



Operating Guide

EPIA CN-Series Mini-ITX Mainboard

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VIA EPIA CN-Series Overview

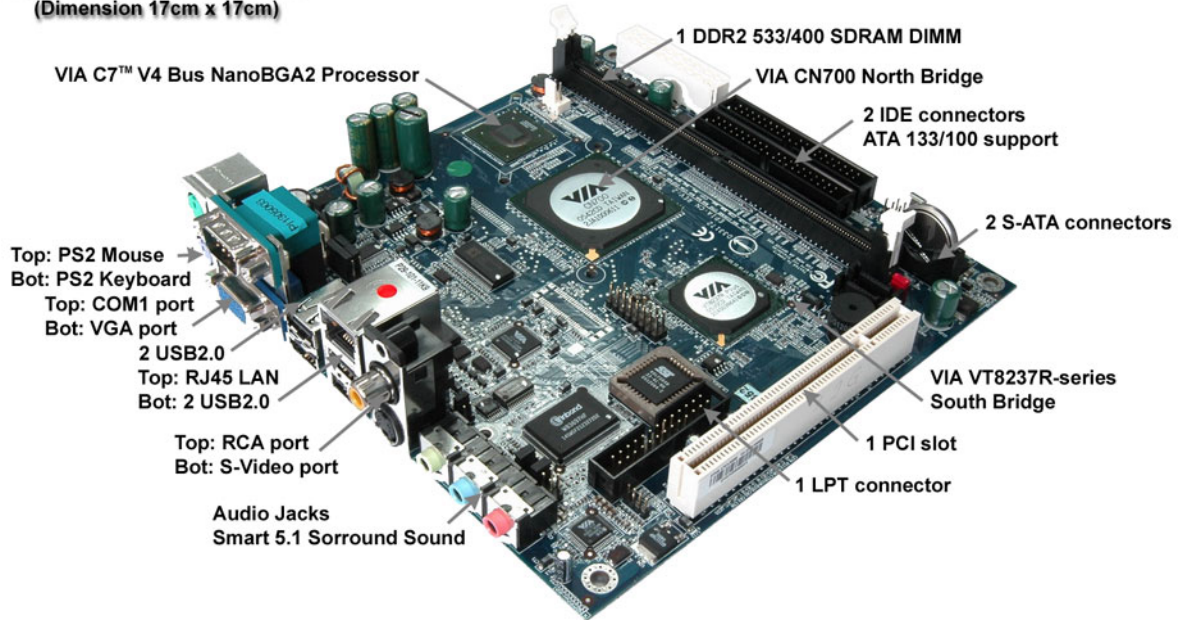
The VIA EPIA CN-Series Mini-ITX Mainboard is an ultra compact native x86 platform optimized for today's demanding embedded and productivity applications. The mainboard is based on the VIA CN700 chipset featuring an embedded hardware MPEG-2 accelerator and integrated VIA UniChrome™ Pro 2D/3D graphics for rich digital media performance. With the sizable memory bandwidth of DDR2 533MHz SDRAM DIMM and the high data transfer speed of ATA-133 and further enhanced by support of 8-Channel AC'97 codec for Smart 5.1 surround sound and SPDIF, the VIA EPIA CN-Series delivers the increased performance levels required by today's embedded digital media applications.

The latest in high-bandwidth connectivity is supported with four USB 2.0 ports, as well as a COM port and has one 10/100 Fast Ethernet port for extended broadband connectivity. The VIA EPIA CN-Series also has one PCI slot for expandability options. The VIA EPIA CN-Series is compatible with a full range of Mini-ITX chassis as well as FlexATX and MicroATX enclosures and power supplies.

The VIA EPIA CN-Series is fully compatible with Microsoft® and Linux operating systems and is available in a variety of configurations, including the latest VIA C7™ V4 Bus NanoBGA2 processor for small, low power and secure x86 processor platforms.

VIA EPIA CN-Series Layout

VIA EPIA CN Mini-ITX Mainboard
(Dimension 17cm x 17cm)



VIA EPIA CN-Series Specifications

Model Name	EPIA CN13000	EPIA CN10000E
Processor	VIA C7 1.3GHz NanoBGA2	VIA C7 1.0GHz NanoBGA2
Chipset	<ul style="list-style-type: none"> - VIA CN700 North Bridge - VIA VT8237R-Series South Bridge 	
System Memory	<ul style="list-style-type: none"> - 1 DDR2 400/533 DIMM slot - Up to 1GB memory size 	
VGA	<ul style="list-style-type: none"> - Integrated VIA UniChrome™ Pro AGP graphics with MPEG-2 acceleration 	
Expansion Slots	<ul style="list-style-type: none"> - 1 PCI 	
Onboard IDE	<ul style="list-style-type: none"> - 2 UltraDMA 133/100/66 Connectors 	
Onboard LAN	<ul style="list-style-type: none"> - VIA VT6103 10/100 PHY 	
Onboard Audio	<ul style="list-style-type: none"> - VIA VT1618 8 channel AC'97 Codec 	
Onboard TV Out	<ul style="list-style-type: none"> - VIA VT1625M HDTV Encoder 	
Onboard I/O Connectors	<ul style="list-style-type: none"> - 1 USB pin header for 4 additional USB 2.0 ports - 1 Front-panel audio pin header (Mic-in and Line-out) - 2 S-ATA Connectors - 1 LPT connector - 1 CD-In pin header - 1 CIR pin header (Switchable for KB/MS) - 2 Fan connectors: CPU/Sys FAN - 1 Front-Panel pin header - 1 ATX Power Connector 	
Back Panel I/O	<ul style="list-style-type: none"> - 1 PS2 Mouse port - 1 PS2 Keyboard port - 1 VGA port - 1 Serial port - 1 RJ-45 LAN port - 4 USB 2.0 ports - 1 RCA port (S/PDIF or TV out) - 1 S-Video port - 3 Audio jacks: line-out, line-in and mic-in (Horizontal, Smart 5.1 Support) 	
BIOS	Award BIOS, LPC 4/8Mbit flash memory	
Operating System	Windows 2000 / XP, Linux, Win CE, XPe	
System Monitoring & Management	<ul style="list-style-type: none"> - CPU voltage monitoring - Wake-on-LAN, Keyboard-Power-on, Timer-Power-on - System power management, AC power failure recovery 	
Operating Temperature	0 ~ 50°C	
Operating Humidity	0% ~ 95% (relative humidity; non-condensing)	
Form Factor	<ul style="list-style-type: none"> - Mini-ITX (4-layer) - 17 cm x 17 cm 	

* The specification is subject to change without prior notice.

VIA EPIA CN Processor SKUs

The VIA EPIA CN-Series is available in 1.0GHz and 1.3GHz speed grades. The VIA EPIA CN10000E and the VIA EPIA CN13000 both utilize the most efficient VIA C7™ V4 Bus NanoBGA2 processor.



EPIA CN10000E / EPIA CN13000

VIA C7™ V4 Bus processor
1.0 GHz / 1.3 GHz
1.004v Operating Volts
128KB L1 Cache
128KB L2 Cache
MMX, SSE, SSE2 and SSE3
Padlock and ACE Encryption



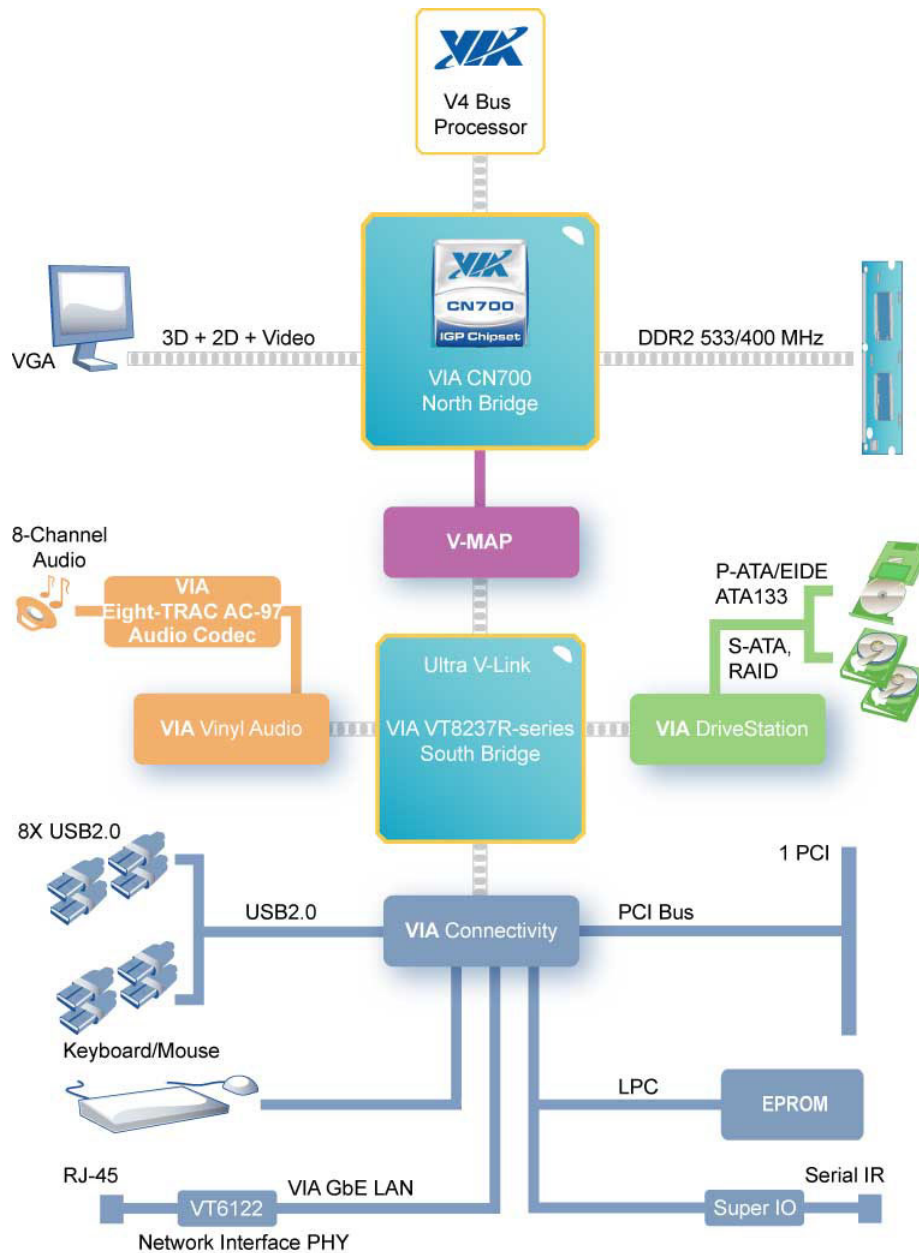
Suitable for small, low power, ultra efficient and secure x86 platform.



PadLock ACE US government approved Advanced Encryption Standard (AES), performing cryptographic functions for securing e-mails, personal files, online transactions, and networks.

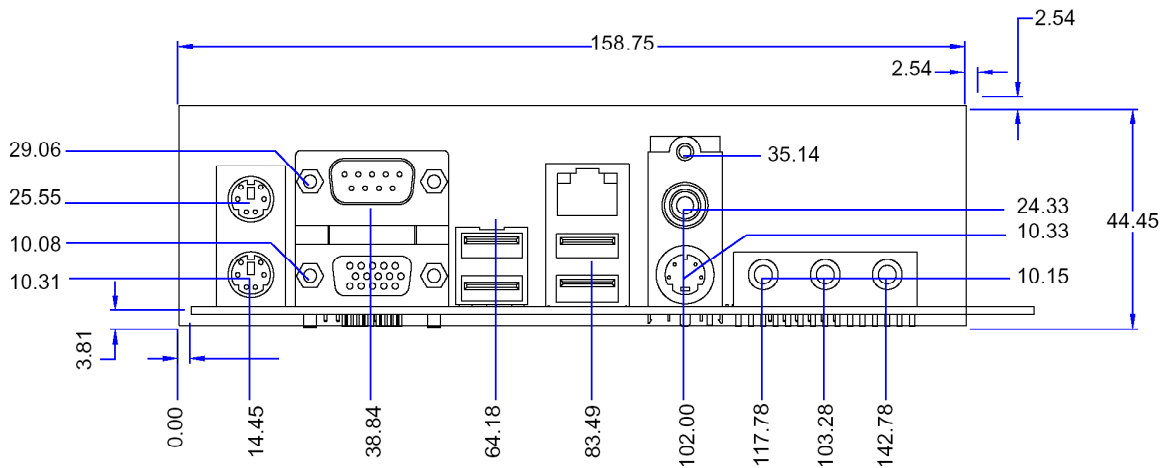
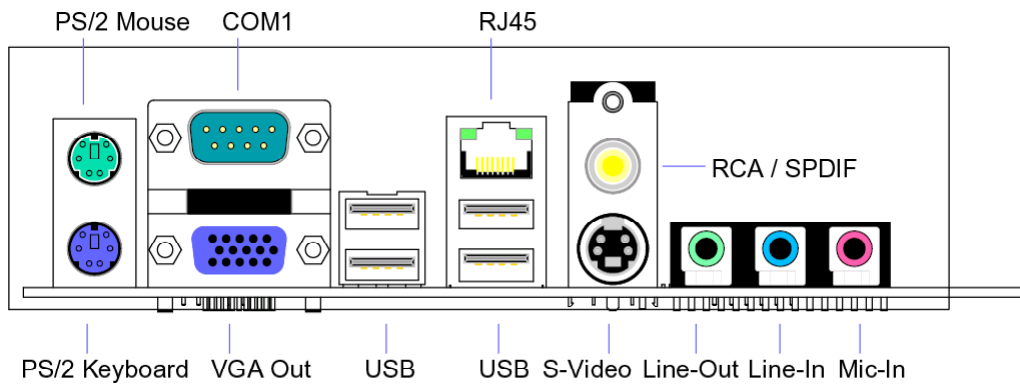
VIA CN700 Chipset Overview

The VIA CN700 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 [CN700](#) features the embedded VIA UniChrome™ Pro 2D/3D MPEG-2 acceleration, DDR2 533/400MHz support, motion compensation and duo-view support to ensure a rich overall entertainment experience. Outstanding connectivity features include USB 2.0, 10/100 LAN and ATA/133.

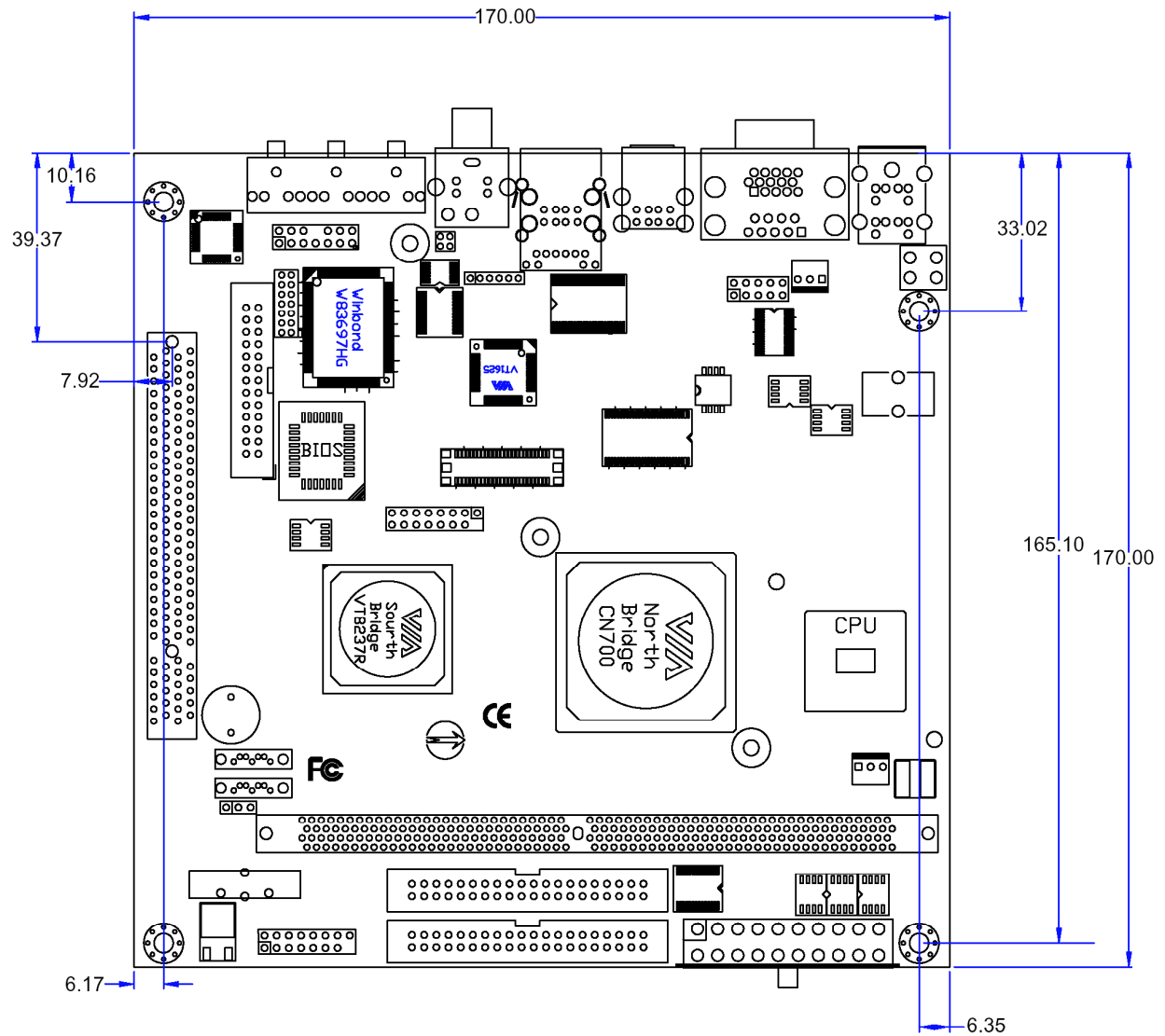


VIA EPIA CN-Series I/O Back Panel Layout

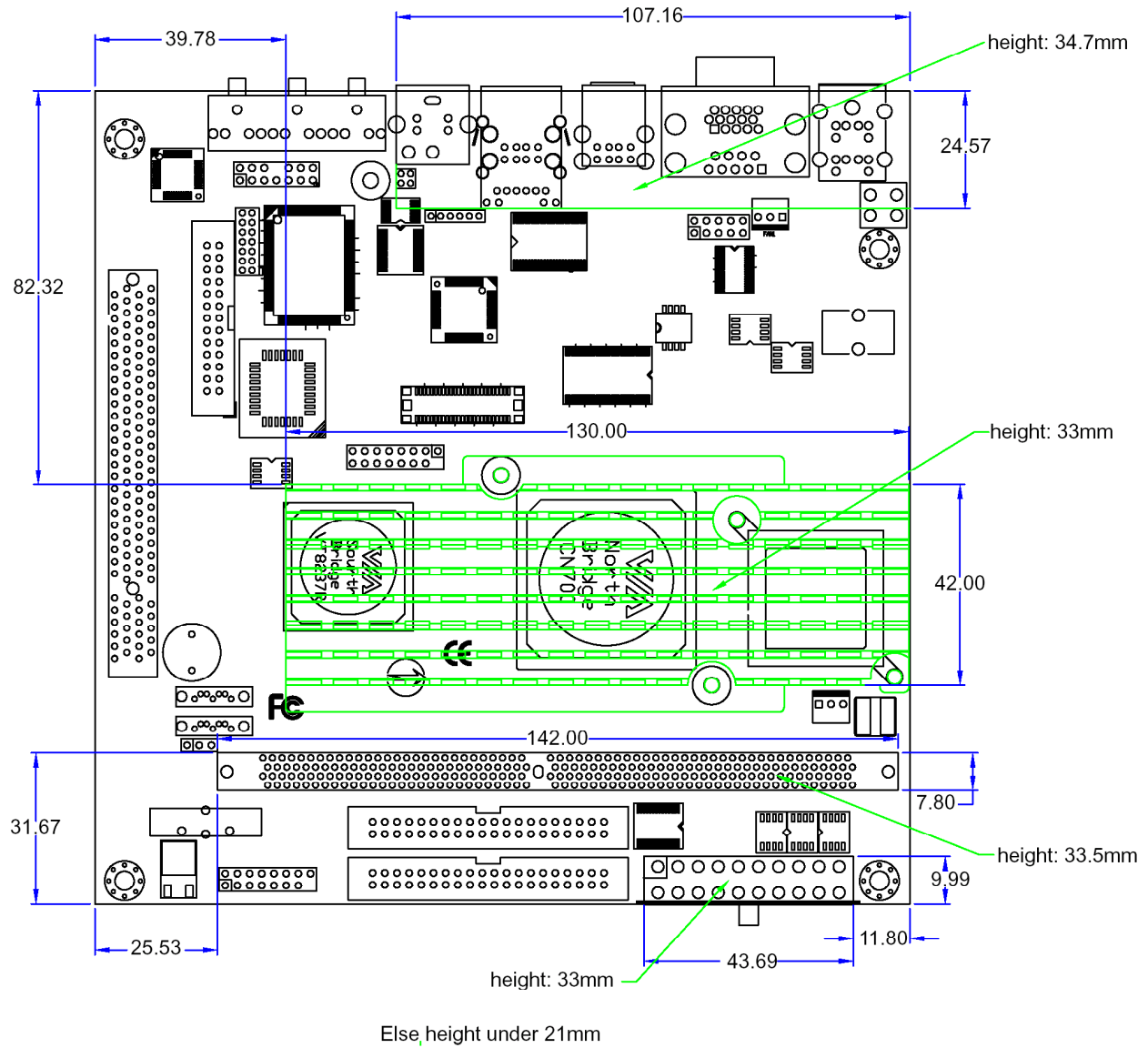
The EPIA CN's ultra compact 17cm x 17cm, integrated design supports all the standard legacy x86 connectivity options as well as PS2 Mouse port, PS2 Keyboard port, VGA port, COM port, RJ45 LAN port, USB 2.0 ports, RCA port, S-Video port and AC'97 audio jacks.



VIA EPIA CN-Series Layout Diagram & Mounting Holes



VIA EPIA CN-Series Layout Diagram & Height Distribution



Power Consumption

Power consumption tests were carried out comparing the VIA EPIA CN10000E (running with the 1.0GHz VIA C7™ V4 Bus NanoBGA2 processor) and the VIA EPIA CN13000 (running with the 1.3GHz VIA C7™ V4 Bus NanoBGA2 processor). The following tables are a comprehensive breakdown of the EPIA platform's voltage, amp and wattage values while running common system applications.

VIA EPIA CN10000E

A. Run 3DMark2003

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.300	0.740	2.442
Main Board +5V	5.000	1.960	9.800
Main Board 5VSB	5.020	0.120	0.602
Main Board +12V	11.900	0.000	0.000
Main Board Power Consumption			12.844

B. Run Pass Mark

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.280	0.800	2.624
Main Board +5V	5.060	1.410	7.135
Main Board 5VSB	5.040	0.110	0.554
Main Board +12V	11.700	0.000	0.000
Main Board Power Consumption			10.313

C. Idle

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.320	0.740	2.457
Main Board +5V	5.040	1.180	5.947
Main Board 5VSB	5.040	0.110	0.554
Main Board +12V	11.700	0.030	0.351
Main Board Power Consumption			9.309

D. Run C.C. Winstone 2004

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.320	0.760	2.523
Main Board +5V	5.000	2.180	10.900
Main Board 5VSB	5.080	0.110	0.559
Main Board +12V	11.900	0.000	0.000
Main Board Power Consumption			13.982

E.

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.380	0.750	2.535
Main Board +5V	5.040	2.000	10.080
Main Board 5VSB	5.020	0.110	0.552
Main Board +12V	11.800	0.000	0.000
Main Board Power Consumption			13.167

F. Run Samsung A.P.

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.320	0.760	2.523
Main Board +5V	5.000	2.010	10.050
Main Board 5VSB	5.080	0.110	0.559
Main Board +12V	11.700	0.000	0.000
Main Board Power Consumption			13.132

VIA EPIA CN13000

A. Playing DVD – Power DVD 4.0

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.340	0.830	2.772
Main Board +5V	5.000	2.060	10.300
Main Board 5VSB	5.000	0.080	0.400
Main Board +12V	12.100	0.330	3.993
Main Board Power Consumption			17.465

B. Run 3DMark2001

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.340	0.790	2.639
Main Board +5V	5.020	2.510	12.600
Main Board 5VSB	5.060	0.080	0.405
Main Board +12V	12.130	0.050	0.607
Main Board Power Consumption			16.250

C. Run Pass Mark

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.340	0.800	2.672
Main Board +5V	5.020	2.060	10.341
Main Board 5VSB	5.080	0.070	0.356
Main Board +12V	12.050	0.330	3.977
Main Board Power Consumption			17.345

D. Idle

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.340	0.790	2.639
Main Board +5V	5.040	1.600	8.064
Main Board 5VSB	5.080	0.090	0.457
Main Board +12V	12.110	0.300	3.633
Main Board Power Consumption			14.793

E. Run C.C. Winstone 2001

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.340	0.810	2.705
Main Board +5V	5.100	2.760	14.076
Main Board 5VSB	5.060	0.070	0.354
Main Board +12V	12.100	0.030	0.363
Main Board Power Consumption			17.499

F. Run Max98

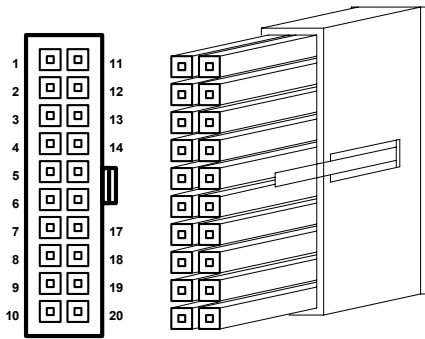
	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.340	0.780	2.605
Main Board +5V	5.020	2.790	14.006
Main Board 5VSB	5.060	0.090	0.455
Main Board +12V	12.310	0.050	0.616
Main Board Power Consumption			17.682

G. Run Samsung A.P.

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.340	0.790	2.639
Main Board +5V	4.980	3.790	18.874
Main Board 5VSB	5.080	0.080	0.406
Main Board +12V	12.100	0.310	3.751
Main Board Power Consumption			25.670

Power Specifications

The EPIA CN utilizes an industry standard 20-pin ATX main connector to the power supply. Due to the EPIA CN platform's ultra low power requirements a 90 – 120 Watt ATX power supply is ample for even the heaviest of multimedia system applications.



1	+3V	11	+3V
2	+3V	12	-12V
3	Gnd	13	Gnd
4	+5V	14	PWR_ON-
5	Gnd	15	Gnd
6	+5V	16	Gnd
7	Gnd	17	Gnd
8	PWR_GD	18	NC
9	5V_SB	19	+5V
10	+12V	20	+5V

Note: NC = no connection

VIA EPIA CN-Series Microsoft and Linux Driver Support

Microsoft Driver Support

VIA EPIA CN series offers full support for the complete range of Microsoft operating systems.

For standard operating systems, Windows 98/Me/2000/XP latest drivers downloads can be found in the VEPD website at www.viaembedded.com.

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

Linux Driver Support

VIA EPIA CN mainboards have a very high degree of support under Linux.

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](#) on VIA Arena, or through your VEPD support contact. Alternatively, VIA can work further towards providing additional drivers to suite your specific needs.

Contact

For more information on the VIA EPIA CN-Series Mini ITX Mainboard contact your sales representative or visit our website at www.viaembedded.com

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