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PC/104 Single Board Computer & Controllers
Ultra Low-Power 333 MHz & 500 MHz AMD Geode LX

Key Features

- PC/104 Form Factor
- PC/104 Stackable Bus Structure
- Complete PC-compatible Single Board Computer (SBC)
- Available in modular, rugged enclosures
- **AMD Geode LX800**
  - 333 MHz and 500 MHz processor options
- High Reliability PCB built to IPC-6012 Class 3 standard
- Nonvolatile storage of CMOS settings without battery
- Stackable 104-pin PC/104 AT bus
- BGA DDR SDRAM (Surface-Mounted)
  - 256MB and 512MB options
- 32-pin SSD socket:
  - Removable Onboard Miniature Industrial ATA/IDE Flash Drive up to 8GB (1GB standard)
  - Flash Drive PIO Mode with BIOS-configured write protect function (available upon request)
  - Natively supported by all major operating systems
- multiPort with Parallel Port, Floppy Drive Interface and 18-bit Digital I/O Port with Advanced Digital Interrupt Modes
- Two Intel® 82551QM Fast Ethernet
- 100Base-Tx and 10Base-T
- Four RS-232/422/485 Ports
- Two USB 2.0 (Universal Serial Bus) Ports
- EIDE Controller with UltraDMA 33/66/100



AMD Geode LX CPU (256MB SDRAM)



Connector Locations



(side view)



IDAN Enclosure

Mouseover thumbnails above to view larger images.

Rugged IDAN system configurations available.

- AMD Geode LX Graphics Processor with LVDS Flat Panel output
- Advanced power management features
    - ACPI 2.0 Compliant
    - Supported power down modes: S1 (Power On Suspend), S3 (Suspend to RAM), S4 (Hibernate), and S5 (Soft-Off)
- Advanced Thermal Management
    - Hardware monitor for CPU temperature, board temperature, and power supply voltages
    - Passive Structural Heatsink & Heatpipes in IDAN and HiDAN System Configurations
- 15 interrupt channels
- 3 timer/counter channels
- RTD Enhanced BIOS with USB Boot and Quick Boot modes
- Supports MMX and 3DNow!™ instructions
- Math coprocessor
- Internal Cache
    - L1 - 64KB of instruction and 64KB data; L2 - 128KB
- Y2K compliant real time clock (external battery required)
- Watchdog timer
- PS/2 Mouse Port
- Keyboard Port
- Speaker Port
- -40 to +85°C standard operating temperature
- Heat Sink Options
    - Thermal-optimized passive heat sink included (standard)
    - Modified heat sinks and flat heat spreaders are available
- For all RTD products, modifications are available upon request

Description

The CME136686LX is an ultra low-power PC/104 single board computer with a PC/104 stackable bus structure. This AMD Geode LX based CPU is an excellent solution for applications requiring real-time computing.

Technical Details

- Stackable Expansion Buses
    - ISA Expansion Bus
        - Full ISA bus operation
        - Supports 8-bit (XT) and 16-bit (AT) peripherals
        - All ISA IRQ lines supported
        - DMA Supported via DDMA (Software-transparent)
        - Supports both I/O-mapped and Memory-mapped expansion cards
        - Positive Decode of PCI cycles

        - I/O and Memory ranges selectable in BIOS
- Two Ethernet Ports
    - Ethernet Controller
        - Intel 82551QM Fast Ethernet PCI Controller
        - Integrated 3KByte Transmit and 3Kbyte Receive FIFOs
    - Physical Layer
        - 100Base-Tx and 10Base-T
    - Easy to Use
        - Low Power Features
        - Status LEDs
        - Software configuration
- SVGA CRT and LVDS Flat Panel interface
    - Analog SVGA Output
    - Resolution up to 1920 x 1440 pixels with up to 4,294 million colors
    - VGA, SVGA, XGA, XGA+, SXGA, and UXGA
    - High-performance memory
        - 24MB of shared DDR SDRAM memory
- Four BIOS configurable RS-232/422/485 serial ports on two connectors, each connect configurable as:
    - One full RS-232 port with TxD, RxD, CTS, RTS, DSR, DTR, RI, and CD
    - One RS-422/485 port with TxD+, TxD-, RxD+, RxD-, with 120 ohm termination jumper
    - Two RS-232 ports:
        - One with TxD, RxD, CTS, and RTS
        - One with TxD and RxD
    - One RS-232 port with TxD and RxD, and one RS-422/485 port with TxD+, TxD-, RxD+, RxD-, with 120 ohm termination jumper
    - Jumper enabled two RS-422/485 ports each with TxD+, TxD-, RxD+, RxD-, with 120 ohm termination jumper
    - 16550 compatible UARTs for high-speed
- multiPort function connector
    - Parallel port
        - SPP, PS/2 bi-directional, EPP & ECP
    - Advanced Digital I/O (aDIO)
        - One 8-bit port programmable as input or output
        - Eight bit-programmable I/O with Advanced Digital Interrupt Modes
            - Event Mode Interrupt generates an interrupt when any input bit changes
            - Match Mode Interrupt generates an interrupt when input bits match a preset value
            - External Strobe Mode latches 8 data inputs and generates and interrupt
        - Two Strobes can be configured as readable inputs.
    - Floppy controller interface
- Two USB 2.0 (Universal Serial Bus) Ports
    - High-speed, full-speed, or low-speed
    - 500 mA @ 5 Vdc provided per port

    - USB Boot capability
- UltraDMA-100 / 66 / 33 Master Mode PCI EIDE Controller
    - Transfer rate up to 100MB/sec using UltraDMA
    - Increased reliability using UltraDMA-33 transfer protocols
    - Support ATAPI compliant devices including DVD drives
    - 48-bit LBA support for hard drives larger than 137GB
- Utility port
    - PC-AT compatible keyboard port
    - PS/2 Mouse Port
    - Speaker (0.1W output) port
    - Hardware Reset input
    - Battery input for Real Time Clock
- Power I/O
    - Access to PC/104 Bus power pins
        - Gnd, ±12 & 5 VDC
    - Access to PC/104-Plus Bus pins
        - Gnd, ±12, 5 & 3.3 VDC
- Mating Connectors
    - Standard 10-pin 0.1" DIL header (Utility, COM1 & 3, COM2 & 4, SVGA, USB, Ethernet)
    - Standard 12-pin 0.1" DIL header (Power)
    - Standard 26-pin 0.1" DIL header (multiPort)
    - Standard 20-pin 2mm DIL header (LVDS)
    - Standard 44-pin 2mm DIL header (EIDE)

Software

- RTD Enhanced BIOS
    - Supports boot from IDE, USB, or Ethernet (PXE)
    - Serial Console Redirection
    - EEPROM-based CMOS Setup – No battery required to store settings
    - Fail Safe Boot – Load DOS even if no boot device is present
    - Special RTD Reliability Enhancements
- Compatible with all x86 PC operating systems:
    - DOS (MS-DOS, ROM-DOS, PC-DOS)
    - Windows (XP, XP Embedded)
    - Linux (desktop and real-time versions)
        - See app note for more details
    - RTOSes such as QNX, VxWorks, Windows CE, and xPC Target
    - Note: Some hardware interfaces may require special drivers
- Includes pre-installed Datalight ROM-DOS

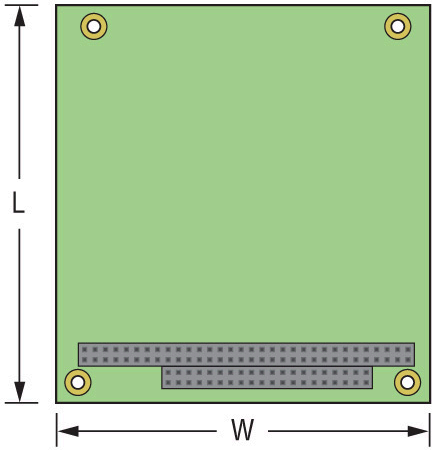
- Drivers and support provided for DOS, Windows, and Linux

Recommended Accessories

- XK-CM77 Cable Kit
- XK-CM80 Cable Kit
- TCP/IP Sockets

Physical Attributes

- Board Dimensions
  - CME136686LX...-256 and CME136686LX...-512
    - Length (L): 3.775 inches (95.89 mm)
    - Width (W): 3.550 inches (90.17 mm)
    - Stand-off Height: 0.600 inches (15.24 mm)
- Weight: Approximately 0.28 lbs. (0.13 Kg) with heatsink
- Standard Operating Temperature, 90% humidity non-condensing: -40 to +85°C
- Storage Temperature: -55 to +125°C
- MTBF
  - CME136686LX...-256: 465,338 hours
  - CME136686LX...-512: TBD
- Power Consumption
  - CPU power consumption is heavily influenced by the running software and system activity.
  - Typical power consumption
    - CME136686LX333HR-256: 5.7 W @ 5 VDC typical
    - CME136686LX500HR-256: 6.2 W @ 5 VDC typical
    - CME136686LX333HR-512: 5.8 W @ 5 VDC typical
    - CME136686LX500HR-512: 6.3 W @ 5 VDC typical
  - Please refer to the hardware manual for detailed consumption scenarios.



Documentation and Downloads

- Block Diagram
- Hardware Manual
- Drivers and Example Programs

Ordering Information

	Description	Header Orientation	DDR SDRAM	Processor Speed	Part Number	Value OEM
	PC/104 cpuModule with 1GB Flash	right-angle	256MB	333 MHz	CME136686LX333HR-256	$1995
				500 MHz	CME136686LX500HR-256	$2195
	PC/104 cpuModule with 1GB Flash	right-angle	512MB	333 MHz	CME136686LX333HR-512	$2195
				500 MHz	CME136686LX500HR-512	$2395

— Sequentially laminated PCB fabricated in accordance with IPC-6012 Class 3 Standards —

***OEM price includes 256MB or 512MB soldered SDRAM and 1GB removable flash drive (8GB flash drive available)**

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