

# TRACE32 Installation Guide

---

[TRACE32 Online Help](#)

[TRACE32 Directory](#)

[TRACE32 Index](#)

|                                                                |                                                                                     |
|----------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>TRACE32 Installation</b> .....                              |  |
| <b>TRACE32 Installation Guide</b> .....                        | <b>1</b>                                                                            |
| <b>Prerequisites</b> .....                                     | <b>6</b>                                                                            |
| <b>Basic Concepts</b> .....                                    | <b>7</b>                                                                            |
| <b>TRACE32-ICD (In-Circuit Debugging)</b> .....                | <b>8</b>                                                                            |
| Host-based Interfaces                                          | 8                                                                                   |
| USB Interface (TRACE32-USB)                                    | 8                                                                                   |
| Ethernet Interface (TRACE32-NET)                               | 9                                                                                   |
| Controller-based Interfaces                                    | 9                                                                                   |
| <b>Minimal Manual Setup (no regular installation!)</b> .....   | <b>10</b>                                                                           |
| Prerequisites and Recommendations for the Minimal Manual Setup | 11                                                                                  |
| Copy the Required Files (USB and Ethernet)                     | 12                                                                                  |
| USB Configuration                                              | 13                                                                                  |
| Set Up the Hardware (USB)                                      | 13                                                                                  |
| Install Drivers (USB)                                          | 14                                                                                  |
| Create the Configuration File (USB and NET)                    | 15                                                                                  |
| Ethernet Configuration                                         | 16                                                                                  |
| Assign a Hostname to the TRACE32 Device (Ethernet)             | 17                                                                                  |
| Modify the Configuration File (Ethernet)                       | 18                                                                                  |
| Re-configure the Hardware (Ethernet)                           | 19                                                                                  |
| Identify the Peripheral File                                   | 20                                                                                  |
| <b>TRACE32-ICE (In-Circuit Emulation)</b> .....                | <b>22</b>                                                                           |
| Legacy Host Interfaces                                         | 22                                                                                  |
| Parallel Interface (TRACE32-PAR)                               | 22                                                                                  |
| Serial Interface (TRACE32-SER)                                 | 22                                                                                  |
| Fiber Optic (TRACE32-SER, TRACE32-NET)                         | 22                                                                                  |
| SCSI Interface (TRACE32-SER, TRACE32-NET)                      | 23                                                                                  |
| Host Interface Cards                                           | 23                                                                                  |
| Fiber Optic Interface (PC-ISA)                                 | 23                                                                                  |
| Fiber Optic Interface (PC-MCA)                                 | 24                                                                                  |
| <b>Hardware Installation (TRACE32-ICE)</b> .....               | <b>25</b>                                                                           |
| Remove Modules                                                 | 25                                                                                  |
| Add Modules                                                    | 25                                                                                  |

|                                                     |           |
|-----------------------------------------------------|-----------|
| System Memory (SCU/PODETH)                          | 26        |
| SCU16-MX2                                           | 26        |
| SCU32-MX4                                           | 26        |
| <b>LEDs on TRACE32 Hardware Modules .....</b>       | <b>27</b> |
| PowerTools                                          | 27        |
| SCU32                                               | 33        |
| SCU32-MPC                                           | 34        |
| SCU32-MPC 100MBit                                   | 35        |
| PODBUS Ethernet Controller                          | 36        |
| PODBUS Ethernet Controller/100                      | 37        |
| <b>TRACE32-Interfaces .....</b>                     | <b>38</b> |
| TRACE32-USB                                         | 38        |
| Connector (USB 3.x)                                 | 38        |
| Connector (USB 2.0 and 1.x)                         | 38        |
| USB Interfaces (USB 3.x to 1.x)                     | 38        |
| TRACE32-ETHERNET                                    | 40        |
| 8P8C-Connector (T568A/B, 'RJ45')                    | 40        |
| AUI-Connector                                       | 40        |
| Ethernet Interface                                  | 40        |
| Selection of Transfer Protocol                      | 41        |
| TRACE32-PAR                                         | 42        |
| Connector                                           | 42        |
| Parallel Interface                                  | 42        |
| TRACE32-SER                                         | 43        |
| Connector                                           | 43        |
| RS232 Interfaces                                    | 43        |
| RS422-Interface                                     | 43        |
| Fiber Optic Interface                               | 43        |
| Selection of Transfer Protocol                      | 44        |
| Selection of Interface                              | 44        |
| Asynchronous RS232/RS422 Driver                     | 45        |
| SASO                                                | 46        |
| Connector                                           | 46        |
| Fiber Optic Interface                               | 46        |
| Selection of Interface                              | 46        |
| <b>SYSTEM SOFTWARE .....</b>                        | <b>47</b> |
| Files and Directories                               | 47        |
| TRACE32 System Files                                | 49        |
| Multiple Systems on one Host                        | 51        |
| File config.t32                                     | 52        |
| Parameters for the PBI Driver with LAUTERBACH Tools | 54        |
| Parameters for PBI Drivers (Software-Only)          | 60        |

|                                                   |            |
|---------------------------------------------------|------------|
| Other Configuration Scenarios                     | 64         |
| <b>Software Installation</b> .....                | <b>65</b>  |
| Floating Licenses                                 | 66         |
| MS-WINDOWS                                        | 67         |
| Quick Installation for controller-based debugging | 67         |
| File CONFIG.T32                                   | 68         |
| USB Interface                                     | 68         |
| Ethernet                                          | 69         |
| Controller-based Ethernet setup                   | 69         |
| Parallel Interface                                | 71         |
| Performance Tuning                                | 72         |
| Fiber Optic Interface                             | 72         |
| Screen/Windows                                    | 73         |
| TRACE32 as a Hidden Instance                      | 74         |
| Japanese Font                                     |            |
| Printer                                           | 76         |
| PC_LINUX                                          | 77         |
| Quick Installation                                | 77         |
| Preparations for the Ethernet Interface           | 81         |
| SUN/SPARC                                         | 82         |
| Quick Installation                                | 82         |
| File config.t32                                   | 85         |
| Ethernet Interface                                | 87         |
| SCSI Interface                                    | 88         |
| RS232 Interface                                   | 90         |
| Motif                                             | 91         |
| Terminal                                          | 95         |
| Printer                                           | 95         |
| HP-9000                                           | 96         |
| Quick Installation                                | 96         |
| HP-UX 10.X                                        | 96         |
| HP-UX 9.X and lower                               | 99         |
| File config.t32                                   | 102        |
| Ethernet Interface                                | 103        |
| SCSI Interface                                    | 104        |
| RS232 Interface                                   | 104        |
| Motif or CDE                                      | 105        |
| Printer                                           | 106        |
| <b>REMOTE Interfaces</b> .....                    | <b>107</b> |
| Example OS/9 together with PC                     | 108        |
| Example VAX/VMS and Workstation                   | 109        |
| <b>InterCom Interface</b> .....                   | <b>110</b> |

|                       |     |
|-----------------------|-----|
| Troubleshooting ..... | 111 |
| FAQ .....             | 115 |

- 22-Sep-16      Added section "[TRACE32 as a Hidden Instance](#)".
- 29-Jul-16      Added section "[Other Configuration Scenarios](#)" regarding the config.t32 file.
- 20-Jun-16      Added "[Example: Remote Control for POWER DEBUG INTERFACE / USB](#)".

# Prerequisites

TRACE32 supports these host computers and operating systems:

| Host               | OS            | Company               | Comment                   |
|--------------------|---------------|-----------------------|---------------------------|
| <b>AXP-STATION</b> |               |                       |                           |
| AXP-STATION        | DIGITAL UNIX  | DEC                   | Motif (SCU based SW only) |
| AXP-STATION        | VMS/AXP 1.5   | DEC                   | Motif (SCU based SW only) |
| <b>HP-9000/700</b> |               |                       |                           |
| HP-9000/700        | HP-UX 8.0     | HP                    | Motif (SCU based SW only) |
| HP-9000/700        | HP-UX 9.0     | HP                    | CDE (SCU based SW only)   |
| HP-9000/700        | HP-UX 10.X    | HP                    | CDE (SCU based SW only)   |
| <b>MACINTOSH</b>   |               |                       |                           |
| MACINTOSH          | LINUX/PPC     | -                     | Motif/Lesstif             |
| MACINTOSH          | MAC OS-X/X86  | Apple Inc.            | Motif                     |
| MACINTOSH          | MAC OS-X/X86  | Apple Inc.            | Qt                        |
| <b>PC</b>          |               |                       |                           |
| PC                 | WINDOWS XP    | Microsoft Corporation | 32 bit                    |
| PC                 | WINDOWS VISTA | Microsoft Corporation | 32/64 bit                 |
| PC                 | WINDOWS 7     | Microsoft Corporation | 32/64 bit                 |
| PC                 | WINDOWS 8     | Microsoft Corporation | 32/64 bit                 |
| PC                 | WINDOWS 10    | Microsoft Corporation | 64 [32] bit               |
| PC                 | LINUX         | -                     | 32/64 bit, Motif/Lesstif  |
| PC                 | LINUX         | -                     | 32/64 bit, Qt             |
| <b>SPARC</b>       |               |                       |                           |
| SPARC              | SOLARIS 2.3   | SUNSOFT               | Open Windows or Motif     |
| SPARC              | SOLARIS 2.X   | SUNSOFT               | CDE                       |
| <b>VAX-STATION</b> |               |                       |                           |
| VAX-STATION        | VMS/VAX 5.5   | DEC                   | Motif (SCU based SW only) |

There are three different types of debugging:

- **Host-based:** TRACE32/PowerView runs on the host (e.g. a PC or Unix Workstation) and handles most of the user interaction and processing. At the start of a debug session, time-critical, target-related communication software is transferred to a POWER tool and then run there.

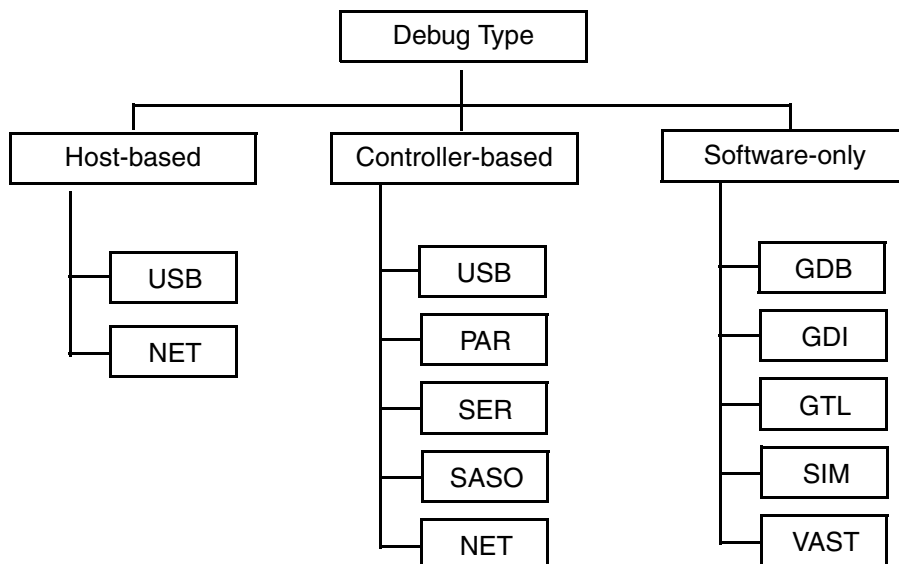
Most customers use Host-based In-Circuit-Debugging (TRACE32-ICD) and tracing.

- **Controller-based:** TRACE32 software runs mostly on the SCU or PODBUS ETHERNET CONTROLLER (PODETH) unit. The system program and the target-related communication software must first be linked together and then downloaded to the SCU/PODETH unit. The host system (e.g. a PC or Unix Workstation) only runs a GUI interface program.

This debugging type is mainly used for In-Circuit-Emulation (TRACE32-ICE).

With PCs and Workstations sufficiently powerful for Host-based debugging, not many customers use a POWER ETHERNET CONTROLLER with a PODBUS-connected POWER DEBUG tool for Controller-based In-Circuit Debugging (TRACE32-ICD).

- **Software-only:** TRACE32 PowerView GUI is used as a debug front-end, or in simulation mode, and in some operation modes also includes the Back-End. No Lauterbach TRACE32 hardware is required (except in some cases for the licensing mechanism).



## Host-based Interfaces

---

This chapter describes the host-based USB and Ethernet configurations. These types of configurations are commonly used for debugging and tracing.

- “**USB Interface (TRACE32-USB)**”, page 8
- “**Ethernet Interface (TRACE32-NET)**”, page 9

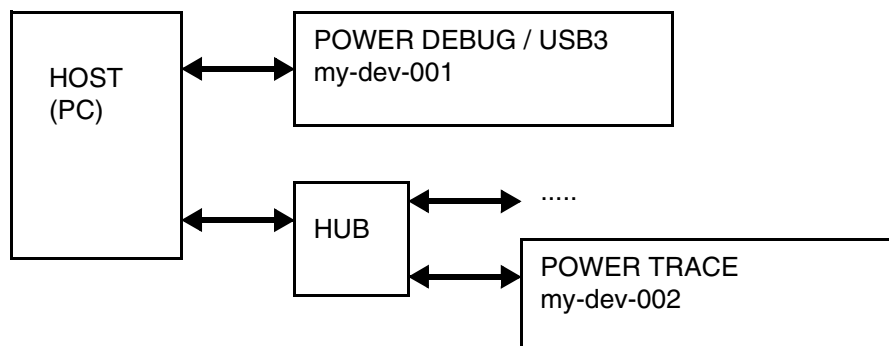
## USB Interface (TRACE32-USB)

---

The Universal Serial Bus (USB) is a standardized serial bus designed to connect peripherals to Personal Computers. The tiered-star topology allows simultaneous connection of up to 127 devices on the bus. Windows and Linux distributions provide full USB support.

If you need to debug with more than one TRACE32 POWER device, you can address these by using their **device name** in the USB configuration. In the TRACE32/PowerView GUI (abbreviated ‘TRACE32’ in this manual), you can set the device name in a dialog box that you open via the **Misc** menu > **Interface Config** (or via the TRACE32 command line using the **IFCONFIG.state** command).

Once you have set a device name, the option `NODE=<device_name>` in `config.t32` tells TRACE32 to connect with the specific ‘named USB device’ that you want.



## Ethernet Interface (TRACE32-NET)

---

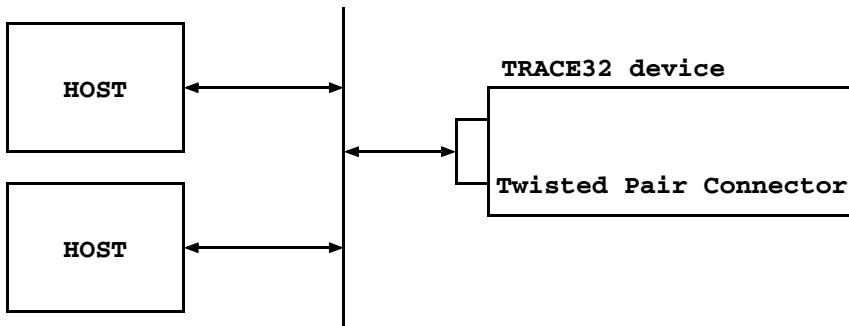
Ethernet is the physical standard for all connections to workstations or network-based PC configurations. The protocols UDP, ICMP (for ping), ARP, RARP and DHCP are supported by the TRACE32 device.

The Internet address of the device can be configured manually (e.g. using the USB Interface), with an RARP or DHCP server, or by using the `arp -s` command before making the first connection. It is not necessary to enter router information or a subnet mask.

The TRACE32 device contains a DHCP client to obtain its IP address from a DHCP server (your DHCP admin usually needs to configure this relation).

In TRACE32, you can set the device name in a dialog box that opens via the **Misc** menu > **Interface Config** (or via the TRACE32 command line using the **IFCONFIG.state** command). When your DHCP admin sets up a relationship for this name and a suitable IP address for your network, the DHCP server forwards this name-to-address information to the DNS server. With the DNS server 'knowing' the device name and IP address, TRACE32 can later use `NODE=<device_name>` in `config.t32` to connect with the device.

Alternatively you can also use the **IFCONFIG.state** dialog to set the IP address manually. Then `NODE=<address>` points TRACE32 to your device.



## Controller-based Interfaces

---

With the shift from in-circuit emulation to boundary-scan (JTAG) based debugging, controller-based interfaces have become much less common. Therefore, controller-based interfaces are not discussed here.

# Minimal Manual Setup (no regular installation!)

---

This chapter describes a minimal manual setup of the TRACE32 software and hardware for the most widespread combinations of devices and operating systems. Please keep in mind that a manual setup may be error-prone and may not work in all debug environments. After all, it is not the installer which installs all files, but **you** who copies just the minimum number of files.

Even if you do not plan to implement a minimal manual setup, this little tour behind the scenes of TRACE32 helps you gain a better understanding of how to tailor the debug system to your needs.

No one likes a black-box environment - so let's switch on the light!

## Use cases where a minimal manual setup makes sense:

- Help Lauterbach Support reproduce and solve any debug issue by quickly providing them with copies of your source and debug files, scripts and TRACE32 files in a minimal software setup (a.k.a. test-tube installation). Help us help you!
- Bundle your demo scripts and other files with a minimal TRACE32 software setup to form a self-contained demonstration kit for use at a trade fair or in a training session.
- Make portable on a USB stick - always a nice-to-have.
- In a space-restricted environment, e.g. a small Virtual Machine image.

## For a regular installation:

- For Windows, a TRACE32 DVD installer is available.  
See **“MS Windows”** in ICD Quick Installation, page 16 (icd\_quick\_installation.pdf).
- For Linux, see **“PC\_LINUX”** in ICD Quick Installation, page 19 (icd\_quick\_installation.pdf).

### NOTE:

For a regular installation, always use the TRACE32 DVD installer.

Currently there is only a TRACE32 DVD installer for Windows, but newer versions of this can also generate a file tree for Linux systems.

# Prerequisites and Recommendations for the Minimal Manual Setup

---

## Windows

---

The minimal manual setup for Windows requires:

- Access to an administrator account for driver installation
- Permission to create folders and files
- Permission to execute files from these locations

## Linux

---

The minimal manual setup for Linux requires:

- Administrator rights
- Firm knowledge of Linux commands to create folders, copy files, set permissions, etc.

Starting November 2012, the TRACE32 PowerView GUI for Linux is available in two variants:

- **Qt GUI**  
If you choose to install a Linux Qt variant of TRACE32 (e.g. t32marm-qt), then you can skip the font installation.
- **Motif GUI**  
TRACE32 for Linux uses Motif libraries for the GUI. These require installation of the TRACE32 fonts. For information about the font installation, see “**Motif GUI specific steps**” in ICD Quick Installation, page 21 (icd\_quick\_installation.pdf).

## Non-TRACE32 Hardware

---

- USB cable (even if you want to ultimately use an Ethernet configuration, for easy device setup you will temporarily want to have a USB cable)
- If you want to set up an Ethernet configuration, you will need either:
  - an Ethernet cross-over cable, or
  - an Ethernet hub or switch and two patch cables

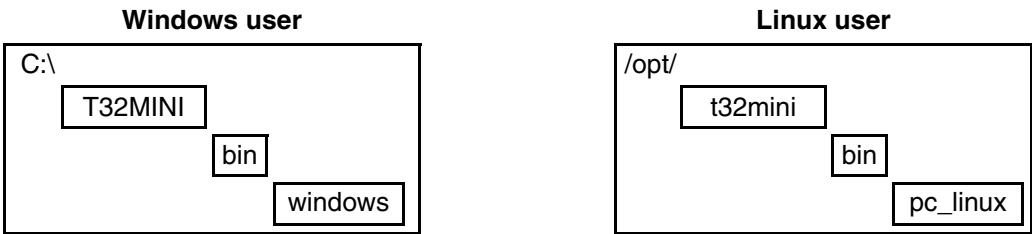
# Copy the Required Files (USB and Ethernet)

The following step-by-step description is for a minimal manual setup of TRACE32 (32-bit version) on Windows and Linux. The file set copied from the TRACE32 installation DVD to a local folder structure is the minimal ARM debugging file set required for debugging PandaBoard.

The minimal debugging file set is identical for USB and Ethernet, only the content of the configuration file `config.t32` differs.

## To copy the required files to their destination folders:

1. Create this folder structure:



2. From the TRACE32 installation DVD, copy these files into the **T32MINI** folder.

| File                     | DVD Location           | Description                                                                     |
|--------------------------|------------------------|---------------------------------------------------------------------------------|
| <code>fcc.t32</code>     | <code>...\files</code> | low-level TRACE32 device communication software                                 |
| <code>fccarm*.t32</code> | <code>...\files</code> | running on the TRACE32 device, debug support for one or more cores              |
| <code>help.t32</code>    | <code>...\files</code> | index, full text search database, error/warning messages, and tooltips          |
| <code>t32.men</code>     | <code>...\files</code> | top-level English menu file, which also initializes additional toolbar buttons. |
| <code>t32font.fon</code> | <code>...\files</code> | TRACE32 system font (Windows only)                                              |

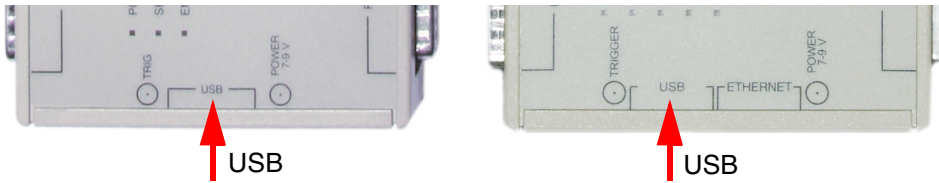
3. Copy these files to the **windows** or **pc\_linux** folder.

| File                     | DVD Location                        | Description                                                                                                                                                                                                               |
|--------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>t32marm.exe</code> | <code>...\files\bin\windows</code>  | TRACE32 for Windows (TRACE32/PowerView GUI, 32-bit version)                                                                                                                                                               |
| <code>t32marm-qt</code>  | <code>...\files\bin\pc_linux</code> | TRACE32 for Linux (32-bit version) <ul style="list-style-type: none"><li>A file name suffix <b>-qt</b> marks the Qt GUI variant of the TRACE32/PowerView GUI.</li><li>The Motif GUI variant has no such suffix.</li></ul> |

Reason for placing the binary into this **bin<os>** structure: it resembles the file structure in our update archives. Then, when updating your minimal installation, you just need to unzip one file.

# USB Configuration

The USB label is printed on USB-capable TRACE32 devices.

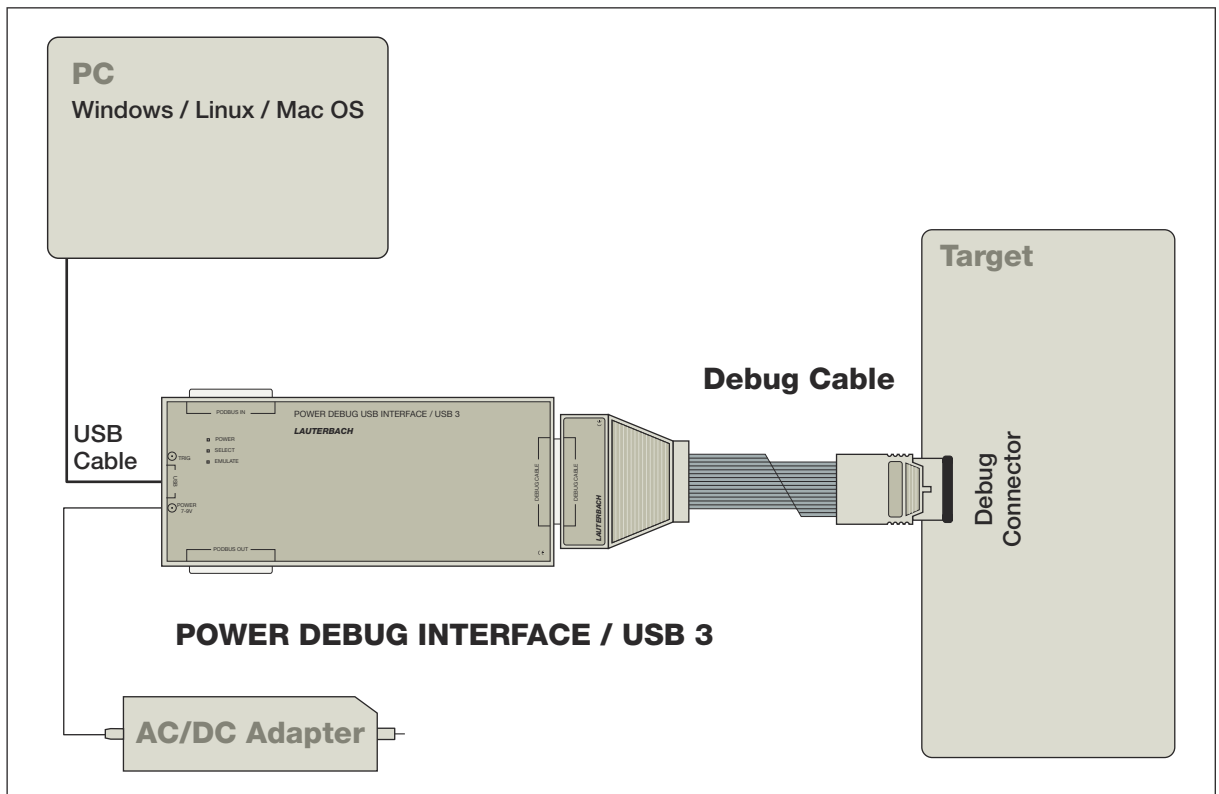


Typical devices include:

- POWER DEBUG INTERFACE / USB3, POWER DEBUG PRO, POWER DEBUG INTERFACE / USB2, POWER DEBUG INTERFACE / USB
- $\mu$ TRACE
- POWER DEBUG II
- POWER TRACE / ETHERNET

## Set Up the Hardware (USB)

1. Connect the target-specific DEBUG CABLE to the POWER DEBUG INTERFACE / USB3.
2. Plug a USB cable into the POWER DEBUG INTERFACE / USB3 and the other end into a free USB port on your Windows / Linux PC (or Workstation).
3. Connect the power adaptor that came with your POWER device to mains and to the device.



## Install Drivers (USB)

---

### Windows (USB)

---

Prerequisite for Windows is the installation of the “TRACE32 PODBUS USB driver for Windows”.

1. On the TRACE32 installation DVD, please navigate to this file:

| File                          | DVD Location                              | Description          |
|-------------------------------|-------------------------------------------|----------------------|
| <code>dpinstselect.exe</code> | <code>...\files\bin\windows\driver</code> | USB driver installer |

2. To install, double-click `dpinstselect.exe`, and then follow the instructions of the installer.

### Linux (USB)

---

For Linux, you don't need to install any drivers, but you need to make sure that the USB devices have the proper name and access rights. The access rights and name are usually configured by **udev**. Please see the installation directory on the Lauterbach TRACE32 DVD for notes and a sample **udev rules file**.

| File                    | DVD Location                                  | Description                                                                     |
|-------------------------|-----------------------------------------------|---------------------------------------------------------------------------------|
| <code>readme.txt</code> | <code>.../files/bin/pc_linux/udev.conf</code> | Instructions on how to configure Linux to make Lauterbach USB devices available |

### If you want to set up an Ethernet configuration on Windows or Linux

---

For Ethernet, you don't need any drivers, but you need to make the device “visible” via a name or an IP address. For this, you need to set up a device name and configure your DHCP server.

(a) If you know ARP and can set up DHCP or configure a local hosts file, you can use this knowledge to map the MAC address of the TRACE32 POWER device (printed on the device) to an IP address and/or host name and then use this as the `NODE=` part of the configuration file.

(b) **An easier way** for the device configuration (to set up a device name or IP address in a TRACE32 device) is to use USB:

- For Windows + Ethernet, please install the USB driver. See “**Windows (USB)**”, page 14.
- For Linux + Ethernet, please configure your udev system. See “**Linux (USB)**”, page 14.

## Create the Configuration File (USB and NET)

1. In the **windows** or **pc\_linux** folder where you have placed the TRACE32 executable, right-click and create a file named `config.t32`.
2. Open the `config.t32` file with an ASCII editor.
3. Copy and paste one of the example configurations into the `config.t32` file:
  - For Windows, use [this example](#).
  - For Linux, use [this example](#).
4. Edit your `config.t32` file - i.e. use your own paths - and assign the ID you want (see `ID=`).
5. Save your `config.t32` file and close it.
  - If you want a USB configuration, please continue at [“Identify the Peripheral File”](#), page 20.
  - If you want an Ethernet configuration, please continue at [“Ethernet Configuration”](#), page 16.

### Windows:

```
// TRACE32 configuration file for USB (Windows)
OS=
ID=T32TEST001
TMP=C:\temp                ; temporary directory for TRACE32
SYS=C:\T32MINI             ; system directory for TRACE32
HELP=G:\SERIAL\CD\files\pdf ; help directory for TRACE32

PBI=
USB

PRINTER=WINDOWS
```

### Linux:

```
// TRACE32 configuration file for USB (Linux)
OS=
ID=T32TEST001
TMP=/var/tmp                ; temporary directory for TRACE32
SYS=/opt/t32mini           ; system directory for TRACE32
HELP=/media/TRACE32/files/pdf ; help directory for TRACE32

PBI=
USB
```

#### NOTE:

For more complex configuration examples, refer to [“Parameters for the PBI Driver with LAUTERBACH Tools”](#), page 54.

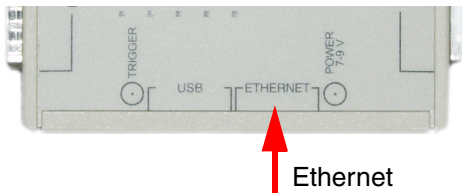
**NOTE:**

The **easiest way** to set the device name for an Ethernet configuration is to start with a USB connection.

So, please continue at [“Copy the Required Files \(USB and Ethernet\)”](#), page 12.

Then complete the rest of this chapter.

The ETHERNET label is printed on Ethernet-capable TRACE32 devices.



Typical devices include:

- POWER DEBUG PRO
- POWER DEBUG II
- POWER TRACE / ETHERNET

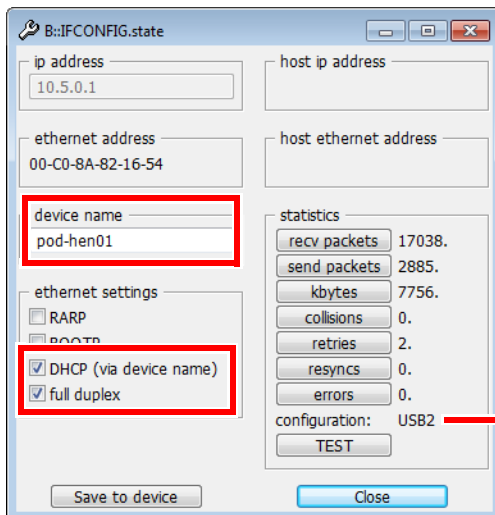
Changing an existing TRACE32 USB configuration to a TRACE32 Ethernet configuration involves these main steps:

- Assign a hostname to the TRACE32 device.
- Modify the configuration file to change the connection from USB to Ethernet.
- Power-off the TRACE32 device
- Disconnect USB from the TRACE32 device
- Connect the TRACE32 device via an Ethernet cable
- Power-on the TRACE32 device.

These steps are explained step by step in the sections below.

## Assign a Hostname to the TRACE32 Device (Ethernet)

1. Make sure your TRACE32 device is connected via USB to your PC or Unix workstation, and you have a configuration file that is properly set up for USB.
2. Power-on the TRACE32 hardware.
3. Start the TRACE32 GUI by double-clicking the TRACE32 executable in the **windows** or **pc\_linux** folder.
4. From the **Misc** menu, select **Interface Config** to open the **IFCONFIG** window.
5. In the entry field below **device name**, type the hostname you want to assign to the TRACE32 device.
6. Do one of the following:
  - If you want to use an Ethernet hub or switch, select the **DHCP (via device name)** checkbox.
  - If you to use a cross-over cable, clear the **DHCP (via device name)** checkbox, and enter the IP address you want to use for this TRACE32 device in the **ip address** box.
7. Select the **full duplex** checkbox only if autonegotiations troubles occur with the used ethernet switch or hub.



Currently it is still a USB configuration.

8. Click **Save to device**.  
This saves the device name in the internal memory of the TRACE32 device.
9. Click **Close**.
10. Choose **File** menu > **exit** to close the TRACE32 PowerView GUI.

## Modify the Configuration File (Ethernet)

Most sites will use Ethernet with DHCP and DNS to assign IP addresses and hostnames to devices. Contact your system administrator for a hostname, and then proceed as follows:

1. In the **windows** or **pc\_linux** folder where you have placed the TRACE32 executable, open the `config.t32` file with an ASCII editor.
2. Modify the `config.t32` file:
  - For Windows, refer to this [example](#).
  - For Linux, refer to this [example](#).

|                                                                                       |
|---------------------------------------------------------------------------------------|
| <b>NOTE:</b> Do NOT use whitespaces around the operator = in the configuration files. |
|---------------------------------------------------------------------------------------|

3. For `NODE=` enter the hostname you have received from your system administrator.
4. Save your `config.t32` file and close it.

### Example configuration for Windows:

```
// TRACE32 configuration file for NET
// (Windows)
OS=
ID=T32TEST002
TMP=C:\temp           ; temporary directory for TRACE32
SYS=C:\T32MINI        ; system directory for TRACE32
HELP=N:\TRACE32DVD\files\pdf ; help directory for TRACE32

PBI=
NET                   ; i.e. EtherNET
NODE=pod-hen01       ; hostname assigned to the TRACE32 device

PRINTER=WINDOWS
```

### Example configuration for Linux:

```
// TRACE32 configuration file for NET
// (Linux/MacOSX/Solaris)
OS=
ID=T32TEST002
TMP=/var/tmp
SYS=/opt/t32mini
HELP=/media/TRACE32/files/pdf

PBI=
NET                   ; i.e. EtherNET
NODE=pod-hen01       ; hostname assigned to the TRACE32 device
```

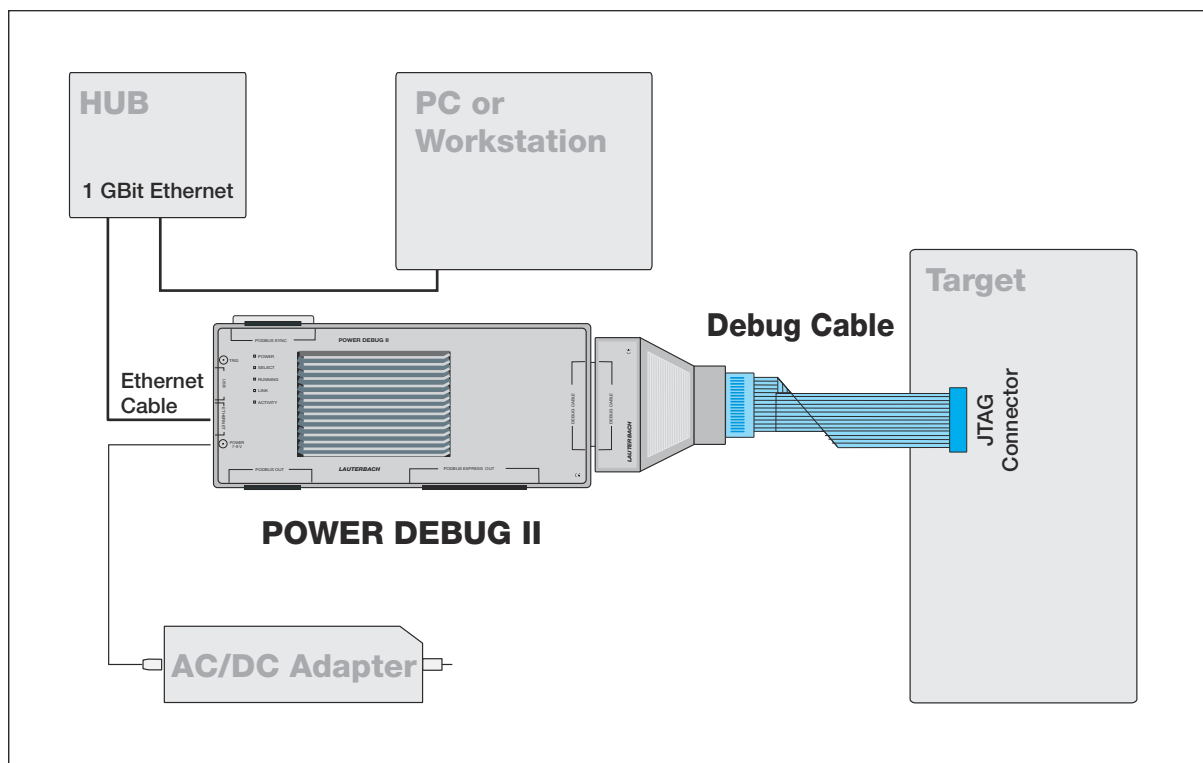
## Re-configure the Hardware (Ethernet)

Remember that we started with a USB configuration, and then modified the TRACE32 configuration file for Ethernet. Now we are ready to re-configure the TRACE32 hardware for Ethernet as well.

A direct cross-over cable link between TRACE32 device and PC or Unix workstation can only be used if you have assigned an IP address to the TRACE32 device as described in [“Assign a Hostname to the TRACE32 Device \(Ethernet\)”](#), page 17. Otherwise you need a hub (or switch) and patch cable(s).

### To re-configure the hardware for Ethernet:

1. Unplug the USB cable.
2. Do one of the following:
  - Plug an Ethernet cable into the POWER TOOL / ETHERNET and the other end into a free port on an Ethernet hub or switch.
  - If you want a direct connection with your Windows / Linux PC (or Workstation), plug the Ethernet cross-over cable directly into the POWER TOOL and your PC.



**NOTE:** Now continue with [“Identify the Peripheral File”](#), page 20.

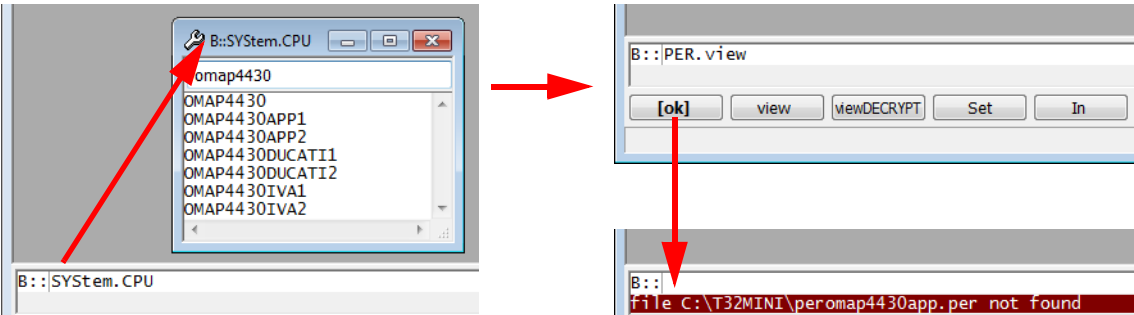
# Identify the Peripheral File

This step-by-step procedure describes how to identify the missing peripheral file (\*.per) for a *minimal manual setup*. A full installation setup copies all available \*.per files to the system directory, by default C:\t32.

## To identify the missing \*.per file in a minimal manual setup:

1. If they are not powered-on already, switch on the TRACE32 hardware, and then power-on your target board.
2. Start TRACE32 by double-clicking the TRACE32 executable in the **windows** or **pc\_linux** folder.
3. At the TRACE32 command line, type these commands:

```
SYStem.CPU ;Opens the SYStem.CPU window, displaying a list of CPUs.  
  
;Double-click the CPU you want to use, e.g. OMAP4430.  
  
PER.view ;Opens the peripheral file for the selected CPU.  
  
;If the file is not found, its name is displayed  
;in the message bar, see screenshots below.  
  
AREA.view ;Allows you to copy the file name of the missing file.
```



Remember that we have not copied any peripheral file (\*.per) yet. As a result, TRACE32 displays an error message.

4. From the TRACE32 installation DVD, copy the \*.per file to the system directory; in our example, copy **peromap4430app.per** to the **T32MINI** folder.

| File     | DVD Location | Description                                      |
|----------|--------------|--------------------------------------------------|
| per*.per | ...\files    | Definitions for on-chip peripherals (text files) |

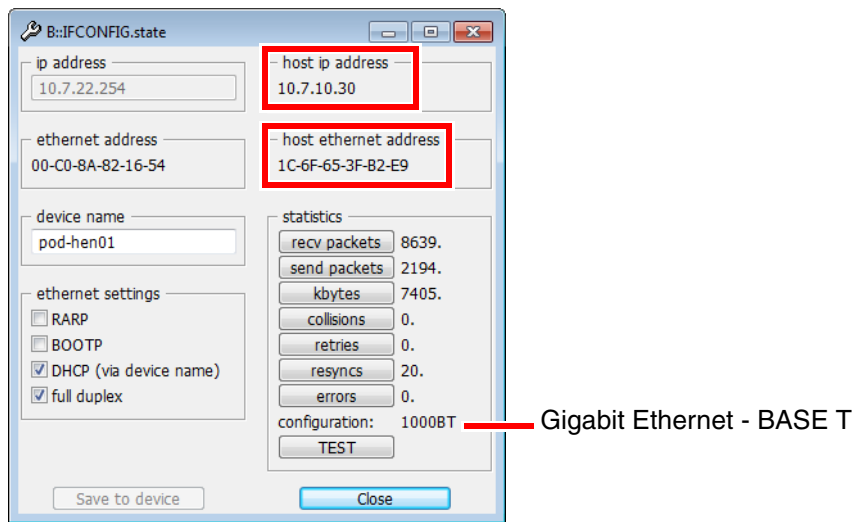
You do **NOT** need to re-start TRACE32.

5. To display the PER file contents, type these commands:

```
SYStem.Up  
PER.view ;Displays the peripheral file for the selected CPU,  
;in our example, for OMAP4430.
```

This completes the minimal manual setup of TRACE32. For the curious reader and user:

The screenshot below is an example of the **IFCONFIG.state** window after we have changed the USB configuration into an ETHERNET configuration, as described in this chapter about the minimal manual setup:



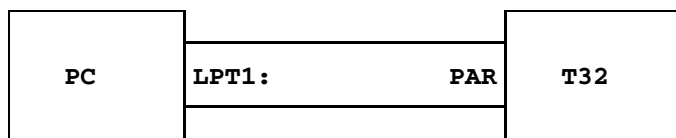
## TRACE32-ICE (In-Circuit Emulation)

## Legacy Host Interfaces

These interfaces have become obsolete or are no longer for sale.

## Parallel Interface (TRACE32-PAR)

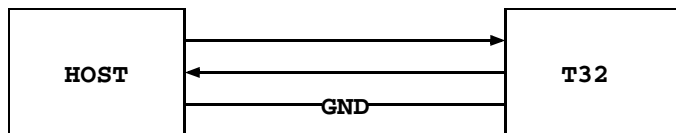
The POBBUS PARALLEL INTERFACE (host-based) was the former standard host interface for PC. With the widespread availability of faster peripheral connection methods like USB and Ethernet it has become obsolete.



Superseded by Ethernet and USB.

## Serial Interface (TRACE32-SER)

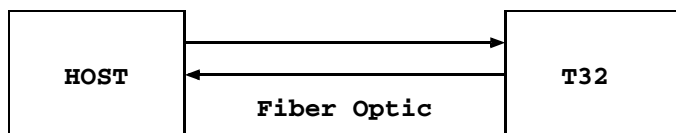
This interface is mainly used on non-standard hosts. The physical link may be RS232 or RS422. The maximum speed is 1 MBit/s with asynchronous transfer modes.



No longer available.

## Fiber Optic (TRACE32-SER, TRACE32-NET)

This interface is used on PCs only. A special interface card is needed (AT or MC bus). The max. speed is 2 MBit/s (ETHERNET card) or 1 MBit/s (SER).



No longer available.

# SCSI Interface (TRACE32-SER, TRACE32-NET)

This interface is made by a special interface box, which connects the SCSI bus to the fiber optic interface. The interface supports all workstations (UNIX or VMS).



No longer available.

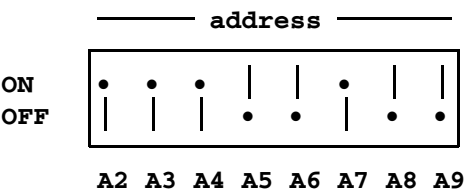
## Host Interface Cards

Both interface cards are no longer available.

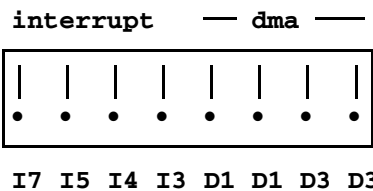
## Fiber Optic Interface (PC-ISA)

This interface card occupies a short slot with an 8 bit bus connector. The address selector is set to 360H, interrupts and DMA are not used in the standard mode. No default settings must be changed on software installation. If a DMA based driver is used, the DMA switches will be set to ON (for faster download).

Default switch settings on the interface card:



switch open: 1  
switch closed: 0



switch open: IRQ/DMA not used  
switch closed: IRQ/DMA used

This card contains no DIP switches or selectors. The interface address is configured by the adapter configuration file. The address of the port must also be selected there.

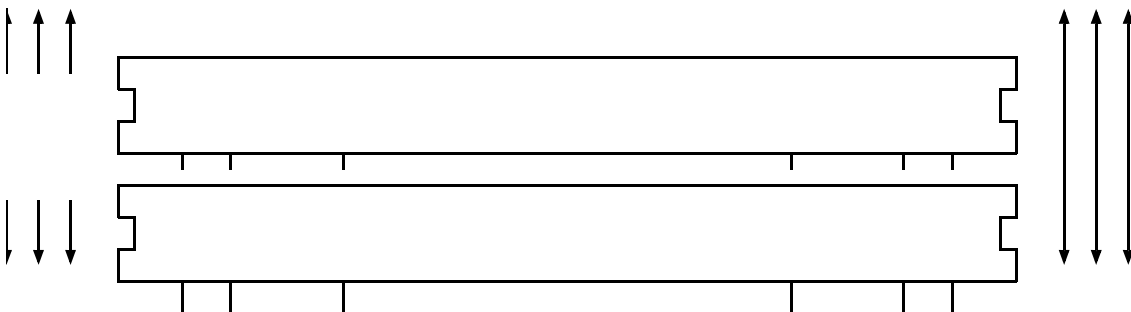
**To install the adapter in your Micro Channel computer, you have to complete the following steps:**

1. Copy the file '@50DF.ADF' to the reference disk (you got this disk with your MicroChannel-Computer).
2. Turn off your computer and install the adapter in any available slot.
3. Insert the reference disk in floppy drive A:.
4. Turn on the system.
5. After booting the setup-program will ask you whether to do an auto-configuration or not. Answer this question with 'No'.
6. Choose the 'configuration' option in the main menu of the setup program.
7. Choose the 'auto configuration' option in the configuration menu.
8. If the auto-configuration fails, you must change the 'ADF' file. Call technical support for details.
9. If the configuration was successful, choose the option 'show configuration' and scroll through the slot-list until you see the entry for the TRACE32 Fiber Optic Interface and its Base I/O-Address. Record this base address.
10. If the base address is not 360H, change the line 'ADDRESS=' in the configuration file 'config.t32' to the correct address. NOTE: The address must be entered in decimal.

## Remove Modules

---

Switch power off before opening the system. Remove the sliders between the module and other attached modules. Begin to apply force from the back end of the system, near the hole for the fan, and disconnect the module slowly.

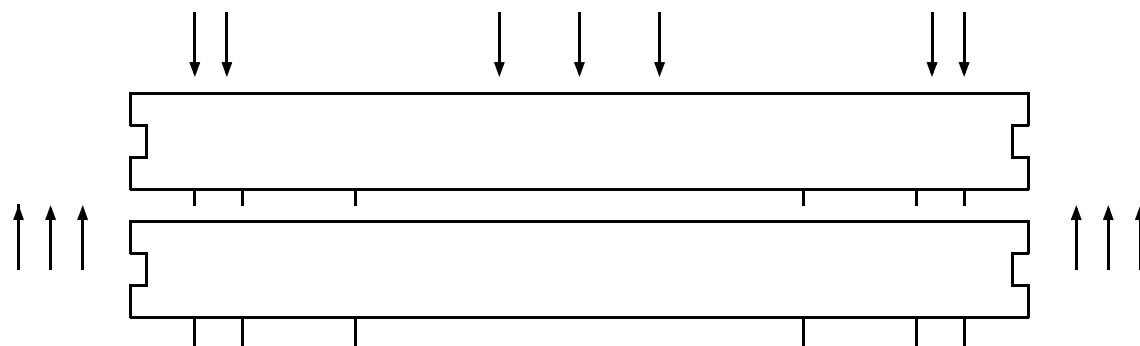


## Add Modules

---

Switch power off before opening the system. Check the connectors of the module to ensure proper alignment of the pins. Fit the connectors between the new module and the system. Be sure not to bend a pin when connecting the modules. Apply force to the connectors of the new module, beginning from the front of the system. If the module is snapped in, once apply force to all connectors to ensure proper contact. As the last step attach the cover plate and the sliders to the module.

**Apply force to the connectors**



# System Memory (SCU/PODETH)

The system controller (SCU) or the PODBUS Ethernet interface (PODETH) consists of main processor, memory and the host interface. The main software and the user interface is running on this processor. Symbol information is also held in the SCU/PODETH memory. If the error message 'out of memory' is displayed during the download of a large program, it may be necessary to upgrade the memory.

- The max. size of memory is 8 MBytes for the SCU16 and 16 MBytes for the SCU32 and up to 64 MByte for the current SCU type.
- The max. size of memory for the PODETH interface is 128 MByte.

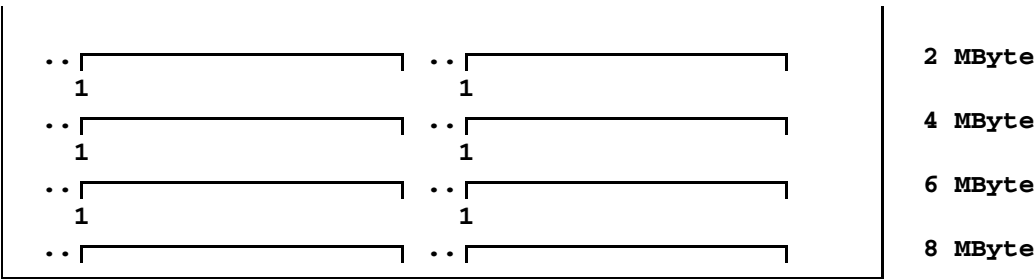
The currently used memory size can be displayed with the command **SETUP.MEMory**. As a worst case calculation for the required memory size for an HLL debug object file the following formula can be used:

$$\text{MEMORY\_SIZE} = ( \text{FILE\_SIZE} - \text{BINARY\_CODE\_SIZE} ) * 3$$

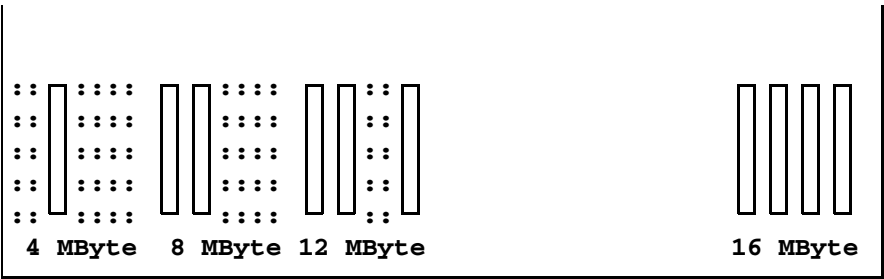
For a memory upgrade the memory module in the SCU/PODETH must be exchanged.

For SCU16, SCU-PAR, SCU32/15 and SCU32/22 memory extensions can be inserted in the SCU module after removing the cover plate with the fan.

## SCU16-MX2



## SCU32-MX4



Standard 1MBit\*4 (60/80ns) ZIP memory chips can be used to upgrade the memory. Eight memories must be used for a 4 MByte extension. Memory must be plugged in according to the schematics above, e.g. for 12 MByte the three memories in position 4, 8 and 12 must be plugged in.

## PowerTools

---

Within the PowerTools family we distinguish three types of hardware modules:

1. **Hardware modules with host interface which must be connected to the host (PODBUS SYNCH):**
  - POWER DEBUG INTERFACE / USB 3
  - POWER DEBUG PRO
  - POWER DEBUG II
2. **Hardware modules with host interface which may be connected to the host (PODBUS IN):**
  - POWER DEBUG INTERFACE / USB 2
  - POWER DEBUG / ETHERNET
  - POWER TRACE / ETHERNET
3. **Hardware modules without host interface**
  - POWER TRACE PX
  - POWER TRACE II
  - POWER PROBE / LOGIC ANALYZER
  - POWER INTEGRATOR
  - POWER INTEGRATOR II
4. **Stand-alone hardware module with host interface**
  - µTrace

## POWER LED

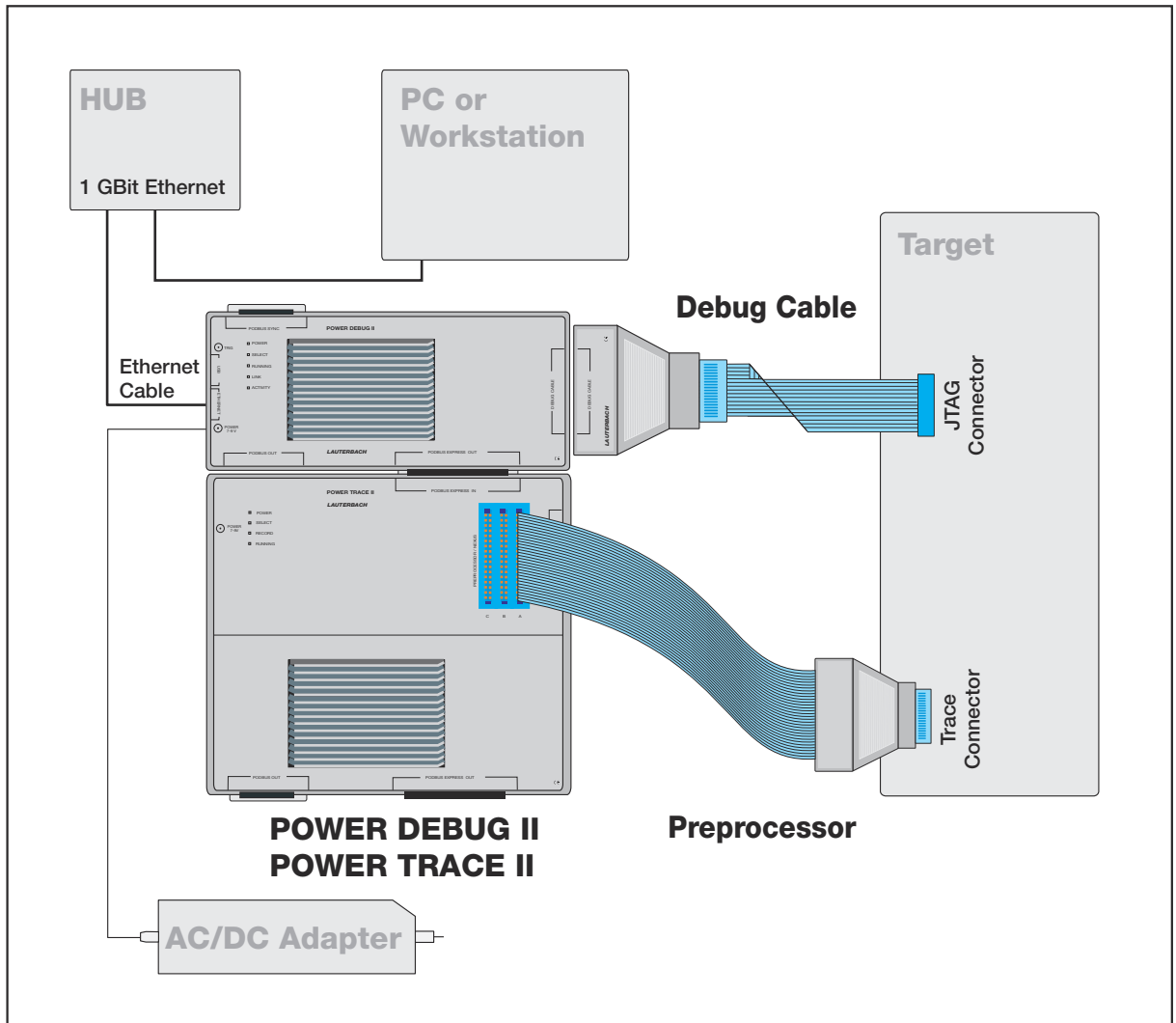
---

If the POWER LED is on, this indicates that a power supply is connected. This applies to all hardware modules except POWER TRACE II and POWER INTEGRATOR II.

## POWER TRACE II/POWER INTEGRATOR II

POWER TRACE II/POWER INTEGRATOR II are only partially powered when a power supply is connected but the TRACE32 software is not started. This avoids unnecessary noise. The POWER LED is flashing to indicate this partly powered state.

POWER TRACE II/POWER INTEGRATOR II are completely powered when the TRACE32 software is started.



In the standard configuration (one POWER TRACE II/POWER INTEGRATOR II is assembled with a POWER DEBUG II module) the power supply connected to POWER DEBUG II is sufficient to supply both units. Any further module needs an extra power supply (more the 7 A).

A POWER LED that is still flashing after the TRACE32 software is started indicates that the current power supply is not sufficient. POWER TRACE II/POWER INTEGRATOR II provide their own POWER 7-9 V connector. This connector can be used to connect an additional power supply.

### TRACE32 Software not Started

The following applies only to the hardware module that is connected to the host:

The SELECT LED flashes regularly when the self-test of the hardware module was successfully completed.

If the self test failed, the following error codes are flashed:

- Three flashes, then a pause: memory test failed
- Six flashes, then a pause: buffer overflow
- Nine flashes, then a pause: failed to load firmware
- Twelve flashes, then a pause: checksum error.

In any case, please contact your local Lauterbach support.

|              |                                                                                                                                                      |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NOTE:</b> | The uTrace does not have a SELECT LED, because it is a stand-alone hardware module. The RECORD LED is used here to indicate that a self-test failed. |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------|

### TRACE32 Software Started

The SELECT LED is on when the TRACE32 software is in communication with the hardware module.

|              |                                                                                      |
|--------------|--------------------------------------------------------------------------------------|
| <b>NOTE:</b> | The state of this LED has no meaning as long as the TRACE32 software is not started. |
|--------------|--------------------------------------------------------------------------------------|

The following applies to all hardware modules except POWER TRACE II and POWER INTEGRATOR II:

- If a single-core processor is debugged, the RUNNING/EMULATE LED is ON, when the program execution is running. The RUNNING/EMULATE LED corresponds with running indicated in the Debug field of the [TRACE32 PowerView state line](#).
- If a multi-core chip is debugged, the RUNNING/EMULATE LED is ON, when the program execution is running on the core that is the master of the debug communication (**SYStem.CONFIG Slave OFF**).

The following applied for POWER TRACE II:

- If the on-chip trace generation logic generates Nexus 5001™ compliant trace messages the RUNNING is ON, when the program execution is running. This is realizable because the trace generation logic generates Debug Status Messages at the start and the stop of the program execution.
- For all other trace protocols the RUNNING LED is on, if the POWER TRACE II hardware is ready to record trace information (see also RECORD LED description) and valid trace information is received.

The following applied for POWER INTEGRATOR II:

- For all other trace protocols the RUNNING LED is on, if the POWER TRACE II hardware is ready to record trace information (see also RECORD LED description) and valid trace information is received.

## RECORD/RECORDING/TRACE LED

---

|              |                                                                                      |
|--------------|--------------------------------------------------------------------------------------|
| <b>NOTE:</b> | The state of this LED has no meaning as long as the TRACE32 software is not started. |
|--------------|--------------------------------------------------------------------------------------|

The RECORD LED is on when the logic analyzer/ trace recording is armed. Armed means incoming trace data are recorded. The RECORD LED corresponds with ARM indicated in the Trace field of the [TRACE32 PowerView state line](#).

## TRIGGER LED

---

|              |                                                                                      |
|--------------|--------------------------------------------------------------------------------------|
| <b>NOTE:</b> | The state of this LED has no meaning as long as the TRACE32 software is not started. |
|--------------|--------------------------------------------------------------------------------------|

The TRIGGER LED is on when the logic analyzer encountered a trigger event. The TRIGGER LED corresponds with TRIGger indicated in the Trace field of the [TRACE32 PowerView state line](#).

## ERROR LED

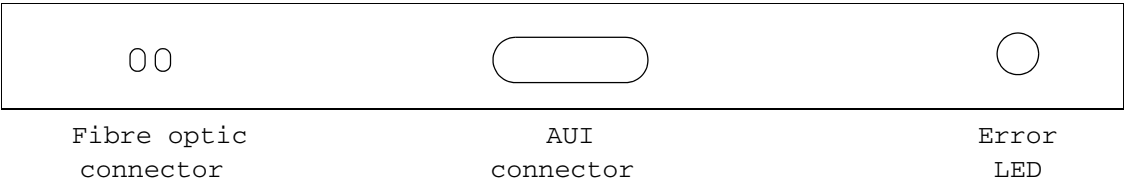
---

The ERROR LED on the POWER INTEGRATOR has no function.

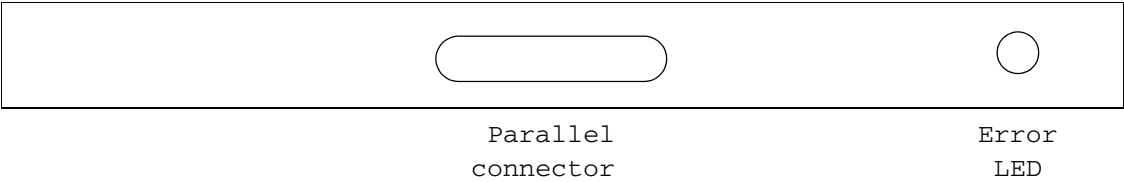
| LEDs on POWER DEBUG II |                                              |
|------------------------|----------------------------------------------|
| LINK                   | Physical link established.                   |
| ACTIVITY               | Ethernet packets received respectively sent. |

| LEDs on POWER DEBUG / ETHERNET and POWER TRACE / ETHERNET |                                     |
|-----------------------------------------------------------|-------------------------------------|
| CONNECT ERROR                                             | Ethernet connection error occurred. |
| TRANSMIT                                                  | Ethernet packets sent.              |
| RECEIVE                                                   | Ethernet packets received.          |
| COLLISION                                                 | Ethernet collision occurred.        |

Rear panel (Fibre optic connector/AUI connector):



Rear panel (Parallel interface):



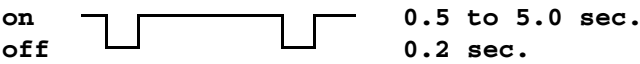
When the TRACE32 system is starting up, the Error LED on the rear of the System Control Unit (SCU) lights for 5 ... 40 s, depending on the memory size. After this delay time the error codes shown below may be blinked:



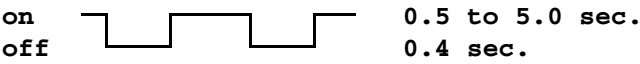
No carrier (fiber optic interface only)



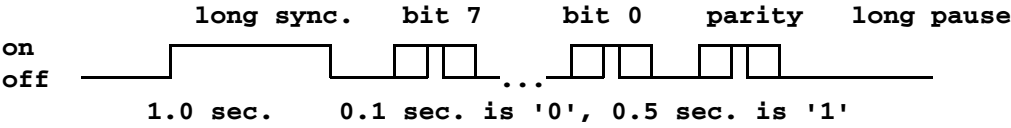
Waiting for connection (ETHERNET only)



Time-out of peripheral systems

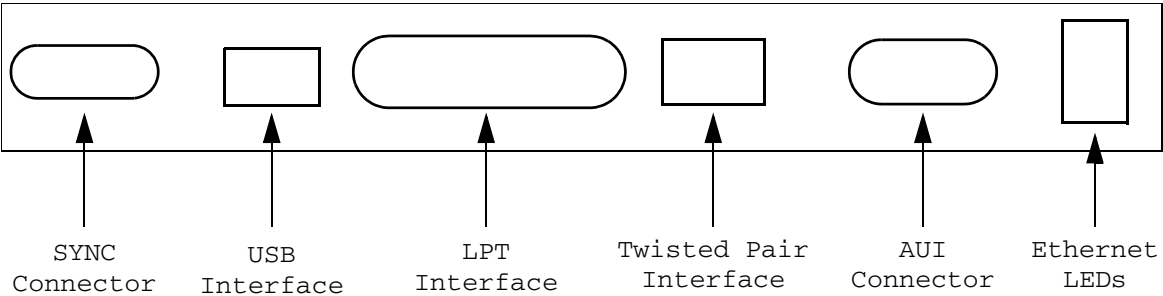


Fatal error



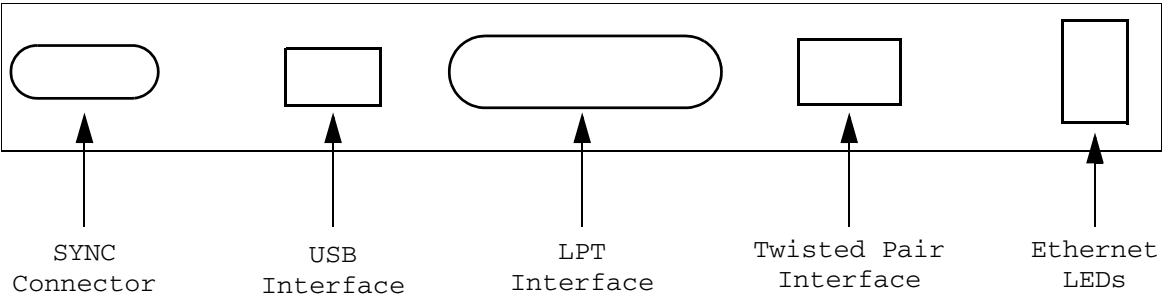
Selftest error with error code

Rear panel:



| Ethernet LEDs |                                                                          |
|---------------|--------------------------------------------------------------------------|
| T             | Transmit activity.                                                       |
| R             | Receive activity.                                                        |
| C             | Collision activity.                                                      |
| L             | Twisted pair link integrity.                                             |
| S             | Twisted Pair Polarity Error (receiver inputs TPRX+, TPRX- are reversed). |
| X             | Twisted Pair Jabber condition detected.                                  |
| E             | In error case an error code is pulsed.                                   |
| A             | On if device is active, flashes if device is not used.                   |

Rear panel:



| Ethernet LEDs |                                                                        |
|---------------|------------------------------------------------------------------------|
| T             | Transmit activity.                                                     |
| R             | Receive activity.                                                      |
| C             | Collision activity.                                                    |
| L             | Twisted pair link integrity.                                           |
| S             | Speed, on if 100MBit Ethernet is used, off if 10MBit Ethernet is used. |
| F             | Full duplex.                                                           |
| E             | In error case an error code is pulsed.                                 |
| A             | On if device is active, flashes if device is not used.                 |

|                  |                                                                          |
|------------------|--------------------------------------------------------------------------|
| <b>LEDs</b>      |                                                                          |
| <b>POWER</b>     | External power is supplied.                                              |
| <b>ACTIVE</b>    | On if device is active, flashes if device is not used.                   |
| <b>ERROR</b>     | In error case an error code is pulsed.                                   |
| <b>TRANSMIT</b>  | Transmit activity.                                                       |
| <b>RECEIVE</b>   | Receive activity.                                                        |
| <b>COLLISION</b> | Collision activity.                                                      |
| <b>LINK</b>      | Twisted pair link integrity.                                             |
| <b>POLARITY</b>  | Twisted Pair Polarity Error (receiver inputs TPRX+, TPRX- are reversed). |
| <b>JABBER</b>    | Twisted Pair Jabber condition detected.                                  |

|                  |                                                                  |
|------------------|------------------------------------------------------------------|
| <b>LEDs</b>      |                                                                  |
| <b>POWER</b>     | External power is supplied.                                      |
| <b>ACTIVE</b>    | On if device is active, flashes if device is not used.           |
| <b>ERROR</b>     | In error case an error code is pulsed.                           |
| <b>TRANSMIT</b>  | Transmit activity.                                               |
| <b>RECEIVE</b>   | Receive activity.                                                |
| <b>COLLISION</b> | Collision activity.                                              |
| <b>LINK</b>      | Twisted pair link integrity.                                     |
| <b>100 MBPS</b>  | On if 100 MBit Ethernet is used, off if 10MBit Ethernet is used. |
| <b>AUX</b>       | Full duplex.                                                     |

# TRACE32-Interfaces

---

## TRACE32-USB

---

### Connector (USB 3.x)

---

| Pin | Signal Name | Color  |
|-----|-------------|--------|
| 1   | VCC         | red    |
| 2   | D-          | white  |
| 3   | D+          | green  |
| 4   | GND         | black  |
| 5   | StdB_SSTX-  | blue   |
| 6   | StdB_SSTX+  | yellow |
| 7   | GND_DRAIN   | shield |
| 8   | StdB_SSRX-  | purple |
| 9   | StdB_SSRX+  | orange |

### Connector (USB 2.0 and 1.x)

---

| Pin | Signal Name | Color |
|-----|-------------|-------|
| 1   | VCC         | red   |
| 2   | D-          | white |
| 3   | D+          | green |
| 4   | GND         | black |

### USB Interfaces (USB 3.x to 1.x)

---

TRACE32 Power Tools can be connected with standard USB cables to any free USB port on the PC itself or on a connected USB hub (stand-alone or embedded in a peripheral, e.g. a monitor or keyboard).

From the tables above you see that a USB connector can also provide power to a device. But the 2.5 Watts provided with USB 2.0, and the 4.5 Watts specified for USB 3.0 are not enough for the sophisticated hi-speed debugging hardware used in our TRACE32 tools. Therefore TRACE32 devices are “self-powered”, i.e. they get their power from an external power supply (that usually comes with the device).

## USB 3.x

---

POWER DEBUG INTERFACE / USB3, POWER DEBUG PRO, and  $\mu$ Trace are Lauterbach TRACE32 Power Tools that support USB 3.0 SuperSpeed (max. bus transfer rate of 5 GBit/s). To take advantage of this high speed, please make sure you operate these TRACE32 devices on USB3 ports, and with matching USB3 cables.

The net transfer speed that can be obtained under real working conditions depends on a number of factors (including PC CPU and USB port chip, cable quality, but also the speed of the target JTAG interface or TRACE port) and has been observed to be roughly between 40 MBytes/s and 100 MBytes/s.

If you don't have any free USB 3.x port, you can also use an USB 2.0 port and USB 2.0 cable. Some loss of transfer speed is expected, but because of the improved internal data path layout introduced for USB 3.x, the devices still have higher transfer rates via USB 2.0 (between 20 and 35 MBytes/s) than our "pure USB 2.0" devices.

The USB 3.x standard does not specify any maximum cable length, but for SuperSpeed connections we recommend using 3 metres or less of high-quality cable, and to plug it directly into a PC USB3 port.

For comparison, a microwave oven uses 2.45 GHz frequencies, USB 3.0 uses 5.0 GHz. This means that interference from other devices, within your PC and from external devices, might affect USB transfers.

## USB 2.0

---

POWER DEBUG INTERFACE / USB2, POWER DEBUG II and POWER DEBUG / ETHERNET all implement a combined USB 2.0 and USB 1.x interface. Connected to a USB 2.0 port, they run in Hi-Speed mode (480 MBit/s) with observed transfer rates of up to 12 MBytes/s.

Please note that the USB specification limits USB 2.0 cable length to 5 metres. This already includes any device-internal wiring, however, so e.g. a laptop plugged into a docking station might cause trouble when you use a 5 metre long USB cable. Also please note that 480 MBit/s means that the USB 2.0 bus has to handle 480 MHz frequencies. At these speeds, electromagnetic interference already becomes an issue.

## USB 1.x

---

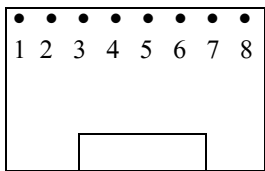
The POWER DEBUG INTERFACE / USB (as one example of this device category) is a full-speed device which uses the full USB 1.x bandwidth of 12 Mbps. USB 2.0 devices connected to a USB1.x port, will have transfer rates of up to 1.5 MBytes/s (some data can be additionally compressed, so in some cases you might observe slightly higher transfer rates).

Low-speed USB 1.x with 1.5 MHz transfer rate is not supported by TRACE32 devices.

Standard connector for the ethernet connection on TRACE32 development tools is a twisted pair connector.

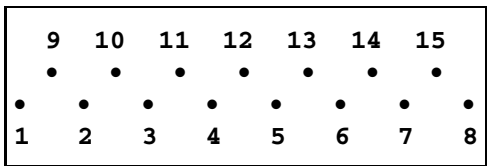
8P8C-Connector (T568A/B, 'RJ45')

This is the standard connector for Ethernet interfaces, for use with twisted-pair cabling.

|                                                                                  |        |       |                                       |
|----------------------------------------------------------------------------------|--------|-------|---------------------------------------|
|  | 1000BT | 100BT | Termination (term):<br>75 Ohms to GND |
| 1                                                                                | TRP1+  | 1     | TRP1+                                 |
| 2                                                                                | TRP1-  | 2     | TRP1-                                 |
| 3                                                                                | TRP2+  | 3     | TRP2+                                 |
| 4                                                                                | TRP3+  | 4     | (termA)                               |
| 5                                                                                | TRP3-  | 5     | (termA)                               |
| 6                                                                                | TRP2-  | 6     | TRP2-                                 |
| 7                                                                                | TRP4+  | 7     | (termB)                               |
| 8                                                                                | TRP4-  | 8     | (termB)                               |

AUI-Connector

This is a legacy interface that is not available on newer TRACE32 devices.

|                                                                                  |                   |
|----------------------------------------------------------------------------------|-------------------|
|  |                   |
| 1                                                                                | GND               |
| 2                                                                                | COL+              |
| 3                                                                                | OUT+              |
| 4                                                                                | GND               |
| 5                                                                                | IN+               |
| 6                                                                                | GND               |
| 7                                                                                | N/C               |
| 8                                                                                | N/C               |
| 9                                                                                | COL-              |
| 10                                                                               | OUT-              |
| 11                                                                               | GND               |
| 12                                                                               | IN-               |
| 13                                                                               | +12V (0.25 A max) |
| 14                                                                               | GND               |
| 15                                                                               | GND               |

Ethernet Interface

The MAC address of the Ethernet interface is recorded on the bottom of the system. The physical transfer speed is 10 MBit/s (legacy devices), 100 MBit/s or 1000 MBit/s. In idle mode, ETHERNET traffic is reduced to a minimum of 2 packets/s.

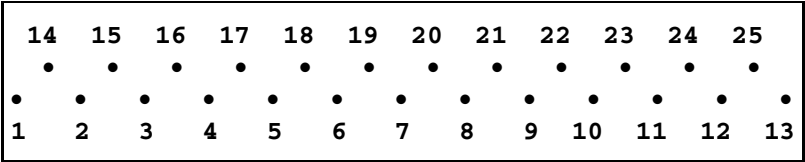
The command **SETUP.URATE** can limit the update speed of the window system, and thus reduce the Ethernet traffic, too. The command **IFCONFIG.Profile** shows statistics about Ethernet usage.

Transfer protocol and interface are selected automatically. The interface, which first establishes a connection is selected for operation. The baud rate and protocol of the fiber optic interface is selected automatically, too. The fiber optic cable can be left connected if the Ethernet interface will be used.

# TRACE32-PAR

This is a legacy interface that is not available on newer TRACE32 devices.

## Connector



|    |        |    |        |
|----|--------|----|--------|
| 1  | -STR   | 14 | -AF    |
| 2  | D0     | 15 | -ERROR |
| 3  | D1     | 16 | -INIT  |
| 4  | D2     | 17 | -SELIN |
| 5  | D3     | 18 | GND    |
| 6  | D4     | 19 | GND    |
| 7  | D5     | 20 | GND    |
| 8  | D6     | 21 | GND    |
| 9  | D7     | 22 | GND    |
| 10 | -ACK   | 23 | GND    |
| 11 | BUSY   | 24 | GND    |
| 12 | PE     | 25 | GND    |
| 13 | SELECT |    |        |

## Parallel Interface

The interface cable is connected directly to the printer port of the PC. TRACE32 supports EPP and ECP mode. The effective download speed is approximately 350 KByte/s.

This is a legacy interface that is not available on newer TRACE32 devices.

## Connector

|    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |    |
| •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  |    |
| •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  | •  |    |
| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |

|    |             |    |         |
|----|-------------|----|---------|
| 1  | GND         | 20 | CODE-0  |
| 2  | TXD RS232-0 | 21 | CODE-1  |
| 3  | RXD RS232-0 | 22 | CODE-2  |
| 4  | RTS RS232-0 | 23 | CODE-3  |
| 5  | CTS RS232-0 | 24 | CODE-4  |
| 6  | TXD RS232-1 | 25 | CODE-5  |
| 7  | RXD RS232-1 | 26 | CODE-6  |
| 8  | RTS RS232-1 | 27 | CODE-7  |
| 9  | CTS RS232-1 | 28 | CODE-8  |
| 10 | +10V        | 29 | CODE-9  |
| 11 | -10V        | 30 | CODE-10 |
| 12 | GND         | 31 | CODE-11 |
| 13 | +5V         | 32 | GND     |
| 14 | GND         | 33 | CLKIN+  |
| 15 | RXD+ RS422  | 34 | CLKIN-  |
| 16 | RXD- RS422  | 35 | CLKOUT+ |
| 17 | TXD+ RS422  | 36 | CLKOUT- |
| 18 | TXD- RS422  | 37 | GND     |
| 19 | GND         |    |         |

## RS232 Interfaces

Two serial interfaces are implemented. Both interfaces are no longer available.

## RS422-Interface

This interface is very flexible. The interface consists of clock input, clock output, data input and data output lines. The transfer protocol is asynchronous. The clock rate may be up to 1 MHz. Clock input is the same for receiver and transmitter. Clock signal is either generated by TRACE32 or the host computer.

## Fiber Optic Interface

This interface can be used for all PC-compatible host computers. For installation no change on the interface setup must be made. The physical transfer speed is 1MBit/s.

## Selection of Transfer Protocol

---

The transfer protocol is selected by coding of the interface cable connector. No change on TRACE32 system must be made by changing between different host computers.

The transfer protocol is defined by the input lines CODE-0 to CODE-11. A logical 0 is defined by shortening the input pin to ground, logical 1 is set with an open input line.

If no interface cable is used, the fiber optic link will be selected by default.

## Selection of Interface

---

CODE-11-10-9-8

|      |                                                          |
|------|----------------------------------------------------------|
| 1111 | Fiber Optic asynch. with handshake                       |
| 1110 | Fiber Optic asynch. DMA (boot EPROM version 2.3 or less) |
| 1101 | reserved                                                 |
| 1100 | RS232 no handshake                                       |
| 1011 | RS232 software handshake                                 |
| 1010 | RS422 no handshake                                       |
| 1001 | RS422 software handshake                                 |
| 1000 | reserved                                                 |
| .... |                                                          |
| 0000 | reserved                                                 |

| CODE-2-1-0 | baud rate                           |
|------------|-------------------------------------|
| 111        | 9600                                |
| 110        | 19200                               |
| 101        | 38400                               |
| 100        | 76800                               |
| 011        | 153600                              |
| 010        | 307200                              |
| 001        | 500000 (RS422 only, boot EPROM 3.x) |
| 000        | 1MBit (RS422 only, boot EPROM 3.x)  |

| CODE-4-5 | (used on software handshake only) |
|----------|-----------------------------------|
| 00       | mode 0                            |
| 01       | ...                               |
| 10       | ...                               |
| 11       | mode 3                            |

| CODE-4 | (no handshake) |
|--------|----------------|
| 0      | mode 0         |
| 1      | mode 1         |

| CODE-6 |                                                   |
|--------|---------------------------------------------------|
| 0      | block checksum, 8 bit data, no parity, 1 stop bit |
| 1      | parity, 8 bit data, even parity, 1 stop bit       |

All other pins must be left open. For details in selecting a protocol refer to the software part of the installation manual.

# SASO

This is a legacy interface that is not available on newer TRACE32 devices.

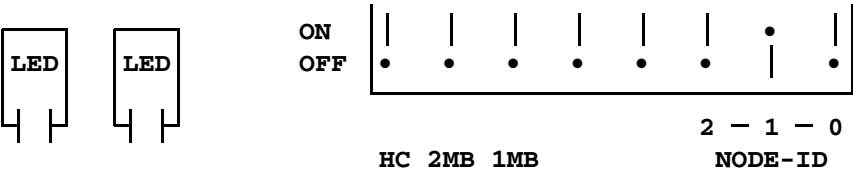
## Connector

The SASO box has two 50-pin female high density connectors, following the SCSI-II standard. Cables to connect to other standards like SCSI-I, D-SUB or DEC are available.

## Fiber Optic Interface

The transfer speed is 1, 2 or 4 MBit/s. The direct DMA protocol is used. SCUs with boot EPROM version 2.3 or less must select this protocol by shorting pin 28 and 32 on the 37-pin connector. SCUs with boot EPROM 3.x choose this protocol automatically. The interface system selects the highest transfer rate possible.

## Selection of Interface



- HC High Current Fiber Optic (for 2/4 MBit or long distance)
- 2MB Limit transfer speed to max. 2 MBit/s
- 1MB Limit transfer speed to 1 MBit/s
- NODE-ID SCSI address (default: 2)

## Files and Directories

---

The TRACE32 system needs two fixed directories. On the system directory all programs and data tables are stored. The temporary directory is used for temporary data tables. On multi-user systems with more than one TRACE32 device, all system files may be shared. Temporary directories must be kept separate for each user. Either different temp directories can be used, or the first characters of temporary file names have to be different for each user. These first characters are defined by the user ID code.

Example of the separation of paths:

| Systemtype          | ID code | System dir. | Temporary directory (example) |
|---------------------|---------|-------------|-------------------------------|
| single user         | T32     | C:\T32\*.*  | C:\TMP\T32?????               |
| multi user option 1 | T32     | C:\T32\*.*  | C:\userid\TMP\T32?????        |
| multi user option 2 | userid  | C:\T32\*.*  | C:\TMP\userid?????            |

The paths name definition for system and temp directories can be done via environment variables (of the host operating system) or in the TRACE32 configuration file. The configuration of these path names in the config.t32 file is only useful when environment variables are hard to define.

Environment variables used by TRACE32:

| Environment  | config.t32<br>OS section | usage                                                                 |
|--------------|--------------------------|-----------------------------------------------------------------------|
| T32ID        | ID=                      | ID code for temporary files (prefix)                                  |
| T32SYS       | SYS=                     | Directory for system files                                            |
| T32TMP       | TMP=                     | Directory for temporary files                                         |
| T32HELP      | HELP=                    | Directory for the PDF help files                                      |
| T32CONFIG    |                          | Pathname of configuration file<br>(used instead of config.t32)        |
| ACROBAT_PATH |                          | Unix only: Installation directory of the Acrobat Reader<br>(acroread) |

If defined in the configuration file, the definitions must be made in the "OS=" section:

```
OS=  
ID=ste  
SYS=c:\t32  
TMP=c:\tmp  
HELP=c:\t32\pdf
```

```
PBI=  
USB  
...
```

|                 |                                                                                |
|-----------------|--------------------------------------------------------------------------------|
| t32*(.exe)      | TRACE32/PowerView GUI executable, e.g. t32mppc.exe, t32marm.exe, ...           |
| config.t32      | Default name of configuration file                                             |
| license.t32     | Default name of software license file (only present if required)               |
| boot.t32        | boot loader and linker (downloaded to TRACE32 device by the TRACE32 GUI)       |
| boot*.t32       | boot files generated by the loader/linker                                      |
| mcc*.t32        | TRACE32 device software for SCU with NSC-CPU                                   |
| mcp*.t32        | TRACE32 device software (SCUPPC, POBUS ETHERNET CONTROLLER)                    |
| fcc*.t32        | TRACE32 device software for POWER TOOLS and FIRE                               |
| scc*.t32        | TRACE32 device software for ICE                                                |
| per*.per        | definition file for on-chip peripherals (text files)                           |
| help.t32        | Help index, full text search database, tooltip text and error/warning messages |
| *.pdf           | Online manual files (in the subdirectory named as HELP= in the config file)    |
| trace32.api     | TRACE32 interface file to Acrobat Reader API                                   |
| men*.men        | additional CPU- or task-specific menu files                                    |
| t32.men         | top-level English menu file                                                    |
| t32jp.men       | top-level Japanese menu file                                                   |
| t32jp-utf-8.men | top-level Japanese menu file in UTF-8 format                                   |
| t32.cmm         | start-up file (PRACTICE script)                                                |
| t32pro.ps       | postscript header file (page and formatting pre-amble for postscript output)   |
| t32font.fon     | TRACE32 font file (WINDOWS only)                                               |
| xplib.t32       | library for FLASH programmer                                                   |

The TRACE32/PowerView GUI executable binary should be installed in a directory which is in the environment search path, and the PDF files should be placed in the directory defined with HELP=. All other files **must** exist in the TRACE32 System directory (T32SYS environment variable or SYS= option).

For Host-based configurations, the TRACE32 operating software is started by entering the name of the TRACE32 binary for your chip family, e.g. "t32marm".

For SCU-based configurations, you start "t32win.exe" (Windows) or "t32cde" (Unix). When the program is executed the first time after a hardware or software update, an automatic configuration process will be started. This process includes analyzing the hardware configuration and linking a bootable image file from the corresponding 'mcc' files. The linked image is saved in a file named 'bootxx'. For each hardware configuration, one boot file is generated, so that different TRACE32 systems can share one system directory. When the t32win or t32cde program is started for the first time, it must have write-permission for the System directory. Once the bootxx.t32 file is generated, this write permission can be revoked.

If the TRACE32/PowerView GUI fails to save the bootable file in the System directory, it will attempt to use the temporary directory (defined by T32TMP) instead. This allows using the system directory in 'read-only' mode. On **UNIX** systems the keyword **NOLOCK** must be used after the header **BOOT=** to turn off the file locking for the 'boot.t32' file. Otherwise the 'boot.t32' file is accessed in read/write mode (for file locking).

```
LINK=NET
NODE=t32
PACKLEN=1024
```

```
BOOT=
NOLOCK
```

In UNIX environments, a third configuration option for the boot files is available. A dedicated user account can be defined, who owns the TRACE32 System directory and the TRACE32 device boot files. All other users only get read permissions to this directory. The TRACE32/PowerView GUI changes the user ID before accessing the boot files. This option is activated with **USER=**username in the configuration file.

Another alternative is to place the boot files in the temporary directory. This can be done by adding the keyword **TMPDIR** after the header **BOOT=** in the configuration file. The advantage over placing the boot files on the server is faster booting, and less network traffic during booting.

When all necessary boot files have been generated, all 'mcc' files can be deleted (if the disk space is needed for other applications).

## Multiple Systems on one Host

If multiple TRACE32 devices are connected to one host, they can share the same system directory. To distinguish between the devices, the environment variable 'T32CONFIG' should be set to different configuration files. The configuration files should change the T32ID with the keyword 'ID=' (after OS=).

The following example of a legacy configuration connects two in-circuit emulators to a SUN workstation via Ethernet. An alternate method is to use one configuration file including different environment variables or to build an emulator pool. In an emulator pool the driver program connects to the first available emulator of a pool of emulators.

### Two configuration files:

```
OS=  
ID=_1
```

```
LINK=NET  
NODE=t32_1
```

```
OS=  
ID=_2
```

```
LINK=NET  
NODE=t32_2
```

### Batch file to connect to emulator #1:

```
T32CONFIG=/usr/t32/config_1.t32  
export T32CONFIG  
/opt/t32/bin/suns/t32cde
```

### Environment variable in configuration file:

```
LINK=NET  
NODE=${T32NODE}  
  
SCREEN=  
HEADER=ICE ${T32NODE}
```

### Command Line Argument in configuration file:

```
LINK=NET  
NODE=${1}  
  
SCREEN=  
HEADER=ICE ${1}
```

### Emulator Pool:

```
LINK=NET  
POOL=t32_1, t32_2, t32_3
```

The configuration file for the system defines the drivers to be installed in the host. By default the software running on the host, assumes that the configuration file is in the system directory and named 'config.t32'. But this can be overruled by specifying the configuration file in the environment variable T32CONFIG. On some systems (e.g. Windows) the configuration file can be defined by a command line option (-c).

```
Format:      <driver>=[<file>|<name>|REMOTE|OFF]
              <special commands>
              ...
              empty line

<driver>:    OS
              PBI
              LINK
              SCREEN
              PRINTER
              LICENSE
              BOOT
              ALINK (PC only)
              ASCREEN (PC only)
              FILE
              KEY
              MOUSE
              SOUND
              REMOTE
              ASSIST (Ethernet only)
```

The definitions in this file are used to select, to load and to configure all TRACE32 'drivers'. All commands and names must be used as shown above (especially blanks and upper/lower case characters).

All drivers can be defined by a line containing the driver definition and some optional commands related to the defined driver. Every configuration block has a headline defining the type of the driver, an equal sign and optionally the internal name or file name of the driver. If there is no file name given, no driver is loaded and all subsequent definitions are passed to the default driver. Each driver block must end with an **empty line**.

Comments in the configuration file must begin with a semicolon in the first column.

```
; Minimal USB configuration
OS=
ID=T32TEST1
SYS=/opt/t32
TMP=/opt/t32/tmp
HELP=/opt/t32/help

PBI=
USB
NODE=pod-hen3

;eof
```

Environment variables and command line parameters can also be used:

```
; Use node name from environment variable, title from command line
PBI=
NET
NODE=${T32NODE}

SCREEN=
HEADER=${1}

;eof
```

This will use the environment variable 'T32NODE' as the definition of the Ethernet node, and the first command line argument will be used as the window header. Comments must start with a semicolon in the first column.

You can also generate 'hierarchical' configuration files by using include files:

```
$INCLUDE /usr/t32/config.all

SCREEN=
PALETTE 0 = 12 34 56

...
```

This allows to keep some configuration information local (e.g. in the home directory of the user by using the environment variable T32CONFIG), and share the rest of the configuration with other systems.

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Format:                           | <b>PBI=</b><br><i>&lt;host_interface&gt;</i><br><i>&lt;special_commands&gt;</i><br>...<br>empty line                                                                                                                                                                                                                                                                                                                                                                        |
| <i>&lt;host_interface&gt;</i> :   | <b>ADDRESS=</b> <i>&lt;address&gt;</i><br><br><b>CITRIX</b><br><br><b>USB</b><br><br><b>USB</b><br><b>NODE=</b> <i>&lt;usb_device_name&gt;</i><br><br><b>PARPORT=</b> <i>&lt;number&gt;</i><br><br><b>NET</b><br><b>NODE=</b> <i>&lt;node&gt;</i><br><b>CONNECTIONMODE=</b> <i>&lt;mode&gt;</i>                                                                                                                                                                             |
| <i>&lt;connection_mode&gt;</i> :  | <b>AUTOABORT</b><br><b>AUTOCONNECT</b><br><b>AUTORETRY</b><br><b>NORMAL</b><br><b>QUERYCONNECT</b>                                                                                                                                                                                                                                                                                                                                                                          |
| <i>&lt;special_commands&gt;</i> : | <b>AUTOABORT</b> (deprecated)<br><b>AUTOCONNECT</b> (deprecated)<br><b>AUTORETRY</b> (deprecated)<br><b>BROADCAST</b><br><b>CORE=</b> <i>&lt;n&gt;</i><br><b>INSTANCE=</b> <i>&lt;n&gt;</i><br><b>ETHERNETADDRESS=</b> <i>&lt;phy_address&gt;</i><br><b>HOSTPORT=</b> <i>&lt;n&gt;</i><br><b>PORT=</b> <i>&lt;n&gt;</i><br><b>SMALLBLOCKS</b><br><b>USE=</b> <i>&lt;bits&gt;</i><br><b>PROXYNAME=</b> <i>&lt;ip_address&gt;</i><br><b>PROXYPORT=</b> <i>&lt;port_nr&gt;</i> |

| <b>Connection Modes</b> |  | <b>not applicable for multicore debugging</b>                                                                                 |
|-------------------------|--|-------------------------------------------------------------------------------------------------------------------------------|
| AUTOABORT               |  | If debugger module is already in use, the TRACE32 executable will be closed automatically without any user interaction.       |
| AUTOCONNECT             |  | The TRACE32 executable will automatically take over control over the debugger module, even if the debugger is already in use. |
| AUTORETRY               |  | If debugger module is already in use, the TRACE32 executable will wait until the current TRACE32 session ends.                |
| NORMAL                  |  | If PowerDebug device is already in use, warn user and close application after confirmation.                                   |
| QUERYCONNECT            |  | If PowerDebug device is already in use, ask user if connection shall be forced.                                               |

| <b>Special Commands</b>               |                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AUTOABORT<br>AUTOCONNECT<br>AUTORETRY | obsolete - please use CONNECTIONMODE=<mode> instead                                                                                                                                                                                                                                                              |
| CORE                                  | Defines the default chip coordinate. In case INSTANCE is left out it, CORE will be also used as INSTANCE parameter.                                                                                                                                                                                              |
| INSTANCE                              | This defines the internal communication channel between TRACE32 executable and debug interface. Set to 0 for single-core debugging (default if not specified). For multi-core debugging (several instances of TRACE32 connect to the same debugger module), use a unique number between 1..16 for each instance. |
| HOSTPORT                              | defines the UDP communication port from the debugger module to the PC (default is PORT+n)                                                                                                                                                                                                                        |
| PORT                                  | sets the UDP communication port from the PC to the debugger module (default is 20000). For AMP, all instances must use the same port number.                                                                                                                                                                     |

| Special Commands                              |                                                                                                                                                                                                    |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SMALLBLOCKS                                   | It restricts the default communication block size to 4.5 KBytes instead of 16KB. This may avoid problems with network equipment which have resource restrictions (e.g. internal buffer overflows)  |
| USE                                           | The USEMASK selects the Lauterbach device, when several devices are connected to each other via PODBUS IN/OUT.<br>For a description and an example, see <a href="#">SYStem.USEMASK()</a> function. |
| PROXYNAME=<ip_address><br>PROXYPORT=<port_nr> | TRACE32 allows to communicate with a POWER DEBUG INTERFACE USB from a remote PC.<br>For an example, see <a href="#">“Example: Remote Control for POWER DEBUG INTERFACE / USB”</a> , page 58.       |

## Examples

### In This Section:

- [Examples for <host\\_interface>](#)
- [Examples for <special\\_commands> that are useful if TRACE32 is controlled via an API](#)
- [Example: Remote Control for POWER DEBUG INTERFACE / USB](#)

### Examples for <host\_interface>

[\[Back\]](#)

```
PBI=          ; TRACE32 development tool is connected to the
USB          ; PC via USB
```

```
PBI=          ; TRACE32 development tool is connected to the
USB          ; PC via USB
NODE=T32-ARM

              ; the TRACE32 development tool is identified by
              ; a name (IFCONFIG)

              ; a name is required if several TRACE32
              ; development tools are connected via USB

              ; requires USB-Flash V8.0 and higher, requires
              ; TRACE32 software build 8000. and higher
```

```
PBI=                ; TRACE32 development tool is connected to
NET                ; the host via ethernet
NODE=T32-ARM
```

```
PBI=                ; TRACE32 development tool is connected to
PARPORT=1          ; the PC via parallel interface
```

```
PBI=                ; TRACE32 development tool is connected to the
ADDRESS=632        ; PC via parallel interface

                    ; address of parallel port in decimal
```

```
PBI=                ; TRACE32 development tool is connected to the
CITRIX             ; PC via Citrix VD (Virtual Channel Driver,
                    ; for USB only)
```

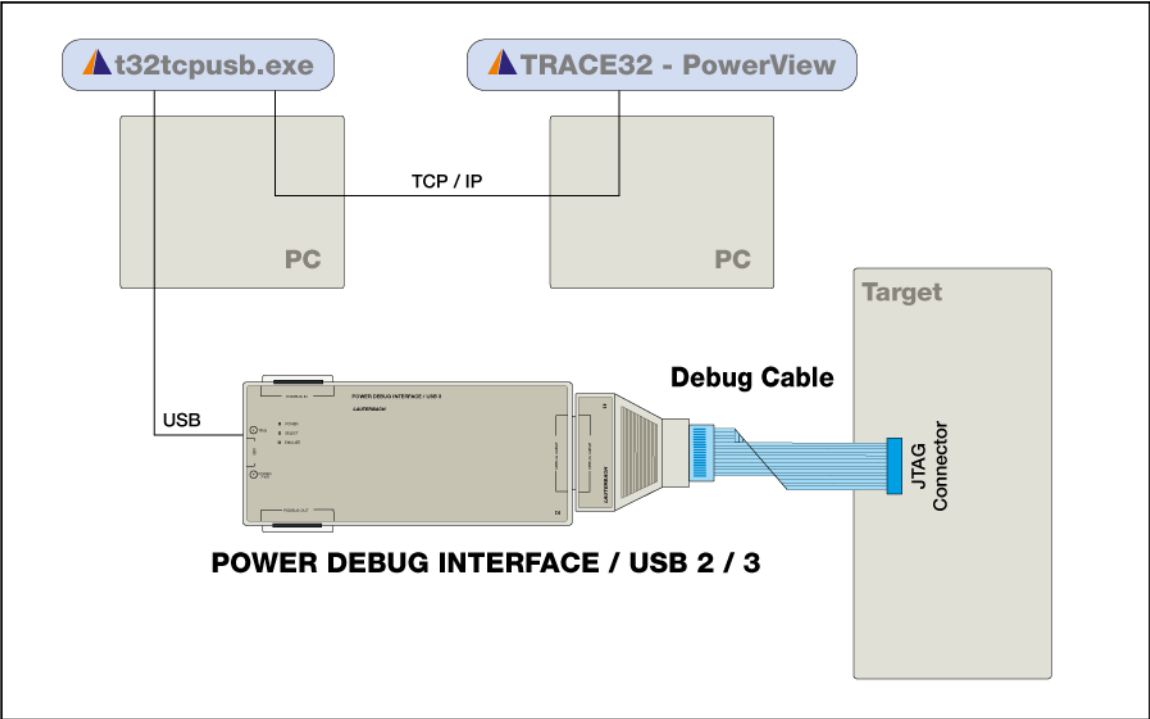
### **Examples for <special\_commands> that are useful if TRACE32 is controlled via an API**

[\[Back\]](#)

```
PBI=                ; Quit TRACE32 without any dialog when
USB                ; connection to debugger fails
CONNECTIONMODE=AUTOABORT
```

```
PBI=                ; The TRACE32 executable will automatically
NET                ; take control over the debugger module,
NODE=T32-ARM        ; even if the debugger is already in use.
CONNECTIONMODE=AUTOCONNECT
```

TRACE32 allows to communicate with a POWER DEBUG INTERFACE USB from a remote PC.



In order to implement this communication, the command line tool **t32tcpusb.exe** has to be started on the PC to which the POWER DEBUG INTERFACE USB is connected. **t32tcpusb.exe** can be found in the `bin/<target_os>` directory of your TRACE32 installation (e.g `bin/windows64`).

|                                             |                                 |
|---------------------------------------------|---------------------------------|
| <b>t32tcpusb.exe</b> <i>&lt;port_nr&gt;</i> | The default port number is 8455 |
|---------------------------------------------|---------------------------------|

```
t32tcpusb.exe 8866
```

On the remote host computer the configuration file for USB has to be extended as follows:

| Parameter      | Syntax                                                                                   | Description                                                                                                                            |
|----------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Host interface | PBI=<br>USB<br>PROXYNAME= <i>&lt;ip_address&gt;</i><br>PROXYPORT= <i>&lt;port_nr&gt;</i> | <i>&lt;ip_address&gt;</i> of PC that runs t32tcpusb.exe<br><i>&lt;port_nr&gt;</i> that was specified when<br>t32tcpusb.exe was started |

```
; Host interface
PBI=
USB
PROXYNAME=10.2.20.142
PROXYPORT=8866

; Environment variables
OS=
ID=T32
TMP=C:\temp           ; temporary directory for TRACE32
SYS=C:\t32            ; system directory for TRACE32
HELP=C:\t32\pdf       ; help directory for TRACE32

; Printer settings
PRINTER=WINDOWS       ; all standard windows printer can be
                      ; used from the TRACE32 user interface
```

|                                                               |                                                                                                                                                                                                 |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Format:                                                       | <b>PBI=&lt;driver&gt;</b><br><b>...</b><br><b>empty line</b>                                                                                                                                    |
| <b>&lt;debug_<br/>monitor_<br/>driver&gt;:</b>                | <b>COM &lt;n&gt;</b><br><b>DLL &lt;dll&gt;</b><br><b>NET &lt;address&gt;</b>                                                                                                                    |
| <b>&lt;instr._set_<br/>simulator_<br/>driver&gt;:</b>         | <b>SIM</b>                                                                                                                                                                                      |
| <b>&lt;virtual_<br/>target_<br/>driver&gt;:</b>               | <b>CADI [&lt;library_file&gt;]</b><br><b>GDI &lt;library_file&gt;</b><br><b>MCD &lt;library-file&gt;</b><br><b>MDI</b><br><b>VAST &lt;library_file&gt;</b><br><b>VDI [&lt;library_file&gt;]</b> |
| <b>&lt;3rd_party_<br/>target_<br/>server_<br/>driver&gt;:</b> | <b>DAS &lt;type&gt;</b><br><b>GDB [&lt;communication_parameters&gt;]</b><br><b>GDB-EPOC</b><br><b>OSE</b>                                                                                       |
| <b>&lt;3rd_party_<br/>simulator_<br/>driver&gt;:</b>          | <b>GDI &lt;dll&gt;</b><br><b>MDI</b><br><b>SCS</b><br><b>SIMTSI</b>                                                                                                                             |

The TRACE32 GUI can be used without any LAUTERBACH hardware as debug front-end for:

- Debugging via a TRACE32 debug monitor
- Debugging via a TRACE32 instruction set simulator
- Debugging via a third-party target server
- Debugging via a third-party simulator
- Debugging a virtual target

```
PBI=COM2 baud=38400      ; start TRACE32 for debugging via a monitor
                          ; program on the target

                          ; use RS232 as communication interface
```

```
PBI=NET 10.2.0.208      ; start TRACE32 for debugging via a monitor
                          ; program on the target

                          ; use ethernet as communication interface
```

```
PBI=DLL C16xcan.DLL      ; start TRACE32 for debugging via a monitor
                          ; program on the target

                          ; communication is performed with a user-defined
                          ; DLL
```

## TRACE32 Instruction Set Simulator

---

```
PBI=SIM                  ; start TRACE32 to debug via a TRACE32
                          ; instruction set simulator
```

## Third-Party Target Server

---

```
PBI=GDB                ; start TRACE32 for Linux debugging via
                        ; gdbserver or T32server
```

```
PBI=GDB COM1 baud=115200 ; start TRACE32 for Linux debugging via
                        ; gdbserver or T32server and use RS232 as
                        ; communication channel
```

```
PBI=GDB 127.0.0.1:30000 ; start TRACE32 for Linux debugging via
                        ; gdbserver or T32server and use TCP/IP as
                        ; communication channel by specifying
                        ; <remote_target_ip_address>:<gdb_port>
```

```
PBI=GDB localhost:30000 ; start TRACE32 for Linux debugging via
                        ; gdbserver or T32server and use TCP/IP as
                        ; communication channel by specifying
                        ; <host_name>:<gdb_port>
```

```
PBI=GDB-EPOC COM1 baud=115200 ; start TRACE32 for EPOC debugging
                                ; via EPOC gdbstub
                                ; use RS232 as communication
                                ; interface
```

```
PBI=OSE                ; start TRACE32 to debug OSE via the OSE debug
                        ; server
```

## Third-Party Simulator

---

```
PBI=GDI tsim.dll        ; start TRACE32 to debug via the Infineon
                        ; TriCore simulator
```

```
PBI=MDI                ; start TRACE32 to debug via the MDI (MIPS debug
                        ; interface) simulator
```

```
PBI=SCS                ; start TRACE32 to debug via the SCS (StarCore)
                        ; simulator
```

```
PBI=SIMTSI             ; start TRACE32 to debug via the Target Server
                        ; Simulator from Texas Instruments
```

## Virtual Targets

For examples of configuration files, see:

- **“Modifying the Configuration Files in Windows”** in Virtual Targets User’s Guide, page 13 (virtual\_targets.pdf).
- **“Modifying the Configuration File in Linux”** in Virtual Targets User’s Guide, page 20 (virtual\_targets.pdf).

## PPC Target Boards

```
PBI=ADS ; decimal address of interface port
ADDRESS=256
```

```
PBI=EBDI ; decimal address of parallel port
ADDRESS=888
```

## Other Configuration Scenarios

Other TRACE32 configuration parameters are described in the manuals pertaining to the various TRACE32 products.

| What do you want to do?                                 | Configuration is described here:                           |
|---------------------------------------------------------|------------------------------------------------------------|
| To start TRACE32 as GDB front-end                       | <b>“Starting TRACE32”</b> (frontend_gdb.pdf)               |
| To set up communication with TRACE32 via remote control | <b>“Preparing TRACE32 Device Driver”</b> (backend_gdb.pdf) |
| To start TRACE32 as front-end and GTL back-end.         | <b>“PowerView System Configurations”</b> (backend_gtl.pdf) |
| To start TRACE32 as front-end and XCP back-end.         | <b>“PowerView System Configurations”</b> (backend_xcp.pdf) |

In this chapter:

- [MS-WINDOWS](#)
- [PC\\_LINUX](#)
- [SUN/SPARC](#)
- [HP-9000](#)

For information about floating licenses, refer to [“Floating Licenses”](#) (floatinglicenses.pdf).

## Floating Licenses

---

For information about floating licenses, refer to [“Floating Licenses”](#) (floatinglicenses.pdf).

## Quick Installation for controller-based debugging

---

The installation can be done by starting “setup.bat” or “files\bin\setup64\setup.exe” (WIN2000/XP/WIN Server 2003/WIN Vista/WIN7/WIN8/WIN10).

|              |                                                                                     |
|--------------|-------------------------------------------------------------------------------------|
| <b>NOTE:</b> | <b>To install TRACE32 on WINDOWS, you have to be logged in as an administrator.</b> |
|--------------|-------------------------------------------------------------------------------------|

Three different driver programs are available for Windows:

t32win.exe (formerly t32w95.exe) for Windows 2000/XP/Vista/7/8/10

Two emulators can share one PC and the WINDOWS environment. The name of the configuration file can be defined in the command line with the option '-c'. The command line for an application may be defined by WINDOWS. The command line

```
t32win.exe -c c:\t32\configw.t32
```

will start the driver with the configuration file 'configw.t32'.

|              |                                                                                                                                                                                              |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NOTE:</b> | You can configure the TRACE32 help system with a few mouse-clicks to display the PDF help files in your favorite PDF viewer; see <a href="#">“Configure the Help System”</a> (ide_user.pdf). |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Example of a configuration script for an TRACE32 ICE:

```
LINK=PAR

SCREEN=
HEADER=TRACE32-68020
MWI

PRINTER=WINDOWS
```

## USB Interface

---

The driver must be selected. Windows 2000 / XP / Vista / 7 / 8 or 10 is required.

When the device is first connected to the system, the hardware assistant detects a new USB device and asks for a driver directory.

If the TRACE32 software is already installed, the required file (t32usb.inf) can be found in the TRACE32 installation directory (e.g. c:\t32\). Otherwise please insert the TRACE32 installation CD and let the system search for it or navigate to the directory \bin\windows\drivers..

### Configuration Command:

LINK=USB

Select USB connection

Prerequisite for Windows 7 and higher: Install the “TRACE32 PODBUS USB driver for Windows”. The USB driver installer is located in `~~/files/bin/windows/drivers` or `~~/files/bin/windows64/drivers`. To install, double-click `dpinstselect.exe`.

Controller-based Ethernet setup

The Ethernet connection requires the driver program with networking capabilities 't32w32.exe'. This program requires that a WINSOCK compatible TCP/IP provider is installed. First a new node must be created for TRACE32. The Ethernet address of the emulator is on a sticker located on the bottom or back side of the system. The following line must be added to the file HOSTS:

```
192.9.200.5      t32
```

**Note, the above used INTERNET address is an example only.** Contact your network administrator for a new INTERNET address for TRACE32. When an RARP server is used, the Ethernet address of the system must be entered in the file ETHERS:

```
0:c0:8a:0:0:0    t32
```

The INTERNET address is requested by a RARP protocol by TRACE32. If no RARP server is running, the address for the first connect must be set in the host table. After the first successful connect the INTERNET address is stored in nonvolatile memory within TRACE32. The following command sets the host translation table:

```
arp -s 192.9.200.5 0-c0-8a-0-0-0
```

|       |                                                                                                                                                                                             |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NOTE: | Windows 95 has a bug, that may cause the arp command to fail, when the arp cache is empty. In this case 'ping' another host before executing the arp command, this will fill the arp cache. |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|       |                                                                                           |
|-------|-------------------------------------------------------------------------------------------|
| NOTE: | On Windows NT the ARP command is only available if you are logged in as an administrator. |
|-------|-------------------------------------------------------------------------------------------|

If the ARP command is not available the internet address must be set by connecting the system via fiber optic link/parallel interface.

To use the network access, the net driver must be activated. The node name can be changed, when not identical to 't32'.

### Configuration Command:

|                 |                                                                                                               |
|-----------------|---------------------------------------------------------------------------------------------------------------|
| LINK=NET        | Used for controller-based debugging                                                                           |
| NODE=<nodename> | (default: t32)                                                                                                |
| PACKLEN=1024    | Limits the size of the UDP packages to 1024                                                                   |
| HANDSHAKE       | Use handshake after each packet send to host                                                                  |
| SMALLBLOCKS     | Limits the size of packet bursts to 4.5 KBytes (useful when switches or routers cannot buffer larger packets) |

This driver must be selected. As a default the address 378 (hex) is used.

**NOTE:** If starting-up the system immediately after power-up the message "LINK ERROR ..." will be displayed. This message can be ignored, the boot sequence will be started normally after the self-test has been finished.

If the interface is not working, check the BIOS setup for the Parallel Port. For the standard configuration it should be set to EPP 1.9.

### Configuration Command:

LINK=PAR                                      Used for controller-based debugging

### Commands:

|                  |                                                                                                                                                                                                    |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LPT2             | Use LPT2 instead of LPT1<br>(Preferable over ADDRESS = xxx)                                                                                                                                        |
| LPT3             | dto.                                                                                                                                                                                               |
| ADDRESS = <addr> | Use address to access the parallel interface.<br>Some common used addresses are:<br>378 (hex) 888 (decimal) for LPT1<br>278 (hex) 632 (decimal) for LPT2<br>3bc (hex) 956 (decimal) for LPT on MGA |
| EPP              | Use EPP mode.                                                                                                                                                                                      |
| ECP              | Use ECP mode.                                                                                                                                                                                      |
| SLOW             | Changes the handling to a more reliable, but slower method.                                                                                                                                        |
| FAST             | Changes the handling to a faster method.<br>This may not work on all PCs.                                                                                                                          |
| SLOWEPP          | Uses EPP mode to speed up transfer to TRACE32.                                                                                                                                                     |
| FASTEPP          | Same as above and use of FAST mode for to receive data from TRACE32.                                                                                                                               |
| SLOWFIFO         | Uses ECP buffered mode to speed up transfer.                                                                                                                                                       |
| FASTFIFO         | Same as above and use of FAST mode for to receive data from TRACE32.                                                                                                                               |

The efficiency of the parallel port (and the optimum configuration) can be checked by the **IFCONFIG.PROFILE.TESTRECV** and **IFCONFIG.PROFILE.TESTSEND** commands. The **IFCONFIG.PROFILE.RESYNC** command can show errors during the transfer. NOTE: To reach optimum performance the software is "self learning". This will result in varying transfer rates during the learn process.

When the Parallel Interface is working in the standard mode, try out the following modes:

|                 |                                                                                                                                                                                                                           |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>FASTFIFO</b> | This will give the best performance on ECP compatible cards. NOTE: You must select the ECP port mode in your BIOS setup!                                                                                                  |
| <b>SLOWFIFO</b> | This mode can be used, when FASTFIFO fails. The download speed is the same, only the upload speed may be slower (only about 10%).                                                                                         |
| <b>FASTEPP</b>  | If you have no ECP Port, but only an EPP Port, this mode can give a performance increase over the standard modes. Check the performance by repeating the <b>PROFILE.TESTRECV</b> command at least ten times.              |
| <b>SLOWEPP</b>  | Can be used, when FASTEPP does not work. The download speed is the same, only the upload speed may be slower (only about 10%). Check the performance by repeating the <b>PROFILE.TESTRECV</b> command at least ten times. |
| <b>FAST</b>     | Can be used, when neither the FIFO nor the EPP modes work. Check the performance by repeating the <b>PROFILE.TESTRECV</b> command at least ten times.                                                                     |
| <b>SLOW</b>     | Must be used when no other modes (including the default mode) work. May also be required when long or bad printer cables are used.                                                                                        |

## Fiber Optic Interface

---

The driver for the fiber optic interface in polling mode is the default driver. The DMA and interrupt switches on the interface card must be set to off. This configuration can be used for ISA and MCA interface cards.

### Configuration Command:

|       |                                     |
|-------|-------------------------------------|
| LINK= | Used for controller-based debugging |
|-------|-------------------------------------|

### Commands:

|               |                                                             |
|---------------|-------------------------------------------------------------|
| ADDRESS = 864 | Defining interface address<br>(default is 864 dec, 360 hex) |
| BAUDRATE = 1  | Limit the baud rate to 1 or 2 Mbit                          |

The special fonts will be loaded by the driver program, if they are not already (fixed) loaded. They should be manually loaded when more than one debugger is used simultaneously.

Configuration file (config.t32) commands:

### Configuration Command:

SCREEN=

### Commands:

|                                  |                                                                                                                                                                                                                                                                            |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MDI                              | MDI Multiple Document Interface (default)<br><br>All child windows appear inside the main application window.                                                                                                                                                              |
| FDI                              | Floating Document Interface<br><br>All child windows can be placed on any position on the desktop independently from the main window. Minimizing the main window, minimizes also the child windows. Only the main window appears in the task bar.                          |
| MTI                              | Multiple Top-level window Interface<br><br>All child windows can be placed on any position on the desktop independently from the main window. Minimizing the main window, minimizes none of the child windows. Both the main and all child windows appear in the task bar. |
| MWI                              | Multiple Window Interface (obsolete alias for FDI).<br><br>See FDI                                                                                                                                                                                                         |
| OFF or INVISIBLE                 | TRACE32 as a hidden instance. For details, see <a href="#">below</a> .                                                                                                                                                                                                     |
| PALETTE <n> = <red><green><blue> | Change color value, the intensities will vary from 0 to 255.                                                                                                                                                                                                               |
| FONT=SMALL                       | Use small fonts (13x7 instead of 16x8). Alternatively, you can use MEDIUM or LARGE.                                                                                                                                                                                        |
| TEXTFONT=<fontname>              | Use the specified font for text windows. The specified font must either match the size of the regular TRACE32 fonts, or must be a TrueType fixed pitch font. Examples for such fonts are "Courier New" or "Lucida Console".                                                |
| CHARSET=<number>                 | Text windows and menus use the specified character set.                                                                                                                                                                                                                    |
| MINCHO                           | Use MS-Mincho character set (Japanese)                                                                                                                                                                                                                                     |
| VLINES=<lines>                   | Startup size lines (default 35)                                                                                                                                                                                                                                            |

|                |                                                                                                |
|----------------|------------------------------------------------------------------------------------------------|
| VCOLUMNS=<col> | Startup size columns (default 81)                                                              |
| VICON          | Startup iconized (minimized)                                                                   |
| VFULL          | Startup full screen (maximized)                                                                |
| HEADER=<name>  | Header text for the TRACE32 main window                                                        |
| LINES=<lines>  | Max. number of lines (default 55)                                                              |
| COLUMNS=<col>  | Max. number of columns (default 144)                                                           |
| other          | Other commands are available for special purposes, they are not used in standard environments. |

## TRACE32 as a Hidden Instance

There are three ways to configure TRACE32 to start as a hidden instance. Choose one of the configuration options:

### Option 1:

The main window of TRACE32 remains hidden. However, dialogs and other window of TRACE32 can still be opened. This is useful, for example, if an error occurs during a regression test.

```
SCREEN=
INVISIBLE
```

#### NOTE:

- INVISIBLE must be written below SCREEN= in the config.t32 file.
- On UNIX machines, the configuration option 1 requires a running X server.

### Option 2:

The main window of TRACE32 and all other dialogs and windows of TRACE32 remain hidden - even if an error occurs.

```
SCREEN=OFF
```

#### NOTE:

- OFF must be written in the same line as SCREEN= in the config.t32 file.
- On Unix machines, the configuration option 2 does NOT require a running X server.
- However, the X libraries must be installed.

**Option 3:**

The main window of TRACE32 is added to the toolbar of the host computer. It can be fully displayed in case of an error.

```
SCREEN=  
VICON
```

## Japanese Font

---

The following example uses a Japanese font for text display.

```
SCREEN=  
TEXTFONT=@MSxxxx      ; the Japanese font name cannot be reproduced here  
CHARSET=128
```

You can also define the window position and size of TRACE32 using the **FramePOS** command or the **CmdPOS** command.

### Configuration Command:

PRINTER=<type>                      printer type (**RAW,NEC,LJ,PS,WINDOWS**)  
RAW: simple printer without graphics  
NEC: NEC compatible printer  
LJ: Laserjet compatible printer  
PS: Postscript printer  
WINDOWS: Windows native printer

### Commands:

DEV=<path>                            device name or file name  
SPOOL=<cmd>                          command is executed after printing  
IBMSET                                use PC-8 character set  
                                      for HP-Laserjet II  
NOR                                    Don't use reverse feed (e.g. CANON LJ-600)  
                                      Only for NEC printer driver.

## Quick Installation

In the following example the directory `/opt/t32` is used as the system directory.

The system directory is created with the following command:

```
mkdir /opt/t32 # or similar
```

The files are extracted from the CD to the system directory with the following commands:

```
mount /mnt/cdrom # or similar
cd /opt/t32
cp -r /mnt/cdrom/files/* ./
cp ./demo/practice/t32.cmm ./
mv bin/pc_linux/config.t32 ./ # not necessary if the TRACE32
                             # executable is called with
                             # configuration filename
                             # parameter
                             # e.g. t32marm -
                             # c/opt/t32/bin/pc_linux/config.
                             # t32
/mnt/cdrom/files/bin/pc_linux/filecvt ./ # converts all filenames to
                                         # lower case and files into
                                         # UNIX format
                                         # and uncompresses all files if
                                         # necessary
```

The following environment variables must be set (e.g. in `.bashrc` for the BASH-shell):

```
export T32SYS=/opt/t32
export T32TMP=/tmp
export T32ID=T32
```

### Prepare and install the fonts:

Since TRACE32 software release April 2010 the font installation is simplified. It's necessary to place a subdirectory named fonts (e.g. `/opt/t32/fonts`) under the TRACE32 system directory (e.g. `/opt/t32`). The TRACE32 PowerView software automatically searches for the required TRACE32 fonts in this directory if the fonts are not provided by the host operating system.

When bitmap fonts are blocked/locked from the host operating system, a usage overwrite can be activated by adding the following lines inside the actual used TRACE configuration file e.g. config.t32.

```
SCREEN=                                ; bitcoded values (0..3 allowed)
FONTMODE=3                            ; bit0: bitmap system fonts activated
                                       ; bit1: bitmap TRACE32 client fonts
                                       ; activated
```

Font installation for TRACE32 software releases older than April 2010:

```
cd /opt/t32/fonts
mkfontdir ./
xset +fp /opt/t32/fonts                # only temporary adding of TRACE32
xset fp rehash                         # fontdirectory

chkfontpath -a /opt/t32/fonts          # permanent adding of the fontdirectory
                                       # not available under SUSE distribution
```

The TRACE32 fonts can be added alternatively to an existing font server configuration.

The **TRACE32 online help system** uses an external PDF viewer for displaying the information in PDF format.

Please execute the TRACE32 command **SETUP.PDFViewer.state** inside the TRACE32 GUI once. If the autodetection fails, a manual setting will be necessary.

### Legacy information for Acrobat Reader usage:

Download Acrobat Reader from <http://www.adobe.com> and install it if not already installed on the system. Usually, you have to be root for the installation!

```
tar -xvzf linux-508.tar.gz            # or similar filename
./INSTALL                             # run the install script
```

Set the environment variable "ACROBAT\_PATH" to the Acrobat installation path:

```
export ACROBAT_PATH=/opt/Acrobat5      # added in ~/.bashrc for BASH
export ACROBAT_PATH=/opt/Adobe/Reader8 # added in ~/.bashrc for BASH
```

Copy the TRACE32 plug-in in the Acrobat plug\_ins folder (without new line):

```
cp /mnt/cdrom/files/bin/pc_linux/trace32.api
   $ACROBAT_PATH/Reader/intellinux/plug_ins
```

If applicable, disable the Acrobat Reader configuration feature: Use only certified plug-ins

Verify that you have write permission to the system directory and prepare the configuration file **config.t32**:

```
cd /opt/t32/bin/pc_linux      # depends on the location of the actual
# or                          # used configuration file - the default
cd /opt/t32                  # file location is /opt/t32 (==T32SYS)

vi config.t32

...

LINK=NET                     # executable t32cde
NODE=t32                     # please replace t32 with the actual
                             # assigned nodename for the ICE system

PBI=                          # executables t32m*
NET
NODE=t32                     # please replace t32 with the actual
                             # assigned nodename for the ICE system
```

Uncompress the executable files before usage (not necessary when filecvt was used before):

```
cd /opt/t32/bin/pc_linux  
gzip -d t32*.gz # or gunzip t32*.gz
```

Include the executable file in the PATH variable:

```
export PATH=$PATH:/opt/t32/bin/pc_linux # added in ~/.bashrc for  
# BASH - preferred solution
```

**NOTE:**

You can configure the TRACE32 help system with a few mouse-clicks to display the PDF help files in your favorite PDF viewer; see [“Configure the Help System”](#) (ide\_user.pdf).

Before the installation a new node must be created. The Ethernet address of the system is placed on the bottom side of the system. The following line must be added to the file `/etc/hosts`:

```
192.168.0.5    t32
```

Note, that the INTERNET address given here is an example only. Contact your network administrator for a new INTERNET address for TRACE32. The Ethernet address of the system must be entered in the file `/etc/ethers`:

```
0:c0:8a:0:0:0    t32
```

The INTERNET address is requested by a RARP protocol by TRACE32. If no RARP server is running, the address for the first connect must be set in the host table. After the first successful connect the INTERNET address is stored in nonvolatile memory within TRACE32. The following command sets the host translation table:

```
arp -s t32 0:c0:8a:0:0:0
```

This command must be executed **immediately before** the first startup of the emulator. It is not required for future startups because the INTERNET address is stored in the emulator. The arp cache table should be checked just before the first startup with the command 'arp -a'.

The net driver must be activated. The node name can be changed, when not identical to 't32'

### Configuration Command:

|                      |                                                          |
|----------------------|----------------------------------------------------------|
| PBI=<br>NET          | driver section read from executables t32m*               |
| NODE=<nodename>      | Node name of TRACE32 (default: t32)                      |
| POOL=<nodename>, ... | Define a set of nodes, which are scanned for connection. |
| LINK=NET             | driver section read from executables t32cde              |
| NODE=<nodename>      | Node name of TRACE32 (default: t32)                      |
| POOL=<nodename>, ... | Define a set of nodes, which are scanned for connection. |

## Quick Installation

In the following example the directory **/home/t32** is used as the system directory. The connection is made by Ethernet and the software is installed for Solaris 2.X.

The system directory is created with the following command:

```
mkdir /home/t32 # or similar
```

The files are extracted from the CD to the system directory with the following commands:

```
mount -F hsfs -o ro /dev/dsk/c0t6d0s2 /cdrom/trace32
# or similar

cd /home/t32

cp -r /cdrom/trace32/files/* .

cp ./demo/practice/t32.cmm .

mv bin/suns/config.t32 . # not necessary if the TRACE32
# executable is called with
# configuration filename parameter
# e.g. t32marm -c/home/t32/bin/suns/
# config.t32

chmod -R u+w *

/cdrom/trace32/files/bin/suns/filecvt .
# converts all filenames to lower
# case and files into UNIX format and
# uncompresses all files if necessary
```

Please modify the file config.t32 to your needs.

In the login script (e.g. .cshrc in the home directory for the C-shell) the following lines must be added:

```
setenv T32SYS /home/t32
setenv T32TMP /tmp
setenv T32ID T32
```

## Prepare and install the fonts:

```
cd /home/t32/fonts
mkfontdir .
xset +fp /home/t32/fonts
xset fp rehash
```

The **TRACE32 online help system** uses an external PDF viewer for displaying the information in PDF format.

Please execute the TRACE32 command **SETUP.PDFViewer.state** inside the TRACE32 GUI once. If the autodetection fails, a manual setting will be necessary.

### Legacy information:

Download Acrobat Reader from <http://www.adobe.com> and install it if not already installed on the system. Usually, you have to be root for the installation!

```
gzip -d sol-508.tar.gz          # or similar filename
tar -xvf sol-508.tar
./INSTALL                      # run the install script
```

Set the Environment variable "ACROBAT\_PATH" to the Acrobat installation path:

```
setenv ACROBAT_PATH /opt/Acrobat5    # added in ~/.cshrc for C-shell
```

Copy the TRACE32 plug-in in the Acrobat plug\_ins folder (without new line):

```
cp /cdrom/files/bin/suns/trace32.api  $ACROBAT_PATH/Reader/sparcsol
                                       aris/plug_ins
```

If applicable, disable the Acrobat Reader configuration feature: Use only certified plug-ins

Verify that you have write permission to the system directory and the boot.t32 file and prepare the configuration file:

```
cd /home/t32/bin/suns      # depends on the location of the actual used
# or                      # configuration file - the default file
cd /home/t32              # location is /home/t32 (==T32SYS)
vi config.t32
...

LINK=NET
NODE=t32                  # please replace t32 with the actual
                          # assigned nodename for the ICE

SCREEN=
WMGR=OW16
```

Uncompress the executable files before usage (not necessary when filecvt was used before):

```
cd /home/t32/bin/suns
gzip -d t32*.gz          # or gunzip t32*.gz
```

Include the executable file in the PATH variable:

```
setenv PATH $PATH:/home/t32/bin/suns  # added in ~/.cshrc for C-shell
# or                                  # preferred solution
```

Add the Ethernet node name to /etc/hosts and /etc/ethers (**the INTERNET address here is only an example**):

| /etc/hosts  |     | /etc/ethers     |     |
|-------------|-----|-----------------|-----|
| 192.9.200.5 | t32 | 0:c0:8a:0:12:34 | t32 |

Execute the ARP command from the system administration level to define the translation between INTERNET and Ethernet address:

```
su
...
arp -s t32 0:c0:8a:0:12:34
^D

ping t32
...
t32 is alive.
```

Start the emulator driver program and study the other configuration options in this manual.

Example of a configuration script for SUN 3/60:

```
LINK=SCSI

SCREEN=
HORSPEED=110
VERTSPEED=120
BARSPEED=75
MIDISRIGHT

PRINTER=LJ
DEV=/tmp/lstfile
SPOOL=lp -c /tmp/lstfile
IBMSET
```

Example of a configuration script for Sparc station in a network:

```
LINK=NET
NODE=trace32_15

SCREEN=
WMGR=OW16

BOOT=
USER=t32

PRINTER=LJ
DEV=/tmp/lstfile
SPOOL=lp -c /tmp/lstfile
IBMSET

PRINTER=PS
DEV=/tmp/lstfile
SPOOL=prt -lpostscript /tmp/lstfile
```

If the TRACE32 system files resides in one directory for all systems, and not everybody should have 'write permission' to that directory, it is possible to define an extra user for TRACE32. Only this user may have the right to write into the system-directory, all 'regular' users read within this directory only. This special 'user' is defined in the configuration file:

### Configuration Command:

BOOT=

NOLOCK

USER=<username>

This special user must be the owner of the executable file 't32' and the system directory. The 'Set-User-Id' bit of the 't32' file must be set:

```
chmod ugo+s t32
```

Another solution to this problem is to store the boot files in the temporary directory. In this case the keyword **NOLOCK** must be used after `BOOT=` . The rights to write to the system directory must be disabled.

The environment variable `T32CONFIG` can be used to define individual configuration scripts for each user.

Before installation a new node must be created. The Ethernet address of the emulator is on a sticker located on the bottom or back side of the system. The following line must be added to the file `/etc/hosts`:

```
192.9.200.5    t32
```

**Note, the above used INTERNET address is an example only.** Contact your network administrator for a new INTERNET address for TRACE32. The Ethernet address of the system must be entered in the file `/etc/ethers`:

```
0:c0:8a:0:0:0    t32
```

The INTERNET address is requested by a RARP protocol by TRACE32. If no RARP server is running, the address for the first connect must be set in the host table. After the first successful connect the INTERNET address is stored in nonvolatile memory within TRACE32. The following command sets the host translation table:

```
arp -s t32 0:c0:8a:0:0:0
```

This command must be executed **immediately before** the first startup of the emulator. It is not required for future startups because the INTERNET address is stored in the emulator. The arp cache table should be checked just before the first startup with the command 'arp -a'.

The net driver must be activated. The node name can be changed, when not identical to 't32'.

### Configuration Command:

LINK=NET

NODE=<nodename>

Node name of TRACE32 (default: t32)

POOL=<nodename>, ...

Define a set of nodes, which are scanned for connection.

For the SCSI interface a new device node must be created in the /dev directory. Check that the chosen combination isn't currently in use, otherwise the standard address cannot be used. The creation of the node must be done from the system administration level.

```
cd /dev
mknod t32 c 17 16
chmod a+r t32
chmod a+w t32
```

Solaris 2.X recognizes SCSI devices during the boot phase and creates automatically device nodes. This behavior can be achieved with the command

```
touch /reconfigure
```

which forces a scanning of the SCSI bus during the next booting or just boot the system with

```
boot -r
```

After this only the access rights of the node has to be changed with

```
chmod a+rw /dev/rdisk/c0t2d0s0
```

This device node is only the example for the use of the standard SCSI ID 2.

### **Configuration Command:**

LINK=SCSI

If the boot EPROM version is 2.3 or older, then the **pins 28 and 32** of the SER module must be shortened (selection of fiber optic with DMA). The workstation should be turned off, when connecting the SASO interface. The SCSI address should be selected according to the table below. The address must be selected on the SASO module (see also description SASO module).

| SCSI address | diskname | workstation | mknod |
|--------------|----------|-------------|-------|
| 1            | sd2      | SUN-3       | 17 16 |
| 2            | sd4      | SUN-3       | 17 32 |
| 2            | sd2      | Sparc       | 17 16 |
| 0            | sd3      | Sparc       | 17 24 |

Example for the configuration command under Solaris 2.X

```
LINK=SCSI  
DEV=/dev/rdisk/c0t2d0s0
```

The cable between the 37-pin TRACE32 connector and a 25-pin D-Sub connector on the host side must be connected in the following way:

|               |                                         |
|---------------|-----------------------------------------|
| (TRACE32-SER) | Pin 1, 21, 24, 26, 28 and 29 connected, |
|               | Pin 1 with Host Pin 7,                  |
|               | Pin 2 with Host Pin 3,                  |
|               | Pin 3 with Host Pin 2.                  |

### Configuration Command:

LINK=RS232

### Commands:

|                  |                                                                                                                                                                                               |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DEV=<path>       | device name (default /dev/ttya)                                                                                                                                                               |
| BLOCKSIZE=<size> | block size (default 32)                                                                                                                                                                       |
| HANDSHAKE=<mode> | handshake mode (default off)                                                                                                                                                                  |
| BAUDRATE=<code>  | baud rate code (default 38400)<br>Common used codes (for SUN) are:<br>13 -> 9600<br>14 -> 19200<br>15 -> 38400<br>See the /use/include/sys/ttydev.h file for the specific codes of your host. |

The block size should be set to 256 bytes on SUN.

Sample config.t32 file for 9600 baud:

LINK=RS232

DEV=/dev/ttya

BLOCKSIZE=256

BAUDRATE=13

Prior to starting the driver the special fonts of the TRACE32 system must be installed. There are two methods for doing this. The first method is to copy the files to the standard directory and include it in the system archive. This is the preferable method, when many users of a network system should be able to access the emulator. The second method is to keep the fonts in an extra directory. This method will be used, if there is no permission to write into the font directory.

On SunOS 4.1.x the fonts from the BDF format must be converted to the local format:

```
cd /home/t32/fonts
../bin/sun4/genfont.bat
rm *.bdf
```

The result should be a set of fonts in the X11/NEWS format (\*.fb). NOTE: This conversion is not required on Solaris 2.x.

First method (adding the fonts to the system archive):

```
cd /usr/openwin/lib/X11/fonts/misc
cp /home/t32/fonts/*.bdf .
mkfontdir .
```

or for SunOS 4.1.x:

```
cd /usr/openwin/lib/fonts
cp /usr/t32/fonts/*.fb .
/usr/openwin/bin/bldfamily -f 20
```

The above commands must be entered from the system administration level, and the OpenWindow environment must be restarted after installing the fonts.

Second method (using an extra directory and set the FONTPATH):

The environment variable FONTPATH should refer to the './fonts' directory. It could be set in the '.profile' or '.login' batch, that is executed in the login procedure, but it must be set before the window system is started.

```
FONTPATH=${FONTPATH}:/home/t32/fonts
```

or for SunOS 4.1.x:

```
FONTPATH=${FONTPATH}:/usr/t32/fonts
```

The 'bldfamily' command in this directory must be executed:

```
cd /home/t32/fonts  
mkfontdir .
```

or for SunOS 4.1.x:

```
cd /usr/t32/fonts  
/usr/openwin/bin/bldfamily -f 20
```

Restart the OpenWindows environment.

Third method (using an extra directory and xset command):

The 'bldfamily' command in this directory must be executed:

```
cd /home/t32/fonts  
mkfontdir .
```

or for SunOS 4.1.x:

```
cd /usr/t32/fonts  
/usr/openwin/bin/bldfamily -f 20
```

The 'xset' commands add this directory to the FONTPATH:

```
xset +fp /home/t32/fonts  
xset fp rehash
```

or for SunOS 4.1.x:

```
xset +fp /usr/t32/fonts  
xset fp rehash
```

## Notes for Solaris 2.X

A substitution for the third method of including a separately TRACE32 font path is to use a user specific file '\$HOME/.OWfontpath' or a host specific file '\$OPENWINHOME/lib/locale/\$LOCALE/OWfontpath' with the TRACE32 font path inside. \$LOCALE is the current selected language for the host (e.g. C for German).

## Notes for CDE (Common Desktop Environment)

Normally the commands 'WMGR' and 'STYLE' aren't necessary. With the command **TRANSIENT** the system uses Transient Shell Windows as children. The default is to use Top Level Shell Windows. Transient Shell Windows are closer coupled together but cannot be minimized or maximized.

## Notes for OpenWindows

OpenWindows cannot display colored icons. Use the configuration item **MONOICON** to select monochrome icons.

Configuration file (config.t32) commands:

### Configuration Command:

SCREEN=

### Commands:

|                                              |                                                                                                                                                                                                        |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRANSIENT                                    | Create TransientShells for client windows. The default is to use TopLevelShells. Transient Shells cannot be iconized or maximized. The visibility and stacking order is controlled by the main window. |
| XFORCE                                       | Force window position of client windows by an extra X call, bypassing the window manager. This can be used if the windows cannot be placed at the wanted location (WINPOS command).                    |
| FONT=SMALL<br>FONT=MEDIUM<br>FONT=LARGE      | Window Manager for Motif, smaller characters (13x7) dto., but larger characters (20x10). MEDIUM is the default setting.                                                                                |
| FONT=DEC                                     | alternative character size used (even) - could be used together with other FONT commands like FONT=SMALL                                                                                               |
| WMGR=MOTIF13<br>WMGR=MOTIF16<br>WMGR=MOTIF20 | Window Manager for Motif, (13x7) dto., but larger characters (16x8) dto., but larger characters (20x10)                                                                                                |
| STYLE=GREY                                   | Use own color scheme with grey background                                                                                                                                                              |
| STYLE=BLUE                                   | White text on blue background for HP-Motif                                                                                                                                                             |
| STYLE=SAND                                   | 'Sand' colors for DEC systems                                                                                                                                                                          |

|                                   |                                                                                                  |
|-----------------------------------|--------------------------------------------------------------------------------------------------|
| PALETTE <n> = <red><green> <blue> | Change color value, the intensities can vary from 0 to 65535.                                    |
| VINES=<lines>                     | start-up size lines (default 35)                                                                 |
| VCOLUMNS=<col>                    | start-up size columns (default 81)                                                               |
| VICON                             | start-up as Icon                                                                                 |
| HEADER=<name>                     | header text for window                                                                           |
| LINES=<lines>                     | max. number of lines (default 55)                                                                |
| COLUMNS=<col>                     | max. number of columns (default 144)                                                             |
| MONO                              | monochrome display on color screen                                                               |
| MONOICON                          | monochrome icons on color screen                                                                 |
| EDITTRANSLATION=<line>            | Adds the line to the translations for the editor windows                                         |
| FIXVDESK                          | Workaround for problems with virtual desktops (minimized client windows after desktop switching) |
| other                             | other commands are available for special purposes, they are not used in standard environments    |

The command **SETUP.EXT BAK %** can be used to append a '%' to the backup files, instead of replacing the extension by '.bak'.

## Terminal

---

The TRACE32 system can also be operated from a standard VT220 compatible terminal. The keyboard can be either VT220 or PC compatible. The following lines are required to use a VT220 terminal:

```
SCREEN=VT220  
  
KEY=VT220  
  
MOUSE=OFF  
  
SOUND=TERM
```

## Printer

---

Accessing a postscript printer with a customer specific command.

### Configuration Command:

PRINTER=<type>                      printer type (**RAW,NEC,LJ,PS**)

### Commands:

DEV=<path>                          device name or file name

SPOOL=<cmd>                        command is executed after printing

IBMSET                              use PC-8 character set for  
HP-Laserjet II

NOR                                  Don't use reverse feed (e.g. CANON LJ-600)  
Only for NEC printer driver.

```
PRINTER=PS  
DEV=/tmp/${T32ID}lstfile  
SPOOL=prt -lpostscript /tmp/${T32ID}lstfile
```

## Quick Installation

### HP-UX 10.X

In the following example the directory '/home/t32' is used as the system directory and the connection is made by Ethernet.

The system directory is created by the following commands:

```
mkdir /home/t32 # or similar
```

Extracting the files from CD (the device name is only an example):

```
pfs_mountd &
pfsd &

pfs_mount -t iso9660 -x unix /dev/dsk/c0t2d0 /cdrom # or similar

cd /home/t32
cp -r /cdrom/files/* .
cp demo/practice/t32.cmm .
mv bin/hp700/config.t32 . # not necessary if the TRACE32
                          # executable is called with
                          # configuration filename parameter
                          # e.g. t32marm -
                          # c/home/t32/bin/hp700/config.t32

chmod -R u+w *
/cdrom/files/bin/hp700/filecvrt . # converts all filenames to lower
                                  # case and files into UNIX format and
                                  # uncompresses all files if necessary
```

Please modify the file config.t32 to your needs.

In the login script (.cshrc in the home directory) the following lines must be added:

```
setenv T32SYS /home/t32
setenv T32TMP /tmp
setenv T32ID T32
```

If you use multiple TRACE32 on one system also set:

```
setenv T32CONFIG /home/t32/bin/hp700/config.t32 # added in ~/.cshrc
                                                  # for C-shell
```

Prepare and install the fonts:

```
cd /home/t32/fonts
/usr/bin/X11/mkfontdir .
xset +fp /home/t32/fonts
xset fp rehash
```

The TRACE32 online help uses the Adobe Acrobat Reader for displaying the information in PDF format. Download Acrobat Reader from <http://www.adobe.com> and install it if not already installed on the system. Usually, you have to be root for the installation!

```
gzip -d hpux-508.tar.gz          # or similar filename
tar -xvf hpux-508.tar
./INSTALL                        # run the install script
```

Set the Environment variable “ACROBAT\_PATH” to the Acrobat installation path:

```
setenv ACROBAT_PATH /opt/Acrobat5
```

Copy the TRACE32 plug-in in the Acrobat plug\_ins folder (without new line):

```
cp /cdrom/files/bin/hp700/trace32.api $ACROBAT_PATH/Reader/hppahpux/
                                         plug_ins
```

Verify that you have write permission to the system directory and the boot.t32 file and prepare the configuration file:

```
cd /home/t32/bin/hp700          # depends on the location of the actual used
    # or                        # configuration file - the default file
cd /home/t32                    # location is /home/t32 ($T32SYS)
vi config.t32
...

LINK=NET                        # please replace t32 with the actual
NODE=t32                       # assigned nodename for the ICE
```

If you don't have write permission to the system directory file boot.32 your config.t32 should look like this:

```
LINK=NET
NODE=t32

BOOT=
NOLOCK
```

Uncompress the executable files before usage (not necessary when filecvt was used before):

```
cd /home/t32/bin/hp700          # or   gunzip t32m*.gz
gzip -d t32m*.gz
```

Include the executable file in the PATH variable

```
setenv PATH $PATH:/home/t32/bin/hp700  # added in ~/.cshrc for C-shell
                                          # preferred solution
```

Add the Ethernet node name to /etc/hosts (**the INTERNET address here is only an example**):

```
/etc/hosts

192.9.200.5    t32
```

The INTERNET address is requested by a RARP protocol by TRACE32. If no RARP server is running, the address for the first connect must be set in the host table. After the first successful connect the INTERNET address is stored in nonvolatile memory within TRACE32. The following command sets the host translation table:

```
su
...
arp -s t32 0:c0:8a:0:12:34
^D

ping t32
...
t32 is alive.
```

Start the emulator driver program and study the other configuration options in this manual.

In the following example the directory '/users/t32' is used as the system directory and the connection is made by Ethernet.

The system directory is created by the following commands:

```
mkdir /users/t32 /users/t32/bin /users/t32/bin/hp700 /users/t32/demo
cd /users/t32
```

Extracting the files from CD (the device name is only an example):

```
mount -r -t cdofs /dev/dsk/c201d2s0 /cdrom
mkdir /users/t32
cd /users/t32
/cdrom/FILES/BIN/HP700/CPLLOWER /cdrom/FILES/DEMO/* /users/t32/demo
/cdrom/FILES/BIN/HP700/CPLLOWER /cdrom/FILES/BIN/HP700
/users/t32/bin/hp700
```

In the login script (.cshrc in the home directory) the following lines must be added:

```
setenv T32SYS /users/t32
setenv T32TMP /tmp
setenv T32ID T32
```

If you use multiple TRACE32 on one system also set:

```
setenv T32CONFIG /users/t32/config.t32
```

Prepare and install the fonts:

```
cd /users/t32/fonts
/usr/bin/X11/mkfontdir .
xset +fp /users/t32/fonts
xset fp rehash
```

Prepare and install the hyperhelp system if not already installed on the system:

```
mkdir /users/t32/hhelp // (or similar)
cd /users/t32/hhelp
tar xvf ../bin/hp700/hhelp.tar
setenv HHHOME /users/t32/hhelp // added in .cshrc for C-shell
```

Copy the hyperhelp executable file to a directory in the PATH, or include it in the \$PATH variable:

```
cp hhhelp/bin/hyperhelp /usr/bin
```

Verify that you have write permission to the system directory and the boot.t32 file and prepare the configuration file:

```
cd /users/t32
cp bin/hp700/config.t32 .
vi config.t32
...

LINK=NET
NODE=t32

SCREEN=
WMGR=MOTIF20
STYLE=BLUE
```

If you don't have write permission to the system directory file boot.32 your config.t32 should look like this:

```
LINK=NET
NODE=t32

SCREEN=
WMGR=MOTIF20
STYLE=BLUE

BOOT=
NOLOCK
```

Include the executable file in the \$PATH variable:

```
setenv PATH $PATH:/home/t32/bin/hp700 # added in ~/.cshrc for C-shell
# preferred solution
```

Please refer to the file bin/hp700/readme.txt to get information about the actual file name needed from you.

Add the Ethernet node name to /etc/hosts (**the INTERNET address here is only an example**):

```
/etc/hosts

192.9.200.5    t32
```

The INTERNET address is requested by a RARP protocol by TRACE32. If no RARP server is running, the address for the first connect must be set in the host table. After the first successful connect the INTERNET address is stored in nonvolatile memory within TRACE32. The following command sets the host translation table:

```
su
...
arp -s t32 0:c0:8a:0:12:34
^D

ping t32
...
t32 is alive.
```

Start the emulator driver program and study the other configuration options in this manual.

Example of a configuration script for HP-9000/330:

```
LINK=SCSI
DEV=/dev/rdisk/2s0

PRINTER=LJ
DEV=/tmp/lstfile
SPOOL=lp -c /tmp/lstfile
IBMSET
```

Example of a configuration script for HP-9000/720:

```
LINK=NET
PACKLEN=1024

SCREEN=
WMGR=MOTIF16
STYLE=BLUE

PRINTER=LJ
DEV=/tmp/lstfile
SPOOL=lp -c /tmp/lstfile
IBMSET

PRINTER=PS
DEV=/tmp/lstfile
SPOOL=prt -lpostscript /tmp/lstfile
```

For the adaptation to Ethernet a new node must be created. The Ethernet address of the emulator is on a sticker located on the bottom or back side of the system. The following line must be added to the file `/etc/hosts`:

```
192.9.200.5    t32
```

**Note, the above used INTERNET address is an example only.** Contact the network administrator for a new INTERNET address for TRACE32.

The INTERNET address is not available to the TRACE32 system. Therefore it can't response to ARP requests. For the first connection, the Ethernet address of the system must be entered in the host table by the following command:

```
arp -s t32 0:c0:8a:0:0:0
```

The net driver must be activated. The node name can be changed, when not identical to 't32'.

On **HP-9000/300 and HP-9000/400** and also some HP-9000/700 workstations the packet size must be **limited to 1024** bytes. Use the command **PACKLEN=1024** for these type of workstations!

### Configuration Command:

LINK=NET

NODE=<nodename> (default: t32)

PACKLEN=<psize> (default:1472)

## SCSI Interface

---

For the SCSI interface a new device node must be created in the /dev/rdisk directory. Check that the selected combination is not currently in use. The creation of the node must be done from the system administration level with the 'sam' program (system administration manager). If your system has no other SCSI devices, create a new kernel which includes the driver for the SCSI. The device node can be created by 'sam', choose either 'data storage' or 'nothing' and don't create a new file system on that disk. Don't initialize the disk and don't mount it. You can choose any SCSI disk for TRACE32, the SCSI address selected in sam must match with the address of the SASO unit. After leaving 'sam' a new device node for the SCSI disk should exist in the '/dev/rdisk'. The command 'ls -l /dev/rdisk' will include a line similar to the following one:

```
crw-r--r--    1  root    sys      47    0x1e0000  Date/Time  2s0
```

The name of the disk may be another one, the handle is dependent on the select code of the SCSI and the SCSI address. Change the access rights for this file to 'R/W':

```
cd /dev/rdisk
chmod a+r 2s0
chmod a+w 2s0
```

The configuration file must include the following lines:

```
LINK=SCSI
DEV=/dev/rdisk/2s0
```

If using a boot EPROM version 2.3 or less, the **pins 28 and 32** on the SER module must be shortened (selection of fiber optic with DMA). The workstation should be turned off, when connecting the SASO interface. The SCSI address should be selected according to the following table. The address must be selected on the SASO module (see description of the SASO interface box).

## RS232 Interface

---

Same procedure like SUN.

Prior to starting the driver the special fonts of the TRACE32 system must be installed. One method is to copy the fonts in an existing font directory of the system. The alternative method is to use an extra directory for the fonts.

First Method (copy the files to existing directory):

```
cd /users/t32/fonts
.../bin/hp400/genfont.bat      (only for HP-UX 8.x)
rm *.hbf                      (only for HP-UX 8.x)
cd /usr/lib/X11/fonts/misc
cp /users/t32/fonts/*.snf .
/usr/bin/X11/mkfontdir .
```

The above commands must be entered from the system administration level, and the Motif environment must be restarted after installing the fonts.

Second method (add directory to FONTPATH):

```
cd /users/t32/fonts
.../bin/hp400/genfont.bat
rm *.bdf
/usr/bin/X11/mkfontdir .
xset +fp /usr/t32/fonts
xset fp rehash
```

For common desktop environment (CDE) no special entries (like WMGR=MOTIF16 or STYLE=BLUE) are necessary inside the file config.t32.

### Configuration Command:

SCREEN=

### Commands:

WMGR=MOTIF13

Window Manager for Motif, (13x7)

WMGR=MOTIF16

dto., but larger characters (16x8)

WMGR=MOTIF20

dto., but larger characters (20x10)

STYLE=BLUE

White text on blue background for HP-Motif

STYLE=SAND

'Sand' colors for DEC systems

PALETTE <n> = <red> <green> <blue>

Change color value, the intensities can vary from 0 to 65535.

LINES=<lines>

max. number of lines (default 55)

COLUMNS=<col>

max. number of columns (default 144)

VLINES=<lines>

start-up size lines (default 35)

VCOLUMNS=<col>

start-up size columns (default 81)

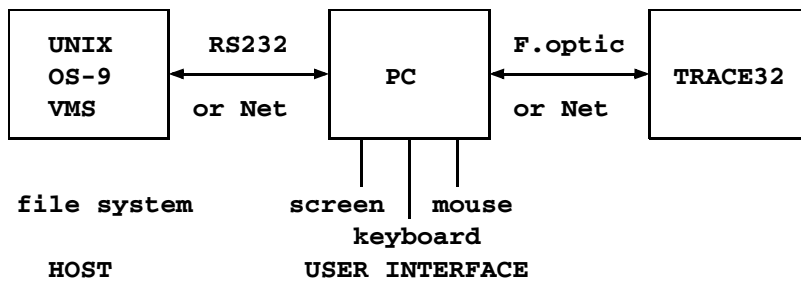
other

other commands are available for special purposes, they are not used in standard environments

## Printer

---

Same as for 'SUN/SPARC'.



The REMOTE system allows to use two hosts for control, one for user interface and the other for the file system. This achieves a fast and comfortable working environment on OS-9 or UNIX systems together with terminals. An MS-DOS PC or another workstation can be used between the host and the emulator as an operating console. The connection between PC and emulator can be done with the fiber optic interface. The connection between the PC and the UNIX/OS-9 system is done by RS232 or via TCP/IP. On the MS-DOS configuration script the command

```
REMOTE=drvser.t32
```

will activate the REMOTE interface and selecting the serial interface. The remote configuration block must be the last one in the configuration script. The configuration of the serial interface is documented in the "MS-DOS installation procedure". By this standard selection, the operating system and file interface from the host system is used. With the commands

```
KEY=REMOTE
BOOT=REMOTE
PRINTER=REMOTE
```

these interfaces can also be redirected to the UNIX system (normally not used).

In the UNIX system (file server) the screen and keyboard interface should be turned off to allow the driver to run in background mode:

```
SCREEN=OFF
MOUSE=OFF
KEY=OFF
SOUND=OFF
```

To execute programs on the MS-DOS system (**OS** commands) an **!** has to be added in front of the command:

```
E::os !dir
```

The 'dir' command is executed on MS-DOS.

## Example OS/9 together with PC

---

The following configuration describe a connection to an OS-9 system. The keyboard, screen and mouse functions are used on the PC. The printer is driven by to OS/9, and booting is done from the PC directly. The mouse will be connected to COM1, and the link to the OS-9 has to be done with COM2. For higher transmission rates an NS16550 should be used within the PC.

```
SCREEN=drvherc.t32  
MOUSE=drvsumma.t32  
PRINTER=REMOTE  
REMOTE=drvser.t32  
ADDRESS=760  
BAUDRATE=19200  
LIMIT=1000
```

configuration script for MS-DOS

```
SCREEN=OFF  
KEY=OFF  
MOUSE=OFF  
SOUND=OFF  
LINK=  
DEV=/t1  
BLOCKSIZE=256  
PRINTER=RAW  
DEV=/p1
```

configuration script for OS-9

## Example VAX/VMS and Workstation

---

The following configuration text describes a connection to an VAX/VMS system. The keyboard, screen and mouse are used on the workstation and booting is done from the workstation directly. The emulator is connected to the workstation via Ethernet.

```
SCREEN=
WMGR=MOTIF16

LINK=NET
NODE=t32_emu

REMOTE=NETASSIST
```

configuration script for the Workstation

```
SCREEN=OFF

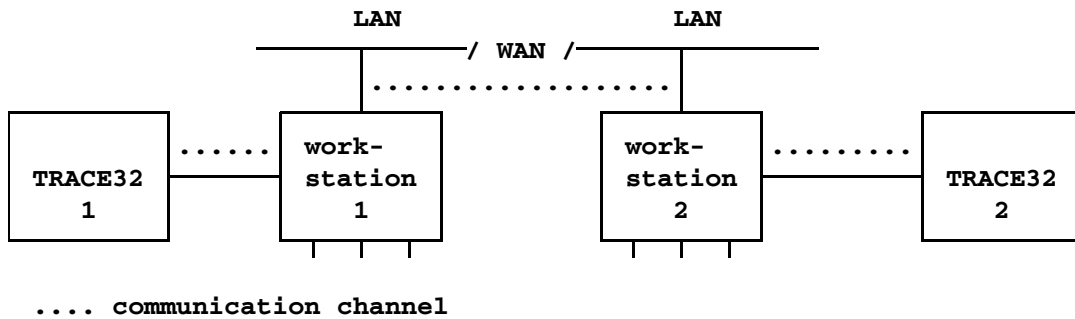
KEY=OFF

MOUSE=OFF

SOUND=OFF

LINK=NET
NODE=workstation1
```

configuration script for VAX/VMS



The configuration script contains the following lines:

```
IC=NETASSIST  
PORT=20000
```

The port number is the UDP port number which is used to communicate with the other system. The default is 20000. If this port is already in use, try one higher than 20000. The InterCom system cannot be used together with Remote, Assist or RCL systems.

**If you can not solve your problem with the following hints, please contact our support line:**

telephone: ++49 8102/9876-555

facsimile: ++49 8102/9876-999

e-mail: support@lauterbach.com

## **System doesn't response to ping on Ethernet**

Internet address already setup in system, or arp used?

When arp is used, it must be used on the same workstation short before.

Ethernet address correct?

System on the correct subnet?

Cables and transceiver o.k.?

Ethernet software in host (PC) configured correctly?

## **Executable program does not start or gives fatal error**

When transferring between different OS-systems, files copied in binary mode?

Access rights to file in directory o.k.?

Configuration file contents o.k.?

## **Executable program displays 'FATAL ERROR selecting device-driver ...'**

Using configuration file for MS-DOS for the WINDOWS-Driver?

WINDOWS and workstation drivers cannot load new drivers.

Environment variable 'T32CONFIG' and/or 'T32SYS' correctly set?

## **Executable program displays 'error reading config.t32':**

Configuration file contents o.k.?

Commands in file in uppercase?

Blanks inserted/not inserted?

Device specific commands placed after device header?

Device configuration blocks separated by empty lines?

Environment variable 'T32CONFIG' and/or 'T32SYS' correctly set?

### **Executable program stops without message, but with window opened**

Access rights to directory o.k.?

On UNIX host, try with 'NOLOCK' feature.

When using the RS232 interface: Is a login process active on the tty?

### **xset +fp fontpath gives error 'bad value ...'**

Does the font directory exist?

Does the fonts.dir file exist (created by mkfontdir)?

Is the directory seen under the same name by the X-server?

Have all directories that lead to the font directory read and execute permissions for everybody?

### **Program stops with message 'font xxxx not found'**

Do fonts appear in the 'xlsfonts' command?

Can one font (e.g. t32-lsys-16) be displayed by 'xfd -fn t32-lsys-16'?

Fonts added to X-Windows FONTPATH?

Fonts converted, when required, and .bdf files removed?  
(E.g. for TinyX you can use bdf2pcf to convert to PCF and gzip to pack them.)

Command to generate font directory executed with correct parameters?

Fonts installed on the X-Windows server, not client?

If using an X-Terminal, use the conversion programs for the X-Terminal?

### **Executable program displays 'boot.t32 not found'**

Access rights to directory o.k.?

Read and write access to boot.t32 (write required on UNIX without NOLOCK)?  
Configuration file contents o.k.?

Environment variable 'T32SYS' correctly set?

### **Executable program stops after displaying 'error reading boot.t32'**

When transferring between different OS-systems, files copied in binary mode? Access rights granted?

Try again after switching off the TRACE32 system?

### **Executable program displays 'illegal command <filename>'**

Environment variable "T32CONFIG" correctly set?

### **Executable program stops after displaying 'booting ...' or 'finished.'**

When transferring between different OS-systems, files copied in binary mode? Packet size set correctly on Ethernet, handshake set when required?

### **Bootloader stops with message 'fatal error ...'**

When transferring between different OS-systems, files copied in binary mode? Mixing different versions of the software, e.g. MCC.T32 and MCCxxx.t32?

### **Bootloader displays 'cannot save image ...'**

Write access right on system directory?

Disk full?

Existing read-only file?

### **Software crashes or stops after booting is finished**

Switches in the network path that cannot handle large bursts (try with SMALLBLOCKS)?

Boot image file maybe destroyed, remove all boot0x.t32 files?

Connection of modules o.k., connector bend?

## **Software doesn't work stable**

Boot image file maybe destroyed, remove all boot0x.t32 files?

Connection of modules o.k., connector bend?

Check connection of Fibre Optic, Ethernet or Parallel interface.

On Ethernet try with smaller packet size and/or handshake.

## **Emulation system doesn't work correctly**

Check Emulation Probe Manual in 'Targets' part of the manual.

## **Parallel Port not working stable**

Check that the port is on the correct mode. Choose either EPP 1.9 or compatible mode. The mode selection can usually be done in the BIOS setup (can be activated during booting).

## **Executable program displays "file help.t32 could not be read"**

The index file help.t32 should be in the trace32 system folder (SYS=<t32 system folder>), but was not found, was damaged or was too old. Download the actual help files from <http://www.lauterbach.com>

## **Executable program displays "Acrobat Reader could not be started", please set \$ACROBAT\_PATH or run acroread manually**

First check if the Acrobat Reader is installed properly and the environment variable "ACROBAT\_PATH" is set correctly to the Acrobat installation directory. Then run ACROBAT\_READER (./opt/Acrobat5/bin/acroread) and check if the plug-in "TRACE32" was loaded correctly: There should be a entry "About Trace32..." in the menu "help->About Plugins". If not, copy the file "trace32.api" to the plug\_ins folder of Acrobat Reader.

If the message is displayed only at Acrobat Reader startup, but then no further problems with the help occur, your system may be too slow, and you can ignore the message!

## **Fixed width font t32sys not found under WINDOWS**

When you start the TRACE32 executable the fonts are loaded. If a SW update will be done, which replaces the TRACE32 font file named t32font.fon, the new fonts will not be activated as long as the old fonts are loaded.

This happens even if both font files are identical.

Please reboot your Windows PC to solve this issue.

|                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Communication with Acrobat Reader failed under Linux</p> <p>Ref: 0343</p> | <p><b>What needs to be done ? I receive the error message regarding communication with Adobe Reader failed under Linux.</b></p> <p>If you use an Acrobat Reader version higher than 7 on a Linux host, you might receive the error message:</p> <p>"Communication with Acrobat Reader failed - check if plugin &lt;trace32.api&gt; is started correctly"</p> <p>In such case you need to update the plugin trace32.api on your host. The new plugin is also available at the download link below:</p> <p><a href="http://www.lauterbach.com/faq/trace32.api_linux.zip">http://www.lauterbach.com/faq/trace32.api_linux.zip</a> TRACE32 Acrobat Reader Plugin (Linux platforms)</p>                                                                                                          |
| <p>Config File PBI Parameters</p> <p>Ref: 0318</p>                           | <p><b>Why does the connection to my debugger via ethernet fail? It starts always as a monitor instead.</b></p> <p>It looks like you set in the config file:</p> <p><b>PBI=NET 11.22.33.44 ; driver to run TRACE32 without HW</b></p> <p>But this starts the TRACE32-SW as a monitor program for connection via ethernet.</p> <p>If you want to connect to a TRACE32 HW by ethernet you need to write the keyword to a second line instead:</p> <p><b>PBI=<br/>NET ; host interface to connect to TRACE32 HW<br/>NODE=11.22.33.44</b></p> <p>You can find a complete description in the installation manual "installation.pdf".</p> <p><a href="http://www.lauterbach.com/faq/configt32-pbi.pdf">http://www.lauterbach.com/faq/configt32-pbi.pdf</a> Section of the installation manual:</p> |

|                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>ERROR about missing entrypoint EncodePointer information (WINDOWS)</p> <p>Ref: 0364</p> | <p><b>Why I get under WINDOWS XP the error message "The procedure entry point EncodePointer could not be located in dynamic link library KERNEL32.dll" ?</b></p> <p>If you get one of the following Windows error messages during startup of the TRACE32 executable</p> <p>"The procedure entry point EncodePointer could not be located in dynamic link library KERNEL32.dll" respectively</p> <p>"Der Prozedureinsprungpunkt "EncodePointer" wurde in der DLL "KERNEL32.dll" nicht gefunden."</p> <p>under Windows XP, then the PC operating system installation doesn't fulfill the following requisite:</p> <p>Windows XP SP2 or higher</p>                                                                                                        |
| <p>ERROR about missing entrypoint HeapSet information (WINDOWS)</p> <p>Ref: 0359</p>       | <p><b>Why I get under WINDOWS 2000 the error message "Entry point HeapSet information could not be found in dynamic Link library Kernel32.dll" ?</b></p> <p>If you get one of the following Windows error messages during startup of the TRACE32 executable</p> <p>"Entry point HeapSet information could not be found in dynamic Link library Kernel32.dll" respectively</p> <p>"Der Prozedureinsprungpunkt "HeapSetInformation" wurde in der DLL "KERNEL32.dll" nicht gefunden."</p> <p>under Windows 2000, then the PC operating system installation doesn't fulfill all of the following requisites:</p> <p>Windows 2000 SP4</p> <p>UpdateRollup for Windows 2000 SP4 (KB891861)</p> <p>TRACE32 software version must be build 25715 or higher</p> |

|                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>File version conflict after software update or patch install</p> <p>Ref: 0378</p> | <p><b>Why do I get a file version conflict after software update?</b></p> <p>The new TRACE32 executable isn't copied manual to an old previous installation directory.</p> <p>The internal subdirectory structure of the update packages has been changed since software version November 2010.<br/>Now the TRACE32 executables are inside a subdirectory <code>bin\&lt;operating_systemtype&gt;</code> e.g. <code>bin\windows64</code>.<br/>For older installations the executable must be moved manual to the TRACE32 system directory e.g. <code>C:\t32</code> or the shortcut property must be corrected.</p> <p>We recommend to modify the shortcut property, due to the fact that this kind of subdirectory structure will be used from the installer in the future too.</p> <p>When the TRACE32 software for more than one processor architecture is installed in the same TRACE32 system directory, but not a software update for all architectures is done.</p> <p>When the update package is used without a preceding TRACE32 software installation.</p> <p>The software update doesn't contain a config file. If you create a copy of the original config file, please don't forget to adapt the SYStem directory in the config file.</p> <pre> OS= ID=T32 SYS=&lt;new system directory&gt; tmp=C:\temp </pre> <p>Otherwise the version of the executable doesn't match with the rest of the TRACE32 files.</p> |
| <p>Fixed Width Font t32sys not found</p> <p>Ref: 0264</p>                            | <p><b>How do I proceed if I get the error message "Fixed width font t32sys not found"?</b></p> <p>When you start TRACE32 the fonts are loaded. If you update your TRACE32 software and the update package includes TRACE32 fonts, these new fonts will not be activated as long as the old fonts are loaded. This happens even when old and new font file are identical.<br/>Reboot your Windows PC.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Floating Licenses (Virtual Prototypes)</p> <p>Ref: 0303</p> | <p><b>How can I use TRACE32 for Virtual Prototypes with Floating Licenses?</b></p> <p>TRACE32 versions from July 2008 and later support floating licenses for Virtual Prototype debugging.</p> <p>Download and install the RLM License Administration Bundle to obtain your License Server binary and use it to look up your RLM Host ID:</p> <p><a href="http://www.reprisesoftware.com/license_admin_kits/license-admin-download.php">http://www.reprisesoftware.com/license_admin_kits/license-admin-download.php</a></p> <p>Download the Lauterbach Certificate (lauterbach.set - for RLM this replaces the Daemon executable) and copy it into your RLM License Server installation directory.</p> <p>Register your TRACE32 Serial Number together with your RLM Host ID.</p> <p>When you receive your Lauterbach License File, copy it into the RLM License Server installation directory. Do NOT rename it.</p> <p>Modify the first lines of your Lauterbach License File: replace localhost with the hostname and 5055 with the port you want to use.</p> <p>Configure your system boot scripts to automatically start the RLM License Server.</p> <p>Set the environment variable <code>RLM_LICENSE=&lt;port&gt;@&lt;hostname&gt;</code> of your RLM server.</p> <p><a href="http://www.lauterbach.com/faq/lauterbach-cert-rlm9.zip">http://www.lauterbach.com/faq/lauterbach-cert-rlm9.zip</a> Lauterbach Certificate (for RLMv9.0 and all later versions)</p> |
| <p>Font Problems on Linux (Motif version)</p> <p>Ref: 0158</p> | <p><b>What should I do if I get an error message about missing fonts during driver startup?</b></p> <p>The host driver imposes several requirements for fixed fonts and font size. The font size requirement can lead to unexpected failure during startup, if one or more of the needed sizes are missing.</p> <p>In addition to the default, <code>FONT=SMALL</code> and <code>FONT=LARGE</code> settings via <code>config.t32</code>, the driver supports 3 small variations of each setting.</p> <p>On systems which use a mixed set of 8bit and 16bit menu fonts, and have only <code>*-iso10646-*</code> system fonts installed, no meaningful glyphs are rendered in the menu or softkeys of TRACE32 main window. If this happens, please install the additional iso8859 system font package(s).</p> <p><b>e.g. <code>yum install xorg-x11-fonts-ISO8859-1-75dpi</code></b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Font Problems on Linux (Motif Version) II</p> <p>Ref: 0334</p> | <p><b>How to add the TRACE32 font directory under Fedora distributions ?</b></p> <p>To add the TRACE32 font directory permanently to the system font directory list, you might do:</p> <p>e.g. <code>ln -s /opt/t32/fonts /etc/X11/fontpath.d/t32-fonts</code></p> <p>Please don't forget to invoke the <code>mkfontdir</code> command inside the directory <code>/opt/t32/fonts</code> for building a fontdirectory file named <code>fonts.dir</code> .</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p>Hidden Instance of TRACE32</p> <p>Ref: 0404</p>                | <p><b>How do I start a hidden instance of TRACE32?</b></p> <p>For information about how to start TRACE32 as a hidden instance, refer to "TRACE32 as a Hidden Instance" (installation.pdf, <a href="http://www.lauterbach.com/pdf/installation.pdf">www.lauterbach.com/pdf/installation.pdf</a>).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p>Interface Converter</p> <p>Ref: 0333</p>                       | <p><b>Is it possible to use an interface converter for TRACE32?</b></p> <p>Most available USB-to-Parallel converters can not be used to drive Parallel-Port TRACE32 tools from the PC USB interface. Because the communication between TRACE32 and PC is timing- and latency-sensitive, and many applications in the market do not work with those converters, we do not investigate deeper about the possible reasons. If you find 3rd party converters usable for TRACE32, please contact us.</p> <p>We know one customer used a USB-to-Parallel interface converter (USB2PAR) successfully. We were told that debugging with it works, but - due to the conversion - downloading files to flash devices on the target is very slow:</p> <p><a href="http://www.lauterbach.com/faq/usb2par-converter.html.en.htm">http://www.lauterbach.com/faq/usb2par-converter.html.en.htm</a> Example of one USB to Parallel Converter (from TU Chemnitz)</p> |

|                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Linux isn't booting anymore after installing USB driver</p> <p>Ref: 0373</p> | <p><b>Why isn't booting LINUX after installing USB driver file 10-lauterbach.rules?</b></p> <p>If a LINUX system isn't booting anymore after the TRACE32 USB driver files 10-lauterbach.rules was installed, then please check, whether an irritating CR character is inside this file or not.<br/>A check can be done with command:</p> <pre>cat -et /etc/udev/rules.d/10-lauterbach.rules</pre> <p>No ^M should be displayed at all.</p> <p>In the directory /dev/lauterbach/trace32 you can find a lot of links from system devices which shouldn't exists there (e.g. audio, disk, dvd, ..)</p> <pre># conversion steps # if package tofrodos isn't already installed sudo apt-get install tofrodos cd /etc/udev/rules.d/ # converts all CF+LF pairs to LF sudo fromdos -d 10-lauterbach.rules</pre>                               |
| <p>Mac OSX El Capitan</p> <p>Ref: 0436</p>                                      | <p><b>What can I do if the USB interface is not working on MacOSX 10.11 El Capitan?</b></p> <p>The minimum version for USB debuggers on OS X El Capitan is 10.11.4.</p> <p>If the Qt4.8 libraries area not installed, follow these steps:</p> <p>boot into "Recovery mode" by immediately holding down Command + R keys when you hear the startup chime</p> <p>open "Terminal" in the "Utilities" pulldown</p> <p>enter "csrutil disable; reboot" and hit return</p> <p>back in OS X 10.11 start the installation of qt-4.8</p> <p>after qt installation boot into "Recovery mode" and open "Terminal" again</p> <p>enter "csrutil enable; reboot" and hit return</p> <p>* Notes regarding OS X 10.11 El Capitan:<br/>Installation of qt-4.8 must be done with "System Integrity Protection" disabled, otherwise it won't succeed.</p> |

|                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Minimized client windows with virtual desktops</p> <p>Ref: 0402</p> | <p><b>Why are some or all client windows minimized, when switching virtual desktops?</b></p> <p>Some window managers minimize the client windows when switching to other virtual desktops and back. In such a case add the line<br/>FIXVDESK<br/>to the screen section of your config file.</p> <p>This workaround has some side effects:</p> <p>When closing the main TRACE32 window, normally all entries of the client windows in the taskbar will be removed and only the entry of the main window will remain.</p> <p>With activated workaround entries of client windows, which are closed before the main window, will remain in the task bar.</p>                                                                                                                                                                                                                                                                                           |
| <p>Missing shared library "libstdc++.so.5"</p> <p>Ref: 0324</p>        | <p><b>What needs to be done? I receive the error message regarding the shared library "libstdc++.so.5".</b></p> <p>If you have updated to a TRACE32-SW later than February 2009 on a Linux host or virt. machine - (VM) you might receive the error message:</p> <p>"/t32marm: error while loading shared libraries: libstdc++.so.5: cannot open shared object file: No such file or directory"</p> <p>In such case you need to contact you system administrator to get this library from CD or via internet for your specific Linux machine type to install it on your host.</p> <p>Here an example for details on Ubuntu and the related command:<br/><a href="http://ubuntuforums.org/archive/index.php/t-78758.html">http://ubuntuforums.org/archive/index.php/t-78758.html</a></p> <p>sudo apt-get install libstdc++5 libstdc++5-3.3-dev</p> <p>Starting with TRACE32 software DVD April 2010 and newer this effect doesn't occur anymore.</p> |

|                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Missing shared library for Linux</p> <p>Ref: 0298</p>   | <p><b>What to do when a system library is missing ?</b></p> <p>Generally you will have to install the corresponding package (which contains the missing library), too.</p> <p>Examples:</p> <p>Fedora7:<br/>error while loading shared libraries: libXp.so.6: cannot open shared object file: No such file or directory      yum install libXp # note the upper case "X" and lower case "p"</p> <p>RHEL5/64bit:<br/>/opt/t32/bin/pc_linux/t32mppc: error while loading shared libraries: libXmu.so.6: wrong ELF class: ELFCLASS64      Not all necessary 32-bit packages are installed.      The 32-bit "libXmu" package and all it's dependencies should be installed.</p> <p>Ubuntu 12.04/64bit:<br/>error while loading shared libraries: libjpeg.so.62: cannot open shared object file: No such file or directory      sudo apt-get install libjpeg62</p> <p>OpenSUSE 13.1/64bit:<br/>error while loading shared libraries: libjpeg.so.62: cannot open shared object file: No such file or directory      Install missing package libjpeg62 with YaST<br/>error while loading shared libraries: libXp.so.6: cannot open shared object file: No such file or directory      Install missing package libXp6 with YaST</p> |
| <p>Missing shared library for Solaris</p> <p>Ref: 0300</p> | <p><b>What to do when a system library is missing ?</b></p> <p>error while loading shared libraries:</p> <p><b>e.g. ld.so.1: t32marm: fatal: libm.so.2: open failed: No such file or directory killed</b></p> <p>This happens when a TRACE32 executable built for Solaris 10 is used on Solaris 8.<br/>Please request a Solaris 8 executable from Lauterbach.</p> <p>As a temporary workaround, you can create a libm.so.2 soft link with:</p> <pre>su ln -s /usr/lib/libm.so.1 /usr/lib/libm.so.2</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Multiple<br/>PODBUS USB<br/>devices</p> <p>Ref: 0289</p> | <p><b>How can I use multiple USB devices with several TRACE32 instances?</b></p> <p>More than one Lauterbach USB device can be used at the same time from the same host.<br/>For each USB device, a TRACE32 instance needs to be started.</p> <p>To use multiple USB devices with one PC or workstation, you need</p> <p>for WINDOWS: the current T32USB driver (see below)</p> <p>current TRACE32 software (at least April 2007)</p> <p>TRACE32 device firmware revision V8 or later (see below)</p> <p>Please download the applicable packages here:</p> <p><a href="http://www.lauterbach.com/faq/t32usb_multi_device.zip">http://www.lauterbach.com/faq/t32usb_multi_device.zip</a> USB multi device update procedure</p> <p><a href="http://www.lauterbach.com/faq/t32usb_setup.exe">http://www.lauterbach.com/faq/t32usb_setup.exe</a> TRACE32 USB Driver installer for Windows (32bit and 64bit)</p> |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Network Preparation for Access by Lauterbach Support</p> <p>Ref: 0209</p> | <p><b>What do I need to tell my network administrator if Lauterbach support wants direct access to my debugger?</b></p> <p>There are cases when direct access to the Trace32 debugger of the customer simplifies the support task for the engineers at Lauterbach a lot. But nowadays this involves usually at least 2 levels of network firewalls and various address and port translations.</p> <p>What does you have to tell to your network administrator to properly configure the company firewall?</p> <p>What we need:</p> <p>Access to UDP destination port 20000 from the Lauterbach.com IP address range 192.149.90.0/24.</p> <p>What your network administrator needs to do:</p> <p>Allow UDP destination port 20000 to debugger from Lauterbach.</p> <p>Forward UDP destination port 20000 to debugger (if address NAT is involved).</p> <p>Open the reverse path as well if the firewall does not do that automatically.</p> <p>Make sure debugger firmware (VERSION.HARDWARE) is V6.9 or later (if port NAT is involved).</p> <p>Simple Cisco example:</p> <p>Entry for the IP access-list controlling the packets from Internet:</p> <pre>permit udp 192.149.90.0 0.0.0.255 host Your.Debugger.IP.address eq 20000</pre> <p>Entry for the IP access-list controlling the packets to the Internet:</p> <pre>permit udp host Your.Debugger.IP.address eq 20000 192.149.90.0 0.0.0.255</pre> |
| <p>No menu icons with Gnome on Ubuntu</p> <p>Ref: 0396</p>                   | <p><b>How do I enable icons on the pull down menus on Ubuntu?</b></p> <p>On Ubuntu/Gnome the menu icons are off by default.</p> <p>To enable the menu icons:</p> <pre>gconftool-2 --type Boolean --set /desktop/gnome/interface/menus_have_icons True</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

### **What could be the reason for the "no response from InterCom" message?**

You are using Intercom communication for TRACE32 on your PC. This was activated by a setting in the active configuration for your TRACE32-SW. Either by the Intercom setting in the t32start configuration or inside your TRACE32 config file (default name config.t32).

The Intercom communication is typically needed if two or more TRACE32 applications shall communicate together (via UDP) as that could be the case in AMP Multicore debug sessions.

The "no response from InterCom" message appears if the default time-out of 500ms to acknowledge an intercom command exceed. That typically happens if several PoverView Instances have to share the bandwidth of only one debug port. The needed bandwidth could be reduced by decreasing the update rate for each TRACE32 application.

**SETUP.URATE <time> or <frequency>**

If that is not sufficient or the resulting update rate becomes unacceptable the InterCom acknowledge time-out could be increased since Build Revision 34366 with following command as well.

**SETUP.INTERCOMACKTIMEOUT <time>**

The default InterCom command acknowledge time-out has been hold as low as possible to keep PRACTICE execution performance, in case of non existent InterCom participants, in an acceptable range!

No TRACE32  
window comes  
up on Unix

Ref: 0246

### Why is no TRACE32 main window coming up under Unix ?

No TRACE32 main window is displayed due to one of the following reasons:

The TRACE32 software doesn't find the TRACE32 system directory.  
environment variable T32SYS isn't set or points to a wrong directory

e.g.

```
export T32SYS=/opt/t32/bin/pc_linux      // wrong
export T32SYS=/opt/t32                  // correct
```

SYS definition inside the TRACE32 configuration file (default name config.t32) is commented, omitted or points to a wrong or not existing directory

e.g.

```
OS=
SYS=/opt/t32/bin          // wrong, should be
SYS=/opt/t32
```

The hostdriver t32cde tries to open the file boot.t32 with write access and will fail, when the TRACE32 system directory respectively the file boot.t32 is write protected.

This is a kind of file semaphore mechanism to avoid problems when several instances will boot and create Trace32 boot images at the same time.

Please add the following lines inside the used TRACE32 configuration file (default name: config.t32):

```
                                // empty line necessary
BOOT=
NOLOCK
                                // empty line necessary
```

or give at least write access to the file boot.t32 via command

e.g. `chmod a+w boot.t32`

|                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>PCF Bitmap Font disabled on Ubuntu</p> <p>Ref: 0375</p>         | <p><b>What to do if I get a error message under Ubuntu regarding PCF bitmap fonts?</b></p> <p>After installation of TRACE32 for Ubuntu and trying to use the TRACE32 fonts you might get an error message like:</p> <p>FATAL ERROR from X-windows: XFT available, but not working with PCF bitmap fonts.<br/>Please check your FontConfig configuration, possibly bitmap fonts are explicitly disabled.</p> <p>To enable the PCF bitmap fonts please use the following settings inside Ubuntu:</p> <pre># "Un-disable" bitmap fonts sudo rm /etc/fonts/conf.d/70-no-bitmaps.conf # Clear the font cache # (path for the T32 font directory is an example, adjust according to your installation) sudo fc-cache -f -v ~/t32/fonts</pre>                                                                                            |
| <p>PerformanceCounter of PC seems to be buggy</p> <p>Ref: 0356</p> | <p><b>TRACE32 says the PerformanceCounter of my PC seems to be buggy. What does this mean?</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p>Popup menu problem under Ubuntu 10.04</p> <p>Ref: 0349</p>      | <p><b>Why doesn't occur a popup menu by a right-mouse button click ?</b></p> <p>Under Ubuntu 10.04 context sensitive popup menus don't occur due to a Xserver bug.</p> <p>Solution:<br/>Update to a newer xserver-common package, version 2:1.7.6-1ubuntu7.4 or later.<br/>For 64bit kernel the additional package xserver-xorg-core, version 2:1.7.6-2ubuntu7.5 or later must be installed too.</p> <p>Explanations:<br/> <a href="https://bugs.launchpad.net/xorg-server/+bug/605565">https://bugs.launchpad.net/xorg-server/+bug/605565</a><br/> <a href="https://bugs.launchpad.net/ubuntu/+source/xorg-server/+bug/574157">https://bugs.launchpad.net/ubuntu/+source/xorg-server/+bug/574157</a><br/> <a href="http://bugs.freedesktop.org/show_bug.cgi?id=25400">http://bugs.freedesktop.org/show_bug.cgi?id=25400</a> </p> |

## What are the prerequisites for the Trace32 host driver(s) on Linux?

The Trace32 host driver for Linux tries to be distribution independent and is currently only available for Linux/x86 and Linux/x86\_64 (Linux/PPC and Linux/ARM on request).

Nevertheless there are some requirements inherited through the build environment.

For Linux/x86 and Linux/x86\_64 these are:

glibc >= 2.5

X.org X11 >= 6.9

These requirements resolve for example to RHEL >= 5 or Suse >= 10.

In any case make sure you have all available X font packages (especially both the 75dpi and 100dpi versions) of your distribution installed to get the best possible display.

## What are the prerequisites for the Trace32 QT host driver(s) on Linux?

The minimum requirements for the Qt GUI are:

**Kernel: 2.6.32**

**libc: 2.11.1**

**Qt libs: 4.6.2**

Minimum versions of some popular Linux distributions:

| Distribution<br>packages | minimum release | required    |
|--------------------------|-----------------|-------------|
| Ubuntu<br>libqtgui4      | 10.04           | libqtcore4, |
| Debian<br>libqtgui4      | 6.0             | libqtcore4, |
| Mint<br>libqtgui4        | 9.0             | libqtcore4, |
| RedHat RHEL              | 6.1             | qt, qt-x11  |
| CentOS                   | 6.0             | qt, qt-x11  |

## How do I use USB with the Trace32 host driver(s) on Linux?

In addition to the generic requirements, USB needs:

kernel >= 2.4 for FullSpeed USB support (12 MBit/s)

kernel >= 2.4.22 for HighSpeed USB support (480 MBit/s)

filesystem supporting USB devices

udev filesystem needs kernel >= 2.6

or

usbdevfs mounted on /proc/bus/usb

hotplug package

The udev or hotplug setup is no strict requirement, but highly recommended if you want to avoid running the Trace32 executables as root all the time.

udev method:

```
su
cp bin/pc_linux/udev.conf/10-lauterbach.rules
/etc/udev/rules.d
```

hotplug method:

To enable proper Trace32 hotplugging, change to the directory on the CD (or with an extracted update) with the Linux executables and issue the following commands in a shell:

```
su
grep -iq trace32 /etc/hotplug/usb.usermap || cat
usb.usermap.trace32 >>/etc/hotplug/usb.usermap
install -m 0755 trace32 /etc/hotplug/usb/
exit
```

You can verify proper operation with the t32usbchecker tool coming with the CD or update.

Minimum settings in config.t32 to use USB:

```
PBI=
USB
```

NOTE: USB can only be used with the host-based executables (name matches t32m\*), NOT with t32cde.

|                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remote Control for<br>POWER<br>DEBUG<br>INTERFACE /<br>USB<br><br>Ref: 0421 | <p><b>Where is t32tcpusb, mentioned in the training manual?</b></p> <p>If you don't find these files on your Lauterbach DVD, please download binaries for Linux and Windows here:</p> <p><a href="http://www.lauterbach.com/faq/t32tcpusb-2015-01-30.zip">http://www.lauterbach.com/faq/t32tcpusb-2015-01-30.zip</a> t32tcpusb support package</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Sending Commands<br>Remote via<br>t32rem.exe<br><br>Ref: 0265               | <p><b>How can I send commands remote to TRACE32?</b></p> <p>syntax: t32rem.exe &lt;localhost or IP address of PC&gt; [port=&lt;n&gt;] &lt;cmd&gt;</p> <p>e.g. t32rem.exe my_pcname do testfile<br/>e.g. t32rem.exe localhost port=20123 Data.List main</p> <p>T32rem.exe (not automatically installed from CD) can be used to send commands remote to a running TRACE32 application.<br/>Here in the example it starts testfile.cmm (only cmm extensions can be omitted in the command).<br/>Use "localhost" or the TCP/IP address of the host where TRACE32 is running.<br/>The port numner can be omitted if it is default (= 20000).<br/>"RCL=NETASSIST" separated by empty lines above and below has to be activated in the config file. If you use "T32Start" for configuration you can activate "RCL" by setting "API Port, Use Port" to "yes".</p> |

## How can I realize a silent installation under Windows?

1. For a simple software roll out of a company unique TRACE32 software installation  
a network mount/drive will be used and the content of the TRACE32 DVD should  
be in a special directory on a server

```
xcopy D:\*.* N:\TRACE32DVD_201011 /E /V /L  
// drive and directory name are only an example
```

2. Record once a TRACE32 installation with the following instructions inside a command shell window:

```
cd N:\TRACE32DVD_201011\bin\setup64  
// drive name N: and the directory is only an  
example and must be replaced by the actual  
user-defined values  
setup.exe /r  
/f1"N:\TRACE32DVD_201011\bin\setup64\setup.iss"  
/r stands for enabling recording the  
installation process  
/f1 defines the file which will contain the  
recorded installation actions
```

Step through the complete TRACE32 installation process.

3. Start a silence TRACE32 installation with the following instruction on a different PC:

```
setup.exe /s  
/f1"N:\TRACE32DVD_201011\bin\setup64\setup.iss"  
/s means silence installation mode
```

Troubleshooting:

- A) If InstallShield didn't work correctly with a record file on the network drive, please use the following default place C:\ru\setup.iss instead.
- B) If the silent installation fails during USB driver installation, please check whether the file  
bin\windows\*\drivers\dpinst.xml contains a line <quietInstall/>.

|                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Switch off cleartype font usage</p> <p>Ref: 0293</p> | <p><b>How can I reactivate the old fashioned font usage ?</b></p> <p>Since 2008 cleartype fonts are used as default.</p> <p>Please add the following lines inside the used TRACE32 configuration file (default name: config.t32) to use the old fonts:</p> <pre> // empty line necessary SCREEN= FONT=NOCLEARTYPE // empty line necessary </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p>UDP Intercom Port Collision</p> <p>Ref: 0320</p>     | <p><b>What's the meaning of the error message: "FATAL ERROR from InterCom-driver: can not bind read socket" ?</b></p> <p>You are using Intercom communication for TRACE32 on your PC. This was activated by a setting in the active configuration for your TRACE32-SW. Either by the Intercom setting in the t32start configuration or inside your TRACE32 config file (default name config.t32). Please see the screen-shots.</p> <p>The Intercom communication is typically needed if two or more TRACE32 applications shall communicate together (via UDP). This is for example needed for multicore debugging or debugging coprocessors like eTPU or PCP.</p> <p>The problem is caused by using the same Intercom port address by different applications. Maybe several TRACE32 executables or other applications. You can check the used ports by command: "netstat -a" on your PC.</p> <p>For TRACE32 you can avoid this problem in the configuration of t32start by "Use Auto Increment Port: Yes". If using a config file like config.t32 you need to set a different Intercom Port manually.</p> |

|                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>USB Debugger not detected by Linux</p> <p>Ref: 0157</p>   | <p><b>Why is my USB debugger not detected at all by Linux?</b></p> <p>There are a few possible reasons:</p> <p>The currently running Linux kernel does not yet support USB</p> <p>USB support was not enabled during Linux kernel configuration</p> <p>USB "kernel module" support was enabled, but module auto-load failed or is not set up properly</p> <p>usbdevfs is not mounted</p> <p>usbdevfs is mounted, but not at /proc/bus/usb</p> <p>using a bad USB cable: please try the original one which came with your debugger, or use 28AWG/1PR 24AWG/2C, not longer than 3 meters</p> <p>the firmware of the debugger is too old: you need V6.5 or later</p> <p>insufficient rights to access the USB device: please try again as root ("sudo", "su -s", or log in as root), and check with "lsusb" if you can see the device at all (Lauterbach USB devices have VendorID 0897).</p> <p>udev.rules were not set up properly to assign the necessary directories and rights to the uSB device</p>                                                                          |
| <p>USB Debugger not detected by Windows</p> <p>Ref: 0279</p> | <p><b>Why is my USB debugger not detected at all by Windows or doesn't work anymore?</b></p> <p>We've had reports that Intel 82801 USB controllers under some circumstances may cause trouble with USB 2.0 devices.</p> <p>The problems should (this is unconfirmed) be fixed with the 82801F chipset series.</p> <p>Plugging in a USB2.0 device to the PC (e.g. "CPU Switch Lite USB 2.0" from Lindy) could cause the effect that running other USB2.0 devices - e.g. PowerDebug Usb 2, or e.g. a USB2.0 memory stick - couldn't be accessed any more, or were not recognized from Windows anymore next time they were used. USB1.0 devices - e.g. keyboard, mouse,... - seem not to be affected. Some issues concerning cable lengths were reported too.</p> <p>In the case of "CPU Switch Lite USB 2.0" from Lindy, the problems stopped instantly when a separate USB cable was used than the USB cable that is part of the combined KVM cable (USB+VGA).</p> <p>Noteworthy is the fact that the KVM USB cable part was used for keyboard and mouse functionality only.</p> |

|                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>USB problem under MacOSX</p> <p>Ref: 0387</p>                      | <p><b>Why do I get the error message "FATAL EROR from PODBUS-driver: could not get nodename" ?</b></p> <p>If you use a TRACE32 PowerDebug/USB module on a Mac OS-X host, you might receive the error message:</p> <p>"FATAL EROR from PODBUS-driver: could not get nodename"</p> <p>In this case the firmware version of the PowerDebug/USB module is too old. Please use a Windows or Linux host to update at least to version V8.x. The current firmware version and a PRACTICE script for updating is available on your Lauterbach TRACE32 Software DVD, in the directory files/demo/etc/hardware or can be download from</p>                                                                                                                                                                                                                                                                                                                                |
| <p>Using 3 GB RAM for TRACE32 task under Windows</p> <p>Ref: 0211</p> | <p><b>How can I permit 3 GB memory allocation for the TRACE32 task under Windows?</b></p> <p>The Windows system file boot.ini must be modified. Please add boot switch /3GB.</p> <p><b>e.g.</b><br/> <code>multi(0)disk(0)rdisk(0)partition(1)\WINDOWS="Microsoft Windows XP Professional"<br/> /FASTDETECT /NOEXECUTE=OPTIN /3GB</code></p> <p>Without special bootswitch /3GB the linker option -LARGEADDRESSAWARE will be ignored!</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p>Using TRACE32 via USB with VMware</p> <p>Ref: 0278</p>             | <p><b>What can I do if the USB interface is not working properly or very slowly with VMware?</b></p> <p>These problems are caused by VMware virtualizing the USB interface.</p> <p>VMware Player 1.x only supports USB 1.1, limiting the transfer speed to 100..300 KB/s.</p> <p>VMware Player 2.x and later supports USB 2.0 and thus allows USB speeds up to 1.500KB/s.</p> <p>To use USB 2.0 you need to update your VMX file (virtualHW.version = "6" and ehci.present = "true").</p> <p>If this does not help, please use TRACE32 with "real" PC hardware.</p> <p>If your PC and TRACE32 tool have an ethernet interface available you can use ethernet together with VMware. Transfer speeds will be lower than with real hardware, too, but not as low as with USB (we observed speeds up to 50% of real hardware).</p> <p>If you use a Virtualized Desktop environment (e.g. VMware View), added latency can also severely degrade USB performance.</p> |

|                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>WARNING<br/>about obsolete<br/>Driver<br/>(WINDOWS<br/>only)</p> <p>Ref: 0266</p>            | <p><b>Why does TRACE32 warn about an obsolete driver?</b></p> <p>You have seen this message:</p> <pre> WARNING: Found active PODBUS USB device using obsolete driver. Please update the driver for your Lauterbach PODBUS USB Controller. Different USB ports may use different driver versions! Please see http://www.lauterbach.com/faq_hostdriver.html FALLBACK: connecting PODBUS USB device NUMBER=1 via obsolete driver </pre> <p>The USB driver you are using for TRACE32 supports an obsolete interface class that could conflict with other USB drivers.</p> <p>Please note:</p> <p>Using the old driver does not affect the functionality of your Lauterbach device or software.</p> <p>The warning is a precaution to avoid potential problems with other USB driver software.</p> <p>Windows Vista/XP/2003 users: Please update the driver with your latest Lauterbach CD.</p> <p>Windows 2000/ME/98 users: A new driver is available on CDs issued after 2007-APR-18.</p> <p>The new USB driver is also available at the download link below:<br/> <a href="http://www.lauterbach.com/faq/t32usb_setup.exe">http://www.lauterbach.com/faq/t32usb_setup.exe</a> TRACE32 USB Driver installer for Windows (32bit and 64bit)</p> |
| <p>Win7 "loses"<br/>PodBus/USB<br/>device after<br/>one hour idle<br/>time</p> <p>Ref: 0344</p> | <p><b>Why does my PodBus/USB device connected to Windows 7 not work anymore after some time ?</b></p> <p>From the Microsoft Knowledge base entry with a hotfix for this problem:</p> <p>"You connect a USB device to a computer that is running Windows 7 or Windows Server 2008 R2. When the computer is idle for more than one hour, the USB device may not work any longer. When this problem occurs, the USB device is not displayed in Device Manager."</p> <p>Title: "USB devices that are connected to a computer may not work after the computer is idle for more than one hour Windows 7 or in Windows Server 2008 R2"</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

Windows 7  
does not install  
TRACE32 USB  
driver

Ref: 0328

## **Why does Windows 7 report "installation failed" when I connect TRACE32 to USB?**

When Windows 7 detects a new device and does not find a driver pre-installed or online, it reports failure (incorrectly: the TRACE32 USB driver is fully compatible with Windows 7).

How to install the driver using "TRACE32 USB Driver installer for Windows":

Download the "TRACE32 USB Driver installer" (t32usb\_setup.exe, see link below)

Start the installer by double-clicking on t32usb\_setup.exe

Follow the installation wizard

How to install the driver manually:

connect your TRACE32 USB Power Device and wait for the "install failed" bubble note

open "Device Manager" (e.g. run "devmgmt.msc")

right-click "Lauterbach POBUSB USB Controller"

select "update driver software"

select "search on this computer"

"browse" to your TRACE32 installation directory (or on the Lauterbach DVD to "bin/windows/driver")

"continue" to install the driver

Note\_1: The installer (link below) is a self-extracting RAR file that contains the driver files and the Microsoft "Driver Package Installer" (DPinst) binaries for Windows 32bit and 64bit. (Lauterbach added "dpinstselect.exe", a small program to auto-invoke dpinst32.exe or dpinst64.exe depending on your Windows platform.)

Note\_2: Due to a certificate problem (not caused by Lauterbach), with the 2010-05-28 version of the installer archive on some Windows 7 64bit installations the driver installation would succeed, but then the driver would not start. This problem has been fixed in the 2010-06-24 version of the driver binary. If you are affected, please download the current t32usb\_setup.exe below.

Installer downloads:

[http://www.lauterbach.com/faq/t32usb\\_setup.exe](http://www.lauterbach.com/faq/t32usb_setup.exe) TRACE32 USB Driver installer for Windows (32bit and 64bit)

## **Why do I have to install a Lauterbach PODBUS USB driver for each USB port?**

Microsoft Windows needs a way to assign the proper type of device driver to an instance of a device.

To achieve this for USB devices, prior to Windows 7, Microsoft did not use the USB VendorID/ProductID/bcdDevice fields, but either (a) the USB Serial Number or (b) the exact device position in the USB tree.

(a) If a device has a "USB Serial Number" set, each individual USB device instance used on a given PC requires an extra driver installation. In other words, if you e.g. swap a device with a co-worker, you need to install a driver.

(b) Without a "USB Serial Number", Windows wants a driver installed once for each USB port where a certain type of device is used. (E.g. swapping devices with a co-worker does not need additional driver installation.)

The USB device design choice was to go for a maximum of one driver installation once per (used!) USB port. Then you don't need to install additional drivers for any Lauterbach PodBus device with a different serial number.

Administrators maintaining restricted user right environments have problems with user-triggered driver installations.

As one pre-requisite, please use the most current installation package. E.g. the "t32usb\_setup.exe" binary from this website (see download link below) is a self-extracting RAR archive that contains the Microsoft "DPinst" driver package pre-installation tool. "DPinst" copies the USB driver to the "Windows Driver Store" and allows subsequent installations to be "automatic".

This should already get rid of most "restricted environment" problems.

If you still have problems, we see two possibilities to further improve the situation:

(1) Allow "standard users" to install the Lauterbach driver by adding the embedded driver certificate to the "Trusted Vendor" certificate store (group settings). This should enable restricted user to install the driver. (Of course you need to test this with your specific version of Windows and your set of group policy settings.)

(2) If all affected Host PCs are identical, a System Administrator can configure one "Template Machine" with all ports installed, and export its USB enumeration tree for the PodBus USB device type from the Registry.

After installing the Lauterbach PODBUS USB driver once on a hardware- and OS-identical target machine, the administrator could then import the enumeration subtree.

(For e.g. XP the subtree would be "HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Enum\USB\Vid\_0897&Pid\_0002". It is unknown if this also works on newer Windows versions. Also any added hub will change the USB tree and require additional installation.)

[http://www.lauterbach.com/faq/t32usb\\_setup.exe](http://www.lauterbach.com/faq/t32usb_setup.exe) TRACE32 USB Driver installer for Windows (32bit and 64bit)

