



Operating Guide

VB7002 Mini-ITX Mainboard

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VIA VB7002 Overview

The VIA VB7002 Mini-ITX Mainboard is an ultra compact native x86 platform optimized for entry level systems in embedded and productivity applications. The mainboard is based on the VIA CN896 chipset featuring the VIA C-9 HC IGP with 2D/3D graphics and video accelerators for rich digital media performance.

The VIA VB7002 onboard VIA C7[®]-D NanoBGA2 processor is a powerful, secure, and efficient processor with its included VIA Padlock Security Engine, VIA CoolStream[™] Architecture, VIA StepAhead[™] Technology Suite, and VIA TwinTurbo[™] technology.

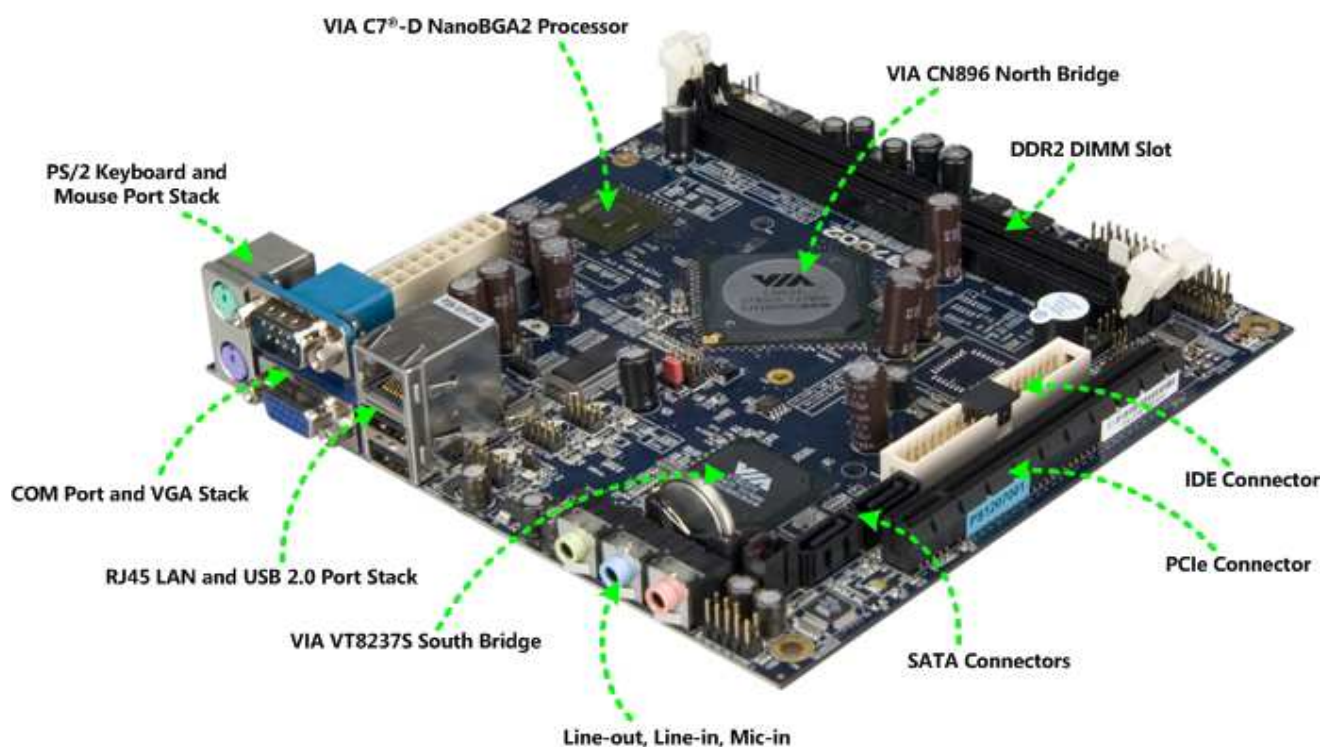
The VIA VB7002 includes sizeable support of up to 4 GB of 667 MHz DDR2 memory and native support for SATA (3 Gbps) storage devices. The VIA VB7002 provides support for high fidelity audio with its included VIA VT1708A High Definition Audio codec. High-bandwidth connectivity is supported with the included two USB 2.0 ports, Fast Ethernet port, and COM port on the back panel.

The VIA VB7002 can be implemented in a wide range of embedded and media applications with its host of included onboard connectors. It supports for up to two SATA (3 Gbps) devices in RAID and non-RAID configurations. The VIA VB7002 can be further enhanced with an external PCI Express graphics card via its 16-lane PCI Express slot and a host of other expandability options.

The VIA VB7002 is compatible with a full range of Mini-ITX chassis as well as FlexATX and MicroATX enclosures and power supplies. The VIA VB7002 is fully compatible with Microsoft[®] and Linux operating systems and is available in a variety of configurations.

VIA VB7002 Layout

VIA VB7002 Mainboard
(Dimension 17 cm x 17 cm)



VIA VB7002 Specifications

Model Name	VB7002-15
Processor	VIA C7 [®] -D 1.5 GHz NanoBGA2 processor with FSB 400 MHz
Chipset	<ul style="list-style-type: none"> - VIA CN896 North Bridge - VIA VT8237S South Bridge
System Memory	<ul style="list-style-type: none"> - 2 x DDR2 400 / 533 / 667 DIMM slot - Up to 4 GB memory size
VGA	- VIA C-9 HC Integrated Graphics with 2D/3D and video accelerators
Expansion Slots	<ul style="list-style-type: none"> - 1 x 16-Lane PCI Express slot (Gen 1) - 1 x 32-bit Mini PCI slot
Onboard IDE	- 1 x UltraDMA 133/100/66 connector
Onboard LAN	- 1 x VIA VT6103L 10/100 Mbps Fast Ethernet Controller
Onboard Audio	- VIA VT1708A High Definition Audio Codec
Onboard I/O Connectors	<ul style="list-style-type: none"> - 2 x SATA (3 Gbps) connectors - 2 x Fan pin connectors: CPU / Sys FAN - 3 x USB pin connectors for six additional USB 2.0 ports (one supports VIA WLAN module) - 1 x Serial port pin connector for COM2 (5V / 12V selectable) - 1 x LPC connector - 1 x CIR pin connector (switchable with KB / MS) - 1 x FIR pin connector (IRDA 1.0) - 1 x SMBus connector - 1 x S/PDIF out pin connector - 1 x Front Panel Audio pin connector (MIC and Line-out) - 1 x Front Panel connector - 1 x ATX Power connector
Back Panel I/O	<ul style="list-style-type: none"> - 1 x PS2 mouse port - 1 x PS2 keyboard port - 1 x Serial port - 1 x VGA port - 1 x RJ45 LAN ports - 2 x USB 2.0 ports - 3 x Audio jacks: MIC-In, Line-In, and Line-Out (with Horizontal and Smart 5.1 support)
BIOS	Award BIOS, SPI 4/8 Mbit flash memory
Operating System	Windows XP, Linux, Win CE, XPe
System Monitoring & Management	<ul style="list-style-type: none"> - CPU voltage monitoring - Wake-on-LAN/Keyboard, RTC Timer power-on, Watch Dog Timer - AC Power failure recovery - Fan monitoring
Operating Temperature	0°C ~ 50°C
Operating Humidity	0% ~ 95% (relative humidity; non-condensing)
Form Factor	<ul style="list-style-type: none"> - Mini-ITX (6-layer) - 17 cm x 17 cm

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

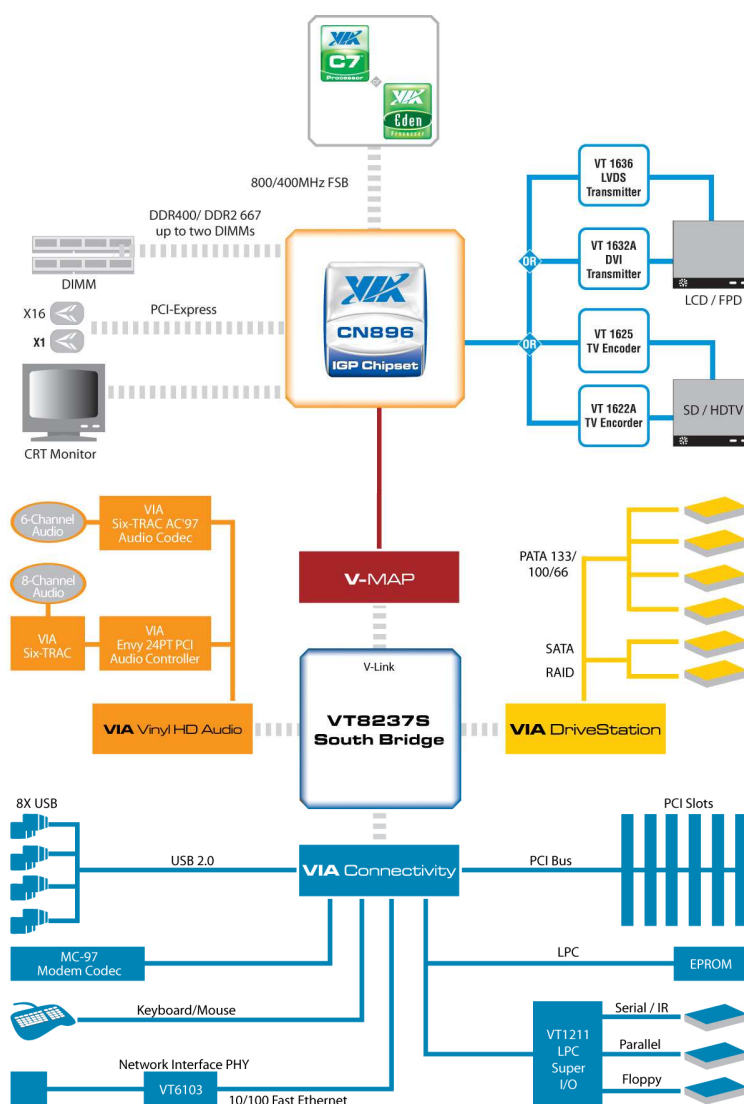
VIA VB7002 Processor SKUs

The VIA VB7002 is available in two speed grades as follows:

- 1.5 GHz VIA C7[®]-D NanoBGA2 Processor

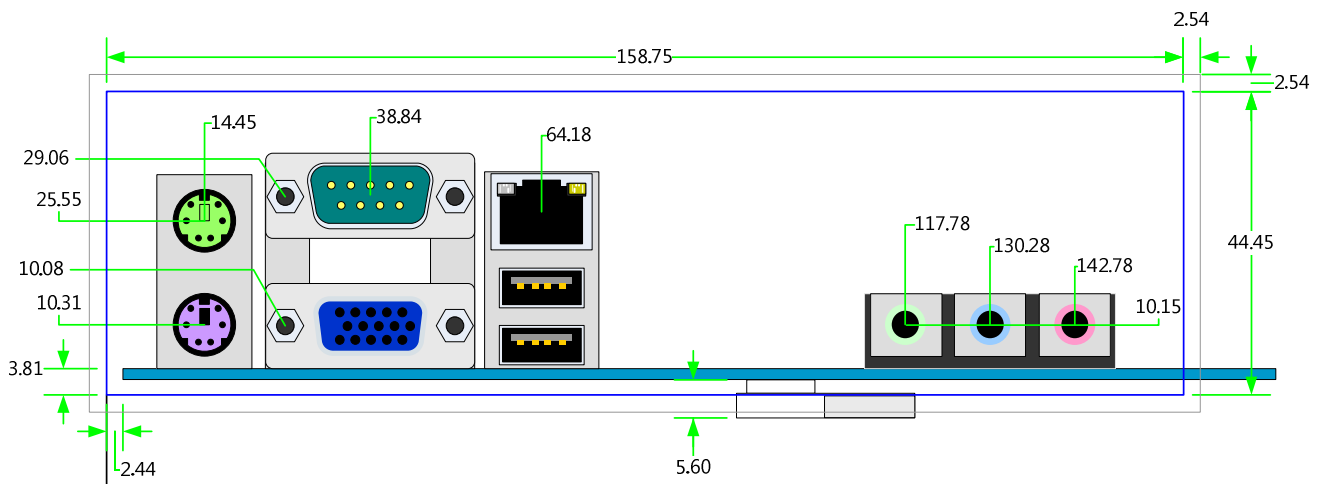
VIA CN896 Chipset Overview

The VIA CN896 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 CN896 North Bridge](#) features the VIA C-9 HC IGP with 2D/3D graphics and video acceleration, DDR2 667/533/400 MHz support, motion compensation and dual display support to ensure a rich overall entertainment experience. Outstanding connectivity features include USB 2.0, 10/100 and Gigabit LAN, SATA (3 Gbps), and ATA/133.

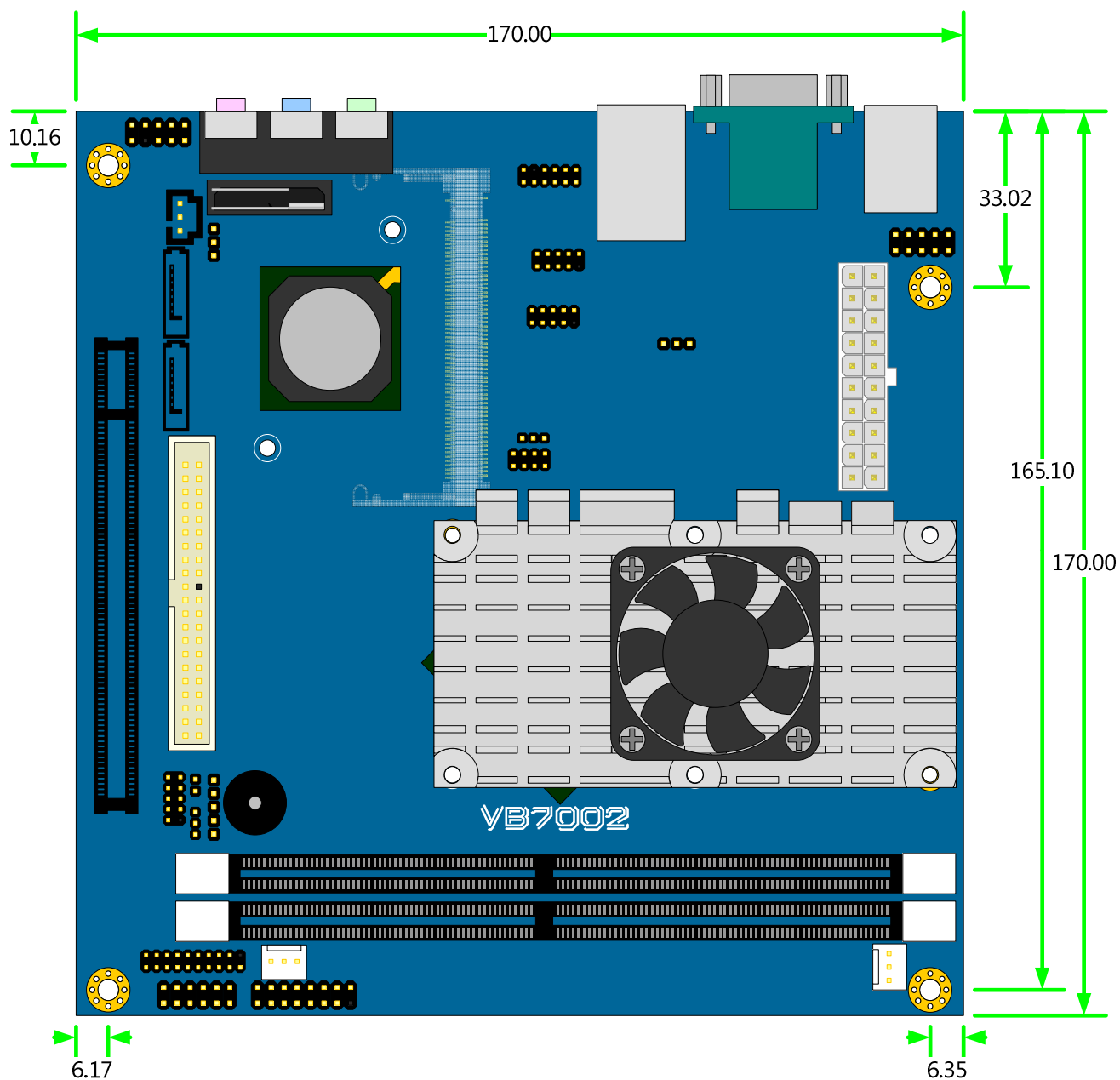


VIA VB7002 I/O Back Panel

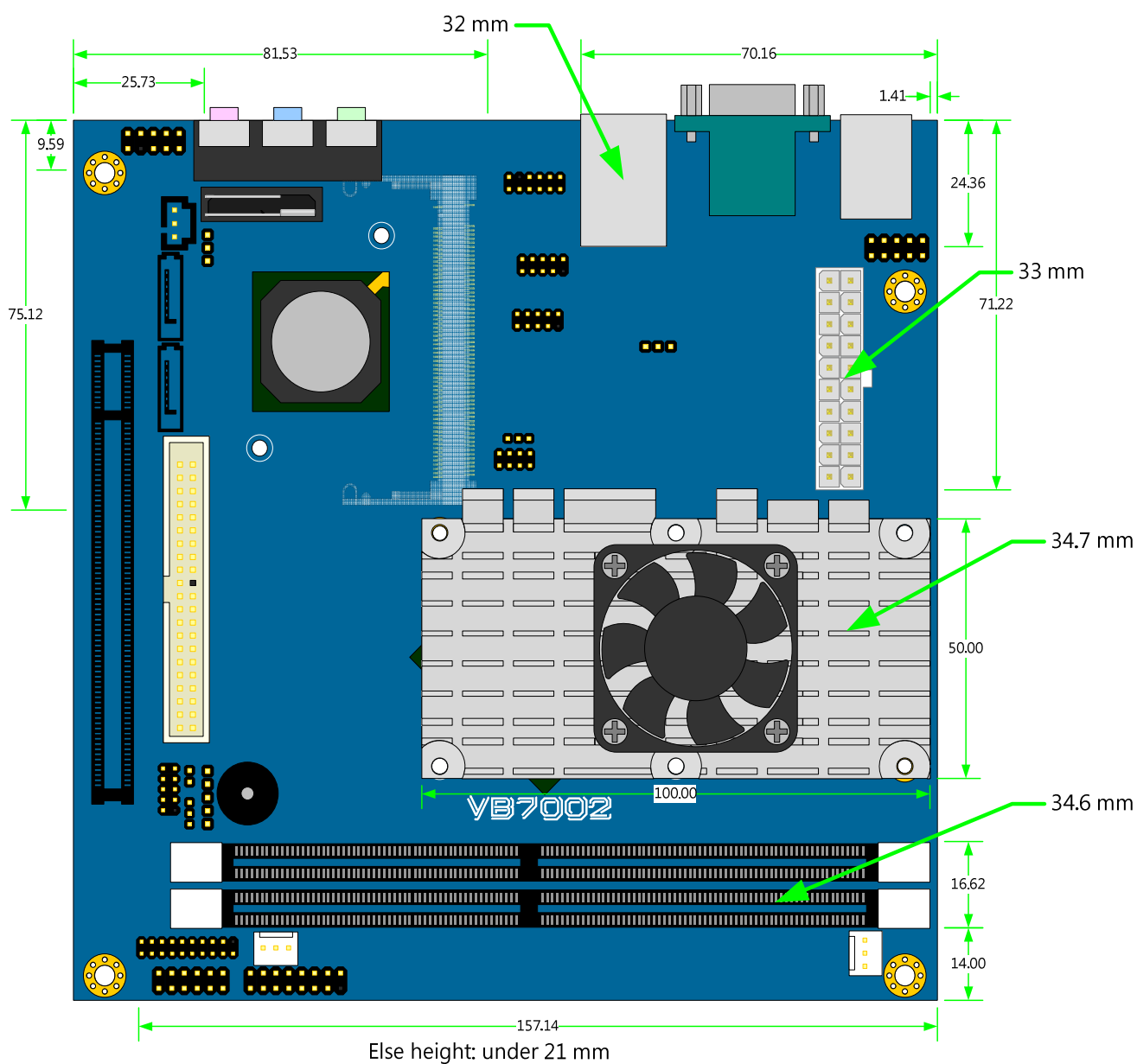
The VIA VB7002 mainboard comes in the ultra compact 17 cm x 17 cm Mini-ITX form factor. Its integrated design supports most of the standard legacy x86 connectivity options including PS/2 mouse port, PS/2 keyboard port, COM port, VGA port, RJ45 LAN ports, USB 2.0 ports, and audio jacks.



VIA VB7002 Dimensions



VIA VB7002 Height Distribution



Power Consumption

Power consumption tests were performed on the VIA VB7002. The following tables are a comprehensive breakdown of the voltage, amp and wattage values while running common system applications.

VIA VB7002-15

A. Playing DVDs with PowerDVD 5.0

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.327	0.984	3.274
Main Board +5V	5.267	2.424	12.767
Main Board 5VSB	5.030	0.094	0.473
Main Board +12V	12.732	0.147	1.872
Total Power Consumption			18.386

B. Playing MP3s with Windows Media Player

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.328	0.978	3.255
Main Board +5V	5.252	2.733	14.354
Main Board 5VSB	5.021	0.195	0.979
Main Board +12V	12.781	0.142	1.815
Total Power Consumption			20.403

C. Running Network Applications - Copying Files

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.330	0.983	3.273
Main Board +5V	5.259	2.380	12.516
Main Board 5VSB	5.024	0.179	0.899
Main Board +12V	12.769	0.146	1.864
Total Power Consumption			18.552

D. Idle State

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.349	0.980	3.282
Main Board +5V	5.299	1.810	9.591
Main Board 5VSB	5.053	0.095	0.480
Main Board +12V	12.775	0.153	1.955
Total Power Consumption			15.308

E. Running C.C. Winstone 2004

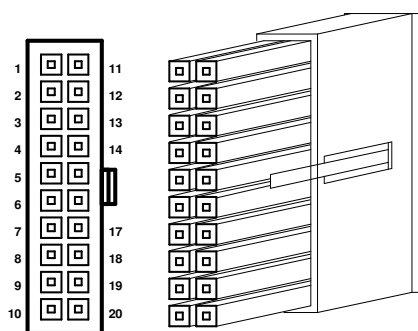
	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.319	0.961	3.190
Main Board +5V	5.234	3.078	16.110
Main Board 5VSB	5.011	0.194	0.972
Main Board +12V	12.778	0.139	1.776
		Total Power Consumption	22.048

F. S3 Mode

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	0.001	0.000	0.000
Main Board +5V	0.050	0.000	0.000
Main Board 5VSB	5.133	0.220	1.129
Main Board +12V	0.018	0.000	0.000
		Total Power Consumption	1.129

Power Specifications

The VIA VB7002 mainboard utilizes an industry standard 20-pin ATX power connector for connecting to the power supply. Due to its ultra low power requirements, a 90 – 120 Watt ATX power supply is ample for even the heaviest of multimedia system applications.



Pin	Signal	Pin	Signal
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	Gnd	13	Gnd
4	+5V	14	PS_ON
5	Gnd	15	Gnd
6	+5V	16	Gnd
7	Gnd	17	Gnd
8	PW_OK	18	-5V
9	+5V_SB	19	+5V
10	+12V	20	+5V

VIA VB7002 Microsoft and Linux Driver Support

MICROSOFT DRIVER SUPPORT

The VIA VB7002 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 VB7002 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 VB7002 Mini-ITX mainboard contact your sales representative or visit our website at www.viaembedded.com

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