

Embedded Software Service and Ruggedized Board Design

Arm Computing x Embedded Single Board Computer



Nathan Wang, Product Manager, Advantech

James Wang, Product Manager, Advantech

Comprehensive Embedded Software Services

WISE-PaaS/ DeviceOn

Acronis

McAfee™

Embedded features APIs

Applications and APIs



Linux



ANDROID

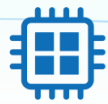


Windows 10

Full Coverage of Operating System



Smart EC



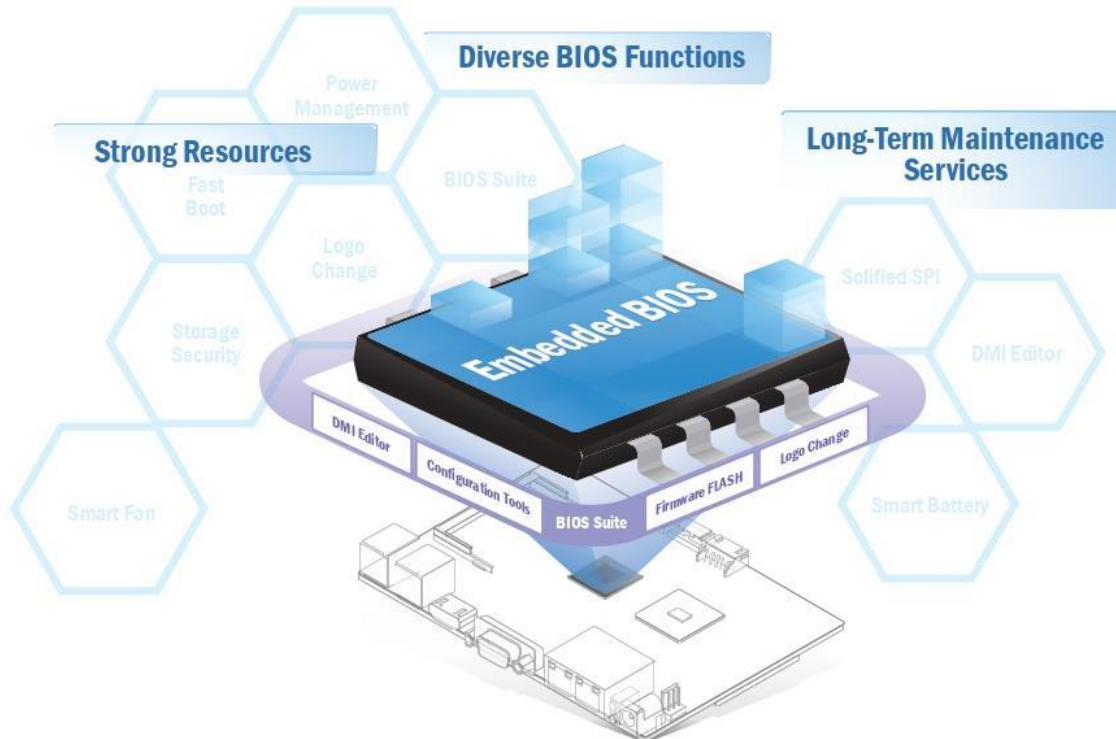
Trusted BIOS

Reliable Board Foundation



Trusted Embedded BIOS Solutions

Diverse BIOS with reliability and long-term management



Sufficient Sources

- Strong partnership with BIOS vendors
- Profound Industry BIOS experience
- 50+ Engineers with profound industrial BIOS experience

Diverse BIOS Functions

- Multi-layer Security
- 3" sec Fast Boot
- Power Management
- BIOS Suite Utility

Long-Term Maintenance Services

- Platform Longevity Support
- Long-term BIOS version control (10 years)
- BIOS Remote Backup

Allied, Industrial & Modular Linux Services

AIM-Linux & AIM-Android

App Add-Ons & SDKs

Launcher <ul style="list-style-type: none"> • Quick Boot • Boot Logo • Status Bar • Navigation Bar 	Protocol <ul style="list-style-type: none"> • CANopen • J1708 • J1939 • MODBUS • 1-Wire 	Diagnostic <ul style="list-style-type: none"> • RF Diagnostic • Connection Diagnostic • System Diagnostic 	Management <ul style="list-style-type: none"> • SNMP • Multi-Screen Control • Resource Mgmt • Applications Mgmt 	Security <ul style="list-style-type: none"> • Secure Boot • License Management • Lock Device • Secure On-device Data
Distribution <ul style="list-style-type: none"> • Yocto • Realtime • Debian • Ubuntu 	DevelopSDK <ul style="list-style-type: none"> • Qt • Python • Java • HTML5 	Maintenance <ul style="list-style-type: none"> • OTA • Remote Desktop • App Management 	Control <ul style="list-style-type: none"> • Device Control • System Control • Extension Port Access • Extension Modules Access 	Edge AI <ul style="list-style-type: none"> • HD PMQ • Pre-trained Models • Edge AI APP

Unified Embedded Platforms

Unified Core	Industrial I/O Drivers	Performance Optimization	Peripheral Integration
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Function & security updates

Compile-less Linux Solutions

Ready-to-use utility tools

ADVANTECH CANONICAL

Enabling an Intelligent Planet



Development Documentation
<http://ess-wiki.advantech.com.tw/view/RISC>

Allied, Industrial & Modular Linux Services

2020 ONLINE

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Industrial ARM-based Starter Kit

10-minute to Start Your ARM Project

- Includes complete verified hard- and software for immediate start
- Comes with a ready-to-run Linux pre-installation

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Industrial ARM-based Starter Kit

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Arm-Based Computing Platforms

Why Advantech

App Add-Ons & SDKs

Products by Platform

Product by Form Factor

AIM-Linux Embedded Software Services

What AIM-Linux Offers

Unified Embedded Platforms

App Add-Ons & SDKs

Design-to-Order Services

Download Center

Media Center

Launcher	Distribution	Management
The high flexibility launcher SDK provides a series of booting feature customizations, such as boot logo-change and splash screen definition.	We offer many distributions, such as Yocto and Debian, which are available for your application development in a preferred environment.	We provide a series of enable system application as well as resource management.
AIM-Linux/Launcher AIM-Android/Launcher	AIM-Linux/Distribution	AIM-Linux/IM AIM-Android/IM

Development SDK	Diagnostic	Maintenance
AIM-Linux integrates a series of popular development SDKs, such as CDT/LLVM, to allow customer applications to run smoothly with those features.	Complete diagnostic utilities of RP, connectivity, and hardware I/O features are ready for your leverage.	Different from standard AIM-Android enables C to update Android OS units through group mt setup your device in to
AIM-Linux/DevelopSDK	AIM-Linux/Diagnostic AIM-Android/Diagnostic	AIM-Android/IM

Protocol	Security	Control
Integrated protocols transfer features for different vertical applications like CANopen and MODBUS.	Several security boot features are verified and built in to secure your device and application via intrusion detection or device lock by operator.	Convenient access to control devices, extends modules under Android.
AIM-Linux/Protocol AIM-Android/Protocol	AIM-Linux/Security AIM-Android/Security	AIM-Android/IM

Edge AI

AIM-Linux/EdgeAI

Arm-Based Computing Platforms

Why Advantech

Products by Platform

Product by Form Factor

AIM-Linux Embedded Software Services

What AIM-Linux Offers

Unified Embedded Platforms

App Add-Ons & SDKs

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Media Center

What AIM-Linux Offers

Features and Benefits

- Modularized Framework: Efficient Resource Allocation
- Value-Added Industrial App & SDK: Accelerated Development
- Longevity BSP Maintenance: Reliable Foundation

AIM-Linux Services Landscape

PaaS & Cloud Platform

WISE-PaaS of Edge Intelligence

WISE-PaaS/ DeviceOn

App Add-Ons

AIM-Linux/Security	AIM-Linux/Launcher	AIM-Linux/Management	AIM-Linux/Distribution
Secure Boot License Management Cipher SDK	Grant Boot Auto Run Multi-Boot Splash Boot Logo Screen	SNMP Multi-Screen Control Audio Path Control	Yocto Debian Realtime

AIM-Linux/DevelopSDK	AIM-Linux/Diagnostic	AIM-Linux/Protocol	AIM-Linux/Edge AI
Qt Java MVBUS Python EdgeX Foundry Go	SE Diagnostic Connective Diagnostic System Diagnostic	CANopen J1939 J1930	Hi3862 Pre-Instal Model Edge AI APP

Unified Embedded Platforms

- Unified Core
- Industrial I/O Drivers
- Performance Optimization
- Functional Integration

Buy Online Support 1-888-576-9668

Arm-Based Computing Platforms

Software & Tools

Select your product configuration from the menu below:

Platforms: NXP i.MX 6

Form Factor: Custom

Model Name: ROM-7421

Search

ROM-7421
NXP i.MX6 Dual/Quad Plus 1GHz Cortex A9
Computer-on-Module

Product Page

App Add-On

Launcher Management Development SDK Diagnostic Protocol

Security Edge AI

Yocto

Suno (Kernel 4.14.98)

Release Notes Recovery SD Add-on Data

Krogoth (Kernel 4.1.15)

Release Notes Recovery SD

Android

Ubuntu

Next Generation of Arm Platform – i.MX8



A72 A35
A53 M4
ARMv8 64-bit

Ultra HD
4K
H.265

Camera/Vision

USB3.0
SATA3.0
PCIe3.0

Comprehensive Software Services

- Multi OS support
- Longevity BSP
- AIM-Linux & AIM-Android

Reliable H/W Design-in Service

- Various core module offerings
- Carrier board reference and consult
- Lifetime support

Trusty Peripherals Integration

- Industrial touch panel
- Wi-Fi , BT and cellular module
- Storage module



ROM-7720 Qseven 2.1 (i.MX8QM)
Highest Performance for AI & Machine Vision Applications



ROM-5720 SMARC 2.0 (i.MX8M)
4K Industrial Graphic Performance for Multimedia Applications



ROM-5721 SMARC 2.0 (i.MX8M Mini)
Power Efficiency for Entry HMI & Industrial Applications



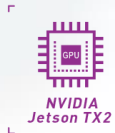
ROM-5620 SMARC 2.0 (i.MX8X)
Safety Certified for Automation & Embedded Applications

Arm-Based Edge AI Solutions

Real-Time Video and Image Inference



GPU-Accelerated Computing



- 256-core NVIDIA Pascal GPU
- CUDA-enabled parallel computing platform

Rapid & Reliable Deployment



- 2 PoE for camera deployment
- Industrial-grade and rugged design

Fast App Deployment



- AIM-Linux/Edge AI package
- JetPack AI package
- NVIDIA ecosystem

IoT Device Operation Management Platform

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

DeviceOn.Dev



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.App



OTA

- Software, firmware & configuration updates
- Advantech BIOS updates



Embedded Boards



FaceView

- Facial recognition
- People counting
- Behavior detection



Wireless IoT Gateways



E2I

- Protocol conversion
- Edge intelligence
- Real-time virtualization



Embedded PCs



ePaper Manager

- EPD device auto-discover
- Fast transmission
- Device association



Fanless Embedded Computers

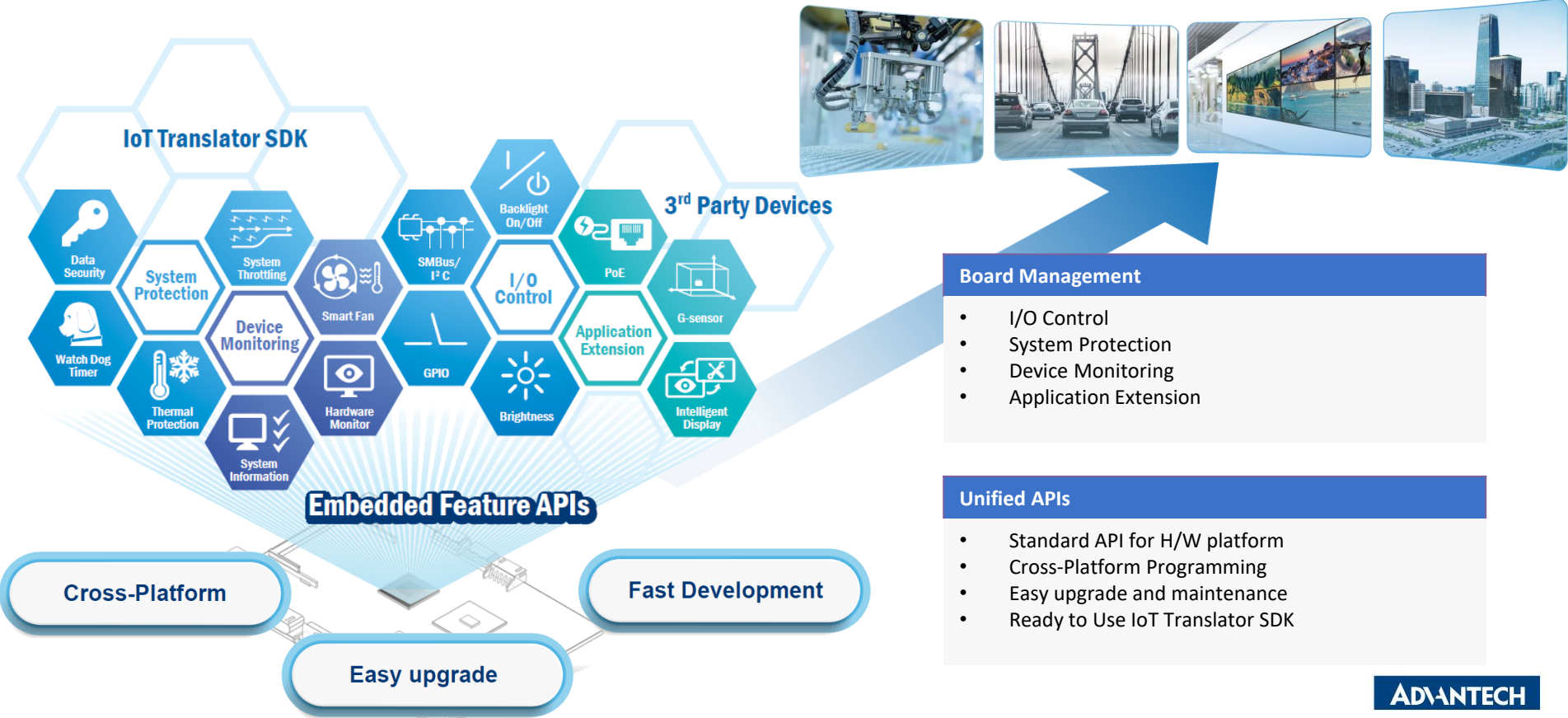


Vertical Focused Solutions



Embedded Feature APIs

Simplified Integration, Configuration and Management



Board Management

- I/O Control
- System Protection
- Device Monitoring
- Application Extension

Unified APIs

- Standard API for H/W platform
- Cross-Platform Programming
- Easy upgrade and maintenance
- Ready to Use IoT Translator SDK

Multi-Layer Security Approach

Protect your devices effectively and efficiently



Device Protection

- Secure Boot Certified Device
- Authority Control
- TPM

Storage Security

- HDD access control
- Storage Encryption
- Configuration Tool

Application Add-On

- SSL/TLS
- Blacklisting and Whitelisting
- Powerful recovery and easy backup



Embedded Linux and Android Alliance

Unified Platform for Embedded Linux & Android Industrial Applications



9+ Software Partners from WW
50+ Projects Get Involved.....



ELAA FORUM
Embedded Linux & Android Alliance

- ARM Technologies
- Trends
- Applications
- Discussion

Join Now !

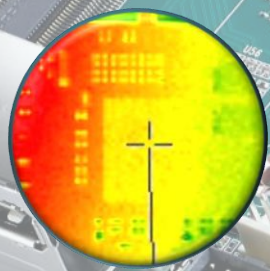
Rugged Design Empowers Embedded Boards

Over 20% boards

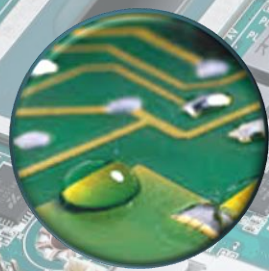
Extended Temperature

Over 15% boards

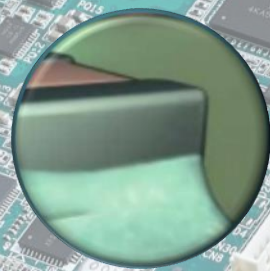
with Conformal Coating



-40~85 °C
Operation



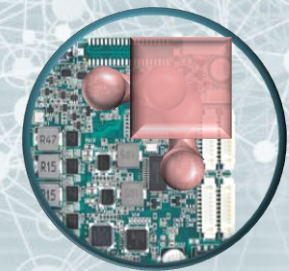
Conformal
Coating



IPC-A-610G
Production

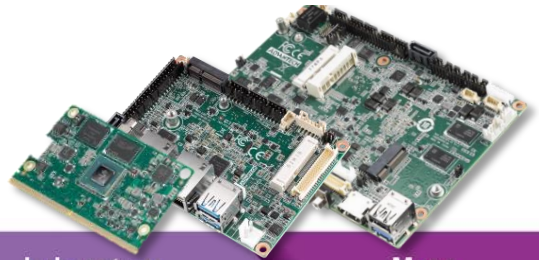
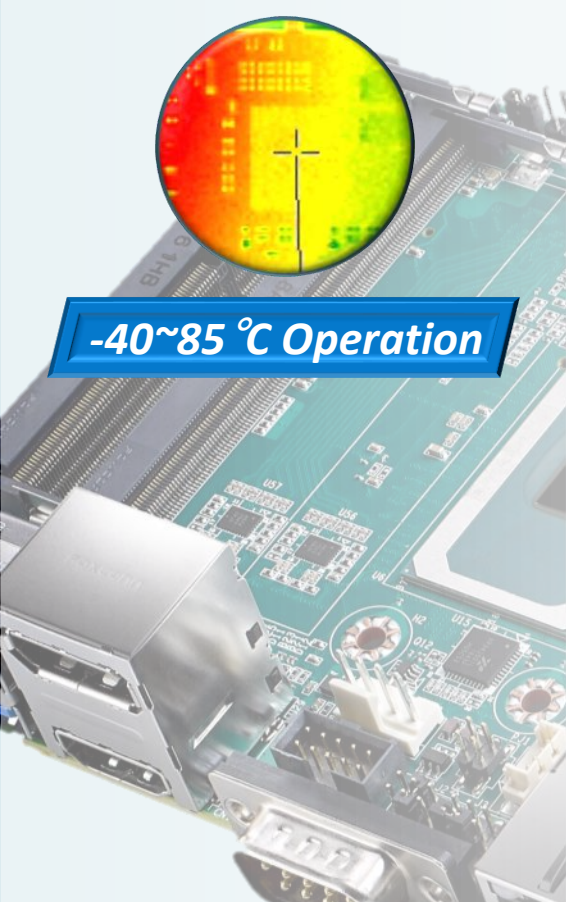


MIL-STD-810G
Vibration



Expertise
Customization

- 40~85°C Extended Operational Temp. Guarantee



Component Selection



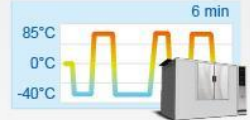
- Industrial grade power solution
- -40 ~ 85°C companion chip
- Centralized component management center (CMC)

Strict Thermal Design



- FloTHERM simulation tool finds hot spots
- Innovation thermal solution: DHCS, QFCS

Laboratory Validation



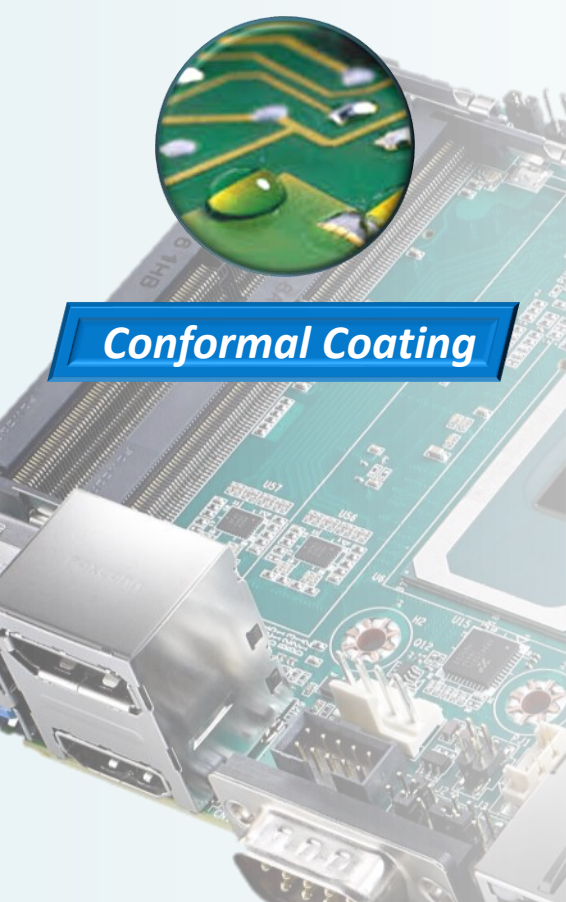
- Industrial standard -40 ~ 85°C validation: IEC60068-2-1, IEC60068-2-2, IEC60068-2-78, IEC60068-2-14

Mass Production



- Phoenix: 100% testing in chamber before shipping
- Phoebus: regular ongoing reliability tests (ORT)

Conformal Coating for Water/Dust Proof

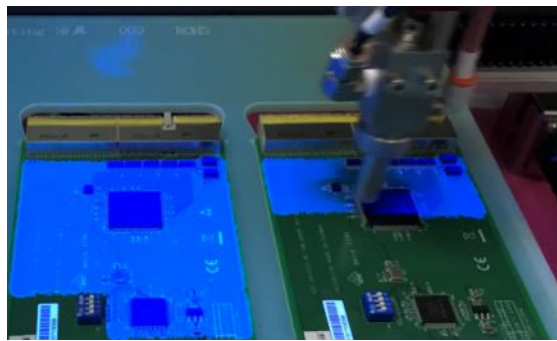


Conformal Coating

In-House Coating Ability
- One-stop-shop and Easy for Customer Service

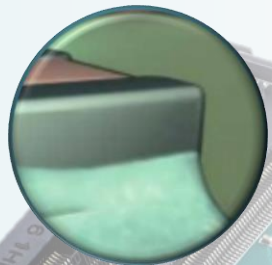
Automatic Coating Machine PVT Delta6
- Shop Floor System for backward analysis

Various Coating Material for Standards
- CONAP® CE-1171, ELECTROLUBE URC-800



	CE-1171	URC-800
Regulation	MIL-I-46058C MIL-STD-810B FED-STD-406 MIL-STD-810B	MIL-I-46085C ASTM B117-03 IPC-CC-830 UL, RoHS
Temperature	-65°C~125°C	-45°C to +140°C
Insulation (Ω)	1.5×10^{13}	1×10^{16}

Reliable Design & Manufacture Process



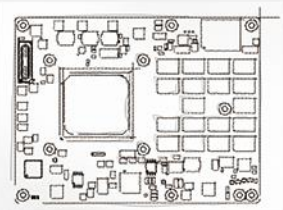
IPC-A-610G Class 3

IPC
Validation Services
RECOGNIZED



PCB Design & Manufacturing

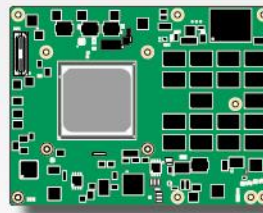
Top Design Quality



- Tighter layout design rule
- ISO certified manufacture
- Monthly quality testing
- IPC-A 6012 Class 3 compliant

PCB Inspection

Tight Quality Check



- Highest printed board inspection in IPC standard
- 10% sample test for each batch in house or 3th party lab
- IPC-A 600 Class 3 compliant

Board Manufacturing & Inspection

High Product Reliability



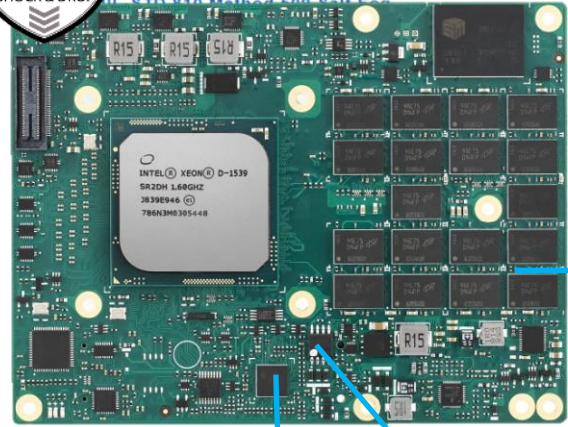
- Inspection with IPC-A qualified
- 100% functional check & visual inspection
- Regular statistical process & quality track system
- IPC-A 600 Class 3 compliant

Strict Design & Reliable Manufacture Process

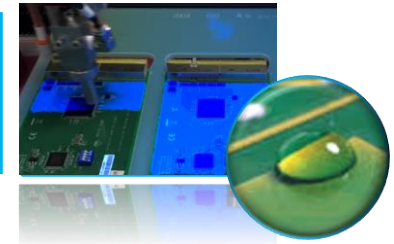


MIL-STD-810G

- MIL-STD 810 Method 500 Low Pressure (Altitude)
- MIL-STD 810 Method 501 High Temperature
- MIL-STD 810 Method 502 Low Temperature
- MIL-STD 810 Method 503 Temperature Shock
- L-STD 810 Method 504 Contamination by Fluids
- L-STD 810 Method 505 Solar Radiation (Sunshine)
- L-STD 810 Method 506 Rain (Wind/Blown Rain)
- L-STD 810 Method 508 Fungus
- MIL-STD 810 Method 509 Salt Fog



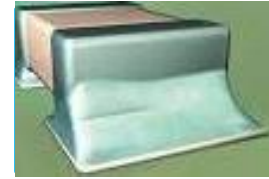
Conformal Coating



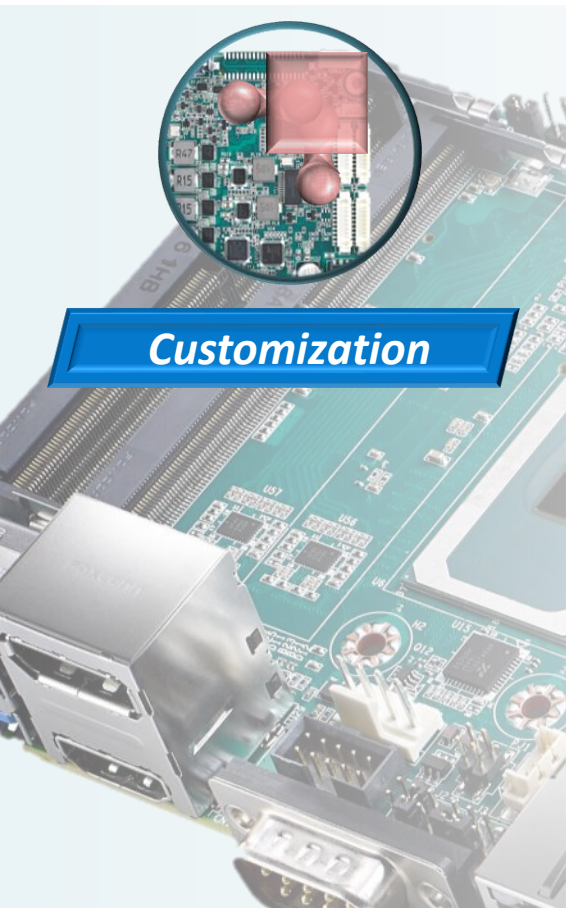
Corner Bonding



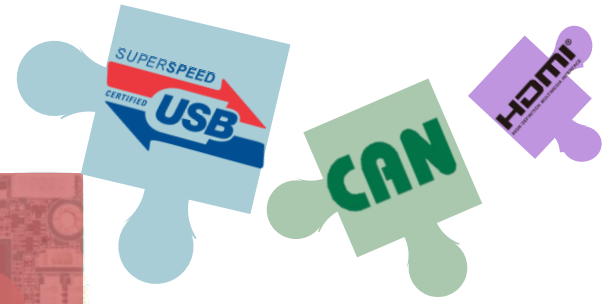
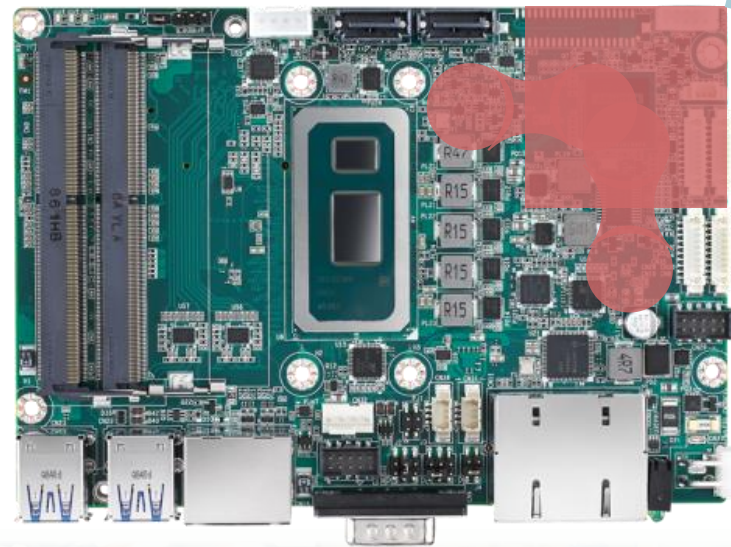
IPC-A-610G



Expertise Board Customization Service



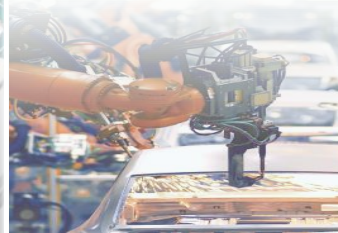
Customization



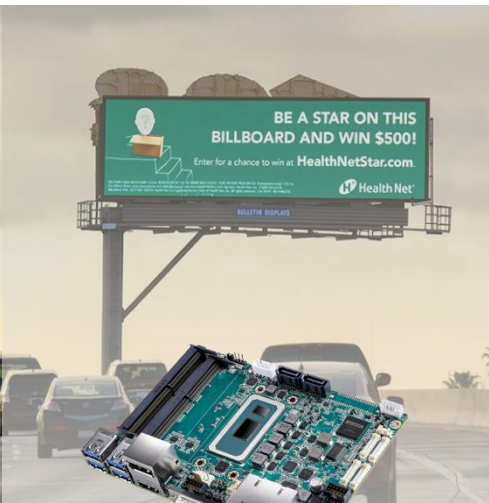
Min. Development Cost

More Fit in Features

Reliable Core Design



Full Product Offerings for Rugged & Harsh



MIO-5373
3.5" Intel Core



AIMB-U117
UTX Intel Atom



SOM-5992
COMe Intel Xeon



ROM-5620
SMARC i.MX 8X

Conformal Coating

IPC-A-610G

MIL-STD-810G

Extended Temperature -20/-40°C to 85°C

Co-Creating the Future of the IoT World

