



Operating Guide

EPIA EK-Series Mini-ITX Mainboard

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VIA EPIA EK-Series Overview

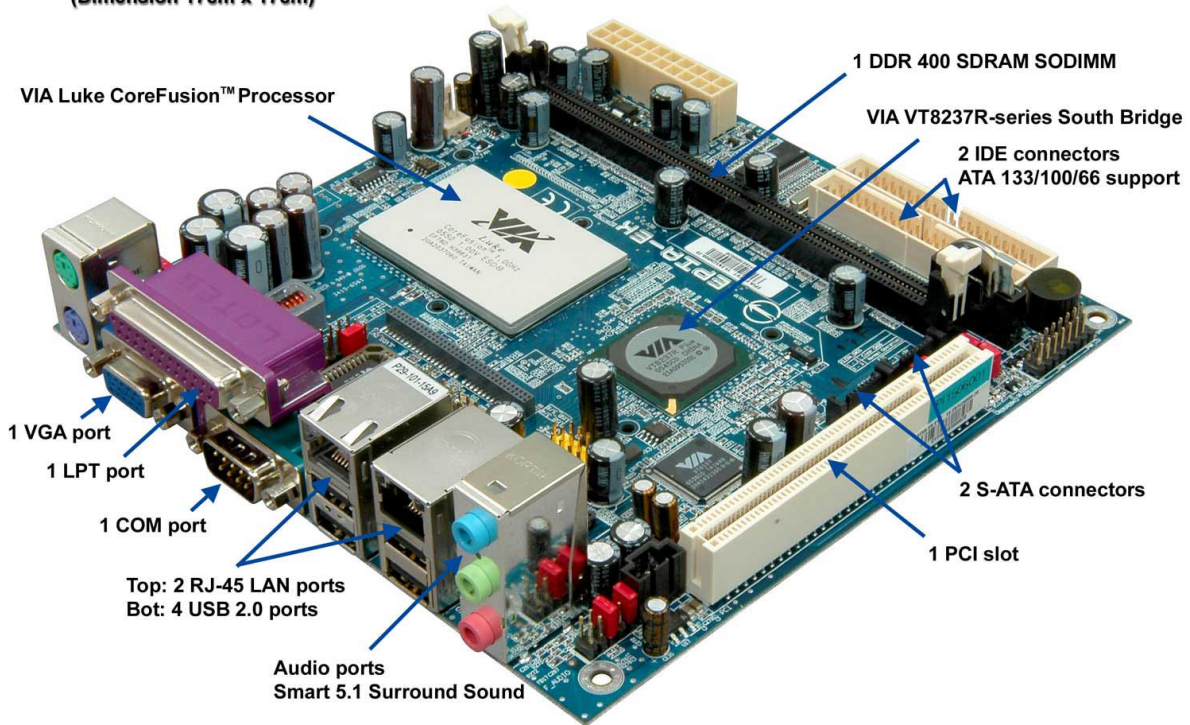
The VIA EPIA EK-Series Mini-ITX Mainboard is an ultra compact native x86 platform optimized for today's demanding embedded and productivity applications. The mainboard is based on the VIA Luke CoreFusion™ Processor featuring an embedded hardware MPEG-2 / MPEG-4 accelerator and integrated VIA UniChrome™ Pro 2D/3D graphics for rich digital media performance. With the sizable memory bandwidth of DDR 400 SDRAM SODIMM and the high data transfer speeds of ATA-133 and further enhanced by support of 6-Channel AC'97 codec for Smart 5.1 surround sound, the VIA EPIA EK-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 COM / CD Audio-in / SIR pin headers and has one 10/100 Fast Ethernet port for extended broadband connectivity. The VIA EPIA EK-Series also has one PCI slot for expandability options. The VIA EPIA EK-Series is compatible with a full range of Mini-ITX chassis as well as FlexATX and MicroATX enclosures and power supplies.

The VIA EPIA EK-Series is fully compatible with Microsoft® and Linux operating systems and is available in a variety of configurations, including the fanless VIA Luke CoreFusion™ processor for silent system designs.

VIA EPIA EK-Series Layout

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



VIA EPIA EK-Series Specifications

Model Name	EPIA EK10000	EPIA EK8000E
Processor	- VIA Luke 1.0GHz CoreFusion™ - VIA VT8237R-Series South Bridge	- VIA Luke 800MHz CoreFusion™ - VIA VT8237R-Series South Bridge
System Memory	- 1 DDR 400 DIMM slot - Up to 1GB memory size	
VGA	- Integrated VIA UniChrome™ Pro AGP graphics with MPEG-2/4 Acceleration	
Expansion Slots	- 1 PCI	
Onboard IDE	- 2 UltraDMA 133/100/66 Connectors	
Onboard LAN	- VIA VT6103L 10/100 Ethernet PHY - VIA VT6107 10/100 Fast Ethernet (default) or VT6122 Gigabit Ethernet Controller	
Onboard Audio	- VIA VT1618 8-channel AC'97 Codec	
Onboard I/O Connectors	- 2 USB pin headers for 4 additional USB 2.0 ports - 1 SIR pin header - 2 S-ATA Connectors - 1 Buzzer - 1 Digital I/O pin header - 1 CD Audio-In pin header - 1 Front-panel audio pin header (Mic-in and Line-out) - 1 WP pin header for BIOS flash - 3 Serial port pin headers for COM2/3/4 (5V/12V selectable) - 1 CIR pin header (Switchable for KB/MS) - 2 Fan connectors: CPU/Sys FAN - 1 SM Bus pin header - 1 LVDS/TTL/DVI module connector (an add-on card is required) - 1 Front-Panel pin header - 1 ATX Power Connector	
Back Panel I/O	- 1 PS2 Mouse port - 1 PS2 Keyboard port - 2 RJ-45 LAN ports - 1 Parallel port (LPT) - 1 Serial port - 4 USB 2.0 ports - 1 VGA port - 3 Audio jacks: line-out, line-in and mic-in (Vertical, Smart 5.1 Support)	
BIOS	Award BIOS, LPC 4/8Mbit flash memory	
Operating System	Windows 2000 / XP, Linux, Win CE, XPe	
Software Application	- VIA FliteDeck™ Suite - MissionControl-H/W Monitoring, Remote SNMP Management - FlashPort-Live BIOS Flash - SysProbe-Live DMI Browser	
System Monitoring & Management	- CPU temperature reading, CPU voltage monitoring - Wake-on-LAN, Keyboard-Power-on, Timer-Power-on, Watch Dog Timer, FAN control - System power management, AC power failure recovery	
Operating Temperature	0 ~ 50°C	
Operating Humidity	0% ~ 95% (relative humidity; non-condensing)	
Form Factor	- Mini-ITX (6-layer) - 17 cm x 17 cm	

* The specification is subject to change without prior notice.

VIA EPIA EK Processor SKUs

The VIA EPIA EK-Series is available in 800MHz and 1.0GHz speed grades. The VIA EPIA EK8000E and the VIA EPIA EK10000 utilize VIA's ultra low power Luke CoreFusion™ processor.



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



PowerSaver 3.0 technology, extends battery life by dynamically altering the voltage and clock frequency to reduce power consumption when the processor is not required to run at full speed.

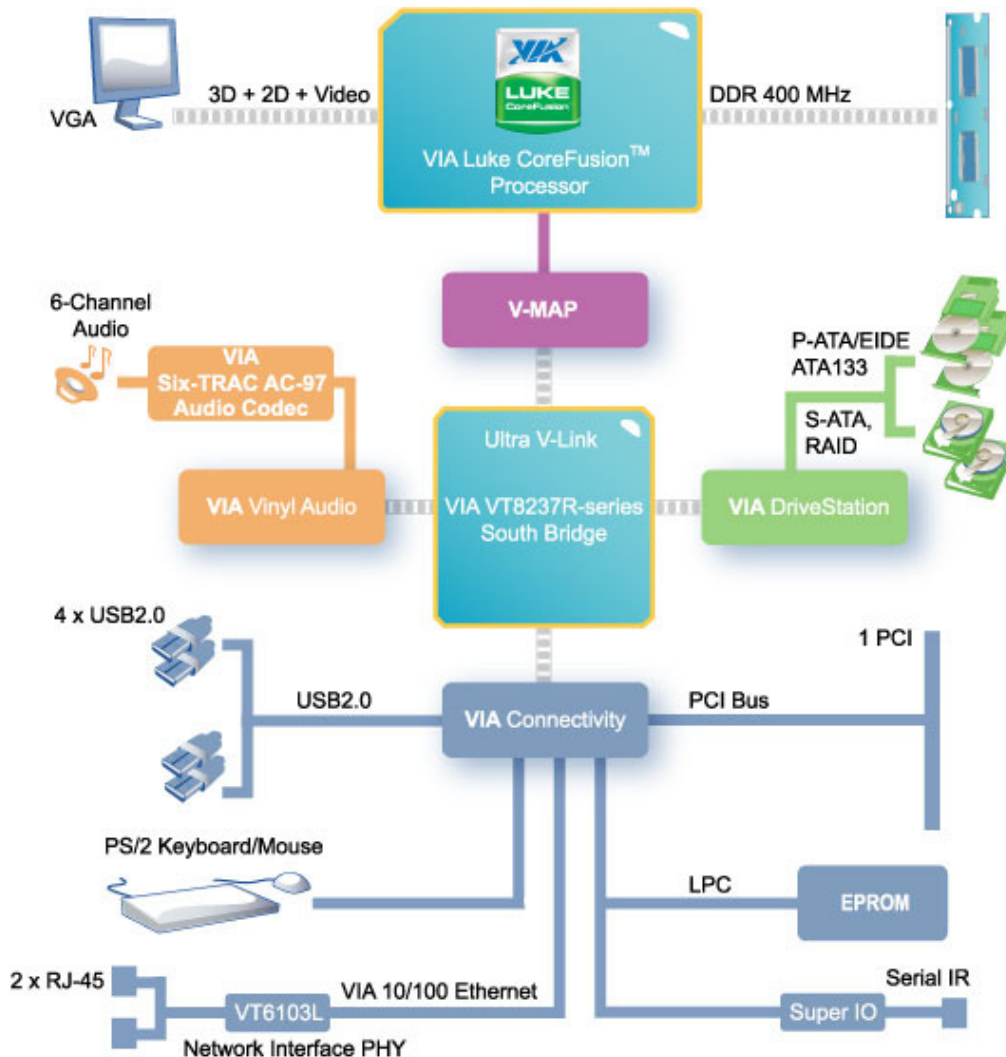


The VIA FliteDeck™ Suite, an advanced system management suite that enables to user to effortlessly track and monitors mission critical system data and enable seamless live Windows®-based BIOS updates as well as comprehensive BIOS status information.

VIA Luke CoreFusion™ Overview

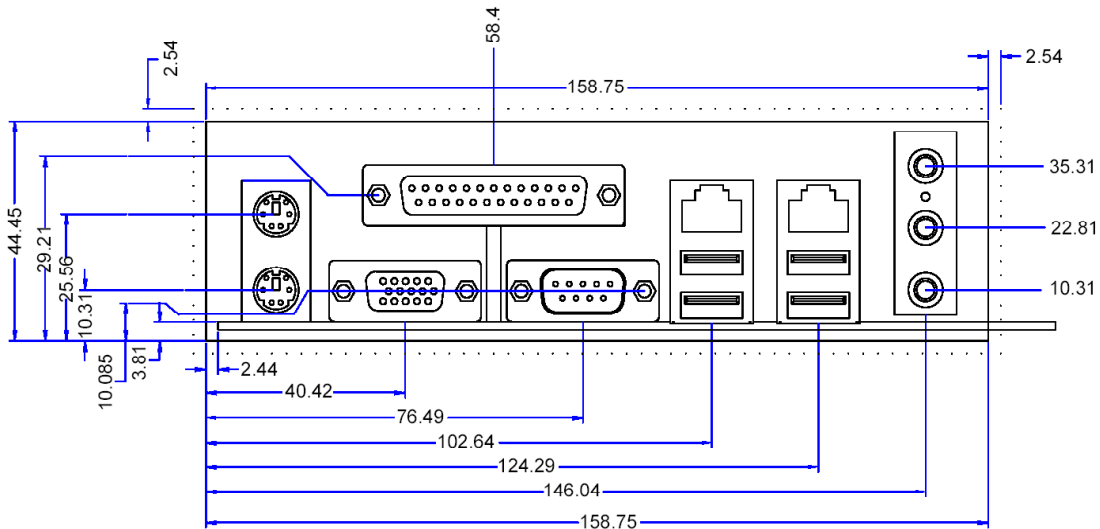
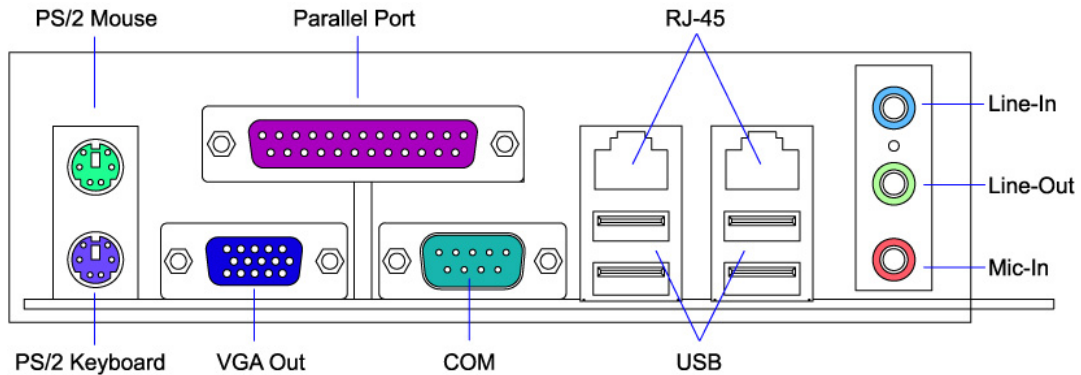
The [Luke CoreFusion™ Processor](#) is a high performance, cost-effective and energy efficient processor with DVI monitor interface and integrated VIA UniChrome™ Pro 2D / 3D graphics / video controller which incorporates MPEG-2 / MPEG-4 acceleration. It also provides superior performance between the DRAM, V-Link and internal AGP graphics controller with pipelined, burst and concurrent operation. The VT8237R-series South Bridge is a highly integrated peripheral controller which includes Serial ATA, Ultra DMA IDE, USB 2.0, 10/100 MB networking MAC, AC'97 and system power management.

The complete system consists of the Luke CoreFusion™ Processor and the VT8237R-series V-Link South Bridge on the EPIA EK board.

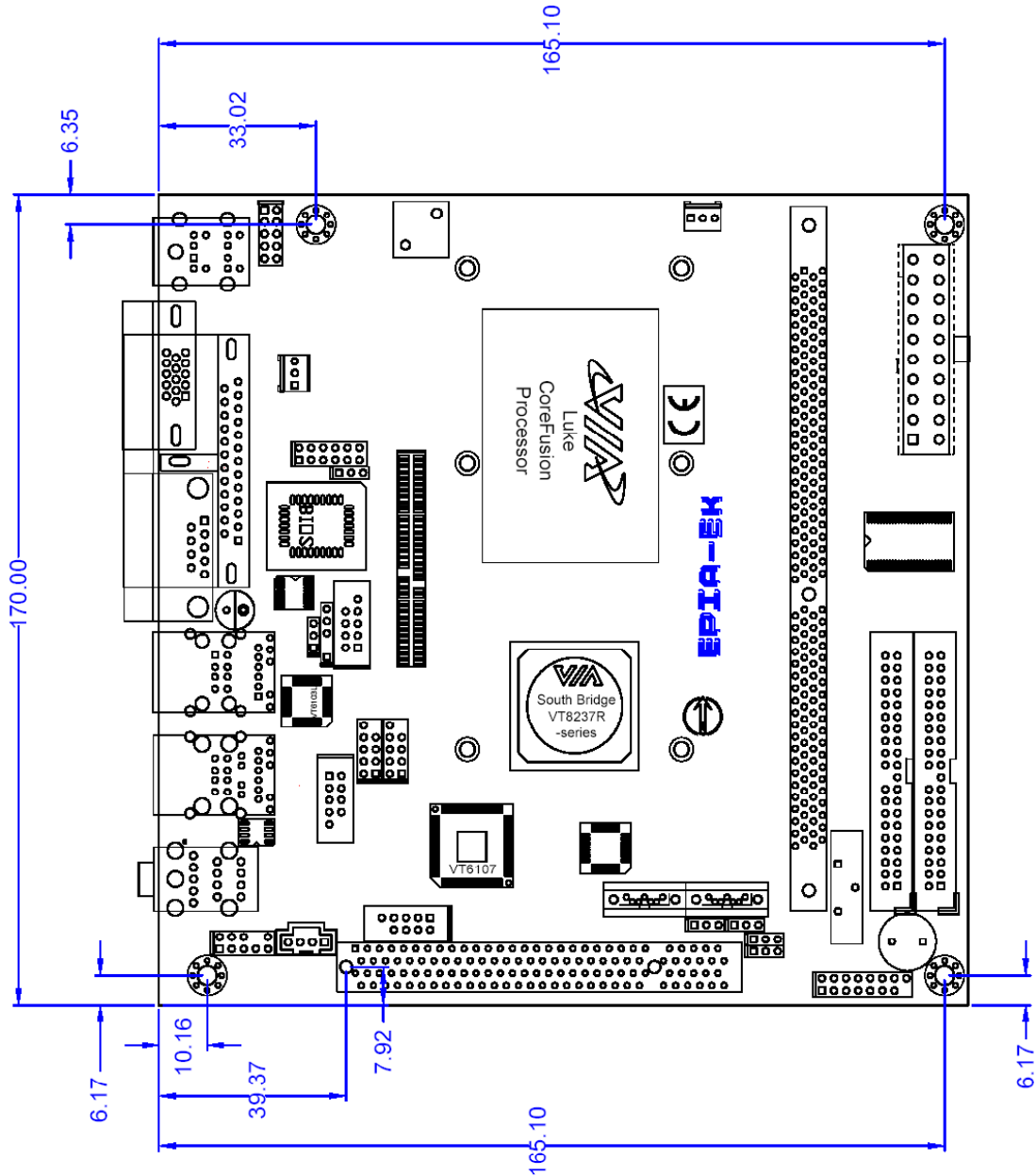


VIA EPIA EK-Series I/O Back Panel Layout

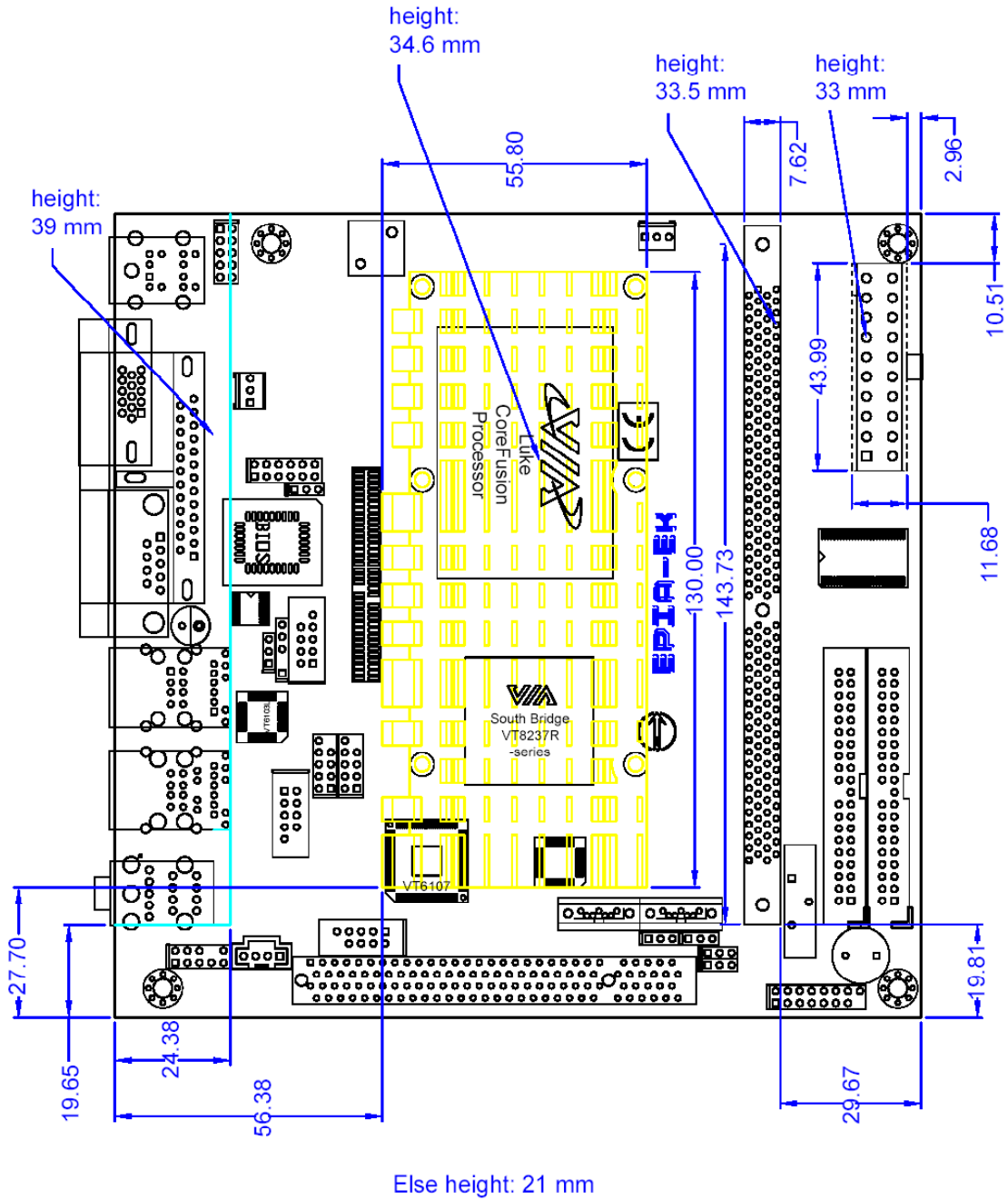
The EPIA EK's ultra compact 17cm x 17cm, integrated design supports all the standard legacy x86 connectivity options as well as PS2 Mouse port, PS2 Keyboard port, VGA port, COM port, RJ45 LAN ports, USB 2.0 ports and AC'97 audio jacks.



VIA EPIA EK-Series Layout Diagram & Mounting Holes



VIA EPIA EK-Series Layout Diagram & Height Distribution



Power Consumption

Power consumption tests were carried out comparing the VIA EPIA EK8000E (running with the 800MHz VIA Luke CoreFusion™ Processor) and the VIA EPIA EK10000 (running with the 1.0GHz VIA Luke CoreFusion™ 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 EK8000E

A. Playing DVD – Power DVD 5.0

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.235	3.150	10.190
Main Board +5V	5.048	1.155	5.830
Main Board 5VSB	4.912	0.026	0.128
Main Board +12V	12.005	0.096	1.152
Main Board Power Consumption			17.301

B. Playing MP3 – Media Player

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.263	3.075	10.034
Main Board +5V	5.062	1.296	6.560
Main Board 5VSB	4.927	0.035	0.172
Main Board +12V	12.026	0.109	1.311
Main Board Power Consumption			18.077

C. Running Network Application – Files Copy

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.251	2.845	9.249
Main Board +5V	5.060	1.003	5.075
Main Board 5VSB	4.923	0.028	0.138
Main Board +12V	12.013	0.096	1.153
Main Board Power Consumption			15.615

D. Running Network Application – Files Copy (10/100)

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.257	2.796	9.107
Main Board +5V	5.071	0.649	3.291
Main Board 5VSB	4.930	0.027	0.133
Main Board +12V	12.007	0.100	1.201
Main Board Power Consumption			13.731

E. Idle

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.276	2.779	9.104
Main Board +5V	5.076	0.526	2.670
Main Board 5VSB	4.934	0.040	0.197
Main Board +12V	12.016	0.135	1.622
Main Board Power Consumption			13.594

F. Run C.C. Winstone 2001

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.239	2.978	9.646
Main Board +5V	5.044	1.564	7.889
Main Board 5VSB	4.914	0.032	0.157
Main Board +12V	12.020	0.105	1.262
Main Board Power Consumption			18.954

G. S3 Mode

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	0.000	0.000	0.000
Main Board +5V	0.000	0.000	0.000
Main Board 5VSB	4.962	0.213	1.057
Main Board +12V	0.000	0.000	0.000
Main Board Power Consumption			1.057

VIA EPIA EK10000
A. Playing DVD – Power DVD 5.0

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.281	3.277	10.752
Main Board +5V	5.045	1.134	5.721
Main Board 5VSB	4.911	0.050	0.246
Main Board +12V	11.988	0.177	2.122
Main Board Power Consumption			18.840

B. Playing MP3 – Media Player

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.289	3.156	10.380
Main Board +5V	5.049	1.265	6.387
Main Board 5VSB	4.917	0.053	0.261
Main Board +12V	12.005	0.173	2.077
Main Board Power Consumption			19.105

C. Running Network Application – Files Copy

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.295	2.879	9.486
Main Board +5V	5.064	0.725	3.671
Main Board 5VSB	4.922	0.054	0.266
Main Board +12V	11.991	0.191	2.290
Main Board Power Consumption			15.714

D. Running Network Application – Files Copy (GIGA)

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.307	2.862	9.465
Main Board +5V	5.076	0.646	3.279
Main Board 5VSB	4.934	0.050	0.247
Main Board +12V	11.999	0.188	2.256
Main Board Power Consumption			15.246

E. Idle

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.305	2.841	9.390
Main Board +5V	5.071	0.604	3.063
Main Board 5VSB	4.931	0.058	0.286
Main Board +12V	12.003	0.197	2.365
Main Board Power Consumption			15.103

F. Run C.C. Winstone 2001

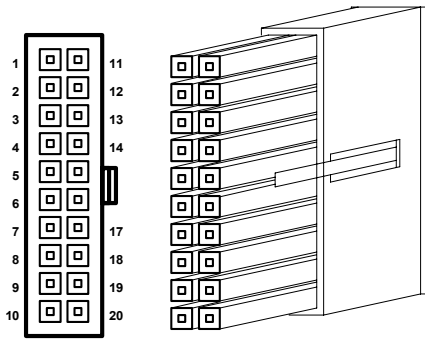
	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.289	3.077	10.120
Main Board +5V	5.048	1.481	7.476
Main Board 5VSB	4.917	0.063	0.310
Main Board +12V	12.006	0.189	2.269
Main Board Power Consumption			20.175

G. S3 Mode

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	0.000	0.000	0.000
Main Board +5V	0.000	0.000	0.000
Main Board 5VSB	4.950	0.358	1.772
Main Board +12V	0.000	0.000	0.000
Main Board Power Consumption			1.772

Power Specifications

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



1	+3.3V	11	+3.3V
2	+3.3V	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	-5V
9	5V_SB	19	+5V
10	+12V	20	+5V

VIA EPIA EK-Series Microsoft and Linux Driver Support

Microsoft Driver Support

VIA EPIA EK 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 EK 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 EK-Series Mini ITX Mainboard contact your sales representative or visit our website at www.viaembedded.com

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