



Mity-SoC Development Kit &

Mity-SoC CPU Module

with 2S/USB/GPIO 256MB DDR2 Onboard

(Onboard EmbedDisk 512MB)

User's Manual

(Revision 1.0A)

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Manual No. IUM6319D-FB-D000-01 Ver.1.0A ◆ December, 2010

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Chapter 1

Introduction

1.1 Packing List

Product Name	Package
VSX-6119-1	● Vortex86SX/ DX CPU Mity-SoC Development board x1 ● Manual & Drivers CD x 1 ● RS232 cable x 3 ● PRINTER cable x1 ● IDE cable x 1 ● USB cable x 1 (USB port x 2) ● GPIO cable x 1 ● YKB for PS/2 Keyboard & Mouse x 1

Product Name	Package
VDX-6319D-FB-D (Onboard EmbedDiSk 512MB)	● Embedded Vortex86DX Mity-SoC CPU Module x1

Product Name	Package
ICOP-6019-VGA	● Mity-SoC VGA/LCD development Kit x1

1.2 Product Description

The VDX-6319D-FB-D family of low-power x86 embedded controller is designed to meet Mity-SoC specification, and integrated with the following features.

- | | |
|------------------------------------|-------------------------------------|
| ■ 800MHz Vortex86DX System-On-Chip | ■ JTAG interface |
| ■ 256MB DDR2 system memory | ■ AMI BIOS |
| ■ 1 USB 2.0 (host) | ■ Onboard EmbedDisk 512MB |
| ■ Up to 2 serial ports | ■ 4MB SPI flash |
| ■ 16-bit GPIO x1 | ■ Single voltage +5V DC |
| ■ x-ISA bus | ■ Support extended operating |
| ■ 2 watchdog timer | temperature range of -20°C to +70°C |

The VDX-6319D-FB-D Mity-SoC family of embedded controller is designed as the kernel of your own application, to provide migration path for projects facing end-of-life challenges with their existing x86 based Mity-Mite controller. The VDX-6319D-FB-D family of controller is designed as a plug in replacement, with backward compatibility to support legacy software to help extend existing product life cycle without heavy re-engineering.

VDX-6319D-FB-D is suitable for broad range of data-acquisition, Industrial automation, Process control, Automotive controller, AVL, Intelligent Vehicle management device, Medical device, Human machine interface, Robotics, machinery control And more...application that required small footprint, low-power and low-cost hardware with open industry standard such as Mity-SoC.

1.3 Specifications

■ VSX-6119-1 (Mity-SoC ISA bus Development board)

Features	VSX-6119-1
Bus Interface	16-bit x-ISA interface PC/104 standard compliant
Status indicator	Digit Type 7-Segment LED Display for POST Code x2 GPIO LED x16
Connectors	2.54mm 26-pin box header for Printer x1 2.54mm 20-pin box header for 16-bit GPIO x1 2.54mm 10-pin box header for RS-232 x1 2.54mm 5-pin box header for Keyboard x1 2.54mm 10-pin box header for USB x1 2.54mm 2-pin header for Reset x1 - External 15-pin D-Sub female connector for VGA - External 9-pin D-Sub male connector for RS-232 x1 - External Mini DIN connector for Keyboard/Mouse x1 4-pin Molex connector for Power input x1 2-pin Terminal strip for Power input x1 - DC Jack for Power input x1
Power Requirement	Single Voltage +5V @150mA
Dimension	185 x 122mm (7.28 x 4.8 inches)
Weight	172g
Operating Temperature	-20°C ~ +70°C -40°C ~ +85°C (Optional)

■ VDX-6319D-FB-D

Features	VDX-6319D-FB-D
CPU	DM&P SoC CPU Vortex86DX- 800MHz Real Time Clock with Lithium Battery Backup
Cache	L1:16K I-Cache, 16K D-Cache L2:128KB Cache
BIOS	AMI BIOS
Bus Interface	16-bit x-ISA interface
System Memory	256MB DDR2 onboard
Watchdog Timer	Software programmable from 30.5 us to 512 seconds x2 sets(Watchdog 1 fully compatible with M6117D)
I/O Interface	● RS-232 port x2 (TTLx2) ● USB port (ver2.0) x1 ● Parallel port x1 ● 16-bit GPIO port x1
Connectors	● 2.00 mm Ø 64-pin header for 16-bit x-ISA x1 ● 2.00 mm Ø 64-pin header for I/O interface x1 ● 2.00 mm Ø 9-pin header for DMA x1 ● 1.25mm Ø 6-pin Wafer for JTAG x1
Flash Disk Support	● Onboard 4MB SPI Flash Disk (Driver: A) ● Onboard EmbedDisk 512MB (Driver: C)
Power Requirement	Single Voltage +5V @400mA
Dimension	65mm X 45mm (2.56 x1.77 inches)
Weight	30g
Operating Temperature	-20°C ~ +70°C -40°C ~ +85°C (Optional)

■ ICOP-6019-VGA

Features	ICOP-6019-VGA
Chipset	TOPRO TP6508IQ VGA and Mono/STN/DSTN/TFT Flat Panel interface support
Bus	16-bit x-ISA interface
Video Memory	Onboard 1MB EDO RAM, support resolution up to 1024x768, 256 colors
Bus Interface	PC/104+ standard compliant
Connectors	● 2.0mm 44-pin box header for LCD x1 ● 2.0mm 10-pin box header for VGA x1 ● 2.54mm 4-pin wafer for +12V, -12V, -5V DC-in x1
Power Requirement	Single Voltage +5V@200mA
Dimension	80 x 50mm (3.14 x 1.96 inches)
Weight	32g
Operating Temperature	-20°C ~ +60°C

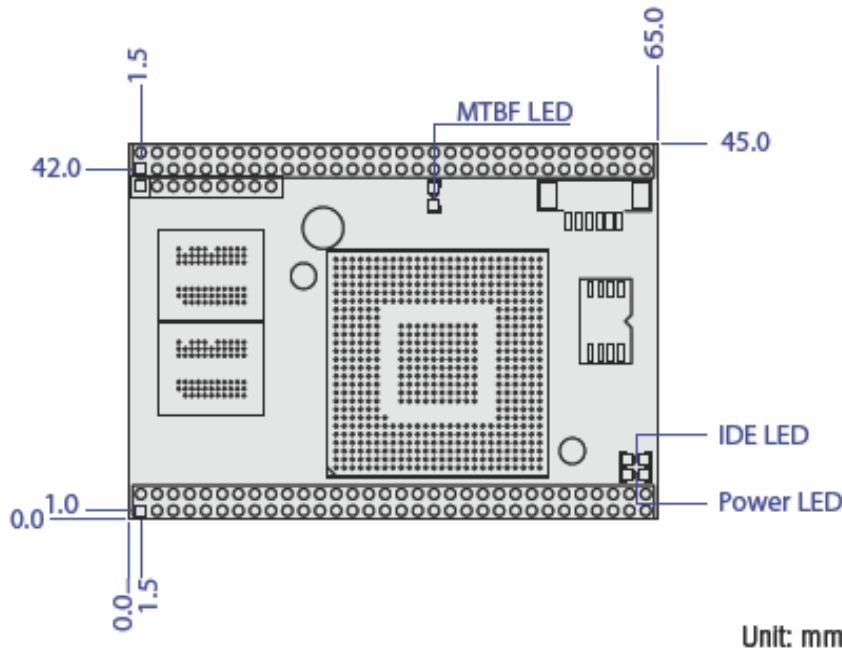
1.4 Order Selection

Mity-SoC CPU Module Ordering Selection

Ordering Type No.	SST-512MB	SPI-4MB	TTL	RS-232
VDX-6319-FB-A	V		V	
VDX-6319-FB-B	V			V
VDX-6319-FB-C	V	V	V	
VDX-6319-FB-D	V	V		V

1.5 Board Dimension

■ VDX-6319D-FB-D

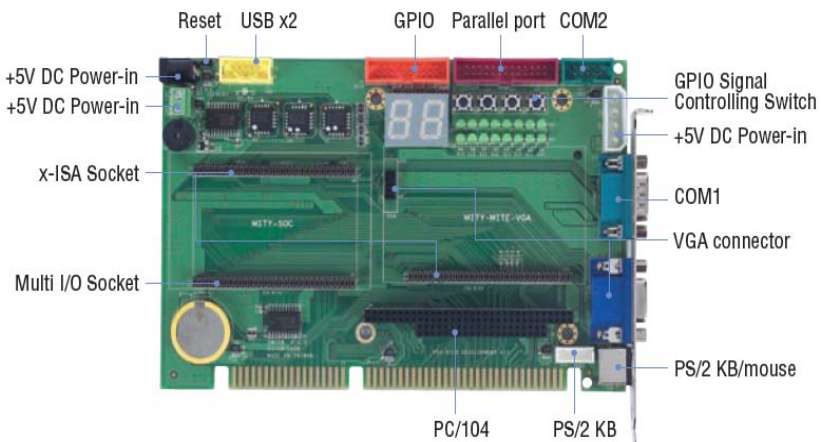


Chapter 2

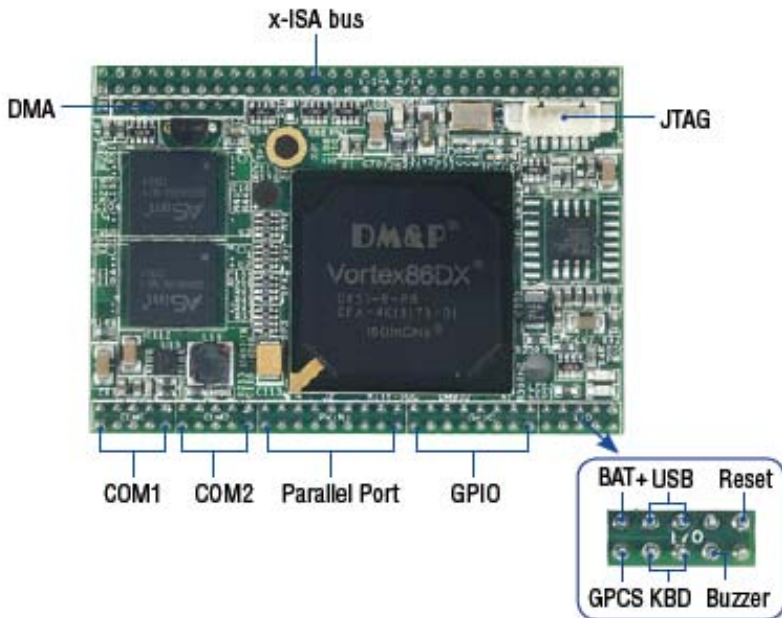
Installation

2.1 Board Outline

■ VSX-6119-1 (Mity-SoC ISA bus Development board)



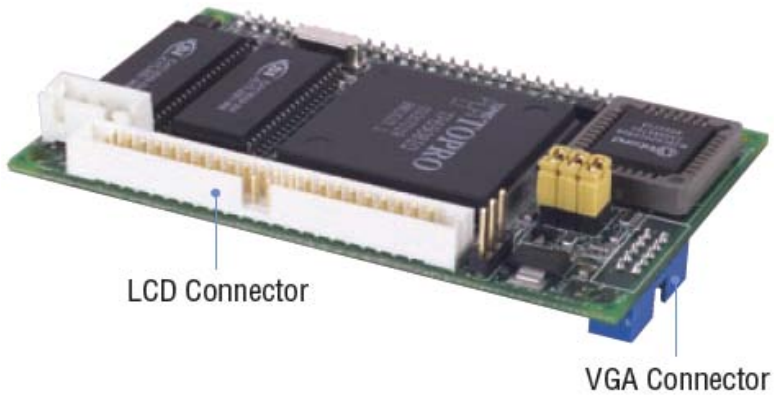
■ VDX-6319D-FB-D



Note: VGA function support (ICOP-6019-VGA) via x-ISA Interface

http://www.icop.com.tw/DB/upload/manual/ICOP-2820_Manual.pdf

■ ICOP-6019-VGA

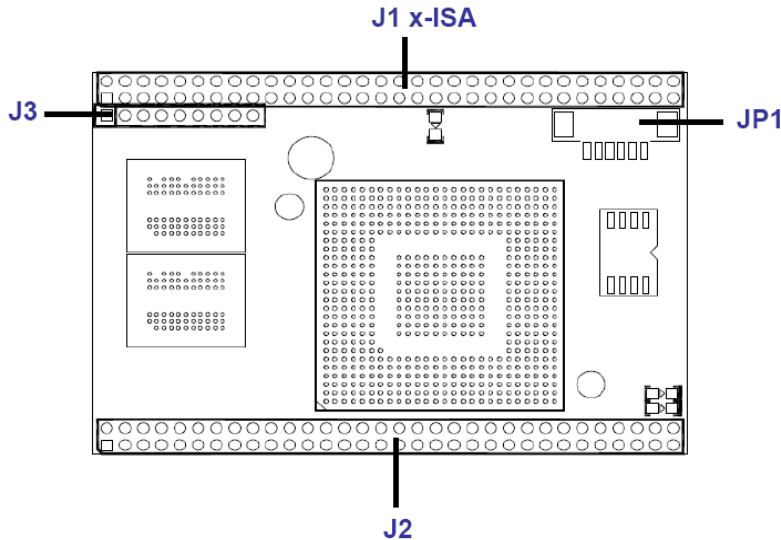


If you need more information about ICOP-6019-VGA, please visit our website:

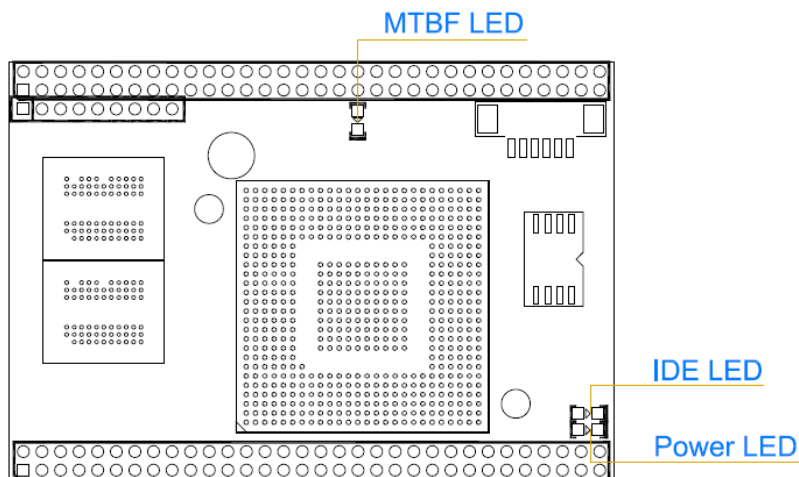
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2.2 Connectors & Jumpers Location

Connectors



Jumpers & LEDs



2.3 Connectors & Jumpers Summary

■ VSX-6119-1 (Mity-SoC ISA bus Development board)

Summary Table			
Nbr	Description	Type of Connections	Pin nbrs.
J1	x-ISA Connector – 64 pin	Box Header, 2.0Ø, 32x2	64-pin
J2	ISA bus Connector, SL62	62-pin Gold finger	62-pin
J3	ISA bus Connector, SL36	36-pin Gold finger	36-pin
J4	PC104 Connector – 64 pin	Box Header, 2.54Ø, 32x2	64-pin
J5	PC104 Connector – 40 pin	Box Header, 2.54Ø, 20x2	40-pin
J6	Mity-Mite VGA Connector	Box Header, 2.0Ø, 32x2	64-pin
J7	USB	Pin Header, 2.54Ø, 5x2	10-pin
J8	Multi I/O Connector – 64 pin	Box Header, 2.0Ø, 32x2	64-pin
J9	GPIO Port	Box Header, 2.54Ø, 10x2	20-pin
J10	COM1	D-Sub Connector	9-pin
J11	COM2	Box Header, 2.54Ø, 5x2	10-pin
J12	Reset	Pin Header, 2.54Ø, 1x2	2-pin
J13	PS/2 Keyboard	Box Header, 2.54Ø, 1x5	5-pin
J14	VGA	D-Sub female connector	15-pin
J15	Power Connector	Terminal Block 5.0Ø, 2x1	2-pin
J16	Power Connector	DC -JACK	3-pin
J17	Power Connector	Box Header, 5.0Ø Molex	4-pin
J18	VGA connector	Box Header, 2.54Ø, 5x2	10-pin
J19	PS/2 Keyboard	Mini-Din Connector	9-pin
J20	PRINT	Box Header, 2.54Ø, 13x2	26-pin
S1~S4	Switch Input		
U5	80 PORT (7Segment Display)	18-pin DIP SSD	18-pin
SP1	BUZZER		
GP0~GP15	LED Display		

2.4 Pin Assignments & Jumper Settings

■ VSX-6119-1 (Mity-SoC ISA bus Development board)

J1: x-ISA Connector – 64pin

Pin #	Signal Name	Pin #	Signal Name
1	GND	2	SBHE
3	RSTDRV	4	SD7
5	VCC	6	SD6
7	SD8	8	SD5
9	SD9	10	SD4
11	SD10	12	SD3
13	SD11	14	SD2
15	SD12	16	SD1
17	SD13	18	SD0
19	GND	20	IOCHRDY
21	SMEMW	22	AEN
23	SMEMR	24	SA19
25	IOW	26	SA18
27	IOR	28	SA17
29	SD14	30	SA16
31	SD15	32	SA15
33	MEMCS16	34	SA14
35	ICOS16	36	SA13
37	REFRESH	38	SA12
39	SYSCLK	40	SA11
41	IRQ7	42	SA10
43	IRQ6	44	SA9
45	IRQ5	46	SA8
47	IRQ4	48	SA7
49	IRQ3	50	SA6
51	IRQ10	52	SA5
53	IRQ11	54	SA4
55	BALE	56	SA3
57	VCC	58	SA2
59	OSC	60	SA1
61	GND	62	SA0
63	IRQ12	64	IRQ14

J2: ISA Bus SL62 – 62-pin Gold finger (Total 98 pins)

Pin #	Signal Name	Pin #	Signal Name
1 (A1)	IOCHCK	2 (B1)	GND
3	SD7	4	RSTDRV
5	SD6	6	VCC
7	SD5	8	IRQ9
9	SD4	10	-5V
11	SD3	12	DRQ2
13	SD2	14	-12V
15	SD1	16	OWS
17	SD0	18	+12V
19	IOCHRDY	20	GND
21	AEN	22	SMEMW
23	SA19	24	SMEMR
25	SA18	26	IOW
27	SA17	28	IOR
29	SA16	30	DACK3
31	SA15	32	DRQ3
33	SA14	34	DACK1
35	SA13	36	DRQ1
37	SA12	38	REFRESH
39	SA11	40	SYSCLK
41	SA10	42	IRQ7
43	SA9	44	IRQ6
45	SA8	46	IRQ5
47	SA7	48	IRQ4
49	SA6	50	IRQ3
51	SA5	52	DACK2
53	SA4	54	TC
55	SA3	56	BALE
57	SA2	58	VCC
59	SA1	60	OSC
61	SA0	62	GND

J3: ISA bus SL36 – 36-pin Gold finger (Total 98 pins)

Pin #	Signal Name	Pin #	Signal Name
1 (A1)	SBHE	2 (B1)	MEMCS16
3	LA23	4	IOCS16
5	LA22	6	IRQ10
7	LA21	8	IRQ11
9	LA20	10	IRQ12
11	LA19	12	IRQ15
13	LA18	14	IRQ14
15	LA17	16	DACK0
17	MEMR	18	DRQ0
19	MEMW	20	DACK5
21	SD8	22	DRQ5
23	SD9	24	DACK6
25	SD10	26	DRQ6
27	SD11	28	DACK7
29	SD12	30	DRQ7
31	SD13	32	VCC
33	SD14	34	MASTER
35	SD15	36	GND

J4: PC104 Connector – 64pin

Pin #	Signal Name	Pin #	Signal Name
1	IOCHCHK *	2	GND
3	SD7	4	RESETDRV
5	SD6	6	VCC
7	SD5	8	IRQ9
9	SD4	10	-5V
11	SD3	12	DRQ2
13	SD2	14	-12V
15	SD1	16	OWS
17	SD0	18	+12V
19	IOCHRDY	20	GND
21	AEN	22	SMEMW *
23	SA19	24	SMEMR *
25	SA18	26	IOW *
27	SA17	28	IOR *
29	SA16	30	DACK3 *
31	SA15	32	DRQ3
33	SA14	34	DACK1 *
35	SA13	36	DRQ1
37	SA12	38	REFRESH *
39	SA11	40	SYSCLK
41	SA10	42	IRQ7
43	SA9	44	IRQ6
45	SA8	46	IRQ5
47	SA7	48	IRQ4
49	SA6	50	IRQ3
51	SA5	52	DACK2 *
53	SA4	54	TC
55	SA3	56	BALE
57	SA2	58	VCC
59	SA1	60	OSC
61	SA0	62	GND
63	GND	64	GND

J5: PC104 Connector – 40pin

Pin #	Signal Name	Pin #	Signal Name
1	GND	2	GND
3	MEMCS16 *	4	SBHE *
5	IOCS16 *	6	SA23
7	IRQ10	8	SA22
9	IRQ11	10	SA21
11	IRQ12	12	SA20
13	IRQ15	14	SA19
15	IRQ14	16	SA18
17	DACK0 *	18	SA17
19	DRQ0	20	MEMR *
21	DACK5 *	22	MEMW *
23	DRQ5	24	SD8
25	DACK6 *	26	SD9
27	DRQ6	28	SD10
29	DACK7 *	30	SD11
31	DRQ7	32	SD12
33	VCC	34	SD13
35	MASTER *	36	SD14
37	GND	38	SD15
39	GND	40	NC

J6: Mity-Mite VGA Connector

Pin #	Signal Name	Pin #	Signal Name
1	GND	2	SBHE
3	RSTDRV	4	SD7
5	VCC	6	SD6
7	SD8	8	SD5
9	SD9	10	SD4
11	SD10	12	SD3
13	SD11	14	SD2
15	SD12	16	SD1
17	SD13	18	SD0
19	GND	20	IOCHRDY
21	SMEMW	22	AEN
23	SMEMR	24	SA19
25	XIOW	26	SA18
27	XIOR	28	SA17
29	SD14	30	SA16
31	SD15	32	SA15
33	MEMCS16	34	SA14
35	TOCS16	36	SA13
37	REFRESH	38	SA12
39	SYSCLK	40	SA11
41	IRQ7	42	SA10
43	IRQ6	44	SA9
45	IRQ5	46	SA8
47	IRQ4	48	SA7
49	IRQ3	50	SA6
51	IRQ10	52	SA5
53	IRQ11	54	SA4
55	BALE	56	SA3
57	VCC	58	SA2
59	XOSC	60	SA1
61	GND	62	SA0
63	IRQ12	64	IRQ14

J7: USB

Pin #	Signal Name	Pin #	Signal Name
1	VCC	2	VCC
3	LUSBD0-	4	LUSBD1-
5	LUSBD0+	6	LUSBD1+
7	GND	8	GND
9	GGND	10	GGND

J8: I/O Connector – 64pin

Pin #	Signal Name	Pin #	Signal Name
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI1	10	VCC
11	DCD2	12	RX2
13	TXD2	14	DTR2
15	GND	16	DSR2
17	RTS2	18	CTS2
19	RI2	20	VCC
21	PD0	22	SLCT
23	PD1	24	PR
25	PD2	26	BUSY
27	PD3	28	ACK\
29	PD4	30	SLCTIN\
31	PD5	32	INIT\
33	PD6	34	ERROR\
35	PD7	36	AUTOFD\
37	GND	38	STORBE\
39	GP0	40	GP8
41	GP1	42	GP9
43	GP2	44	GP10
45	GP3	46	GP11
47	GP4	48	GP12
49	GP5	50	GP13
51	GP6	52	GP14
53	GP7	54	GP15
55	GPCS0	56	VBAT
57	KBDAT	58	HDCS0
59	KBCLK	60	HDCS1
61	SPKR	62	RESETL
63	GND	64	PWG

J9: GPIO

Pin #	Signal Name	Pin #	Signal Name
1	GND	2	VCC
3	GP00	4	GP10
5	GP01	6	GP11
7	GP02	8	GP12
9	GP03	10	GP13
11	GP04	12	GP14
13	GP05	14	GP15
15	GP06	16	GP16
17	GP07	18	GP17
19	VCC	20	GND

J10: COM 1

Pin #	Signal Name	Pin #	Signal Name
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI1	10	GND
11	GND		

J11: COM 2

Pin #	Signal Name	Pin #	Signal Name
1	DCD2	2	RXD2
3	TXD2	4	DTR2
5	GND	6	DSR2
7	RTS2	8	CTS2
9	RI2	10	NC

J12: RESET

Pin #	Signal Name	Pin #	Signal Name
1	Reset	2	GND

J13: PS/2 Keyboard

Pin #	Signal Name	Pin #	Signal Name
1	KBCLK	2	KBDAT
3	NC	4	GND
5	VCC		

J14: VGA

Pin #	Signal Name	Pin #	Signal Name
1	R OUT	2	G OUT
3	B OUT	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	NC	12	DDCDAT
13	HSYNC	14	VSNC
15	DDCCLK		

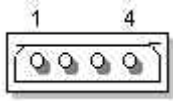
J15: Power Connector (Terminal Block 5.0mm)

Pin #	Signal Name
1	+5V
2	GND

J16: Power Connector (DC-JACK)

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

J17: Power Connector – 4-pin Header (P4 Molex 5mm)

	Pin #	Signal Name
	1	+5V
	2	GND
	3	GND
	4	+12V

J18: VGA

Pin #	Signal Name	Pin #	Signal Name
1	R OUT	2	GND
3	G OUT	4	GND
5	B OUT	6	GND
7	HSYNC	8	GND
9	VSNC	10	GND

J19: PS/2 Keyboard / Mouse

Pin #	Signal Name	Pin #	Signal Name
1	KBDATA	2	NC
3	GND	4	VCC
5	KBCLK	6	NC
7	MSDATA	8	NC
9	GND	10	VCC
11	MSCLK	12	NC
13	GGND	14	GGND
15	GGND	16	GGND
17	GGND		

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