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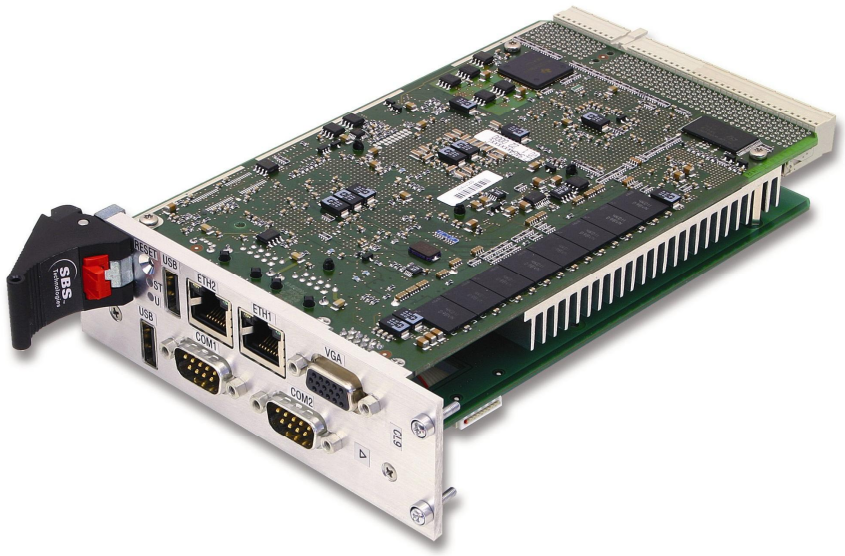
CL9

High Performance – 3U CompactPCI® Intel® Pentium® M Processor Board

Single Board Computers

Features

- Intel® Pentium® M processor, 1.4 GHz to 1.8 GHz and Intel® Celeron® M processor 1.0 GHz and 1.3 GHz
- Up to 2MB L2 cache
- Ultra compact all-in-one PC
- System slot for 32-bit CompactPCI backplane
- Up to 1GB DDR SDRAM
- Flash drive up to 4 GB or local 2.5” hard disk
- VGA/DVO interface
- Dual Gigabit Ethernet
- Enhanced IDE UDMA-100
- Dual Serial ATA
- 2x serial I/O with FIFOs RS-232 interface
- 4x USB 2.0
- Optional audio interface
- Watchdog, temperature sensor
- 5V / 3.3V supply
- Optional -40°C to +75°C
- Custom specific versions



Single slot version not shown

CL9 is a high-performance 3U CompactPCI® CPU board using the low power Intel® Pentium®M Processor incorporating sophisticated power management technology, eliminating the need for an onboard fan. The CL9 is available in two different front options (1 or 2 slot width), enabling the user to select the feature set required for the target application. The CL9 runs in the system slot of the CompactPCI backplane.

The single slot version contains a CompactFlash as an option.

The 8HP version optionally contains an integrated hard disk or CompactFlash. The 8HP versions offer the user the choice between a DVI interface or a COM2 port on the front. In place of the COM1an audio interface AC’97 can be integrated if the operating temperature is not below 0 °C.

The CL9 supports two Gigabit Ethernets, up to 1 Gbyte of DDR SDRAM and supports VGA/DVO. At the core of the CL9 design is a high-bandwidth bus between the processor and the chipset running at 400MHz bus. The chipset-to-memory bus supports 333 MHz (PC2700) DDR SDRAMs. In addition there are four USB 2.0 ports, two serial channels, and two serial ATA channels. Interfaces are available as front- and/or rear-I/O. The CL9 is available in standard temperature range 0° to +70°C, and optional in extended from -40°C to +75°C. Custom specific versions are available on request.

The CL9 is a powerful processor platform for a wide range of applications and markets such as multimedia, automation, transportation, as well as imaging, medical, robotics, and many others. The CL9 is very suited to low-power embedded computer applications in a small form factor where optimal performance and functionality is required.

Specifications

Processor - µFCBGA, Low Power design
- Scaleable processing power with flexible processor design
- Intel Pentium M processor: 1.4 GHz to 1.8 GHz
- Intel Celeron M processor: 1.0 GHZ and 1.3 GHz
- High efficiency on-board switching regulator (DC/DC)
- Fanless cooling with heat sink
- See price list for latest CPU versions

Cache	level 1	level 2
Pentium M (90nm)	32 KB	2MByte, full speed
Pentium M (130nm)	32 KB	1MByte, full speed
Celeron M (130nm)	32 KB	1MByte, full speed
Celeron M (90nm)	32 KB	512KByte, full speed

Chipset – Intel 855GME with 6300ESB
- 400 MHz system bus to processor
- PCI burst mode transfers up to 512 MB/s (64-bit/66 MHz)
- One 64-bit wide PCI-Xbus with 66 MHz
- One 32-bit wide PCIbus with 33 MHz
- Data throughput between 855GME and 6300ESB is 256 MB/s (theoretical)

Memory – DDR 333
- High-speed 333MHz (PC2700) DDR SDRAM
- 64-bits wide
- 512 Mbytes to 1 Gbyte with soldered chips

CompactPCI
- PICMG 2.0 R3.0 compliant CPCI 32bit/33MHz local bus standard
- Backplane with rear I/O
- System only PCI Bridge TI PCI2050B for up to 7 slots
- J1+2, 2 mm pin and socket connectors (IEC-1076-4-101)

Gigabit – Intel 82546GB
- Highly integrated Dual Ethernet Controller with 64-bit/66 MHz PCI-X local bus DMA
- 64 Kbyte Transmit and Receive FIFO
- 10/100/1000BaseT auto-negotiation
- Both channels at front I/O with RJ45 connectors and status LEDs

Hard Disk or Flash Drive
- EIDE interface on header connector for two devices
- Extension board with one Compact Flash connector (4HP)
- On extension card (8HP) for one 2.5” IDE hard disk or one Compact Flash connectors (for extended temperature range and higher shock/vibration immunity)

VGA and LCD - Chipset Integrated
- 2D & 3D graphics engine
- Up to 64MB of dynamic video memory allocation
- Integrated 350MHz 24-bit RAMDAC for analog VGA monitors up to 1600 x 1024, 75Hz
- Integrated Digital Video Output (DVO) Port interface
- Dual independent pipe support
- Display image rotation
- Graphics power management
- VGA at front and rear I/O
- DVO at connector, with extension card DVI-D support possible

EIDE
- Ultra ATA/100 sync. DMA mode up to 90 Mbytes/sec
- PIO mode 4 and bus master IDE up to 16 Mbytes/sec
- Onboard devices supported via local header

Serial I/O - RS232
- Integrated in chipset
- Two async. 16550 compatible full duplex serial channels
- High-speed transfer up to 115.2 kbaud with 16 byte FIFOs
- COM1 and COM2 optional available at front (8HP) or rear I/O
- With 8HP extension card other interface types are supported (e.g. RS485)

Audio AC’97 Interface - optional
- S/PDIF digital output (optical)
- Line in
- Headphone out
- Note: The audio interface does not operate below 0 °C

General Purpose Input/Outputs
- 8 bits programmable general purpose inputs/outputs

USB 2.0
- Four USB 2.0 connectors, one or two (8HP) on front and two on rear I/O

Keyboard
- Via USB (supports legacy keyboard/mouse SW)

Mouse
- Via USB (supports legacy keyboard/mouse SW)

Real-time clock
- Integrated in chipset
- RTC 146818 compatible, on-board Li-battery

CMOS RAM
- 114 bytes non-volatile CMOS RAM for BIOS data

EEPROM
- 1Mbit (128kByte) serial EEPROM for non-volatile user data

Floppy
- Via USB port

Watchdog
- Integrated in chipset
- Two stage watchdog with independent count values
- First stage drives NMI or SMI, second stage drives reset
- Configurable granularity from 1µs to 10min

Timer
- Integrated in chipset based on 82C59
- Includes three timer comparators
- One-shot and periodic interrupts supported

Temp. Sensor
- CPU die and heat sink temperature software readable from –65°C to +127°C

LED
- Two LEDs at front panel

BIOS Features
- New AMI BIOS Core 8, in-system programmable Flash ROM
- CPU, memory and IDE auto-detection/selection
- Integrated VGA, and Ethernet BIOS ROM
- USB Mass Storage support
- Password protection, BIOS post, system and video BIOS shadowing
- Extensive setup with remapable serial/parallel ports
- Operation without disk and keyboard
- Remote BIOS through serial port

Software

- The following software is supported to the extent listed below.

OS	On Request	Available
WIN XP	-	√
QNX 6	√	-
VxWorks	-	√
Lynx OS	√	-
Linux	-	√

Front and Onboard I/O
With standard Front Panel (8HP)

Function	Front I/O	On-board I/O	Rear I/O
Giga Ethernet 0	RJ-45		
Giga Ethernet 1	RJ-45		
USB 0	USB		
USB 1	USB		
USB 2/3			yes
VGA	D-15		yes
DVO	DVI-D *1		
EIDE		yes	
SATA 1			yes
SATA 2			yes
COM 1	D-09		yes
COM 2	D-09		yes
Audio AC'97 *2	Yes		
GPIO (8 pins)			yes
Reset	Button		yes
Speaker			Yes
LED	Yes		
Keyboard, mouse, Floppy	Via USB		Via USB

*1 Possible with special extension card, COM2 front I/O not available

*2 Only available for operating temperature range ≥ 0 °C

Front and Onboard I/O
With standard Front Panel (4HP)

Function	Front I/O	On-board I/O	Rear I/O
Giga Ethernet 0	RJ-45		
Giga Ethernet 1	RJ-45		
USB 0	USB		
USB 1		Header	
USB 2/3			Yes
VGA	D-15		Yes
DVO		Header	
EIDE		Header	
SATA 1			Yes
SATA 2			Yes
COM 1		Header	Yes
COM 2		Header	Yes
GPIO (8 pins)			Yes
Reset	Button		Yes
Speaker			Yes
LED	Yes		
Keyboard, mouse, Floppy	Via USB		Via USB

Power Requirements

- +5 V, +3.3V Required

Power Consumption - typical operating current (estimated)

- 512 MB memory bank, w/o keyboard, hard disk, modules, etc.

Pentium M	5 V	3.3 V	Total Power
1.0 GHz	A	A	W Celeron M
1.3 GHz	A	A	W Celeron M
1.4 GHz	A	A	W
1.6 GHz	3.7 A	2.4 A	26.5 W
1.8 GHz	2.9 A	2.4 A	22.5 W

Operating measured at DOS prompt, no power saving

Mechanical – PICMG 2.0

- 3U, 1 slot wide (100 x 160 x 20.32mm) with 4HP Front panel
- 3U, 2 slot wide (100 x 160 x 40.64mm) with 8HP Front panel
- CL9 at backplanes with right justified system slot occupies one CPCI slot only.

Temperature

- Note: For detailed information about the operating temperature behavior of the board it is absolutely necessary to consult the manual. The highest achievable operating temperature depends on processor type, speed, ambient conditions (air flow) and front plate width.
- All values under typical conditions.

	Operating	Storage
Standard	0°C to +70°C	–40°C to +85°C
Extended	-40°C to +75°C	–40°C to +85°C

Humidity

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

Altitude

- Operating: 15.000 ft. (4.5 km)
- Storage: 40.000 ft. (12 km)

Shock

- C-, I-.Style 12g / 6 ms, 3 axis, up & down, 5 hits / direction

Vibration

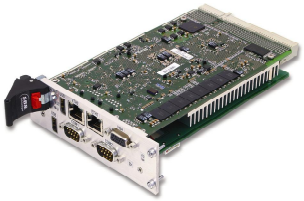
- C-, I-.Style 2 g rms @ 5 to 100 Hz, 30 minutes each axis

MTBF

- Calculations are available in accordance with MIL-HDBK-217. Please contact factory.

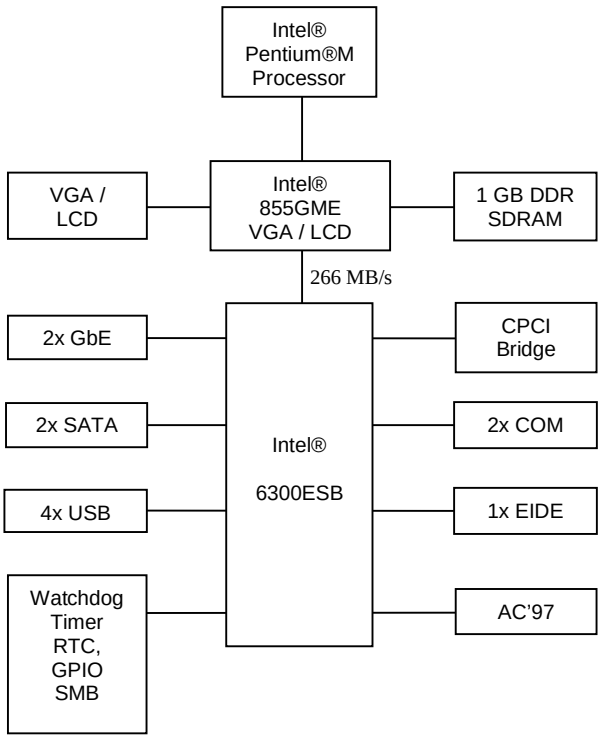
Safety

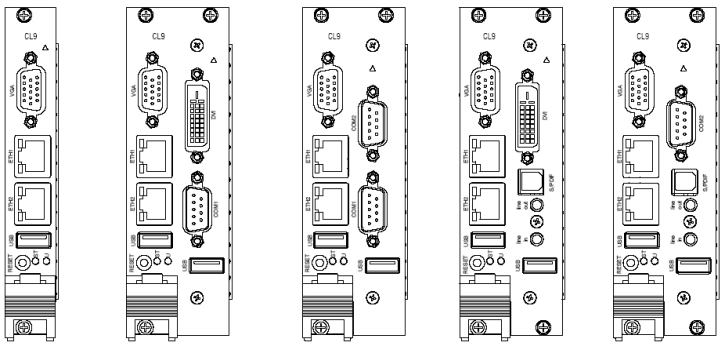
- Designed to meet standard UL 1590, CE class A, FCC-A



CL9

Block Diagram





Ordering Information

Hardware Accessories

CTM15:	I/O transition module for 3U backplane
SCC484TC08CL9:	Starter cage 19" 4U with fans, power supply, CDROM and hard disk

Operating Systems

Extensive operating systems support is available (see page 3).
Chassis with power supplies, backplanes and drives on request.
For detailed information and further options, contact SBS.

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