Operating Guide

VB6002-Series Mini-ITX Mainboard

November 16, 2006 Version 1.01

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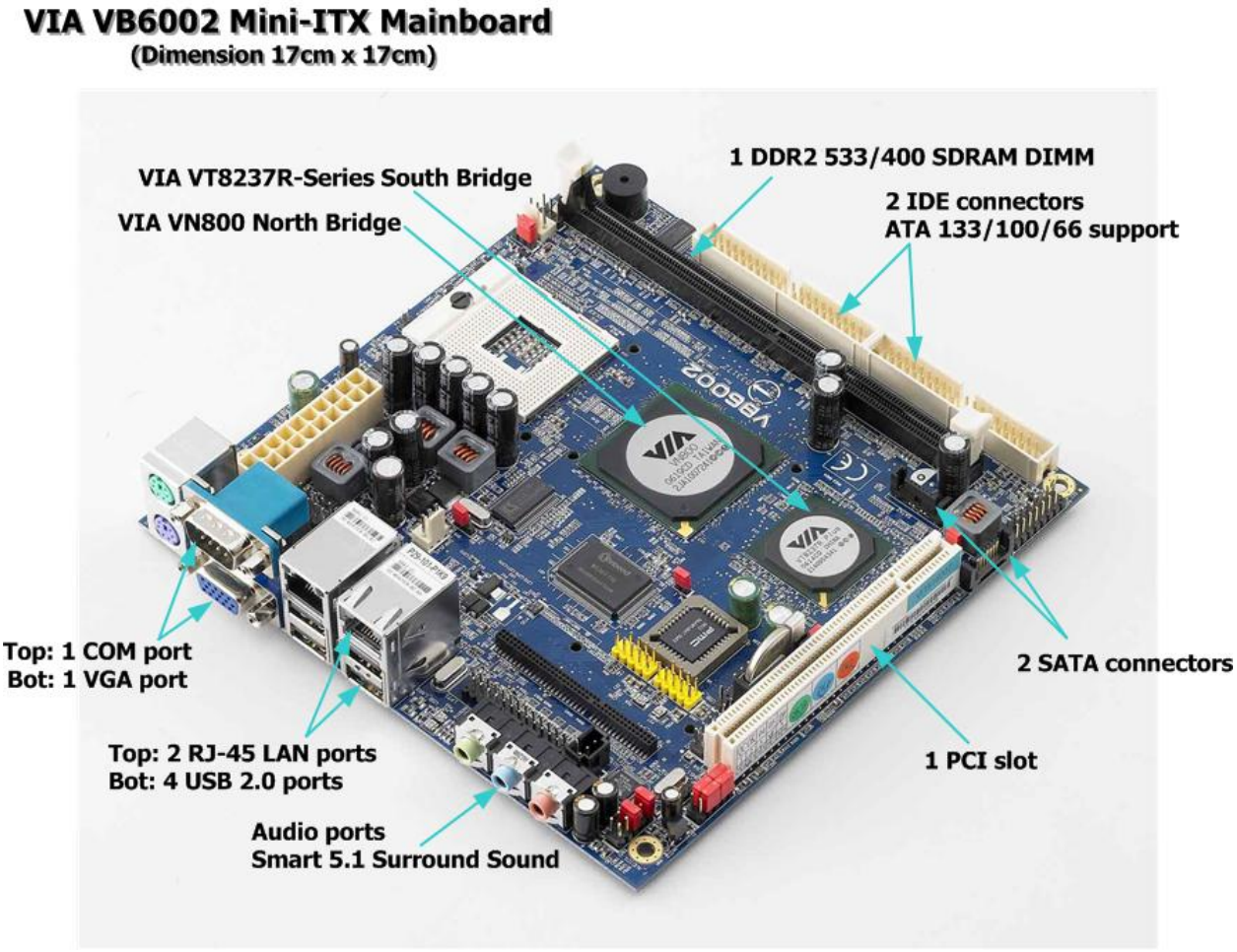
VIA VB6002-Series Overview

The VIA VB6002-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 VN800 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 speeds of ATA-133 and further enhanced by support of 6-Channel AC'97 codec for Smart 5.1 surround sound and SPDIF, the VIA VB6002-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 VB6002-Series also has one PCI slot for expandability options. The VIA VB6002-Series is compatible with a full range of Mini-ITX chassis as well as FlexATX and MicroATX enclosures and power supplies.

The VIA VB6002-Series is fully compatible with Microsoft® and Linux operating systems and is available in a variety of configurations, including the Intel® Pentium® M or Celeron® M Socket 479 processors for x86 processor platforms.

VIA VB6002-Series Layout



VIA VB6002-Series Specifications

Model Name	VB6002
Processor	Intel Pentium-M/Celeron-M Socket 479 Processor
Chipset	- VIA VN800 North Bridge - VIA VT8237R-Series South Bridge
System Memory	- 1 DDR2 533/400 DIMM slot - Up to 1GB memory size
VGA	- Integrated VIA UniChrome™ Pro AGP graphics with MPEG-2 acceleration
Expansion Slots	- 1 PCI
Onboard IDE	- 2 UltraDMA 133/100/66 Connectors
Onboard LAN	- VIA VT6103L 10/100 Base-TX Ethernet PHY - VIA VT6107 10/100 Mbps Fast Ethernet (default) or VT6122 Gigabit Ethernet Controller
Onboard Audio	- VIA VT1618 8-channel AC'97 Codec
Onboard I/O Connectors	- 1 ATX Power Connector - 1 Buzzer - 1 CIR pin header (switchable for KB/MS) - 1 Digital I/O pin header - 2 Fan connectors: CPU/Sys FAN - 1 Front-panel audio pin header (Mic-in and Line-out) - 1 Front-Panel pin header - 1 FS1 pin header for CPU front side bus speed selection - 1 J2 pin header for VCCA selection - 1 LPC pin header - 1 LPT pin header - 1 LVDS/TTL/DVI module connector (an add-on card is required) - 1 P4_1 pin header and 1 P4_2 pin header for CPU type selection - 1 S_LED1 pin header for SATA LED/C4 function selection - 1 S/PDIF connector: (S/PDIF-out) - 2 S-ATA Connectors - 1 Serial port pin header for COM 2 (5V/12V selectable) - 1 SIR pin header (IRDA 1.0) - 1 SM Bus pin header - 2 USB pin headers for 4 additional USB 2.0 ports
Back Panel I/O	- 3 Audio jacks: line-out, line-in and mic-in (Horizontal, Smart 5.1 Support) - 1 PS2 Keyboard port - 1 PS2 Mouse port - 2 RJ-45 LAN ports - 1 Serial port - 4 USB 2.0 ports - 1 VGA port
BIOS	Award BIOS, LPC 4/8Mbit flash memory
Operating System	Windows 2000 / XP, Linux, Win CE, XPe
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°C ~ 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.

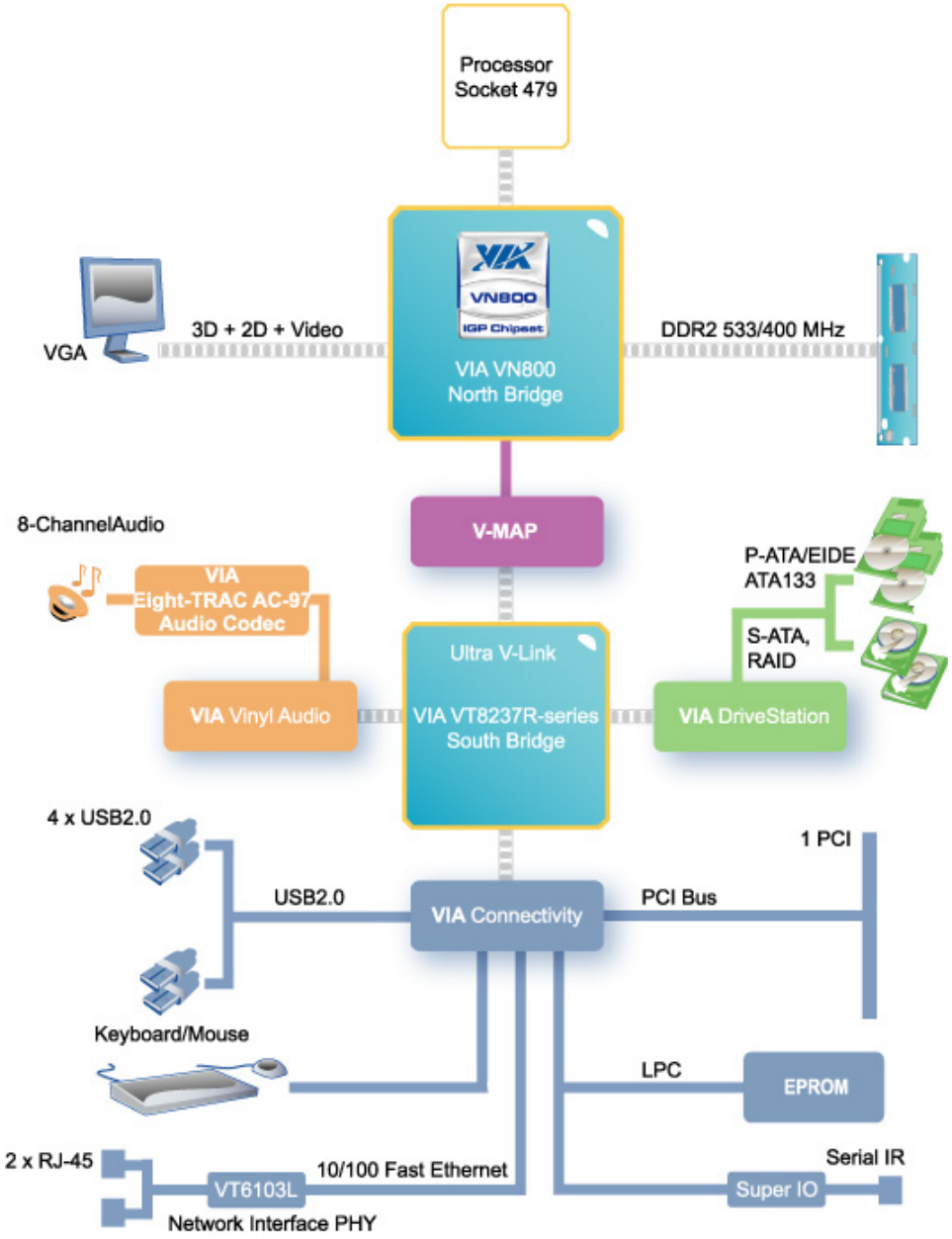
VIA VB6002 Processor SKUs

The VIA VB6002-Series is available in flexible speed grades and utilizes the most efficient Intel Pentium-M / Celeron-M processor. The verified CPU kinds are listed as follows:

- Intel® Pentium® M Processor with 2-MB L2 Cache and 533-MHz Front Side Bus
  - 780 (clock speed 2.26GHz)
  - 760 (clock speed 2.0GHz)
  - 750 (clock speed 1.86GHz)
  - 740 (clock speed 1.73GHz)
  - 730 (clock speed 1.6GHz)
- Intel® Celeron® M Processor with 1-MB L2 Cache and 400-MHz Front Side Bus
  - 380 (clock speed 1.6GHz)
  - 370 (clock speed 1.5GHz)
  - 350 (clock speed 1.3GHz)

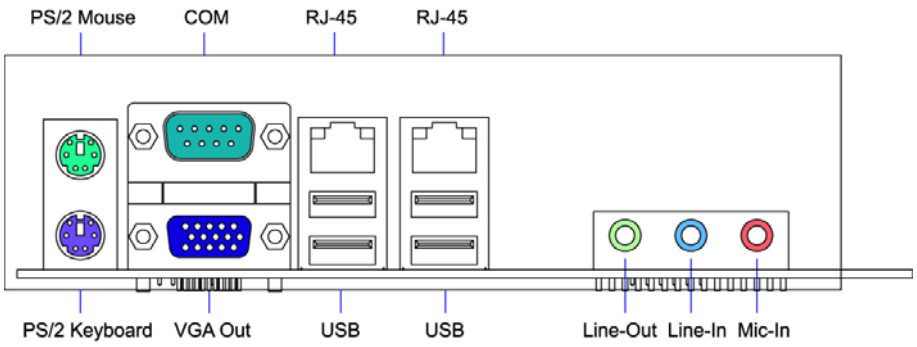
VIA VN800 Chipset Overview

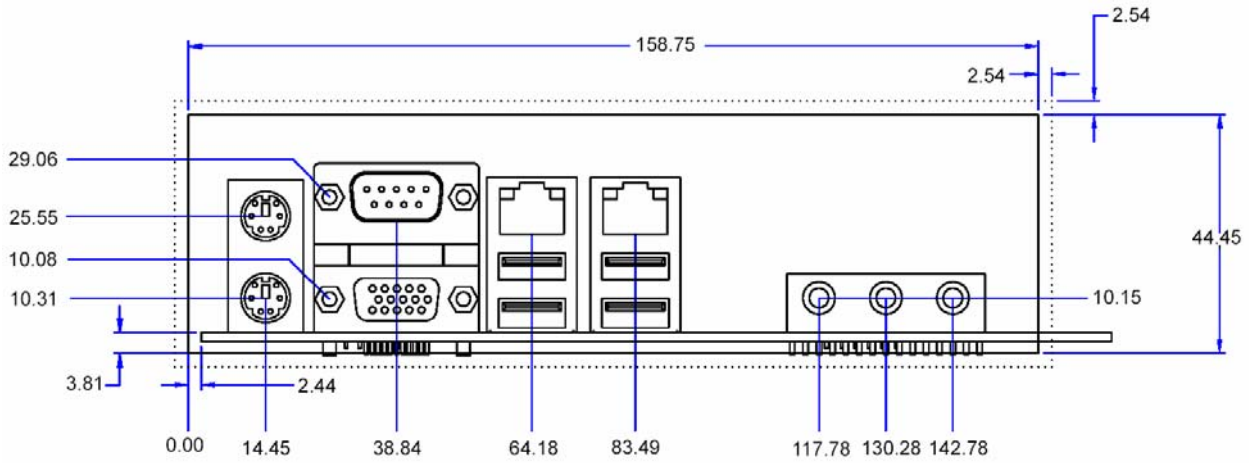
The VIA VN800 Chipset is designed to enable high quality digital video streaming and DVD playback in a new generation of fanless, small form factor PCs and IA devices. The VN800 features the embedded VIA UniChrome™ Pro 2D/3D MPEG-2 acceleration, DDR2 533MHz support, motion compensation and duo-view support to ensure a rich overall entertainment experience. Outstanding connectivity features include USB 2.0, 10/100 LAN and ATA/133.



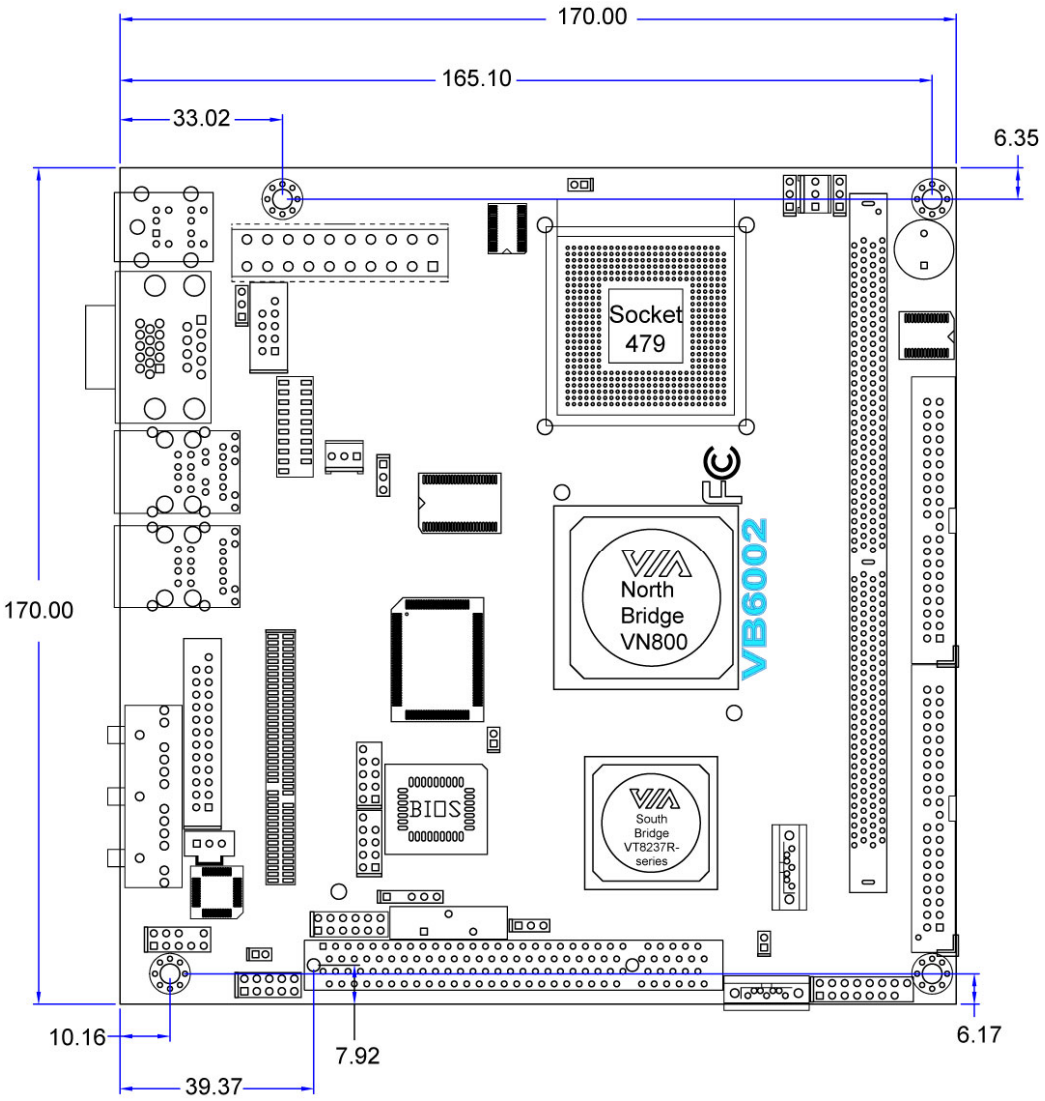
VIA VB6002-Series I/O Back Panel Layout

The VB6002'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.

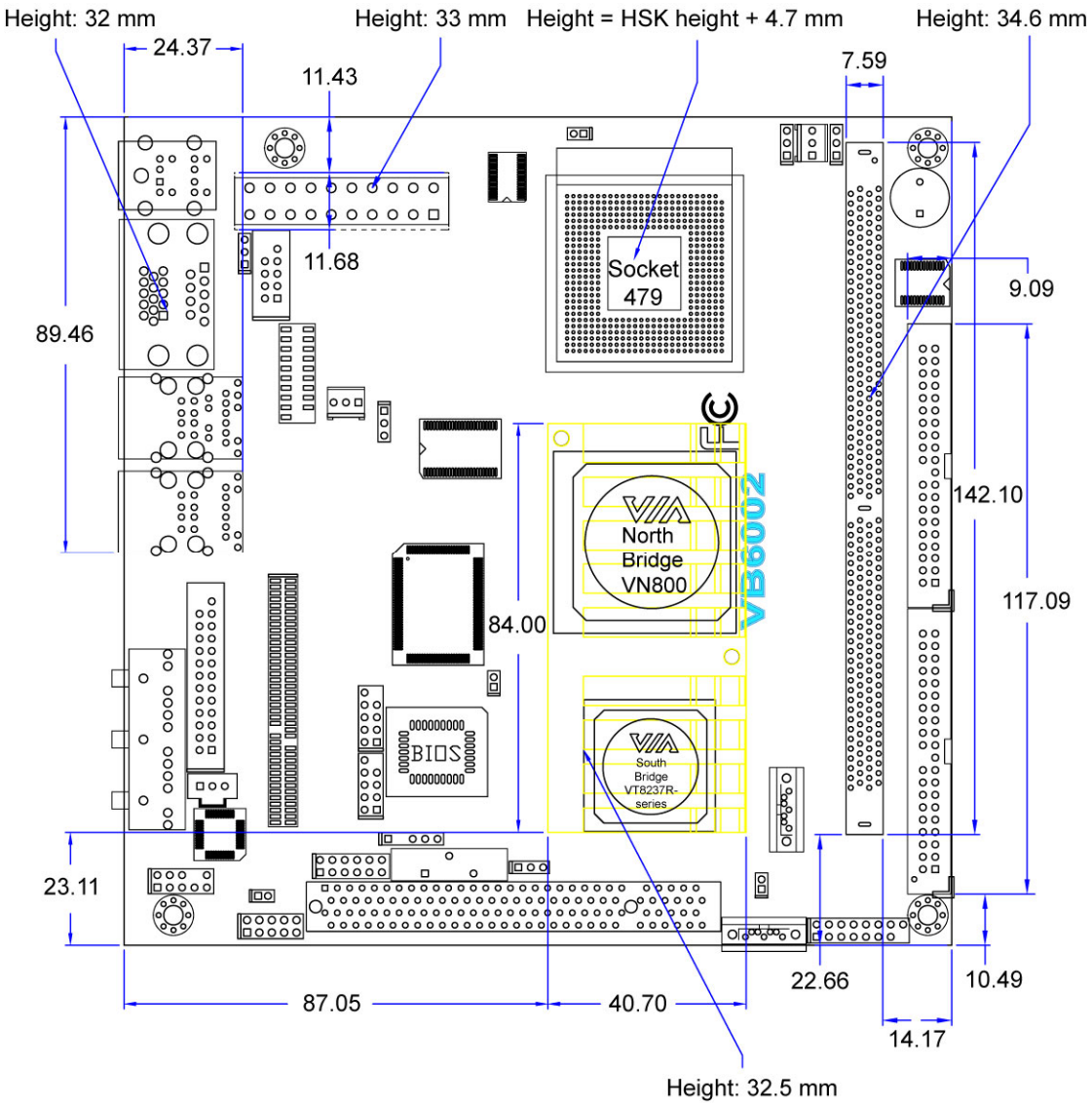




VIA VB6002-Series Layout Diagram & Mounting Holes



VIA VB6002-Series Layout Diagram & Height Distribution



Power Consumption

Power consumption tests were carried out comparing the VIA VB6002 running with Intel Pentium-M 2.26GHz and Celeron-M 1.5GHz processors. The following tables are a comprehensive breakdown of the VB6002 platform's voltage, amp and wattage values while running common system applications.

VIA VB6002 1.5 GHz

A. Playing DVD – Power DVD 5.0

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.341	1.270	4.243
Main Board +5V	4.931	2.512	12.387
Main Board 5VSB	5.052	0.171	0.864
Main Board +12V	12.070	0.197	2.378
Main Board Power Consumption			19.871

B. Playing MP3 – Media Player

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.347	1.298	4.344
Main Board +5V	4.915	2.951	14.504
Main Board 5VSB	5.058	0.173	0.875
Main Board +12V	12.118	0.196	2.375
Main Board Power Consumption			22.099

C. Running Network Application – Files Copy

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.357	1.223	4.106
Main Board +5V	4.953	2.145	10.624
Main Board 5VSB	5.068	0.170	0.862
Main Board +12V	12.116	0.196	2.375
Main Board Power Consumption			17.966

D. Idle

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.364	1.115	3.751
Main Board +5V	4.964	2.047	10.161
Main Board 5VSB	5.073	0.171	0.867
Main Board +12V	12.117	0.197	2.387
Main Board Power Consumption			17.167

E. Run C.C. Winstone 2004

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.341	1.237	4.133
Main Board +5V	4.907	2.996	14.701
Main Board 5VSB	5.052	0.169	0.854
Main Board +12V	12.100	0.193	2.335
Main Board Power Consumption			22.023

F. 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	5.136	0.178	0.914
Main Board +12V	0.000	0.000	0.000
Main Board Power Consumption			0.914

VIA VB6002 2.26 GHz

A. Playing DVD – Power DVD 5.0

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.338	1.246	4.159
Main Board +5V	4.899	3.253	15.936
Main Board 5VSB	5.048	0.174	0.878
Main Board +12V	12.084	0.197	2.381
Main Board Power Consumption			23.354

B. Playing MP3 – Media Player

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.341	1.274	4.256
Main Board +5V	4.872	3.636	17.715
Main Board 5VSB	5.052	0.185	0.935
Main Board +12V	12.134	0.199	2.415
Main Board Power Consumption			25.320

C. Running Network Application – Files Copy

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.352	1.208	4.049
Main Board +5V	4.921	2.880	14.172
Main Board 5VSB	5.063	0.173	0.876
Main Board +12V	12.131	0.196	2.378
Main Board Power Consumption			21.475

D. Idle

	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.359	1.231	4.135
Main Board +5V	4.929	2.831	13.954
Main Board 5VSB	5.070	0.173	0.877
Main Board +12V	12.127	0.199	2.413
Main Board Power Consumption			21.379

E. Run C.C. Winstone 2004

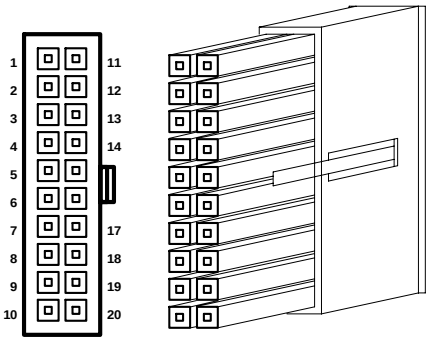
	Measured Voltage	Measured Amp.	Watts
Main Board +3.3V	3.336	1.190	3.970
Main Board +5V	4.866	3.859	18.778
Main Board 5VSB	5.043	0.196	0.988
Main Board +12V	12.114	0.196	2.374
Main Board Power Consumption			26.111

F. 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	5.138	0.181	0.930
Main Board +12V	0.000	0.000	0.000
Main Board Power Consumption			0.930

Power Specifications

The VB6002 utilizes an industry standard 20-pin ATX main connector to the power supply. Due to the VB6002 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 VB6002-Series Microsoft and Linux Driver Support

Microsoft Driver Support

VIA VB6002 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 VB6002 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 VB6002-Series Mini ITX Mainboard contact your sales representative or visit our website at **www.viaembedded.com**

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