

F26L

Embedded Single Board Computer with Intel Apollo Lake-I 3U CompactPCI PlusIO

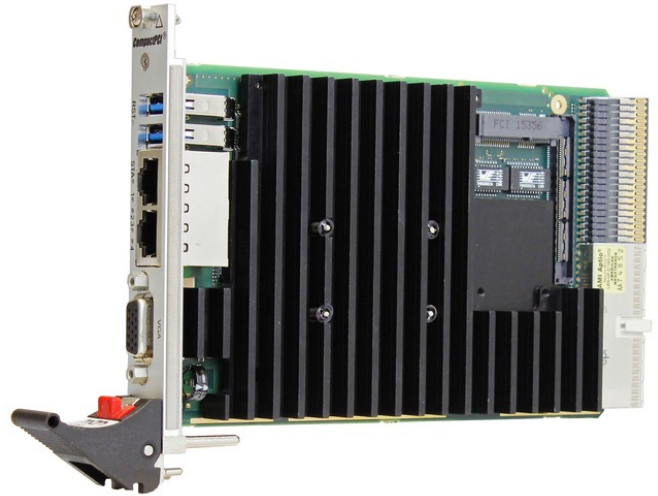
- » Intel E3900 series CPU with up to four cores
- » Up to 8 GB DDR3 RAM soldered, ECC
- » For CompactPCI 2.0 systems or CompactPCI PlusIO 2.30 hybrid systems (2.0 and CPCI-S.0)
- » CPU TDP 6.5 W to 12 W
- » Front I/O: 2 Gb Ethernet, 2 USB 3.0, 1 VGA
- » Rear I/O: 2 Gb Ethernet, 4 PCIe x1, 4 USB 2.0
- » 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 future-safety and long-term availability. It is equipped with an Intel Atom Apollo Lake-I dual-core or quad-core 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

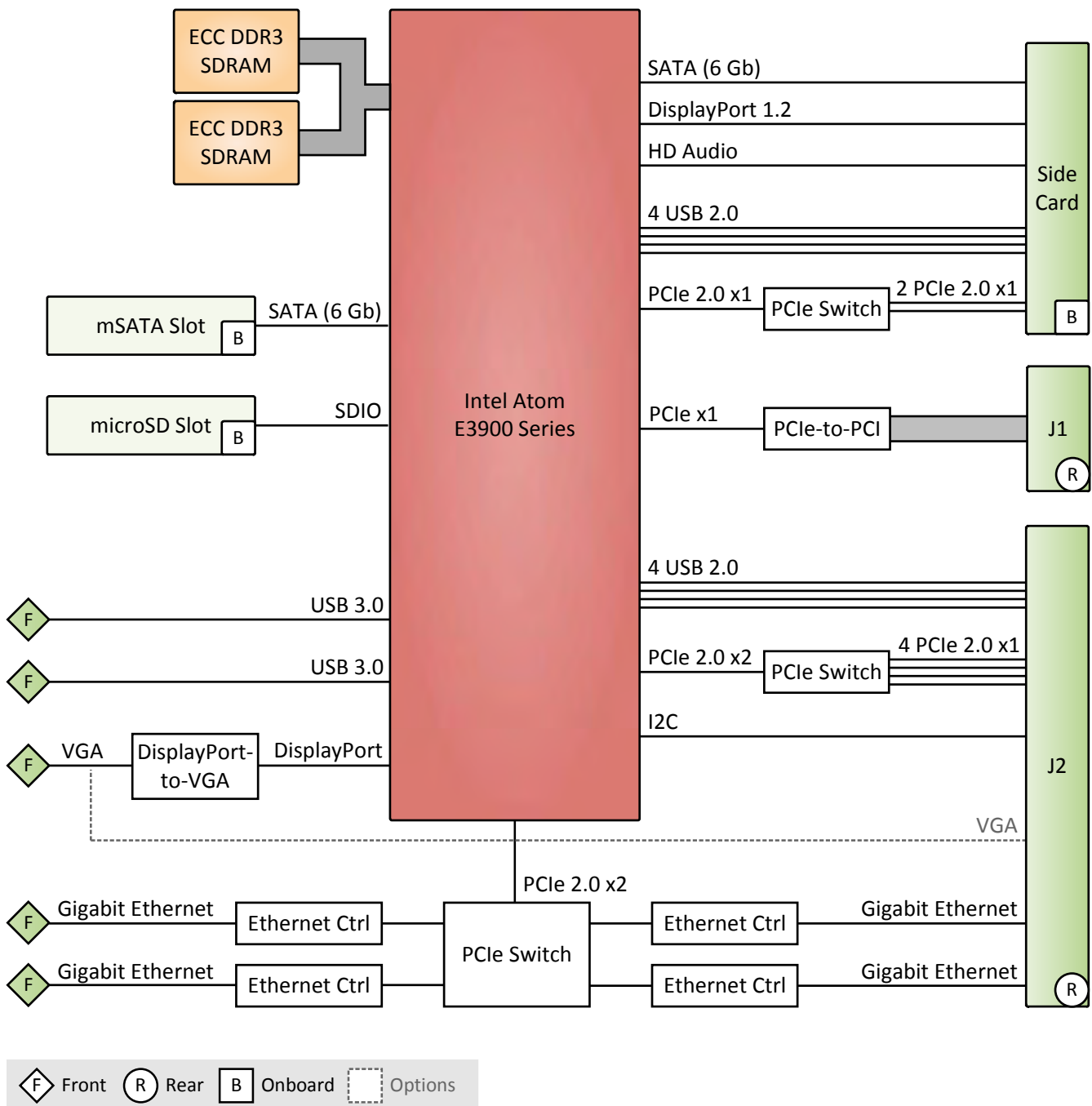
The standard I/O available at the front panel of the F26L includes VGA, two Gigabit Ethernet and two USB 3.0 ports. The F26L can be extended by different side cards. Additional functions include a variety of different UARTs or another four USBs, SATA for hard disk connection and HD audio.

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.



CPU

- The following CPU types are supported:
 - Intel Apollo Lake-I E3930 Entry, 2 cores, 1.3 GHz
 - Intel Apollo Lake-I E3940 Intermediate, 4 cores, 1.6 GHz
 - Intel Apollo Lake-I E3950 High, 4 cores, 1.6 GHz
- Intel Virtualization Technology (Intel VT)
 - VT-d
 - VT-x

Security

- Trusted Platform Module (TPM 2.0)

Memory

- System RAM
 - Soldered DDR3, ECC support
 - 4 GB or 8 GB
- Boot Flash
 - 16 MB

Mass Storage

- The following mass storage devices can be assembled:
 - microSD card
 - mSATA disk

Front Interfaces

- Video
 - One VGA connector
 - The front channel can optionally be led to the backplane
- USB
 - Two Type A connectors, USB 3.0
- Ethernet
 - Two RJ45 connectors, 100/1000BASE-T, or
 - Two 4-pin M12 connectors, D-coded, 100BASE-T (8 HP front panel), or
 - Two 8-pin M12 connectors, X-coded, 100/1000BASE-T (8 HP front panel), or
 - Two 8-pin M12 connectors, A-coded, 100/1000BASE-T (8 HP front panel)
 - Four link and activity LEDs (two per channel)
- Status LED
- Reset button

Onboard Interfaces

- An onboard connector allows a side card to be plugged onto the CPU board to add front panel connections or mass storage devices. A range of standard side cards is available to implement the following functions.
- SATA
 - One channel, SATA Revision 3.x
- Video
 - One DisplayPort channel
- Audio
 - One HD Audio channel
- USB
 - Four channels, USB 2.0
- PCI Express
 - Two x1 links, PCIe 2.0

Rear Interfaces

- USB
 - Four channels, USB 2.0
- Ethernet
 - Two channels, 100/1000BASE-T
- PCI Express
 - Four x1 links, PCIe 2.0
- I2C
 - One interface
- Compatible with PICMG 2.30 CompactPCI PlusIO
 - 1PCI33/4PCIE2.0/0SATA/4USB2/2ETH1G

Supervision and Control

- Board controller
- Watchdog timer
- Temperature measurement
- Real-time clock with supercapacitor or battery backup

Backplane Standard

- Compliance with CompactPCI Core Specification PICMG 2.0 R3.0
- 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%)
 - The board can be supplied with +5V only, all other voltages are generated onboard.
- Power consumption
 - 22 W max.

Mechanical Specifications

- Dimensions
 - 3U, 4 HP, or
 - 3U, 8 HP
- Weight
 - 350 g (model 02F026L00)

Environmental Specifications

- Temperature range (operation)
 - -40°C to +85°C, compliant with EN 50155, class TX
- Temperature range (storage): -40°C to +85°C
- Cooling concept
 - Air-cooled, airflow 1.5 m/s (model 02F026L00), or
 - Natural convection (model 02F026L01)
 - Conduction-cooled in MEN CCA frame
- Relative humidity (operation): max. 95% non-condensing
- Relative humidity (storage): max. 95% non-condensing
- Altitude: -300 m to +3000 m
- Shock: EN 50155 (12.2.11) / EN 61373 category 1 class B body mounted
- Vibration: EN 50155 (12.2.11) / EN 61373 category 1 class B body mounted

Reliability

- MTBF: 365 000 h @ 40°C according to IEC/TR 62380 (RDF 2000)

Safety

- Electrical Safety
 - EN 62368-1 (former EN 60950-1)
- 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)

BIOS

- AMI Aptio UEFI Firmware

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 10
- VxWorks
 - BSP on request
- QNX
 - BSP on request
- **For more information and available packages see Software.**

Germany

MEN Mikro Elektronik GmbH

Neuwieder Straße 1-7
90411 Nuremberg
Phone +49-911-99 33 5-0

sales@men.de
www.men.de

USA

MEN Micro Inc.

860 Penllyn Blue Bell Pike
Blue Bell, PA 19422
Phone 215-542-9575

sales@menmicro.com
www.menmicro.com

France

MEN Mikro Elektronik SAS

18, rue René Cassin
ZA de la Châtelaine
74240 Gaillard
Phone +33-450-955-312

sales@men-france.fr
www.men-france.fr

China

MEN Mikro Elektronik Co., Ltd.

Room 1215, #993 West Nanjing Road
Shanghai 200041
Phone +86-21-5058-0963

sales@men-china.cn
www.men-china.cn

Up-to-date information, documentation and ordering information:
www.men.de/products/f26l/

MEN is not responsible for the results of any actions taken on the basis of information in the publication, nor for any error in or omission from the publication. MEN expressly disclaims all and any liability and responsibility to any person, whether a reader of the publication or not, in respect of anything, and of the consequences of anything, done or omitted to be done by any such person in reliance, whether wholly or partially, on the whole or any part of the contents of the publication.

The correct function of MEN products in mission-critical and life-critical applications is limited to the environmental specification given for each product in the technical user manual. The correct function of MEN products under extended environmental conditions is limited to the individual requirement specification and subsequent validation documents for each product for the applicable use case and has to be agreed upon in writing by MEN and the customer. Should the customer purchase or use MEN products for any unintended or unauthorized application, the customer shall indemnify and hold MEN and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim or personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that MEN was negligent regarding the design or manufacture of the part.

In no case is MEN liable for the correct function of the technical installation where MEN products are a part of.

© 2019 MEN Mikro Elektronik GmbH