

Quick Installation Guide

Version 1.1

EmETX-i602

ETX Embedded Intel Celeron ULV 400MHz
CPU Model with one SODIMM up to 512
MB SDRAM, CRT\Flat Panel SVGA, one
Realtek 8139CL Fast Ethernet, AC97 3D
Audio

Part Number: 4041060200100

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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

If you have any technical difficulties, please consult the user's manual first at:

<ftp://ftp.arbor.com.tw/pub/manual>

Please do not hesitate to call or e-mail our customer service when you still can not find out the answer.

<http://www.arbor.com.tw>

E-mail: info@arbor.com.tw

Specifications

General Specifications

- **CPU** : Intel Ultra Low Voltage Embedded Celeron 400MHz to Pentium3 933MHz processor with FSB 100/133 MHz EBGA package.
- **Chipset** : VIA VT8606 TwisterT with Integrated Savage4 AGP 4X Graphics core and VT82C686B Super "South Bridge"
- **BIOS** : AWARD® Flash BIOS
- **Green Function** : power saving supported in BIOS. DOZE / STANDBY / SUSPEND modes, ACPI & APM
- **L2 Cache** : Integrated on CPU (256 KB ~ 512 KB)
- **DRAM Memory** : Onboard SODIMM socket up to 512MB of SDRAM
- **Enhanced IDE with UltraDMA** : supports 2 port and up to 4 ATAPI devices, Ultra DMA transfer 33 / 66 and 100 MB/sec.
- **Real-time Clock** : built-in chipset with lithium battery backup(built on carrier board). CMOS data backup of BIOS setup and BIOS default.

High Speed Multi I/O

- **Chipset** : VIA VT82C686B
- **Serial Ports** : Two high speed RS-232C ports (COM1). One high speed RS-232C/422/485 port COM2 (jumper selectable). Both with 16C550 compatible UART and 16 byte FIFO.
- **USB** : 4 onboard USB ver 1.1 ports
- **SIR Interface** : onboard IrDA TX/RX port
- **Bi-directional Parallel Port** : SPP, EPP and ECP mode.
- **Keyboard and Mouse** : support one PS/2 Keyboard and one PS/2 Mouse
- **Audio Chipset**: VIA VT82C686B, AC97 2.0 compliant, Multistream Direct Sound and Direct Sound 3D acceleration.

Network Interface Controller

- **Chipset** : Realtek 8139CL, 10/100 Mbps

Display Controller

- **Chipset** : 4x AGP S3 Savage4 3D and S3 Savage 2000 2D engines integrated in VT8606 supports up to 32MB of Shared Memory
- **Display Type** : Flat Panel and CRT displays up to 1280x1024 @ 32 bpp
 - Lcd interface : Flat Panel 36-bit TFT/DSTN interface
 - LVDS interface(PBE-1000) : Scalable Bandwidth is ranging from 25MHz~112MHz(VGA~SXGA) 18/36-bit one/two channel LVDS interface
 - TV-Out : Support NTSC,PAL NTSC-EIA(Japan) formats . Support 640x480 resolutions
- **Resolution**: Single Channel of LVDS / 36-bit of TTL and 12-bit of TMDS; all resolutions are supported up to 1280x1024.

Environmental and Power

- **Power Requirements** : +5 V @ 2.18 A (typical);(Low Power Embedded Celeron 400MHz and 512MB SDRAM)
- **System Monitoring and Alarm** : CPU and System temperature, system voltage .
- **Board Dimensions** : 95mm x 114mm (3.7" x 4.5")
- **Board Weight** : 0.087kg
- **Operating Temperature** : 0 to 60°C (32 to 140°F)

Packing list

Before you begin installing your single board computer, please make sure that the following materials have been shipped:

- > 1 x EmETX-i602 EXT Embedded Intel Celeron(or PIII Tualatin) SBC
- > 1 x Quick Installation Guide
- > 1 x CD-ROM (for driver used)
- > 1 x Warranty Card

Ordering Codes

| | | |
|------------------------|---|---------------|
| EmETX-i602/C400 | ETX Embedded Intel Celeron ULV 400MHz Single Board Computer with one SODIMM socket up to 512 MB SDRAM, CRT SVGA, One Realtek 8139CL Fast Ethernet, AC97 3D Audio. | |
| EmETX-i602/P800 | ETX Embedded Intel PIII Tualatin Low Power 800MHz Single Board Computer with one SODIMM socket up to 512 MB SDRAM, CRT SVGA, One Realtek 8139CL Fast Ethernet, AC97 3D Audio. | |
| PBE-1000 | The Evaluation Board for ETX serials development (ATX form factor) | |
| Heat Sink | 2631040950000 | |
| SODIMM | 64MB | 5150064001440 |
| | 128MB | 5150128001440 |

Jumper/Connector Quick Reference

Connectors

| Lable | Function | Page |
|-------|--------------------------------------|------|
| LCD1 | LCD TTL Connector 1 | 9 |
| LCD2 | LCD TTL Connector 2 | 9 |
| ETX1 | PCI Bus, USB, Audio | 10 |
| ETX2 | ISA Bus | 10 |
| ETX3 | VGA,LCD,Video,COM1,COM2,LPT,IrDA,M/K | 11 |
| ETX4 | IDE1,IDE2,Ethernet,Miscellaneous | 11 |

Flat Panel VGA

LCD1

Type : Onboard 40-pin Box Header (Hirose DF-40DS-1.25C)

| 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 |

LCD2

Type : Onboard 20-pin Box Header (Hirose DF-20DS-1.25C)

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | GND | 2 | GND |
| 3 | FPD24 | 4 | FPD25 |
| 5 | FPD26 | 6 | FPD27 |
| 7 | FPD28 | 8 | FPD29 |
| 9 | FPD30 | 10 | FPD31 |
| 11 | FPD32 | 12 | FPD33 |
| 13 | FPD34 | 14 | FPD35 |
| 15 | GND | 16 | GND |
| 17 | NC | 18 | NC |
| 19 | NC | 20 | NC |

ETX Connector

ETX1

ETX2

| | | | | | | | |
|----|---------|---------|-----|----|---------|---------|-----|
| 1 | GND | GND | 2 | 1 | GND | GND | 2 |
| 3 | PCICLK3 | PCICLK4 | 4 | 3 | SD14 | SD15 | 4 |
| 5 | GND | GND | 6 | 5 | SD13 | MASTER# | 6 |
| 7 | PCICLK1 | PCICLK2 | 8 | 7 | SD12 | DREQ7 | 8 |
| 9 | REQ#3 | GNT#3 | 10 | 9 | SD11 | DACK#7 | 10 |
| 11 | GNT#2 | VCC3 | 12 | 11 | SD10 | DREQ6 | 12 |
| 13 | REQ#2 | GNT#1 | 14 | 13 | SD9 | DACK#6 | 14 |
| 15 | REQ#1 | VCC3 | 16 | 15 | SD8 | DREQ5 | 16 |
| 17 | GNT#0 | N.C | 18 | 17 | MEMW# | DACK#5 | 18 |
| 19 | VCC | VCC | 20 | 19 | MEMR# | DREQ0 | 20 |
| 21 | SERIRQ | REQ#0 | 22 | 21 | LA17 | DACK#0 | 22 |
| 23 | AD0 | VCC3 | 24 | 23 | LA18 | IRQ14 | 24 |
| 25 | AD1 | AD2 | 26 | 25 | LA19 | IRQ15 | 26 |
| 27 | AD4 | AD3 | 28 | 27 | LA20 | IRQ12 | 28 |
| 29 | AD6 | AD5 | 30 | 29 | LA21 | IRQ11 | 30 |
| 31 | CBE#0 | AD7 | 32 | 31 | LA22 | IRQ10 | 32 |
| 33 | AD8 | AD9 | 34 | 33 | LA23 | IO16# | 34 |
| 35 | GND | GND | 36 | 35 | GND | GND | 36 |
| 37 | AD10 | AUXAL | 38 | 37 | SBHE# | M16# | 38 |
| 39 | AD11 | MIC | 40 | 39 | SA0 | OSC | 40 |
| 41 | AD12 | AUXAR | 42 | 41 | SA1 | BALE | 42 |
| 43 | AD13 | ASVCC | 44 | 43 | SA2 | TC | 44 |
| 45 | AD14 | SNDL | 46 | 45 | SA3 | DACK#2 | 46 |
| 47 | AD15 | ASGND | 48 | 47 | SA4 | IRQ3 | 48 |
| 49 | CBE#1 | SNDR | 50 | 49 | SA5 | IRQ4 | 50 |
| 51 | VCC | VCC | 52 | 51 | VCC | VCC | 52 |
| 53 | PAR | SERR# | 54 | 53 | SA6 | IRQ5 | 54 |
| 55 | PERR# | N.C | 56 | 55 | SA7 | IRQ6 | 56 |
| 57 | PME# | USB2- | 58 | 57 | SA8 | IRQ7 | 58 |
| 59 | LOCK# | DEVSEL# | 60 | 59 | SA9 | SYSCLK | 60 |
| 61 | TRDY# | USB3- | 62 | 61 | SA10 | REFCH# | 62 |
| 63 | IRDY# | STOP# | 64 | 63 | SA11 | DREQ1 | 64 |
| 65 | FRAME# | USB2+ | 66 | 65 | SA12 | DACK#1 | 66 |
| 67 | GND | GND | 68 | 67 | GND | GND | 68 |
| 69 | AD16 | CBE#2 | 70 | 69 | SA13 | DREQ3 | 70 |
| 71 | AD17 | USB3+ | 72 | 71 | SA14 | DACK#3 | 72 |
| 73 | AD19 | AD18 | 74 | 73 | SA15 | IOR# | 74 |
| 75 | AD20 | USB0- | 76 | 75 | SA16 | IOW# | 76 |
| 77 | AD22 | AD21 | 78 | 77 | SA18 | SA17 | 78 |
| 79 | AD23 | USB1- | 80 | 79 | SA19 | SMEMR# | 80 |
| 81 | AD24 | CBE#3 | 82 | 81 | IOCHRDY | AEN | 82 |
| 83 | VCC | VCC | 84 | 83 | VCC | VCC | 84 |
| 85 | AD25 | AD26 | 86 | 85 | SD0 | SMEMW# | 86 |
| 87 | AD26 | USB0+ | 88 | 87 | SD2 | SD1 | 88 |
| 89 | AD27 | AD29 | 90 | 89 | SD3 | NOWS# | 90 |
| 91 | AD30 | USB1+ | 92 | 91 | DREQ2 | SD4 | 92 |
| 93 | PCIRST# | AD31 | 94 | 93 | SD5 | IRQ9 | 94 |
| 95 | INTR#C | INTR#D | 96 | 95 | SD6 | SD7 | 96 |
| 97 | INTR#A | INTR#B | 98 | 97 | IOCHK# | RSTDRV | 98 |
| 99 | GND | GND | 100 | 99 | GND | GND | 100 |

ETX Connector

ETX3

ETX4

| | | | | | | | |
|----|-----------|--------------|-----|----|------------|------------|-----|
| 1 | GND | GND | 2 | 1 | GND | GND | 2 |
| 3 | R | B | 4 | 3 | SV_SB | PWGIN | 4 |
| 5 | HSY | G | 6 | 5 | PS_ON | SPEAKER | 6 |
| 7 | VSY | DDCK | 8 | 7 | PWRBTN# | BATT | 8 |
| 9 | N.C/DE | DDDA | 10 | 9 | KBINH | LILED | 10 |
| 11 | LCD16/B0 | LCD18/B2 | 12 | 11 | WDTRIG | ACTLED | 12 |
| 13 | LCD17/B1 | LCD19/B3 | 14 | 13 | ROMKBCS# | SPEEDLED | 14 |
| 15 | GND | GND | 16 | 15 | EXT_PRG | 12CLK | 16 |
| 17 | LCD13/G5 | LCD15/VSYNC | 18 | 17 | VCC | VCC | 18 |
| 19 | LCD12/G4 | LCD14/HSYNC | 20 | 19 | OVC# | GPCS# | 20 |
| 21 | GND | GND | 22 | 21 | EXTSMI# | 12DAT | 22 |
| 23 | LCD8/G0 | LCD11/G3 | 24 | 23 | SMBCLK | SMBDAT | 24 |
| 25 | LCD9/G1 | LCD10/G2 | 26 | 25 | SIDE_CS3# | CPU_FAN | 26 |
| 27 | GND | GND | 28 | 27 | SIDE_CS1# | DASP_S | 28 |
| 29 | LCD4/R4 | LCD8/B5 | 30 | 29 | SIDE_A2 | PIDE_CS3# | 30 |
| 31 | LCD5/R5 | LCD6/B4 | 32 | 31 | SIDE_A0 | PIDE_CS1# | 32 |
| 33 | GND | GND | 34 | 33 | GND | GND | 34 |
| 35 | LCD1/R1 | LCD3/R3 | 36 | 35 | PDIAG_S | PIDE_A2 | 36 |
| 37 | LCD0/R0 | LCD2/R2 | 38 | 37 | SIDE_A1 | PIDE_A0 | 38 |
| 39 | VCC | VCC | 40 | 39 | SIDE_INTRQ | PIDE_A1 | 40 |
| 41 | JILI_DAT | LTGIO0 | 42 | 41 | N.C | N.C | 42 |
| 43 | JILI_CLK | BLON# | 44 | 43 | SIDE_ACK# | PIDE_INTRQ | 44 |
| 45 | BIASON | DIGON | 46 | 45 | SIDE_RDY | PIDE_ACK# | 46 |
| 47 | COMP | Y | 48 | 47 | SIDE_IOR# | PIDE_RDY | 48 |
| 49 | SYNC | C | 50 | 49 | VCC | VCC | 50 |
| 51 | LPT/FLPY# | N.C/SHFCLK | 52 | 51 | SIDE_IOW# | PIDE_IOR# | 52 |
| 53 | VCC | GND | 54 | 53 | SIDE_DRQ | PIDE_IOW# | 54 |
| 55 | STB#/I.C | AFD#/DENSEL | 56 | 55 | SIDE_D15 | PIDE_DRQ | 56 |
| 57 | I.C | PD7/N_C | 58 | 57 | SIDE_D0 | PIDE_D15 | 58 |
| 59 | IRRX | ERR#/HDSSEL# | 60 | 59 | SIDE_D14 | PIDE_D0 | 60 |
| 61 | IRTX | PD6/MOT0 | 62 | 61 | SIDE_D1 | PIDE_D14 | 62 |
| 63 | RXD2 | INIT#/DIR# | 64 | 63 | SIDE_D11 | PIDE_D1 | 64 |
| 65 | GND | GND | 66 | 65 | GND | GND | 66 |
| 67 | RTS#2 | PD5/N.C | 68 | 67 | SIDE_D2 | PIDE_D13 | 68 |
| 69 | DTR#2 | SLIN#/STEP# | 70 | 69 | SIDE_12 | PIDE_D2 | 70 |
| 71 | DCD#2 | PD4/DSKCHG# | 72 | 71 | SIDE_D3 | PIDE_D12 | 72 |
| 73 | DSR#2 | PD3/RDATA# | 74 | 73 | SIDE_D11 | PIDE_D3 | 74 |
| 75 | CTS#2 | PD2/WP# | 76 | 75 | SIDE_D4 | PIDE_D11 | 76 |
| 77 | TXD#2 | PD1/TRK0# | 78 | 77 | SIDE_D10 | PIDE_D4 | 78 |
| 79 | RI#2 | PD0/INDEX# | 80 | 79 | SIDE_D5 | PIDE_D10 | 80 |
| 81 | VCC | VCC | 82 | 81 | VCC | VCC | 82 |
| 83 | RXD1 | ACK#I.C | 84 | 83 | SIDE_D9 | PIDE_D5 | 84 |
| 85 | RTS#1 | BUSY#I.C | 86 | 85 | SIDE_D6 | PIDE_D9 | 86 |
| 87 | DTR#1 | PE/WDATA# | 88 | 87 | SIDE_D8 | PIDE_D6 | 88 |
| 89 | DCD#1 | SLCT#/WGATE# | 90 | 89 | -RI | LAN_WAKE | 90 |
| 91 | DSR#1 | MSCLK | 92 | 91 | RXD- | PIDE_D8 | 92 |
| 93 | CTS#1 | MSDAT | 94 | 93 | RXD+ | SIDE_D7 | 94 |
| 95 | TXD#1 | KBCLK | 96 | 95 | TXD- | PIDE_D7 | 96 |
| 97 | RI#1 | KBDAT | 98 | 97 | TXD+ | HDRST# | 98 |
| 99 | GND | GND | 100 | 99 | GND | GND | 100 |