

A25

Embedded Single Board Computer with Intel Xeon D 6U VMEBus for Industrial Applications

- » Intel Xeon D-1500 (Broadwell DE)
- » Up to 16 cores and 32 threads
- » 64-bit VMEbus master and slave interfaces
- » Up to 32 GB DDR4 DRAM soldered, ECC
- » Front I/O: 3 Gb Ethernet, 2 USB 3.0, 2 COMs
- » Rear I/O: 2 Gb Ethernet
- » 1 PMC/XMC slot
- » Trusted Platform Module (TPM)



Latest Intel Xeon Technology

The A25 is a high-performance multicore VMEbus CPU board based on Intel's Xeon D-1500 server CPU. The VMEbus interface is implemented as an open-source, FPGA-based solution. This makes it both future-proof and cost-efficient with comprehensive functionality. The A25 supports a reduction of system size, a reliable long-term operation without forced air cooling, and manifold computing functions with just one computer board.

Versatile Front I/O and Mass Storage

With two USB ports, three Gigabit Ethernet ports and two RS232 COMs at the front, the board offers the crucial basics of a multi-purpose industrial computer. Being equipped with DDR4 SDRAM with ECC and Flash, the need for flexible mass storage extensions is covered by slots for microSD and mSATA.

Flexible Interfaces via PMC/XMC

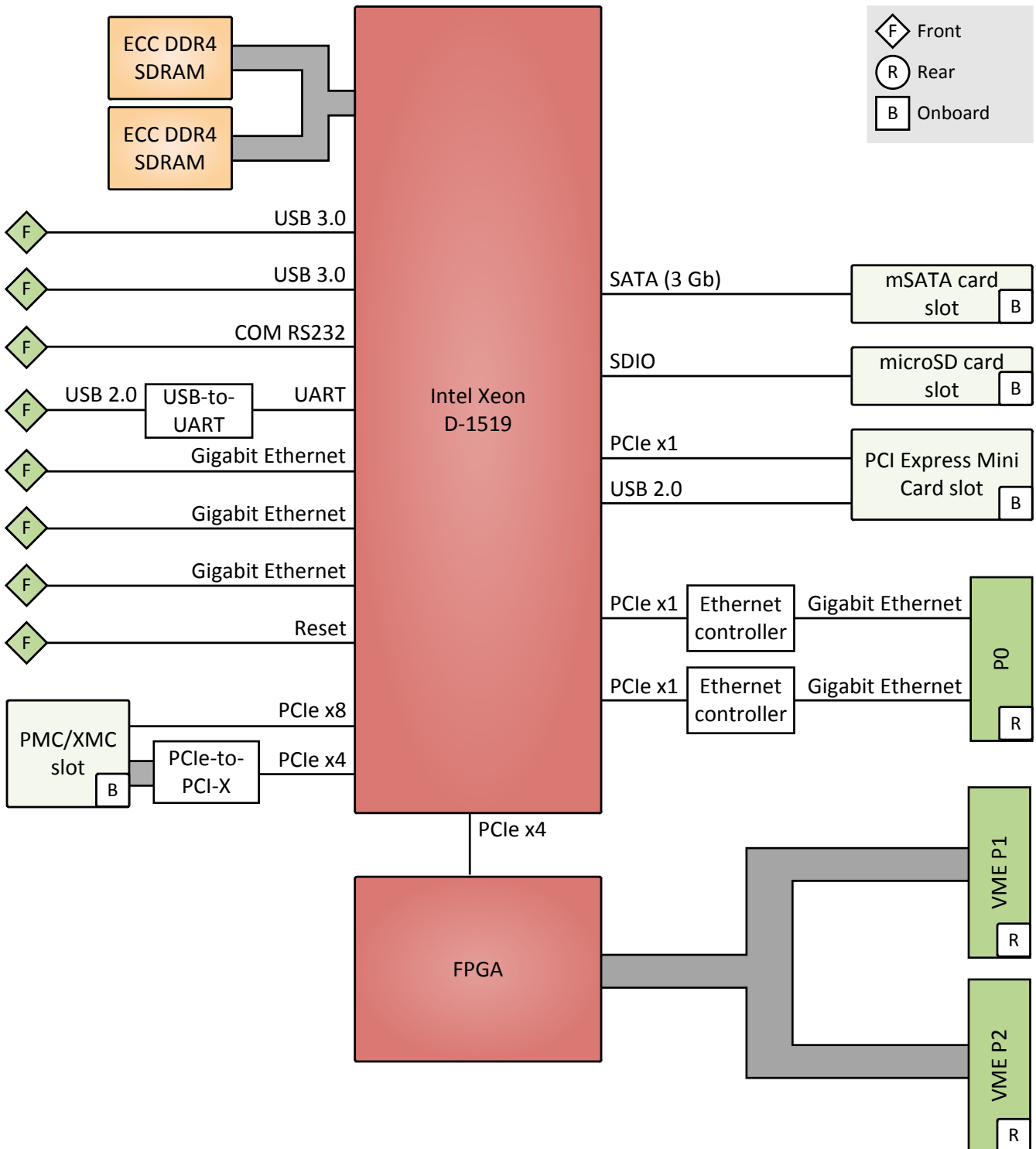
In addition, the A25 can be equipped with one XMC/PMC mezzanine card and one PCI Express Mini Card, providing additional front I/O (XMC/PMC) for functions such as graphics, mass storage, or further Ethernet. The PMC slot supports modules up to 64-bit/133-MHz PCI-X, while the XMC slot is controlled by one PCI Express x8 link. The modular extension with I/O mezzanines on a single-board computer allows to configure tailored systems from open standard components, reducing integration time and cost.

Designed for Harsh Environments

The A25 supports operation in a -40°C to +60°C temperature range. The rugged board withstands shock and vibration as all components on the board are soldered, which is a prerequisite for reliable operation and a longer product life-time.

Demanding Markets

The A25 is a computer board well suited for critical embedded applications, especially in the industrial automation and power & energy markets, for example as the central safety platform for power plants.



F Front
R Rear
B Onboard

Diagram



CPU

- The following CPU types are supported:
 - Intel Xeon D-1519, 4 cores
 - Intel Xeon D-1539, 8 cores (on request)
 - Intel Xeon D-1577, 16 cores (on request)
- Intel Virtualization Technology (Intel VT)
 - VT-d
 - VT-x
- Intel Turbo Boost Technology
- Intel Hyper-Threading Technology

Security

- Trusted Platform Module (TPM 2.0)

Memory

- System Memory
 - Soldered DDR4, ECC support
 - 4 GB, 8 GB, 16 GB or 32 GB
- Boot Flash
 - 16 MB

Mass Storage

- The following mass storage devices can be assembled:
 - microSD card
 - mSATA disk

Front Interfaces

- USB
 - Two Type A connectors, host, USB 3.0
 - One Type A connector, USB-to-UART, for UART functionality using a USB 2.0 connection
- Ethernet
 - Three RJ45 connectors, 1000BASE-T, or
 - Six link and activity LEDs (two per channel)
- UART
 - One physical interfaces RS232 on RJ45 connector
- PMC/XMC front I/O if populated
- Status LED
- Reset button

Onboard Interfaces

- The board supports either one PMC module or one XMC module.
- XMC
 - One slot
 - Compliant with XMC standard VITA 42.3-2006
 - One x8 PCI Express link, PCIe 3.0
 - 5 V / 3.3 V V(I/O)
- PMC
 - One slot
 - Compliant with PMC standard IEEE 1386.1
 - Up to 64-bit/133-MHz, 3.3 V V(I/O)
- PCI Express Mini Card slot
 - One x1 PCI Express link
 - One USB 2.0 interface

Rear Interfaces

- Ethernet
 - Two channels, 1000BASE-T on P0 connector

Supervision and Control

- Board management controller
- Watchdog timer
- Temperature measurement
- Real-time clock
 - with supercapacitor, or
 - with battery backup (optional)

Backplane Standard

- VME64 and VME64x Specification
- The following features are supported:
 - Master: D08(E0):D16:D32:D64(DMA only):A16:A24:A32:BLT:MBLT, non-privileged program/data, supervisory
 - Slave: D08(E0):D16:D32:D64:A16:A25:A32:BLT:MBLT
 - Slave access routing to SRAM or other bus via Wishbone bus (e.g. PCI)
 - Slot-1 function with auto-detection
 - Interrupter D08(O):I(7-1):ROAK
 - Interrupt handler D08(O):IH(7-1)
 - Bus requester: ROR (release on request), RWD (release when done), SGL (single level 3 fair/non-fair requester)
 - Multi-level 0-3 bus arbiter (RRS Round-Robin-Select)
 - BTO VMEbus timeout
 - ADO address only cycles
 - Mailbox functionality
 - Location Monitor A16, A24, A32
 - DMA controller with scatter gather capabilities (A24/A32/D32/D64, non-privileged, supervisory)
 - DMA access capabilities VMEbus, SRAM and other buses via Wishbone bus (e.g. PCI)
 - Utility functions
 - 1 MB local SRAM accessible via Wishbone bus
 - Geographical addressing

Electrical Specifications

- Supply voltage
 - +5 V (-3%/+5%)
- Power consumption
 - 60 W typ.

Mechanical Specifications

- Dimensions
 - 6U, 4 HP
- Weight
 - 540 g

Environmental Specifications

- Temperature range (operation)
 - -40°C to +60°C
- Temperature range (storage): -40°C to +85°C
- Cooling concept
 - Air-cooled, airflow 1.5 m/s
- Relative humidity (operation): max. 95% non-condensing
- Relative humidity (storage): max. 95% non-condensing
- Altitude: -300 m to +3000 m
- Conformal coating (optional)

Reliability

- MTBF: 267 000 h @ 40°C according to IEC/TR 62380 (RDF 2000)

Safety

- Electrical Safety
 - EN 62368-1 (former EN 60950-1)
- Flammability (PCBs)
 - UL 94 V-0

EMC

- EN 55022 (radio disturbance)
- IEC 61000-4-2 (ESD)
- IEC 61000-4-3 (electromagnetic field immunity)
- IEC 61000-4-4 (burst)
- IEC 61000-4-5 (surge)
- IEC 61000-4-6 (conducted disturbances)

BIOS

- AMI Aptio

Software Support

- Linux
- For more information on supported operating system versions and drivers see Software.

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www.men.de/products/a25/

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