

T-Engine/TX4956 Development Kit

An Open Development Platform for Embedded Systems



The CPU Board of the T-Engine/TX4956 Development kit (in full-scale)

If you have any questions, please feel free to contact us.
E-mail: te-sales@personal-media.co.jp

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|--------------------------|--|
| CPU Board | |
| CPU | TOSHIBA TX4956 (MIPS, 400 MHz, 0.6W, FBGA Package) |
| Flash Memory | 16 MB |
| SDRAM | 128 MB |
| Input/Output I/F | USB (Host), PCMCIA slot, Serial port, eTRON chip I/F, Headphone output, Microphone input, Expansion bus (PCI compatible), JTAG-ICE I/F |
| Others | RTC, analog RGB output (resolution up to 800 x 600) |
| Power Supply | AC adapter |
| Dimensions | 120 x 75 mm (4.724 x 2.953 inch, excluding protrusions) |
| LCD Board (Optional) | |
| Specification/Resolution | TFT color 240 x 320 dot |
| Others | Touch panel, Key switches (3), Infrared input port |
| Dimensions | 120 x 75 mm (4.724 x 2.953 inch) |

PRODUCT SPECIFICATION

Supplied Software

For T-Engine target board

- PMC T-Monitor
- PMC T-Kernel
T-Kernel/OS, T-Kernel/SM, T-Kernel/DS
- PMC T-Kernel Extension (Basic middleware for development)
File management functions, CLI (Command Line Interpreter), PC card manager (bus driver), USB manager (bus driver)
- Device drivers: source code included
Clock (RTC), console (serial), system disk (ATA card, USB), KB/PD (keyboard, touch panel, mouse), screen (LCD)
- Sample applications: source code included
Simple Hard Disk Partitioner (hdpert), Disk Format (format), Compare Files (cmp), Disk Dump (dd), Simple Editor (ed)

Note:

- Customers are allowed to execute the above software on T-Engine/TX4956 Development Kit only. If the above software are executed on another hardware (or embedded in a final product), a separate license is required. Please contact us for further information.
- Among software shown above, the copyright to T-Kernel, the standard real-time OS for T-Engine, is held by the T-Engine Forum (<http://www.t-engine.org/>).
The T-Kernel program, including source code, has been made open to the public by the T-Engine Forum. Anyone who agrees to the conditions set forth in the T-License is free to use it, including incorporation in end products. Note, however, that the T-Kernel offered by the T-Engine Forum lacks MMU support. The addition of MMU support is necessary in order to run the PMC T-Kernel Extension, for realizing file management and virtual memory, or in order to run other middleware such as the PMC T-Shell with its GUI functionality. Personal Media offers the PMC T-Kernel with these and other enhancements.

For development machine

- GNU development environment with source code
GNU based development environment running on PC-based Linux and Windows (Cygwin), including GDB source debugger.
- GUI integrated development environment:
Eclipse for PMC T-Kernel
(Free download for the registered user)

Optionals

LCD Board (for T-Engine/TX4956)

An LCD board which connects to the CPU board of the T-Engine/TX4956 Development Kit.

T-Engine Development Bench (acrylic board + portable cover)

Dedicated Connectors for Extension Bus of T-Engine/ μ T-Engine

LAN Extension Board

Drivers and TCP/IP software are not included, use "PMC T-Shell/TX4956 Development Kit"

PMC T-Shell/TX4956 Development Kit

An assortment of GUI middleware, TCP/IP, Script Language "MicroScript", and others.

Main Package Details

- Hardware
 - A standard T-Engine specification board with TX4956 (LCD board not included)
 - Connector Board (Standard 9-pin RS232C, 15-pin VGA)
The display and serial cable for PC can be connected to this board.
 - AC adapter
 - RS232C (serial) cable
- CD-ROM
T-Kernel and other software and various documentation
- Others
Packing list, Software License Agreement, etc.

System Requirements for GNU Development Environment

- PC/AT compatible Linux
 - Confirmed package: RedHat Linux 7.1 / 7.3 / 8.0 / 9.0, Red Hat Professional Workstation.
- Windows (Cygwin)
 - Confirmed package: Cygwin on Windows XP Professional

Documentation

The following documentation are being supplied in electronic files:

- Development Kit User's Manual
- Library Manual
- Device Driver Manual
- T-Kernel Extension Manual
- GNU Development Environment Manual
- GNU Development Environment Manual (for Windows)
- T-Monitor Specification
- T-Kernel Specification
- T-Monitor/T-Kernel Implementation Specification
- Hardware User's Manual (circuit diagrams provided)

Reference Books and Related Information

- T-Kernel Kumikomi Programing Kyokasho (A Practical Guide to T-Kernel Embedded Programing), Ken Sakamura (Ed.), 4200yen.
- T-Kernel Standard Handbook, Ken Sakamura (Ed.), 3800yen.
* English documents are included as PDF files on CD-ROM.
- T-Engine, T-Engine2, T-Engine3 (TRONWARE extra edition), 1600yen (each).
- TRONWARE Vol.1-109 (TRON bimonthly magazine, scheduled to be continued), 1200yen (ordinary issue).
- μ TRON 4.0 Standard Guidebook, Ken Sakamura (Ed.), 3200yen.
* The above books are published by Personal Media Corporation in Japanese. Tax is not included.
- T-Engine Forum <http://www.t-engine.org/>
- TRON Project <http://www.tron.org/>
- Personal Media Corporation (T-Engine Solution Website)
<http://www.t-engine4u.com/en/index.html>

Personal Media Corporation

Koizumi Bldg. 1-29-1 Nishi-Gotanda, Shinagawa-ku, Tokyo 141-0031 Japan

E-mail: te-sales@personal-media.co.jp

<http://www.personal-media.co.jp/>

Tel: +81-3-5759-8305

Fax: +81-3-5759-8306

- For details and price, please contact us.

- TRON is an abbreviation of "The Real-time Operating System Nucleus".

- eTRON is an abbreviation of "entity and economy TRON".

- TRON, eTRON, T-Engine, μ T-Engine, T-Monitor, and T-Kernel are specified terms for computers, and are not product names.

- All product names are trademarks or registered trademarks of their respective owners.

- Due to continued product upgrade or enhancement, the information in this document is subject to change without notice.

- T-Engine is an open, royalty-free specification, and not a commercial product.