EPC_{Embedded PC}
User Manual

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User Manual: EPC $_{Embedded PC}$
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Information for Users

Please read this manual before using the product for the first time, and be sure to keep it where you can make use of it later.
Unless where explicitly referred to the versions Economy Unit or Business Unit, the description applies for all units.

Intended audience

The manual has been written for users who are familiar with PC systems and automation technology.

Conventions used in this manual

[KEY]   Keys the user has to press on the keyboard are represented in square brackets, e.g. [CTRL] or [DEL].

`Courier`   Screen output is represented in the Courier type font, e.g. `C:\>`

`Courier Bold` User inputs via keyboard are identified by the Courier Bold type font, e.g. `C:\>`**DIR**

Italics   The names of buttons, menus or other screen elements the user has to select and product names are represented in *italics* .

Safety instructions

Wherever there may be dangerous faults in the automation equipment, i.e., where an error would cause significant property damage or injury to persons if it occurred, additional external precautions must be taken or equipment must be set up (for example by using independent limit switches, mechanical disabling locks, etc.). In the event of an error, these measures must ensure or force a safe operating status.
Testing and verification of suitability for the purpose intended by the user, or for deployment under usage conditions, are the responsibility of the user. Systeme Lauer accepts no liability for testid.

Pictograms

The following pictograms have been used in the manual to identify special text passages:

Danger!
Potentially hazardous situation.
May result in personal injury.

Caution!
Potentially hazardous situation.
May result in property damage.

Tips and supplementary information

Table of Contents

Company

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Our philosophy

Systeme LAUER is a reliable partner who thinks and acts internationally. From the LCA electronic text display and the high-tech PCS control panel to the industrial computer we supply a complete program for

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- monitoring   and

- control

Within the AUGUSTA Technologie AG, a group of global companies, Systeme LAUER stands for an almost unlimited product range right up to competent service.

On account of an active cooperation with our customers, our qualified team produces convincing concepts which bring man, machine and interface into line in an efficient way.
Proximity to our customers – the direct dialog – is the foundation of our success.

Contact

Support   Telephone: +49 (7022) 9660–209

                                           +49 (831) 5758   -354   or   -358

                                 E-mail: support@systeme-lauer.de

In case of support enquiries, please have the serial number of the device ready !

Please access our Download Forum to find current drivers, software, drivers, manuals, … and novelties at
     http://forum.systeme-lauer.de/

Sales   Telephone: +49 (7022) 9660-0

                                 E-mail: Sales@systeme-lauer.de

In addition, we offer   ... training and technical courses in our modern training center, or, if you prefer, in your company.
Ask your sales partner for our current training catalog.

... not only demonstration units, but we also provide specialists who assist you personally when starting your first application.
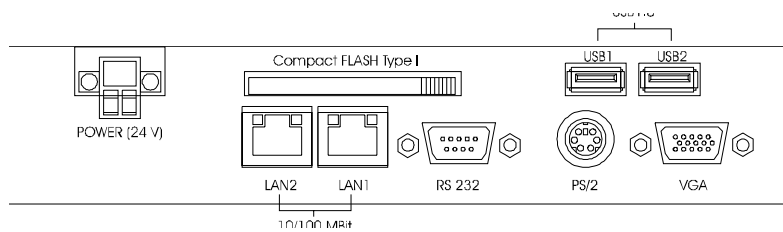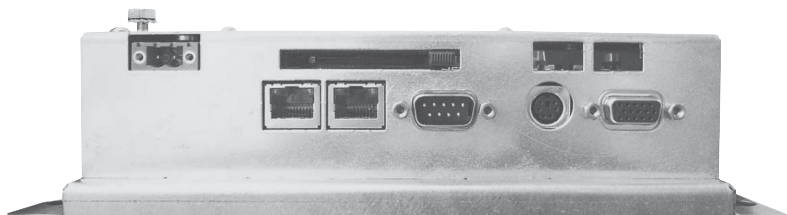
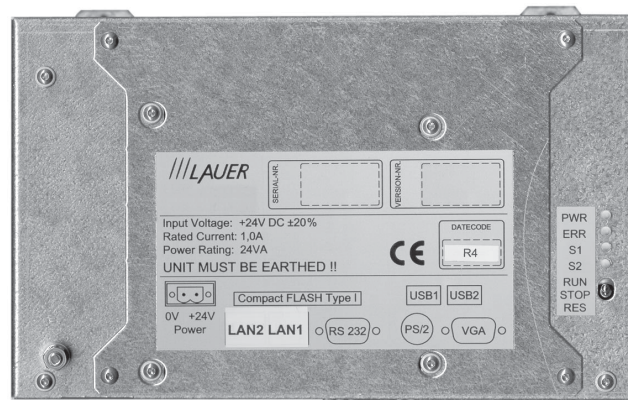# 1 Product Description

1.1 Control side

① Color TFT resistive touch display
6.4", 10.4" or 12"

1.2 Slot side

1.3 Rear side

1   Product Description

2 Commissioning

2.1 Power supply

Caution!

The EPC must only be operated at protective extra-low-voltage as defined by European standard EN60950!

The control transformer must comply with European standard EN60742!

Compare the power supply voltage with the voltage specified on the type label.

All cable connections must be tested before commissioning the system.

You must ensure that all the voltages and signals correspond to the relevant specifications.

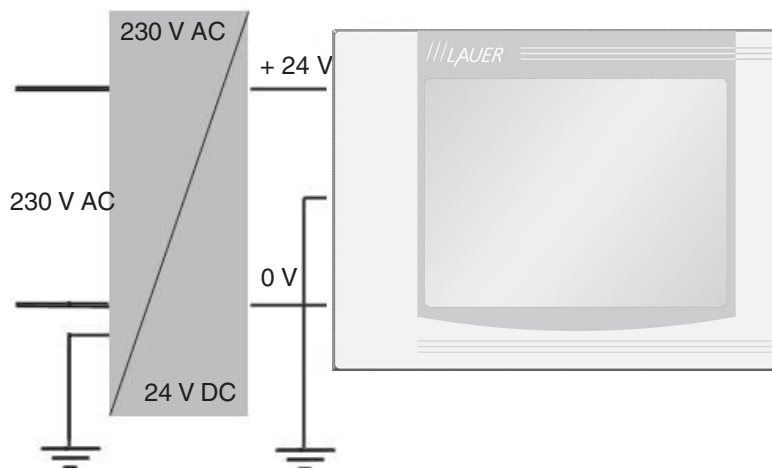The 0V supply voltage connection has a low-impedance connection to the housing (ground) !

① 24 V power supply

② Grounding screw
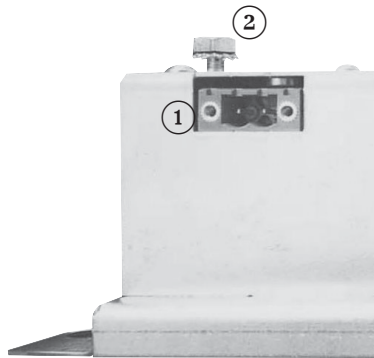
The power supply is rendered by a two-pole connector (Phoenix MST BT 2.5/2).

Power supply diagram

2   Commissioning

2.2   Grounding diagram

In order to ensure a safe diversion of electric interferences,

the following points have to be observed:

- Connect the device and the switch cabinet with a central grounding point via the shortest route possible.

- Make sure the connection between the device and switch cabinet has the lowest inductivity possible.

- All the data cables connected to the device must be shielded cables.

- The shields must be grounded on both the ends. Connections between systems must be of low impedance. High transient currents over the line shield resulting from differences in potential must be excluded.

- The design of the grounding connection with green/yellow cable must have a cross section of at least 4 mm².

2.3   Installation

Installation

The device should be installed in an HF-proof housing or switch cabinet made of metal.

To ensure that heat generated in the device can dissipate into the environment, a space of 100 mm must be maintained around the device!

Eight hexagon nuts are used for assembly.

Caution!

Potential hazard of damaging the device!

Front-side protection type IP65 is only guaranteed if the seal is correctly seated in the front plate.

A space of 100 mm must be maintained around the installed device for air circulation.

2.4   Starting the device

Start procedure

The EPC boots and loads the Windows CE operating system.

3 EPC Manager (Windows CE 4.1)

General aspects

The Lauer EPC is an embedded PC based on **Microsoft® Windows® CE** in compact and modular construction. Apart from the numerous Windows CE features, the system comprises a special user interface, the **Lauer EPC Manager**, which can be used to configure and control the device. On account of the consistent adaptation of a visualization software, the system is excellently suited to monitor and control processes, for example.

Despite numerous functions (and the size of the operating system thus required) the Lauer EPC achieves the best load time possible for a PC platform which is enabled by the fine harmonization of the hardware and software. Fast readiness of the operating system after switch-on is ensured.

In the standard version the Lauer EPC has the following operating system features (status **image version 1.1** (build 23062003)):

- Microsoft® Windows® CE .NET **4.1**
- **Registry** management on CompactFlash card (CFC)
- **USB support** for input devices, printers, data carriers and networks
- .NET Compact Framework 1.0
- **Standard libraries:** ATL, COM, DCOM and MFC
- **Communication protocols and APIs:** RDP, RAS/PPP, PPPoE, TAPI, PPTP, ICS, NDIS, TCP/IP, TCP/IPv6, SMB/CIFS and Winsock
- **Server:** FTP, RAS/PPTP, Telnet, http server (WEB server) and SQL Server ADO .NET Data Provider
- **File systems:** FAT, CD/UDFS
- **Internet Explorer** 5.5 with **ASP**, **JScript** and **VBScript**
- **Multi-language user interface** (MUI) (US English, French, German, Italian and Spanish)
- **Software keyboard** and **touch screen** support for serial and USB touch panels
- **Security Services** SSPI and CryptoAPI 1.0
- User interface in **Windows XP** style
- Support of up to **512 MB** main memory (RAM)
- Display resolutions **640x480**, **800x600** and **1024x768** at **16 Bit color depth**
- Fast **IDE driver** for CompactFlash cards
- Support for modems on serial interface and PC104 cards (default setting COM1/IRQ4 and COM3/IRQ11)
- **ActiveSync** and Windows CE TCP/IP transport for data exchange and software development

The free **Lauer EPC SDK** for **Microsoft® eMbedded Visual C++® 4.0** and the integrated **.NET Compact Framework** also permit software development and expansion in many programming languages.

3 EPC Manager (Windows CE 4.1)

Folders and drives

The following illustration shows the general folder structure after the start-up of the Lauer EPC.
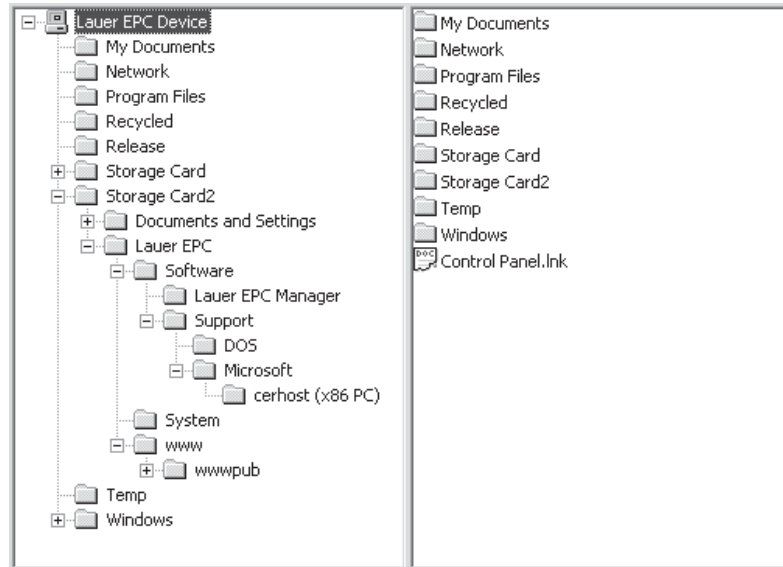
Temporary folders

Some of the folders are RAM based and thus should not be used as their contents will be irretrievably lost after the device has been switched off and the system is re-initialized after new start-up. These folders include **My Documents, Program Files, Recycled, Release, Temp** and **Windows.**

Network

These folders contain all network objects which the Lauer EPC can access, such as any released folders and printers in a Microsoft network.

Storage card

The **Storage card** folders represent all data carriers, the contents of which is resident. This includes the internal and external CompactFlash card (CFC) as well as the data carriers which are connected by USB (memory stick, HDU, etc.). In Windows CE they are initialized in the sequence in which they are recognized (Storage Card, Storage Card2, Storage Card3, etc.).

Note!

On account of the dynamic allocation of the indices, absolute path entries should be avoided. If an absolute path has to be entered, try to avoid frequent modifications of the drive configuration.

3 EPC Manager (Windows CE 4.1)

In standard configuration with an internal and external CompactFlash card, the following allocation always applies:

Storage Card (external):
Contains user files as well as the current registry.

Standard folder: **\Documents and settings**
Windows CE registry.

Storage Card2 (internal):
Contains the operating system as well as the system software and the system data.

Standard folder: **\Documents and settings**
Windows CE registry (master)

\Lauer EPC\Software\Lauer EPC Manager
Lauer EPC Manager user interface and additional modules

\Lauer EPC\Software\Support
Additional support software by other suppliers

\Lauer EPC\System
System software and libraries

\Lauer EPC\www\wwwpub
Basic folder for WEB server files (Internet pages), which can be accessed in a network with a WEB browser (i.e. Internet Explorer).

3 EPC Manager (Windows CE 4.1)

Lauer EPC Manager

The Lauer EPC Manager is a graphical user interface which permits fast access to the most important configuration and control options. It is carried out automatically during every restart if an external CFC has been placed. If the Manager has been terminated, it can be restarted either by means of the Windows Explorer (see **Folders and drives**) or directly by means of the **toggle switch** on the rear side of the device (the Manager can be de-activated – see **Lauer EPC Manager module**). The following illustration shows the basic condition of the Manager:

Note!

At present the Manager is available in English only.

The optimization of the UI with respect to size and arrangement of the individual elements permits easy operation even on touch-screen devices with small displays (6.4"). Of course, the system can also be operated with the keyboard connected.

The individual buttons of the Manager will be dealt with in greater detail in the following chapters.

3   EPC Manager (Windows CE 4.1)

Runtime

This item tarts the runtime software. After this button has been actuated the following display will appear:

If the query is acknowledged with "Yes", the Manager will set the system to the runtime mode by executing the registered runtime software (normally a visualization software or PLC). If the system could not be set to the runtime mode, the process will be aborted without error message. The Manager can execute any random runtime software.

3 EPC Manager (Windows CE 4.1)

Configuration

This item contains all configuration options of the system. In basic condition, the configuration panels looks as follows:
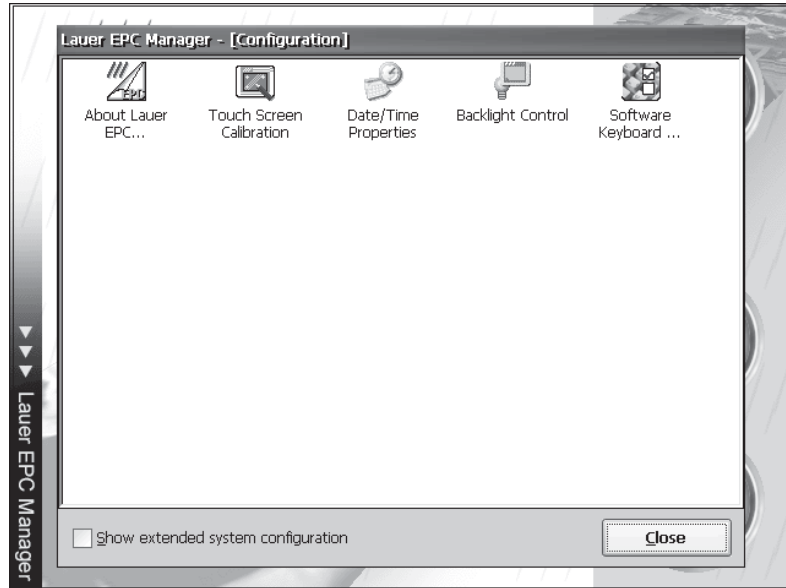

The Manager displays all options which have to be easily accessible for the user and whose modification does not affect the functions of the device. Here, all near-system settings are suppressed, which however can be released after a password has been entered. For release, the **<Show Extended System Configuration>** button has to be activated. Subsequently, an input field will appear, in which the current password has to be entered as shown in the following illustration:

If the password entered is correct, the Manager will look for available modules and will display them.

# 3 EPC Manager (Windows CE 4.1)
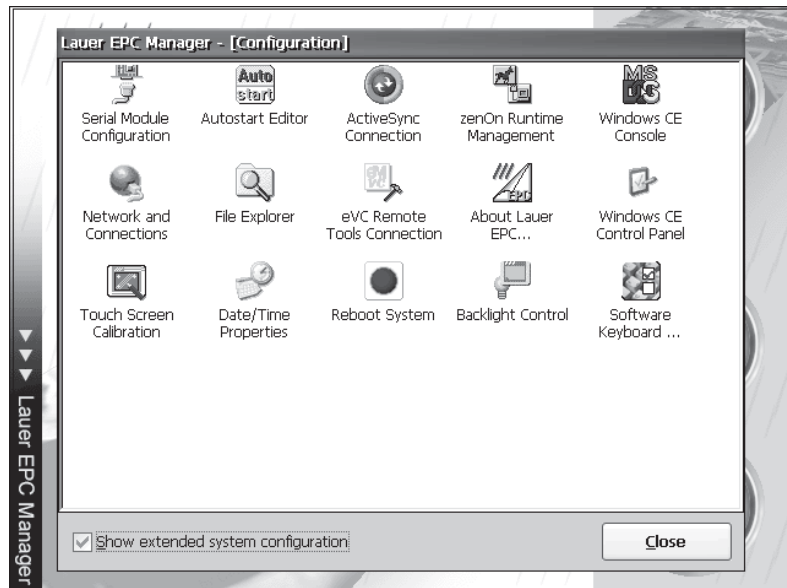
After repeated actuation of the <Show Extended System Configuration> button, all password-protected modules will be hidden again by a repeated search for available modules and the analysis of their attributes.

Note!

No password has been defined in the delivery condition.

The current password can be changed in the dialog field for password input. The **<Change>** button has been provided for this purpose, after the actuation of which the following display will be seen:
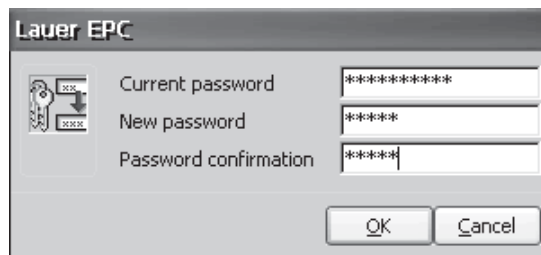
The activation of the new password will take place after actuation of the **<OK>** button only if the current password is entered and the new password corresponds to the repeated entry. Otherwise all input fields will be erased. The input dialog can be quit without changes by actuating the **<Cancel>** button.

3 EPC Manager (Windows CE 4.1)

Lauer EPC Manager modules

The configuration panel of the Lauer EPC Manager is set up of individual modules which have been saved in the form of special EXE files in the installation directory of the Manager. This modular design permits future updates without any effort whatsoever, and in additions enables the development of other special modules by the user as well. In addition, every module can be marked by an attribute separately so that it is displayed after input of a password only.

The Manager is supplied with a set of basic modules which permit the configuration of basic components. Some of the configuration modules offer the same options as the Windows systems control. The configuration of the system by means of the Manager modules should be preferred, however, as this saves the settings at the same time, which are then retained after switching the unit on and off. If, for example, the IP address of a network connection is entered directly via the system control (**Start>Settings>Control Panel>Network and Dial-up Connection**), it is not ensured that these settings are really retained after the next restart. However, if the same option is activated by means of the Manager (**Configuration>Network and Dial-up Connections**), the value set will be saved after closing.

The following chapters will describe the currently available modules with their detailed functions:

Serial module configuration

All Lauer EPCs have been fitted with an extension slot on the rear side, to which various communication modules can be connected, such as MPI, ProfiBus, serial interfaces, etc. The serial interface modules in particular (the module type **S1** and **S2** are available at present) have been provided with two types of connection each. Module S1 is a **RS232/TTY** interface, whereas S2 is suitable for **RS422/RS485** connections. The "Serial Module Configuration" Manager module permits changeover between the two types of connection of a serial interface module. The changeover takes place both immediately after acknowledgement and automatically after a restart.
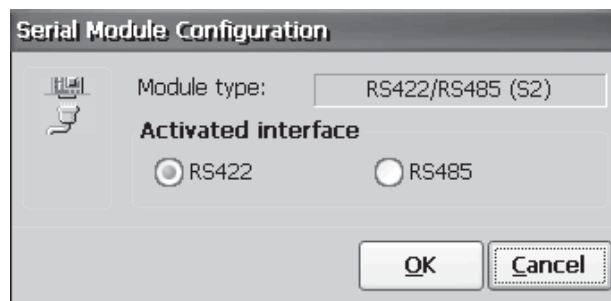
3   EPC Manager (Windows CE 4.1)

After execution of the "Serial Module Configuration" the connected interface module is recognized automatically and the interface type set is displayed as shown in the following illustrations:
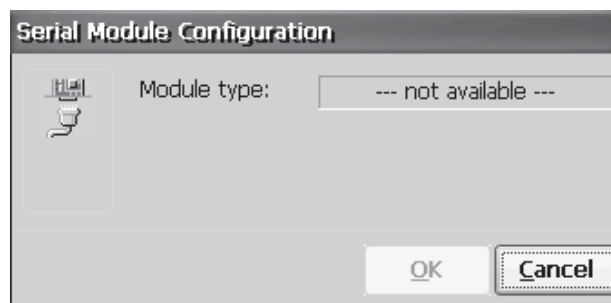
• **RS232/TTY (S1)** interface module:
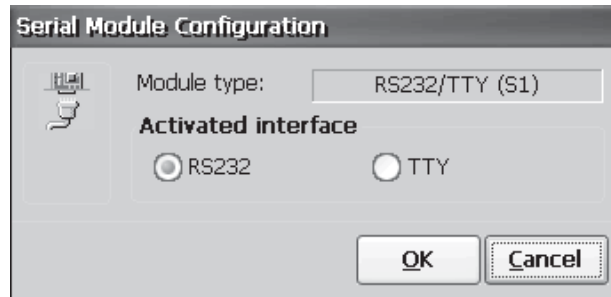

• **RS422/RS485 (S2)** interface module:

If no serial interface module has been fitted or another communication module has been connected (such as MPI), the software will cause the following display:

3 EPC Manager (Windows CE 4.1)

Autostart Editor

The "Autostart Editor" permits the automatic execution of a user application at the restart of the Lauer EPC. In addition, it can be defined here whether the Lauer EPC Manager is to be run or not.
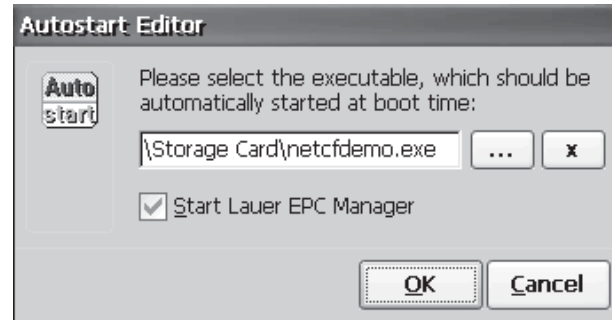
Button**<...>**

This button permits the selection of an executable program file (EXE) which is to be run after restart. The selection of the file is effected by a file browser as shown in the following illustration:
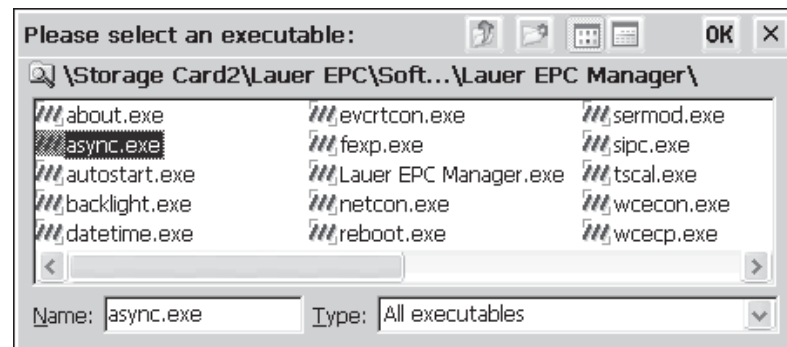
Button **<x>**

This button erases the entire contents of the text line, and is thus rather helpful for systems without keyboard connected.

Start Lauer EPC Manager

If this option is activated, the Lauer EPC Manager will be run automatically when the system is started.

Note!

Even if the Manager can be started subsequently by means of the Windows Explorer or the toggle switch on the rear side of the device, it is recommended not to deactivate this option.

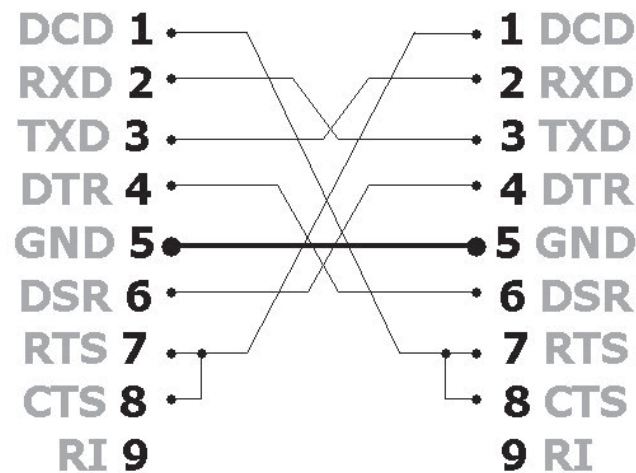# 3   EPC Manager (Windows CE 4.1)

ActiveSync Connection

This module permits the manual connection with a host computer through **Microsoft ActiveSync**. ActiveSync is a communication platform specifically developed for mobile computers (handheld PCs) to synchronize data between a mobile unit and the host computer via a serial cable or infra-red. More recent versions of ActiveSync also permit communication through Ethernet or USB. Many development tools, such as **Microsoft eMbedded Visual C++4.0**, support ActiveSync.

Before the host computer can communicate with the Lauer EPC through ActiveSync, ActiveSync has to be installed first of all. ActiveSync is available free of charge and can be downloaded directly from the Microsoft site (the current version is 3.7 at the point of preparation of this Manual).

Moreover, the Microsoft Platform Manager and the SDK (Software Development Kit) for Lauer EPCs are required for software development (the SDK for Lauer EPC is available free of charge).

ActiveSync Cable

A special serial cable is needed for the physical connection between the Lauer EPC and the host computer. The pin allocation of such a cable (two-sided nine-pole Sub-D socket) is shown in the following illustration:


The cable is also suitable for direct connection between the Lauer EPC and the host computer through PPP (Point-to-Point Protocol).
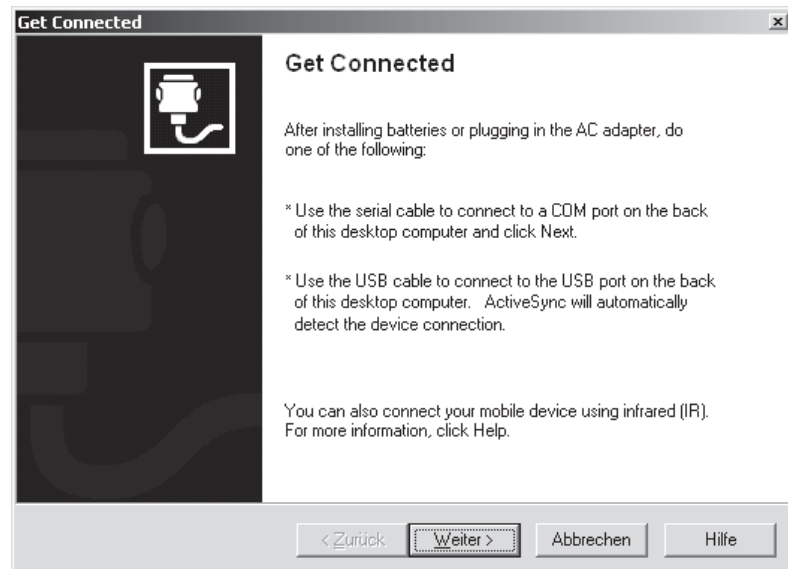
3 EPC Manager (Windows CE 4.1)

Installation of ActiveSync on the host computer

Below please find the description of the ActiveSync installation on the host computer by means of version 3.7 (English).

The setup program of ActiveSync normally has the designation **MSASYNC.EXE**. The setup program will appear a few seconds after start as follows:
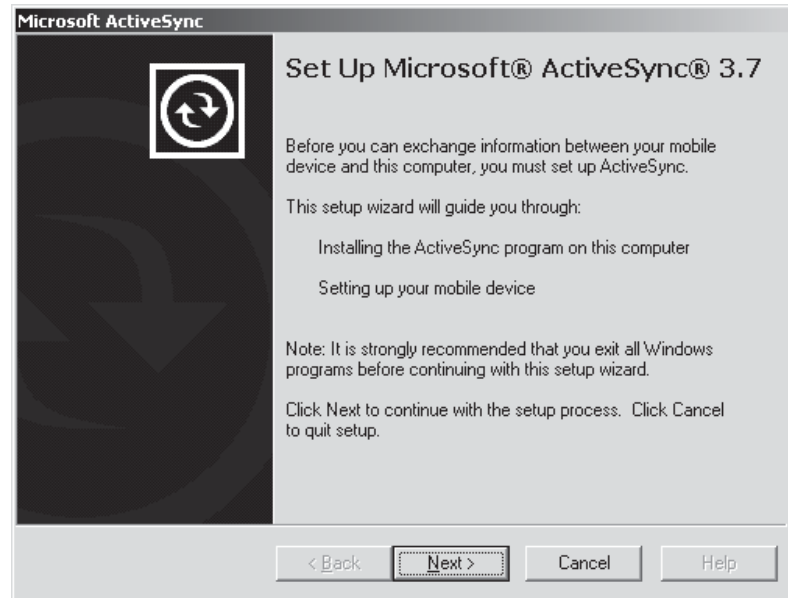

This display and the following screens have to be acknowledged with **<Next>** until the installation is completed. After completion of the installation, the configuration of the connection to the device takes place as well as the subsequent automatic recognition, which is initiated with the following display:

3   EPC Manager (Windows CE 4.1)

At this point, use the ActiveSync cable to connect the Lauer EPC to the host computer. Use a serial interface on your host computer which is not occupied by an application and which can be used by ActiveSync. Subsequently continue with the automatic recognition so that the following display will appear.
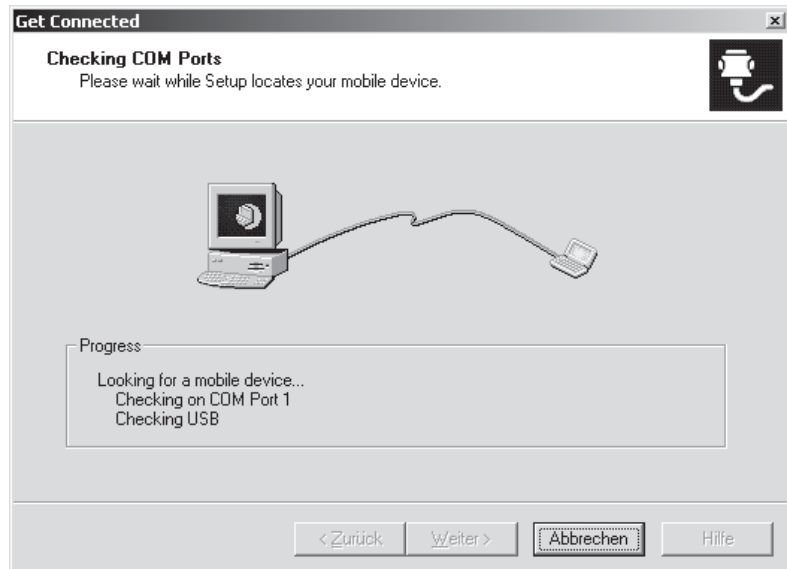
After the automatic recognition has been started, ActiveSync will search for devices connected and will try to identify them. Now start the "ActiveSync Connection" Manager module on the Lauer EPC, which will display as follows:
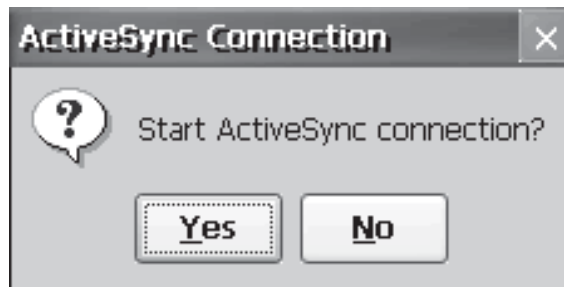
After acknowledgement of the inquiry with **<Yes>**, the system will try to set up a connection to the host computer.
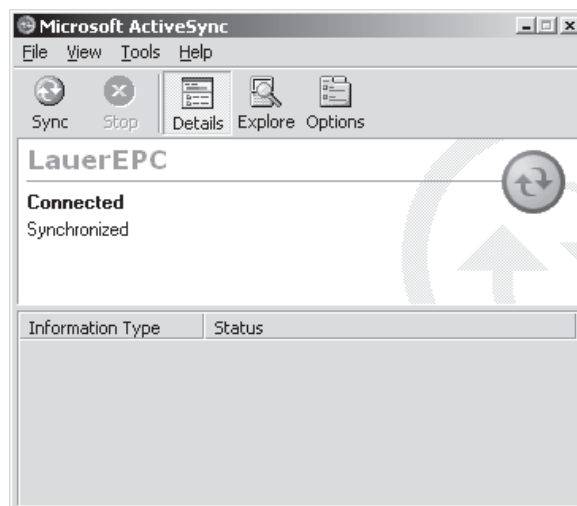
Note!

As both sides will try to establish a connection for a limited period of time only, it might be necessary to repeat the process if no connection could be established. The ideal time for the start of the "ActiveSync Connection" module is when ActiveSync is checking the interface connection (in case of more than one interface possible).

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3 EPC Manager (Windows CE 4.1)

When the automatic recognition has been completed successfully, ActiveSync will display as follows:

At this point, the so-called "partnership" between the Lauer EPC and the host computer can be configured. However, this is not imperative if files only are to be exchanged or development tools are used. At every connection, however, ActiveSync will request again that the partnership is configured, if this has not been done. The following illustration displays a successful connection between the Lauer EPC and the host computer through ActiveSync:

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3 EPC Manager (Windows CE 4.1)

Normally ActiveSync is also visible as a symbol in the taskbar. An active or inactive connection is displayed as follows:

Active connection   Inactive connection


Configuration of the Platform Manager:

The Windows CE platform manager permits data exchange between a Window CE based system and the host computer, and thus allows software development or problem analyses. Normally it is installed automatically when the **Microsoft Embedded Visual C++4.0** is installed, for example. As already mentioned, a so-called SDK (Software Development Kit) is required for software development on a Windows CE device. The following chapters will describe how the platform manager is configured for the communication between the Lauer EPC and the host computer by means of ActiveSync (for the configuration of the platform manager every tool normally offers a menu item – in eVC4.0 it is located in the **Tools** menu).

1 – Select the device
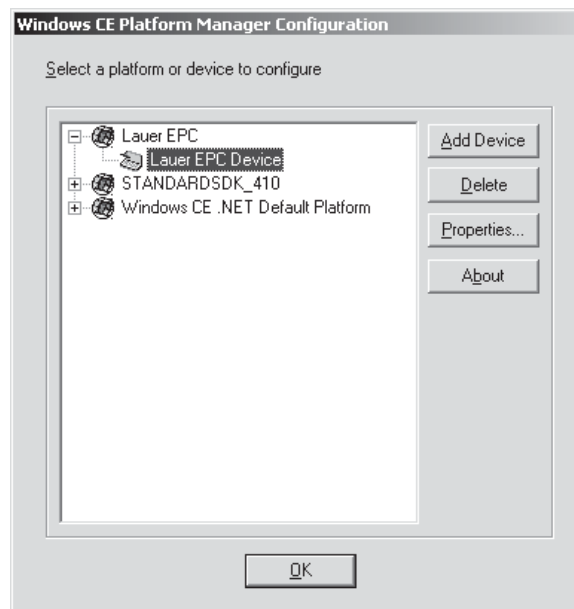
3 EPC Manager (Windows CE 4.1)

2 – Access the properties in the **<Properties>** menu. Select **Microsoft ActiveSync** as the transport and startup server in the properties dialog. That's it!
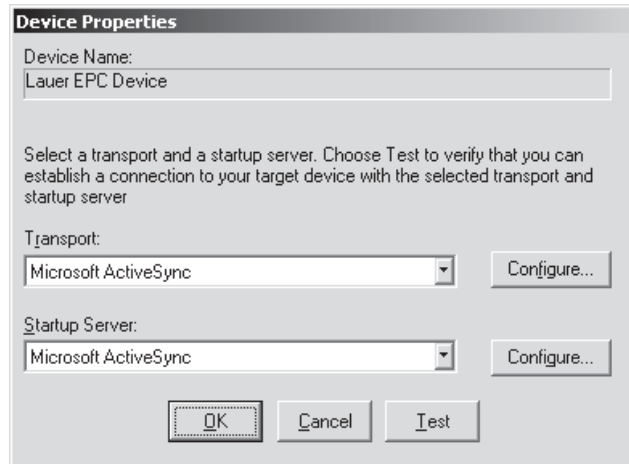

Note!

If the Lauer EPC is connected to the host computer by an Ethernet cable at the same time, it is recommended to select TCP/IP Transport for Windows CE for the transport to achieve a higher communication speed.

Once the one-time configuration of the platform manager has been completed, any remote tool can be used. In the following example the communication with the Lauer EPC is established with the **Remote Zoomin** remote tool.

1 – Start the **Remote Zoomin** remote tool. A list with currently installed devices will be displayed. Here, select the **Lauer EPC Device**.
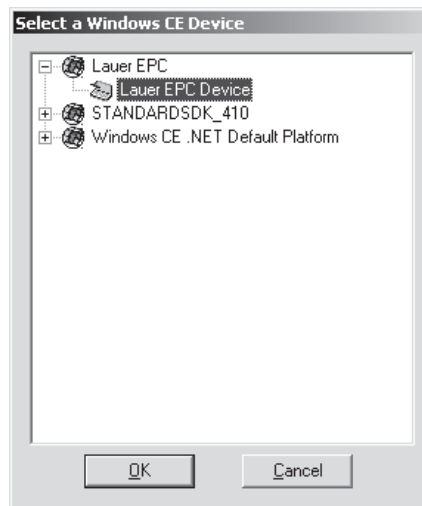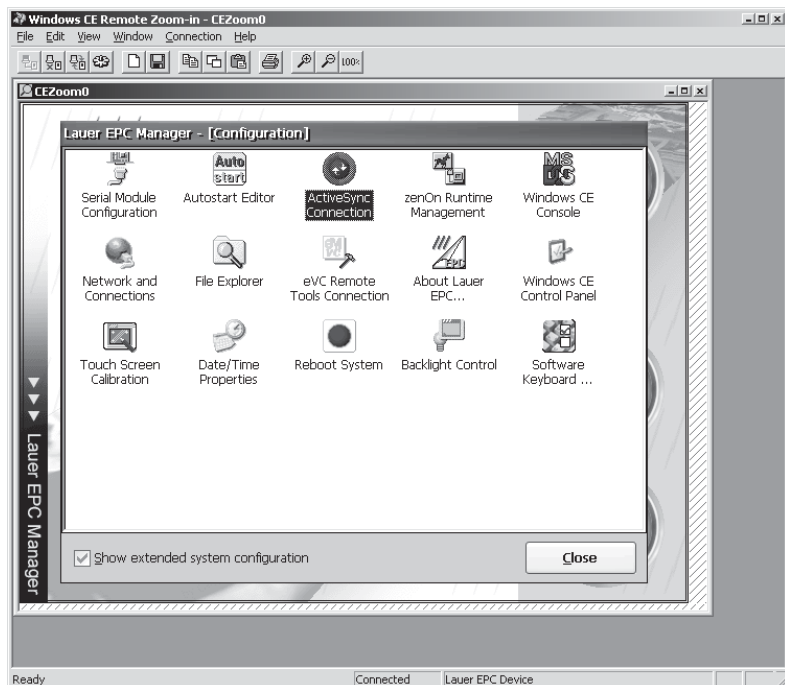
3 EPC Manager (Windows CE 4.1)

After acknowledgement of the selection with **<OK>**, the system will wait until the connection has been established.
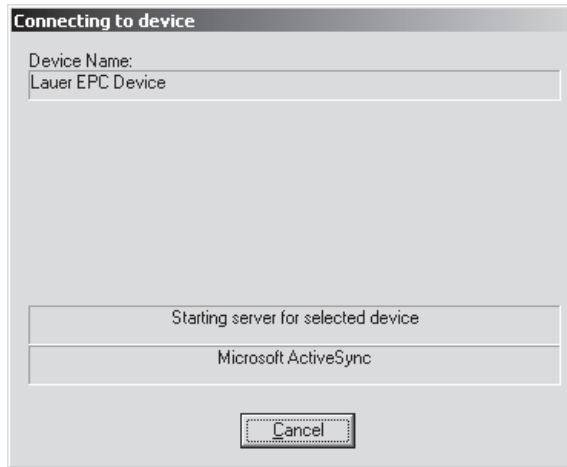
After the connection has been established, the tool will display a current screenshot of the Lauer EPC.


When the connection is severed (after the serial connection cable has been unplugged, for example), the ActiveSync connection will report back with a message. A new connection can be established again immediately by actuating <Yes>.

3   EPC Manager (Windows CE 4.1)

zenOn Runtime Management

Normally the **zenOn** visualization software is used in Lauer EPC systems. This module permits the configuration of the runtime system which is located on the **storage card**. In addition, it registers zenOn as a runtime software so that it can be started directly by the Manager.
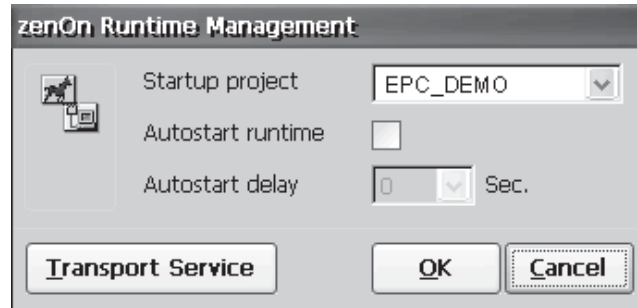
Startup Project

This item permits the selection of the zenOn project which is to be started in runtime mode.

Autostart Runtime

When this button has been activated, the system will automatically switch into the runtime mode at the next start and will execute the project selected.

Autostart Delay

This item indicates the delay time in seconds, after which the system is to switch into the runtime mode after system start. Until this time has run down, the automatic start of zenOn can be interrupted. Delay times of between 0 and 100 seconds (1 minute 40 seconds) can be selected. The time can be selected only if **Autostart Runtime** has been activated.

Windows CE Control Board

This item calls the Windows CE Panel Window, which corresponds to the DOS box on a Windows Desktop PC.

Network and Connections

This item permits the establishment and configuration of network connections.

File Explorer

This item starts the Windows Explorer.

eVC Remote Tools Connection

This module permits the connection with a host computer through the **Manual Server**. This server is also used for software development with
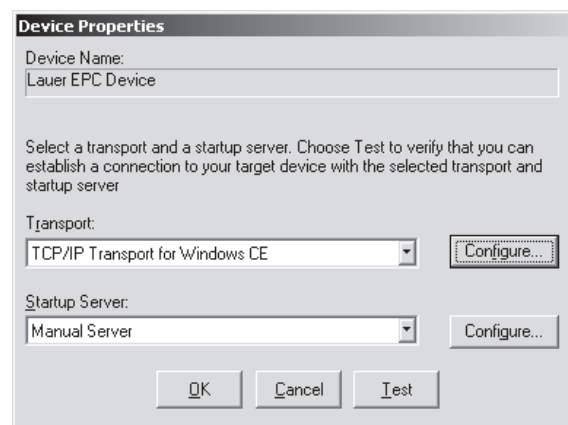
3   EPC Manager (Windows CE 4.1)

Microsoft eMbedded Visual C++4.0 and remote tools, such as **Registry Editor**, **File Viewer**, **Zoomin** (contained in the delivery range of eVC4.0), and is an alternative to ActiveSync. The communication is established with TCP/IP through Ethernet, for example. For this reason, a network cable only is needed for the physical connection between the Lauer EPC and the host computer.

Here the platform manager and the SDK also have to be installed and configured first before the Lauer EPC can communicate with the host computer. This will be illustrated in the following chapters:

1 – Select the device.
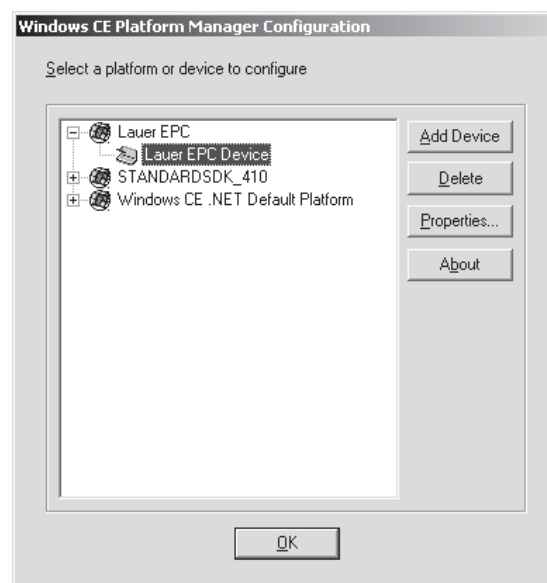
2 – Access the properties in the **<Properties>** menu. Select **TCP/IP Transport for Windows CE** and the **Manual Server** startup server as a transport means in the properties dialog. The following illustration renders the correct configuration:
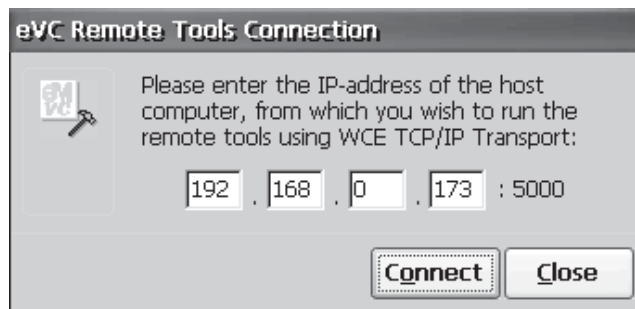
3   EPC Manager (Windows CE 4.1)

3 – Now the transport has to be configured. For this purpose click on the **<Configure>** button. Another configuration dialog will be displayed which looks as follows:
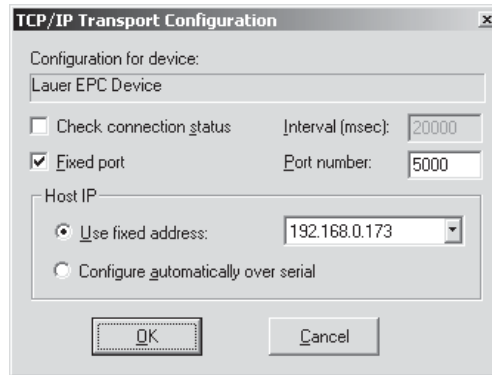
It is important that a static port with number **5000** is set, and that the address of the host computer is entered, as shown in the illustration.

Once the configuration of the platform manager has been completed, any remote tool can be used. In the following example the communication with the Lauer EPC is illustrated by means of the File Viewer remote tool.

1- Start up the **eVC Remote Tools Connection** tool on the Lauer EPC, enter the IP address of the host computer, and acknowledge by pressing **<Connect>**. Subsequently the dialog is closed.

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3 EPC Manager (Windows CE 4.1)

2 – Start the **File Viewer** remote tool. A list with currently installed devices will be displayed. Here, select the **Lauer EPC Device**.
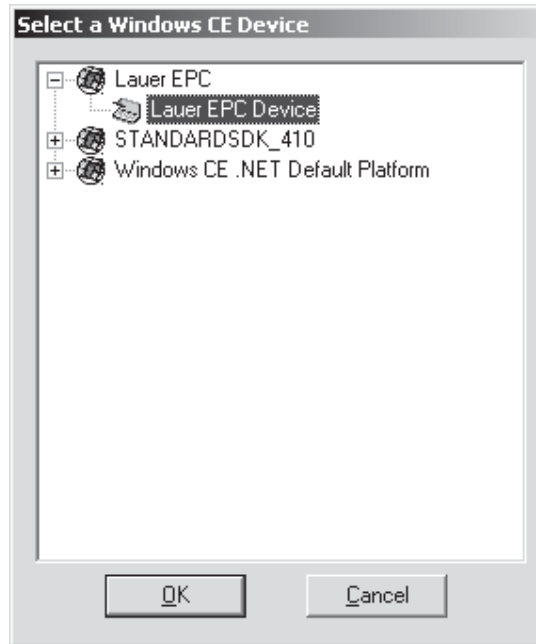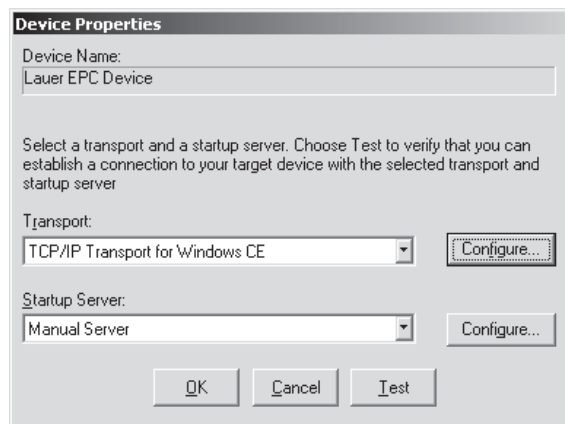

After acknowledging the selection with **<OK>**, another dialog is opened which has to be acknowledged with **<OK>**.

3 EPC Manager (Windows CE 4.1)

Now the system waits for the connection to be established.
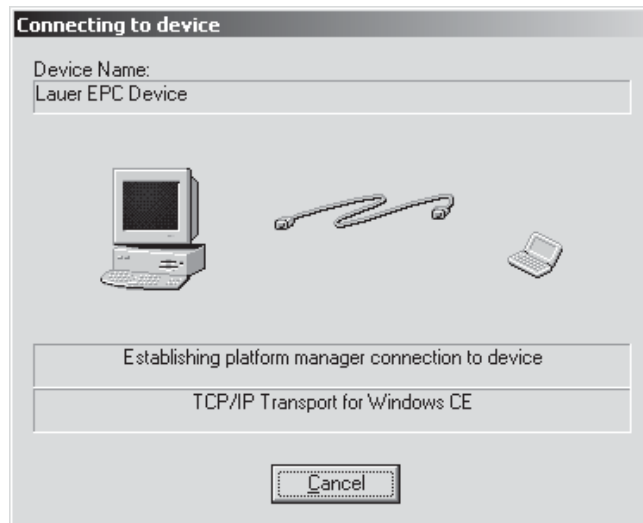
After the connection has been established, the File Viewer displays the contents of the file system of the Lauer EPC.
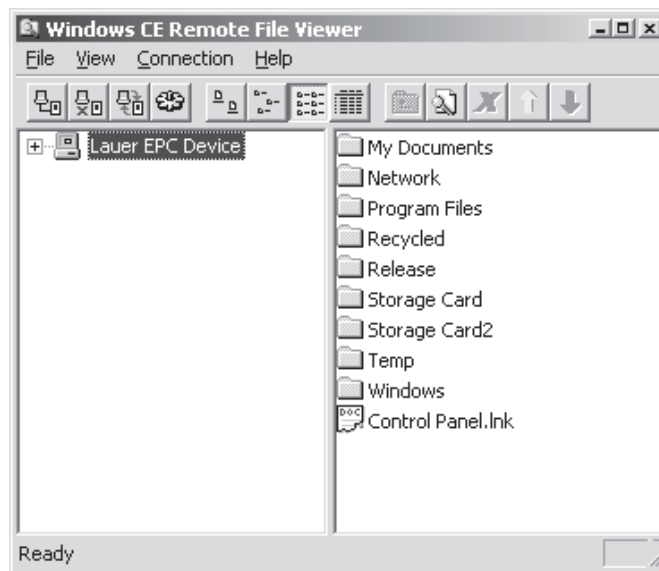
When the connection is severed (after a remote tool has been terminated, for example), eVC Remote Tools Connection reports with a message. After a successful connection, the IP address of the host computer is saved, and a new session can be started by pressing **<Connect>**.

3 EPC Manager (Windows CE 4.1)

About Lauer EPC ...

This item renders information on the device and the system software, such as the image and manager version, as well as a list of the installed modules with their designation and version number.
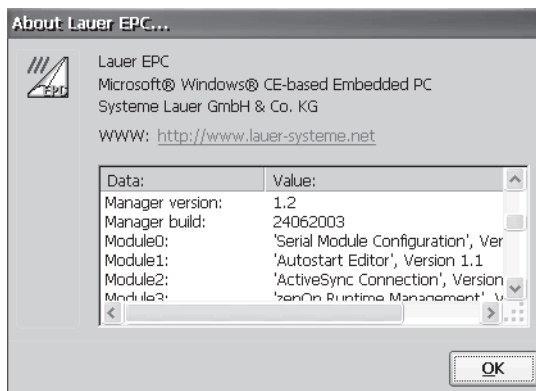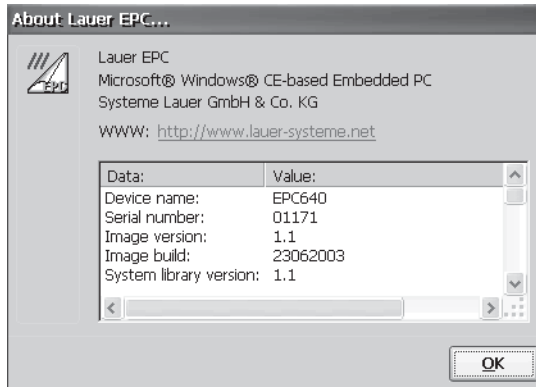
Windows CE Control Panel

This item starts the Windows system control, in which other Windows CE specific settings can be carried out.

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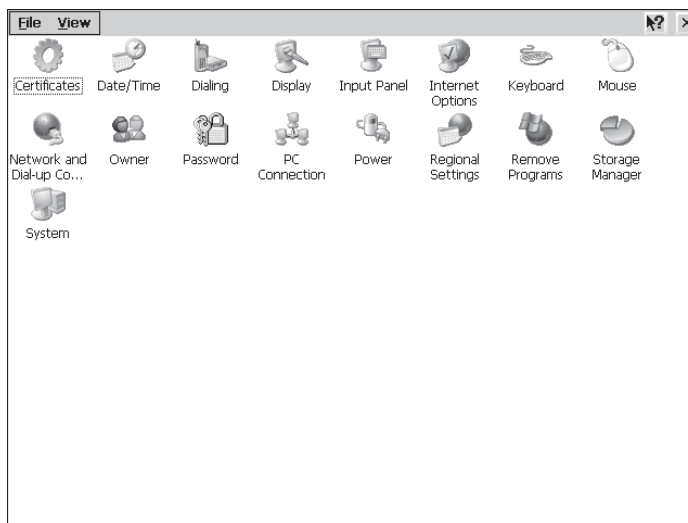
3 EPC Manager (Windows CE 4.1)

Touch Screen Calibration

This item executes the touch screen calibration program.

Date/Time Properties

This item starts the module to set the time and date.

Reboot System

This item restarts the system. Prior to restart, all unsaved system settings will be saved.
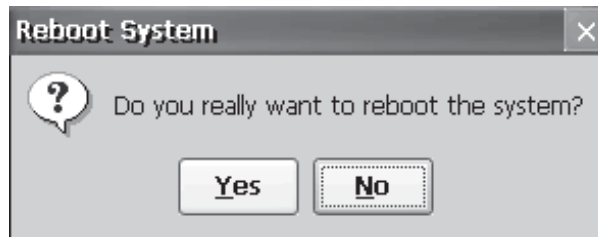
This module will be executed even if the toggle switch on the rear side of the device is brought to the RESET position and the device has been configured for soft reset.

Backlight Control

This item permits the configuration of the software controlled background lighting.

Note!

In devices which have not been provided with a software support for background lighting (such as EPC640), this module has no effect.
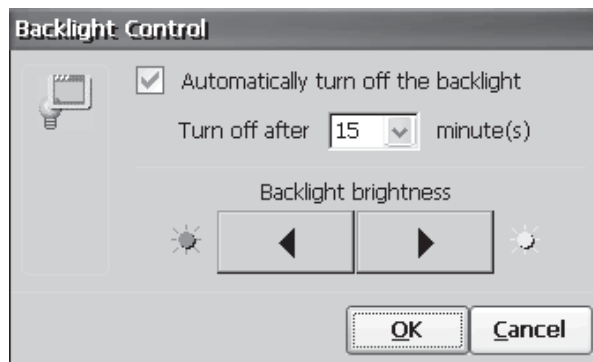
3   EPC Manager (Windows CE 4.1)

Automatically turn off backlight | If this option is activated, the background lighting will be switched off after the time given has run down. The lighting will be switched on as soon as the touch screen is touched, a key is actuated on the keyboard or mouse connected, or a connected mouse is moved. It can also be activated by software (see the **"Lauer EPC.dll" system library**). The time for automatic switch-off of the background lighting can be set between 1 and 100 minutes (1 hour 40 minutes).

Backlight brightness | This button can be used to vary the brightness of the background lighting.

Software Keyboard Configuration | This module is used to activate and configure the integrated software keyboard (SIP – Software Input Panel).

Automatic Launch | The software keyboard is faded in automatically as soon as a window with a standard input field is visible, and it is faded out as soon as this field is closed again.

3 EPC Manager (Windows CE 4.1)

Manual Launch

If this option is selected, a symbol will be faded in on the bottom left-hand side of the screen:

The symbol is always in the foreground and thus can be accessed very fast. The software keyboard is activated or deactivated very easily by a simple click on the symbol. In addition, the symbol can be moved on the screen as required. For this purpose "get hold" of it with the touch screen or use a mouse connected and slowly move the symbol into the requested position. After release it will remain in the requested position. By means of the special "throw logic", the symbol can be "thrown" to one of four corner positions. For this purpose, "get hold" of the symbol and move it into the requested direction within half second maximum and release it again. It will position automatically in the requested corner of the screen. This action may prevent unnecessary frequent touching (and thus soiling) of the touch screen.

Those who are interested in the technology will find a list of the exact times the keyboard symbol evaluates for the interpretation of the various actions:

Time	Action
Clicking and releasing the symbol **within 200 ms**.	Activates / deactivates the software keyboard
Clicking, moving and releasing the symbol **within 200 to 500** ms.	"Throw" the symbol into the requested corner position
Clicking, moving and releasing the symbol **after 500 ms**.	Place the symbol in the requested position

Deactivated

This item deactivates the software keyboard.

3   EPC Manager (Windows CE 4.1)

Properties

Among other things, this button can be used to select and configure one of the available software keyboards. At present, the following standard keyboards have been implemented:

Small software keyboard (internal designation: **Keyboard**):

Large software keyboard (internal designation: **LargeKB**):

3   EPC Manager (Windows CE 4.1)

The integrated servers

Various standard servers have been integrated in the Lauer EPC (and are activated at delivery), which permit file administration and remote control in a network. Some of the servers need a user name and password. In delivery condition, these have been set to the following values:

User name: **admin**
Password: **admin**

The password can be changed with the **Password** option in the Windows system control.

Note!
The password mentioned here must not be confused with the Lauer EPC Manager password. Other than the Manager password, which is applicable only within the Manager, this is a device password.

The following chapters will deal with the servers in greater detail. For the example, it is assumed that the device has been connected to a PC by network cable and the following network settings have been allocated to the connection used:

IP address: 192.168.0.175
Subnet mask: 255.255.255.0

FTP server

The FTP server permits the transmission of files to and from the device as well as the administration of folders. It uses what is called the File Transfer Protocol, with which files and folders can be copied, deleted or created. Any computer system with an FTP client can be used for this purpose. As almost all computer systems have been provided with an FTP client software nowadays, it is the least expensive method to remotely administer files and folders by network. Moreover, numerous shareware or freeware clients are available as well.

3 EPC Manager (Windows CE 4.1)

The following example demonstrates how a connection is established to the Lauer EPC by means of FTP with a conventional host computer running on Windows 2000 and Internet Explorer 6. It is important that the FTP client of the host computer used is <u>not</u> operated in so-called **passive mode**. In the Internet Explorer, this setting can be deactivated in the property dialog under **Advanced**.
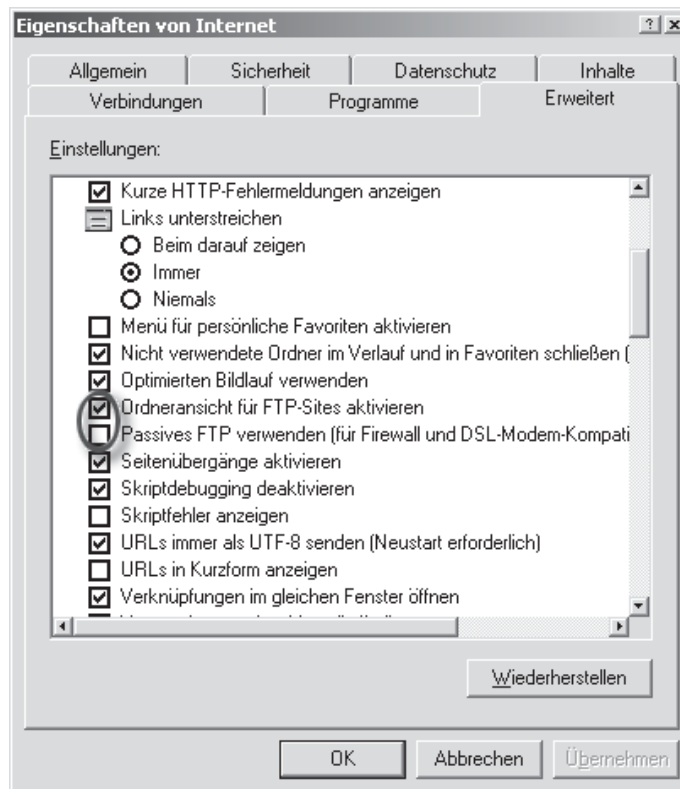
It is also important that the **Enable Folder View for FTP Sites** option is ticked in the Internet Explorer.

After having carried out the settings, the Internet Explorer can be started. The FTP address of the device has to be entered in the address bar in the following way:

```
ftp://username:password@IP_address_of_the_device[/folder]
```

This short form permits the input of the address including username and password in one single line. Of course, the address can also be entered without any user data, such as

```
ftp://IP_address_of_the_device[/folder]
```

whereupon manual log-on is required. The protocol prefix **ftp:** indicates that the connection through the File Transfer Protocol (TCP ports 20/21) is used. The IP address of the device can optionally be followed by the name of a folder into which the Internet Explorer should skip after the connection has been established. If the folder name is not entered, the root directory (/) is selected automatically.

3 EPC Manager (Windows CE 4.1)

For the connection in our example, we will enter as follows:

```
ftp://admin:admin@192.168.0.175
```

After acknowledgement by pressing the <Enter> key, the Internet Explorer will render the contents of the root directory:
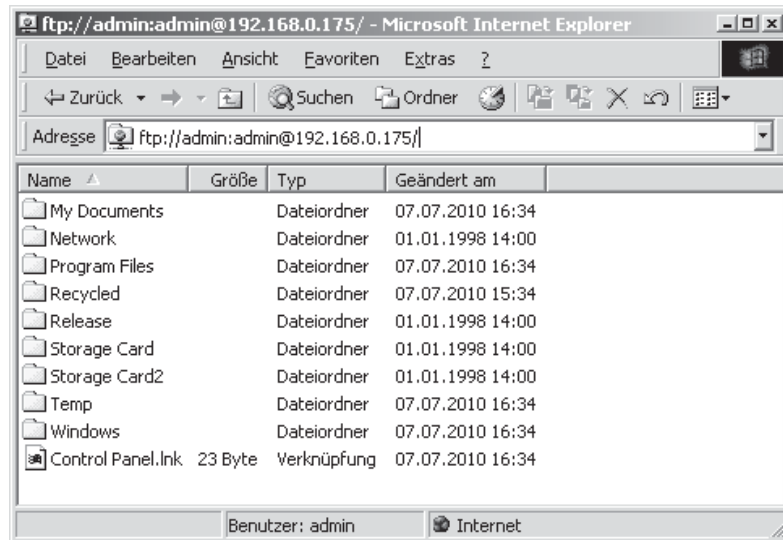
Hint!

As the Internet Explorer components are integral parts of the new Windows operating system, a connection can be established directly through the Windows Explorer, if no web browser has been installed or a non-compatible browser is used. The following illustration displays the FTP connection in the Windows Explorer in our example.
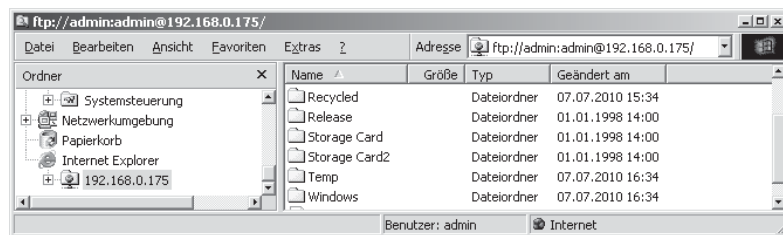
Now file operations can be carried out in the usual way.

3 EPC Manager (Windows CE 4.1)

http server (WEB server)

The HTTP server (or WEB server) permits the installation of web pages on the device which can then be viewed with any random web browser on a host computer (or on another Lauer EPC). Thus, simple Intranet servers can be set up, for example, offering online documentation, or online applications permitting remote configuration of the device. ASP, Jscript and VBScript script environments are available for online applications.

On delivery, an example page has been installed on the Lauer EPC, which can be viewed with the Internet Explorer (**Active Scripting** has to be activated under the safety settings). In our example, the following address is entered in the address bar of the Internet Explorer in order to view the example page:

```
http://192.168.0.175
```

The protocol prefix **http:** indicates that the connection uses the Hyper Text Transfer Protocol (TCP Port 80).

After acknowledgement, the title page is displayed. For the installation of your own webpage the following points have to be observed:

• The default setting for the root directory of the Internet page is

   \Storage Card2\Lauer EPC\www\wwwpub

• The name of the homepage is **default.htm**.

Telnet server

The Telnet server in the Lauer EPC can be used to establish command-line-based communication from a Telnet client, which corresponds to the input request directly on the device and renders available the same flexibility on a remote PC. Folders and files can be created, deleted or moved, for example. Moreover, it is also possible to start applications from a remote PC.

Like the FTP server, the Telnet server is protected by password and uses the same user data. Most desktop PCs have been equipped with a Telnet client.
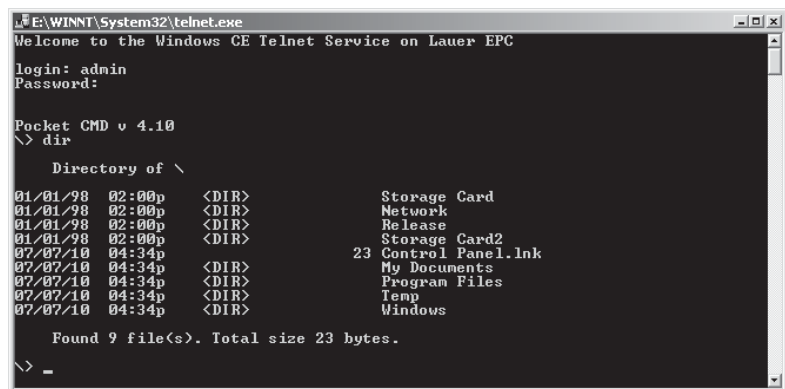
3 EPC Manager (Windows CE 4.1)

The following example uses the Telnet client in Windows 2000. First of all, the Telnet client is started in the **Run** dialog under **Start> Run**, for example. For our example device, we enter here as follows:

```
telnet 192.168.0.175
```

and acknowledge the input by pressing <OK>. A DOS box is opened with the Telnet client as shown in the following illustration:
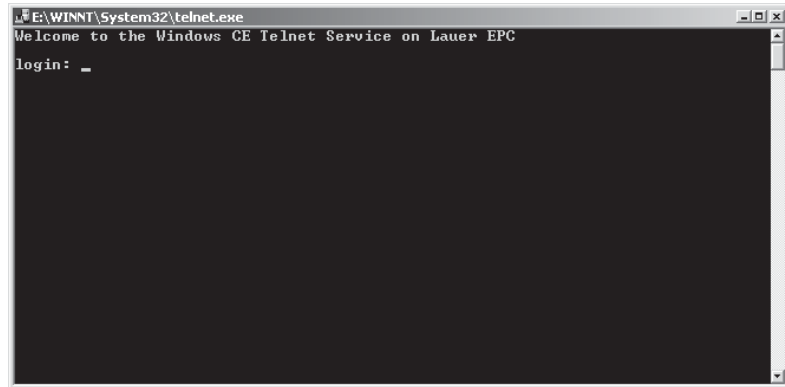
At this point the system requests the input of the username and the password. As already mentioned, the same general user data are used.

After input of the correct user data, the command line will appear and is ready for the input of the command. The following illustration renders the content of the root directory after input of the **dir** command:

The connection can be severed at any time by input of the **Exit** command.

3   EPC Manager (Windows CE 4.1)

RDP (Remote Desktop Protocol)

The **Remote Control for Windows CE** application has been integrated in the Lauer EPC (**cerdisp.exe**), which by RDP permits the complete control of the device by a host computer through a network. The counter part to this application is **cerhost.exe**, which is executed on the host computer. This application is located in the

```
\Storage Card2\Lauer EPC\Software\Support\Microsoft\cerhost (x86 PC)
```

folder on the Lauer EPC and can be transferred to the host computer by FTP (it can also be downloaded directly from Microsoft).

The following illustrations show how a connection is established with **cerdisp** and **cerhost** through RDP. In this case the Lauer EPC has the IP address 192.168.0.175, and the host computer 192.168.0.173.

1)   Run cerhost.exe on the host computer. The following screen will appear:
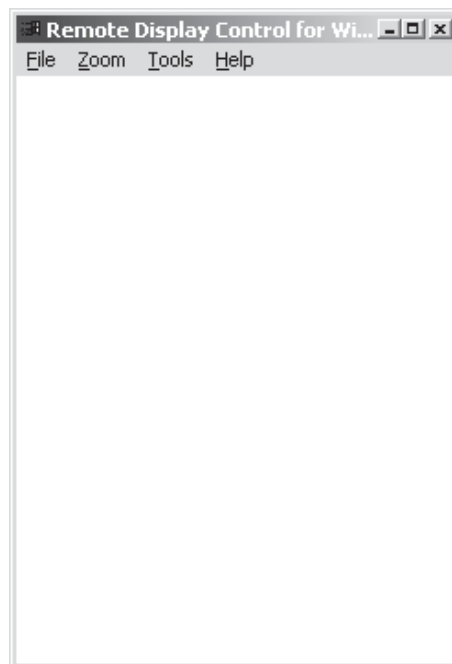
3 EPC Manager (Windows CE 4.1)

2)   Enter **Start>Run** in the dialog on the Lauer EPC or cerdisp in the Windows CE panel, and acknowledge the input.

The cover screen of the application will be displayed.

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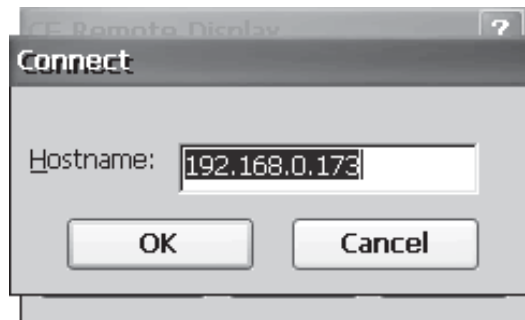
3 EPC Manager (Windows CE 4.1)

After a short period of time (or acknowledgement by pressing <OK>), the following configuration dialog will be displayed:
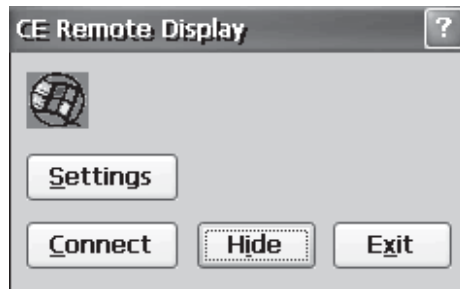
3) The **<Connect>** button is important here, which permits the input of the IP address or the name of the host computer. As shown in the following illustration, the IP address is entered here:

3   EPC Manager (Windows CE 4.1)

After acknowledgement with <OK> cerhost will display the contents of the window on the host computer. On the Lauer EPC, cerdisp will be minimized, as shown in the illustration. The configuration dialog can be invoked at any time by double-clicking this symbol.

After the connection has been established, the Lauer EPC can be completely operated by the host computer by means of mouse or keyboard

Access to the folders and printers released in the network

One of the most important features on the Lauer EPC is the access to released folders and printer in a Microsoft network. Public folders or printers available in the network can be allocated to local folders in the Lauer EPC if the user is logged in with his username and password. Naturally, this user has to be entered and known in the network.
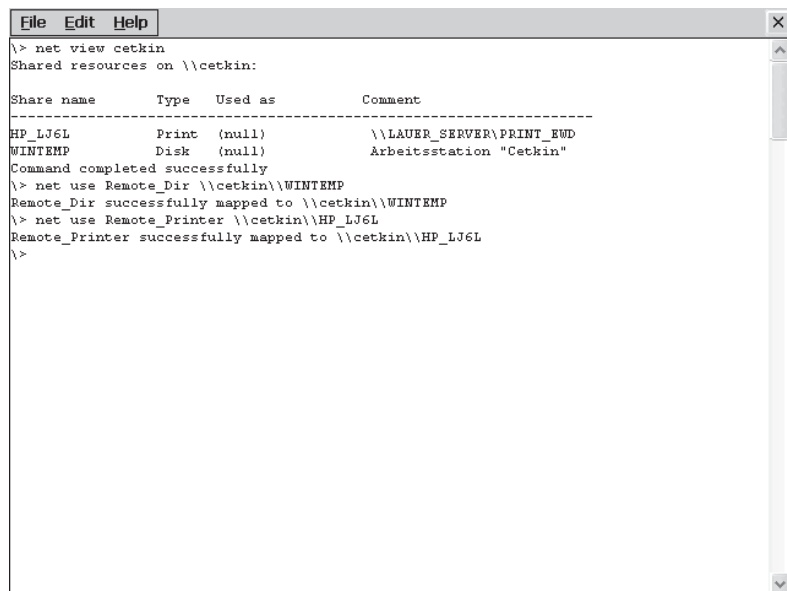
Contrary to the desktop versions of Windows, the network resources have to be allocated manually on the Lauer EPC. For this purpose the prompt line is started, in which the necessary commands can be entered.

In the following example, one folder and one printer have been released in the network, which the Lauer EPC shall have access to. The data for this example are as follows:

Workstation (server):   cetkin

Released folder: WINTEMP

Released printer: HP_LJ6L

3 EPC Manager (Windows CE 4.1)

A typical command sequence for this is as follows:
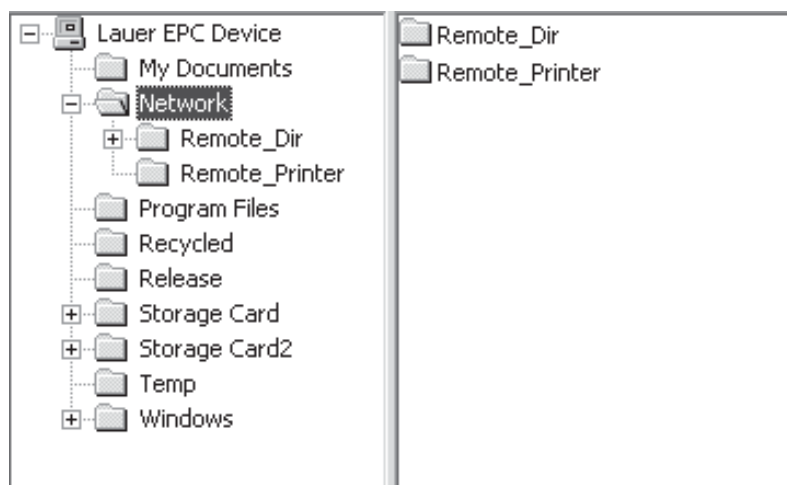
```
File   Edit   Help                                                        ×
\> net view cetkin
Shared resources on \\cetkin:

Share name       Type   Used as          Comment
----------------------------------------------------------------
HP_LJ6L          Print  (null)           \\LAUER_SERVER\PRINT_EWD
WINTEMP          Disk   (null)           Arbeitsstation "Cetkin"
Command completed successfully
\> net use Remote_Dir \\cetkin\\WINTEMP
Remote_Dir successfully mapped to \\cetkin\\WINTEMP
\> net use Remote_Printer \\cetkin\\HP_LJ6L
Remote_Printer successfully mapped to \\cetkin\\HP_LJ6L
\>
```

First of all, all released resources of the **cetkin** workstation are listed with the **net view** command. During the first access, the Lauer EPC requests the username as well as the appertaining password and, if and when necessary, the domain name. If the user data are known in the network, the resources are listed. In the example mentioned above two resources are available – one folder with the designation **WINTEMP** as well as the network printer **HP_LJ6L**. Now these resources are allocated to local folders by means of the **net use** command ("mapping"). In our example, the network folder is allocated to the local **Remote_Dir** folder and the network printer to the local **Remote_Printer** folder. From now on the new folders will appear in the **\Network** folder as shown in the following illustration:

```
☐ Lauer EPC Device                    Remote_Dir
    My Documents                       Remote_Printer
  ☐ Network
    ☐ Remote_Dir
        Remote_Printer
    Program Files
    Recycled
    Release
  ☐ Storage Card
  ☐ Storage Card2
    Temp
  ☐ Windows
```

3 EPC Manager (Windows CE 4.1)

Access can now be gained normally to the network folder Remote_Dir, whereby special attention has to be given to the printer objects: Printers are shown as folders as well (in our example Remote_Printer). Every file which is copied to a printer folder will be printed immediately on the corresponding printer.

The allocation of network resources to local folders can be automated by means of a batch file, for example. Resources already allocated can be erased again with the **/d** option of the net use **command. To erase the Remote_Dir network folder in our example, the following command has to be entered:**

```
net use Remote_Dir /d
```

A list of valid commands and parameters can be called up with the following command:
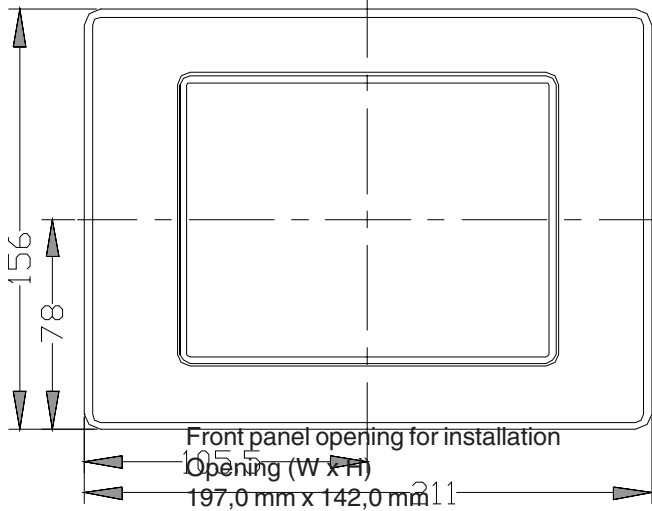
```
net /?
```
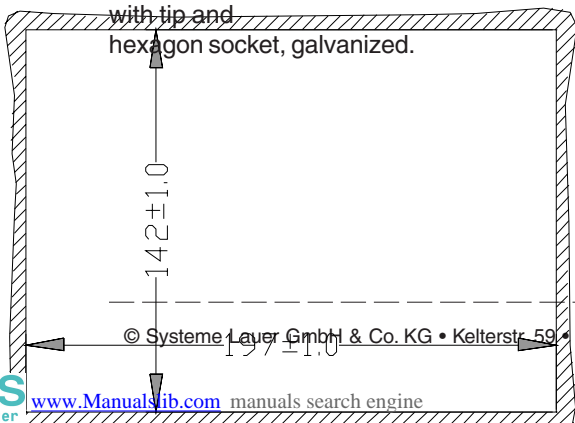
T   Technical data

T1   Mechanical dimensions

Free spaces

To ensure that heat generated in the device can dissipate into the environment, a space of 50 mm must be maintained around the device!

T1.1 EPC 640 external / internal dimensions

Front plate   Width   211 mm
                                    Height   156 mm

Cut-out dimensions   Width   197 mm
                                    Height   142 mm

Installation depth   70 mm

Weight   approx. 1 kg

156

78

105,5

211

Front panel opening for installation
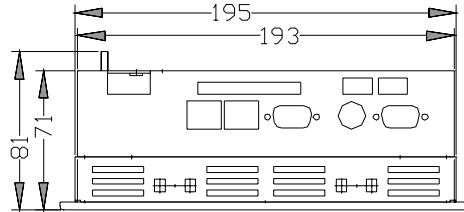Opening (W x H)
197,0 mm x 142,0 mm

1. Type of attachment: with six
retaining blocks made of aluminum or
plastic with M5x30, DIN 914 set screws,
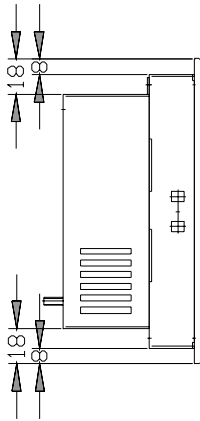with tip and
hexagon socket, galvanized.

142±1.0

197±1.0

T   Technical data

T1.2 EPC 640 unit dimensions

Bottom view of device

195
193
81
71

Side view

18
8
18
8

Rear view of device

211
156

Side view

4
140
120
23
67

Top view of device

T   Technical data

T1.3 EPC 1000 external / internal dimensions

Front plate	Width	318 mm
	Height	244 mm
Cut-out dimensions	Width	303 mm
	Height	228 mm
Installation depth	77 mm	
Weight	approx. 2.8 kg	

244

318

229.0±1.0

303.0±1.0

T   Technical data

T1.4 EPC 1000 unit dimensions
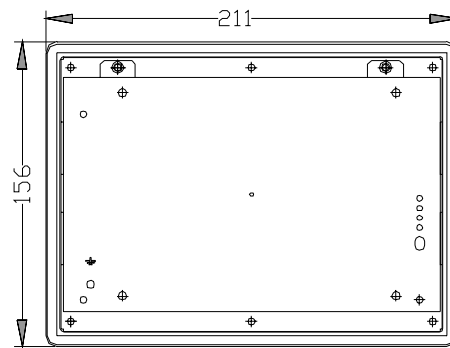
Bottom view of device
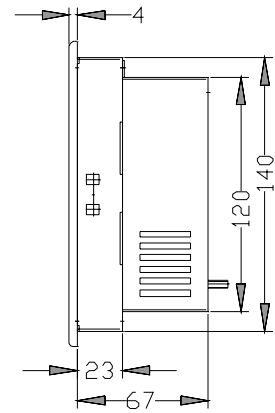
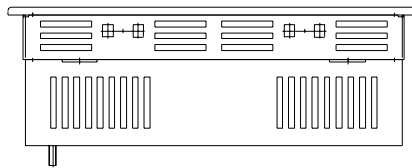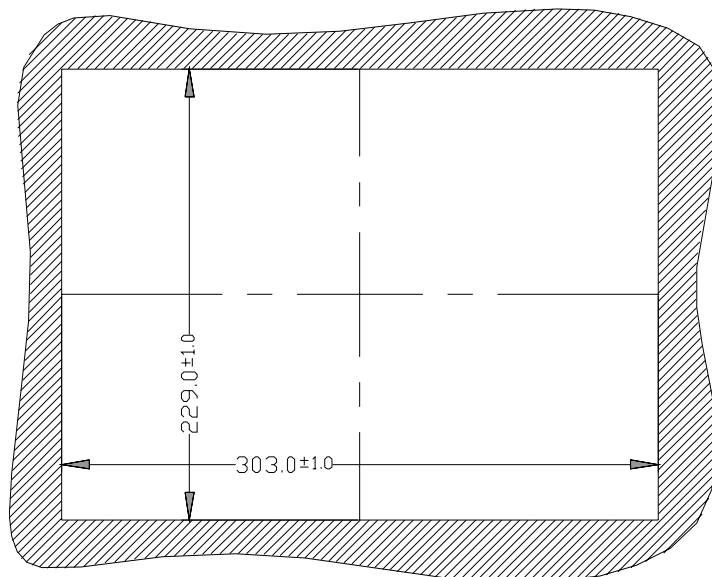Side view   Rear view of device   Side view

Top view of device

T   Technical data

T1.5 EPC 1200 external / internal dimensions

Front plate	Width	364 mm	
	Height	296 mm	
Cut-out dimensions	Width	345 mm	
	Height	277 mm	
Installation depth	77 mm		
Weight	approx. 2.8 kg		

T Technical data

T1.6 EPC 1200 unit dimensions

Bottom view of device

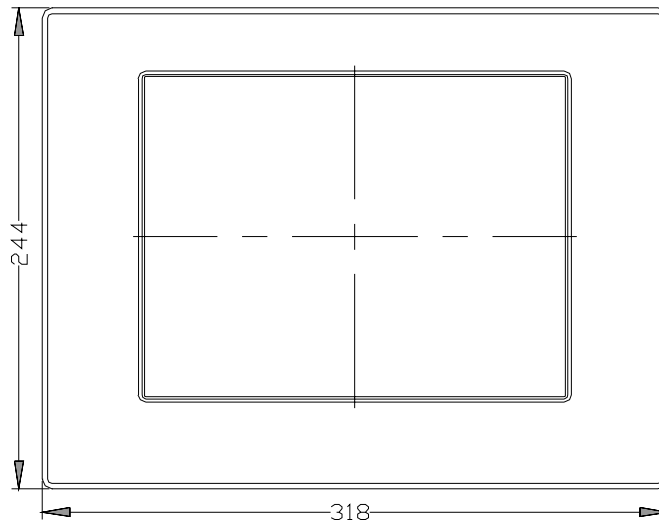Side view   Rear view of device   Side view
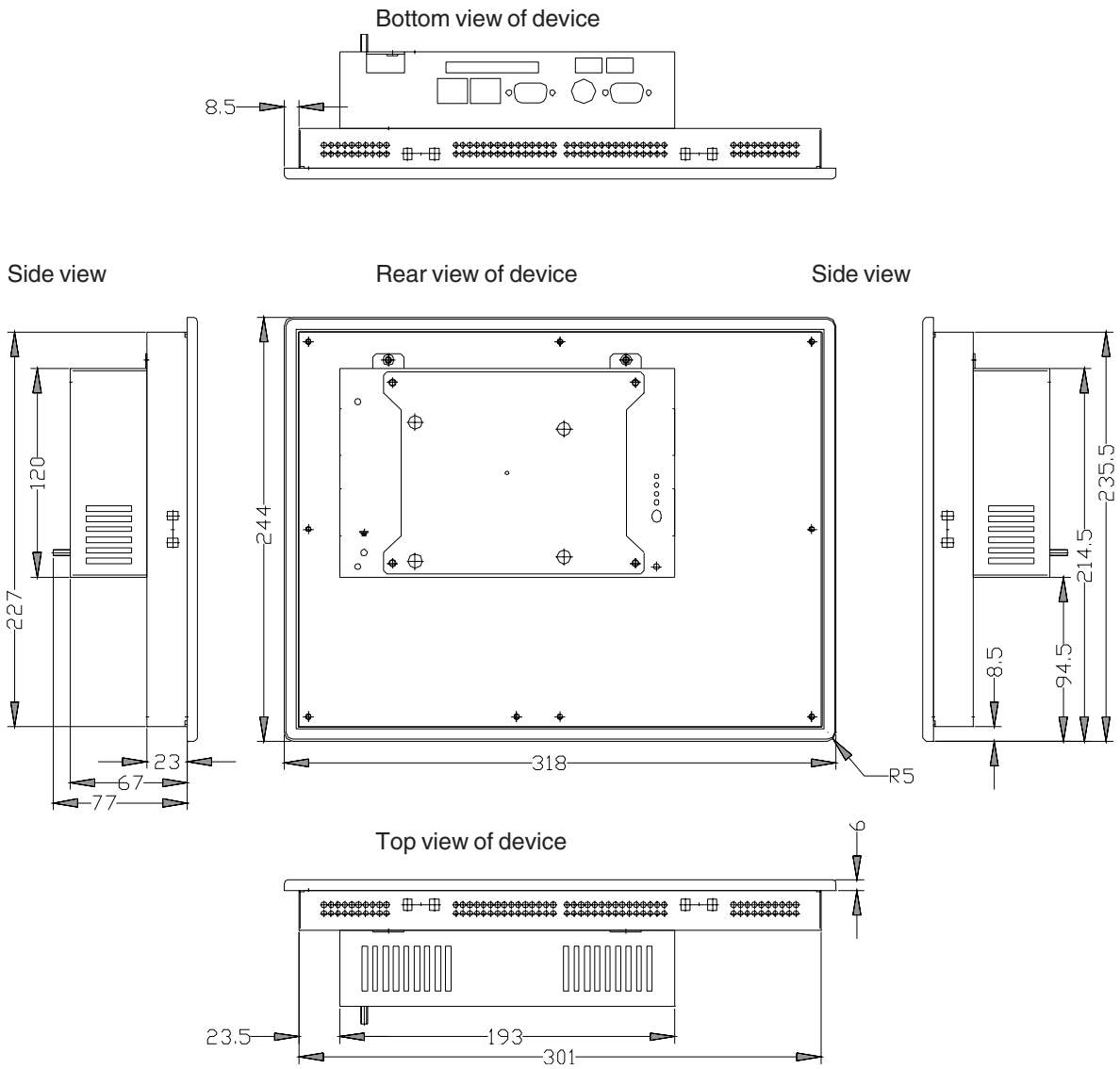
Top view of device
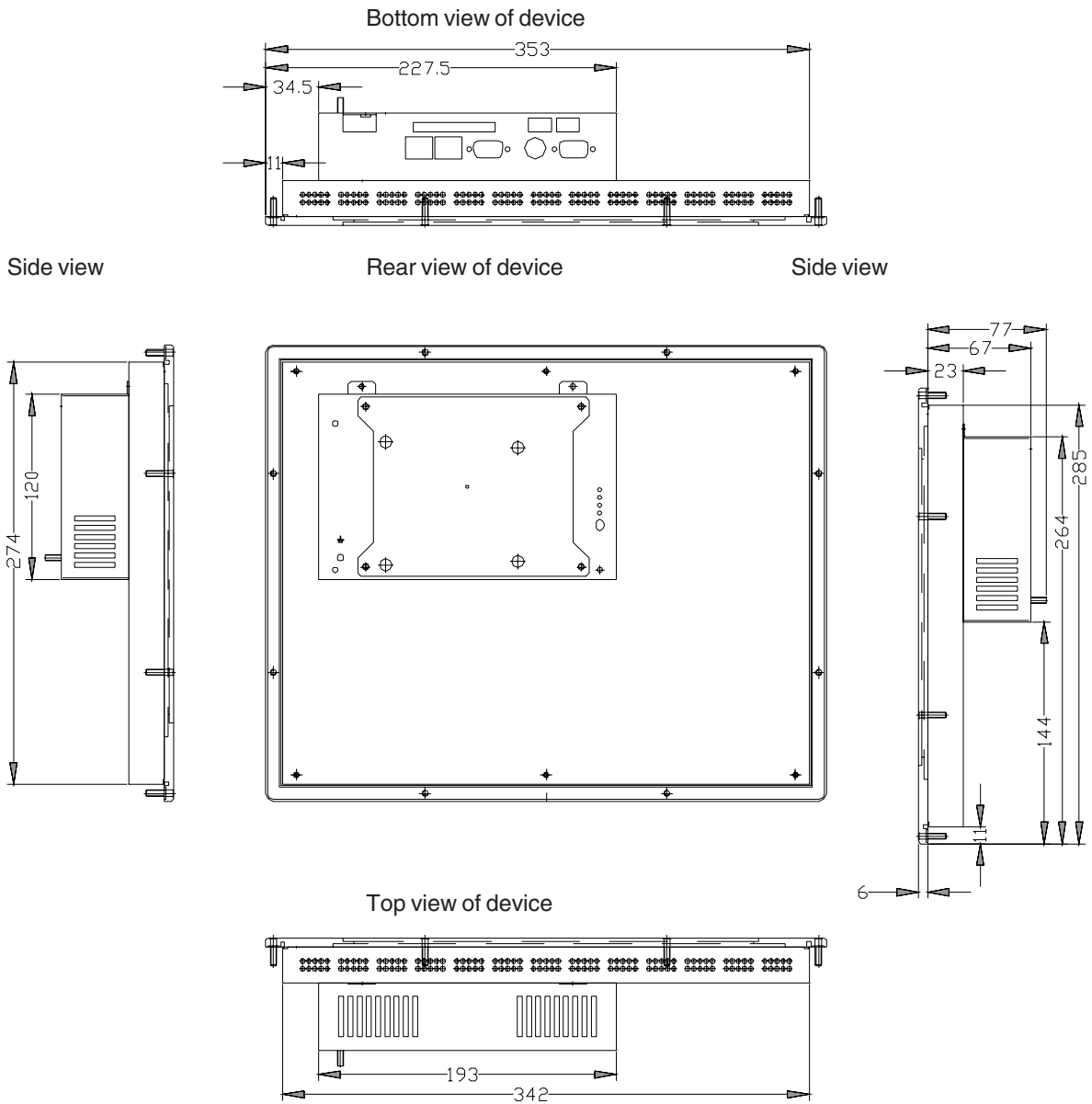
T   Technical data

T1.7 EPC 1500 external / internal dimensions

Front plate	Width	452 mm
	Height	357 mm
Cut-out dimensions	Width	429 mm
	Height	334 mm

Installation depth   66 mm without cassette, maximum 94 mm with cassette

Weight   approx. 3.5 kg

Displayöffnung

357.0

452.0

Durchbruch für den Einbau

334.0 ±0.5

346.0

273.0

73.0

429.0 ±0.5

10x Bohrung ø4.6 für Gerätebefestigung

6.0

6.0

30.5

220.5

410.5

441.0
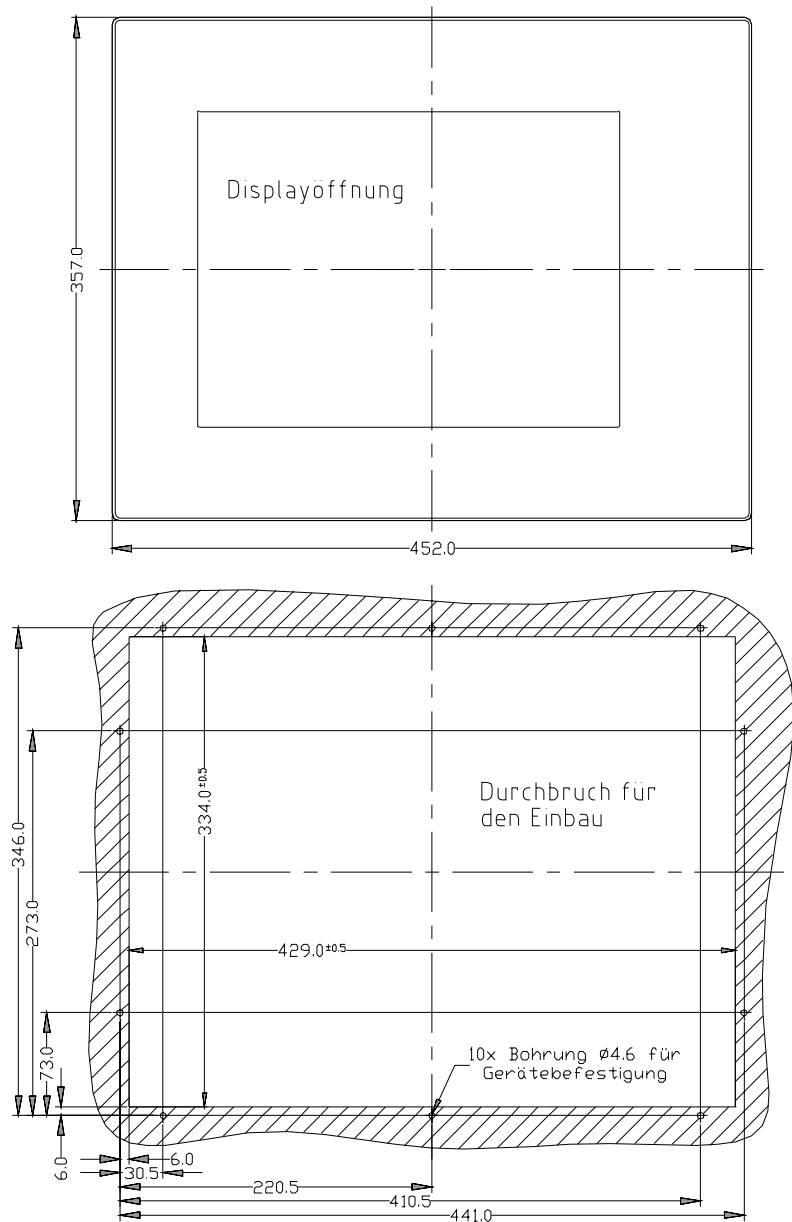
T   Technical data

T1.8 EPC 1500 unit dimensions

Bottom view of device

Side view   Rear view of device   Side view

Kassette

Top view of device
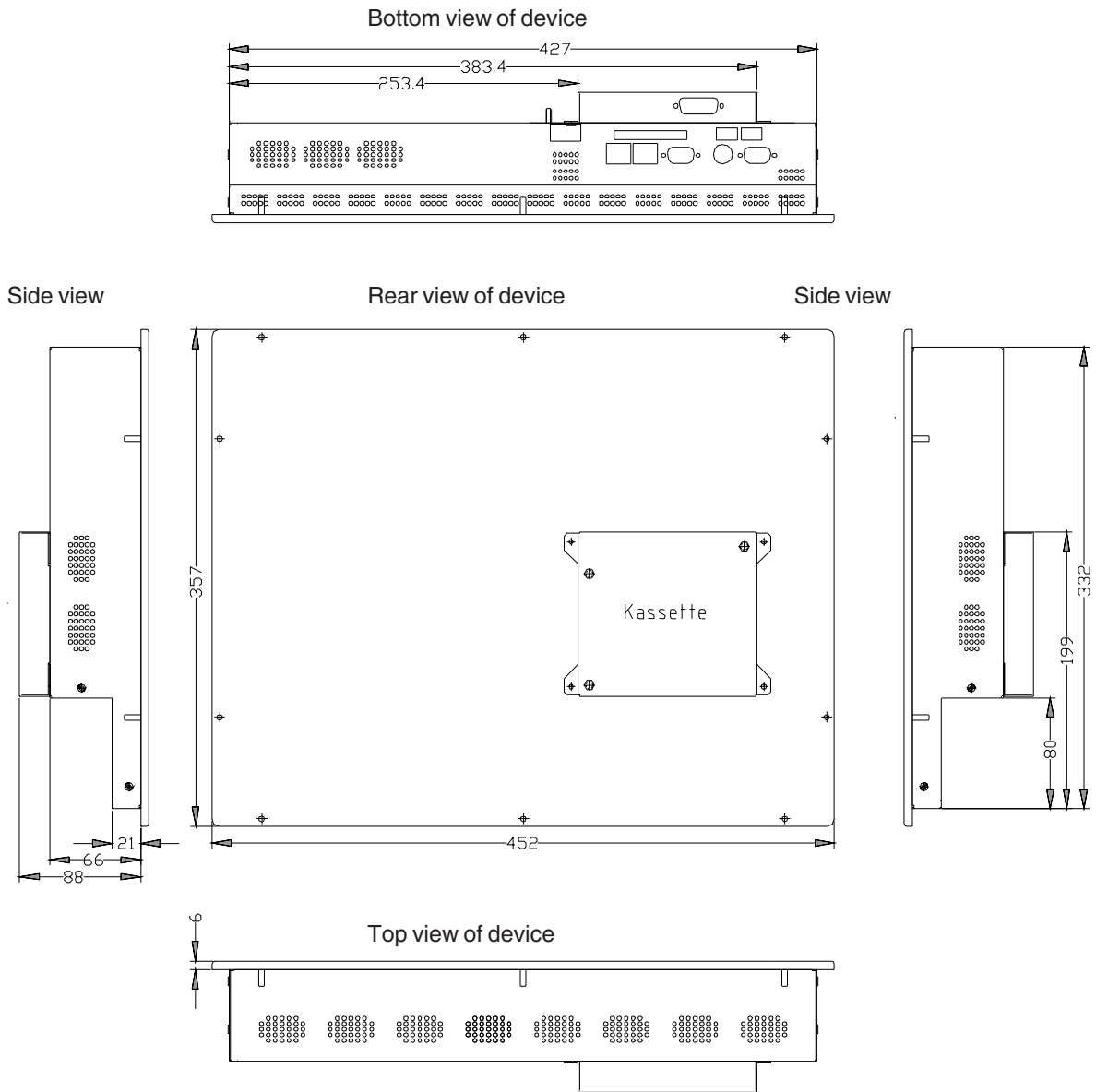
T   Technical data

T2   Electrical data

Power supply	Operating voltage	24 V ± 20 %, protected against reverse polarity
	Power consumption	approx. 0.7 A
	Fuse	2.5 A slow-blowing
	Bridging time	1 ms at 19.2 V (Ub-20 %)

Display
EPC 640
DOT matrix display 640x 480 pixel, 65536 colors, 6.4", CFL background illumination
EPC 1000
DOT matrix display 800 x 600 pixel, 65536 colors, 10.4", CFL background illumination
EPC 1200
DOT matrix display 800 x 600 pixel, 65536 colors, 12.1", CFL background illumination
EPC 1500
DOT matrix display 1024 x 768 pixel, 65536 colors, 15", CFL background illumination

Operating temperature range 0 ... 45 °C

Touch   Resistive

| Memory | Operating system | 32 MByte compact FLASH (internal) |
| | Main memory | 64 MByte SDRAM, 64 bits expandable to 256 MByte |

Type of processor   National Geode GX-1 with 300 MHz

Interfaces	Serial 1	RS232 for free disposal and Windows CE debug interface
	Serial 2	Communication module interface (available only with communication cassette attached)
	USB	2x USB 1.0 (low-powered, max. 100 mA per port)
	PS/2	Keyboard interface, mouse to be connected additionally through enclosed PS72 patch cord
	VGA	connection for external monitor
	PC/104	Expansion slot for standard PC/104 modules and optional communication cassettes (MPI, Profibus, CAN, RS485/RS422, RS232/TTY)

T   Technical data

T4   Ambient conditions

| Ambient temperature | Operation | in case of vertical (standing) installation | 0 ... 45 °C |
		at an installation angle of up to 45°	0 ... 45 °C
		at an installation angle of up to 20°	0 ... 40 °C
		at an installation angle of below 20°	0 ... 35 °C
		in case of horizontal (laying) installation	0 ... 35 °C
	Storage	-20 ... 60 °C	
Humidity	Operation	10 ... 75%, non-condensing	
	Storage	10 ... 95 %, non-condensing	
Resistance to vibration and shock	Sine	2 g, 10-500 Hz	
	Shock	15 g, 11 ms	
	Continuous shock	10 g, 16 ms	
	Free fall	from a height of 1 m (in packaging), 1 x each axis	
Protection type	Front	IP 65	
	Rear side	IP 20	
EMC/CE		Interference resistance European standard EN 61-000-6-2	
		Interference emission European standard EN 55022	

T   Technical data

T5   Interfaces

T5.1 Compact FLASH slot

In its standard configuration, the EPC devices are equipped with a Compact FLASH slot based on CFA standard (Type 1).

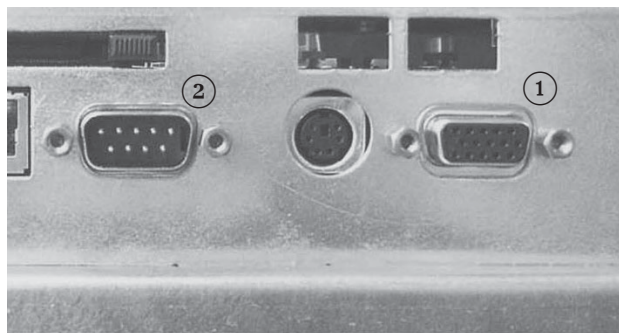Location of the Compact FLASH slot
① Ejection lever
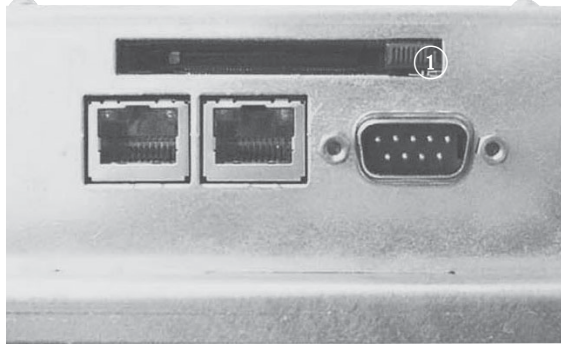
Caution!
Compact FLASH cards manufactured by SANDISK only may be used in combination with the EPC!
The compact FLASH card may be changed only when the device has been switched off !

T5.2 VGA/COM1 interface

① VGA port
② COM 1

In all standard EPC devices, the debug port is configured as a serial interface. This interface can be configured as a debug port to assist in program development.

Caution!
Com 1 is available only if it was activated by the associated software.

The serial interface has been assigned according to the PC XT/AT standard!
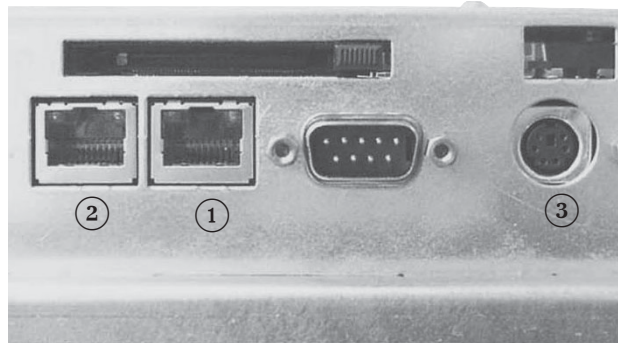
T   Technical data

T5.3 Ethernet, mouse and keyboard

①Ethernet 1 (RJ45)
②Ethernet 2 (RJ45)
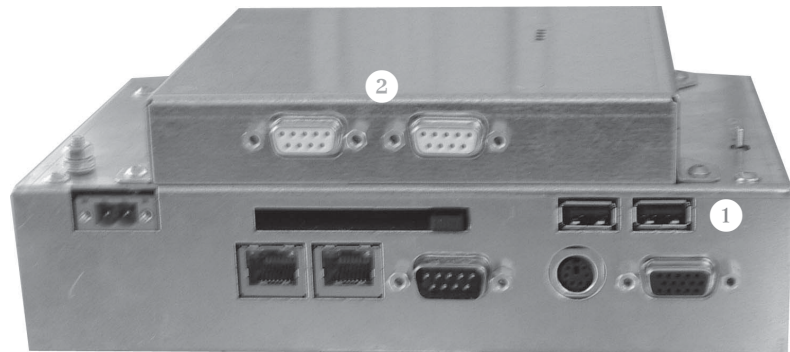③   PS2 mouse / keyboard

PS2 adapter cable for mouse and keyboard

Caution!
The PS/2 mouse and PS/2 keyboard may be plugged or unplugged only when the device is switched off.
Otherwise these input devices are not recognized by the operating system!

T   Technical data

T5.4 Cassette option and USB interfaces

① 2 x USB interface
② Bus module cassette (opt.)*

*   Depending on the type of bus module, the interfaces can vary (in preparation). If the bus module cassette has not been fitted, the rear side of the device is covered with a cover sheet.

Caution!
A maximum current of 100 mA may be drawn from the two USB interfaces! External USB devices which require a higher supply current have to provide this current themselves!

T   Technical data