*Typ3 osa*

# Software Installation

Edition 101

BOSCH
Automation

*Typ3 osa*

# Software Installation

1070 073 797-101 (00.08) GB

Software-Version: V5.1.x

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# 1 Safety Instructions

Please read this manual before starting with the Typ3 osa software installation. Store this documentation in a place to which all users have access at all times.

## 1.1 Intended use

For the intended use, please refer to the additional information listed in Section 1.6.

The products described

- have been developed, manufactured, tested and documented in compliance with the safety standards. These products pose no danger to persons or property if they are used in accordance with the handling regulations and safety notes prescribed for their configuration, installation and proper operation.
- comply with the requirements of
  - the EMC Directives (89/336/EEC, 93/68/EEC and 93/44/EEC)
  - the Low-Voltage Directive (73/23/EEC)
  - the harmonized standards EN 50081-2 and EN 50082-2
- are designed for operation in industrial environments (emission class A), i.e.
  - no direct connection to public low-voltage power supply,
  - connection to the medium- or high-voltage system via a transformer.

  In residential environments, in trade and commerce as well as small enterprises class A equipment may only be used if it does not inadmissibly interfere with other equipment.

☞ **This is a class A device which may cause radio interference in residential environments. In this case, the operator may be required to take suitable countermeasures and to bear the cost of the same.**

The faultless, safe functioning of the product presupposes proper transport, storage, erection and installation as well as careful operation.

## 1.2 Qualified personnel

The requirements as to qualified personnel depend on the qualification profiles described by ZVEI (central association of the electrical industry) and VDMA (association of German machine and plant builders) in:
**Weiterbildung in der Automatisierungstechnik**
**edited by: ZVEI and VDMA**
**MaschinenbauVerlag**
**Postfach 71 08 64**
**D-60498 Frankfurt**.

The present manual is designed for **project engineers and PC specialists.** They require special knowledge of the Windows™ graphical user interfaces and network configurations.

Programming, start and operation as well as the modification of programs or program parameters may only be performed by properly trained personnel! This personnel must be able to judge potential hazards arising from programming, program changes and in general from the mechanical, electrical, or electronic equipment.

Interventions in the hardware and software of our products, unless described otherwise in this manual, are reserved to our specialized personnel.

Tampering with the hardware or software, ignoring warning signs attached to the components, or non-compliance with the warning notes given in this manual may result in serious bodily injury or material damage.

Only electrotechnicians as recognized under IEV 826-09-01 (modified) who are familiar with the contents of this manual may install and service the products described.

Such personnel are

- those who, being well trained and experienced in their field and familiar with the relevant standards, are able to analyze the work to be carried out and recognize any hazards.
- those who have acquired the same amount of expert knowledge through years of experience that would normally be acquired through formal technical training.

Please note our comprehensive range of training courses. Our training center will be pleased to provide you with further information,
telephone: +49 (0) 6062 78-258.

## 1.3 Safety markings on products

Warning of dangerous electrical voltage!

Warning of danger caused by batteries!

Components sensitive to electrostatic discharge!

Warning of hazardous light emissions (optical fiber cable emissions)

Disconnect from mains before opening!

Pin for connecting PE conductor only!

Connection of shield conductor only

## 1.4 Safety instructions in this manual

**DANGEROUS ELECTRICAL VOLTAGE**
This symbol is used to warn of a **dangerous electrical voltage.** The failure to observe the instructions in this manual in whole or in part may result in **personal injuries**.

**DANGER**
This symbol is used wherever insufficient or lacking compliance with instructions may result in **personal injury**.

**CAUTION**
This symbol is used wherever insufficient or lacking compliance with instructions may result in **damage to equipment or data files**.

☞ This symbol is used to draw the user's attention to special circumstances.

★ This symbol is used if user activities are required.

## 1.5 Safety instructions concerning the product described

**DANGER**
**Danger of life through inadequate EMERGENCY-STOP devices!**
**EMERGENCY-STOP devices must be active and within reach in all system modes. Releasing an EMERGENCY-STOP device must not result in an uncontrolled restart of the system!**
**First check the EMERGENCY-STOP circuit, then switch the system on!**

**DANGER**
**Incorrect or undesired axis movement!**
**First, new programs should be tested carefully without axis movement! For this purpose, the control unit offers the possibility of inhibiting axis movements and/or auxiliary function outputs by appropriate softkeys in the 'automatic' group operating mode.**

**DANGER**
**Incorrect or undesired control unit response!**
**Bosch accepts no liability for damage resulting from the execution of an NC program, an individual NC block or the manual movement of axes!**

**Furthermore, Bosch accepts no liability for consequential damage which could have been avoided by programming the PLC appropriately!**

**DANGER**
**Retrofits or modifications may adversely affect the safety of the products described!**
**The consequences may include severe injuries, damage to equipment, or environmental hazards. Possible retrofits or modifications to the system using third-party equipment therefore have to be approved by Bosch.**

**DANGEROUS ELECTRICAL VOLTAGE**
**Unless described otherwise, maintenance works must be performed on inactive systems! The system must be protected against unauthorized or accidental reclosing.**

**Measuring or test activities on the live system are reserved to qualified electrical personnel!**

**DANGER**
**Tool or axis movements!**
**Feed and spindle motors generate very powerful mechanical forces and can accelerate very quickly due to their high dynamics.**

- **Always stay outside the danger area of the machine when it is running!**
- **Do not ever deactivate the safety-relevant functions of the unit!**
- **Report any malfunction of the unit to your servicing and repairs department immediately!**

**CAUTION**
**Use only spare parts approved by Bosch!**

**CAUTION**
**Danger to the module!**
**All ESD protection measures must be observed when using the module! Prevent electrostatic discharges!**

The following protective measures must be observed for modules and components sensitive to electrostatic discharge (ESD)!

- Personnel responsible for storage, transport, and handling must have training in ESD protection.
- ESD-sensitive components must be stored and transported in the prescribed protective packaging.
- ESD-sensitive components may only be handled at special ESD-workplaces.
- Personnel, working surfaces, as well as all equipment and tools which may come into contact with ESD-sensitive components must have the same potential (e.g. by grounding).
- Wear an approved grounding bracelet. The grounding bracelet must be connected with the working surface through a cable with an integrated 1 MΩ resistor.
- ESD-sensitive components may by no means come into contact with chargeable objects, including most plastic materials.
- When ESD-sensitive components are installed in or removed from equipment, the equipment must be de-energized.

## 1.6 Documentation, software release and trademarks

### Documentation

The present manual provides the user with information concerning the installation of the software on the Typ3 osa and the PC control panel.

| Overview of available documentation | Part no. | |
|---|---|---|
| | German | English |
| Interface conditions<br>for project engineering and maintenance | 1070 073 704 | 1070 073 736 |
| Operating instructions<br>Standard operator interface | 1070 073 726 | 1070 073 739 |
| Operating instructions – Diagnostics Tools | 1070 073 779 | 1070 073 780 |
| DIN programming instructions<br>for programming to DIN 66025 | 1070 073 725 | 1070 073 738 |
| CPL programming instructions | 1070 073 727 | 1070 073 740 |
| ICL700 system description,<br>Program structure of the integrated PLC | 1070 073 706 | 1070 073 737 |
| ICL700 project planning manual,<br>software interfaces and CNC interface signals of the integrated PLC | 1070 073 728 | 1070 073 741 |
| MACODA<br>Operation and configuration of the machine parameters | 1070 073 705 | 1070 073 742 |
| Tool Management – Parameterization | 1070 073 782 | 1070 073 793 |
| Software PLC<br>Development environment for Windows NT | 1070 073 783 | 1070 073 792 |
| Measuring cycles for<br>touch-trigger switching probes | 1070 073 788 | 1070 073 789 |
| Universal Milling Cycles | – | 1070 073 795 |
| Software Installation | 1070 073 796 | 1070 073 797 |

☞ **In this manual the floppy disk drive is always drive 'A' and the hard disk drive is always drive 'C'.**

Special keys or combinations of keys are represented by pointed brackets:

- Special keys: e.g. <enter>, <pgup>, <del>
- Key combinations (pressed simultaneously): e.g. <ctrl> + <pgup>

## Release

☞ **This manual refers to the following version:**
**Software: V5.1.x**

The current release number of the individual software modules can be viewed by selecting the 'Control-Diagnostics' softkey in the 'Diagnostics' group operating mode.

The software version of Windows95 or WindowsNT may be displayed as follows:

1. Click with right mouse key on the "My Computer" icon on your desktop
2. Select menu item "Properties".

## Modifications

Modifications in the present manual as compared to the previous edition are marked by black vertical bars in the margin.

This symbol is used in illustrations to call your attention to any modifications made.

## Trademarks

All trademarks of software installed on Bosch products upon delivery are the property of the respective manufacturer.

Upon delivery, all installed software is copyright-protected. The software may only be reproduced with the approval of Bosch or in accordance with the license agreement of the respective manufacturer.

MS-DOS® and Windows™ are registered trademarks of Microsoft® Corporation.

PROFIBUS® is a registered trademark of PROFIBUS Nutzerorganisation e. V.

SERCOS interface® is a registered trademark of Interessengemeinschaft SERCOS interface e.V.

# 2 Overview

## 2.1 Software package

The Typ3 osa software package contains the following:

- software for the Typ3 osa control unit
- software for the control panels:
  - PC control panel (PC-Panel GUI)
  - Control terminals BT150, BT200, BT250
  - IPC with separate control panel
- updates for Bosch application software
- additional software programs for X-Window integration (Exceed 5.1), Y2K Update for Windows 95 / NT 4.0
- documentation, release notes for various Bosch applications
- MS Internet Explorer, Adobe Acrobat Reader for Bosch user documentation

The installation is

- **user-friendly:** menu-guided installation, utility programs for configuration and data back-up
- **with network support:** integrated network access through Ethernet and TCP/IP support

## 2.2 Installation procedure

The steps required for the installation depend on the installation environment and the concrete demand:

- **Hardware components**

  An external CD-ROM drive is required for the installation.
  An integrated CD-ROM drive is only available if the IPC with a separate control panel is used as control panel (cf. ”Special case IPC” table on page 2–4).

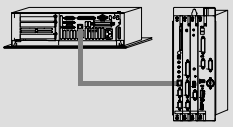
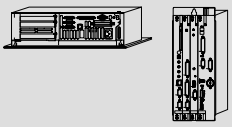
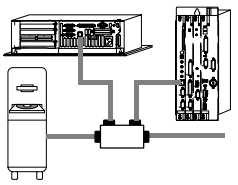
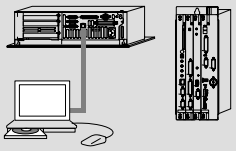
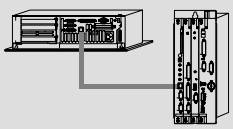
- **Network integration**

  For standard installation without network integration, refer to shaded column in table on 2–3.
  Software installation with network integration available as alternative

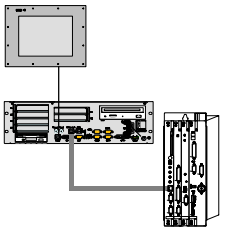
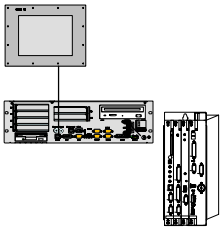
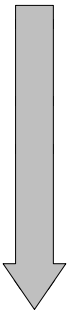
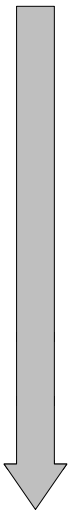
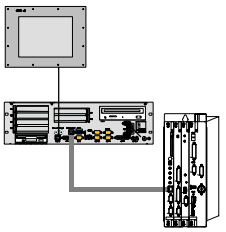
- **Software update**

  Typ3 osa and the control panel PC have been equipped with the complete software necessary for operation in the factory.
  Therefore, a software installation is limited to updating the existing software.

## Overview of software installation

| | Without network integration | | With network integration | | Section |
|---|---|---|---|---|---|
| | Software update | Software update after components change | Software update | Software update after components change | |
| Existing hardware configuration |  |  |  | | |
| **1. Installing the software on the PC** | | | | | |
| | Save Typ3 osa data | – | Save Typ3 osa data | – | 4.2 |
| | – | | Connect CD-ROM drive to the network | | 3.3.2 |
| | Establish Ethernet link between laptop computer with CD-ROM drive and control panel. Unplug control panel from osa master module, if necessary.  | | – | | 3.3.1 |
| | Laptop computer: Set TCP/IP address | | – | Control panel: Set TCP/IP address | 4.3 6.2 |
| | Install Exceed | | Install Exceed | | 4.4 |
| | Y2K update for Windows 95; for old installations made before 1/1/2000 | Y2K update for Windows 95 / Windows NT | Y2K update for Windows 95; for old installations made before 1/1/2000 | Y2K update for Windows 95 / Windows NT | 4.5 |
| | Invoke Setup on CD-ROM | | Invoke Setup on CD-ROM | | 4.6 |
| **2. Installing the software on Typ3 osa** | | | | | |
| | Establish Ethernet link between control panel and Typ3 osa  | | – | | 3.3.1 |
| | – | | – | Typ3 osa: Set TCP/IP address | 5.1.1 |
| | Download the osa master software | | Download the osa master software | | 4.7 |
| | RESET | | RESET | | 4.8.1 |
| | Restore data | Load old backup data | Restore data | Load old backup data | 4.8.2 |

## Special case: software installation with IPC and an integrated CD-ROM drive

| | Without network integration | | Section |
|---|---|---|---|
| | Software update | Software update after components change | |
| Existing hardware configuration |  |  | 3.3.3 |
| **1. Installing the software on the PC** | | | |
|  | Save Typ3 osa data | – | 4.2 |
| | IPC: Set TCP/IP address | | 6.2<br>4.3 |
| | Install Exceed | | 4.4 |
| | Y2K update for Windows 95; for old installations made before 1/1/2000 | Y2K update for Windows 95 / Windows NT | 4.5 |
| | Invoke Setup on CD-ROM | | 4.6 |
| **2. Installing the software on Typ3 osa** | | | |
|  | Establish Ethernet link between IPC and Typ3 osa  | | 3.3.1 |
| | Download the osa master software | | 4.7 |
| | RESET | | 4.8.1 |
| | Restore data | Load old backup data | 4.8.2 |

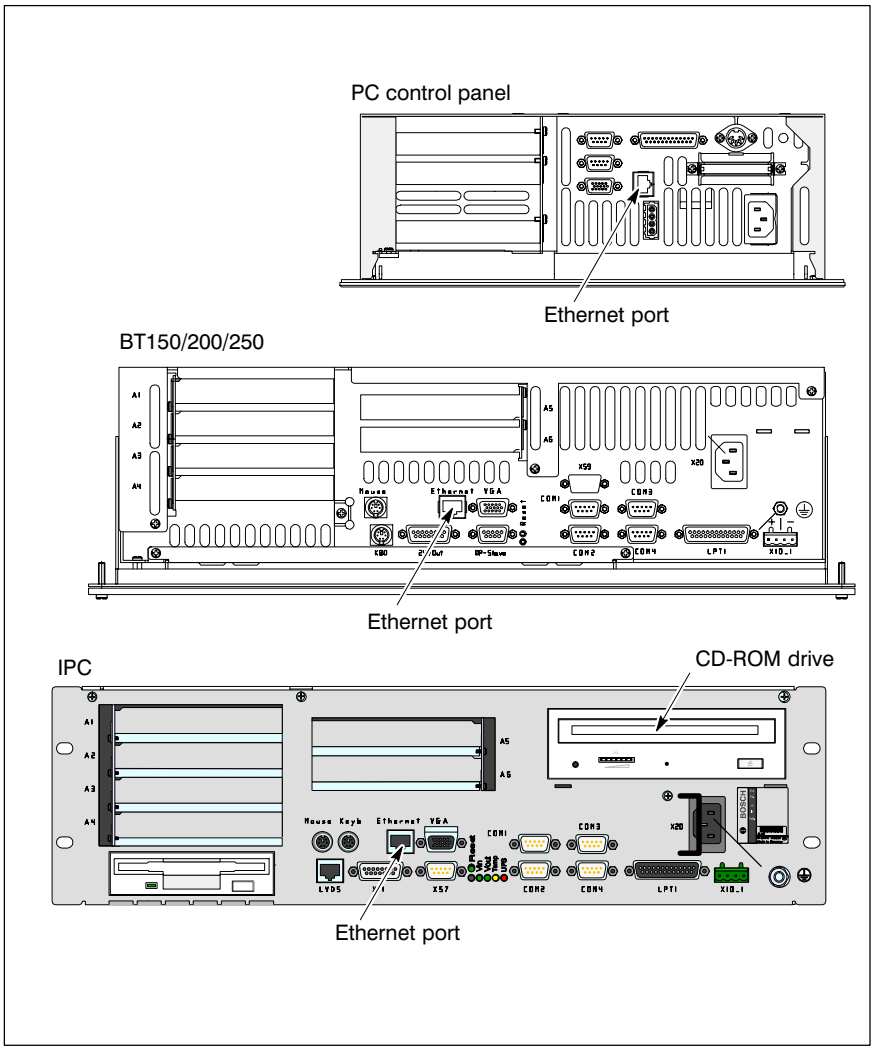
# 3 Hardware components

☞ **For detailed hardware descriptions, please refer to the ”Typ3 osa”, ”BT150/BT200/BT250” and ”IPC” interface conditions.**

## 3.1 Control panel PC

The ”SW OSA3 V5.x.x” software release can be installed on the following systems:

- **PC control panel** (Typ3 osa control panel)
- **Control terminals BT150, BT200, BT250**
- **IPC** with separate control panel



## Interfaces

All of the systems listed above offer the following interfaces

- an X52 Ethernet network port for data transfer (10 Mbits/s) between the control panel PC and the osa master module
- at least one free serial COM port (X34 or X35) for backup operations if the ”NCTAR” program is used!

Furthermore, **IPC** is equipped with

- an integrated CD-ROM drive

## Software

One of the following operating systems including the Y2K service pack has already been installed in the factory on all Bosch control panels:

- Windows 95
- Windows NT 4.0

The PC control panel furthermore already contains the necessary application software ex works:

- SW OSA3 V5.1.x (including Typ3 osa configuration software)
- Exceed

If no software is available on the control panel, the PC should have at least the following free hard disk space:

- at least 120 MB for installing ”SW OSA3 V5.1.x” (approx. 80 MB) and Exceed (approx. 40 MB)
- at least 200 MB for installing Service pack 5 for Windows NT 4.0 and the ”SW OSA3 V5.1.x”
- at least 125 MB for installing the Y2K Service pack (approx. 2 MB) for Windows 95 and the ”SW OSA3 V5.1.x” software.

## 3.2 osa master module

☞ **An osa master module with at least 12 MB of FEPROM memory capacity is required for the osa master software release V5.1.x or higher.**

The following osa master modules meet this requirement at the moment:
Part no. 1070 080396, 1070 080397 and 1070 080399

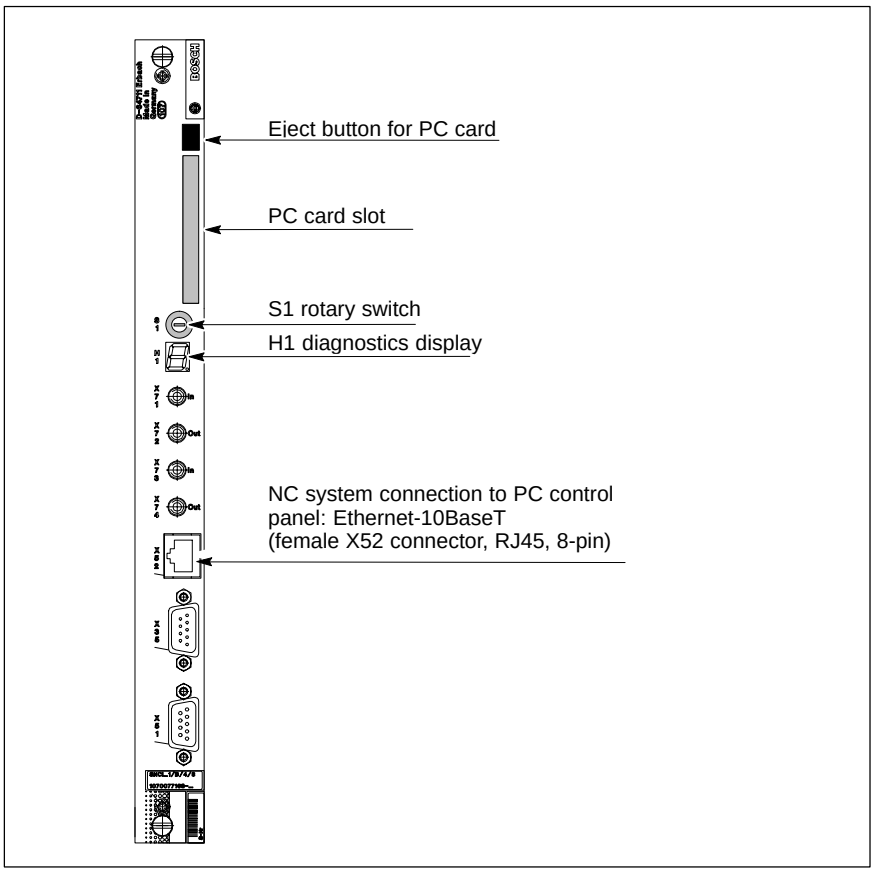
### Interfaces, control elements

The **osa master module** is equipped with

- an X52 Ethernet network port (10 Mbits) for data transfer to the control panel PC
- rotary switch S1: Position ”0” for run mode and software update
- PC Card Slot: for PC card containing monitor program
  (by reading the monitor program from the osa master module, the so-called ”Monitor” is generated on a PC card inserted into this slot).

### Operating system

Bosch Typ3 osa Software V5.1.x, pre-installed




☞ **For more technical information on the interfaces, please refer to the Typ3 osa interface conditions.**

## 3.3 CD-ROM drive

In order to perform the installation from a CD, the control panel PC must have access to a CD-ROM drive.

Therefore, an external laptop computer or a network PC including a CD-ROM drive and

- network adapter with RJ45 connector
- Windows 95 or Windows NT
- TCP/IP protocol (possibly also NetBEUI protocol) for data exchange within the network
- file and printer releases installed

has to be available.

The IPC has an integrated CD-ROM drive. No additional measures have to be taken.

### 3.3.1 External CD-ROM drive without network integration

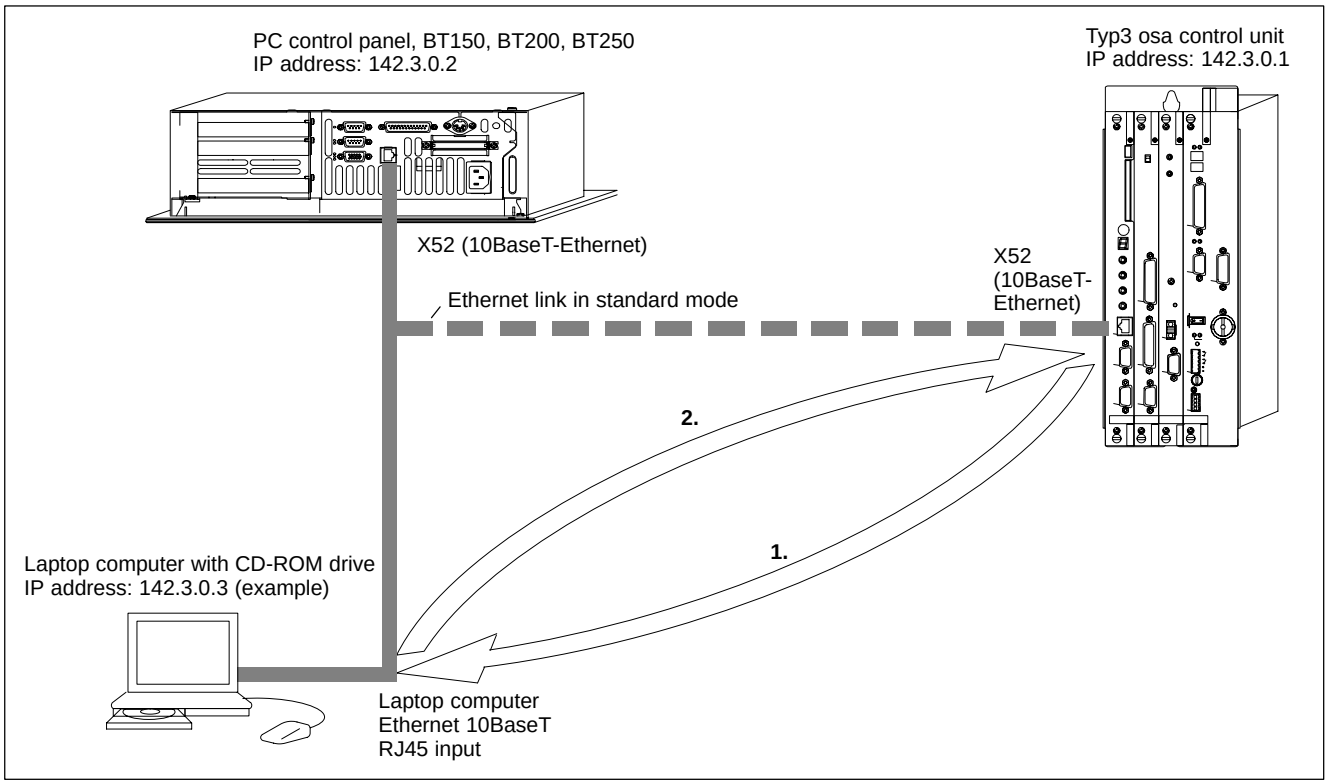
1. Disconnect the Ethernet cable between the control panel and the Typ3 osa from port X52 of the osa master and connect it to the laptop computer (with a CD-ROM drive).

   In order to access the CD-ROM drive,
   - the IP address of the laptop computer is adjusted to the preset IP address of the control panel
   - the CD-ROM drive of the laptop computer is enabled (refer to section 6.3)
   - the network link to the CD-ROM drive is activated in the control panel PC (refer to section 6.4).

☞ **The first part of the installation is performed via this link, i.e. loading of the ”Typ3 osa configuration software and other components” to the control panel PC.**

2. When the software installation on the control panel PC has been completed, restore the Ethernet link between the control panel PC and the osa master module.

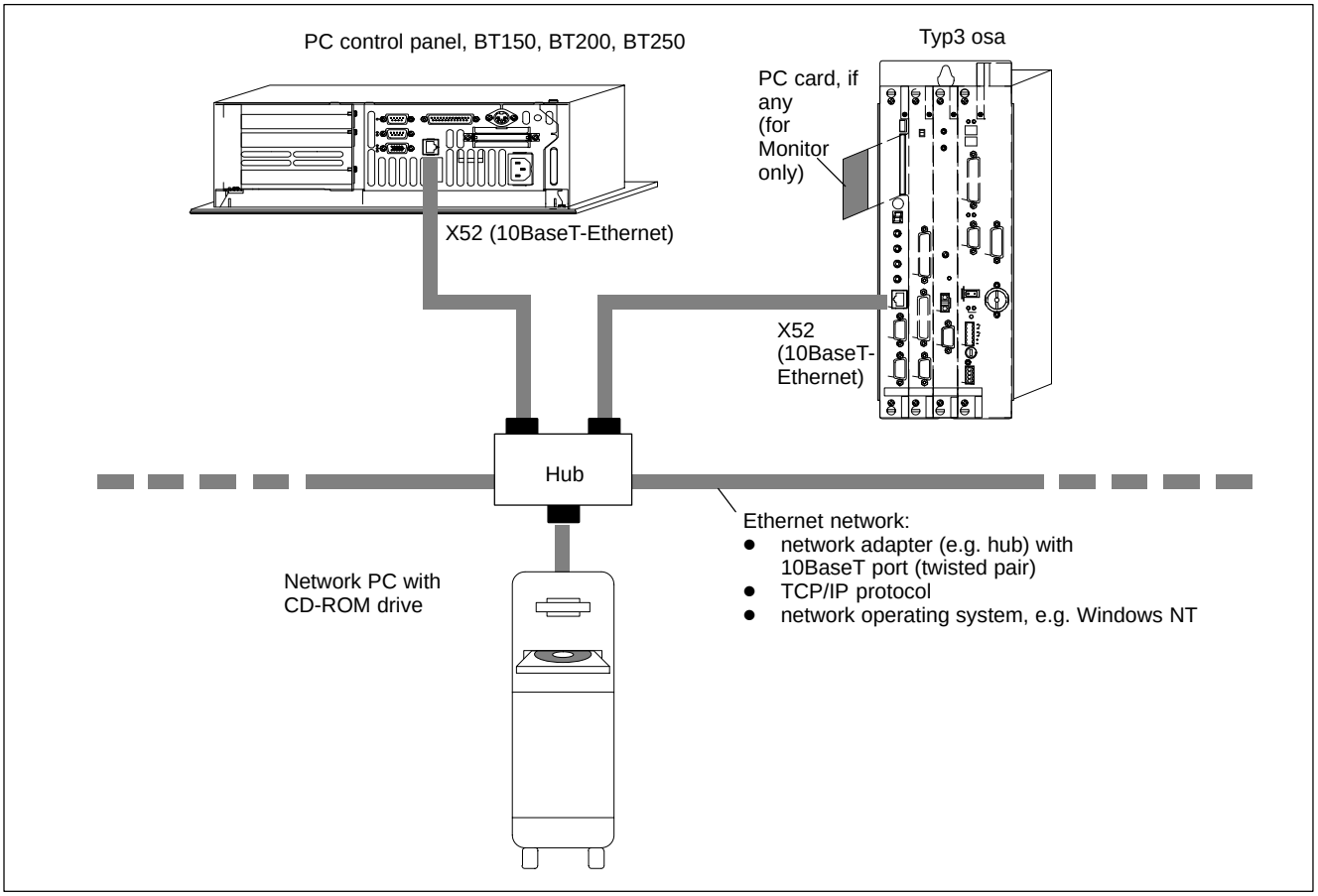
☞ **The second part of the installation is performed via this link, i.e. loading of the Typ3 osa software to the osa master module. The required IP addresses have already been set to suitable values.**


PC control panel, BT150, BT200, BT250
IP address: 142.3.0.2
Typ3 osa control unit
IP address: 142.3.0.1
X52 (10BaseT-Ethernet)
Ethernet link in standard mode
X52
(10BaseT-
Ethernet)
2.
1.
Laptop computer with CD-ROM drive
IP address: 142.3.0.3 (example)
Laptop computer
Ethernet 10BaseT
RJ45 input

## 3.3.2 External CD-ROM drive in the network

The control panel PC and the Typ3 osa are integrated into an existing **network** through Ethernet links and the TCP/IP protocol. For this purpose, Ethernet cables are connected between the control panel PC and the osa master module, respectively, and a network hub.

Since the installation is performed via the existing Ethernet network, this is a particularly efficient method of transmitting the software to the individual Typ3 osa control units. A PC or a control panel may be defined as **central** control station for the software download.




A network PC with a CD-ROM drive in the Ethernet network, Windows NT 4.0 operating system, is **absolutely necessary** for the software installation. ”Administrator privileges” are required to install the Typ3 osa software under Windows NT!

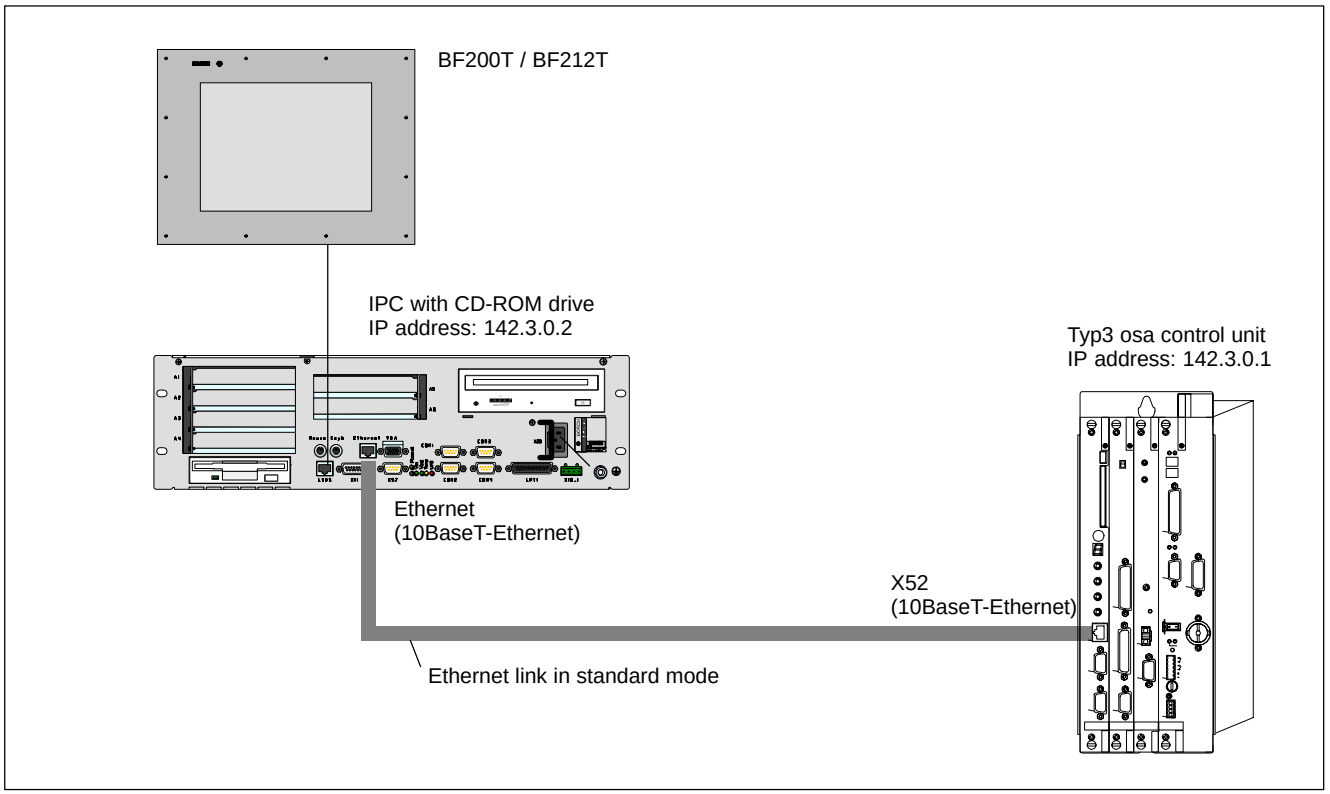
The network settings are made by the network administrator, for details, refer to the Windows NT documentation.

**The following settings and definitions must be made:**

- match the IP addresses of the control panel PC and the osa master module to the network address
- if necessary, define joint domain or workgroup for the network stations
- define shared resources (sharing folders) with the participating stations (cf. section 6.3)
- define shared CD-ROM network drive (cf. section 6.4)

### 3.3.3 Special case: IPC with integrated CD-ROM drive

The software can be installed **directly** from the CD in the IPC's integrated CD-ROM drive. For this purpose, the IP address of the IPC has to be set to the default IP address of Typ3 osa.



Notes:

# 4 Software installation

## 4.1 Overview of software programs

The following table shows an **overview of the software programs** that can be installed and the access path of the individual setup routines on the CD.

☞ **In the example, it is assumed that the CD-ROM drive is accessed with drive letter ”D”.**

| Type | Software name | Used for | Installed on: | Start with program name (CD) |
|---|---|---|---|---|
| **X-Window Server** | Exceed | X-Server for Typ3 osa application | Control panel PC | **Setup** in the D:\Exceed51\W95 folder on the CD |
| **MS-Windows Y2k update** | Windows 95 Year 2000 update; service pack 5 for windows NT 4.0 | Year 2000 capability | Control panel PC | D:\y2k\w95y2kde.exe D:\y2k\sp5gr.exe on the CD |
| **Typ3 osa software** | **Typ3 Configuration** | Configuration program for Typ3 osa, set TCP/IP, loading program for the osa master software | Control panel PC | **Setup** in the D:\V5xx\PCP\Disk1 folder on the CD |
| | PLC software | PLC operating software | osa master or ICL 700 | automatically with ”Typical” setup type |
| | CPL cycles, other cycles | Cycles for the Typ3 osa application program | osa master and control panel PC | automatically with ”Typical” setup type |
| | CPL debugger | Debugging of CPL programs | Control panel PC | Call up **Setup** in the D:\V5xxx\PCP\Disk1 folder and activate the ”CPL Debugger” option in the ”Custom” setup type |
| | **Typ3 osa master** | Control software | osa master | Call up **Download Typ3 osa** in the T3Config program on the control panel PC |
| | Documentation | Control documentation in PDF format | Control panel PC | automatically with ”Typical” setup type |
| | Logbook | Logging of system events | Control panel PC | Call up **Setup** in the D:\V5xxx\PCP\Disk1 folder and activate the ”Logbook” option in ”Custom” setup type |
| **Cycle update** | e.g. drilling | Updating the CPL drilling cycle of Typ3 osa | Control panel PC | e.g. **Bohren.exe** in the D:\Cycles folder on the CD |
| **User software** | other | User-specific software, such as APS modules, etc. | osa master or control panel PC | User-specific setup for Profi software and WinSPS |

☞ **For installation procedure, refer to overview on page 2–2ff.**

## 4.2 Data backup

**CAUTION**
**Loss of data.**
**Backup your data prior to a software update.**

In order to be able to restore all original system functions after a software update, the programs, user functions and settings installed or made for the entire system have to be carefully logged prior to the update.

### 4.2.1 PLC program backup

The current PLC program is backed up using **WinSPS**, the Bosch PLC user program. This program is usually run on a project computer (e.g. laptop computer).

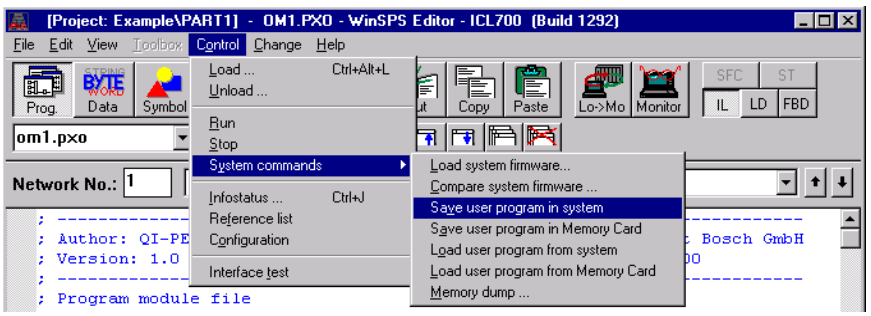
The backup will be stored

- on the project computer
  and/or
- in the **user FEPROM** of the osa master module

☞ **For this backup, the project computer must be linked to the ICL 700 port X31.**

When the backup is saved in the user FEPROM (usrfep) of the osa master module, a file named "**plcprog.bin**" is created containing the current PLC program. When a complete archive is generated as in version 5.1.x or later (cf. section 4.2.2), this file will then be saved automatically.

★ For saving the program in the user FEPROM, select the following function from the "WinSPS" program editor
CONTROL ▶ SYSTEM COMMANDS ▶ **SAVE USER PROGRAM IN SYSTEM**



## 4.2.2 Generating a complete archive in V5.1.x or higher

The user and system data of Typ3 osa to be saved is **archived** and copied to an **external folder**. This folder may exist on a hard disk of the control panel PC or on a data carrier of a network PC.

The complete archive function available in V5.1.x and higher **archives** the following data:

- RAM file system (files and folders in the RAM memory)
- user FEPROM (usrfep file system including ICL user program, if available)
- values of permanent CPL variables
- tool tables (from data base)
- MACODA parameters (from data base)
- non-volatile data modules and flags of the soft PLC

The archive **does not include:**

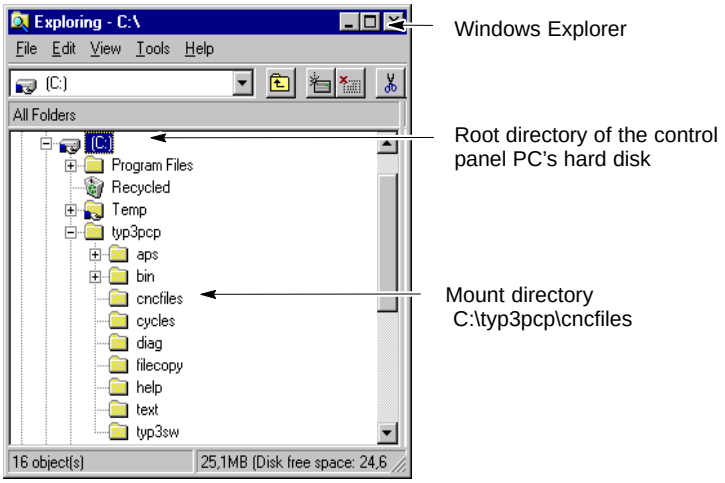
- various system files such as GESDAT_VW, PRINTC, DBSYSERR.DAT, etc.
- all files stored in the /dev folder
- all files stored in mounted NFS file systems
- all files stored in the FEPROM file system

### Requirement

Access to an external mnt folder in the Typ3 osa file system because the archive is generally saved in the mnt folder only.

**Standard path**:
c:\typ3pcp\cncfiles on the hard disk of the control panel PC

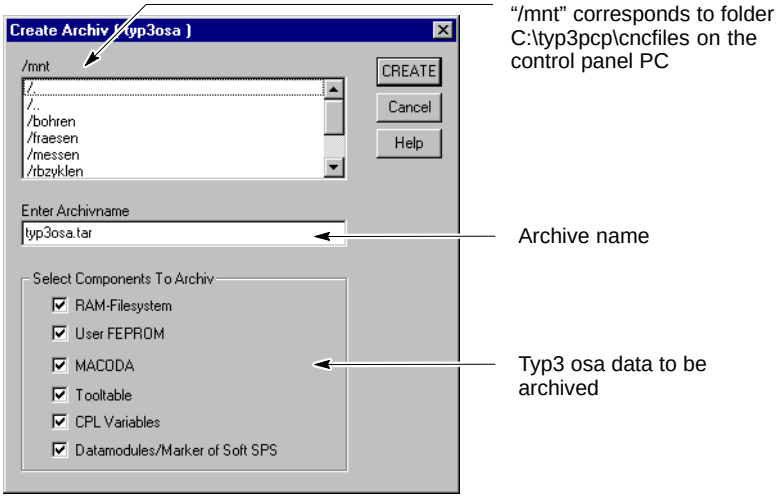
Example:
Mount folder name on the Typ3 osa control panel GUI: **/mnt**
Related folder on the hard disk: **c:\typ3pcp\cncfiles**



## Archivation using T3Config

★ At the Windows level, select
START ▶ PROGRAMS ▶ BOSCH PC-PANEL▶**TYP3 CONFIGURATION**

Call up the UTILITIES ▶ **CREATE ARCHIVE** menu item and select the control unit (e.g.: typ3osa) whose data is to be saved:




★ Enter a name for the archive to which the backup data of Typ3 osa is to be saved.

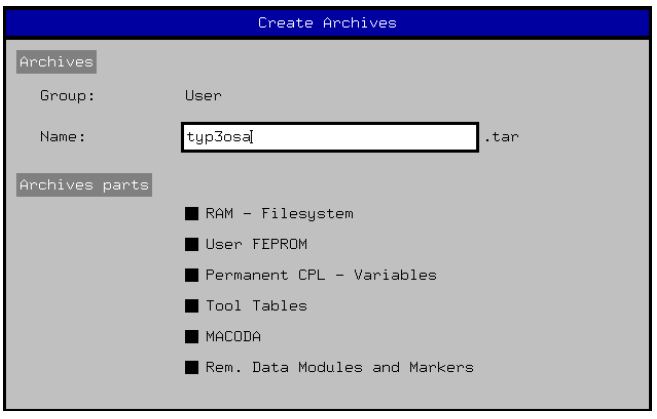
The backup data will be saved in the specified archive (with the ".tar" extension).

★ Mark the components to be saved (default: **all**) and then start the archivation process.

## Archiving from the Typ3 osa operator interface

In V5.1.x and higher, the archive may also be generated from the Typ3 osa operator interface. This option is to be preferred if a data backup of the Typ3 osa is to be made although access to the Windows desktop is inhibited.

★ For archivation, select in the Typ3 osa operator interface:
GOM MANAGE ▶ SAVE FILES ▶ ARCHIVES ▶ CREATE ARCHIVES




Enter a name for the archive and specify whether the data shall be saved **completely** (default setting) or **selectively**.

After a software update or a hardware replacement, the data can be read selectively again from the archive (”Extract archives” SK)

### Error log

If an error occurs during the backup process, a file containing an error protocol is generated which may be viewed using a text editor or the NC editor.

Example:
Name of archive: typ3osa.tar
Name of error log file: typ3osa_c.pro

### Saving archive data

The **archives generated** by Typ3 osa should be saved on an external data medium (floppy disk, CD-ROM) or in a network folder.

☞ **This is particularly advisable if the control panel PC is to be subjected to an operating system update (e.g. Year 2000 update) for Windows 95 or Windows NT.**

### 4.2.3 Data backup up to V4.x.x

Two options are available for backing up data up to and including V4.x.x:

- ”Copy Files to PCP Filesystem” using the ”T3 Configuration” software program
- The ”nctar” and ”upload” routines

Both methods offer certain advantages and disadvantages:

| Data protection | Advantages | Disadvantages |
|---|---|---|
| Copy Files to PCP Filesystem | • The existing Ethernet link between the control panel PC and the Typ3 osa control unit is used | • The files can only be transmitted one by one to the control panel PC<br>• If many files are to be saved, the choice becomes difficult<br>• Restoring is difficult because files have to be restored to the proper folders |
| ”nctar” routine | • Entire folders are saved to a ”tar” archive<br>• Restoring files is possible by selecting ”Restore Archive” | • The following is not saved: the values of the permanent CPL variables, non-volatile data modules and flags<br>• Zero modem line required as additional link between control panel and control unit |
| ”upload” routine (only useful in connection with ”nctar”) | • Files not archived with ”nctar” are saved by this program | • Zero modem line required as additional link between control panel and control unit |

In practice, the preferred process will depend on the local conditions.

☞ **The following files will not be saved:**

- permanent CPL variables (values)
- non-volatile data modules and flags of the soft PLC
- various system files such as GESDAT_VW, PRINTC, DBSYSERR.DAT, etc.
- all files stored in the /dev folder
- all files stored in mounted NFS file systems
- all files stored in the FEPROM file system

### Backup using “Copy Files to PCP Filesystem”

★ At the Windows level, select

START ▶ PROGRAMS ▶ BOSCH PC-PANEL ▶ TYP3 CONFIGURATION ▶ UTILITIES ▶ **Copy Files to PCP Filesystem**

★ Select the files to be saved from the following folders:

- root (root directory)
- usrfep (user FEPROM)
- database
- etc (system)
- usr/mtb (machine tool manufacturer)
- usr/user

For a description of the procedure, refer to page 5–16.

☞ **When restoring files, make sure that the files are copied to the proper folders.**

### Backup using ”nctar” and ”upload”

☞ **The ”nctar” and ”upload” routines require access to the Windows GUI. For the installation of the ”nctar” and ”upload” routines, please refer to page 4–8.**

A data backup for version **V4.x.x** and lower is carried out in 3 steps:

1. Save files and folders stored in the RAM memory:
   In order to save the contents of the RAM memory, execute the following command in the DOS input field on the control panel:
   **nctar -c ram.tar**

2. Save the user FEPROM (usrfep file system including ICL user program):
   In order to save the contents of the ”User FEPROM”, execute the following command in the DOS input field on the control panel:
   **nctar -c usrfep.tar**

   Two ”nctar archives” will be generated in the control panel PC:
   - ram.tar: contains all files available in the RAM file system
   - usrfep.tar: contains the contents of the user FEPROM

3. Save tool tables (from data base):
   In order to transmit the tool tables (K..., V..) from the /database/ folder (Typ3) to the control panel PC, proceed as follows:

   ★ From the Windows GUI, select
   START ▶ PROGRAMS ▶ **MS-DOS prompt**

   ★ Select the folder for the backup files

   ★ At the DOS prompt, enter: **upload *.***

★ Change to the Typ3 osa GUI and **select** the tables with
GOM MANAGE ▶ SAVE FILES ▶ FILE TRANSFER ▶ SELECT

★ When all files and data have been selected, **start** the upload process with:
GOM MANAGE ▶ SAVE FILES ▶ FILE TRANSFER ▶ SELECT ▶ SAVE ▶ START

☞ **From the installed version V5.1.x and above, files can be restored with the help of the ”Restore Archive” tool in the ”T3 Configuration” program!**

**Installation:**
**nctar, upload routine**

☞ **For more information, please refer to the README file in the ”filecopy” folder.**

These routines require an active LSV2 protocol on the control unit side:

★ Connect a V.24 zero modem cable to X35 of the osa master module and the ”COM2” port of the control panel PC.

★ Install the programs as described in the README file (in the C:\typ3pcp\filecopy folder of your control panel PC or in the D:\Filecopy folder on the CD).

★ The X35 DNC interface (osa master) can be activated and deactivated by pressing a softkey on the Typ3 osa GUI:
GOM DIAGNOSTICS ▶ RESET FUNCTIONS ▶ LSV2-DNC

★ Check the settings in LSV2.CFG (especially the settings for the COM port).

## 4.3 Checking the TCP/IP settings

The entire data exchange between the control panel PC and the Typ3 osa is performed via the Ethernet link. TCP/IP is used as network protocol which is suitable for all Bosch Typ3 osa applications.

Since the Ethernet interface on the Typ3 osa master does not provide for dynamic access to the IP address, a fixed TCP/IP address must be allocated to the control panel PC.

☞ **New TCP/IP settings have to be made only if, in the course of a Typ3 osa software update,**

- an IP address other than 142.3.0.2 (default address used by Bosch) is desired for the control panel PC;
- several control panel PC's are connected to a company network and another control panel PC is added;
- the network address of the company network has changed;
- Windows 95 or Windows NT has been reinstalled on the control panel PC

### Without network integration

The control panel PC and the osa master module have default IP addresses for the Ethernet link between these two components:

- osa master module: 142.3.0.1
- control panel PC: 142.3.0.2

For software installation, the IP address of the laptop computer (with CD-ROM drive) has to be set to a suitable value, e.g. 142.3.0.3:

**Procedure:**

Select:
START ▶ SETTINGS ▶ CONTROL PANEL ▶ **NETWORK**
(cf. section 6.2).

☞ **When using BT150 / 200 / 250 or IPC, the IP addresses of these units also have to be adjusted.**

### With network integration

If the control panel PC and Typ3 osa are integrated into a network, the IP addresses have to be adjusted to the local network.

**Procedure:**

1. Control panel settings: refer to section 6.2
2. osa master module settings: refer to section 5.1.1

## 4.4 Installing Exceed

☞ **Installing this software is not necessary if Exceed release 5.1 is already available on the control panel PC when updating the Typ3 osa software.**

### Requirements

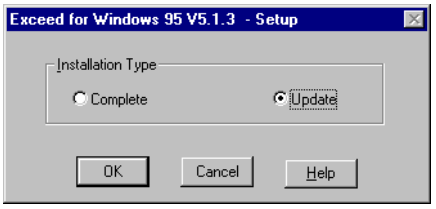
A **fixed TCP/IP address setting** is required for the control panel PC. For verification, refer to section 4.3.

### Starting the installation

★ Call up the **Setup** routine in the D:\EXCEED51\WIN95 or WINNT folder on your CD.

The software is installed

- completely (for new installation only) or
- as software update




Accept all default settings in the dialog windows and follow the instructions of the installation routine.

### Defining a password

The installation process is completed with a password query. The password is used to prevent unauthorized persons from making accidental or deliberate changes to the Exceed settings.

A password can only be defined **during** the installation process.

### Testing Exceed

When the installation has been completed, the program is automatically configured.

## 4.5 Installing service packs (Windows 95 and Windows NT 4.0)

★ Check the Windows 95 or Windows NT 4.0 GUI on the control panel PC for ”Year 2000 Capability”:

Control panel PC:

- Windows 95: for installations made prior to 01/01/2000, you should generally install the Y2k update
- Windows NT: display ”SP5 (or higher) for Windows NT installed” in the ”Blue Screen” while booting

If you have not yet performed the Y2k operating system update, you should now update your software using the Microsoft service packs supplied on the CD.

Please read the README file in the D:\Y2k folder where you will find additional general notes on the service packs.

**CAUTION**
**Microsoft strongly recommends creating a bootable disk of the Windows operating system for backup purposes before installing the service packs. For more information, please refer to your Microsoft operating system documentation.**

### Y2K update for Windows 95

☞ **Please refer to the information contained in the Y2kw95de.txt or the Y2kw95en.txt file in the D:\Y2k folder where you will find detailed installation instructions from Microsoft for the update.**

Select the language version of the Y2k update according to the language version of your Windows GUI installed.

★ **Windows 95 (German version)**:
Run the program D:\y2k\w95y2kde.exe on the CD

★ **Windows 95 (English version)**:
Run the program D:\y2k\w95y2kEn.exe on the CD

Follow the instructions during the installation process. After the installation, the control panel PC is to be re-booted in order to activate the Y2k update.

### Y2K update for Windows NT 4.0

The Y2K update is included in the installation of service pack 5.

Select the language version of the Y2k update according to the language version of your Windows GUI installed.

★ **Windows NT 4.0 (German version)**:
Run the program D:\y2k\sp5gr.exe on the Bosch CD

★ **Windows NT 4.0 (English version)**:
Run the program D:\y2k\sp5en.exe on the Bosch CD

The appropriate service pack 5 is copied to a new folder named C:\temp\sp5.

☞ **Read the information contained in the file NTsp5.htm in the C:\temp\sp5 folder where you will find detailed installation instructions from Microsoft concerning the update.**

★ Start the ”Update” routine in the C:\temp\sp5\update folder.

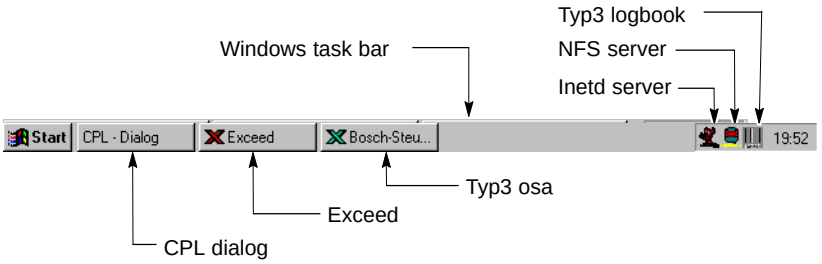
Follow the instructions during the installation process. Then re-boot the control panel PC in order to activate the Y2k update.

## 4.6 ”Setup” to the control panel PC

The Setup routine will install **all software components necessary** for Typ3 osa (e.g. T3Config etc.) on the control panel PC.

Step 1 Exiting current applications and services

Before calling up the Setup routine on the CD, all active applications and services on the control panel PC must be closed which are listed in the task bar:




### Closing applications

★ Close applications by pressing the ”**Alt + F4**” keys simultaneously.

- **Closing Bosch control TYP3 <Name of Typ3 osa>**:
  Press the **ALT + F4** keys and hit ”OK” when the message ”This will end your MMI-Application” is displayed.
- **Closing Exceed:**
  Press the **ALT + F4** keys and hit ”OK” when the message ”This will end your X Window session” is displayed.
- **Closing the CPL dialog:**
  Press the **ALT + F4** keys
- **Closing other active programs (e.g. CPL debugger):**
  Press the **ALT + F4** keys

### Closing services in Windows 95

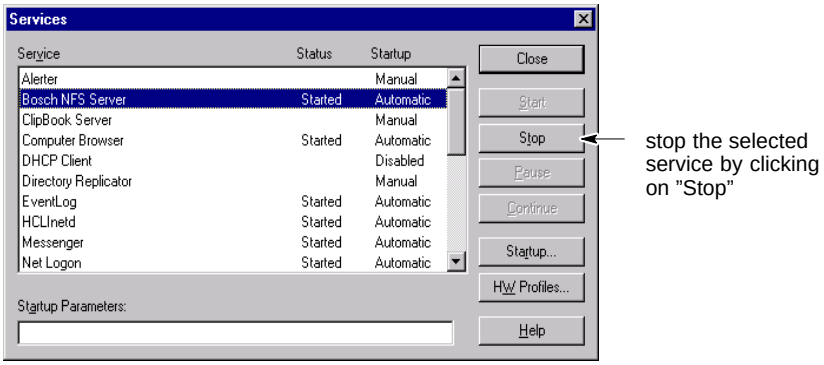
★ Closing applications with the **mouse button**:

- click with the **right** mouse button on the Typ3 NFS server icon in the task bar and select ”Exit”.
- click with the **left** mouse button on the Inetd (Inet Daemons Services) icon in the task bar and select ”Exit”.
- click with the **right** mouse button on the Typ3 logbook icon , if displayed in the task bar, and select ”Exit”.

**Closing services in Windows NT 4.0**

★ Select: START ▶ SETTINGS ▶ CONTROL PANEL ▶

**SERVICES** ▶




★ Select the following services one by one and click on "Stop" every time in order to stop the selected service:

- Bosch NFS Server
- HCLInetd (Inet Daemons Services)
- Typ3 Logbook Service, if active

Step 2 Calling up the Setup routine

For the following installation, it is assumed, for example, that a link with a CD drive with the letter D:\ has been established.

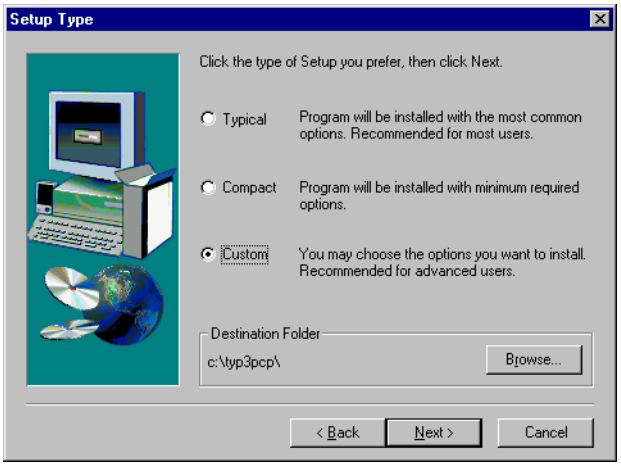
★ Insert the CD into the CD-ROM drive, start the Windows Explorer, select the "**Setup.exe**" program from the

D:\V5xxx\Pcp-bof\Disk1

folder and start it with a double-click.

The Setup routine starts the installation process and copies the necessary initialization files to the hard disk of the control panel PC.
Then, the first installation dialog is displayed for selecting the **Setup Type** and the **Destination folder**:

Step 3 Selecting Setup Type



**Destination folder**

Default folder:

C:\typ3pcp

You may also define a folder of your choice.

**Typical Setup**

You will usually select the ”Typical” option. You will be required to make a minimum number of settings, and all programs necessary for a complete update will be installed.

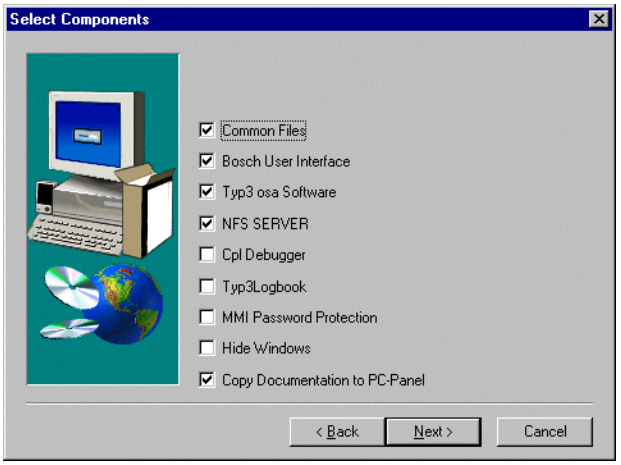
**Compact Setup**

As ”Typical Setup”, but without osa master software.

**Customer Setup**

Using the ”Customer Setup” option, you may define the components to be installed.

In this case, you have to check the components you wish to install:




| | Designation | Description |
|---|---|---|
| ✓ | Common Files | DLL’s, text files, commonly used components |
| ✓ | Bosch User Interface | T3Config, BOF, INI-Files, CPL |
| ✓ | Typ3 osa Software | osa master software |
| ✓ | NFS SERVER | File Server for Mount folder |
| | Cpl Debugger | Debugger for CPL applications |
| | Typ3Logbook | Typ3 logbook |
| | MMI Password Protection | Password protection |
| | Hide Windows | Activate access inhibition for Windows Desktop |
| ✓ | Copy Documentation to PC-Panel | Copy Typ3 osa documentation to the control panel PC |

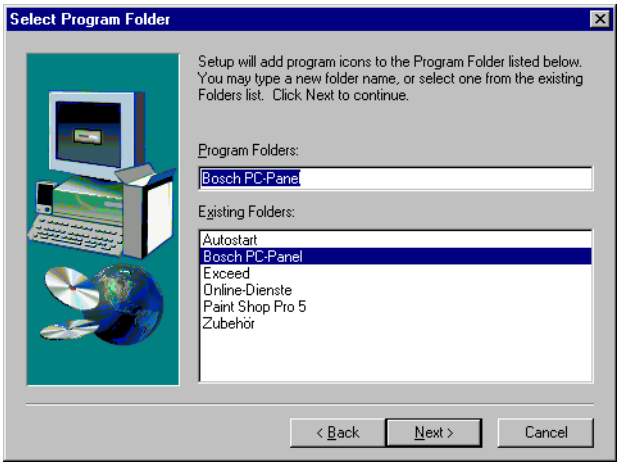
We recommend checking at least the first 3 components checked above in order to obtain an operative system.

The components checked in the table above are those included in the ”Typical Setup”.

Step 4

## Creating the ”Bosch PC-Panel” program folder

In the next step, a program folder is created from which all programs relating to Typ3 osa can be started which are available on the control panel PC. You may accept the name ”Bosch PC-Panel” proposed by the installation software.

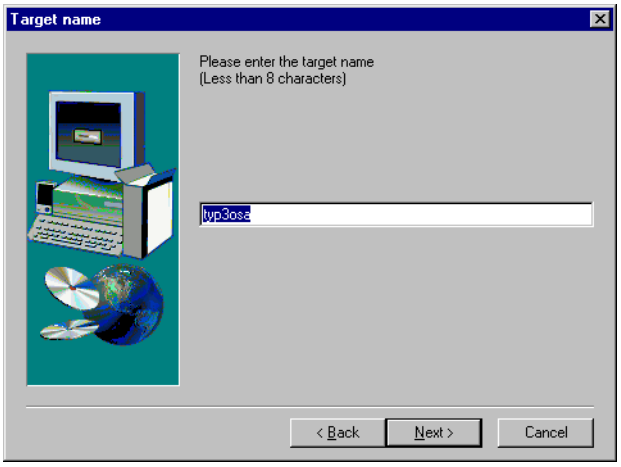



Click on ”Next” after having defined the name.

Step 5

## Naming Typ3 osa

In this step, you define the symbolic name of the Typ3 osa to which the osa master software is transferred **when the PC installation has been completed**.

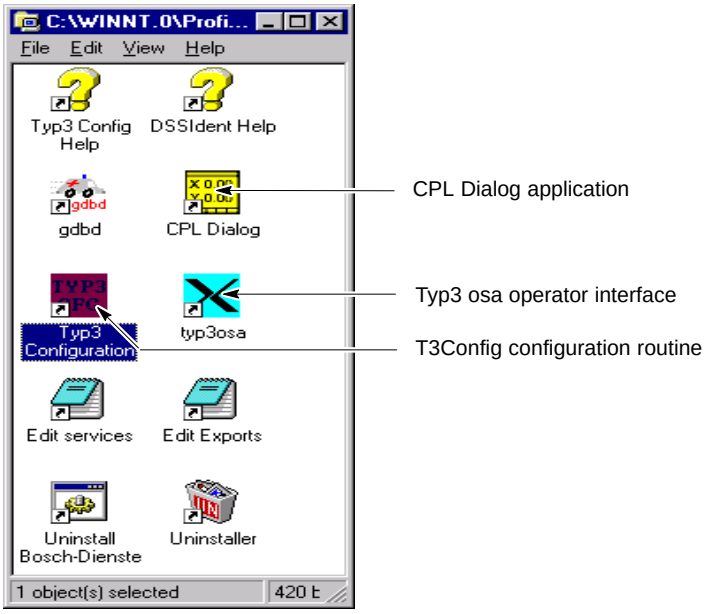



If several Typ3 osa’s are connected, you may identify every single unit by its name. The names may be changed later on using the ”T3Config” routine. (cf. section 5.1.1, TCP setup).

When a name has been changed, the IP address has to be confirmed.

The installation routine now generates the program icons as well as various information files in the ”Bosch PC-Panel” program folder.

Bosch PC-Panel program folder

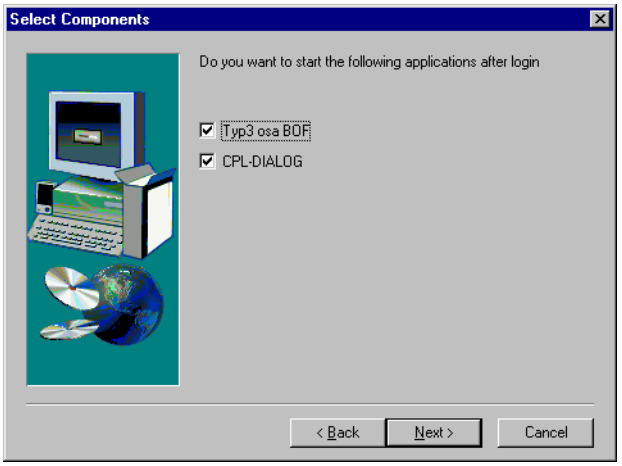



Close the ”Bosch PC-Panel” program folder to continue.

## Step 6 Defining Autostart

In the next step, you define whether the following components should be automatically started when booting:

| | Designation | Description |
|---|---|---|
| ✓ | Typ3 osa BOF | Operator interface of the Typ3 osa application |
| ✓ | CPL-Dialog | Bosch CPL dialog program |



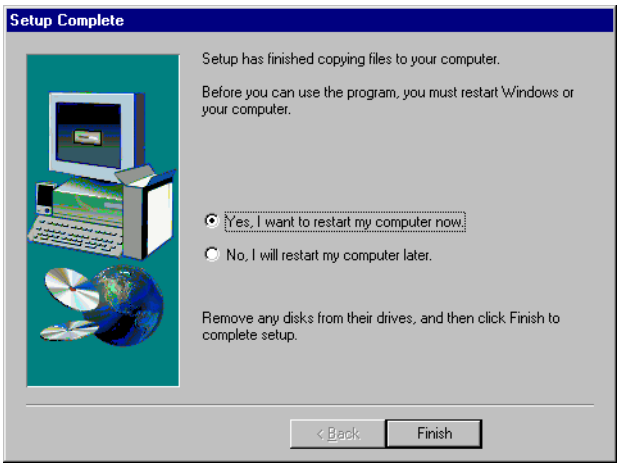

★ You should not delete the check marks unless you want your own applications to be started when booting.

Then, a message is displayed that the NFS server for mounting the directory (default: c:\typ3pcp\cncfiles) has been successfully installed on the control panel PC.

Step 7 Starting with new software

In the last installation step, you are prompted to restart the control panel PC.

★ Click on ”Finish” to exit the installation routine.




After booting, check whether the ”T3 Configuration” program can be started (also refer to section 5).

## 4.7 ”Download” to Typ3 osa

For the download, the control panel PC and an osa master module have to be linked via the Ethernet (cf. section 3.3).
Use the ”Typ3 Configuration” program (cf. section 5.2) for configuring other Typ3 osa control units connected via a network.

☞ **For the installation of the osa master software release V5.1.x or higher, an osa master module with a minimum of 12 MB EPROM memory is necessary.**

### Switch position S1

**S1 = 0**
Default setting for the software update, also after replacement of control components.

**S1 = B**
Only if the battery on the osa master module is empty and no software is available on the module any more.
This may be the case, e.g., when the module has been stored for a long period of time without power supply.

Step 1 Setting the TCP/IP of the osa master

### Without network integration

The control panel PC and the osa master module have default IP addresses for the Ethernet link between these two components:

- osa master module: 142.3.0.1
- control panel PC: 142.3.0.2

The IP addresses need not be changed.

### With network integration

If the control panel PC and Typ3 osa are integrated into a network, the IP addresses have to be adjusted to the local network.

★ Select:
START ▶ PROGRAMS ▶ BOSCH PC-PANEL ▶ **TYP3 CONFIGURATION**

★ Set the IP address of the osa master module by selecting T3CONFIG ▶ **TCP Setup**  . For a description of the procedure, refer to section 5.1.1).

Step 2 Download settings

★ If the Typ3 Configuration program has not yet been opened, select:

START ▶ PROGRAMS ▶ BOSCH PC-PANEL ▶ **TYP3 CONFIGURATION**

For the settings and subsequent download, select:

T3SWCONFIG ▶ **DOWNLOAD PCP->TYP3** 

★ Select the name of the osa master from the list box of the ”Typ3 Name” dialog box.

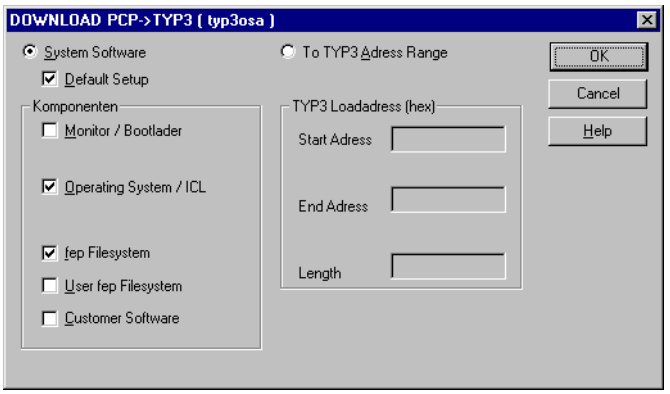
---

**CAUTION**
**Loss of data.**
**The list box of the ”Typ3 Name” dialog box may contain several osa master names. When the loading process of the Typ3 osa software has already started, mistaking the Typ3 name of networked control units will lead to a data loss of this control unit.**

---

Then the ”Download PCP –> TYP3” dialog window will be opened.

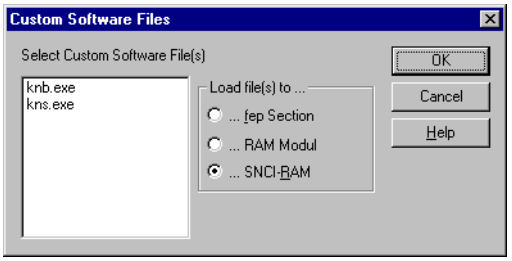
★ Check the components you want to install.
We recommend selecting the ”Default Setup” setting.



| | Designation | Description |
|---|---|---|
| ● | System Software | Selection of system software for the osa master |
| ✓ | Default Setup | Preselection of components:<br>– Operating system / ICL<br>– fep file system |
| | Monitor / Bootlader | The monitor and boot loader program for special cases. **Do not select:** if the transmission is interrupted, e.g., by a power failure, communication is no longer possible. |
| ✓ | Operating System / ICL | Operating program for the osa master module and ICL 700 |
| ✓ | fep Filesystem | Generate fep file system |
| | User fep Filesystem | **Do not select** because special configuration files for SERCOS, ICL applications, network, machine parameters (for laboratory operation) are contained here! |
| | Customer Software | Load customer-specific software |

Customers with a ”Bosch development system” have the opportunity of installing ”Customer Software”. In this case you should select the files to be loaded with the space bar:

- knb.exe
- kns.exe (for soft PLC)
- ops.exe




Especially for **testing your own applications**, you should only check the ”Customer Software” option in the DOWNLOAD PCP–>TYP3 dialog box. The loading times will become much shorter. Furthermore, you may define the memory area of the osa master module to which the files are to be loaded.

| | Installation variant | Note |
|---|---|---|
| ○ | fep Section | FLASH memory (patch area) on the osa master module |
| ○ | RAM Modul | PC-Card (only if PCMCIA card has been plugged into the osa master module) |
| ● | SNCI-RAM | osa master DRAM memory |

Step 3 Starting the download

★ When you have selected the components, click on ”OK”.

Then the process of loading the Typ3 osa software from the control panel PC to the osa master module is started.

☞ **It takes approx. 30 minutes to load the Typ3 osa software !**

When the loading process has been completed, Typ3 osa is not yet ready:

- The ”Ready” LED on the osa dc interface module is **off**
- Display H1 on the osa master module shows an ”A” (= monitor mode, i.e. the ”monitor” program that controls the communication with the control panel PC via the Ethernet is running on the osa master)

For getting the unit Ready for operation, refer to section 4.8.

## 4.8 Getting Typ3 osa ready for operation

### 4.8.1 Starting Typ3 osa

Step 1 Getting Typ3 osa ready for operation

**Starting after update**

★ Confirm with the ”RESET” key on the osa dc interface module or press 

(RESET) in the ”T3Config” program.

The correct start-up of the control unit is indicated by:

- ”Ready LED” on the osa dc interface module is lit, i.e. Ready signal of the control unit is available.
- H1 on the osa master module shows a horizontal line.

☞ **An intact Ethernet link between the control panel PC and the Typ3 osa is indicated by a point flashing in irregular intervals in the lower right corner of the H1 display on the osa master module.**

**Starting after download with S1 = B**

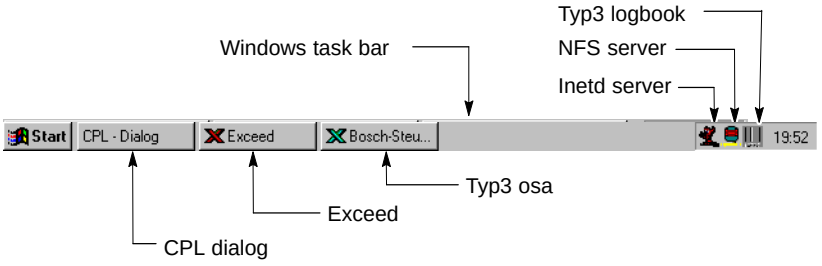
If the control unit has been programmed with switch position ’B’, first, it must be RESET with switch position ’6’. After booting again, switch position ’0’ must be set.

Step 2 Getting the Typ3 osa operator interface ready for operation

Before starting the Bosch operator interface for the first time, you first have to restart the control panel PC.

★ Select: START ▶ END... ▶ **RESTART WINDOWS**

Make sure that the Typ3 osa applications, Exceed, the NFS server and the Inetd server, as well as the Typ3 logbook work properly after booting. This can be recognized by the following Windows task bar.



## 4.8.2 Recovering Typ3 osa control data

When the installation has been successfully completed, you have to restore the previously backed-up data to the Typ3 osa control unit.

☞ **In order to restore data, the Bosch Typ3 osa operator interface must be running, and the directory containing the backed-up archives and files must have been mounted (cf. section 5.2.3).**

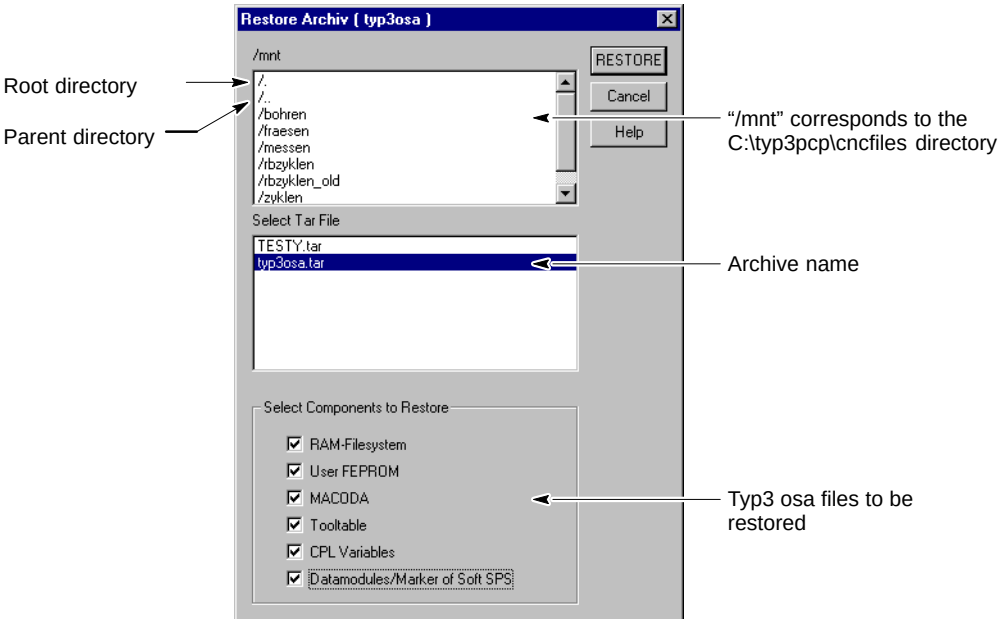
### Restoring data using T3Config

The Restore Archive command will restore archive files with the ".tar" extension to the Typ3 osa. All tar archives of the Typ3 osa software releases below 5.1.x are included in this process.

★ After booting, select from the Windows GUI:
START ▶ PROGRAMS ▶ BOSCH PC-PANEL ▶**TYP3 CONFIGURATION**

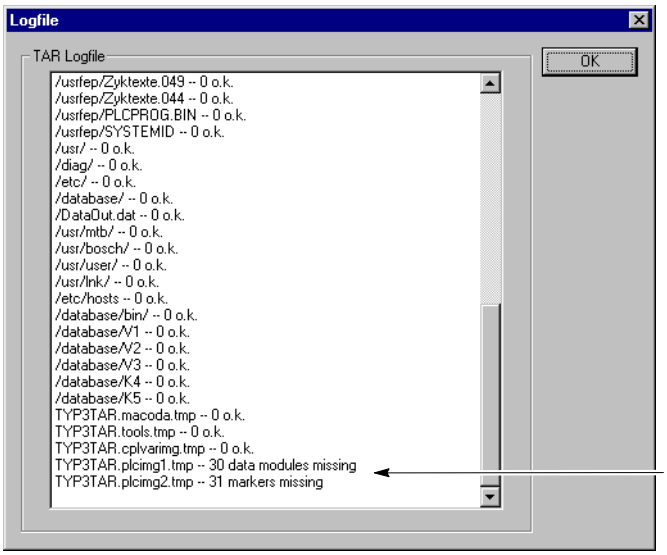
★ Call up menu options UTILITIES ▶ **RESTORE ARCHIVE**
and select the control unit (e.g. name: typ3osa) whose data is to be restored.

The "typ3osa.tar" archive is stored as an example in the folder path C:\typ3pcp\cncfiles on the hard disk of the control panel PC.




★ Check the files to be restored (default: none checked) and then start restoring the files.

When the data has been successfully restored, a message will be displayed. Errors during "Restore" are saved in a logfile "[archive name]_x.pro". This file can be immediately read after restoring.



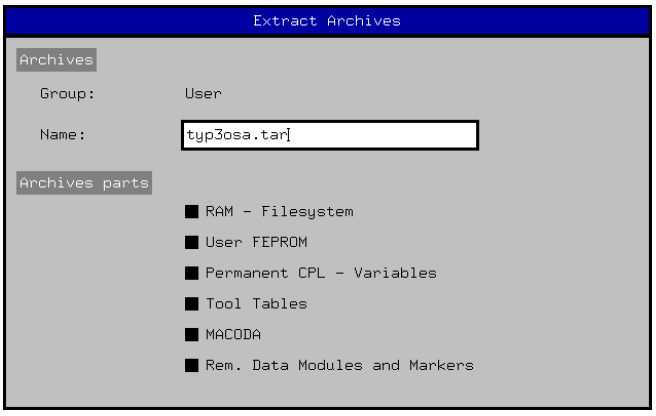

Error message in log file

## Restoring from Typ3 osa operator interface

A Typ3 archive may also be restored from the Typ3 osa operator interface (V5.1.x or higher). This option is suitable when the Typ3 data has to be restored although access to the Windows desktop has been inhibited.

★ For restoring data, select from the Typ3 osa operator interface:
GOM MANAGE ▶ SAVE FILES ▶ ARCHIVES ▶ **EXTRACT ARCHIVES**

★ Select the archive (e.g. typ3osa.tar) in the back-up directory (usually the first mount directory). Decide whether the data is to be restored **completely** (default setting) or **selectively**:




When the data has been restored, the control unit must be rebooted in order to activate the restored data.

☞ **With the Typ3 osa software release V5.1.x, the MACODA parameters are given new parameter block numbers.**
**MACODA parameters generated up to and including V4.x.x will be automatically converted to the new parameter block numbers when being restored to release V5.1.x!**

☞ **For the ”nctar” and ”download” programs, you must have access to the Windows GUI.**

### Restoring archives generated with ”nctar”

**Requirement:**
V.24 link between osa master module (X51) and control panel PC (COM1, 2).

In order to restore archives created with software releases V4.x.x and ”nctar”, you should proceed as follows:

★ “**Restore Archive**” in the ”T3 Configuration” program
(cf. page 4–24ff.)

or

Select from the Windows GUI:
START ▶ PROGRAMS ▶ **MS-DOS prompt**

★ Select directory containing back-up archives

★ Enter into the DOS input window:
**nctar -x ram.tar**
**nctar -x usrfep.tar**

### Restoring files backed up with ”upload”

**Requirement:**
V.24 link between osa master module (X51) and control panel PC (COM1, 2).

In order to restore archives created with software releases V4.x.x and ”upload”, you should proceed as follows:

★ Select from the Windows GUI:
START ▶ PROGRAMS ▶ **MS-DOS prompt**

★ Select directory containing back-up files

★ Enter into the DOS input window:
**download *.***

★ Change to the Typ3 osa operator interface and **start** the download with
GOM MANAGE ▶ SAVE FILES ▶ FILE TRANSFER ▶ LOAD ▶ **LOAD**

### 4.8.3 Restoring a PLC program

The PLC program is restored:

- with "**Restore Archive**" (cf. page 4–24) when the **plcprog.bin** file had previously been saved in the usrfep (user FEPROM) of the osa master as described in section 4.2.1.

  Then, the osa master module must be restarted with switch position S1=2. During booting, the PLC program is copied from the usrfep of the osa master to the ICL RAM of ICL700.
  After booting, return the switch to position S1=0.

- or using a laptop computer connected to the X31 port of ICL700 by loading the PLC program **with the help of the WinSPS application**.
  Then, boot the control unit again with switch position S1=0.

**CAUTION**
**Limited function!**

**The backed-up PLC program is not necessarily operative if the interface or APS modules have been changed by the software update!**

**Please refer to the up-to-date information contained in the README file in the D:\APS\profi or D:\APS\winsps directories on the Bosch installation CD.**

### 4.8.4 Establishing applications

**Updates APS, CPL,..**

The Bosch installation CD usually also contains some application updates, e.g., for CPL, APS, which are not installed automatically.

Separate routines are required in order to install these updates, which are described in detail in the Readme files on the CD. Please observe the installation instructions contained in these files.

Notes:

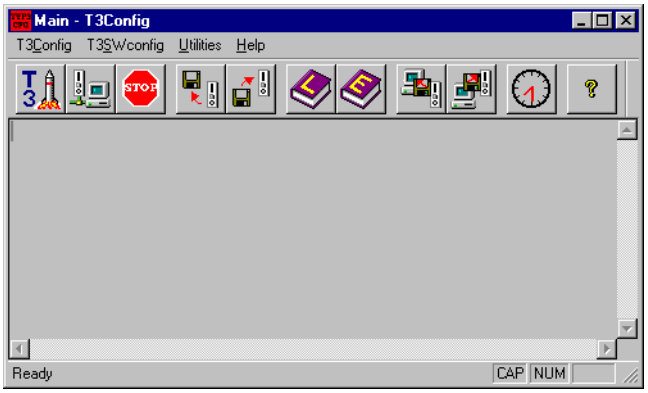
# 5 The T3 Configuration program

The T3 Configuration program (Typ3 osa software configuration tool) offers the following functions, for example

- load Typ3 osa software (osa master/ICL700)
- back-up and restore user data
- setting the TCP/IP addresses
- calling up the operating modes of Typ3 osa
- creating the mount directory
- etc.

★ In order to select the menu items described below, you should start the "T3 Configuration" program on the control panel PC as follows:

START ▶ PROGRAMS ▶ BOSCH PC-PANEL ▶ **TYP3 CONFIGURATION**




**Main menu**

The following items are available for selection in the main menu:

- T3Config (TCP/IP Setup, etc.)
- T3SWConfig (loading, setting, saving Typ3 osa software, etc.)
- Utilities (backup, restore, etc.)
- Help

## 5.1 ”T3Config” menu

The ”T3Config” pull-down menu consists of the sub-menus:

- TCP-Setup
- Startup Installation
- Exit to finish the T3 Configuration program

### 5.1.1 TCP/IP Setup 

The TCP/IP Setup is used to set the IP address of osa master modules. As a rule, this is only required if Typ3 osa is to be integrated into a network and the IP addresses have to be adapted to the local network.

☞ **Before changing the IP address of Typ3 osa, you first have to define the IP address of the control panel PC (refer to section 6.2).**

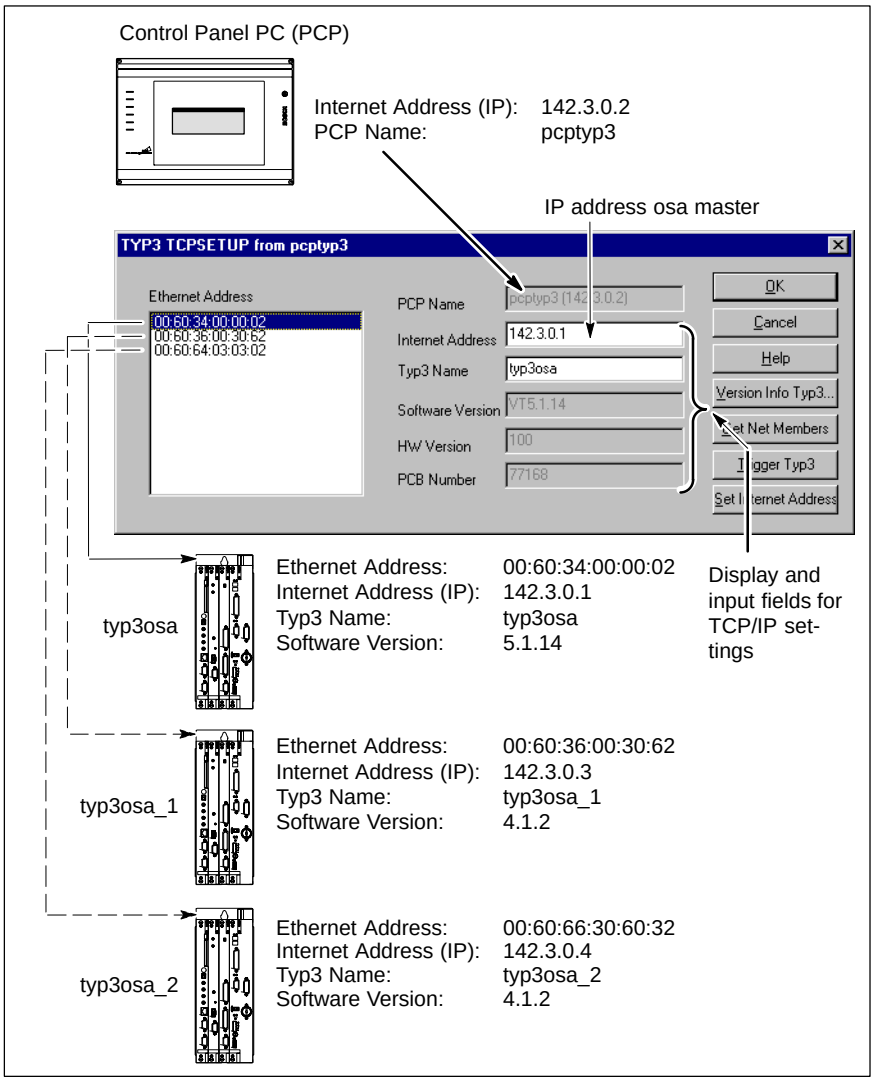
**Selecting the control unit**

★ Select:  or the T3CONFIG ▶ TCP SETUP menu item.

★ Press the ”**Get Net Members**” button from the ”TYP3 TCPSETUP from ...” dialog window.

The dialog window shows all Typ3 osa units that communicate with the control panel PC via TCP/IP including information on:

- physical Ethernet address
- Internet address (IP) of Typ3 osa and the control panel PC
- name of Typ3 osa
- current Typ3 osa software release on the osa master module
- hardware version of the osa master module
- release information of the active subsystems




| Designation in dialog window | Meaning | Factory setting (new components) | Input for network link (example) | Notes |
|---|---|---|---|---|
| Ethernet Address (osa master) | Ethernet hardware address of the osa master module | depending on hardware, e.g. 00:60:34:00:00:02 | cannot be changed! | – |
| PCP Name | Internet address of the control panel PC | 142.3.0.2 | 133.2.0.2 | Network settings via Windows (cf. section 6.2). |
| Internet Address | Internet address of the osa master module | 142.3.0.1 | 133.2.0.1 | – |
| Typ3 Name | Symbolic name of the osa master module | typ3osa | typ3osa_1 (max. 28 characters*) | can also be changed in Setup |

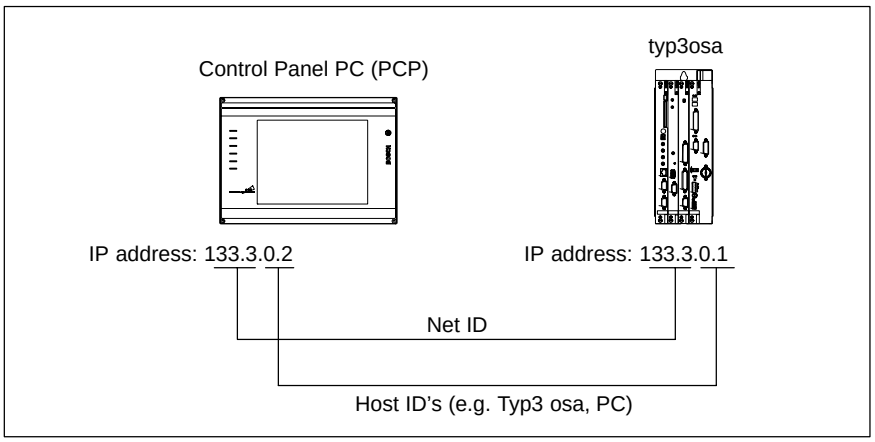
* max length 7 characters up to monitor program release 3.10

★ By clicking on the Ethernet address of the Typ3 osa to be configured, the display and input fields on the right-hand side are filled with the current data.

If **no** ”internet address” and **no** ”Typ3 Name” are displayed, the data refers to a control unit to which no software has been loaded.
In this case, you should proceed to section 5.1.2, ”Startup Installation”, in order to perform the missing TCP/IP settings and to load the software to the Typ3 osa.

**Entering the IP address**

The network ID of the Typ3 osa must always be identical with the network ID of the control panel PC in order to enable the network stations to find each other (for definition of TCP/IP, net ID, host ID, refer to section 6.2).




★ Enter the new IP address in the ”Internet Address” field (e.g. 133.2.0.1).

★ As an option, you may enter a new name for the control unit in input field ”Typ3 Name”.

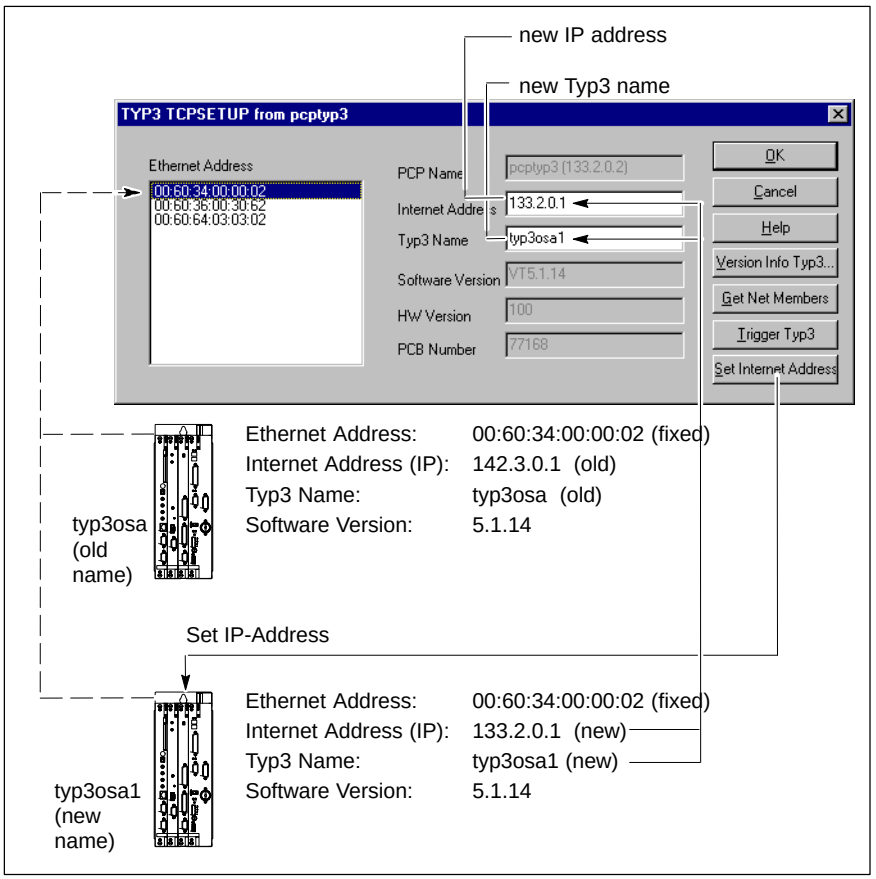
☞ **The identification of a Typ3 osa is always determined jointly by the three parameters ”physical Ethernet address”, ”Internet address” and ”Typ3 Name”.**

★ Then press the “**Trigger Typ3**” button in order to test the Ethernet link of the selected control unit.

Track the response on the H1 LED of the osa master module selected.
If two small rectangles appear in turns for approx. 2 seconds in the LED display, then you have selected the ”proper” osa master.

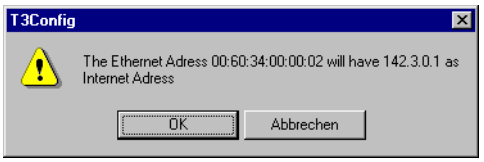
## Assigning the IP address

☞ **Even if the IP address is not to be changed, the hardware-dependent Ethernet address has to be specified with ”Set Internet Address”.**




★ Press the ”**Set Internet Address**” button.

★ Confirm the next two dialog windows by hitting ”OK”.





☞ **In order to activate the new IP address / the new name, the TYP3 TCPSETUP dialog must be exited with ”OK”, and the entire system must be rebooted.**

This new information is saved on the control panel PC in the ”hosts” file of the ”C:\Windows” (Windows 95) or the ”C:\Winnt\system32\drivers\etc\” (Windows NT) directory.
In Typ3 osa, the ”hosts” file is available in the ”/etc/” and ”/usrfep/” directories.

## 5.1.2 Startup Installation 

The ”Startup Installation” option should be selected when the battery on the osa master module is empty and no software is available any more on the module.
This may be the case, e.g., when the module has been stored for a long period of time without power supply.

### Monitor program

In order to perform the installation on an empty osa master module, a PC card with a bootable monitor program must be used.
With the help of the monitor program, the **basic communication** can be built up via the Ethernet link between the control panel PC and the osa master module.

### Starting the installation process

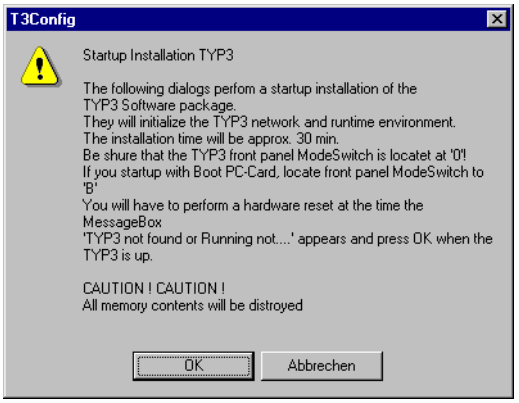
★ Plug the PC card into the appropriate slot on the osa master module.

★ Set switch ”S1” on the front panel to position ’**B**’ (for details, refer to section 5.5). Initiate the hardware **RESET** at the osa dc interface module. When the control unit has run up, an ”A” appears in the H1 display of the osa master module: the control unit is in monitor mode.

★ Remove the PC card from the osa master module.

★ Select:  or the T3CONFIG ▶ **Startup Installation** menu option.

First, a window containing installation notes is displayed:




Confirm the starting window, then the Typ3 osa connected will be located. During this process, the ”TYP3 TCPSETUP from ...” dialog window will be opened. The ”Ethernet address” list box contains the Ethernet hardware address of the selected control unit.

☞ **Each network card, osa master module, etc. containing an Ethernet port has its own, unique Ethernet address (e.g. 00:60:34:00:00:02) which is assigned to this specific hardware component only.**

Setting the IP address

★ If necessary, enter a new IP address and a new Typ3 name in order to include the Typ3 osa into an existing network.

★ Press ”Trigger Typ3” in order to make sure that the proper control unit is displayed: The LED display on the osa master module shows two small rectangles in turns for about 2 seconds.

★ Select ”Set Internet Address” to permanently assign the new IP address and the Typ3 name to the control unit.

★ Finish your inputs with ”OK”. Then, some system programs are loaded into the control unit until the next dialog menu is opened: ”DOWNLOAD PCP –> TYP3OSA”.

## Selecting components

With the next choice in the ”DOWNLOAD PCP –> TYP3OSA” dialog menu, it is also possible to install the **Monitor/Bootloader** so that you will no longer have to boot from the PC card in the future.

| | **Designation** | **Description** |
|---|---|---|
| ● | System Software | Selection of system software for the Typ3 osa master |
| ✓ | Default Setup | Preselection of components:<br>– Operating system / ICL<br>– fep file system |
| ✓ | Monitor / Bootloader | Monitor and bootloader program. |
| ✓ | Operating System / ICL | Operating program for the osa master (SNCI) and ICL700 |
| ✓ | fep Filesystem | Generate fep file system |
| | User fep Filesystem | **Do not select** because special configuration files for SERCOS, ICL applications, network, machine parameters (for laboratory operation) are contained here! |
| | Customer Software | Load customer-specific software |

★ After the selection of the components, press ”OK”.

This will start loading the Typ3 osa software from the control panel PC to the osa master module.

☞ **It takes approx. 30 minutes to load the Typ3 osa software !**

When the loading process has been completed, Typ3 osa is not yet ready:

- The ”Ready” LED on the osa dc interface module is **off**
- Display H1 on the osa master module shows an ”A” (= monitor mode)

**Getting Typ3 osa ready for operation**

★ Set the S1 rotary switch of the osa master module to **S1 = 6** and initiate a RESET by:

- operating the RESET key on the osa dc interface module, or
- clicking on 

(RESET) in the ”T3Config” program.

★ Set the S1 rotary switch of the osa master module to **S1 = 0** (normal mode):

- ”Ready LED” on the osa dc interface module is lit, i.e. Ready signal of the control unit is available.
- H1 on the osa master module shows a horizontal line.

☞ **An intact Ethernet link between the control panel PC and the Typ3 osa is indicated by a point flashing in irregular intervals in the lower right corner of the H1 display on the osa master module.**

## 5.2 ”T3SWconfig” menu

The ”T3SWConfig” pull-down menu consists of the submenus

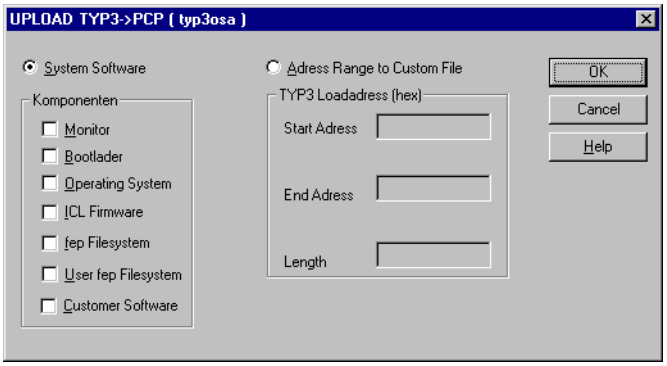
- Upload TYP3 -> PCP
- Download PCP ->TYP3
- Edit PCP hosts
- Edit Typ3 hosts
- Select NFS-Mount-Directory
- Add to ’export.us’
- Reload ’export.us’

### 5.2.1 File transfer

**Upload TYP3 –> PCP**

The upload serves to copy system components of the Typ3 osa control software from the osa master module to the control panel PC.

★ Select:  or the menu
T3SWCONFIG ▶ UPLOAD TYP3 –> PCP




★ Select the files to be copied.

★ Accept the proposed file names in the next dialog in order to save the files in the folder C:\typ3pcp\typ3sw.

The upload is started, thus forcing the control unit to switch to monitor mode (H1 display: ”A”).

★ When the upload has been completed, initiate a RESET by:

- operating the RESET key on the osa dc interface module, or
- clicking on 

(RESET) in the ”T3Config” program, or
- pressing the softkeys of the Typ3 operator interface:
GOM DIAGNOSTICS ▶ RESET FUNCTIONS ▶ **SYSTEM RESTART**

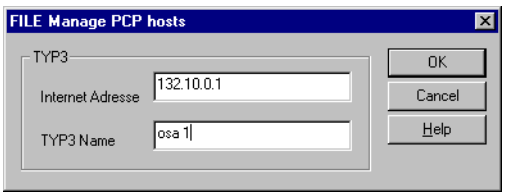
**Download PCP –>TYP3**

The download installs the system components of the Typ3 osa control software to the osa master/ICL700 module. This process corresponds to the standard installation of the Typ3 osa software. For the procedure, refer to section 4.7.

## 5.2.2 Host files

### Edit PCP hosts

The ”Edit PCP hosts” menu item serves to introduce **additional Typ3 osa control units** which are to be identified by the control panel PC via TCP/IP. The entry entered in the next dialog box is added to the names declared for the TCP/IP network protocol in the ’hosts’ file on the control panel PC.



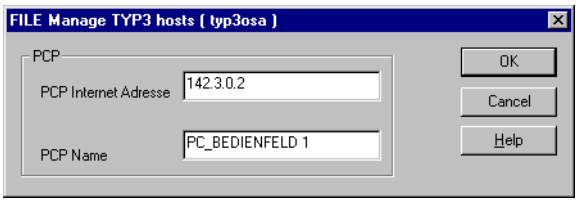

If an entry with the new name or Internet Address already exists, this entry is deleted from the file, and the entry shown in the dialog box is added.

☞ **Windows NT**
The hosts file is available in the folder:
C:\”Windows System Folder”\system32\drivers\etc

**Windows 95**
The hosts file is available in the folder:
C:\”Windows System Folder”

### Edit Typ3 hosts

The ”Edit Typ3 hosts” menu item is used to introduce **additional** control panel PC’s which are to be identified via TCP/IP. The entry entered in the next dialog box is added to the names declared for the TCP/IP network protocol in the ’hosts’ file on the Typ3 osa control.




If an entry with the new name or Internet Address already exists, this entry is deleted from the file, and the entry shown in the dialog box is added.

☞ **Typ3 osa control unit**: The hosts file is available in the /etc/ and /usrfep/ folders.

## 5.2.3 Mount directory

**First mount directory, ”/mnt/”**

The mount directory is located on the control panel PC and serves for backup and general data protection services of a connected Typ3 osa. The Typ3 operator interface has direct access to the mount directory.

**Control panel PC:**
The default directory for this purpose has been set to **C:\typ3pcp\cncfiles** in the factory.

**Typ3 osa:**
In the control unit, the directory name is **/mnt/**.

Users who prefer using another directory on the control panel PC or a directory on a remote network server, have to redefine the mount directory.

**Additional mount directory, ”/mnt2/”**

A second mount directory, e.g. a:\, may be defined for direct access to a floppy disk drive.

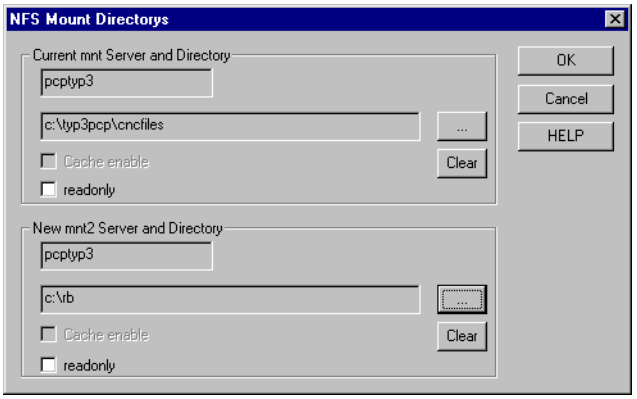
**Typ3 osa:**
In the control unit, this directory has the name **/mnt2/** (floppy disk).

☞ **It is not possible to define a subdirectory of the first mount directory as additional mount directory.**

**Defining the mount directory**

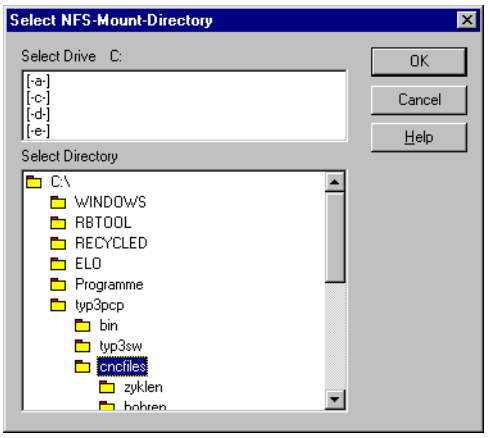
★ Select: T3SWCONFIG ▶ **Select NFS-Mount-Directory**

The ”Select NFS-Mount-Directory” dialog window contains all currently valid mount directories.




Use the ”Clear” button to delete the currently valid entry.

★ Press the  button to define a mount directory.




★ First double-click on a drive and then on one of its folders to define the mount directory. A double-click on a folder will visualize all subdirectories available, if any.

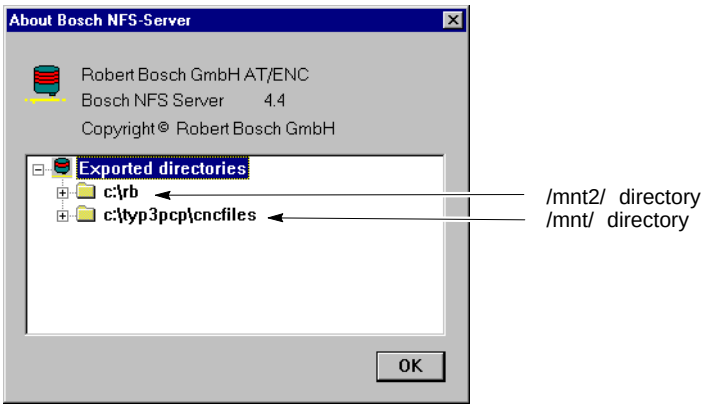
★ Accept the settings by hitting ”OK”.

The mount directory data will be saved in the ”startup” file of the usrfep in Typ3 osa and in the export.us file on the control panel PC.

**Mounting**

The actual mounting process does not start before the control panel PC and Typ3 osa have been rebooted. After booting, the mount directories are available in the Typ3 operator interface. The current mount directories can be displayed by double-clicking on the NFS symbol in the task bar.

★ In the NFS symbol of the task bar: select ▶ ABOUT




**Add to export.us and Reload export.us**

The directory entries can be changed by selecting the ”**Add to export.us**” menu item. Selecting ”Reload export.us” will instruct the NFS server to read the export.us file again and to accept its settings.

## 5.3 ”Utilities” menu

The **Utilities** comprise a number of functions which serve for the Typ3 osa software maintenance.
Included are dialogs for synchronizing the clock, for saving and displaying logbook and system error files and for copying files freely between the Typ3 osa and the control panel PC.

The ”Utilities” pull-down menu offers the following submenus:

- Sync Typ3 Clock to PCP
- Read Logbook
- View Logbook File
- Read System Errors
- View System Error File
- Copy files to Typ3 Filesystem
- Copy files to PCP Filesystem
- RESET
- Force to Monitor
- Force to DRAM Monitor
- Run from Monitor
- Make SRAM Card-Monitor
- Make FEPROM Card-Monitor
- Ping Typ3
- View socket info
- Create Archiv
- Restore Archiv

### 5.3.1 Sync Typ3 Clock to PCP

The internal time data of the control panel PC and the active Typ3 osa are synchronized.

## 5.3.2 Saving the logbook and errors

The booting data and error messages of Typ3 osa can be saved in logbook and system error files on the control panel PC.

**Read Logbook**

Output of the Typ3 osa logbook entries to a file.

★ Select  or the menu:
UTILITIES ▶ READ LOGBOOK

Then, a file name must be entered in the ...\typ3sw default directory under which the logbook is to be saved.
The logbook file has the default extension ".log".

Then – following confirmation – the control unit will be forced into "Monitor mode" (H1 display shows "A", cf. section 5.5.2), and the logbook stored in the Typ3 osa will be saved under the name previously entered.

**View Logbook File**

★ Select the UTILITIES ▶ VIEW LOGBOOK FILE menu in order to view the logbook stored for a Typ3 osa.

**Read System Errors**

Outputs the system error entries of the Typ3 osa to a file.

★ Select  or the menu:
UTILITIES ▶ READ SYSTEM ERRORS.

Then, a file name must be entered in the ...\typ3sw default directory under which the system errors will be saved. The system error file has the default extension ".ser".

Then – following confirmation – the control unit will be forced into "Monitor mode" (H1 display shows "A"), and the system errors stored in the Typ3 osa will be saved under the name previously entered.

**View System Error File**

★ Select the
UTILITIES ▶ **VIEW SYSTEM ERRORS FILE** menu in order to view the system error file stored for a Typ3 osa.

## 5.3.3 File transfer: Control panel PC <–> Typ3 osa control unit

The file transfer uses the Ethernet port in order to transmit data from the control panel PC to Typ3 osa and vice versa.

When copying a file with a name that already exists in the target directory, the file with the identical name **in the target directory** will be **replaced** upon confirmation only.

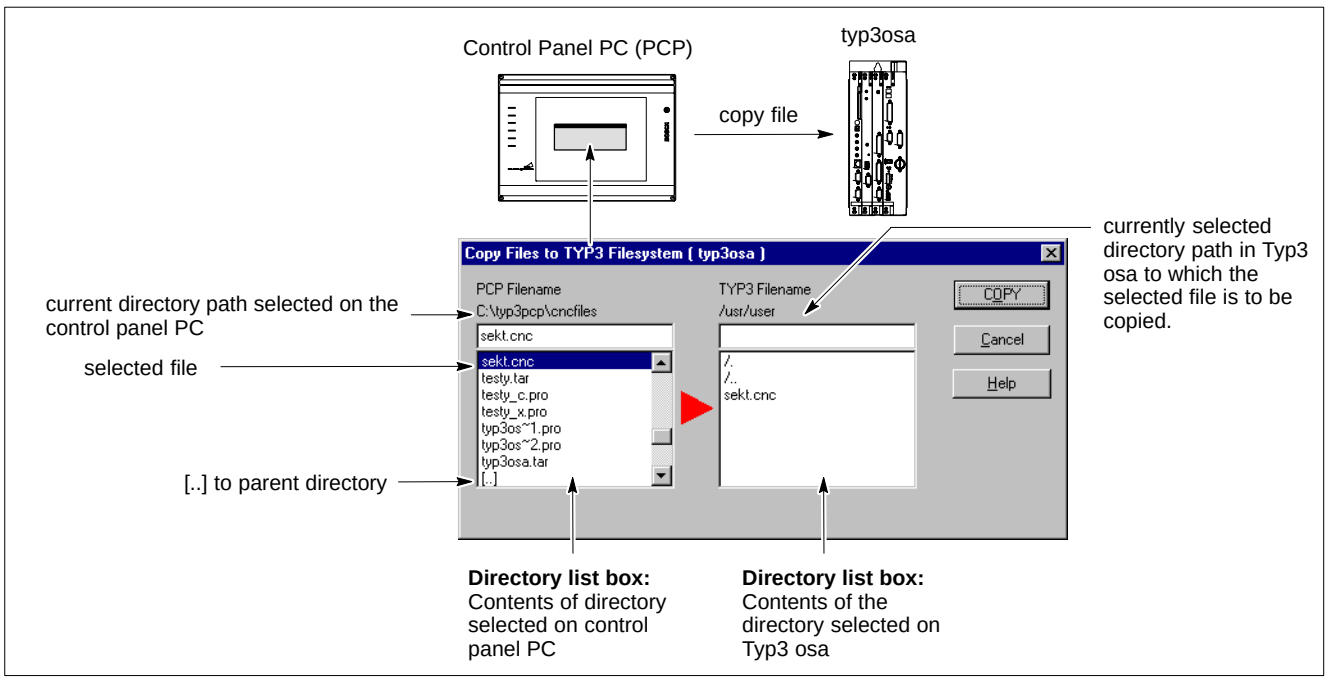
**Copy files to Typ3 Filesystem**

This function may only be used to transfer **one** file at a time. In order to transfer several files, every single file has to be confirmed.

★ Select  or the menu:
UTILITIES ▶ COPY FILES TO TYP3 FILESYSTEM in order to copy files from the control panel PC to the Typ3 osa.

★ In the directory list box, select the data directory containing the file to be copied.
Selecting a subdirectory: **[directory name...]**
Selecting a parent directory: **[..]**

★ Select the file to be copied from the directory list box and start the transfer by hitting the ”COPY” button.

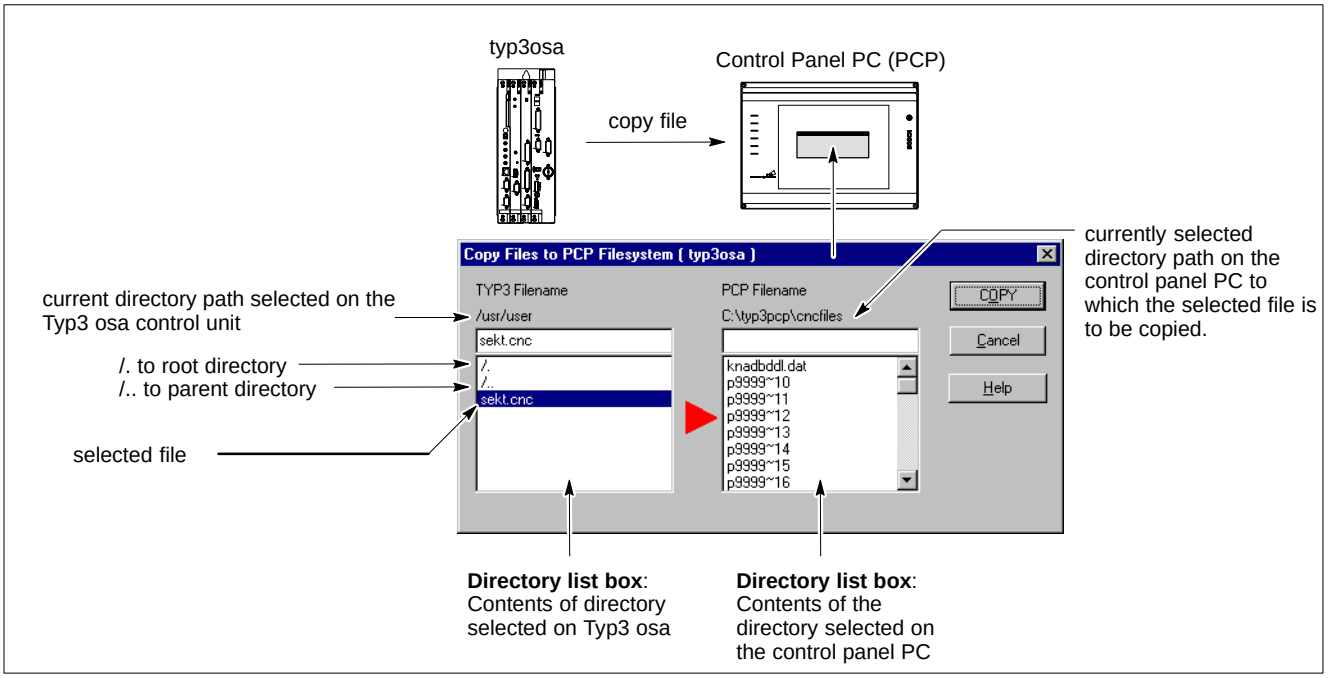


## Copy files to PCP Filesystem

★ Select  or the menu:
UTILITIES ▶ **COPY FILES TO PCP FILESYSTEM** in order to copy data from Typ3 osa to the control panel PC.

★ In the directory list box, select the directory containing the file to be copied.
Selecting a subdirectory: **/directory name...**
Selecting a parent directory: **/..**
Selecting the root directory: **/.**

★ Select the file to be copied from the directory list box and start the transfer by hitting the ”COPY” button.



## 5.3.4 ”Monitor” mode of the Typ3 osa control unit

The **Monitor** is a program that facilitates internal communication between a Typ3 osa and a control panel PC connected via **Ethernet**. It runs on the osa master module and is started from, e.g., the ”T3Configuration” application.

Monitor mode is visualized by an ”A” on the **H1** LED display of the osa master module (cf. section 5.5.2).

Monitor mode is necessary:

- for downloading the Typ3 osa software, e.g., for a software update
- when initiating RESET with T3Config

**Monitor update**

The ”Monitor” and ”Bootloader” programs can only be updated if the control unit is in DRAM monitor mode, or if a bootable PC card with ”Monitor” has been plugged into the slot on the osa master module.

**Force to Monitor**

A selected control unit is forced into monitor mode by selecting ”**Force to Monitor**”. If the control unit had previously been in monitor mode, the process is aborted.

**CAUTION**
**Please note that the Ready signal becomes low during transition to monitor mode! This may affect the current operation of Typ3 osa.**

**Run from Monitor**

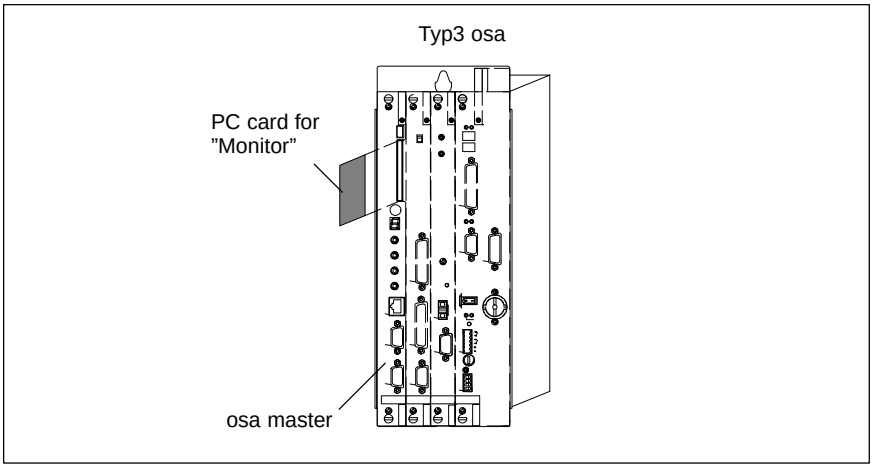
A control unit running in monitor mode is loaded with the runtime software, if possible. If this software is already running, the process is aborted.

**CAUTION**
**With older osa dc interface modules, the READY signal remains open after booting. In more recent osa dc interface modules, the READY signal is closed.**

**Make SRAM-Card Monitor,**
**Make FEPROM-Card Monitor**

The SRAM-Card-Monitor/FEPROM-Card Monitor is used to produce a bootable ”monitor” on a PC card. This card may then serve as a basis for additional system installations.

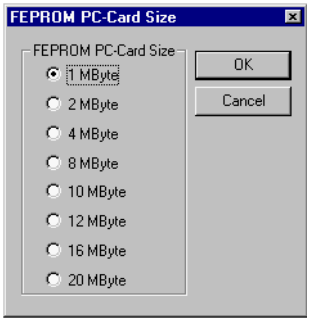
★ Insert an SRAM PC-Card/FEPROM Card without write protection into the appropriate slot on the osa master module.




★ Select:
UTILITIES ▶ **MAKE SRAM-CARD MONITOR** in order to load an SRAM PC card with the ”monitor” code.

★ Select:
UTILITIES ▶ **MAKE FEPROM-CARD MONITOR** in order to load a FEPROM-PC-Card with the ”monitor” code.

The FEPROM card must be erased prior to programming. The memory size has to be indicated because it cannot be determined automatically.




Performing this function will erase the FEPROM card, and then load it with the ”monitor” code. The SRAM card/FEPROM card thus generated is bootable on the osa master module with switch position S1 = B (cf. section 5.5).

**CAUTION**
**The ”Make SRAM-Card Monitor” and ”Make FEPROM Card Monitor” functions will destroy all data that may be available on the PC card.**


**RESET**

The control unit selected is rebooted. For this purpose, the control unit is forced to ”monitor mode”.

---

**CAUTION**
**When initiating a RESET of Typ3 osa, please note that the current operation will be affected.**

---

☞ **After a RESET using the** 

**button, older osa dc interface modules will remain without the ”READY” signal.**
**In this case, you have to initiate an additional hardware RESET on the osa dc interface module in order to reestablish the full ready status (Ready LED lighted).**

**Force to DRAM Monitor**

When the **DRAM Monitor** has been loaded and activated in the osa master module, a new ”monitor” program and the ”bootloader program” may be loaded into the control unit.
When the loading processes have been completed, the DRAM monitor branches to monitor mode.

☞ **As an alternative to the DRAM monitor, the control unit may be started from switch position ’B’ (osa master) using a bootable PC card (cf. section 5.5).**

---

**CAUTION**
**In the event of an error in the FLASH memory of the osa master module while loading the monitor program, a bootable PC card is required to restart the control unit.**

---

## 5.3.5 Testing the network availability of the Typ3 osa control unit

### Ping Typ3

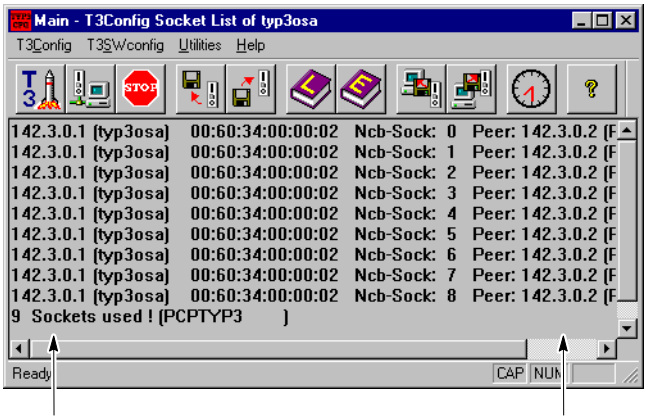
★ Select:
UTILITIES ▶ PING TYP3

Using this command, the 'ping' network program searches the selected control unit (e.g. "typ3osa") in the network.
A message will be output in an information window or an error window whether or not the search was successful (e.g.: "typ3osa: Ping success!").

### View Socket Info

The socket info designates all currently open application links of the selected Typ3 osa which use the TCP/IP protocol at the same time. In the figure shown below, the "sockets", i.e. the communication ports, are the "typ3osa" control unit and the "PCPTYP3" control panel.

★ Select:
UTILITIES ▶ **VIEW SOCKET INFO**




"typ3osa" and "PCPTYP3" are currently linked by 9 sockets.

**Sockets** of Typ3 osa "typ3osa"

**Sockets** of the control panel PC "PCPTYP3"

The sockets indicate that an intact TCP/IP protocol is running between the control unit and the control panel. If no socket is listed, there may be a fault in the Ethernet, on the network port/card or the network software.

## 5.3.6 Archive for Typ3 osa control data

**Create Archive**

Using **Create Archive**, the user data of the selected Typ3 osa is backed up completely or in parts. The user may select any name for his archive, and the extension ".tar" will be added automatically.

If a **fault** occurs while creating an archive, a file containing an error log will be created, e.g.:

Name of archive: typ3osa.tar
Name of error log file: typ3osa_c.pro

The error log file can be read with a text editor.

☞ **The archive file created with "Create Archive" is restored to the control unit with the command "Restore Archive".**

★ Select:
UTILITIES ▶ **CREATE ARCHIVE**

For a description of the procedure, refer to section 4.2.2.

**Restore Archive**

The **Restore Archive** command may be used to restore archive files created by

- "Create Archive" (V5.1.x or higher) or with
- the "nctar" backup routine (up to and including V4.3.x)

to the selected Typ3 osa. The data can be restored completely or in parts.

★ Select:
UTILITIES ▶ **RESTORE ARCHIVE**

For a description of the procedure, refer to section 4.8.2.

## 5.4 "HELP" menu

The "Help" menu offers a wide range of online information concerning the **menu items** contained in the T3Configuration routine and their **functions**.

The "About T3Config..." submenu contains the following information:

- Release number of the "T3 Configuration Tool"
- Copyright information
- Physical memory size of the control panel PC
- Free hard disk memory available

## 5.5 S1 switch positions and H1 display (osa master module)

### 5.5.1 S1 rotary switch

The booting process is controlled by the position of the S1 rotary switch on the osa master module.

**CAUTION**
**Loss of Data or possible malfunction!**
**Setting the S1 switch to positions other than ”0” is authorized for service purposes only, and is restricted to specially trained service technicians!**

**Position “0”:** Switch position for standard operation (”Normal mode”). The file systems are retained and will be checked for consistency during run-up.
If the FEPROM file system is defective, the unit cannot be run up. In this case, the control must be reloaded.
If a root file system is defective and cannot be automatically repaired, the control will not run up. A critical system error will be displayed. During the next run-up a new, empty file system will be automatically generated.
If a defective usrfep file system is detected, the control will try to link the file system to the ”!usrfep!” directory reserved for this purpose (mounting). The user can then copy the still readable files to another file system (e.g. root file system).
After having run up in switch position ”7”, the recovered files can be copied back to the new usrfep file system.
The PLC systems software is retained and will not be loaded again to the osa plc.
The base monitor activates the Ethernet interface. The debugging interface is activated by the base monitor only if the osa dc interface module is available.

**Position “1”:** The osa plc remains in STOP condition when the control has run up. The PLC user program is not executed. Otherwise as position ”0”.

**Position “2”:** Debugging mode with and without osa dc interface; otherwise as position ”1” (only for osa master L/XL).

**Position “3”:** Guaranteed run-up. The control runs up with a minimal configuration, independent of the machine parameter settings. Thus, a false configuration of the machine parameters, which prevents a run-up in normal mode (position ”1”), can be circumvented; otherwise as position ”1” (only for osa master L/XL).

**Position “4”:** as position ”2”. (only for osa master L/XL).

**Position “5”:** as position ”2”, but without ”power fail handling” (only for osa master L/XL).

**Position “6”:** Initial program loading. Used for the first start-up of a newly installed control. First, a new Root file system is generated. The hardware configuration of the

part program memory (e.g. with/without PC card) is determined. The PLC system firmware and PLC application program are loaded for the first time. The Typ3 osa then copies, from the ”usrfep” FEPROM file system, all data required for the start-up. In the event that such data does not exist in that location, the control software proceeds by generating the factory-preset basic configuration with the use of data from the ”feprom” FEPROM file system. The PLC application program is then started.

**CAUTION**
**Loss of Data!**
**Switch position ”6” causes all data of the old file system to be deleted. You are cautioned to use this setting only when you have completed the backup of all important data (such as MACODA parameters, SERCOS files, etc.) in the ”usrfep” FEPROM file system. Otherwise you will have to perform a complete new software installation!**

**Position “7”:** Initial loading of basic data. Used for starting up a control, the ”usrfep” FEPROM file system of which has been destroyed or contains inconsistent data, making the start-up of the Typ3 osa impossible. In contrast to the consequences of switch position ”6”, the old ”usrfep” FEPROM file system is also deleted entirely, and newly generated. The data of the root file system is retained. Otherwise as ”Normal mode”.

**CAUTION**
**Loss of Data!**
**Switch position ”7” causes all data of the ”usrfep” FEPROM file system to be deleted. The root file system remains intact.**

**You are cautioned to use this setting only when you have completed the backup of all important data (such as MACODA parameters, SERCOS files, etc.) to an external data storage medium. Otherwise you will have to perform a complete new software installation!**

**Position “8”:** Similar to Position ”9” (applies exclusively to osa master L/XL)

**Position “9”:** Debugging mode. The hardware is initialized, and the entire software is loaded into the individual modules. All modules – with the exception of the CL – are initialized, assume the monitor mode and stand by for debugging instructions. The osa plc delays both loading and starting the PLC application program until all other modules have been started.

**Position “A”:** Debugging mode. The hardware is initialized without loading the software into the individual modules. From this point onward, functions are the same as with Position ”F.” This position is intended for loading software into RAM via Ethernet.

**Position “B”:** Initial loading of basic data or software swap from PC Card. The PC Card must have been specially prepared for this purpose. If this is not the case, the system, will not start up.
The Typ3 osa copies, from an appropriately prepared PC Card, all data into its internal boot and/or data FEPROM’s. This way, any Typ3 software can be introduced to the control (even into a new, completely “empty” control).
Please keep in mind that the destination areas on the control will be overwritten: In the event that the PC Card contains, for example, the ”usrfep” and

”feprom” FEPROM file systems, the data of all preexisting ”usrfep” and/or ”feprom” FEPROM file systems on the control will be deleted!

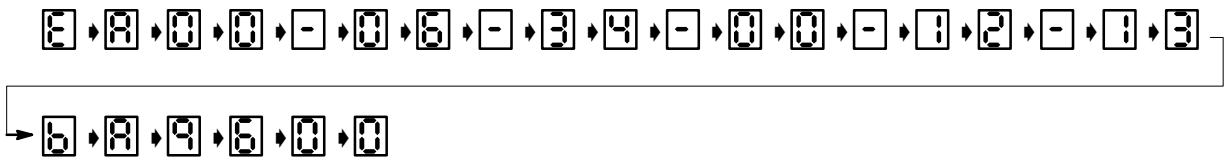
**Position “C”:** For backing up the osa plc system software to the FEPROM of the control. The backup procedure must be started from a programming device connected to the osa plc. The osa plc then copies the system software into the FEPROM range of the NC control.

**Position “D”:** Debugging mode. Deletes all subsequently loaded software, if any, in the RAM reload mode.
Deletes the root parameters in the FEPROM (PC card extension of the root file system, etc.)

**Position “E”:** Debugging mode. The position is designated for the display of the Ethernet address and the debugging baudrate on the H1 display. All characters are displayed in succession.
In the event that the switch position is changed while the Ethernet address is displayed, the control discontinues the Ethernet address display and commences with the display of the debugging baudrate. In the event that switch S1 is no longer positioned at ”E” subsequent to displaying the last figure, the Typ3 osa Control will initialize its debugging interface at a speed of 9600 Baud. The remaining functions are as with Position ”F,” below.

**Position “F”:** Debugging mode. Activates the base monitor. The Typ3 osa communicates with the debugging computer via the second V24 interface on X35 (default baudrate is 9600).

**Example:** Display – on H1 – of **E**thernet **A**ddress (e.g. 00 06 34 00 12 13), and of debugging **ba**udrate (e.g. 9600 baud).




☞ **While in the debugger window, the command “CTRL Y” can be generated by entering the ”nmi” character string.**

## 5.5.2 H1 Diagnostic Display

The H1 diagnostic display is used at different times and by different software functions (e.g. basis monitor, PC Card bootloader, bootloader, start-up software) for displaying status information and fault messages.

### Display readings during standard operation, control running

| | |
|---|---|
| ”–”: | Normal mode. If ”–” is not displayed although S1 rotary switch is set to ”0” position, please contact our customer service. |
| Decimal point: | Illuminates for at least 0.2 sec with each data packet transmitted via Ethernet. |

### Displays during debugging mode

☞ **In the event that the Typ3 osa is booted with the S1 switch set to ”E,” it will initially return different configuration data on H1. The explanation of displays appears in Section 5.5.1, ”Position E”.**

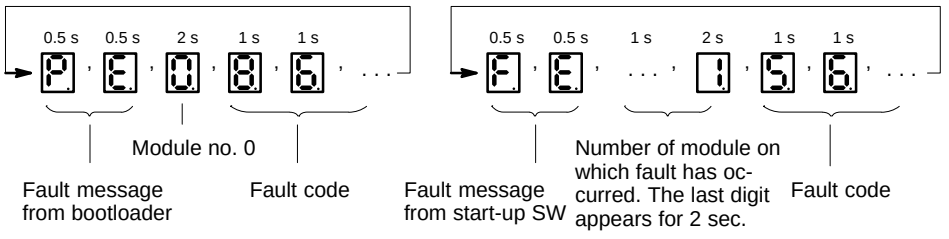
| | |
|---|---|
| ”8”, ”A”: | The system is in basis monitor mode. If ”A” is displayed, the monitor expects data from the debugging interface and/or from the Ethernet interface. |
| ”L”: | Loading via Ethernet. The control is currently processing a data packet. |
| ”d”: | Loading via Ethernet. The control is currently deleting FEPROM ranges. |
| Decimal point: | Illuminates for at least 0.2 sec with each verified data packet transmitted via Ethernet. |

### Error displays during the boot process

Any faults occurring during the boot process of the Typ3 osa cannot immediately be displayed on the screen. For this reason, bootloader and start-up software are using the H1 as a diagnostic display. In this case, a complete fault message is formed by characters that are displayed in succession on a timeline.

Faults occurring in the bootloader area are identified by the starting sequence ”P” and ”E” (Panic Error), and in the software area by ”F” and ”E” (Fatal Error). The timed succession of the fault messages is depicted in the illustration below. For example, ”PE 0 86” and ”FE 1 56”:

**Error displays during the boot process**

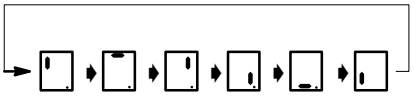


### Displays during “osa plc software backup to Typ3 osa FEPROM” (S1 Position: ”C”)

| | |
|---|---|
| ”C”: | FEPROM range is currently being deleted. |
| Decimal point and rotating illumination of 1 segment at a time: | Now programming FEPROM area. |

**Example**:

**Display during FEPROM programming**



”E”: Fault detected while deleting or programming FEPROM area. Process was aborted.

”8”: Verifies complete and fault-free data transfer to control memory.

### Displays during “initial data loading or SW swap from PC Card” (S1 Position: ”B”)

”C”: Now programming a range of 32 kB **in boot FEPROM**. See also ”0” and ”L.”

”d”: Now programming a range of 8 kB **in data FEPROM**. See also ”0” and ”L.”

”0”: Display alternates between ”C” and ”d.” Now programming corresponding FEPROM range with value ”0.”

”L”: Display alternates between ”C” and ”d.” Now programming the corresponding FEPROM range with data from PC Card.

”F”: Now clearing FEPROM’s.

”P”: Now verifying the checksum of the data to be programmed (in blocks of 64 kB). In case of fault, refer to ”E.”

”E”: Fault detected during programming FEPROM’s. Programming was aborted.

”U”: Switch S1 not in Position ”B.”

”A”: The PC Card was filled with data, the destination addresses of which are outside the FEPROM range of the control. Programming is aborted.

”S”: Faulty data on PC Card. Programming is aborted.

”2”: ZWS RAM cannot be written to, or insufficient capacity (<256 kB).

”8.”: Verifies fault-free data copy from PC Card to control.

# 6 Network settings

☞ **We recommend having your network administrator perform all network-related settings.**

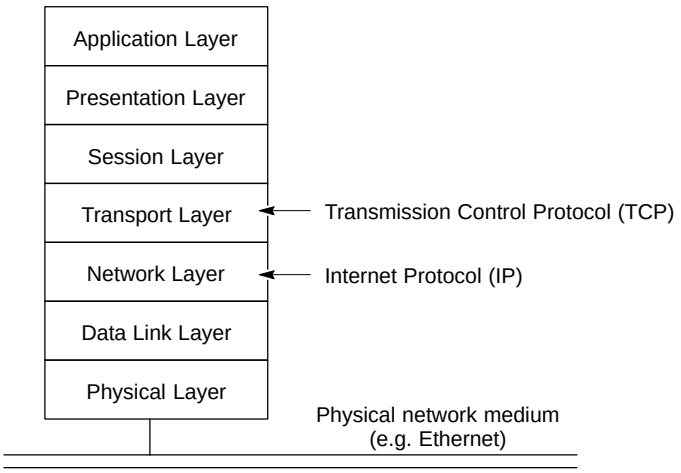
For more information on the TCP/IP protocol or the network settings, please contact your network administrator and/or refer to your Microsoft operating system documentation.

## 6.1 Terms

### OSI reference model

The reference model shows the division of the communication process into a hierarchy of layers. Each layer performs functions which are available to the higher next layer as ”services”.
As shown in the figure below, the IP and TCP protocols belong to the ”Network Layer” and the ”Transport Layer”.

**OSI reference model**




### Transmission principle of TCP/IP

When transmitting data, a file to be transmitted is subdivided by TCP into individual segments. Afterwards, each segment is given its own TCP header and forms a TCP packet. TCP then transmits the packet to IP which in turn adds an IP header to the packet which contains the appropriate IP addresses. Finally, the IP packet is passed to a network. On the receiving side, the IP packets are reassembled by TCP into a complete file.

### Internet Protocol (IP)

TCP/IP consists of two protocols:

- **IP** (Internet Protocol): The IP header adds the most important information concerning the IP address of the source and destination computer to the data. The individual IP packets are independently transmitted to the destination address. Therefore, they may arrive at their destination in another sequence than the one they were sent in. The ”reassembly into a complete file” is a task performed by TCP.
  IP is located in the ”network layer” of the ISO/OSI reference model.

### Transmission Control Protocol (TCP)

- **TCP** (Transmission Control Protocol) is a protocol with the following properties:
  - **Connection-oriented**:
    The basic feature of the TCP header is the information about the port numbers.
    The communication is built up via TCP in a similar way as a telephone call. The caller (active partner) and the receiver (passive partner) are basically two programs that want to communicate. For this purpose, the partners agree on two ”communication ports”. Both sides have to agree on a port number beforehand under which the passive partner waits for the connection to be established. Since several applications (ftp, telnet, www) may use TCP/IP at the same time, IP and TCP must cooperate. The IP address and the port number of the source and the destination together define the individual communication ports (sockets). Each socket has its own dedicated memory as a communication buffer in which the data to be transmitted and to be received is stored.
  - **Reliable**:
    TCP fragments the data to be transmitted into numbered packets of suitable size. The TCP packets are transmitted across the network as unrelated IP packets. If no acknowledgement is transmitted by the destination port, a timed is triggered, and TCP sends the packet again. The TCP module of the destination waits for all packets to arrive and then sorts the packets according to their proper order.
  - **Byte-stream oriented**:
    TCP has the task of fragmenting the data to be transmitted into smaller packets, if necessary, and to transmit them. At the receiver side, this process is repeated in reverse order. From the application’s point of view, x bytes are transmitted via TCP. The receiving application receives x bytes.

  TCP is located in the ”Transport layer” of the ISO/OSI reference model.

### ARP protocol

Before IP packets may be sent, the Ethernet address of the receiver must be ascertained. The **ARP** protocol (Address Resolution Protocol) serves to discover the Ethernet address corresponding to a certain address. Address resolution is transparent to the application. From the application’s point of view, only IP addresses/names are used. The IP-to-Ethernet address mapping is saved in a list. The entries in this list are generated and deleted dynamically whenever an entry has not been used for a certain period of time.

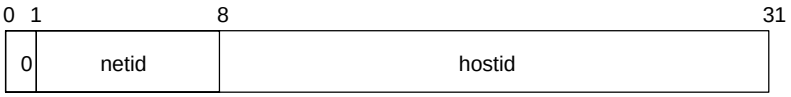
## IP addressing

Each computer in a TCP/IP network needs a unique **IP address**. The IP address may be obtained automatically during booting from a **DHCP server** (Dynamic Host Configuration Protocol).

An IP address consists of 4 bytes which make up the unique internet address of a computer. The address is usually stated in the format ”123.45.67.89”. When determining the IP protocol, several classes of addresses were defined. The address class indicates how many computers can be directly addressed.

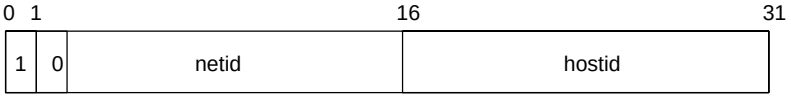
Only those computers can be addressed directly which differ by their ”hostid” only while their ”netid” is identical. Depending on the number of a computers available in a company, addresses can be allocated so that all computers available in a company network can be directly addressed:

Class A



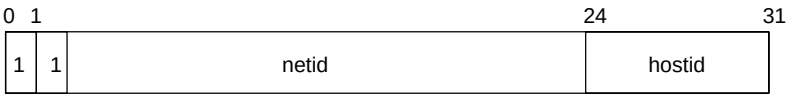

IP addresses: 0.0.0.1 to 127.255.255.255 (127.0.0.1 reserved for localhost)
7 bits reserved for network ID (netid)
24 bits reserved for hostid
hostmask 0x00ffffff; 16777216 computers can be addressed directly

Class B




IP addresses: 128.0.0.0 to 191.255.255.255 (127.0.0.1 reserved for localhost)
14 bits reserved for network ID (netid)
16 bits reserved for hostid
hostmask 0x0000ffff; 65536 computers can be addressed directly

Class C




IP addresses: 192.0.0.0 to 255.255.255.255
22 bits reserved for network ID (netid)
8 bits reserved for hostid
hostmask 0x000000ff; 256 computers can be addressed directly

Because of the increasing number of computers networked by the world wide web, a clear match between an IP address and a certain computer is no longer possible. For this reason, internal networks (intranets) are built up within companies where the IP address is only valid within the company network. Access to the world wide web is permitted via so-called firewall computers which are designed to protect the internal network against unauthorized access.

## 6.2 Configuring TCP/IP

Define the TCP/IP address of the control panel PC before adjusting the TCP/IP address of Typ3 osa.

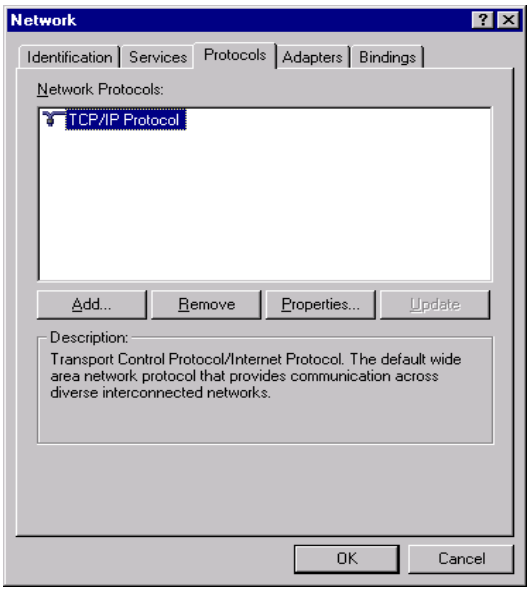
The TCP/IP address of the control panel PC is in turn based on the local network, if any, and its network ID (i.e., its IP address).

### Setting the IP address in Windows 95 / Windows NT

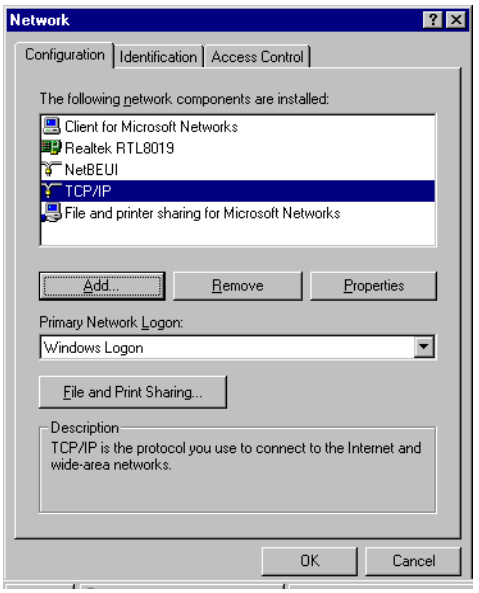
★ Select: START ▶ SETTINGS ▶ CONTROL PANEL ▶

**NETWORK** 

Windows NT 4.0 network configuration

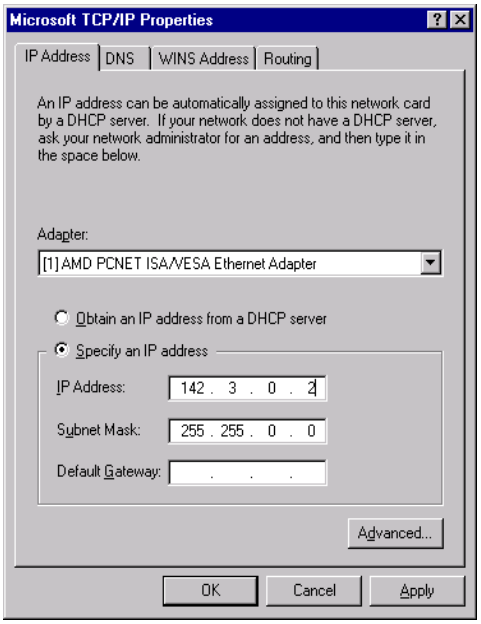



Windows 95 network configuration

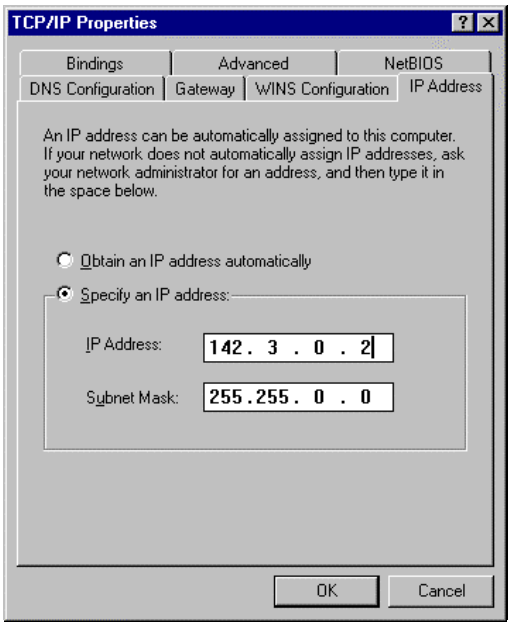


★ Open the **TCP/IP properties**

Windows NT 4.0 TCP/IP properties




Windows 95 TCP/IP properties




The following entries must be made in the ”IP address” and ”Subnet Mask” input boxes:

- **without network link**
  (Ethernet link between control panel PC and Typ3 osa only): Control panel PC: 142.3.0.2
- **Laptop computer with CD-ROM drive:**
  142.3.0.3 (example), matched to control panel PC setting
- **with network link:**
  ”IP address”, adapted to network ID of the internal company network
- Subnet Mask: 255.255.0.0 (example)

☞ **The Typ3 osa control unit must also be given a suitable IP address within a local network (refer to section 5.1.1).**

## 6.3 Sharing a network drive

### Access privileges

In order to grant another computer (client PC) access to a CD-ROM drive, the computer in which the drive is installed (server PC) must **share** this unit, i.e. it has to **grant permission to use** it.

In **Windows NT**, the administrator may create ”groups” with a ”user profile” that contains the privileges required for sharing network drives. If no such ”group” has been defined, only the administrator may define shared units.

In **Windows 95**, the possibility of sharing units is limited to those persons who have access to the Windows GUI.

### ”Sharing” resources in Windows 95 and Windows NT 4.0 on the server PC

★ Insert the ”Bosch Typ3 osa software CD” into the CD-ROM drive of the server PC

★ Click on the icons: My computer  ▶ CD-ROM  ▶,

then menu item File ▶ Sharing ... ▶

In the ”Sharing” menu, select ”Shared as”: ”CD” (Share Name)

The **shared** CD-ROM drive is marked by the symbol 

## 6.4 Mapping a network drive

The computer (client PC) that desires access to the CD-ROM drive, has to ”**map**” the shared CD-ROM drive (on the server PC) to its file system (directory).

Searching the shared CD directory named ”CD” on the server PC:

★ Select: Network neighborhood  ▶ Entire network ▶

select ”Server PC workgroup” ▶ select ”Network PC” ▶ search for ”CD” of the CD-ROM drive and click:

select
▶ File ▶ Map network drive

and then assign the ”CD” a drive letter (e.g. ”D:”).

☞ **Accessing the server PC requires a password – if configured accordingly by the administrator – before a network map can be established.**

★ Insert the CD-ROM into the drive.
Check in the Windows Explorer whether the contents of the Bosch CD are actually read.

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**1070 073 797-101 (00.08) GB** · HB NC · AT/PLS · Printed in Germany