toolstar*test *OS*

toolstar*test *LX*

Manuals

toolhouse

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Please contact toolhouse should you require additional software or accompanying manuals.

General Notes

For current issues that published after printing this manual, please refer to the file README.TXT on the disk.

The online documentation of the programs, which can be accessed any time by pressing the F1 key or click the according button, often contains complementing and detailed information which is not included in this printed manual.

Due to the multitude of possible system configurations, it can't be guaranteed that the software works 100% correctly in all circumstances; in this case, please contact our support at support@toolhouse.de to help you.

Registered users get for all toolhouse products free technical support via fax, email or phone. The support is limited to the current version.

toolstar® software is permanently updated and enhanced, so that you can always work on the current state of the art.

You received steady released updates for the software via toolhouse or your toolstar® vendor.

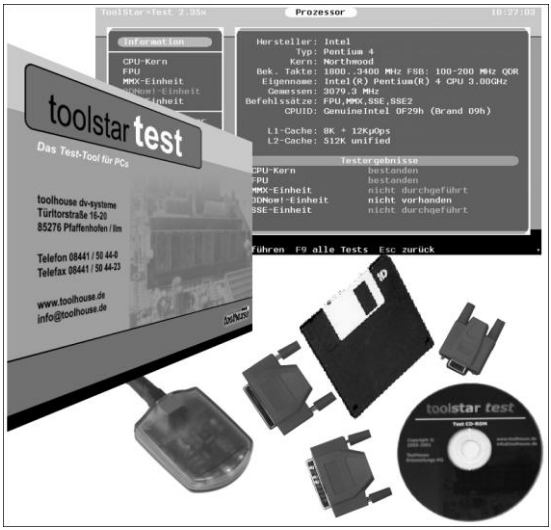
Optimal results received by the current version.

Contents

II. toolstar®**test** OS / LX

Professional hardware tests

with its own operating system



PC diagnostics of an elite class!

- Tests for all important components
- Self booting, own operating system (OS) resp. Linux (LX)
- Boot from floppy (only OS), CD or USB stick
- Batch capable, continuous tests, protocols and lots more
- Regular updates
- Extensive online help
- Optional test plug set COM/LPT and USB
- toolstar®**shredder** optional integrable

1. Using the program

System requirements

Minimum:
- an "IBM-compatible" computer with 80386 processor or better, 8 MB RAM
- LX: 80486 processor or better, 32 MB RAM

For self-booting operation:
- needs a bootable floppy disk drive (OS) or a bootable copy on CD or similar medium; for the USB stick a compatible bootable USB port is needed.

To run under DOS (only OS):
- MS-DOS 6.22, or compatible
- can run from floppy or from hard disk (faster)

Installation, starting:

toolstar®**test** OS runs directly from the floppy disk, an USB stick or a CD-ROM with its own operating system (recommended mode of operation). toolstar®**test** LX runs from USB stick or CD-ROM in a Linux environment (containing on USB stick resp. CD). In particular for the program start form USB stick the BIOS of the PC have to support this. Unfortunately it doesn't works on each system because every manufacture has its own procedures.

The toolhouse USB stick has to be plugged on the PC. You can also start toolstar®**test** OS under DOS (and for this, you can copy the files to a new directory on the hard disk), but some functions are not available then. toolstar®**test** LX also can be started within an existing Linux system. If during the start some errors about missing libraries occur, you have to install them. Dependent on the kernel version, some functions don't work or runs limited.

The program is not existing on the optional test CD-ROM or test DVD. The test CD/DVD only contains test data!

In self-booting start from disk, a boot menu is available (see below), press and hold the *Ctrl* key to access it. Starting from command line, you can enter some command line options (see below). You can also enter a command line in self-booting operation. Select the according option in the boot menu or hold down the *Alt* key to do so. In either case, the currently running hardware detection step is displayed in the bottom line; if this is finished, the main menu appears. The current step is stored on floppy disk or USB stick.

At the start of toolstar®**test** LX, first Linux is booting, with its own extensive hardware detection. If a kernel parameter is necessary, type it as usual for Linux in the boot prompt. If the boot sequence stops on an old computer with an error message regarding of the missing CPU feature "pae", restart and type "486" in the boot prompt.

Boot toolstar®**test** OS from USB stick:

The on the USB stick stored version is self booting.
Please remove, especially for toolstar®**test** OS, all not necessary USB devices e. g. printers, multimedia keyboard, webcams etc. to avoid resource conflicts. To boot a PC from USB stick it hast to set in the BIOS. Dependent on your BIOS manufacture there are different settings possible.
Alternative some system shows a choice of boot devices by pressing a key during startup. Then it's not needed to use the BIOS setup

General procedure:

Enter, after starting the PC, the BIOS setup. Change to the section that's set the boot order. Swap the boot order: first entry has to be "USB stick" or poss. "ThumbDrive", the second one "hard drive". If this setting is not present, please select "*USB-HDD*". If it's still not possible to boot from USB stick please try the settings "*USB-FDD*" or "*USB-ZIP*".

Special procedure by following BIOSes:

Award 6.0 (resp. Phoenix-Award 6.0):
Call "Advanced BIOS Features", and select in "Boot Order" "USB-HDD" or alternative "USB-FDD".

Phoenix (in particular older Notebooks)
Select "Boot Options"/"Boot Order" at the first page; (newer ones has a one page "Boot"). Now you can change the boot order of the existing boot devices. The stick is present under "Hard Disks".

AMI:
It's recommended to select "USB-LS120" (if present) or "USB-HDD" alternative "USB-FDD" in the boot order.

On other BIOSes please use corresponding settings.

*If your PC still don't boots from USB stick please start toolstar®**test** OS/LX from CD-ROM (or only for toolstar®**test** OS from floppy disk). A self extracting floppy image (floppy.exe) and an ISO-CD-image is stored on the USB stick in the folder "images". After creating the floppy or CD restart your PC to boot from it. If the program asks for a toolstar® USB stick, simply plug the stick into a free USB port. toolstar®**test** OS/LX is running completely now.*

Start Log (toolstar®test OS)

toolstar®**test** OS saves during start-up, including the hardware detection process, which step is currently done, in the file startlog.bin. Should toolstar®**test** OS crash or hang (e. g. due to malfunctioning or exotic hardware), that step is skipped at the next start. (For this, the disk must not be write-protected, of course). If this has occurred and you want to test another computer, you should reset the start-up log - using the command line options, the boot menu or the option in the settings menu in the program itself.
toolstar®**test** OS saves for each of the possible operating environments (self booting, DOS, with DPMI/Windows etc.) a separate log.

Boot Menu (toolstar®test OS)

Right at the beginning of toolstar®**test** OS ´s start (in self-booting mode) you can, similar to Windows, bring up a start menu (boot menu) that offers some basic options for the start of the program. To do so, press and hold the *Ctrl* key while the message "Starting toolstar®**OS**..." is displayed. Alternative it's possible to rename the file BOOTMEN_ in BOOTMENU. Then toolstar®**test** OS direct entering the boot menu. (The file is empty and has no extension. So don't rename it to BOOTMENU.TXT or livewise.)

Then the following menu options show up - press the number key at the beginning of each line, or use the cursor and enter keys.

The first options start toolstar®**test** OS right away:

Start without step-by-step confirmation
starts toolstar®**test** OS (with options below)
Start with step-by-step confirmation
starts with asking for confirmation for (almost) each step (with options below)

These options are yes/no switches; each execution toggles:

Clear startup log [self-boot section]
Show graphical logo
Enter command line
Load files in any case in realmode (e. g. during boot problems with USB floppys)
Load floppy image in any case (e. g. at USB-CD boot problems)

Submenu USB – and further diagnostic options:

Debug mode – particularly for extended output at the start
Forbid checking CD boot for loading the floppy image.
USBOptions= 0 to 5
Default is 2, if it´s not changed in tooltest.ini. If the USB initialization hangs up during the start of toolstar®**test** OS at "**OHCI...**", try USBOptions=1. At hang up on "**UHCI...**" try 0, 1, 3, 4 and 5 please.

Further options not directly connected to toolstar®:

Continue boot from hard disk
Quick reset (floppy disk changed?)
(bypassing the POST test of the BIOS)

Command Line:

The command line options can (but need not) start with a slash '/' or a dash '-', and is not case-sensitive.

Under DOS (toolstar®**test** OS) or Linux (toolstar®**test** LX), you can use these arguments:

`?/H/HELP`	Gives a brief list of these options.
`CLEARLOG`	Clear Start Log
`DONTLOG`	Don't use Start-Log.
`NOLOGO`	Don't display the graphical start image, use text-mode instead
`D`	Debug mode (more information at startup and in the program, to locate errors).
`1 SINGLESTEP`	Confirm each step at startup.

You can also enter any INI file setting (s. Ch. 3) at the command line to override the setting in the INI file (no need to specify the [INI section]), plus these simplifying arguments useful for batch operation:

`Script=scriptfile` starts specified burn-in test script
`Report=outputfile` sets output file name
(Default extensions .tts and .txt are appended automatically unless other extension specified.)

This can be done in DOS and in self-booting mode – in self-booting mode, enter the boot menu and select the option to get prompted for a command line (or press and hold the *Alt* key instead of *Ctrl* to get the command line prompt directly).

Example (in one line):

```
tooltest script=myscr report=myout pcname=Server1
pcsn="123-4/5" testername="John Doe"
```

As you can see, enclose strings with spaces, dashes or slashes in quotes.
Note that under DOS, the length of the command line is usually limited to 127 characters.

Exit codes (error levels) are also shown. You find a list in the appendix.

toolstar®**test** LX is started at the Linux prompt with `./testlx` instead of `tooltest`, but the command line is equal.

Important notes for using the program:

- The main menu contains sections for the different parts of the system which combine both information pages and test options.
- The results of the tests, that have been performed, can be viewed in the Result Report menu in four different detail levels.
- For Burn-In testing (tests that can run a long time over night, non-interactively), there is a separate menu option where you can edit and run a list of tests you would like to perform.
- You can enter the tester's name, the PC's designation, comments etc. in the Settings menu.
- To save a window's content (info or reports) to a file or to send it to a printer, press the *F2* key in such a window (then you can select the target).

General Usage:

Using toolstar®**test** OS/LX is very simple and self-explanatory; also, you see hints on which keys to use in the status line (the bottom line on the screen). A mouse can also be used if available. Following is an overview for the different situations:

Menus

Use cursor up, cursor down, *Home, End* to highlight an option (move the orange bar); press *Space* or *Enter* to execute the option. A gray option is disabled and cannot be selected. A yellow triangle to the right indicates a submenu.
You can also press a letter key to directly invoke the option with that letter highlighted (such as G for Graphics).
Press *Esc* to leave the current menu and go back.
With the mouse, just left-click on the desired option; right-click to go back (similar to "Esc").
In menus that contain several tests, you can press the *F9* key to execute all the tests in a row.
Some options show a (yellow) hint in the status line.

!!! Many menus have an info page as first option, which is automatically displayed when entering the menu, and below the test items (the first is automatically focused in the menu).

Windows

Windows with lists of info or test reports can be scrolled the usual way with the cursor keys (if they contain more info than can be shown on one page on the screen, which is indicated by a scrollbar at the right). If at the same time a menu is active, hold the *Shift* key to scroll the window contents instead. You can also use the mouse to operate the scrollbar, of course.

Press *F2* to open a dialog to save the window contents to a file or send them to a printer.

Messages, Questions

Message boxes display a message or question with one or more buttons below it. You see the keys you can use in the status line, and some buttons have highlighted shortcut keys. (You can use the *Tab* key to focus a button and press *Space* or *Enter* to execute that; but note that on questions "*Enter*" always means "Yes" and not the focused button.) Alternative do a left-click with the mouse on the button.

Dialogs

Use *Tab* to navigate through the dialog elements. In groups of radio buttons and checkboxes, arrow key high/down also works. Press *Space* or *Enter* to activate/select the current element. Some elements also have shortcut keys.
Note about the *Enter* key: When a button is focused, the button is pressed; when something else, such as a checkbox is focused, in many dialogs it means OK (see the status line).
Press *Esc* to cancel the dialog.
Or you can use the mouse to select an element.

Help

See below.

Mouse availability

toolstar®**test** LX: Mouse functionality is provided by the Linux functions.

toolstar®**test** OS: When a mouse is connected, that can be used in the current environment, it can be used to operate this program:
- If self-booting, toolstar®**test** OS first searches for a PS/2 mouse by default that is supported by the system BIOS, then it scans all known (standard) serial ports for serial mice (Microsoft or Logitech compatible).
- When running under DOS, Windows, etc.: if a mouse driver (DOS driver, or in Windows DOS box) is already installed, it is used; otherwise, serial mice are searched.
- Self booting and DOS: an USB mouse can be used likewise (also parallel to others)

The Help System

toolstar**test** OS's help system is also rather easy to use, using keyboard or mouse (if available, see above).

When pressing *F1*, a help window appears, displaying help on the current active part of this program. In this help window, you may use the following keys:

- *Cursor* up/down to highlight (focus) the previous/next cross-reference; if there is no cross-reference visible, the screen will be scrolled up/down one line.
- *Tab/Shift-Tab* to move the focus to the next/previous cross-reference, including scrolling the screen as necessary and wrapping around the end.
- Any letter to focus the next cross-reference that starts with this letter.
- *Enter, Space* to switch to the highlighted topic.
- *F1* inside a help window to get the »help on help«-screen.
- *Alt-F1* to bring up the topic you had before this. Up to 30 topics are recorded by toolstar®, together with the last position and focused cross-reference in the topic.
- *Backspace* does it likewise, but closes the window if there is no previous page.
- *Shift-F1* for the alphabetical help index.
- *Ctrl-F1* to show the contents page of this help system.
- *Esc* close the help window.

The following mouse operations can be done:

- Click on the scroll bar arrows to scroll the help window up/down one line, above/below the button to scroll up/down one page, or drag the button. (If the focused cross-reference moves off the screen, the previous/next cross-reference will be focused).
- Click on a cross-reference once to focus it. Click again on the focused cross-reference to switch to the linked topic.
- Right-click to go back to the last topic, or close the help window if none.

Note:

Some contexts or cross-references point to a line inside a help topic, i. e. there's also something standing above the initial point.

2. The Menu Structure

toolstar®**test** OS/LX combines information and diagnostic functions for the different components in respective submenus. Following is an overview about the menu options, some have a special note; for further notes use the online help, please.

System Overview

Three types of system overview are available:

One-page Overview

A brief summary on about one screen page, showing the most important contents of the system.

- The names of system and mainboard are acquired from SMBios/DMI. These are unfortunately often not set extensively or even incorrect by the manufacturer, or contain meaningless reservations (which could be ignored optionally).
- In the Options dialog you can specify if you want non-present elements to be displayed (e. g. "Sound: ---"), which may simplify a possible automated processing of the output.

User-definable Standard Overview

Configurable in the Options dialog; this may be accessed directly with the menu option below.

More extensive Overview

Shows virtually everything that you can select. *Use this output when you have a technical support request.*

Simultaneous tests

Shows a window for the selection of the simultaneous testable components. These are:

- CPU(s)
- Memory
- Devices

With the displayed options different CPUs, memory test methods and devices are selectable.

Processor

Information

Shows some information's about the CPU (in the window next to the menu)

Extended informations

Shows some features of the processor, e. g. SSE, SpeedStep, VMX, 64 bit extensions.

Stress tests

A special designed test for high load which uses all function units together (FPU, MMX, 3DNow, SSE). On multi core/multi CPU systems it runs on all cores/CPUs at the same time. You can also select the length and the used CPUs/cores separately.

Stress tests → CPUs/core selection

On a multi core/multi CPU system you can select the cores/CPUs you want to test with the listed quick and cache tests below (it tests one after one).

Quick tests

In subgroups divided quick tests of the different function units. CPU core (general functions), FPU (conventional floating point unit), MMX unit (Multimedia Extensions), 3DNow! unit (from AMD) and SSE unit (Streaming SIMD Extensions, incl. SSE2, SSE3, SSSE3). By pressing the F9 key, all tests run automatically, without choosing the menu items separately.

The detailed test results (for every core/processor separate) are listed in the result report (at the main menu).

Cache test

Tests the level 2 and (if existing) the level 3 cache of the CPU(s) with the same methods as the memory tests.

MHZ Monitor

The MHz Monitor displays the clock frequency of the CPU, continuously updated in a bar graph. This is intended for systems that can change the speed dynamically, such as Intel's SpeedStep in their mobile Pentium III processors that runs at a higher speed when running from an external power supply. (This test is not available on older systems (386/486) due to exactness.)

Basic Mainboard Components

Board & BIOS info

Shows the BIOS manufacturer, the identification string of the BIOS, the BIOS date, and the chipset (as far as known).
A more detailed chipset device listing can be found in the PCI Devices list.
The informations acquired from SMBios/DMI are unfortunately often not set extensively or even incorrect by the manufacturer, or contain meaningless reservations (which could be ignored optionally).

PCI Device List

This menu option shows a brief list (with a section for each bus number) of the devices.

PCI Details

This second menu option shows comprehensive infos about each device.

PCI Test

Runs a direct bus scan and tests different BIOS functions.

Plug&Play

This list shows the system device nodes, if a PnP BIOS is present.

Interrupts (IRQs)

Note that some devices that use interrupts cannot be found here.

DMA Channels

Note that some devices that use DMA-Channels cannot be found here.

Hardware-Monitoring

This page displays the data from temperature, voltage, and fan speed sensors, as far as supported by the motherboard and if the particular chips are known to toolstar®**test** OS.
The chips are searched in this order:

1) chipset-integrated;
2) on the SMBus, as far as present and supported;
3) on I/O ports.

CMOS & RTC

Here the functions of the so-called CMOS-RAM are being tested, which stores the BIOS configuration settings and also contains the real-time clock (RTC).

PC Speaker

This test plays a little melody to test the function of the standard PC sound generator. A Speaker in the PC case or on the mainboard is required, or if the output is routed through a sound card, it must be initialized and its volume must be set high enough.

Other Components

This tests these components:
Interrupt Controller, DMA Controller, System timer, Keyboard Controller
Since these are not divided in sub-tests, they are combined here.

Memory

Information

The (automatically displayed) info page in the memory menu shows a list of the memory ranges as reported by the system - those labeled "available" are normal working memory ranges that can be tested; "reserved" are BIOS ROM ranges (which of course cannot be tested, like the few KB that have a special usage on ACPI systems).

Optional module informations from the SMBios/DMI are displayed. Unfortunately it is often not set extensively or even incorrect by the manufacturer, or contains meaningless reservations (which could be ignored optionally).

Memory Speed

It displays the throughput in MB/s for read, write, and random access for up to four different access methods.

Memory Tests

The next four options starts a test of the entire system memory with certain single test methods, or select *All* for all seven. (The blocks/dashes indicates how they supplement each other.) You can pick your own methods, and specify a memory range, by selecting *User-defined*. These seven test methods are available:

Menu item		Tests performed
Quick	1:	Adressing
	2:	Chessboard pattern
Additional	3:	Windows mode
	4:	Complementary bits
Further	5:	Left-&right-walking bits
	6:	Large complements
Deep	7:	Distributed accesses

When the test is running, in the upper left window of the test status screen, the single different tests are displayed. Below you see the percentage of the completion of the current test and the total runs (note that the test speeds are different and the total completion bar won't be updated linearly.)
In the lower right corner, there's a 'map' of the memory, with blocks representing a certain block of memory - a green block means no error found yet, a red X indicates one (or more) error, R means reserved area; a similar display is found later in the Result Report (with a higher resolution). The wandering white block indicates the beginning of the range of memory that is currently being tested.
The entire low memory (0 to 640K), as well as the area occupied by toolstar®**test** OS itself, are also tested, after necessary copying/mapping.

Note: Memory tests are only available in self-booting mode or under pure DOS.
Tests above the 4 GB address space run only self-booting. toolstar®**test** LX access by its kernel module the hole memory (also above 4 GB); if toolstar®**test** LX runs not in self booting modus with the included Linux, but on a present Linux installation, the module is only loaded if the kernel versions are equal.

Memory: SPD-EEPROMs

Not too old SDRAM memory modules (DIMMs; since PC100 standard) must have a small memory that contains the timing specification to access the module (maybe for different fre-

quencies); there the module manufacturer can also store data about himself and the module. (SPD = Serial Presence Detect).
This menu item tries to read the SPDs via the SMBus.

Ports

Overview

The information page shows a table of the serial and parallel ports with its I/O addresses. For each serial (COMx) and parallel (LPTx) port there is one submenu.
This submenus shows information's about the configuration of the port and the test result summary. In the lower left window, you see the current pin values of the port.

Serial ports: The internal loopback test does not require the test plug on the port, it tests the internal communication inside/up to the UART. Handshake and transmit/receive test require the optional obtainable test plug on the port; they test the connection between the outputs of the UART up to the plug.

Parallel ports: The controller test tests the port's controller and does not requite the test plug on the port.
The status port test requires the optional obtainable test plug on the port; it tests the connection between the outputs of the controller up to the plug.

Modem

If a modem is connected to one of the serial ports, it can be tested automatically or interactively. Also it is possible to change the baud rate.

USB

This submenu offers the following information and tests for the Universal Serial Bus:

Start USB driver
Loads the driver for the USB controller, afterwards.

Information about the Host Controllers:

- Specifications (universal HCI, open HCI, enhanced HCI)
- Vendor and label
- State

Device Overview
Shows a brief summary of all connected USB devices and controllers, with the most important information about type, vendor, etc.
The tree-like display also shows you which device is connected to which port or hub.

Device Details & Basic Tests
This list displays some more details of the devices and their configuration options, as well as notes if errors have occurred when detecting or accessing the devices.
A deeper test that is specially tailored to the respective device classes or even the vendor-specific device itself is not performed. For some standard classes, however, you find tests in the corresponding other menus of toolstar®**test** OS, such as keyboard, mouse and mass storage.

Tests with Test Plugs
When you have connected the special (optional obtainable) USB test plug to a port, you can perform special tests with this menu item; these tests specifically can verify the correctness of data transfers, including any possible USB hubs and cables in between.

The middle, red LED shows whether the test plug receives power (independently of the test above) – if connected directly to the host controller (to the PC), this is usually always the case; otherwise, when connected to a hub, this depends on the correct function of that hub. The green and yellow LED shows the sending resp. receiving of data.

The plug can be used on both USB 1.1 and USB 2.0 controllers. It tests full speed transfers with up to 12 Mb/s.

General Notes about USB:
toolstar®**test** OS/LX automatically detects USB device attachment/removal and configures them. But please make sure to attach or remove devices only when there is no test currently running, in order to not disturb that test, rather only when you are inside a menu or dialog.

Network cards

If a network card is installed in the PC, its specific data are shown.

Graphics

Information

Lists all detected graphic cards and further information's

Select modes for testing

Warning: select only modes that can be displayed by your monitor! (The standard modes with numbers below 20h should be run without problems, as well as all 640x480 modes.) Selected by default are standard text mode 3 and the 640x480 mode with the highest color depth.

Test Image, Primary Colors, Gray levels, Color levels, Grid

During displaying the primary colors, its possible to shown a menu prompt by pressing the *F1 key*.

Visible memory

Test the memory that is used from the graphic card in the selected modes. During the tests, you see random characters/pixels and colors on the screen. (This test ends automatically and shows the result in a message box.)

Video memory test

Tests the whole memory (or a selected range) of almost all conventional graphic cards. It uses the same seven tests as a comparable main memory test.
It could be, that this test needs more time as a comparable main memory test, because the data rate particular in the back channel of AGP cards are slower.

Additional card

If more then one graphic card installed (two ports of one graphic card are waived), you can initialize the second one here and toggle between both cards for all graphic tests. There is no standard to handle two graphic cards and share the resources between both, so it's possible that this test do not work with all graphic card mainboard combinations.

Drives

The overview page shows a brief listing of the floppy disk drives, hard disks, IDE devices (Legacy- as well as PCI-EIDE, IDE-RAID- and Serial-ATA-controller), SCSI (via ASPI) and CD/DVD drives via MSCDEX (under DOS).
toolstar®**test** LX use the Linux drivers and functions and makes no different for access (SCSI, SATA, USB,...).

Beneath follow sections for the drive types Floppy/Removable, Hard Disk, CD-ROM/DVD, Other, that also tell which interface is used. These offer submenus with the following items (not all available for all drive types):

Information
Shows information's about the IDE, SCSI or CD/DVD device and the insert medium.

Select range for testing
Applies to all following read and write tests of this drive

Mechanics test
Strains the drive's mechanics by randomly reading single sectors spread over the entire media; also measures the average access time (for positioning and reading).

Quick read benchmark
Performs some reading accesses on the whole medium and investigate the maximum, the average and the minimum transfer rate.

Read test
Reads the entire disk or the range selected before (and showing continuously updated status information). If an error occurs, it is displayed in the bottom window; the test stops after a certain number of errors have been encountered. The data transmitting rate is shown, too.

Read test with Test-CD-ROM / Test-DVD
Requires the special (optional obtainable) Test-CD or Test-DVD and can thus additionally verify if the data is being read correctly. (Of course only available for CD/DVD drives.)

Write test
For each block, the data is first read (multiple times, to be safe), then a pattern is written and read back, then the original data is written back and verified - hence this test does NOT destroy any data on the disk. (Not available for CD/DVD drives.)

CD/DVD burn test
Burns and reads data on recordable disks, optional only as simulation. Also erases RW-media. RW-media are recommended, because of its multiple usages.

Erase CD/DVD-RW
Erases rewriteable discs.

SMART analysis
Shows data like the wearout of the drive and also critical errors (as far as supported and only for IDE drives).

SMART self test
If the drive supports a self test, it's possible to show the result of earlier done test. You can also start a short and a comprehensive self test. Attention: the test runs within the drive. toolstar®**test** OS has no control about it! (For further information about SMART read the online help, please.)

Controller test
Executes some diagnostic functions of the controller/BIOS; not all of these, however, are supported on all systems. (BIOS hard disks only.)

Eject
Opens the CD/DVD drawer.

Partition table
Shows information's about the logical splitting of the hard drive.

View sectors
Here you can look at arbitrary sectors of the media, especially to verify if a previous formatting/deletion (conducted otherwise) have been successful. For this purpose, you can also set the test result (pass/fail).

Complete erasing / shredder (optional)

Erases hard disks finally and irreversibly using German or international standards or personal guidelines. See also toolstar***shredder** OS.

Input Devices

Keyboard: Check keys

You can press any key for which the numbers and values are then displayed. Press the *Esc key* twice to end this test.
toolstar®**test** OS/LX shows a standard keyboard layout, on which the pressed keys are highlighted; since toolstar®**test** OS/LX cannot know which keyboard with possible special keys you are actually using, you are asked whether the test was successful. The difference key colors are only for an easy use and have no meaning.

LEDs

Tests the functionality of the 3 standard lights on the keyboard. Of course you are asked whether it worked correctly, since a program cannot see that.

Mouse

The mouse test consists of having to move the mouse to the corners of the screen and click there; you also see a simple "graphical" representation of the mouse.
Notes on mouse availability can be found at the end of chapter 1.
Depending on mouse connection and type, usually no more than two or three buttons can be detected, neither special functions such as a scroll wheel.

*toolstar®**info***

If toolstar®**info** is stored in the same directory as toolstar®**test** OS, you can start it with this menu option (otherwise it fails) without exiting toolstar®**test** OS. After exiting toolstar®**info** you automatically came back to toolstar®**test** OS.

Settings

Store the following settings in the INI file

Define if the info of PC and Tester and also the option settings are permanent stored in the INI file. (Avoids error messages and idle times at CD boot without floppy/USB stick.)

PC and Tester info

In this dialog, you can enter lines of text that will be added to the output of the reports: designation of the PC, serial number, name of tester, and comments.
You can select for each of these lines whether they should be stored as default on the toolstar®**test** OS/LX floppy / stick (e. g. the tester's name) or should just apply to the current session (e. g. PC's serial number).
The titles of the 3 comment lines are also changeable. Attention: the right side (the long lines) must not be empty if the left lines should be shown (type one space therefore).

PC and Tester info → automatic

Set an automatic, system specific input to the lines, e. g. the name of the system or its serial number, present in the SMBios/DMI.

HTML:

For HTML output format, you can specify a URL to an image file with your company's logo, and also specify how you want it to be aligned on the page. The logo file does not need to be on the disk with toolstar®**test** OS, it must just be accessible when you view/print the output file in your web browser.

- Simplest way is when you put it where you store the output files, then you can simply specify the name: `mylogo.jpg`.
- You can also specify a full path name, such as `d:\myimages\mylogo.jpg`. But note that, while it works fine this way with Microsoft Internet Explorer, other browsers

require it this way: `file:///d:\myimages\mylogo.jpg`. Since this works with MSIE too, you should always prefer the latter version.
- A web URL works too, of course, as long as you have internet access when you view the output: e.g. `http://www.mycompany.com/images/logo.jpg`.

General and special options

In this two dialogs you find a number of options for the general settings of toolstar®**test** OS/LX and for the settings of single, special components. An extended description is in the online help.

Start-Log

See chapter 1.

Results Report

The first option shows a hierarchical display of the test results; the detail level can be adjusted, as you can see in the status line. The second option is only available when a burn-in test has already been performed, and re-displays its protocol.
You can (as for all info windows) print these reports or save them to a file by pressing the F2 key.
*Note: If an error occurs since the last start of toolstar®**test** OS/LX (or the last reset of the events) this windows has a red margin (even if no error occur during the last burn-in-test).*

The settings for the selective details also could be set in the menu *Settings → Hierarchical result report*.

You can reset all events in the hierarchically report with the last menu option.

Burn-In Tests

Burn-in tests are used to let some (non-interactive) tests run automatically and for a longer time.
In the menu are besides the first option for defining own test tree predefined tests of different thoroughness and length.
Quick test starts a test which tests all components one time for its basic functions.
Profi test is more thorough, takes more time, the single test run several times
Extended test is at least as thorough as the profi test and runs optional 1, 2, 8 or 24 hours.

If script files already exist on the floppy / stick / CD, it's (the first 10) shown direct on this menu inclusive its description (if exist). Stored scripts are also show here (if there is still enough space). With "load script" you can load further script from the current floppy.

Dependence if "run script immediately" is selected, the predefined and loaded test runs immediately or are shown in a dialog first, where its contend can be visited or edited.

In the dialog window, you can create/edit a list of the tests that will be performed in the given order. So, the buttons Add, Remove, Edit, arrows (to rearrange) work for the currently selected line; the Defaults button sets some standard tests.

The options menu offers settings for the total processing including a description for the script; with Load/Save you can load the script from or save it to disk.

"Run!" finally starts the tests; "Close" closes the dialog window.

After completion of the tests a result report is shown. If an error occurs since the last start of toolstar®**test** OS/LX (or the last reset of the events) this windows has a red margin.

Help

Shows the online help. It can also been shown with the F1 key at (almost) any time.

About toolstar®**test** OS/LX

Shows contact information and the license owner.

Exit

When you have performed some tests and have not viewed the results summary, you are asked if you want to do so now (the menu selection is set to the appropriate menu).

In self-booting mode, you are also asked if you really want to exit; in the goodbye-screen, you have the option to reset or turn off your system (if supported). Under DOS/Windows, the program just exits.
Under toolstar®**test** LX you have also the possibility to change to the Linux prompt.

The functions for resetting or turning off the system under toolstar®**test** LX, shut down the Linux system regular. In self booting mode it's not necessary, but provides the automatic unmount and eject of CDs.

3. Miscellaneous

toolstar®**test** LX's home directory is the subdirectory `testlx` (it's also its default directory for storing all outputs). toolstar®**test** OS's home directory is the root directory.

Different to toolstar®**test** OS Linux is case sensitive for file names. Also it's possible to use longer file names than 8.3.

You can also use directories (with / instead of \), but please note, that the most directories exists only temporarily during the running system. So changes won't be stored on the stick. Only the default directory /testlx (not at CD-boot) and the on the stick mounted directory /stick (with all subdirectories) are stored on the stick.

If a network connection is available, it's possible to store the result report to a shared directory on the network. For this type `//server/share/filename.txt` or, if necessary, `//username:password@server/share/filename.txt` as file name. If the server won't be reachable by its name, try it with its IP address. You can store the user name, the password and if necessary the workgroup in the INI file (for this, see the next chapter). Write it with the commands RemoteSaveUser, RemonteSavePass and RemoteSaveWG in the [options] section. So the save dialog contains this data by default.

With the shortcuts *Strg+Alt+F1* to *F6* you can switch between different consoles, to e. g. start toolstar®**test** LX multiple times or do other tasks at the Linux prompt; for this toolstar®**test** LX runs by default on the first console. You starts toolstar®**test** LX (also after exiting and returning to the Linux prompt) with `./testlx`

For a regular shut down of the system after exiting the program (and in case of CD-boot to unmount and eject the CD) type `shutdown -hP now` (switch of) or `shutdown - r now` (restart) in the Linux prompt. (toolstar®**test** LX and the stored outputs doesn't matter if the PC is switched of by the power off button on the PC, because the file system will by updated after each write access.)

If you want to execute special Linux commands before starting toolstar®**test** LX, you can write it in the shell script `/testlx/prestart.sh`

INI File tooltest.ini (OS) resp. testlx.ini (LX)

In the INI file that looks like those used by other programs and Windows – sections in brackets with assorted settings – program preferences are stored.

[General]

`SaveDestination=0..7`	(Last used) output destination
`SaveFileName=OUTPUT.TXT`	(Last used) file name for saving the output.
`AppendToFile=0/1`	(Last used) setting whether to append to the output file.

[Ports]

For the port tests:
Additional serial and parallel ports (that are not detected by the BIOS, also more than 4 resp. 3) can be specified here: Create a line (as often as needed)

```
UserComPort=3E0h
```

etc. for the needed addresses (here 3E0 hexadecimal, equivalent to $3e0, 0x3e0 and 992); if the program is supposed to check if there are really ports on the particular PC, set
`VerifyUserComPorts=1`
(default is 0=off, applies to all UserComPort specifications).
Similarly, use `UserLptPort` and `VerifyUserLptPorts` for parallel ports.

[Options]

These options correspond to those in the Options dialog. There are further rarely needed settings, who are not shown in the dialog; the description to theses options is in the online help.

[TestInfo]

Corresponding to the PC and Tester Info dialog

DOS Exit Codes (Errorlevels) / Port80 Codes

toolstar®**test** OS returns under DOS exit codes (errorlevels) to the calling program or batch file; also optionally to port 80h for POST boards. For the separate error specifications, only the error that occurred *last* will be output.

Error-level (dez.)	Port80-code (hex)	Meaning
0		no error occured
1		general start error (main program missing, damaged, etc.)
10	0A	aborted by user, no error occured so far
14	0E	aborted by used, at least one error occured. (Overwrites specified single value above 64=40h)
15	0F	all tests performed, at least one error without further specification occurred
		self-booting only:
	00-1F	exception (displayed on screen)
	20-2F	operating system initialization
	30-3F	reserved
		CPU:
64	40	general
65	41	core
66	42	FPU
67	43	MMX
68	44	3DNow!
69	45	SSE
71	47	Burn-In-Test
105	69	CPU cache test
		Mainboard:
96	60	PCI
97	61	CMOS-RAM/Real-time clock
98	62	PC Speaker
99	63	Interrupt controller
100	64	DMA controller
101	65	System timer
102	66	Keyboard controller
		Memory:

104	68	Main memory
108	6C	SPD-EEPROM **
		Serial Ports: *
113	71	COM1 Internal Loopback
114	72	COM1 Handshake
115	73	COM1 Transmit
117	75	COM2 Internal Loopback
118	76	COM2 Handshake
119	77	COM2 Transmit
121	79	COM3 Internal Loopback
122	7A	COM3 Handshake
123	7b	COM3 Transmit
125	7d	COM4.. Internal Loopback
126	7E	COM4.. Handshake
127	7F	COM4.. Transmit
		Parallel Ports: *
129	81	LPT1 Controller
130	82	LPT1 Status port
133	85	LPT2 Controller
134	86	LPT2 Status port
137	89	LPT3 Controller
138	8A	LPT3 Status port
141	8d	LPT4 Controller
142	8E	LPT4 Status port
		USB:
144	90	general
145	91	Host Controller
146	92	Test plug: Handshake
147	93	Test plug: Transfer
		Graphics:
161	A1	Test image: grid
162	A2	Test image: color levels
163	A3	Test image: gray
164	A4	Test image: primary colors
165	A5	Test image: test image
168	A8	Graphics memory test
		Floppy/Removable: *
176	b0	#1 no media **
177	b1	#1 read test
178	b2	#1 write test
180	b4	#2 no media **
181	b5	#2 read test
182	b6	#2 write test
184	b8	#3 no media **
185	b9	#3 read test
186	bA	#3 write test
188	bC	#4.. no media **
189	bd	#4.. read test
190	bE	#4.. write test
		Hard Disks: *
193	C1	#1 read test
194	C2	#1 write test

195	C3	#1 controller
197	C5	#2 read test
198	C6	#2 write test
199	C7	#2 controller
201	C9	#3 read test
202	CA	#3 write test
203	Cb	#3 controller
205	Cd	#4.. read test
206	CE	#4.. write test
207	CF	#4.. controller
		CD/DVD: *
208	d0	#1 no media **
209	d1	#1 read test
210	d2	#1 read test with test CD
212	d4	#2 no media **
213	d5	#2 read test
214	d6	#2 read test with test CD
216	d8	#3 no media **
217	d9	#3 read test
218	dA	#3 read test with test CD
220	dC	#4.. no media **
221	dd	#4.. read test
222	dE	#4.. read test with test CD
		Input Devices:
225	E1	Keyboard: Keys check
226	E2	Keyboard: LEDs
232	E8	Mouse
		Other:
238	EE	external program wanted abortion (DOS)
	F0-FE	reserved
	FF	normal execution (no error so far)

---

*	internal numbering as in menu order; numbers of 5 and above have same codes as no. 4
**	if to be treated as error according to option

Example in Batch File without checking for single errors:

```
tooltest (parameters)
if errorlevel 15 goto Error
if errorlevel 14 goto UserAbort_after_Error
if errorlevel 10 goto UserAbort_without_Error
if errorlevel  1 goto Starterror
echo everything okay
goto End
:StartError
 ...etc...
:UserAbort_without_Error
 ...etc...
:UserAbort_after_Error
 ...etc...
```

```
:Error
 ...etc...
:End
```

Others

`BackBitmap`	Name of a bitmap file as background for menu and toolbar (MSIE 3 and higher)
`UseCyrixCPUID`	enable CPUID command on Cyrix/IBM processors
`NoExtraThread`	0/1, default 0; if 1, for information gathering (+output), no separate thread will be used
`OutputDebugString`	0/1: if in debug mode (/d in command line), log file outputs and additional info will be written to the debug terminal (view it e.g. with the "DebugView" tool from www.sysinternals.com (http://www.sysinternals.com)).

^^^

Help at technical problems

Effective support with exact information

In order to provide a quick response to any technical enquiries you may have with toolstar® products, toolhouse has taken specific steps to help you report problems to our technical staff. An important procedure in tracking and processing suspected problems is the use of Technical Problem Report forms or TPR's. It's available as form and as program.
It's already on your USB stick/floppy, or you receive it via e-mail direct by ToolHouse or at http://www.toolhouse.de

The program TPB.exe (technical problem report)
you already received together with your toolstar® product.

The program for technical support / TPR form

Both help you to give exact information about the problems to our developers. The missing of single information's makes it maybe impossible to solve your problem. For these reasons it's in your and in your interest to fill in all fields correctly. Please give a full description of the problem and where it is occurring along with any other useful information you may have. Please also state any additional requirements hardware/software that may be needed to reconstruct the problem here by our engineers.

Help us to help you

Please describe as exactly as possible in which context the problem occur. Additional give us further information about special hardware and software combinations. This is necessary to solve your problem as fast as possible.

Enhanced system information

With the toolstar® products it's possible to store and print extensive information about your system. Please add it to the TBR!
(If possible, created by the program, in which the problem occurs.)

toolstar®**test** WIN:	System overview (in the menu tree) → extended overview → select high details → file → save as... → only text (prefer RTF) –> OK
toolstar®**test** OS/LX:	System overview → extended overview → F2 save
toolstar®**info**:	File → general overview → F2 save → OK
toolstar®**win**:	File → save as... → selected pages → select (at least general overview) preferred format: text → add to file

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Your Wishes and Suggestions

The products of the toolstar® family are developed in cooperation with PC manufacturers, administrators and service technicians to ease your work.
The products being developed further continuously for you.

If you are missing some functions, would prefer present functions differently or expanded, or are entirely satisfies, please notify us of it.
This way you help us continue to ease your work with the products of the
toolstar® family

We are looking forward to hear from you.

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For your notes: _____