

FSC-1812V2NA

**PICMG 1.0 Full-size Mother
Board with VGA/LAN/Audio
Interfaces**

Version: A1

Announcement

The information in this manual represents no promise or guarantee by EVOC. EVOC reserves the right to make changes to the manual, without prior notice to customer. EVOC shall not be responsible or liable for any damage or loss caused by inappropriate installation or use, intentionally or unintentionally, direct or indirect damage or a potential for damage.

Before purchasing product, make sure that the features of the product suit your needs.

EVOC is a registered trademark of EVOC Intelligent Technology Co., Ltd. All trademarks, registered trademarks, and trade names used in this user's guide are the property of their respective owners.

The information in this manual is protected by copyright. No part of this manual may be reproduced in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from EVOC.

Safety Instructions

1. Before handling your FSC-1812V2NA, read the instructions and safety guidelines on the following pages to prevent damage to the product and to ensure your own personal safety;
2. Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them;
3. Before taking board from anti-static packaging, put your hand on grounded metal object for a while (about 10 seconds) to eliminate static on your body;
4. When holding a board, wear a grounded wrist strap against your skin to eliminate static on your body. Hold a board by its edges or by its metal mounting bracket;
5. Before inserting, removing or re-configuring motherboard or expansion card, first disconnect the computer and peripherals from their power sources;
6. Before removing boards or computer , first turn off all power resources and disconnect the power cord from power source;
7. For whole set, when inserting or removing boards, first disconnect the computer and peripherals from their power sources;
8. To connect or disconnect any equipment, first turn off all power resources and disconnect the power cord from power source;
9. To avoid power on/off computer frequently, wait at least 30 seconds after turning off the computer before re-turning on the computer.

C o n t e n t

Chapter 1 Product Introduction	1
Brief Introduction	1
Ordering Information	2
Environment and Dimension	2
Main Board Structure	2
Chapter 2 Installation Direction	4
Product Layout	4
Interface Address Map	5
Jumper Function Setting	6
Installing System Modules	6
SATA Interface	7
SATA Hard Disk Hot-Swap	7
Audio Interface	9
USB Interface	10
Fan Interface	10
Parallel Port and Serial Port	11
Video Interface	12
LAN Interface	13
Keyboard and Mouse Interface	13
Power Interface	14

Status Indicator Interface	15
Chapter 3 Overview of BIOS Function.....	16
Appendix.....	17
Watchdog Programming Guide.....	17
I/O Interface Address Table	20
IRQ Interrupt Assignment	21

Chapter 1

Product Introduction

Brief Introduction

FSC-1812V2NA main board is the latest industrial level standard main board, which has high performance graphic capability, high-speed operation capability and high-speed processor capability.

FSC-1812V2NA main board uses the latest Intel LGA755 processor, not only support new generation PCI Express Bus, but also PCI 2.3 Bus. FSC-1812V2NA front-end system Bus supports frequency up to 1.06GHz, and the dual channel DDRII 533/667/800 memory technology increases throughput a lot. The graphic controller of FSC-1812V2NA have used the forth generation Intel graphic engine, the graphic core working frequency up to 400MHz, the graphic capability is 30%-40% higher than 915G, and the CH7317 chipset of Chrontel company helps to achieve SDVO to VGA, support dual video function. The latest DMI Bus is used between south bridge and North Bridge. The bandwidth up to 2GB/s (only 266 MB/s of former HUB Link), increases the throughput a lot, support two KMHz Ethernet interfaces.

Four 32bit standard PCI slot can be expanded by being equipped with the latest PICMG 1.0 standard mother board, supports 4 serial ATC interfaces at most, 10 standard USB2.0 interfaces, provides powerful system capability.

FSC-1812V2NA main board uses the latest SPI BIOS, the memory capability up to 16Mbits. What's more, the main board has powerful intelligent fan control function and supports hot-swap of SATA hard disk.

Ordering Information

Model	Description
FSC-1812V2NA	PICMG1.0 full-length main board with 2VGA (Q965 integration and SDVO to VGA) /2LAN/Audio interface/ do not support RAID
FSC-1812V2NA(RAID)	PICMG1.0 full-length main board with 2VGA (Q965 integration and SDVO to VGA) /2LAN/Audio interface/ support RAID
FSC-1812VNA-2D	PICMG1.0 full-length main board with 2VGA (Q965 integration and SDVO to VGA) /LAN /Audio interface/ do not RAID
FSC-1812VNA-2D(RAID)	PICMG1.0 full-length main board with 2VGA (Q965 integration and SDVO to VGA) / LAN /Audio interface/ support RAID
FSC-1812VNA	PICMG1.0 full-length main board with VGA (Q965 integration) / LAN /Audio interface/ do not support RAID
FSC-1812VNA(RAID)	PICMG1.0 full-length main board with VGA (Q965 integration) / LAN /Audio interface/ support RAID

Environment and Dimension

- Working environment:
Working Temperature: 0~60°C
Humidity: 5%~95% (Non-condensing)
- Store Temperature:
Temperature: -25°C~75°C
Humidity: 5%~95% (Non-condensing)
- Dimensions: 338.6mm×121.9mm

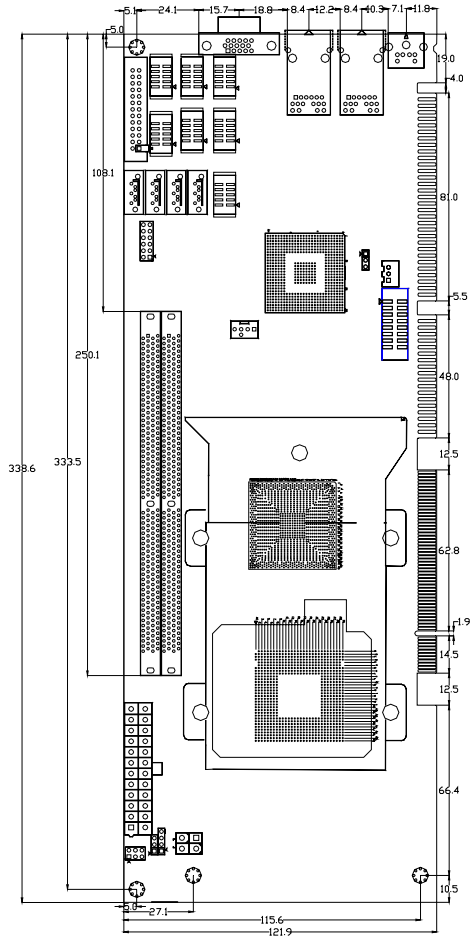
Main Board Structure

- 1) Tech support standard: DDR2, PCI, USB2.0;
- 2) Processor: LGA775 socket style CPU, 533/800/1066MHz FSB, Intel Core™ 2 Duo processor E6400/E4300, P4 651, Celeron 440, Celeron D 352;
- 3) System chipset: Intel Q965+ICH8/ICH8R chipset 533/800/1066MHz front bus;
- 4) System Memory: two 240-pin DDR2 memory band, the memory capability up to 4GB;
- 5) BIOS: SPI Flash BIOS;
- 6) Onboard video: Q965m integrated graphic controller, the forth generation Intel graphic engine, 400MHz work frequency and system sharing memory, D.V.M.T. (dynamic video memory technology) is used to distribute video memory. The CRT video resolution up to 2048×1536@75Hz. Support dual video function;
- 7) Onboard LAN: support two 10/100/1000 Base-T Ethernet interfaces at most;
- 8) SATA interface: support 4 serial ATA interface at most;
- 9) USB interface: 10 USB 2.0 standard interfaces;
- 10) One 7.1+2 track high fidelity sound card:
 - A) One earphone/sound box interface, one transmitter interface, one LINE-IN interface;
- 11) I/O interface: one parallel port, two RS-232, one PS/2 keyboard and mouse interface.
- 12) Watchdog Timer: 1-255 second or 1-255 minute, 255 levels, watchdog overtime interrupt or reposition system.
- 13) Hardware monitor: examine the working voltage of CPU, system chassis rotate speed and temperature.
- 14) power: ATX power

Chapter 2

Installation Direction

Product Layout



Unit: mm

Jumper Function Setting

1) JCC1: Cleanup/Keeping the content of CMOS

CMOS get power from the button battery on board. Clear CMOS will lead the elimination of system configuration, which will recover to factory default. The steps: (1) Turn off the computer power supply; (2). Instant short-circuiting J5 pin; (3) turn on the computer ;(4)press DEL to enter BIOS when starting the computer, load optimized defaults; (5) Save and exit the setting system.



Setting	JCC
Open	[2-3](normal working status, default)
Instantly short	[1-2](clear the content of CMOS, all the BIOS setting resume to factory default value)

Installing System Module

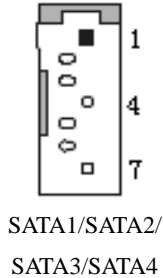
The CPU card is equipped with two DDR II (Double Data Rate) DIMM (Dual Inline Memory Modules) 240-pin memory slot (DIMM1 and DIMM2) .

When installing memory modules, please note:

- Firstly, aim at the gap of memory DIMM module and the DIMM slot. Then insert the DIMM module properly.
- Support DDRII memory which accord with Inter 1.8V DDRII 533/667/800 specification. The maximum capability up to 2GB.
- It is recommended to use DIMM memory bank with SPD, in order to guarantee stable operation.

SATA Interface

This main board provides four SATA interfaces.



Pin#	Signal Name
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

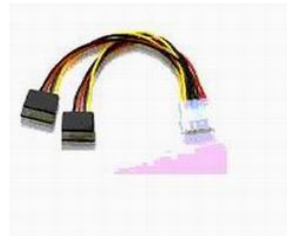
SATA Hard Disk Hot-Swap

Note for SATA hard disk hot-swap:

- (1) The main board should support the south bridge chipset later than ICH6.
- (2) The hard disk should support SATA 2.0 interface and 15 bit SATA hard disk power interface.
- (3) The chipset driver supports the hot-swap of SATA hard disk.
- (4) Electriferous hot-swap of SATA hard disk in operation system is forbidden.



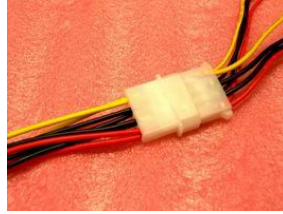
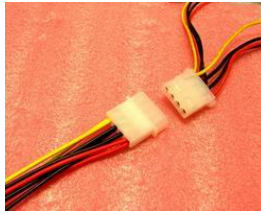
SATA hard disk data cable



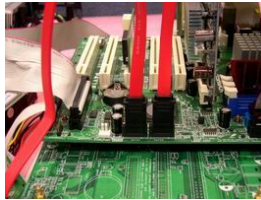
SATA hard disk power cable

Please obey the following steps of SATA hot-swap as follows, or the unsuitable operation may lead to the mangle of hard disk and loss of data.

Steps of hot-swap SATA hard disk:



Step 1: please connect SATA power cable 1 x 4 pins (white) to 1 x 4 pins power cable of power adapter.



Step 2: connect SATA data cable to SATA interface on the main board.



Step 3: connect SATA power cable 15pin interface (black) to SATA hard disk.



Step 4: connect SATA data cable to SATA hard disk.

Steps of hot-swap SATA disk:



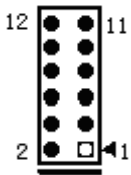
Step 1: unfix SATA data cable from one side of SATA hard disk.



Step 2: unfix SATA 15pin power cable interface (black) from one side of SATA hard disk.

Audio Interface

The main board provides a set of 2 x 6pin audio connector pins (default not to use auto-detection interface function and the 11pin, 12pin) . Please use the audio transfer cable comes with the main board to connect audio device.

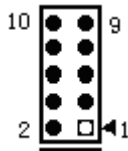


AUDIO1

Pin#	Signal Name	Pin#	Signal Name
1	LOUT_R	2	LOUT_L
3	AGND	4	FRONT-JD
5	LIN_R	6	LIN_L
7	AGND	8	AGND
9	MICP_IN	10	MICP_P)
11	LINE1-JD	12	MIC1-JD

USB Interface

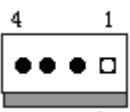
The main board provides 5 sets of standard 2 x 5 pin pins, supports USBBer2.0 device and can connect 10 USB devices at the same time.



Pin#	Signal Name	Pin#	Signal Name
1	USB1_+5V	2	USB2_+5V
3	USB1_Data-	4	USB2_Data-
5	USB1_Data+	6	USB2_Data+
7	GND	8	GND
9	Key/NC	10	GND_Chassis

Fan Interface

The main board provides a set of standard fan socket. Pay attention to the following 3 issues when using fan socket: 1) the current for fan shall not be over 350 mA (4.2W, 12V). 2) Please confirm fan's wire complies with the socket wire. Power cord (usually red) is in the middle position. In addition, you shall pay attention to the earth wire (usually black) and fan rev output impulse signal wire (other colors). It is suggested to use a fan with rotation speed detection. 3) Adjust the fan's airflow to the direction of heat venting.

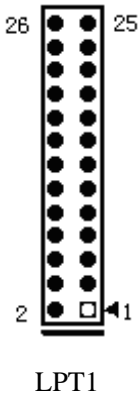


Pin#	Signal Name
1	GND
2	+12V power
3	Fan rev impulse output
4	Fan rev PWM control

Parallel Port and Serial Port

(1) Parallel Port

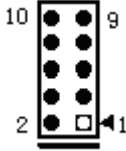
This is a standard 26-pin parallel port used for connecting parallel port peripherals upon your request.



Pin#	Signal Name	Pin#	Signal Name
1	STB#	14	AFD#
2	PD0(parallel data 0)	15	ERR#
3	PD1(parallel data 1)	16	INIT#
4	PD2(parallel data 2)	17	SLIN#
5	PD3(parallel data 3)	18	GND
6	PD4(parallel data 4)	19	GND
7	PD5(parallel data 5)	20	GND
8	PD6(parallel data 6)	21	GND
9	PD7(parallel data 7)	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE(Paper empty)	25	GND
13	SLCT	26	NC

(2) Serial Port

COM1, COM2 can connect devices with RS-232 standard DB9 interfaces such as mouse and mineral camera.



COM1、
COM2

Pin#	Signal Name
1	DCD(data carrier detection)
2	RXD(data receiving)
3	TXD(data transferring)
4	DTR(data terminal ready)
5	GND
6	DSR(data setup ready)
7	RTS(require to send)
8	CTS(clear sending)
9	RI(ring indication)
10	NC

Video Interface

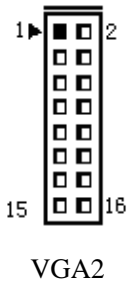
(1) VGA1 is a 15bit D style VGA display socket.



VGA1

Pin#	Signal Name	Pin#	Signal Name
1	Red	2	Green
3	Blue	4	NC
5	GND	6	GND
7	GND	8	GND
9	CRT_5V(+5V)	10	GND
11	NC	12	DDCDATA
13	HSYNC	14	VSYNC
15	DDCCLK		

(2) VGA2 is a 2 x 8pin VGA display pin.



Pin#	Signal Name	Pin#	Signal Name
1	Red	2	GND
3	NC	4	Green
5	GND	6	DDCData
7	Blue	8	GND
9	HSYNC	10	NC
11	CRT_5V(+5V)	12	VSYNC
13	GND	14	GND
15	DDCCLK	16	NC

LAN Interface

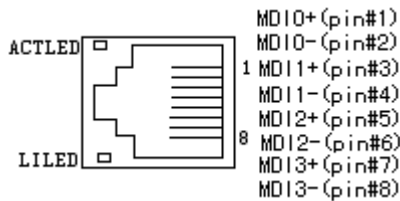
The main board provides two 1000Mbps Ethernet interfaces (LAN1, LAN2) LILED and ACTLED are the indicator besides Ethernet interface; they show the links status and activity transferring status of LAN. LED status description is showed as follows:

MDI0/2+,MDI0/2-: plus/minus TXD

MDI1/3+,MDI1/3-: plus/minus RXD

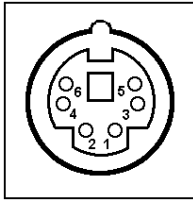
ACTLED: indicator of LAN status

LILED: indicator of LAN links



LILED	Indicator Status	ACTLED	Indicator Status
ON (green)	100Mbps	Glitter	Data sending/receiving
ON	1000Mbps	OFF	No data to receive/send
OFF	Ineffective Link		

Keyboard and Mouse Interface

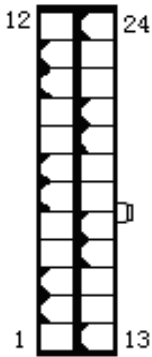


KM1

Pin#	Signal Name
1	KB_DATA
2	MS_DATA
3	GND
4	+5V
5	KB_CLK
6	MS_CLK

Power Interface

1) ATX Power Interface



ATX1

Signal Name	Pin#	Pin#	Signal Name
+3.3V	1	13	+3.3V
+3.3V	2	14	-12V
GND	3	15	GND
+5V	4	16	PS_ON
GND	5	17	GND
+5V	6	18	GND
GND	7	19	GND
PWROK	8	20	-5V
+5V Standby	9	21	+5V
+12V	10	22	+5V
+12V	11	23	+5V
+3.3V	12	24	GND

2) +12V Power Interface



ATX_12V1

Pin#	Signal Name
1	GND
2	GND
3	+12V Power
4	+12V Power

3) **Mother board power interface:CN1**



CN1

Pin#	Signal Name
1	VCC5SB
2	PS_ON-
3	GND

Status Indicator Interface

FP1, FP2, FP3 is used to connect the function buttons and indicators on the front panel of chassis.



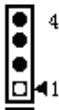
FP1

Pin#	Signal Name	Pin#	Signal Name
1	Power Switch	2	GND
3	GND	4	System Reposition Signal
5	Hard disk LED-	6	Hard disk LED+



FP2

Pin#	Signal Name
1	Power LED +
2	NC
3	GND



FP3

Pin#	Signal Name
1	Speaker Out
2	NC
3	GND
4	+5V

Chapter 3

Overview of BIOS Function

Regarding the BIOS setup of FSC-1812, please refer to the *AMI BIOS Setting Direction* edited by EVO Company.

Appendix

Watchdog Programming Guide

FSC-1812 include a programmable watchdog timer (WDT) which can reach 255 level and time by minute or second. Watchdog Timer can be programmed to reset system or generate maskable interrupt after a certain number of seconds/minutes during which a program or computer fails to respond. Below it describes WDT program in C language. Note: before running WDT, you must first enter WDT programming mode; after finishing WDT configuration, exit WDT. Please follow the below process for set up the WDT function:

- Enter WDT programming mode
- Set up WDT working mode/start WDT/close WDT
- Exit WDT programming mode

The following documents are needed to include:

```
#include <stdio.h>
```

```
#include <dos.h>
```

```
#include <bios.h>
```

```
#include <stdlib.h>
```

```
#include <string.h>
```

(1) Enter WDT Programming mode

```
outportb(0x2e,0x87); //enter WDT Programming mode, write 87 for two
                        times on INDEX PORT
```

```
outportb(0x2e,0x87); //INDEX PORT [4e /2e], DATA PORT[4F/2F]
```

```
outportb(0x2e,0x07); //reg0X07, is used to select logic device
```

```
outportb(0x2f,0x08); //select logic device8,
```

```
outportb(0x2e,0x30); //reg0x30, device enable register,0=disable,
```

```
1=enable
```

```
outportb(0x2f,0x01); //enable device8
```

(2) Setup WDT working mode, reposition or interrupts

```
outportb(0x2e,0x2D);
```

```
char oldval = inportb(DATAP);
```

a. Configure WDT into reposition working mode

```
oldval &= 0xfe;
```

```
        /*reg0x2d.bit0, reposition mode set this bit as 0
```

```
        1=GPIO50
```

```
        0=WDTO
```

```
        */
```

```
outportb(0x2f, oldval);
```

b. Configure WDT into interrupt working mode

```
oldval |= 0x01;
```

```
        /* reg0x2d.bit0, interrupts mode set this bit as 1
```

```
        1=GPIO50
```

```
        0=WDTO
```

```
        */
```

```
outportb(0x2f, oldval);
```

```
outportb(0x2e,0xf7); // select WDT interrupts
```

```
outportb(0x2f,IRQ_RESOURCE);
```

Thereinto, IRQ_RESOURCE =0: any interrupt is forbidden

```
        /*
```

```
        register 0xF7
```

```
        bit[3:0]WDT interrupt Mapping
```

```
        1111=IRQ 15
```

.....
0011=IRQ3
0010=IRQ2
0001=IRQ1
0000=Disable
*/

(3) Select WDT time by minute or second

a. Select WDT time by minute with the following word:

; suppose it is WDT programming mode

```
outportb(0x2e,0xf5); // select to time by minute, register 0xf5.bit3=1。  
outportb(0x2f,0x08);
```

b. Select WDT time by second with the following word:

; suppose it is WDT programming mode

```
outportb(0x2e,0xf5); // select to time by second, register 0xf5.bit3=1  
outportb(0x2f,0);
```

(4) Start/Forbid WDT

; suppose it is WDT programming mode

```
outportb(0x2e,0xf6); // write the scheduled time TIME-OUT-VALUE  
outportb(0x2f,TIME-OUT-VALUE);
```

Note: TIME-OUT-VALUE can count from 1 to 255, time unit is “minute” or “second”, if TIME-OUT-VALUE is zero, WDT will be forbidden. WDT can be started when TIME-OUT-VALUE is any number except zero.

(5) Exit WDT Programming mode

```
outportb (0x2e,0xaa) ;
```

I/O Interface Address Table

The space of system I/O address is 64K. Each peripheral takes up a section of I/O space. The following table shows you part of the I/O address assignment of the CPU card. Because the address of PCI device (such as PCI network card) is configured by software, it is not listed in the table.

Address	Device Description
000h - 00Fh	DMA controller#1
020h - 021h	Programmable Interrupt Controller #1
040h - 043h	System Timer
060h - 064h	Standard 101/102 keyboard controller
070h - 071h	Real Time Clock, NMI
080h - 09Fh	DMA page Register
0A0h - 0A1h	Programmable Interrupt Controller#2
0C0h - 0DEh	DMA controller#2
0F0h - 0FFh	Data Processor
170h - 177h	Secondary IDE
1F0h - 1F7h	Primary IDE
295h - 296h	Hardware Monitor
2F8h - 2FFh	Serial Port #2(COM2)
376h	Secondary IDE(dual FIFO)
378h - 37Fh	Parallel Port#1(LPT1)
3B0h - 3DFh	Intel 82945G internal graphic controller
3F0h - 3F5h	Standard Floppy disk Controller
3F6h	Primary IDE(dual FIFO)
3F8h - 3FFh	Serial Port#1(COM1)

IRQ Interrupt Assignment

The system has 16 interrupt sources in total. Some has been occupied by system equipment. Only those unoccupied interrupt sources can be designated to other equipment. ISA equipment requests exclusive use of its interrupt; only PnP ISA equipment can be assigned interrupt by BIOS or operating system. While multiple PCI devices can share the same interrupt, and assigned by BIOS or operating system. The following table shows part of the interrupts assignment of the CPU card, but it doesn't list the interrupts used by PCI devices.

Level	Function
IRQ0	System Timer
IRQ1	Standard 101/102 key or Microsoft keyboard
IRQ2	Programmable Interrupts Controller
IRQ3	Serial Port#2
IRQ4	Serial Port#1
IRQ5	Reserved
IRQ6	Reserved
IRQ7	Parallel Port#1
IRQ8	System CMOS/Real Time Clock
IRQ9	Software change course to Int 0Ah
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 mouse
IRQ13	Data Processor
IRQ14	Primary IDE
IRQ15	Secondary IDE

Please refer to <http://www.evoc.com> if you want to know detail information about our company.