Leading Embedded Core Innovation & Design-in Services

Time to Market

Leading Innovation

Design-in Service

- Industrial Motherboards
- Computer On Module
- Embedded Single Boards Computers
- Arm-Based Computing Platforms
- Industrial Flash & Memory
- Embedded PCs
- Embedded Software
- Embedded Wireless Module
Full Range Embedded Board+ Solutions

Industrial Motherboards
Super Fast Time to Market with New CPU
Cabling for IO Expansion

Computer On Modules
Full Range CPU Module
Carrier Board Integrates FPGA, AISC and IOs

Embedded Single Board Computers
Extended Temp 3.5” / 2.5” Computer
MIOe Module for Vertical IO Expansion

RISC Computing Platforms
ARM Solution in All Form Factor
COM, SBC & Box Computer
Bridge New Technology to Accelerate IoT Era

COM-HPC x Thermal x Vertical-Oriented Modularized Design

Irene Wu, Product Assistant Manager, Advantech
Nick Lin, Project Assistant Manager, Advantech
In 2025, **130 ZB data** will be processed on the edge **150 billions devices** will connect to the edge -- IDC

Accelerate Huge Data Processing in IoT Era
Latest Server-grade Motherboard: AIMB-586

Excellent Computing & Graphics
- Intel 8th/9th Gen CFL-S Platform, up to 8 processor cores
- Independent displays, support 4K2K with HDR

High Speed Connectivity & Expansion
- 14 USB with 4 ports USB 3.1 gen2 (10Gbps), 4 PCIe3 expansions
- 4 ports 1000Base-T, M.2 M-key & E-key

Reliable & Flexible Design
- Dual power Design, ATX power input or 12V DC in
- Level 4 ESD Protection Design
Latest Server-grade COM Express: SOM-5962

**Extreme Computing Performance**
- Intel C3000 Processor Families
- Up to 16 Computer Cores & 128GB memory

**Super Speed Expansion & Scalability**
- 4 ports 10GBase-KR & 1 port 1000Base-T integrated
- Flexible I/O: PCIe gen3(8Gbps), USB3 & SATA3

**Wide Range Operation Design**
- 8 ~ 20V power input for system design and stability
- -40 ~ 85°C operating temperature
Next Generation Computer-on-Module

Scalability & Easy Deployment
- Full Spectrum for Diverse Applications

Remote Management
- Easy Accessibility & Operations

Low Latency
- Time-Sensitive Communication

Data Processing Capability
- Manage Mass Data at Edge

High Network Bandwidth
- Reduce Data Transmission Time

Super Speed
- I/O Interface

Extreme CPU Performance & Memory Capacity

More Expansion Bus & Higher Bandwidth
Computer-on-Module Revolution: COM-HPC

Breakthrough Computing Performance
- 20 core/110W server grade capability
- Max. 1TB reliable ECC memory

Wider Bandwidth and Faster Transmission
- Max. 100 Gb LAN
- PCI Express Gen5 (32GT/s)
- USB4.0, Thunderbolt (40Gbps)

More Super Speed I/O Expansion
- Max. 65 Lanes PCIe
- 8x 10GbE
COM-HPC: Two Types for Diverse Applications

**COM-HPC Client**
- CPU & Graphics integrated, and super speed I/O expansion for diverse requirements

**COM-HPC Server**
- Server grade performance and 10G LAN integrated, better for system scalability
SOM-8990 First COM-HPC Server Module

Intel® Xeon® D (Skylake-D)
16 Core
110W

512GB Memory
ECC/non-ECC

4 x 10GbE

45 pairs lanes

Prototype @ Q2 2020
SMARC Modules: Full Range Performance Offering

- NXP i.MX8M
- Intel E3900
- Intel Core U
What a Good Thermal Solution Looks Like?

3 DNA

Efficiency  Thinness  Quiet
Improvement on 3 Ways

**QFCS**

- **Mechanism**
  - Twin-Fins
  - Two-Stages Spring Screws

- **Conduct**
  - Hard Contact
  - Heat Pipe

- **Heat Flow**
  - Heat Dissipation for Key Chips
  - Low Heat Resistance

**Simulation Result**
Quadro Flow Cooling System, QFCS

3axis AIRFLOW | 45w DISSIPATION | 27mm THICKNESS | 45dB DECIBEL

Mix Fin
- Stacked & Extrusion Fins
- Increase Airflow Exchange

Hard Contact
- Chip Heat Dissipation
- Contact Copper Directly

Venting Hole
- Cool Down Memory
- 15% Weight Reduced

Heat Pipe
- Speed up Heat Diffusion
- Flexible Mechanism
Diverse Platforms for Extreme Computing Performance

High Efficiency
Achieve 10°C+ Cooler Down

Ultra Thin
Max 27mm w/ Weight 250g

Silence Operating
45db required by Library

Compatible Design
Support Embedded STD FF.

Computer on Module
SOM-5898

Single Board Computer
MIO-5393

Embedded Motherboard
AIMB-506

Quadro Flow Cooling System, QFCS
What a Good Thermal Solution Looks Like?

Efficiency  Quiet

Quadro Flow Cooling System
The Challenges of Rich Demand for IoT

- 60% Ready to Use
  - Standard Product

- 30% Required for Difference I/O
  - Small Custom based on Standard Product

- 10% Fully Customization
  - Tailored-Made for niche application

Market Share
Build Solution for Your Vertical Application

MI/O-Extension

WISE-PaaS/DeviceOn
IoT Device Operation Management

UIO40-Express

MBed Core
Design-In Services
MI/O Extension - Satisfy All Your x86 Needs

- Compact Size
- Rugged B/B Connection
- High Bandwidth PCIe
- Off-the-Self MIOe Module

MIO SBC  |  Vertical MIOe Module  |  Off-the-Shelf Enclosure

Smart Packing MIOe-210 6 UARTs
Surveillance MIOe-3674 4 PoE
Medical Equipment MIOe-3680 4 CAN w/ 15KV
Automation MIOe-220 3 GbE
AI MIOe-260 GbE, M.2, mPCIe
High Performance SBC in Edge - MIO-5393

High Computing Power
- Intel 9th Xeon & Core-I Processor Families.
- Up to 6 Computer Cores.

Advanced Interfaces
- LVDS/eDP + HDMI + DP Displays with 4K Decode.
- M.2 Wireless & NVME SSD modules with Intel RST.

Wide Range Operating
- Power Input DC +12C with 10% tolerance.
- Operating Temperature -40 ~ 85 °C.
UIO40-Express
Build Systems for Your Vertical Applications with Speed

Step 1
2.5” Core Board
- RSB-3430: NXP I.MX6 Cortex-A9 Dual Lite Cores
- RSB-3710: Rockchip RK3399 Cortex-A72/53 Dual/Quad Cores

Step 2
Vertical I/O Board
- UIO-4030: RS-485 x 1, RS-232 x 1, GPI x 4, GPO x 4
- UIO-4032: USB 2.0 x 2, RS-232 x 2, GbE x 1
- UIO-4034: CAN x 1, RS-232 x 2

Step 3
Vertical Application System
- EPC-R3430 with RSB-3430 2.5" SBC
- EPC-R3710 with RSB-3710 2.5" SBC

Step 4
AIM-Linux & AIM/Android
- Modularized Framework
- Value-added Industrial App & SDK
- Longevity BSP Maintenance

Step 5
IoT Devices Operation Management
- WISE-PaaS/DeviceOn

Various I/O Options
Compact Structure
Unified Software Package
Take Your Device Everywhere - RSB-3430

Powerful but Fan-less
- NXP i.MX 6 Coretex-A9 Processor Family.
- Max Power Consumption 2W.

Small but Complete
- Standard Pico-ITX 2.5” SBC.
- HDMI, LVDS, GbE, Wireless Connectivity.
- UIO 40-Express Expansion

Reliable Foundation
- Longevity BSP Maintenance.
- Remote Maintenance thru DeviceON.
WISE-PaaS/DeviceOn
Empowers Edge Intelligence

Device Management
- Device Monitoring and Diagnostics
- Device Control & Updating

Data Management
- Data Acquisition and Storage
- Secure Data Access

Connectivity Service
- Device Connectivity
- Plug-n-Play Peripherals

OTA
- Software & Firmware Updates
- Advantech BIOS Updates

Rule Engine
- Distributed Rule Monitoring
- Flexible Trigger and Action

Data Security
- McAfee Threat Protection
- Acronis Backup Recovery

DeviceOn.Dev

DeviceOn.App

ETA
- Protocol conversion
- Edge intelligence
- Real-time virtualization

FaceView
- Facial recognition
- People counting
- Behavior detection

FaceView

ePaper Manager
- EPD device auto-discover
- Fast transmission
- Device association
Co-Creating the Future of the IoT World