VC7

Celeron® Pentium® III PC 3U VMBus Embedded Computer

Features

- Intel® Celeron® 566–733 MHz
- Mobile Intel® Pentium® III 333–466 MHz
- Ultra-compact all-in-one PC
- Double VME slot with front and rear I/O
- Windows® Embedded NT, Windows® 2000/NT, QNX, VxWorks®, and Linux
- 1.8-in. FlashDrive up to 2 GB
- VGA/LCD resolutions up to 1600 x1200 and 4(2) MB high-speed SDRAM
- Fast Ethernet 10/100 Mbit
- SCSI up to 20 MB/s
- PCI bus enhanced IDE
- CANbus for low cost I/O
- Serial ATA port
- Four serial I/O with FIFOs RS-232 or RS-422 interface
- Two IEEE 1284 parallel ports
- Two USB ports
- Watchdog
- NMI ticker
- Temperature sensor
- Single +5V supply
- Extended temperature range (-40° C to 70° C)
- Low-cost special-application assembly

VC7 is a VMEBus all-in-one 3U Single Board Computer (SBC) designed to meet the needs of embedded application developers serving such markets as industrial automation, medical, scientific, imaging, military, and aerospace. The VC7 supports such operating systems as Windows® 2000/NT, ONX, VxWorks, and Linux.

The ultra-compact all-in-one concept with flexible processor and RAM configurations, front and rear I/O, and a full array of on-board peripherals including a video interface, fast Ethernet, and a SCSI interface combined with custom assembly for specific applications provides optimized price/performance for all kinds of OEM applications.

Increased shock and vibration immunity, rugged compact 3U design, extended temperature range (-40° C to 70° C), and a LCD interface make the VC7 ideal for extreme operating environments.

Special features include four serial channels with flexible RS-232 and RS-422 interfacing, a CANBus device for low-cost I/O, and single +5V supply.

Specifications

Processor
- Intel® Celeron® 566–733 MHz
- Mobile Intel® Pentium® III 333–466 MHz
- High-efficiency on-board switching DC/DC regulator
- Fanless cooling with heatsink

Processor Performance

CPU	Frequency	Winstone 99 Business	High-End
Mobile Pentium III	333 MHz	15.0	22.7
Mobile Pentium III	466 MHz	16.4	27.0
Celeron	566 MHz	21.1	31.8
Celeron	733 MHz	23.0*	38.0*

Tested with 128 MB RAM, 1024 x 768 64K color, and
ST34502LW HD
* Estimated

Cache

CPU	Level 1	Level 2
Celeron*	32 KB	128 KB (full speed)
Pentium III *	32 KB	256 KB (full speed)

* Also valid for Mobile processor

Chipset
- Intel® 82443BX, 82371EB
- 66 MHz system bus with Intel® Celeron® and Mobile Intel® Pentium® III
- PCI burst mode transfers >100 MB/s
- 32-bit 33 MHz PCI Bus interface

Intel® 6300ESB I/O Controller Hub
- Two 32-bit PCI Bus interfaces
- LPC (Low Pin Count) interface
- UltraDMA100 IDE Bus interface
- Serial ATA Host Controller
- USB 2.0 Host Controller
- 12 GPIO control lines
- Real-Time Clock
- SMBus interface
- Watchdog timer
- Interrupt controller
- Four 32-bit general-purpose timers (cascade able to 64-bit)

Memory – PC66
- Two DIMM 64-bit sockets (64–512 MB)
- 64-bit memory bus (72-bit with ECC)
- Optional Error Correction

Flash Drive
- Internal 1.8-in. IDE Flash Drive
- Up to 2 GB supported
- Extended temperature range and increased shock / vibration immunity

VGA and LCD
- CT 69030/69000
- 64-bit Windows® accelerator and LCD flat panel interface
- High-speed on-chip 4/2 MB synchronous DRAM (83 MHz)
- Flexible 9, 12, 15, 18, or 24-bit panel TFT interface

CRT Resolution	CT 69030	CT 69000
1024 x 768	16 M @ 100 Hz	64 K@ 100 Hz
1280 x 1024	16 M @ 75 Hz	256 @ 75 Hz
1600 x 1200	64 K @ 60 Hz	

VME Bridge
- Tundra Universe III
- Industry standard CA91C142B PCI to VMEBus Controller
- Full VMEBus system controller, FIFOs for write posting
- DMA Controller with linked list support
- Master/slave transfer modes: BLT, ADOH, RMW, LOCK, RETRY, A24/ A16 and D16 / D8

Fast Ethernet
- AMD 79C972
- 10/100 Mb/s controller with PCI local bus DMA
- 12 KB FIFO transmit and receive buffers
- Transfer rate auto-negotiation

EIDE I/O
- UltraDMA/33 sync. DMA mode up to 33 MB/s
- PIO Mode 4 and bus master IDE up to 16 MB/s
- Support for three devices via EIDE connector and rear I/O

CAN I/O
- Support for CAN 2.0 specification
- Opto-isolated (500 VDC) high-speed ISO 11898 interface

Serial I/O
- Four async. 16550-compatible full-duplex serial channels
- High-speed transfer up to 115.2 Kbaud with 16-byte FIFOs
- COM1+2: RS-232 or RS-422 interface
- COM 3+4: RS-232 or RS-422 interface

Parallel I/O
- Two bi-directional IEEE 1284-compatible enhanced parallel ports (including EPP and ECP) for printer or general purpose I/O

Floppy Drive
- Single channel 3.5-in. floppy drive controller 720 and 1.44 MB

USB Ports
- Two 12 Mb/s USB channels

Keyboard and Mouse Port
- PS/2 compatible keyboard and mouse port on front panel

Real-Time Clock
- RTC 146818-compatible, on-board Li-battery

CMOS RAM
- 114 bytes of non-volatile CMOS RAM

EEPROM
- 4 Kb serial EEPROM for non-volatile user data

Watchdog
- Software controlled reset (550 ms)

Temperature Sensor
- Local temperature SW-readable from -55° C to 125° C, 0.5° increments

NMI Ticker
- User-programmable NMI timer (0.3–18 ms) for real-time applications

Speaker
- Internal speaker (1.0–4.2 KHz)

LED
- Front-panel LED (red), user-programmable

BIOS Features
- AMI BIOS
- In-system programmable Flash ROM, CPU, memory and IDE auto-detection/selection, integrated VGA, Ethernet and SCSI ROM
- Password protection
- BIOS POST
- System and video BIOS shadowing
- Extensive setup with remappable serial/parallel ports
- Disk, keyboard, and video not required for operation

Front and Rear I/O (with Transition Module CTM6)
The transition module connector pinouts (rear I/O) correspond to standard PC connectors (press fit cables).

Function	Front I/O	Rear I/O
VGA	HD-15	10-pin
Ethernet	RJ-45	-
Multi-I/O*	-	26-pin
Keyboard	mini-DIN	-
Mouse	mini-DIN	-
USB 1+2	1 USB	-
Reset	Switch	-
Speaker	On-board	-
LED	Red LED	-
CAN	-	-
Watchdog	-	-
EIDE Primary**	-	44-pin, 2.0 mm
COM 1+2	2x D0-9	2x 10-pin
COM 3+4	-	2x 10-pin
LPT1	D-25	26-pin
LPT2	-	26-pin
LCD	-	40-pin
SCSI	-	50-pin
Floppy	-	26-pin, 1.25 mm

* Multi-I/O connector includes keyboard, mouse, two USB, reset, watchdog, LED, CAN and speaker.
** Secondary EIDE includes an additional 44-pin connector for 1.8-in. on-board FlashDrive

Power Requirements
- +5 V—required
- ±12V—not required

Power Consumption
Tested with +5V, typical current, 128 MB memory, w/o keyboard, hard disk, modules, etc.

CPU	Frequency	Idle*	Operating*
Mobile Pentium III	333 MHz	1.6 A	2.2 A
Mobile Pentium III	466 MHz	1.7 A	2.4 A
Celeron	566 MHz	1.7 A	3.4 A
Celeron	733 MHz	1.7 A	3.9 A

*Idle—measured at DOS prompt, max. power savings
*Operating—measured at DOS prompt, no power savings

Mechanical
- 3U, three slot wide (100 x 160 x 60 mm) including FlashDrive
- Two slots on VMEBus
- Rear I/O one left side of system slot via I/O transition module

Temperature
Highest reachable operating temperature depends on processor type, speed, ambient conditions (airflow) as shown below. All values under typical conditions.

Range	Operating	Storage
Standard	0° C to +70° C	–40° C to +85° C
Extended	–40° C to +70° C	–40° C to +85° C
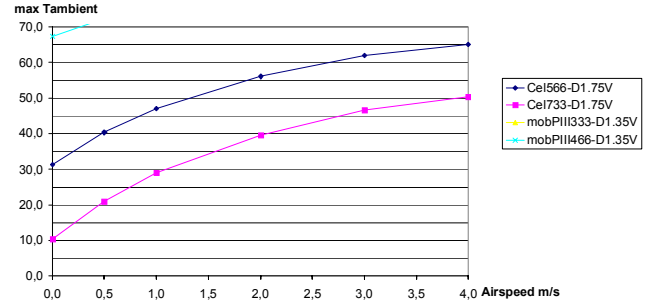
NOTE: Mobile Intel® Pentium® III (333, 466 MHz) require minimum air flow of 0.5 m/s. Also, the Mobile Pentium® III processors can run at 70° C.

Altitude
- Operating   15,000 ft. (4.5Km)
- Storage   40,000 ft. (12Km)

Humidity
- Operating: 5 - 95% @ 40°C
- Storage: 5 - 95% @ 40°C

MTBF
Calculations are available in accordance with MIL-HDBK-217. Please contact SBS for latest values.
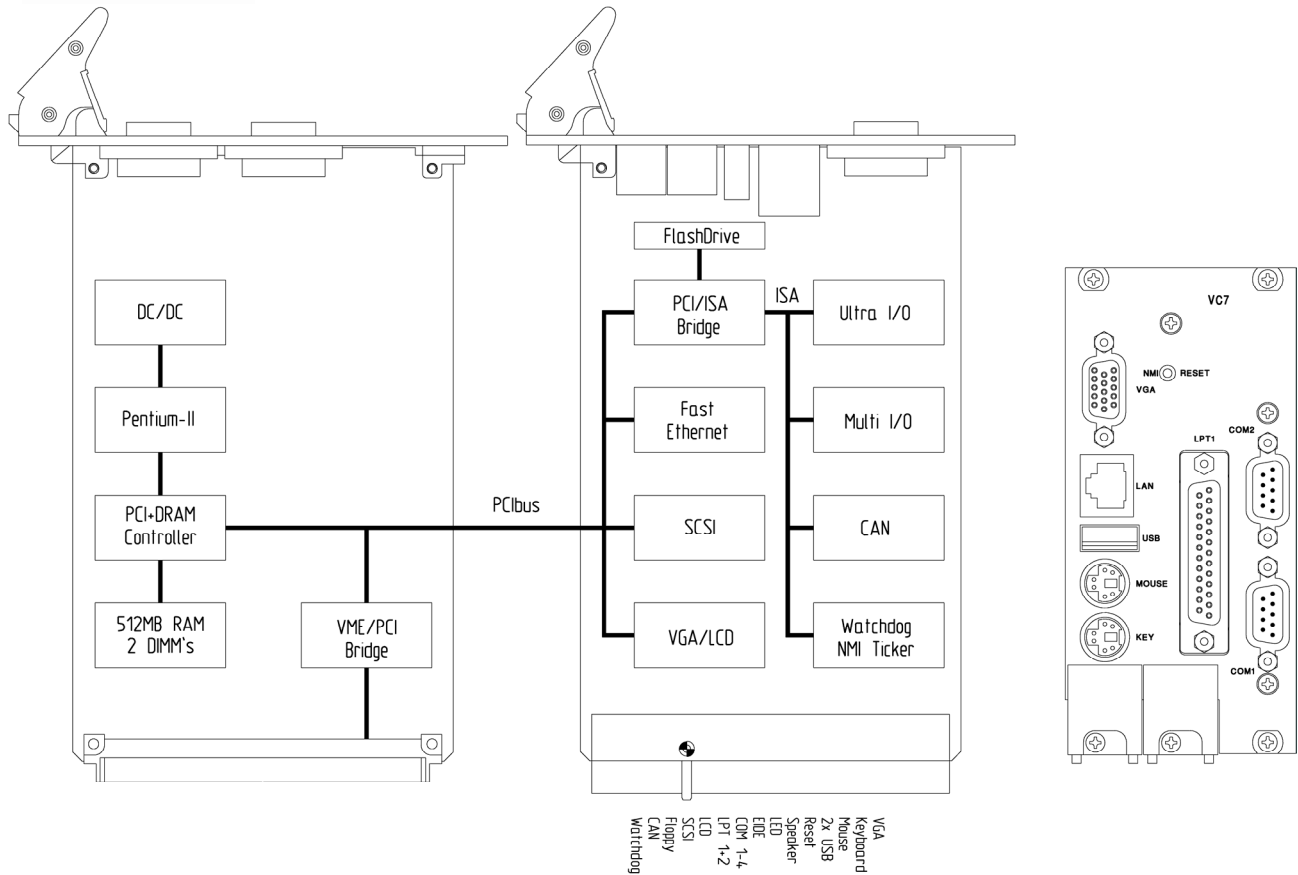
Safety
All PWBs are manufactured with flammability ratings of 94V–0 by UL recognized manufacturers.

VC7

Block Diagram

Ordering Information

Hardware Accessories

CTM6:	I/O Transition Module
CT-IDE	IDE Transition Module 2.0 mm -> 2.544 mm
CBUS I/O	Carrier for Transition Module (male/male)
SC304F	Floppy disk 3.5-in., 19-in. box: 3U/4HP, cable
SC306H10G0	IDE Hard disk 3.5-in., 10 GB, 19-in. box: 3U/6HP, cbl.
YLBSCSI304A	Flatcable for external SCSI drive, 60 cm, 3U/4HP front panel, 50-pin Centronics conn.
YLBCOM304A	Flatcable for 2x COM, 3U/4HP front panel

Chassis

SCC484TV09VC7— StarterCage: 19", 4U, 84TE card cage, 9x 3U VME slots; 3x fan, 235W power supply, EMC, 1x CBUS-IO, CD-ROM, 3.5" floppy drive, 10 GB hard disk, I/O transition module (CTM6, HD-ADAP1-A) with frontpanel (YLBCOM304A), 0°C/+50°C
Special chassis, supplies, backplanes and drives on request

Operating Systems

WIN-NT4xC	Windows® NT.x
WIN-2000xC	Windows® 2000
QNX-11252	QNX4
QNX-11294	QNX4, Photon microGUI
VXW2-BVW7	VxWorks® board support package Tornado 2 (with VMEBus driver)
WIN-ENT4xE	Windows® Embedded NT 4.x

VMEBus Software

WNT-VME2	VME-DLL and I/O driver for Windows® NT
QNX-VME	VMEBus driver for QNX
VxWORKS	See above

CANopen Software

WNT-CAN	CANopen master SW for Windows® NT
VXW-CAN	CANopen master SW for VxWorks®
QNX-CANIO	CAN I/O library for QNX

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