



Operating Guide

EPIA-N700 Mainboard

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VIA EPIA-N700 Overview

The VIA EPIA-N700 Nano-ITX mainboard is a super compact native x86 mainboard optimized for entry level systems in embedded and productivity applications. The mainboard is based on the VIA VX800 Unified Digital Media IGP chipset featuring the VIA Chrome9™ HC3 with 2D/3D graphics and video accelerators for rich digital media performance.

The VIA EPIA-N700 includes a choice of VIA C7® or Eden™ ULV NanoBGA2 processors. The VIA NanoBGA2 processors are powerful, secure, and efficient. They include the VIA Padlock Security Engine, VIA CoolStream™ Architecture, VIA StepAhead™ Technology Suite, and VIA TwinTurbo™ technology.

The VIA EPIA-N700 supports up to 2 GB of 667/533 MHz DDR2 memory. The VIA EPIA-N700 provides support for high fidelity audio with its included VIA VT1708B High Definition Audio codec. In addition it supports two SATA (3.0 Gbps) storage device. Other supported storage includes CompactFlash and IDE.

The VIA EPIA-N700 is compatible with a full range of Nano-ITX, Mini-ITX, FlexATX, and MicroATX enclosures. The VIA EPIA-N700 is fully compatible with Microsoft® and Linux operating systems.

VIA EPIA-N700 Layout

EPIA-N700 Mainboard
(Dimension 12 cm x 12 cm)

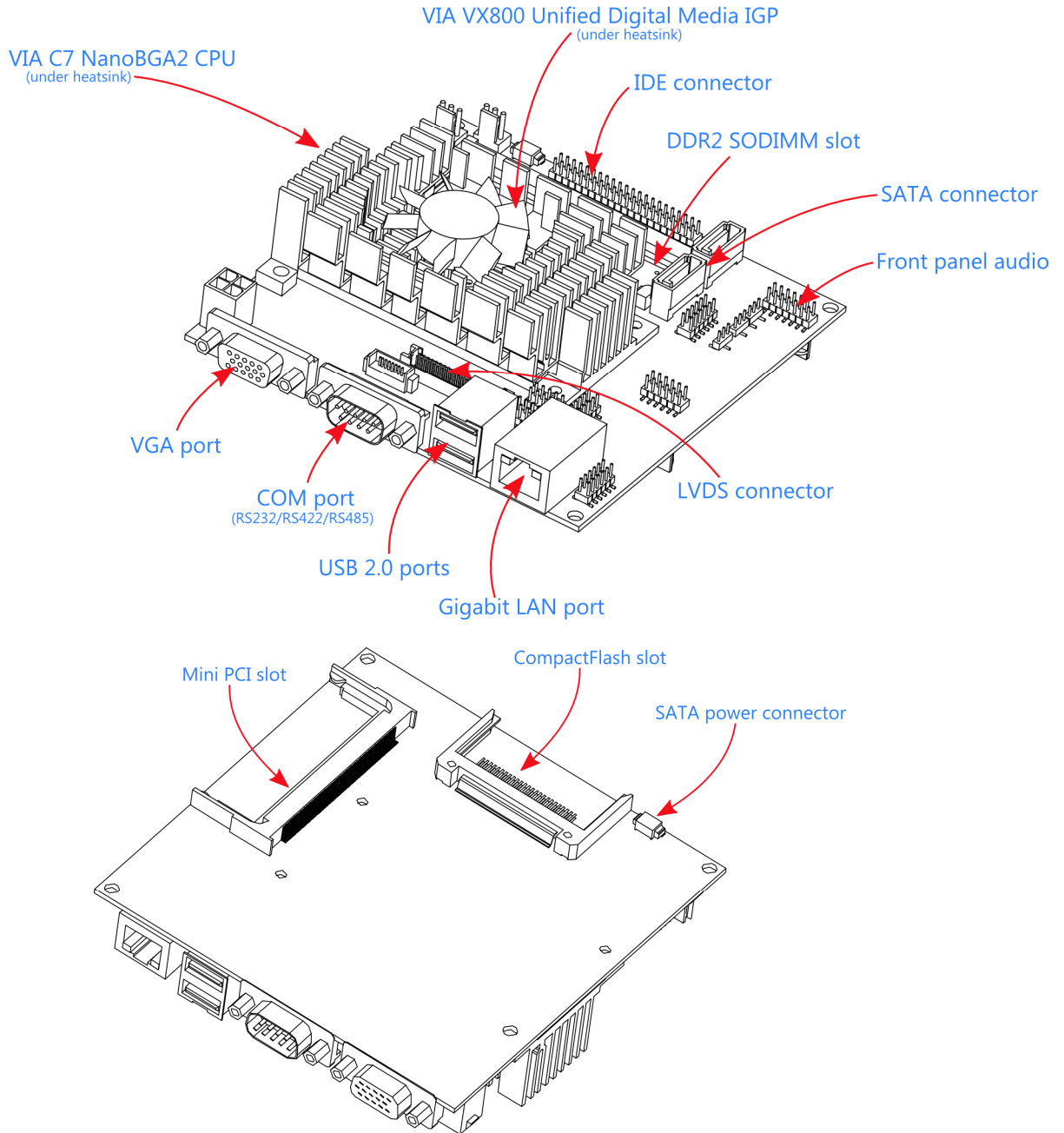


Figure 1: EPIA-N700 layout

VIA EPIA-N700 Specifications

Model Name	- EPIA-N700-15L	- EPIA-N700-05LE
Processor	- VIA C7 [®] 1.5 GHz NanoBGA2 processor (400 MHz FSB)	- VIA Eden [™] ULV 500 MHz NanoBGA2 processor (400 MHz FSB)
Chipset	- VIA VX800 Unified Digital Media IGP Chipset	
System Memory	- 1 x DDR2 533/667 SODIMM slot - Up to 2 GB memory size	
VGA	- Integrated VIA Chrome9 [™] HC3 DX9 3D/2D Graphics and unified video decoding acceleration	
Onboard IDE	- 1 x UltraDMA 133/100/66/33 pin connector (2.0 mm / 44-pin)	
Onboard LAN	- 1 x VIA VT6130 PCIe Gigabit LAN controller	
Onboard Audio	- VIA VT1708B High Definition Audio Codec	
Onboard I/O Connectors	<ul style="list-style-type: none"> - 1 x USB pin header for two additional USB 2.0 ports - 1 x Front audio pin header for headphone-out/MIC-in or amplifier module - 1 x Dual-channel LVDS panel connector - 1 x Backlight control connector (for inverter power and brightness control) - 1 x CF Type I connector (shared with IDE) - 2 x SATA connectors - 2 x +5V SATA power connectors - 1 x SPI pin header - 1 x Digital I/O pin header - 1 x KB/MS pin header - 1 x SMBus pin header - 3 x RS-232 serial port pin header (with 5V/12V selector) - 1 x Front panel pin header - 1 x System temperature reading pin header - 2 x Fan connectors for CPU and system fans - 1 x 12V power connector - 1 x Power mode select connector (PS-on, 5Vsb) 	
Expansion Slot	- 1 x Mini PCI slot	
Back Panel I/O	<ul style="list-style-type: none"> - 1 x Serial port (supports RS-232/422/485) - 1 x VGA port - 1 x RJ-45 LAN port - 2 x USB 2.0 ports 	
BIOS	<ul style="list-style-type: none"> - Award BIOS - SPI 4/8 Mbit flash memory 	
Operating System	Windows 2000/XP, Linux, WinCE, XPe	
System Monitoring & Management	<ul style="list-style-type: none"> - CPU voltage monitoring - Wake-on-LAN, Keyboard power-on, RTC Timer power-on, Watch Dog Timer - Fan speed detection - System power management and temperature monitoring - AC Power failure recovery 	
Operating Temperature	0°C ~ 60°C	
Operating Humidity	0% ~ 95% (relative humidity; non-condensing)	
Form Factor	<ul style="list-style-type: none"> - Nano-ITX (8-layer) - 12 cm x 12 cm 	

Note: This specification is subject to change without prior notice.

VIA EPIA-N700 Processor SKUs

The VIA EPIA-N700 is available in two speed grades as follows:

- 1.5 GHz VIA C7[®] NanoBGA2 Processor
- 500 MHz VIA Eden[™] ULV NanoBGA2 Processor

VIA VX800 Chipset Overview

The VIA VX800 Unified Digital Media Chipset is designed to enable high quality digital video streaming and DVD playback in a new generation of fanless, small form factor PCs and IA devices. The VIA VX800 features VIA Chrome9™ HC3 with 2D/3D graphics and video acceleration, DDR2 667/533 MHz support, motion compensation and dual display support to ensure a rich overall entertainment experience. Outstanding connectivity features include USB 2.0, 10/100/1000 LAN, SATA (3.0 Gbps), and ATA/133.

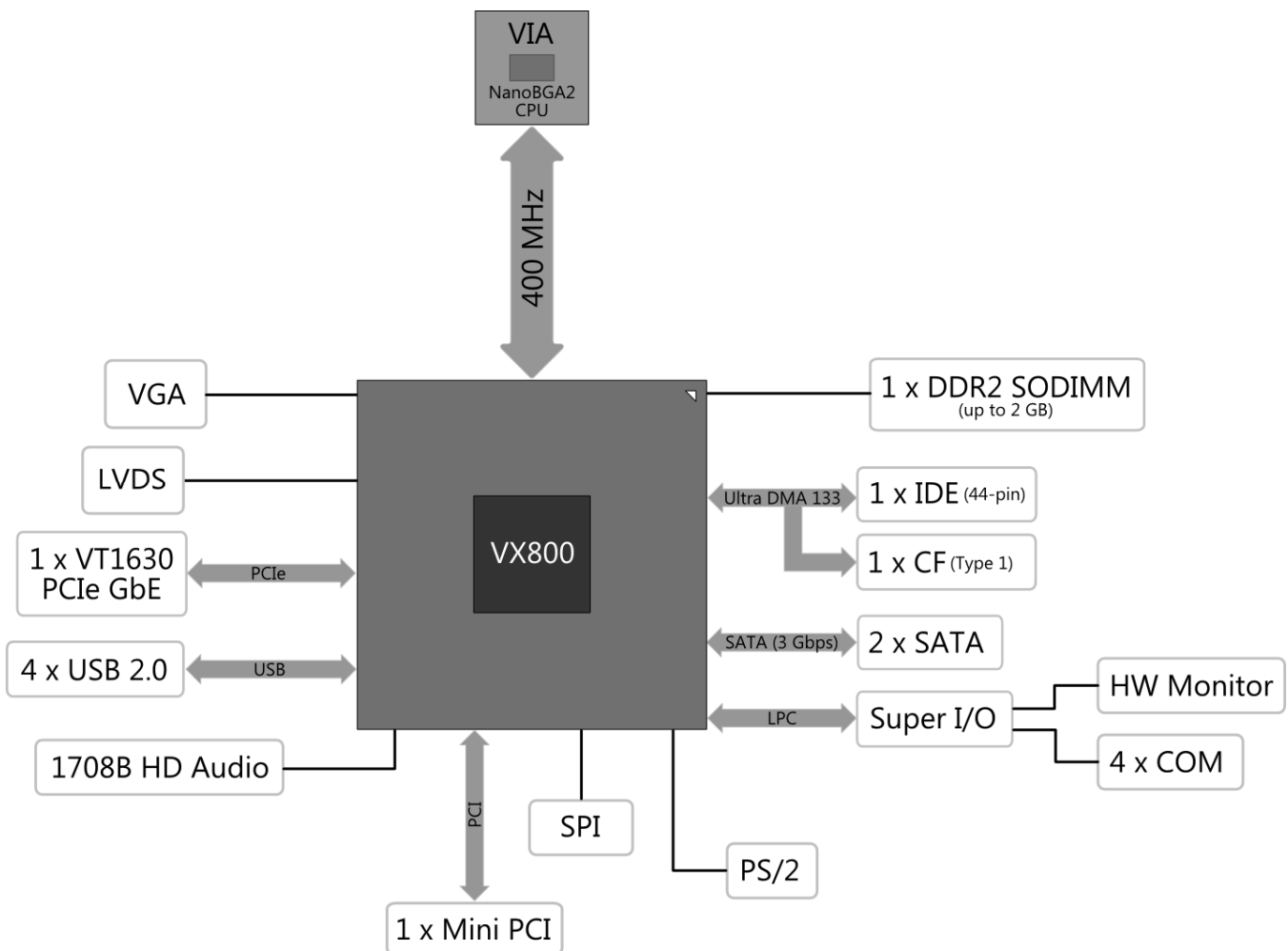


Figure 2: VX800 as implemented in EPIA-N700

VIA EPIA-N700 Dimensions

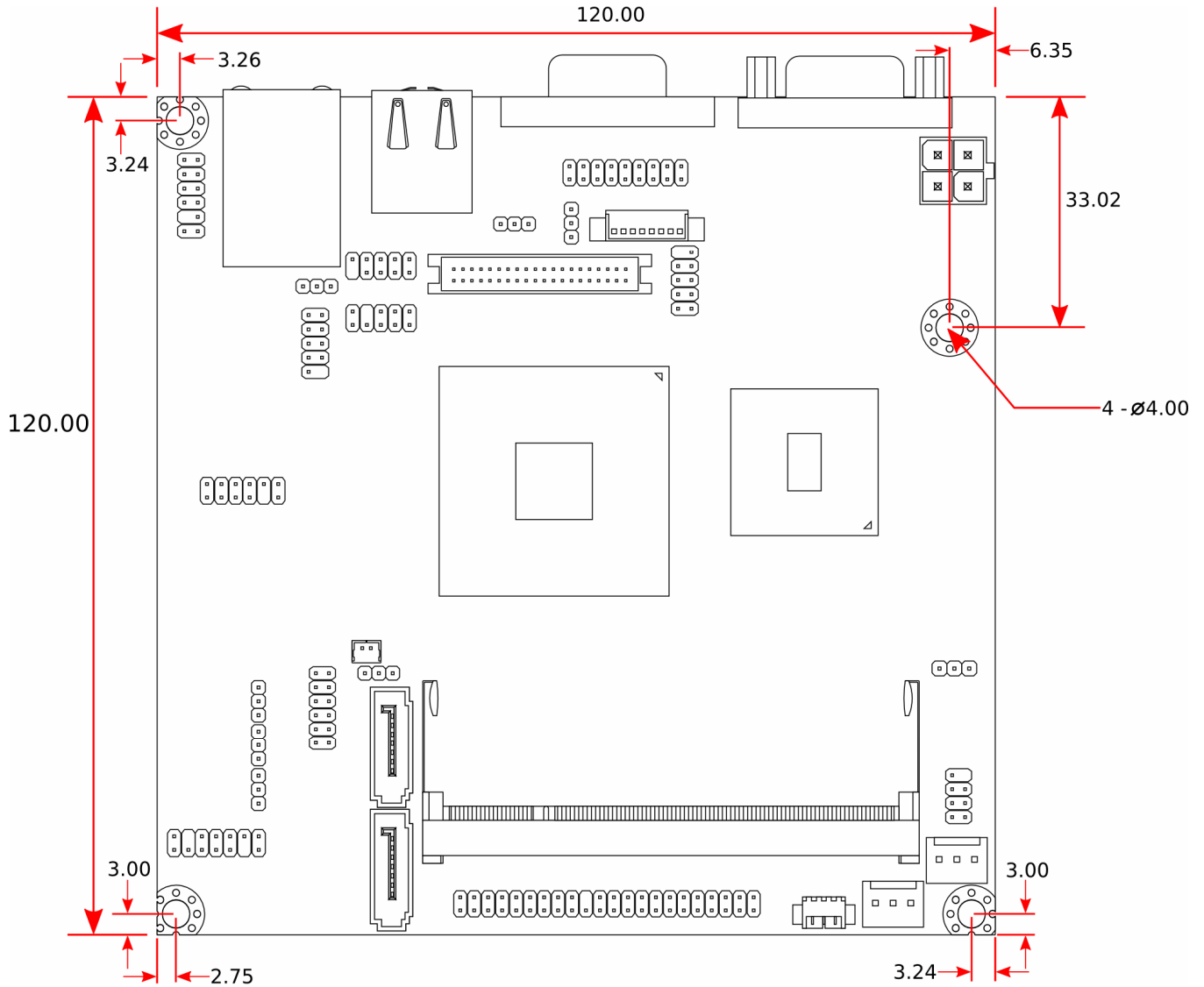
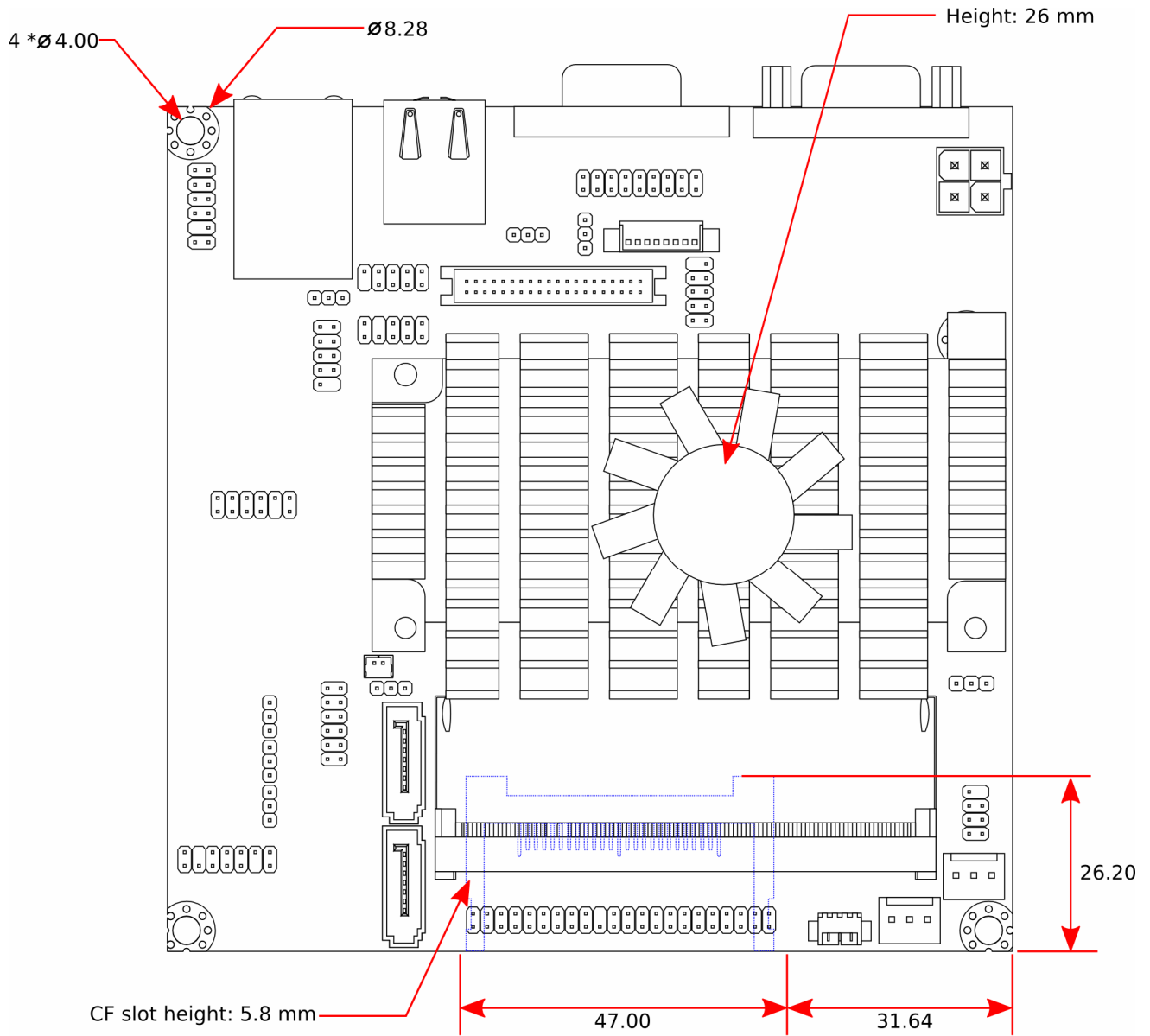


Figure 3: EPIA-N700 mounting layout and dimensions

VIA EPIA-N700 Height Distribution



All other height is under 21 mm.

Figure 4: EPIA-N700 height distribution

VIA EPIA-N700 Side Profile

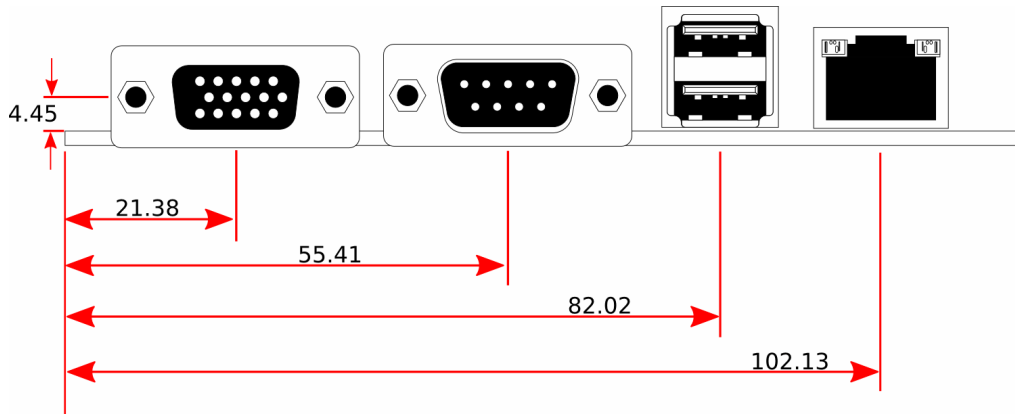


Figure 5: EPIA-N700 back panel ports

Power Consumption

Power consumption tests were performed on the VIA EPIA-N700 for both processor options. The following tables are a comprehensive breakdown of the voltage, amp and wattage values while running common system applications.

VIA EPIA-N700-15L

A. Playing DVD – Power DVD 5.0

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.389	1.384	4.690
Main Board +5V	4.989	0.624	3.113
Main Board +12V	11.89	0.232	2.758
DC Input +12V	12.010	1.168	14.028
		Main Board Power Consumption	10.557
		Total Power Consumption	14.028

B. Playing MP3 – Media Player

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.389	1.391	4.714
Main Board +5V	4.990	0.619	3.089
Main Board +12V	11.97	0.318	3.806
DC Input +12V	12.000	1.274	15.288
		Main Board Power Consumption	11.602
		Total Power Consumption	15.288

C. Running Network Application – Files Copy

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.388	1.244	4.215
Main Board +5V	4.992	0.581	2.900
Main Board +12V	12.030	0.085	1.023
DC Input +12V	12.050	1.022	12.315
		Main Board Power Consumption	8.141
		Total Power Consumption	12.315

D. Idle

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.387	1.172	3.970
Main Board +5V	4.992	0.650	3.245
Main Board +12V	12.020	0.078	0.938
DC Input +12V	12.010	0.968	11.626
		Main Board Power Consumption	8.147
		Total Power Consumption	11.626

E. Running C.C. Winstone 2004

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.390	1.368	4.638
Main Board +5V	4.990	0.597	2.979
Main Board +12V	11.94	0.423	5.051
DC Input +12V	11.960	1.368	16.361
		Main Board Power Consumption	12.556
		Total Power Consumption	16.361

F. S3 mode

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.387	0.000	0.000
Main Board +5V	4.992	0.209	1.043
Main Board +12V	12.080	0.000	0.000
DC Input +12V	12.080	0.118	1.425
		Main Board Power Consumption	1.041
		Total Power Consumption	1.425

VIA EPIA-N700-05LE
A. Playing DVD – Power DVD 5.0

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.363	1.038	3.491
Main Board +5V	4.980	0.671	3.342
Main Board +12V	12.080	0.067	0.809
DC Input +12V	12.090	0.831	10.047
		Main Board Power Consumption	7.642
		Total Power Consumption	10.047

B. Playing MP3 – Media Player

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.363	1.131	3.804
Main Board +5V	4.979	0.637	3.172
Main Board +12V	12.050	0.0429	0.517
DC Input +12V	12.060	0.793	9.564
		Main Board Power Consumption	7.492
		Total Power Consumption	9.564

C. Running Network Application – Files Copy

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.362	0.012	0.040
Main Board +5V	4.981	0.613	3.053
Main Board +12V	12.020	0.012	0.144
DC Input +12V	12.030	0.769	9.251
		Main Board Power Consumption	7.225
		Total Power Consumption	9.251

D. Idle

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.363	1.072	3.605
Main Board +5V	4.981	0.616	3.068
Main Board +12V	12.060	0.023	0.277
DC Input +12V	12.050	0.728	8.772
		Main Board Power Consumption	6.951
		Total Power Consumption	8.772

E. Running C.C. Winstone 2004

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.363	1.187	3.992
Main Board +5V	4.980	0.634	3.157
Main Board +12V	12.020	0.075	0.902
DC Input +12V	12.090	0.819	9.902
		Main Board Power Consumption	8.054
		Total Power Consumption	9.902

F. S3 mode

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	0.133	0.000	0.000
Main Board +5V	4.981	0.233	1.161
Main Board +12V	12.020	0.000	0.000
DC Input +12V	12.020	0.123	1.478
		Main Board Power Consumption	1.161
		Total Power Consumption	1.478

VIA EPIA-N700 Microsoft and Linux Driver Support

MICROSOFT DRIVER SUPPORT

The VIA EPIA-N700 mainboard is compatible with Microsoft operating systems. The latest Windows 2000 and Windows XP drivers can be downloaded from the VEPD website at www.viaembedded.com.

For embedded operating systems (Windows CE.NET and Windows XP Embedded), the related drivers can be found in the VIA Arena website at www.viaarena.com.

LINUX DRIVER SUPPORT

The VIA EPIA-N700 mainboard is highly compatible with many Linux distributions.

Support and drivers are provided through various methods including:

- Drivers provided by VIA
- Using a driver built into a distribution package
- Visiting VIA Arena website at www.viaarena.com for latest updates on a monthly basis
- Installing a third party driver (such as the ALSA driver from the Advanced Linux Sound Architecture project for integrated audio)

For OEM clients and system integrators developing a product for long term production, other code and resources may also be made available. You can submit a request either through the [Developers portal](#) at VIA Arena, or through your VEPD support contact. Alternatively, VIA can work further towards providing additional drivers to fit your specific needs.

Contact

For more information on the VIA EPIA-N700 Nano-ITX mainboard contact your sales representative or visit our website at www.viaembedded.com

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