



Operating Guide

VB8003 Mainboard

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VIA VB8003 Overview

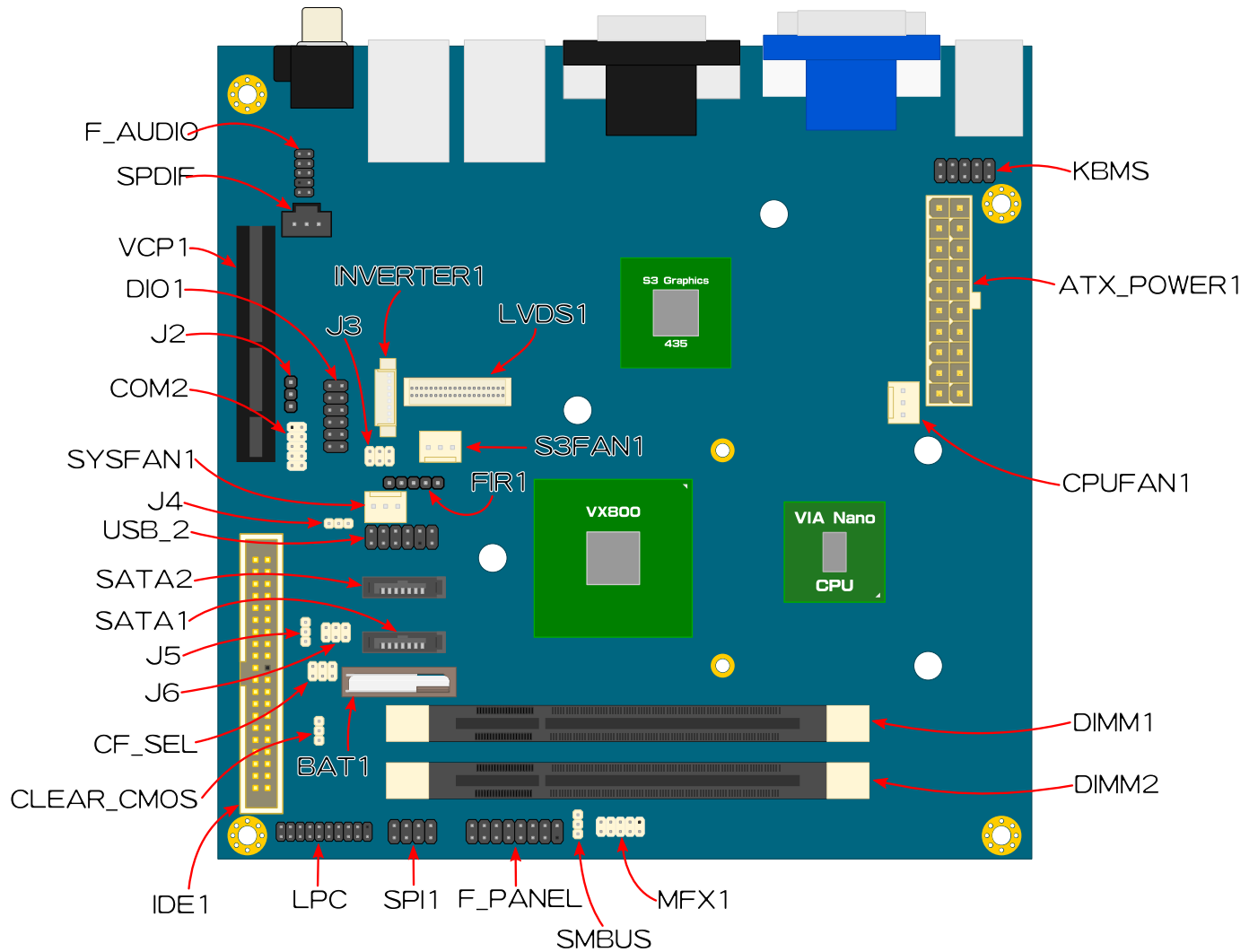
The VIA VB8003 mainboard is an ultra compact native x86 platform optimized for today's demanding embedded and productivity applications. The mainboard is based on the VIA VX800 advanced all-in-one system processor featuring an embedded hardware MPEG-2, MPEG-4 and WMV9 video decoding accelerator. Its integrated VIA Chrome9™ HC 2D/3D graphics provide rich digital media performance.

The VB8003 also supports up to 4 GB of DDR2 667MHz SDRAM through two SODIMM slots, high data transfer speeds through ATA-133, and an 8-Channel High Definition Audio Codec that delivers Smart 7.1 surround sound. The VIA VB8003 delivers the increased performance levels required by today's embedded digital media applications.

The latest in high-bandwidth connectivity features four USB 2.0 ports (and the ability to support up to two more USB ports using the available onboard pin headers), and two Gigabit Ethernet ports for extended broadband connectivity. The VIA VB8003 is compatible with a full range of Mini-ITX chassis as well as FlexATX and MicroATX enclosures and power supplies.

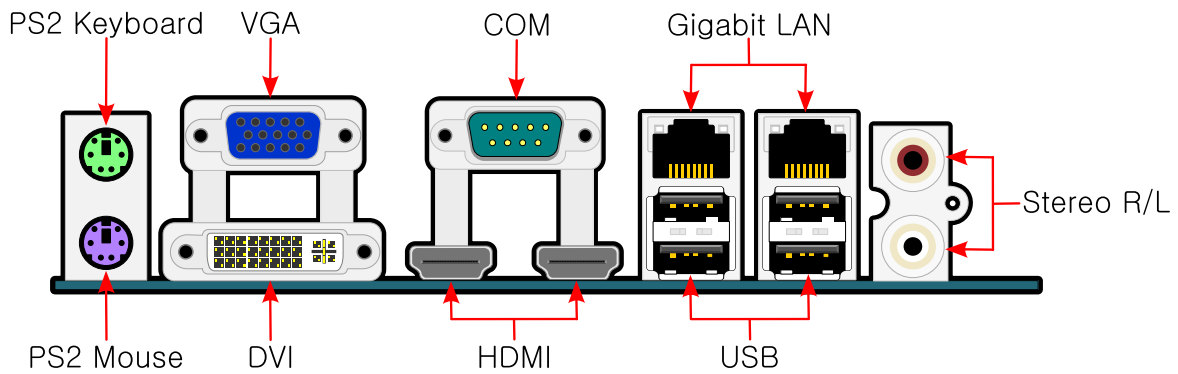
The VIA VB8003 is fully compatible with Microsoft® and Linux operating systems and is available in a variety of configurations.

VIA VB8003 Layout (top view)



VIA VB8003 Layout (side view)

The VB8003's ultra compact 17cm x 17cm, integrated design supports connectivity options including one DVI port, two Gigabit Ethernet ports, four USB 2.0 ports, one VGA port, one COM port, two PS/2 keyboard and mouse ports, two HDMI ports, and stereo audio outputs.



VIA VB8003 Specifications¹

Model Name	VB8003-16
Processor	VIA Nano™ 1.6GHz NanoBGA2 processor
Chipset	- VIA VX800 advanced all-in-one system processor
System Memory	- 2 DDR2 533/667 SO-DIMM sockets - Up to 4GB memory size
VGA	- S3 Chrome 435 ULP through PCIe x4 with GDDR3 256MB 32x32x2 - VIA Chrome9 HC integrated graphics with 3D/2D and unified video decoding accelerator - Supports up to 4 displays
Storage expansion	- 1 PATA (40-pin with power) - supports HDD, SSD, and DOM - 1 CF type II - 2 SATA (support power for DOM)
Onboard LAN	- 2 VIA VT6130 Gigabit Ethernet Controllers
Onboard Audio	- VIA VT1708B High Definition Audio Codec
Onboard Super I/O	- VIA 1211 LPC Super I/O
Onboard I/O Connectors	- 1 USB pin connector for 2 additional USB 2.0 ports - supports VIA VT6656 WLAN module - 1 Serial port pin header for COM2 (5V/12V) - 2 Serial ports reserved through video capture slot (5V/12V) - add-on card required - 1 PS2 mouse/keyboard header - 1 DIO pin header - 4 GPI - 4 GPO - 1 LPC header - 1 FIR pin connector (IRDA 1.0) - 1 SMBus connector - 1 Front-panel pin header - 1 Front audio pin header (MIC-in and Line-out) - 1 SPDIF pin connector - 1 Digital video input for CCIR-656/601/transport stream video - 1 MFX pin connector - 1 Backlight control connector (controls inverter power and panel brightness) - 1 24-bit 2-channel LVDS connector - 3 Fan pin connectors for CPU and System fans - 1 System temperature connector - 1 ATX power connector
Back Panel I/O	- 1 PS2 mouse port - 1 PS2 keyboard port - 2 HDMI ports - 1 DVI-I connector - 2 RJ45 ports - 1 serial port - 1 VGA port - 4 USB 2.0 ports - 2 RCA jacks
BIOS	- Award BIOS - SPI 4/8Mbit flash memory
Operating System	Windows XP, Linux, XPe

¹ Specifications subject to change without notice.

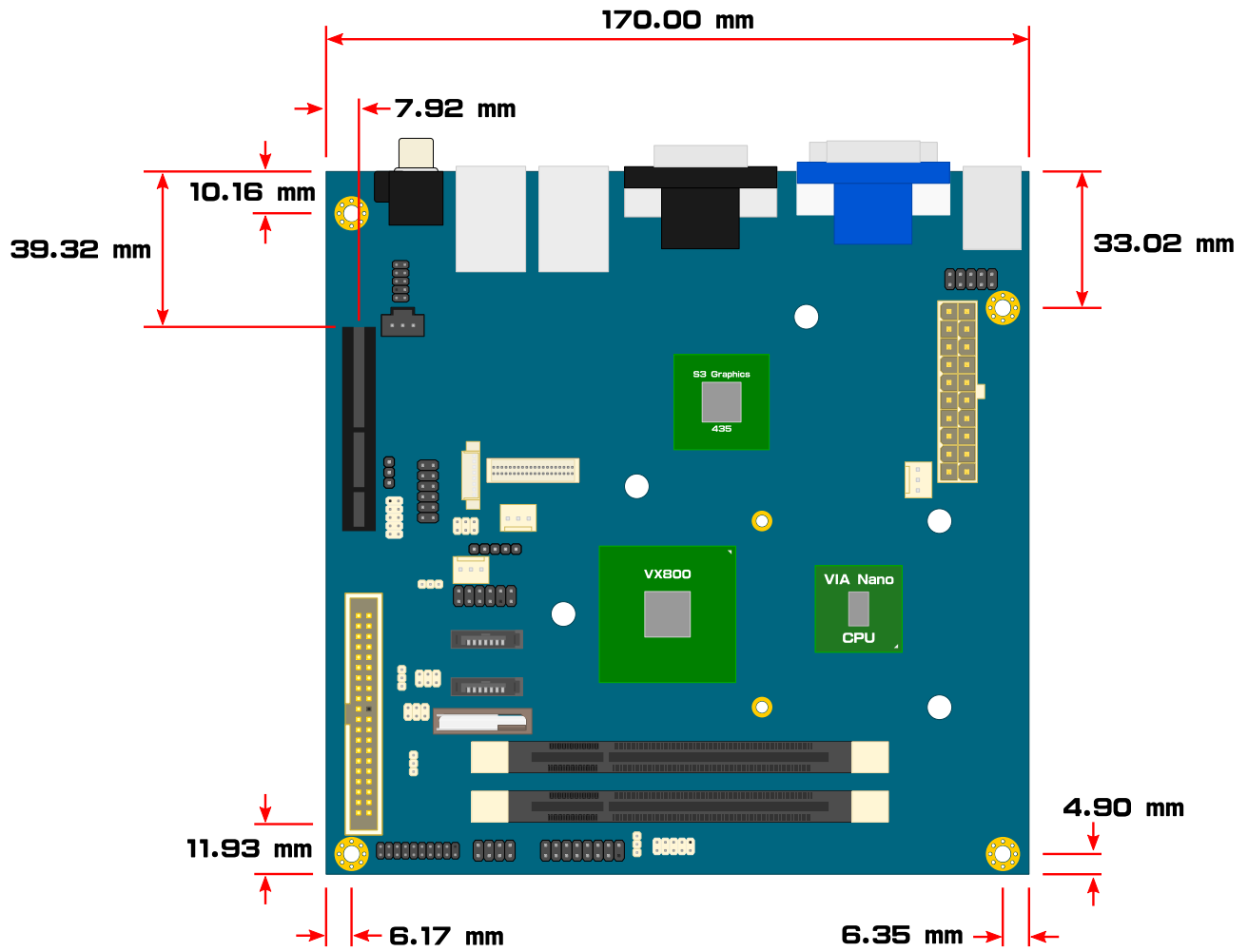
System Monitoring & Management	<ul style="list-style-type: none"> - Wake-on-LAN, Keyboard-Power-on, Timer-Power-on - CPU/system voltage monitoring - System temperature monitoring - Fan speed monitoring - Watchdog timer - AC power failure recovery
Operating Temperature	0 ~ 60 °C
Operating Humidity	0% ~ 95% (relative humidity; non-condensing)
Form Factor	<ul style="list-style-type: none"> - Mini-ITX - 17 cm x 17 cm

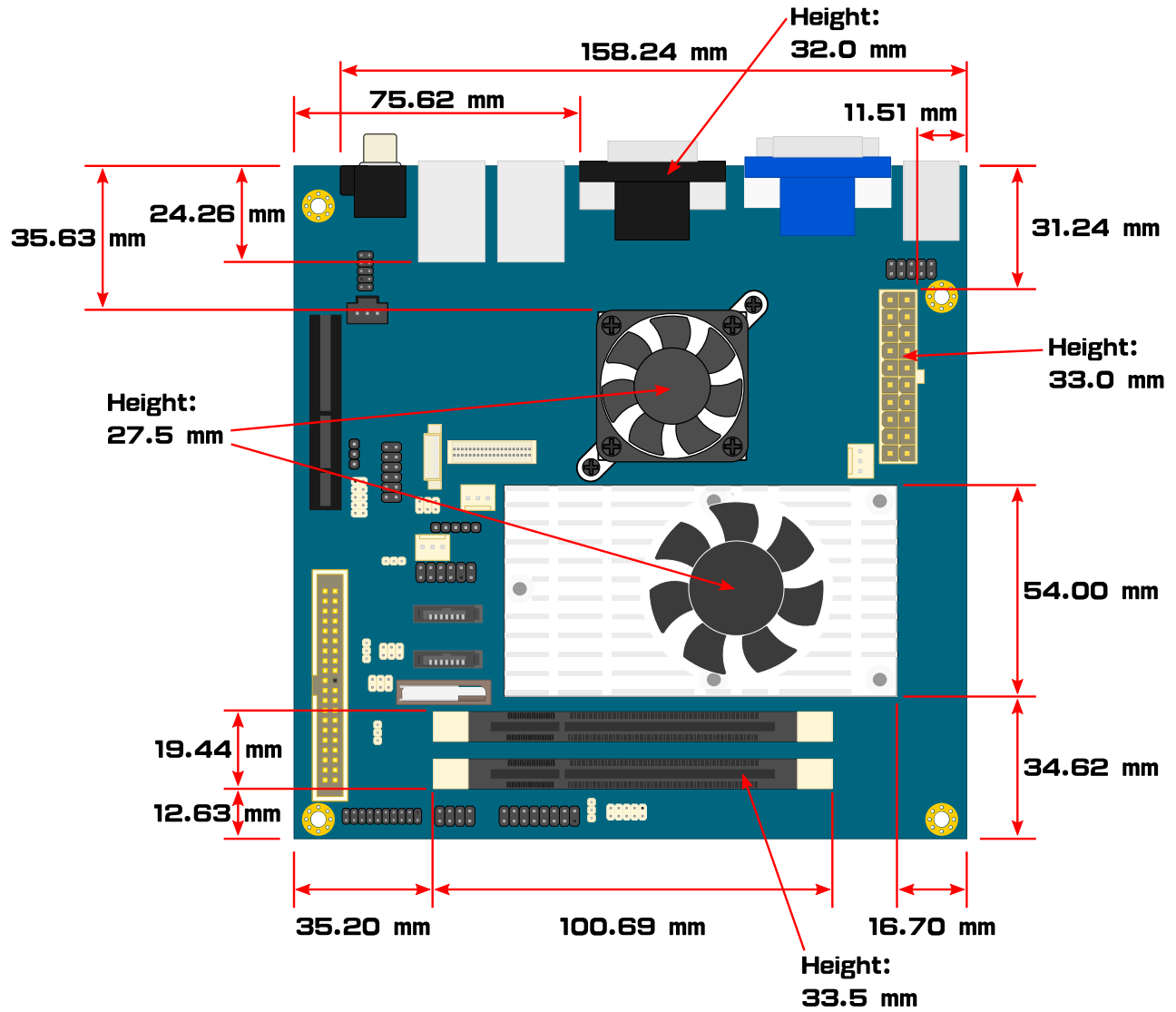
VIA VB8003 Processor SKU

The VIA VB8003 is available in the following speed grade:

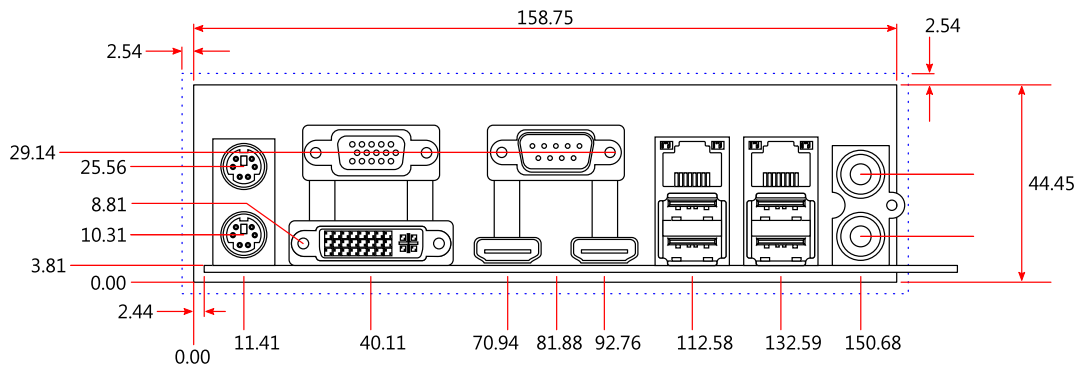
- 1.6 GHz VIA Nano™ NanoBGA2 Processor

VIA VB8003 Dimensions and Height Distribution





**All other height on the top side is 21 mm or below.
The maximum height on the bottom side is 5.8 mm.**



Power Consumption

Power consumption tests were performed four different configurations. The following tables are a comprehensive breakdown of the mainboard's voltage, amp and wattage values while running common system applications.

VB8003 WITH NANO™ 1.6 GHZ

A. Running 3DMark2005 (S3 435 DVI+HDMI)

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.203	1.196	3.831
Main Board +5V	5.212	4.333	22.584
Main Board 5VSB	5.002	0.094	0.470
Main Board +12V	12.650	1.167	14.763
		Total Power Consumption	41.648

B. Running Windows Media Player and PowerDVD 8.0 (VX800 VGA + HDMI)

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.224	0.767	2.473
Main Board +5V	5.175	5.059	26.180
Main Board 5VSB	4.980	0.094	0.468
Main Board +12V	12.702	0.794	10.085
		Total Power Consumption	39.206

C. Running VLC Media Player, Windows Media Player, Real Player, and PowerDVD 8.0 (S3 435 DVI + HDMI, VX800 VGA + HDMI)

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.078	1.747	5.377
Main Board +5V	5.175	4.735	24.504
Main Board 5VSB	4.963	0.093	0.462
Main Board +12V	12.689	0.766	9.720
		Total Power Consumption	40.063

D. Playing MP3 in Media Player

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.307	1.268	4.193
Main Board +5V	5.216	2.908	15.168
Main Board 5VSB	5.042	0.117	0.590
Main Board +12V	12.775	0.711	9.083
		Total Power Consumption	29.034

E. Copying files through the network (LAN1)

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.301	1.348	4.450
Main Board +5V	5.305	2.800	14.854
Main Board 5VSB	5.049	0.087	0.439
Main Board +12V	12.768	0.707	9.027
		Total Power Consumption	28.770

F. Copying files through the network (LAN2)

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.298	1.331	4.390
Main Board +5V	5.299	3.015	15.976
Main Board 5VSB	5.045	0.086	0.434
Main Board +12V	12.773	0.705	9.005
		Total Power Consumption	29.805

G. Idle

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.322	1.290	4.285
Main Board +5V	5.296	1.949	10.322
Main Board 5VSB	5.063	0.086	0.435
Main Board +12V	12.776	0.710	9.071
		Total Power Consumption	24.113

H. Running C.C. Winstone 2004

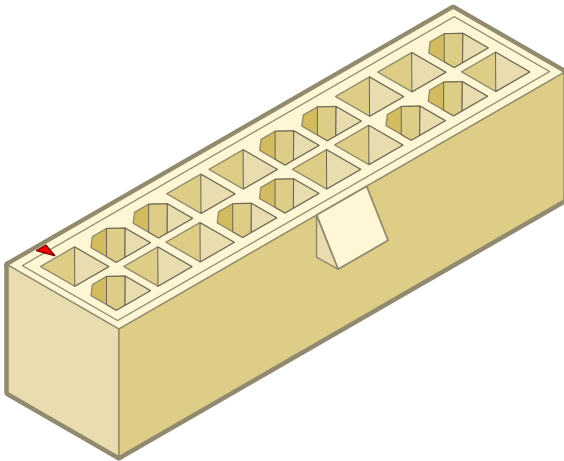
	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	3.288	1.244	4.090
Main Board +5V	5.127	4.014	20.580
Main Board 5VSB	5.028	0.092	0.463
Main Board +12V	12.768	0.713	9.104
		Total Power Consumption	34.237

I. S3 mode

	Measured Voltage	Measure Amp	Watts
Main Board +3.3V	0.000	0.000	0.000
Main Board +5V	0.028	0.000	0.000
Main Board 5VSB	5.087	0.334	1.699
Main Board +12V	0.010	0.000	0.000
		Total Power Consumption	1.699

Power Specifications

The VIA VB8003 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 VB8003 Microsoft and Linux Driver Support

MICROSOFT DRIVER SUPPORT

The VIA VB8003 mainboard is compatible with Microsoft operating systems. The latest Windows XP drivers can be downloaded from the VEPD website at www.viaembedded.com.

For embedded operating systems (Windows XP Embedded), the related drivers can be found in the VIA Embedded website at www.viaembedded.com.

LINUX DRIVER SUPPORT

The VIA VB8003 mainboard is highly compatible with many Linux distributions.

Support and drivers are provided through various methods including:

- Using drivers provided by VIA
- Using a driver built into a distribution package
- Visiting www.viaembedded.com for the latest updated drivers
- 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 to your VEPD support contact.

Contact

For more information on the VIA VB8003 mainboard contact your sales representative or visit our website at www.viaembedded.com.

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