

Born to be perfect ▶



1U 19" Fanless Server

19" Rack-mount Rugged Fanless HPS+GPU



Extended
Temperature
+70°C
-40°C

CPU Full Speed



- ▶ 1U, 19" Rack Mount Fanless Core i7 Server
- ▶ Rugged design for reliability under demanding MIL-STD-810G/DO-160/MIL-461F Shock, Vibration, EMI/EMC conditions
- ▶ EN50155 Compliance for moving vehicles, railway, etc.
- ▶ Multi-Display Management support by AMD E8860 supports 6 clone/independent/extended Modes
- ▶ Superior expansion up to 10x GbE ports or dual-10GbE SFP
- ▶ 32 GB DDR4 high capacity support by Intel 6th Gen. Skylake ROC249A

PERFECTRON

PERFECTRON.COM





1U 19" Rack-mount Rugged Fanless HPS + GPU

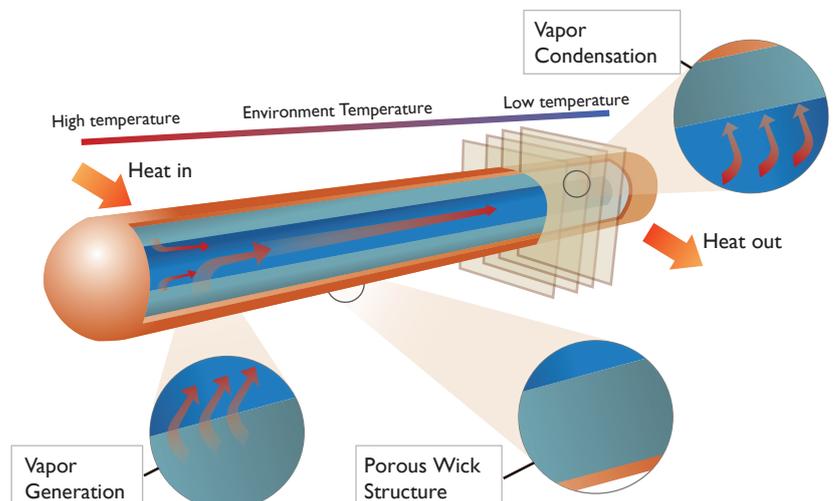
Ultimate Compact Rugged COTS for real-time communication and surveillance control

In combat operation command center, monitors are transmitting real-time operation from satellite, air, ground or naval radar. Only with the smoothest live tracking, officers in thousands miles away can make accurate decisions within shortest time to accomplish the mission, guard their sovereignty and most importantly to send their servicemen back safely. While scenario change to rolling stock, servers onboard are main controls for surveillance, diagnostics, media content and communication, etc.. key functions to assure train's safety, schedule accuracy and advanced passenger services. It takes rugged design high performance servers to triumph harsh operating environments in moving status and can still provide highest computing capability.

PERFECTRON's 1U 19" rack-mount rugged fanless HPS are designed with below major concepts so to win customers in railway, maritime and combat control room.

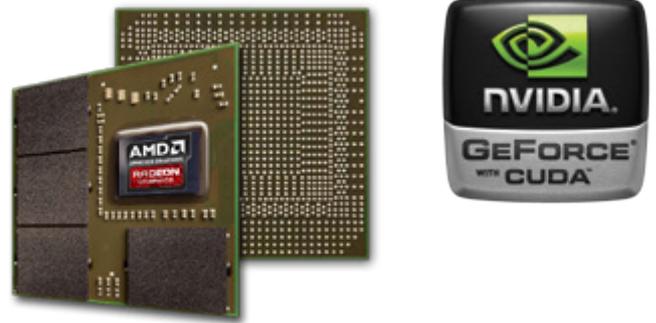
High efficiency Thermal Solutions support $-40^{\circ}\text{C}\sim+70^{\circ}\text{C}$

For 19" rack-mount, PERFECTRON strikes to present fanless solution with Intel® quad-core Core i7 in 1U height (44mm) that can operate from -40°C to $+70^{\circ}\text{C}$. The high efficiency thermal solution is composed with multi heat dissipating parts like vacuumed copper heat pipes, heat sinks and honeycomb vents on chassis. Honeycomb dissipating vents are constructed on the top and the sides to increase the dissipating area. The honeycomb cells can achieve faster heat dissipation without occupying much space. Two heat spreaders and two heat sinks are installed to create a magnificent ventilating structure. Six heat pipes are implemented to conduct the heat to the thermal modules on the two sides of the system. This phenomenal combination can bring out the best dissipating effect which CPU that in ROC235A Ivy Bridge platform has proved can full speed work at 3.1GHz up to $+55^{\circ}\text{C}$ and remain at 2.3GHz at $+70^{\circ}\text{C}$; while for ROC249A, with CPU 6th Gen. Skylake-S and AMD E8860 GPU, it can still work in extended temperature from -20°C to $+60^{\circ}\text{C}$. It is the important guarantee for best stability, high MTBF and no risk while facing sudden air-condition failure.



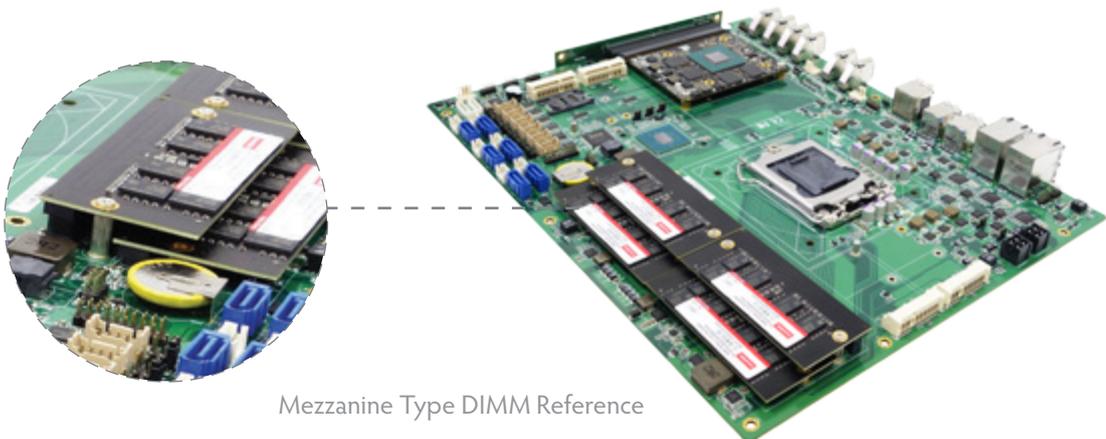
Powerful Graphic with AMD Radeon™ E8860 for 6 Independent DisplayPort

Not only with high power processor, high-end GPU is crucially needed to ensure graphics data transition and calculation within mean time. ROC249A builds in graphics card with AMD E8860, it is proven to pass 3D mark scored 2689 and which can drive up to six independent DisplayPort, it is dynamically configurable for many power and performance requirements. The E8860 embedded GPU provides enhancement technology for GPGPU parallel processing with OpenCL 1.2 to graphic acceleration with OpenGL 4.2 and up to six digital outputs.



High Speed by high capacity up to 32GB DDR4 Memory

To accelerate communication between GPU and CPU, the key is memory cache. With latest Intel Skylake i7-6700, ROC249A can support high capacity memory DDR4 up to 32GB which would be excellent to accelerate read/write speed for big data acquisition and transmission applications.



Versatile expansion capability for dual 10GbE SFP

To fulfill flexibility and high-speed bus integration, ROC249A provides rich expansion slots including 1 set of PCIe x16 or 1 sets of mini PCIe connectors internally. (if AMD graphic card is not installed) It can use to expand two 10GbE high-speed SFP or up to ten GbE LAN for applications within networks.



MIL-STD 810G and Railway EN50155 certification ▶

PERFECTRON's 1U 19" rack-mount rugged fan-less HPS are born to support heavy information computing and graphic calculation demand in harsh environment thus pass MIL-STD 810G environmentally test:

- ▶ Method 507.5, Procedure II (Temperature & Humidity)
- ▶ Method 516.6 Shock-Procedure V Non-Operating (Mechanical Shock)
- ▶ Method 516.6 Shock-Procedure I Operating (Mechanical Shock)
- ▶ Method 514.6 Vibration Category 24/Non-Operating (Category 20 & 24, Vibration)
- ▶ Method 514.6 Vibration Category 20/Operating (Category 20 & 24, Vibration)
- ▶ Method 501.5, Procedure I (Storage/High Temperature)
- ▶ Method 501.5, Procedure II (Operation/High Temperature)
- ▶ Method 502.5, Procedure I (Storage/Low Temperature)
- ▶ Method 502.5, Procedure II (Operation/Low Temperature)
- ▶ Method 503.5, Procedure I (Temperature shock)



EN50155 Certificates ▶

EN50155, the environmental test, EMC test, safety test and performance test especially for moving vehicles, rolling stock computers are highly considered during developing stage of PERFECTRON's 1U 19" HPS. Thus the HPS are compliant with EN50155 and with certificates by request:

- Clause 12.2.1 Visual inspection
- Clause 12.2.2 Performance test
- Clause 12.2.9 Insulation test
- Clause 12.2.11 Vibration, shock and bump test





ROC249A

1U 19" Rack-mount Rugged Fan-less HPS
(High Performance Server)

- ▶ Intel® 6th Gen. Skylake-S Chipset Q170
- ▶ Intel® Core i7-6700TE (4C/8M, 2.4GHz)
- ▶ Memory supports SO-DIMM DDR4/2133 MHz up to 32GB
- ▶ Graphic AMD E8860 up to 6x Display output build in
- ▶ Multi-display HDMI, DisplayPort
- ▶ 4x USB, 3x COM, dual LAN
- ▶ 1 x mPCIe expansion slot
- ▶ 2x 2.5" HDD/SSD easy swap tray
- ▶ Power 16V to 32V DC-in
- ▶ Extended operating temp. -20 to 60°C
- ▶ MIL-STD-810G compliance



ROC235A

1U 19" Rack-mount Rugged Fan-less HPS
(High Performance Server)

- ▶ Intel 3rd Gen. Ivy Bridge Chipset QM77
- ▶ Intel Ivy Bridge 22nm processor i7-3610QE(4C/6M, 3.3 GHZ)
- ▶ Memory supports DDR3 1333/1600MHz up to 16GB
- ▶ Multi-display VGA, HDMI, DVI-D
- ▶ 2x GbE LAN, 6x USB
- ▶ 1x mini PCIe, 2x PCI expansion
- ▶ Terminal block 9~24V DC-in
- ▶ Extended operating temp. -40 to 70°C
- ▶ EN50155 compliance
- ▶ Redundant UPS & back up batteries model by request



ROC235B

1U 19" Rack-mount Rugged Fan-less HPS
(High Performance Server)

- ▶ Intel 3rd Gen. Ivy Bridge Chipset QM77
- ▶ Intel Ivy Bridge 22nm processor i7-3610QE(4C/6M, 3.3 GHZ)
- ▶ Memory supports DDR3 1333/1600MHz up to 16GB
- ▶ Multi-display VGA, HDMI, DVI-D
- ▶ 2x GbE LAN, 6x USB
- ▶ 1x mini PCIe, 2x PCI expansion
- ▶ 2x accessible 2.5" storage
- ▶ Power 100~240V AC-in
- ▶ Extended operating temp. -20 to 60°C
- ▶ EN50155 compliance



ROC236A

1U 19" Rack-mount Rugged Fan-less HPS
(High Performance Server)

- ▶ Intel 3rd Gen. Ivy Bridge Chipset HM76
- ▶ Intel Ivy Bridge 22nm processor i7-3517UE(2C/4M, 1.7 GHZ)
- ▶ Memory supports DDR3 1333/1600MHz up to 8GB
- ▶ Display VGA output
- ▶ 2x GbE LAN, 8x USB
- ▶ 1x mini PCIe expansion
- ▶ DC jack connector 9~36V DC-in
- ▶ Extended operating temp. -40 to 70°C
- ▶ EN50155 compliance

Technical Specifications

ROC249A

Chipset

- Intel® Q170

CPU

- i7-6700TE

Memory

- Up to 32GB

Storage

- 2 x 2.5 SATAIII accessible

Housing

- Aluminum

Dimension (W x H x D)

- 440 x 44 x 380 mm

Ethernet

- 2 x LAN

COM

- 3 x DB9 connector
(1 x RS2323/422/485, 2 x RS-232)

Graphics Display

- Optional for AMD E8860 up to 6x mini DisplayPort output

Display

- 1 x HDMI from CPU

- 2 x DP++

USB

- 4 x USB 3.0

Power Input

- 16V to 32V DC-in

Expansion

- 1 x PCIe16 Slot

- 1x mini PCIe Slot

Operating Temp.

- -20 to 60°C

ROC235A

Chipset

- Intel® QM77

CPU

- i7-3610QE

Memory

- Up to 16GB

Storage

- 2 x SATAIII

Housing

- Aluminum

Dimension (W x H x D)

- 440 x 44 x 380 mm

Ethernet

- 2 x LAN

COM

- 1 x RS232/422/485

Display

- 1 x VGA

- 1 x HDMI

- 1 x DVI-D

USB

- 2 x USB 2.0

- 4 x USB 3.0

Power Input

- 9~24V DC

Expansion

- 2 x PCI

- 1 x mPCIe

Operating Temp.

- -40 to +70°C

ROC235B

Chipset

- Intel® QM77

CPU

- i7-3610QE

Memory

- Up to 16GB

Storage

- 2 x 2.5 SATAIII accessible

Housing

- Aluminum

Dimension (W x H x D)

- 440 x 44 x 380 mm

Ethernet

- 2 x LAN

COM

- 1 x RS232/422/485

Display

- 1 x VGA

- 1 x HDMI

- 1 x DVI-D

USB

- 2 x USB 2.0

- 4 x USB 3.0

Power Input

- 100~240V AC-in

Expansion

- 2 x PCI

- 1 x mPCIe

Operating Temp.

- -20 to +60°C

ROC236A

Chipset

- Intel® HM76

CPU

- i7-3517UE

Memory

- Up to 8GB

Storage

- 2 x SATAIII

Housing

- Aluminum

Dimension (W x H x D)

- 440 x 44 x 287 mm

Ethernet

- 2 x LAN

COM

- 1 x RS232/422/485

Display

- 1 x VGA

USB

- 2 x USB 3.0

- 6 x USB 2.0

Power Input

- 9V~36V DC-in

Expansion

- 1 x mPCIe

Operating Temp.

- -40 to +70°C

Ordering Information

ROC249A

19" 1U Rack-mount Intel® Q170 Fanless Rugged System with Intel® i7-6700TE, AMD E8860 graphic card build in supports up to 6 independent mini DisplayPort output, 16V to 32V DC-in, extended temp. -20 to 60°C

ROC235A-UT

19" 1U Rack-mount Intel® QM77 Fanless Rugged System with Intel® Core™ i7/i5/i3 processors, 2 x PCI slot, 1 x Mini PCIe, Dual LAN, 6 x USB, 1 x VGA, 1 x DVI, 1 x HDMI, 9V~24V DC-in, Extended Temperature. -40 to 70°C

ROC235B

19" 1U Rack-mount Intel® QM77 Fanless Rugged System with Intel® Core™ i7/i5/i3 Processors, 2 x Easy Swap SSD, 2 x PCI slot, 1 x Mini PCIe, Dual LAN, 6 x USB, 1 x VGA, 1 x DVI, 1 x HDMI, 100V~240V AC-in, Extended Temperature. -20 to 60°C

ROC236A-UT

19" 1U Rack-mount Intel® HM76 Fanless Rugged System with Core™ i7 processor, 1 x Mini PCIe, 2 x LAN, 8 x USB, 1 x VGA, 9V to 36V DC-in, Extended Temperature. -40 to 70°C

Contact us

perfect@perfectron.com

www.perfectron.com

+886-2-8911-8077

