F26L

Embedded Single Board Computer with Intel Atom E3900 Series 3U CompactPCI PlusIO

- » Intel E3900 series CPU with up to four cores
- » Up to 8 GB DDR3 RAM soldered, ECC
- » For CompactPCI 2.0 systems or CompactPCI PlusIO 2.30 hybrid systems (2.0 and CPCI-S.0)
- » CPU TDP 6.5 W to 12 W
- » Front I/O: 2 Gb Ethernet, 2 USB 3.0, 1 VGA
- » Rear I/O: 2 Gb Ethernet, 4 PCIe x1, 4 USB 2.0
- » microSD card and mSATA slots
- » Trusted Platform Module (TPM)
- » Side card connector for high flexibility and interface extensions
- » Up to -40 °C to +85 °C

Low-Power Intel Atom CPU

The F26L low-power CPU board is a member of the scalable family of Intel CPU boards which ensures futuresafety and long-term availability. It is equipped with an Intel Atom Processor E3900 Series dual-core or quadcore System-on-a-Chip (SoC). Due to the low power architecture on the Intel Atom processor, the CPU card has a total power consumption of max. 6.5 Watts to 12 Watts, while having a clock frequency of up to 1.6 GHz. An excellent graphics performance, thermal supervision of the processor and a watchdog for the operating system top off the functionality of the F26L. Furthermore, a Trusted Platform Module is assembled for security purposes.

Designed for Extreme Temperatures

The CompactPCI PlusIO board has been designed for applications with extreme temperatures, where high reliability and long-term availability are essential requirements. This kind of application is common in the rail market, in industrial automation and in the power and energy sector, for example. To fulfill these extreme temperature requirements, the F26L has been equipped with a specially outlined heat sink, which efficiently takes away the heat from the board.



CompactPCI PlusIO (PICMG 2.30)

The F26L supports the CompactPCI PlusIO (PICMG 2.30) specification, meaning it can be used in a hybrid system for control of both CompactPCI and CompactPCI Serial peripheral boards. Compliant to the standard, four USB 2.0, four PCI Express x1 as well as two Gigabit Ethernet interfaces are accessible on the J2 rear I/O connector.

Versatile Front I/O

The standard I/O available at the front panel of the F26L includes VGA, two Gigabit Ethernet and two USB 3.0 ports. The F26L can be extended by different side cards. Additional functions include a variety of different UARTs or another four USBs, SATA for hard disk connection and HD audio.

Linux and Windows Support

The F26L operates in Windows 10 and Linux environments as well as under real-time operating systems that support Intel's multi-core architecture. The AMI UEFI BIOS was specially designed for embedded system applications.

Long-Term Availability

Long-term availability until 2031 minimizes life-cycle management by making the F26L available at least for this period of time.









Diagram

F26L Data Sheet • 2020-03-26

CPU	 The following CPU types are supported: Intel Atom x5-E3930, 2 cores, 2 threads, 1.3 GHz, 1.8 GHz Turbo Boost, 6.5 W, 2 MB cache Intel Atom x5-E3940, 4 cores, 4 threads, 1.6 GHz, 1.8 GHz Turbo Boost, 9.5 W, 2 MB cache Intel Atom x7-E3950, 4 cores, 4 threads, 1.6 GHz, 2.0 GHz Turbo Boost, 12 W, 2 MB cache
Memory	 System RAM Soldered DDR3, ECC 8 GB max.
Security	Trusted Platform Module 2.0
Mass Storage	 The following mass storage devices can be assembled: mSATA microSD card
Graphics	Processor graphics
	 This product includes interface options Different front connectors Front or rear connection for some interfaces (assembly option) I/O expansion using a side card plugged via board-to-board connector SD/DifferesD card: SNT SD/microSD card: UHS-1 (104 MB/s (SDR104)) SATA 1 × SATA Revision 3.x, board to board Video 1 × NGA 1 × DDI board to board Audio USB 2 × USB 3.0, Type A 4 × USB 2.0, board to board USB 2 × 10/100/1000BASE-T, RM5 2 × 10/100/1000BASE-T, M12, A-coded, receptacle 2 × 10/100/1000BASE-T, M12, X-coded, receptacle 2 × 10/100/1000BASE-T, M12, X-coded, receptacle 2 × 10/1000BASE-T, M12, X-coded, receptacle 3 × PCle 2.0, x1, board to board 4 × USE 2.0, x1, board to board 4 × DCle 2.0, x1, board to board 3 × bcards and to board 4 × DCle 2.0, x1, board to board 5 × PCle 2.0, x1, board to board 6 × PCle 2.0, x1, board to board 6 × PCle 2.0, x1, board to board 7 × PCle 2.0, x1, board to board 8 × PCle 2.0, x1, board to board 1 × botton ED 9 Status: board status (BMC) 9 Ethernet: activity, link 9 Power 1 × button
Technical Data	

Supervision and Control	 Board management controller Temperature measurement Watchdog timer Real-time clock, buffered by supercapacitor (3 days) or battery (1 year)
Product Standard	 CompactPCI: CompactPCI Core Specification PICMG 2.0 R3.0 CompactPCI PlusIO: CompactPCI PlusIO Specification PICMG 2.30 1PCI33/4PCIE2.0/0SATA/4USB2/2ETH1G System slot 32-bit/33-MHz CompactPCI bus V(I/O): +3.3 V (+5 V tolerant)
Electrical Specifications	 Supply voltage +5 V (-3 % / +5 %) +3.3 V (-3 % / +5 %) +12 V (-10 % / +10 %) Power consumption: 22 W max.
Mechanical Specifications	 Dimensions 3U, 4 HP 3U, 8 HP 3U, 12 HP (8 HP with M12 connectors, up to 12 HP with side card) Weight: 350 g (4 HP with RJ45 connectors) Cooling Air cooling Conduction cooling
Product Compliance: Rail - Rolling Stock	 Operating temperature: -40 °C to +85 °C (EN 50155:2007, class TX, board) Storage temperature: -40 °C (EN 60068-2-1:2007, Ab) to +85 °C (EN 60068-2-2:2007, Bb) Altitude: -300 m to +3000 m Relative humidity (operation): max. 95% non-condensing Relative humidity (storage): max. 95% non-condensing Shock: 50 m/s² / 30 ms (EN 61373:2010, vehicle body, cat. 1, class B) Vibration: 10 min @ 1.01 m/s² and 5 h @ 5.72 m/s² (EN 61373:2010, vehicle body, cat. 1, class B)
Product Compliance: Information Technology Equipment	 Electrical safety: EN 62368-1:2014 + AC:2015 Flammability (PCBs): UL 94 V-0
EMC	 EN 55022 (radio disturbance) IEC 61000-4-2 (ESD) IEC 61000-4-3 (electromagnetic field immunity) IEC 61000-4-4 (burst) IEC 61000-4-5 (surge) IEC 61000-4-6 (conducted disturbances)
Reliability	365 000 h predicted @ 40 °C according to IEC/TR 62380 (RDF 2000)
BIOS/Boot Loader	AMI Aptio UEFI Firmware





4

Software Support

Linux

- □ Supported kernel: 4.8 or higher. For older kernels (e.g., 4.4.x), patches for the Apollo Lake platform are also available.
- Yocto BSP
- □ Tested with: Yocto BSP (Sumo 2.5, Linux kernel 4.15)
- Windows
 - Windows 10 IoT Enterprise 64-bit
- VxWorks
 - BSP on request
- QNX
 - BSP on request
- See also Application Note Recommendations for a Robust Software Setup
- For more information and available packages see Software.





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