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1. Introduction

EMB-CM3000 Main Board는 146 x 105(mm) 의 Size(3.5Inch)이며 mPGA479M SOCKET_ SMT Type 으로 Intel Pentium 및 Celeron M (Architecture 90nm) 478PIN CPU를 지원하며, FSB(Front Side Bus) 400MHz 이며 DDR 400/533MHz Memory로서 SODIMM socket (max: 1G)을 Support한다.

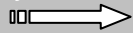
EMB-CM3000은 PENTIUM 4이상급의 ATX 파워 전원 변환을 위한 케이블을 제외하고 별도의 보드없이 각종 커넥터들을 내장하고 있다.

EMB-CM3000은 통합된 인텔 칩셋 915GM의 Extreme Graphics Controller를 사용하며 DVMT(Dynamic Video Memory Technology)3.0으로서 128MB 비디오메모리가 지원된다. CRT모드는 2048 X 1536까지 지원되며 18비트 LVDS와 함께 듀얼로도 사용되고 S-VIDEO등의 TV출력도 가능하다. 또한 SDVO신호를 사용하여 DVI, 24비트 LVDS등(OPTION)의 확장된 그래픽을 지원한다. Video Memory는 Main Memory를 Share해서 사용하도록 되어 있다.

EMB-CM3000은 통합형 AC' 97 Audio Controller가 내장되어 있어 6채널 Audio출력(현재 스테레오만 수용)과 라인입력과 마이크까지 가능하여 충분한 Multimedia 환경을 Support한다.

EMB-CM3000은 1 채널의 UltraDMA 33,66,100이 가능한 PATA와 초당 150MB를 전송하는 SERIAL ATA를서포트한다.

그리고 **EMB-CM3000**은 REALTEK사의 RTL8110SC칩을 사용하여 GIGABIT LAN을 가능하여 보다 빠른 인터넷을 서포트한다.

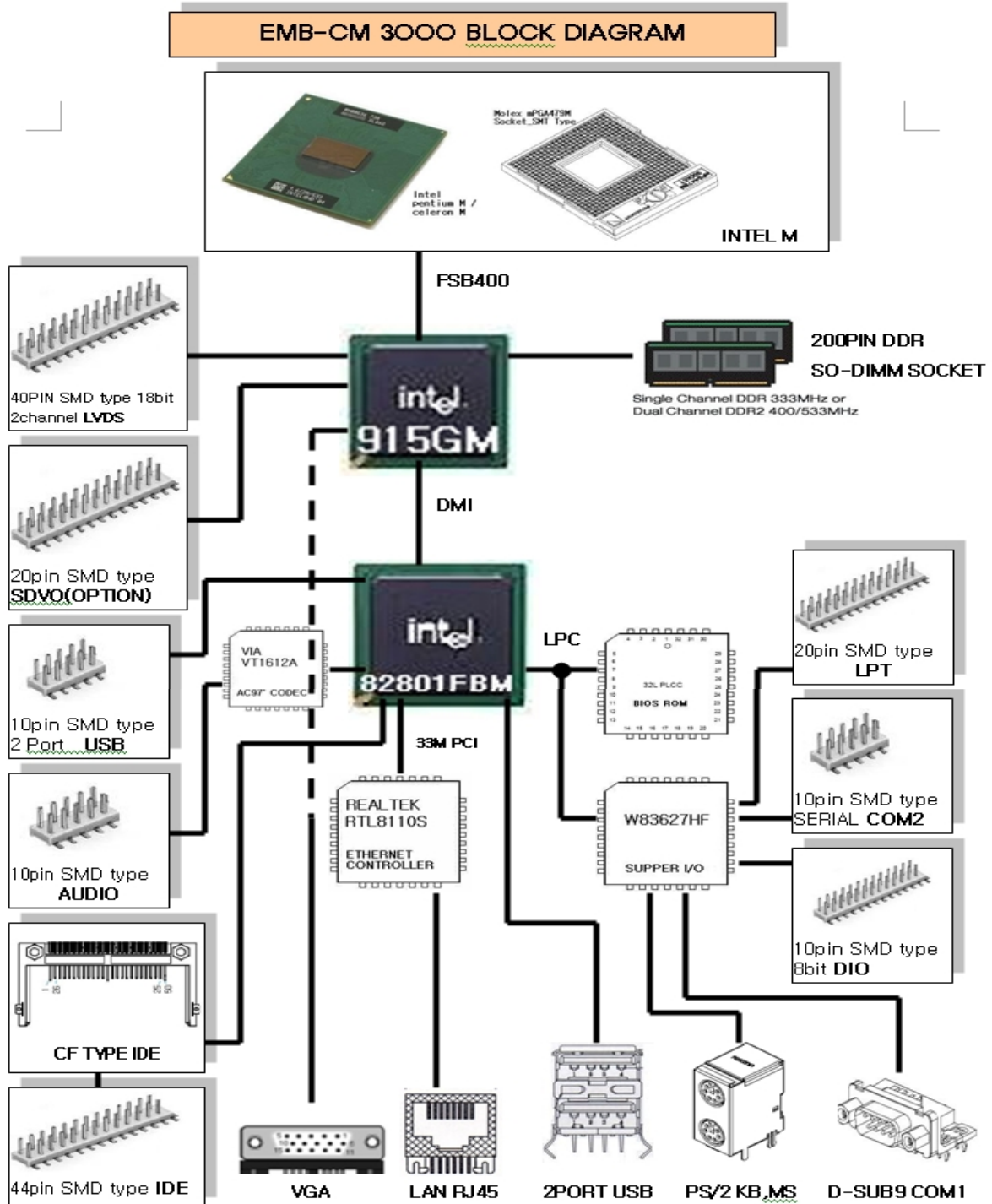


2. Specifications

Processor	<ul style="list-style-type: none"> - Intel Pentium-M Processor - Micro-FCBGA 479 BALL / Micro-FCPGA 478 PIN (mPGA479M SOCKET_ SMT Type) 	<ul style="list-style-type: none"> - Intel Celeron-M Processor - Micro-FCBGA 479 BALL / Micro-FCPGA 478 PIN (mPGA479M SOCKET _ SMT Type)
Chipset	<ul style="list-style-type: none"> - Intel 915GM, GMCH, uFCBGA 1257 ball - Intel 82801FBM, ICH6-M, uBGA 609 	
Memory	<ul style="list-style-type: none"> - One 200 Pin DDR2 SO-DIMMDIMM Socket [Support upto DDR2 400/533MHz] 	
Graphics	<ul style="list-style-type: none"> - Integrated 2D/3D Extreme Graphics 2 Controller in 915GM - Dynamic Frame Buffer size upto 64MB - Dual ch 18bit LVDS transmitter - 1 SDVO Port(ANALOG) / TV out 	
Ethernet	<ul style="list-style-type: none"> - 10/100/1000 Base-T Ethernet - Realtek RTL8110SC for 1G BASE-T [default] 	
Super I/O	<ul style="list-style-type: none"> - W83627HF, LPC interface, 2 serial, 1 LPT, 1 IRDA, GPIO Etc. 	
SSD	<ul style="list-style-type: none"> - CompactFlashCard type I/II, IDE interface 	
Audio	<ul style="list-style-type: none"> - AC'97 Audio Codec interface 	
IDE	<ul style="list-style-type: none"> - Support 1 Ch UltraDMA 33,66,100 - Primary IDE, PIN header SMD type 44 pin IDE interface 	
Back Panel I/O Ports	<ul style="list-style-type: none"> - 1 x PS2 K/B, Mouse Port, DIN - 1 x CRT Port, 15 pin D-sub - 1 x RJ-45 LAN port - 2 x USB 2.0/1.1 ports, - 1 x Serial port, 9 pin D-sub, COM1 	
On Board I/O Connectors	<ul style="list-style-type: none"> - 1 x USB 2.0 2 port 8 pin header SMD type - 1 x Audio 8 pin header SMD type(MIC,SPEAKER,LINEIN) - 1 x Parallel Port, pin header SMD type 20 pin - 1 x SIR 4 pin header SMD type - 1 x Fan connector - 1 x 8bit DIO 8 pin header SMD type - 1 x LVDS, 40 pin connector SMD type - 1 x SDVO, 20P connector SMD type(ANALOG) - 1 x Serial port 9P pin header SMD type, COM2 - 1 x CompactFlashCard type I/II - 1 x SATA 	
BIOS	AMI	
Power	Support ATX 250W -> [SB5V, 5V, 12V], 12 pin Power Connector	
Form Factor	3.5" SBC, size 146mm x 105mm, PCB 8 Layers(builup).	
Operating Temp	0 to 60°C	



3. Blockdiagram

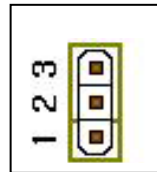




4. Board Installation

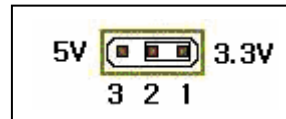
4.1 CMOS Clear(Shunt)

Battery ON	JP3	1,2 SHORT OR OPEN
CMOS Clear	JP3	2,3 SHORT



4.2 LVDS LCD POWER SELECT(Resistor)

3.3V LCDVDD	JP2	1,2 Short
5V LCD VDD	JP2	2,3 Short



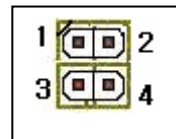
4.3 PS ON OFF / RST /BUZZER / HDD LED SELECT

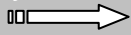
PWBTN	CNP1	1,3 tact short
RESET	CNP1	5,7 tact short
BUZZER	CNP1	2(+),4(-) BUZZER
HDDLED	CNP1	10(+),9(-) HDD LED



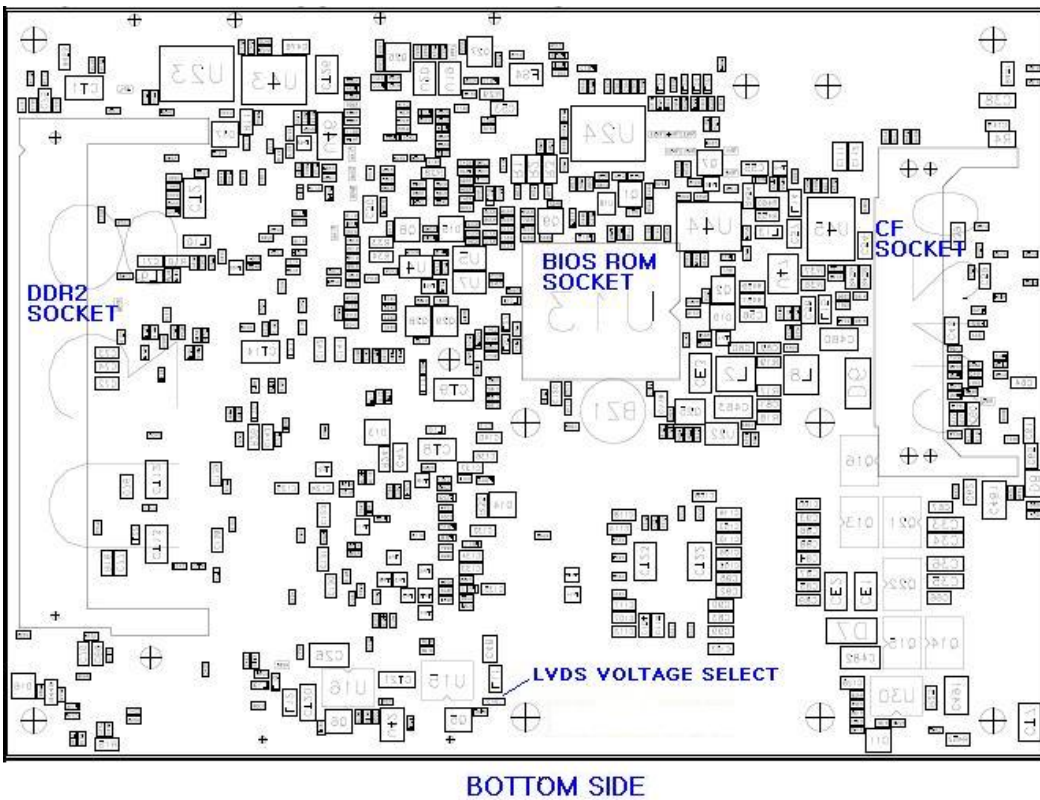
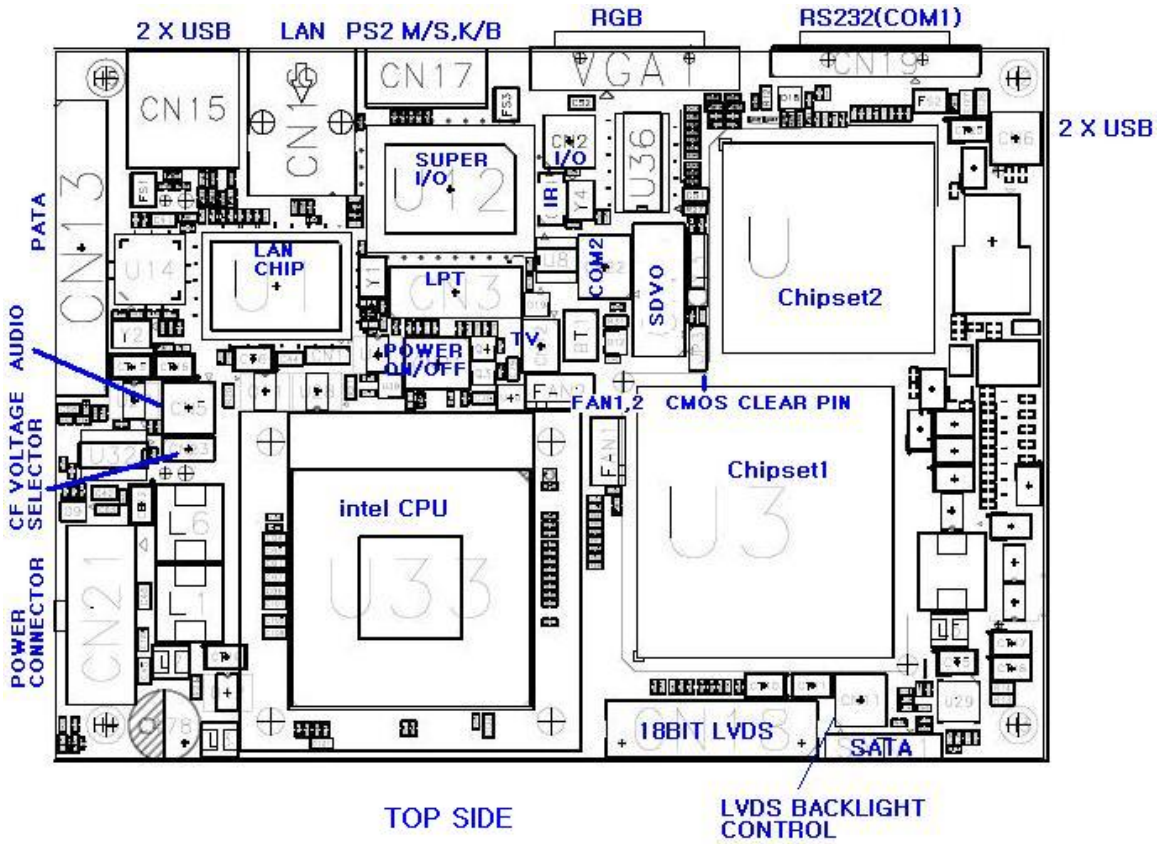
4.4 CF VOLTAGE SELECT(Shunt)

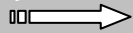
+3.3V	CN23	1,2 short
+5V	CN23	3,4 short





5. BOARD Descriptions





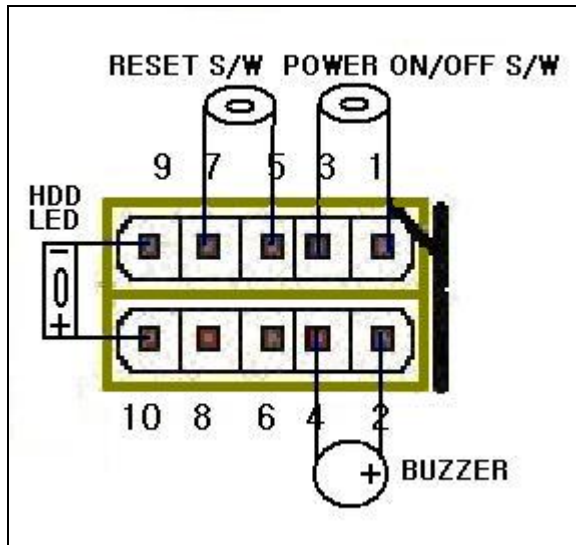
6. Connector Definitions

6.1 Connector Functional Descriptions

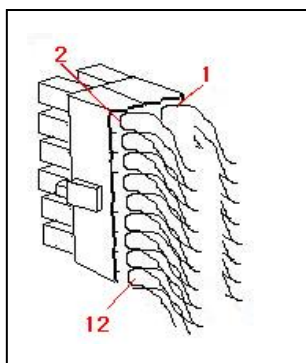
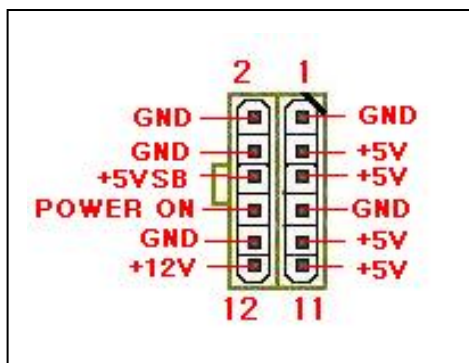
NO.	Connector	Descriptions
1	CNP1	PS ON / RESET ,BUZZER, HDD LED Connector
2	JP3	CMOS clear jumper (Default pin 1,2 short or Open)
3	BT1	CR2032 LEAD COIN CELL Connector
4	FAN1,2	FAN Connector
5	CN21	ATX POWER interface Connector
6	JP2	LVDS voltage select jumper (Default pin 1,2 short → 3.3V)
7	U13	Bios ROM Socket
8	U38	DDR2 Socekt
9	CN5	External headset or speaker, Line In, MIC Connector
10	VGA1	RGB Connector
11	SATA1	Serial ATA Connector
12	CN20	CF Connector
13	CN23	CF VOLTAGE Select
14	CN13	P-ATA Connector
15	CN3	LPT Connector
16	CN16	LAN Connector
17	CN19	RS232 Comport 1 Connector
18	CN22	RS232 Comport 2 Connector
19	CN17	PS/2 KEYBOARD / MOUSE Connector
20	CN15	USB 1,2 Connector
21	CN3	USB 3,4 Connector
22	CN18	18bit LVDS Connector
23	CN11	LVDS POWER,BACKLIGHT Select Connector
24	CN12	TV OUT Connector
25	CN4	SDVO Connector
26	CN2	GPIO Connector
27	CN14	IR Connector



6.2 PS ON/OFF , RESET , BUZZER, HDD LED Connector (CNP1)

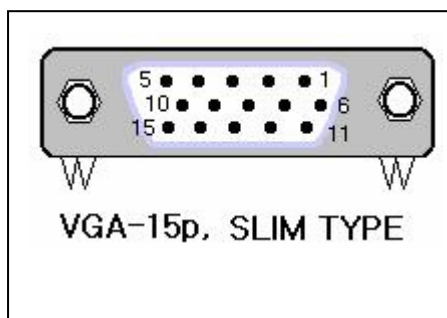


6.3 ATX POWER Interface(VGA1)



핀 번호	핀 설명
1,2,4,7, 10	Ground
3,5,9,11	+5V
6	+5V STANBY
12	+12V
8	POWER ON/OFF

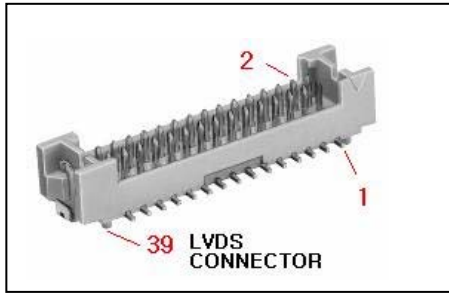
6.4 VGA Connector(J2)



핀 번호	설명	핀 번호	설명
1	Red	9	+5V
2	Green	10	GND
3	Blue	11	NC
4	NC	12	DDC Clk
5	GND	13	H-sync
6	Frame GND	14	V-Sync
7	Frame GND	15	DDC Data

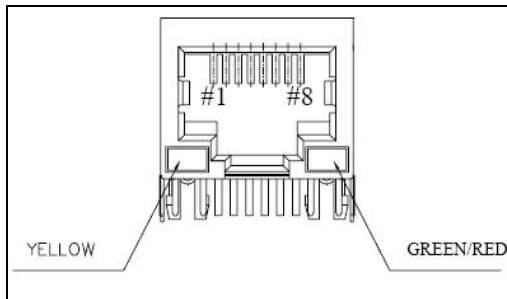


6.5 LVDS Connector(CN18)



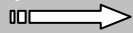
Pin num	Signal	Pin num	Signal	Pin num	Signal	Pin num	Signal
1	B-D0-	11	GND	21	B-DCLK+	31	+12V
2	LCDVCC	12	A-DCLK-	22	A-D1-	32	GND
3	B-D0+	13	B-D2-	23	GND	33	+3.3V
4	LCDVCC	14	GND	24	A-D1+	34	NC
5	GND	15	B-D2+	25	NC	35	BKLIGHT
6	GND	16	A-D2-	26	GND	36	NC
7	B-D1-	17	GND	27	NC	37	LCDVCC
8	GND	18	A-D2+	28	B-D0-	38	NC
9	B-D1+	19	B-DCLK-	29	+5V	39	LCDVCC
10	A-DCLK+	20	GND	30	B-D0+	40	NC

6.6 Ethernet Connector(CN16)

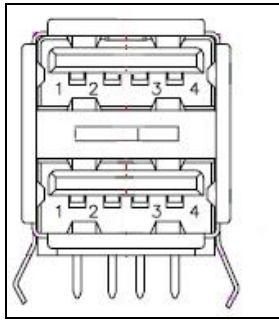


핀 번호	설명
1	MDI0+
2	MDI0-
3	MDI1+
4	MDI1-
5	MDI2+
6	MDI2-
7	MDI3+
8	MDI3-

두 개의 LED 중에 위의 YELLOW가 LAN_LINK LED이고 GREEN/RED가 LAN_ACTIVE LED이다. ACTIVE_LED는 1000M 혹은 100/10M 라인이 연결된 경우 불이 점멸하게 되고 LINK_LED는 연결된 상태에서는 항상 불이 켜져 있게 된다.



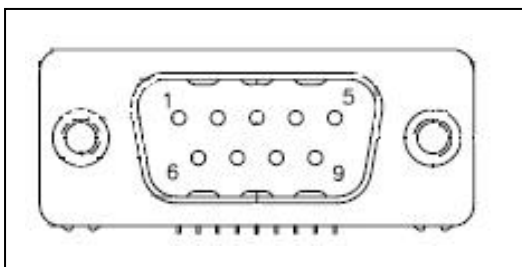
6.7 2Port USB Connector (CN15)



1	USBVCC
2	D-
3	D+
4	USBGND

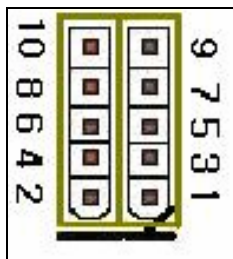
6.8 Serial Port Connector (CN19,CN22)

CN19



< 신호 정의 >

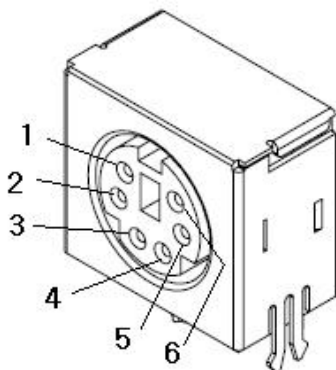
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND		



CN22

1	DCD	6	CTS
2	DSR	7	DTR
3	RXD	8	RI
4	RTS	9	GND
5	TXD		NC

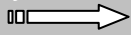
6.9 Keyboard/Mouse Connection(CN17)



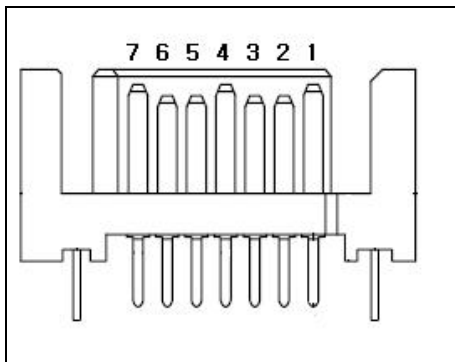
Pin	Name	Dir	Description
1	CLK	↔	KeyBoard Clock
2	VCC	→	Power , +5 VDC
3	DATA	→	KeyBoard Data
4	DATA	→	Mouse Data
5	GND	→	GND
6	CLK	↔	KeyBoard Clock

* Y 자 케이블 사용 (핀 사양 확인 후 사용!)

* 기본연결: MOUSE

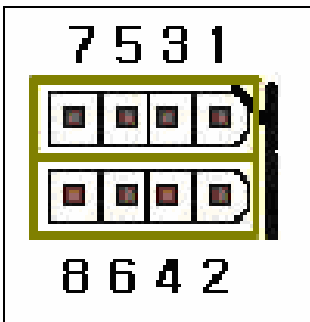


6.10 SERIAL ATA Connector (SATA1)



1	GND
2	TX1+
3	TX1-
4	GND
5	RX1-
6	RX1+
7	GND

6.11 AUDIO Connector(CN5)

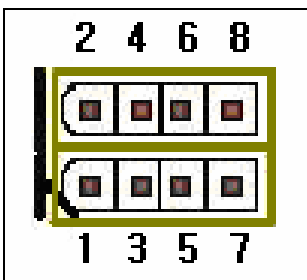


1	MIC IN
2	GND
3	LINE OUT -LEFT
4	LINE IN -LEFT
5	LINE OUT -RIGHT
6	LINE IN -RIGHT
7	GND
8	GND

6.12 FAN Connector(FAN1,2)

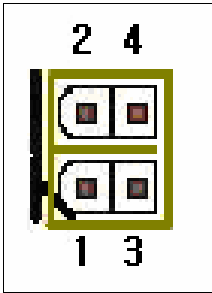
PIN	SIGNAL
1	Ground
2	+12V
3	NC

6.13 GPIO Connector (CN2)



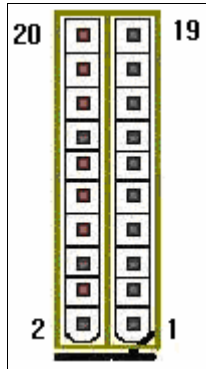
1	DIO 7
2	DIO 3
3	DIO 6
4	DIO 2
5	DIO 5
6	DIO 1
7	DIO 4
8	DIO 0

6.14 IR Connector (CN14)



1	IRTX
2	IRRX
3	+ 5V
4	GND

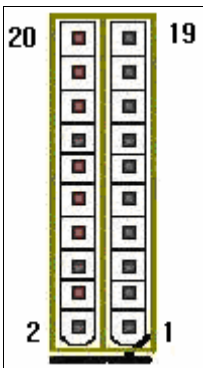
6.15 SDVO Connector (CN4)



핀 번호	설명	핀 번호	설명
1	SDVO_RED	2	SDVO_INT
3	SDVO_RED-	4	SDVO_INT-
5	SDVO_BLUE	6	SDVO_FLDSTALL
7	SDVO_ BLUE -	8	SDVO_FLDSTALL-
9	SDVO_GREEN	10	SDVO_CLK
11	SDVO_ GREEN -	12	SDVO_CLK-
13	+12V	14	SDVO_CTRLCLK
15	+5V	16	SDVO_CTRLDATA
17	GND	18	+3.3V
19	GND	20	GND

* DVI를 사용할시 중간 트랜스미터를 사용하여야 한다.(OPTION 사항)

6.16 LPT Connector (CN3)



핀 번호	설명	핀 번호	설명
1	STB	2	AFD
3	DATA0	4	ERR-
5	DATA1	6	INIT
7	DATA2	8	SLIN
9	DATA3	10	ACK
11	DATA4	12	BUSY
13	DATA5	14	PE
15	DATA6	16	SLCT
17	DATA7	18	GND
19	GND	20	GND



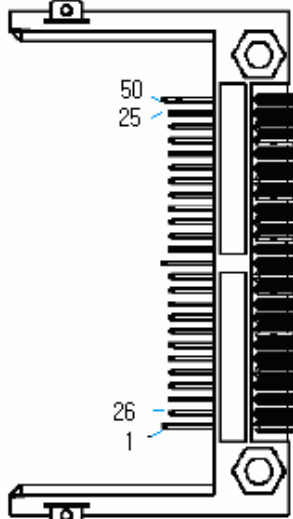
6.17 IDE Interface Connector (CN13)

PIN	SIGNAL	Description
1	IDEPRSTX	Reset signal to the hard disk
2,22,24,26,28,30,32,40,43	GND	Hard Disk GND
3	IDEPDR7	Low part of data bus
4	IDEPDR8	High part of data bus
5	IDEPDR6	Low part of data bus
6	IDEPDR9	High part of data bus
7	IDEPDR5	Low part of data bus
8	IDEPDR10	High part of data bus
9	IDEPDR4	Low part of data bus
10	IDEPDR11	High part of data bus
11	IDEPDR3	Low part of data bus
12	IDEPDR12	High part of data bus
13	IDEPDR2	Low part of data bus
14	IDEPDR13	High part of data bus
15	IDEPDR1	Low part of data bus
16	IDEPDR14	High part of data bus
17	IDEPDR0	Low part of data bus
18	IDEPDR15	High part of data bus
19	GND	Hard Disk GND
20	NC	Not Connected
21	IDEPDREQR	Disk DMA Request might be driven by the IDE hard disk to request bus master access to the PCI bus
23	IDEPIOWX	I/O Write
25	IDEPIORX	I/O Read
27	IDEPIORDYR	This signal may be driven by the hard disk to extend the current I/O cycle
29	IDEPDACKX	Disk DMA Acknowledge
31	IDEPINTR	Interrupt line from hard disk
33	IDEPA1	Address line, used to address i/o registers in the IDE hard disk
34	NC	Not Connected
35	IDEPA0	Address line, used to address i/o registers in the IDE hard disk
36	IDEPA2	Address line, used to address i/o registers in the IDE hard disk
37	IDEPCS0X	Hard Disk Chip-Select
38	IDEPCS1X	Hard Disk Chip-Select
39	HDDLED	Signal from hard disk indicating hard disk activity
41,42	+5 V	+5V POWER
44	NC	Not Connected



6.18 CF-Card Connector (CN20)

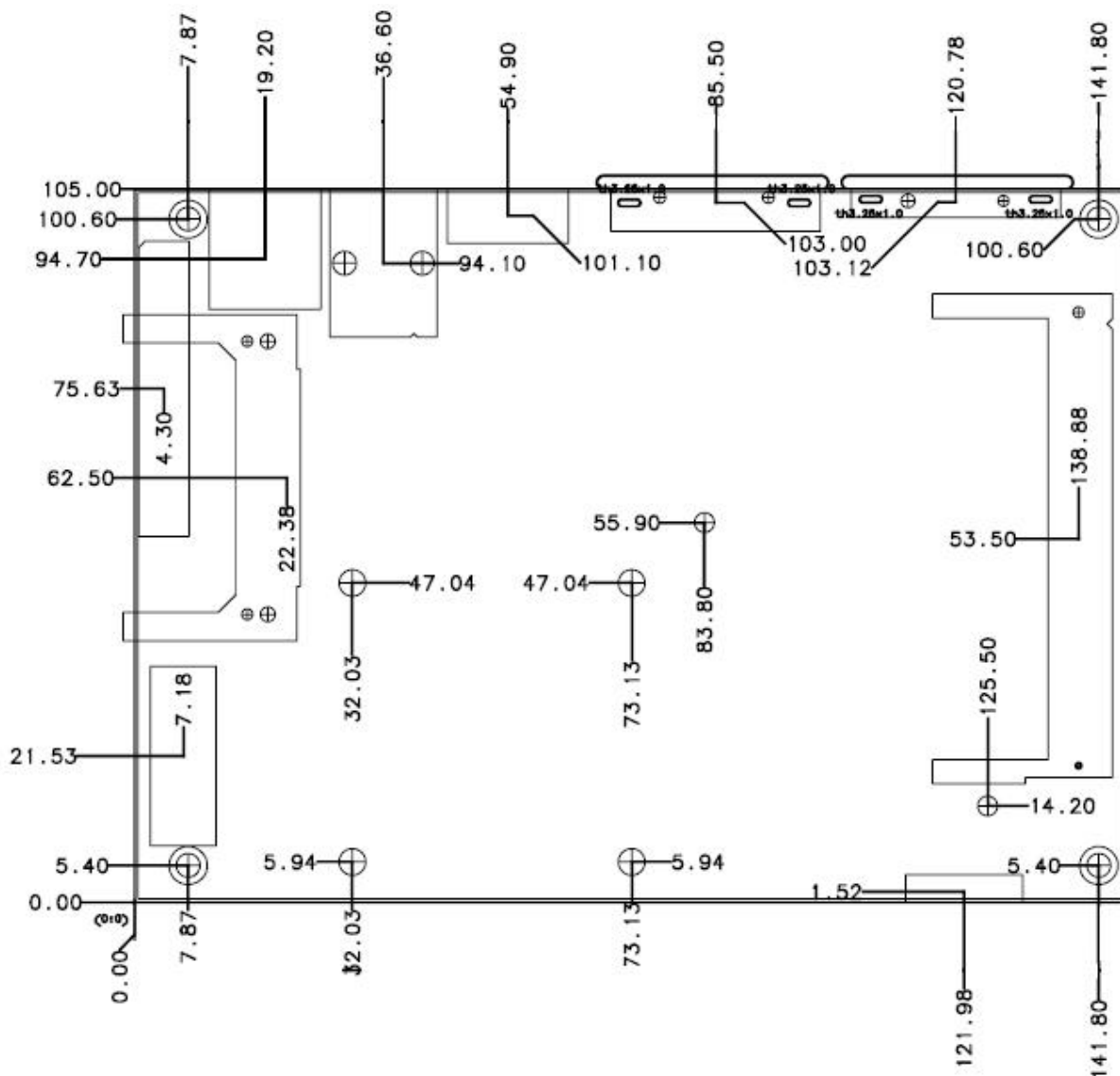
PIN	SIGNAL	PIN	SIGNAL
1	GND	26	GND
2	IDEDA3	27	IDEDA11
3	IDEDA4	28	IDEDA12
4	IDEDA5	29	IDEDA13
5	IDEDA6	30	IDEDA14
6	IDEDA7	31	IDEDA15
7	IDECS_A0	32	IDECS_A1
8	GND	33	GND
9	GND	34	IDEIOR_A
10	GND	35	IDELow_A
11	GND	36	+3.3V
12	GND	37	IDEIRQA
13	+3.3V	38	+3.3V
14	GND	39	NC(SLAVE)
15	GND	40	NC
16	GND	41	IDERST_
17	GND	42	ICHRDYA
18	IDESAA2	43	IDEREQA
19	IDESAA1	44	IDACK_A
20	IDESAA0	45	HDDLED_0
21	IDEDA0	46	CBLIDA
22	IDEDA1	47	IDEDA8
23	IDEDA2	48	IDEDA9
24	+3.3V	49	IDEDA10
25	GND	50	GND



REVERSE TYPE



8. Measurement Drawing



9. Reference

상커스 텍 홈페이지 : <http://www.syncus.co.kr>