Telum™ ASLP10

High Performance AMC CPU

Features

- Intel® Pentium® M processor 2GHz, Intel® LV Pentium® M processor 1.4GHz and Intel® ULV Celeron® M processor 1GHz
- Single width, full height AMC.0 form factor
- Hot Swap compliant
- Carrier Grade Linux Support
- Addresses up to 2 GB DDR2 SDRAM (400MHz) with ECC
- 1 GB Flash (standard), others on request
- Two Gigabit Ethernet ports (Serdes type) on rear I/O AMC.2 Type E2 on port 0&1
- Two SATA on rear I/O AMC.3 Type S2 on port 2&3
- PCI Express x8 data port AMC.1 Type 8 on port 4 to 11
- IPMI ver.1.5 acc. to AMC.0
- Common reference clock (CLK3) support
- One USB 2.0 port on front
- Watchdog, temperature sensor
- Optional –40 °C to +55 °C

The Telum™ ASLP10 is a single width, full height AMC processor board with integrated low power Intel® Pentium® M processor and dual Gigabit Ethernet channels. It is designed in compliance to AMC.0, AMC.1 Type 8 (PCI Express), AMC.2 Type E2 (Gigabit Ethernet) and AMC.3 Type S2 (Serial ATA). The Telum ASLP10 supports full hot swap. It is designed for use in a broad range of applications such as wireless base stations, voice over packet, enterprise devices, test and measurement systems, and server blade applications.

The Telum ASLP10 platform is designed to support processors starting with 1 GHz up to 2 GHz. It offers low power consumption and eliminates the need for on-board fans. The design is ready to accept future higher performance Intel Pentium M processor versions.

The Telum ASLP10 provides a unique feature set, addresses up to 2 GB of 400 MHz DDR2 SDRAM with ECC and a PCI Express x8 data port via the AMC connector. Optionally the ASLP10 contains 1 GB Flash, with other Flash sizes on request.

The memory is soldered which results in a higher MTBF and shock and vibration immunity. This combined with a custom specific assembly service provides optimized price/performance for all kinds of telecom applications. The board is also available in extended temperature version ranging from -40 °C to +55 °C.

The Telum ASLP10 also includes a Module Management Controller (MMC) supporting the Intelligent Platform Management Interface (IPMI) architecture. It is responsible for power sequencing, hot swap and module management. The MMC allows independent platform management between IPMI enabled boards, power supplies, fans and other accessories in a system. This feature can be used for autonomous monitoring, logging and recovery control functions.

The CLK3 input (from the carrier) provides a common reference clock in order to support a spread spectrum clock (SSC) signal.

Supported operating system is Carrier Grade Linux®.

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Specifications

Processor – μFCBGA, Low Power Design
- Scalable processing power with flexible processor design
- Intel Pentium M processor: 1.4 GHz to 2 GHz
- Intel Celeron M processor: 1 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	2048 KB, full speed
Celeron M (90nm)	32 KB	512 KB, full speed

Chipset – Intel® E7520
- 533 or 400MHz system bus to processor
- One PCI Express x4 bus with 2 Gbytes/s transfer rate to Ethernet
- One PCI Express x8 bus with 4 Gbytes/s transfer rate to AMC interconnect – AMC.1 Type 8

Memory – DDR2 – 400MHz
- High-speed registered DDR SDRAM
- 72-bit wide with error correction (ECC)
- 512 Mbytes to 2 Gbytes with soldered chips
- 2 Gbyte availability depends on 1Gbit component availability

Flash Memory
- Standard 1 GB Flash
- Other Flash sizes on request

Dual Gigabit Ethernet
- Highly integrated Dual Channel Ethernet Controller – AMC.2 Type E2
- Serdes type 1000Base-BX connection via AMC connector

IPMI 1.5
- Baseboard Management Controller supporting the Intelligent Platform Management Interface (IPMI) architecture

EIDE- 6300ESB
- Ultra SATA/150 sync. DMA mode up to 150 Mbytes/sec
- Two SATA devices (AMC.3 Type S2) supported via AMC connector

USB 2.0 – 6300ESB
- One USB 2.0 connector at front
- Universal serial bus channels at rear optional (customer specific)

Keyboard/Mouse
- Support via USB port

Real-time clock
- RTC 146818 compatible

CMOS RAM
- 242 bytes non-volatile CMOS RAM

EEPROM
- 512 kbit serial EEPROMs for non-volatile user data

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 10 minutes

Serial Port (customer specific, on request)
- TxD/RxD, RTS/CTS on AMC interconnect

Timer
- Integrated in 6300ESB chipset
- Includes three timers comparators
- One-shot and periodic interrupts supported

Reference Clock CLK3
- Common reference clock from the carrier to the AMC module
- Supports a spread spectrum clock (SSC)

Temperature Sensors
- CPU die and board temperature software readable from –65 °C to +127 °C

LED
- Front panel LED system control
- Hot swap (blue), LED 1 (red) (failure, out of service status) LED 2 (green) and LED 3 (amber) available for applications

Hot-Swap – compliant to PICMG AMC.0
- Board can be inserted or removed in a powered system

BIOS Features
- New AMI BIOS Core 8, in-system programmable Flash ROM
- CPU, memory and IDE auto-detection/selection
- Integrated Ethernet BIOS ROM
- USB Mass Storage support and booting capability (floppy, HDD, CDROM)
- Password protection, BIOS post, system BIOS shadowing
- Operation without disk, keyboard and video

Software
- The following software is supported to the extent listed below:

OS	On Request	Planned
CG Linux	—	√

Front and Rear I/O (Interconnect)
- The pin out of the interconnect (rear I/O) corresponds to is compliant to the PICMG AMC.1 specification:

Function	Front	Interconnect
CLK3	—	CLK3
Eth 1	—	Port 0
Eth 2	—	Port 1
USB	√	Port 18 (on request)
PCI Express x8	—	Port 4 to 11
Reset button	√	—
LEDs	√	—
SATA 1	—	Port 2
SATA 2	—	Port 3
COM	—	Port 20 (on request)

Power Requirements
- +12V   Module power
- +3.3V   Management power, 0.1A max.

Power Consumption – typical operating current (estimated)
- For detailed information see the manual.

Pentium M	Typical Power
2.0 GHz, 1 GB	38 W (FSB 533MHz)
1.4 GHz, 512 MB	29 W
1.0 GHz, 512 MB	24 W (Celeron M)

Mechanical – PICMG AMC.0
- Single width, full height
- 180.6 x 73.5 x 28.95 mm (without front bezel)

Temperature
- Note: For detailed information about the operating temperature behavior of the board of any style it is absolutely necessary to consult the manual. The processor type and speed, altitude and the type of cooling influence the board temperature range.

Range	Operating	Storage
Standard	0 °C to +55 °C	-40 °C to +85 °C
Extended	-40 °C to +55 °C	-40 °C to +85 °C

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

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

Shock
- Style: 1, 3   12g / 6 ms, 3 axis, up & down, 5 hits / direction

Vibration
- Style: 1, 3   2 g rms @ 5–100 Hz, 1 hour each axis

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

Safety
- Designed to meet:

- FCC 47 CFR Part 15 Class A (USA)
- EN 55022:1998/A1:2000/A2:2003 Class A ITE (EU)
- ICES-003 Issue 3 Class A (Canada)
- VCCI Class A ITE
- AS/NZ CISPR 22:2002 Class A (Aus. New Zealand)

- EN 55024:1998/A1:2001/A2:2003 (EU)

- UL60950-1 (USA)
- CSA 22.1 No. 60950-1-03 (Canada)
- EN 60950-1 (EU)

- CE Mark

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Block Diagram
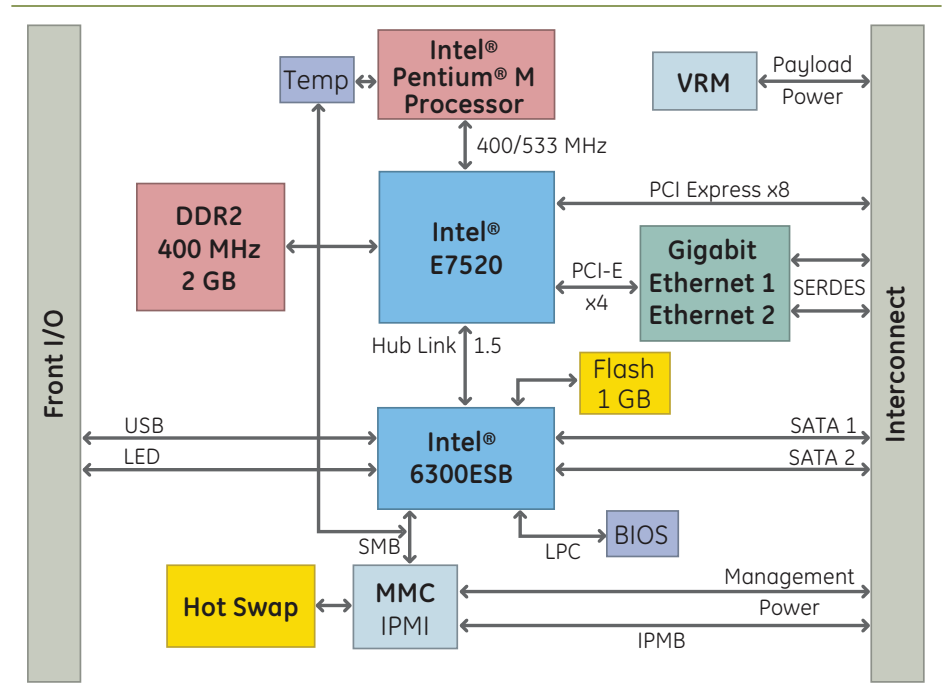
Ordering Information

ASLP10

Hardware Accessories
Not applicable

Operating Systems
Carrier Grade Linux
For detailed information and further options, contact
GE Fanuc Embedded Systems.

About GE Fanuc Embedded Systems

GE Fanuc Embedded Systems is a leading global provider of embedded computing solutions for a wide range of industries and applications. Our comprehensive product offering includes many types of I/O, single board computers, high performance signal processors, fully integrated, rugged systems including flat panel displays, plus high speed networking and communications products. The company is headquartered in the U.S. and has design, manufacturing and support offices throughout the world. Whether you're looking for one of our standard products or a fully custom solution, GE Fanuc Embedded Systems has the breadth, experience and 24/7 support to deliver what you need. For more information, visit www.gefanucembedded.com.

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Additional Resources

For more information, please visit the GE Fanuc Embedded Systems web site at:

www.gefanucembedded.com