:1 9-pin RS232C cable (standard computer to modem cable) to the 9-pin connector of the FP Web-Server. Before the modem is connected to the FP Web-Server, please use a terminal program to enter the appropriate AT commands (see modem manual) to:
  * Ignore DTR changes (AT&D0)
  * RTS/CTS hardware handshake (AT&K0&R0)
  * No wait on dial tones (ATX3)
  This setting is saved with the command AT&W for the next power-up or ATZ command.

  If the modem is connected via a PBX to the PSTN, a “0w” or “0” can be put in front of the Dialup ISP telephone number.

Dialup and email tests

- The new, enhanced email functions like POP3 login and name resolution via DNS can also be tested in a LAN, i.e. also in the local Ethernet a POP3 login and DNS access can be tested. The network administrator can provide the parameters and addresses.

  To test the Internet dialup and the Dialup ISP parameters, a Windows computer with ‘remote dialup networking’ can be used. This setup plus an email client like “Eudora” or “Outlook” can be used to test the email servers and the Email ISP parameters.

  For tests in Germany we included "Example7", see ***description of HTML examples*** (see "Description of the HTML Examples" on page 10-3).

  Later versions will implement an extended status display.

FP Web-Server configured as PPP-Server

- You can also configure the FP Web-Server as a PPP-Server which is dialed up instead of an ISP. This FP Web-Server, i.e. the PPP-Server, works as a dialup gateway for a LAN where an email server can be used to send emails.

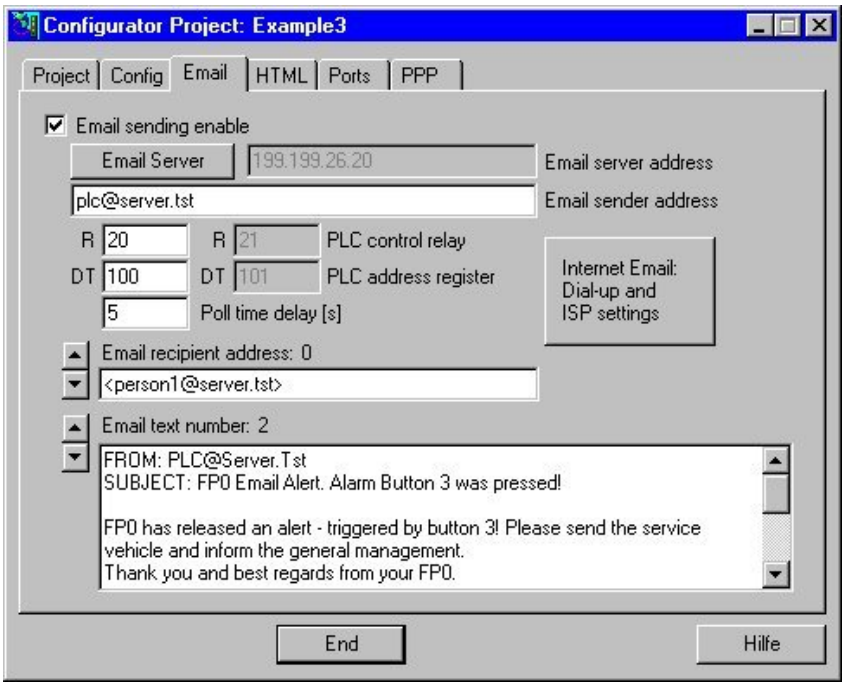
Comments for Using a Cellular Phone (GSM) Modem

Please note the following when a cellular phone (GSM) module is used by the FP Web-Server to call an ISP before sending an email:

1. At the dialog "***Email Server Settings*** (on page 6-13)" enter a high value (17000ms or more) for the timeout of the DNS and Email Server.
2. At the dialog "Internet Dialup Settings" only the baud rate can be set. The FP Web-Server always uses 8 data bits, no parity and 1 stop bit.
3. Be careful with the GSM antenna! Keep distance to the other units (PLC, modem, FP Web-Server...). that may cause interference by high level radio waves.
4. Set the GSM module to the factory settings (default settings) before connecting to the FP Web-Server.
5. Please reboot (power up) the FP Web-Server after changing cables and connectors. Especially after connecting a modem / GSM module to the FP Web-Server, it is necessary to restart the unit for modem initialization and recognition.
6. Most of the GSM providers also offer Internet services. In this case these providers will not allow you to dial up other Internet Service Providers via GSM! I.e. if you have a GSM contract with company **XYZ** and this company also offers Internet dial-up services then you cannot use your GSM module to dial up Internet services from the other company, e.g. **ABC**.

6.2 Email Configurator Input Fields

In the following the individual input fields of the Configurator are described:



6.2.1 Email Enable/ Disable

Switches the email functions of the FP Web-Server ON or OFF.

If they are switched on, an Email-Server (see "Generalities on the Email-Server" on page 6-12) must be available. The PLC Program (see "PLC Program with Function Block from the Library M_CE_LIB" on page 6-7) should also be prepared for email administration. As soon as the email function is enabled certain internal relays (see "PLC Email Control Relay Register" on page 6-25) in the PLC will be requested by the FP Web-Server in regular intervals (see "PLC Polling Interval" on page 6-27) to detect when an email has to be sent. For detailed information on the email functions see also ***Email Functions of the FP Web-Server*** (on page 6-2).

Comment:

Disable the email function if it is not used to save the FP Web-Server's memory (see "Available Memory" on page 7-39).

6.2.2 Email Server Settings

When clicking on [Email Server] the dialog "Email Server Settings" opens.

See ***Generalities on the Email-Server*** (on page 6-12), ***Email Server Settings*** (on page 6-13) and ***Internet Dialup Settings*** (on page 6-17).

See ***Setup of an Individual Ethernet LAN*** (on page 10-20) for tips on how to build your own network.

6.2.3 Internet Email

When clicking on [***Internet Email: Dial-up and ISP settings*** (see "Internet Dialup Settings" on page 6-17)] you can configure sending emails via PPP-Client.

6.2.4 Email Sender's Address

Enter the PLC's, i.e. the FP Web-Server's email address here. This email sender's address should be known to the SMPT Email-Server. Using Internet email the registered sender address must be entered as stated from the ISP.

◆ **NOTE**

Always enter the email sender's address without <> characters! The address is limited to 79 characters, e.g. plc@domain.com.

6.2.5 PLC Email Control Relay Register

As soon as the email function is enabled the relay register in the PLC is requested by the FP Web-Server in regular intervals (see "PLC Polling Interval" on page 6-27) to detect when an email has to be sent.

The relay registers Rxy and Rxy+1 defined here have the following functions:

- The PLC internal relay Rxy undergoes regular polling from the FP Web-Server and is set by the PLC in case an email has to be sent. Rxy is reset by the FP Web-Server after the email has been sent.
- If an error occurs, the Rxy+1 is set by the FP Web-Server after the email transmission. Otherwise the Rxy will be reset.

◆ **NOTE**

This setting also has to correspond to the *PLC Program* **(see "PLC Program with Function Block from the Library M_CE_LIB" on page 6-7).**

6.2.6 PLC Email Pointer Data Register

The data registers determine which email recipient's address and which email text is to be used. The two data registers DTzz and DTzz+1 are read when an email should be sent.

They have the following significance:

- PLC 16-bit DT Address DTzz: For sending the email, the value (**Content**) of the storage location DTzz is read by the FP Web-Server and interpreted as a DT address (**Pointer**), where the string (an FPWIN Pro string with a header) with the recipient's email address begins. If the value of the DTzz lies in the range of 0 to 3, the Recipient's Address (see "Selection and Input of Predefined Email Recipient's Addresses" on page 6-27) defined in the Configurator project is used.
  Data in the FL range are impossible!
- DTzz+1: For sending an email, the value (**Content**) of the storage location DTzz+1 is read by the FP Web-Server and interpreted as a DT address (**Pointer**), where the string (an FPWIN Pro string with a header) with the recipient's email address begins. If the value of the DTzz lies in the range of 0 to 3, the email text predefined in the Configurator project is sent.
  Data in the FL range are impossible!

◆ **NOTE**

This setting also has to correspond to the *PLC Program* **(see "PLC Program with Function Block from the Library M_CE_LIB" on page 6-7).**

6.2.7 PLC Polling Interval

If the email is turned on, the internal relay (see "PLC Email Control Relay Register" on page 6-25) of the PLC is requested according to the predefined interval (for example 7 seconds). The "Poll time delay" works in the range of 1 to 60 seconds.

If the HTTP-Server and/or the Ethernet/ RS232C ports are carrying out MEWTOCOL communication with the PLC at the same time, the polling time take longer than the setup. Especially when carrying out the multi-frame MEWTOCOL commands (PLC program download) via the Ethernet/ RS232C ports, the email polling of the PLC internal relay can be delayed.

◆ **NOTE**

This interval has to agree with the "Server_Timeout" **definition in the global variables of the PLC Program (see "PLC Program with Function Block from the Library M_CE_LIB" on page 6-7).**

6.2.8 Selection and Input of Predefined Email Recipient's Addresses

Predefined email address of the recipient No.0 to No.3: With the [Spin] buttons (arrow up/ down) you can choose between the 4 input fields of the recipients' addresses.

◆ **NOTE**

- **Always enter the predefined recipient's email address with <> characters! The address is limited to 79 characters, e.g.** <operator@domain.com>.
- **A recipient's address can be selected under the numbers 0 to 3 in the PLC Program (see "PLC Program with Function Block from the Library M_CE_LIB" on page 6-7).**

6.2.9 Selection and Input of Predefined Email Texts

Predefined email texts No.0 to No.3, see also ***Predefined Email Texts on the FP Web-Server*** (on page 6-6):

With the [Spin] buttons (arrow up/ down) you can choose between the 4 input fields of the email text input.

Code words in the first line of the email:

The RFC 822 regulation defines several keywords such as the keyword "Subject", used in the examples above. If you read the RFC regulations, you will find that you can freely define a return address and a date when an email was sent, "Cc", "Bcc", which should also work with the FP Web-Server.

Comments:

- A predefined text can be selected under the numbers 0 to 3 in the PLC Program (see "PLC Program with Function Block from the Library M_CE_LIB" on page 6-7).
- The email text file can be edited with a text editor (e.g. n otepad) without using the configurator tool. If you edit an email text file with notepad, the configurator project should **not** be opened with the FP Web Configurator. After editing is finished, open the project with the configurator tool and click [Save] to be sure that the text is not longer than 32,000 characters.

Chapter 7

HTTP-Server Functions/ Web Pages

7.1 Details on the FP Web-Server's Web Page Functions

For an initial demo of the HTTP function of the FP Web-Server you can access the Matsushita Internet demo unit. To carry out the test you need an Internet browser that can access the Internet.

Please enter the following address: **"http://62.180.233.51/"**

For further information also see:

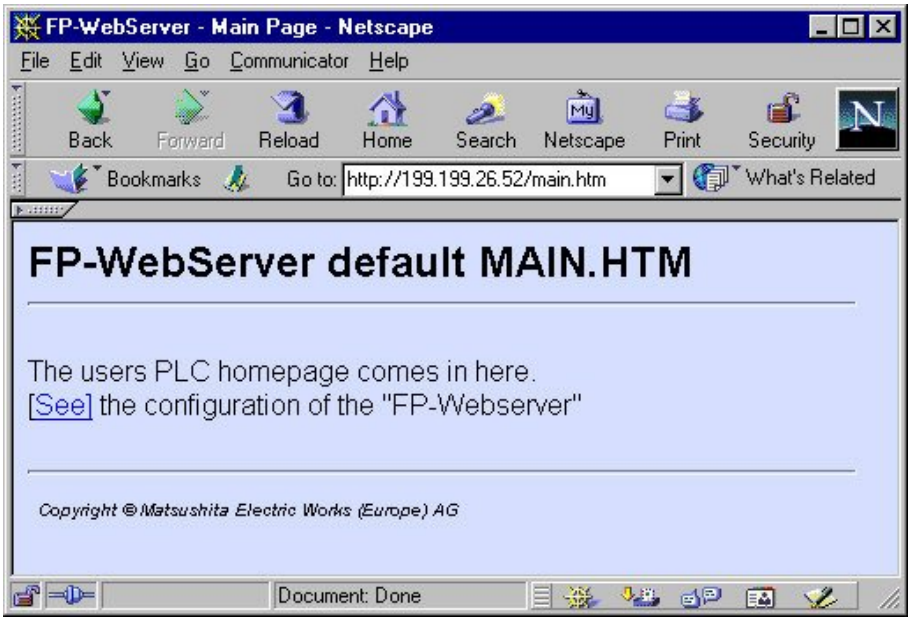
- ***Calling Parameter*** (see "HTTP Address, CGI Function PLC and Calling Parameter" on page 7-6)
- ***Data Fields*** (see "Data Fields for Displaying PLC Data on HTML Pages" on page 7-10)
- ***Input Fields*** (see "Defining Input Fields for PLC Data on HTML Pages" on page 7-21)

7.1.1 Testing the FP Web-Server Functions

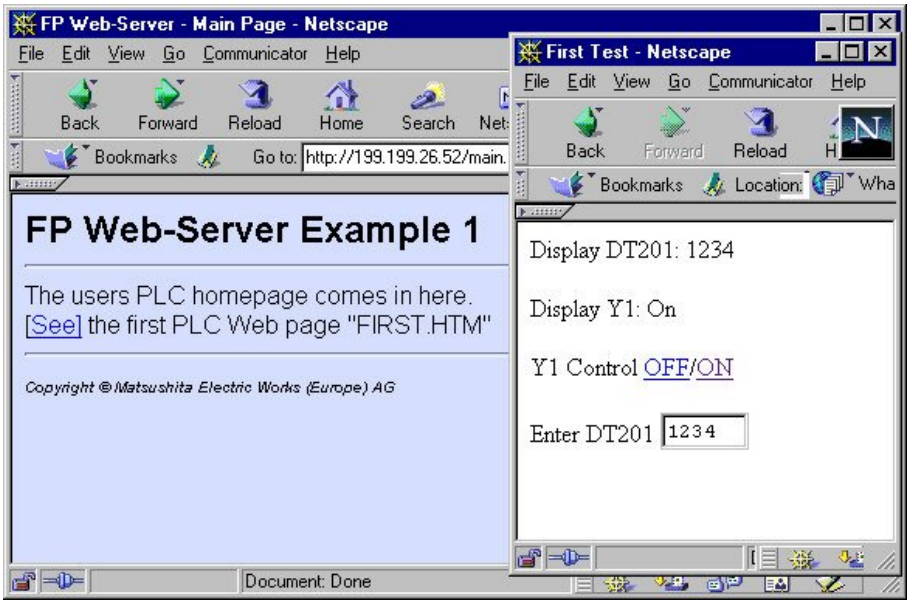
For details on how to put a FP Web-Server with HTML Pages in operation, see also ***First Steps*** (on page 3-1). The HTML Pages of the FP Web-Server can be displayed by a standard Internet browser. Therefore, start the Internet browser and enter the IP address of the FP Web-Server in the input field "Location":

The HTML page **"MAIN.HTM"** of the FP Web-Server will be displayed.

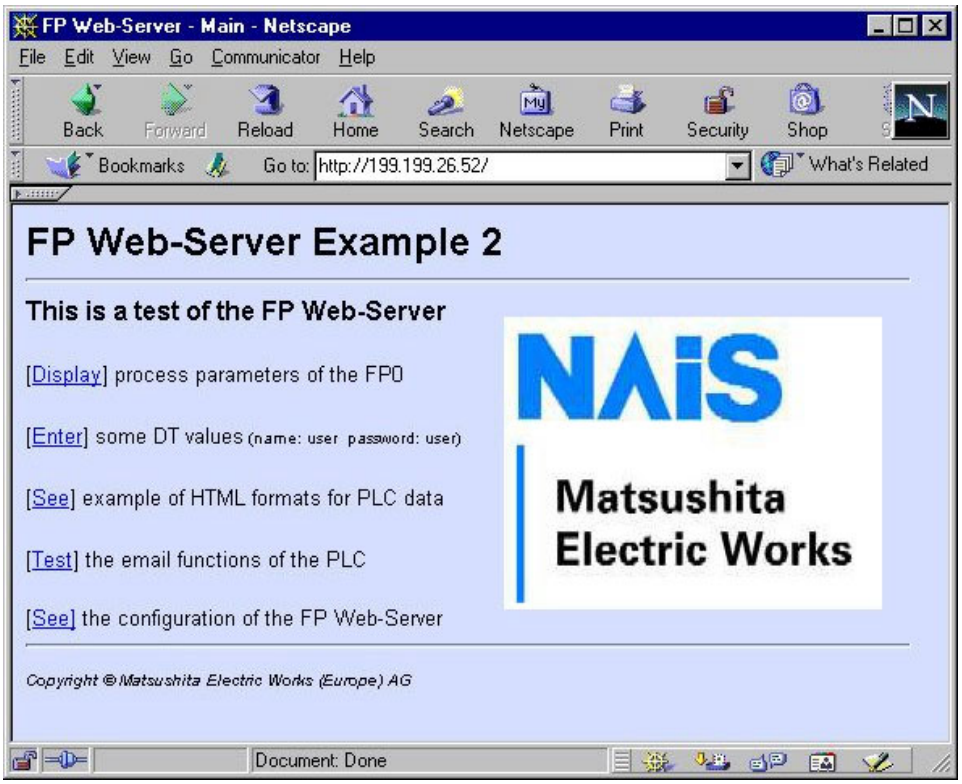
For the "default_project" (without PLC data, FP Web-Server may not be connected to a PLC) for example:



Or for 'Example1' (with PLC Data):



Or for 'Example2':



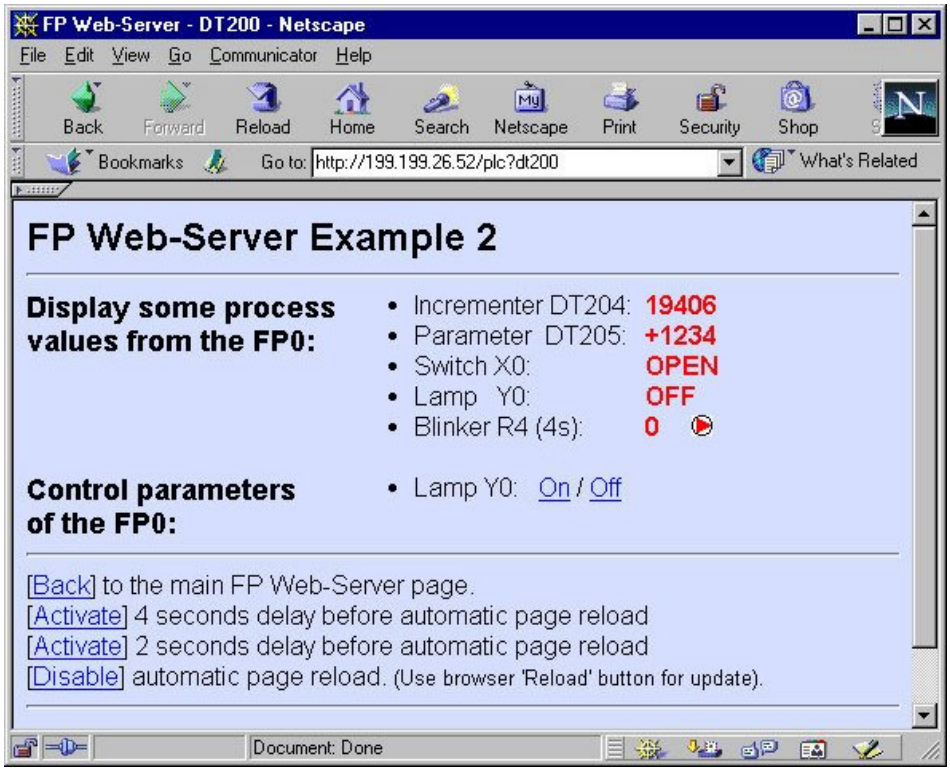
7.1.2 Internet Browser Settings

If the FP Web-Server is operated in an office network with a Proxy gateway to the Internet, the access to the FP Web-Server HTML pages might take a long time. In this case, shut off the Proxy function of the browser for this specific IP address of the FP Web-Server. For the browser setup see also TCP/IP Setup: Configurator/Browser Operations Via LAN (see "TCP/ IP Setup for Configurator/Browser Operations via LAN" on page 10-14).

7.1.3 Generalities on PLC Data Fields in HTML Pages

"Example2 (see description of HTML examples (see "Description of the HTML Examples" on page 10-3)) is used for the following explanation:

Here is the HTML page **'MAIN.HTM'** of the FP Web-Server displayed. By clicking the links you can test the individual pages. For example, by clicking [Display] the DT200 page (with PLC data) is displayed:



By clicking on [On] or [Off] the output of the PLC can be set.

This page contains PLC data fields whose data address has been entered in the HTML source text. The address is replaced by PLC data upon the calling of the browser. For the format (see "Data Fields for Displaying PLC Data on HTML Pages" on page 7-10) and the input in a HTML code, see also ***HTTP Address, CGI Function PLC and Calling Parameter*** (on page 7-6).

To accomplish this, the HTML pages that should also display PLC data are marked with the data name extension .MTM instead of .HTM. This is done with the assistance of a "HTML-Compiler" (integrated into the Configurator) before the transmission to the FP Web-Server is carried out by the Configurator.

In the example above, the PLC data are (not necessarily) marked in red. These data were requested from the PLC by the MEWTOCOL Address (see "PLC MEWTOCOL Station Address" on page 5-9) that is defined in the Configurator project. This '"default" MEWTOCOL address can be modified by the calling parameter &A=x in the "Location" field. For a description of the parameter, see also ***HTTP Address, CGI Function PLC and Calling Parameter*** (on page 7-6).

7.1.4 HTTP Address, CGI Function PLC and Calling Parameter

Please also note the display/ input in the "Location" field:
"http://199.199.26.52/plc?dt200" of the browser. With the parameter after the IP address you can control various functions.

HTTP Address	Function
http://199.199.26.52/	Downloads MAIN.HTM (in MAIN.HTM you can neither use PLC data fields nor password protection)
http://199.199.26.52/zzz.HTM	Downloads HTML page zzz.HTM
http://199.199.26.52/plc?yyy	Downloads HTML page yyy.MTM incl. PLC data. The file format .MTM is equivalent to the .HTM format plus PLC data. The .MTM file is generated by the Configurator.
http://199.199.26.52/plc?yyy&U=xx	With automatic reload/ update after xx seconds. The maximum refresh rate is reached with the input &U=0.
http://199.199.26.52/plc?yyy&A=xx	All following PLC data displayed (including yyy.MTM) are addressed to the PLC with the C-Net/MEWTOCOL Address xx (0..32). 0 is equivalent to the universal address EE. The default address (if no &A parameter is used) can be determined in the base configuration setting PLC MEWTOCOL Address (see "PLC MEWTOCOL Station Address" on page 5-9). The &A operator does not affect the default addressing for input fields.
http://199.199.26.52/plc?yyy&Rxxy=w	Before downloading the page yyy, the internal relay with the address Rxxy is set (w=1) or reset (w=0). (xx=0...999 y=0...F w=0/1)
http://199.199.26.52/plc?yyy&Yxxy=w	Before downloading the page yyy, the output with the address Yxxy is set/ reset. (xx=0...999 y=0...F w=0/1)
http://199.199.26.52/plc?yyy&Y0=1&A=5&Y0=1	Composed types of commands are also possible!

Comments:

- **http://199.199.26.52/"** can be omitted for relative hyperlinks in an .HTM (or .MTM).

- Only when the HTTP-Server is turned on (***HTTP-Server Enable*** (on page 5-10)), can the modification of PLC data (via &Y and &R commands) be temporarily turned off with DIP switch 2. If an error occurs the DIP 2 might also be the cause, because it prevents writing to the PLC. Therefore the functioning of the Ys and Rs is also affected. For the DIP switch settings see DIP Switches (see "PLC Connection, Cable Drawings, Modem, DIP Switches" on page 10-7).
- The functions &Y and &R can be limited with [Add. Range] (see "PLC Address Range Definition" on page 7-42)
- The name of the CGI function must be in small letters, i.e. "http://199.199.26.52/PLC?yyy" will not work.
- The PLC address of the &R and &Y commands cannot be replaced by a variable name i.e. "http://199.199.26.52/plc?yyyeR'name'=1" will not work. For further information see also ***Using Variable Names Instead of Absolute PLC Addresses*** (on page 7-15).
- All file names have to correspond to the DOS 8.3 format, i.e. the name may only have up to 8 characters and the extension (type) only up to 3 characters after the period. If long file names, spaces or Japanese characters are used, an error message pops up before transmission to the FP Web-Server.

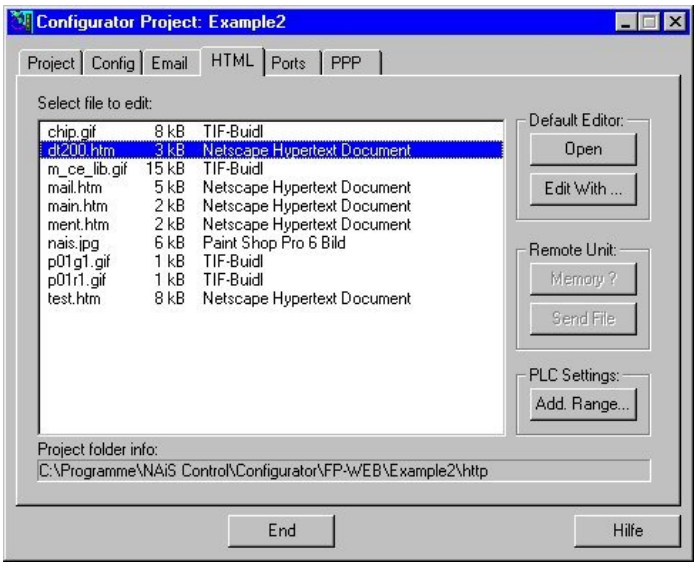
7.1.5 Configurator Settings Concerning the HTTP-Server

Please refer to the following descriptions:

1. Password Protection, see ***Password Protection*** (on page 5-6)
2. PLC Interface Settings, see ***PLC Interface*** (on page 5-8)
3. HTTP-Server Enable, see ***Selection of Main Functions*** (on page 5-10)
4. ***Automatic page reload*** (see "Automatic Page Reload upon Submitting PLC Data" on page 7-29) upon submitting PLC data

7.1.6 Editing HTML Pages

All web pages the FP Web-Server should be able to display should be created and/ or edited on a computer. To do so, it would be best to mark the respective file of the project in the configurator in the "HTML" screen and start the preinstalled editor of the operating system by double-clicking (or pressing <Enter> or [OPEN]):



Alternatively you can select an installed editor by pressing [Edit With]. The editor can be an HTML editor or a standard ASCII text editor.

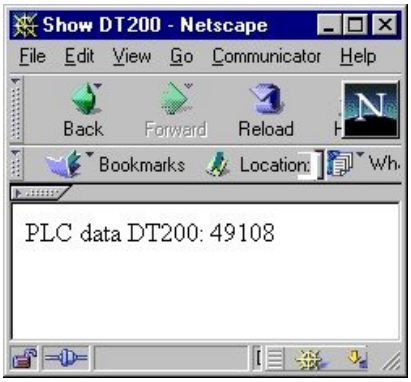
ASCII Text Editor:

With a standard text editor like the "NotePad" of the operating system, all HTML features can be ideally utilized. Nevertheless it takes time to get used to the HTML format. For training purposes, the following links are recommended:

http://archive.ncsa.uiuc.edu/General/Internet/WWW/
http://www.uni-siegen.de/help/html/
http://developer.netscape.com/
http://developer.netscape.com/tech/javascript/index.html
http://developer.netscape.com/tech/dynhtml/
http://WDVL.com/Authoring/HTML/
http://whatis.techtarget.com/
http://selfaktuell.teamone.de/links/

The first HTML page that displays PLC data might look as follows (text file):

```
<html>
<head>
<title>Show DT200</title>
</head>
<body>
<p>PLC data DT200: {DT200_5_u}</p>
</body>
</html>
```



HTML Editor:

Standard HTML editors like "Frontpage" (Microsoft Browser), "Composer" (Netscape Browser) and "MS-Word" provide many user-friendly functions to design HTML pages. Many browsers also provide an integrated editor (see Netscape Composer in the example below or Frontpage of the IE).

Recommended browsers are:

- Netscape Navigator version 4.7, 4.75 or 7.0
- Internet Explorer version 5.0 or 5.1
- Opera 7.03

Other versions have not been tested and should not be used.

7.1.7 Compiling and Transferring HTML Pages

To insert PLC data fields into an HTML page, the PLC address information is enclosed in {...} curly brackets. You will find a detailed description of the format of the {...} PLC data fields in the following section. If an HTML page with {...} PLC data fields has been created/ changed, it has to be transformed into an .MTM file by the "HTML-Compiler" and transferred to the FP Web-Server afterwards.

This is done automatically upon pressing the ***[SEND]*** (see "Upload Configurator Project to the Remote Unit" on page 4-8) button of the Configurator. If the 'HTML Compiler' discovers an input error, you receive an error message and the location of the error found in the HTML code is displayed. If the compilation is carried out error free, the file .MTM is created and transferred to the FP Web-Server.

An .MTM file corresponds to an .HTM file besides the following issues:

- A Java Script sub-function has been added to the "Header" to display submit confirmations.
- A meta tag has been inserted into the "Header" to control the optional, automatic reload of the page.
- The {...} PLC data fields are replaced by the respective number of spaces.
- The information (addresses, formats...) of the PLC data fields were attached as binary data.

NOTES

- **The maximum size of the .HTM and the .MTM file is limited to 64kB.**
- **Please do not use special characters and umlauts in {...} PLC data fields. The following characters are strictly forbidden:** " _ % \ < > & ' ?

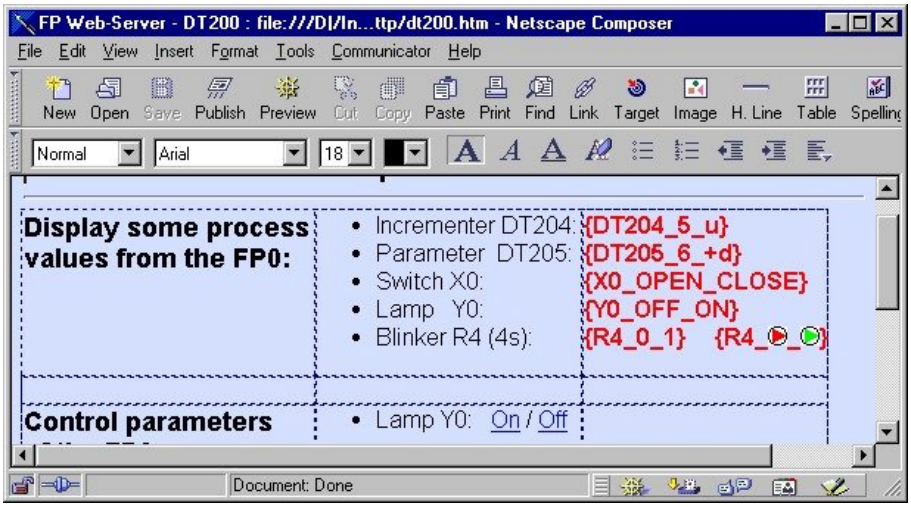
7.1.8 Data Fields for Displaying PLC Data on HTML Pages

To integrate PLC data display fields into an HTML page, the following parameters are enclosed in {...} curly brackets and inserted directly at the respective location on the HTML page.

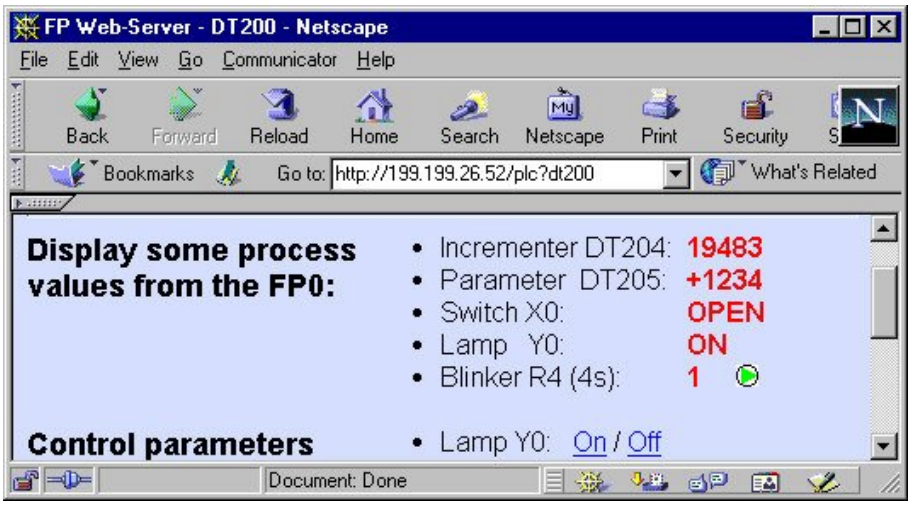
- Data type and data address of the PLC
- Number of display locations on the page (for numbers)
- Specification of the format displayed (format of numbers or text ON/ OFF for internal relay)

The {...} fields can only be seen in the HTML editor (ASCII Text Editor) and are replaced by the respective number of spaces by the "HTML-Compiler". Such a file is then named an .MTM file and saved on the FP Web-Server. Upon the request of an Internet browser, the fields are filled with he current data by the FP Web-Server and displayed by the browser.

Display on the HTML editor (Netscape Composer):



Display on the browser (Netscape Browser):



The setup of the field for PLC data display always has the format **{TTxxxy_aa_bb}** with the following parameters:

TT	PLC Data Type. Implemented PLC data identifiers: **DT, FL, LD, R, X, Y**
xxxy	Address of the PLC Data, e.g. DT200 or Y7. The address range supported by the FP Web-Server is 0 ... 32765. For internal relays, the last position of the address is a hexadecimal number from 0...F, e.g. R2F
aa	Numbers: Number of characters reserved in HTML. The rest will be cut off. Internal Relays: Text that should be displayed at internal relay state 0, .g. **OFF**.
bb	Numbers: Number format, i.e. type of the display. See below. Internal Relays: Text that should be displayed at internal relay state 1, e.g. **ON**.

The data type and address part **TTxxxy** can be replaced by the corresponding variable name from the FPWIN Pro project, e.g. **{'VarName'_aa_bb}** or e.g. **{'name'_5_i}**. For details see Variable Names (see "Using Variable Names Instead of Absolute PLC Addresses" on page 7-15).

There is no space allowed between the curly bracket and the first character. For example **{ DT3_4_u}** or **{ 'name'_5_i}** is not allowed. It will be interpreted as a Java Script (see "Example on Java Script Automations" on page 7-29) command and copied unchanged into the final HTML file.

The setup of the format specification bb for numbers is
[flags][width][.precision][l]type

Format examples can be seen in TEST.HTM. Only the specification 'type' is obligatory. The other inputs are optional. In the following list the corresponding FPWIN Pro types are listed in brackets:

type	Data Type Specification. Permitted markers are:
	d = decimal, whole-numbered (16-bit, **INT**)
	i = decimal, whole-numbered (16-bit, **INT**)
	u = unsigned decimal, whole-numbered (16-bit, **WORD**)
	o = unsigned octal (16-bit, **WORD**)
	x = unsigned hexadecimal, lower case (16-bit, **WORD**)
	X = unsigned hexadecimal, upper case (16-bit, **WORD**)
	f = floating point number without exponent (32-bit, **REAL**)
	e = floating point number with exponent (small **e** for exponent, **REAL**)
	E = floating point number with exponent (capital **E** for exponent, **REAL**)
	g = either **e** or **f**, depending on what seems to be more compact (**REAL**)

type	Data Type Specification. Permitted markers are:
	G = like **g**, but also taken into account for the exponential display (**REAL**)
	s = FPWIN Pro strings with current string length in the "Header" (**STRING[]**)
	S = string without "Header". Generated like it is with F95. (**WORD[]**)
	c = a single ASCII character

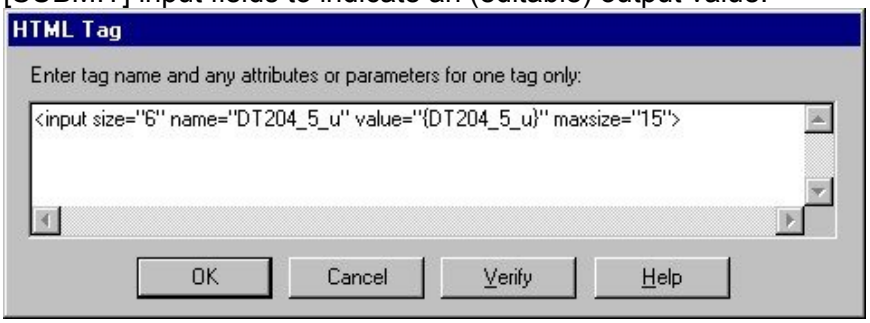
type	'long' Type Modifier for 32-bit Values. Permitted markers are:
	ld = 32-bit decimal, whole-numbered (**DINT**)
	li = 32-bit decimal, whole-numbered (**DINT**)
	lu = 32-bit unsigned decimal, whole-numbered (**DWORD**)
	lo = 32-bit unsigned octal (**DWORD**)
	lx = 32-bit unsigned hexadecimal, lower case (**DWORD**)
	lX = 32-bit unsigned hexadecimal, upper case (**DWORD**)

precision	A number that defines the number of (decimal) positions, which makes sense to be used for floating point numbers and strings.
width	A number that gives the minimum length of the field. If the number is shorter, the field is filled up with spaces.
flags	The following characters are permitted:
	+ = The algebraic sign (+ or -) is always indicated.
	0 = Leading zeroes are indicated.
	' ' = (blank character) Prefix the output value with a blank if the output value is signed and positive.
	# = Forces the output value of the e, E, or f format to contain a decimal point (but only if digits follow). When used with the g or G format, the # flag also prevents the truncation of trailing zeros.

Comments:

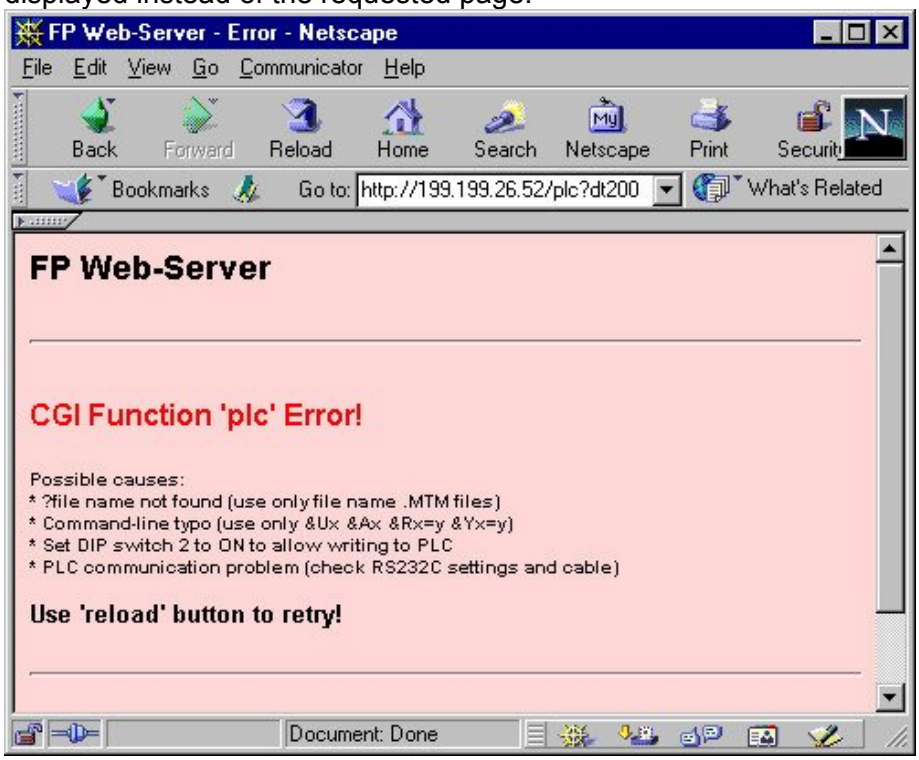
- In the text parameters **aa** and **bb** for the specification of the texts for the internal relay's statuses, it is also possible to use complex HTML blocks, e.g. to display graphics.
- Please do not use special characters and umlauts in {...} PLC data fields (and/ or the format parameters aa and bb). The following characters are strictly forbidden: " _ % \ < > & ' ?

- PLC data display fields can also be used in the [VALUE] field of the [SUBMIT] input fields to indicate an (editable) output value.



- Strings to be displayed have a maximum length of 52 characters. For PLC data input fields, only strings with 48 characters are possible.
- The special characters < and > are transcribed as ¼ and ¾ characters when a strings is displayed on an HTML page. Please also see ***ASCII Character Codes for Strings*** (on page 7-33).
- The "default" MEWTOCOL address can be modified for the current browser request of this page with the calling parameter &A=x .

- If an HTML page from FP Web-Server is requested by the browser but the PLC data cannot be readout from the PLC (Baud Rate, DIP Switch, Problems with Cables...), an HTML page with an error message will be displayed instead of the requested page.



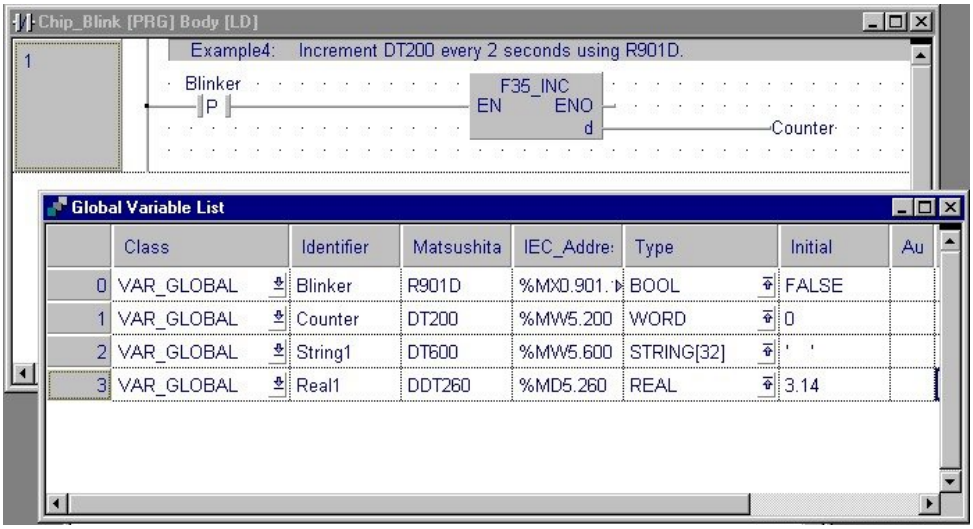
7.1.9 Using Variable Names Instead of Absolute PLC Addresses

The data type and address part **TTxxxy** of a PLC data display or input field can be replaced by the corresponding variable name from the FPWIN Pro project, e.g. **{'VarName'_aa_bb}**.

During the compilation and the transfer of the HTML page the variable name is replaced by the absolute, global PLC address found in the CSV file. The CSV file is exported by FPWIN Pro and stored in the Configurator project folder. There is only one CSV file allowed in the Configurator project folder. The CSV file can have any name - but it must have the CSV extension (CSV file type).

For variable names please use numbers from 0 to 9, letters from A to Z and the underscore only! Please do not use special characters like * - < > $ % / & and so on! Upper and lower case letters have the same meaning. For example 'VarNam' is the same as 'varnam' or 'VARNAM'.

In the following example based on "Example4" (see ***description of HTML examples*** (see "Description of the HTML Examples" on page 10-3)) the FPWIN Pro project with the following global variable list is used:



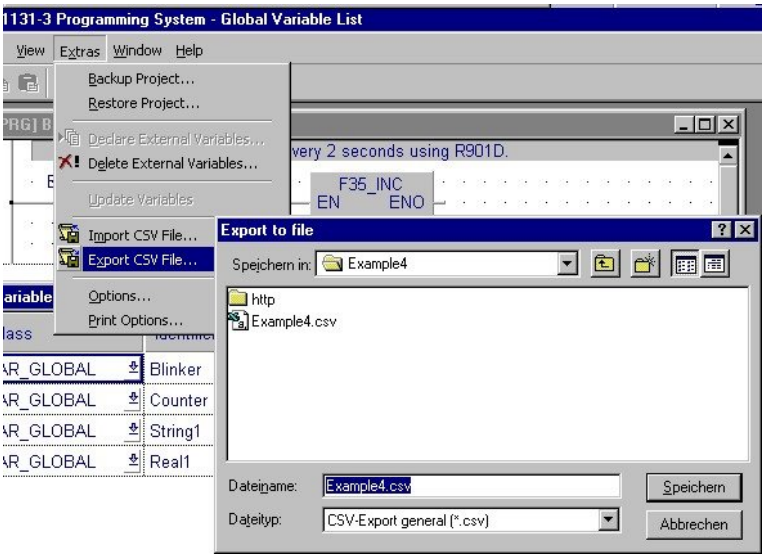
Carry out the following steps in FPWIN Pro to export the global variable list as a CSV file:

Generating a CSV File

◆ **PROCEDURE**

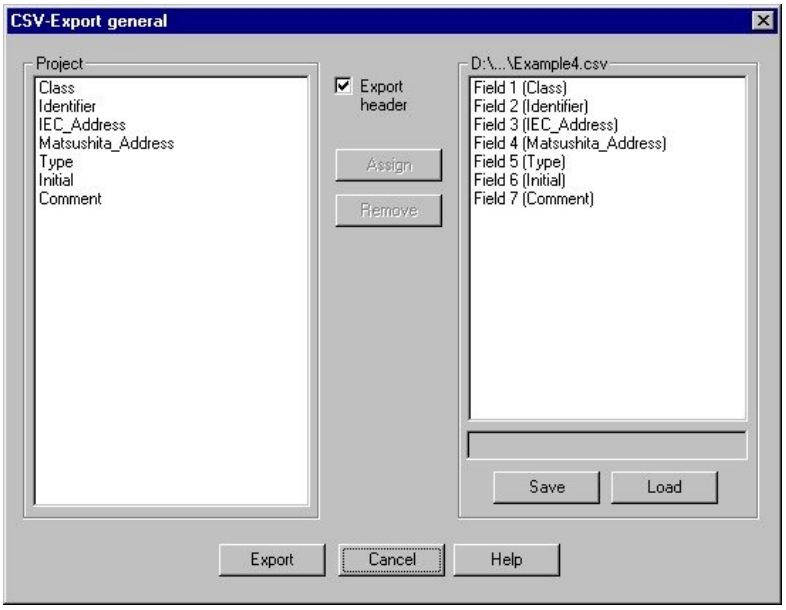
1. **Use the menu items "Extras -> Export CSV File..."**

2. Select the folder where the Configurator project is stored

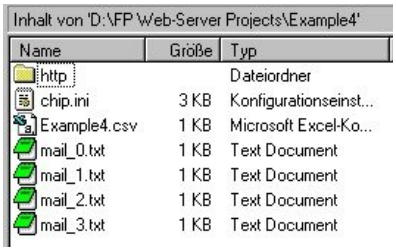


The settings in the following dialog "CSV-Export general" need not be changed

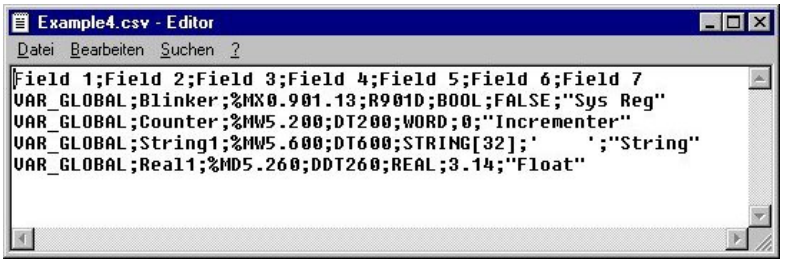
3. Save the CSV file by clicking on [Export]



These steps have generated a CSV file in the Configurator project folder



If a text editor is used the contents of the CSV file looks like this:

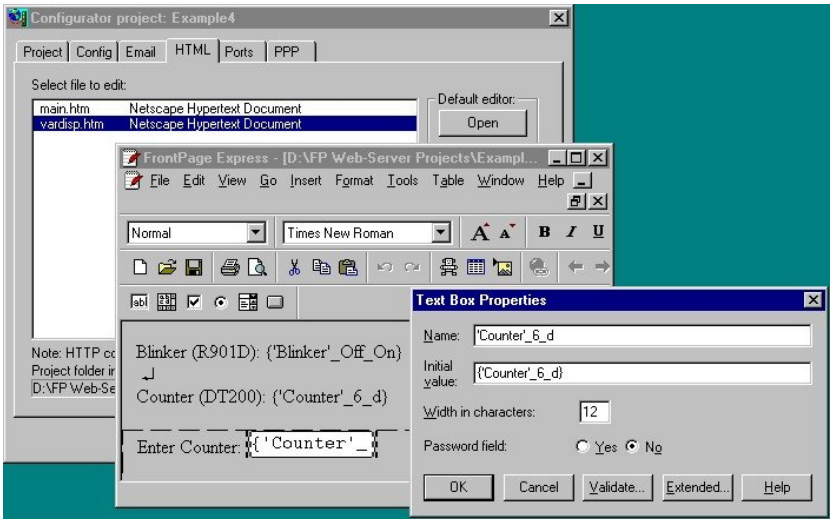


Accessing a CSV File via an HTML Page

◆ **PROCEDURE**

1. **If a Configurator project also has a FPWIN Pro CSV file, the PLC addresses in a HTML page can be referenced by its (global) variable name**

   In the HTML editor the use of these variable names instead of absolute address values can look as follows:



2. **If this HTML page is now downloaded to the FP Web-Server the variable names are replaced by the absolute PLC addresses found in the CSV file**

   Looking at the example above, with the browser it should look as follows:

7.1.10 Activating Password Protection for an Individual HTML Page

With the FP Web-Server the Password (see "Password for Web Pages Containing PLC Data" on page 5-6) protection for ALL HTML pages containing PLC data can be switched on or off. To have only individual pages protected by a password, the special command **{PW}** has to be entered in the HTML code. The text **{PW}** is not displayed on the browser anymore after having been translated by the HTML-Compiler, i.e. with the command [SEND] to the FP Web-Server.

Three variations are possible:

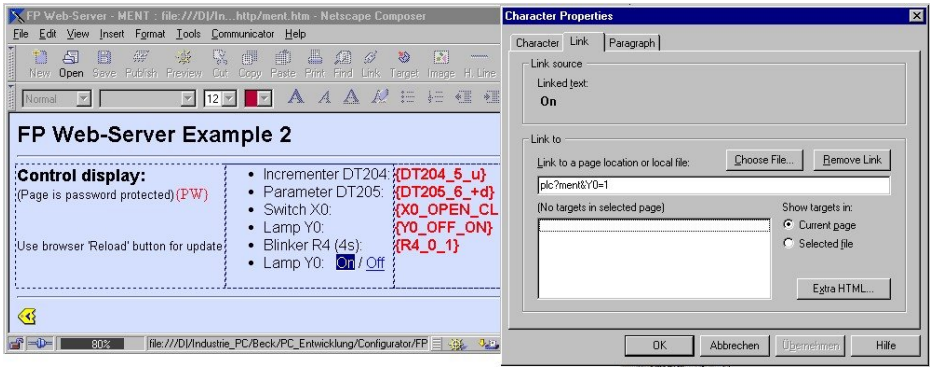
- {PW} protects the page by ***user name and password*** (on page 5-6)
- With the marker **{PW_pppp}** set in the HTML code, the user name specified in the base configuration (see user name and password (on page 5-6)) and the password **pppp** of the new command will be asked for before displaying the data. Hence you can assign different passwords to different HTML pages.
- The tag **{PW_ip.ip.ip.ip}** enables the display of the page only within that browser which is installed on the computer with the IP address **ip.ip.ip.ip**. Thus you can display certain HTML pages only by certain computers. If the computer has the wrong IP address, the following standard dialog is displayed by the browser:

But the FP Web-Server will not accept any entry.

The individual page protection should be switched on in the configuration (also see Password (see "Password for Web Pages Containing PLC Data" on page 5-6)).

7.1.11 Inputs for Controlling PLC internal relays on HTML Pages

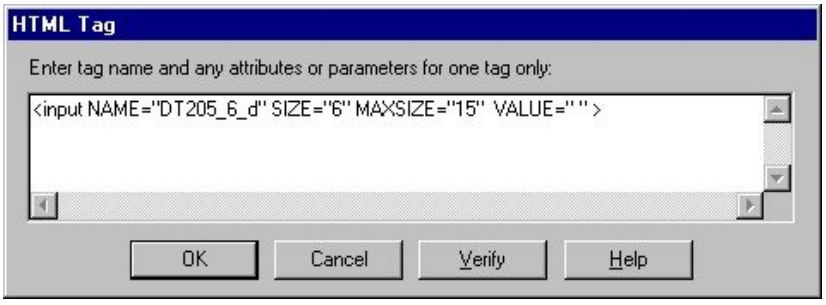
To control PLC internal relays via HTML pages, hyperlinks, as they are described under Calling Parameters (see "HTTP Address, CGI Function PLC and Calling Parameter" on page 7-6), are used. In the example projects you can find "links" for controlling in the DT200.HTM and MENT.HTM pages:



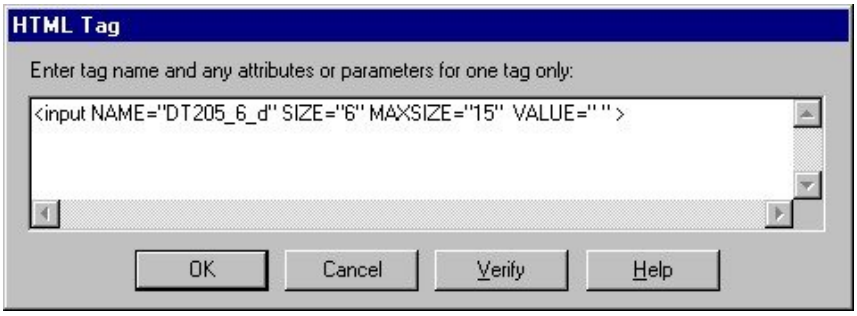
7.1.12 Defining Input Fields for PLC Data on HTML Pages

HTML [SUBMIT] fields are used to integrate PLC data input fields into an HTML page. The same PLC data field definition as for the display field is used, except for the curly brackets. Make sure that the definition is entered in the "Name" field.

An example thereto can be found in the MENT.HTM file of the configurator project "Example2".



It is also possible to use a PLC display field to obtain an editable pre-allocation of the input field.



This has to be interpreted as follows:

VALUE="{DT205_6_+d}"	DT205 is readout of the PLC and interpreted as a signed decimal number and displayed in the input field with the algebraic sign. After that, the input editor is started in the HTML page.
NAME="DT205_6_d"	If the input editor is ended with <ENTER> or [SUBMIT], the input field is interpreted as a signed decimal number with 6 positions and saved as DT205 on the PLC.

The setup of the format specification for numbers is comparable to the ***format*** (see "Data Fields for Displaying PLC Data on HTML Pages" on page 7-10) of the input fields. The data type and address part **TTxxxy** can be replaced by the corresponding variable name from the FPWIN Pro project. For example **{'VarName'_aa_bb}** or **{'name'_5_i}**. For details see ***Variable Names*** (see "Using Variable Names Instead of Absolute PLC Addresses" on page 7-15).

A little browser window is generated, after the input and the transmission of the data to the PLC, either to indicate a possible error message or a successful transmission:

This window can be disabled, see ***automatic page reload after submitting PLC data*** (see "Automatic Page Reload upon Submitting PLC Data" on page 7-29).

If an error occurs, DIP switch 2 might be the cause. DIP switch 2 prevents writing to the PLC. See ***PLC Connection, Modem, Cable Drawings, DIP Switches*** (see "PLC Connection, Cable Drawings, Modem, DIP Switches" on page 10-7) or the PLC address range was limited with ***[Add. Range]*** (see "PLC Address Range Definition" on page 7-42).

In general, there are two ways of defining an input field:

A) Send Input with Button:

Several input fields can be summed up in one 'input field' and sent to the PLC with a separately defined button. A confirmation dialogue box (OK or ERROR) is generated. In the following HTML code, the current value of DT204 is written into the first input field before and after the input editor is started. The inputs for DT204 and DT205 can be edited and then sent to the PLC by clicking [SET]. The input for DT204 is interpreted as an unsigned decimal number. The input for DT205 is interpreted as a signed decimal number (The <ENTER> key has no function here.):

```
<form ACTION="/plcpost" METHOD="POST" TARGET="SUBWIN" ONSUBMIT="opensubwin(200,100);">
<p>Enter DT204 <input NAME="DT204_5_u" SIZE="6" VALUE="{DT204_5_u}">
     and DT205 <input NAME="DT205_6_d" SIZE="6" VALUE="">
     and       <input TYPE="submit" NAME="Button" VALUE="  set  "></p>
</form>
```

B) Send Input with <ENTER> Key:

A single input field (It is also possible to use several input fields in one HTML page!) does not necessarily need a button of its own; it can be sent to the PLC immediately by pressing <ENTER>. A confirmation dialog box (OK or ERROR) is generated. In the following HTML code, the current value of DT260 is displayed in the input fields initially after that the input editor is started. The input can be edited and then sent to the PLC by pressing <Enter>. The input is interpreted as a 32-bit floating point number:

```
<form ACTION="/plcpost" METHOD="POST" TARGET="SUBWIN" ONSUBMIT="opensubwin(200,100);">
<p>Enter DT260 <input NAME="DT260_12_f" SIZE="13" VALUE="{DT260_12_+g}"> </p>
</form>
```

The individual HTML commands can be entered (exactly as described above) into the HTML code of the page and then adjusted respectively. Some HTML editors provide additional help and automatic generation for creating submit fields. The commands have the following significance:

ACTION="/plcpost"	Enter precisely like this. CGI function of the FP Web-Server.
METHOD="POST"	Enter precisely like this. Method of the CGI call.
TARGET="SUBWIN"	Enter precisely like this. Display the result in a separate window.

ONSUBMIT="opensubwin(200,100)	Enter precisely like this. Java Script call and window size.
Enter DT204	Variable text will be displayed as seen.
NAME="DT204_5_u"	Specification of the memory address in the PLC and interpretation of the input format.
SIZE="6"	Width of the input window in number of characters.
VALUE="{DT204_5_u}"	Initial value of the input field. Pre-allocation of the Edit field.

Only for the definition of buttons in case A):

TYPE="submit"	Enter precisely like this. Function of the [SUBMIT] buttons.
NAME="Button"	Enter precisely like this. Name of the [SUBMIT] button.
VALUE=" set "	Variable labeling of the [SUBMIT] buttons.

Notes on Strings:

- **The format definition S is used for ASCII strings without "header", i.e. an ASCII string is generated with the F95 command in the PLC. The length that was determined in the input field definition is the maximum string length that can be transferred to the PLC. It can be shortened even further with the format command** .xS**. In this case x stands for the number of characters of the shortened string length.**

  - NULL-String: If such a string has the length 0 (zero) the data in the PLC is not changed.

- **The format definition** s **is used for ASCII strings with "header", i.e. ASCII strings that have been generated with the string commands of FPWIN Pro (from version 3.0 on) in the PLC. The "header" consists of two 16-bit words before the real ASCII string.**

  - 1st Word: Maximum string length permitted that can be saved here. Zero disables writing.

  - 2nd Word: Current length of the strings.

  - 3rd Word and following: ASCII characters of the string in LO/ HI sequence in the word.

- Firstly, the entered string will always be shortened to the length that is depicted in the SIZE="**x**" command. Secondly, this string can be shortened even further with the format command **.xs**. Thirdly, the maximum memory permitted (Header 1st Word) has to be taken into account. After the transmission of the string to the PLC, the "header" (2nd Word) with the new length will be updated.

- Un-initialized String: If a string variable is not initialized by the FPWIN Pro project, the 1st Word (maximum string length) is zero. With this the FP Web-Server cannot store any character in this string because no memory is reserved for storing!

- Null-String: If such a string has the length 0 (zero) the current length of the string (2nd Word) is also set to 0, i.e. the string is deleted.

- **A string (**s **or** S**) of an input field (determined by MEWTOCOL) can only be** 48 characters **long! Compare to display fields for strings that are 52 characters long!**

- **The special characters < and > are transcribed as ¼ and ¾ characters when the strings are displayed. If the special characters ¼ and ¾ are used in input fields, they will be transcribed into the characters < and > before they are transmitted to the PLC.**

- **Only 7 bit ASCII characters are supported when strings are displayed or entered in HTML. Please see the** *ASCII Character Codes for Strings* **(on page 7-33).**

Comments:

- In the current version only DT, FL and LD values can be defined in input fields. The input of internal relay values (R, Y) has to be realized via hyperlinks in the format, as it is described under ***Calling Parameter*** (see "HTTP Address, CGI Function PLC and Calling Parameter" on page 7-6).

- In the definition of the input field NAME="DT205_6_d", only numbers from 0 to 9, letters from A to Z and the underscore are permitted! Please do not use special characters like * - < > $ % / ' & and so on!

- The data type and address part **TTxxxy** can be replaced by the corresponding variable name from the FPWIN Pro project. For example **{'VarName'_aa_bb}** or **{'name'_5_i}**. For details see ***Variable Names*** (see "Using Variable Names Instead of Absolute PLC Addresses" on page 7-15).

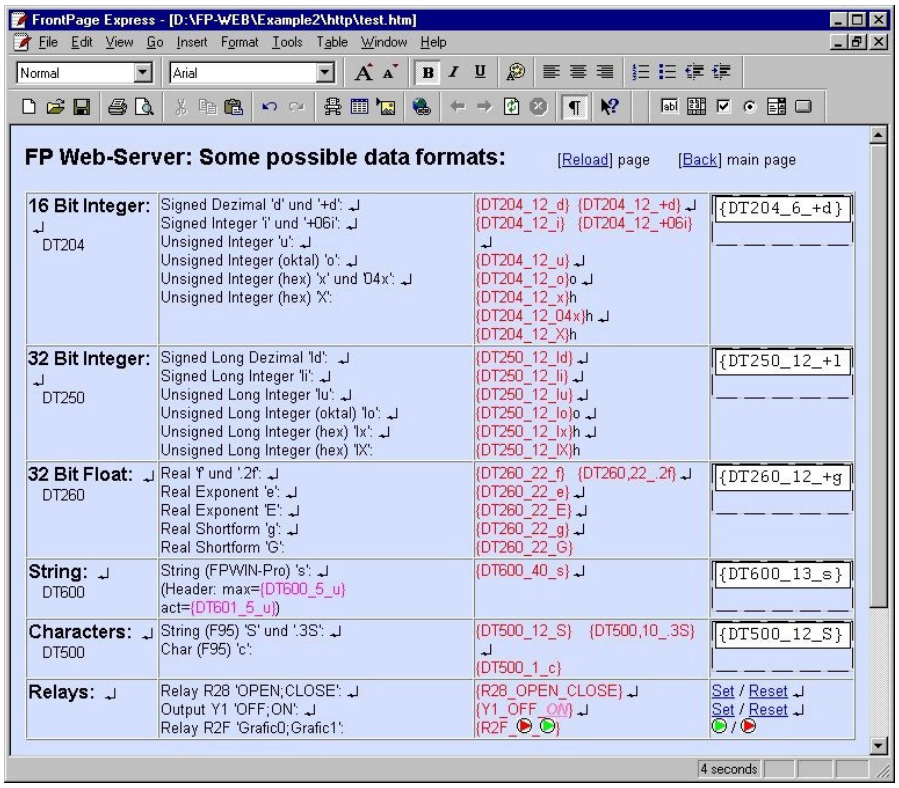
- In the current version, octal and hexadecimal numbers cannot be entered, i.e. format specifiers **_o** and **_x** and **_X** have not been implemented yet!

- The "default" MEWTOCOL address of the PLC cannot be modified by the calling parameter "Address Modifier" **&A=x** for input fields!
- In case A) where several input fields can be sent to the PLC with a button, the maximum number of characters of all NAME="..." commands is limited to 300. The number of characters of all VALUE="..." commands is limited to 300 as well.
- Only if the HTTP-Server is switched on (***HTTP-Server Enable*** (on page 5-10)) can the modifying of PLC data via the [SUBMIT] fields be switched off temporarily with DIP switch 2. If an error occurs, the DIP 2 might be the cause. DIP 2 prevents writing to the PLC. See ***PLC Connection, Modem, Cable Drawings, DIP Switches*** (see "PLC Connection, Cable Drawings, Modem, DIP Switches" on page 10-7).
- You can limit the PLC write access with the function ***[Add. Range]*** (see "PLC Address Range Definition" on page 7-42).

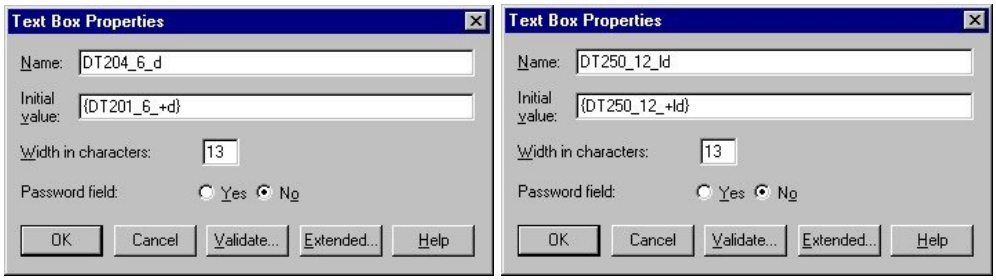
7.1.13 Example on Formatting Display and Input Fields

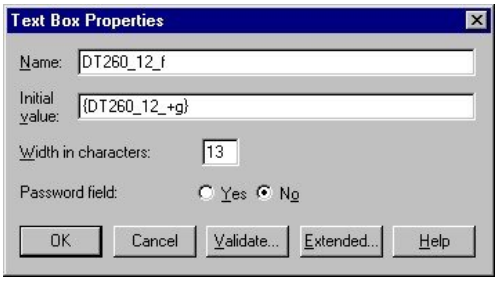
The file TEST.HTM of the "Example2" project shows a multitude of formatting methods:

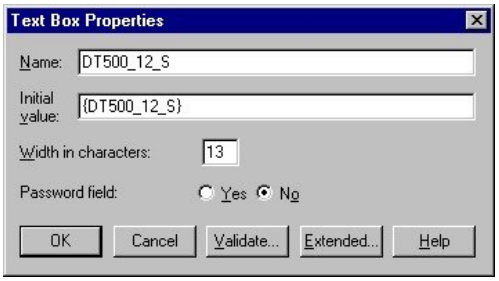
TEST.HTM: In the HTML Editor:

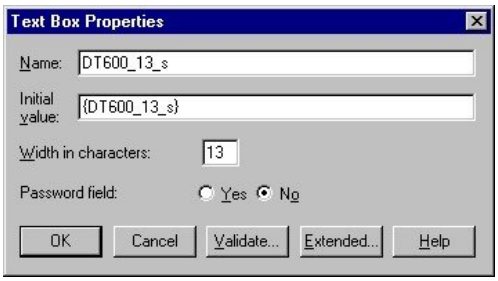


Input Fields in the HTML Editor:

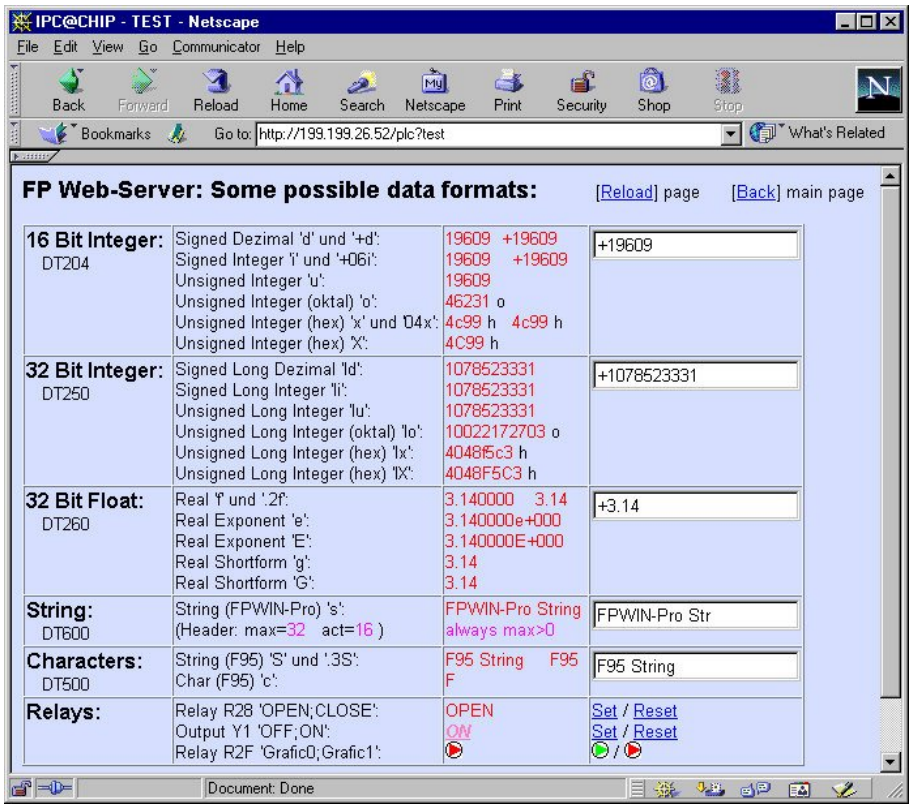



Text Box Properties
Name: DT260_12_f
Initial value: {DT260_12_+g}
Width in characters: 13
Password field: Yes No
OK Cancel Validate... Extended... Help


Text Box Properties
Name: DT500_12_S
Initial value: {DT500_12_S}
Width in characters: 13
Password field: Yes No
OK Cancel Validate... Extended... Help


Text Box Properties
Name: DT600_13_s
Initial value: {DT600_13_s}
Width in characters: 13
Password field: Yes No
OK Cancel Validate... Extended... Help

TEST.HTM: Displayed in the Browser:



Please note that the string at DT600 needs to be initialized by the PLC program before data can be stored there. Also see second note in "Notes on Strings", ***Defining Input Fields for PLC Data on HTML Pages*** (on page 7-21).

7.1.14 Automatic Page Reload upon Submitting PLC Data

If the html file "s_m_done.htm" is uploaded to the FP Web-Server **before you start the unit**; the html code of this file will be reloaded to the browser after submitting PLC data. The following default window will be replaced by displaying the file "s_m_done.htm".

Example 1: Automatic refresh of an html page after sending PLC data

Enter the following lines in the file "s_m_done.htm":

```
<html><head><title>DONE</title></head><body>
<script language="JavaScript">
opener.location.reload(true);
window.close();
</script></body></html>
```

Comments:

- This script also automatically closes the default window OK or DONE
- Find a copy of this file in \\Example4\http in your installation directory
- Using this file you can execute Java script applications after sending PLC data
- The file "s_m_done.htm" may not contain PLC data fields, e.g. `{DT100_6_d}`
- **Restart** the IEC Configurator after you have modified the file "s_m_done.htm". (When modifying other htm files the unit does not have to be restarted.)

Example 2: Automatic refresh of an html page after sending PLC data but without closing the OK window automatically

Using this script you have to click [OK] to close the OK window

```
<html><head><title>DONE</title></head><body>
<p align="center"><font face="Arial"><strong><big>FP Web-
Server</big><br>
</strong><small>Data values transfered to PLC.</small></font></p>
<form><div align="center"><center><p>
<input type="button" value="OK" + " onClick="self.close()"></p>
</center></div></form>
<script language="JavaScript">
opener.location.reload(true);
</script></body></html>
```

This script cannot be used with all versions of MS Internet Explorer while some windows of html browsers are opened at the same time containing different data.

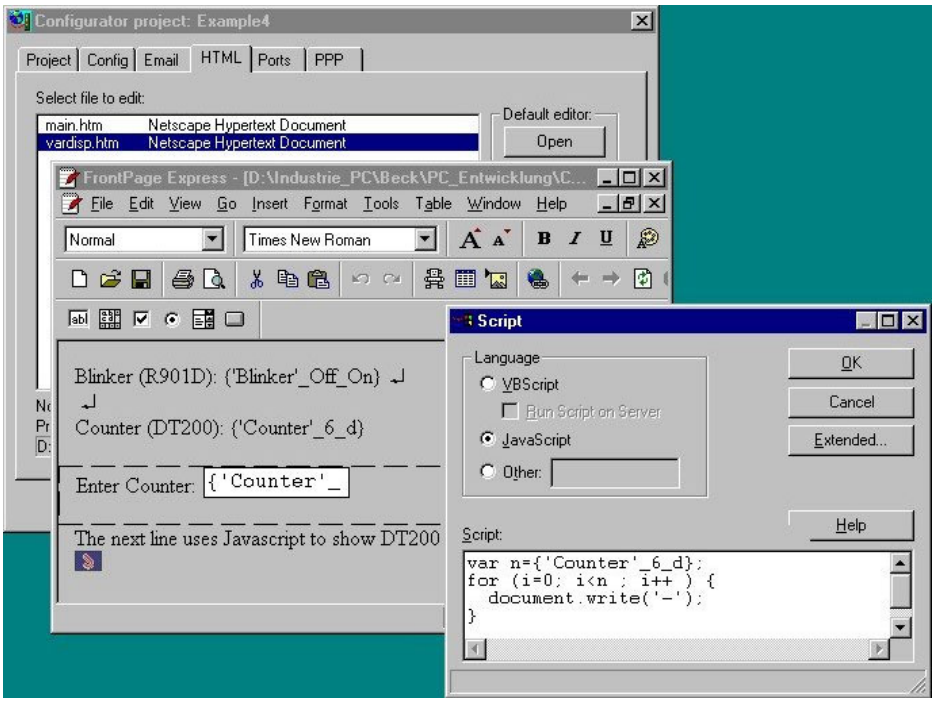
Comment:

Thus beware when using advanced Java script because different versions of browsers and/ or manufacturers may be incompatible.

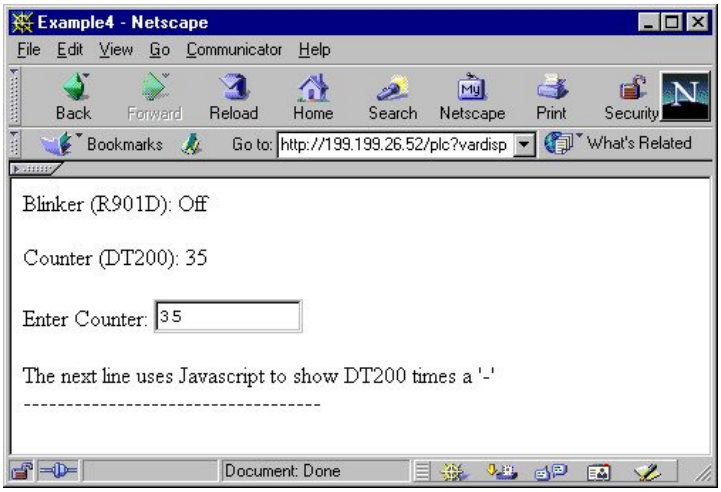
7.1.15 Example on Java Script Automations

In the Configurator project "Example4" and "Example5" (see ***description of HTML examples*** (see "Description of the HTML Examples" on page 10-3)) the usage of Java Script is demonstrated.

In the Configurator project "Example4" Java Script is used to generate a "line" in the HTML output with the number of dashes read from of PLC data DT200. The source in the HTML file looks as follows:



In this example DT200 (variable name "Counter") is read from the PLC and interpreted as number 'n'. In a loop that follows, **'n'** dashes ('-') are output. The resulting HTML page looks as follows:



◆ NOTE

The character { in Java Script must be followed by a space character, tab character or a new line. Otherwise it is interpreted as a PLC data field.

Example:

```
for (i=0; i<n ; i++ ) {document.write('-'); }
```

will generate a compiler error. But the following code will work as expected:

```
for (i=0; i<n ; i++ ) {
  document.write('-');
}
```

7.1.16 Notes on HTML Frames

In the following file "MAIN.HTM" of "Example8" (see ***description of the HTML examples*** (on page 10-3)) two frames are used.

```
<html>
<head>
   <title>FP-WebServer Example8 - Frames</title>
</head>
<frameset rows="50%,50%" frameborder="yes" border="1" framespacing="1">
   <frame name="topFrame" src="plc?top&U=1" scrolling="auto">
   <frame name="untenFrame" src="plc?unten" scrolling="auto">
   <noframes>
      <body text="#000000" bgcolor="#FFFFFF">
      </body>
   </noframes>
</frameset>
</html>
```

The content of each frame is stored in a separate HTML file:

TOP.HTM

UNTEN.HTM

Each HTML file can be edited separately. Both HTM files show PLC data but the TOP.htm site is automatically updated every second.

7.1.17 ASCII Character Codes for Strings

Only 7 bit ASCII character codes are supported when strings are displayed or entered in HTML.

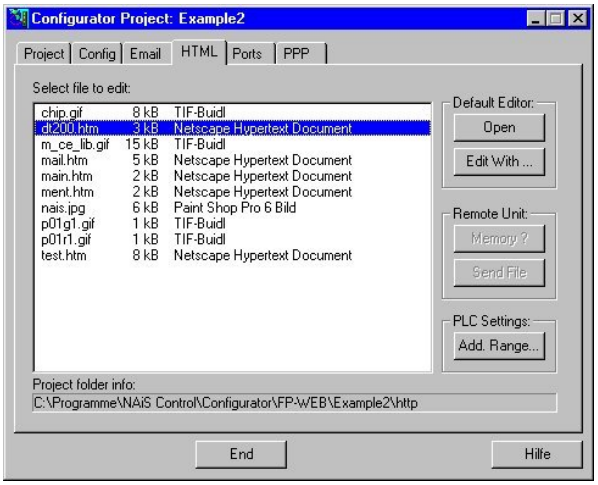
Dec	Hex	Char
32	20	sp
33	21	!
34	22	"
35	23	#
36	24	$
37	25	%
38	26	&
39	27	'
40	28	(
41	29	)
42	2A	*
43	2B	+
44	2C	,
45	2D	-
46	2E	.
47	2F	/
48	30	0
49	31	1
50	32	2
51	33	3
52	34	4
53	35	5
54	36	6
55	37	7
56	38	8
57	39	9
58	3A	:
59	3B	;
60	3C	<
61	3D	=
62	3E	>
63	3F	?

Dec	Hex	Char
64	40	@
65	41	A
66	42	B
67	43	C
68	44	D
69	45	E
70	46	F
71	47	G
72	48	H
73	49	I
74	4A	J
75	4B	K
76	4C	L
77	4D	M
78	4E	N
79	4F	O
80	50	P
81	51	Q
82	52	R
83	53	S
84	54	T
85	55	U
86	56	V
87	57	W
88	58	X
89	59	Y
90	5A	Z
91	5B	[
92	5C	\
93	5D	]
94	5E	^
95	5F	_

Dec	Hex	Char
96	60	`
97	61	a
98	62	b
99	63	c
100	64	d
101	65	e
102	66	f
103	67	g
104	68	h
105	69	i
106	6A	j
107	6B	k
108	6C	l
109	6D	m
110	6E	n
111	6F	o
112	70	p
113	71	q
114	72	r
115	73	s
116	74	t
117	75	u
118	76	v
119	77	w
120	78	x
121	79	y
122	7A	z
123	7B	{
124	7C	|
125	7D	}
126	7E	~
127	7F	

7.2 Configurator HTTP Administration and Functions

All web pages for the FP Web-Server are created and/ or edited on the computer. To do this, it would be best to mark the respective file of the project in the Configurator in "HTML" screen and start the preinstalled editor of the operating system by double-clicking (or pressing <Enter> or [OPEN]):



After double-clicking, the file name extension (type) is analyzed and then the computer tries to find an installed program in the registry that can open and edit that type of file. If no such program is installed on the computer, you will receive an error message:

Alternatively you can select an installed editor by pressing [EDIT WITH]. The editor can be an HTML editor or a standard ASCII text editor.

We recommend installing the following programs and defining them as "default" for this type of file:

.HTM	Netscape Composer (is installed automatically with the Netscape Browser)
.GIF .JPG	PhotoEdit (can be installed with MS Office)

If the Microsoft Internet Explorer browser is used, the editor "Frontpage Express" has to be installed separately. See "Custom Install" during IE installation.

To test which editor is installed, click (while in Windows Explorer) on an .HTM file and use the right mouse button to call up a list of available editors.

For supplementary information on how an editor can be defined as the "default" editor see below ***Open File with Default Editor*** (see "Open File With a Default Editor" on page 7-36).

NOTES

- **All file names have to correspond to the DOS 8.3 format, i.e. the name may only have up to 8 characters and the extension (type) only up to 3 characters after the period. If long file names, spaces or Japanese characters are used, an error message pops up before transmission to the FP Web-Server.**
- **Recommended are Netscape Navigator version 4.7 or 4.75, or Internet Explorer version 5.0 or 5.1. Other versions have not been tested and should not be used.**
- **The file size displayed shows not the exactly value because it is rounded to whole KB.**

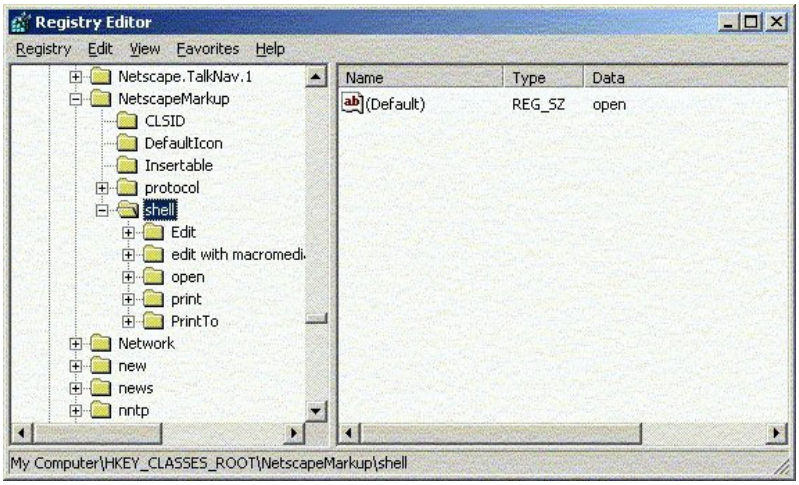
7.2.1 Open File With a Default Editor

The "default" editor that has been installed on your computer is started by pressing [OPEN]. The [OPEN] button has the same function as double-clicking the selected file.

For determining the "default" editor, the registry is explored in the following order:

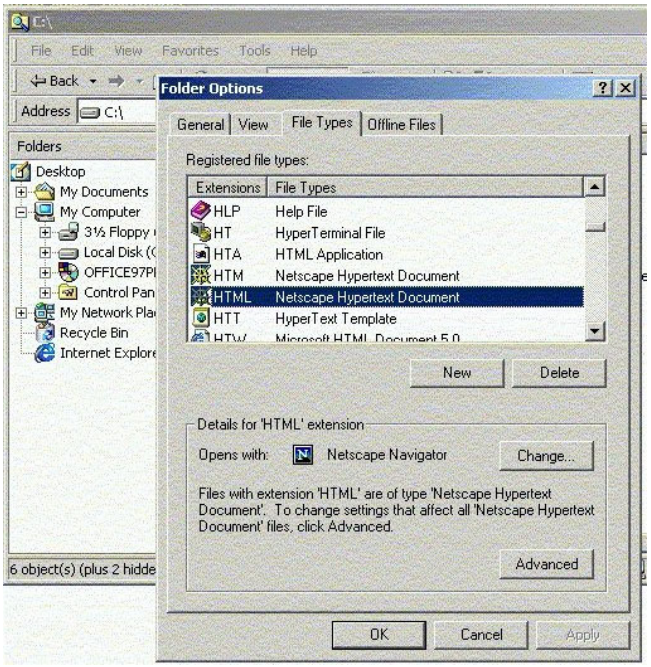
- Determining the filename extension (e.g. .htm) and the notation (e.g. NetscapeMarkup).
- The notation is searched for and the path of the editor is determined in the section "shell" is used.

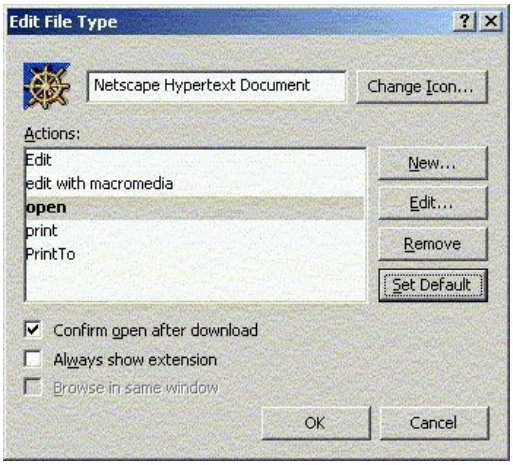
- First the path of the keyword "edit" will be tried. If it cannot be used the standard label of section "shell" (e.g. keyword "open") will be tried.



If a different "default" editor than the one currently used should be started with this function, the new "default" editor can be defined as follows:

The standard value of section "shell" can be set to the default setting with the assistance of the Explorer:

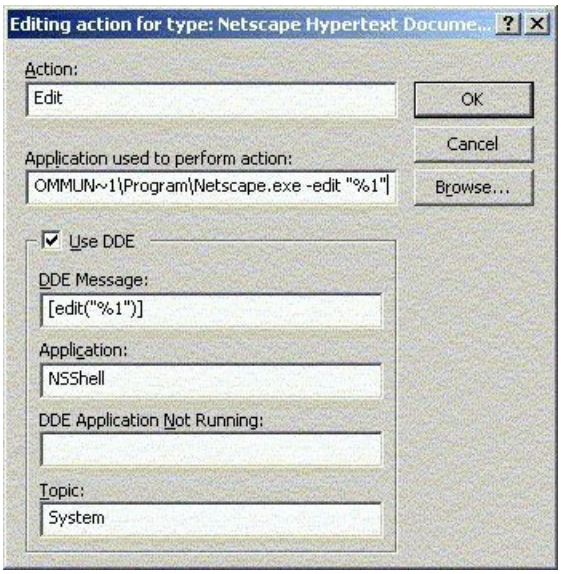




- Select [View] or [Folder Options] under [Tools] in your Explorer.
- In [Folder Options], select the respective file type from the list of [File Types].
- Display the functions installed for this type with [Advanced].
- Select the respective editor and set it as the "default" editor with [Set Default].

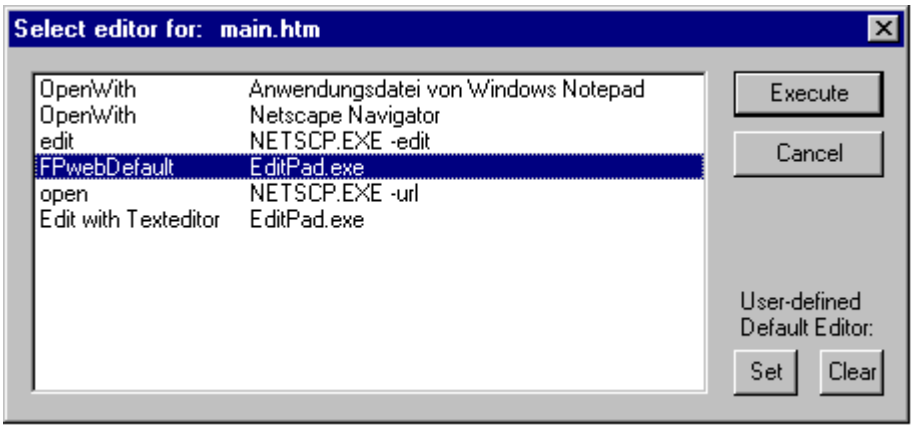
Comment:

To detect the program used behind the functions, [Edit] can be clicked. In this case, for example, the calling of the Netscape/ the Composer is hid behind [Edit]:



7.2.2 Edit With an Alternate Editor

The list of all available editors (including the text editor) is displayed in the dialog "Select Editor for:" that is opened with [Edit With]:



The editor that is highlighted will be started when you double-click it or click [Execute].

Click [Set] to define the highlighted editor as the default editor for this type of file. Thereafter the editor you selected is started by the FP Web Configurator Tool when you edit this type of file using [Open] or by double-clicking.

[Clear] resets the user defined default editor setting (FPwebDefault) to the actual Windows default editor settings.

Comment:

If you are using Netscape Navigator but Netscape Composer is not your default editor, only the browser is started while opening a *.htm file. When the page is shown in the browser you can open Netscape Composer via the menu **File -> Edit page** for editing the page.

7.2.3 Available Memory

The memory available on the FP Web-Server is calculated and displayed in a separate window if you have pressed [Memory?] before.

This function is only available if an FP Web-Server unit has been selected with the ***Find Server Function*** (on page 4-6) function before.

The FP Web-Server has 512KB FLASH memory on board. The remaining available memory space depends on the size of the following components:

- Basic operating system (about 325KB)
- Matsushita firmware (about 26KB to 36KB, depending on the port drivers used and whether email sending is enabled)
- FP Web-Server configuration (about 1KB)
- Predefined email text (1 to 128KB) if enabled

The remaining memory of about 148KB can be used for HTTP files.

Examples:

- One HTML page needs 4 KB of memory. You can create 36 HTML pages (not 37 because 1KB of memory is kept free).
- After completely downloading the largest Configurator project "Example2" to the FP Web-Server there are still 83KB (90KB with hardware version 1.1 with BIOS 1.03) memory remaining and available for additional HTTP files (i.e. about 20 medium-size HTML files with 4KB per file).

The following values are estimated:

Function	Memory
HTML only	153KB free
MEWTOCOL port	reduction of 5kB
Transparent port	reduction of 4.5kB
Email function	reduction of 9kB (plus the length of static email texts)

Comment:

One 1KB (1024 Bytes) of available memory is permanently reserved for internal system usage, therefore it cannot be used by HTTP files.

7.2.4 Uploading the Selected File to the Remote Unit

The selected file is transferred to the remote unit by pressing [Send file]. This function is only available if an FP Web-Server unit has been selected with the ***Find Server Function*** (on page 4-6) function beforehand.

Before transmitting data to the FP Web-Server, a safety request is carried out:

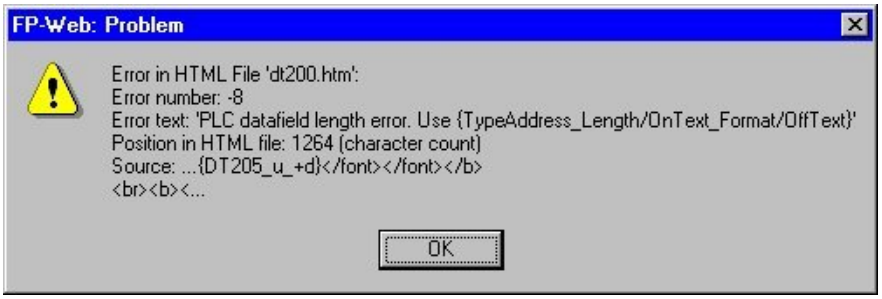
The data transmission to the FP Web-Server starts after clicking [YES], whereupon the any pre-existing file on the FP Web-Server will be irrecoverably overwritten.

The remote unit need not be rebooted because only files for the HTTP-Server are updated on the remote unit. Please use the [Reload] button of the browser to update the display of the browser with the new content of the file.

If the current ***Password*** (see "Password for Web Pages Containing PLC Data" on page 5-6) of the FP Web-Server does not correspond to that of the Configurator project, the user name and the password will be requested before data transmission.

If a transmission error occurs, an explanatory text will be displayed along with it. If data transmission could not be carried out completely because of a transmission error, the following error message is displayed at the end of the [Send file] function:

HTML files that contain ***PLC Data Fields*** (see "Data Fields for Displaying PLC Data on HTML Pages" on page 7-10) are compiled automatically before data transmission. In case the formatting errors are diagnosed when the PLC data fields are interpreted, you will receive an error message similar to the following:



In this case, data transmission is not carried out.

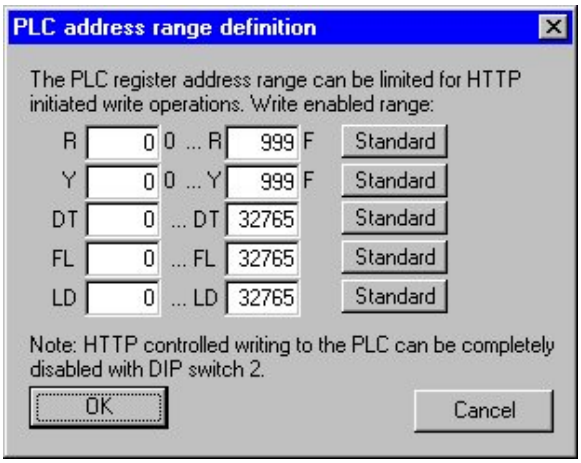
Comment:

To be able to provide HTML pages for the browser, the HTTP-Server of the FP Web-Server has to be activated. See ***HTTP-Server Enable*** (on page 5-10).

7.2.5 PLC Address Range Definition

With this dialog you can define limited areas using the registers R, Y, DT, FL and LD of your PLC.

All values shown in the example are maximum values. With the button [Standard] you can set the values to the maximum range, i.e. there will be no PLC write protection (like in FP Web-Server version 1.0).



Only the address area stated in this dialog can be used for writing data to the PLC by HTML pages, e.g. browser command line parameters or {...} submit fields. You will receive a message if the browser tries to access other address areas of PLC memory that lie outside the range defined.

Chapter 8

Ethernet/ RS232C Ports

8.1 Generalities on the Ethernet/ RS232C Ports

The FP Web-Server can work as an Ethernet to a RS232C interface converter. Thereby all data the FP Web-Server receives via an Ethernet port (e.g. from a computer) are routed to its RS232C port and vice versa (i.e. all data received at the RS232C interface are sent back to the computer via the Ethernet). In this configuration the FP Web-Server is the server and the computer is the client.

To setup an FP Web-Server port as a client, see ***Enable Transparent TCP/IP Client Port*** (on page 8-9). With two FP Web-Server units that are setup as a pair of transparent port server and client, two FP-Sigma can communicate with each other via PLC Link protocol (take into account the timeout set in the PLC).

8.1.1 Server's Side

For this kind of data exchange, the FP Web-Server provides two special Ethernet (respectively TCP/ IP) server ports that wait for an incoming connection from a client (e.g. a computer or an FP Web-Server configured as a port client):

a) MEWTOCOL Communication with the PLC

- 3-pin RS232C connection is connected with the PLC
- preset TCP/ IP port number 9094 (Server)
- up to three client connections are possible (TCP/ IP)
- MEWTOCOL protocol for data- and program exchange
- can be switched off with DIP switch 1

b) Transparent Communication

- 9-pin RS232C connection is connected with any unit (also PLC...)
- preset TCP/ IP port number 9095 (Server or Client)
- only one client possible (TCP/ IP or UDP/ IP)
- arbitrary protocols (also MEWTOCOL) possible
- can be switched off with DIP switch 3

Comments:

- If the PPP-Server or Internet email of the FP Web-Server is active and a modem is connected to the 9-pin RS232C, transparent communication is impossible.
- The current FP Web-Server firmware implementation supports up to 3 clients, i.e. up to three computers (e.g. with FPWIN Pro) can communicate with a PLC! However, recognize that only one client is allowed to use the MEWTOCOL monitor commands! This means that only one client is allowed to use FPWIN Pro or FPWIN GR for data monitoring.
- To elinate this problem where only one client is allowed to use FPWIN Pro or FPWIN GR for data monitoring by admitting only one client. See the parameter ***MEWTOCOL Number of Clients*** (on page 8-7).
- MEWTOCOL communication between a PLC and FPWIN Pro (or an FP Web port client) can involve a very high data load, hence with only one FPWIN Pro Client, communication can be hindered so gravely that HTTP pages and email communication are slowed down significantly.
- While multi-frame communication (program download) is carried out, MEWTOCOL communication for the other clients (incl. email and HTTP functions) is temporarily stopped!
- For Information on DIP switch settings see ***PLC Connection, Cable Drawings, Modem, DIP Switches*** (see "PLC Connection, Cable Drawings, Modem, DIP Switches" on page 10-7).

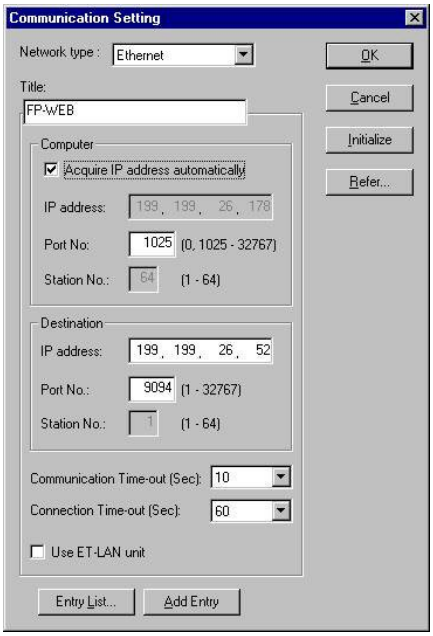
8.1.2 Client's Side

At the client's side (computer or an FP Web port client) there are several possibilities numbered **A) to C)** and/or software packages to communicate with the special MEWTOCOL server ports of the FP Web-Server (to exchange data with the PLC):

A) Ethernet support integrated:

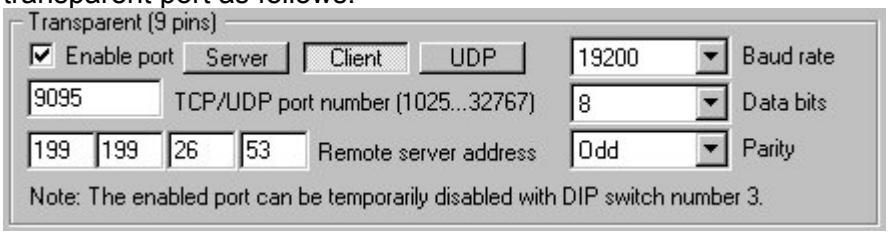
1. With FPWIN Pro, FPWIN GR, GTWIN or PCWAY it is possible to communicate directly with the FP Web-Server, i.e. the PLC/ GT10 or GT30 via the Ethernet.

   The following settings are required:

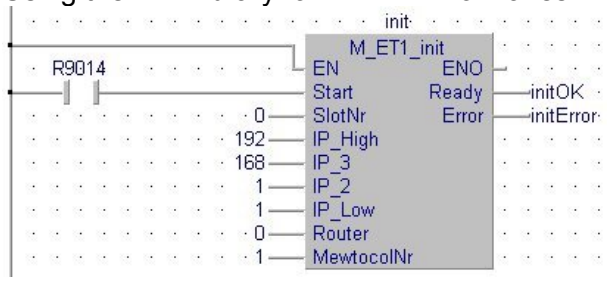


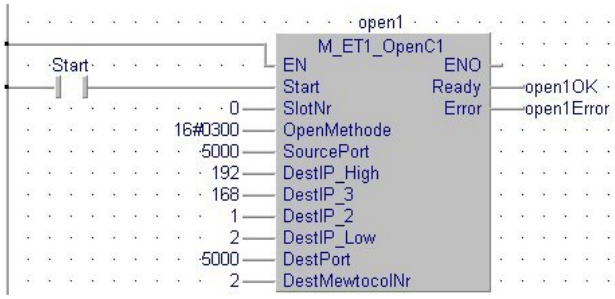
Comment: Do not activate the checkbox "Use ET-LAN unit"!

2. Using a second FP Web-Server setup as transparent port client a RS232 communication via Ethernet can be established. Such a port client can be used for:
   Programs (DOS programs) with no Ethernet support that use the RS232 port only
   To upgrade any RS232 device with Ethernet connectivity, setup the transparent port as follows:



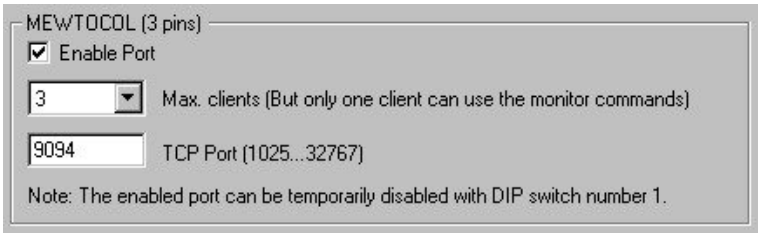
3. Also the FP2 ET-LAN unit can communicate with the FP Web-Server ports. Using the ET1 library for FPWIN Pro makes PLC programming easy:





8.2 Configurator Parameters to the MEWTOCOL Port Server

In the following, the input fields of the "Ports" screen of the Configurator concerning MEWTOCOL communication with the PLC is described. The RS232C parameter of the connection to the PLC is determined in the ***PLC Interface*** (on page 5-8).



- 3-pin RS232C connection is connected with the PLC
- preset TCP/ IP port number 9094
- up to three clients possible
- MEWTOCOL protocol for data- and program exchange
- can be switched off with DIP switch 1

For a detailed description of the cables and the DIP switch functions see ***PLC Connection, Cable Drawings, Modem, DIP Switches*** (on page 10-7).

Comments:

- The MEWTOCOL port acts as a server , i.e. it waits to be connected with a client, e.g. a PC or a Transparent Client Port.
- The Transparent TCP/IP Client Port (see "Enable Transparent TCP/IP Client Port" on page 8-9) can also be a client of a MEWTOCOL server.

8.2.1 Enable MEWTOCOL Port Server

Enabling and disabling the MEWTOCOL communication from the Ethernet port to the PLC (via 3-pin RS232C) connector:

If the MEWTOCOL port is enabled and a PLC is connected to the 3-pin connector, FPWIN Pro or an FP Web-Server setup as transparent port client can communicate with the PLC via the Ethernet and the FP Web-Server. For further information see Ports, Servers and Clients (see "Generalities on the Ethernet/ RS232C Ports" on page 8-2).

The RS232C parameter of the connection to the PLC is determined in the ***PLC Interface*** (on page 5-8).

Only if the function is enabled in the Configurator, it can be switched off temporarily with DIP switch 1, see ***PLC Connection, Cable Drawings, Modem, DIP Switches*** (on page 10-7).

Comment:

Disable the MEWTOCOL port if it is not used to save the FP Web-Server's ***memory*** (see "Available Memory" on page 7-39).

8.2.2 MEWTOCOL TCP Port Number

The TCP port server number for MEWTOCOL communication is determined here.

The presetting is set to 9094. The possible range is 1025 to 32767.

The port number set here must be known to the outstation, i.e. the client (FPWIN Pro or an FP Web-Server setup as transparent port client).

For examples on client's settings see ***Client's Side*** (on page 8-3).

8.2.3 MEWTOCOL Number of Clients

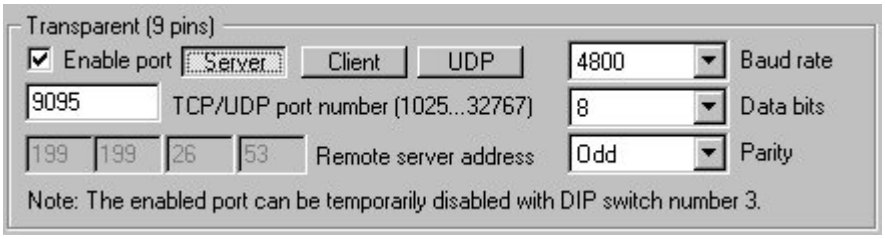
Input of the maximum number of clients allowed that can access the PLC via MEWTOCOL simultaneously.

If more than one client is active, be careful when using FPWIN Pro because only one client is allowed to use MEWTOCOL monitoring commands. To be safe, it might be better to admit only one client.

For a detailed discussion of this problem also see ***Server's Side*** (on page 8-2).

8.3 Configurator Parameters for the Transparent Port

In the following, the input fields of the Configurator's "Ports" screen concerning transparent communication is described.



The FP Web-Server can act as a TCP/IP port server or a TCP/IP port client:

1. A transparent port server waits for a TCP connect (via Ethernet) coming from a computer client or from an FP Web-Server set up as a transparent port client. Both the transparent port server and the client have the following features:
   - 9-pin RS232C connection is connected with any unit (also PLC, GT panel or computer)
   - preset TCP/ IP port number is 9095
   - Point-to-point Server/ Client connect (no multiple connects)
   - arbitrary protocols (also MEWTOCOL) are possible
   - can be switched off with DIP switch 3
2. Using two FP Web-Servers (one as server, the other as client) to simulate an RS232 cable via Ethernet, i.e. the RS232C data is routed via Ethernet from one port to the other.

FP Web-Server version 1.3 can also act as a UDP/IP port server or a UDP/IP port client or both at the same time. This mode is named “Multipoint UDP Transparent Port. For more details, see “Enable Transparent UDP/IP Port”:

1. UDP-Server receives data from a distant UDP-Client and outputs via RS232C. Additionally status information (client IP address) is output via RS232C.
2. UDP-Client receives RS232C data and sends it to the remote UDP-Server. Additionally the IP address of the remote UDP-Server can be selected via RS232C data.

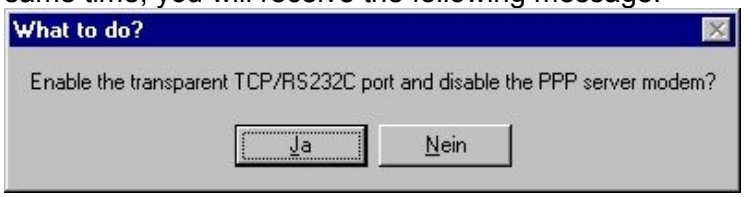
For a detailed description of the cables and the DIP switch functions see PLC Connection, Modem, Cable Drawings, DIP Switches (see "PLC Connection, Cable Drawings, Modem, DIP Switches" on page 10-7).

8.3.1 Enable Transparent TCP/IP Server Port

Enabling or disabling transparent communication from the Ethernet port to the unit that is connected to the 9-pin RS232C connector of the FP Web-Server. Activate the checkbox "Enable port" and select the option "Server".

Comments:

- Disable transparent communication port if it is not used to save the FP Web-Server's ***memory*** (see "Available Memory" on page 7-39).
- If FPWIN Pro/ FPWIN GR and GTWIN should be able to communicate via Ethernet with a GT10/ GT30 panel, the 9-pin port of the FP Web-Server has to be connected to the RS232C port of the panel.
- If the PPP-Server or Internet email of the FP Web-Server is active and a modem is connected to the 9-pin RS232C, transparent communication is impossible, i.e. either a transparent RS232C port or a PPP-Server for external modem access (PPP Gateway to the Ethernet) is possible. If the transparent port is activated and the PPP-Server is active at the same time, you will receive the following message:



- The RS232C/ Ethernet terminal program "TeraTerm" can be used to test the transparent port server function. Note the following link: http://hp.vector.co.jp/authors/VA002416/teraterm.html".
- With two FP Web-Server units that are setup as a pair of transparent port server and client, two FP-Sigma can communicate with each other via PLC Link protocol (take into account the timeout set in the PLC).
- Setting the baud rate too slow can lead to lost data because of no handshake is carried out while using full duplex transmission. If the transparent port does not support a half duplex transmission as MEWTOCOL the baud rate has to be set as high as possible.

8.3.2 Enable Transparent TCP/IP Client Port

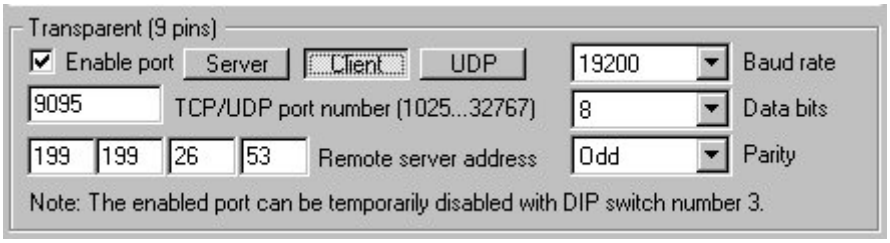
With the FP Web-Server it is possible to setup a RS232C/TCP port which acts as a client and connects via TCP to an FP Web-Server.

◆ **PROCEDURE**

1. **Enter the IP address of the FP Web-Server into the address fields at "Remote server address"**

2. **Enter the TCP port number**

   The TCP port number must match the port number used at the server side.



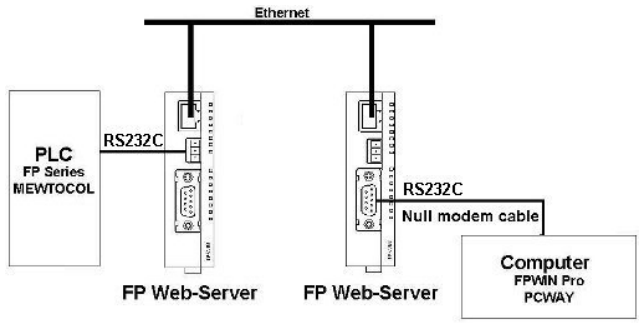
Acting as a port client:

1. Upon starting the FP Web-Server (or after errors or disconnects) the client port will automatically connect to the specified server IP address and port number.
2. The server can be an FP Web-Server port setup as a MEWTOCOL (9094) or transparent port server (9095).
3. With this RS232C communication via Ethernet can be established and used as a normal RS232C cable.
4. With two FP Web-Server units set up as a transparent port server and client, two FP-Sigma PLCs can communicate with each other via the PLC link function (PLC Link protocol) (take into account the timeout set in the PLC).

For a detailed description of the cables and the DIP switch functions see PLC Connection, Cable Drawings, Modem, DIP Switches (see "PLC Connection, Cable Drawings, Modem, DIP Switches" on page 10-7).

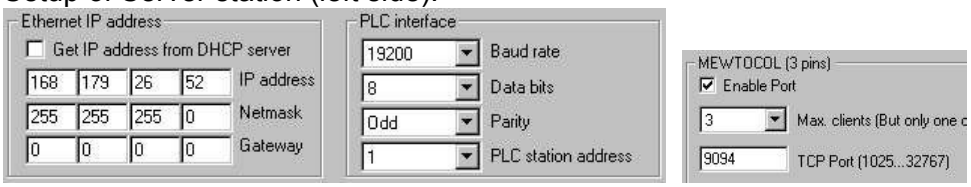
Two different system configurations are possible:

1. MEWTOCOL communication: From 9-pin port of one unit to the 3 pin port of a second unit

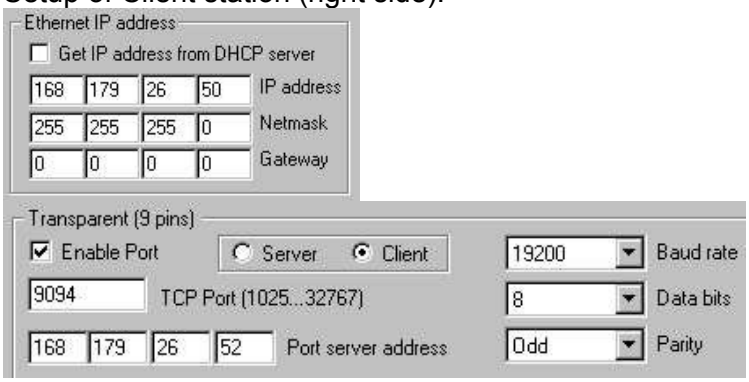


Example:

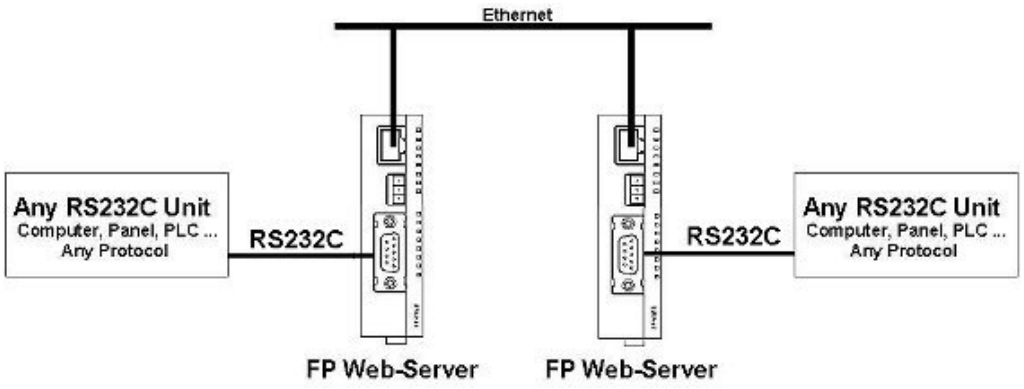
Setup of Server station (left side):



Setup of Client station (right side):

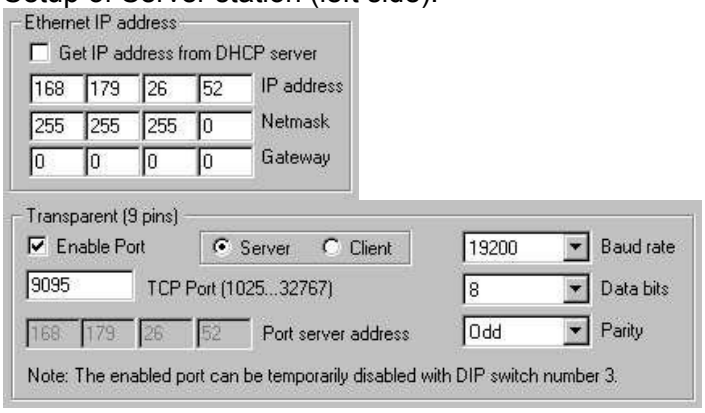


2. Transparent communication: From 9 pin port of one unit to the 9 pin port of a second unit

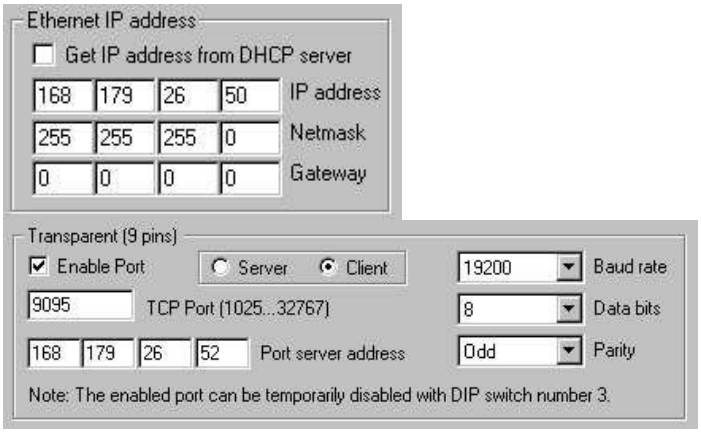


Example:

Setup of Server station (left side):



Setup of Client station (right side):



8.3.2.1 Cables to connect to the 9 pin connector of the FP Web-Server

Use a null modem cable (see "PPP Communication via Null Modem Cable" on page 9-15) (crossed pair) to connect a computer with the of the FP Web-Server (9 pin male).

For the connection of the FP Web-Server (9 pin male) with a modem a standard cable (1:1) has to be used.

For a detailed description of the cables and the DIP switch functions see ***PLC Connection, Cable Drawings, Modem, DIP Switches*** (on page 10-7).

8.3.3 Enable Transparent UDP/IP Port

8.3.3.1 General Explanations

With FP Web-Server version 1.3 the following new 'Transparent UDP Multipoint Port' function was implemented. This function uses UDP/IP protocol to realize an UDP-Server and an UDP-Client at the **same** time:

1.) Transparent Port UDP Server:

- The FP Web-Server is configured to watch a specific port number (e.g. 9095) for incoming UDP data packets
- Data received from a distant UDP-Client at this port is output via the FP Web-Server's 9-pin RS232C
- The FP Web-Server memorizes the IP address of the distant UDP-Client sending the data. If the distant UDP-Client (having an IP address uuu.vvv.www.xxx) sends data the first time (i.e. the last data was received from a different UDP-Client) the following happens:
  - The special string "{iuuu.vvv.www.xxx}<CR>" is output via the FP Web-Server's RS232C port
  - It is followed by the data received from the new, distant UDP-Client

2.) Transparent Port UDP Client:

- The FP Web-Server is configured with a default remote UDP-Server IP address and port number
- The FP Web-Server sends data received via its 9-pin RS232C to the remote UDP-Server. This is done in the following way:
  - The data received via the 9-pin RS232C is buffered inside the FP Web-Server until data is no longer received within the configured 'packing time' (e.g. 100ms).
  - Then the buffered data is sent to the remote UDP-Server

  On power up, the configured, default remote UDP-Server IP address is used

- To enable multipoint communication the default remote UDP-Server IP address can be changed in the following way:
  - The data received via the 9-pin RS232C is analyzed for a data stream that includes a special string like “{Iuuu.vvv.www.xxx}<CR>”
    Note: <CR> stands for the carriage return code 13 decimal, i.e. 0D hex.
  - If such a special string is received via RS232C, then the IP address “uuu.vvv.www.xxx” is used as the new, next remote UDP-Server IP address
- Data following this special string is sent to the new remote UDP-Server (having an IP address “uuu.vvv.www.xxx”).

3.) How the PLC can control the Transparent UDP Port:

When the FP Web Configurator tool is installed, the FPWIN Pro example “IP_to_Dword.asc” is also copied onto the hard disk. This file can be found under the default installation path:

“C:\Programs\NAiS Control\Configurator\FP-Web\FPWIN-Pro_Example”

This example PLC program shows the handling of IP address strings. It converts IP address strings to a DWORD (binary representation) to enable IP addresses to be checked and compared. With this example function block it is also possible to generate IP address strings from binary (DWORD) information.

For a detailed description of the connection to the FP Web-Server, see ***cables to connect to the 9 pin connector of the FP Web-Server*** (see "Cables to connect to the 9 pin connector of the FP Web-Server" on page 8-13).

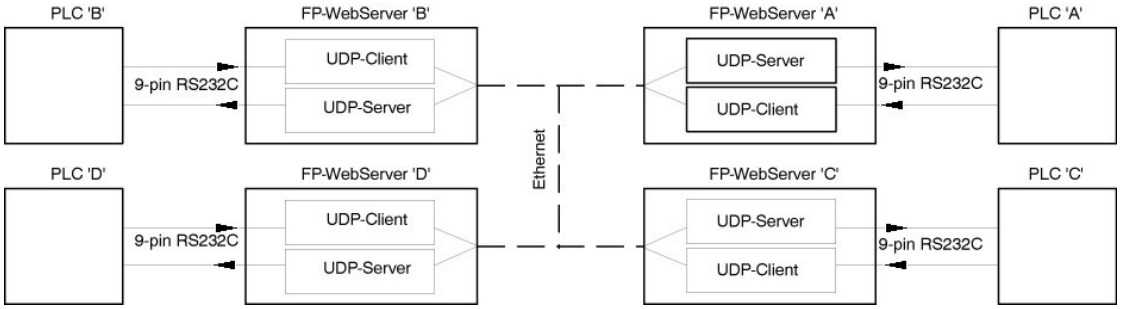
8.3.3.2 Example for "Transparent Multipoint Port" Communication

All stations in the following examples use the ‘Transparent Multipoint UDP Port’ function. The UDP-Server and UDP-Client functions of all stations are configured to use port number 9095.

The three example FP Web-Server stations are set up as follows:

- Station ‘A’: ID = 199.199.77.11
- Station ‘B’: ID = 199.199.77.12

- Station ‘C’: ID = 199.199.77.13



Example 1:

Station	Data stream received via its 9-pin RS232C connector		Station	Data stream is output via its 9-pin RS232C connector
A	{I199.199.77.12}<CR>xxxxxxx	→	B	{i199.199.077.011}<CR>xxxxxxx
B	{I199.199.77.11}<CR>yyyyyyy	→	A	{i199.199.077.012}<CR> yyyyyyy

Example 2:

Station	Data stream received via its 9-pin RS232C connector		Station	Data stream is output via its 9-pin RS232C connector
C	{I199.199.77.012}<CR>xxxxxxx	→	B	{i199.199.077.013}<CR>xxxxxxx
C	yyyyyyy	→	B	yyyyyyy

Example 3:

Station	Data stream received via its 9-pin RS232C connector		Station	Data stream that is output via its 9-pin RS232C connector
A	{I199.199.77.12}<CR>xxxxxxx {I199.199.77.13}<CR>yyyyyyy	→	B	{i199.199.077.011}<CR>xxxxxxx
			C	{i199.199.077.011}<CR>yyyyyyy

8.3.3.3 General Comments and Comparison between TCP and UDP

1. UDP/ IP (in short UDP) does not use a connect/ disconnect sequence. With UDP it is possible to send data to a different station than one from which data is received, both at the same time and using the same port number.

2. UDP/ IP does no support automatic data error handling.

   Using TCP the data is sent to the distant station and the distant station automatically sends an "OK answer" back. The data package will be sent a second time if the "OK response" is not received by the sender. This procedure cannot be watched by the user (i.e. PLC).
   Using UDP the data package is sent to the distant station and the receiving is not automatically checked or repeated in case errors occur. The data is directly forwarded to the user (i.e. PLC).

3. Data can ONLY get lost if you unplug the Ethernet cable. To handle this case it is a good idea for the PLC to send an "OK response" back to the sender when data is received.

4. Missing UDP data packages should be handled by the user protocol.
   For example:

   If 'Station A' sends data to 'Station B' then 'Station B' should send back an answer to 'Station A'. 'Station A' should also check the returned answer with a timeout. If no answer is received within the timeout, then 'Station A' should re-send the data package or send the data to a different station.

5. The network administrator has to ensure that UPD packages are also forwarded by all necessary routers and gateways.

6. Additional note: The usage of the special strings “{I...}<CR>” and “{i...}<CR>” will restrict the range of user data sent and received via the Transparent Port. The user must make sure that the string “{I” and “{i” does not appear in the user data or protocol, i.e. the character combinations “{I” and “{i” can no longer be used in the user data (because it is reserved for Multipoint communication).

7. The special string “{i...}<CR>” sent to the PLC string can be easily handled by the PLC program because it has a fixed length.

8. The FP Web-Server (i.e. the “Transparent Port UDP Client”) buffers the data received from the PLC via RS232C until none is received within the configured ‘packing time’ (maybe 100ms). The RS232C data sender (PLC or other RS232C unit) must ensure that the data sent before the 100ms delay does not exceed 2000 characters: the “Transparent Port UDP Client” RS232C receiving buffer size is 2000 bytes.

9. The special string “{I” must be received by the FP Web-Server via RS232C in one ‘package’, i.e. no delay longer than the ‘packing time’ (maybe 100ms) is allowed between the special string's characters.

10. The Transparent Port Multipoint function can handle sending and receiving at the same time. Also data can be received from two or three different stations at the same time. The PLC gets the data one after the other.

8.3.4 Transparent TCP/UDP Port Number

The TCP/UDP port number for transparent communication is determined here.

a) Port server:
The port number set here must be known to the client (RS232C redirector, FPWIN Pro or GK panel).

b) Port client:
The port number specified here must match the desired server port to be accessed.

For examples on TCP client's settings, see ***Client's Side*** (on page 8-3).

For UDP multipoint setup, see ***Example for "Transparent Multipoint Port" Communication***(on page 8-14).

8.3.5 Transparent RS232C Baud Rate

The FP Web-Server receives its data for transparent communication via the 9-pin RS232C port with the label "MODEM COM." (RS232C). For a detailed description of the cables see ***PLC Connection, Modem, Cable Drawings, DIP Switches*** (see "PLC Connection, Cable Drawings, Modem, DIP Switches" on page 10-7).

The following settings have to correspond to the settings of the external unit that is connected to 9-pin RS232C port.

Baud Rate from 1200 to 115200 BPS:

The presetting is 19200 BPS.

8.3.6 Transparent RS232C No. of Data Bits

The number of data bits is 7 or 8:

The presetting is 8 data bits.

Further information: Transparent Port (see "Configurator Parameters to the Transparent Port" on page 8-8), Enable Port (see "Enable Transparent TCP/IP Server Port" on page 8-9), RS232C Settings (see "Transparent RS232C Baud Rate" on page 8-17).

8.3.7 Transparent RS232C Parity Bit

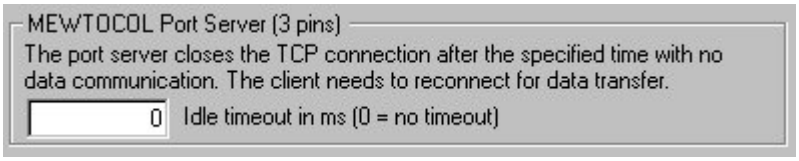
Tells you if there is a parity "None, Odd, Even" required and which one is to be used:

The presetting is the "odd" parity.

For further information see: ***Transparent Port*** (see "Configurator Parameters to the Transparent Port" on page 8-8), ***Enable Port*** (see "Enable Transparent TCP/IP Server Port" on page 8-9), ***RS232C Settings*** (see "Transparent RS232C Baud Rate" on page 8-17).

8.3.8 Advanced Transparent Port Parameters

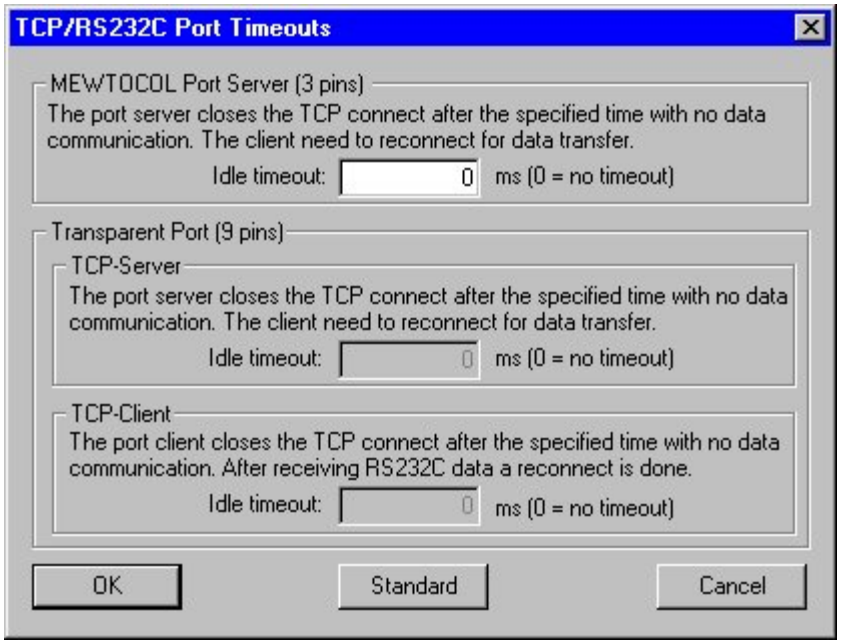
The settings for the idle timeout for **MEWTOCOL Server Port** are the same for transparent server port as for transparent UDP port.



After the connection has been cancelled the client (PC, transparent client port...) has to connect via TCP to the MEWTOCOL Server port again. Set the idle timeout only if the operation of the server or client is often interrupted that causes troubles to reconnect during connections are still open.

8.3.8.1 Advanced Settings of the TCP Ports

With the dialog "TCP / RS232C Port Timeouts" you can specify timeouts when the FP Web-Server cancels the connection to the client if no data is transmitted for the duration of the specified value for idle timeout. The idle timeout can be set to the default value 0 (i.e. the FP Web-Server never disconnects automatically as in version 1.0) by clicking on [Standard].



MEWTOCOL Server Port, see Advanced Transparent Port Parameters (on page 8-18)

Transparent Server Port

After the connection has been cancelled the client (PC, transparent client port...) has to connect via TCP to the Transparent Server Port again. Set the idle timeout only if the operation of the server or client is often interrupted, which causes trouble reconnecting while connections are still open.

Transparent Client Port

The FP Web-Server (acting as a client here) cancels the connection to the server if no data is transmitted for the duration of the specified idle timeout. Next the client FP Web-Server is waiting for incoming data at the RS232C port (9-pin male connector). For incoming data the FP Web-Server connects to the port server again and data will be transmitted. The connection will not be closed if data is sent or received.

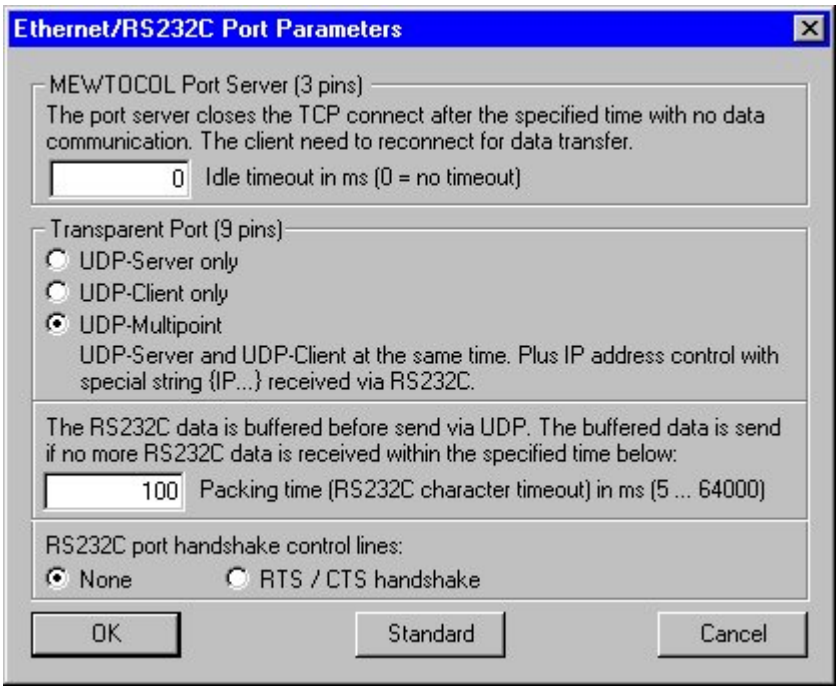
If the idle timeout is set to 0 by clicking on [Standard], the client FP Web-Server connects to the server after initialization (also after an error or a disconnect from the other server) and never disconnects automatically again.

Comment

With the function "idle timeout" it is possible that multiple TCP-Port-Clients can send data to **one** TCP-Port-Server.

8.3.8.2 Advanced Settings of the UDP Port

Clicking on [Advanced] opens the following dialog:



Click on [Standard] to reset all values to default settings.

MEWTOCOL Server Port, see Advanced Transparent Port Parameters (on page 8-18)

"UDP-Server only"

The transparent port UDP-Server waits on incoming UDP data from a distant UDP-Client (FPWeb-Server set to UDP-Client) and outputs this via RS232C. Data received via RS232C is sent to the distant UDP-Client (the one who sent data the last time). The special strings {I...} are not generated/processed.

"UDP-Client only"

The transparent port UDP-Client waits on RS232C data receiving. The RS232C data is buffered and sent (after packing time with no receiving) to the configured, remote UDP-Server. Only the configured remote IP server address is used. The special strings {I...} are not generated/processed.

"UDP Multipoint"

UDP-Server and UDP-Client at the same time. Plus IP address control with special string {IP...} received via RS232C. For details on the UDP multipoint server/client communication, see link “Enable Transparent UDP/IP Port”.

"Packing time"

The RS232C data is buffered before being sent via UDP. The buffered data is sent if no more RS232C data is received within the time specified here. Possible range is 5 ... 64000ms. The default time is 100ms.

The RS232C data sender (PLC or other RS232C unit) must ensure that the data before the packing delay does not exceed 2000 characters, i.e. the RS232C receiving buffer size is 2000 bytes.

The special string “{I” must be received by the FP Web-Server via RS232C within one ‘packet’, i.e. a delay of longer than the ‘packing time’ (e.g 100ms) is not allowed between the characters of the special string.

"RS232C handshake mode"

The RS232C of the FP Web-Server can be configured to do RTS/CTS handshaking. By default the RTS/CTS handshake is disabled. RTS/CTS handshaking is handled independent of the maximum allowed packet size of 2000 bytes (see above ‘Packing time”).

Chapter 9

PPP-Server Setup

9.1 Dial-up Networking Setup for Computer/ FP Web-Server

The FP Web-Server can administer a modem that permits logging on of a "PPP-Client" and establishing a TCP/ IP connection to the FP Web-Server via modem.

When the connection has been established, the functions are the same as the ones described above for Ethernet communication.

Functions possible:

- HTTP-Server for Web Pages
- RS232C/ Ethernet Ports
- Remote configuration

In addition, the FP Web-Server provides a "Gateway" function that allows other FP Web-Servers (that are connected to the "Gateway" FP Web-Server via the Ethernet) to be accessed via a long-distance modem connection. For a description of the gateway setup, see PPP Gateway Functions (see "FP Web-Server PPP Gateway Functions" on page 9-12).

In the following paragraph, the installation of a Windows95 computer and modem is described. Using its standard Windows Dial-up Networking (PPP-Client) functions you can call up a FP Web-Server.

For a detailed description of the parameters for the PPP-Server in the FP Web-Server see ***PPP-Server Configurator Inputs and Parameters*** (on page 9-17).

9.1.1 TCP/ IP Network Installation of a Windows Client

To make it possible for a computer to communicate with the FP Web-Server via the network, the TCP/ IP network protocol has to be installed. These settings are independent of the decision whether the communication is carried out via the Ethernet or via the dial-up networking modem. For details on the TCP/ IP installation on a Windows computer, see TCP/ IP Setup for Configurator/ Browser Operations via LAN (see "TCP/ IP Setup for Configurator/Browser Operations via LAN" on page 10-14).

Comment:

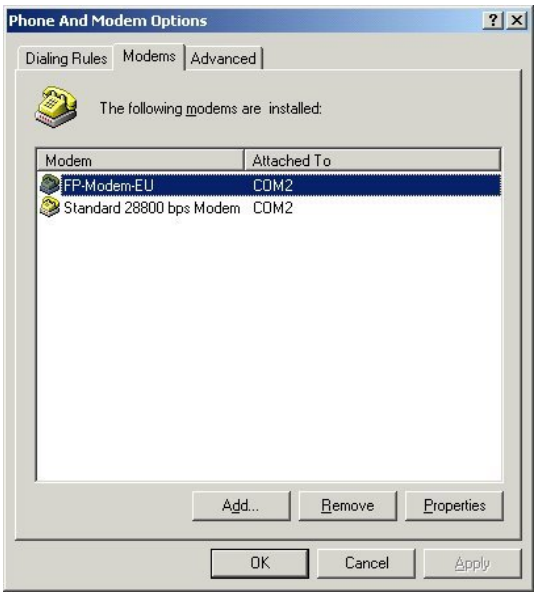
The following screenshots were taken from a Windows 2000 operating system. The layout of other Windows operating systems may differ slightly.

9.1.2 Modem and Dial-up Networking Installation of a Windows Client

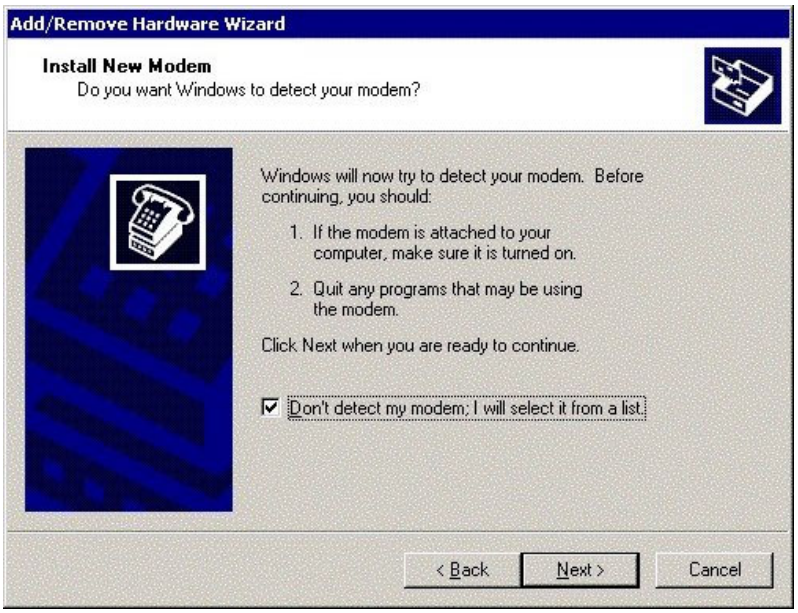
Configure and test the respective modem under "system settings", "modems". (For example, a "standard 28800 BPS modem" to COM 2 was used.) Do not forget to set the optional parameters correctly before closing "modem", "system settings".

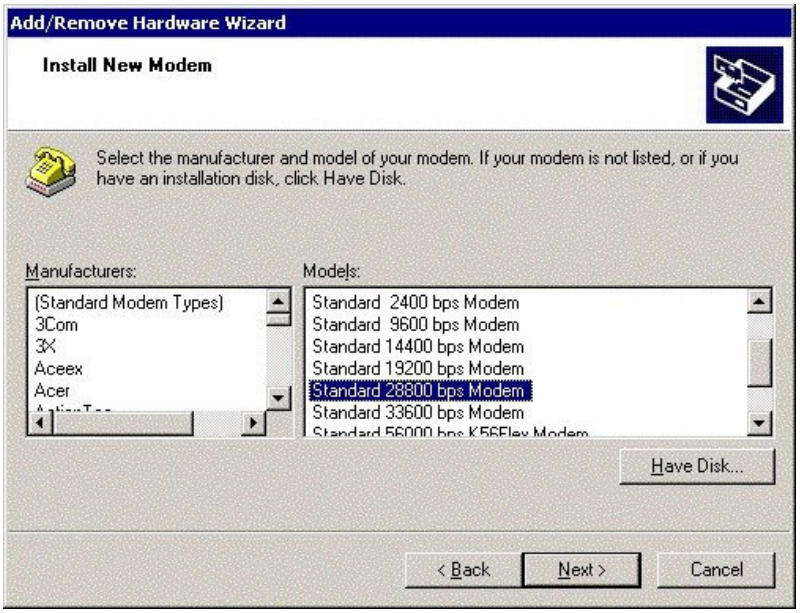
◆ **PROCEDURE**

1. **Open the dialog "Phone and Modem Options"**



2. Press [ADD] to add a new modem

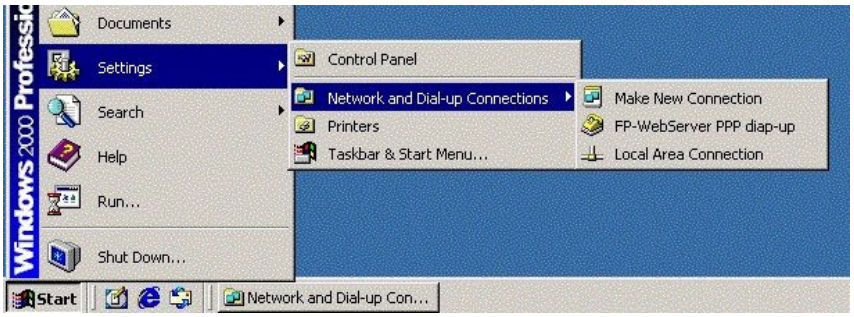


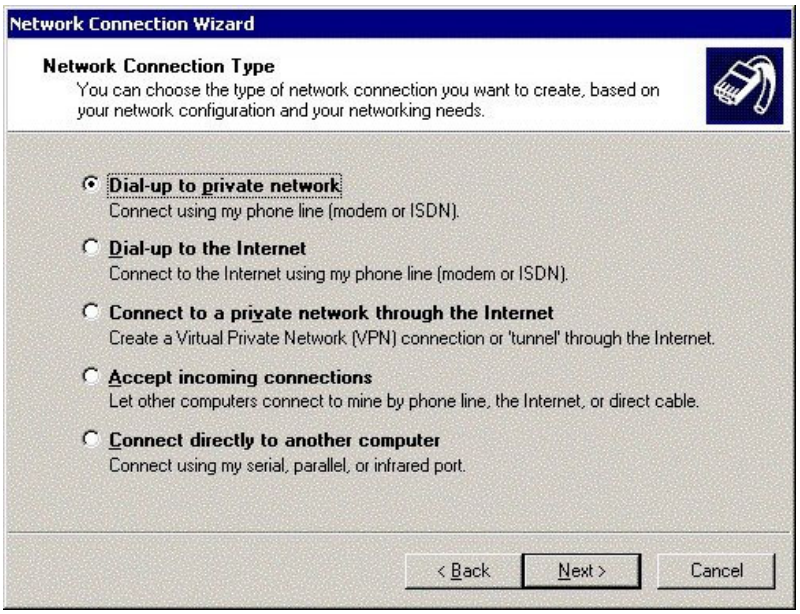


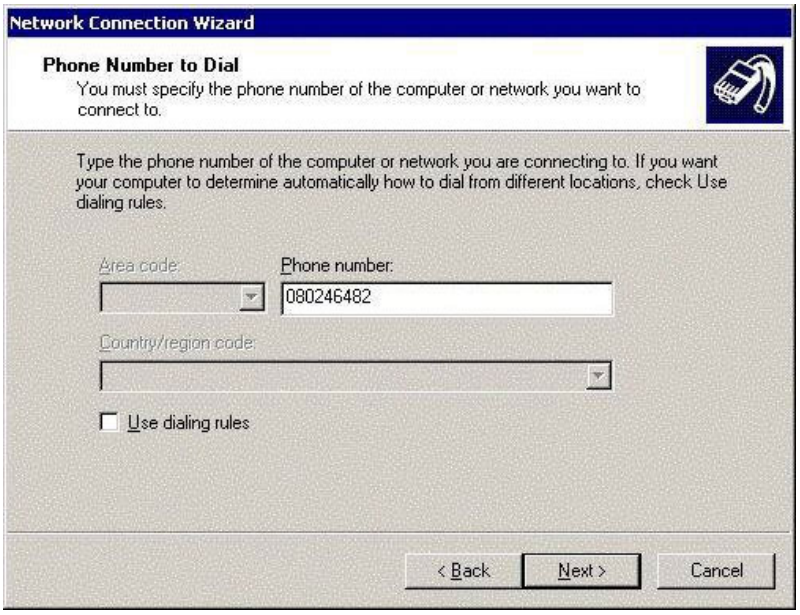
3. Windows95: Install the dial-up networking and restart the computer

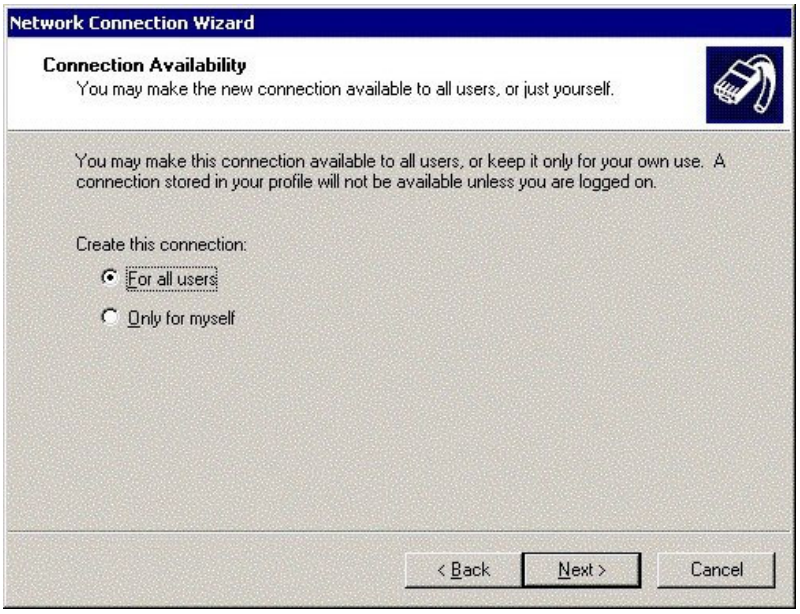
In "system settings", "network", a dial-up networking adapter with TCP/ IP protocol (Optional: the client gets his address automatically from the server.) should be installed now. For details on the TCP/ IP installation on a Windows computer, see TCP/IP Setup: Configurator/Browser Operations Via LAN (see "TCP/ IP Setup for Configurator/Browser Operations via LAN" on page 10-14).

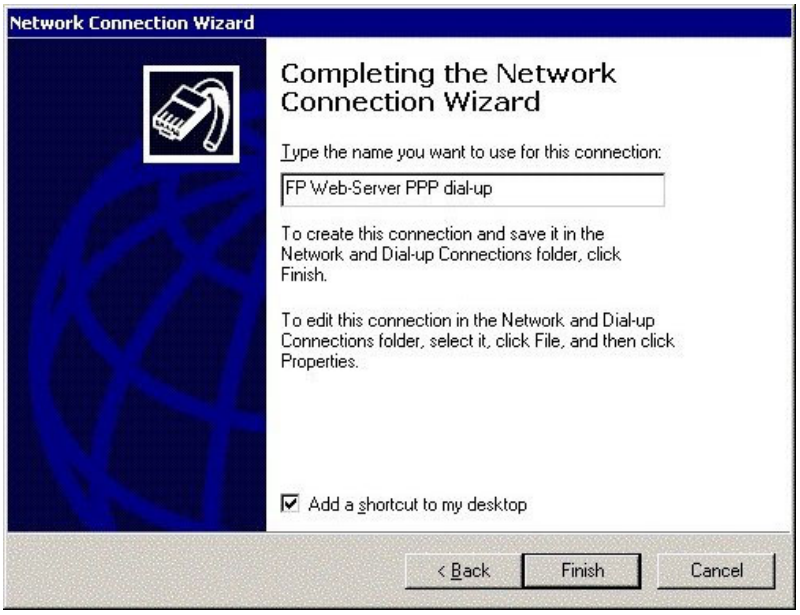
4. **Double-click "Create New Connection" in the folder "Dial-up Networking" and create a new entry by entering the respective data**



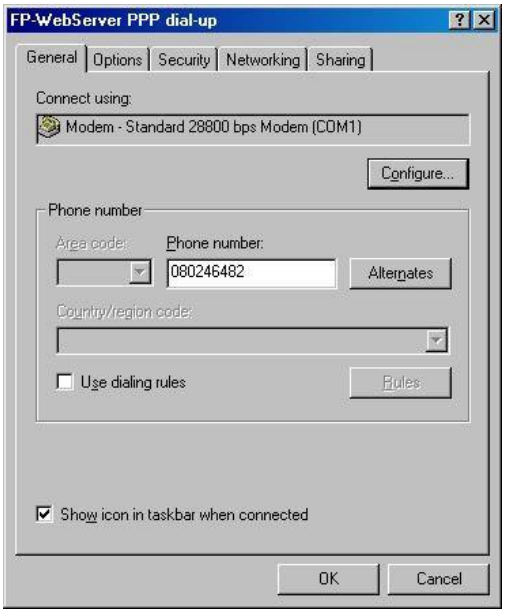


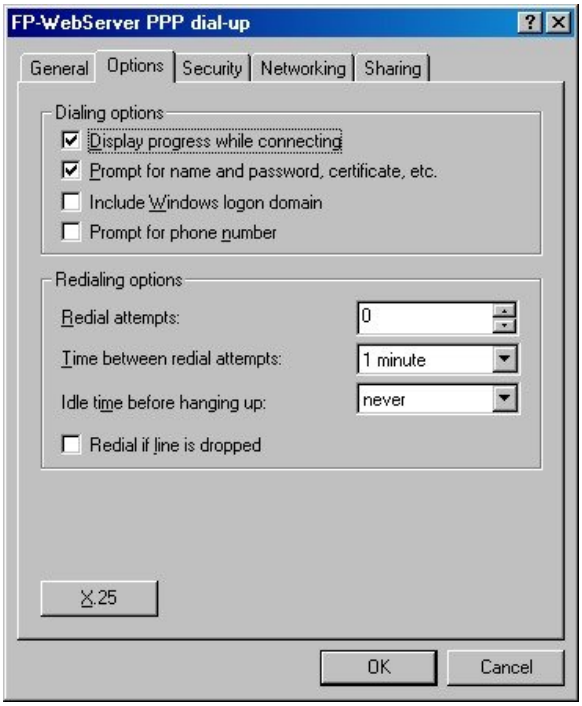

Network Connection Wizard
Phone Number to Dial
You must specify the phone number of the computer or network you want to connect to.
Type the phone number of the computer or network you are connecting to. If you want your computer to determine automatically how to dial from different locations, check Use dialing rules.
Area code:
Phone number:
080246482
Country/region code:
Use dialing rules
< Back
Next >
Cancel

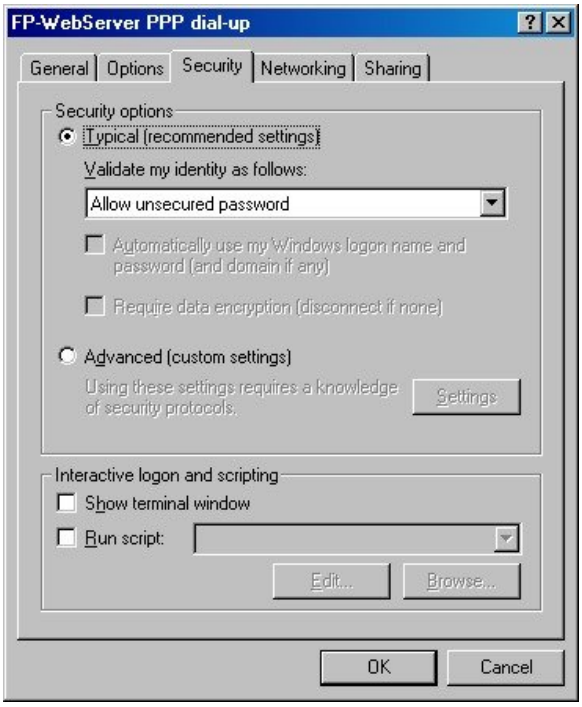

Network Connection Wizard
Connection Availability
You may make the new connection available to all users, or just yourself.
You may make this connection available to all users, or keep it only for your own use. A connection stored in your profile will not be available unless you are logged on.
Create this connection:
For all users
Only for myself
< Back
Next >
Cancel

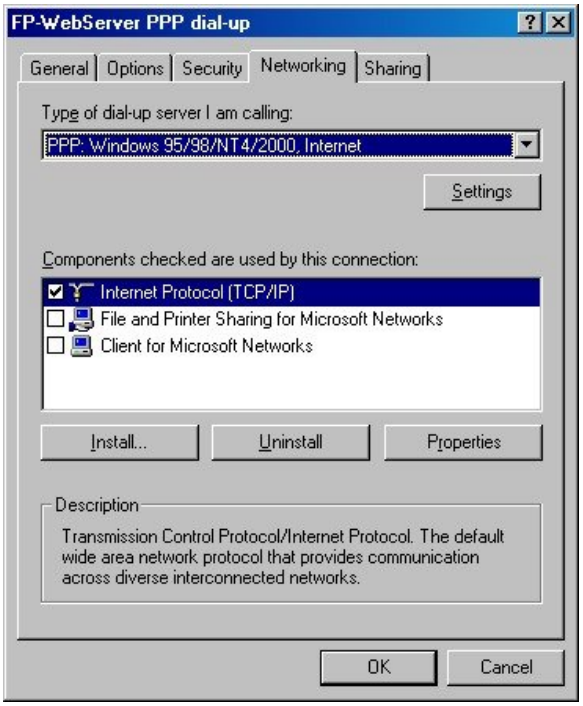


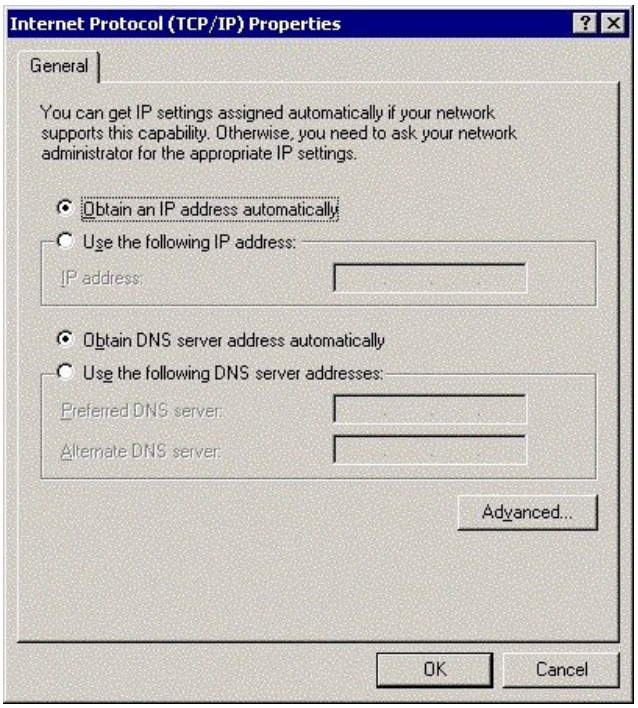
5. After having completed the "New Entry", double-check the "Properties"




FP-WebServer PPP dial-up
General
Options
Security
Networking
Sharing
Dialing options
Display progress while connecting
Prompt for name and password, certificate, etc.
Include Windows logon domain
Prompt for phone number
Redialing options
Redial attempts:
0
Time between redial attempts:
1 minute
Idle time before hanging up:
never
Redial if line is dropped
X.25
OK
Cancel


FP-WebServer PPP dial-up
General
Options
Security
Networking
Sharing
Security options
Typical (recommended settings)
Validate my identity as follows:
Allow unsecured password
Automatically use my Windows logon name and password (and domain if any)
Require data encryption (disconnect if none)
Advanced (custom settings)
Using these settings requires a knowledge of security protocols.
Settings
Interactive logon and scripting
Show terminal window
Run script:
Edit...
Browse...
OK
Cancel



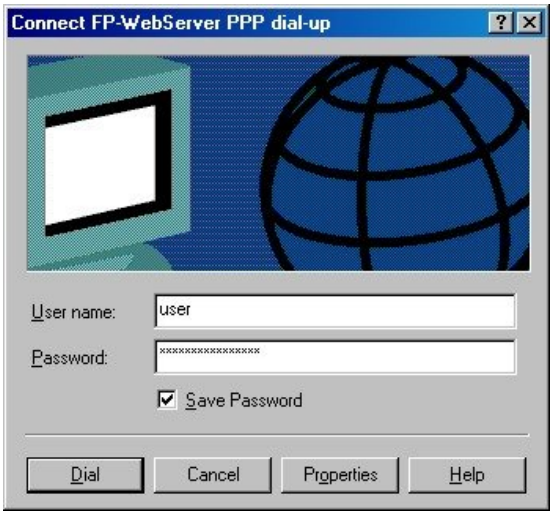


6. **Enter the password that was defined in the Configurator project before** in lower case only

Also see Base Configuration/ ***User Name and Password*** (on page 5-6) and ***preinstalled passwords and safety instructions*** (on page 10-28).

Example:

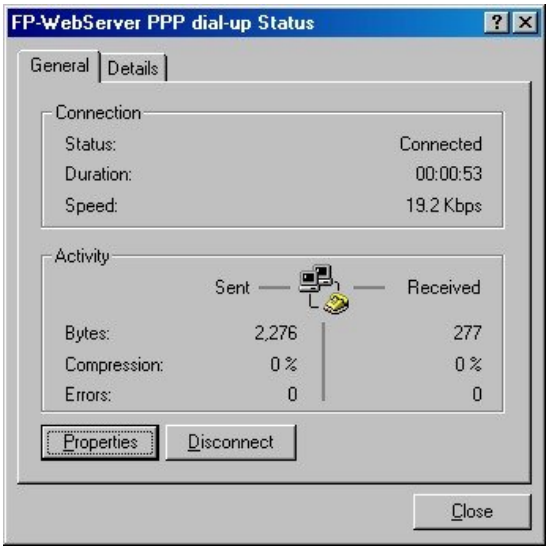
Even if the password was "Abc1", it has to be entered as "abc1" for dial-up networking.



The Windows computer and the FP Web-Server should NOT be connected additionally via Ethernet.

7. **As soon as the connection is established, the application that accesses the FP Web-Server (via TCP/ IP protocol) can be started**

The browser, Configurator, FPWIN Pro, etc. can be used in the same way with an Ethernet connection.



9.1.3 FP Web-Server PPP Gateway Functions

The PPP-Server can be called up via modem by a PPP-Client, e.g. laptop with dial-up networking functions, see Modem and Dial-up Networking Installation (see "Modem and Dial-up Networking Installation of a Windows Client" on page 9-3). As soon as the connection is established, you cannot only access the PLC and the FP Web-Server functions of the PPP-Server with this distant PPP-Client, but also contact all the other FP Web-Servers in the network via Ethernet!

The Ethernet (LAN) network and the dial-up networking connection have to be regarded as two separate networks, each with its own network address! For notes on IP addressing and distinguishing the network's and the unit's address, see ***IP and TCP/ IP*** (on page 10-12).

Within the LAN there is only one PPP-Server gateway allowed, i.e. if several FP Web-Servers are connected in a network via the Ethernet, only one of the FP Web-Servers in this network can assume the function of a PPP-Server.

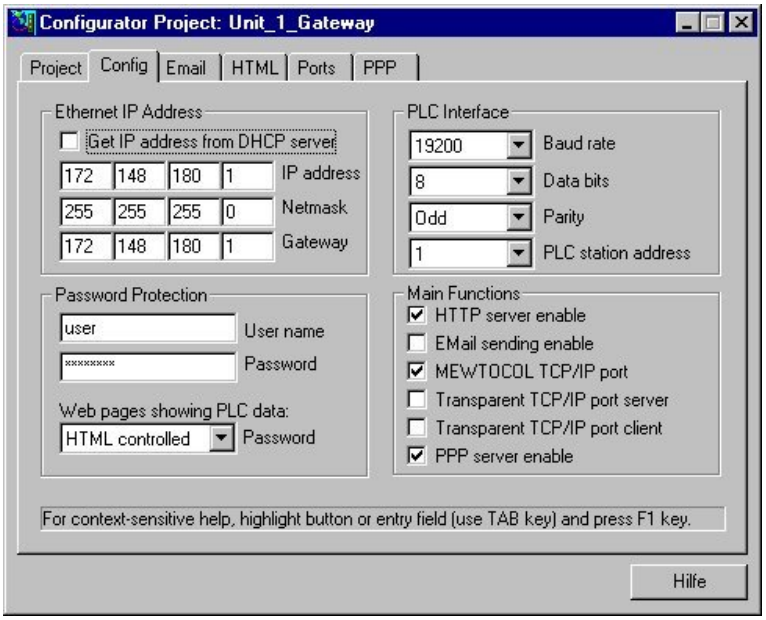
When the IP configuration of the FP Web-Server is carried out, you can specify a default LAN gateway. As soon as a modem connection with the PPP-Server is established, this gateway address is replaced by the PPP configuration.

◆ **EXAMPLE**

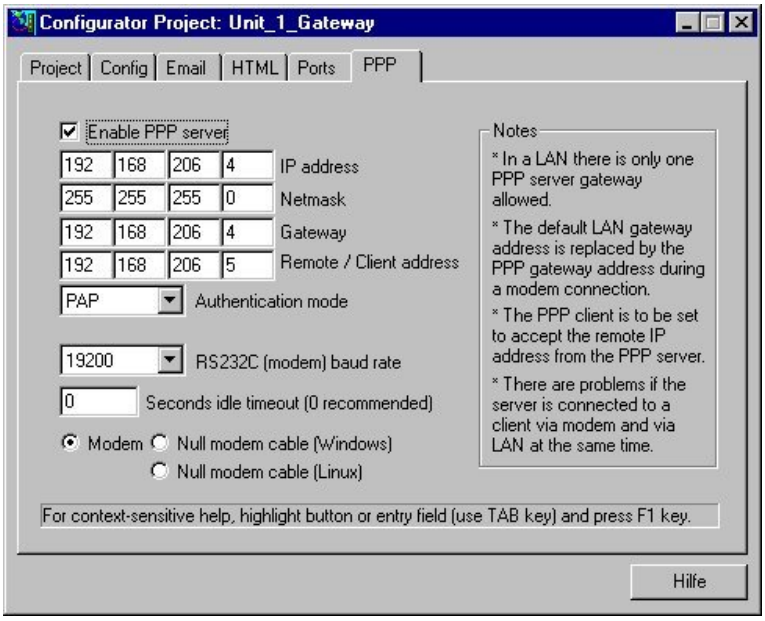
Configuration for an Initial Test:

All FP Web-Servers in the Ethernet network need to have entered the gateway address of that FP Web-Server that implemented the PPP-Server access.

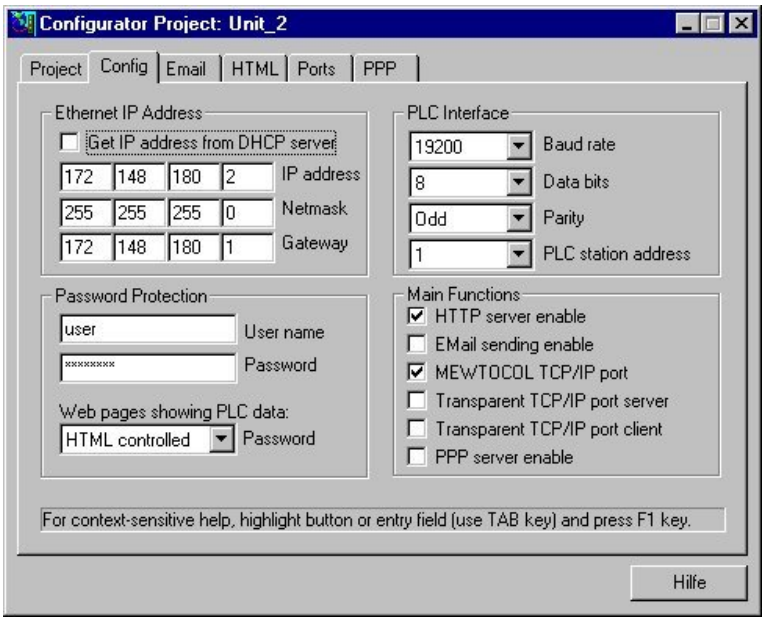
Configuration example for the FP Web-Server that implemented the PPP-Server access:



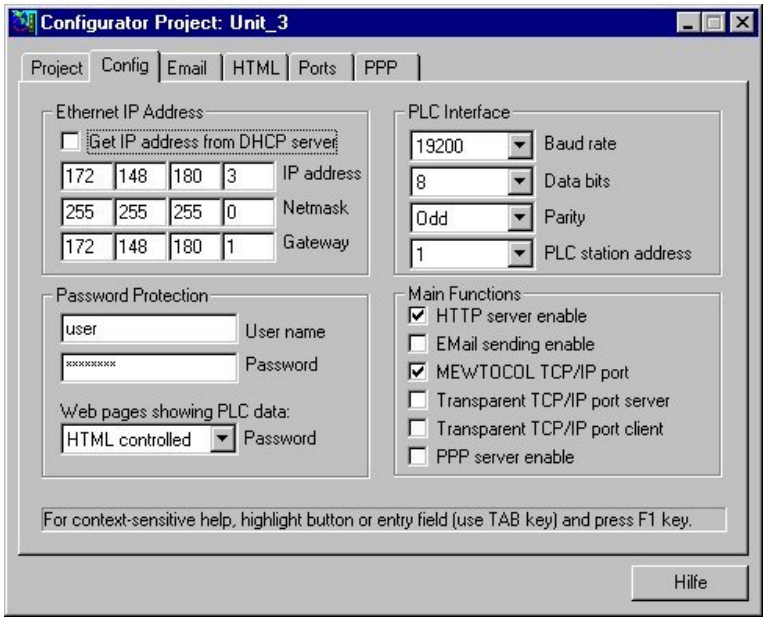
The following parameters need not to be changed and can also be used for your PPP gateway setup.



Configuration example of a second FP Web-Server in the LAN:



Configuration example of a third FP Web-Server in the LAN:

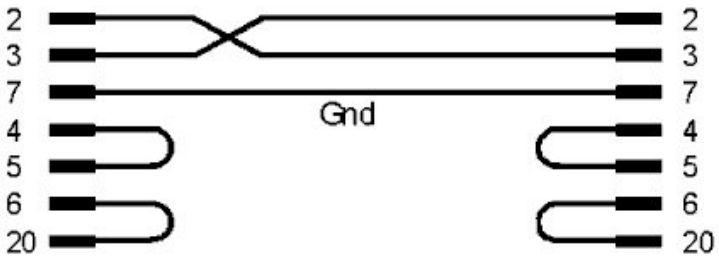


With this configuration example, it was possible to test the IP_forwarding successfully, i.e. a Windows computer that dialed up the FP Web-Server gateway was able to communicate with the other FP Web-Servers in the Ethernet LAN (were the Gateway-FP Web-Server is in). However, the [FIND] command of the Configurator (located on the remote Windows computer) could not find these FP Web-Servers because the IP broadcasts (using the [FIND] command of the Configurator) may not be forwarded via a gateway. See the description of [FIND] (see "Find Server Function" on page 4-6) and details at ***enter IP address manually*** (on page 4-7) how to configure these FP Web-Server via TCP communication.

9.1.4 PPP Communication via Null Modem Cable

Some Windows versions allow a PPP connection to be established to the FP Web-Server via RS232C and null modem. Such an "RS232C - null modem cable" replaces both modems of the PPP connection, i.e. the computer's RS232C COM port is directly connected to the FP Web-Server's 9-pin port via a null modem cable.

Use a standard null modem adapter having 9-pin, female, RS232C connectors on both sides. The minimum wiring should look as follows: 2-3 ; 3-2 ; 5-5. (This is the minimum number of wires needed.) The minimum wiring connects the GND and the data lines only. A 25-pin connection should look as follows:

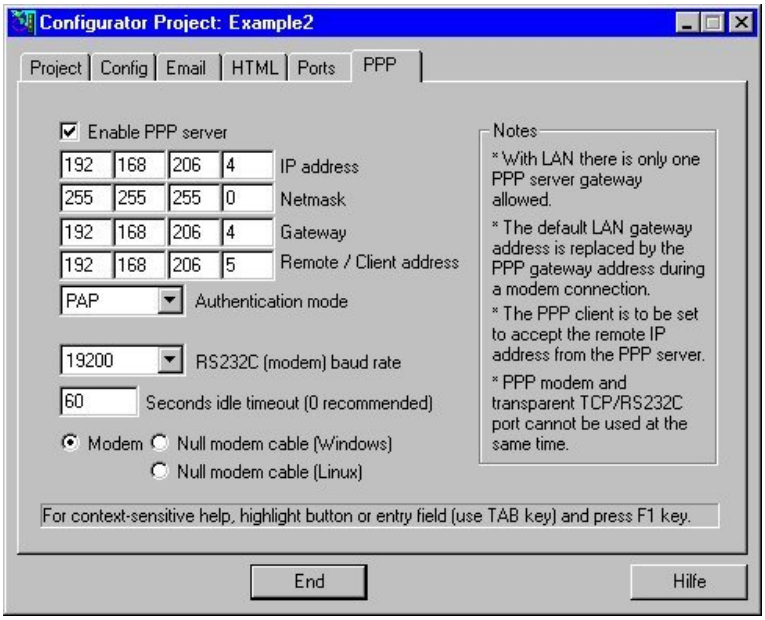


Comments:

- The bridges 4-5 and 6-20 on each side are not absolutely necessary. They are only essential for questions of compatibility.

9.2 PPP-Server Configurator Inputs and Parameters

In the following, the input fields of the "PPP" screen of the Configurator for the PPP-Server configuration are described.



Comments:

- The PPP-Client has to be set up in such a way that it accepts the remote IP address from the PPP-Server.
- The modem and the transparent TCP/ RS232C port cannot be used at the same time.
- The modem has to be connected to the 9-pin RS232C port of the FP Web-Server. For a detailed description of the cables and the DIP switch functions see ***PLC Connection, Cable Drawings, Modem, DIP Switches*** (on page 10-7).

9.2.1 PPP-Server Enable/ Disable

Enable/ disable the PPP-Server, i.e. the gateway function between the modem (at the 9-pin RS232C port) and the Ethernet network.

◆ **NOTE**

If the PPP-Server of the FP Web-Server is active and a modem is connected to the 9-pin RS232C, transparent communication is impossible, i.e. either a transparent RS232C port or a PPP-Server for external modem access (PPP gateway to the Ethernet) is possible. If the PPP-Server is activated and the transparent port was active at the same time, you will receive the following message:

9.2.2 PPP-Server IP Address

The fixed IP address of the FP Web-Server for a dial-up networking connection has to be entered here.

The IP address consists of 4 numbers (any 0 to 255). The first numbers define the network address, the other numbers define the participant's address.

The Ethernet (LAN) network and the dial-up networking connection have to be regarded as two separate networks, each with its own network address! For notes on IP addressing and distinguishing the network's and the unit's address, see ***IP and TCP/ IP*** (on page 10-12).

For an example of an initial test configuration see PPP Gateway Functions (see "FP Web-Server PPP Gateway Functions" on page 9-12).

9.2.3 Netmask (Remote Network)

The netmask of the dial-up networking has to be entered here. This netmask defines the allocation of the address to the network's or the unit's address. This sub-netmask applies to the dial-up networking, i.e. the PPP-Server IP address and the PPP-Client remote IP address.

For an example of an initial test configuration see PPP Gateway Functions (see "FP Web-Server PPP Gateway Functions" on page 9-12).

9.2.4 PPP-Server Gateway Address

The IP address that provides the gateway function between the Ethernet LAN and dial-up networking has to be entered here. It makes sense to enter the IP address of the PPP-Server here see ***PPP-Server IP Address*** (on page 9-18).

For an example of an initial test configuration see PPP Gateway Functions (see "FP Web-Server PPP Gateway Functions" on page 9-12).

9.2.5 PPP-Client Remote Address

The IP address that is assigned to the PPP-Client (e.g. laptop) during a dial-up networking connection has to be entered here. The PPP-Client should be configured as described in Modem and Dial-up Networking Installation of a Windows95 Client (see "Modem and Dial-up Networking Installation of a Windows Client" on page 9-3), such that no fixed IP address is used for the dial-up networking connection but that the IP address assigned by the PPP-Server is accepted.

For an example of an initial test configuration see PPP Gateway Functions (see "FP Web-Server PPP Gateway Functions" on page 9-12).

9.2.6 PPP Authentication Mode for the Remote PPP-Client

The type of the authentication (password request) that should be used for a dial-up networking connection, can be determined here.

With a Windows PPP-Client the "PAP" method should be selected.

9.2.7 RS232C Baud Rate (Modem/ Cable)

The maximum baud rate for the RS232C connection from the FP Web-Server to the modem has to be determined here. In case of noisy telephone lines a low baud rate (e.g. 19200 BPS or 9600 BPS) should be selected. Normally, the connected modem can automatically identify the baud rate used by the FP Web-Server.

9.2.8 Seconds Idle Timeout

The period of time after which the modem connection is disconnected by the FP Web-Server (respectively the PPP-Server) if no data exchange is carried out is defined here, i.e. if no data transfer has been carried out via the modem for a certain period of time, the connection is automatically disconnected. Values range from 0 to 500 seconds.

The idle time should be set as short as possible because under certain circumstances the predefined idle time must pass, before the FP Web-Server can accept another connection. A value of 0 disables the idle timeout and the FP Web-Server does **not** disconnect. This is recommended for Windows clients that get into trouble when a PPP-Server disconnects the modem connection.

Comment:

The idle timeout of all examples (see "Description of the HTML Examples" on page 10-3) supplied with the FP Web-Server are set to 0.

9.2.9 Modem or Null Modem Cable Selection

Some Windows versions allow a PPP connection via a null modem cable to the FP Web-Server to be established.

The COM port of the computer is directly connected to the 9-pin port of the FP Web-Server via a null modem cable.

For further information see ***PPP Communication via Null Modem Cable*** (on page 9-15).

Chapter 10

Additional Information

10.1 Contents of the CD and Auxiliary Programs

You will find the following folders on the CD:

Folder	Comment
-	Configurator Setup
Manual	User's Manual
Adobe Acrobat Reader	Acrobat Reader Setup

◆ **NOTE**

Please pay attention to possible license regulations!

10.2 Description of the HTML Examples

The following examples supplied with the installation of the FP Web-Server configurator show in a simple way the HTML functions of the FP Web-Server and may be used as source material for advanced projects.

Example 1: First Steps with HTML Including PLC Data

First steps with HTML including PLC data. Shows basic functions for handling PLC data with HTML pages:

- display of the value of a 16-bit data register, e.g. DT200.
- display and/ or change the condition of an internal relay, e.g. R100.
- Enter 16-bit data via an HTML page in the browser.
- Independent to the HTTP functions, FPWIN Pro is able to communicate with the PLC that is connected to the FP Web-Server via Ethernet TCP/ IP port 9094.

Example 2: HTML Functions

Shows all detailed HTML functions of the FP Web-Server:

- Use of images to show conditions of relays.
- Automatic refresh of an HTML page after set duration.
- Check password for protected pages.
- Enter a series of 16-bit DT values with [Submit].
- Display of all PLC data in integer, floating point, double word and string format.
- Enter PLC ASCII text (array of characters) and strings of FPWIN Pro via HTML pages.
- Activate the email function of the FP Web-Server via HTML pages.
- FPWIN Pro is able to communicate with the PLC that is connected to the FP Web-Server via Ethernet TCP/ IP port 9094.

Using this example it is recommended to download the FPWIN Pro example **Example2.asc** to the PLC. This ASCII file can be found under "Programs/ NAiS Control/ Configurator/ FP-WEB/ Example2".

Example 3: Condition of Relays

This example displays the condition of relays with active images, i.e. the images can be clicked to change the condition of the relay.

Example 4: Labels and Java Script

This example shows the use of labels (symbolic names) and the use of Java Script:

- When addressing PLC registers within HTML pages, you can also use symbolic names, e.g. Blinker, Counter instead of the absolute addresses, e.g. DT200, R20. The correlation between the symbolic name and the absolute address is stored in a *.CSV file that has to be copied to the root directory of the project.
- The use of Java Script can automate HTML pages. The script program starts after loading and before displaying the HTML page. A DT200 value read from the PLC is set as a counter for a Java Script loop. For each repetition of the loop, the character '-' is put onto the page, i.e. the PLC controls the length of the '---' line.
  Java Script offers a large library of programming instructions to build convenient, special or automated HTML pages. Also the display and the handling of the browser can be changed with Java Script.
  Additionally it shows the usage of the version 1.3 feature to do an automatic page reload on PLC data entry. For details on the usage of the special HTML page “s_m_done.htm” see ***automatic page reload on submitting PLC data*** (see "Automatic Page Reload upon Submitting PLC Data" on page 7-29).

Example 5: Symbolic Names, Strings, Java Script

This example shows:

- Symbolic names used instead of absolute PLC addresses.
- Strings are stored on the PLC and
- JavaScript is used with the FP Web-Server to program:
  - a button to send multiple strings to the PLC
  - receiving multiple strings from the PLC and buffer in variables
  - a button to display buffered strings
  - verifying data in the browser before sending
  - generating its own "Error" and "OK" windows after data submit

In this case the JavaScript is in a separate file "javascri.js" which is called from the HTML page. To enter some values on the "Billboard", you have to initialize some data registers on your PLC. Therefore it is necessary to program the PLC as described in "instruc.htm".

Example 6: PLC data Sent via Email

PLC data is sent via email. This example requires the PLC program **Example6.asc** to be run on the PLC. This PLC program converts PLC data into text before sending an email. The new version of the FP Web-Server V1.2 supports email text of up to 32000 ASCII characters. The program file, the respective FPWIN Pro library and a brief description (Readme.txt) can be found under "Programs/ NAiS Control/ Configurator/ FP-WEB/ Example6/ PLCprog".

Example 7: Internet Email

This is an example for using Internet email with the FP Web-Server. It is similar to example 2, but sending email is set to Internet dialup.

- This example uses data of the ISP (phone number, DNS address) of the provider "Freenet, Call-by-Call". These settings can only be used in Germany. Please change the settings to another dial-up provider according to your country.
- The example of the email ISP is also an account from "Freenet" and is not for official use. Before you can use this example you have to register an email account from Freenet (http://office.freenet.de/) or an other provider. Modify the example settings for the email sender's address, user name and password according to the email account you have access to.

Example 8: Use of Frames

This example shows the use of frames.

- Using frames while displaying PLC data on the first page (Main.htm)
- When using frames one html page can consist of several independent HTML files
- The file Main.htm of this example consists of two referenced pages. One page is displayed in the upper frame, the other in the lower frame. The upper frame is refreshed continuously, e.g. PLC data will be read continuously. The lower frame is static for entering PLC data.
- Only edit MAIN.htm with a text editor, e.g. NotePad, do not use an HTML editor.

Example 9: Bar Graphs

This example shows several uses for bar graphs, whereby images increase their size according to PLC data. It also shows that all HTML tags, values and parameters may be replaced by PLC values. Only edit *.htm pages with a text editor, e.g. NotePad, do not use an HTML editor.

Example 10, New HTML Features

This example shows the new HTML features of FP Web Configurator version 1.3. These are list boxes, checkboxes, radio buttons and a reset button for entry fields. Additionally it shows how to use the new feature: automatic page reload on PLC data entry. For details on the using the special HTML page “s_m_done.htm”, see ***automatic page reload on submitting PLC data*** (see "Automatic Page Reload upon Submitting PLC Data" on page 7-29).

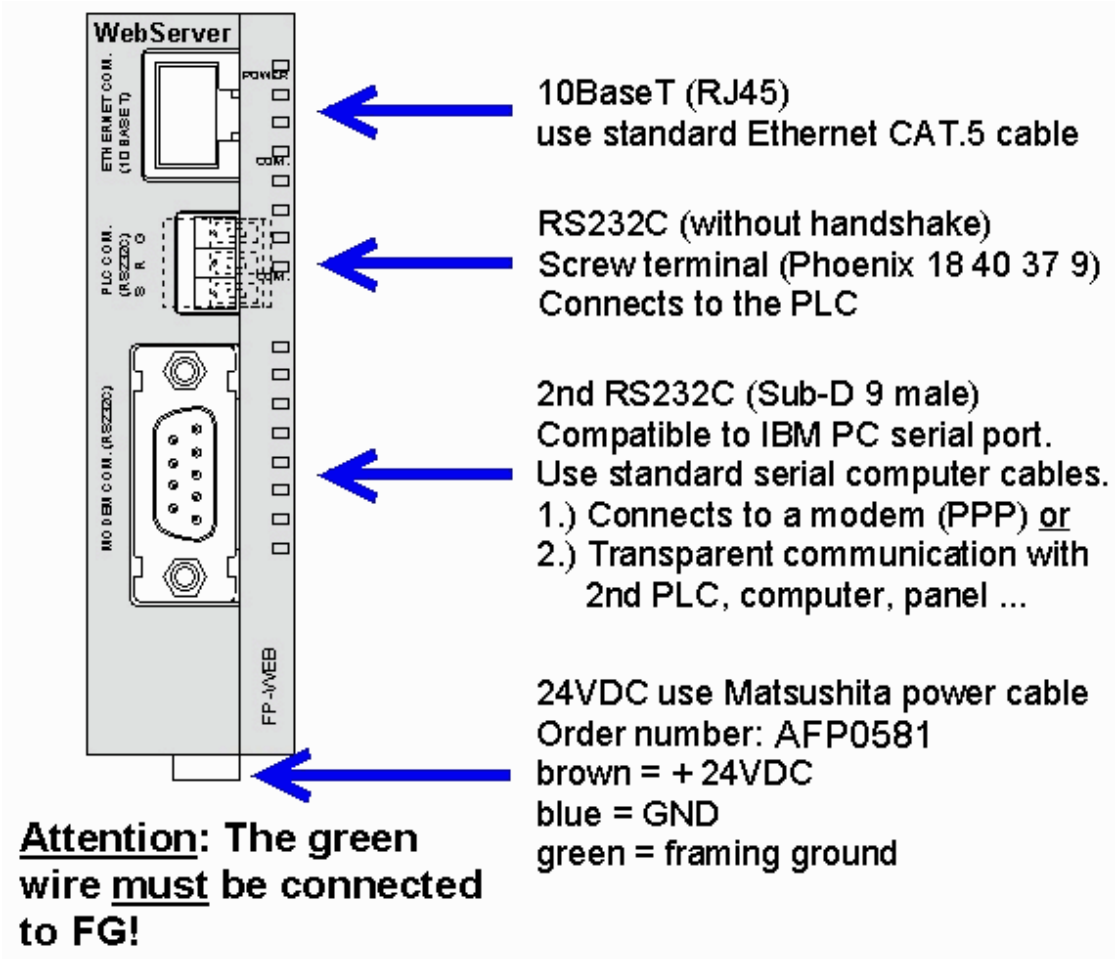
◆ **NOTE**

Edit this example's HTML pages with a text editor, e.g. Notepad.

10.3 PLC Connection, Cable Drawings, Modem, DIP Switches

Please also see the installation sheet " FPWEB_Server_Leaflet" supplied with your FP Web-Server for important notes, cables and installation.

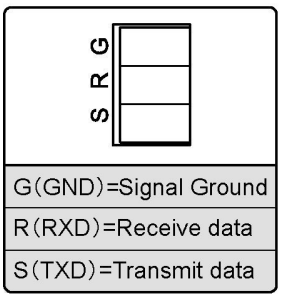
10.3.1 PLC Connection



10.3.2 Cable Drawings and Modem

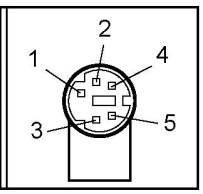
The possible cables for connecting the FP Web-Server to the Matsushita PLC:

■RS232C(3-pin)



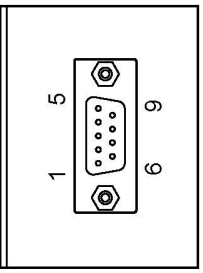
1.Tool port FP0/M/2/2SH/Σ/FP-e using cable AIGT8192

FP Web-Server Screw Terminal 3-pin	PLC Tool Port Sub-D male 5-pin
G	1(Blown)
R	2(Red,White)
S	3(Orange,Green)



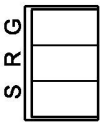
2.COM. Port FP1/M/2/2SH/10SH,SDU FP2/3 using cable AIP81842

FP Web-Server Screw Terminal 3-pin	PLC COM.Port Sub-D male 9-pin
G	7(Blown)
R	2(Red,White)
S	3(Orange,Green)
	4
	5



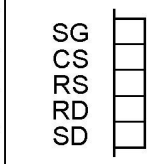
3.COM. Port FP0/FP-e

FP Web-Server Screw Terminal 3-pin	PLC COM.Port Screw Terminal
G	G (/SG)
R	S (/SD)
S	R (/RD)

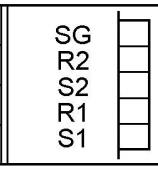


4.COM. 1 and COM.2 Ports FPΣ

FP-WEB	COM1
G	SG
R	SD
S	RD
	RS
	CS



COM2
SG
S1(/S2)
R1(/R2)



G (GND) = System Ground

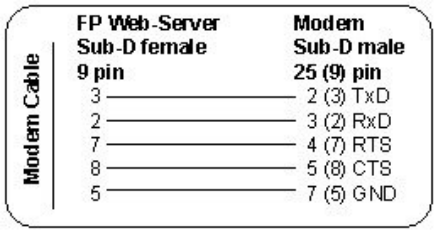
R (RxD) = Receive Data

S (TxD) = Transmit Data

The 3-pin screw terminal is from Phoenix Contact: Phoenix product: MC1.5/3-ST-3.5

PPP-Server with modem:

Use a standard computer/ modem cable to connect the FP Web-Server to a modem:



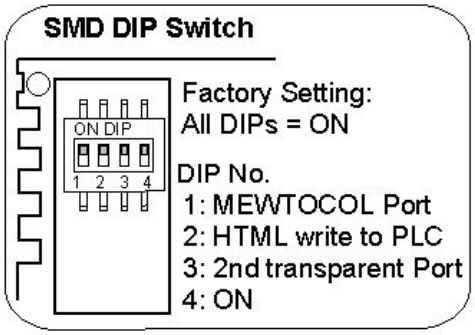
PPP-Server without modem:

Use a null modem cable to connect the FP Web-Server directly to a computer:

- A minimum, self-made adapter can be built by using two female connectors and 9-pin SUB-D connectors. The wiring should look as follows: 2-3; 3-2; 5-5. (This is the minimum number of wires required.)
- Or use a standard null modem adapter with full 25-pin, female RS232C connectors on both sides to create a connection between the FP Web-Server (with 25/9 adapter) and the computer's COM port.
- The full wiring of a standard 25-pin null modem adapter should look as follows:
  1-1; 2-3; 3-2; 4+5-8; 6-20; 7-7; 8-4+5; 20-6

10.3.3 DIP Switches

Upon delivery, the DIP switches of the FP Web-Server are set to ON.



◆ **NOTES**

- **The DIP switches can only switch OFF a function that has been enabled (i.e. activated) in the Configurator before. If a function has not been enabled in the Configurator, the DIP switch has no function!**

- **The DIP switch settings are read by the FP Web-Server every second, i.e. the FP Web-Server recognizes DIP switch changes automatically and does not need to be restarted.**

10.3.4 Special Notes for Service Technicians for Clearing Passwords

To clear the password (and the configuration) of a FP Web-Server, the following steps have to be carried out:

◆ **PROCEDURE**

1. **Shut down the FP Web-Server, i.e. disconnect or switch off the 24V supply**

2. **Disconnect all RS232C cables (to the PLC and to the Modem)**

3. **Set the DIP switches: 1=ON 2=OFF 3=ON 4=OFF**

4. **Power up the FP Web-Server and watch the LEDs**

   After the initialization (which takes about 9 seconds) the 2nd COM LED is activated for about 5 seconds

   If the DIP switches are not switched ON during those 5 seconds, the FP Web-Server deactivates the 2nd COM LED and resumes to normal operation

   If all DIP switches are switched ON during the 5 seconds in which the 2nd COM LED is lit, the following tasks are carried out simultaneously:

   - CHIP.INI file on the FP Web-Server (holding the configuration and the passwords) is deleted.

   - 2nd COM LED stays activated.

   - FP Web-Server stops its operation.

   After this, proceed with the following steps:

5. **Shut down the FP Web-Server and power up again**

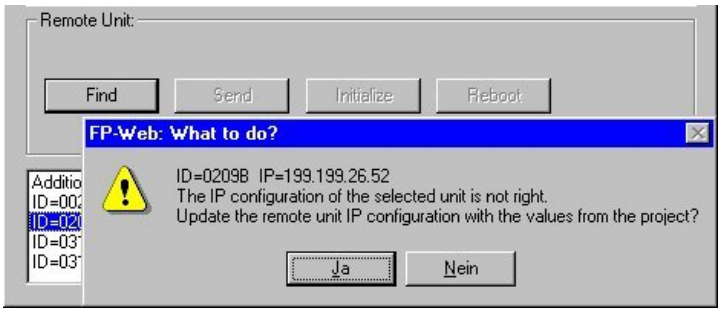
   The FP Web-Server will start with a DHCP address or will temporarily use the fixed address 1.1.1.1

6. **Start the Configurator and use the [OPEN] button to load a Configurator project with the IP configuration and password set correctly for the initialization of the FP Web-Server**

7. **Press the [FIND] button and select the appropriate FP Web-Server by double-clicking**

   See also ***Select from List of Units Found*** (on page 4-7).

8. **The confirmation message which pops up (before the IP configuration is transferred) is to be answered with [Yes]**



9. **Wait about 15 seconds, then press [FIND] again and select the appropriate FP Web-Server**

   The confirmation message should not pop up this time.

10. **Press the [INITIALIZE] button to send the firmware and base configuration to the unit**

11. **Press [SEND] (and optionally check the "HTTP files" checkbox) to transfer the new configuration to the unit**

12. **Shut down the FP Web-Server and reconnect the RS232C cables.**

13. **Power up for normal operation**

10.4 IP and TCP/ IP

Every Ethernet participant must have an individual IP address. This address may not be used a second time in the same network. The IP address consists of 4 numbers (any 0 to 255). The first numbers define the network address, the other numbers define the participant's address.

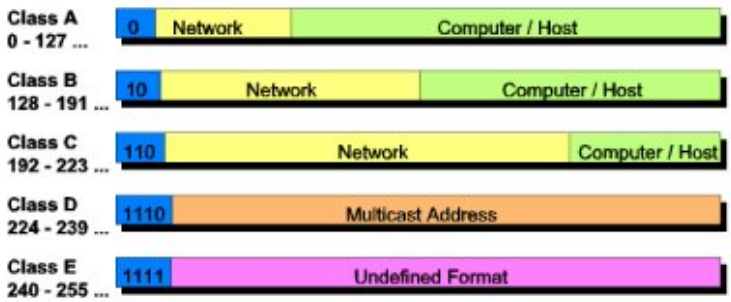
The Internet Address:

To be independent from the medium as well as the platform, one should not adjust the addressing of a single bus system when specifying the communication system. The concept of the Internet is based on one's own address, i.e. the Internet address. The Internet address is comprised of 32-bits and is divided into a network part and a participant's part. While the Ethernet address is displayed hexadecimally, for the most part, the decimal notation is normally used for the Internet address. Every byte is represented by its decimal value. Valid address specifications are numbers between 0 and 255.

Example: 0011 1001 / 0011 1101 / 111 0010 / 0001 1001

would be displayed as: 57. 61. 242. 25

Therefore, special address conventions have been agreed upon:



The following recipient's addresses are fixed:

- 255.255.255.255. broadcast "to all"
- Network address = 0 "the own network"

Computer:

For information of the TCP/ IP installation on a Windows computer see TCP/ IP Setup for Configurator/ Browser Operations via LAN (see "TCP/ IP Setup for Configurator/Browser Operations via LAN" on page 10-14).

FP Web-Server:

The IP address of the FP Web-Server can be fixed or it can be allocated dynamically by a DHCP-Server. See also Configurator (see "DHCP or Fixed IP Address" on page 5-4).

The following two decisions can be made to set up the IP configuration of the FP Web-Server:

A) In a "self set-up" network (e.g. with only one hub) the fixed IP addresses can be assigned by yourself. See also *Setup of an Individual Ethernet LAN* **(on page 10-20).**

In many cases a class C network is used. The network is identified by 3 numbers. The participants (Computers, Units, FP Web-Server...) are distinguished by the last number (1 to 254), e.g. 192.168.206.1 to 192.168.206.254.

In case this network is connected to a second network via a gateway (e.g. the computer for configuration might be in this network), the gateway address also needs to be specified, e.g.:

Computer in x.y.206.z Network with Netmask 255.255.255.0, using the x.y.206.1 Gateway.

FP Web-Server in x.y.60.z

The network should have the following settings:

- IP Add=x.y.60.31

- Netmask=255.255.255.0

- Gateway=x.y.60.1

B) In case the FP Web-Server should be connected to an existing network, the following data must be asked from the network administrator:

- Is there a DHCP-Server in the network? If NOT:

- IP address: Which fixed IP address can be assigned to the FP Web-Server?

- Netmask: How is the network address set up (length of the network address and/ or the participant's address)?

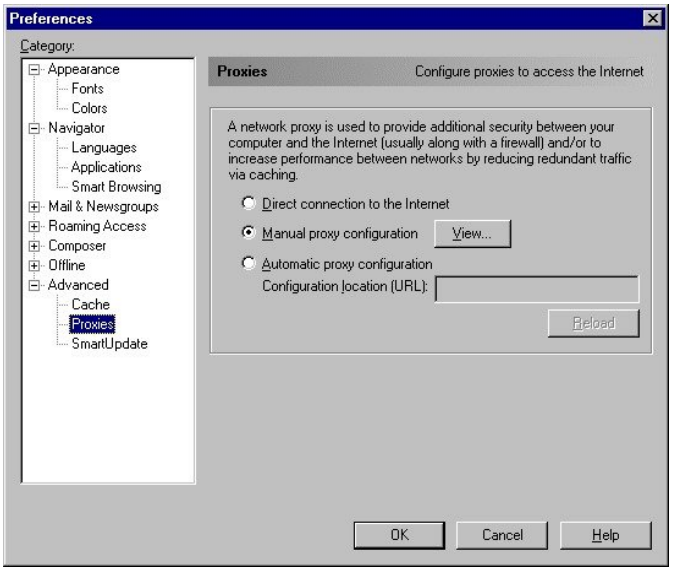
- Gateway: What is the gateway's IP address? (0.0.0.0 if there is no gateway to be used).

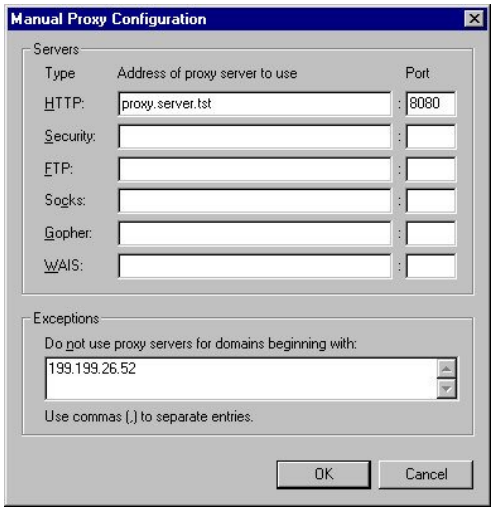
10.5 TCP/ IP Setup for Configurator/Browser Operations via LAN

Browser Setup:

The HTML pages of the FP Web-Server can be displayed with a standard Internet browser. For further information also see the initial browser test in chapter ***First Steps*** (on page 3-1).

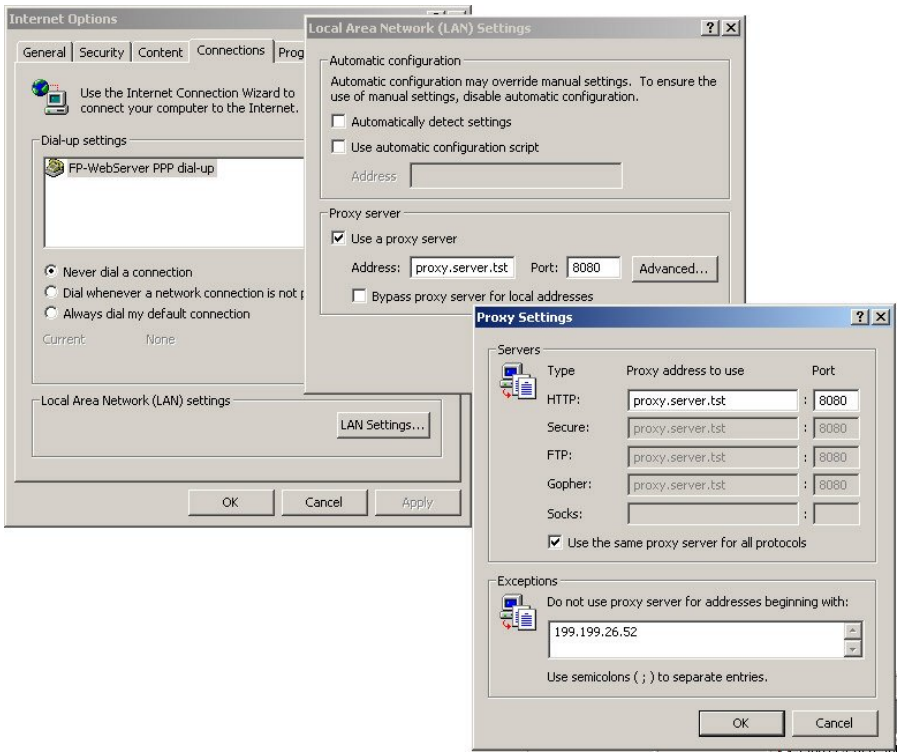
If the FP Web-Server is operated in an office network with Proxy to the Internet, accessing the FP Web-Server HTML pages might take a long time. In this case, shut off the Proxy function of the browser for this specific IP address of the FP Web-Server. Enter the following necessary setting in the Netscape browser by clicking "Edit", "Preferences" and "Advanced Proxy". Then press [View] and enter the IP address of the FP Web-Server under "Exceptions":





In the Internet Explorer you can find these entries under:

"Internet Options", "LAN-Settings", "Advanced", "Exceptions"



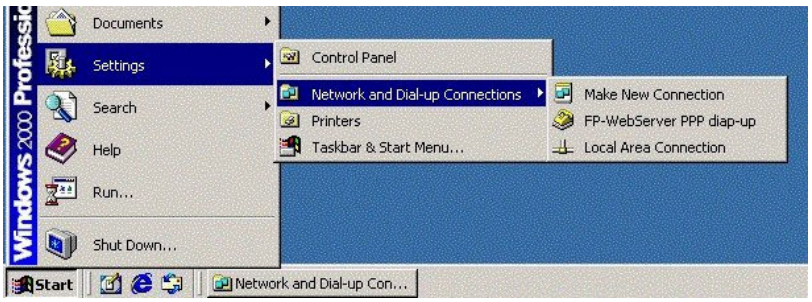
Comments:

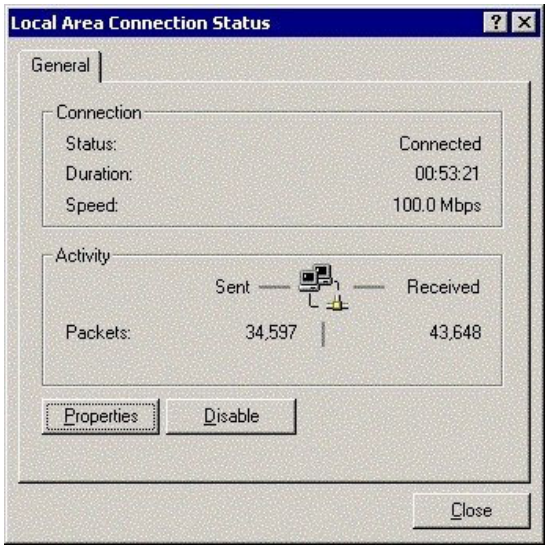
- There are no Proxy exceptions to be specified if the browser is used to request HTML pages from an FP Web-Server located in the Internet. But the Proxy to the Internet must be setup not to buffer HTML pages from the FP Web-Server. Be aware if the Proxy is reading HTML pages from its internal cache memory instead of requesting them from the FP Web-Server, changed PLC data cannot be seen!
- Please ask your network administrator, in case you have problems reloading changed HTML data from the Internet (via Proxy).

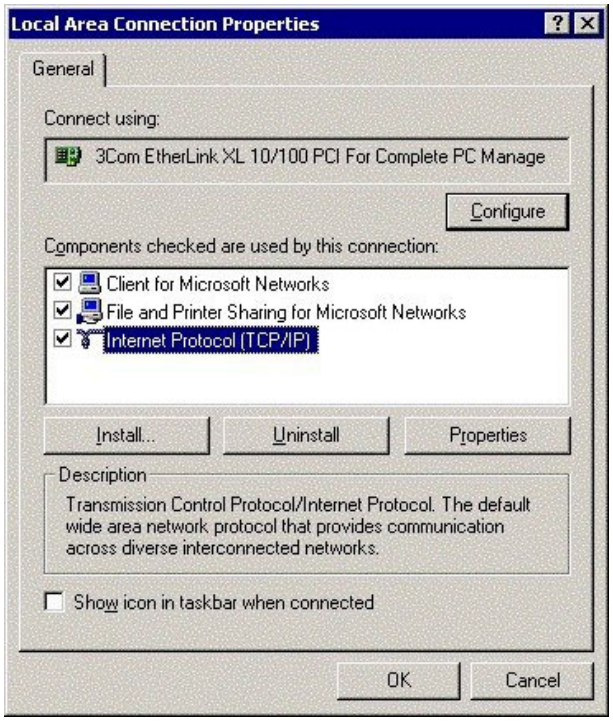
Windows with TCP/ IP (and optional dial-up networking):

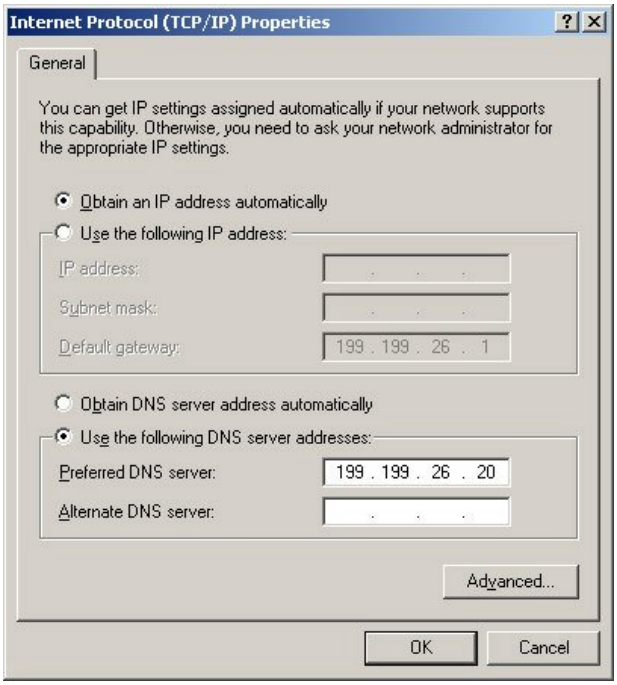
To make it possible for a computer to communicate with the FP Web-Server via the network, the TCP/ IP network protocol has to be installed. These settings are independent from the decision whether the communication is carried out via the Ethernet or the dial-up networking modem. However, an Ethernet card is required for LAN communication and a modem is required for a the dial-up networking connection.

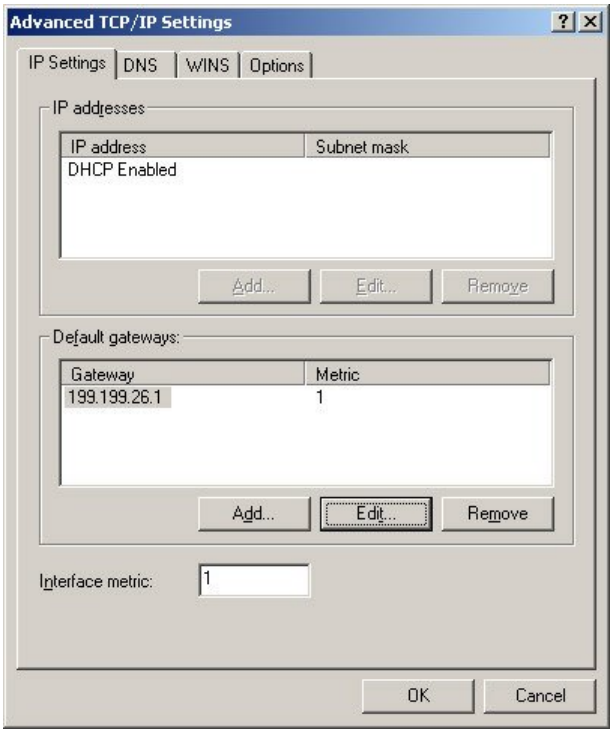
Screen prints of the "System Settings" and "Network" (a computer with Ethernet card plus dial-up networking is displayed here):

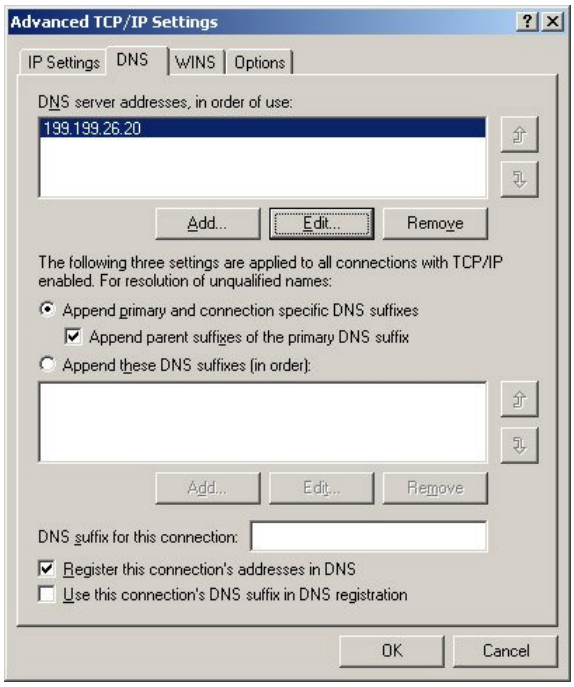


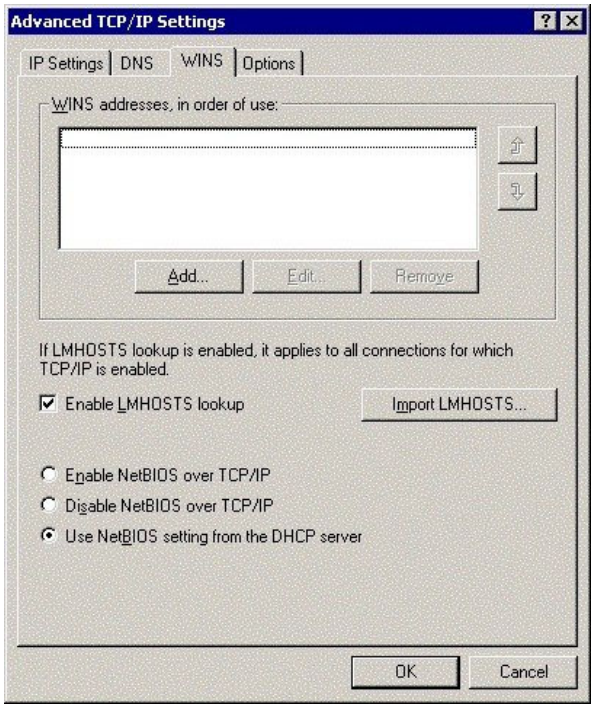

Local Area Connection Status
General
Connection
Status: Connected
Duration: 00:53:21
Speed: 100.0 Mbps
Activity
Sent
Received
Packets: 34,597 43,648
Properties
Disable
Close


Local Area Connection Properties
General
Connect using:
3Com EtherLink XL 10/100 PCI For Complete PC Manage
Configure
Components checked are used by this connection:
Client for Microsoft Networks
File and Printer Sharing for Microsoft Networks
Internet Protocol (TCP/IP)
Install...
Uninstall
Properties
Description
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
Show icon in taskbar when connected
OK
Cancel


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
199 . 199 . 26 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
199 . 199 . 26 . 20
Alternate DNS server:
Advanced...
OK
Cancel


Advanced TCP/IP Settings
IP Settings
DNS
WINS
Options
IP addresses
IP address
Subnet mask
DHCP Enabled
Add...
Edit...
Remove
Default gateways:
Gateway
Metric
199.199.26.1
1
Add...
Edit...
Remove
Interface metric:
1
OK
Cancel


Advanced TCP/IP Settings
IP Settings
DNS
WINS
Options
DNS server addresses, in order of use:
199.199.26.20
Add...
Edit...
Remove
The following three settings are applied to all connections with TCP/IP enabled. For resolution of unqualified names:
Append primary and connection specific DNS suffixes
Append parent suffixes of the primary DNS suffix
Append these DNS suffixes (in order):
Add...
Edit...
Remove
DNS suffix for this connection:
Register this connection's addresses in DNS
Use this connection's DNS suffix in DNS registration
OK
Cancel


Advanced TCP/IP Settings
IP Settings
DNS
WINS
Options
WINS addresses, in order of use:
Add...
Edit...
Remove
If LMHOSTS lookup is enabled, it applies to all connections for which TCP/IP is enabled.
Enable LMHOSTS lookup
Import LMHOSTS...
Enable NetBIOS over TCP/IP
Disable NetBIOS over TCP/IP
Use NetBIOS setting from the DHCP server
OK
Cancel

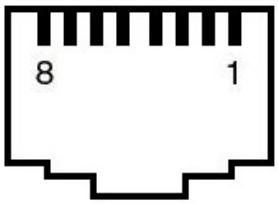
10.6 Setup of an Individual Ethernet LAN

If no connection to an existing Ethernet network is used, you will find a couple of helpful remarks in the following paragraph.

In the following example, only one computer should be used for carrying out the configuration of one or several FP Web-Servers:

- If only one computer (with Ethernet card) should be connected with one FP Web-Server pier-to-pier, a crossover-cable can be used between the computer and the FP Web-Server. Please use the following pin allocation for setting up a cable for connecting two Ethernet network interfaces (hubs, cascading, FP Web-Server to computer, etc.):

  - 10BASE-T Crossover Cable:



RJ45 Male Plug (on Cable)

10BASE-T Crossover Cable	
RJ45 #1 Pin	**RJ45 #2 Pin**
1TX_D1+	3RX_D2+
2TX_D1-	6RX_D2-
3RX_D2+	1TX_D1+
6RX_D2-	2TX_D1-

- If more than one FP Web-Server should be connected with one (or several) computer, a hub or switch has to be used as a star coupler. A standard Ethernet 10BASE-T hub can be used as a star coupler. When using a hub, you can use standard Ethernet twisted pair cables along with it.
- For using the email functions in such a "mini-network", an Email-Server has to be installed on the (or on one of the) computer. For example, on the Matsushita Ethernet exhibition board the Email-Server "1st Class Mail Server 2.0" by "1cis.com" was used successfully. See also Details on the Email-Server (see "Generalities on the Email-Server" on page 6-12).

- If the IP address (and/or the data rate 10/ 100 MBPS) are not modified very often, a switch might increase the performance of the network in comparison to a hub:

Minimizing Collisions with the Help of Switches:

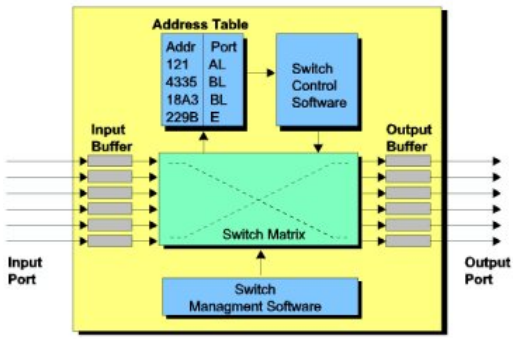
A switch is an intelligent unit with which you can subdivide the Ethernet in sub-segments that are widely independent from each other. You can imagine it as a kind of switch matrix. If a piece of information should be transferred to another segment, the switch automatically establishes the respective connection. The other segments are not concerned by this data transfer and can be run in parallel operation mode. With the help of switches you can cut the likelihood of collisions drastically or even eliminate them totally (e.g. in the extreme case of a "totally switched" network).

Unfortunately, the case that several stations want to send a message to the same recipient cannot be defused by a switch. It has to be mentioned though that this special case cannot be controlled with the conventional, deterministic bus system either.

A switch receives a data package on one side. Based on the destination address, the unit decides via which output bus the message should be forwarded. You have to differentiate between switches that receive whole messages at once, analyze them and forward them afterwards ("Store and forward"), and other switches that are toggle controlled by the hardware as soon as the recipient's address is defined ("Cut through"). Of course, the latter ones are somewhat faster.

The price for this ideal way to avoid collisions has two aspects to consider:

First, switches are not cheap. There is a lot of processing effort behind them. Second, the effective wiring of the bus system is abandoned again and one returns to the traditional pier-to-pier connection. Consequently, the wiring effort is increased significantly.



For generalities on TCP/ IP also see ***IP and TCP/ IP*** (on page 10-12).

10.7 First HTML Page Including PLC Data

How to Create your first HTML Page for the FP Web-Server:

◆ **PROCEDURE**

1. **Select an editor, e.g. Word 2000, Frontpage (supplied by the Internet Explorer), Netscape Composer (supplied by the Netscape Navigator)**

   Open Word 2000:

   Input text, maybe an instruction that is compatible to a Matsushita PLC (e.g. {DT200_6_u}).You can also create a hyperlink to jump back and forth between pages.

   [Save As] (.htm format): e.g. C:\Programs\NAiS Control\Configurator\Fp-web\Example4\http\hello.htm

2. **Start Configurator**

   Start\Programs\Nais Control\Configurator\Fp-web\FP WEB Configurator

   Select proper FP Web-Server unit (e.g. ID:0209A) by clicking [FIND], select project by clicking [OPEN], e.g. C:\Programs\NAiS Control\Configurator\Fp-web\Example4\http

   Select [HTML] Tab, click “hello.htm” and send the file from the computer to the FP Web-Server by clicking [SEND FILE]. (Upon successful transfer you will be asked to click [OK] twice more. The transfer cannot be carried out successfully if the .htm file is still open in Word 2000. You can only open the .htm file with the help of the default editor of the Configurator by clicking [OPEN], if you have entered the editor used beforehand (Word 2000 is not entered), see also Default Editor (see "Open File With a Default Editor" on page 7-36).

   Leave the Configurator in the state it is and switch to the browser (e.g. Internet Explorer, Netscape Navigator).

3. **Start Browser, e.g. Netscape Navigator, Internet Explorer**

   Click [Netscape/Explorer]

   Insert the IP address and the file name, by which the connection to the FP Web-Server and the HTML file is established, in the Location field, e.g. http://199.199.26.52/hallo.htm. Press <Enter>.

   FP Web-Server page is displayed.

To view the results of the request written down in the .htm file to the PLC, you have to enter a command in the location field (all commands can be found in the manual), e.g. http://199.199.26.52/plc?hello. Press <Enter>. (The .htm extension has to be deleted to be able to carry out the task described above.)

When you encounter problems trying to display the FP Web-Server page or you do not know the IP address by which the connection to the FP Web-Server is established, proceed as follows:

◆ **PROCEDURE**

1. **Start Configurator**
2. **Click [FIND]**

   The new IP address is displayed after the ID No. of the respective FP Web-Server, e.g. ID:0209A IP:199.199.26.52 Project:EXAMPLE4.
3. **Start Netscape**
4. **Click [Edit], [Settings], [expanded], [Proxies], [Display]**
5. **Enter the new IP address in the “exceptions” window**

Make sure that you worked through the ***First Steps*** (on page 3-1) before you try out the HTML functions of the FP Web-Server.

For generalities also see HTTP-Server Functions/ Web Pages (see "Details on the FP Web-Server's Web Page Functions" on page 7-2). There you will also find information on the following topics:

- HTTP Address, CGI Function PLC and Calling Parameter (on page 7-6)
- Data Fields for Displaying PLC Data on HTML Pages (on page 7-10)
- Inputs for Controlling PLC Internal Relays on HTML Pages (on page 7-20)
- Defining Input Fields for PLC Data on HTML Pages (on page 7-21)

In the following paragraphs you can learn more on how to work with HTML pages:

ASCII Text Editor:

With a standard text editor like "NotePad" of the operating system, all HTML features can be ideally utilized. Nevertheless it takes time to get used to the HTML format.

For training purposes, the following links are recommended:

English: http://archive.ncsa.uiuc.edu/General/Internet/WWW/
http://developer.netscape.com/
http://developer.netscape.com/tech/javascript/index.html
http://developer.netscape.com/tech/dynhtml/
http://WDVL.com/Authoring/HTML/
http://whatis.techtarget.com/
http://selfaktuell.teamone.de/links/

German: http://www.uni-siegen.de/help/html/
http://www.teamone.de/selfaktuell/index.htm

French: http://www.selfhtml.com.fr/

Spanish: http://www.selfhtml.com.ar/

The first HTML page that displays PLC data might look as follows (text file):

```
<html>
<head>
<title>Show DT200</title>
</head>
<body>
<p>PLC data DT200: {DT200_5_u}</p>
</body>
</html>
```

An example with a [Submit] field (PLC data input) can be found in "Example1" of the Configurator projects. The file FIRST.HTM would look as follows (text file):

```
<html>
<head>
<title>First Test</title>
</head>
<body>
<p>Display DT201: {DT201_6_d}</p>
<p>Display Y1: {Y1_Off_On}</p>
<p>Y1 Control <a href="plc?first&Y1=0">OFF</a>/
<a href="plc?first&Y1=1">ON</a></p>
<form ACTION="/plcpost" METHOD="POST" TARGET="SUBWIN"
ONSUBMIT="opensubwin(200,100);">
  <p>Enter DT201 <input SIZE="6" VALUE="{DT201_6_d}"
name="DT201_6_d"> </p>
</form>
</body>
</html>
```

The HTML Editor:

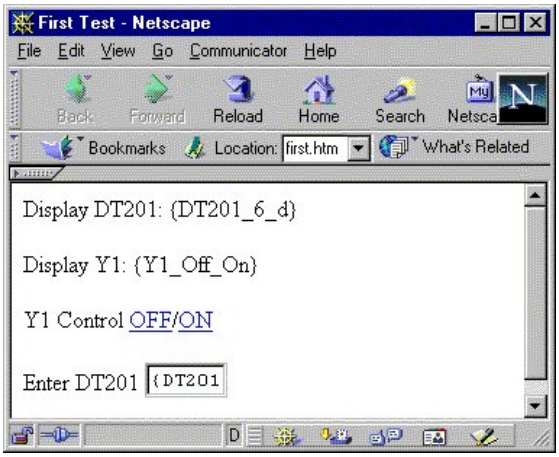
FIRST.HTM can be edited further with an HTML editor, e.g. MS Word or the Netscape browser (Netscape Composer). It would be best to start the Netscape Composer via the Configurator or manually. See also ***Configurator HTTP Administration and Functions*** (on page 7-35).

◆ **PROCEDURE**

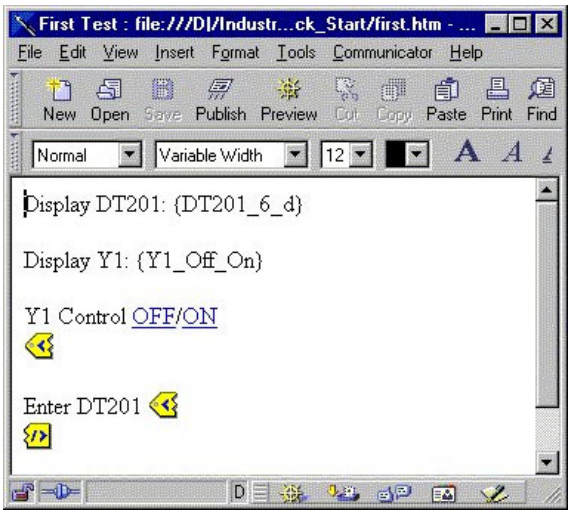
1. **Search for the page FIRST.HTM to be edited with the Windows Explorer on your local hard drive**

2. **Double-click the file**

3. **The Netscape browser is opened and the HTML page is displayed**

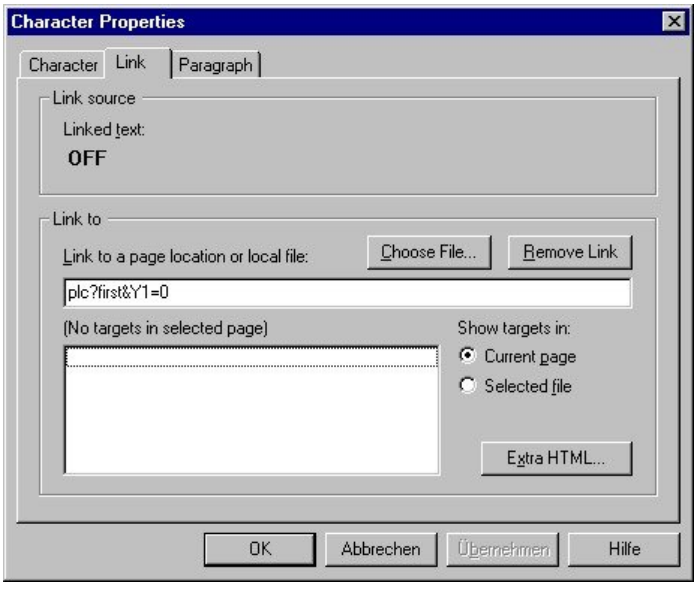


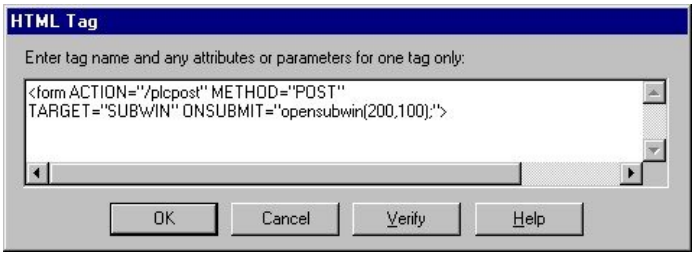
4. **Start the function [FILE], [EDIT PAGE] in the Netscape menu bar**

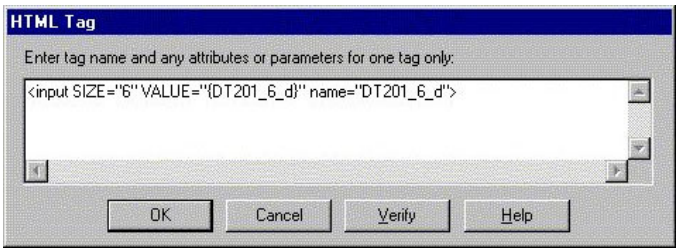


5. **The HTML page can be edited**

6. **Use the right mouse button to edit hyperlinks and tags.**







For information on the format of {...} PLC data fields and other {...} commands (e.g. {PW} to activate the password request) see HTTP-Server Functions/ Web Pages (see "Details on the FP Web-Server's Web Page Functions" on page 7-2).

7. **Save the HTML file by pressing [File], [Save]**

Compiling and Transferring:

After editing the HTML pages, you have to compile them and transfer them to the FP Web-Server. This is carried out with the Configurator.
Open the respective Configurator project with [OPEN], look for the respective FP Web-Server with [FIND] and transfer the configuration together with the HTML pages (after compilation) by pressing [SEND] (plus HTTP Checkbox). Another possibility is to use the [Send file] button on the HTML Screen of the Configurator. See also:

- For an initial HTML test: ***First Steps*** (on page 3-1)
- For operating the Configurator: ***Generalities about the FP Web-Server Configurator*** (on page 4-2)

Comments:

- With **http://199.199.26.52/** the browser downloads and displays MAIN.HTM that may not contain PLC data fields or a password. This main page should either provide links to the PLC display pages, e.g. a link to **http://199.199.26.52/plc?first**, or you should enter this link into the "Location" field of the browser. To activate an automatic refresh (every 4 seconds), please enter the following into the "Location" field (respectively the link of the main page): **http://199.199.26.52/plc?first&U=4**
- To set the output Y7 to 1 automatically when the page is displayed, please enter the following into the "Location" field: **http://199.199.26.52/plc?first&Y7=1**
- To request the data from the PLC with address no.3 please enter the following into the "Location" field: **http://199.199.26.52/plc?first&A=3**
- If something is entered into the input field of the HTML page, send it by pressing <ENTER>.
- To update the page, press the [RELOAD] button of the browser.

10.8 Preinstalled Passwords and Safety Instructions

User name and password can be preset in the Configurator project.

Overview of the preset passwords:

Service	User Name:		Password:	
	Factory	Default	Factory	Default
Telnet	tel	user	tel	user
FTP	ftp	user	ftp	user
PPP	ppps	user	ppps	user
HTML Pages and PLC Data	web	user	web	user

The use of capital letter or small letters in the user name and passwords are not analyzed, i.e. the user name and password check are not case sensitive. User name and password should have 1 to 9 characters. Only ASCII characters are allowed. Do not use umlauts or Japanese characters.

Exception:

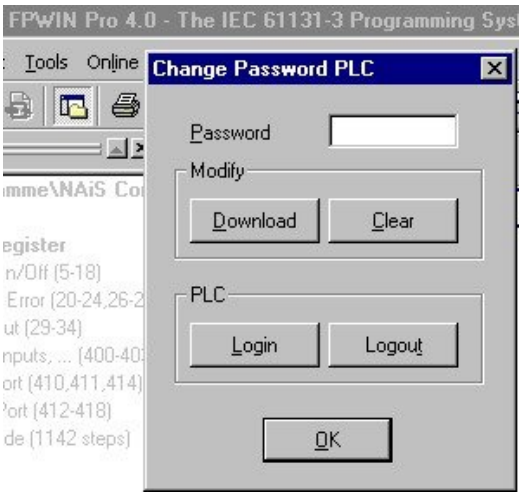
For a remote dial-up connection (PPP connection) only lower case letters are to be entered for the password on the client's side. For further information also see Control Buttons (see "Password Window Popping Up Automatically" on page 4-13)/ ***User Name and Password*** (on page 5-6).

To clear all passwords (and the complete configuration) see ***Clearing Passwords*** (see "Special Notes for Service Technicians for Clearing Passwords" on page 10-10).

NOTES

- **Always change the password. Leaving the default password can cause security problems. For the definition of the user name and the password see also** *Password Protection* **(on page 5-6).**

- **The password of the PLC can be adjusted with the help of FPWIN Pro.**



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Record of changes

Manual No.	Date	Desceiption of changes
ARCT1F372E	Apr., 2003	First Edition
ARCT1F372E-1	Aug., 2003	2nd Edition

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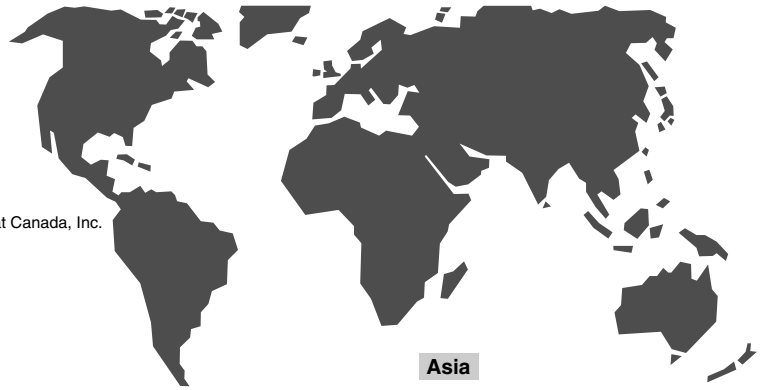

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ARCT1F372E-1 200310
ACG-M372E-1

Printed in Japan.