» EZ2-VX6060 «

Getting Started

SD.DT.F65-0e - February 2011

Revision History

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Kontron follows the DEEE/WEEE directive.

You are encouraged to return our products for proper disposal.

The Waste Electrical and Electronic Equipment (WEEE) Directive aims to:

- reduce waste arising from electrical and electronic equipment (EEE)
- make producers of EEE responsible for the environmental impact of their products, especially when they become waste
- encourage separate collection and subsequent treatment, reuse, recovery, recycling and sound environmental disposal of EEE
- improve the environmental performance of all those involved during the lifecycle of EEE

Conventions

This guide uses several types of notice: Note, Caution, ESD.

Note: this notice calls attention to important features or instructions.


Caution: this notice alert you to system damage, loss of data, or risk of personal injury.


ESD: This banner indicates an Electrostatic Sensitive Device.

All numbers are expressed in decimal, except addresses and memory or register data, which are expressed in hexadecimal. The prefix `0x' shows a hexadecimal number, following the `C' programming language convention.

The multipliers `k', `M' and `G' have their conventional scientific and engineering meanings of $*10^3$, $*10^6$ and $*10^9$ respectively. The only exception to this is in the description of the size of memory areas, when `K', `M' and `G' mean $*2^{10}$, $*2^{20}$ and $*2^{30}$ respectively.

When describing transfer rates, `k' `M' and `G' mean $*10^3$, $*10^6$ and $*10^9$ *not $*2^{10}$ $*2^{20}$ and $*2^{30}$.*

In PowerPC terminology, multiple bit fields are numbered from 0 to n, where 0 is the MSB and n is the LSB. PCI and CompactPCI terminology follows the more familiar convention that bit 0 is the LSB and n is the MSB.

Signal names ending with an asterisk (*) or a hash (#) denote active low signals; all other signals are active high.

Signal names follow the PICMG 2.0 R3.0 CompactPCI Specification and the PCI Local Bus 2.3 Specification.

For Your Safety

Your new Kontron product was developed and tested carefully to provide all features necessary to ensure its compliance with electrical safety requirements. It was also designed for a long fault-free life. However, the life expectancy of your product can be drastically reduced by improper treatment during unpacking and installation. Therefore, in the interest of your own safety and of the correct operation of your new Kontron product, you are requested to conform with the following guidelines.

High Voltage Safety Instructions


Warning!
All operations on this device must be carried out by sufficiently skilled personnel only.


Caution, Electric Shock!
Before installing a not hot-swappable Kontron product into a system always ensure that your mains power is switched off. This applies also to the installation of piggybacks. Serious electrical shock hazards can exist during all installation, repair and maintenance operations with this product. Therefore, always unplug the power cable and any other cables which provide external voltages before performing work.

Special Handling and Unpacking Instructions

ESD Sensitive Device!
Electronic boards and their components are sensitive to static electricity. Therefore, care must be taken during all handling operations and inspections of this product, in order to ensure product integrity at all times

Do not handle this product out of its protective enclosure while it is not used for operational purposes unless it is otherwise protected.

Whenever possible, unpack or pack this product only at EOS/ESD safe work stations. Where a safe work station is not guaranteed, it is important for the user to be electrically discharged before touching the product with his/her hands or tools. This is most easily done by touching a metal part of your system housing.

It is particularly important to observe standard anti-static precautions when changing piggybacks, ROM devices, jumper settings etc. If the product contains batteries for RTC or memory backup, ensure that the board is not placed on conductive surfaces, including anti-static plastics or sponges. They can cause short circuits and damage the batteries or conductive circuits on the board.

General Instructions on Usage

In order to maintain Kontron's product warranty, this product must not be altered or modified in any way. Changes or modifications to the device, which are not explicitly approved by Kontron and described in this manual or received from Kontron's Technical Support as a special handling instruction, will void your warranty.

This device should only be installed in or connected to systems that fulfill all necessary technical and specific environmental requirements. This applies also to the operational temperature range of the specific board version, which must not be exceeded. If batteries are present, their temperature restrictions must be taken into account.

In performing all necessary installation and application operations, please follow only the instructions supplied by the present manual.

Keep all the original packaging material for future storage or warranty shipments. If it is necessary to store or ship the board, please re-pack it as nearly as possible in the manner in which it was delivered.

Special care is necessary when handling or unpacking the product. Please consult the special handling and unpacking instruction on the previous page of this manual.

Table Of Contents

List Of Figures

List Of Tables

Chapter 1 - Equipment Presentation

1.1 Overview

EZ2-VX6060 is based on the best technologies from the embedded world and is ideally suited for systems evaluation.

- 5+ Years of Guaranteed Supply
- 10+ Years of Hardware and Software Support
- 2U Rackable Server
- Fedora 12 Linux Support

EZ2-VX6060 is ready to use; its factory settings can get you to a shell prompt under Linux OS in a few seconds.

Thanks to its modular design based on standards, EZ2-VX6060 is compatible with many extensions.

1.2 Ordering Information

System type **EZ2-VX6060**

- **EZ2-VX6060-00-L** 6U VPX Intel® Core™ i7 Computer. Linux software version.

Non contractual photography

Figure 1: EZ2-VX6060 Overview

1.3 At a Glance

The information displayed below applies for:
a VX6060 board Order Code: VX6060-SA24-00000

Processor

- Dual Intel® Core™ i7, clocked at 2 GHz

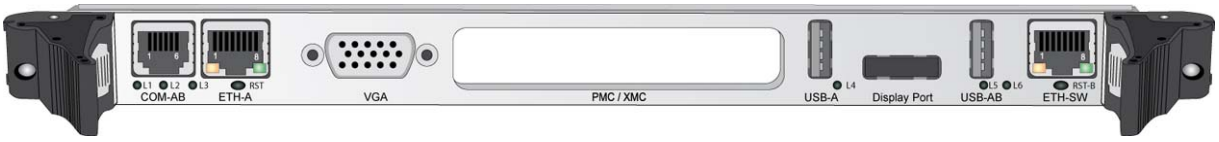
Memory

- DDR3 SDRAM: 2 GB per CPU, 4 GB total onboard

Storage

- SATA Disk: Western Digital 15GB SSD Disk

Connectivity on Board Front Panel



- One Serial Line: COM-AB
- Two Ethernet 10/100/1000Base-T ports
  - ETH-A
  - ETH-SW
- One VGA port: VGA
- Two USB 2.0 ports:
  - USB-A
  - USB-AB
- One DisplayPort: DisplayPort

Management

- Board Front Panel Status LEDs:
  - L1, L2, L3 for CPU-A
  - L4, L5, L6 for CPU-B
- Chassis Front Panel Status LEDs:
  - Voltages
  - Fail Signals

Software

> Depending on the system Order Code, Linux or VxWorks Operating System has been pre-loaded on the at the factory.
See Chapter 2 “Software” page 14 for details on your configuration.

Chassis Form Factor

> 2U four−slot desktop chassis (Height: 88.9 mm − Width: 482.6 mm − Depth: 440.0 mm)

Warranty

> 5+ years of Guaranted Supply
> 10+ years of Hardware and Software Support available

1.4 Receipt of the Equipment

1.4.1 Checking the Packages

Inspecting the packages and verifying their condition is the responsability of the customer and should be carried out upon delivery.

> Inspect the packages and check their condition:
  - no broken corners,
  - general state of the case (no rips or holes),
  - condition of the bands and the clips.
> If you wish to report any damage in transit, you should make out a full report, and also note the damage on the packing list that accompanies the equipment. Ensure that the report and the packing list are signed by yourself and also by the transport agent, and send a copy of these documents to:
  - the transport company,
  - Kontron.

1.4.2 Unpacking

Unpacking the equipment must be carried out under the supervision of a technician approved by Kontron.

> Open the package and take out the items one by one.

Two people should assist in the unpacking of the system unit, as it may be heavy.

> Inspect each item and make a note of any possible defects (scratches, marks or blemishes, damaged cables, etc.). If necessary, make a report of any damage or defects.
> Check the equipment against the packing list and report any missing items.

It is recommended that you keep the package and the anti-shock protection. This will be required if you decide to move your system or rack to a different site.

1.4.3 Content

The EZ2-VX6060 6U VPX Computer is made of:

	EZ2-VX6060-00-L
One computer rack and associated boards	X
One power supply cable	X
One serial cable KIT-2X-RJ12DB9	X
One documentation CD-ROM CDDOC	X
One DVD-ROM Fedora 12 on VX6060	X
EZ2-VX6060 Getting Started SD.DT.F65 (this file)	X
EZ2-VX6060-00-L Quick Start SD.DT.F64	X

Table 1: Delivery Content

. EZ2-VX6060-00

. Power Supply Cable

. Serial Cable

. CDDOC

Figure 2: Delivery Content

1.5 System Identification

An identification label is available on the top side of the system.

Figure 3: System Identification

- Model: System Order Code
- Sn: Serial Number
- ECL: Engineering Change Level

1.6 Introducing Front and Rear Views

Front View

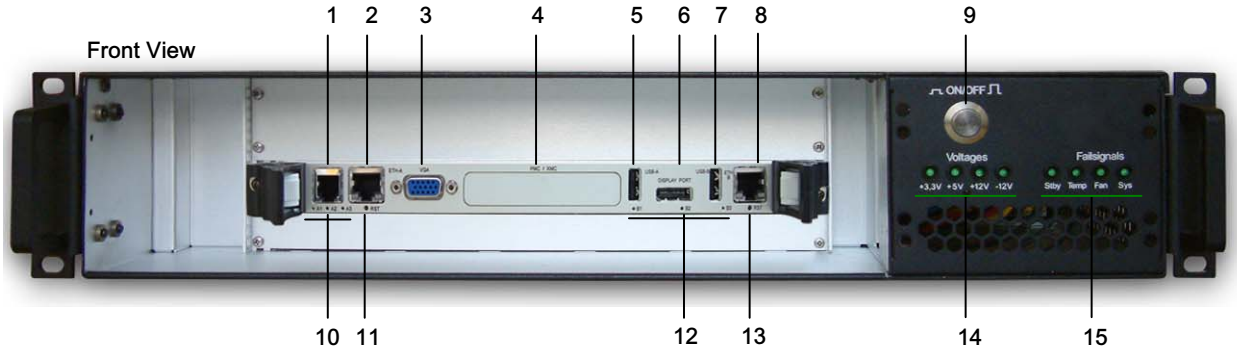


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Figure 4: Front View

1. Serial Connector COM-AB
2. Ethernet CPU-A
3. VGA Port CPU-A
4. PMC/XMC Slot
5. USB CPU-A
6. DisplayPort CPU-A
7. USB CPU-AB
8. Ethernet ETH-SW
9. ON/OFF Button
10. Status LEDs CPU-A: L1, L2, L3
11. Reset Button CPU-A
12. Status LEDs CPU-B: L4, L5, L6
13. Reset Button CPU-B
14. Chassis Management LEDs: Voltages
15. Chassis Management LEDs: Fail Signals

RearView

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Figure 5: Rear View

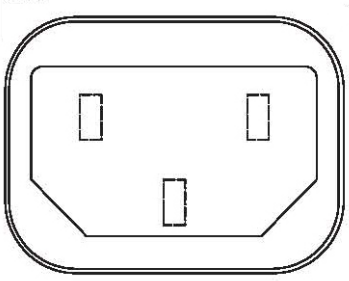
16.Power Supply Connector

17.Rear Door (acces to the rear panel of the chassis)

Power Supply Connector

AC connector:
IEC320 type female plug rated 3A

Pin	J1
1	Line
2	Neutral
3	Earth



1.7 Associated Documentation

This product is based on the same design as the board. Therefore, the following documentations are available on the Kontron web site or on the technical documentation CD-ROM .

Hardware

> VX6060 6U VPX Computing Node - User's Guide CA.DT.76

Systems

> EZ2-VX6060-00-L Quick Start SD.DT.F64

1.8 Plug and Play with EZ2-VX6060

1.8.1 Plug

To connect the EZ2-VX6060 Computer, you need to attach the following cables:

- the Power Supply cable **(19)** (available in the delivery kit) to the Power Supply connector **(16)**
- the Serial cable **(18)** (available in the delivery kit) to the Serial connector **(1)**
- a VGA cable (not available in the delivery kit) to the VGA connector **(3)**
  or
  a DisplayPort cable (not available in the delivery kit) to the DisplayPort connector **(6)**
- an USB cable (not available in the delivery kit)

System Type EZ2-VX6060-00

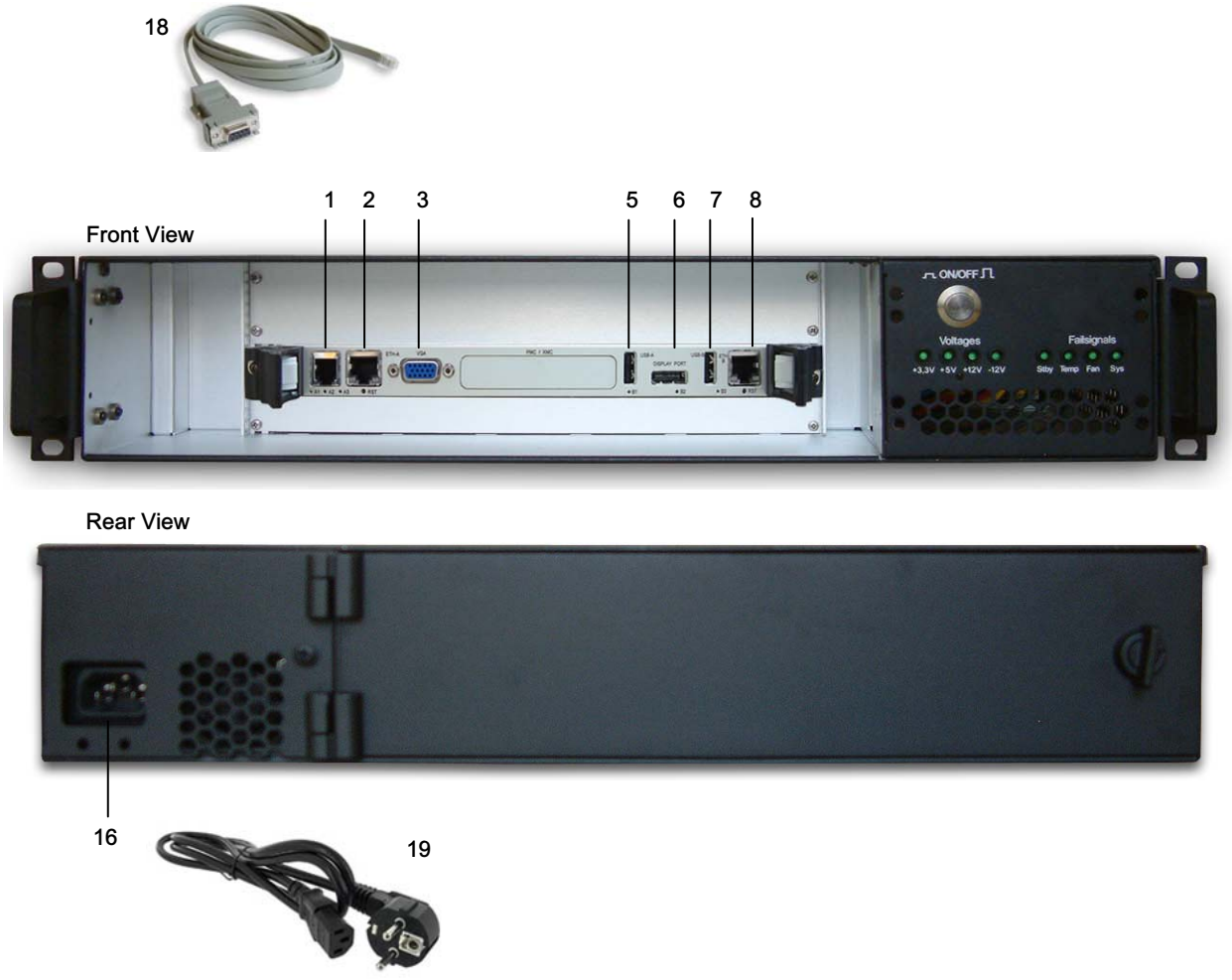


Figure 6: Connecting EZ2-VX6060

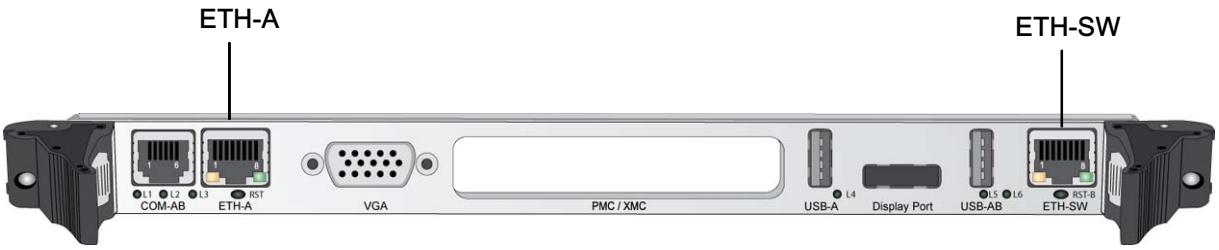


Figure 7: Hardware Name of Ethernet Ports

Linux Device Name	Hardware Name	Chassis Location
eth2	ETH-A	Board front panel
ethx*	ETH-SW	Board front panel

Table 2: Mapping Table: Linux Device Name / Hardware Name

*All interface names are possible here, since the internal Gigabit ETH switch can give access to any interface.

See VX6060 6U VPX Computing Node - User's Guide document for more information on the network architecture on board the VX6060.

ON/OFF Button

The ON/OFF button is located on the front panel of the EZ2-VX6060 system.

Non contractual photography

To start the system

> Power on the main power supply module, AC Switch on the rear side of the system.

To stop the system

- Shutdown the OS.
- Power off the main power supply module (AC Switch on the rear side of the system).

Powering the system Off and On

DO NOT turn the power on while the power is cycling off. Wait a few seconds until the power has completely cycled off. Follow the same precaution for turning the power off.
Turning the power on or off before this cycle is complete can cause the voltage and temperature values programmed into the board monitoring system to be lost.
MAKE SURE YOU FOLLOW THESE SAFETY PRECAUTIONS.

Make sure the rack has been powered off using the ON/OFF button (on the rear panel of the rack) before unplugging the power supply cable.

1.8.2 Play

> Plug the system as described in section 1.8.1 “Plug” page 8.
> Power on the system
> Following screens appears for a few seconds, then VX6060 continues with the Linux boot.:
  - BIOS

```
Version 2.01.1204. Copyright (C) 2010 American Megatrends, Inc.
Press <DEL> or <F2> to enter setup. Press <F7> for BBS POPUP Menu.
VX6060-A>
```

  - Linux Fedora 12

```
GRUB loading, please wait...
lv_root   rhgb   iommu=off   vmalloc=512MB   selinux=0   acpi_enforce_resources=lax
console=ttyS0,115200   clocksource=hpet   rdblacklist=allocator   rdblacklist=vxfabric
rdblacklist=vxdma
Linux-bzImage, setup=0x3400, size=0x377c80
initrd /initramfs-2.6.32.14-10176.vx6060.fc12.i686.PAE.img
Probing EDD (edd=off to disabl


Initializing cgroup subsys cpuset
Initializing cgroup subsys cpu
Linux  version  2.6.32.14-10176.vx6060.fc12.i686.PAE  (root@evalpasemi)  (gcc  version
4.4.2 20091027 (Red Hat 4.4.2-7) (GCC) ) #1 SMP Fri Jun 25 16:58:36 CEST 2010
KERNEL supported cpus:
  Intel GenuineIntel
  AMD AuthenticAMD
  NSC Geode by NSC
  Cyrix CyrixInstead
  Centaur CentaurHauls
  Transmeta GenuineTMx86
  Transmeta TransmetaCPU
  UMC UMC UMC UMC
BIOS-provided physical RAM map:
...
...
...
Starting vx6060setup [  OK  ]

Fedora release 12 (Constantine)
Kernel 2.6.32.14-10176.vx6060.fc12.i686.PAE on an i686 (/dev/ttyS0)

node1 login:
```

- Log in as:
  - VX6060 login: **root**
  - password: **kontron**

  or
  - VX6060 login: **guest**
  - password: **guest**

1.9 Health Management

» LEDs

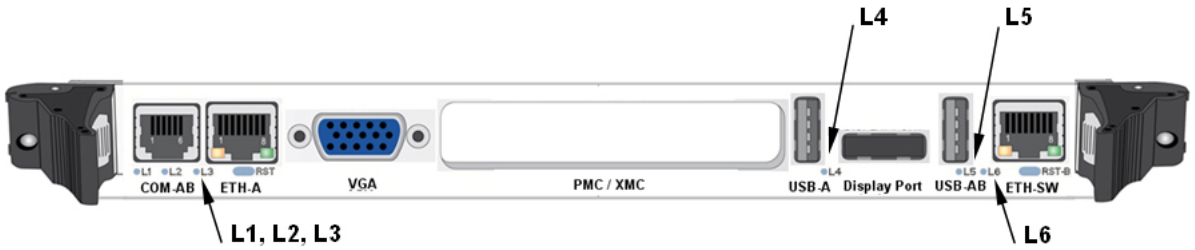


Figure 8: LEDs Front panel

CPUA LED	COLOR	DESCRIPTION
L1	RED	Permanent error on CPUA subsystem
	GREEN	Internal power OK for CPUA subsystem
	ORANGE	Reset state on CPUA subsystem
	OFF	Blinking during CPLDA I2C, SMI or COM activity
L2 (1)	RED	CPLDA watchdog reset timer has expired
	GREEN	Normal operation mode
	ORANGE	Factory test mode
	OFF	Blinking during SATA activity in CPUA subsystem
L3 (1)	RED	Processor hot, may trigger processor performance limitations on CPUA
	GREEN	Ethernet ETH-A connector valid on front panel
	ORANGE	Ethernet ETH-A link directed to central onboard ethernet switch
	OFF	Blinking during ETH-A link activity in CPUA subsystem

(1) The color of these LEDs may also be changed later by application software.

Table 3: CPUA LEDs Description

CPUB LED	COLOR	DESCRIPTION
L4	RED	Permanent error on CPUB subsystem
	GREEN	Internal power OK for CPUB subsystem
	ORANGE	Reset state on CPUB subsystem
	OFF	Blinking during CPLDB I2C, SMI or COM activity
L5 (1)	RED	CPLDB watchdog reset timer has expired
	GREEN	USB-AB front connector selection: USB attached to CPUB subsystem
	ORANGE	USB-AB front connector selection: USB attached to CPUA subsystem
	OFF	Blinking during SATA activity in CPUB subsystem
L6 (1)	RED	Processor hot, may trigger processor performance limitations on CPUB
	GREEN	Ethernet ETH-SW connector valid on front panel
	ORANGE	Ethernet ETH-SW link directed to VPX rear connector
	OFF	Blinking during ETH-SW link activity

(1) The color of these LEDs may also be changed later by application software.

Table 4: CPUB LEDs Description

Reset

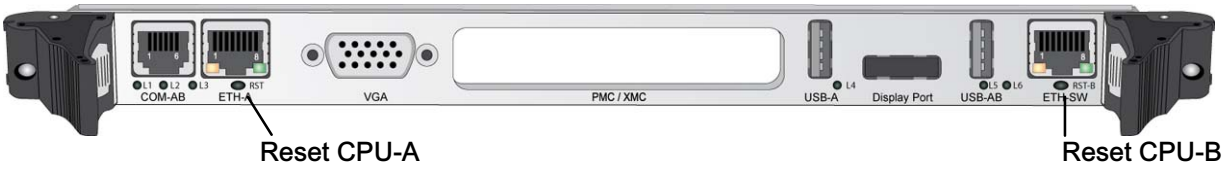


Figure 9: SBC Reset Switch

On the VX6060, each CPU has an independent reset button. One CPU can be reset without disturbing the other CPU. However, as in EZ2-VX6060 system, the CPUA is file diskless server for linux running on CPUB, a reset of CPUA will result in a freeze of the OS on CPUB. In that case, a CPUB reset would be necessary.

Graceful shutdown of the OS is mandatory on CPUA to maintain the file system integrity for EZ2-VX6060, else the risk is high of having to reinstall the software completely.

Chapter 2 - Software

2.1 BIOS Firmware

- BIOS release >= **10208**
- Refer to chapter 2 of SD.DT.F69 (VX6060 AMI BIOS User Manual)

refer to Appendix A of SD.DT.F69 (VX6060 AMI BIOS User Manual)

2.1.1 BIOS Recovery

- Refer to Appendix A of SD.DT.F69 (VX6060 AMI BIOS User Manual)

2.2 Linux

- Fedora 12 release
- Kontron release >= **10176**
- Refer to SD.DT.72 (Release Note Fedora 12 on VX6060)

2.3 Linux Pre-Installed System Parameters

2.3.1 Account Password

Root account password is: **kontron**

Guest account password is: **guest**

2.3.2 Disk Storage

Disk storage is organised with a small **/boot** partition and a large **/** partition spanning the rest of the disk.

2.3.3 Networking

Each cpu has 3 ethernet interfaces. In this system 2 are used for Inter CPU communication, the other one can have another use as explained below.

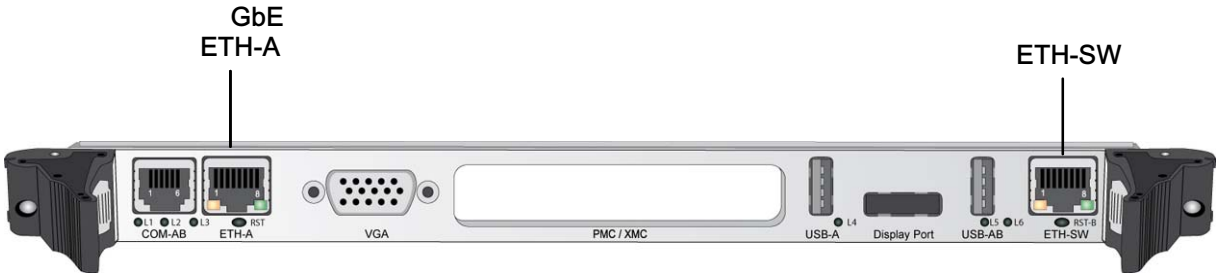


Figure 10: Linux Pre-Installed System Parameters: Networking

» CPUA (Linux hostname: node1)

eth2 (ETH-A) on **CPUA** is configured to request its IP address and parameters from a DHCP server at system boot. Use it if your network provides a DHCP service.

If you plugged the network cable only after boot, please use **ifup eth2** command to restart the configuration process with the server.

eth0 and **eth1** on **CPUA** are aggregated in order to increase the bandwidth through a new port **bond0.**

bond0 on CPUA is configured with a fixed IP address **bond0 192.168.1.1.**

CPUA is a diskless server under **192.168.1.0** network.

» CPUB (Linux hostname: node2)

eth0 and **eth1** on **CPUB** are aggregated in order to increase the bandwidth through a new port **bond0. bond0** on CPUB is configured to request its IP address and parameters from the DHCP CPUA server at system boot. Resulting IP address is **192.168.1.2**

eth2 on **CPUB** is not configured. Users can easily configure **eth2** for a specific network with the **ifconfig** command.

CPU	Linux Devices		Hardware Name
CPUA	eth0	bond0 192.168.1.1	N.A.
	eth1		
	eth2	eth2 External Network DHCP configuration	ETH-A
CPUB	eth0	bond0 192.168.1.2	N.A.
	eth1		
	eth2	eth2 not configured	N.A.

Internal network 192.168.1.0 is accessible through the front panel ETH-SW.

2.3.4 Serial Line / Console Output

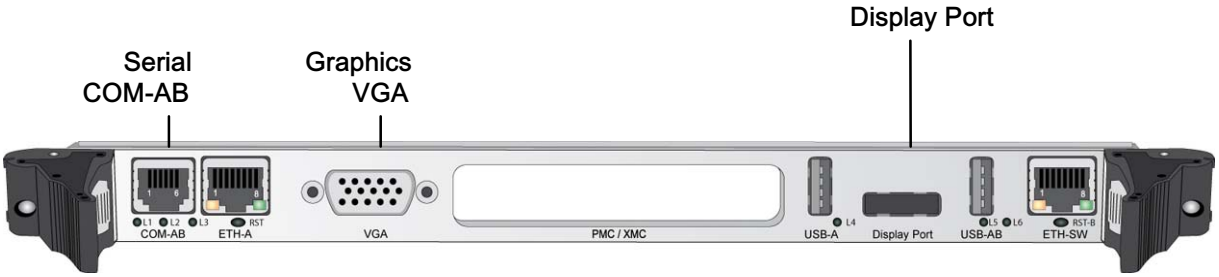


Figure 11: Linux Pre-Installed System Parameters: Serial Line / Console Output

EZ2-VX6060

Characteristics ot the serial line:

- Baudrate: 115200
- Parity: None
- Data Bits: 8
- Stop Bits: 1
- Flow Control: None

2.4 Linux Pre-Installed Benchmarks

Sample benchmarks are provided with the system. These benchmarks can help you get the current performances of the system. **lmbench** covers most classical OS aspects, **iperf** will measure networking performance on TCP/IP socket on ETHERNET. Using **iperf** on top of VXFabric (tm) is also possible when the VXFabric(tm) software is installed.

2.4.1 What To Expect

VX6060 can run up to 8 execution threads on 2 CPUS. Communication between all the different threads can use the following mecanism

1° between threads of same application: direct read/write into the common memory pool of the process : See lmbench **bcopy** performance

2° between threads on same CPU in different processes:

- Shared memory : see bcopy in lmbench
- sockets: see iperf run locally with server and client on same node

3° between processes running on different CPUs

- sockets: see iperf run between two nodes.

a. using simple GETH link between nodes

b. using a bound interface of two GETH links (see iperf chapter)

c. using VXFabric(tm) which gives sockets on top of the PCIE fabric between CPUA and CPUB

2.4.2 lmbench

lmbench is an old fashion benchmark which consists of a suite of simple, portable benchmarks. It is interesting for results of memory bandwidth or latency.

To see the last **lmbench** result, change directory to **/opt/benchmarks/lmbench** and run the **make see** command.

```
[guest@node1 ~]$ cd /opt/benchmarks/lmbench/
[guest@node1 lmbench]$ make see
cd results && make summary percent 2>/dev/null | more
make[1]: Entering directory `/opt/benchmarks/lmbench/results'

                L M B E N C H  3 . 0  S U M M A R Y
                ------------------------------------------------
                (Alpha software, do not distribute)


Processor, Processes - times in microseconds - smaller is better
----------------------------------------------------------------------------------------
Host                 OS  Mhz null null      open slct sig  sig  fork exec sh
                             call  I/O stat clos TCP  inst hndl proc proc proc
--------- ------------- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ---- ----
vx6060    Linux 2.6.32. 2000 0.13 0.21 1.84 2.77 3.12 0.34 1.37 104. 374. 1642

Basic integer operations - times in nanoseconds - smaller is better
-------------------------------------------------------------------------------------------
Host                 OS  intgr intgr  intgr  intgr  intgr
                          bit   add    mul    div    mod
--------- ------------- ------ ------ ------ ------ ------ --
vx6060    Linux 2.6.32. 0.4000 0.0100 0.1400 9.5000 9.4700

Basic float operations - times in nanoseconds - smaller is better
-------------------------------------------------------------------------------------------
Host                 OS  float  float  float  float
                         add    mul    div    bogo
--------- ------------- ------ ------ ------ ------
vx6060    Linux 2.6.32. 1.0700 1.7900 8.6200 8.5900

Basic double operations - times in nanoseconds - smaller is better
-------------------------------------------------------------------------------------------
Host                 OS  double double double double
                         add    mul    div    bogo
--------- ------------- ------  ------ ------ ------
vx6060    Linux 2.6.32. 1.0700 1.7900 9.0700 8.5900

Context switching - times in microseconds - smaller is better
-------------------------------------------------------------------------------------
```

```
[-------------------------------------------------------------------------
Host                 OS  2p/0K 2p/16K 2p/64K 8p/16K 8p/64K 16p/16K 16p/64K
                         ctxsw  ctxsw  ctxsw ctxsw  ctxsw   ctxsw   ctxsw
--------- ------------- ------ ------ ------ ------ ------ ------- ----- ---- --- ----
vx6060    Linux 2.6.32. 3.4100 0.9200 3.2600 3.6900 3.0100 3.83000 3.60000

*Local* Communication latencies in microseconds - smaller is better
---------------------------------------------------------------------------------------
ost                  OS 2p/0K  Pipe AF     UDP  RPC/   TCP  RPC/ TCP
                         ctxsw       UNIX         UDP         TCP conn
--------- ------------- ----- ----- ---- ----- ----- ----- ----- ----
vx6060    Linux 2.6.32. 3.410 8.812 9.01  18.4  22.8  23.9  27.7  40.

File & VM system latencies in microseconds - smaller is better
-------------------------------------------------------------------------------
Host                 OS   0K File      10K File     Mmap    Prot   Page   100fd
                          Create Delete Create Delete Latency Fault  Fault  selct
--------- ------------- ------ ------ ------ ------ ------- ----- ------- -----
vx6060    Linux 2.6.32.   11.3 8.0097   22.2   11.5  7057.0 0.120 1.10820 1.554

*Local* Communication bandwidths in MB/s - bigger is better
-----------------------------------------------------------------------------
Host                 OS  Pipe AF    TCP  File   Mmap  Bcopy  Bcopy  Mem   Mem
                             UNIX      reread reread (libc) (hand) read write
--------- ------------- ---- ---- ---- ------ ------ ------ ------ ---- -----
vx6060    Linux 2.6.32. 2233 5713 2232 2478.9 4131.3 3316.2 2624.4 4672 4701.

Memory latencies in nanoseconds - smaller is better
    (WARNING - may not be correct, check graphs)
------------------------------------------------------------------------------
Host                 OS   Mhz   L1 $   L2 $    Main mem    Rand mem    Guesses
--------- -------------   ---   ----   ----    --------    --------    -------
vx6060    Linux 2.6.32.  2000 1.4550 3.7220   39.1        134.6
make[1]: Leaving directory `/opt/benchmarks/lmbench/results
```

To rerun a benchmark with the same configuration, change directory to **/opt/benchmarks/lmbench** and run **make rerun** command.

To run a benchmark with a new configuration, change directory to **/opt/benchmarks/lmbench** and run **make result** command.

Then run **make see** again to see all different runs appearing in the summary.

2.4.3 iperf

iperf is a commonly used tool for network performance measurement.

Choose a server between node1 and node2 by running **iperf -s** command. It will be waiting for the client.

From the other node, run **iperf -c <*server_ip*>** to launch the benchmark.

In the following example, you can see the benefit of the configured bonding between node1 and node2. Data rate transfer between node1 and node2 up to 1.2 Gbits/sec has been reached.

node1 acts as the server

```
[guest@node1 ~]$ iperf -s
------------------------------------------------------------
Server listening on TCP port 5001
TCP window size: 85.3 KByte (default)
------------------------------------------------------------
[  4] local 192.168.1.1 port 5001 connected with 192.168.1.2 port 60546
[  4]  0.0-10.0 sec  1.41 GBytes  1.21 Gbits/sec
```

node2 acts as the client

```
[guest@node2 ~]$ iperf -c node1
------------------------------------------------------------
Client connecting to node1, TCP port 5001
TCP window size: 16.0 KByte (default)
------------------------------------------------------------
[  3] local 192.168.1.2 port 60546 connected with 192.168.1.1 port 5001
[  3]  0.0-10.0 sec  1.41 GBytes  1.21 Gbits/sec
```

For more information information, run **iperf --help** command.

2.4.4 Sockets on VXFabric

This technology is explained in great detail in Kontron White paper (see www.kontron.com/vpx page or the VX6060 download section on www.kontron.com) if you do not already have this document. Once started, VXFabric implements TCP/IP sockets on top of PCIe. Using the interface names exposed by VXFabric(tm) you can use iperf between CPUA and CPUB to measure VXFabric(tm) communication.

Detailed information can be found in chapter 'IP over VXFabric' in "Release Note Fedora 12 on VX6060" (SD.DT.F72).

Chapter 3 - System Recovery

3.1 Hardware Problem

Refer to CA.DT.A76 (VX6060 User's Guide).

3.2 BIOS Recovery on CPUA

Refer to Appendix A of SD.DT.F69 (AMI-BIOS User Reference Manual).

3.3 Linux Fedora 12 Recovery

Refer to SD.DT.F72 (Release Note Fedora 12 on VX6060).

3.4 BIOS Recovery on CPUB

Refer to Appendix A of SD.DT.F69 (AMI-BIOS User Reference Manual).

3.5 More help

Email your issue to support-kom-sa@kontron.com with subject line EZ2-VX6060-00-L and give your system Serial number.

Chapter 4 - Technical Specifications

4.1 Rack

Dimensions

Height	2U 3.5" / 88.9 mm
Width	19" / 482.6 mm 17.63" / 448 mm without mounting ears
Depth	17.32" / 440 mm

Weight

Weight (approximately)	~ 8 Kg

Power Supply Unit (PSU)

Input Voltage	100-240 VAC (50-60 Hz)
Max. Power	400 W
Output Voltages and Strength	+5V 40A +3.3V 40A +12V 20A -12V 5A

Ambient Temperature

Temperature	DO-160E §4
Operating:	-20°C to +65 °C (0)
Storage:	-40°C to +85 °C

(0) The maximum room temperature is 45°C. Continued operation at this temperature may degrade hardware performance. It is advisable, therefore, to install a supplementary air conditioning system in the room if temperature of the site is greater than that recommended.

Humidity

Relative Humidity	DO-160E §6 5 to 95% non condensing

EMC

> CE

Safety

> TUV EN 60950 / UL 60950

4.2 VPX Backplane

Key Figures

> Compliant to VITA 46.0 baseline specification

Appendix A - Technical Recommendations

Recommendation
Avoid connecting your rack on the same circuit as any electrical equipment that does not have a noise suppressor, and can produce transient phenomena.
It is preferable to install a separate power line directly from the main electrical network.
All the system components (peripheral rack, printer, etc.) must be connected directly to the main electrical network.

Power Supply
Check the correct input voltage prior applying power to the unit. Refer to Chapter 3 “Technical Specifications", section “Power Supply".

Electrical safety
To prevent electrical accidents that could damage your equipment and threaten user safety, adhere to the regulations and standards recommended in the IEC publication 364 (International Electronic Commission) and the French standard NFC 15-100.

Electrical Damage
Avoid connecting cables to the front panel application connectors while functioning. Voltage discharge may damage the inserted boards I/O devices or the power supply.

Fire safety
Fire estinguishers, type CO2, should be installed in the work area, close to the rack.

User Safety
All fans are externally protected with proper finger guard grids. User should avoid touching any fan part with his fingers.

DO NOT turn the power on while the power is cycling off. Wait a few seconds until the power has completely cycled off. Follow the same precaution for turning the power off.
Turning the power on or off before this cycle is complete can cause the voltage and temperature values programmed into the board monitoring system to be lost.
MAKE SURE YOU FOLLOW THESE SAFETY PRECAUTIONS.

Make sure the rack has been powered off using the ON/OFF button (on the rear panel of the rack) before unplugging the power supply cable.

It is strongly recommended to use an antistatic wrist strap and a conductive foam pad when you install or upgrade your system to prevent the accumulation of electrostatic charges.

Avoid touching areas of integrated circuitry; static discharge can damage circuits.

Appendix B - List of Abbreviations

AC	Alternating Current
BSP	Board Support Package
DC	Direct Current
EMC	Electro-Magnetic Compatibility
ESD	Electrostatic Sensitive Device
LED	Light Emitting Diode
MTBF	Mean Time Between Failures
OS	Operating System
PMC	PCI Mezzanine Card
RTM	Rear Transition Module
SBC	Single Board Computer
SDRAM	Synchronous DRAM. A type of dynamic RAM memory chip.
U	The U is a standard unit of height measurement (e.g. 1U). One U is 4.445 centimetres (1.75 inches).
USB	Universal Serial Bus.
WEEE	Waste Electrical and Electronics Equipment
XMC	Express Mezzanine Card (VITA)

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