



Overview:

The **VRM-CC3-X** is a versatile 4HP/3U CompactPCI® CPU board, equipped with the Intel® series of ULV Celeron® or LV Pentium® III processors, designed especially for systems which require very low power consumption. Available either with 800/933MHz Low Voltage Pentium III or the 400/650MHz Ultra Low Voltage Celeron processor and up to 512MB RAM, the **VRM-CC3-X** covers a wide range of applications, including PXI systems. The DVI-I video interface is suitable for attachment of both, advanced (digital) and legacy (analog) displays (DSUB connector optionally). The **VRM-CC3-X** is provided with a 100Mbps Ethernet controller. The on-board CompactFlash socket allows for utilization of an ATA Flash card or IBM Microdrive®. A local expansion interface connector may be used to directly attach a companion I/O board, which can carry in addition a hard disk drive. As an option, rear I/O across the J2/P2 connector is available.

Features:

- Form Factor: CompactPCI Single Size CompactPCI style Eurocard (160x100mm²), front panel width 4HP (20.3mm)
- Processor: Designed for Intel® ULV Celeron® and LV Pentium® II Micro FC-BGA processors (Tualatin 0.13u generation), max. junction temperature 100°C, processor thermal design power classification.
 - VRM-CC3-1: 400MHz ULV Celeron, 0.95V, 100MHz FSB, 256KB L2 cache, 3.4W typical
 - VRM-CC3-2: 650MHz ULV Celeron, 1.10V, 100MHz FSB, 256KB L2 cache, 7.0W typical
 - VRM-CC3-3: 800MHz ULV Pentium 3, 1.15V, 133MHz FSB, 512KB L2 cache, 11.2W typical
 - VRM-CC3-4: 933MHz LV Pentium 3, 1.15V, 133MHz FSB, 512KB L2 cache, 12.2W typical
- Chipset: Intel i815G chipset consisting of:
 - 82815 Graphics/Memory Controller Hub (GMCH)
 - 82801 I/O controller Hub (ICH2)
 - 82802 Firmware Hub (FWH)
 - 8761 LPC Super I/O
- Memory: 144-pin SO-DIMM socket. Support for up to 512MB, PC133, non ECC, unbuffered SDRAM. Support for serial presence detect (SPD) SO DIMM's
- Video: Both analog monitor and digital flat-panel display support by DVI-I connectors (front panel), up to 1280x1024 pixel 16M colors 85Hz refresh rate, incorporates PanelLink Digital Technology (Silicon Image). Option: D-SUB (female HD15) connector available, replaces DVI-I connector.
- USB: Ports over-current protected, data transfer rate of up to 12Mbps, conforming to USB1.1
 - USB Port 1: Type A connector (front panel)
 - USB Port 2: J2/P2 Rear I/O Option
- Ethernet: 10/100Mbps Fast Ethernet controller, 82551ER chip, RJ45
- Serial Port COM1:
 - On-board RS-232E transceiver, RJ45 front panel connector (adapter RJ45 to D-Sub available), transceiver can be disabled if rear I/O COM port option is preferred. J2/P2 Rear I/O Option (TTL voltage level)
 - Legacy I/O:
 - LPC Super-I/O interface connector, VRM-CC6 mezzanine companion board available for top (right) or bottom (left) mounting. J2/P2 Rear I/O option: Keyboard, Mouse, COM1 (TTL voltage level)
- IDE/ATA:
 - Ultra ATA/66 40-pin connector (primary IDE). CompactFlash socket for CFA ATA cards (secondary IDE). J2/P2 Rear I/O option: Primary IDE
- CompactPCI: 32-bit, 33.3MHz, PCI bridge chip PLX 6150, 133MBps CPCI master
- J2/P2 Rear I/O Option:
 - Primary IDE, USB Port 2, Keyboard/Mouse, COM1 (TTL Level), Rear I/O transition module VRM-CCY-RIO available
- PXI Support– TRIG0, TRIG1, TRIG6, TRIG7 (can be alternatively used as GPIO)
- BIOS: Phoenix BIOS with our embedded systems enhancements. 8Mbit Flash memory. Updates available upon request.
- Drivers (Major OS): Intel graphics drivers. Intel networking drivers
- Power Requirements:
 - VRM-CC3-1: +5V±0.25V 1.3A max. +3.3V±0.1V 1.1A max
 - VRM-CC3-2: +5V±0.25V 1.9A max. +3.3V±0.1V 1.3A max.
- Thermal Conditions: Processor cooled down by passive heat sink, typical thermal resistance 13.8K/W (natural convection), 4.6K/W (forced air-flow@200LFM). Custom specific heat sink solutions on request. Max. ambient operating temperature with standard heat sink:

Features cont.:

- Environmental Conditions:
 - VRM-CC3-1: 0-40°C (natural convection cooling), 0-70°C* (200-LFM forced airflow)
 - VRM-CC3-2: 0-60°C (200LFM forced airflow), 0-70°C * (400LFM forced airflow)
 - VRM-CC3-3: 0-45°C (200LFM forced airflow), 0-65°C (400LFM forced airflow), 0-70°C* (600LFM forced airflow)
 - VRM-CC3-4: 0-40°C (200LFM forced airflow), 0-65°C (400LFM forced airflow), 0-70°C* (600LFM forced airflow)
- *Limited to 70°C due to other components than the processor*
- Storage temperature -40°C to +85°C, max. gradient 5°C/min
- Humidity: 5% ...95% RH non-condensing
- Altitude: -300m...+3000m
- Shock: 15g 0.33ms, 6g 6ms
- Vibration: 1g 5-2000Hz
- EC Regulations: EN55022, EN55024, EN60950-1 (UL60950-1/IEC60950-1)
- MTBF: 0.113 * 10⁶h
- Typical Performance Rating measured with PCMark2002 under Windows 200:

Board	Processor	CPU/Mem Score
VRM-CC3-1	400MHz ULV Celeron®	1274/886
VRM-CC3-2	650MHz ULV Celeron®	1990/933
VRM-CC3-3	800MHz ULV Celeron®	tbd
VRM-CC3-4	933MHz ULV Celeron®	2854/1467

Ordering options:

- VRM-CC3-1: 3U/4HP CPCI CPU Board, ULV Celeron 400MHz uFCBGA 0.13u processor, 256MB SDRAM, 256K cache, 100MHz FSB.
- VRM-CC3-2: 3U/4HP CPCI CPU Board, ULV Celeron 650MHz uFCBGA 0.13u processor, 256MB SDRAM, 256K cache, 100MHz FSB.
- VRM-CC3-3: 3U/4HP CPCI CPU Board, LV Pentium III 800MHz uFCBGA 0.13u processor, 256MB SDRAM, 256K cache, 100MHz FSB.
- VRM-CC3-4: 3U/4HP CPCI CPU Board, LV Pentium III 933MHz uFCBGA 0.13u processor, 256MB SDRAM, 256K cache, 100MHz FSB.
- VRM-CC3-8: 512MB SDRAM Option.
- VRM-CC6-1: 3U Super I/O module, local expansion board complementing optionally the VRM-CC3, front panel 8HP, intended for front panel I/O mounting on top of VRM-CC3.
- VRM-CC6-3: Similar to VRM-CC6-1, front panel width 4HP, w/o parallel port, mouse/keyboard combined in one Mini-DIN connector (external splitter cable available as accessory), mounting on the top or the bottom side of VRM-CC3.
- VRM-CC6-8: Optional hard disk drive, on-board mounting on top of the VRM-CC6-1 and CC6-3.
- VRM-CCY-1: Rear I/O transition module for VRM-CC3.
- VRM-CR9-5: Mechanical kit, expands the VRM-CC3 front panel to 6U full height
- VRM-261.92.009.01: Adapter for front panel RS-232 usage, RJ45 jack to male D-sub connector 9-pos, customer configurable, suitable e.g. for COM-port emulation.
- VRM-261.91.009.01: Adapter for front panel RS-232 usage, RJ45 jack to female D-sub connector 9-pos, customer configurable, suitable e.g. for null-modem emulation
- VRM-280.7.400: External keyboard/mouse Y-splitter cable Mini-DIN male to 2 x Mini-DIN female (required for VRM-CC6-3 only).
- VRM-908.51.02.01: DVI-D to DVI-D cable assembly, 2m, connects the VRM-CC3 to DVI monitors (digital way)
- VRM-908.57.02.01: DVI-I to HD DSUB 15 cable assembly, 2m, connects the VRM-CC3 to VGA monitors (analog way)
- VRM-908.57.12.01: DVI-I to VGA adapter (plug to receptacle), to be plugged onto the VRM-CC3 DVI output, with HD DSUB15 socket, suitable especially for analog monitors with attached VGA cable.

