3U CompactPCI Intel® SBCs
F14, F15, F17, F18, F19P

Embedded Solutions

High computing and graphics performance with forward compatibility for a wide range of industrial applications.

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Content

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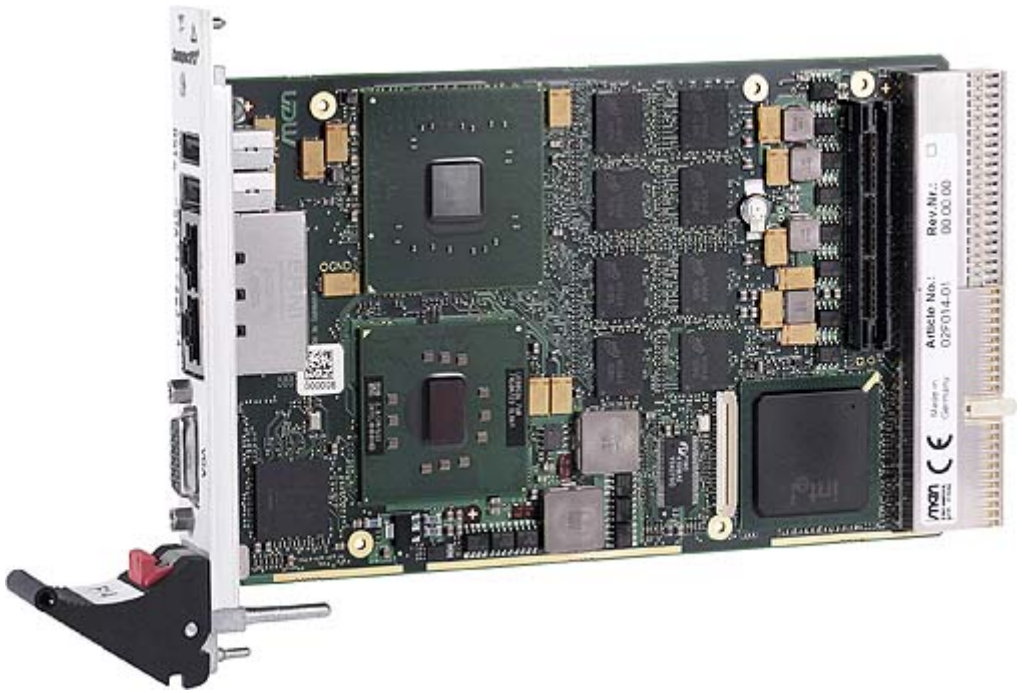
- *Processor roadmap*
- *Technical data*
- *Side card concept*
- *Rear I/O*
- *Serial ATA*
- *Features and benefits*
- *Summary*



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MEN Products Fit to Intels Roadmap

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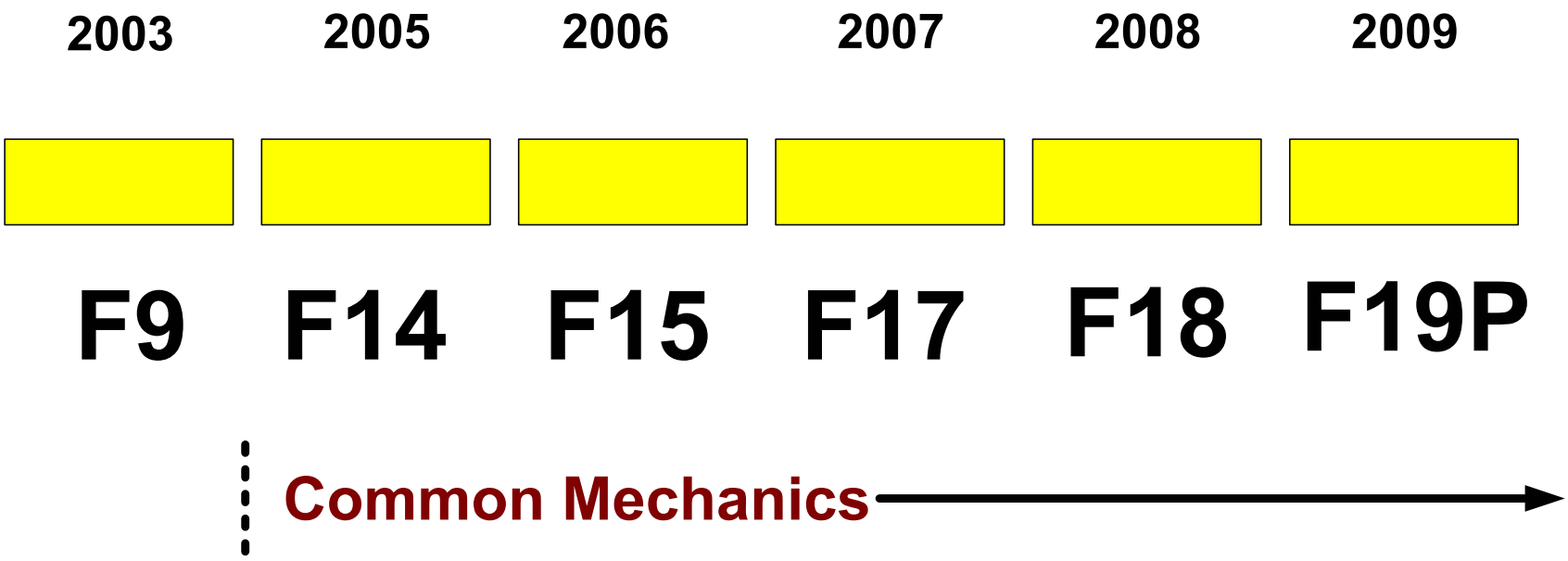

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Scalable Performance – F14 and F15

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F14

- Pentium M 760, 2 GHz
- 32-bit CPU
- Celeron M, 1 GHz
- 533 MHz FSB
- Power consumption up to 37.5 W
- Chipset: Intel 915GM and ICH6-M
- 2 MB L2 cache
- Up to 2 GB DDR2 DRAM soldered
- CompactFlash
  - Type I
  - DMA Support
- 4 Mbits boot flash

F15

- Core Duo T2500, 2 GHz
- 32-bit CPU
- Single-core Celeron M, 1.07 GHz
- 667 MHz FSB
- Power consumption up to 41 W
- Chipset: Intel 945GM and ICH7-M
- 2MB L2 cache
- Up to 4 GB DDR2 DRAM soldered
- CompactFlash
  - Type I
  - DMA Support
- 8 Mbits boot flash

Scalable Performance – F17 and F18

Embedded Solutions

F17

- Core 2 Duo T7400, 2.16 GHz
- 64-bit CPU
- Single-core Celeron M, 1.73 GHz
- 667MHz FSB
- Power consumption up to 44 W
- Chipset: Intel 945GM and ICH7-M DH
- 4MB L2 cache
- Up to 4 GB DDR2 DRAM soldered
- CompactFlash
  - Type I
  - DMA Support
- 8 Mbits boot flash

F18

- Core 2 Duo T7500, 2.2 GHz
- „Ext.“ 64 bit
- Core 2 Duo L7500, 1.6 GHz
- 800MHz FSB
- Power consumption up to 47 W
- Chipset: Intel GM965 and ICH8-M
- 4MB L2 cache
- Up to 4 GB DDR2 DRAM soldered
- CompactFlash
  - Type I
  - DMA Support
- 8 Mbits boot flash

Scalable Performance – F19P

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F19P

- Core 2 Duo SP9300, 2.26 GHz
- „Ext.“ 64 bit
- SingleCore Celeron M 722, 1.2 GHz
- 1066MHz FSB
- Power consumption up to 44 W
- Chipset: Intel GS45 and ICH9-M
- 6MB L2 cache
- Up to 4 GB DDR3 DRAM soldered
- CompactFlash
  - Type I
  - DMA Support
- 16 Mbits boot Flash

Further Common Features

- 4HP cPCI system master or stand-alone
- CompactPCI (Express) system-slot functionality (except F19P)
- Prepared for rugged environments
- With passive heat sink
- Forced air cooling required (system)

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Side Board Concept

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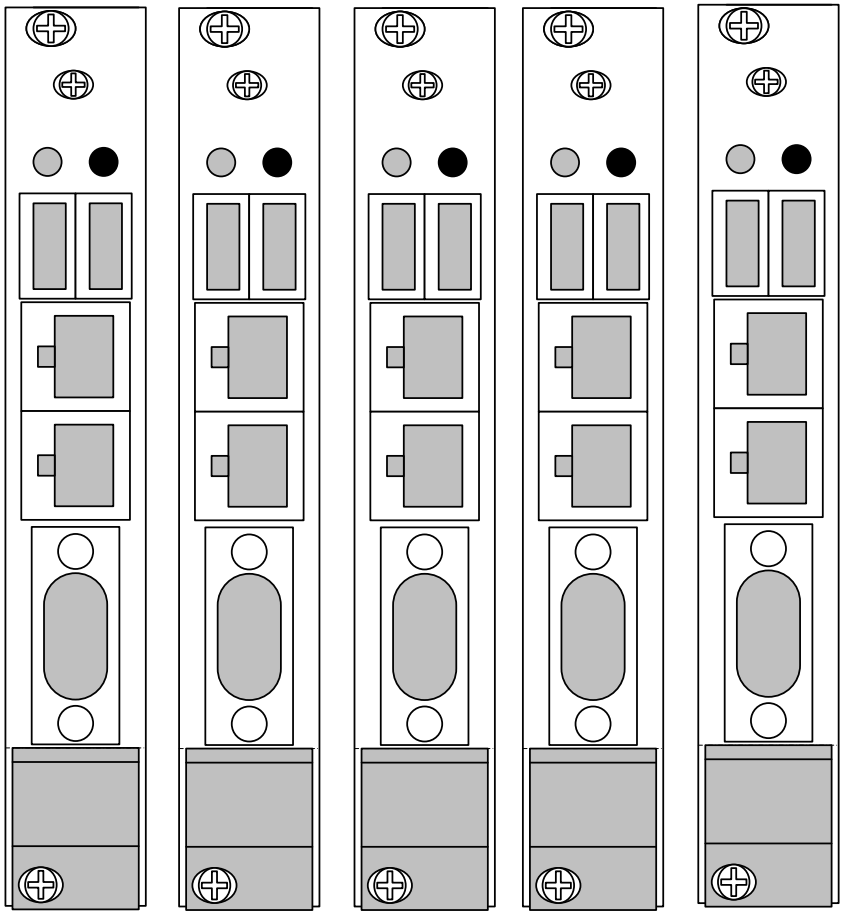
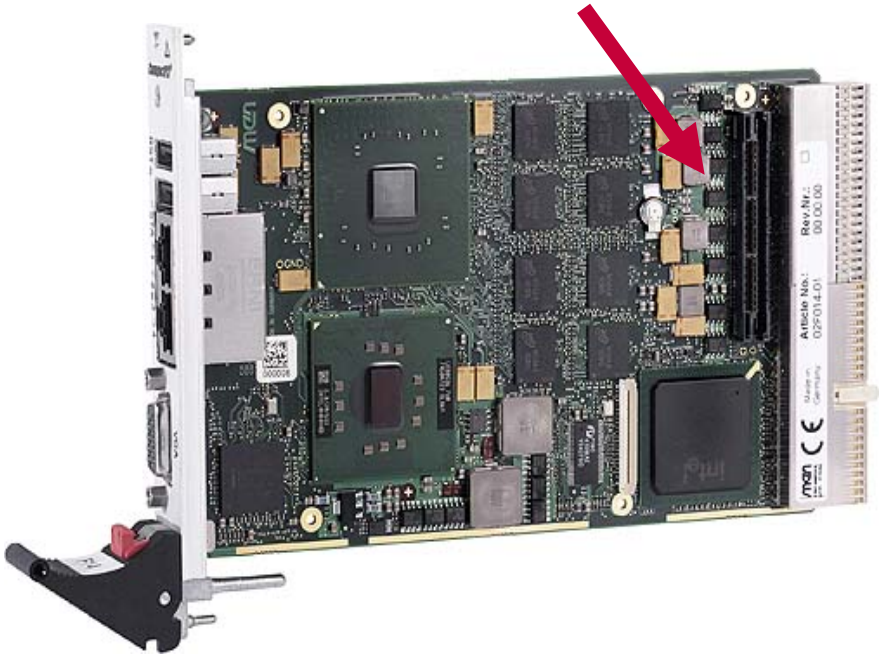


F14 F15 F17 F18 F19P

Side-board connector



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Side Cards

F600	*1-4 COMs via SA-Adapters™* *Optical isolation depending on SA-Adapter™* *2.5" SATA hard-disk slot and additional SATA for external device*	
F601	*2 DVI connections* *1 HD audio* *1 COM, alternatively with optical isolation* *2.5" SATA hard-disk slot*	
F602	*4 PCI Express® links x1 to backplane* *1 COM via SA-Adapter™* *1 USB 2.0* *1 DVI connection* *2.5" SATA hard-disk slot*	
F603	*1 RS232* *2 USB 2.0* *2.5" SATA hard-disk slot* *CompactFlash® slot*	
F604	*1 IEEE 1394 interface* *1 DVI-D Single Link* *1 HD Audio (in or out)* *1 or 2 RS232* *2.5" SATA hard-disk slot*	

Side Cards

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F605	*4 HP extension for 3U Intel® SBCs F15, F17, F18* *1 XMC slot (PCIe® 1 x4 link or 2 x1 links)* *or 1 PMC slot (32/64 bits, 33/66/133MHz, PCI-X)* *PMC rear I/O support via J2 (only in 32-bit backplane)*	
F606	*4 HP extension for 3U Intel® SBCs F14, F15, F17, F18* *2 Gigabit Ethernet on Lemo railway compliant connectors* *1 COM extension (SA-Adapter™)* *-40 to +85°C screened* *Conformal coating* *2.5" SATA hard disk slot*	
F608	*2 COMs via SA-Adapter™* *4 SATA ports via rear I/O (CompactPCI PlusIO compliant)* *2 DVI on 8HP* *2 USB optional* *2.5" SATA hard disk slot*	

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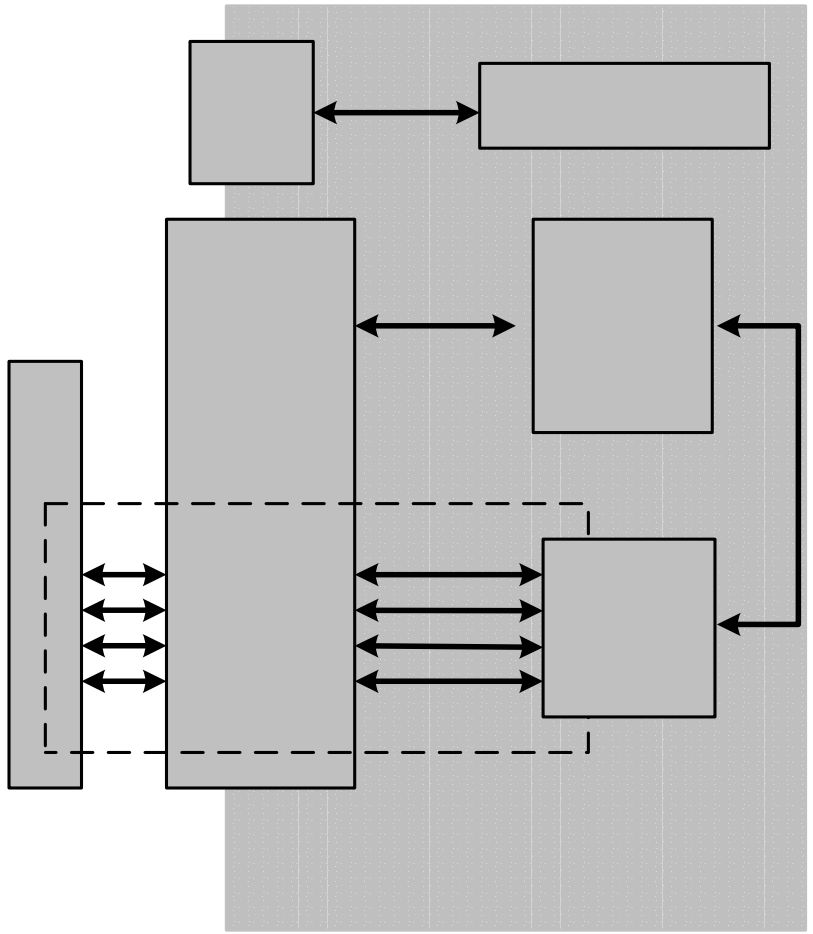
Optional rear I/O Ethernet on F15 and F17

Additional third Ethernet available via rear I/O

- Controller on special adapter with CompactFlash (08AE03-)
- Via one PCI Express link on side-card connector
- Instead of graphics interface on side-card connector



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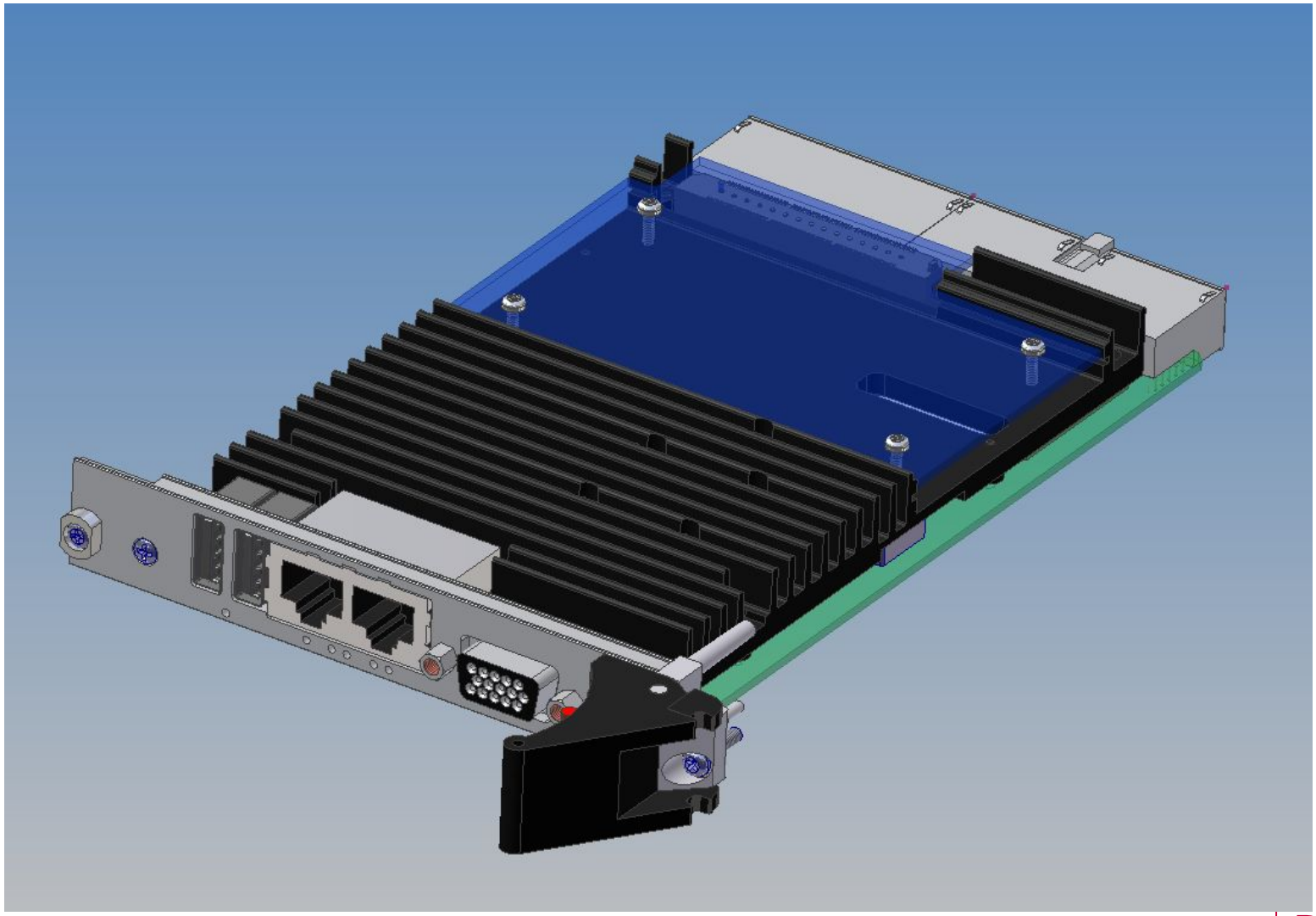
Compact Flash Carrier with Gigabit Ethernet



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Rear I/O for CompactPCI Boards

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	F14	F15	F17	F18	F19P
CPCI on J1	32 bit/ 33MHz	32 bit/ 33MHz	32 bit/ 33MHz	32 bit/ 33MHz	32 bit/ 33MHz
SATA on J2	x1	x2	x2	x2	x4*
USB 2.0 on J2	x2	x2	x2	x2	x4*

* new pinout; not compatible to the other boards

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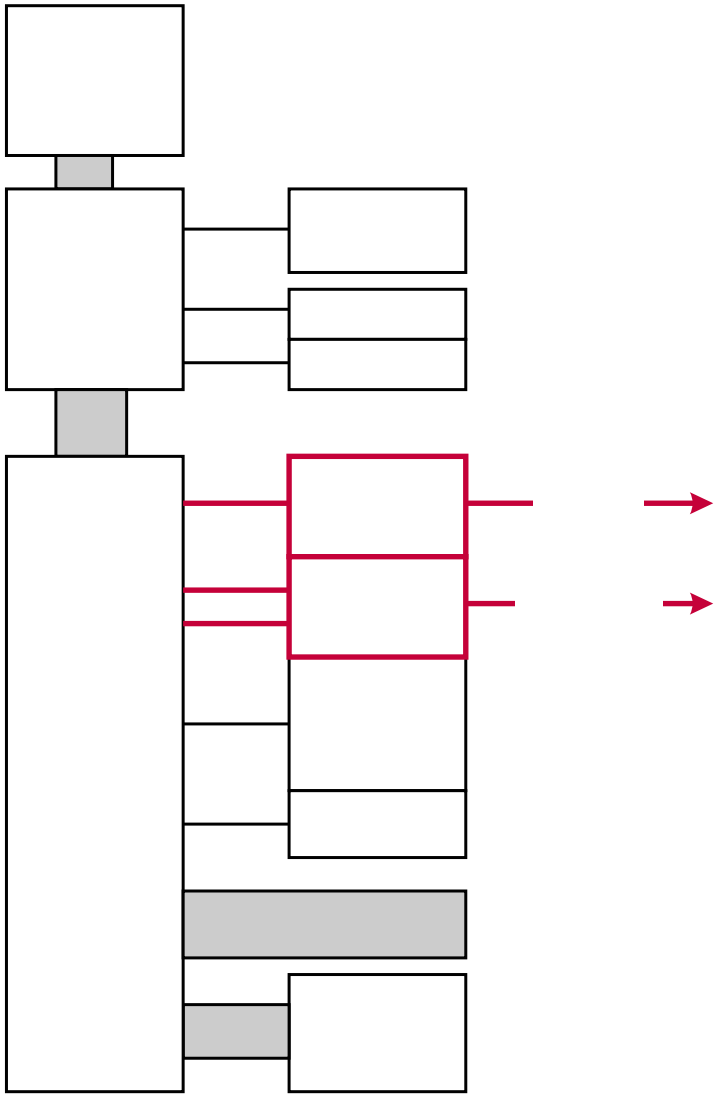
Mass Storage

Parallel IDE (PATA)

- One port for CompactFlash, or:
- One port for local hard-disk/CD-ROM

Serial ATA (SATA)

- Two channels via side-board connector
- Transfer rates up to 150MB/s /300MB/s
- F15, F17, F18, F19P – RAID support



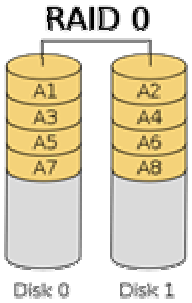
Serial ATA (SATA)

***F14**: 1x SATA with 1.5 Gb/s*

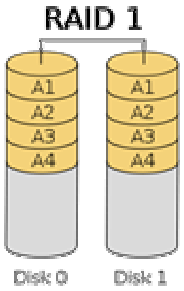
***F15 / F17**: 2x SATA with 1.5 Gb/s and RAID 0/1*

***F18** : 2x SATA with 3.0 Gb/s and RAID 0/1*

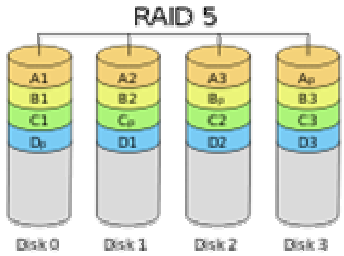
***F19P**: SATA supports RAID 0/1/5/10*

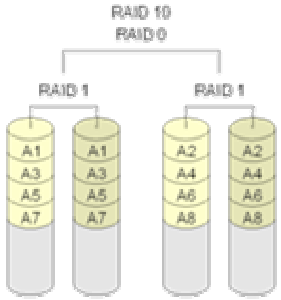


2 HHDs, the operation system sees only one HDD



2 HHDs for mirroring





I/O

USB

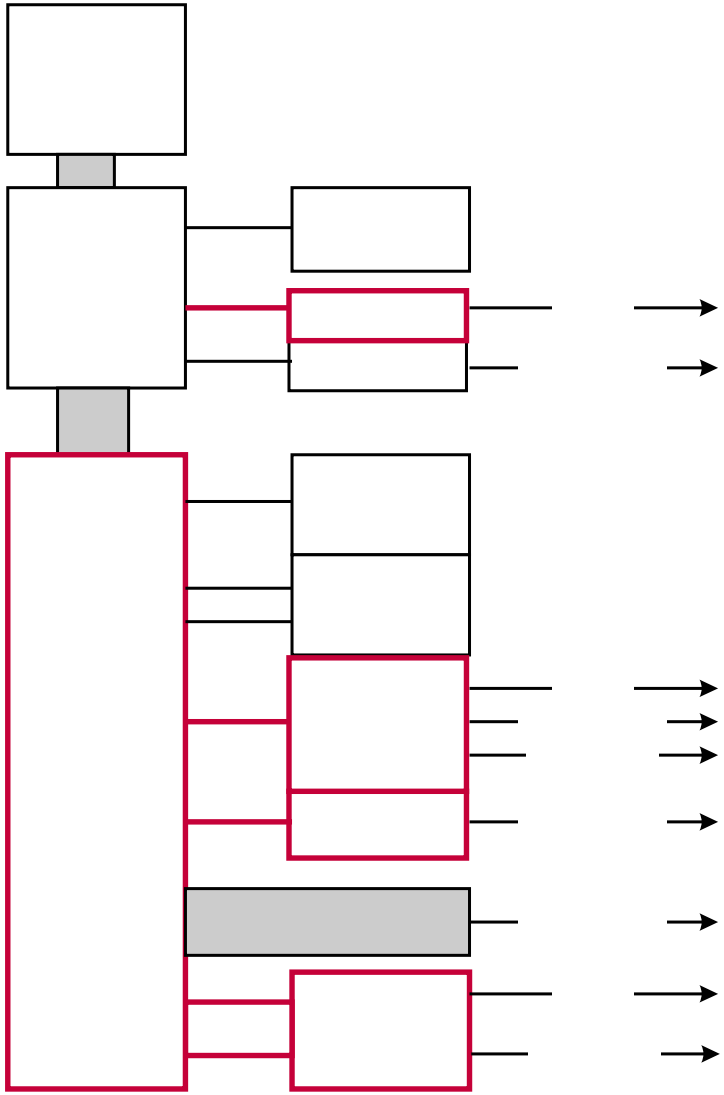
- 2 USB 2.0 front panel
- 4 USB 2.0 side board
- 2 / 4 (F19P) USB 2.0 rear I/O

Ethernet

- each Gigabit Ethernet is connected to the CPU via its own PCI-Express link

HD audio

- Via side card



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Graphics Performance

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VGA – Graphics clock

- 200 or 160 MHz on F14
- 250 MHz on F15, F17
- Up to 500 MHz Gen 4 Graphics engine on F18
- Up to 533 MHz Gen 5 Graphics engine on F19P (performance 20% better than the F18)

Miscellaneous

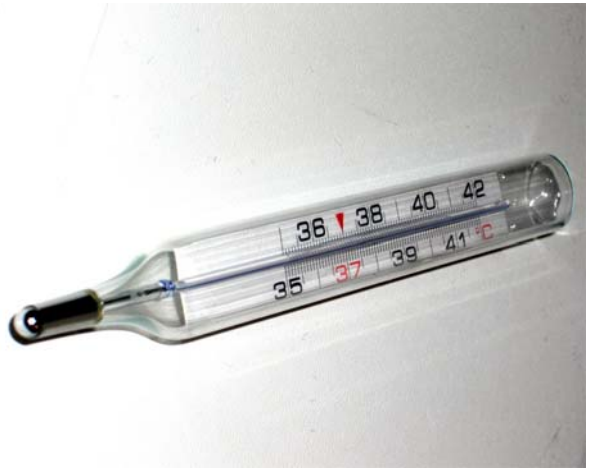
Real-time clock

External watchdog timer in the Board Management Controller

Temperature measurement

User LED

Reset button



Non-Standard Options

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Graphics

- One or two DVI-D connectors at front via side board

  Simultaneous connection of two monitors

Ethernet

- D-Sub connector instead of RJ45
- Third interface via rear I/O

Rear I/O

- Two USB 2.0 ports and two SATA ports via rear I/O transition module (F14, F15, F17, F18)

Mechanical

- Side cards left or right side of CPU

Software Support

Windows 2000/XP, Vista

Linux

VxWorks

QNX
(to be verified)

Intel VT Virtualization Technology
(only F15, F17, F18 and F19P)

Attention:

- 64-bit hardware technology requires 64-bit operating system support

Features and Benefits 1/3

Typical Wintel Application for high computing performance and multimedia requirements in the low power range with affordable price

Scalable performance (F14, F15, F17, F18,F19P) with forward compatibility thanks to same side card concept

Long term availability 5 years

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Features and Benefits 2/3

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Fast and future-oriented

- No PCI bridge
- DDR2 RAM – up to 4GB
- SATA and PCIe (6x1 PCIe lanes)
- 4x1 PCIe lanes usable on side board

Reliable

- RAID support via SATA on side board

Compact solution

- 1 cPCI slot
- CompactFlash or hard disk on board

Optimized for multimedia

- 2x DVI instead of VGA
- Display of the same or of different contents simultaneously

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Features and Benefits 3/3

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Suited for rugged and mobile applications

- Especially developed passive heat sink
- DRAM soldered against vibration/shock
- Prepared for coating

Robust mechanical connection to side card

- Extension to 8HP in 3U systems
- Also for use in 6U systems

Intel Virtualization Technology

Typical Applications

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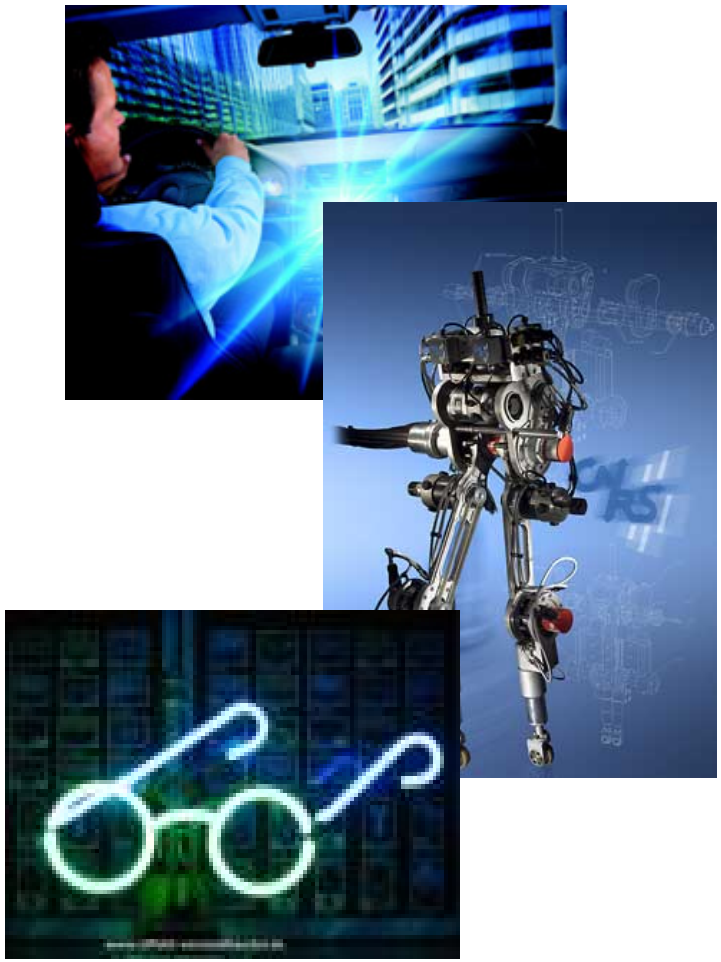
- *Infotainment and multimedia*
- *Instrumentation and test*
- *Vision systems*
- *Monitoring and video capture systems (security)*
- *Handling equipment (robots)*
- *Control systems*



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Target Markets

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Industrial control and automation

Power generation and distribution

Ground transportation (railway, metro, tram, bus)

Commercial vehicles

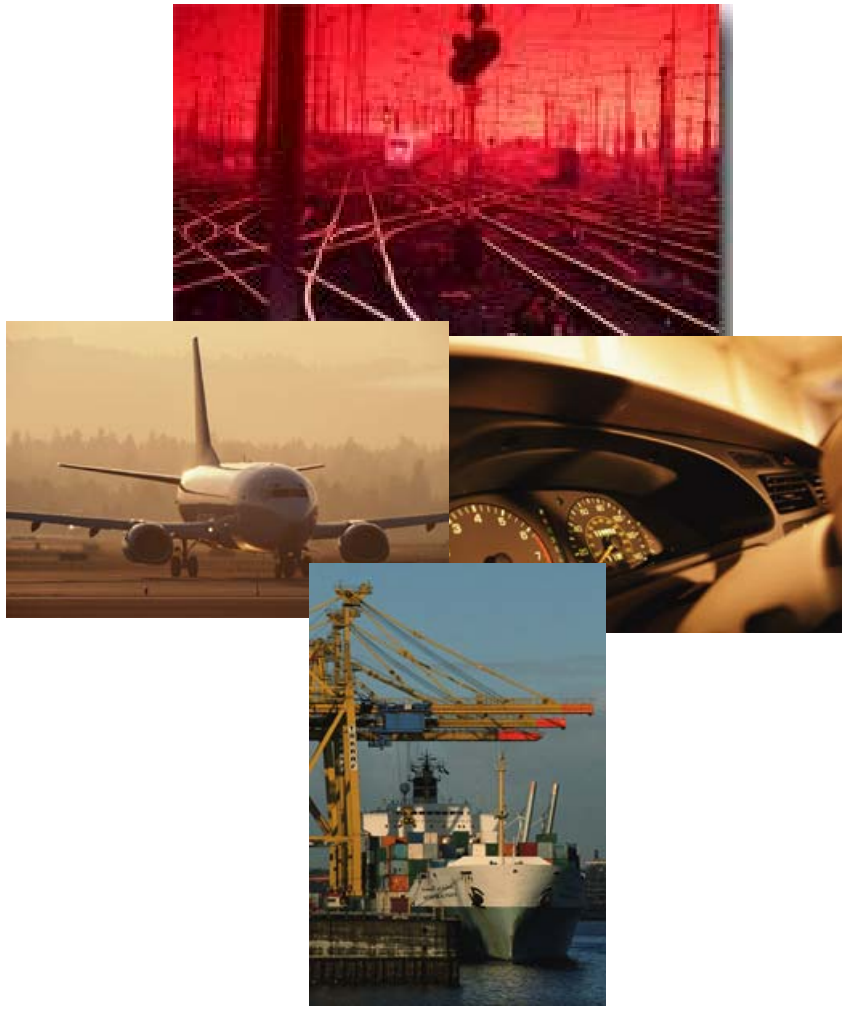
Shipbuilding

Civil Avionics

Medical engineering

Telecom

Automotive



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Sales Information F14

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Standard versions

- Low-Cost-Version with Celeron M 1GHz

  512MB DRAM, 1 Gigabit /1 Fast Ethernet
- High-Performance-Version with Pentium M 2GHz

  1GB DRAM, 2 Gigabit Ethernet

Availability

- Stock

Sales Information F15

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Standard versions

- Core Duo T2500, 2GHz, 1GB DDR2 SDRAM, 2 Gb Ethernet, 0..+45°C

Availability

- Stock

Sales Information F17

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Standard versions

- Core 2 Duo T7400, 2.16 GHz, 2 Gb Ethernet, 2GB DDR2 SDRAM, 0..+45°C

Availability

- Stock

Sales Information F18

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Standard versions

- Core 2 Duo T7500, 2.2 GHz, 2 Gb Ethernet, 4GB DDR2 SDRAM, 0..+45°C

Availability

- Stock

Sales Information F19P

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Standard versions

- Core 2 Duo SP9300, 2.2 GHz, 2 Gb Ethernet, 4 GB DDR3 SDRAM, 0..+60°C

Availability

- Q2 2009

Summary

Flexible performance because of forward compatibility

Perfectly suited for rugged environments

- Soldered DRAM
- Robust side card connector
- Especially developed passive heat sink

Fast and future-oriented

- DDR2 RAM, up to 4GB (DDR3 on F19P)
- 4 - 6 PCIe lanes to dual Ethernet and side board
- 2 – 4 SATA channels
- No PCI-bridge

Multimedia-capable

- 1 VGA + 2 DVI connections

Long-term availability ⇨ 5 years new (F19P: 7 years)

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Thank you for your attention!

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Our mission is to provide embedded computing and I/O solutions for demanding industrial applications in the most innovative, reliable and flexible way.

As a member of the UN Global Compact Initiative, MEN is committed to follow the principles of human rights, labour, environment and anti-corruption as defined by this organization.

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