

PERFECTRON



Embedded Platform Solutions
Comprehensive Embedded SBC &
Rugged Computing Systems
2014 Product Catalog

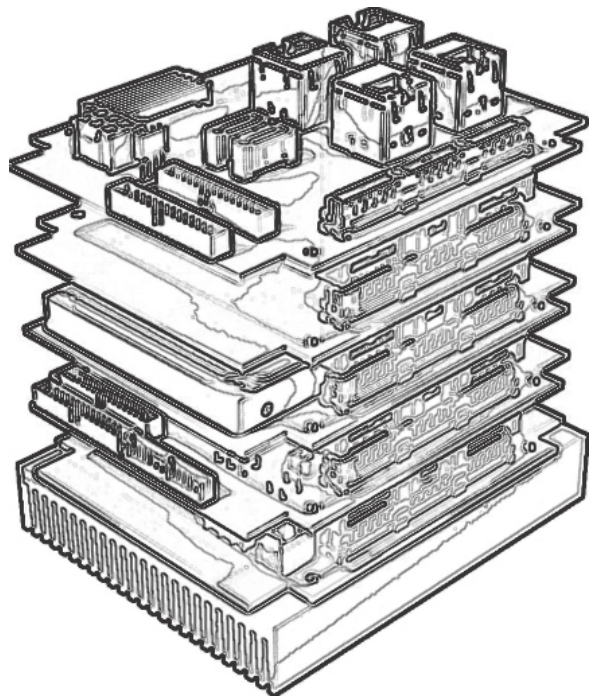


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ABOUT PERFECTRON

Headquartered in Taiwan, PERFECTRON focuses on providing wide-temp embedded computer solutions for industrial automation, process control, transportation, telecommunication and many other industries. PERFECTRON's drive toward innovative technological standards enables the company to offer a portfolio containing wide range of CPU modules in various form factors, as well as industrial motherboards, wide-temp fanless rugged systems, display solutions and computer-on-modules that can be implemented to withstand extreme environment conditions, shock and vibration.



Truly Extended Temp. Grade Components



PERFECTRON specializes in the design and manufacture of single board computers (SBCs) tailored to meet the computing and ruggedize needs of our customers. PERFECTRON insists on designing products from board level only with truly extended temperature grade components such as power solutions (Capacitor/Chock/MOSEFT), Clock Generator (Oscillator/Crystal/Clock Gen), Super I/O, TPM, etc. to ensure motherboard's performance under low temperature environments from -40°C up to +85°C.

CPU Full Speed +70°C Over Wide Range Temp.



PERFECTRON's fanless systems present excellent wide range temperature coverage due to advanced design of liquid-vapors vacuum copper heat pipe instead of usual aluminum heat sink. And more profound feature is under such a wide range temperature difference, the CPU is proven running full speed from Intel® ATOM to Quad Core i7. For example, PERFECTRON's Core i Performance series is a model born for extreme temperature environments by proven outstanding operation performance under crucial conditions. Powered with Intel® Ivy Bridge Quad Cores i7-3610QE (45W), it survives +70°C without processor throttling (reduced frequency) and continually presents superior 2.3 GHz clock speed high performance under crucial conditions.

Anti-Vibration by Rugged Connector



Known for application's ruggedness, reliability, sealing properties, and compactness characteristics, PCIe/104 & PFE connectors are ideal for high-end electronic equipment used in extreme environmental conditions. Our rugged connectors have a functional life greater than 10,000 mating cycles, with easy connect/disconnect and blind mating. The PCIe/104 standard specifies Samtec's Q2™ QMS/QFS series in a three bank (156-pin) orientation for module stacking. Samtec specifically designed the QMS/QFS series with a 15, 24 mm stack height for top and bottom board stacking. Q2™ has triple the wipe of many high speed mezzanine interconnects making it appropriate for rugged applications.

Critical Parts Soldering on Board



To achieve high standard of shock and vibration demand, PERFECTRON provides motherboards with components soldering on board including CPU, RAM I/C and storage NAND drive all BGA types soldered on board. Which not only enhances the conductivity for circuit dissipation also improves the robustness of motherboards. Benefits of soldering :

- High density
- Heat conduction
- Maximum resistance to shock and vibration
- Lower resistance and inductance at the connection
- Better and more predictable high-frequency performance
- High EMC compatibility (lower radiated emissions) and the smaller lead inductance

**EXTENDED
TEMPERATURE**

-40°C / +85°C

StackPC

New Approach for stackable computers

Many Common I/O Interfaces Deliver through StackPC Connector: USB, RS-485/CAN, SPI, Ethernet, SATA

Easy of Dual Gigabit Ethernet Interface Implementation:
1. Dual GbE delivery through StackPC connectors to front panel connectors
2. Easy PoE implementation

Interface Connectors (Standard PC or Customized)

One Way Stack Orientation Excludes Using Switches for PCI-Express, USB, SATA and Others for Lane-Shifting Implementation

Common Approach for Module Design and Placement in Rugged

Standard SATA SSD Can Be Used Inside of Stack without Cables Connection

Legacy PCI Bus or x16 PCI-Express BUS Support

Mated Height Up to 20 mm, Tall Components for Host and Power Module Can Be Used According to StackPC Specification

One Way Stack Orientation

StackPC Interface Module

StackPC Peripheral Module

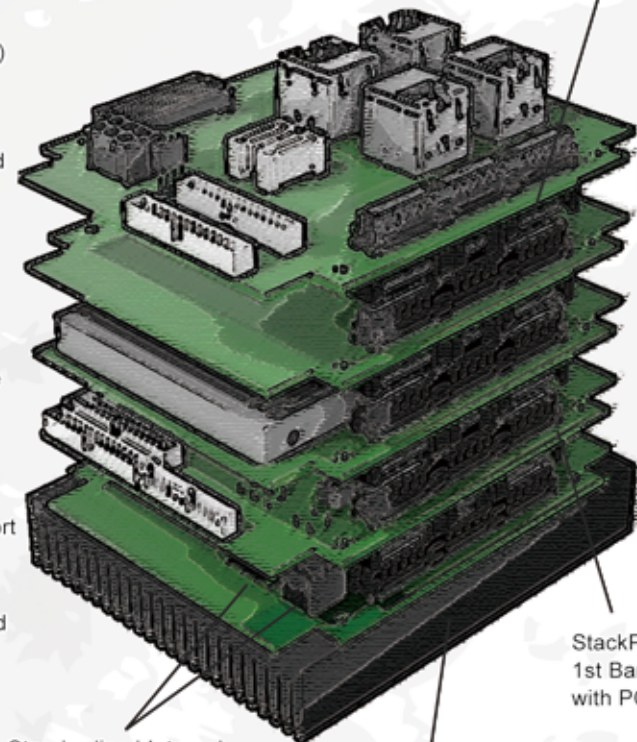
StackPC Storage Module

StackPC Host Module

Heatsink

StackPC Power Source Module Heatsink

StackPC Pinout, 1st Bank Fully Compatible with PCIe/104



Standardized Internal Power Connectors

Common Approach for Cooling Inside of Stack Enclosures

3.5 SBC



| Model Name | | OXY5313A OXY5315A | OXY5314A OXY5319A | OXY5316A OXY5320A OXY5321A | OXY5335A OXY5336A |
|-----------------|----------------------------|--|--|--|---|
| System | CPU Type | Intel® Pineview D525/N455 1.8 GHz/1.66 GHz | Intel® Tunnel Creek E660T/ E620T 1.3 GHz/600 MHz | Intel® Cedarview N2800/N2600/D2550 1.86 GHz/1.6 GHz/1.86 GHz | Intel® Ivy Bridge 22nm Core i7/i5/i3, BGA type |
| | Chipset | Intel® ICH8M | Intel® EG20T | Intel® NM10 | Intel® QM77/HM76 |
| | Memory Type | 1 x 204-pin SO-DIMM DDR3 800/1066 MHz up to 4 GB/ 2 GB | 1GB/512MB DDR2 667/800 MHz Memory IC onboard | 1 x 204-pin SO-DIMM DDR3 800/1066 MHz up to 4 GB/ 2 GB/4 GB | 1 x 204-pin SO-DIMM DDR3 1333/1600 MHz up to 8 GB |
| | BIOS | AMI® BIOS | AMI® BIOS | AMI® BIOS | AMI® UEFI BIOS |
| | Watchdog | 1-255 sec. or 1-255 min. software programmable | 1-255 sec. or 1-255 min. software programmable | 1-255 sec. or 1-255 min. software programmable | 1-255 sec. or 1-255 min. software programmable |
| Expansion Slot | Mini PCIe | 1 | 1 | 1 | 1 x mPCIe 1 x mSATA |
| Display | Chipset | Intel® GMA3150 Graphic Core | Chrontel 7317B SDVO to VGA | Intel® GMA3650VR Graphic Core SGX545 | Intel® HD Graphics 4000 integrated graphics engine |
| | LVDS | Single Channel 18-bit LVDS | Single Channel 18/24-bit LVDS | Dual Channel 24-bit LVDS | Dual Channel 24-bit LVDS |
| | Display Type | VGA, LVDS | VGA, LVDS | LVDS, DVI-I | VGA, LVDS, DVI-I |
| Audio | Codec | Realtek ALC662 High Definition Audio Codec | Realtek ALC886 High Definition Audio Codec | Realtek ALC269 High Definition Audio Codec | Realtek ALC887 High Definition Audio Codec |
| Ethernet | Chipset | 2 x RTL8111DL GbE LAN | 2 x Intel® 82574IT GbE LAN | 2 x RTL8111E GbE LAN | Intel® 82579LM & 82574L GbE |
| Rear I/O | VGA | 1 | 1 | N/A | 1 |
| | DVI-I | N/A | N/A | 1 | 1 |
| | Ethernet | 2 x RJ45 | 2 x RJ45 | 2 x RJ45 | 2 x RJ45 |
| | COM | 1 x RS232/422/485 with 5V/12V selectable | 1 x RS-232/422/485 with 5V/12V selectable | 1 x RS232/422/485 with 5V/12V selectable | 1 x RS232/422/485 |
| | USB | 2 x USB 2.0 | 2 x USB 2.0 | 1 x USB 2.0 | 2 x USB 3.0 |
| | Reset Button | 1 | N/A | 1 | N/A |
| | SATA | 2 x SATAII | 1 x SATAII | 1 x SATAII | 2 x SATAIII |
| Internal I/O | SSD | 1 x CF Socket | 1 x CF Socket | 1 x CFast socket | N/A |
| | COM | 3 x RS-232 with 5V/12V selectable 4 x RS232 | 3 x RS232 | 4 x RS232 with 5V/12V selectable | 3 x RS232 |
| | USB | 6 x USB 2.0 | N/A | 6 x USB 2.0 | 8 x USB 2.0 |
| | SIM card Holder | N/A | N/A | N/A | 1 |
| | DIO | 4 in/4 out | 4 in/4 out | 4 in/4 out | 4 in/4 out |
| | LVDS | 1 | 1 | 1 | 1 |
| | CAN Bus | N/A | 1 | N/A | N/A |
| | SMBus | N/A | 1 | N/A | N/A |
| | PS/2 | N/A | N/A | 1 | 1 |
| | LPT | 1 | N/A | 1 | 1 |
| | Mechanical and Environment | Power Type | 12V DC-in | 12V DC-in | 12V DC-in |
| Dimension | | 146 x 102 mm | 146 x 102 mm | 146 x 102 mm | 146 x 102 mm |
| Operating Temp. | | -20°C~+70°C | -20°C~+70°C | -20°C~+70°C | -20°C~+70°C |

EPIC SBC



EBX SBC



| Model Name | | OXY5622A | OXY5737A |
|----------------------------|-----------------|---|--|
| System | CPU Type | Intel® Bay Trail-I E3845 1.91 GHz (10W) E3815 1.46 GHz (5W) | Intel® Haswell 22nm Core i7/i5/i3, BGA 1364 |
| | Chipset | N/A | Intel® QM87 |
| | Memory Type | 1 x XR-DIMM DDR3 1600 MHz up to 4 GB | 1 x XR-DIMM DDR3 1600 MHz up to 8 GB |
| | NAND Drive | 32 GB | 32 GB |
| | BIOS | AMI® UEFI BIOS | AMI® UEFI BIOS |
| | Watchdog | 1-255 sec. or 1-255 min. software programmable | 1-255 sec. or 1-255 min. software programmable |
| Expansion Slot | Mini PCIe | 2 | 1 x mPCIe 1 x mPCIe/mSATA |
| | StackPC | N/A | 1 (4 x PCIe x 1, 2 x USB 2.0, LPC, SMBus, 2 x SATA) |
| | FPE | N/A | 1 (1 x PCIe x 16) |
| Display | Chipset | Intel® Gen7 Graphic DX11 | Intel® GT8 HD Grapics integrated graphics engine |
| | LVDS | Dual Channel 24-bit LVDS | Dual Channel 24-bit LVDS |
| | Display Type | VGA, 2 x DP, LVDS | 2 x DP, DVI-I, LVDS |
| Audio | Codec | Realtek ALC887 High Definition Audio Codec | Realtek ALC887 High Definition Audio Codec |
| Ethernet | Chipset | 2 x Intel® I210IT GbE | Intel® I218LM & I210IT GbE |
| Rear I/O | DVI-I | N/A | 1 |
| | DP | 2 | 2 |
| | Ethernet | 2 x RJ45 | 2 x RJ45 |
| | COM | N/A | 1 x RS232/422/485 with 5V/12V selectable |
| | USB | 1 x USB 3.0 2 x USB 2.0 | 2 x USB 3.0 2 x USB 3.0 (Front) |
| | Audio | Line-out, Mic-in | Line-out, Mic-in |
| | Power Button | 1 | 1 (Front) |
| | Reset Button | N/A | 1 (Front) |
| Internal I/O | SATA | 2 x SATAII (optional with CFAST & NAND Drive) | 2 x SATAIII |
| | SSD | 1 x CFAST socket | N/A |
| | VGA | 1 | N/A |
| | COM | 2 x RS232 with 5V/12V selectable 4 x RS422/485 with isolation | 4 x RS232 with 5V/12V selectable 1 x RS232/422/485 with 5V/12V selectable |
| | USB | N/A | 2 x USB 2.0 |
| | SIM card Holder | 1 | 1 |
| | DIO | 8 in/8 out | 8 in/8 out |
| | LVDS | 1 | 1 |
| | Touch | 1 | 1 |
| Mechanical and Environment | Power Type | 9~36V DC-in | 9~36V DC-in |
| | Dimension | 165 x 115 mm | 203 x 146 mm |
| | Operating Temp. | -20°C~+70°C | -20°C~+70°C |

PC/104+ & StackPC (PCIe/104)



| Model Name | OXY5413A OXY5415A | OXY5535B | | |
|------------------------|-----------------------------------|---|--|---|
| System | CPU Type | Intel® Pineview D525/N455 1.80 GHz/1.66 GHz | Intel® Ivy Bridge Core i7/i3/ Celeron, BGA type (17W) | |
| | Chipset | Intel® ICH8M | Intel® QM77 | |
| | Memory Type | 1 x 204-pin SO-DIMM DDR3 800 up to 4 GB/2 GB | 1 x XR-DIMM DDR3 1600 MHz up to 8 GB | |
| | NAND Drive | N/A | 32 GB | |
| | BIOS | AMI® BIOS | AMI® UEFI BIOS | |
| | Watchdog | 1-255 sec. or 1-255 min. software programmable | 1-255 sec. or 1-255 min. software programmable | |
| | Expansion Slot | StackPC | N/A | 1 (2 x PCIe x 1, 1 x PCIe x 4, 6 x USB, 2 x SATA, 2 x GbE LAN, 1 x LPC, 2 x SPI, 1 x SMBUS, 2 x RS485 (FBUS)) |
| FPE | | N/A | 1 (1 x PCIe x 16) | |
| PC/104 | | 1 | N/A | |
| PCI-104 | | 1 | N/A | |
| Display | Chipset | Intel® GMA3150 Graphic Core | Intel® HD Graphics 4000 integrated graphics engine | |
| | LVDS | Single channel 18-bit LVDS | Single/Dual channel 24-bit LVDS | |
| | Display Type | LVDS, VGA | LVDS, VGA | |
| Audio | Codec | Realtek ALC269 High Definition Audio Codec | Realtek ALC887 High Definition Audio Codec | |
| Ethernet | Chipset | 2 x RTL8111DL GbE LAN | Intel® 82579LM & 82574IT GbE | |
| Internal I/O | VGA | 1 | 1 | |
| | DVI-D | N/A | 1 | |
| | SATA | 1 | 2 x SATA III | |
| | SSD | 1 x CFAST socket | N/A | |
| | COM | 2 | 2 x RS232 2 x RS422/485 with isolation | |
| | DIO | N/A | 4 in/4 out | |
| | USB | 4 | 2 x USB 2.0 | |
| | LVDS | 1 | 1 | |
| | Audio | N/A | 1 | |
| | PS/2 | N/A | 1 | |
| | Ethernet | 1 (pin-header, work with LAN card) | N/A | |
| | Mechanical and Environment | Power Type | 5V DC-in | 12V DC-in |
| | | Dimension | 96 x 115 mm | 96 x 115 mm |
| Operating Temp. | | -20°C~+70°C | -20°C~+70°C | |

StackPC (PCIe/104) Carrier Board



| Model Name | SK507 | |
|-----------------------------------|------------------------|---|
| StackPC | PCIe x 1 | 1 |
| | PCIe x 4 | 1 |
| | USB | 6 x USB 2.0 |
| | SATA | 2 |
| | Ethernet | 2 x GbE LAN |
| | LPC | 1 |
| | COM | 2 x RS485 |
| | FPE | PCIe x 16 |
| USB | | 4 x USB 3.0 |
| Expansion Slot | Mini PCIe | 2 |
| Rear I/O | DisplayPort | 1 (through FPE) |
| | VGA | 1 (through cable connecting to CPU module) |
| | GbE | 2 x RJ45 (through StackPC (from CPU module)) |
| | | 2 x RJ45 (through StackPC PCIe x 1 (Intel® 82574L)) |
| | USB 3.0 | 4 (through FPE) |
| Internal I/O | COM | 2 x RS485 (Terminal Blocks, Driver with Isolation) |
| | SATA | 1 |
| | SATA Power | 1 |
| | CFAST | 1 |
| | SIM Card Holder | 1 |
| Mechanical and Environment | Form Factor | EPIC |
| | Power Type | 9 to 24V DC-in |
| | Dimension | 115 x 165 mm |
| | Operating Temp. | -20 ~ +70°C |

COM Express Type 6



| Model Name | OXY5135B | |
|----------------------------|------------------|---|
| System | CPU Type | Intel® Ivy Bridge 22nm Core i7/i5/i3, BGA type |
| | Chipset | Intel® QM77 |
| | Memory Type | Dual Channel 4 GB DDR3 1600MHz Memory IC onboard |
| | BIOS | AMI® UEFI BIOS |
| | Watchdog | 1-255 sec. or 1-255 min. software programmable |
| Expansion Slot | PCIe x 16 | 1 |
| | PCIe x 1 | 7 |
| Display | Chipset | Intel® HD Graphics 4000 integrated graphics engine |
| | LVDS | Dual Channel 24-bit LVDS |
| | Display Type | Three DDI ports support HDMI/ DP/ SDVO/ DVI |
| Audio | Codec | Integrated Intel® High Definition Audio |
| Ethernet | Chipset | 1 x Intel® 82579LM GbE LAN |
| Internal I/O | SATA | 2 x SATAIII 2 x SATA II |
| | USB | 4 x USB 3.0/8 x USB 2.0 |
| | LPC bus | 1 |
| | SMBus | 1 |
| | I ² C | 1 |
| Mechanical and Environment | Power Type | AT mode (12V) ATX mode (12V & 5Vsb) |
| | Dimension | 125 x 95 mm |
| | Operating Temp. | -20°C~+70°C |

Carrier Board for COM Express Type 6



| Model Name | SK505 | |
|----------------------------|---------------------|---------------------------|
| System | BIOS | SPI ROM socket |
| | Super I/O | Fintek F81866-1 |
| Expansion Slot | PCIe x 16 | 1 |
| | PCIe x 1 | 3 |
| | Mini PCIe | 1 |
| Audio | Codec | Realtek ACL887 |
| Rear I/O | DVI-D | 1 |
| | HDMI | 1 |
| | DP | 1 |
| | VGA | 1 |
| | Ethernet | 1 x RJ45 |
| | Audio | Mic-in, Line-in, Line-out |
| | USB | 4 x USB 3.0/2.0 |
| | COM | 1 x RS232/422/485 |
| | PS/2 | 2 x Jack |
| | e-SATA | 1 |
| I/O Interface | SATA | 2 x SATAII (3 Gb/s) |
| | SSD | 1 x CFast socket |
| | USB | 5 |
| | COM | 6 |
| | UART | 2 |
| | Power Button | 1 |
| | Reset Button | 1 |
| | ATX Power Connector | 1 |
| | LVDS | 2 |
| | SIM Card Holder | 1 |
| Mechanical and Environment | Power Type | ATX (24-pin) |
| | Dimension | 305 x 244 mm |
| | Operating Temp. | -40 ~ 85°C |

DC/DC Power Converter Module



| Model Name | SK701 |
|----------------------|---|
| Main Features | StackPC 60W DC/DC Converter Module with 9V to 36V input, 12V output |
| | 12V DC output up to 5 Amp |
| | Hot swap/Live insertion |
| | Compact size |
| | Supports wide operating temp. -20°C~+70°C |

StackPC & PCIe/104 Peripherals



| Model Name | SK210 |
|----------------------|---|
| Type | NVIDIA GT730M Graphics Card |
| Main Features | PCIe/104 compatible |
| | NVIDIA GT730M supports 384 CUDA cores |
| | 1GB DDR Memory |
| | 4 x DP up to 3840 x 2160 |
| | 1 x VGA by pin-header up to 2048 x 1536 |
| | Supports wide operating temp. -20~+70°C |



| Model Name | SK401 |
|----------------------|---|
| Type | Storage Card |
| Main Features | PCIe/104 compatible |
| | 2 x 2.5" SSD/HDD (Share with mSATA) |
| | 1 x 7-pin, 1 x 7+15-pin |
| | 2 x mSATA |
| | Supports wide operating temp. -20°C~+70°C |



| Model Name | SK506 |
|----------------------|---|
| Type | Quad-Port Gigabit Ethernet Card |
| Main Features | PCIe/104 compatible |
| | 1 x PCIe_4 Intel® i350-AM4 supports 4 x GbE |
| | 2 x GbE through StackPC |
| | Supports wide operating temp. -20°C~+70°C |



| Model Name | SK704 |
|----------------------|---|
| Type | StackPC Power Card |
| Main Features | PCIe/104 compatible |
| | 9~36V DC-in |
| | Up to 105W max. |
| | Support Delay on/off |
| | Supports wide operating temp. -20°C~+70°C |

Industrial Mini-ITX Motherboards



| Model Name | | INS8320B INS8321B | INS8335A | INS8335C | INS8346B | |
|----------------------------|--------------|--|--|--|---|---------------------------|
| System | CPU Type | Intel® Cedarview N2600/ D2550 1.6 GHz/1.86 GHz | Intel® 22nm Ivy Bridge Processor (Mobile) socket (rPGA988) | Intel® 22nm Ivy Bridge Processor (Mobile) socket (rPGA988) | Intel® LGA1155 Core i7/i5/i3 Processor | |
| | Chipset | Intel® NM10 | Intel® QM77 | Intel® QM77 | Intel® Q77 | |
| | Memory Type | 2 x 204-pin SO-DIMM DDR3 800/1066 up to 4 GB/2 GB | 2 x 204-pin SO-DIMM DDR3 1333/1600 up to 16 GB | 2 x 204-pin SO-DIMM DDR3 1333/1600 up to 16 GB | 2 x 204-pin SO-DIMM DDR3 1333/1600 up to 16 GB | |
| | BIOS | AMI® BIOS | AMI® UEFI BIOS | AMI® UEFI BIOS | AMI® UEFI BIOS | |
| | iAMT | N/A | Support iAMT 8.0 | Support iAMT 8.0 | Support iAMT 8.0 | |
| | Watchdog | 1-255 sec. or 1-255 min. software programmable | 1-255 sec. or 1-255 min. software programmable | 1-255 sec. or 1-255 min. software programmable | 1-255 sec. or 1-255 min. software programmable | |
| Expansion Slot | PCIe x 16 | N/A | N/A | N/A | 1 | |
| | PCIe x 1 | N/A | 1 | 1 | N/A | |
| | Mini PCIe | 1 x mPCIe 1 x mSATA (optional) | 1 | 2 x mPCIe 1 x mSATA | 1 x mPCIe 1 x mSATA | |
| | PCI | 1 | 1 | 1 | N/A | |
| Display | Chipset | Intel® GMA3650 VR Graphic Core SGX545 | Intel® HD Graphics 4000 integrated graphics engine | Intel® HD Graphics 4000 integrated graphics engine | Intel® HD Graphics 4000 integrated graphics engine | |
| | LVDS | Dual channel 24-bit LVDS | Dual channel 24-bit LVDS | Dual channel 24-bit LVDS | Dual channel 24-bit LVDS | |
| | Display Type | VGA, LVDS, DVI | VGA, LVDS, DVI, HDMI | VGA, LVDS, DVI, HDMI | VGA, LVDS, DVI, HDMI | |
| Audio | Codec | Realtek ALC887 High Definition Audio Codec | Realtek ALC892 High Definition Audio Codec | Realtek ALC892 High Definition Audio Codec | Realtek ALC892 High Definition Audio Codec | |
| Ethernet | Chipset | 2 x Intel® 82574L GbE | Intel® 82579LM & 82574IT GbE | Intel® 82579LM & 82574L GbE | Intel® 82579LM & 82574L GbE | |
| Rear I/O | VGA | 1 | 1 | 1 | 1 | |
| | DVI-D | 1 | 1 | 1 | 1 | |
| | HDMI | N/A | 1 | 1 | 1 | |
| | Ethernet | 2 x RJ45 | 2 x RJ45 | 2 x RJ45 | 2 x RJ45 | |
| | Audio | Mic-in, Line-out | Mic-in, Line-in, Line-out | Mic-in, Line-in, Line-out | Mic-in, Line-in, Line-out | |
| | COM | 1 x RS232/422/485 with 5V/12V selectable 1 x RS232 with 5V/12V selectable | 1 x RS232/422/485 with 5V/12V selectable | 1 x RS232/422/485 with 5V/12V selectable | 2 x RS232/422/485 with 5V/12V selectable | |
| | USB | 4 x USB 2.0 | 4 x USB 3.0 | 4 x USB 3.0 | 4 x USB 3.0 | |
| | PS/2 | N/A | N/A | 1 x KB, 1 x Mouse | N/A | |
| | Power | 1 (DC Jack) | 1 (DC Jack) | N/A | N/A | |
| | Internal I/O | SATA | 2 x SATA II | 2 x SATAIII 2 x SATAII | 2 x SATAIII 2 x SATAII | 2 x SATAIII 2 x SATAII |
| SSD | | N/A | 1 x CF-SATA | N/A | N/A | |
| COM | | 7 x RS232 with 5V/12V selectable 1 x RS232/422/485 with 5V/12V selectable | 2 x RS232 with 5V/12V selectable 1 x RS232 2 x RS232/422/485 with 5V/12V selectable | 2 x RS232 with 5V/12V selectable 1 x RS232 2 x RS232/422/485 with 5V/12V selectable | 4 x RS232 | |
| USB | | 3 x USB 2.0 | 4 x USB 2.0 | 4 x USB 2.0 | 4 x USB 2.0 | |
| SIM Card Holder | | N/A | N/A | 1 | N/A | |
| DIO | | 8 in/8 out | 8 in/8 out | 8 in/8 out | 8 in/8 out | |
| LVDS | | 1 | 1 | 1 | 1 | |
| PS/2 | | 1 | 1 | N/A | 1 | |
| LPT | | 1 | 1 | 1 | N/A | |
| Fan | | CPU/System fan connector | CPU/System fan connector | CPU/System fan connector | CPU/System fan connector | |
| Mechanical and Environment | | Power Type | 9V to 24V DC-in | 9V to 24V DC-in | AT & ATX (24-pin + 4-pin) | AT & ATX (24-pin + 4-pin) |
| | | Dimension | 170 x 170 mm | 170 x 170 mm | 170 x 170 mm | 170 x 170 mm |
| | | Operating Temp. | -20°C~+70°C | -20°C~+70°C | -20°C~+70°C | -20°C~+70°C |

Industrial ATX Motherboards



| Model Name | INS8145A | INS8147B | INS8153A | |
|-----------------------------------|-----------------|---|--|--|
| System | CPU Type | Intel® LGA1155 Core i7/i5/i3 Processor | Intel® LGA1155 Core i7/i5/i3 Processor | Intel® LGA1155 Xeon E3-1200v2 series and Core i3 Processor |
| | Chipset | Intel® Q67 | Intel® H61 | Intel® C216 |
| | Memory Type | 4 x 240-pin LDIMM dual channel DDR3 1066/1333 up to 16 GB | 2 x 240-pin LDIMM dual channel DDR3 1066/1333 up to 16 GB | 4 x 240-pin LDIMM dual channel DDR3 1066/1333 up to 32 GB |
| | BIOS | AMI® UEFI BIOS | AMI® UEFI BIOS | AMI® UEFI BIOS |
| | iAMT | Support iAMT 7.0 | N/A | Support iAMT 8.0 |
| | Watchdog | 1-255 sec. or 1-255 min. software programmable | 1-255 sec. or 1-255 min. software programmable | 1-255 sec. or 1-255 min. software programmable |
| Expansion Slot | PCIe x 16 | 1 | 1 | 2 (2 slots share same bandwidth) |
| | PCIe x 4 | 1 (x 8 slot) | 0 | 2 |
| | PCIe x 1 | 1 | 2 (one with x 4 slot) | N/A |
| | PCI | 4 | 4 | 3 |
| | Mini PCIe | N/A | N/A | 1 (optional mSATA supported) |
| Display | Chipset | Intel® HD Graphics 3000 integrated graphics engine | Intel® HD Graphics 2000/3000 | Intel® HD Graphics 4000 integrated graphics engine |
| | Display Type | VGA, HDMI, DVI-D | VGA, DVI-D | VGA, HDMI, DVI-D, DP |
| Audio | Codec | Realtek ALC892 High Definition Audio Codec | Realtek ALC887 High Definition Audio Codec | Realtek ALC887 High Definition Audio Codec |
| Ethernet | Chipset | Intel® 82579LM & 82574L GbE LAN | 2 x Realtek 8111E | Intel® 82579LM & 82574L GbE LAN |
| Rear I/O | VGA | 1 | 1 | 1 |
| | DVI-D | 1 | 1 | 1 |
| | HDMI | 1 | N/A | 1 |
| | Ethernet | 2 x RJ45 | 2 x RJ45 | 2 x RJ45 |
| | Audio | Mic-in, Line-in, Line-out | Line-out, Mic-in | Mic-in, Line-in, Line-out |
| | COM | 1 x RS232/422/485 with 5V/12V selectable | 1 x RS232/422/485 with 5V/12V selectable 1 x RS232 with 5V/12V selectable | 2 x RS232/422/485 with 5V/12V selectable |
| | USB | 4 x USB 2.0 | 4 x USB 2.0 | 4 x USB 3.0 |
| | PS/2 | 1 x KB, 1 x Mouse | 1 x KB, 1 x Mouse | N/A |
| Internal I/O | SATA | 2 x SATAIII 4 x SATAII | 4 x SATAII | 2 x SATAIII 2 x SATAII |
| | CF-SATA | N/A | N/A | 1 |
| | COM | 5 x RS232 with 5V/12V selectable | 4 x RS232 with 5V/12V selectable | 4 x RS232 with 5V/12V selectable |
| | USB | 10 x USB 2.0 | 10 x USB 2.0 | 10 x USB 2.0 |
| | DIO | 4 in/4 out | 16 in/16 out | 8 in/8 out |
| | LPT | 1 | N/A | 1 |
| | PS/2 | N/A | N/A | 1 |
| Mechanical and Environment | FAN | CPU / System fan connectors | CPU / System fan connectors | CPU / System fan connectors |
| | Power Type | AT & ATX (24-pin + 4-pin) | AT & ATX (24-pin + 4-pin) | AT & ATX (24-pin + 4-pin) |
| | Dimension | 305 x 244 mm | 305 x 206 mm | 305 x 244 mm |
| | Operating Temp. | -20°C~+70°C | -20°C~+70°C | -20°C~+70°C |

Embedded Systems - Atom Slim



| Model Name | | ROC114A | ROC315B | ROC316A |
|----------------------------|-----------------------|---|---|--|
| System | CPU Type | Intel® Tunnel Creek E660T 1.3 GHz | Intel® Pineview N455 1.66 GHz | Intel® Cedarview N2800 1.86 GHz |
| | Chipset | Intel® EG20T | Intel® ICH8M | Intel® NM10 |
| | Memory Type | 1GB DDR2 667/800 MHz memory IC onboard | 1 x 204-pin SO-DIMM DDR3 800MHz up to 2 GB | 1 x 204-pin SO-DIMM DDR3 800/1066MHz up to 4 GB |
| Expansion Slot | Mini PCIe | 1 | 1 | 1 |
| Storage Device | HDD/SSD | N/A | 1 x 2.5" SATA HDD/SSD | 1 x 2.5" SATA HDD/SSD |
| | CF | 1 x CF socket | 1 x External CF socket | N/A |
| | CFast | N/A | N/A | 1 x External CFast socket |
| Front I/O | VGA | 1 | N/A | N/A |
| | Ethernet | 2 x RJ45 | N/A | N/A |
| | Audio | N/A | Mic-in, Line-out | Mic-in, Line-out |
| | COM | 1 x RS232/422/485 | 4 x RS232 | 4 x RS232 |
| | USB | 2 x USB 2.0 | 4 x USB 2.0 | 4 x USB 2.0 |
| | CAN Bus | 1 | N/A | N/A |
| | Power Button | 1 | 1 | 1 |
| | Power LED | 1 | 1 | 1 |
| | HDD LED | 1 | 1 | 1 |
| | Rear I/O | VGA | N/A | 1 |
| DVI-I | | N/A | N/A | 1 |
| CF Socket | | N/A | 1 | N/A |
| CFast Socket | | N/A | N/A | 1 |
| Ethernet | | N/A | 2 x RJ45 | 2 x RJ45 |
| USB | | N/A | 2 x USB 2.0 | 1 x USB 2.0 |
| Antenna | | Reserved two antenna holes | Reserved two antenna holes | Reserved two antenna holes |
| Power | | 1 (DC Jack) | 1 (Terminal Block) | 1 (Terminal Block) |
| Mechanical and Environment | Power Requirement | 12V DC-in | 9V to 30V DC-in | 9V to 30V DC-in |
| | Dimension (W x H x D) | 105 x 40 x 195 mm | 195 x 51 x 230 mm | 195 x 51 x 230 mm |
| | Operating Temp. | -20°C~+70°C | -20°C~+70°C | -20°C~+70°C |

Embedded Systems - Atom Power



| Model Name | | PER321A | PER321A-2D |
|----------------------------|-----------------------|---|--|
| System | CPU Type | Intel® Cedarview D2550 1.86 GHz onboard | Intel® Atom™ D2550 1.86 GHz onboard |
| | Chipset | Intel® NM10 | Intel® NM10 |
| | Memory Type | 2 x 204-pin SO-DIMM DDR3 800/1066 MHz up to 4 GB | 2 x 204-pin SO-DIMM DDR3 800/1066 MHz up to 4 GB |
| Expansion Slot | Mini PCIe | 2 | 2 |
| Storage Device | HDD/SSD | 1 x 2.5" SATA HDD/SSD | 2 x 2.5" SATA Easy Swap/SSD |
| | mSATA | 1 (optional) | 1 (optional) |
| Front I/O | COM | 3 x RS232 1 x RS232/422/485 | 3 x RS232 1 x RS232/422/485 |
| | USB | 2 x USB 2.0 | 2 x USB 2.0 |
| | Power Button | 1 | 1 |
| | Power LED | 1 | 1 |
| | HDD LED | 1 | 1 |
| Rear I/O | VGA | 1 | 1 |
| | DVI-D | 1 | 1 |
| | Ethernet | 2 x RJ45 | 2 x RJ45 |
| | Audio | Line-out, Mic-in | Line-out, Mic-in |
| | COM | 1xRS232/422/485 1xRS232 | 3 x RS232 with 5V/12V selectable 1 x RS232/422/485 with 5V/12V selectable |
| | USB | 4 x USB 2.0 | 4 x USB 2.0 |
| | Antenna | Reserved two antenna holes | Reserved two antenna holes |
| | Power | 1 (Terminal Block) | 1 (Terminal Block) |
| Mechanical and Environment | Power Requirement | 9V to 24V DC-in | 9V to 24V DC-in |
| | Dimension (W x H x D) | 342 x 65 x 216 mm | 391 x 65 x 216 mm |
| | Operating Temp. | -20°C~+60°C | -20~+60°C (ambient with air flow) |

Embedded Systems - Core i Performance



| Model Name | | PER335A | PER535A |
|----------------------------|-----------------------|--|--|
| System | CPU Type | Intel® 22nm Ivy Bridge Processor (Mobile) socket (rPGA988) | Intel® 22nm Ivy Bridge Processor (Mobile) socket (rPGA988) |
| | Chipset | Intel® QM77 | Intel® QM77 |
| | Memory Type | 2 x 204-pin SO-DIMM DDR3 1333/1600 MHz up to 16 GB | 2 x 204-pin SO-DIMM DDR3 1333/1600 MHz up to 16 GB |
| Expansion Slot | PCIex1 | N/A | 1 |
| | Mini PCIe | 1 | 1 |
| | PCI | N/A | 1 |
| Storage Device | HDD/SSD | 2 x 2.5" SATA HDD/SSD | 2 x 2.5" SATA HDD/SSD |
| Front I/O | COM | 3 x RS232 1 x RS232/422/485 | 3 x RS232 1 x RS232/422/485 |
| | USB | 4 x USB 2.0 | 4 x USB 2.0 |
| | Power Button | 1 | 1 |
| | Power LED | 1 | 1 |
| | HDD LED | 1 | 1 |
| Rear I/O | VGA | 1 | 1 |
| | DVI-D | 1 | 1 |
| | HDMI | 1 | 1 |
| | Ethernet | 2 x RJ45 | 2 x RJ45 |
| | Audio | Mic-in, Line-in, Line-out | Mic-in, Line-in, Line-out |
| | COM | 1x RS232/422/485 | 1x RS232/422/485 |
| | USB | 4 x USB 3.0 | 4 x USB 3.0 |
| | Antenna | Reserved two antenna holes | Reserved two antenna holes |
| | Power | 1 (Terminal Block) | 1 (Terminal Block) |
| Mechanical and Environment | Power Requirement | 9V to 24V DC-in | 9V to 24V DC-in |
| | Dimension (W x H x D) | 370 x 77 x 240 mm | 370 x 122 x 246 mm |
| | Operating Temp. | -20°C~+60°C | -20°C~+60°C |

Embedded Systems - 1U Rackmount



| Model Name | | ROC235A | ROC235B |
|----------------------------|-----------------------|--|--|
| System | CPU Type | Intel® 22nm Ivy Bridge Processor (Mobile) socket (rPGA988) | Intel® 22nm Ivy Bridge Processor (Mobile) socket (rPGA988) |
| | Chipset | Intel® QM77 | Intel® QM77 |
| | Memory Type | 2 x 204-pin SO-DIMM DDR3 1333/1600 MHz up to 16 GB | 2 x 204-pin SO-DIMM DDR3 1333/1600 MHz up to 16 GB |
| | Mini PCIe | 1 | 1 |
| | PCI | 2 | 2 |
| Storage Device | HDD/SSD | 2 x 2.5" SATA HDD/SSD | 2 x 2.5" EASY SWAP SSD |
| | USB | 2 x USB 2.0 | 2 x USB 2.0 |
| | Power Button | 1 | 1 |
| | Power LED | 1 | 1 |
| | HDD LED | 1 | 1 |
| | Reset | 1 | 1 |
| Rear I/O | VGA | 1 | 1 |
| | DVI-D | 1 | 1 |
| | HDMI | 1 | 1 |
| | Ethernet | 2 x RJ45 | 2 x RJ45 |
| | Audio | Mic-in, Line-out | Mic-in, Line-out |
| | COM | 1 x RS232/422/485 | 1 x RS232/422/485 |
| | USB | 4 x USB 3.0 | 4 x USB 3.0 |
| | Power | 1 (Terminal Block) | 1 (AC Inlet) |
| Mechanical and Environment | Power Requirement | 9V to 24V DC-in | 100V to 240V AC-in |
| | Dimension (W x H x D) | 440 x 44 x 380 mm | 440 x 44 x 380 mm |
| | Operating Temp. | -20°C~+70°C | -20°C~+60°C |

IP65 Rugged PPC



| Model Name | RVT0820A | RVT1216A | |
|-----------------------------------|-----------------------|--|--|
| System | CPU Type | Intel® Cedarview N2600 1.60 GHz | Intel® Cedarview N2800 1.60 GHz |
| | Chipset | Intel® NM10 | Intel® NM10 |
| | Graphic Chipset | Integrated Intel® GMA3600 VR Graphic Core SGX545 | Integrated Intel® GMA3600 VR Graphic Core SGX545 |
| | Memory Type | 1 x 204-pin SO-DIMM DDR3 800/1066 MHz up to 2 GB | 1 x 204-pin SO-DIMM DDR3 800/1066 MHz up to 2 GB |
| | Expansion Slot | 1 x Mini PCIe | 1 x Mini PCIe |
| | Ethernet | 2 x RTL8111E GbE LAN | 2 x RTL8111E GbE LAN |
| | Storage Device | 1 x CFast Socket | 1 x CFast Socket |
| Rear I/O | DVI-I | 1 | 1 |
| | Ethernet | 2 x RJ45 | 2 x RJ45 |
| | COM | 1 x RS232/422/485 with 5V/12V selectable | 1 x RS232/422/485 with 5V/12V selectable |
| | USB | 1 | 1 |
| LCD Display | Size | 8.4" LCD with LED backlight | 12.1" LCD with LED backlight |
| | Resolution | SVGA 800 x 600 | XGA 1024 x 768 |
| | Contrast Ratio | 600 : 1 | 700 : 1 |
| | Brightness | 450 cd/m ² | 500 cd/m ² |
| | Touch Type | 4 wire resistive | 8 wire resistive |
| Mechanical and Environment | Power Requirement | 9V to 30V DC-in | 9V to 30V DC-in |
| | Power Consumption | 25W | 35W |
| | Dimension (W x H x D) | 240 x 190 x 59 mm | 320 x 260 x 66 mm |
| | Operating Temp. | -30°C~+60°C | -30°C~+70°C |

EXTREME SYSTEM

RUGGED FANLESS

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4th Generation
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PCIe/IO4 EXTENSION MODULES



NVIDIA GT730M
Graphics Card-SK210



Quad-Port Gigabit
Ethernet Card-SK506



Storage Card-SK401

NVIDIA GPU ON GT730M

- NVIDIA CUDA (384) Technology
- OpenGL 4.4 Support
- 4 DisplayPort





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