ADVANTECH

Enabling an Intelligent Planet

3U CPCI-Serial Smart Solutions

- Application Scenarios
- Blade IPC Product Features
- 3U CPCI-S Product Introduction
- Key Solutions

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ADVANTECH
Enabling an Intelligent Planet

Est. 1983

Headquarters: **Taipei, Taiwan**

INDUSTRIES SERVED

Industry 4.0, Industrial IoT, Embedded Computing, Medical, Retail, Logistics

$10.61B MARKET CAP (USD)

(Feb., 2024)

HONORS & AWARDS

- No.5 in Best Taiwan Global Brands — Interbrand
- No.17 in Top 50 Global Automation Vendors — CONTROL
- No.9 in Top 100 Industrial IoT Companies — IoT ONE
- Red Dot Product Design Award — reddot design award
- iF Product Design Award — iF

WORLD'S LARGEST IPC COMPANY

Advantech IPC WW Market Share

● Advantech ● Other IPC Companies

Source: OMDIA – Market Share estimates for Industrial PCs: World, 2022 Edition

$2.07B 2023 REVENUE

(USD)

KEY ECO-SYSTEM PARTNERS

intel, Microsoft, NVIDIA, Micron, AMD, Canonical Ubuntu, Texas Instruments, arm, NXP, Qualcomm, MEDIATEK

and more...

QUALITY SYSTEMS IN PLACE

- ISO9001
- ISO14001
- ISO13485
- ISO17025
- ISO27001
- ISO45001
- TL9000
- ISO50001
- RoHS
- WEEE
- SONY GP
- REACH

1.8 MILLION+ sq. ft.

MANUFACTURING PLANTS

Linkou, Taiwan

- 9 SMT lines, 16 system lines
- Engineering sample services
- Complex product lines
- Flexible & quick production

Kunshan, China

- 12 SMT lines, 13 system lines, 6 chassis lines
- Chassis design & production
- Mature product lines
- Cost-effective production

Nogata, Japan

- 4 SMT lines, 1 system line
- Japan design center, CTOS service, logistics center, repair center

WORLDWIDE OFFICES

Manufacturing	3
On-site service	4
Design centers	11
CTOS centers	16
Repair centers	17
Logistics centers	20

More than 90 offices globally!

8800+ EMPLOYEES

Market Segment Trend & Analysis

Customer Pain Points

- Inflexible CPU Computing and I/O Extension Capabilities
- More Computing results from Greater Size
- Complicated Product Lifetime Management
- Limited Reliability in Harsh Environment (-40 ~ 85°C)

Technology Market Trends

- Higher Density Computing
- Harsher User Scenarios
- Lower Latency
- More Data
- Reduced Size

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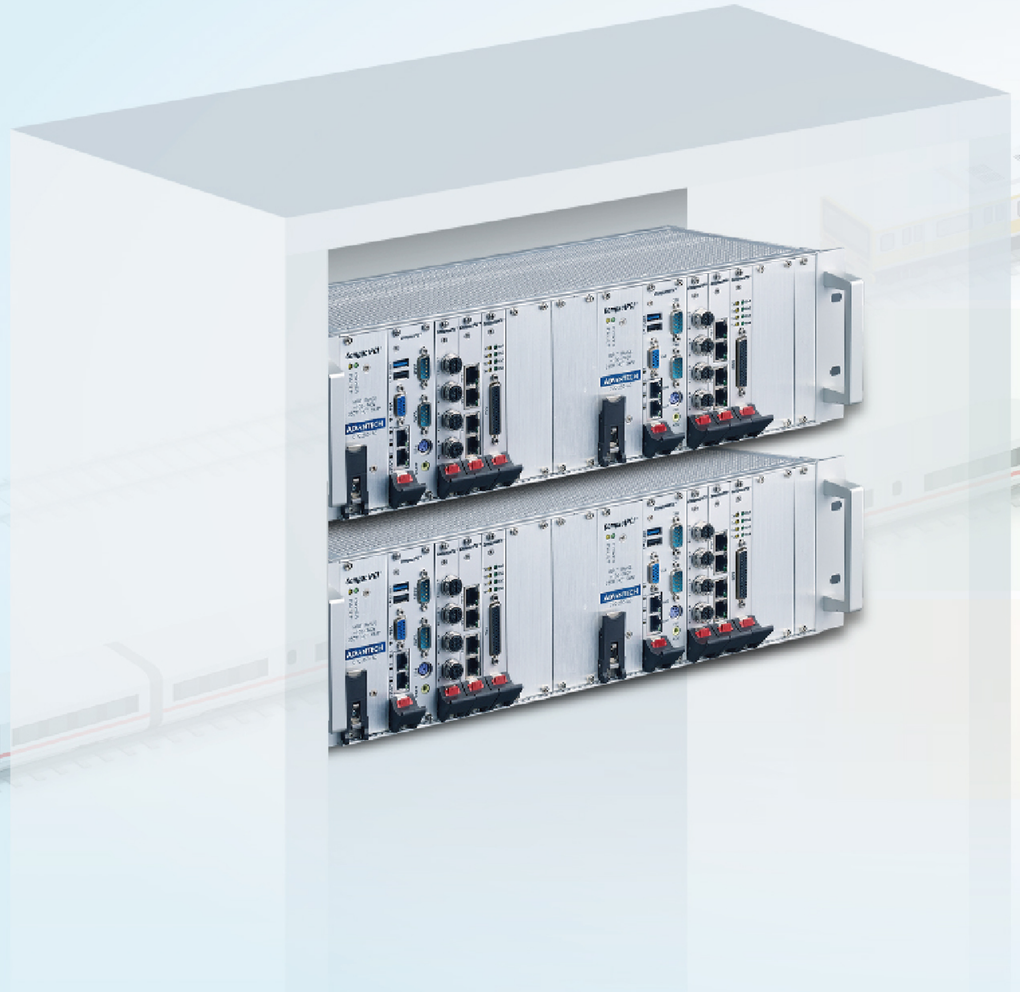
Why BIPC?

What is Blade IPC -> Special IPC = Smart IPC (configurable module), Slim IPC (compact size), Safe IPC (high reliability) Edge Computing



- Open PICMG standard
- Plug in unit deisgn, no internal cabling

- Flexibility of adding I/O expansion
- Single or multi-node system building
- Longevity support

- Hot-swap module design
- MTTR < 30 min

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Who are the Blade IPC Team?

One of the Advantech IIoT product groups, engaged in CPCI/VPX associated products

Maintainability

Ruggedization

Stability

Scalability

- Reliability
- Modularity
- Compatibility
- Longevity
- Upgradability

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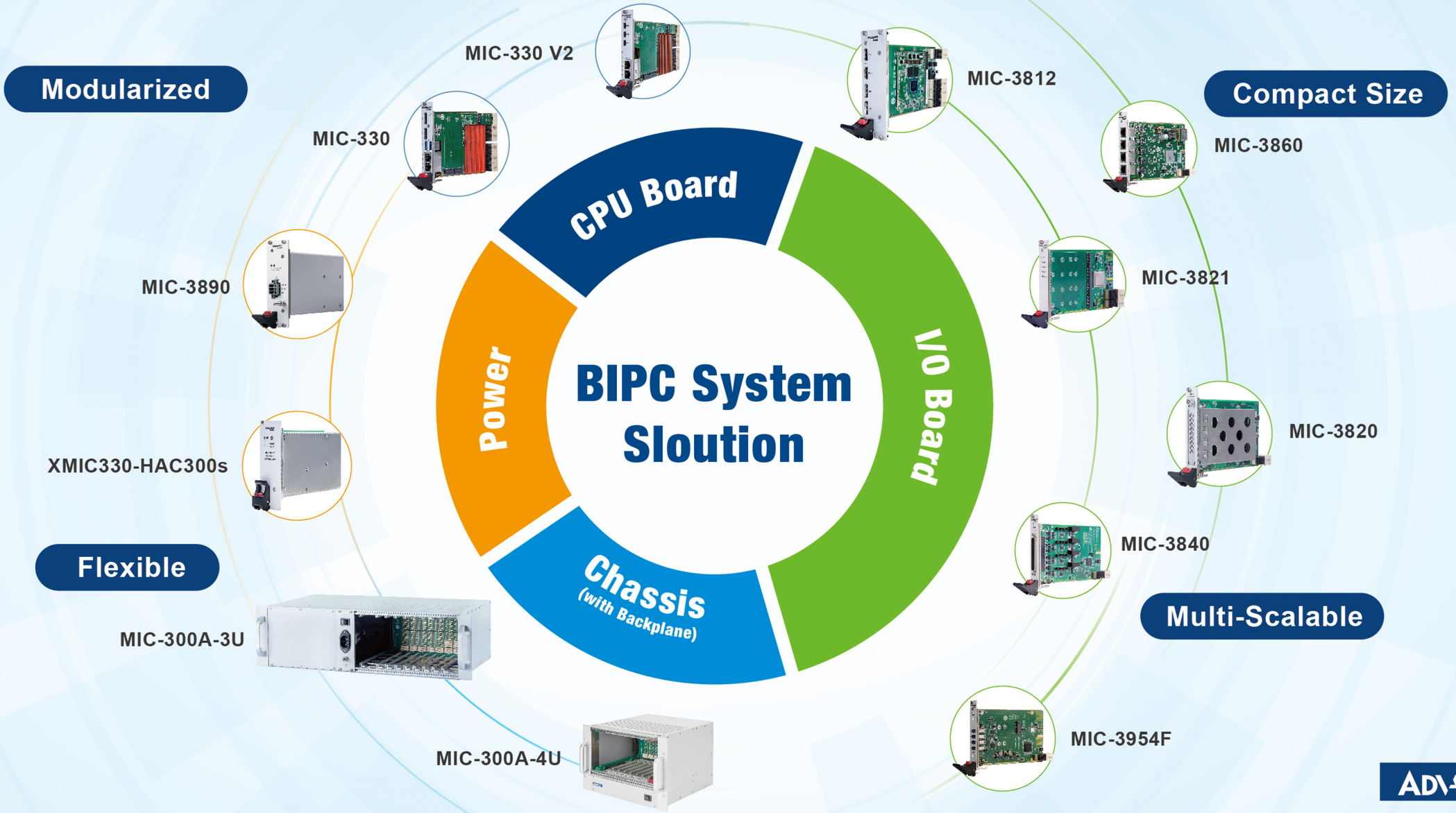
Configure to Your Own “Slim Smart System”

Configurable, Flexible



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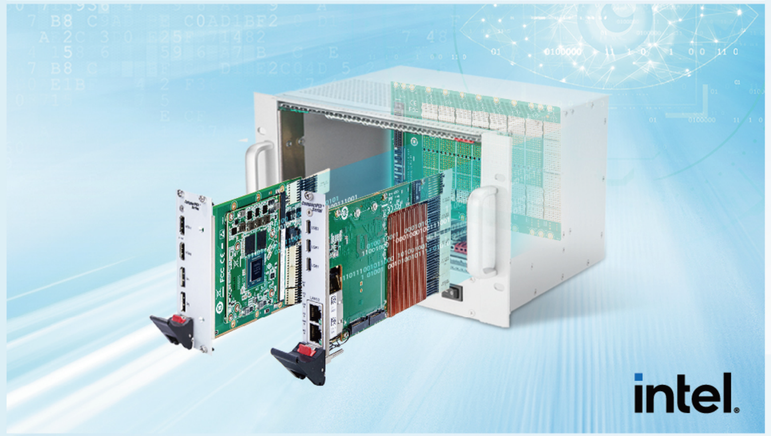
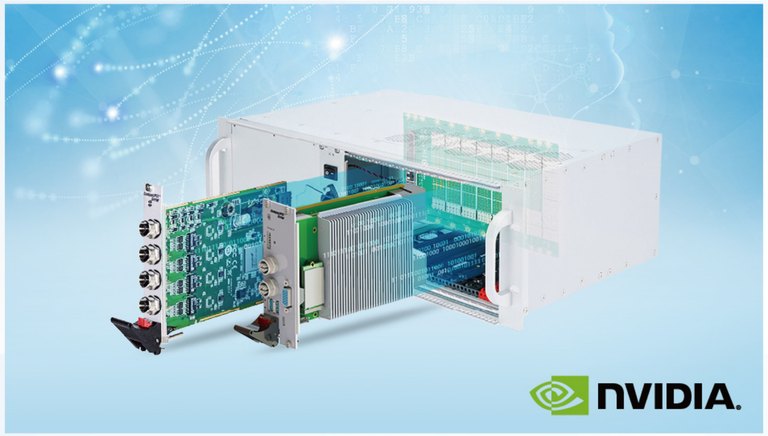
AI/Video Solution on Edge Computing

Video & AI HW Solution in Slim, Smart, Scalable and Standard 3U CPCI-Serial Form Factor for Transportation/Automation

Intel X86 + MXM GPU

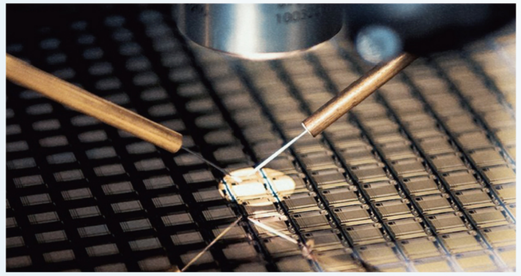


NVIDIA Jetson Orin AGX + I/O

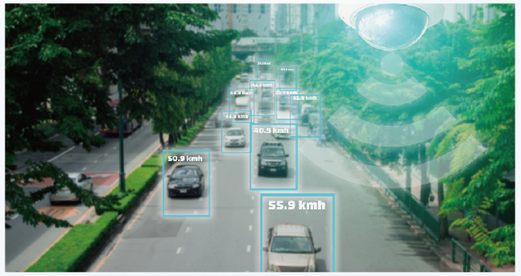


Intel X86 + NVIDIA Jetson Orin AGX + I/O + Switch

Medical Equipment



Surface Inspection

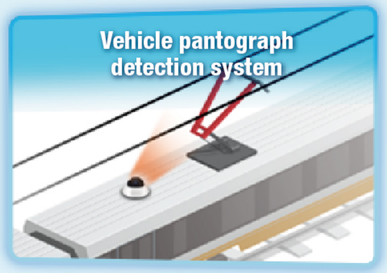


Transportation

Aerospace

Smart Solution on Transportation

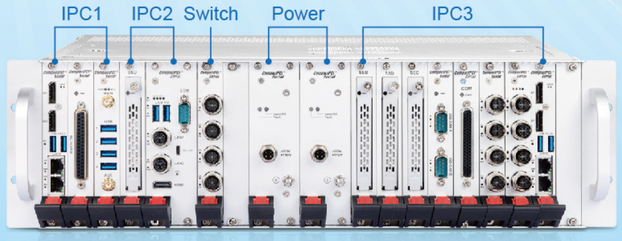
The development trend of "next generation" vehicle integrated intelligent monitoring



All System In One Chassis to Save Installation Space

Traditional Solution

Innovative Solution



Distributed (Single System) | **All-In-One (Multisystem)**

Smart Solution on Surgical Equipment (CT/Endoscope/Robot)

Application:

Robotic assisted surgery, portable surgical system.

Current Solution:

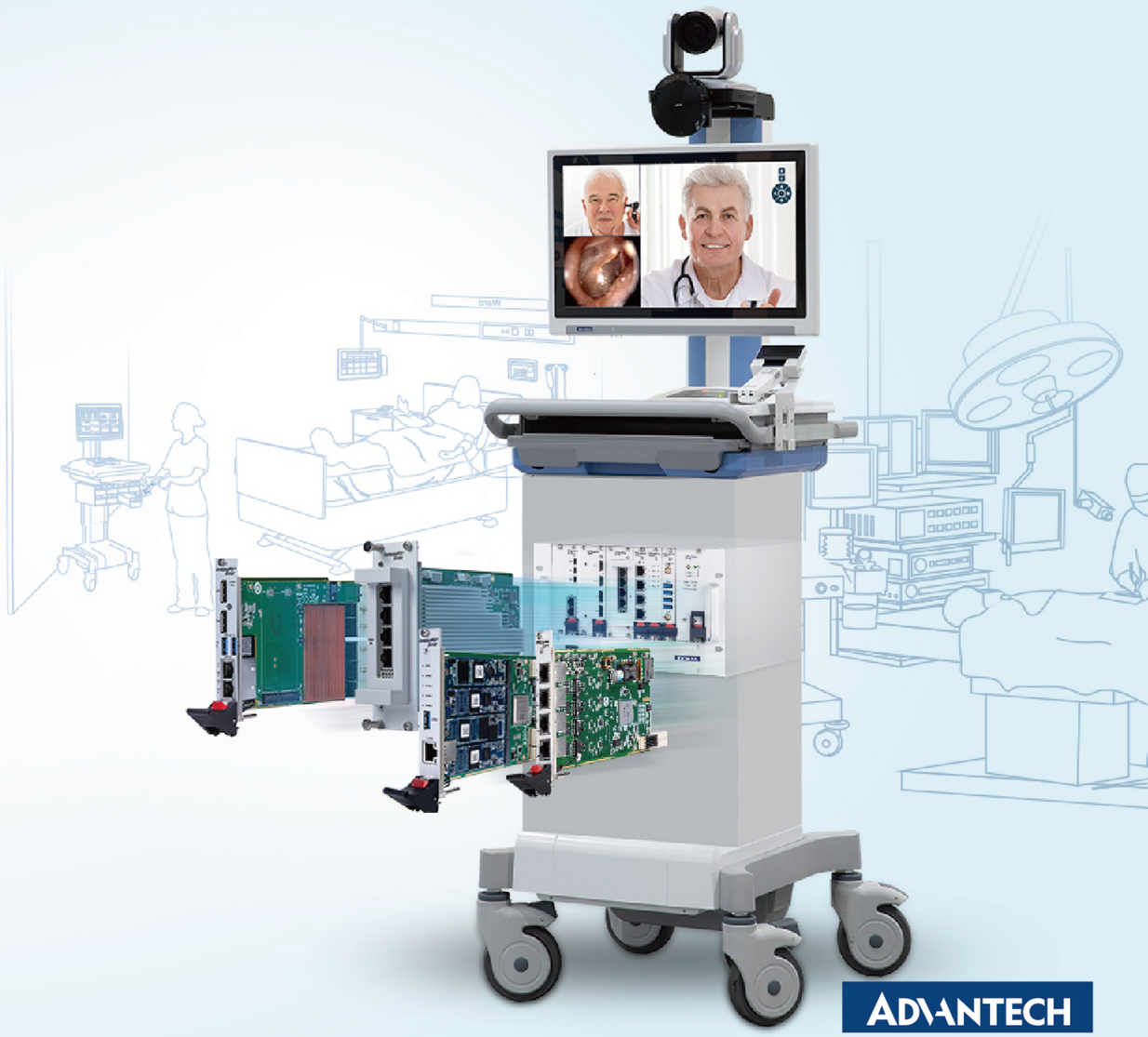
Custom server board + PCIe based graphics card, optimized thermals & size.

Challenges:

Rich communication ports like USB3.0/2.0 and 1/5/10GbE with high resolution. Real time video & image processing need a high-end CPU/DDR and PCIe/USB resources but still remain compact enough for small chassis designs.

Proposal: 3U CPCI-Serial

More compact with optimized thermal system solution, MXM graphics, and modularized design for easier function card upgrading and extension.



3U CompactPCI-Serial

MIC-330 Intel® CPU Blade

AI

High Performance

High-Speed Communication

Modular Design

Lightweight

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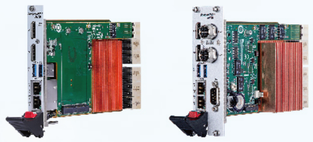
3U CPCI-S Family

View More >

Intel CPU

MIC-330



MIC-330v2

NVIDIA AI

MIC-332

Chassis

MIC-300A

PSU

MIC-3890

XMIC330-HAC300s

I/O

MIC-3810

MIC-3811

MIC-3812

MIC-3820

MIC-3821

MIC-3840

MIC-3860

MIC-3954D

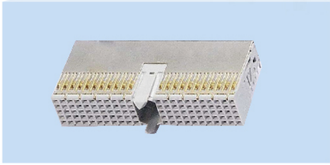
MIC-3954E

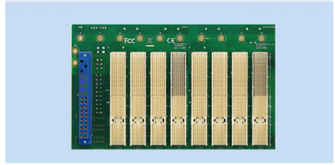
MIC-3954F

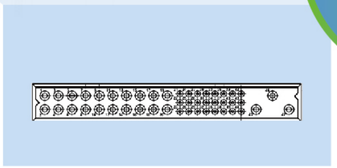
Traditional CPCI vs High-Speed CPCI-Serial

The same appearance, not the same "innterior", to achieve different IO expansion capabilities (bandwidth/transmission rate)

Traditional CPCI







Plug in units
- PCI Bus

Backplane
- 32-bit or 64-bit / 33MHz or 66MHZ

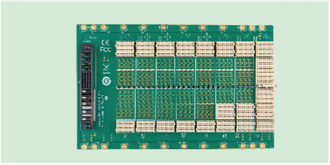
Power Source
- Connector up to 3.125Gbps

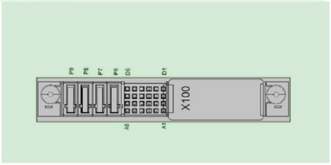
CompactPCI® Specification

PICMG

VS

High speed CPCI





Plug in units
- Serial Bus

Backplane
- Up to 40 x PCIe, 8 x SATA, 8 x GbE,8 x USB 2.0/3.0

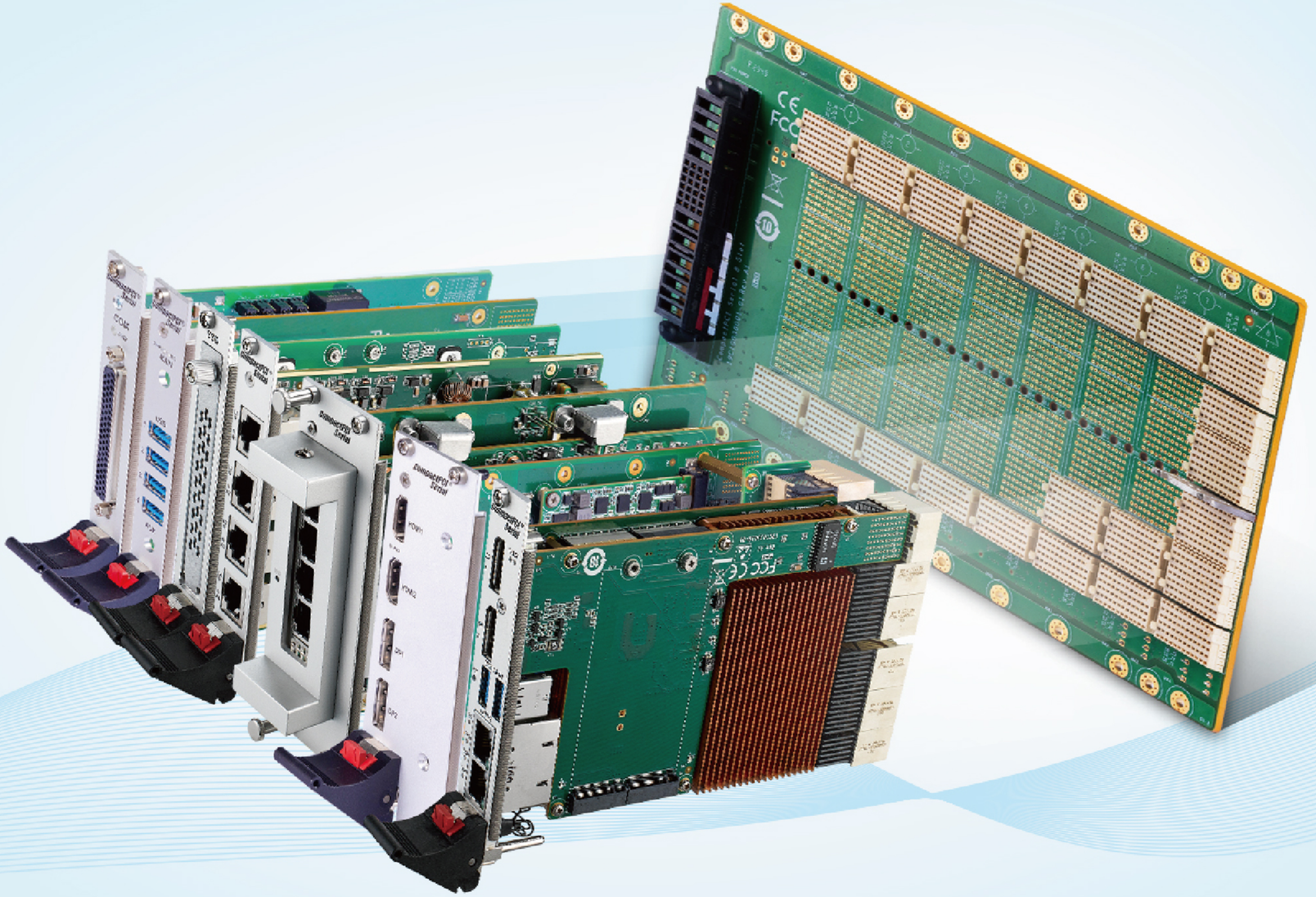
Power Source
- Connector up to 12/20/25Gbps

CompactPCI® Serial

PICMG

Simple,Flexible,Reliable by 3U CPCI-S Technology

Easy, quick configuration, CPU extension, and peripheral I/O board per user request



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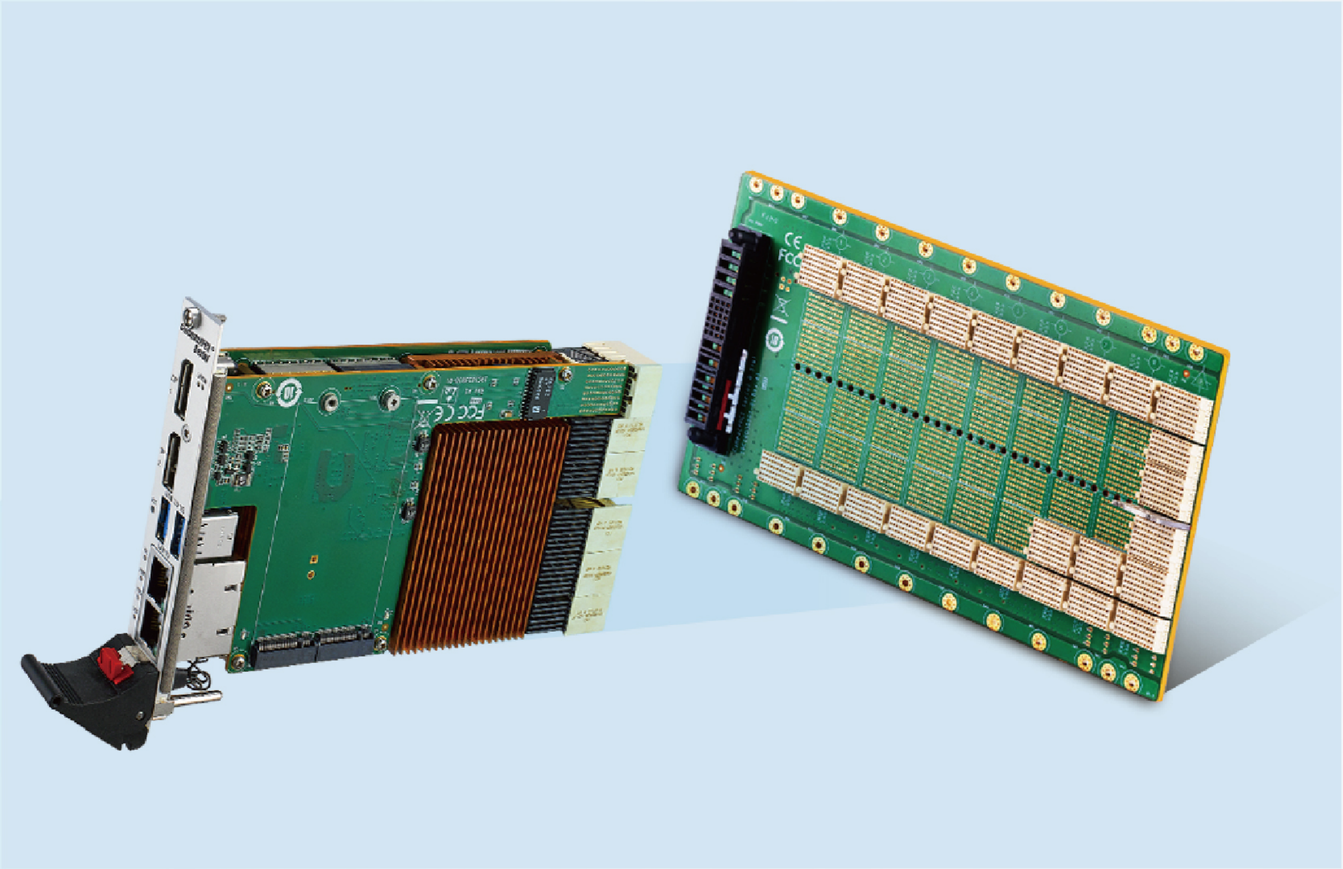
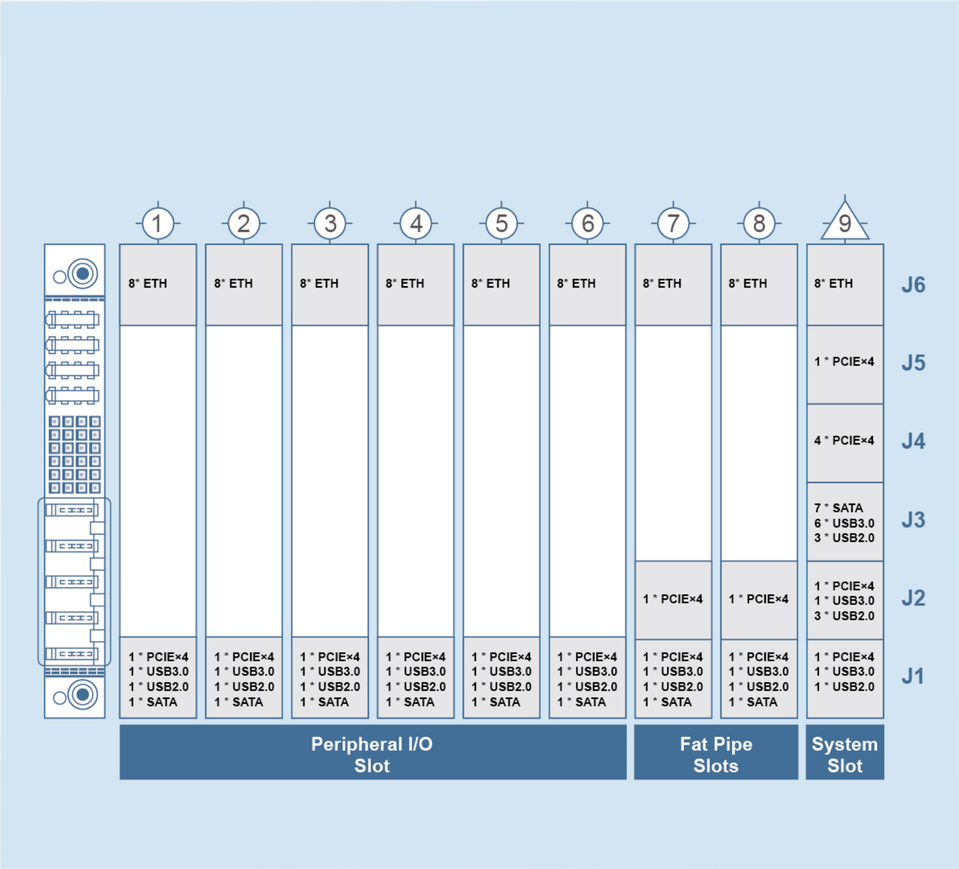
CPCI Serial System

Up to 9 slot backplane to offer rich I/O resources from system slots to peripheral I/O slots:

• 40 x PCI® Express • 8 x Gigabit Ethernet • 8 x SATA • 8 x USB2.0/3.0





•System Slot J1-6 • Fat Pipe Slots J1-2, Optional J6 • Peripheral Slots J1, Optional J6

Positions not filled: Optional RIO

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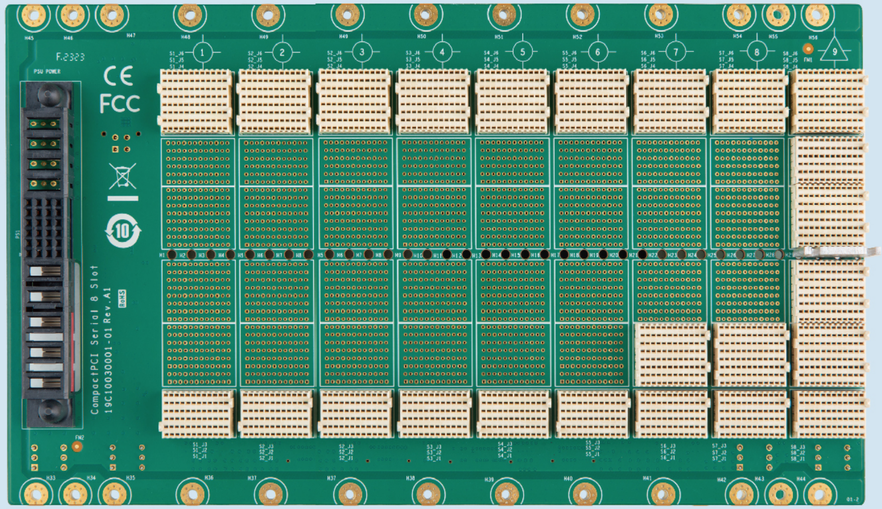
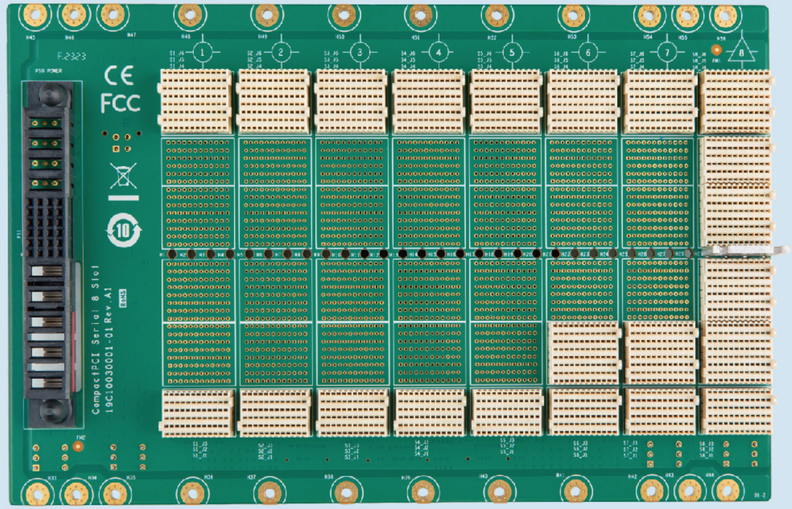
CompactPCI® Serial System 9 Slot Backplane

The system slot board (CPU) is the root complex (source) for up to 8 x PCIe3.0 links (up to 2 x PCIe x8, 6 x PCIe x4), 8 x SATA/SAS 3.0, 8 x USB2.0/3.2, 8 x GbE/10GbE distributed across a cPCI-S backplane to the peripheral slots. Please note the descending precedence order for SATA channels.



PE Link	1	2	3	4	5	6	7	8
USB	1	2	3	4	5	6	7	8
SATA	8	7	6	5	4	3	2	1
GBE	1	2	3	4	5	6	7	8

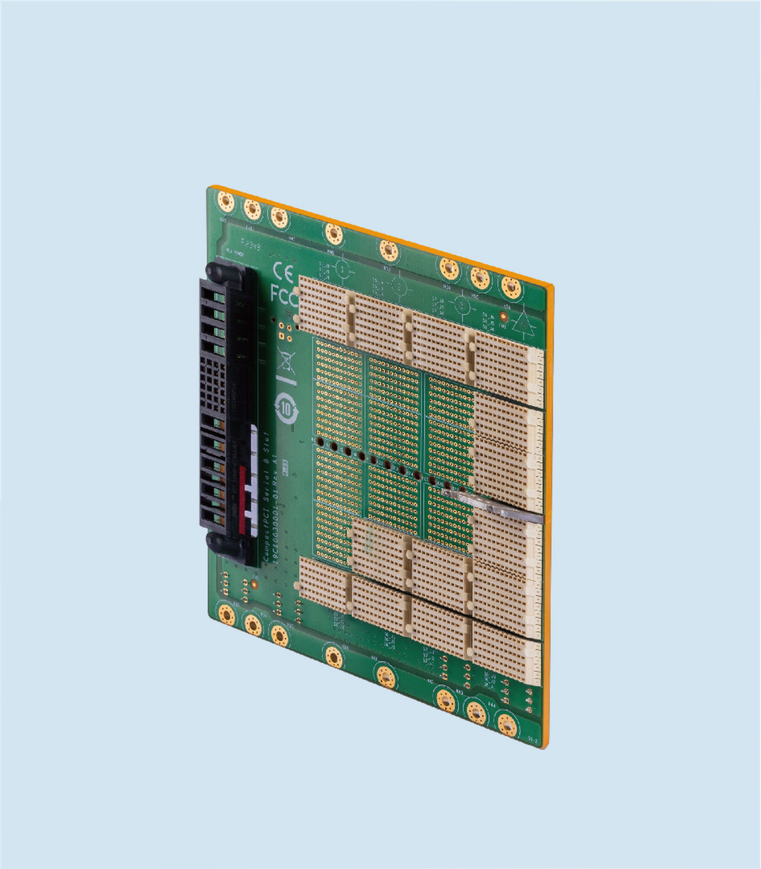


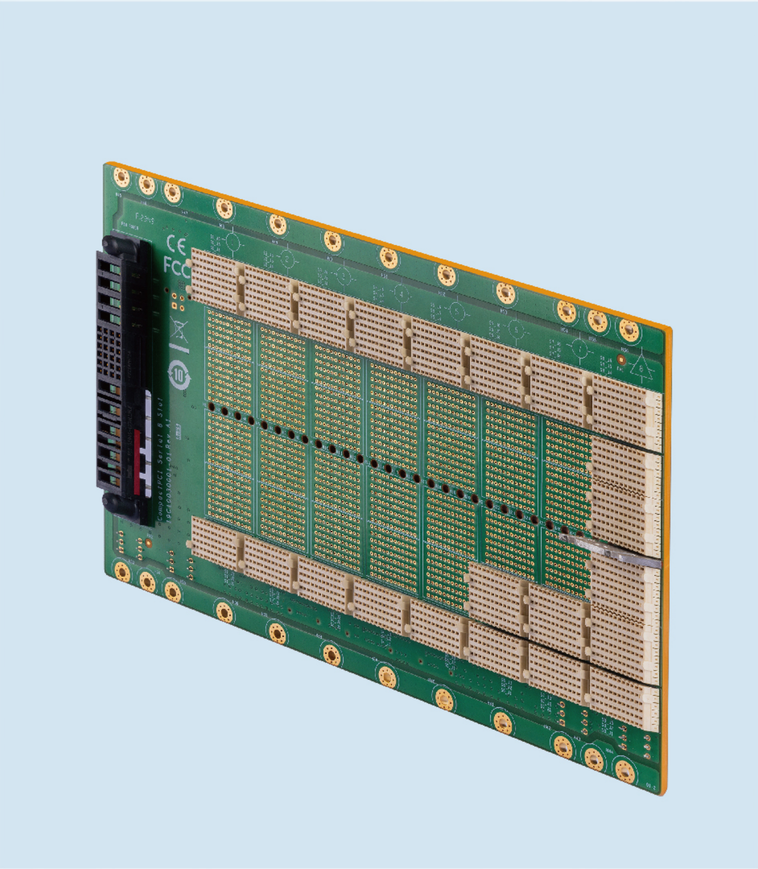
PE Link	1	2	3	4	5	6	7
USB	1	2	3	4	5	6	7
SATA	7	6	5	4	3	2	1
GBE	1	2	3	4	5	6	7

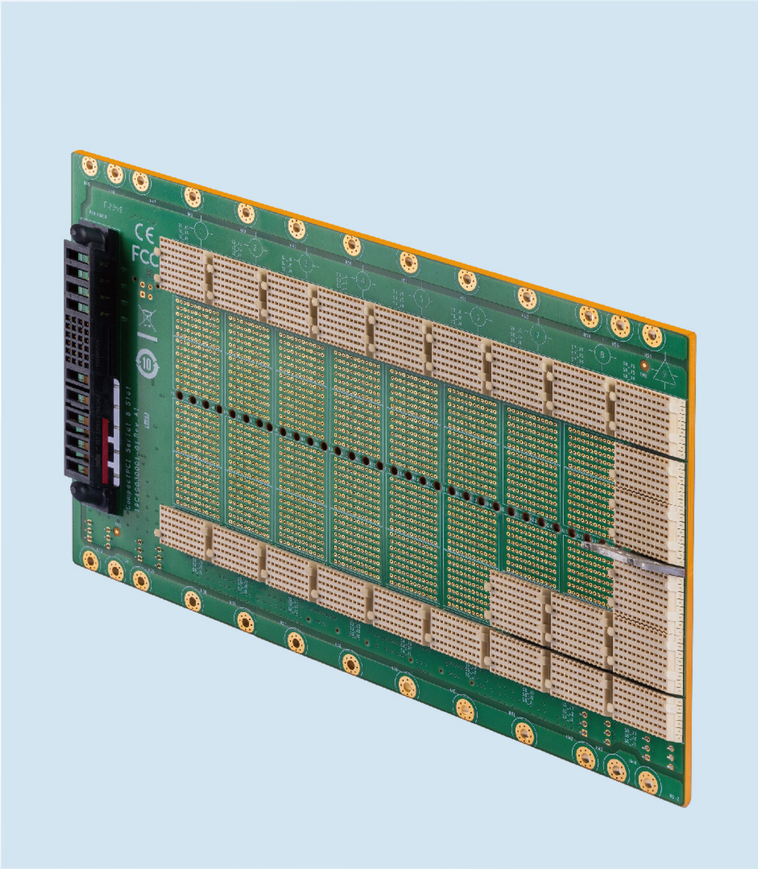
Note: If higher PCIe transfer rate is required, use backplane communication via PCI Express® up to Gen4 by using new AirMax VSe® series connectors (both plug in board and backplane) up to 25Gb/s differential pair

3U CPCI-S Alternative Bachplane Option

CPCI Serial backplanes for optimum throughput





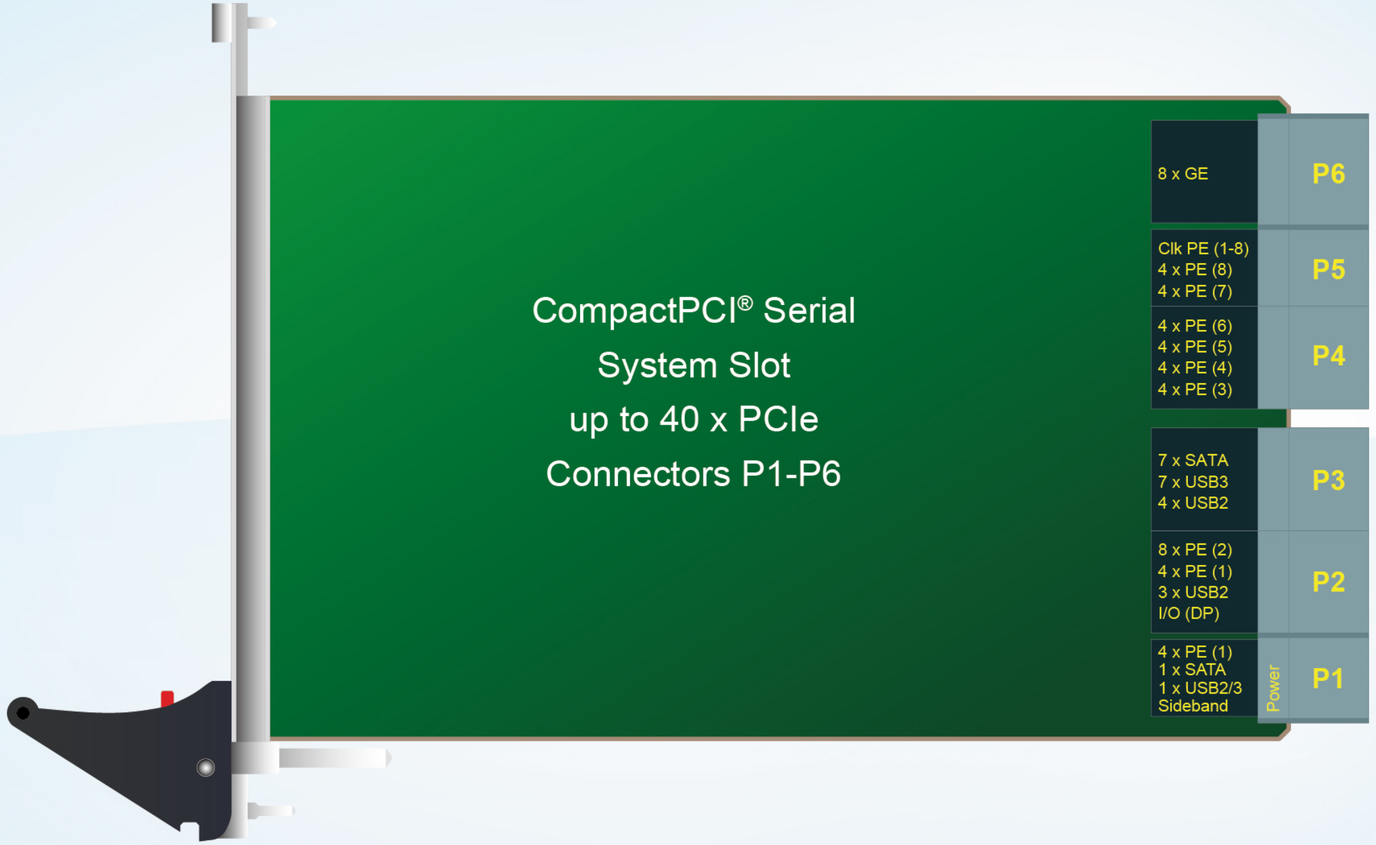


The CompactPCI® serial system slot is located on either far left or far right

CompactPCI® Serial System Slot Pin Assignments

A system slot card (CPU) provides up to

• 40 x PCI® Express • 8 x Gigabit Ethernet • 8 x SATA • 8 x USB2.0/3.0



Gigabit Ethernet
star architecture
or full mesh

In a CPCI serial system, up to 40 x PCIe lanes can be distributed across the backplane
to 2 x fat pipe peripheral slots (8 lanes each) and 6 x standard peripheral slots (up to 4 lanes each)

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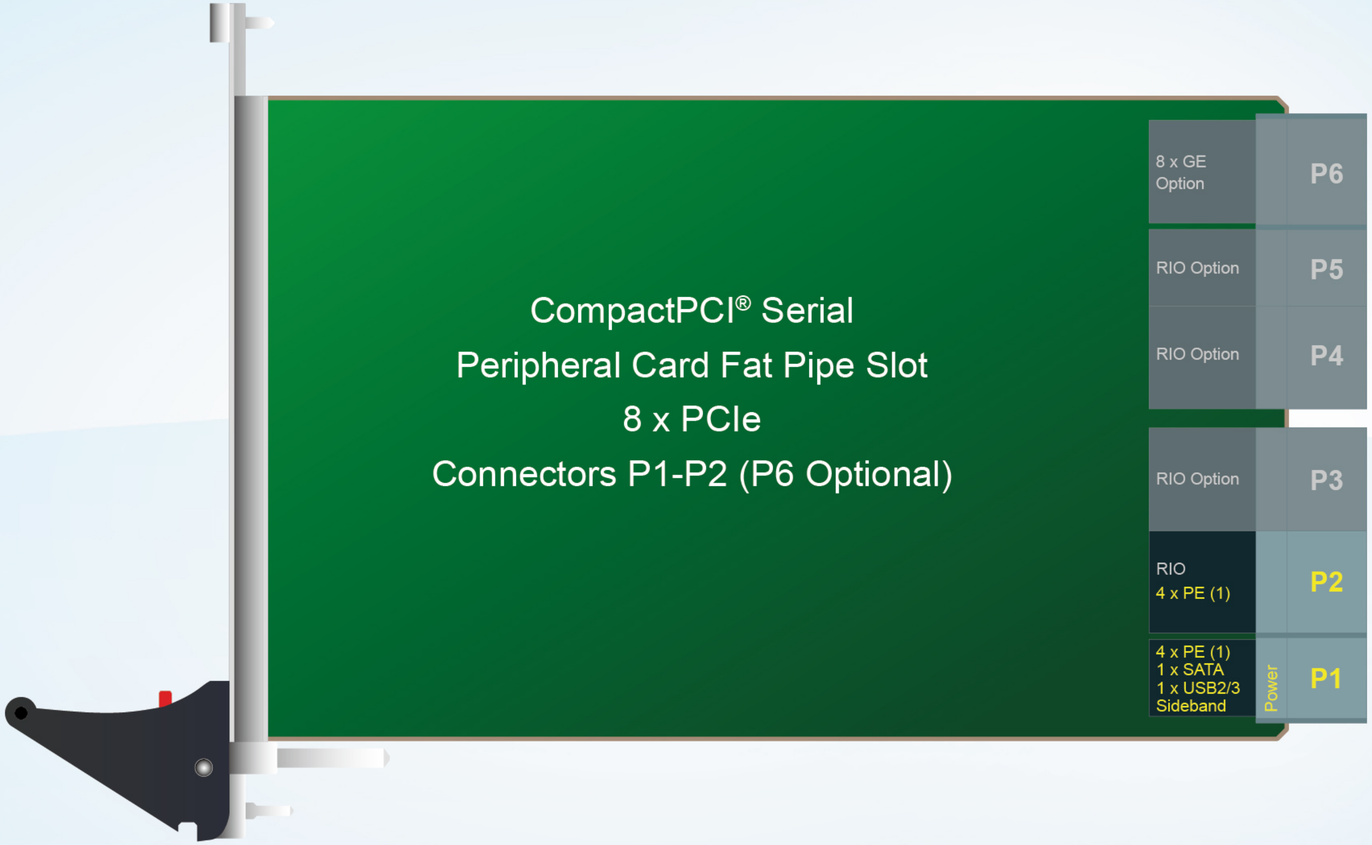
CompactPCI® Serial Fat Pipe Peripheral I/O Slot Pin Assignments

A fat pipe peripheral slot provides • 1 x PCIe x8 • 1 x USB2.0/3.0 • 1 x SATA3.0

P1-P2 are mandatory on a fat pipe peripheral card, P3-P6 optionally for GbE and/or rear I/O



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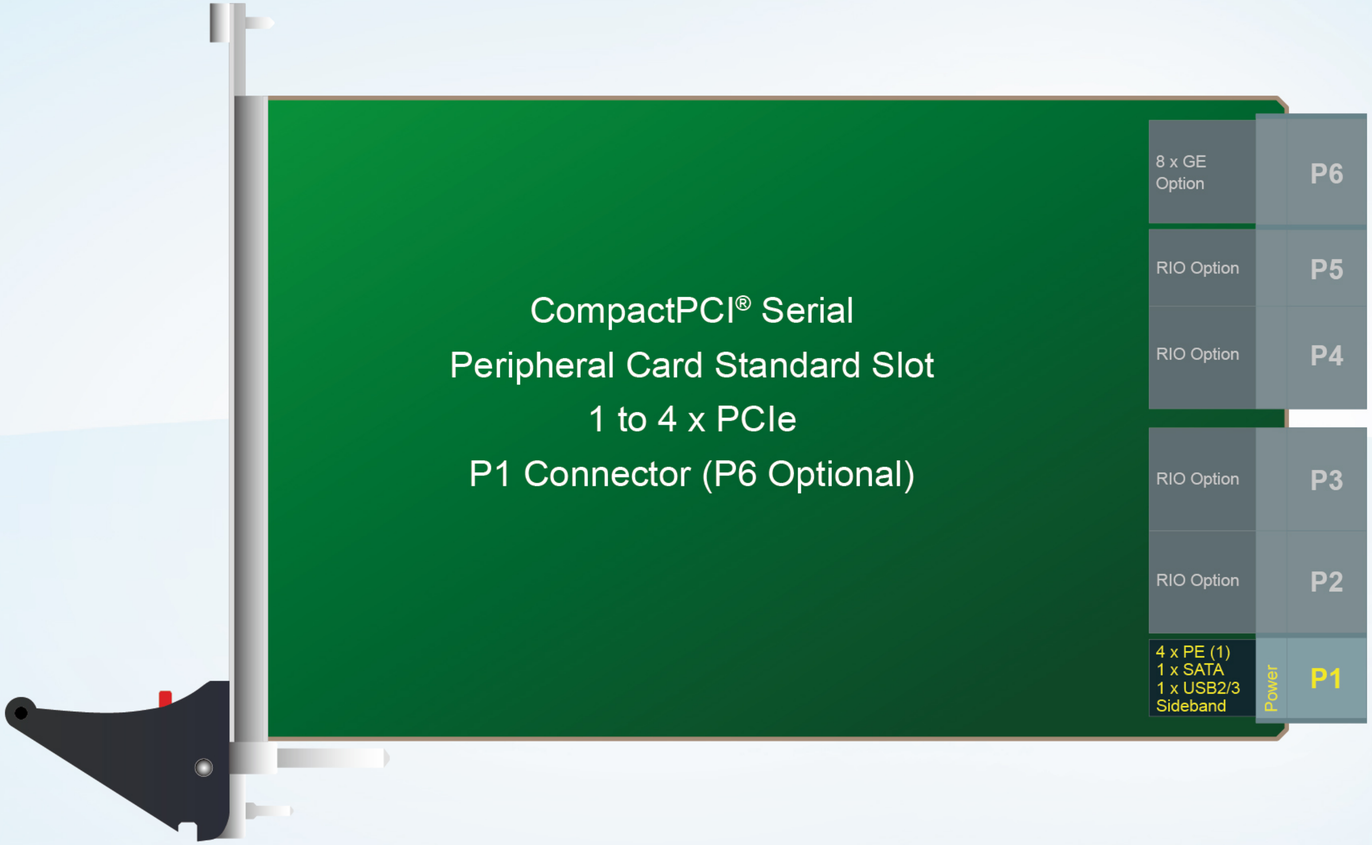
CompactPCI® Serial Peripheral I/O Slot Pin Assignments

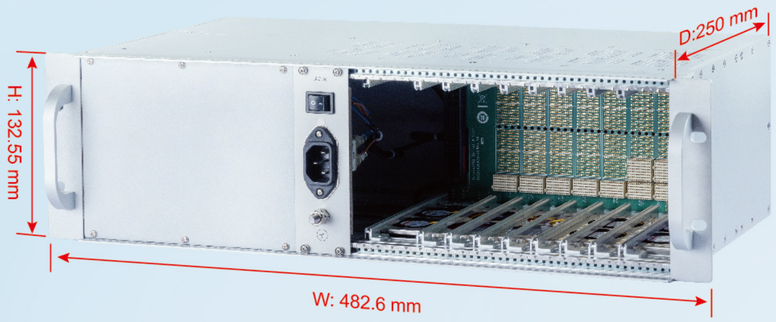
A CompactPCI® Serial peripheral slot provides up to • 1 x PCIe x4 • 1 x USB2.0/3.0 • 1 x SATA3.0

P1 is mandatory on a peripheral card, P2-P6 optional for GbE and/or rear I/O

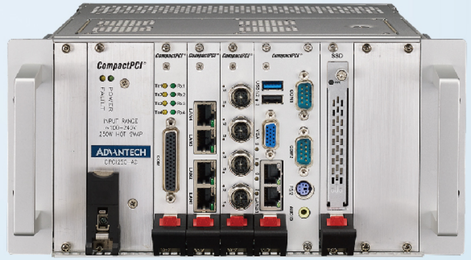


CPCI System

Build Your Smart Slim System with the BIPC Solution



3U 19-inch

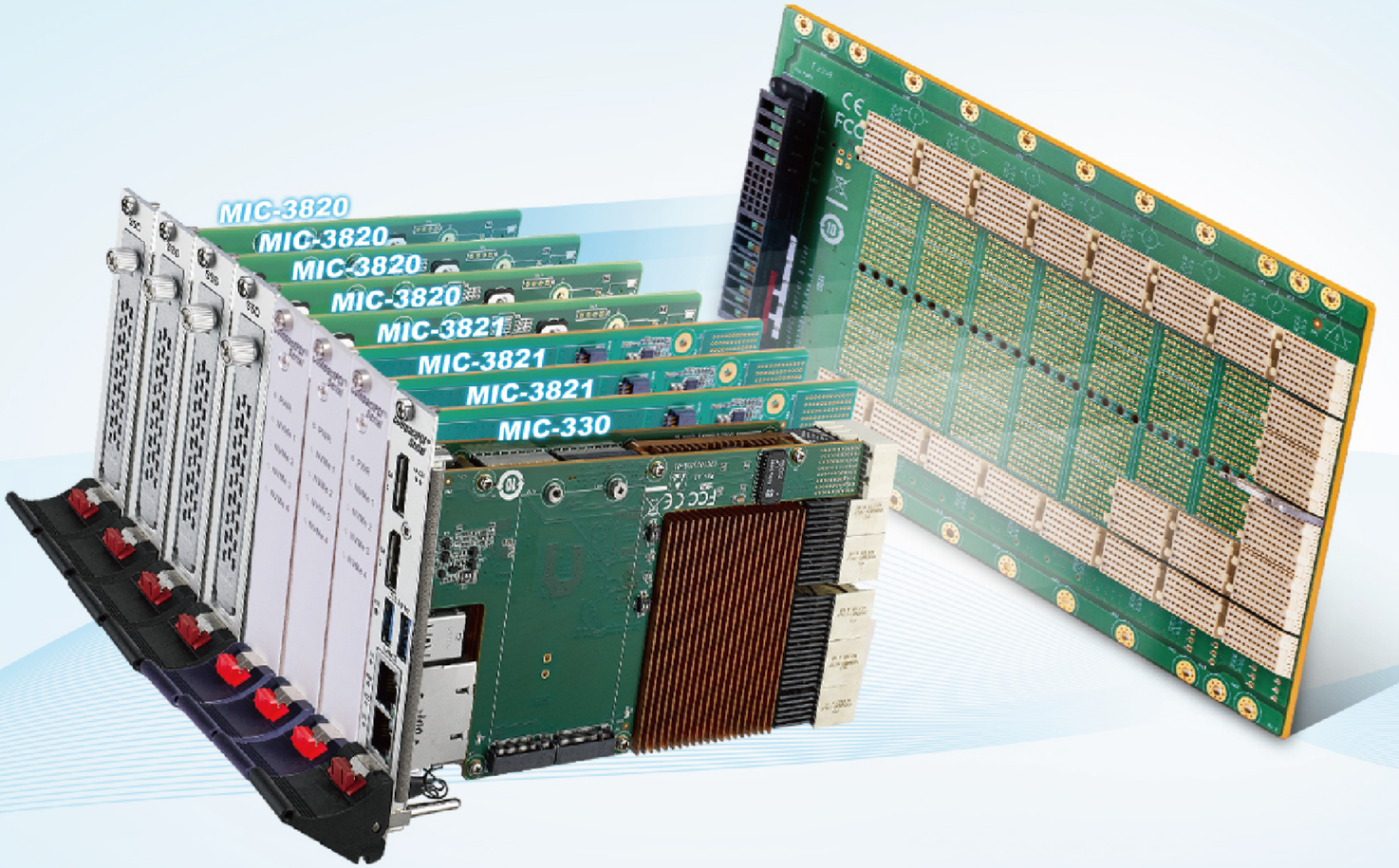


4U 19-inch

Build your own size chassis per request

Multi & Diverse storage solution

2.5" SATA drive or PCIe/NVMe storage options



- MIC-300A : 8-slot CPCI-S slot backplane, 1 *system slot & 7 *I/O slots
- MIC-330/MIC-330V2: 9th or 11th gen Intel® CPU board option
- MIC-3821: Quad M.2 M-Key PCIe 3.0 x4 NVMe carrier
- MIC-3820: 2.5” SATA3.0 carrier

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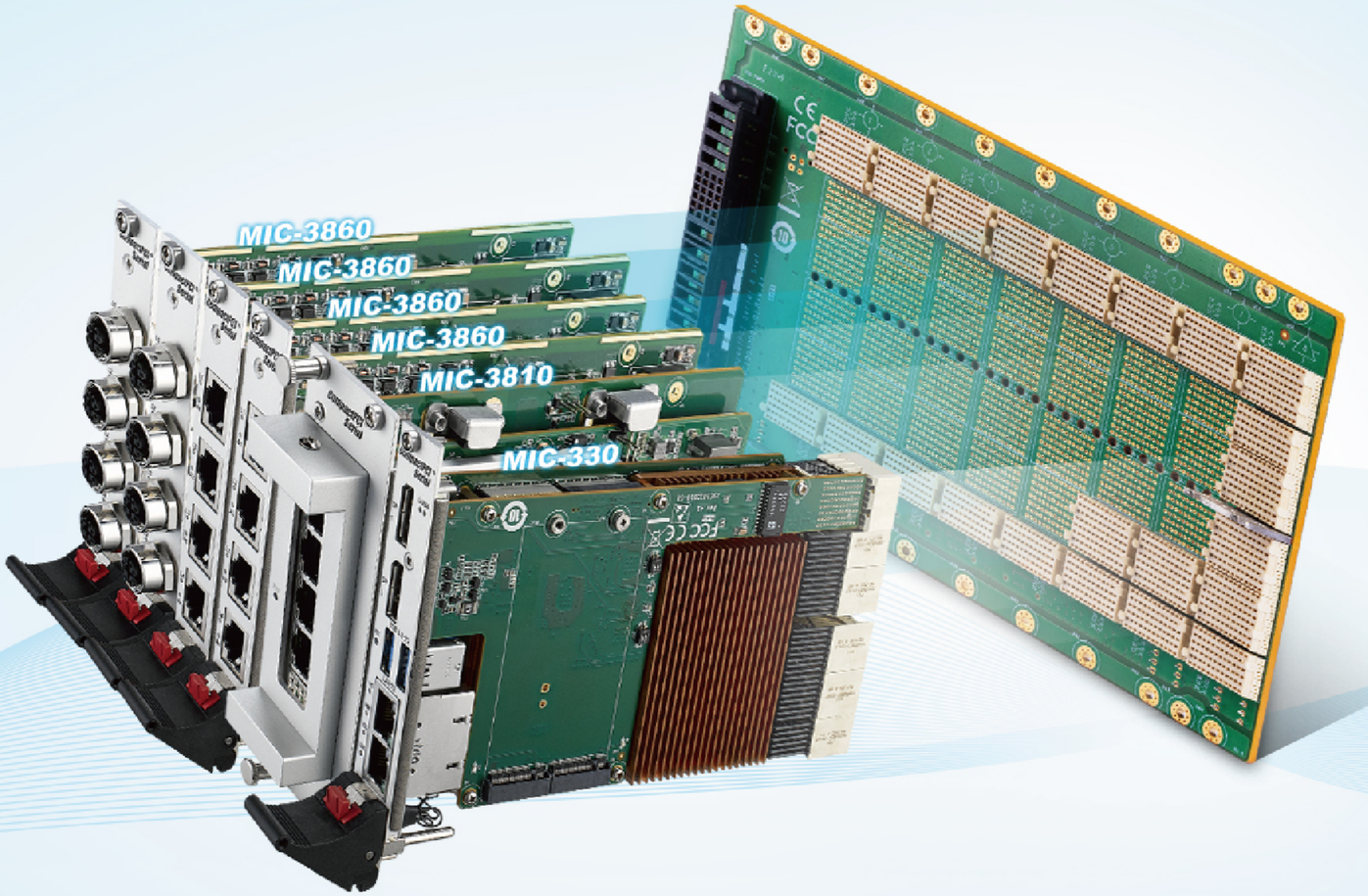
Network Adapter Solution

RJ-45 or M12 X-code Ethernet connector option



- MIC-300A: 8-slot CPCI-S slot backplane, 1 x system slot & 7 x I/O slots
- MIC-330/MIC-330V2: 9th or 11th gen Intel® CPU board option
- MIC-3810: PCIe carrier for low profile PCIe 10GbE Ethernet module
- MIC-3860: Quad port RJ-45 or quard port M12 X-code GbE / 2.5GbE Ethernet card

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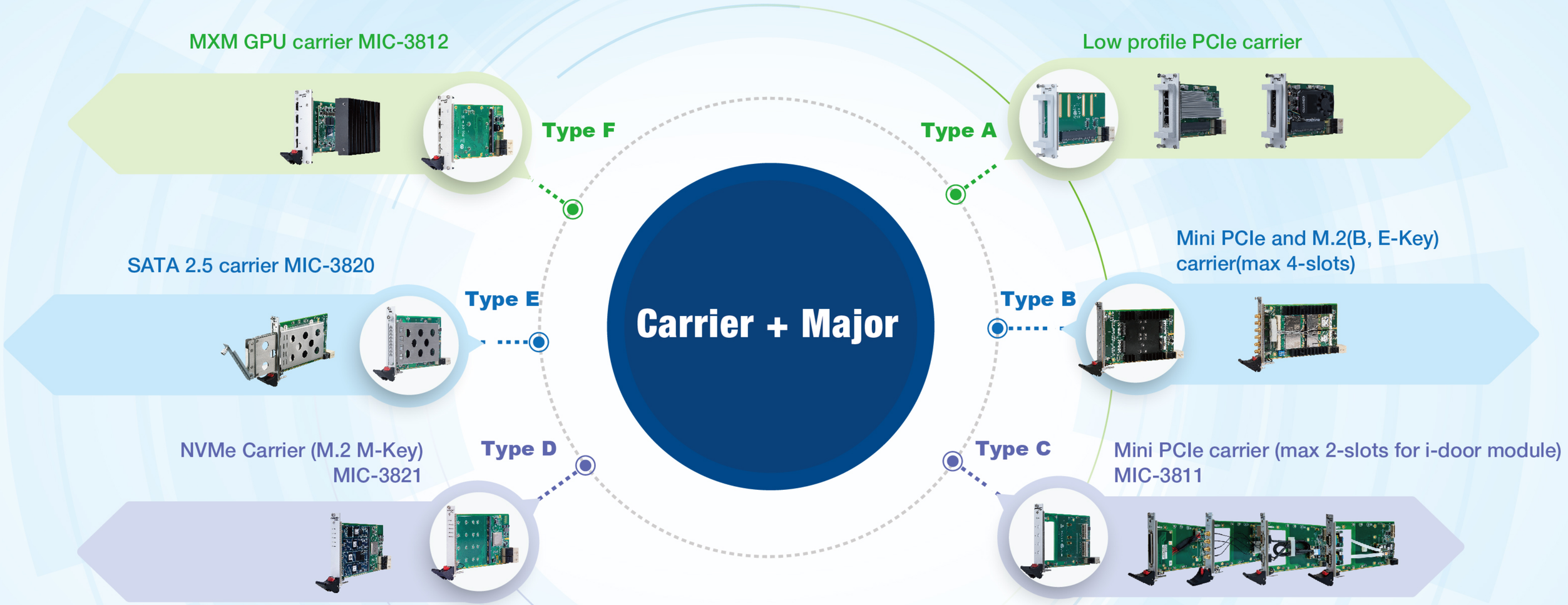
“Carrier + Module” Concept = Flexible, Cost Effective



Regional Service and Customization Centers

China	Kunshan	86-512-5777-5666
Taiwan	Taipei	886-2-2792-7818
Netherlands	Eindhoven	31-40-267-7000
Poland	Warsaw	00800-2426-8080
USA	Milpitas, CA	1-408-519-3898

Worldwide Offices

Asia Pacific

Taiwan

Toll Free	0800-777-111
Taipei & IoT Campus	886-2-2792-7818
Taichung	886-4-2372-5058
Kaohsiung	886-7-392-3600

China

Toll Free	800-810-0345
Beijing	86-10-6298-4346
Shanghai	86-21-3632-1616
Shenzhen	86-755-8212-4222
Chengdu	86-28-8545-0198
Hong Kong	852-2720-5118

Japan

Toll Free	0800-500-1055
Tokyo	81-3-6802-1021
Osaka	81-6-6267-1887
Nagoya	81-0800-500-1055
Nogata	81-949-22-2890

Korea

Toll Free	080-363-9494/5
Seoul	82-2-3660-9255

Singapore

Singapore	65-6442-1000

Malaysia

Kuala Lumpur	60-3-7725-4188
Penang	60-4-537-9188

Thailand

Bangkok	66-02-2488306-9

Vietnam

Hanoi	84-24-3399-1155
Hochiminh	84-28-3836-5856

Indonesia

Jakarta	62-21-751-1939

Australia

Toll Free	1300-308-531
Melbourne	61-3-9797-0100

India

Bangalore	91-94-4839-7300
Pune	91-94-2260-2349

Americas

North America

Toll Free	1-888-576-9668
Cincinnati	1-513-742-8895
Milpitas	1-408-519-3898
Irvine	1-949-420-2500
Ottawa	1-815-433-5100
Chicago	1-888-576-9668

Brazil

Toll Free	0800-770-5355
São Paulo	55-11-5592-5367

Mexico

Toll Free	1-800-467-2415
Mexico City	52-55-6275-2777

Europe

Netherlands

Eindhoven	31-40-267-7000
Breda	31-76-523-3100

Germany

Toll Free	00800-2426-8080/81
Munich	49-89-12599-0
Düsseldorf	49-2103-97-855-0

France

Paris	33-1-4119-4666

Italy

Milan	39-02-9544-961

UK

Newcastle	44-0-191-262-4844
London	44-0-870-493-1433

Spain

Madrid	34-91-668-86-76

Sweden

Stockholm	46-0-864-60-500

Poland

Warsaw	48-22-31-51-100

Russia

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St. Petersburg	8-812-332-57-27
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