EPPC-T10
Embedded 64-bit PowerPC™ T1014 Single Board Computer

High-End PowerPC with QorIQ CPU
- NXP® PowerPC QorIQ T1014, 1.2 GHz, 64-bit architecture, Double Precision Floating Point Unit, Ethernet, ECC-RAM
- Ideal for EtherCAT applications with up to 3 independent networks
- Equipped with
  - RTC with battery backup
  - 1x RS-232
  - 3x independent GB-Ethernet
  - 1x USB 2.0 (Host)
  - 1x microSD™ card slot
  - Internal PCI Express® Mini card slot for hardware extension
  - Status LEDs
- DIN hat rail mounting

Health Features and Fallback Flash
- Local voltage and temperature monitoring
- Fail-save firmware update by means of fallback Flash
- Watchdog protection
- Over temperature protection

Wide Range of Software Support
- Linux® BSP available
- Universal boot loader: "Das U-Boot"
- EtherCAT® Master Stack available

Customization on Request
- Power-saving Dual-Core PowerPC QorIQ T1022 or Quad-Core T1042
- Parallel or serial MRAM (512 Kbyte)
- Extended DDR3 RAM (2 GB instead of 512 Mbyte)
- Extended Flash memory (2x 128 Mbyte instead of 2x 16 Mbyte)
- PCIe® slot for development (with customization of case size)
- Additional 4th Ethernet interface
- Internal SATA-SSD
- Other BSPs like OS9®, QNX®, VxWorks®, ...
- More customized solutions on request

64-Bit Embedded PowerPC Host CPU
The EPPC-T10 is an embedded CPU board with 3 independent Ethernet interfaces. The NXP PowerPC QorIQ T1014 with 1.2 GHz features one 64-bit e5500 Power Architecture® processor core with high-performance data path acceleration architecture (DPAA) and network peripheral interfaces.

The local memory bus is 64 bits wide plus 8 bits ECC with an overall capacity of 512 Mbyte. 16 Mbyte SPI Flash for boot loader and 32 Kbit I²C EEPROM for U-Boot environment offer non-volatile memory spaces.

The EPPC-T10 features a second 16 Mbyte 'fallback' SPI Flash, used for system recovery if a system crash occurs during a firmware update. Alternatively it can be used for application software.

Gigabit Ethernet
The EPPC-T10 is equipped with 3 independent Gigabit Ethernet interfaces accessible at the front panel, which give an excellent base for EtherCAT® applications.

Console (Serial)
For connection of the RS-232 interface an easily accessible RJ45 connector is provided. Additionally a Terminal is accessible via mini-USB connector for configuration of the system.

USB
The USB host port supports USB 2.0 high-speed.

RTC
An RTC with battery backup is equipped on the EPPC-T10.

Software Support
The Flash memory carries the standard boot program "Das U-Boot" and enables the EPPC-T10 to boot various operating systems from on-board Flash, network, USB, microSD card or optional SSD.
A BSP is available for Linux. Others on request.
The esd EtherCAT Master Stack is available for several operating systems.

Customization on Request
Customized options are available for customized serial production in reasonable quantities. Please contact our sales team for detailed information.
Customized options are for example:

CPU Type
The EPPC-T10 is also available with the power saving dual-core QorIQ CPU T1022 or with the quad-core QorIQ CPU T1042 on request.

Memory
The memory can be extended with larger DDR3 RAM and Flash. An additional serial or parallel MRAM memory, that is suitable for capturing continuous logging data, is available on request.

PCI Express
A PCIe® slot for development can be equipped. The case size can be customized as needed. The PCIe slot can be used for example for a customized PMC-Add-on. Please ask for further information.
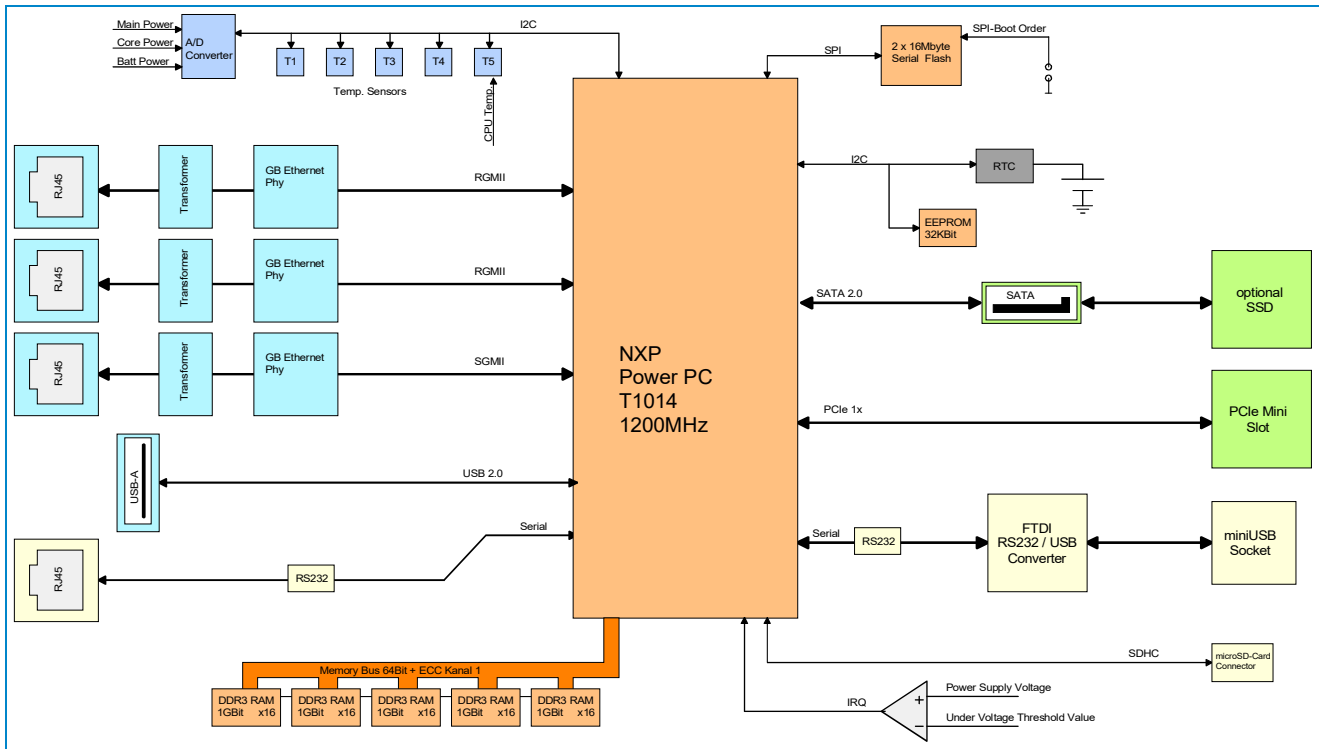
SSD
A built-in solid state disc can be equipped on request.

BSPs
Please ask for OS-9, QNX, VxWorks or other BSPs.

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Technical Specifications:

Microcontroller and Memory:

Microcontroller	NXP PowerPC™ QorIQ T1014, 64-bit, 1.2 GHz, Double Precision Floating Point Unit
Memory	512 Mbyte DDR3 RAM, 64 bits wide + 8 bit ECC, 2x 16 Mbyte Flash for boot loader, 32 Kbit I²C EEPROM for U-Boot environment, 32 Kbit I²C EEPROM for Bootstrapping, 4 Kbit I²C EEPROM for SPD info DDR RAM
Real Time Clock	RTC with battery, backup time min. 5 years (25°C)

Bus Interfaces

PCIe	PCI Express® Mini Card Electromechanical Specification Revision 1.2, Full-Mini Card

Health:

Voltage monitor	For all internal voltages and temperatures
Temperature monitor	2x I²C board temperature sensors, 1x CPU temperature sensor
Watchdog	CPU watchdog

Interfaces:

Ethernet	3x Gigabit Ethernet, 1000BaseT, IEEE802.3 at RJ45-connectors in front panel
USB host	USB 2.0 High-Speed (480 Mbit/s), 1x via USB socket type-A in front panel
Serial	1x RS-232, up to 115 kbaud, RJ45 connector
Terminal	1x via Mini USB socket onboard
microSD Slot	1x microSD card connector onboard

General:

Cooling method	Convection cooling
Operating temperature	0 °C ... +55 °C ambient
Storage temperature	-20 °C ... +60 °C ambient
Relative humidity	0% ... 90 % (non-condensing)
Power supply voltage	16 V... 32 VDC, $P_{typical}$= 12 W, P_{max}= 20 W
Dimensions	161 mm x 106 mm x 30 mm (without mounting clamp)
Mounting	DIN hat rail mounting (on NS 35/7,5, according to DIN EN 60715)

Order Information:

Hardware		Order No.
EPPC-T10	Embedded QorIQ T1014 PowerPC CPU Board, 1.2 GHz, 512 Mbyte RAM	I.2007.02

Board Support Package		
EPPC-T10-Linux-Adaption		I.2007.77

Support for BSP		
EPPC-T10-Linux-Support	12 months Linux support	I.2007.67

EtherCAT Master Stack (runtime licence for a single site)		
EtherCAT Master-Linux/PowerPC		P.4500.03

EtherCAT Master Project Bundle		
EtherCAT Master Project Bundle	10x EtherCAT Master runtime licence, 1x EtherCAT Workbench, 12 month support and update service	P.4503.01