Front End Display with Windows® CE FED-...10

Manual
Operator Panel

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Contents and general instructions

Designated use

The display and operator panels described in this manual have been designed exclusively for use with PLC systems. The devices may only be used as follows:

- in accordance with designated use
- in their original state
- without any modifications by the user
- in faultless technical condition.

If additional commercially-available components such as sensors and actuators are connected, the specified limits for pressures, temperatures, electrical data, torques, etc. must not be exceeded.

Please observe the standards specified in the relevant chapters and comply with technical regulations, as well as with national and local regulations.
Contents and general instructions

Target group

This manual is intended exclusively for technicians trained in control and automation technology, who have experience in installing, commissioning, programming and diagnosing display and operator panels.

Service

Please consult your local Festo repair service if you have any technical problems.

Notes on the use of this manual

This manual contains specific information on installing and commissioning the FED display and control panels.

Information on programming can be found on the FST4 CD ROM (order no. 191440).
Important user instructions

Danger categories

This manual contains instructions on the possible dangers which may occur if the product is not used correctly. These instructions are marked (Warning, Caution, etc), printed on a shaded background and marked additionally with a pictogram. A distinction is made between the following danger warnings:

Warning

... This means that failure to observe this instruction may result in serious personal injury or damage to property.

Caution

... This means that failure to observe this instruction may result in personal injury or damage to property.

Please note

... This means that failure to observe this instruction may result in damage to property.

The following pictogram marks passages in the text which describe activities with electrostatically sensitive components.

Electrostatically sensitive components may be damaged if they are not handled correctly.
Contents and general instructions

Marking special information

The following pictograms mark passages in the text containing special information.

Pictograms

Information:
Recommendations, tips and references to other information sources.

Accessories:
Information on necessary or sensible accessories for the Festo product.

Environment:
Information on environment-friendly use of Festo products.

Text markings

- The bullet indicates activities which may be carried out in any order.

1. Figures denote activities which must be carried out in the numerical order specified.

- Hyphens indicate general activities.
1 Introduction

The FESTO FED-...10 series workstations are a family of state-of-the-art products offering an efficient platform for running the Microsoft Windows CE .NET operating system.

Microsoft® Windows® CE is a robust, compact, highly efficient, scalable operating system (OS) that is designed for a variety of embedded systems and products. Its multithreaded, multitasking, fully preemptive OS environment is designed specifically for hardware with limited resources.

Windows CE .NET, the successor to Windows CE 3.0, combines an advanced real-time embedded operating system with the most powerful tools for rapidly creating the next generation of smart, connected, and small-footprint devices.

Windows CE .NET 4.2 supports Microsoft eMbedded Visual C++ 4.0 and Microsoft Visual Studio .NET, providing a complete development environment for building Web services and applications for the Microsoft .NET Compact Framework, a subset of the Microsoft .NET Framework on the desktop. With these tools, developers can rapidly build smart designs running rich applications on the latest hardware.

To start develop the applications for Windows CE .NET on FED-...10 products, you must install SDK for the specific WCE build image version. The SDK for FED-...10 products is available on demand.
2 Windows CE. NET Features in FED

The FED implementation of the Windows CE .NET 4.2 is particularly rich of features.

The Table 1 shows a list of all features of Windows CE. NET 4.2 that have been included in the OEM build image for the FED products.

<table>
<thead>
<tr>
<th>Services, Tools, Features, and Applications</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications and Services Development</td>
<td>The combined Web and application services of Windows CE .NET provide unprecedented opportunities to build smart, mobile, and connected devices that have integrated access to Windows operating systems, applications, databases, and the Internet.</td>
</tr>
<tr>
<td>Component Services: Distributed Component Object Model (DCOM)</td>
<td></td>
</tr>
<tr>
<td>Standard SDK for Windows CE .NET</td>
<td></td>
</tr>
<tr>
<td>Applications: End User</td>
<td>Ready-to-use applications perform common tasks and rely on underlying services, providing rapid application deployment within specific classes of devices, such as mobile handheld devices, data collection devices, and thin clients.</td>
</tr>
<tr>
<td>Microsoft ActiveSync</td>
<td></td>
</tr>
<tr>
<td>CAB File Installer/Uninstaller</td>
<td></td>
</tr>
<tr>
<td>File Viewers (Microsoft PowerPoint, Image, PDF)</td>
<td></td>
</tr>
<tr>
<td>Terminal Emulator</td>
<td></td>
</tr>
<tr>
<td>Windows Messenger</td>
<td></td>
</tr>
<tr>
<td>WordPad</td>
<td></td>
</tr>
<tr>
<td>Remote Desktop Connection</td>
<td></td>
</tr>
</tbody>
</table>
Core Operating System Services

Core operating system services contain information on the Windows CE kernel and other features common to all Windows CE platforms. The core operating system services enable low-level tasks such as process, thread, and memory management and provide some file system functionality.

- USB Host Support – HID (Human input device), Printer, Remote NDIS, Storage class drivers
- Battery driver
- Serial port Support - UART, DMA UART
- Debugging Tools (Toolhelp API)
- Fonts (Tahoma, Times New Roman, Symbol)

Communication Services and Networking

Windows CE .NET provides networking and communications capabilities that enable devices to connect and communicate more securely with other devices and people over both wireless and wired networks.

- Networking Features: Network Driver Interface Specification (NDIS) 4.0, utilities (IpConfig, Ping, Route), TCP/IP, Windows Networking API/Redirector (SMB/CIFS)
- Local Area Network (LAN): 802.3 (Ethernet), 802.5
- Personal Area Network (PAN): Bluetooth, Infrared Data Association (IrDA)
- Wide Area Network (WAN): dial-up networking, telephony API

File Systems and Data Store

File systems and data store enable devices to compress, store, or read data from RAM or ROM and have varying responsibilities from filtering to partitioning.

- File and Database Replication
- File System
- Registry Storage
- Storage Manager
- System Password
2 Windows CE .NET Features in FED

Multimedia and Browsing Services

The Internet connectivity modules enable you to build the most sophisticated Internet access devices. Off-the-shelf protocols are available at various levels to give you multiple Internet access options. Windows CE .NET includes the high performance Microsoft DirectX API and Microsoft Windows Media technologies found on desktop computers, enabling high-performance audio, video, and streaming media services on Windows CE .NET-based devices.

Pocket Internet Explorer

Basic Multimedia (streaming, WMV and MPEG-4 streaming)

Shell and User Interface

Ready-to-use, built-in user interfaces (UI) and UI services can save you considerable time when you want to create the sophisticated, easy-to-use, graphical devices that users demand.

Custom Message Box

Graphics, Windowing, and Events

Shell

User Interface (customizable UI, software input panel, touch display)
3 Starting-up the System

Immediately after power has been applied the unit will load the operating system showing in sequence a white page with the “loading MIPS Code...” message followed by a screen with solid color that can be blue or green and finally the Windows CE Desktop.

The “Backup Battery Low” warning message is displayed in the lower right corner whenever the FED battery is low; in this case the standard FED Battery Low LED is also blinking in the upper left corner.

In case the unit does not start correctly, the panel will switch to Configuration Mode. Diagnostic information can be obtained if the Enter key (in the touch keypad at the lower right corner) is pressed for more than two seconds. Appendix A contains the description of the diagnostic information.

At the first power-up of the product, the application Start Menu will run.

This application is a simple dialog box where the user can choose the initial settings for subsequent power-up sequences of the product.

There are three options available:

- Start Windows CE Desktop
- WebTool
- VipWin
3 Starting-up the System

Fig 3/1: Initial Settings Dialog Box

If Windows CE Desktop is chosen, no applications will be started automatically.

WebTool is a simple application designed to make an easier browsing experience with the FED product.

VipWin is the Festo SCADA application. An unlicensed copy of the application is already loaded in the FED products. Follow the relevant instructions to activate your copy of the VipWin software.

After confirming the choice in the StartMenu dialog box with the OK button, the new settings will be saved to the registry automatically.

The user will be prompted whether to restart the system immediately or restart manually at later.

Please note that the choice will be effective only at the next system restart.
3 Starting-up the System

3.1 WebTool

WebTool is a simple application designed to facilitate the navigation in Windows CE-based panels used as embedded web browser.

WebTool interface resembles a browser with commands at the top of the display.

It provides a mean to enter and store one or more IP addresses and select one of them for use as default at start-up.

WebTool is a full-screen application that resizes dynamically depending on working area size (display size; Virtual Keyboard and Taskbar decrease working area).

The WebTool toolbar has a web address bar like common browsers and the following buttons:

- Go loads currently entered URL
- Back navigates backwards
- Forward navigates forward
- Stop stops loading current page
- Refresh reloads current page
- Print prints current page
- New opens new empty tab
- Close closes current tab (unless it is the last one)
- Save saves current page into favorites
- Save all saves all tabs into favorites
- Load favorites opens popup menu to load all favorites or chosen favorite
- Settings opens Settings dialog
- Exit closes the application

Some of these buttons have the same meaning as in Internet Explorer, and some are new.

The 'Save' button stores currently open web address in the special user friendly Favorites (References).
3 Starting-up the System

The names of Favorites are stored in the second line Toolbar, in the form of tabs.

The number of Favorites is limited to 8. If the user wants to open a new page, when there are already opened 8 tabs, then the last selected tab is overwritten by new web page address.

'Save All' button stores all opened web addresses since starting WebTool into Favorites.

The Windows CE Virtual Keyboard will be automatically opened when WebTool requires user interaction, for instance for entering IP addresses and for entering passwords. After successfully entering the value, the Virtual Keyboard will be automatically closed.

3.2 Settings

In WebTool 'Settings' there are 3 sections:

- General.
- Favorites.
- About.

Settings dialog might be protected by a password:

Fig 3/2: Initial Settings Dialog Box
3 Starting-up the System

3.3 General

In the General dialog there are the following controls:

Refresh
User can choose if there will be set Manual or Automatic. Automatic refresh rate can be one of predefined values: 15 s, 30 s, 1 min, 2 min, 5 min, 10 min.

Startup
One of following radio buttons must be selected: Blank page, Load all favorites, Load this address. For “Load this address” it is possible to write a new web address, or to choose one from the list of Favorites.

Text
The user can choose one of the following text sizes from combo box: Smallest, Smaller, Medium, Larger, Largest.

Security
Contains checkbox is Password required: If password is required, WebTool will ask for a password at the next start-up. If checkbox Required is selected then Password must be entered in edit box. Password protection is valid after exiting WebTool application.
3 Starting-up the System

3.4 Favorites

![WebTool Favorites Dialog Box](image)

**Fig 3/4: WebTool Favorites Dialog Box**

- **Load All / Load Selected**: The user chooses which of stored pages in Favorites will be automatically opened upon boot up WCE.
- **Clear All / Clear**: The user chooses which of stored pages will be cleared from Favorites.
- **Save All / Save**: It has the same meaning as in the main toolbar.
4 Control Panel Applets

This chapter describes the applet included in the Control Panel folder. Please note that some of them are specific to the FED platform.

4.1 Date / Time

Description:
Used to set date, time and time zone.

Notes:
Applying changes to the time zone will update the registry. Time will be saved through power cycles only if the backup battery is correctly installed.

4.2 Dialing

Description:
Used to set dial-up location and dialing patterns.

Notes:
Not necessary when connecting via LAN.

4.3 Display

Description:
Used to set desktop image and screensaver idle time.

Notes:
You can select between two possible desktop images or none (no desktop image).

Screensaver idle time may be set in a range from 15 sec to 30 min. This feature turns off automatically the display backlight (the screen becomes black) after
the touchscreen has been idle for the specified time. Tapping on the touchscreen will turn on the backlight again. The purpose of this feature is to extend the life of the backlight.

4.4 Internet Options

**Description:**

Used to set default web pages, connection settings and the level of security.

**Notes:**

These settings are effective for browsing using Internet Explorer.

The same applet is accessible also from Internet Explorer in the 'Tools/Options' toolbar:

- under the 'General' tab, the Start and Search Page can be defined.
- in the 'Connection' tab it is necessary to set 'Use LAN' and 'Access the Internet using proxy server' with Address and Port, if the network connection is across a local network.

4.5 Keyboard

**Description:**

Used to set keyboard repeat rate and delay.

**Notes:**

Applies only to external USB keyboards and not to the Virtual Keyboard (the Virtual Keyboard does not support repeat).
4 Control Panel Applets

4.6 Mouse

**Description:**
Used to set and test double-click sensitivity.

**Notes:**
Applies to both external USB mouse and touchscreen.

4.7 Owner

**Description:**
Used to specify owner identification data and user name, password and domain for networking API/Redirector.

**Notes:**
Owner identification or Notes may be shown at power on. Since there is no benefit from password for API/Redirector it is suggested to leave it blank.

4.8 Password

**Description:**
Used to specify power-up password or screensaver password (turn the backlight on).

**Notes:**
The user must type password at power-up or backlight on. If there is no USB keyboard it is recommended to leave it blank.

4.9 PC Connection

**Description:**
Used to control the connection between the Windows CE device and a desktop computer. If a
4 Control Panel Applets

different speed or port (COM2) is required for serial communication, change it here.

Notes:
Connection settings are defined in Network and Dial-up Connections (4.8)

4.10 Regional Settings

Description:
Used to specify local settings for the Date/Time applet and number formatting.

Notes:
Default setting is English (United States). Only subset of languages from Windows 2000/XP Regional Settings is available.

4.11 Remove Programs

Description:
Used to remove installed programs.

4.12 Contrast / Brightness

Description:
Used to set contrast and brightness.

Notes:
Depends on the display type.
Contrast adjustment is possible only in products with monochrome or STN color displays.
Brightness adjustment is possible only in products with TFT color display
4 Control Panel Applets

4.13 Network and Dial-up Connections

Description:

Used to enter change network driver settings and setup for serial (Dial-up) connections.

Notes:

In the FED platform there are two network drivers that can work simultaneously.

<table>
<thead>
<tr>
<th>Applet</th>
<th>Driver</th>
<th>Default Addresses</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAN9001</td>
<td>SMC LAN91C 111 Ethernet 10/100 Mb/s</td>
<td>IP 192.168.0.200 Subnet Mask 255.255.255.0 Default Gateway 192.168.0.1 Name Servers (DNS, WINS) not required.</td>
</tr>
<tr>
<td>SMXETHER1</td>
<td>SMUX Ethernet 10 Mb/s</td>
<td>IP 192.168.0.201 Subnet Mask 255.255.255.0 Default Gateway 192.168.0.1 WINS 192.168.0.100</td>
</tr>
</tbody>
</table>

If DHCP server exist in the LAN it is sufficient to select the check box “Obtain an IP address via DHCP”

If a remote Web server is to be accessed, a proxy server must also be specified in Internet Options (see chapter 3.5.).

One dial-up connection is defined by default: ‘COM1 HW115200’. Its properties may be changed selecting the ‘Configure…’ tab. The default settings are:

baud rate 115200
Parity No
stop bit 1
data bits 8
Flow Hardware

New serial (Dial-up) connections can be added from “Make New Connection”.
4.14 SMUX Assignment

SMUX refer to a FED-specific internal connection bus designed to offer a flexible association between Windows CE devices (COM ports) and FED physical ports.

There are two serial ports available as COM1 and COM2.

**Description:**

Used to set desired SMUX assignment, i.e. a link between DUART (COM1) and one of the communication ports (PLC, PC/Printer, and Aux port).

Possible settings for COM1 are:
- PC/Printer port,
- PLC port,
- Aux port,
- Boot SMUX assignment.

Possible settings for COM2 are:
- PC/Printer port,
- PLC port,

Note that they depend on setting for COM1 port. It’s not possible to choose PC/printer or PLC port be directed at the same time to both COM1 and COM2.

Boot SMUX assignment means that Windows CE does not change SMUX assignment, but leaves assignment that was set on boot. Default setting is PC/Printer.
4 Control Panel Applets

4.15 Storage Manager

**Description:**

Used to mount and format the two Flash disks available in the platform:

- DSK1 (PanelMemory)
- DSK2 (FlashCard).

**Notes:**

Before formatting it is necessary to dismount the selected disk. Formatting is possible only from the ‘Properties’ toolbar. After formatting a certain disk, mounting and reset should be done.

Formatting DSK1 (PanelMemory) will cause registry settings to be erased.

Storage Manager also allows scanning and defragmentation of disks in a way similar to desktop Windows.

It is recommended to perform disk scan and defragmentation after several writing/deleting cycles on disks. Also, in the case of interrupted file transfers (like in the case of power off), it is possible that lost clusters remain. Then the user should dismount the disk, start scanning with fixing and mount the disk again. Lost clusters will appear as FILE000x.CHK and must be deleted.

4.16 System

**Description:**

Used to display general information and system memory set-up.

**Notes:**
System memory (RAM) in a Windows CE device is divided into two areas: Storage memory and Program memory.

The Storage memory or object store resembles a permanent, virtual RAM disk. Data in the object store could be retained when the system is suspended or soft-reset, and devices typically have a backup power supply for the RAM, to preserve data if the main power supply is interrupted temporarily. When operation is resumed, the system looks for a previously created object store in RAM and uses it if one is found. Devices that do not have battery-backed RAM can use the hive-based registry to preserve data across boots. In FED the hive-based registry is not stored on Storage memory in RAM, but on PanelMemory flash disk.

Information:
FED Windows CE workstations do not support retained RAM disks

The remaining RAM is dedicated to Program Memory. Program Memory works like the RAM in Personal Computers: it stores the heaps and stacks for both system and non-system applications. Non-system applications are loaded from memory, uncompressed, and stored into Program Memory for execution.

On some Windows CE platforms, the system, under low-memory conditions, might ask the user for permission to take some object store RAM for use as program RAM to satisfy an application's RAM needs. It means that some applications require more Program memory to run smoothly.

The boundary between the storage memory and the program RAM is movable. The user can move the dividing line between storage memory and program RAM by using the System Control Panel application.
4 Control Panel Applets

Memory settings are stored in the registry. The registry can be saved to the memory card using the “Registry save” (see chapter 5.4) shortcut placed on the Desktop. Double click on the icon to run the program; a message will confirm the completion of the operation. Changing memory assignment and saving to registry will start the application SysMemDiv.exe (see chapter 5.11) at the following power-up.

The user application can determine System memory division by calling two Windows CE .NET functions. GetSystemMemoryDivision() retrieves information from the kernel pertaining to object store and system memory, while SetSystemMemoryDivision() sets the specified number of pages for the object store.

4.17 Stylus

**Description:**

Used to test double tap speed/physical distance and to re-calibrate the touch screen.

4.18 Power

**Description:**

Used to display battery (main/backup) status and power supply selection.

**Notes:**

FED HMI products only have the main battery. For this reason the status of backup battery is grayed-out. Power supply selection is not possible for FED products.
4.19 Config Mode

**Description:**

The panel will be switched from Windows CE mode to FED Configuration Mode. FED Configuration Mode can be used for firmware/hardware updates of the product.
5 OEM Applications

This chapter contains the list and a short description of all OEM-supplied applications that have been included in OEM Windows CE for the FED build image.

All OEM applications are placed in the /Windows folder of the FED build. They can be started from the command prompt. The user should select ‘/Start/Programs/Command Prompt’ and type requested command. As an example for starting Batch.exe:

```plaintext
> cd /windows
> batch /windows/autoexec.bat
```

The OEM applications that do not need parameters can be started by double clicking on their icon in the /Windows folder.

It is necessary to change the ‘View’ options in Windows Explorer to see these applications. The user should select ‘View/Options’ and uncheck all 3 check boxes. Windows Explorer can be started by selecting ‘/Start/Programs/Windows Explorer’ or by clicking on the ‘My Computer’ icon on the desktop.

5.1 Batch.exe

**Purpose:** batch file processor

**Usage:** BATCH filename

**Description:**

The following commands are supported in Batch File:

- `REM` ignores the line (remark)
- `PAUSE` waits for a keystroke
- `WAIT` number waits for a number of milliseconds
- `COPY` sourcefile destfile copies a source file to a destination file (overwrites destination file)
5 OEM Applications

MOVE sourcefile destfile
moves a source file or directory to a destination file or directory

DEL file
deletes a file

MD directory
makes a directory

RD directory
removes an empty directory

XCOPY sourcefile(s) destdir
copies source files (wildcards supported) to specified destination directory

XCOPY sourcefile(s) destdir/s
copies source files and subdirectories to specified destination directory

CALL batchfile
transfers execution to another batch file

ProgramName
executes a program

Information:
Full path names must always be specified.

5.2 Running scripts at start-up

At power-up the system checks for the presence of a file named AUTOEXEC.BAT in the root directory of the FlashCard.

If present, the file is opened and the commands it contains are executed.

Information:
An error message will be written to the console upon each command that failed; you may use the PAUSE command in the batch file to isolate the problem.

5.3 ChkBatch.exe

Purpose: check command line arguments

Usage: CHKBATCH BatchFile

Description:
If a batch file is specified as an argument, transfer the processing of that file to BATCH.
5 OEM Applications

If the file is not specified or if the file does not exist, it exits silently.

Information:
Full path names must always be specified.

5.4 VKey.exe

**Purpose:** show virtual keyboard

**Usage:** VKEY

**Description:**
When a USB keyboard is not present, the user can enter text/numbers using this application that will show a pop-up touch keypad on the screen.

**Notes:**
This application is started by clicking its icon in the right corner of Windows CE taskbar. Clicking the icon when the keyboard is shown, will close the application.

5.5 RegSave.exe

**Purpose:** save current registry to non-volatile memory

**Usage:** REG SAVE

**Description:**
The registry is saved to PanelMemory in the subfolder /user in *.hv and *.mky files.

**Notes:**
Registry should be explicitly saved after any registry change (for instance, after changing Control Panel settings or installing new programs). Registry information must be saved to non-volatile memory.
before turning off the device, otherwise information changed since last registry save will be lost.

A shortcut to this program has been placed on the desktop ("Registry save").

5.6 IconSave.exe

**Purpose:** save desktop icon configuration

**Usage:** ICONSAVE

**Description:**
The current configuration of desktop icons is saved to nonvolatile memory. The saved configuration can be restored with the command IconCopy.exe.

**Notes:**
The configuration of icons in the desktop will always be restored to the default value at system start-up.

5.7 IconCopy.exe

**Purpose:** restore saved desktop icon configuration

**Usage:** ICONCOPY

**Description:**
The configuration of desktop icons that has been previously saved with the IconSave command is restored to the desktop.

**Notes:**
Include this command in Autoexec.bat if you wish to show a configuration of desktop icons different from the default.
5 OEM Applications

5.8 RegClean.exe

**Purpose:**
restore default ROM registry

**Usage:**
REGCLEAN

**Description:**
The registry files cannot be erased manually, because they are system files. This special application is available to delete changed registry settings and restore original settings.

**Notes:**
It is necessary to restart FED after executing RegClean.exe, so that default registry settings can be restore and take effect.

A shortcut to this program is available on the desktop ("Restore ROM Registry").

5.9 Version.exe

**Purpose:**
show Windows CE OEM version information

**Usage:**
VERSION

**Description:**
Displays Windows CE OEM build image version. The information contains name, number and date of Windows CE OEM build.

**Notes:**
Before reporting any problems, please use this program to determine the product version you are using.
5 OEM Applications

5.10 SpinTest.exe

**Purpose:** demo application

**Usage:** SPINTEST

**Description:**
The application is intended to show the graphical performance of the Windows CE device. It starts spinning boxes in 3 tiled windows. New start of spinning boxes can be done by clicking in one of 3 windows or after default inactivity timeout.

**Notes:**
The application uses SPINCUBE.dll custom controls

5.11 LedTest.exe

**Purpose:** demo/diagnostic application

**Usage:** LEDTEST

**Description:**
The application is an example of using the API for programming FED auxiliary keys, LED indicators and buzzer. It may turn on and off all LED indicators from number 0 to number 100. For all LEDs that turning on/off passed the number is shown, and for those where failed the point is shown.

**Notes:**
There is a matching eVC ++ 4.0 application that is the same as this Windows CE application , so the user can modify it according to its needs.
5.12 MemDump.exe

**Purpose:** display memory content

**Usage:** MEMDUMP address

**Description:**
address must be specified in hexadecimal form (no leading 0x) and defines memory range to be displayed. The content of consecutive 16 bytes is displayed.

While the application is running, the following commands can be entered (followed by an <ENTER>):

- U increments the address by 16
- D decrements the address by 16
- H switches display to hex mode
- A switches display to ASCII mode
- X closes the application

**Notes:**
This program should be used for debugging purposes only.

5.13 MemSet.exe

**Purpose:** set memory content

**Usage:** MEMSET b|h|w address data

**Description:**
Address and must be specified in hexadecimal form (no leading 0x).

b Byte
h Half-word
w Word

5-7
5 OEM Applications

Notes:
This program should be used for debugging purposes only.

5.14 SysMemDiv.exe

Purpose: set system memory division
Usage: SYSMEMDIV

Description:
Restores the memory division stored in the registry.

Notes:
This program is run automatically at Windows CE start-up.
6 Serial Ports

Three physical serial communication interfaces are available in FED: one UART and two DMA UART (DUART) ports.

The UART port is reserved exclusively as a debug interface (for debug messages) and cannot be used for anything else.

DUART1 is the serial port COM1, DUART2 is the serial port COM2; they may be used for ActiveSync or Terminal connection, as configured in “Network and Dial-up Connections” (see chapter 3.8) and „PC Connection“ (see chapter 3.11) in Control Panel.

6.1 Terminal Connection

Only advanced users should use terminal connections.

A terminal session may be started using ‘Start/Programs/Communication/Terminal’ and double click on ‘Make New Session’.

An appropriate ‘Session name’ should be typed in.

Choose ‘Select a modem’: ‘Hayes Compatible on COM1’.

Some number should be entered as ‘Telephone number’ and pressed ‘Configure’. ‘Device Properties’ window opens with Tab ‘Port Setting’.

All 3 check boxes on the left side should be selected and changed ‘Baud Rate’ from 19200 to 115200.
7 Connecting FED to a PC with Microsoft ActiveSync

7 Connecting FED to a PC with Microsoft ActiveSync

7.1 Connection via Serial Line

Connection between a PC and FED can be done using Microsoft ActiveSync via serial line using the FEDZ-PC cable.

Microsoft ActiveSync V3.5 or higher must be installed in the PC; the ActiveSync software is downloadable for free from the Microsoft web site.

The FEDZ-PC cable must be connected to the PC serial port and to the FED PC/Printer port.

Once the software has been installed in the PC, communication via serial line must be enabled in the ActiveSync “Connection Settings” as shown in the following figure:
After confirmation with the OK button, the system will automatically try connection with FED; if connection does not start, the service can be started manually on the FED panel starting the “PC Link” application available under “Start\Programs\Communication”.

ActiveSync will prompt to set-up a partnership; partnership is only required if Ethernet connection via ActiveSync will be used; the next chapter describes how to set-up the connection via Ethernet.

The Device Name required for the partnership, can be any name; this will be used by ActiveSync to identify the Windows CE device in future connections.

If the partnership has been defined, the registry in the FED must be saved running the “Registry save” program available on the FED Desktop.
7 Connecting FED to a PC with Microsoft ActiveSync

7.2 Connection via Ethernet

Information:
Ethernet Connection is only supported by Microsoft ActiveSync V3.x.

The connection with ActiveSync can be established also via Ethernet.

Ethernet connection requires that a partnership with the Windows CE device be established.

If not established, please refer to the previous chapter; connect to the device via serial line and setup a partnership.

Once the partnership has been established, the serial link must be terminated. This can be done directly from the Windows CE unit with a double click on the connection icon shown in the system icon tray. On the “Connection Status” dialog box, click then on “Disconnect”.

In Microsoft ActiveSync select “File\Connection Settings” and verify that network connection is allowed, as shown in the following figure:
Close the "Connection Settings" dialog and run on the panel the "ActiveSync" program available from "Start\ Programs\ Communication".

In the "ActiveSync" dialog box select the method of connection as "Network Connection" and set the "Connect to:" in accordance with the personal computer name from where ActiveSync is running. This parameter should be automatically proposed by
7 Connecting FED to a PC with Microsoft ActiveSync

the system and it will match with the identification name given to the PC on the Microsoft Network.

Click then “Connect” to activate the connection.

A message will confirm that the connection has been established successfully.
8 Servers

8 Servers

The following servers are included in the FED Windows CE image.

8.1 Ftp Server

An Ftp server can accessed with the following default login options:

User: anonymous
Passwd: email address

The default folder in FED is PanelMemory; it is not possible to change to the upper folder (root).

8.2 Telnet Server

Telnet password should be set in Control Panel/Password, before the first connecting by telnet.

User: ADMIN
Passwd:***

Default folder in FED is / (root).

Telnet server acts like the command prompt in FED. The commands available are: help, dir, cd, copy, del, ...
(see chapter 5.1)

8.3 Web Server

The default page of the Web server is:

/Windows/www/wwwpub/default.htm page.
Appendix A. – System Start-up Diagnostic Information and troubleshooting

Symptoms

The Windows CE Operating System does not start and the following error message is displayed on the screen: 'WCE xx xx xx', where xx are 3 error codes.

Error codes can be displayed in Configuration mode pressing the Enter key for more than 3 seconds.

Cause

The Windows CE image stored in the memory card can be damaged.

The possible error codes are the following:

1st code:

01 = WCE image without loader
02 = No Windows CE system detected on the memory card

2nd code:

01 = Windows CE checksum error in loader
02 = Windows CE checksum error in Windows CE file system

3rd code:

01 = timeout in loading Windows CE system
02 = generic Windows CE load failure

Solution

The memory card will probably have to programmed again