



User's Manual

Version 1.0

3003050

PC/104 Embedded Intel Celeron ULV
400MHz CPU Model with one SODIMM up to 512 MB SDRAM, CRT/Flat Panel
SVGA, one Realtek 8100BL Fast Ethernet

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Warning

Single Board Computers and their components contain very delicate Integrated Circuits (IC). To protect the Single Board Computer and its components against damage from static electricity, you should always follow the following precautions when handling it :

1. Disconnect your Single Board Computer from the power source when you want to work on the inside
2. Hold the board by the edges and try not to touch the IC chips, leads or circuitry
3. Use a grounded wrist strap when handling computer components.
4. Place components on a grounded antistatic pad or on the bag that came with the Single Board Computer, whenever components are separated from the system
5. The CPU need the Heat Sink on it.

Technical Support

<http://www.globalamericaninc.com>

Specifications

General Specifications

- **CPU** : Intel Ultra Low Voltage Embedded Celeron 400MHz to Pentium III 933MHz processor with FSB 100/133 MHz uBGA package.
- **Chipset** : VIA VT8606 100/133 MHz North Bridge, VIA VT82C686B
- **Display Controller** : VIA 8606 Integrated Savage4 2D/3D Video Accelerator, 32MB Shared Memory, 4 x AGP
- **Extensive LCD Support** : 15-pin D-sub VGA output x 1(8 x 2 pin header), supports LCD display TTL
- **BIOS** : AWARD® Flash BIOS
- **Green Function** : power saving supported in BIOS. DOZE / STANDBY
- **L2 Cache** : Integrated on CPU (256 KB ~ 512 KB)
- **DRAM Memory** : One 144-pin SODIMM socket supports up to 512MB
- **IDE Interface** : 44-pin connector x 1 (IDE supports DMA33)
- **Real Time Clock** : RTC with Lithium Battery

High Speed Multi I/O

- **Chipset** : VIA VT8606
- **Serial Ports** : Two high speed COM ports, one is high speed RS-232C and the other is RS232C/422/485 port (jumper selectable). Both with 16C550 compatible UART and 16 byte FIFO.
- **USB** : 2 onboard USB ver 1.1 ports
- **Extension Bus** : PC/104
- **Flash EPROM** : 2MB EPROM and combined BIOS support
- **Watchdog Timer** : 1 - 255 sec, system reset or NMI

Network Interface Controller

- **Chipset** : Realtek 8100BL chip
- **Interface** : IEEE802.3U compatible 10/100 Base-T interface includes software driver and boot ROM function

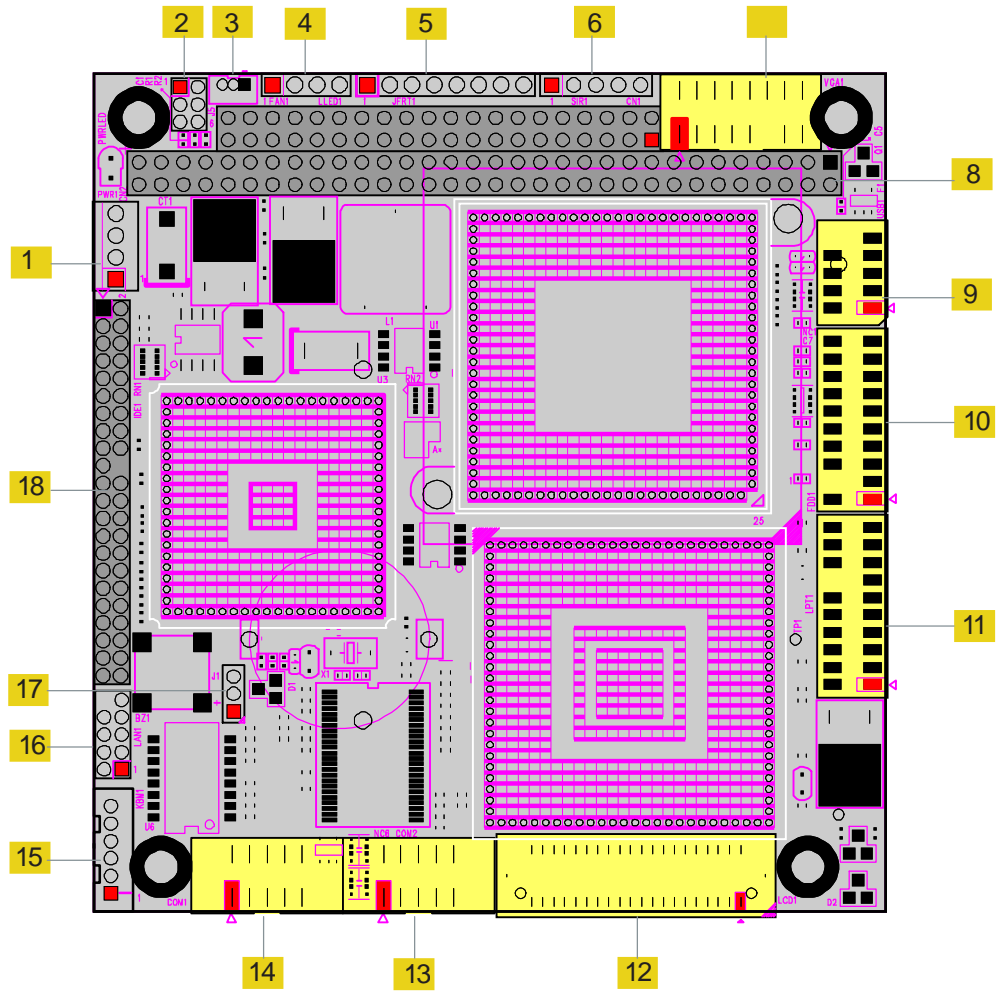
SSD Interfaces

- **Compact Flash Card (CFC)**
 - **Compact Flash Socket** : supports Type I/II CFC
 - **Capacity** : up to 1 GB CFC

Environmental and Power

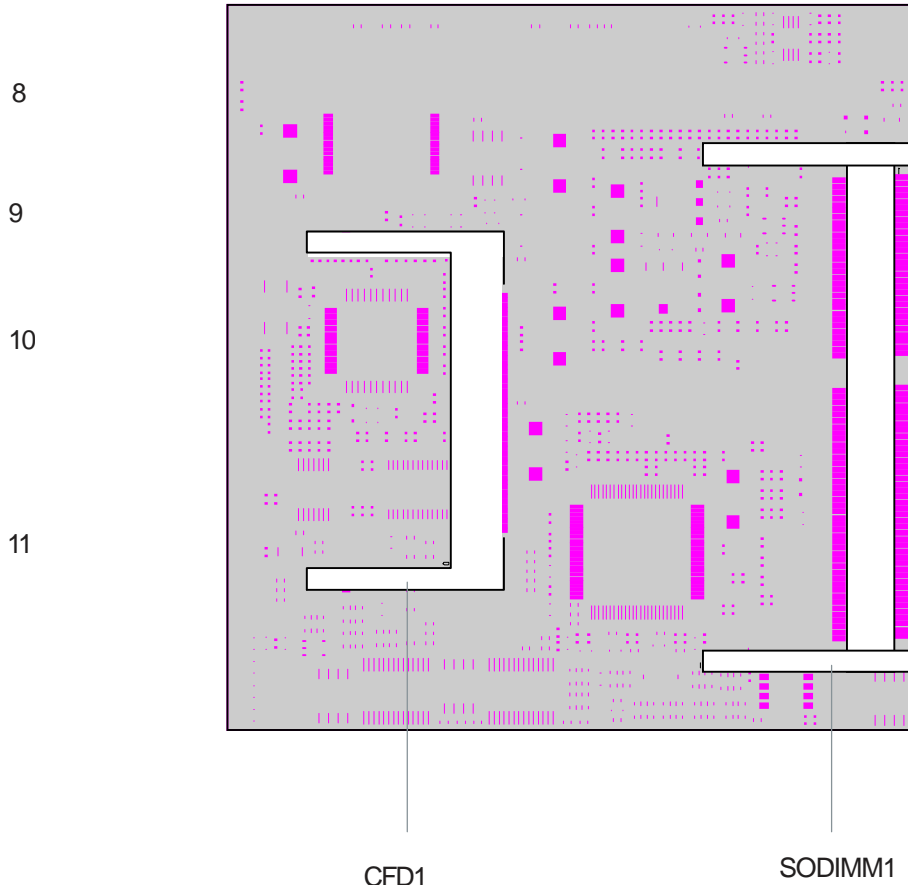
- **Power Requirements** : +5 V @ 2.1 A (typical);(ULV Celeron 400MHz and 512MB SDRAM)
- **System Monitoring and Alarm** : CPU and System temperature, system voltage .
- **Board Dimensions** : 90mm x 96mm (3.5" x 3.8")
- **Board Weight** : 0.11kg
- **Operating Temperature** : 0 to 60°C (32 to 140°F)

Board Layout Top View (Front)



- | | | | |
|----------|-----------|----------|----------|
| 1. PWR1 | 6. SIR1 | 11. LPT1 | 16. LAN1 |
| 2. J4 | 7. VGA1 | 12. LCD1 | 17. J1 |
| 3. FAN1 | 8. PC 104 | 13. COM2 | 18. IDE1 |
| 4. LLED1 | 9. USB1 | 14. COM1 | |
| 5. JFRT1 | 10. FDD1 | 15. KBM1 | |

Board Layout View (Back)



Jumper/Connector Quick Reference

Jumpers

Label	Function
J1	Clear CMOS
J4	COM2 RS-232/422/485 Selection

Jumper/Connector Quick Reference

Connector	
Label	Function
VGA1	VGA Display Connector
LCD1	18&24 Bit LCD Connector (DF-13 40 pin)
IDE1	IDE Hard Drive Connector
CFD1	Compact Flash Connector
USB1	USB 0-1 Connector
SIR1	IrDA Connector
KBM1	Keyboard and PS/2 Mouse Connector
FDD1	Floppy Drive Connector
LPT1	Parallel Port Connector
COM1	COM1 RS-232 Serial Port Connector
COM2	COM2 RS-232/422/485 Serial Port Connector
PWR1	Small 4P Power Connector
LAN1	100 Base-Tx Ethernet Connector
LLED1	LAN LED
JFRT1 (1-2)	Front Panel (Reset Switch)
JFRT1 (3-4)	Front Panel (External SMI)
JFRT1 (5-6)	Front Panel (HDD LED)
JFRT1 (7-8)	Front Panel (External Speaker)

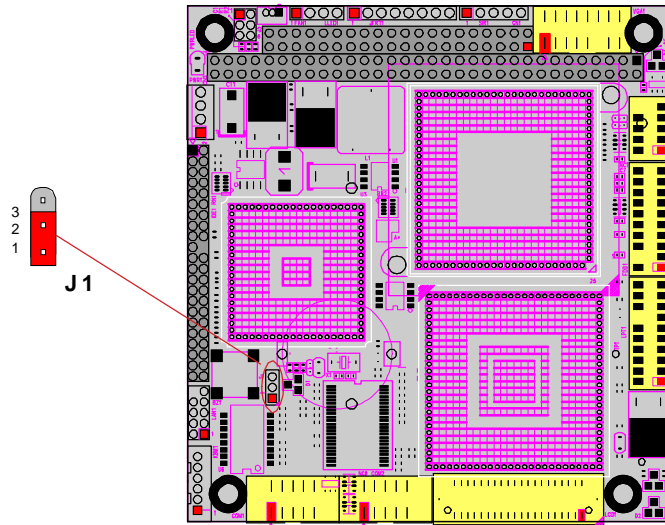
CMOS Jumper Settings

CMOS Operation (J1)

Type : onboard 3-pin header

If the 3003050VL/C400 refuses to boot due to inappropriate CMOS settings here is how to proceed to clear (reset) the CMOS to its default values.

CMOS Setup (J1)	J1	Status
Normal Operation	1-2 ON	ON
Clear CMOS	2-3 ON	ON
default setting	1-2 ON	



Serial Port Selection (RS232C/422/485)

RS-232C/422/485 Mode select (J4)

Type : onboard 6-pin(2*3) header

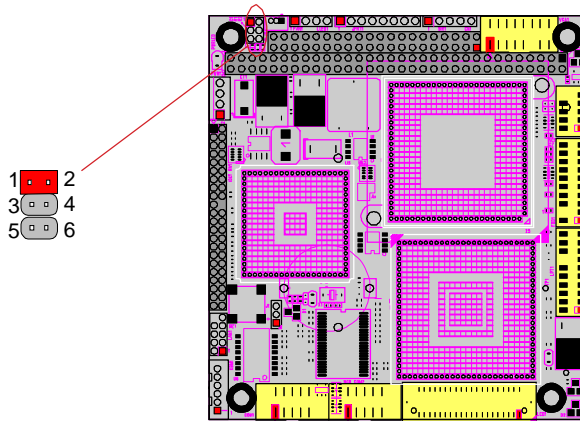
J4 Selection	1-2	3-4	5-6
RS-232C	ON	OFF	OFF
RS-422	OFF	ON	OFF
RS-485	OFF	OFF	ON

default setting RS-232C

RS-422/485 Mode on COM2

The onboard COM2 port can be configured to operate in RS-422 or RS-485 modes. RS-422 modes differ in the way RX/TX is being handled. Jumper J5 switches between RS-232C or RS-422/485 mode. All of the RS-232C/422/485 modes are available on COM2.

COM2			
Pin Defined:	RS-232C	RS-422	RS-485
Pin1 :	DCD	Tx+	RTx+
Pin2 :	RXD	Tx-	RTx-
Pin8 :	CTS	Rx+	x
Pin9 :	RI	Rx-	x

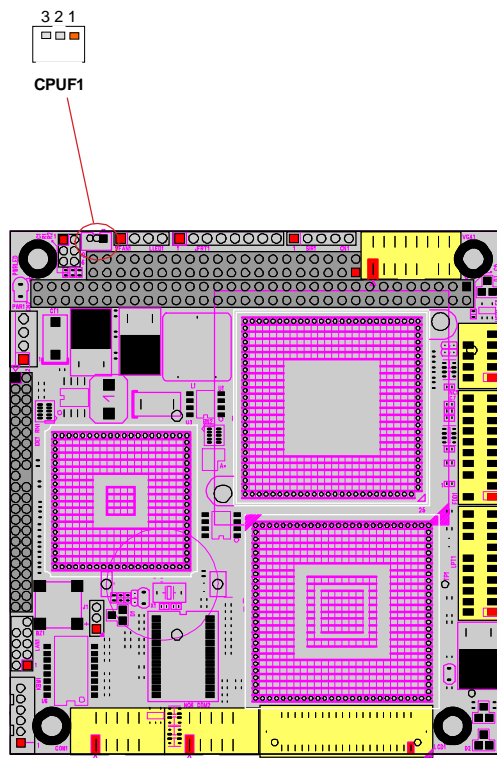


CPU Fan Connector

Connector : **FAN1**

Type : onboard 3-pin wafer connector

Pin	Description
1	FAN_CTL
2	+5V
3	GND



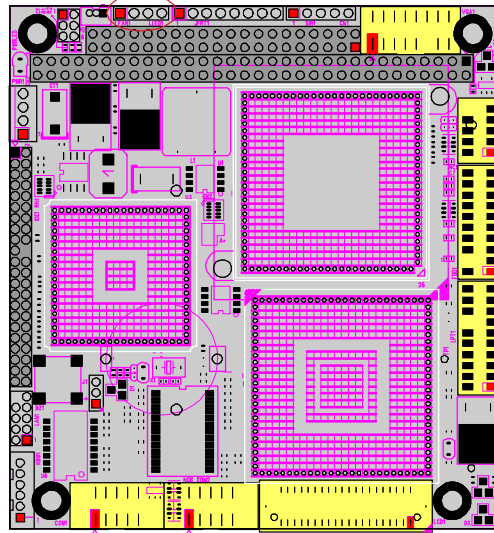
LAN LED Connector

Connector : **LLED1**

LAN LED can be indicated when the Network is on or off.

Type : Onboard 4-pin header

Pin	Description
1	ACTLED-
2	+3.3V
3	LINKLED-
4	+3.3V

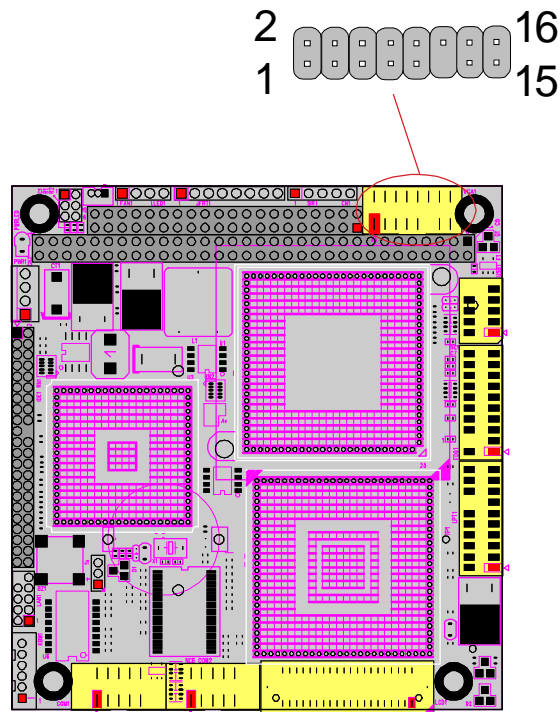


VGA Connector

Connector : VGA1 Connector

Type: Onboard 16-pin mini boxheader

Pin	Description	Pin	Description	Pin	Description
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	VDDAT
3	BLUE	8	GND	13	HSYNC
4	NC	9	Vcc	14	VSYNC
5	GND	10	GND	15	VDCLK
16	NC				

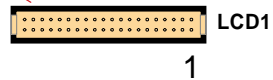
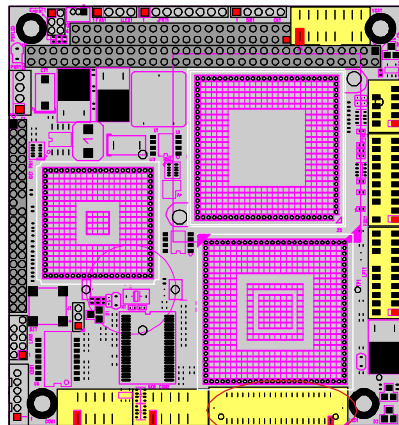


Flat Panel VGA

LCD1

Type : Onboard 40-pin Box Header

Pin	Description	Pin	Description
1	VCC5V	2	VCC5V
3	GND	4	GND
5	VCC3V	6	VCC3V
7	NC	8	GND
9	FPD0	10	FPD1
11	FPD2	12	FPD3
13	FPD4	14	FPD5
15	FPD6	16	FPD7
17	FPD8	18	FPD9
19	FPD10	20	FPD11
21	FPD12	22	FPD13
23	FPD14	24	FPD15
25	FPD16	26	FPD17
27	FPD18	28	FPD19
29	FPD20	30	FPD21
31	FPD22	32	FPD23
33	GND	34	GND
35	SHFCLK	36	HSYNC
37	M(DE)	38	VSYNC
39	ENABLK	40	ENAVEE



COM1 & COM2 Connectors

COM1 RS-232

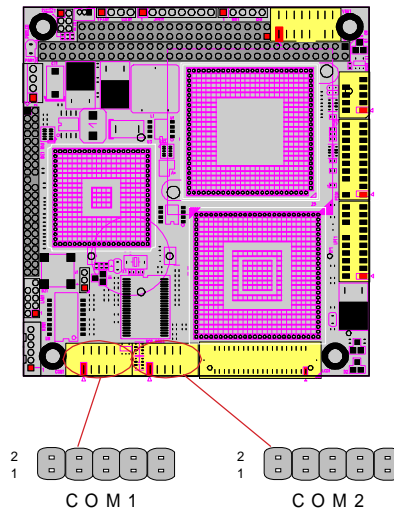
Connector : COM1
Type : Onboard 10-pin header

Pin	Description	Pin	Description
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI	10	NC

COM2 with RS-232/422/485 Mode

Connector : COM2
Type : onboard 10-pin header

Pin	Description	Pin	Description
1	DCD2(422TXD+/485DATA+)	2	RXD2(422TXD-/485DATA-)
3	TXD2	4	DTR2
5	GND	6	DSR2
7	RTS2	8	CTS(422RXD+)
9	RI(422RXD-)	10	NC

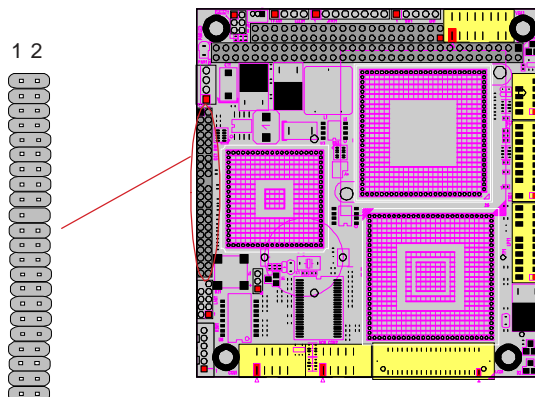


Enhanced IDE Connector

Connector : IDE1

Type : Onboard 44-pin box headers

Pin	Description	Pin	Description
1	#RESET	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	NC/(Vcc)
21	REQ	22	GND
23	IO RWITE	24	GND
25	IO READ	26	GND
27	IO READY	28	GND
29	DACK	30	GND
31	IRQ14	32	NC
33	ADDR1	34	ATA66 DETECT
35	ADDR0	36	ADDR2
37	CS#1	38	CS#3
39	IDEACTP	40	GND
41	VCC(+5V)	42	VCC(+5V)
43	GND	44	NC

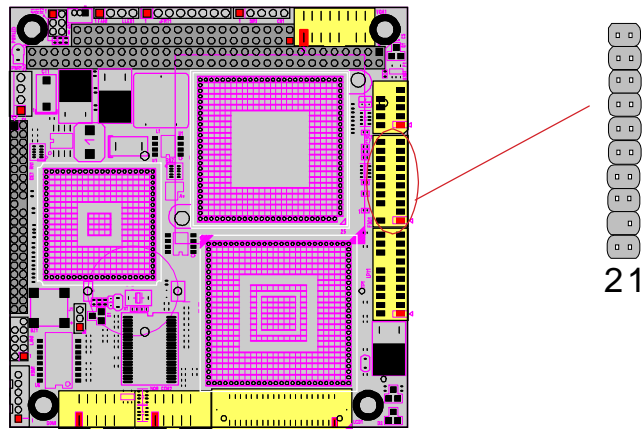


FDD Connector

Connector : FDD1

Type : Onboard 20-pin header

Pin	Description	Pin	Description
1	GND	2	Drive density select 0
3	GND	4	NC (Key)
5	GND	6	Drive density select 1
7	#Write data	8	#Index
9	#Write gate	10	#Motor enable A
11	#Track 0	12	#Driver select B
13	#Write protect	14	#Driver select A
15	#Read data	16	#Motor enable B
17	#Head select	18	#Direction
19	#Disk change	20	#Step

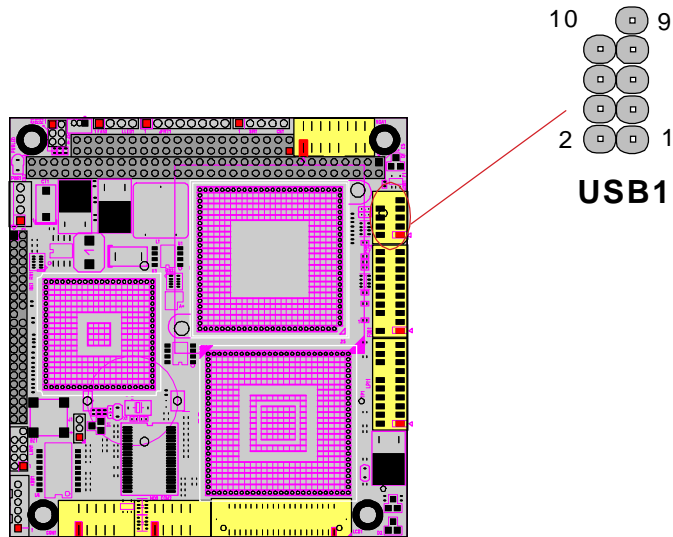


USB Connector

Connector : USB1 connector

Type: onboard Two 8-pin box headers

Pin	Description	Pin	Description
1	+5V	2	+5V
3	USBD0-	4	USBD1-
5	USBD0+	6	USBD1+
7	GND	8	GND
9	GND	10	NC

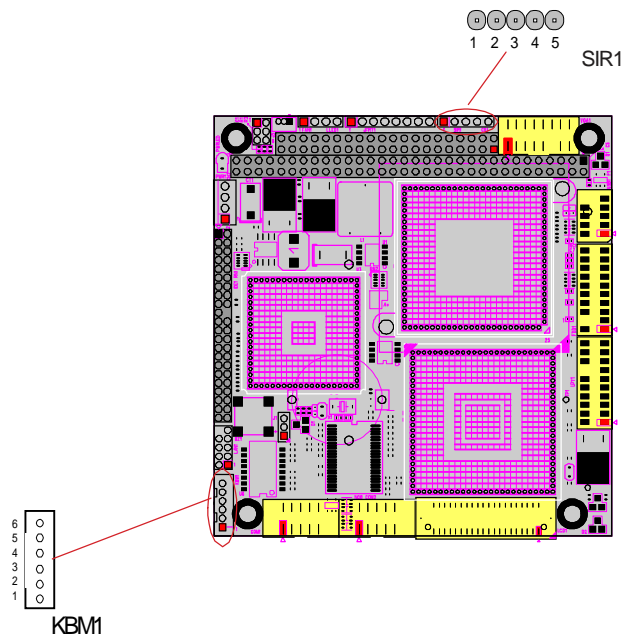


Infrared (IR) Connector

Connector : **SIR**

Type : SIR1: onboard 5-pin header

Pin	Description	Pin	Description
1	+5V	2	NC
3	IRRX	5	GND
5	IRTX		



Keyboard & PS/2 Mouse

Connector : **KBM1**

Type : KBM2: onboard waver 6-pin

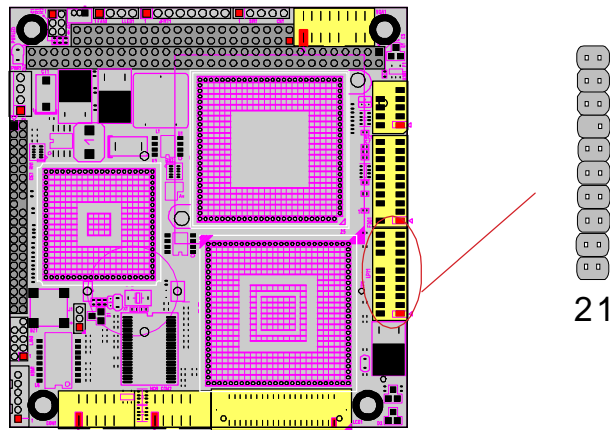
Pin	Description	Pin	Description
1	KB_DATA	2	GND
3	MS_DATA	4	KB_CLK
5	+5V	6	MS_CLK

Parallel Port Connector

Connector : LPT1

Type : Onboard 20-pin header

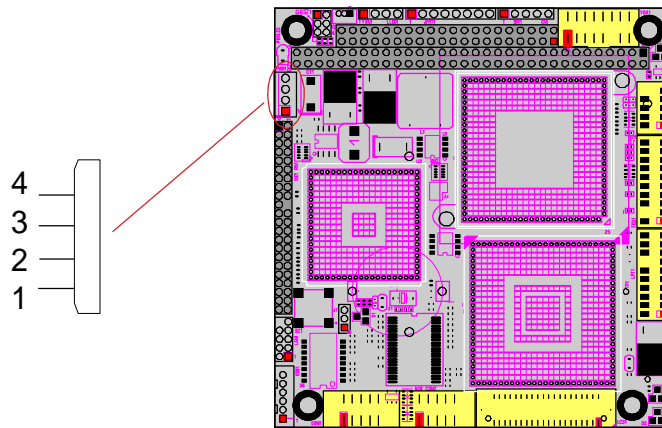
Pin	Description	Pin	Description
1	#STROBE	2	#Auto feed
3	PTD 0	4	#Error
5	PTD 1	6	#Initialize
7	PTD 2	8	#Select Input
9	PTD 3	10	GND
11	PTD 4	12	GND
13	PTD 5	14	NC (KEY)
15	PTD 6	16	Busy
17	PTD 7	18	Paper Empty
19	#Acknowledge	20	Select



Small 4P Power Connector

Connector : PWR1
Type : 4 pin

Pin	Description	Pin	Description
1	+5V	2	GND
3	GND	4	+12V

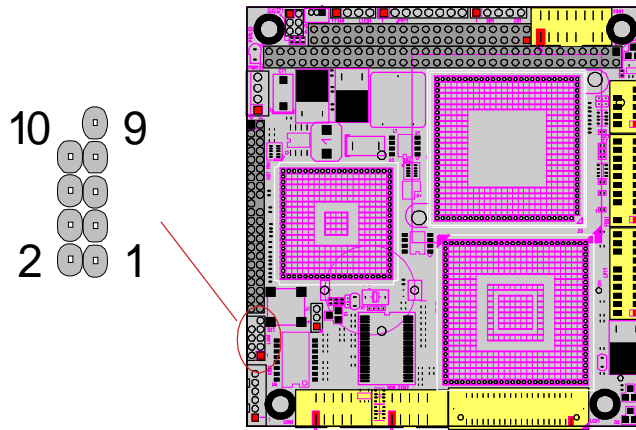


100 Base-Tx Ethernet Connector

Connector : LAN1

Type : onboard 10-pin header

Pin	Description	Pin	Description
1	TX+	2	TX-
3	RX+	4	NC
5	NC	6	RX-
7	NC	8	NC
9	GND	10	NC

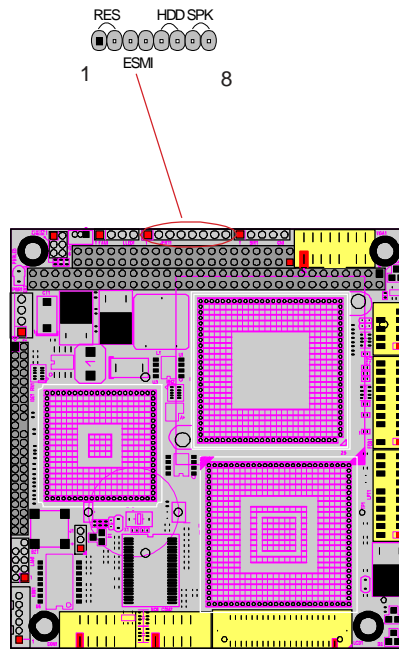


Switches and Indicators

Connector : **JFRT1**

Type : onboard 8-pin header

Pin	Jumper	Description
1-2	RES	Reset
3-4	NC	
5-6	HDD	Pin-5 is "HDD+",Pin6 is "HDD-"
7-8	SPEAKER	Pin-7 is "SPEAKER+",Pin-8 is "SPEAKER-"



System Resources

Interrupt Assignment

IRQ Address	Description
0	System Timer
1	Keyboard (KB output buffer full)
2	Programmable Interrupt Controller
3	Serial Port 2 (COM2)
4	Serial Port 1 (COM1)
5	AC'97 Audio for VIA Audio Controller
6	Reversed
7	Parallel Port 1
8	Real-Time Clock
9	VIA Tech 3038 PCI To USB Universal Host Controller
10	S3 Graphics Twister
11	Realtek RTL 8139(A/B/C/8130) PCI Fast Ethernet NIC
12	PS/2 Mouse
13	Numeric data processor
14	Primary IDE Controller
15	Secondary IDE Controller

I/O Address Space

Adress	Description
0000 - 000F	DMA Controller
0010 - 001F	Motherboard Resources
0020 - 0021	PC
0022 - 003F	Motherboard Resources
0040 - 0043	System Timer
0044 - 005F	Motherboard Resources
0060 - 0060	Keyboard
0061 - 0061	Systems Speaker
0062 - 0063	Motherboard Resources
0064 - 0064	Keyboard
0065 - 006F	Motherboard Resources
0070 - 0073	System CMOS / Real time clock
0074 - 007F	Motherboard Resources

0080 - 0090	DMA Controller
0091 - 0093	Motherboard Resources
0094 - 009F	DMA Controller
00A0 - 00A1	PC
00A2 - 00BF	Motherboard Resources
00E0 - 00BF	Motherboard Resources
00C0 - 00DF	DMA Controller
00F0 - 00FF	Numeric Data Processor
0170 - 0177	VIA Bus Master PCI IDE Controller
01F0 - 01F7	VIA Bus Master PCI IDE Controller
02F8 - 02FF	Communications (COM2)
0376 - 0376	VIA Bus Master PCI IDE Controller
0378 - 037F	Printer Port (LPT1)
03B0 - 03BB	S3 Graphics Twister
03C0 - 03DF	S3 Graphics Twister
03F6 - 03F6	VIA Bus Master PCI IDE Controller
03F7 - 03F7	Floppy Disk Controller
03F8 - 03FF	Communications (COM1)
04D0 - 04D1	Motherboard Resources
0CF8 - 607F	PCI Bus
D000 - D00F	VIA Bus Master PCI IDE Controller
D400 - D41F	VIA Tech 3038 PCI to USB Universal Host Controller
D800 - D81F	VIA Tech 3038 PCI to USB Universal Host Controller
DC00 - DCFF	Avance AC'97 Audio for VIA (R) Audio Controller
E000 - E003	Avance AC'97 Audio for VIA (R) Audio Controller
E400 - E403	Avance AC'97 Audio for VIA (R) Audio Controller
E800 - E8FF	Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet NIC