



Product Information

PC1-GROOVE • *CompactPCI*® PlusIO Core™ i7 Processor High Performance CPU Card

Equipped with New Technology for High Bandwidth Demand *CompactPCI*® Serial Suitable for Classic *CompactPCI*® and PICMG 2.30 *CompactPCI*® PlusIO Systems

Document No. 5621 • 1 October 2015

*The PC1-GROOVE is a powerful 4HP/3U **CompactPCI**® CPU board, equipped with an Intel® Core™ i7 processor (dual core, quad threads) scalable from 1.06GHz up to 2.66GHz clock (Turbo Boost up to 3.2GHz), and integrated graphics. The PC1-GROOVE front panel is provided with two Gigabit Ethernet jacks, two USB receptacles, and either the Vesa DisplayPort connector for attachment of a high resolution display (DVI adapter available), or alternatively the classic style VGA connector.*

Conforming to the PICMG® 2.30 *CompactPCI*® PlusIO specification, the PC1-GROOVE in addition provides standardised high speed rear I/O across the backplane connector J2, such as PCI Express®, SATA, and Gigabit Ethernet. In a hybrid backplane system, the PC1-GROOVE acts as a bridge to PICMG® CPCIS.0 *CompactPCI*® Serial cards. In a classic *CompactPCI*® system, any 2.30 compliant rear I/O transition module such as the PR1-RIO may be used as an expansion option.



PC1-GROOVE

Feature Summary

- ▶ *CompactPCI®* System Slot Controller
- ▶ *CompactPCI®* PlusIO Rear I/O According to PICMG® 2.30
- ▶ Hybrid Systems Option (Dual Backplane *CompactPCI®* & *CompactPCI® Serial*)
- ▶ Based on the *Intel®* Calpella-ECC Low Power Platform (Arrandale+ECC CPU, IbexPeak-M PCH)
- ▶ *Intel® Core™ i7-600* Mobile Processor, Two Cores, 4 Threads, 3 Level Cache Hierarchy, Multi-Core CPU Turbo Boost Technology, Integrated Graphics Engine
- ▶ Standard Voltage Processor i7-610E 2.53GHz (3.2GHz Turbo Mode) TDP 35W, 500/766MHz Graphics
- ▶ Low Voltage Processor i7-620LE 2.0GHz (2.8GHz Turbo Mode) TDP 25W, 266/566MHz Graphics
- ▶ Ultra Low Voltage Processor i7-660UE 1.33GHz (2.4GHz Turbo Mode) TDP 18W, 166/500MHz Graphics
- ▶ Ultra Low Voltage Processor i7-620UE 1.06GHz (2.13GHz Turbo Mode) TDP 18W, 166/500MHz Graphics
- ▶ Other Processors on Request (i5-520E, i3-330E, P4505, U3405)
- ▶ Up to 8GB DDR3 Memory in Total (Dual Channel Mode Capable, up to 1066MHz PC3-8500)
- ▶ One Memory Bank Soldered (Low Memory) for Extreme Ruggedized Systems, up to 4GB
- ▶ One Socket for a DDR3 SODIMM Module, up to 4GB
- ▶ *Intel®* Mobile Series QM57 Express Chipset Platform Controller Hub (IbexPeak-M)
- ▶ Three Port Graphics Controller (Front Panel: DisplayPort or VGA Connector)
- ▶ SDVO (DVI) and Secondary DisplayPort Channel Via Mezzanine Connector
- ▶ Max Resolution 2560x1600 (DisplayPort), 1920x1200 (DVI), 2048x1536 (VGA)
- ▶ Quad Gigabit Ethernet Controllers
- ▶ Six Native SATA Channels 3Gbps
- ▶ Two Additional SATA Channels 3Gbps, RAID capable with JMicron Drivers
- ▶ Twelve USB 2.0 Channels
- ▶ CompactFlash with C40-SCFA Mezzanine Module Option (4HP Assembly Height Maintained)
- ▶ CFast™ Flash Card with C41-CFAST Mezzanine Module Option (4HP Maintained)
- ▶ SATA 1.8-Inch SSD with C42-SATA Mezzanine Module Option (4HP Maintained)
- ▶ Dual mSATA Mini Cards (RAID) with C47-MSATA Mezzanine Module Option (4HP Maintained)
- ▶ Dual M.2 SATA SSDs with C48-M2 Mezzanine Module Option (4HP Maintained)
- ▶ On-Board PCI Express® Packet Switch (4 Lanes available for Rear I/O and CPCI Serial Backplane Respectively, another 4 Lanes for Mezzanine Side Card)
- ▶ Variety of Mezzanine Expansion Boards (Side Cards) Available with and w/o PCIe
- ▶ Most Mezzanines Optionally Equipped with 2.5-Inch Single- or Dual-Drive
- ▶ Rear I/O Transition Module Option (e.g. PR1-RIO)
- ▶ UEFI Firmware Phoenix
- ▶ Long Term Availability
- ▶ Coating, Sealing, Underfilling on Request
- ▶ RoHS compliant
- ▶ MTBF 14years @ 50°C
- ▶ Designed & Manufactured in Germany
- ▶ ISO 9001 Certified Quality Management
- ▶ RT OS BSP & Driver Support - QNX 6.5.0 Available, VxWorks and Others on Request

Related Information PC1-GROOVE

PC1-GROOVE Home

www.ekf.com/p/pc1/pc1.html

PC1-GROOVE User Guide

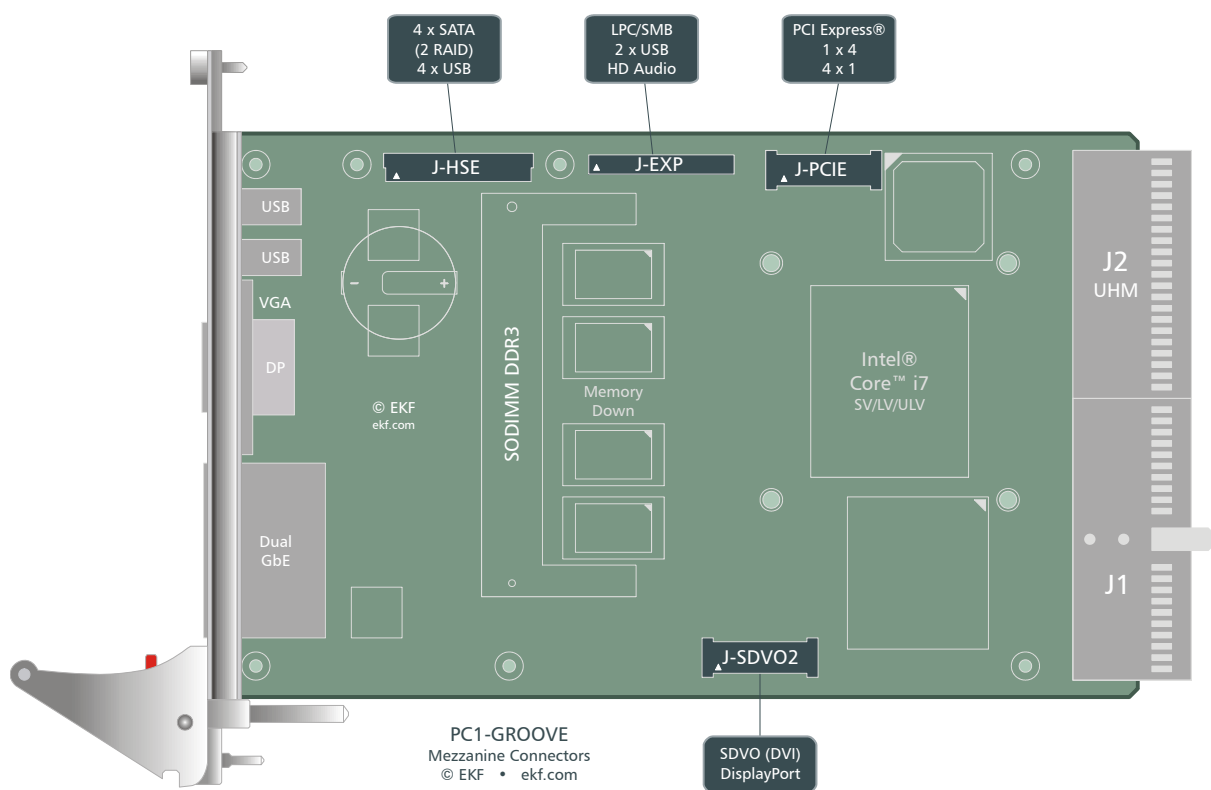
www.ekf.com/p/pc1/pc1_uge.pdf



PC1-GROOVE

The PC1-GROOVE is equipped with a set of local expansion interface connectors, which can be optionally used to attach a mezzanine side board. A variety of expansion cards is available, e.g. providing legacy I/O and additional PCI Express based I/O circuitry such as SATA and Gigabit Ethernet, or a secondary video output. Most mezzanine cards can accommodate in addition a 2.5-inch drive.

Typically, the PC1-GROOVE and the related side card would come as a readily assembled 8HP unit. As an alternate, Flash based mezzanine storage modules are available that fit on the PC1-GROOVE while maintaining the 4HP profile. The C42-SATA module e.g. is equipped with a very fast 1.8-inch SATA Solid State Drive (SSD), which is suitable for installation of any popular operating system.



PC1-GROOVE • Mezzanine Board Connectors

Related Documents Mezzanine Modules and Side Cards

C40 ... C45 Series Mezzanine Storage Modules	www.ekf.com/c/ccpu/c4x_mezz_ovw.pdf
Mezzanine Modules Overview	www.ekf.com/c/ccpu/mezz_ovw.pdf



CPU Carrier to Mezzanine Side Card Connector Suite



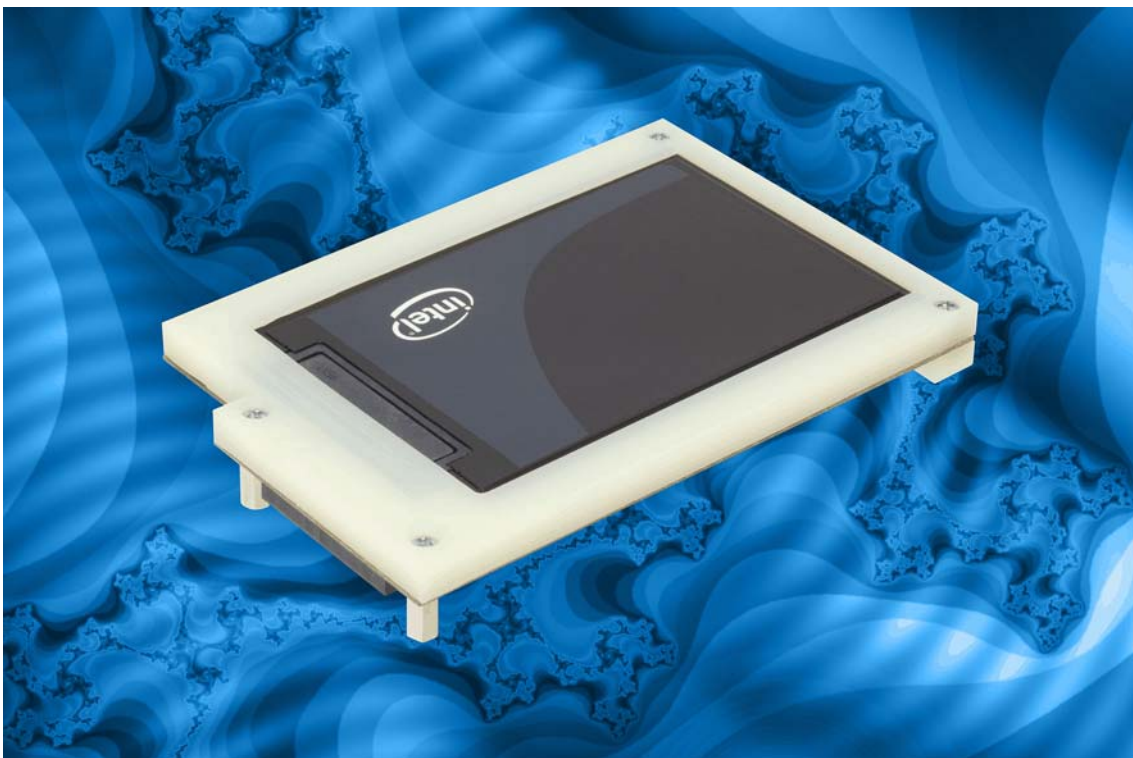
Low Profile Storage Module Area



PC1-GROOVE with C47-MSATA RAID Mezzanine Module



C41-CFAST Mezzanine Module



C42-SATA Mezzanine Module



C43-SATA Mezzanine Module



C47-MSATA • Low Profile RAID Storage Mezzanine Module



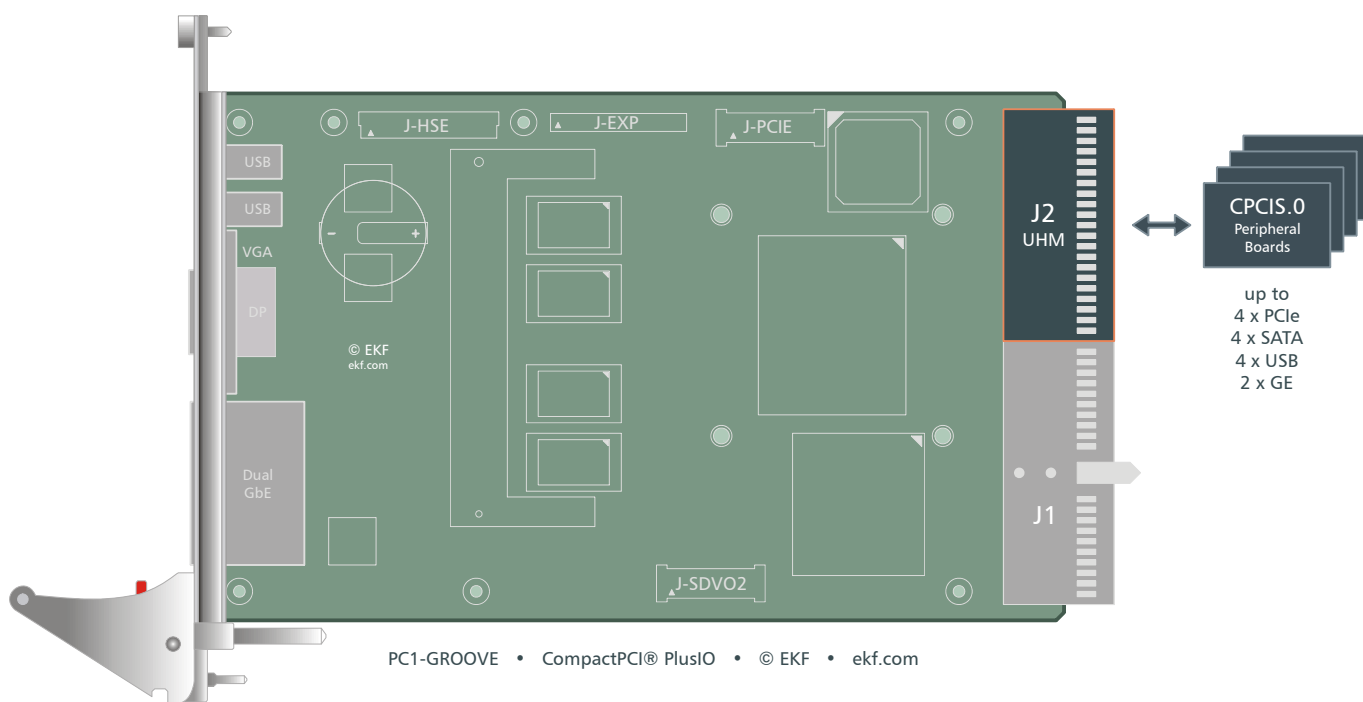
C48-M2 • Low Profile Storage Module 2 x M.2 SATA SSD



8HP Assembly PC1 - PCS - C48

CompactPCI® PlusIO (PICMG 2.30) is a new standard for rear I/O across J2, specified by the PICMG®. High speed signal lines (PCI Express®, SATA, Gigabit Ethernet and USB) are passed from the PC1-GROOVE through the special UHM connector to the backplane, for usage either on a PlusIO rear I/O transition module, or CompactPCI® Serial card slots.

CompactPCI® Serial (PICMG CPCIS.0) defines a completely new card slot, based on PCI Express®, SATA, Gigabit Ethernet and USB serial data lines. On a hybrid backplane, both card styles, CompactPCI® and CompactPCI® Serial, can coexist, with the PC1-GROOVE in the middle as system slot controller for both backplane segments.



PC1-GROOVE • High Speed UHM Rear I/O Backplane Connector

Related Documents CompactPCI® PlusIO & CompactPCI® Serial	
CompactPCI® Serial - Concise Guide	www.ekf.com/s/serial_concise.pdf
CompactPCI® Serial - The Smart Solution	www.ekf.com/s/smart_solution.pdf
CompactPCI® Serial Home	www.ekf.com/s/serial.html
CompactPCI® PlusIO Home	www.ekf.com/p/plus.html



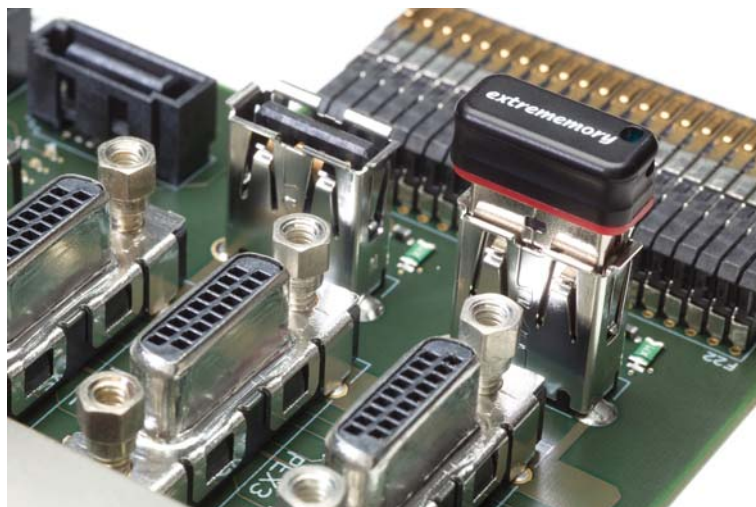
PC1-GROOVE • Backplane Connectors



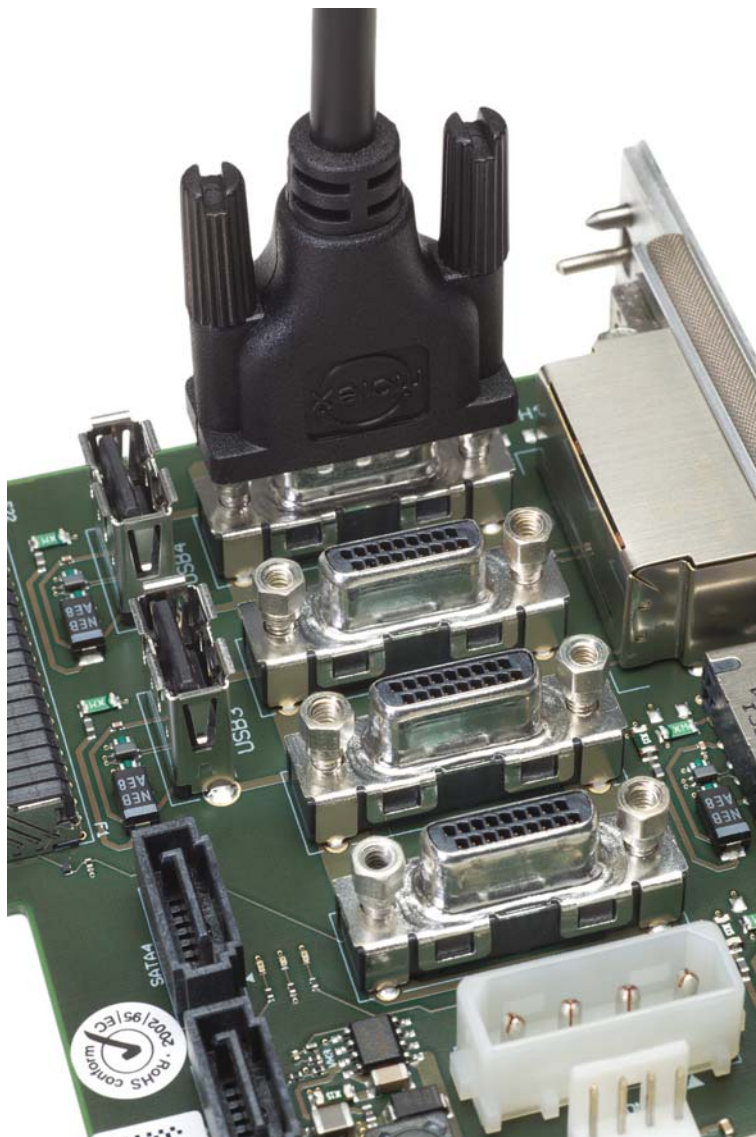
PC1-GROOVE • Top View (UHM Connector Upper Right Corner)



PR1-RIO • Rear I/O Transition Module



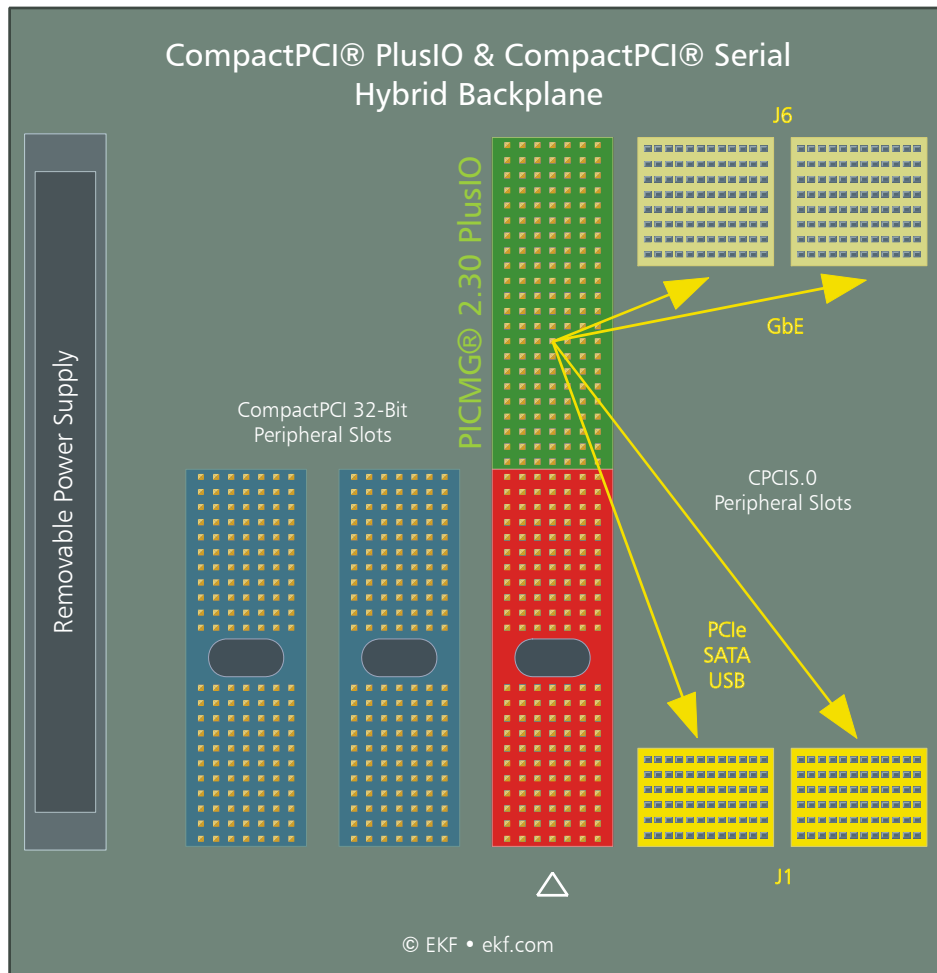
PR1-RIO w. on-Board USB Stick



PR1-RIO w. on-Board PE Cable Connectors



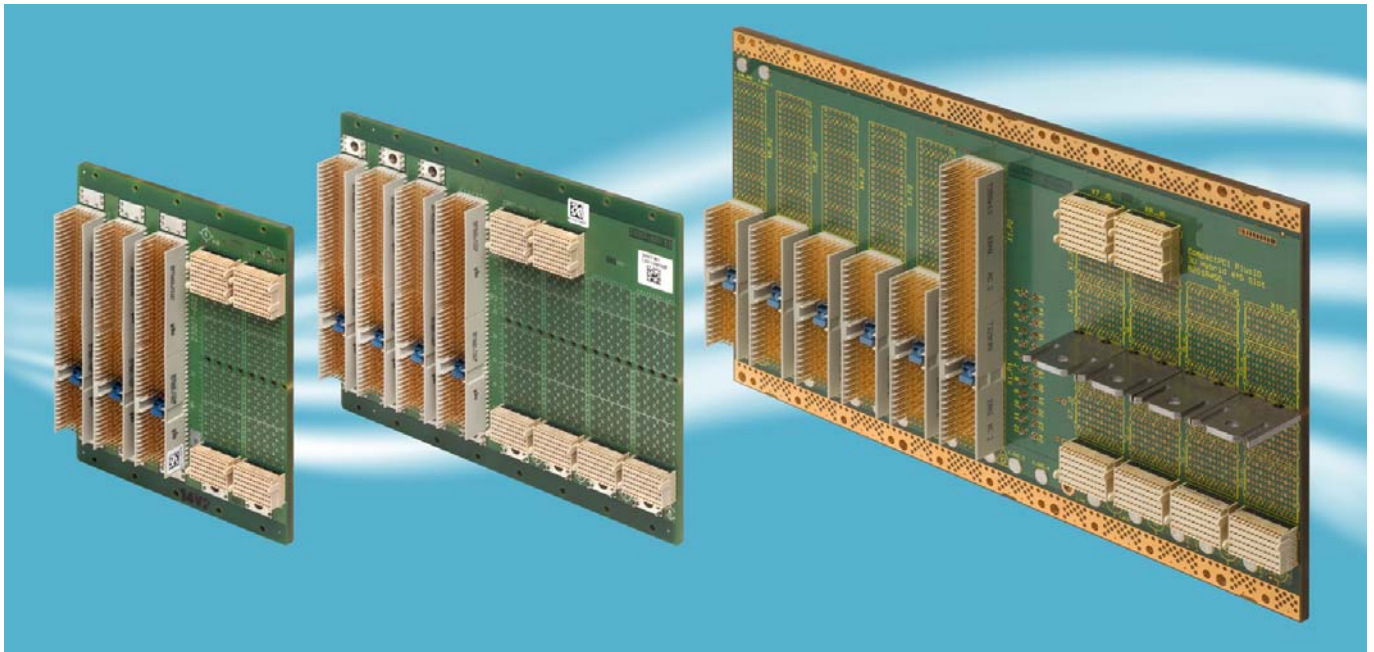
PC1-GROOVE & PR1-RIO



Small Systems Hybrid Backplane



PC1-GROOVE as System Controller in a Hybrid System



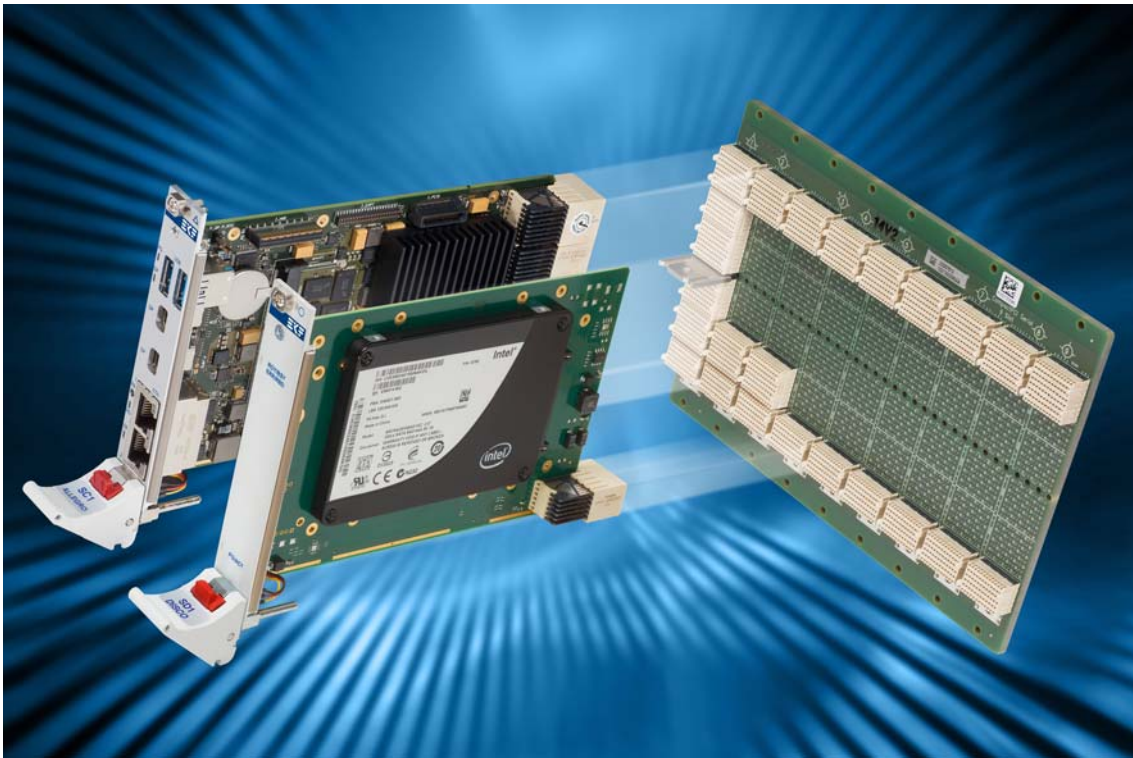
Sample Hybrid CompactPCI® & CompactPCI® Serial Backplanes



Sample Hybrid System Rack

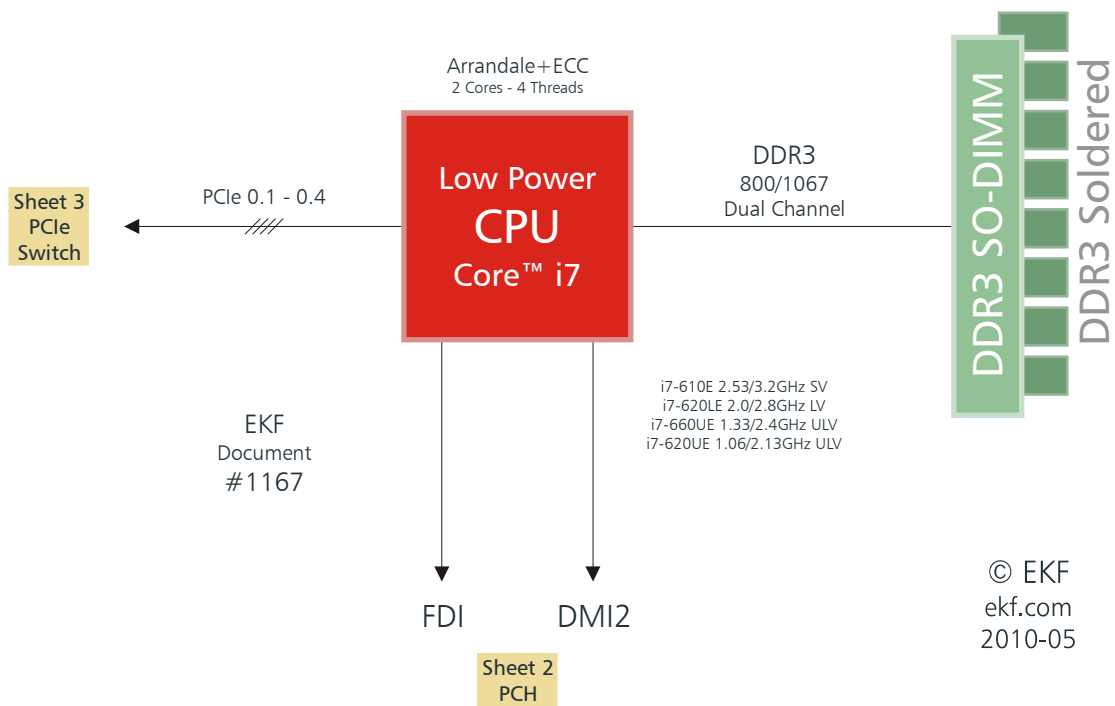


Sample Hybrid System Rack



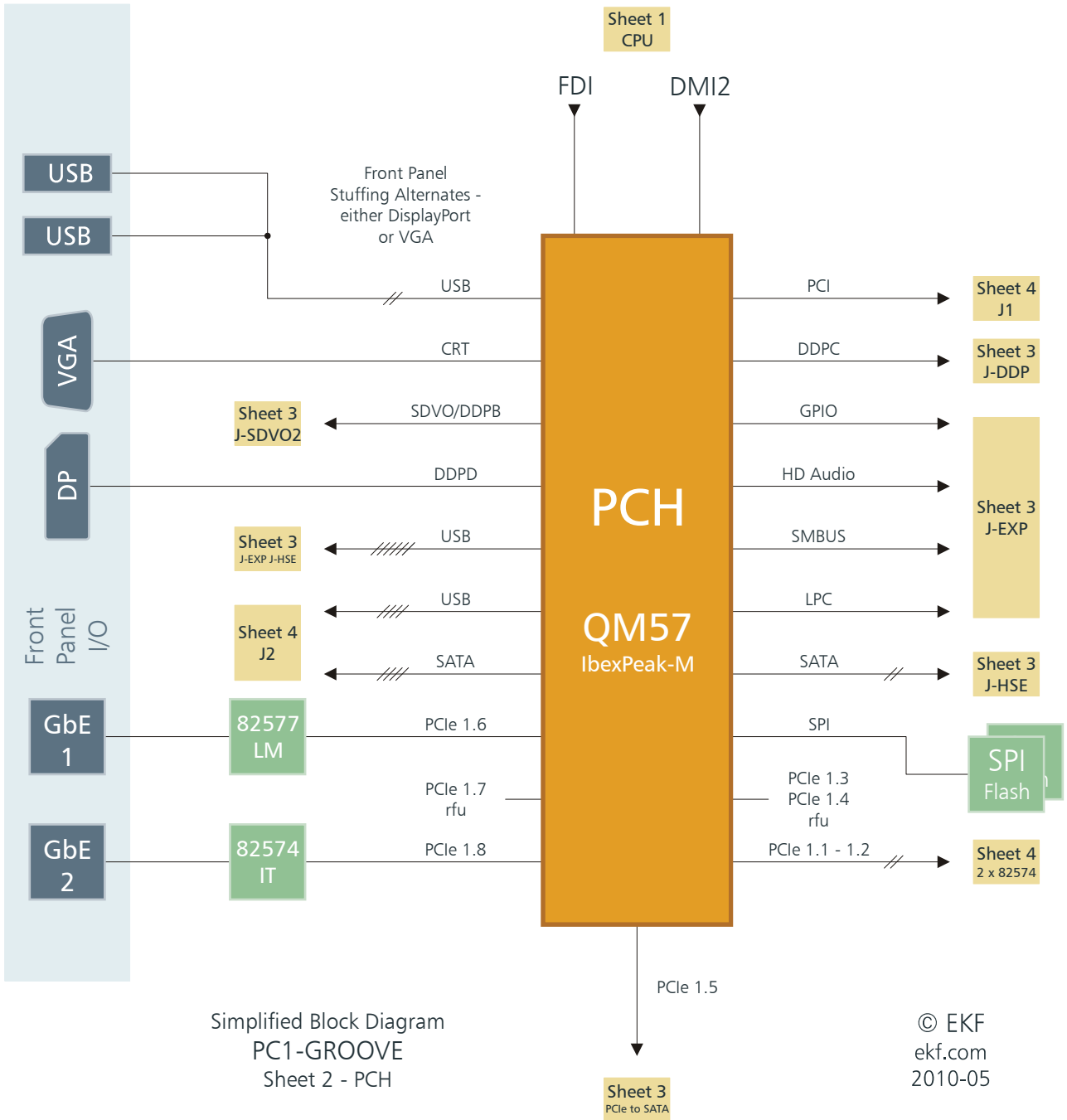
State of the Art Alternate: CompactPCI® Serial Native Systems

Block Diagram

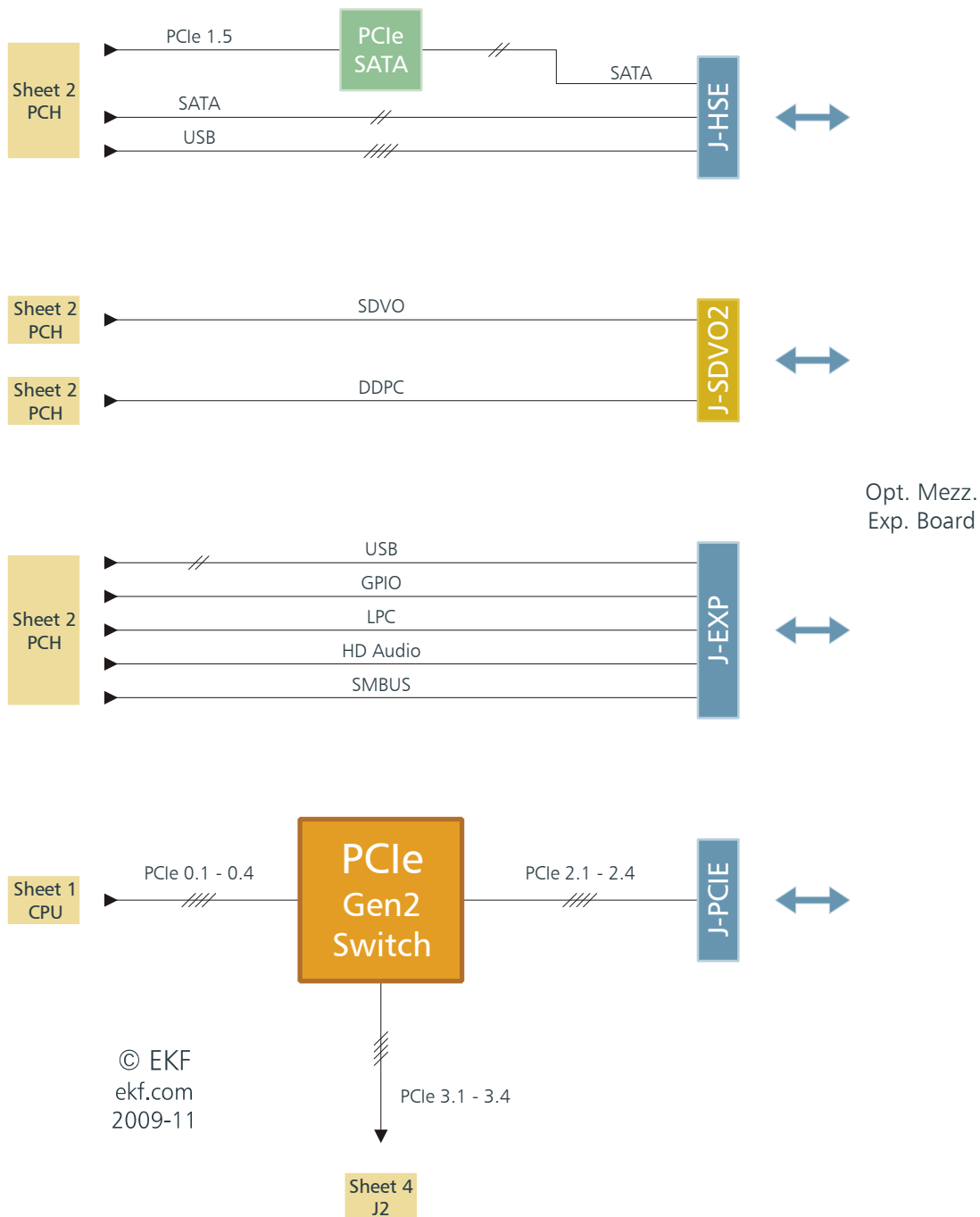


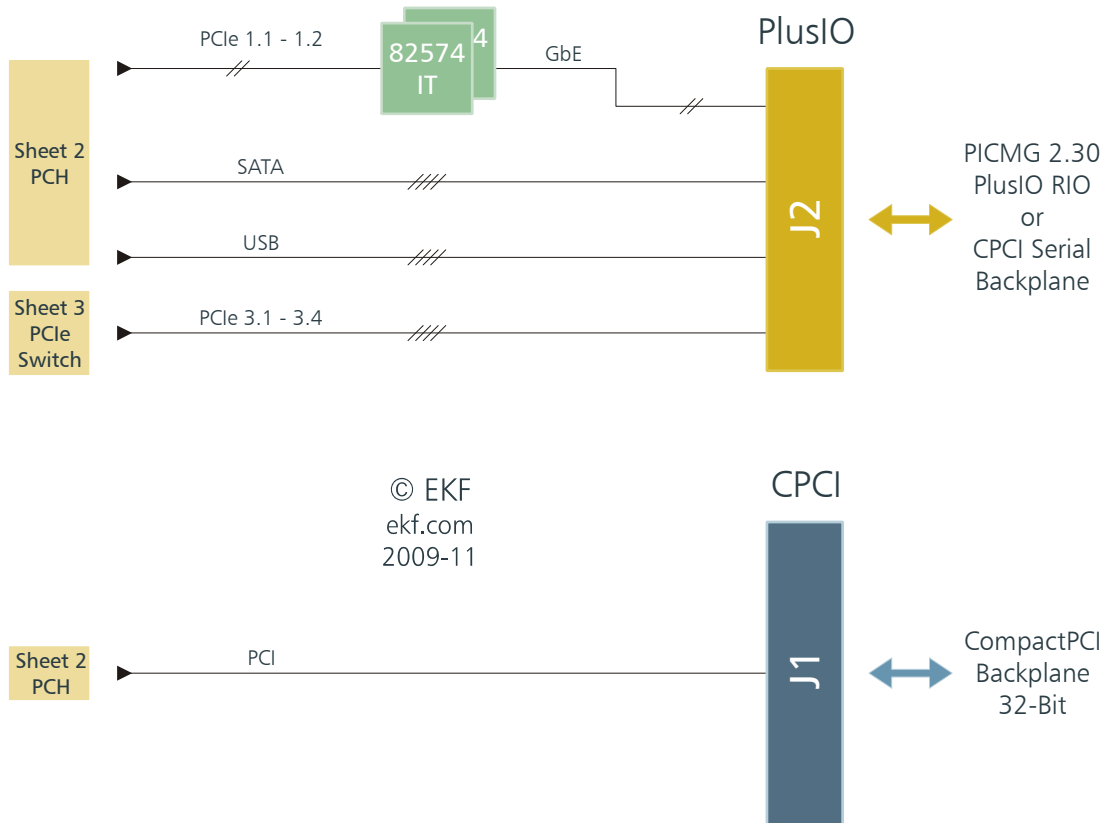
Intel® Low Power Platform Calpella+ECC

Simplified Block Diagram
PC1-GROOVE
Sheet 1 - CPU & RAM

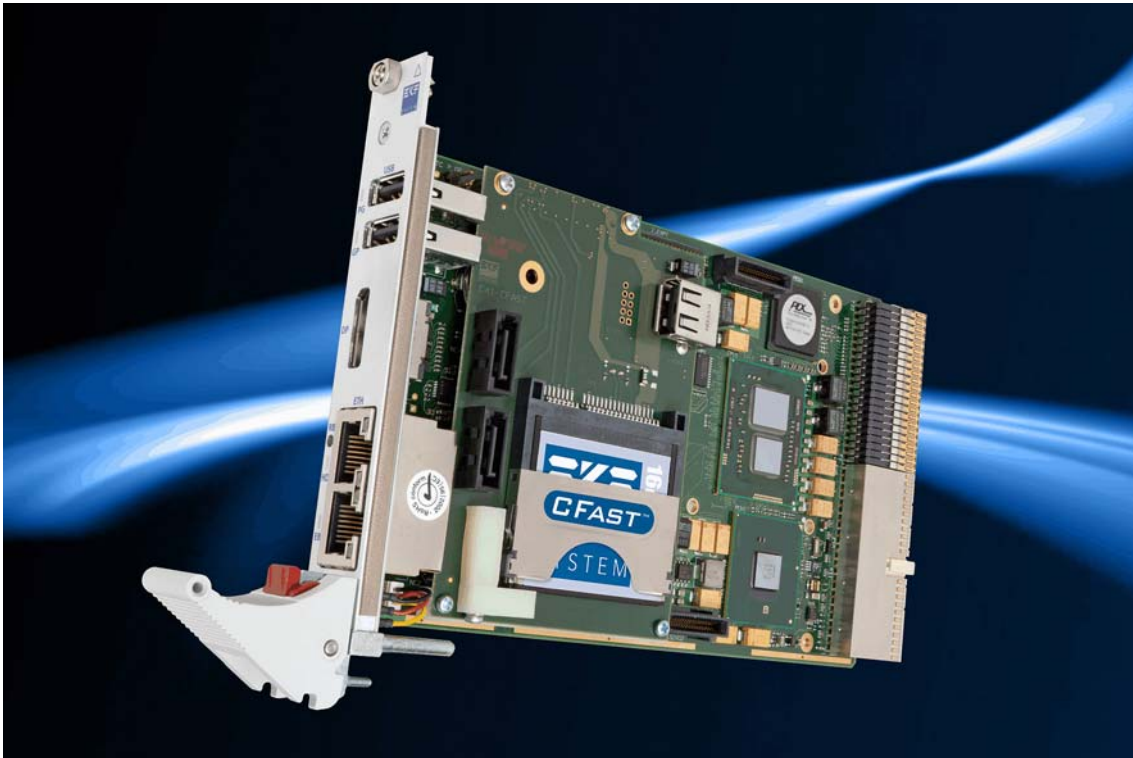


Simplified Block Diagram
 PC1-GROOVE
 Sheet 3 - Mezzanine Connectors





Simplified Block Diagram
PC1-GROOVE
Sheet 4 - Backplane Connectors



PC1-GROOVE • DisplayPort • C41-CFAST Module



PC1-GROOVE • VGA • C44-SATA Side Card



PC1-GROOVE • DisplayPort • C41-CFAST Module



PC1-GROOVE • VGA • C42-SATA Module

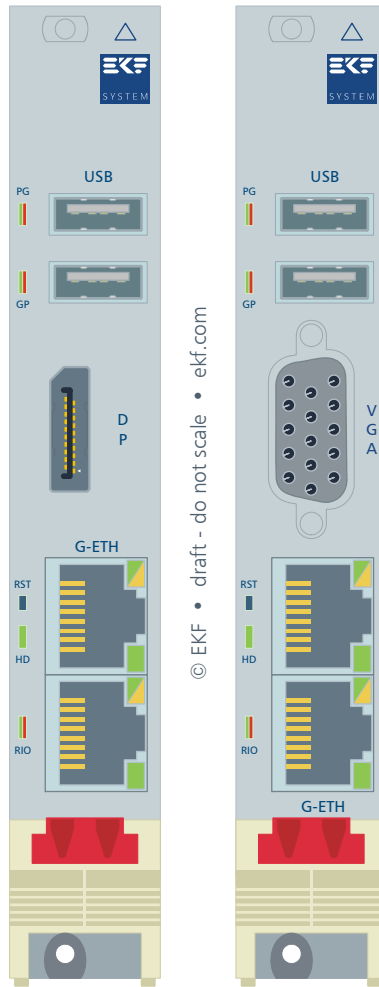


PC1-GROOVE • C45-SATA (Front Panel Removable SSD)



PC1-GROOVE • C45-SATA (Internal SSD)

Front Panel Options



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PC1-GROOVE
DisplayPort

PC1-GROOVE
VGA



Custom Specific Front Panel Solutions Available



PC1-GROOVE • PCS-BALLET Side Card (8HP Assembly)



PC1-GROOVE • PCS-BALLET Side Card (12HP Assembly)



PC1-GROOVE & PR1-RIO



Small Industrial Systems



Small Industrial Systems



Rugged Industrial Systems



Rugged Industrial Systems



C40-SCFA CompactFlash Module



C41-CFAST CFAST Module



C42-SATA 1.8-Inch Micro SATA Module



C43-SATA Internal SATA Connector Module



C47-MSATA Dual mSATA SSD Module



Custom Specific Mezzanine Module Design



PC1-GROOVE with C47-MSATA RAID Storage Mezzanine Module



PC1-GROOVE 12HP Assembly w. PCS-BALLET & C32-FIO



PC1-GROOVE w. PCS-BALLET Side Card & C42-SATA Mezzanine





PC1-GROOVE w. PCS-BALLET Side Card & C47-MSATA Mezzanine





DisplayPort to DVI Adapters Available



DisplayPort to VGA Adapters Available

Ordering Information

For popular PC1-GROOVE SKUs please refer to www.ekf.com/liste/liste_21.html#PC1

For popular Mezzanine Side Cards please refer to www.ekf.com/liste/liste_20.html#C23



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