



USER MANUAL

Version 0.1

MB-64000

Gaming board with onboard VIA NANO/Eden ULV Processor with Dual VGA, NVRAM, ccTalk and Gaming I/O



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Table of Contents

Chapter 1. General Information	3
1.1 Introduction	3
1.2 Specifications	5
1.3 Precautions	7
1.4 Board Layout	7
1.5 Board Dimensions	8
Chapter 2. Connector and Jumper Settings	9

Chapter 1. General Information

1.1 Introduction

WIN Enterprises, a leading manufacturer of x86 computing platforms, announces the MB-64000, a compact JAMMA gaming control board that is able to support a broad range of applications. MB-64000 comes equipped with a choice VIA Eden processors for entry-level to high performance gaming and vending needs. Onboard processor choices include the VIA® NANO 1.6GHz, Eden™ ULV 1.0 GHz and Eden ULV 500MHz processor. Both Eden ULV 1.0GHz and 500MHz can run fanlessly.

The MB-64000 is equipped with an authentication chip onboard. This feature enables customers to create and maintain an electronic security key for their software program. The battery-powered intrusion detection is an optional function that alerts the customer when the door lock, switch, coin box, bill counter, or program of the gaming machine is tampered with, even when the power is unplugged.

The board features an FPGA and an Application Programming Interface (API) that can be programmed to directly handle I/O functions. This enables the CPU to be offloaded of I/O functions, thereby reducing or eliminating processing interrupts and providing better system throughput (i.e., better response for the game user). The FPGA also provides other functions like intrusion detection, NVRAM, and random number generation.

Features

- Choice of onboard VIA ULV processors, 500MHz, 1.0GHz, and 1.6GHz
- UniChromePro & MPEG-2 acceleration for 2D/multimedia applications
- One DDR2 DIMM FSB 400/533MHz with support up to 2GB; NVRAM 32KB/128KB/512KB; and 256MB NANDrive optional up to 4GB
- Driver, API, and sample code for FPGA control of I/O are available
- Optional onboard authentication chip for custom individual security
- JAMMA 56-pin and Fruit (Slot) Machine 20-pin + 72-pin golden finger gaming I/O interface
- Optional battery-powered intrusion detection

Software

As a general member of Microsoft Windows Embedded Partner program, we are fully supported by Microsoft to provide the low-cost embedded OS – Windows CE to customers. WIN Enterprises can support drivers, APIs for our customers according to their applications to provide control of the gaming I/O, Ethernet, AC97 audio, RS-232 / ccTalk COM port, intrusion detection, and other features. Sample code can also be provided to assist customers with the rapid development of their software.

1.2 Specifications

■ System	
CPU	VIA Nano 1.6GHz, 800MHz FSB VIA Eden ULV 500MHz, 400MHz FSB VIA Eden ULV 1GHz, 400MHz FSB
BIOS	AMI® 4Mb Flash ROM
Chipset	North Bridge: VIA CN700; South Bridge: VIA VT8237R+
System Memory	DDR2 400/533 DIMM, up to 2GB
Watchdog Timer	Programmable watchdog timer, time-out value up to 255 sec
■ Display	
Graphic Chipset	Integrated UniChrome™ Pro graphics MPEG2 video decoding Share memory size from 8MB and up to 64MB
Video Interface	Primary – VGA; support CRT resolution in 1600 X 1200 (UXGA) Secondly – VGA Support independent dual display resolution up to 1024 X 768
■ Audio	
Audio Chipset	AC 97
Power Amplify	Onboard 6W x2 Stereo Power Amplifier
Audio Interface	2x amplified speaker out through golden fingers
■ Networking	
LAN	1x RJ45 for 10/100Base-TX Ethernet
■ Storage	
Solid State Disk	One CF type II slot Onboard 256MB NANDrive; optional expend to 4GB
Hard Disk Drive	One 44-pin PATA connector for DOM (PATA or CF jumper selectable) Two SATA connectors
■ Security	
Security	Processor built-in security engine support AES, RNG and Security Hash Authenticate chip for individual security TPM 1.2 FPGA
■ Gaming	
Boot ROM	Optional 2MB Flash ROM onboard

NVRAM	Battery backup 32KB/128KB/512KB CMOS SRAM Optional change to battery-less FRAM
Timers	4x programmable timer with timeout interrupt
Intrusion Detection	Optional module with - 6x Intrusion detection inputs - Logs date/time of last 32 events - Events include door status, system resets/brownouts
I2C	Pin header
Gaming I/O	FPGA controlled photo-coupler isolated inputs and 350mA open-collector driver outputs through - 20-pin + 72-pin fruit machine golden finger - 56-pin JAMMA standard golden finger
■ I/O Connectors	
I/O Connectors	2 x RS-232 D-SUB 9 2 x ccTalk pin header 2 x USB 2.0 4 x USB 2.0 pin header 1 x PS2 KB/MS pin header
■ Power Supply	
Power input	Through JAMMA and fruit machine golden finger
Power consumption	Max: DC+12V/3A, DC+5V/4A required only for the board; Power for Gaming I/O and peripherals excluded
■ Software	
Operating System	Microsoft Windows CE 6.0 Microsoft Windows XPe or Linux on request
API	Gaming I/O API and sample code for - Microsoft Windows CE 6.0 included - Microsoft Windows XPe or Linux on request
■ Mechanical and Environment	
Environmental	Operating Temperature: 0~60 °C Storage Temperature: -20~80 °C Humidity: 10~85% non-condensing
Approval	FCC/CE Class A RoHS, WEEE
Dimension	170 x 200mm (6.69" L x 7.87" W)
■ Optional	
Optional List	1. Intrusion detection module 2. I2C module pin header 3. 2MB bootable Flash ROM 4. Battery-less FRAM 5. Microsoft Windows XPe license with API and sample code

1.3 Precautions

Ensure that you properly ground yourself before handling the MB-64000 board or other system components. Electrostatic discharge can be easily damage the MB-64000 board.

Do not remove the anti-static packing until you are ready to install the MB-64000 board.

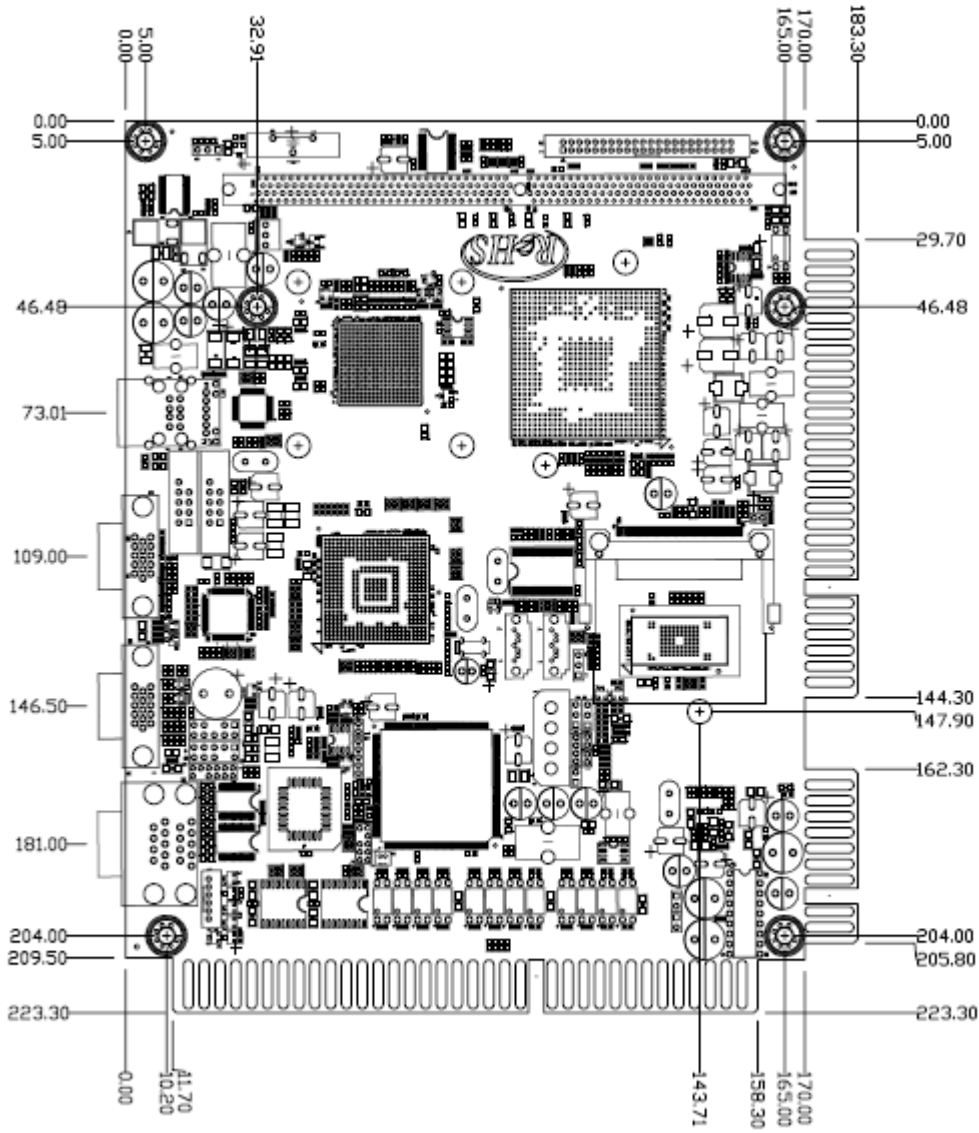
Ground yourself before removing any system component from its protective anti-static packaging. To ground yourself, grasp the expansion slot covers or other unpainted parts of the computer chassis.

Handle the MB-64000 board by its edges and avoid touching its components.

1.4 Board Layout



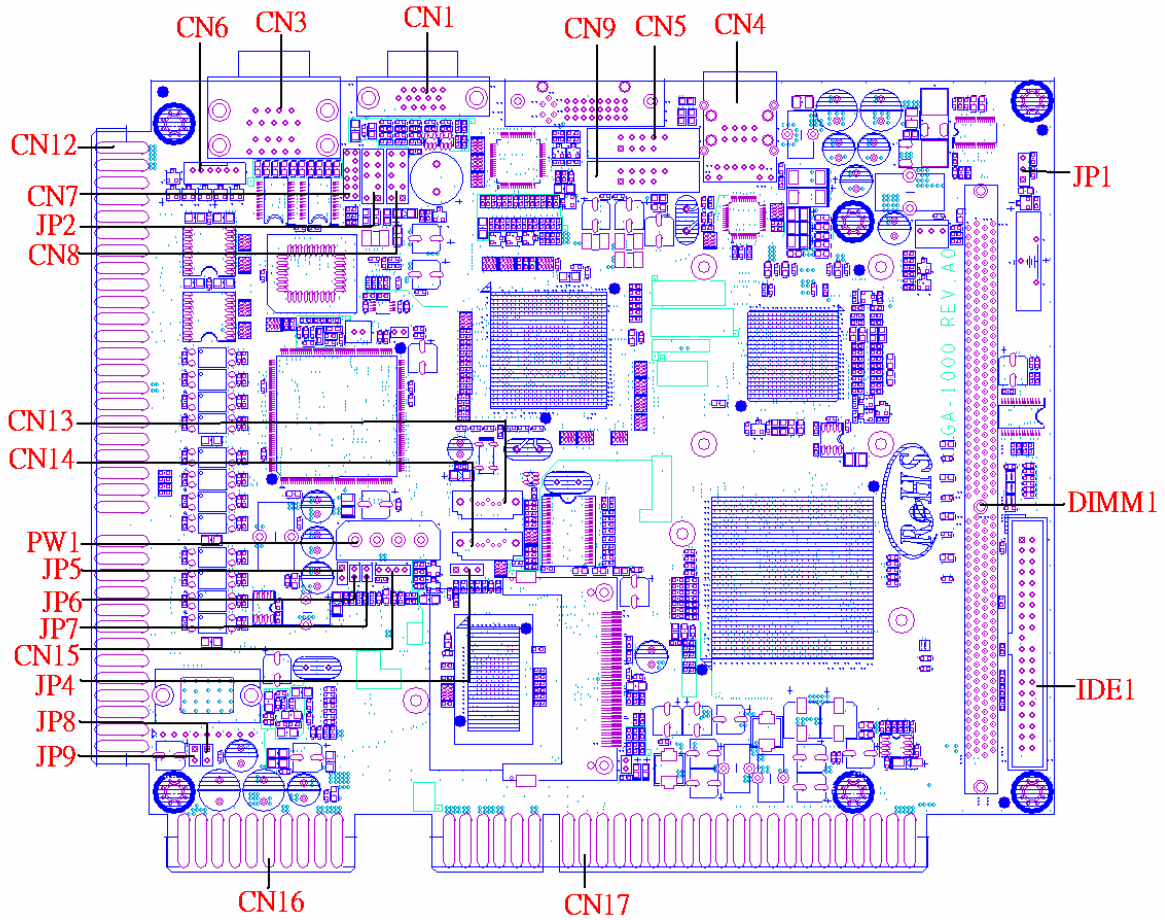
1.5 Board Dimensions



Board Dimensions (mm) -- Component Side

Chapter 2. Connector and Jumper Settings

Board Connectors



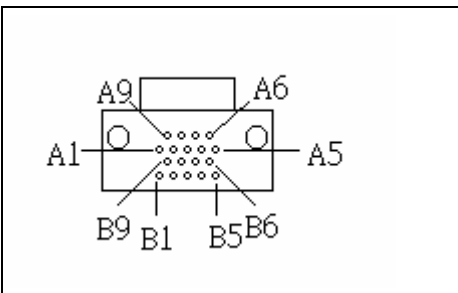
Connectors List

Connector	Description	Connector	Description
CF1	CF card socket	CN1	VGA PORT
CN2	-	CN3	COM1/2 PORT
CN4	LAN+USB1/2 PORT	CN5	USB3/4 Pin Header
CN6	CCTALK Connector	CN7	Test Pin Header
CN8	PS2 KB/ MS Pin Header	CN9	USB5/6 Pin Header
CN10	CPU FAN Connector	CN11	Battery Connector for SRAM
CN12	72-pin Golden Finger	CN13	SATA Connector

CN14	SATA Connector	CN15	Test Pin Header
CN17	JAMMA Golden Finger	CN16	20-pin Golden Finger
JP2	Test Pin Header	JP1	Clear CMOS
JP5	RESET	JP4	2-3(100MHz)/1-2(133MHz)
JP8	Speaker Left	JP7	NANDrive(Master/Slave)
JP10	CF(Master/Slave)	JP9	Speaker Right

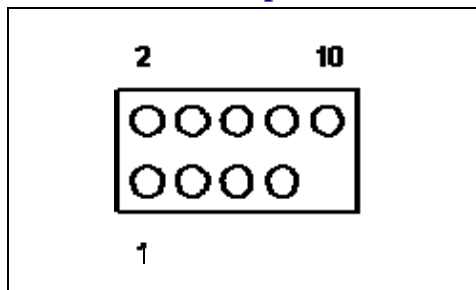
Connectors/Jumper Settings

CN3:COM1 and COM2 Jack



Pin	Signal	Pin	Signal
A1	DCD	B1	DCD
A2	RXD	B2	RXD
A3	TXD	B3	TXD
A4	DTR	B4	DTR
A5	Ground	B5	Ground
A6	DSR	B6	DSR
A7	RTS	B7	RTS
A8	CTS	B8	CTS
A9	R1	B9	R1


CN5 & CN9: USB pin header



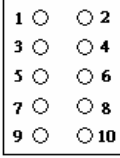
Pin	Define	Pin	Define
1	+5V	2	+5V
3	P0DATA-	4	P1DATA-
5	P0DATA+	6	P1DATA+

7	GND	8	GND
9	Reserved	10	GND

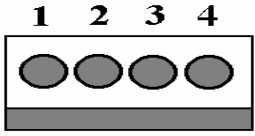
CN6: CCTALK Connector

			
Pin	Define	Pin	Define
1	+12V	2	+12V
3	CCTALK1	4	CCTALK2
5	GND	6	GND

CN8: PS/2 KB/MS Connector

			
Pin	Define	Pin	Define
1	KCLK	2	MCLK
3	KDAT	4	MDAT
5	Reserved	6	Not used
7	GND	8	GND
9	+5V	10	+5V

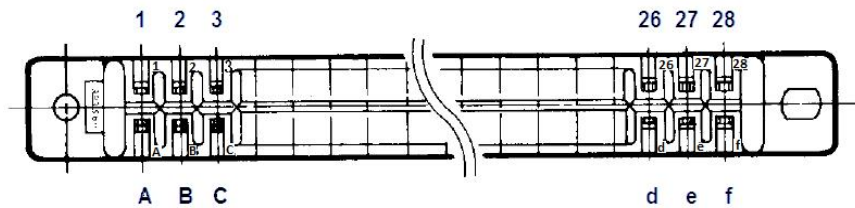
PW1:IDE Power Connector

			
Pin	Define	Pin	Define
1	+12V	2	Ground
3	Ground	4	+5V

Power and Gaming I/O connector

Note: The following Golden Finger pin-definition tables refer to the HRS CR7 Edge Connector pictured below.

HRS CR7 series 3.96mm Pitch Card Edge Connector Contact No. Alignment List



Note 1. To use alphabetic symbols, following 8 alphabetic characters are not used.
G, I, O, Q, g, i, o, q

Note 2. The above pattern is viewed from the contact (connection) side.

Pin Assignment of Power Connectors

CN16:20 PINs Golden Finger (HRS CR7E-20)

20-pin G. Finger (HRS CR7E-20)			
CN16			
Solder Side		Component Side	
Pin #	Signal	Pin #	Signal
A	GND	1	GND
B	GND	2	GND
C	n.c.	3	n.c.
D	n.c.	4	OUT26
E	+12V	5	+12V
F	+12V	6	+12V
H	+5V	7	+5V
J	+5V	8	+5V
K	GND	9	GND
L	GND	10	GND

Pin Assignment of Gaming Connectors

CN12: 72-pin Golden Finger Pin Definition (HRS CR7E-72)

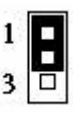

72-pin Golden Finger (HRS CR7E-72)			
CN12			
Solder Side		Component Side	
Pin #	Signal	Pin #	Signal
A	GND	1	GND
B	GND	2	GND
C	OUT11	3	OUT5
D	OUT10	4	OUT4
E	OUT9	5	OUT3
F	OUT8	6	OUT2
H	OUT7	7	OUT1
J	OUT6	8	OUT0
K	OUT15	9	OUT21
L	OUT14	10	OUT20
M	OUT13	11	OUT19
N	OUT23	12	OUT18
P	OUT22	13	OUT17
R	OUT12	14	OUT16
S	DOOR5	15	GND
T	IN12	16	IN13
U	IN20	17	IN19
V	IN22	18	IN23
W	IN11	19	IN21
X	n.c.	20	DOOR0
Y	IN15	21	IN10
Z	IN14	22	IN18
a	n.c.	23	n.c.
b	OUT25	24	IN9
c	OUT24	25	IN8
d	IN17	26	IN7
e	IN16	27	IN6
f	DOOR4	28	IN5
h	DOOR3	29	IN4
j	DOOR2	30	IN3
k	DOOR1	31	IN2
l	SPKR_R	32	IN1

m	SPKR_COM	33	IN0
n	SPKR_COM	34	SPKR_L
p	n.c.	35	n.c.
r	n.c.	36	n.c.

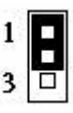

CN17: JAMMA 56-Pin Golden Finger (HRS CR7E-56)

56-pin Golden Finger (HRS CR7E-56)			
CN17			
Solder Side		Component Side	
Pin #	Signal	Pin #	Signal
A	GND	1	GND
B	GND	2	GND
C	+5V	3	+5V
D	+5V	4	+5V
E	+12V	5	+12V
F	+12V	6	+12V
H	n.c.	7	n.c.
J	OUT17	8	OUT19
K	OUT21	9	OUT20
L	SPKR_COM	10	SPKR_L
M	SPKR_COM	11	SPKR_R
N	n.c.	12	n.c.
P	n.c.	13	n.c.
R	IN19	14	n.c.
S	IN20	15	IN18
T	IN22	16	IN21
U	IN8	17	IN0
V	IN9	18	IN1
W	IN10	19	IN2
X	IN11	20	IN3
Y	IN12	21	IN4
Z	IN13	22	IN5
a	IN14	23	IN6
b	IN15	24	IN7
c	OUT27	25	OUT26
d	OUT28	26	IN24
e	GND	27	GND
f	GND	28	GND

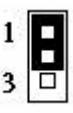

JP1: Clear CMOS

Pin		Setting
	1-2	Normal (Default)
	2-3	Clear CMOS



JP3: Bypass Select

Pin		Setting
	1-2	Bypass Enable
	2-3	Bypass Disable



JP4:CLK

Pin		Setting
	1-2	133 MHz
	2-3	100 MHz (Default)

JP5: System Rest

Pin		Setting
	OPEN	(Default)
	CLOSE	Rest

JP7: NANDrive Select

Pin		Setting
1 2 	OPEN	SLAVE
1 2 	CLOSE	MASTER (Default)



JP8: SPEAK Left Pin Header

Pin	Define
1	SPEAL_L
2	GNDAUD

JP9: SPEAK Right Pin Header

Pin	Define
1	SPEAL_R
2	GNDAUD

JP10: CF Select

Pin		Setting
1 2 	OPEN	SLAVE (Default)
1 2 	CLOSE	MASTER



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