Welcome to E-XFL.COM

Understanding Embedded - Microcontroller, Microprocessor, FPGA Modules

Embedded - Microcontroller, Microprocessor, and FPGA Modules are fundamental components in modern electronic systems, offering a wide range of functionalities and capabilities. Microcontrollers are compact integrated circuits designed to execute specific control tasks within an embedded system. They typically include a processor, memory, and input/output peripherals on a single chip. Microprocessors, on the other hand, are more powerful processing units used in complex computing tasks, often requiring external memory and peripherals. FPGAs (Field Programmable Gate Arrays) are highly flexible devices that can be configured by the user to perform specific logic functions, making them invaluable in applications requiring customization and adaptability.

Applications of Embedded - Microcontroller,

Details

Product Status	Discontinued at Digi-Key
Module/Board Type	FPGA Core
Core Processor	Kintex-7 70T
Co-Processor	-
Speed	200MHz
Flash Size	32MB
RAM Size	-
Connector Type	Samtec LSHM
Size / Dimension	1.97" x 1.57" (50mm x 40mm)
Operating Temperature	0°C ~ 70°C
Purchase URL	https://www.e-xfl.com/product-detail/trenz-electronic/te0741-02-070-2cf

Trenz Electronic

Overview

The Trenz Electronic TE0820 are 4 x 5 standard footprint MPSoC modules integrating a Xilinx Zynq UltraScale+ with up to 4 GByte 32-Bit DDR4 SDRAM, and max. 512 MByte SPI Boot Flash memory for configuration and operation, and powerful switch-mode power supplies for all on-board voltages. A large number of configurable I/O's is provided via rugged high-speed stacking strips.

All modules in 4 x 5 cm form factor are fully mechanically and largely electrically compatible among them. All this on a tiny footprint, smaller than a credit card, at the most competitive price.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

Extended device life cycle

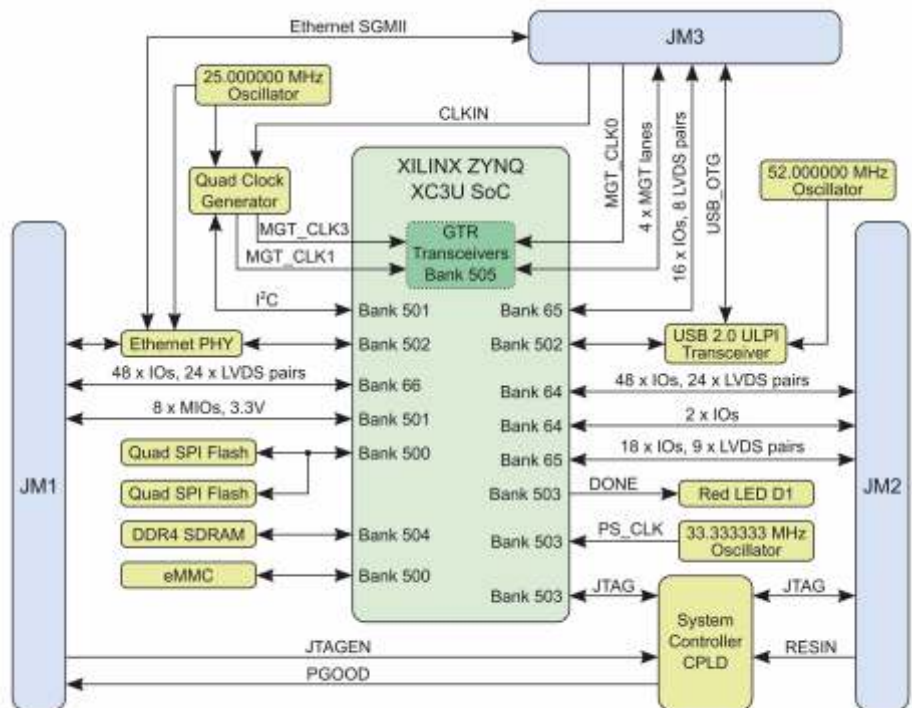Rugged for industrial applications

Key Features (preliminary)

- Xilinx Zynq UltraScale+ MPSoC 784 pin package (ZU3EG, option ZU5EV)

- Memory:
  - 32-Bit DDR4 - 4 GByte max
  - SPI Boot Flash dual parallel - 512 MByte max
  - 4 GByte eMMC (up to 64 GByte)

- B2B connectors:
  Plug-on module with 2 x 100-pin and 1 x 60-pin high-speed hermaphroditic strips
  - 14 x MIO, 132 I/O's x HP (3 banks)
  - Serial transceiver: PS GTR 4
  - GT Reference clock input
  - PLL for GT Clocks (optional external reference)
  - 1 GBit Ethernet PHY
  - USB 2.0 OTG PHY
  - Real Time Clock

- Size: 40 x 50 mm

- All power supplies on board.

Other assembly options for cost or performance optimization plus high volume prices available on request.

Overview

The Trenz Electronic TE0803 is an industrial-grade MPSoC module integrating a Xilinx Zynq UltraScale+ with up to 8 GByte 64-Bit width DDR4 SDRAM, and max. 512 MByte SPI Boot Flash memory for configuration and operation, and powerful switch-mode power supplies for all on-board voltages. A large number of configurable I/O's is provided via rugged high-speed stacking connections.
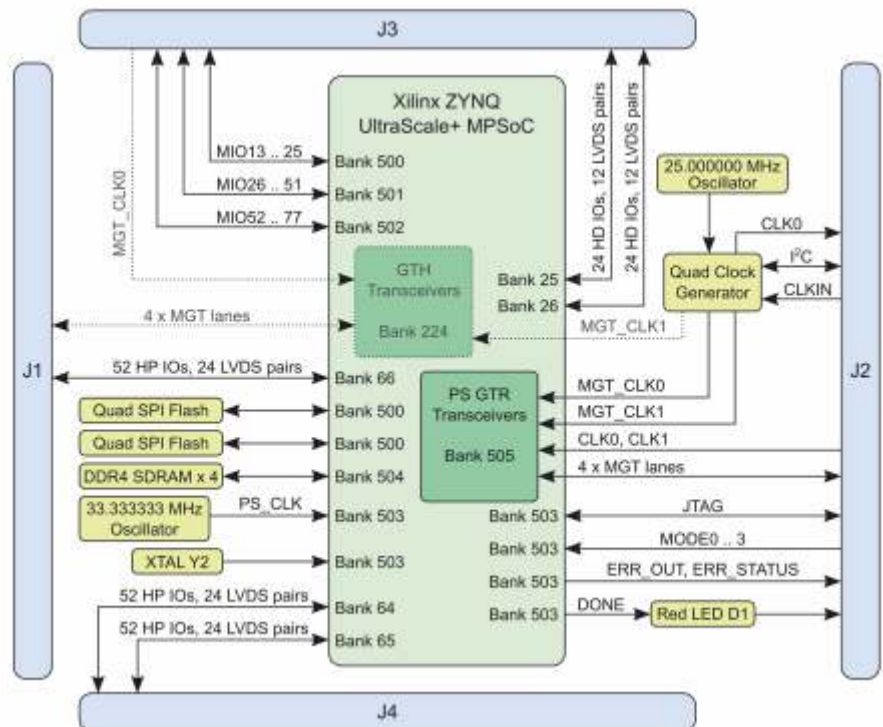
All this in a compact 5.2 x 7.6 cm form factor, at the most competitive price.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

Extended device life cycle

Rugged for industrial applications

Key Features (preliminary)

- Xilinx Zynq UltraScale+ MPSoC 784 pin package (ZU3EG, optional ZU5EV)

- Memory:
  - 64-Bit DDR4 - 8 GByte max
  - SPI Boot Flash dual parallel - 512 MByte max

- B2B connectors:
  Plug-on module with 4 x 160-pin connectors
  - 65 x MIO, 156 I/O's x HP (3 banks)
  - Serial transceiver: PS GTR 4, PL GT 4 (ZU4, ZU5 only)
  - GT Reference clock input
  - PLL for GT Clocks (optional external reference)

- Size: 52 x 76 mm

- All power supplies on board.

- Other assembly options for cost or performance optimization plus high volume prices available on request.
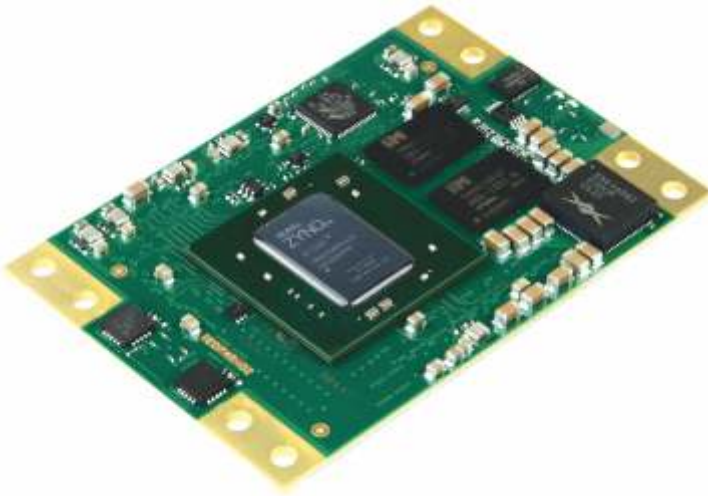
Overview

The Trenz Electronic TE0745 is an industrial-grade SoC module integrating a Xilinx Zynq-7 (Z-7030, Z-7035, Z-7045), 1 GByte 32-Bit wide DDR3/L, 32 MByte SPI Flash memory for configuration and operation and powerful switch-mode power supplies for all on-board voltages. A large number of configurable I/O's is provided via rugged high-speed stacking strips.

All this on a tiny footprint, smaller than a credit card, at the most competitive price.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

Extended device life cycle

Rugged for industrial applications

Key Features

- Xilinx Zynq 7030/7035/7045

- Rugged for shock and high vibration

- 1 GByte 32-Bit wide DDR3/L

- 32 MByte SPI Flash

- Dimensions: 5.2 x 7.6 cm

- B2B Connectors with 3 x 160 pin
  - 250 I/O's, all HR and HP I/O
  - 1 GBit Ethernet PHY,
  - USB 2.0 OTG PHY
  - 8 x GTX (7030: 4 GT)
  - 2 GT Reference Clock inputs (7030: 1 REFC
  - Reference clock input for PLL (optional)
  - 2 x PLL outputs
  - I2C
  - 6 MIO

- Real Time Clock

- MAC Address EEPROM

- Evenly spread supply pins for good signal integrity

Other assembly options for cost or performance optimization plus high volume prices available on request.

trenz electronic

4 X 5 form factor
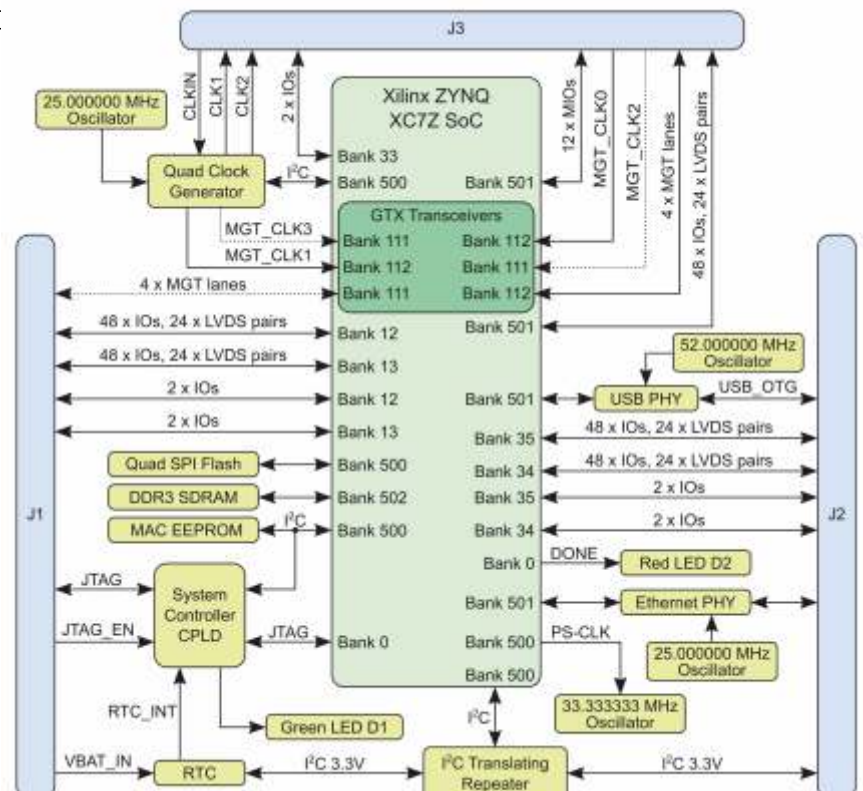
Overview

Trenz Electronic TE0715 are industrial-grade SoC modules integrating a Xilinx Zynq-7000 SoC, a gigabit Ethernet transceiver (physical layer), 1 gigabyte DDR3 SDRAM with 32-Bit width, 32 megabyte Flash memory for configuration and operation, 4 transceivers, a USB ULPI transceiver, and powerful switch-mode power supplies for all onboard voltages. A large number of configurable I/O's is provided via rugged high-speed stacking strips. All modules in 4 x 5 cm form factor are mechanically compatible.

All this on a tiny fooprint, smaller than a credit card, at the most competitive price.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

Extended device life cycle

Rugged for industrial applications

**XILINX** ALL PROGRAMMABLE™

ZYNQ™

Key Features

- Industrial-grade Xilinx Zynq-7000 (Z-7015, Z-7030) SoM , supported by the free Xilinx Vivado WebPACK tool

- Rugged for shock and high vibration

- ARM dual-core Cortex-A9

- 10/100/1000 tri-speed gigabit Ethernet transceiver (PHY) with SGMII
  - MAC Address EEPROM

- 32-Bit-wide 1 GByte DDR3 SDRAM

- 32 MByte QSPI Flash memory (with XiP support)

- Programmable clock generator
  - Transceiver clock (default 125 MHz)

- Plug-on module with $2 \times$ 100-pin and $1 \times$ 60-pin high-speed hermaphroditic strips

- 132 FPGA I/O's (65 LVDS pairs possible) and 14 PS-MIO available on board-to-board connectors

- 4 GTP/GTX (high-performance transceiver) lanes GTP/GTX (high-performance transceiver) clock input

- USB 2.0 high-speed ULPI transceiver

- On-board high-efficiency DC-DC converters
  - 4.0 A x 1.0 V power rail
  - 1.5 A x 1.5 V power rail
  - 1.5 A x 1.8 V power rail

- System management

- eFUSE bit-stream encryption

- AES bit-stream encryption

- Temperature compensated RTC (real-time clock)

- User LED

- Evenly spread supply pins for good signal integrity

Other assembly options for cost or performance optimization plus high volume prices available on request.
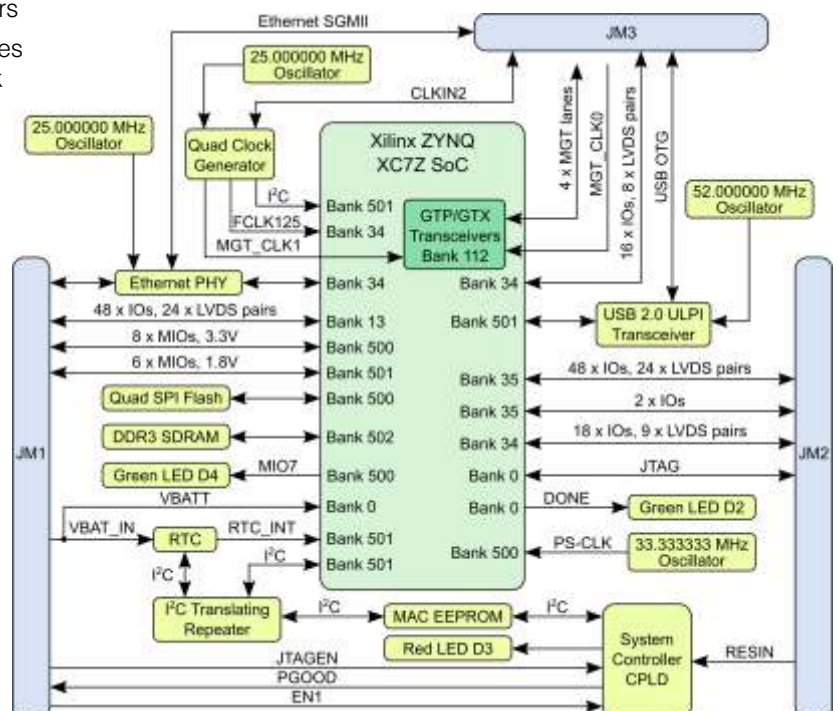
Overview

Trenz Electronic TE0720 are industrial-grade SoC modules integrating a Xilinx Zynq-7000 SoC, a gigabit Ethernet transceiver, 1 gigabyte DDR3 SDRAM with 32-Bit width, 32 megabyte Flash memory for configuration and operation, a USB ULPI transceiver, and powerful switch-mode power supplies for all on-board voltages. A large number of configurable I/O's is provided via rugged high-speed stacking strips. All modules in 4 x 5 cm form factor are mechanically compatible.

All this on a tiny footprint, smaller than a credit card, at the most competitive price.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

Key Features

- Industrial-grade Xilinx Zynq 7020 SoM, supported by the free Xilinx Vivado WebPACK tool
- Rugged for shock and high vibration
- ARM Dual Core Cortex-A9
- 10/100/1000 tri-speed gigabit Ethernet transceiver (PHY) with SGMII
  - MAC Address EEPROM
- 32-Bit-wide 1 GByte DDR3 SDRAM
- 32 MByte QSPI Flash memory (with XiP support)
- 4 GByte (up to 32 GB) e-NAND
- Plug-on module with 2 × 100-pin and 1 × 60-pin high-speed hermaphroditic strips
- 152 FPGA I/O's (75 LVDS pairs possible) and 14 PS-MIO available on board-to-board connectors
- USB 2.0 high-speed ULPI transceiver
- On-board high-efficiency DC-DC converters
  - 4.0 A x 1.0 V power rail
  - 1.5 A x 1.5 V power rail
  - 1.5 A x 1.8 V power rail
- System management and power sequencing
- eFUSE bit-stream encryption
- AES bit-stream encryption
- Temperature compensated RTC (real-time clock)
- 3 user LEDs
- Optional MEMS sensor (3D accelerometer and 3D magnetometer)
- Evenly spread supply pins for good signal integrity

Other assembly options for cost or performance optimization plus high volume prices available on request.

Arduino form **X** factor **Shield**
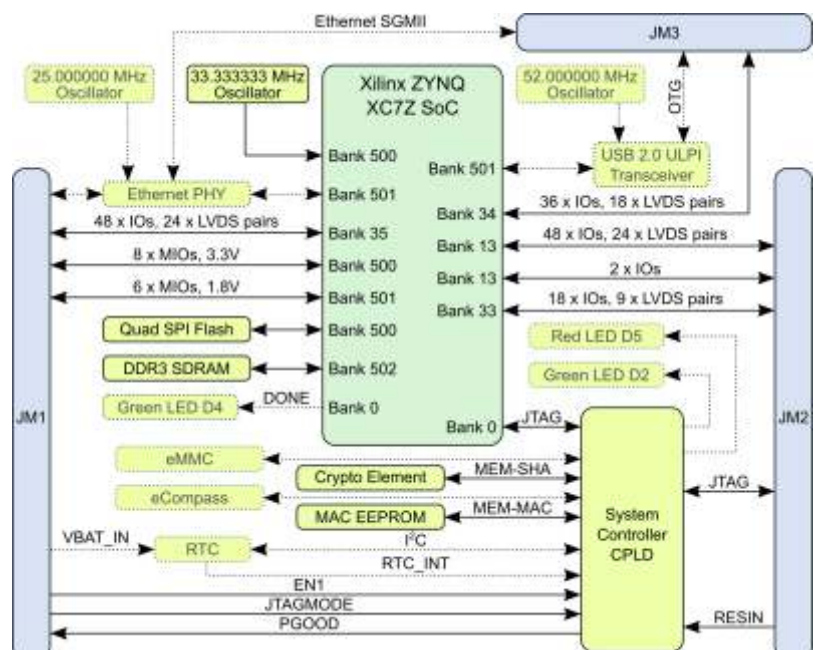
Overview

The Trenz Electronic TE0723 is a Arduino compatible FPGA module integrating a Xilinx Zynq-7010, 512 MByte DDR3L, and 16 MByte SPI Flash Memory for configuration and operation.

The "ArduZynq" is the lowest cost, Linux ready solution to use the latest FPGA: the Xilinx 7 series. Use it as a FPGA development platform, or run Linux on the Cortex A9 cores.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

Extended device life cycle

"Ideal for Maker"

Make:

Key Features

- Xilinx XC7Z010-1CLG225C
- Form Factor: Arduino Shield
- Dual ARM Cortex-A9
- Up to 512 MByte DDR3L
- 16 MByte SPI Flash memory
- 12 MHz MEMS Oscillator low power consumption
- Hi-Speed USB2.0 ULPI Transceiver
- 23 FPGA I/O's available on board-to-board connectors
- MicroSD Card socket
- Micro USB OTG
- RGB LED (PL I/O connected)
- "Done" LED (inverted polarity)
- On-board USB JTAG and UART
- CERN Open Hardware Licence 1.2

Other assembly options for cost or performance optimization available or high volume prices on request.

ΣXILINX ALL PROGRAMMABLE™

ZYNQ™

Raspberry Pi
form **X** factor
Model 2
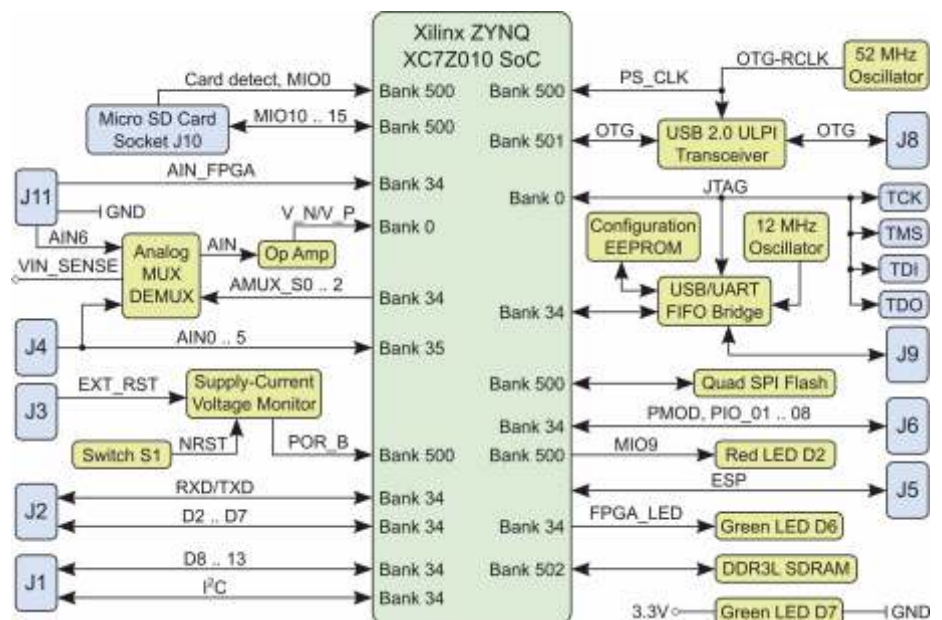
Overview

The Trenz Electronic TE0726 is a Rasberry Pi compatible FPGA module integrating a Xilinx Zynq-7010, 512 MByte DDR3L SDRAM, 4 USB ports, an Ethernet port and 16 MByte Flash memory for configuration und operation.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

Extended device life cycle

"Ideal for Maker"
Make:

Key Features

- Xilinx Zynq XC7Z010-1CLG225C
  - 512 MByte DDR3L SDRAM
  - 16 MByte Flash
- LAN9514 USB Hub with Ethernet
  - 4 x USB with power switches
  - 100 MBit Ethernet RJ45
- Micro SD card slot
- HDMI Typ A
- DSI Connector (Display)
- CSI-2 Connector (Camera)
- Micro USB
  - power input
  - USB UART
  - JTAG ARM- und FPGA-Debug
- 3.5 mm audio plug (PWM Audio output only)
- Raspberry Pi Model 2 form faktor
- HAT header with 26 I/O's

Other assembly options for cost or performance optimization plus high volume prices available on request.

XILINX
ALL PROGRAMMABLE™

ZYNQ™
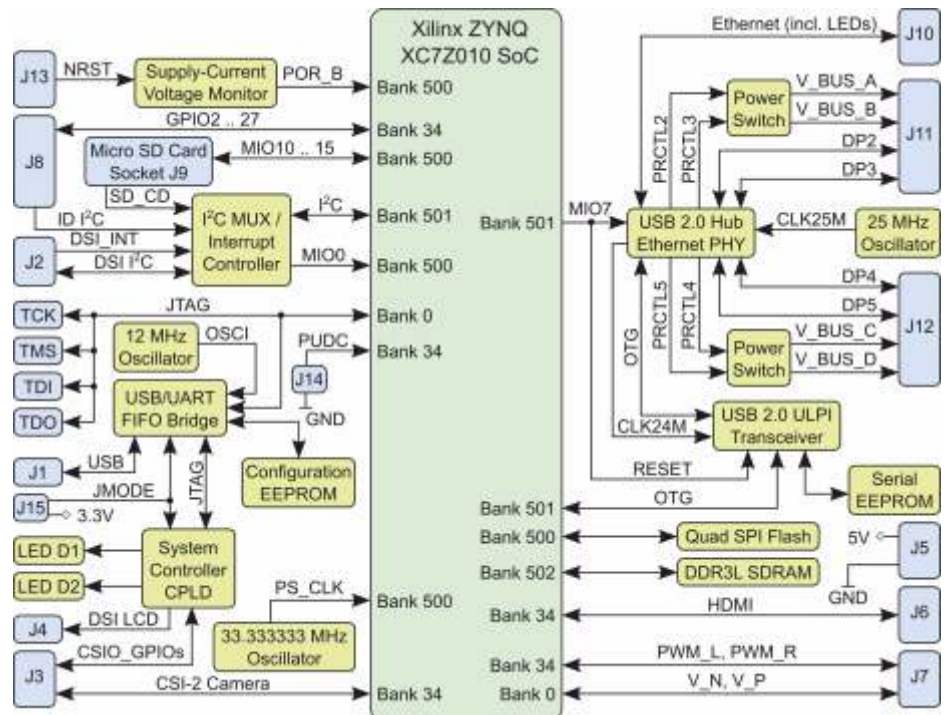
Overview

Trenz Electronic TE0741 are industrial-grade FPGA modules integrating a Xilinx Kintex-7 T FPGA, 32 MByte Flash memory for configuration and operation, 8 transceivers, and powerful switch-mode power supplies for all on-board voltages. A large number of configurable I/O's is provided via rugged high-speed stacking strips. All modules in 4 x 5 cm form factor are mechanically compatible.

All this on a tiny footprint, smaller than a credit card, at the most competitive price.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

Key Features

- Industrial-grade Xilinx Kintex-7 (70T, 160T, 325T and 410T) SoM
- Rugged for shock and high vibration
- 32 MByte QSPI Flash memory (with XiP support)
- Programmable clock generator
  - 2 x Transceiver clock (default 125 MHz)
  - Fabric clock (default 200 MHz)
- Plug-on module with 2 × 100-pin and 1 × 60-pin high-speed hermaphroditic strips
- 144 FPGA I/O's (65 LVDS pairs possible) available on board-to-board connectors
- 8 GTX (high-performance transceiver) lanes
  - GTX (high-performance transceiver) clock input
- On-board high-efficiency DC-DC converters
  - 20.0 A x 1.0 V power rail
  - 1.5 A x 1.8 V power rail
- System management and power sequencing
- eFUSE bit-stream encryption
- AES bit-stream encryption
- User LEDs
- Evenly spread supply pins for good signal integrity

Recommended Software:

- Kintex-7 XC7K**70T**-2CF, Kintex-7 XC7K**160T**-2CF: Xilinx Vivado Webpack (free license)

- Kintex-7 XC7K**325T**-2CF, Kintex-7 XC7K**410T**-2CF: Xilinx Vivado Design Suite

Other assembly options for cost or performance optimization plus high volume prices available on request.

Extended device life cycle

Rugged for industrial applications

www.trenz-electronic.de/te0741
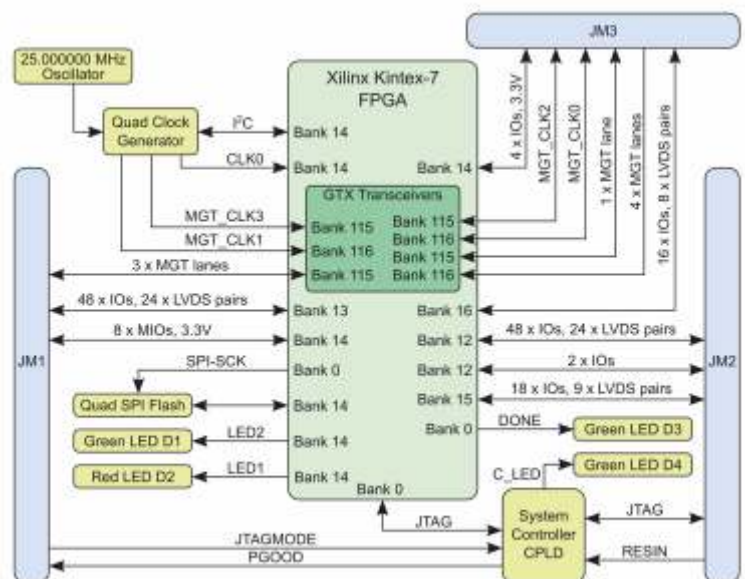
Overview

Trenz Electronic TE0710 are industrial-grade FPGA modules integrating a Xilinx Artix-7 T FPGA, two MBit Ethernet transceivers (physical layer), 512 Mbyte DDR3 SDRAM with 8-Bit width, 32 MByte Flash memory for configuration and operation, and powerful switch-mode power supplies for all on-board voltages. A large number of configurable I/O's is provided via rugged high-speed stackingstrips.

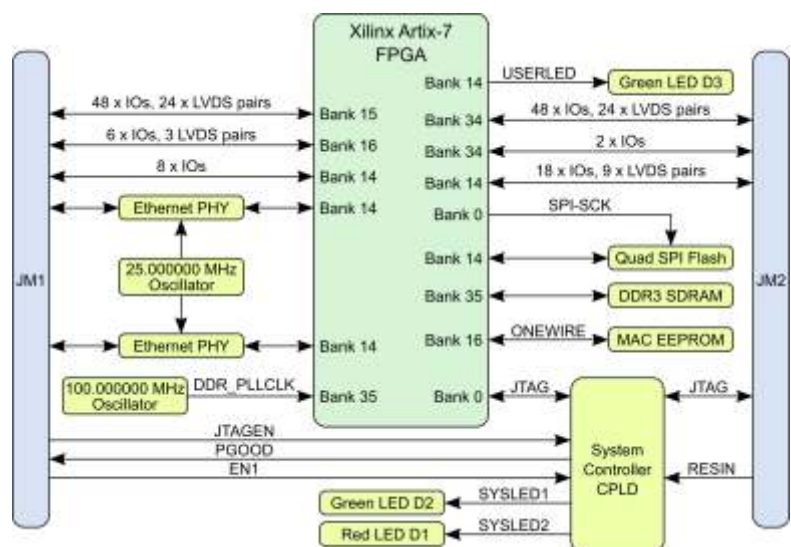All modules in 4 x 5 cm form factor are mechanically compatible.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

Key Features

- Industrial-grade Xilinx Artix-7 (15T to 100T) SoM, supported by the free Xilinx Vivado WebPACK tool
- Rugged for shock and high vibration
- 512 MByte DDR3 SDRAM
- Dual 100 MBit Ethernet PHY
- MAC Address EEPROM
- 32 MByte QSPI Flash memory (with XiP support)
- 100 MHz programmable MEMS oscillator
- Plug-on module with 2 × 100-pin high-speed hermaphroditic strips
- 112 FPGA I/O's (51 differential pairs) available on board-to-board connectors
- On-board high-efficiency DC-DC converters
  - 4.0 A x 1.0 V power rail
  - 1.0 A x 1.8 V power rail
  - 1.0 A x 1.5 V power rail
- System management and power sequencing
- eFUSE bit-stream encryption
- AES bit-stream encryption
- User LED
- Evenly spread supply pins for good signal integrity

Other assembly options for cost or performance optimization plus high volume prices available on request.

Extended device life cycle

Rugged for industrial applications

Overview

Trenz Electronic TE0711 are industrial-grade FPGA modules integrating a Xilinx Artix-7 T FPGA, 32 MByte Flash memory for configuration and operation, and powerful switch-mode power supplies for all on-

number of board voltages. A large configurable I/O's is provided via rugged high-speed stacking strips. All modules in 4 x 5 cm form factor are mechanically compatible.

All this on a tiny footprint, smaller than a credit card, at the most competitive price.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

Key Features

- Industrial-grade Xilinx Artix-7 (15T to 100T) SoM, supported by the free Xilinx Vivado WebPACK tool

- Rugged for shock and high vibration

- 32 MByte QSPI Flash memory (with XiP support)

- 100 MHz programmable MEMS oscillator

- Plug-on module with $2 \times$ 100-pin and $1 \times$ 60-pin high-speed hermaphroditic strips

- 178 FPGA I/O's (84 differential pairs) available on board-to-board connectors

- On-board high-efficiency DC-DC converters
  - 4.0 A x 1.0 V power rail
  - 1.0 A x 1.8 V power rail

- System management and power sequencing

- eFUSE bit-stream encryption

- AES bit-stream encryption

- 3 user LEDs

- FTDI USB to UART/FIFO bridge

- Evenly-spread supply pins for good signal integrity

Other assembly options for cost or performance optimization plus high volume prices available on request.

Extended device life cycle

Rugged for industrial applications

4 X 5 form factor
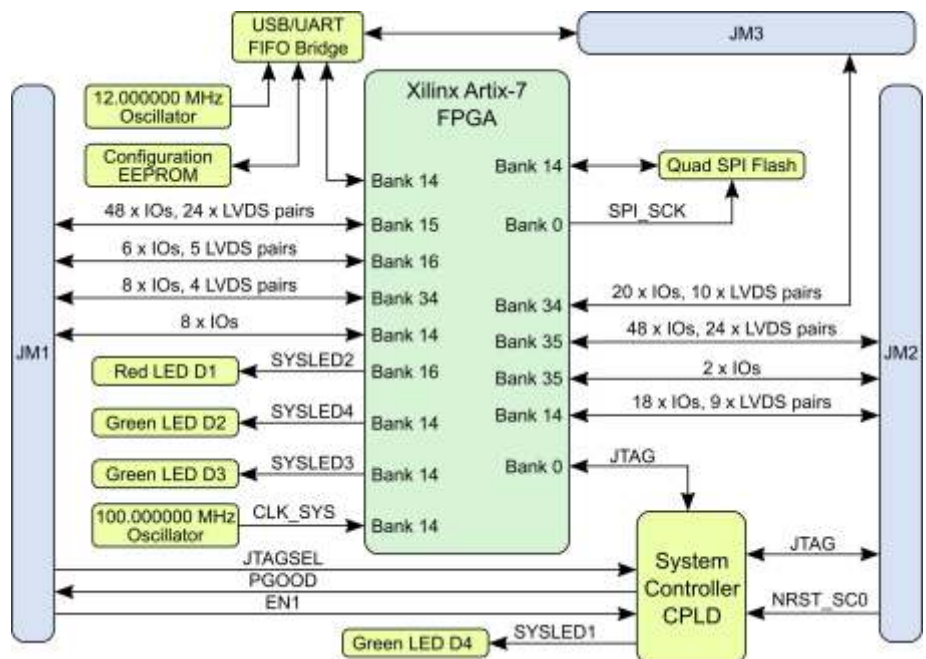
Overview

The Trenz Electronic TE0713 is an industrial-grade FPGA module integrating a Xilinx Artix-7 FPGA, USB 3.0 to FIFO bridge, 1 GByte of DDR3L SDRAM, 32 MByte Flash memory for configuration and operation, and powerful switching-mode power supplies for all on-board voltages. Numerous configurable I/O's are provided via rugged high-speed strips. Modules in 4 x 5 cm form factor are fully mechanically and largely electrically compatible among them. All this on a tiny footprint, smaller than a credit card, at the most competitive price.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

Extended device life cycle

Rugged for industrial applications

XILINX ALL PROGRAMMABLE™

ARTIX 7™

Key Features

- Xilinx Artix-7 (15T to 200T) SoM
- Both industrial and commercial temperature ranges available
- Rugged for high shock and high vibration resistance
- 1 GByte DDR3L 32-bit SDRAM
- 32 MByte QSPI Flash memory (with XiP support)
- USB 3.0 to FIFO interface bridge
- Programmable clock quad generator
  - GTP transceiver clock (default 125 MHz)
  - Fabric clock (default 200 MHz)
- Plug-on module with 2 x 100-pin and 1 x 60-pin high-speed hermaphroditic strips
- 152 FPGA I/O's (75 differential pairs) available via B2B connectors
- 4 GTP (multi Gigabit transceiver) lanes
- External clock input for GTP transceivers via B2B connector
- On-board high-efficiency DC-DC converters
- System management and power sequencing
- eFUSE bit-stream encryption
- AES bit-stream encryption
- User configurable LED
- Evenly spread supply pins for good signal integrity.

Other assembly options for cost or performance optimization plus high volume prices available on request.

form **X** factor
4
3
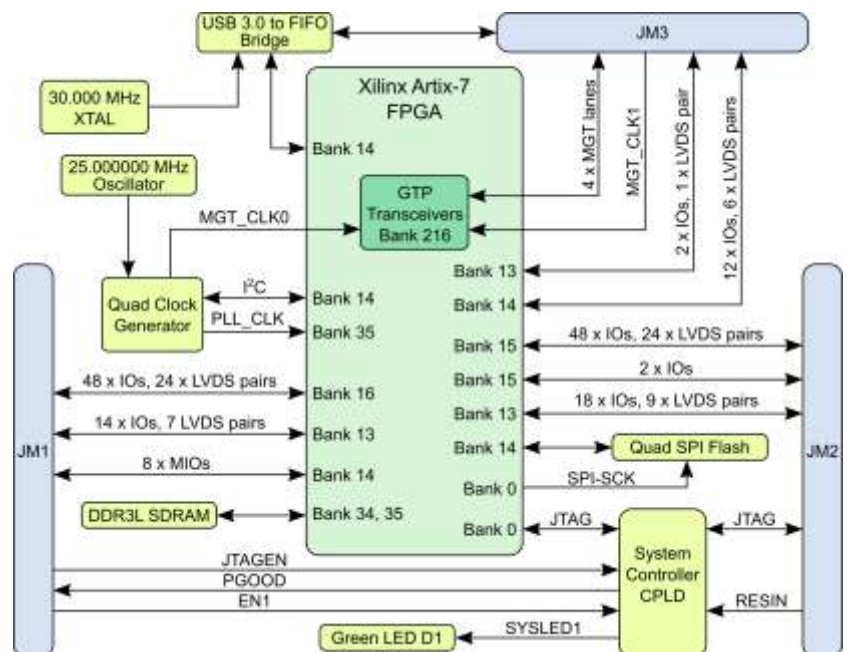
Overview

The Trenz Electronic TE0714 is an industrial-grade FPGA module integrating a Xilinx Artix-7 (A15T, A35T, A50T), 16 MByte Flash memory for configuration and operation and powerful switch-mode power supplies for all on-board voltages. A large number of configurable I/O's is provided via rugged high-speed stacking strips.

All this on a tiny footprint, smaller than a credit card, at the most competitive price.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

Extended device life cycle

Rugged for industrial applications

XILINX

ARTIX7

Key Features

- Xilinx Artix-7 (A15T, A35T, A50T)
- Rugged for shock and high vibration
- 16 MByte QSPI Flash memory
- Dimensions: 4 x 3 cm
- Differential MEMS Oscillator for GT Clocking
- MEMS Oscillator for PL Clocks (option)
- Plug-on module with 2 × 100-pin high-speed hermaphroditic strips
  - 144 FPGA I/O's (max 68 differential)
  - XADC Analog Input
  - 4 GTP (high-performance transceiver) lanes
  - GT Reference Clock input
  - Optimized I/O and power pins for good signal integrity
- On-board high-efficiency DC-DC converters
- eFUSE bit-stream encryption (AES)
- One user LED

Other assembly options for cost or performance optimization plus high volume prices available on request.
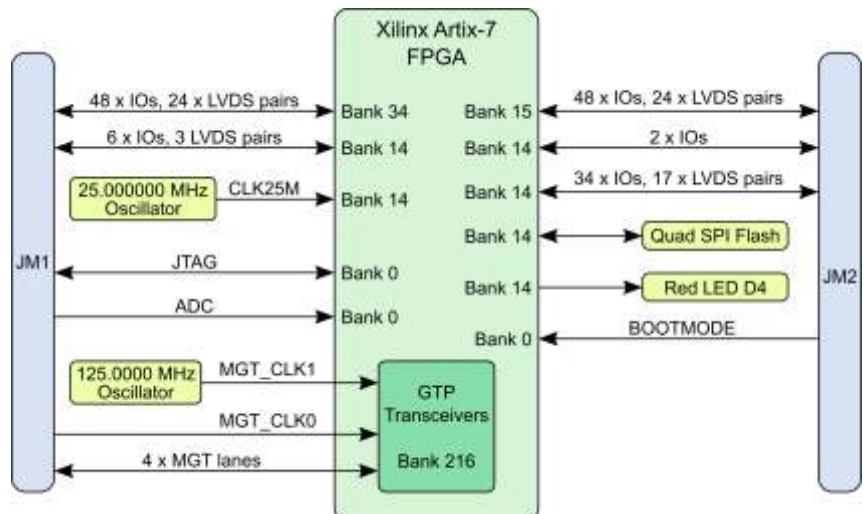
TE0725 Series
Xilinx Artix-7, 32 MByte Flash, 87 IO's, 2x 50 Pin Headers 2.54 mm Pitch

Overview

The Trenz Electronic TE0725 is a low cost small-sized FPGA module integrating a Xilinx Artix-7 (15T - 100T) and 32 MByte Flash memory for configuration and operation. The 2 x 50 pin header with a 2.54 mm standard pitch fits perfect on a breadboard.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

XILINX ALL PROGRAMMABLE. ARTIX.7

Extended device life cycle   Rugged for industrial applications

Key Features

• Xilinx Artix-7 15T up to 100T
• commercial temperature grade (industrial on request)
• 32 MByte Flash memory
• 2 x 50 pin headers with 2.54 mm pitch, ideal for breadboard use
• 87 IO's (42 + 42 + 3)
• 100 MHz system clock
• I2C EEProm
• 3.3V single supply with on board voltage regulators
• Size 73 x 35 mm
• JTAG connector
• 2 LEDs
• optional HyperRAM (8 to 32 MByte)
• optional Fiber Optic module

Other assembly options for cost or performance optimization available or high volume prices on request.
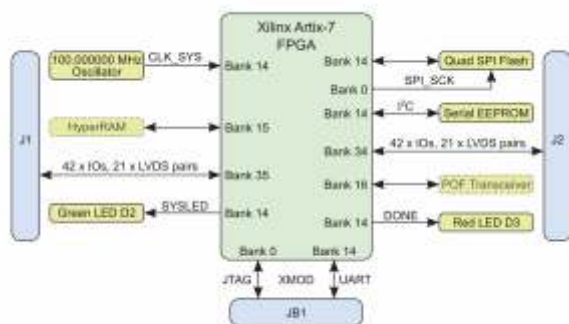
TE0725LP
Xmod Form-Factor, FT2232H, Lattice XO2-256 CPLD, 4 Position DIP Switch

Overview

The Trenz Electronic TE0725LP-01-100-2C is a low cost small-sized FPGA module integrating a Xilinx Artix-7 (15T - 100T) and 32 MByte Flash memory for configuration and operation. The 2 x 50 pin headers with a 2.54 mm standard pitch are perfect for bread-board or low cost dual layer PCB.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

XILINX ALL PROGRAMMABLE. ARTIX.7

Extended device life cycle   Rugged for industrial applications

Key Features

• Xilinx Artix-7 XC7A100T
• commercial temperature grade (industrial on request)
• 32 MByte Flash memory
• 2 x 50 pin headers with 2.54 mm pitch, ideal for breadboard use
• 3.3 V or optional 1.8 V single supply with on board voltage regulators
• 95 I/O's (42 + 42 + 3 + 8)
• 25 MHz system clock (100 MHz can be customized on request)
• I2C EEPROM
• JTAG/UART connector
• One user LED
• 7.3 x 3.5 cm form factor
• Optional HyperRAM (8 - 32 MByte) or HyperFlash

Other assembly options for cost or performance optimization plus high volume prices available on request.

trenz electronic

Xmod form **X** factor **Xmod**
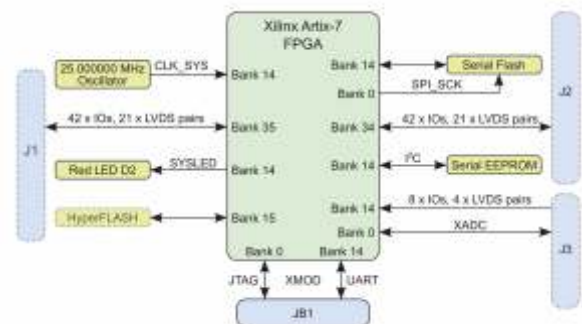
Overview

Xmod-USB-X is a universal USB adapter with 2 channels based on FTDI FT2232H USB2 HS Interface chip.

In the consigned default configu-ration Port A is JTAG and Port B is a serial interface. FT2232H port A and B are connected to small on-board programmable CPLD to allow flexible application specific remappings of FT2232H functions into 8 user I/O pins of single Xmod 12 x 8 Module.

Minimum PCB area on base board to support JTAG function 5 x 10 mm (does not include mounting hole space).
TE0790 is compatible with Xilinx Tools in contrast to the TE0790-01L, that can be used flexibly.

All modules produced by Trenz Electronic are developed and manufactured in Germany.

Key Features

- Xmod form-factor
  - Supported base slots: 6 x 2, 8 x 4, 10 x 6, 12 x 8, 5 x 2, 5 x 3
  - Size: 20 x 25 mm
  - M3 mounting hole

- FT2232H
  - Channel B RX/TX LED's (on top, not visible from front)
  - Mini-USB connector (more rugged then micro-USB)
  - 93C56 EEPROM

- Lattice XO2-256 CPLD
  - On board programmable using Lattice tools
  - 8 universal I/O pins
  - VCCIO either 3.3 V or user supplied (1.8 to 3.3V)
  - Red user LED (front visible)
  - 12 MHz clock from on-board Oscillator

- LDO for optional USB power

- Green Power-on LED (front visible)

- User button (front accesible)

- 4 position DIP switch
  - Choose CPLD program mode
  - FTDI EEPROM disable (not implemented in PCB REV 1)
  - Use VIO same as VCC
  - Use VCC from USB
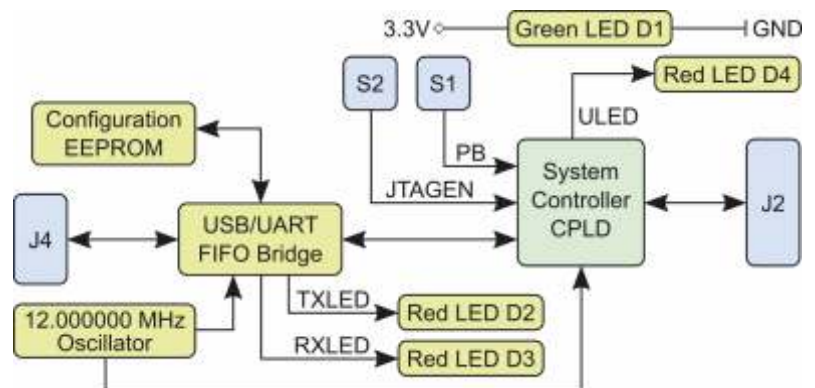
Following Trenz Electronic Carrier Boards are custom-built base boards for specific Trenz Electronic SoMs, which exposes the module's B2B-connector-pins to accessible connectors and provides a whole range of on-board components to test and evaluate Trenz Electronic SoMs.

TEBF0808

- Mini-ITX form factor
- ATX power supply connector (Important 12 V only supply required)
- optional 12 V standard power plug
- USB 3.0 with USB 3.0 HUB
- Gigabit Ethernet RJ45
- MicroSD Card (bootable) and eMMC (bootable)
- PCIe slot - one PCIe lane (16 Lane connector)

- Displayport Single Lane
- One SATA Connector
- Dual SFP+
- FMC HPC slot (1.8 V max VCCIO)
- Fan connectors, PC enclosure, FMC fan
- Intel front panel- and HDA audio-connector
- CAN FD transceiver (10 pin IDC connector)
- 20 pins ARM JTAG connector (PS JTAG0)
- One Samtec FireFly (4 GT lanes bidir)
- One Samtec FireFly connector for reverse loopback

TEB0728

- Trenz TE0728 module socket (3 x Samtec SEM connectors 80 pins)
- 2 x RJ45 Ethernet
- SD card slot
- Power supply with DC jack
- 3 x user LED's (red/yellow/green)
- User push button

TEB0729

- Trenz TE0729 module socket (2 x Samtec BTE/BSE connectors 120 pins)
- 5 V board supply via DC jack
- 3 x RJ45 Ethernet
- 1 x MicroUSB and 1 x SD card connector
- 1 x 128K I2C CMOS Serial EEPROM
- 1 x 2K I2C Serial EEPROM
- XMOD (TE0790) pin header
- 2 x pin header FPGA bank power supply
- 1 x VBat pin header and 2 x VG96 pin header
- 1 x user push button, 1 x LED (red), user switch FPGA boot mode

TEB0745

- Trenz TE0745 module socket (3 x Samtec ST5 connectors 160 pins)
- 24 V power supply over ARKZ950/2 connecting terminal
- XMOD (TE0790) Pin Header (JTAG / UART)
- 1 x EMI Network Filter
- microSD connector
- RJ45 Ethernet connector
- USB Host connector
- 8 x SFP connector
- 6 x pin header 50 pol. (FPGA bank I/O's and power)
- 6 x pin header 12 pol. (FPGA bank I/O's and power)

20 x 23,1 cm form factor
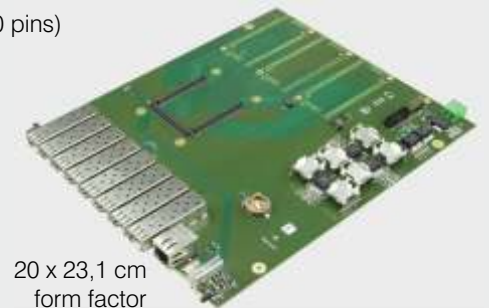
TEBA0714

- Trenz TE0714 module socket (2 x Samtec LSHM connectors 100 pins)
- XMOD (TE0790) pin header
- 1 x pin header 16 pol. (JTAG, MGT-CLK, boot mode, XADC, I/O's)
- 1 x pin header 10 pol. (I/O's)
- SFP connector
- LDO voltage regulator 3.3 V to 2.5 V
- 2 x user LED's (red/green) and 1 x LED (red)
- 2 x pin headers 50 pol. (FPGA bank I/O's and power)
- 1 x pin header for FPGA bank power VCCIO34 (1.8 VOUT, 2.5 V, 3.3 VOUT)
- 1 x pin header for FPGA bank power V_CFG (1.8 VOUT, 2.5 V, 3.3 VOUT)

www.trenz-electronic.de/te-baseboards

Module series comparison table

	TE0710	TE0711	TE0712	TE713	TE0714	TE0715	GigaZee TE0720
Device family	ARTIX.7	ARTIX.7	ARTIX.7	ARTIX.7	ARTIX.7	ZYNQ	ZYNQ
Device list	35T 50T 75T 100T	35T 50T 75T 100T	35T 50T 75T 100T 200T	15T - 200T	15T 35T 50T	Z-7015 Z-7030	Z-7020
Form factor/size	4X5	4X5	4X5	4X5	4X3	4X5	4X5
Connectors	2 × Samtec LSHM	3 × Samtec LSHM	3 × Samtec LSHM	3 x Samtec LSHM	2 x Samtec LSHM	3 × Samtec LSHM	3 x Samtec LSHM
Programmable logic family	Artix-7	Artix-7	Artix-7	Artix-7	Artix -7	Z-7015: Artix-7 Z-7030: Kintex-7	Artix-7
Processing system	MicroBlaze	MicroBlaze	MicroBlaze	MicroBlaze	MicroBlaze	2 x Cortex A9	2 x Cortex A9
SDRAM capacity [MByte] max	512 DDR3	-	1024 DDR3	1024 DDR3L	-	1024 DDR3	1024 DDR3
Flash [MByte]	32	32	32	32	16	32	32
EEPROM	-	FTDI User EEPROM	MAC	-	-	MAC	MAC
eMMC	-	-	-	-	-	-	4 - 64 GByte
Ethernet PHY	2 x 100 MBit	-	100 MBit	-	-	1 GBit	1 GBit
USB PHY	-	USB 2 UART/FIFO		USB 3.0	-	USB 2.0 OTG	USB 2.0 OTG
Total I/O	112	178	158	152	144	132 + 14 MIO	152 + 14 MIO
GBit transceivers	-	-	4 x GTP	4 x GTP	4 x GTP	Z-7015: 4 x GTP Z-7030: 4 x GTX	-
Other features	-	-	Programmable Clock Generator	Programmable Clock Generator	-	Programmable Clock Generator, RTC	RTC

TE0728	TE0729	TE0741	TE0745	TE0782	TE803	TE0808 „UltraSOM+"	TE820	TE0841
ZYNQ	ZYNQ	KINTEX-7	ZYNQ	ZYNQ	ZYNQ UltraSCALE+	ZYNQ UltraSCALE+	ZYNQ UltraSCALE+	KINTEX UltraSCALE
Z-7020 (automotive)	Z-7020	70T 160T 325T 410T	Z-7030 Z-7035 Z-7045	Z-7035 Z-7045 Z-7100	ZU3EG, ZU5EV, (ZU2CG-ZU5CG, ZU2EG-ZU5EG, ZU4EV, ZU5EV)	ZU9EG (ZU6CG, ZU9CG, ZU6EG, ZU9EG, ZU15EG)	ZU3EG, ZU5EV, (ZU2CG-ZU5CG ZU2EG-ZU5EG ZU4EV, ZU5EV)	KU35 KU40
6 x 6	5.2 x 7.6 *	4 x 5	5.2 x 7.6 *	8.5 x 8.5	5.2 x 7.6	5.2 x 7.6	4 x 5	4 x 5
3 x Samtec SEM	2 x Samtec BTE	3 × Samtec LSHM	3 x Samtec ST5	3 x Samtec QTH	4 x Samtec ST5	4 x Samtec ST5	3 x Samtec LSHM	3 x Samtec LSHM
Artix-7	Artix-7	Kintex-7	Kintex-7	Kintex-7	UltraScale+	UltraScale+	UltraScale+	UltraScale
2 × Cortex A9	2 × Cortex A9	MicroBlaze	2 x Cortex A9	2 x Cortex A9	4 x Cortex A53+ 2 Cortex R5	4 x Cortex A53 + 2 Cortex R5	4 x Cortex A53+ 2 Cortex R5	MicroBlaze
512 DDR3	512 DDR3	-	1024 DDR3/L	1024 DDR3	8192 DDR4	8192 DDR4	4096 DDR4	4096 DDR4
16	32	32	32	32	64	64	64	32
8 KByte	3 x MAC	-	MAC	2 x MAC + 16 KByte	-	16 KByte	-	-
	4 - 64 GByte	-	-	4 - 64 GByte	-	-	4 - 64 GByte	-
2 x 100 MBit	2 x 100 MBit, 1 GBit	-	1 GBit	2 x 1 GBit	-	-	4 - 64 GByte	1 GBit
-	USB 2.0 OTG PHY	-	USB 2.0 OTG PHY	2 x USB 2.0 OTG	-	-	USB 2.0 OTG	-
124 + 34 MIO	136 + 14 MIO	144	250 + 6 MIO	250 + 2 MIO	156 + 65 MIO	204 + 65 MIO	132 + 14 MIO	144
-	-	8 x GTX	8 x GTX	16 x GTX	PS GTR 4	4 x GTR, 16 x GTH	PS GTR 4	8 x GTH
Automotive, RTC, CAN	RTC, Cooling Solution available	Programmable Clock Generator	RTC	Programmable Clock Generator, RTC, eMMC	Programmable Clock Generator	System Monitor, Programmable Clock Generator	Programmable Clock Generator, Real Time Clock, eMMC	Programmable Clock Generator

*modules with form factor 5.2. x 7.6 cm are not compatible with each other

oi710 - Quad 1.2GHz DAC

www.sundance.technology/oi710/

The oi710 a combination of a DAC module (SMT-FMC211) and the EMC²-DP. As such this system gives you four 1.25GHz DAC channels on a OneBank® PC/104 FPGA carrier card.

- Quad channel DAC (TI DAC3484)
- DAC control by Artix-7 FPGA (XC7A15T)
- 16-bit DDR3 local memory for DAC data
- I^2C bus for control
- External clock and triggers

oi816 - Octal 16BIT ADC

www.sundance.technology/oi816/

A combination of an eight channel ADC module (FMC168) and the EMC²-DP. This system gives you eight 16-bit ADC channels at 250MSPS on a OneBank® PC/104 FPGA carrier card.

- Eight-channel 16-bit 250MSPS A/D conversion
- Available as air cooled and conduction cooled
- VITA 57.1-2010 compliant
- Based on TI ADS42LB69
- Coaxial front panel inputs on SSMC connectors
- Single ended AC or DC coupled analogue input

- Flexible clock tree enables:
  - internal clock
  - internal clock locked to an external reference
  - external clock
  - external sync / 1PPS

EMC²-DP stackable box

Coming soon!

Here's a preview of our stackable ruggedised case for the EMC²-DP. Currently in the R&D phase so please get in touch with any customisation requests!

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WWW.SUNDANCE.COM

FMC

cronologic

cronologic GmbH & Co. KG

cronologic offers a family of high-resolution high-throughput PCIe analog-to-digital converters (ADCs)

All models share these characteristics:

- 4 analog input channels
- Additional digital trigger and/or gating inputs
- PCIe x4 or x8 half-size boards
- Gross DMA-bandwidth of 1 Gbyte/s or 2 Gbyte/s
- Arbitrary board combinations can be synchronized
- LEMO 00 series input connectors (adapter cabels to SMA connector available)
- The DC-offset can be shiftet to make optimal use of the ADC range for either positiv or negative pulses

	Ndigo5G-10			Ndigo5G-8			Ndigo250M-14	Violet250M-14	Violet125M-14	unit
PCIe lanes	4			4			8	8	8	-
PCIe Bandwidth	800			800			1400	1400	1400	MB/s
Analog channels	4	2	1	4	2	1	4	4	4	-
Max. Sampling Rate	1250	2500	5000	1250	2500	5000	250	250	125	Msps
Max. Bandwidth		1000			1000		120 or 700	120 or 700	60 or 450	MHz
Max. individual sample length	26	26	26		26		32	hours	hours	µs
THD	58	58	58		58		73	73	86	dBc
SNR	51	50	50		45		64	64	74	dBc
SFDR incl.	61	60	60		58		74	74	86	dBc
SFDR excl.	74	64	63		57		76	76	TBD	dBc
SINAD	50	48	48		45		64	64	72	dBc
ENOB	8.0	7.7	7.7		7.2		10.3	10.3	11.0	-
Input type and coupling		AC single ended			AC single ended		DC single ended	DC single ended	DC single ended	-

Ndigo Series

It has been designed to aquire trains of pulses at high repetition rates. Employing an onboard zero supression, the pulse data is recorded with pre- and post-cursors, omitting the data inbetween to reduce the requirements on bandwidth and pulse processing or averaging. There is no deadtime between samples as long as the sustained rate is lower than the available PCIe bandwidth. The first available instances of this series provide 5 Gsps at 10-bit resolutuion and 250 Msps at 14-bit resolution.

These boards are ideally suited for applications like

- Mass Spectrometry
- Photon Counting
- Lidar
- NMR