
Introduction

Welcome to the PCA-6551VE Socket 370 single board computer. It is a half-size FC-PGA Pentium®-based single board computer with VGA and Ethernet.

The PCA-6551VE boosts embedded applications to new heights, especially where size is a paramount concern. At the same time, it also effectively eliminates the constraints in performance which exist in most traditional embedded architectures.

The PCA-6551VE has the evergreen Intel 440 BX PCI set built-in. The 440 BX can support 66 MHz as well as 100 MHz front side bus. All the original Socket 370 based designs for the Celeron™ CPU running 66 MHz FSB now require major revamping to reliably run with the advanced Pentium III based Coppermine, even though the Coppermine uses the same socket. The **Pentium® III with FC-PGA package** is Intel's first high performance CPU which reverts to the socket approach. This makes high performance in half-size computing possible, and the PCA-6551VE is already the performance leader.

There are two 168-pin DIMMs reserved on the PCA-6551VE. The total memory support is 512 MB, which is the largest in its kind. The VGA has an onboard AGP interface, and the C&T 69000 controller is used. Since the onchip video memory can be 2 MB, the graphics/video performance is high enough for most industrial applications. The Realtek 10/100Base-T Ethernet controller is also onboard. It operates via a PCI interface, which guarantees high-speed communication. These onboard devices with high-speed interfaces (either via AGP or PCI) are important because they must match the power of the Pentium® III.

The PCA-6551VE also has Advantech's standard SBC features built-in. These include ISAMAX to support numerous ISA cards typically required for CTI applications. This makes the PCA-6551VE one of the best and most powerful engines for a variety of CTI environments. The high-precision RTC with battery is reserved to guarantee precise timing and scheduling. A socket for DOC® is also reserved for a solid state disk up to 144 MB. However, due to height constraints, it only supports up to a 24 MB DOC. Other features such as 2S1P, IDEX1 up to mode 4 performance, and an FDD connector are also included. We are proud of our PCA-6551VE, which underscores our contribution to the IPC market. The PCA-6551VE will play a crucial role in being an IPC master which can react quickly as rapid advances in technologies occur. The Coppermine based CPU is so sophisticated that it is continuing to challenge the skills of SBC designers. In future, Advantech will release more and more products based on this technology.

1.1 Specifications

- **System architecture**

- Intel® Socket 370 Celeron™/Coppermine CPU architecture, CPU up to 700+ MHz
- 66/100 MHz bus supported
- CE, FCC Class A certified
- Equipped with VGA, 100Base-TX
- PCI V2.1 compliant
- PICMG 1.0 compliant
- Half-size SBC with ISA gold fingers

- **CPU support**

- Intel® Socket 370 CPU (PGA socket)
- Intel® Celeron™/Coppermine for Socket 370 up to 700 MHz with 66/100 MHz external bus

- **Cache memory**

- 128/256 KB Level 2 cache (Pipeline Burst SRAM) on-die

- **Main memory**

- Supports SDRAM only
- Up to 512 MB (max.)
- 168-pin DIMM socket x 2
- ECC support (single bit error correction / multiple bit error reporting)

- **BIOS**

- Award System BIOS supported
- 2 Mbit Flash ROM
- C&T VGA BIOS

- **Chipset**

- Intel® 82440BX PCI set
- 2nd generation PII chipset with MMX support
- PCI V2.1 concurrent PCI
- Optimized SDRAM support

- **VGA**

C&T 69000 VGA controller (mini VGA package)
2 MB SDRAM embedded
CRT and flat panel displays supported
AGP interface

- * **C&T 69000 controller**

Max. resolution	Color	Refresh rate
800 x 600	True color	85 Hz
1024 x 768	True color	85 Hz
1280 x 1024	True color	85 Hz

Dual displays supported, MPEG I/II playback supported
Drivers support: Windows 95/98, Windows NT 4.0

- **LAN**

RTL-8139B Ethernet controller
10Base-T / 100Base-TX supported, full Duplex
Complies with PCI V2.1
Driver support:
Dos/Windows, NetWare, Windows 95/98, Windows NT 4.0, SCO Open Server 5.0
RJ-45 x 1

- **Onboard I/O**

Winbond 83977-TF Super I/O onboard
SIO x 2, with 2 x 16C550 UARTs, 10-pin connector x 1
PIO x 1, bidirectional, EPP/ECP supported, 26-pin x 1
Floppy disk controller: 5.25" 360 KB / 1.2 MB;
3.5" 720 KB / 1.2 MB / 1.44 MB / 2.88 MB supported, 34-pin x 1
One PCI IDE hard disk interface: Supports up to two enhanced IDE devices up to
PIO mode 4 and DMA Master mode 2. Also supports Ultra DMA 33
On-chip keyboard, mouse controller
Onboard 5-pin header for keyboard x 1
Onboard buzzer x 1
Onboard USB with 6-pin header x1
Onboard 2-pin header for reset switch, 4-pin for speaker, 5-pin for keylock power
daughterboard

- **I/O connectors**

- VGA port

- LAN RJ-45 connector (change to PS/2 mouse port if LAN is not required)

- COM1 DB-9 connector

- PS/2 keyboard connector

- (PS/2 connector is for both mouse and keyboard if LAN connector is required)

- **Onboard RTC**

- High precision clock/calendar with battery backup

- **Onboard solid state disk socket**

- Socket reserved for M-Systems' DiskOnChip® (DOC)

- Memory size up to 144 MB single chip

- Drivers support DOS, Windows, Win 95/98 and NT

- **ISA MAX**

- Built-in ISA MAX to support more ISA add-on cards (up to 20)

- **Watchdog Timer**

- 1, 2, 4, 8, 16, 32, 64 second time-out intervals

- **Dimensions (W x D)**

- 185 x 122 mm

- **Power requirements**

- +5 V @ 14 A (max)

- +12 V @ 200 mA (max)

- **Environment**

- Operating temperature: 0 ~ 60° C

- Storage temperature: -20 ~ 80° C

- Relative humidity: 10 ~ 90% (non-condensing)

- **Certification**

- CE approved

- FCC Class A

1.2 Packing List

In addition to this manual, the PCA-6551VE package includes:

- PCA-6551VE single board computer x 1
- Printer and SIO cable x 1
- FDC cable x 1
- IDE cable x 1
- C&T 69000 VGA driver utility disk x 1
- RTL 8139B LAN driver utility disk x 3
- Y-cable for keyboard and mouse
- CPU cooler x 1

If any of these items are missing or damaged, please contact your vendor.
