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Enabling an Intelligent Planet

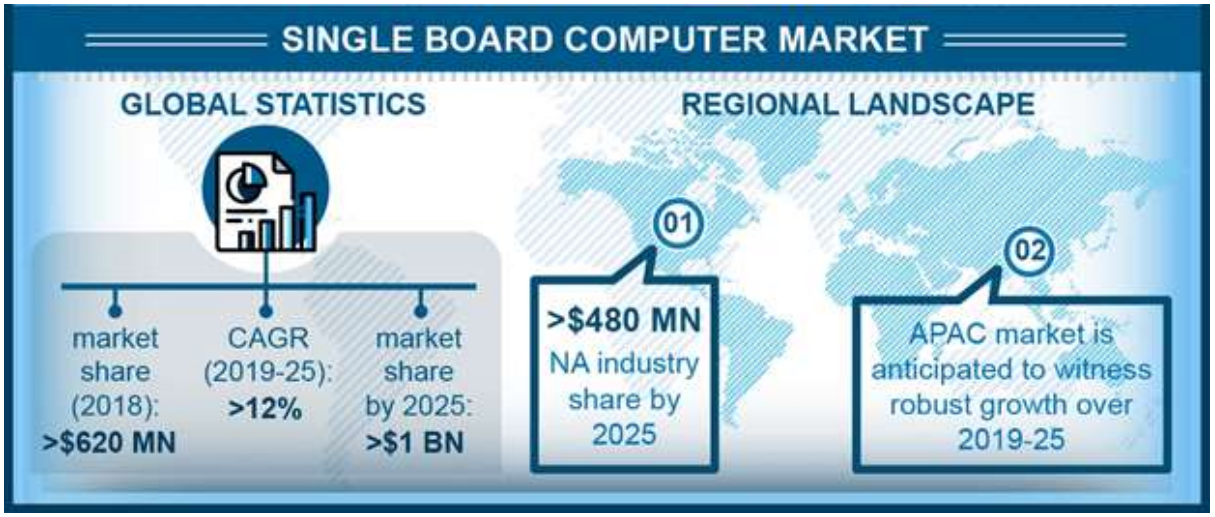
Introduction to Advantech CPCI

Advantech Intelligent System Group

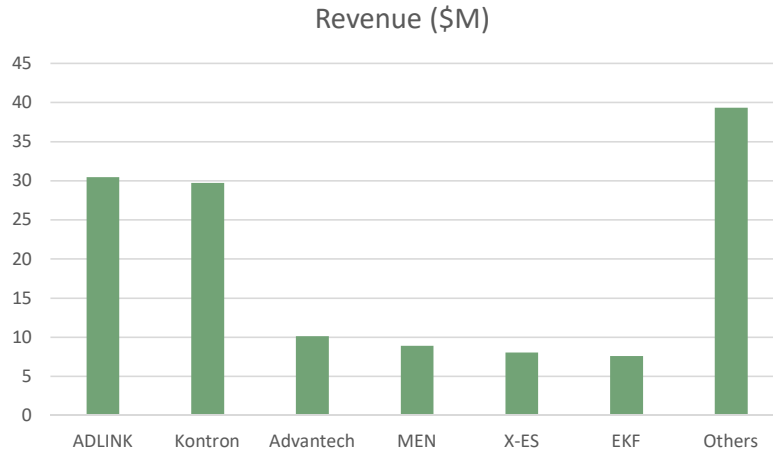
IPC PSM

Jan 25, 2021

CPCI, VPX, VME, XTCA Market Analysis



*Global marketing insights Inc. 2019



*IHS 2016 – CPCI Market share (Board/System) - USD$202.6M @2015

- **cPCI/VPX/VME/XTCA Market** size valued at over **USD 620 million**
  - **CPCI** market size is around **200M@2018**
- Region Perspective in 2025
  - **US 48% / EU 34% / APAC 18% (APAC Growth is Higher)**

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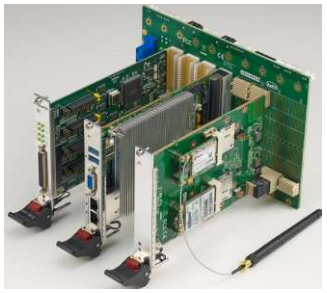
CPCI for Mission Critical Applications

Spec Compliance

★PICMG 2.0 R3.0 Compact PCI Spec
★PICMG 2.1 R2.0 Compact PCI Hot Swap
★PICMG 2.11 R3.0 Power Spec



Scalability/Flexibility

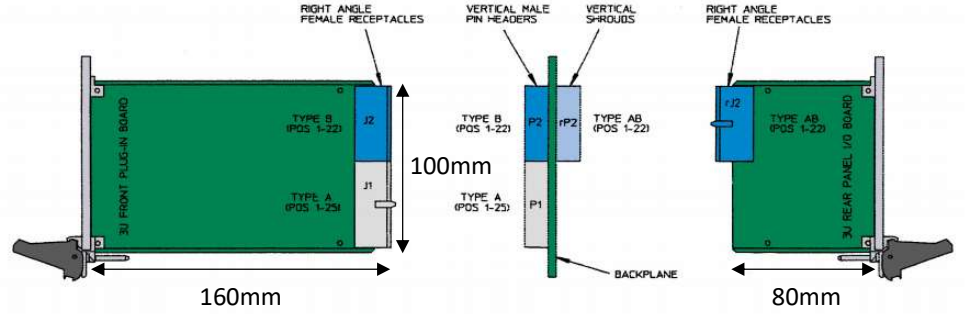
★ 33/66MHz PCI/CPCI-S/PlusIO
★ Support PCIe/USB3.0/SATA3.0
★ BP of PCI, CPCI-S or Hybrid design
★ Hot-Swapping
★ Flexible Front or Rear I/O
★ High Density Deployment

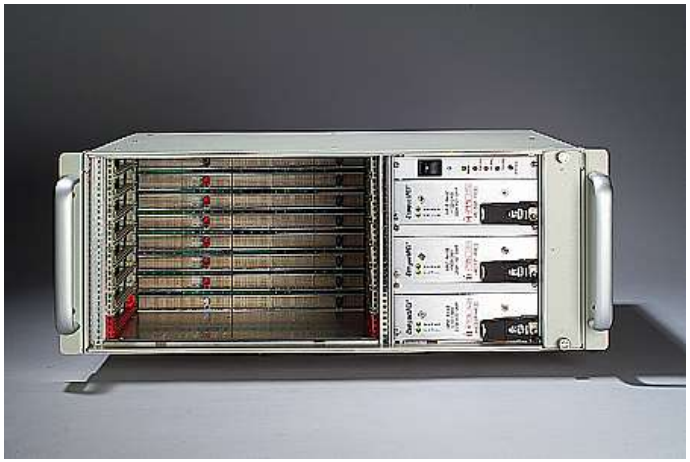
Ruggedized Design

★ IEEE 1101.10 EURO Card Fixing Mechanism
★ Reinforced Anti-shock/Vibration
★ Optimized Airflow Design
★ EMI/EMS Protection

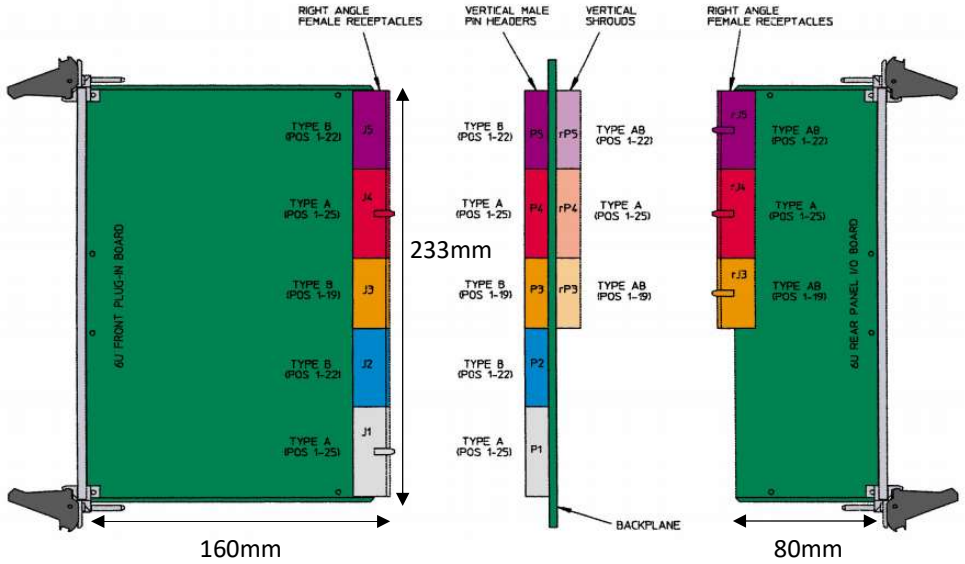
Form Factor

3U





6U



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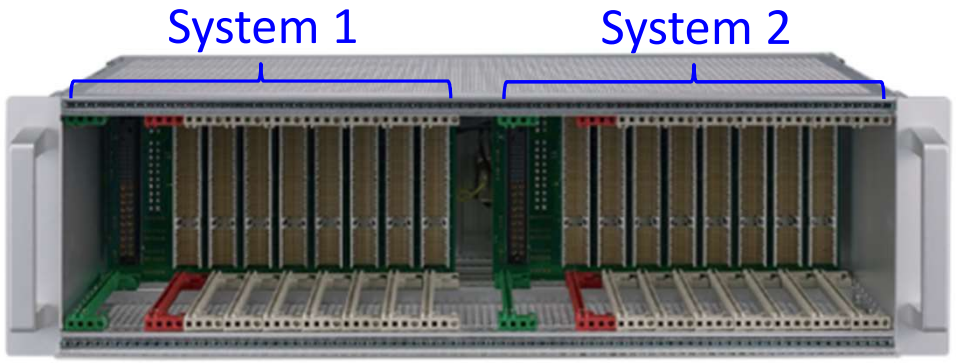
Benefit of CPCI - High Density Deployment

- One CPU card or I/O board occupies 1 (4HP) or 2 (8HP) slots, a chassis can be installed with multiple systems.
- Facilitates centralized management architecture.
- Chassis with RIO ≈ 300mm depth, without RIO ≈ 250mm.

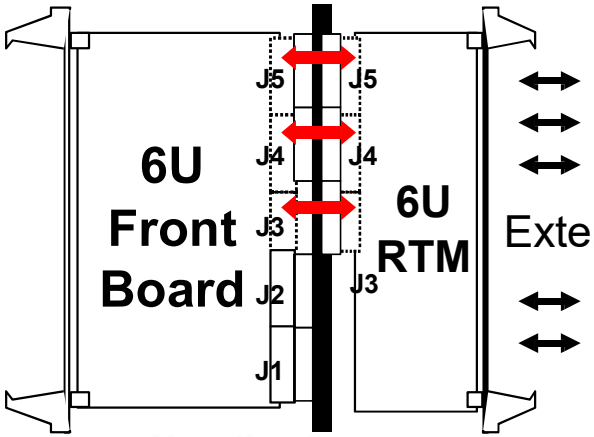


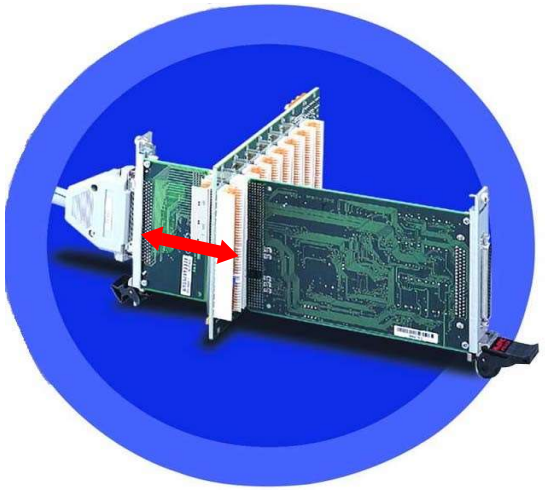
MIC-3023

3U Chassis with Dual System Hybrid BP

Benefit of CPCI - Front/Rear I/O Flexibility

Rear Transition Module (RTM) design offers front/rear I/O flexibility and eases maintenance.





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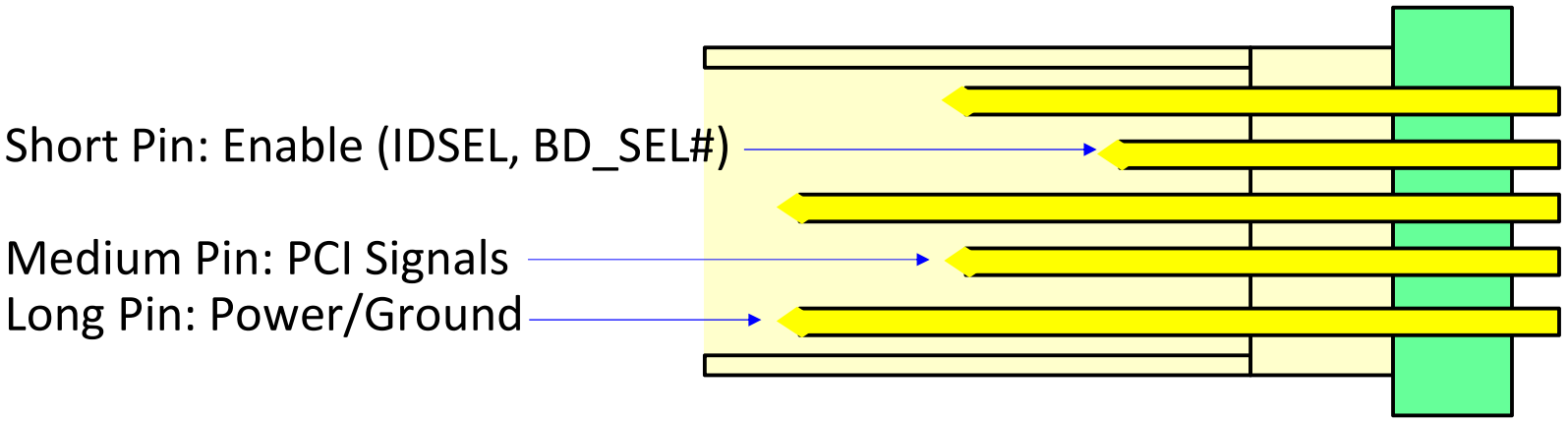
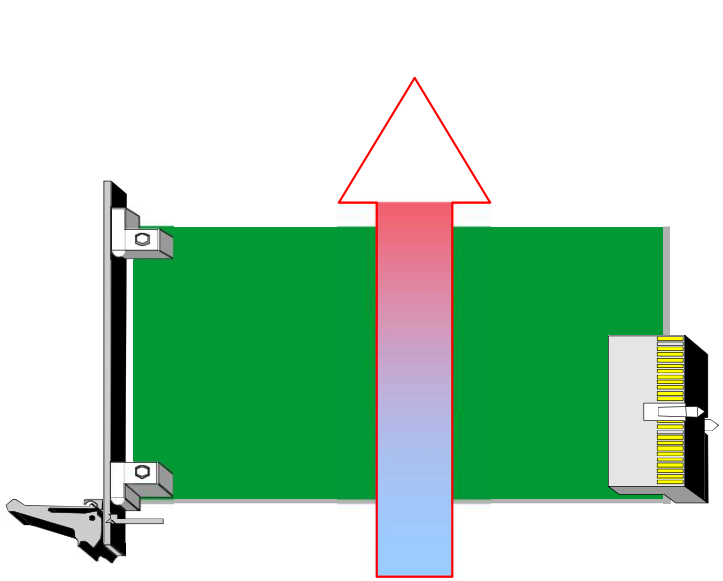
Benefit of CPCI - Hot-Swapping Design

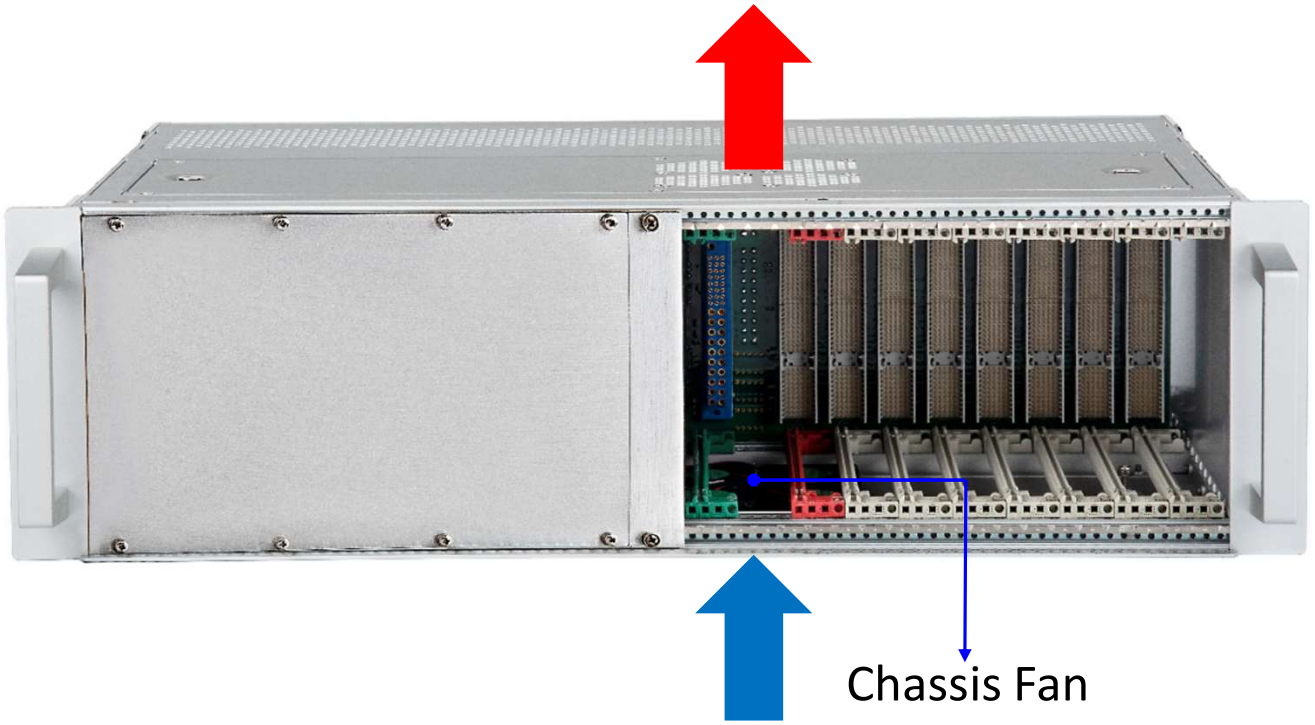
- 3 different length pins that realize hardware level hot-swapping safety.
- Still needs software level control.



Benefit of CPCI - Optimized Thermal Design

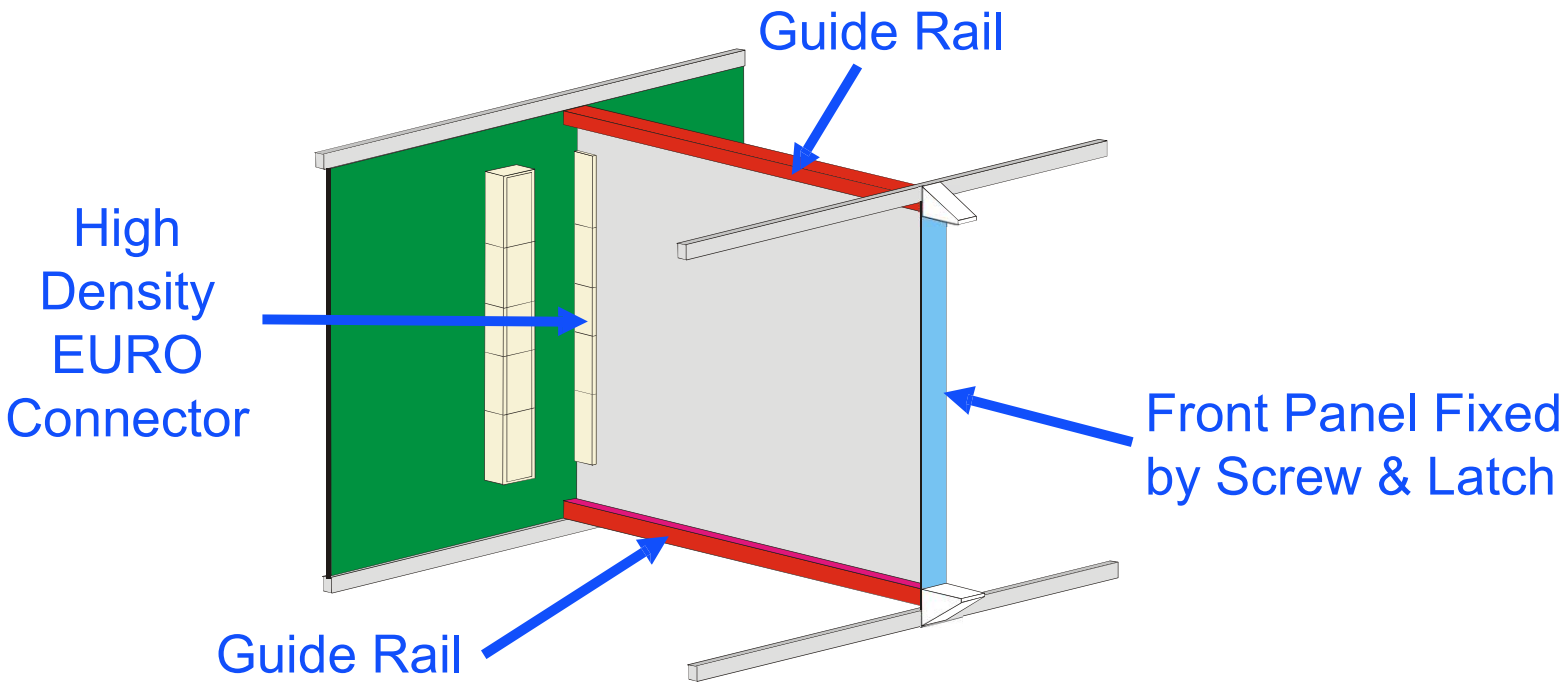
- Low impedance airflow path inside chassis.





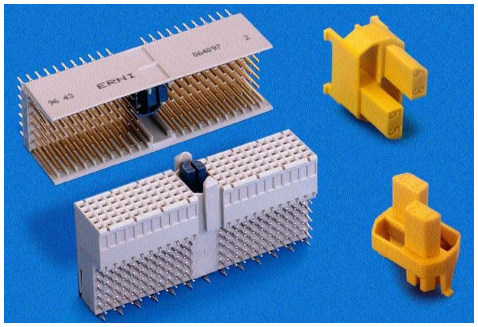
Benefit of CPCI - Ruggedized Board Fixing Mechanism

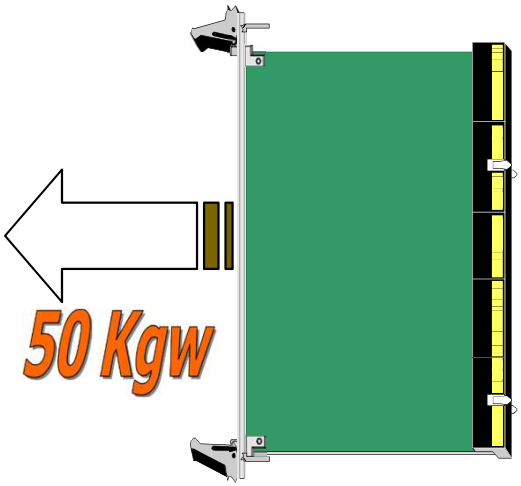
- Anti-shock/vibration mechanical architecture for transportation and military applications.



Benefit of CPCI - Airtight EURO Connector

- IEC-1076-4-101, 2mm pitch ECURO connector used.
- 2 connectors on 3U card, 5 connectors on 6U card.
- Each connector for 10 Kgw retention force.
- The connector is airtight, excellent anti-oxidation capability.





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3U Compact PCI Bandwidth Migration Plan

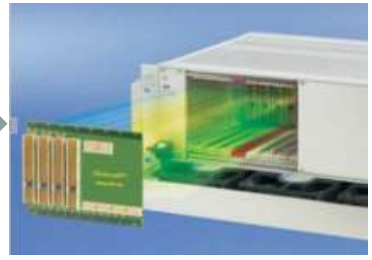
Phase1 : Legacy CPCI

Legacy PCI bus,
32/64bit,33/66MHz

Data rate: 1Gb/s

MIC-3332 Core i CPU card
MIC-3329 Atom CPU card
MIC-3955 COM board
MIC-3958 Ethernet board
MIC-3716 DAQ card
MIC-3680 CAN card
MIC-3022 3U CPCI Legacy BP*1

Available



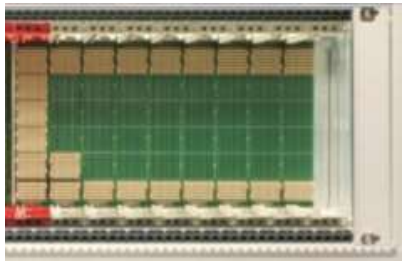
Phase2: Plus IO

4 x PCIe x1 lanes
4 x S-ATA ports
4 x USB 2.0
2 x Ethernet 1000BaseT

Data rate:5 Gb/s

MIC-3023 3U Hybrid BP*1
MIC-3954 SATA/Mini PCIe carrier

Available
We R Here



Phase3: CPCI-Serial

6x PCIex4 & 2xPCIex8,up to Gen3
8x S-ATA up to Rev 3.0
8x USB 2.0 and USB 3.0
8x Ethernet up to 10GBaseT

Data rate:12.5Gb/s

MIC-330: CPCI-S
MIC-38X Ethernet Switch
MIC-38X Ethernet card
MIC-38X Graphics carrier

2021 Later

CPCI PCI

CPCI Plus IO

CPCI-Serial

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3U CPCI Product Roadmap

Available | Developing | Planning | Conceptual | Phase-out

CPU Card

MIC-3332
- Mobile 6th Gen Core i/Xeon E3 V5, onboard 16GB ECC DDR4, dual-BIOS
- Max 6 GbEs, EN50121-4, EN50155 compliant

MIC-3329
- Atom E3845 (4C/4T), onboard 4GB ECC DDR3, dual-BIOS
- Max 4 GbEs, EN50121-4, EN50155 compliant

MIC-330 CompactPCI Serial
- Mobile 9th Gen Core i/Xeon E onboard 32GB ECC DDR4, dual-BIOS
- Max 6 GbEs, EN50121-4, EN50155 compliant
- 22 PCIe Gen 3 lanes to BP, M.2 (SATA) x 2

MIC-332
- Atom® x6000E (Elkhart Lake)
- EN50121-4, EN50155 compliant

I/O Cards

MIC-3954A CompactPCI Serial
2 Mini PCIe Carrier

MIC-3954B CompactPCI Serial
2.5” HDD/SSD Carrier

MIC-3954D/ CompactPCI Serial
4 M.2/Mini-PCIe Carrier

MIC-3955A/B
4/8 RS-232/422/485

MIC-3958B
4 GbE RJ45/M12 X-code

MIC-3958D
3/5 GbE switch M12 X-code

MIC-3716
16-ch DAQ (250Ks/s, 16-bit)

MIC-3680
Isolated dual CAN ports card with RTM

MIC-3810 CompactPCI Serial
PCIe GPU card Carrier

MIC-3850 CompactPCI Serial
3/7 GbE switch board

MIC-3860 CompactPCI Serial
4 GbE RJ45/M12 X-code

Chassis

MIC-3022
- 4U, 21-slot chassis
- 250W AC PSU

MIC-3023
- 3U, 21 or 11 slots chassis w/o PSU

MIC-300 CompactPCI Serial
- 3U, 21-slot

Released | 2021

6U CPCI Product Roadmap

Available | Developing | Planning | Conceptual | Phase-out

CPU Card

MIC-3500

- Xeon-D SoC, 8-core, max 128GB DDR4, dual-BIOS
- 2 10GbE SFP+ on front I/O, redundant M.2 SSDs

MIC-3399

- Mobile 6th Gen Core i, max 16GB onboard DDR4, 16GB SODIMM, dual-BIOS
- 5 GbEs, 1 XMC (PCIe x 8), max 2 2.5" SATA, 1 M.2

MIC-3398

- Atom E3845, Celeron N2930/J1900, 8GB ECC/non-ECC DDR3 SODIMM, dual-BIOS
- Max 4 GbEs, 2 RS-232/422/485, 1 2.5" SATA, 1 CFast

I/O Cards

MIC-3951

Dual-PMC Carrier

MIC-3961

64-bit PCI Card Carrier

MIC-3666

Dual 10 GbEs fiber XMC card

MIC-3667

4 GbEs RJ45 XMC card

Chassis

MIC-3042

- 4U, 8-slot chassis
- 500W 2+1 RPS

MIC-3043

- 4U, 6-slot chassis
- 2 3.5" or 4 2.5" hot-swap storage trays
- 500W 2+1 RPS

Released

3U VPX Product Roadmap

Available | Developing | Planning | Conceptual | Phase-out

CPU Card

MIC-6330

- Xeon E3 v5/v6, max 16GB onboard ECC DDR4, dual-BIOS
- PCIE to BP, HS design for rugged application

I/O Cards

MIC-6030

- 3U VPX switch
- 6x PCIE & 6x Gb-BX to BP
- HS design for rugged application

MIC-6130

- 3x M.2 by PCIe gen3
- Max 3TB per board
- Optional BMC AST1010

MIC-6110

- XMC carrier (PCIe x 8)
- Conduction-cooled

Released | 2021

6U VPX Product Roadmap

Available | Developing | Planning | Conceptual | Phase-out

CPU Card

MIC-6315 RapidIO

- Xeon-D SoC, 8-core, max 32GB ECC DDR4, dual-BIOS
- Data plane SRIO, expansion plane PCIe, control plane 4 x SERDES

MIC-6313 RapidIO

- Mobile 5th Gen Core i, max 8GB onboard DDR3, 8GB SODIMM, dual-BIOS
- 4 SRIO x 4 to BP, XMC support

MIC-6314 PCI EXPRESS

- Mobile 5th Gen Core i, max 8GB onboard DDR3, 8GB SODIMM, dual-BIOS
- 2 PCIE x 8 to DP, 2 PCIE x 8 to EP, XMC support

MIC-660 PCI EXPRESS

- Mobile 9th Gen Core i/Xeon

I/O Cards

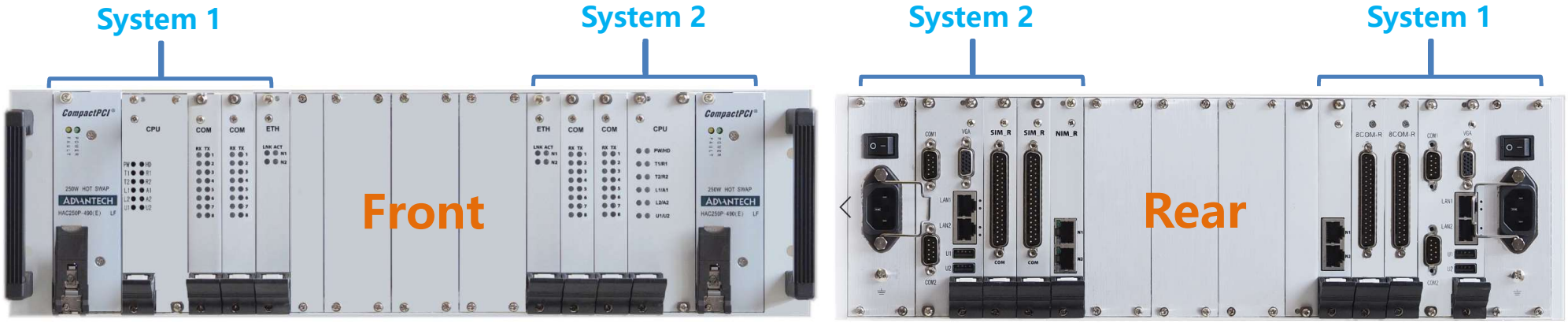
MIC-6110

MXM Carrier

Released | 2021

Successful Case Sharing

Wayside Signaling

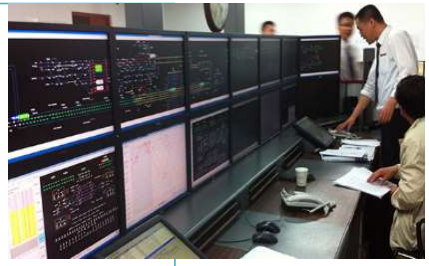


Requirement:

- 3U 19” rackmount chassis.
- Low power Atom grade CPU, fan-less, -40°C ~ 70°C op. temp.
- Dual systems for redundancy.
- Front LED, all I/Os on the rear side.
- EMC/Safety EN50121-4,GB/T 24338.5.
- MTBF>10^5 hours.

Products:

- MIC-3329 CPU card, MIC-2023 chassis, MIC-3955B2 8-port COM card + RTM, MIC-3958A1 4-port NIC card + RTM.



宽温设计,防尘,防水,抗震,板卡三防处理,板卡隔离保护预留等.

Extended temperature/ Coating process / Isolated protection for boards, etc

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Pantograph Monitoring

Requirement:

- 3U 19” rackmount chassis with customized BP.
- High performance Core i7, 2 or 3 systems in 3U chassis.
- Connectors with locks for reliability insurance.
- All I/Os on the front side, easy maintenance.
- DC 110V power input.
- EMC/Safety EN50155, GB/T 24338.4, GB/T 25119, GB/T 21563.
- MTBF>10^5 hours.
- Multiple LANs for cameras, COMs for communication/control.

Products:

- MIC-3332 CPU card, MIC-3023 chassis, MIC-3954B1 SATA HDD carrier, MIC-3955A1 4-port COM card, MIC-3958B1 4-port NIC card, MIC-3958D1 3-port switch card.

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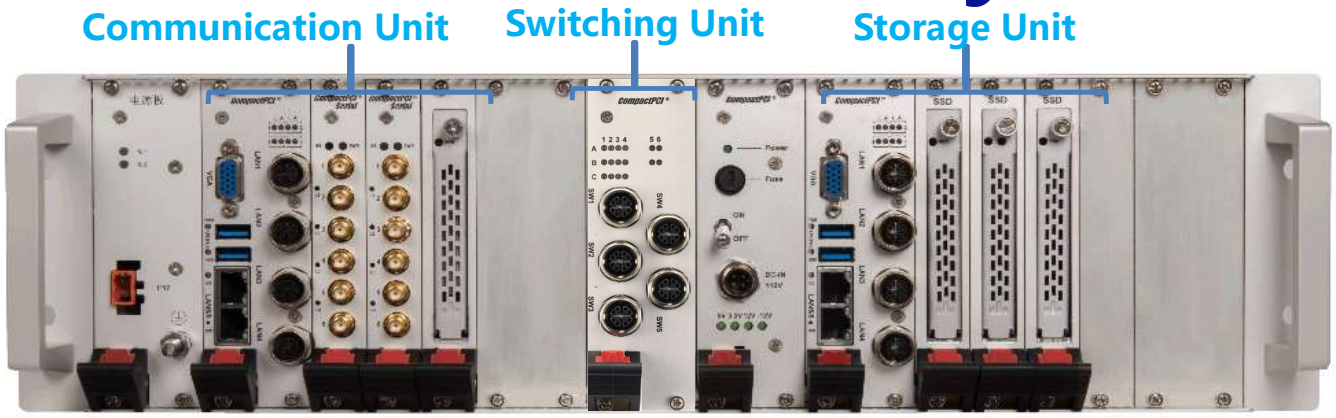
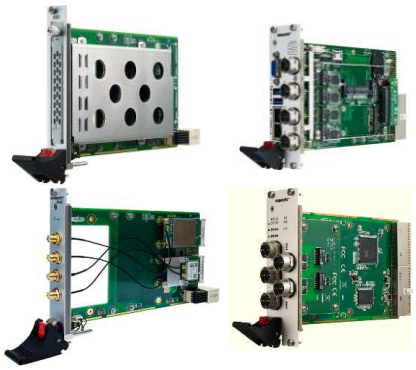
Onboard Connectivity





Requirement:

- 3U 19” rackmount chassis with customized BP.
- High performance Core i7, 2 systems in 3U chassis.
- Connectors with locks for reliability insurance.
- All I/Os on the front side, easy maintenance.
- DC 110V power input.
- EMC/Safety EN50155, GB/T 24338.4, GB/T 25119, GB/T 21563
- 4G/5G connectivity, high storage capacity.

Products:

- MIC-3332 CPU card, MIC-3023 chassis, MIC-3954B1 SATA HDD carrier, MIC-3954 4-Mini PCIe carrier, MIC-3958D1 5-port switch card.

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