



**PRODUCT
GUIDE**
2020





PRODUCT GUIDE

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Development Kit

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SECO: YOUR TECHNOLOGY PARTNER

SECO **designs** and **manufactures embedded systems in-house.**

SECO offers a wide range of **standard modules, SBCs, systems** and **custom solutions** to leverage **innovative**, state-of-the-art **technologies**. Thanks to its drive for continuous evolution and relying on its **strong know-how**, SECO responds to new **challenging market demands** with **cutting edge solutions**, and a **strong focus on the Internet of Things**.



KNOW-HOW

DESIGN



Extensive experience in Micro Computer design, both Hardware and Software-wise



Analysis & Design



FPGA design



Signal Integrity



Drivers Engineering & Development

MANUFACTURING



In-house manufacturing.
Lean Manufacturing employed to reduce waste and accelerate the time to market



BIOS Engineering & Development



BSP



Hardware Engineering & Development



Firmware Development

SYSTEMS



Design and integration of Micro Computers with video interfaces and mechanical design



Software development



Validation & Verification



Mechanical Engineering & Development



Thermal Analysis

PRODUCT LINES

STANDARD PRODUCTS

MODULAR SOLUTIONS



Qseven® SMARC



COM HPC® COM Express™ ETX®/XTX

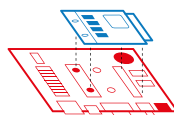
SINGLE BOARD COMPUTERS



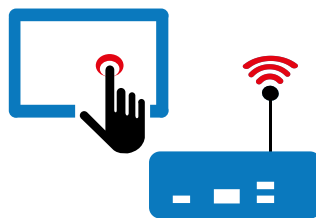
Embedded NUC™ Pico-ITX

SEMI-CUSTOM SOLUTIONS

CUSTOM CARRIER BOARDS + MODULAR SOLUTIONS



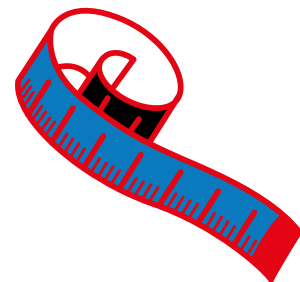
MODULAR HMI & BOXED SOLUTIONS



FULL-CUSTOM SOLUTIONS

END-TO-END "TAILORED" SOLUTIONS:

Full support from concept development to the complete system solution



Beyond the long-established and consistent hardware product portfolio, SECO offers **custom design, system integration**, and a range of multi-sector, customer centric **services, such as BIOS customization, surface treatments**, PCB specific certifications for industry requirements like transportation, amongst others. SECO manages the entire **production cycle in-house**, from the development and design stage to manufacturing to mass distribution. SECO always aims to serve as a true collaborative technology partner for its customers' special projects.

PARTNERSHIPS

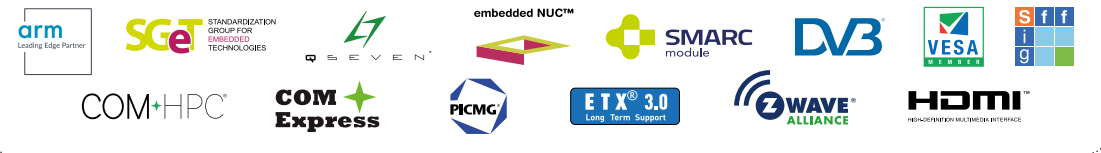
WORLDWIDE SILICON VENDORS



OPERATING SYSTEMS



STANDARDS & CONSORTIUM









CERTIFICATIONS



MAIN FIELDS OF APPLICATION

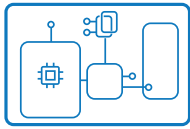
SECO's solutions today can be found at the heart of the most sophisticated and diverse products throughout various industries, such as traditional uses in industrial automation, biomedical devices, digital signage and across more modern applications like the Internet of Things and robotics.

| | | | | | | |
|---|---|--|--|--|--|--|
|  Automation |  Automotive |  Avionics |  Biomedical/Medical devices |  Digital signage - Infotainment |  Edge Computing |  E - health Telecare |
|  Energy |  Fitness Equipment |  Gaming |  HMI |  Home Automation |  Home Entertainment |  Industrial Automation and Control |
|  Info Kiosks |  Internet of Things |  In-Vehicle Infotainment Systems |  Measuring instruments |  Mobile devices |  Multimedia devices |  PDA Electronics |
|  Point of Sales |  Portable devices |  Robotics |  Server - High Performance Computing |  Surveillance |  Telco |  Thin clients |
|  Transportation |  Vending |  Visual Computing |  Wireless Technologies |  Makers & Education |  Fast POC maker boards by SECO | |

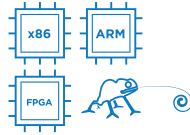
SERVICES

YOUR TECHNOLOGY PARTNER **FOR CUSTOMIZED COMPUTING PLATFORMS**

- | Design review | Off-the shelf SBCs customization | Carrier board design for modular computing platforms |
- | Full custom SBC design | x86, Arm & FPGA know-how | Secure your design & production in our HQ - Italy |



Design Review



x86, Arm, FPGA Know-How & cross-platform design



Secure your design and production



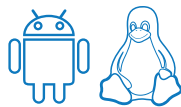
Let us design your product

YOUR TECHNOLOGY PARTNER **FOR SOFTWARE CUSTOMIZATION**

- | Customized BIOS | Firmware & driver development | BSP development | Long-term support |



BIOS tuning



Linux BSP & Android development



Firmware & driver support



We take care of your project, with lifetime support

YOUR TECHNOLOGY PARTNER **FOR SYSTEMS AND ASSEMBLY**

- | Software pre-installed on your system | Assembly services | Design and production of your boxed solution |
- | Touch-display solutions | Design and production of your final product |



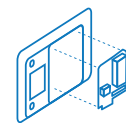
Software preloaded



Boxed solutions



Touch displays



Displays assembly

YOUR TECHNOLOGY PARTNER **FOR THE INDUSTRIAL INTERNET OF THINGS**

EVERYTHING YOU NEED TO POWER YOUR IoT PRODUCT, FROM DEVICE TO CLOUD



Prototyping Tools



Industrial IoT Hardware



Connectivity



IoT Device Cloud



IoT Apps

EDGEHOG

ALL-IN-ONE IIoT PLATFORM

IoT Solution

EDGEHOG is a multitasking industrial device management platform. It's the tool you need to maintain connected embedded Systems, update and configure your system and fleet with a couple of clicks.

EDGEHOG is a One-Stop IoT Solution, a bridge between hardware and cloud. Let EDGEHOG take care of connections, OTA updates and keep your focus on anything but your core application development.

 **UX and Service Design Consulting**

 **Hardware + Embedded Integration**

 **Embedded Software**


 **OS and Firmware**


 **Connection LTE / LTE-M / NB-IoT / 5G**


 **Cloud**

 **Web and Mobile Platform Ready**

Service Offering


 **HW Integration and Customization**
Powerful Arm and x86 GW solutions
Custom Gateways
PLCs and Sensors integration

 **OTA Updates**
EDGEHOG Device Management perform OS security and software updates


 **Geolocation**
The exact position of your devices. Always under control


 **Cloud Connectivity**
Mobile connection with Telenor Connexion
Wi-Fi/BT and LAN


 **Container Runtime**
Smooth application deployment and updatability


 **Dedicated IoT OS**
EDGEHOG IoT OS based on Yocto Linux optimized for all SECO Gateways. Double partition and Fallback


 **OS Support and Maintenance**
Your OS always up to date, safe and ready to use.


 **API Cloud**
EDGEHOG Device Management APIs: integrate Edgehog Device Management on third-party applications, such as customers' applications

 **Remote Control**
Remote managing of Gateways status connection, memory, processor, SSH access, battery status




 **Telemetry Agent**
EDGEHOG Telemetry Agent collects telemetry data from sensors, either physical or synthetic. Local DB to prevent data loss

 **Predictive Maintenance on the Edge**
Machine learning algorithm for detecting GW status and the predictive maintenance of the connected device

 **Machine Learning on the Edge**
EDGEHOG is an optimized Machine Learning solution from both hardware (NPU) and software (Continuous Features Updates and Production) point of view

 **Security and Self-Maintainance**
Integrated firewall, IDS, IPS Encryption via SSL/TLS Certificate. EDGEHOG Enactive System enables EDGEHOG Core Software to be self-maintained and self-regulated

One-Stop IoT Solution: Hardware to Cloud

| | | | | | | |
|--|-------------|---|-------------------------------------|---|--|--|
|  EDGEHOG Device Management Web Platform | Integrate | API's, Connectors, Data/Event Processors | | | Service and UX Design Consulting | |
| | Service | Device control, Application updates, Security updates, Dev Tools, Control, Security, Rules, Visualization | | Telemetry storage, Data management | | |
| Cloud Connection | Communicate | Mobile: LTE, 5G, NB-IoT, LTE-M | Wi-Fi/BT, LAN, Z-Wave, Zigbee, LoRa | High performance, bi-directional, efficient IoT protocols | Hardware and Data Integration Consulting | |
|  EDGEHOG OS, Edge Agents, Synthetic Sensors | Process | OS | Core Logic | Device Applications | | Telemetry, Control, Processing, Analytics, Firewall, Antivirus |
| | Connect | Multi-protocol field connectors: Modbus, I2C, | | | | |
|  SECO SBC Gateways Arm/ x86, Custom HW solutions, Sensors | Hardware | SBC Gateways Arm/x86 | Custom HW solutions | Sensors, Actuators,... | | |
| | | Hardware Integration, Hardware certification,... | | | | |



Device Management

The Edgohog Device Management Web Portal allows the IoT Manager, IT Manager and Sales Manager to:

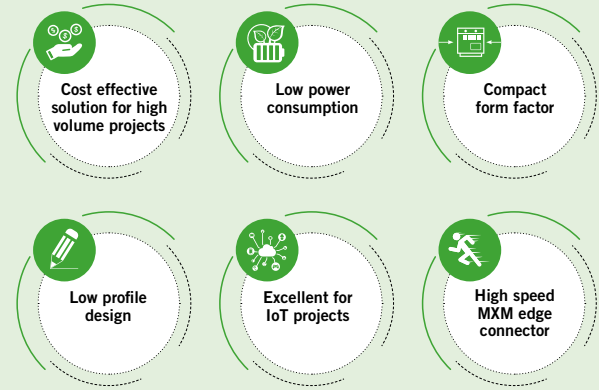
- control and configure devices
- manage OS and software updates
- know the location of your devices
- upload and deploy your apps on your devices
- manage your containers
- have an overview of the services purchased
- have the details of the service cost and use





Q S E V E N

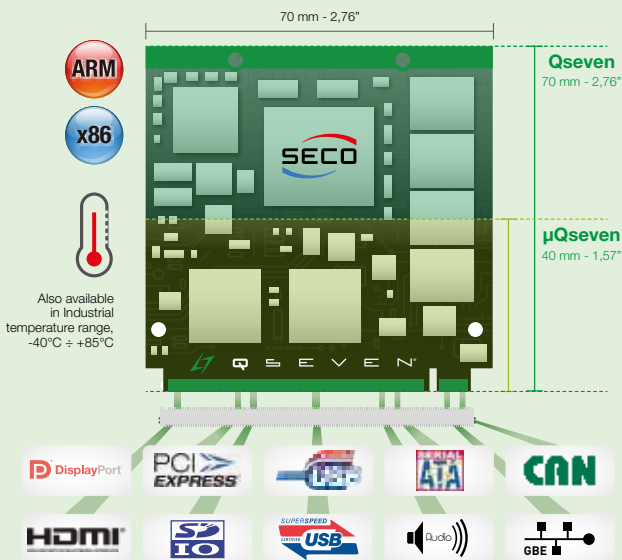
QSEVEN® STANDARD ADVANTAGES



COMPUTER-ON-MODULE APPROACH

- | Design investment limited to the carrier board |
- | Consolidated Standard form factor |
- | Scalable and future-proof | Long-term availability |
- | Arm and x86 cross-compatibility |
- | Multi-vendor solution | Highly configurable |
- | Innovative and upgradable | Accelerated time-to-market |

QSEVEN® FEATURES OVERVIEW



Qseven

Qseven® Rel. 2.1 compliant module with NXP i.MX 8X Applications Processors

Highly-efficient architecture in a compact, safety-certifiable Qseven® module

Q7-C58



Available in Industrial Temperature Range

| | |
|------------------------|---|
| Processor | NXP i.MX 8X family SoCs: Dual or Quad Arm Cortex®-A35 Cores + 1x Cortex® M4F core for real-time processing |
| Max Cores | 4+1 |
| Memory | Soldered down LPDDR4 memory @ 1200MHz, 32-bit interface, up to 4GB |
| Graphics | Embedded GC7000Lite GPU Supports OpenGL 3.0, 2.1, OpenGL ES 3.1, OpenCL 1.2 Full Profile and 1.1, OpenVG 1.1, and Vulkan Embedded VPU, supports HW decoding of HEVC/H.265, AVC/H.264, MPEG-2, VC-1, RV10, VP8, H.263 and MPEG4.2t, HW encoding of AVC/H.264 2 independent displays supported |
| Video Interfaces | Factory alternatives: • 2x LVDS Single Channel / 1x LVDS Dual Channel 18-/24-bit interface • LVDS Single Channel 18-/24-bit interface + HDMI interface • eDP 4-lane interface + LVDS single Channel 18-/24-bit interface • eDP 4-lane interface + HDMI interface |
| Video Resolution | MIPI-DSI, LVDS, eDP, HDMI: Up to 1920 x 1080 @ 60Hz |
| Mass Storage | Optional Soldered onboard eMMC 5.1 Drive, up to 64GB SD 4-bit interface QSPI NOR Flash soldered on-board |
| Networking | 1 x Gigabit Ethernet interface On-board WiFi 802.11 a/b/g/n + BT LE 5.0 module, optional |
| USB | 2 x USB 2.0 Host Ports 2 x USB 3.0 Host Ports |
| PCI-e | 1x PCI-e 3.0 x1 port |
| Audio | 1x I2S Audio interface |
| Serial Ports | 1x 4-wires UART |
| CAN | 1x CAN interfaces |
| Other Interfaces | 1x 4-lanes CSI camera interface 2x PWM Up to 8x GPIOs I2C bus SM bus SPI interface Watchdog Boot select signals Power Management Signals |
| Power Supply | +5V _{DC} and +3.3V _{RTC} |
| Operating System | Linux Android |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 70 x 70 mm (2.76" x 2.76") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



High graphics performance and extreme temperature for low power designs

Q7-B03



| | |
|------------------------|---|
| Processor | Intel® Atom™ x5-E3930 Dual Core @1.3 GHz (Burst 1.8GHz), 2MB L2 Cache, 6.5W TDP Intel® Atom™ x5-E3940 Quad Core @1.6 GHz (Burst 1.8GHz), 2MB L2 Cache, 9.5W TDP Intel® Atom™ x7-E3950 Quad Core @1.6 GHz (Burst 2.0GHz), 2MB L2 Cache, 12W TDP Intel® Pentium® N4200 Quad Core @1.1GHz (Burst 2.5GHz), 2MB L2 Cache, 6W TDP Intel® Celeron® N3350 Dual Core @1.1GHz (Burst 2.4GHz), 2MB L2 Cache, 6W TDP Intel® Celeron® J3455 , Quad Core @1.5GHz (Burst 2.3GHz), 2MB L2Cache, 10W TDP Intel® Celeron® J3355 , Dual Core @2.0GHz (Burst 2.5GHz), 2MB L2Cache, 10W TDP |
| Max Cores | 4 |
| Max Thread | 4 |
| Memory | Dual Channel Soldered Down DDR3L-1866 memory, up to 8GB |
| Graphics | Integrated Intel® HD Graphics 500 series controller with up to 18 Execution Units Three Independent displays supported HW decoding of HEVC(H.265), H.264, MVC, VP8, VP9, MPEG2, VC-1, WMV9, JPEG/MJPEG formats HW encoding of HEVC(H.265), H.264, MVC, VP8, VP9 and JPEG/MPEG formats |
| Video Interfaces | eDP interface or Single/Dual Channel 18/24bit LVDS interface HDMI or DP++ interface |
| Video Resolution | DP: Up to 4096 x 2160 @60Hz eDP: Up to 3840 x 2160 @60Hz HDMI: Up to 3840 x 2160 @30Hz LVDS, VGA: Up to 1920 x 1200 @ 60Hz |
| Mass Storage | Optional eMMC 5.0 drive soldered on-board 2 x external S-ATA Gen3 Channels SD interface |
| Networking | Gigabit Ethernet interface Intel® I210 or I211 Controller (MAC + PHY) |
| USB | 6 x USB 2.0 Host Ports 2 x USB 3.0 Host Ports (*) (*) Second USB 3.0 Host port can be exploited only using Qseven® Rel. 2.1 compliant Carrier boards |
| PCI-e | 4 x PCI-e Root Ports (including the PCI-e port used for Gigabit Ethernet controller) |
| Audio | HD Audio interface |
| Serial Ports | 1 x UART, TTL interface |
| Other Interfaces | I2C Bus LPC Bus SM Bus SPI interface Watch Dog Timer Thermal / FAN management Power Management Signals |
| Power Supply | +5V _{DC} and +5V _{SB} (optional) |
| Operating System | Microsoft® Windows 10 Enterprise (64 bit) Microsoft® Windows 10 IoT Core Linux Yocto (64 bit) |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 70 x 70 mm (2.76" x 2.76") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



Take advantage of the wide scalability offered by Qseven® form factor and the i.MX 8 family

Q7-C26



| | |
|------------------------|---|
| Processor | NXP i.MX 8 Family: • i.MX 8QuadMax - 2x Cortex®-A72 cores + 4x Cortex®-A53 cores + 2x Cortex®-M4F cores • i.MX 8QuadPlus - 1x Cortex®-A72 cores + 4x Cortex®-A53 cores + 2x Cortex®-M4F cores |
| Memory | Soldered Down LPDDR4-3200 memory, 64-bit interface |
| Graphics | Integrated Graphics Processing Unit, supports 2 independent displays. Embedded VPU, supports HW decoding of HEVC/H.265, AVC/H.264, MPEG-2, VC-1, RV9, VP8, H.263 and MPEG4 part, HW encoding of AVC/H.264 Supports OpenGL ES 3.1, Open CL 1.2, OpenGL 3.x, DirectX 11 |
| Video Interfaces | HDMI 2.0a / DP 1.3 or eDP 1.4 interface, supporting HDCP 2.2 Dual Channel or 2 x Single Channel 18- / 24-bit LVDS interface (1 x Single Channel in case of eDP interface available) |
| Video Resolution | HDMI / DP / eDP: resolution up to 4096x2160 @ 60Hz LVDS: resolution up to 1920x1080 @ 60Hz |
| Mass Storage | 1x SATA Gen3 interface eMMC 5.1 drive soldered on-board SD 4-bit interface QSPI Flash soldered-on-board |
| Networking | 1 x Gigabit Ethernet interface |
| USB | 4 x USB 2.0 Host Ports 1 x USB 3.0 Host Port 1 x USB 2.0 OTG port |
| PCI-e | 2x PCI-e x1 Gen3 ports |
| Audio | I2S Audio Interface |
| Serial Ports | 1x UART Tx/Rx/RTS/CTS 1x CAN Bus (TTL level) |
| Other Interfaces | CSI camera connector 2x I2C Bus SPI interface 8 x GPIOs Boot select signal Power Management Signals Watchdog |
| Power Supply | +5V _{DC} ±5% +3.3V _{RTC} |
| Operating System | Linux Yocto Android |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 70 x 70 mm (2.76" x 2.76") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

Qseven® solution for next generation
embedded systems

Q7-C25

Available in Industrial
Temperature Range

| | |
|------------------------|--|
| Processor | NXP i.MX 8M Family based on Arm Cortex®-A53 cores + general purpose Cortex®-M4 processor: <ul style="list-style-type: none"> • i.MX 8M Quad - 4x Cortex®-A53 cores up to 1.5GHz • i.MX 8M Dual - 2x Cortex®-A53 cores up to 1.5GHz • i.MX 8M QuadLite - 4x Cortex®-A53 cores up to 1.5GHz, no VPU |
| Memory | Soldered Down DDR4-2400 memory, dual-channel 32-bit interface, up to 4GB |
| Graphics | Integrated Graphics Processing Unit, supports 2 independent displays. Embedded VPU, supports HW decoding of HEVC, H.264, H.263, MPEG-4, MPEG-2, AVC, VC-1, RV, DivX, VP6, VP8, VP9, JPEG (not for i.MX8M QuadLite). Supports OpenGL ES 3.1, Open CL 1.2, OpenGL 2.x, DirectX 11 |
| Video Interfaces | HDMI 2.0a / Display Port 1.3 interface, supporting HDCP 2.2 and HDCP 1.4/1.3 eDP interface or 18- / 24-bit Dual Channel LVDS interface |
| Video Resolution | HDMI/DP up to 4096 x 2160p60 LVDS/eDP up to 1920 x 1080 @ 60Hz |
| Mass Storage | eMMC 5.0 drive soldered on-board, up to 64GB Optional microSD slot on board QSPI Flash soldered-onboard |
| Networking | 1 x Gigabit Ethernet interface Optional WiFi + BT LE module onboard |
| USB | 1 x USB 3.0 OTG Ports Up to 4 x USB 2.0 Host Ports |
| PCI-e | Up to 2 x PCI-e x1 Gen2 ports |
| Audio | I2S Audio Interface |
| Serial Ports | 1x UART Tx/Rx/RTS/CTS (Optional) 1x Debug UART Optional CAN Bus interface (TTL Level) |
| Other Interfaces | I2C Bus SM Bus Optional SPI interface 8 x GPIOs UltraLow Power RTC Power Management Signals Watchdog |
| Power Supply | +5V _{DC} ±5% and +5V _{SB} (optional) +3.3V _{RTC} |
| Operating System | Linux Yocto Android |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 70 x 70 mm (2.76" x 2.76") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

Mobile-oriented with eMMC
and Camera Interface

Q7-A36

Available in Industrial
Temperature Range

| | |
|------------------------|--|
| Processor | Intel® Atom™ E3845 , Quad Core @1.91GHz, 2MB Cache, 10W TDP Intel® Atom™ E3827 , Dual Core @1.75GHz, 1MB Cache, 8W TDP Intel® Atom™ E3826 , Dual Core @1.46GHz, 1MB Cache, 7W TDP Intel® Atom™ E3825 , Dual Core @1.33GHz, 1MB Cache, 6W TDP Intel® Atom™ E3815 , Single Core @1.46GHz, 512KB Cache, 5W TDP Intel® Atom™ E3805 , Dual Core @ 1.33GHz, 1MB Cache, 3W TDP Intel® Celeron® J1900 , Quad Core @2.0GHz, 2MB Cache, 10W TDP Intel® Celeron® N2930 , Quad Core @1.83GHz, 2MB Cache, 7.5W TDP Intel® Celeron® N2807 , Dual Core @1.58GHz, 1MB Cache, 4.3W TDP |
| Max Cores | 4 |
| Max Thread | 4 |
| Memory | Soldered on-board DDR3L memory E3845, E3827, J1900, N2930: up to 8GB Dual-Channel DDR3L 1333MHz E3826: up to 8GB Dual-Channel DDR3L 1066MHz N2807: up to 4GB Single-Channel DDR3L 1333MHz E3825, E3815: up to 4GB Single-Channel DDR3L 1066MHz |
| Graphics | Integrated Intel® HD Graphics 4000 series controller (not for E3805) Dual independent display support HW decoding of H.264, MPEG2, MVC, VC1, VP8, MJPEG formats HW encoding of H.264, MPEG2 and MVC formats |
| Video Interfaces | HDMI or Multimode Display Port interface Embedded Display Port or 18 / 24 bit dual channel LVDS interface Optional Camera interface |
| Video Resolution | HDMI: Up to 1920x1080p@60Hz Display Port, eDP: Up to 2560x1600@60Hz Optional LVDS interface: Up to 1920x1200@60Hz |
| Mass Storage | 2 x external SATA channels SD interface Optional eMMC Drive soldered on-board |
| Networking | Gigabit Ethernet interface |
| USB | 1 x USB 3.0 Host port 6 x USB 2.0 Host ports (one shared with USB 3.0 interface) |
| PCI-e | 3 x PCI-e x1 lanes |
| Audio | HD Audio interface |
| Serial Ports | 1 x Serial port (TTL interface) |
| Other Interfaces | I2C Bus LPC Bus SM Bus Thermal / FAN management SPI interface Power Management Signals |
| Power Supply | +5V _{DC} ± 5% |
| Operating System | Microsoft® Windows 7 (32/64 bit) Microsoft® Windows 8.1 (32/64 bit) Microsoft® Windows 10 (32/64 bit) Microsoft® Windows 10 IoT Microsoft® Windows Embedded Standard 7 (32/64 bit) Microsoft® Windows Embedded Compact 7 Linux (32/64 bit) Yocto |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 70 x 70 mm (2.76" x 2.76") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



Qseven

Qseven® with the Intel® Atom™ E3800 and Celeron® families (formerly Bay Trail) SoC

x86 performance on a low-power module

Q7-974



Available in Industrial Temperature Range

| | |
|------------------------|--|
| Processor | Intel® Atom™ E3845, Quad Core @1.91GHz, 2MB Cache, 10W TDP Intel® Atom™ E3827, Dual Core @1.75GHz, 1MB Cache, 8W TDP Intel® Atom™ E3826, Dual Core @1.46GHz, 1MB Cache, 7W TDP Intel® Atom™ E3825, Dual Core @1.33GHz, 1MB Cache, 6W TDP Intel® Atom™ E3815, Single Core @1.46GHz, 512KB Cache, 5W TDP Intel® Celeron® J1900, Quad Core @2.0GHz, 2MB Cache, 10W TDP Intel® Celeron® N2930, Quad Core @1.83GHz, 2MB Cache, 7.5W TDP Intel® Celeron® N2807, Dual Core @1.58GHz, 1MB Cache, 4.3W TDP |
| Max Cores | 4 |
| Max Thread | 4 |
| Memory | Soldered on-board DDR3L memory E3845, E3827, J1900, N2930: up to 8GB Dual-Channel DDR3L @ 1333MHz E3826: up to 8GB Dual-Channel DDR3L @ 1066MHz N2807: up to 4GB Single-Channel DDR3L @ 1333MHz E3825, E3815: up to 4GB Single-Channel DDR3L @ 1066MHz |
| Graphics | Integrated Intel® HD Graphics 4000 series controller Dual independent display support HW decoding of H.264, MPEG2, MVC, VC1, VP8, MJPEG formats HW encoding of H.264, MPEG2 and MVC formats |
| Video Interfaces | HDMI or Multimode Display Port interface Embedded Display Port or 18 / 24 bit dual channel LVDS interface Additional VGA interface (optional external adapter is required) |
| Video Resolution | HDMI: Up to 1920x1080p@60Hz Display Port, eDP, CRT: Up to 2560x1600@60Hz Optional LVDS interface: Up to 1920x1200@60Hz |
| Mass Storage | Up to 2 x external SATA channels SD interface Optional SATA Flash Drive soldered on-board |
| Networking | Gigabit Ethernet interface |
| USB | 1 x USB 3.0 Host port 6 x USB 2.0 Host ports (one shared with USB 3.0 interface) |
| PCI-e | 3 x PCI-e x1 lanes |
| Audio | HD Audio interface |
| Serial Ports | 1 x Serial port (TTL interface) |
| Other Interfaces | I2C Bus LPC Bus SM Bus Thermal / FAN management SPI interface Power Management Signals |
| Power Supply | +5VDC ± 5% |
| Operating System | Microsoft® Windows 7 (32/64 bit) Microsoft® Windows 8 (32/64 bit) Microsoft® Windows 8.1 (32/64 bit) Microsoft® Windows 10 (32/64 bit) Microsoft® Windows 10 IoT Microsoft® Windows Embedded Standard 7 (32/64 bit) Microsoft® Windows Embedded Compact 7 Linux (32/64 bit) Yocto |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 70 x 70 mm (2.76" x 2.76") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

Qseven

Qseven® with NXP i.MX 6 Processor

Optimal balance of performance and power

Q7-928



Available in Industrial Temperature Range

| | |
|------------------------|--|
| Processor | NXP i.MX 6 Family, based on Arm® CORTEX-A9 processors - i.MX6S Solo - Single core up to 1GHz - i.MX6DL Dual Lite - Dual core up to 1GHz per core - i.MX6D Dual - Dual core up to 1GHz per core - i.MX6DP DualPlus - Dual core up to 1GHz per core - i.MX6Q Quad - Quad core up to 1GHz per core |
| Max Cores | 4 |
| Memory | Up to 4GB DDR3L on-board (up to 2GB with i.MX6S) Dedicated 2D Hardware accelerator Dedicated 3D Hardware accelerator, supports OpenGL® ES 2.0 3D Dedicated Vector Graphics accelerator supports OpenVG™ (only i.MX6D, i.MX6DP and i.MX6Q) Enhanced 2D and 3D graphics with i.MX6DP Supports up to 3 independent displays with i.MX6D, i.MX6DP and i.MX6Q Supports 2 independent displays with i.MX6DL and i.MX6S |
| Graphics | 1 x LVDS Dual Channel or 2 x LVDS Single Channel 18 / 24 bit interface HDMI Interface 1.4 Video Input Port / Camera Connector |
| Video Interfaces | LVDS, up to 1920x1200 HDMI, up to 1080p |
| Video Resolution | On-board eMMC drive, up to 32 GB SD / MMC / SDIO interface 1 x µSD Card Slot on-board 1 x External SATA Channel (only available with i.MX6D and i.MX6Q) |
| Mass Storage | Gigabit Ethernet interface |
| Networking | 1 x USB OTG interface 4 x USB 2.0 Host interfaces |
| USB | 1 x PCI-e x1 lane (only PCI-e 1.1 and Gen2 are supported) |
| PCI-e | AC'97 Audio interface I2S |
| Audio | 2 x Serial ports (TTL interface) CAN port interface |
| Serial Ports | I2C Bus LPC Bus SM Bus Power Management Signals |
| Other Interfaces | +5VDC ± 5% |
| Power Supply | Linux Yocto Microsoft® Windows Embedded Compact 7 |
| Operating System | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Operating Temperature* | 70 x 70 mm (2.76" x 2.76") |
| Dimensions | |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



Improved speed & power efficiency with NXP's
first MPU with 14LPC FinFET process technology

µQ7-C72



Smallest x86 standard module
at proprietary costs

µQ7-A76-J



| | |
|------------------------|---|
| Processor | NXP i.MX 8M Mini Family based on Arm® Cortex®-A53 cores + general purpose Cortex®-M4 400MHz processor: <ul style="list-style-type: none"> • i.MX 8M Mini Quad - Full featured, 4x Cortex®-A53 cores up to 1.8GHz • i.MX 8M Mini Dual - Full featured, 2x Cortex®-A53 cores up to 1.8GHz • i.MX 8M Mini Solo - Full featured, 1x Cortex®-A53 cores up to 1.8GHz • i.MX 8M Mini Quad Lite - 4x Cortex®-A53 cores up to 1.8GHz, no VPU • i.MX 8M Mini Dual Lite - 2x Cortex®-A53 cores up to 1.8GHz, no VPU • i.MX 8M Mini Solo Lite - 1x Cortex®-A53 cores up to 1.8GHz, no VPU NXP i.MX 8M Nano Family based on Arm® Cortex®-A53 cores + general purpose Cortex®-M7 750MHz processor: <ul style="list-style-type: none"> • i.MX 8M Nano Quad - Full featured, 4x Cortex®-A53 cores up to 1.5GHz • i.MX 8M Nano Dual - Full featured, 2x Cortex®-A53 cores up to 1.5GHz • i.MX 8M Nano Solo - Full featured, 1x Cortex®-A53 cores up to 1.5GHz • i.MX 8M Nano Quad Lite - 4x Cortex®-A53 cores up to 1.5GHz, no VPU • i.MX 8M Nano Dual Lite - 2x Cortex®-A53 cores up to 1.5GHz, no VPU • i.MX 8M Nano Solo Lite - 1x Cortex®-A53 cores up to 1.8GHz, no VPU |
| Max Cores | 4+1 |
| Memory | Soldered Down onboard DDR4 memory: <ul style="list-style-type: none"> • Up to 4GB of DDR4-2400, 32-bit bus memory (i.MX8M Mini) • Up to 2GB of DDR4-2400, 16-bit bus memory (i.MX8M Nano) |
| Graphics | i.MX 8M Mini Family of processors: Vivante GC320 2D accelerator + GCNanoUltra 3D accelerator OpenGL ES 2.0, OpenVG 1.1 support i.MX 8M Nano Family of processors: Vivante GC7000UL 2D/3D GPU OpenGL ES 3.1, OpenCL1.2, Vulkan support Only for i.MX 8M Mini Family, not for Lite processors, embedded VPU able to offer: <ul style="list-style-type: none"> • VP9, HEVC/H.265, AVC/H.264, VP8 HW Decoding • AVC/H.264, VP8 HW encoding |
| Video Interfaces | Single/Dual Channel 18/24 bit LVDS interface or eDP interface |
| Video Resolution | Up to 1920 x 1080p |
| Mass Storage | eMMC 5.1 drive on-board, up to 64GB SD / MMC / SDIO interface Optional QSPI Flash for booting |
| Networking | Gigabit Ethernet interface Optional WiFi 802.11 a/b/g/n/ac +BT 5.0 NGFF module soldered on-board |
| USB | 5x USB 2.0 Host ports (i.MX 8M Mini) 4x USB 2.0 Host ports (i.MX 8M Nano) |
| PCI-e | 1 x PCI Express x 1 lane (only with i.MX 8M Mini) |
| Audio | I2S Audio Interface |
| Serial Ports | 1x 4-wire UART + 1 x Debug UART Optional CAN interface |
| Other Interfaces | SPI interface Watchdog 8x GPIO SM Bus I2C interface |
| Power Supply | +5V _{DC} and +5V _{SB} (optional) |
| Operating System | Linux (Yocto) |
| Operating Temperature* | 0°C ÷ +60 °C (commercial temp.) -30°C ÷ +85°C (extended temp.) |
| Dimensions | 40 x 70 mm (µQseven, 1.57" x 2.76") |

| | |
|------------------------|--|
| Processor | Intel® Celeron® N2807 , Dual Core @1.58GHz, 1MB Cache, 4.3W TDP Intel® Atom™ E3815 , Single Core @1.46GHz, 512KB Cache, 5W TDP Intel® Atom™ E3825 , Dual Core @1.33GHz, 1MB Cache, 6W TDP |
| Max Cores | 2 |
| Max Thread | 2 |
| Memory | Soldered on-board DDR3L memory E3825, E3815: up to 4GB Single-Channel DDR3L @ 1066MHz N2807: up to 4GB Single-Channel DDR3L @ 1333MHz |
| Graphics | Integrated Intel® HD Graphics 4000 series controller Dual independent display support HW decoding of H.264, MPEG2, MVC, VC1, VP8, MJPEG formats HW encoding of H.264, MPEG2 and MVC formats |
| Video Interfaces | Multimode Display Port interface 18 / 24 bit dual channel LVDS interface |
| Video Resolution | DP++ (HDMI compatible): Up to 2560x1600@60Hz LVDS interface: Up to 1920x1200@60Hz |
| Mass Storage | 2 x external SATA channels SD interface Optional eMMC drive soldered on-board |
| Networking | Gigabit Ethernet interface |
| USB | 1 x USB 3.0 Host port 4 x USB 2.0 Host ports (one shared with USB 3.0 interface) |
| PCI-e | 3 x PCI-e x1 lanes Gen2 |
| Audio | HD Audio interface |
| Serial Ports | 1 x Serial port (TTL interface, Tx / Rx only) |
| Other Interfaces | I2C Bus LPC Bus SM Bus Thermal / FAN management Power Management Signals |
| Power Supply | +5V _{DC} ± 5% |
| Operating System | Microsoft® Windows 7 Microsoft® Windows 8.1 Microsoft® Windows 10 Microsoft® Windows 10 IoT Microsoft® Windows Embedded Standard 7 Microsoft® Windows Embedded Compact 7 Linux Yocto |
| Operating Temperature* | 0°C ÷ +60°C |
| Dimensions | 40 x 70 mm (1.57" x 2.76") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



μQseven

μQseven® with
NXP i.MX 6 Processor

Optimal balance of
performance and size

μQ7-962



Available in Industrial
Temperature Range

| | |
|------------------------|---|
| Processor | NXP i.MX 6 Family, based on Arm® CORTEX-A9 processors - i.MX6S Solo - Single core up to 1GHz - i.MX6DL Dual Lite - Dual core up to 1GHz per core - i.MX6D Dual - Dual core up to 1GHz per core - i.MX6Q Quad - Quad core up to 1GHz per core |
| Max Cores | 4 |
| Memory | Up to 2GB DDR3L on-board (up to 1GB with i.MX6S) |
| Graphics | Dedicated 2D Hardware accelerator Dedicated 3D Hardware accelerator, supports OpenGL® ES2.0 3D Dedicated Vector Graphics accelerator supports OpenVG™ (only i.MX6D and i.MX6Q) Supports up to 3 independent displays with i.MX6D and i.MX6Q Supports 2 independent displays with i.MX6DL and i.MX6S |
| Video Interfaces | 1 x LVDS Dual Channel or 2 x LVDS Single Channel 18 / 24 bit interface HDMI Interface 1.4 |
| Video Resolution | LVDS up to 1920x1200 HDMI up to 1080p |
| Mass Storage | Up to 8 GB eMMC drive soldered on-board SD / MMC / SDIO interface 1 x External SATA Channel (only available with i.MX6D and i.MX6Q) |
| Networking | Gigabit Ethernet interface |
| USB | 1 x USB OTG interface 4 x USB 2.0 Host interfaces |
| PCI-e | 1 x PCI-e x1 lane (only PCI-e 1.1 and Gen2 are supported) |
| Audio | I2S / AC'97 Audio interface |
| Serial Ports | 2 x Serial ports (TTL interface) CAN port interface |
| Other Interfaces | I2C Bus SM Bus Power Management Signals |
| Power Supply | +5V _{DC} ± 5% |
| Operating System | Linux Yocto |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 40 x 70 mm (1.57" x 2.76") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

μQseven

μQseven® with
NXP i.MX 6 Processor

Small, flexible OTS module
at proprietary costs

μQ7-A75-J



Available in Industrial
Temperature Range

| | |
|------------------------|---|
| Processor | NXP i.MX 6 Family, based on Arm® CORTEX-A9 processors - i.MX6S Solo - Single core up to 1GHz - i.MX6DL Dual Lite - Dual core up to 1GHz per core |
| Max Cores | 2 |
| Memory | Up to 1GB DDR3L on-board (up to 512MB with i.MX6S Solo) 32-bit I/F |
| Graphics | Dedicated 2D Hardware accelerator Dedicated 3D Hardware accelerator, supports OpenGL® ES2.0 3D Supports 2 independent displays |
| Video Interfaces | 1 x LVDS Dual Channel or 2 x LVDS Single Channel 18 / 24 bit interface HDMI Interface |
| Video Resolution | LVDS, resolution up to 1920x1200 HDMI, resolution up to 1080p |
| Mass Storage | On-board eMMC drive, up to 8 GB SD / MMC / SDIO interface Internal SPI Flash for booting |
| Networking | FastEthernet (10 / 100 Mbps) interface |
| USB | 1 x USB OTG interface 1 x USB 2.0 Host interface |
| PCI-e | 1 x PCI-e x1 lane (only PCI-e 1.1 and Gen2 are supported) |
| Audio | I2S / AC'97 Audio interface |
| Other Interfaces | On the card edge connector, many pins can be used as General Purpose I / Os or to implement some(*) of the following extra functionalities: - Additional SD interface - Up to 4 UARTs - CAN interface - Watchdog(s) - I2C interfaces - PWM outputs - SPI interface - Additional Audio interface (*) not all the combinations are allowed simultaneously Power Management Signals |
| Power Supply | +5V _{DC} ± 5% Optional Low Power RTC |
| Operating System | Linux Yocto |
| Operating Temperature* | 0°C ÷ +60 °C (Commercial temp.) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 40 x 70 mm (1.57" x 2.76") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.





Carrier Board for Qseven® Rev. 2.0 compliant modules on 3.5" Form factor

Feature rich for fast Time-to-market

CQ7-A42

CROSS PLATFORM Philosophy
Cross-compatible platform with x86 and Arm solutions



Available in Industrial Temperature Range

| | |
|------------------------|--|
| Video Interfaces | LVDS Dual Channel 24-bit + backlight connectors or 2 x eDP connectors Multimode Display Port or HDMI Connector |
| Mass Storage | 1 x SATA connector with HDD Power connector 1 x mSATA Slot microSD Slot on combo microSD + SIM connector |
| Networking | Up to 2 x Gigabit Ethernet connectors |
| USB | 1 x USB 3.0 Host port on Type-A socket 2 x USB 2.0 Host ports on double Type-A sockets 2 x USB 2.0 Host ports on internal pin header 1 x USB 2.0 OTG port on micro-AB socket (USB port shared with miniPCI-e slot) |
| PCI-e | miniPCI-e slot Full / Half Size, combined with SIM card slot |
| Audio | Audio interface on internal pin header |
| Serial Ports | 4-wire RS-232 / RS-422 / RS-485 configurable serial port on DB9 male connector 2 x RS-232 Full-modem serial ports on internal header (need LPC interface from Qseven® module) CAN interface on PCB terminal block |
| Other Interfaces | SPI internal pin header LPC Bus internal pin header SM Bus / I2C GPIO expander, makes available 16 x GPIOs on internal pin header Front Panel Header 1 x 28 pin connector for additional features (I2C, ACPI signals, SM Bus, Watch Dog, Thermal Management) +12V Tachometric FAN connector Optional Debug USB port on miniB socket Optional MFG connector for JTAG programming of Qseven® module |
| Power Supply | +12V _{DC} Mini-fit Standard ATX power connector Coin cell battery Holder for CMOS and RTC |
| Operating Temperature* | -40°C ÷ +85°C (Industrial temperature range) |
| Dimensions | 146 x 102 mm (5.75" x 4.02") |

*All carrier board components must remain within the operating temperature at any and all times, including start-up; carrier operating temperature is independent of the module installed. Please refer to the specific module for more details. Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider specific cooling solutions for the final system.

Carrier Boards for Qseven® and µQseven modules

Development kit compatible with both x86 and Arm Qseven® Rev. 2.0 modules



Everything you need for flexible development

Q7 DEV KIT 2.0

CROSS PLATFORM Philosophy
Cross-compatible platform with x86 and Arm solutions



SCHEMATICS PUBLICLY AVAILABLE



FEATURES OF CQ7-A30

| | |
|------------------------|---|
| Video Interfaces | HDMI / Display Port interface on PCI-e x16 slot LVDS / eDP interface on PCI-e x8 slot |
| Mass Storage | SATA Female 7p connector with dedicated Power connector, interface shared with mSATA Slot SATA Male 7+15p connector SD / MMC Card Slot SPI Flash Socket I2C EEPROM Socket |
| Networking | Gigabit Ethernet connector |
| USB | 1 x USB 3.0 Host Type-A socket 1 x USB 3.0 OTG micro-AB socket 2 x USB 2.0 Host ports on internal pin header (alternative to USB 3.0 port #0) Up to 4 x USB 2.0 Host ports on quad Type-A socket |
| PCI-e | PCI-e x4 interface on dedicated PCI-e x16 slot shared with 3 x PCI-e x1 slots + miniPCI-e slot (selection via jumper) |
| Audio | Embedded HD Audio Codec, Realtek ALC888 2 x Triple HD Audio jacks 2 S / PDIF connectors (In & Out) Audio Expansion Slot |
| Serial Ports | CAN Bus (both TTL interface and with CAN transceiver) 3 x RS-232 only ports 2 x RS-232 / RS-422 / RS-485 configurable serial ports |
| Other Interfaces | Feature Connector, with I2C , SM Bus, Watchdog, Thermal and Power Management Signals LPC Bus Header SPI Pin Header SIM Card slot 4 x 7-segment LCD displays for POST codes PS / 2 Mouse / keyboard pin header 2 x tachometric FAN connectors Debug Port on mini-B USB connector Power, Reset, LID and Sleep Buttons |
| Power Supply | +12V _{DC} Coin cell battery Holder for CMOS and RTC |
| Operating Temperature* | 0° C ÷ 60° C |
| Dimensions | 345 x 170 mm (13.58" x 6.69") |

*All carrier board components must remain within the operating temperature at any and all times, including start-up; carrier operating temperature is independent of the module installed. Please refer to the specific module for more details. Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider specific cooling solutions for the final system.

Development kits for Qseven® and µQseven modules



Development Kit

Complete package to start the development with both **x86 and Arm Qseven® Rev. 2.0** modules

Quickly “start” prototyping for short Time-to-market

Q7 STARTER KIT 2.0



Cross-compatible platform with x86 and Arm solutions

SCHEMATICS PUBLICLY AVAILABLE



Available in Industrial Temperature Range

FEATURES OF CQ7-A42

| | | |
|--|------------------------|--|
| | Video Interfaces | LVDS Dual Channel 24-bit + backlight connectors or 2 x eDP connectors Multimode Display Port or HDMI Connector |
| | Mass Storage | 1 x SATA connector with HDD Power connector 1 x mSATA Slot microSD Slot on combo microSD + SIM connector |
| | Networking | Up to 2 x Gigabit Ethernet connectors |
| | USB | 1 x USB 3.0 Host port on Type-A socket 2 x USB 2.0 Host ports on double Type-A sockets 2 x USB 2.0 Host ports on internal pin header 1 x USB 2.0 OTG port on micro-AB socket (USB port shared with miniPCI-e slot) |
| | PCI-e | miniPCI-e slot Full / Half Size, combined with SIM card slot |
| | Audio | Audio interface on internal pin header |
| | Serial Ports | 4-wires RS-232 / RS-422 / RS-485 configurable serial port on DB9 male connector 2 x RS-232 Full-modem serial ports on internal header (need LPC interface from Qseven® module) CAN interface on PCB terminal block |
| | Other Interfaces | SPI internal pin header LPC Bus internal pin header SM Bus / I2C GPIO expander, makes available 16 x GPIOs on internal pin header Front Panel Header 1 x 28 pin connector for additional features (I2C, ACPI signals, SM Bus, Watch Dog, Thermal Management) +12V Tachometric FAN connector Optional Debug USB port on miniB socket Optional MFG connector for JTAG programming of Qseven® module |
| | Power Supply | +12V _{DC} Mini-fit Standard ATX power connector Coin cell battery Holder for CMOS and RTC |
| | Operating Temperature* | -40°C ÷ +85°C (Industrial temperature range) |
| | Dimensions | 146 x 102 mm (5.75" x 4.02") |

*All carrier board components must remain within the operating temperature at any and all times, including start-up; carrier operating temperature is independent of the module installed. Please refer to the specific module for more details. Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider specific cooling solutions for the final system.

Development kits for Qseven® and µQseven modules



SMARC STANDARD ADVANTAGES

- Extreme low power design**
- Low profile design**
- Dedicated battery management signals**
- Up to four display interfaces**
- Dual Ethernet**
- SMARC Compact 82x50 mm**

COMPUTER-ON-MODULE APPROACH

- | Design investment limited to the carrier board |
- | Consolidated Standard form factor |
- | Scalable and future-proof | Long-term availability |
- | Arm and x86 cross-compatibility |
- | Multi-vendor solution | Highly configurable |
- | Innovative and upgradable | Accelerated time-to-market |

SMARC SUPPORTED FEATURES

| System I/O interface | # of interfaces |
|---------------------------------------|--|
| PCI Express lanes | 4 |
| Serial ATA channels | 1 |
| USB 2.0 ports | 6 |
| USB 3.0 ports | 2 |
| LVDS channels embedded DisplayPort | 2 |
| DP++ / HDMI | 1 dedicated DP++ 1 shared DP++ / HDMI |
| Camera interfaces | 2 MIPI CSI |
| High Definition Audio / I2S | 1 I2S + 1 shared I2S / HD Audio |
| Ethernet 10/100/1000 Mbps | 2 |
| UARTs | 2 x 4-Wire + 2 x 2-Wire |
| Secure Digital I/O 4-bit | 1 |
| I ² C Bus | 5 |
| SPI Bus | 2 |
| CAN Bus | 2 |
| Watchdog Timer | 1 |
| Boot selection signals | 3 |
| GPIOs | 12 (some with alternate functions) |
| System and Power management signals | Reset out and Reset in Power button in Power source status Module power state status System management pins Battery and battery charger management pins Carrier Power On control |



SECO is one of the founding members of SGET

SMARC



SMARC® Rel. 2.1 with Intel® Atom® x6000E Series, Intel® Pentium® and Celeron® N & J Series CPUs (formerly Elkhart Lake)

First SMARC module specifically designed for Functional Safety (FuSa) of Safety-related systems

SM-C93



Available in Industrial Temperature Range

| | |
|-----------------------------------|---|
| Processor | <p>Intel® Atom™ x6000E CPUs certified for FuSa, compliant to IEC 61508 and ISO 13849 requirements for Functional Safety and Safety Integrity Levels:</p> <ul style="list-style-type: none"> Atom™ x6427FE Quad Core @1.9GHz (no Turbo) 12W TDP w/ IBECC, IHS and TCC, FuSa Certified - Ind. Temp. Range Atom™ x6200FE Dual Core @1.0GHz (no Turbo) 4.5W TDP no Graphics w/ IBECC, IHS and TCC, FuSa Certified- Ind. Temp. Range <p>Other Intel Atom™ x6000E, Pentium® and Celeron® N and J Series CPUs:</p> <ul style="list-style-type: none"> Celeron® J6413 Quad Core @ 1.8GHz (3.0GHz Turbo) 10W TDP - Comm. Temp. Range Celeron® N6211 Dual Core @1.2GHz (3.0GHz Turbo) 6W TDP - Comm. Temp. Range Pentium® J6425 Quad Core @1.8GHz (3.0GHz Turbo) 10W TDP - Comm. Temp. Range Pentium® N6415 Quad Core @1.2GHz (3.0GHz Turbo) 6W TDP - Comm. Temp. Range Atom™ x6211E Dual Core @1.2GHz (3.0GHz Turbo) 6W TDP w/ IBECC and IHS - Ind. Temp. Range Atom™ x6413E Quad Core @1.5GHz (3.0GHz Turbo) 9W TDP w/ IBECC and IHS - Ind. Temp. Range Atom™ x6425E Quad Core @1.8GHz (3.0GHz Turbo) 12W TDP w/ IBECC and IHS - Ind. Temp. Range Atom™ x6212RE Dual Core @1.2GHz (no Turbo) 6W TDP w/ IBECC, IHS and TCC - Ind. Temp. Range <p>(* IHS: Integrated Heatspreader; TCC: Time Coordinated Computing)</p> |
| Max Cores | 4 |
| Memory | <p>32-bit LPDDR4x Soldered Down Memory Up to 16GB Quad Channel with In-Band Error Correction Code (IBECC, Safety Related feature) supported 1GB or 2GB Single Channel, 4GB Dual Channel, 8GB or 16GB Quad Channel supported Speed: 4267MT/s single rank (1GB / 2GB / 4GB / 8GB), 3733MT/s dual rank (16GB)</p> |
| Graphics | <p>Up to 3 independent displays Integrated Gen11 UHD Graphics controller with up to 32 EU 4K HW decoding and encoding of HEVC (H.265), H.264, VP8/VP9, WMV9/VC1 (decoding only)</p> |
| Video Interfaces | <p>DirectX 12.1, OpenGL ES 3.1, OpenGL 4.5, OpenCL™ 1.2, Vulkan 1.0 eDP 1.3 or Dual Channel 18/24bit LVDS interface (factory options) 2 x DP++ 1.4 or 1x DP++ 1.4 and 1x HDMI 1.4 interfaces Single Active up to 7680x4320 @60Hz (8K) - Display Port Re-timer needed on the Carrier board to support 8Kp30/5Kp60 resolution</p> |
| Video Resolution | <p>Multiple Active Displays Up to 4096 x 2160 @60Hz</p> |
| Mass Storage | <p>1 x external S-ATA Gen3 Channel SDIO interface Optional eMMC 5.1 drive soldered on-board (Safety Related)</p> |
| Networking | <p>2x Gigabit Ethernet PHY with precision clock synchronization and synchronous Ethernet clock output for IEEE 1588 (Safety Related - Black channel). Optional SERDES (SGMII) Interface for additional third Gigabit Ethernet (factory option, alternative to fourth PCI-e lane)</p> |
| USB | <p>6 x USB 2.0 Host Ports 2 x USB 3.1 Gen2 Ports</p> |
| PCI-e | Up to 4 x PCI-e Gen3 Lanes |
| Audio | HD Audio interface |
| Serial Ports | 2 x HS-UARTs (Safety Related) 2 x UARTs |
| CAN Bus | 2x |
| Other Interfaces | <p>Up to 14x GPIOs SM Bus Power Management Signals I2C Bus 1x SPI interface for boot 1x General Purpose SPI or eSPI (Factory Alternatives)</p> |
| Functional Safety features | FuSa Interface signals for IEC 61508 and ISO 13849 |
| Power Supply | +5V _{DC} and +3.3V _{RTC} |
| Operating System | Microsoft® Windows 10 Enterprise (64 bit) Linux Yocto 64-bit |
| Operating Temperature* | -40°C ÷ +85°C (Industrial version) |
| Dimensions | 50 x 82 mm |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



SMARC

SMARC Rel. 2.1 with the Intel® Atom™ X Series, Intel® Celeron® J / N Series and Intel® Pentium® N Series (formerly Apollo Lake) Processors

SMARC

SMARC® Rel. 2.1 compliant module with NXP i.MX 8M Plus Applications Processors



High performance, low power and feature-rich

SM-B69



Available in Industrial Temperature Range

Low-power design for embedded applications of machine learning at higher levels

SM-D18



Available in Industrial Temperature Range

| | |
|------------------------|---|
| Processor | Intel® Atom™ x7-E3950 Quad Core @1.6 GHz (Burst 2.0GHz), 2MB L2 Cache, 12W TDP Intel® Atom™ x5-E3940 Quad Core @1.6 GHz (Burst 1.8GHz), 2MB L2 Cache, 9.5W TDP Intel® Atom™ x5-E3930 Dual Core @1.3 GHz (Burst 1.8GHz), 2MB L2 Cache, 6.5W TDP Intel® Pentium® N4200 Quad Core @1.1GHz (burst 2.5GHz), 2MB L2 Cache, 6W TDP Intel® Celeron® N3350 Dual Core @1.1GHz (burst 2.4GHz), 2MB L2 Cache, 6W TDP Intel® Celeron® J3455 , Quad Core @ 1.5GHz (Burst 2.3GHz), 2MB L2Cache, 10W TDP Intel® Celeron® J3355 , Dual Core @ 2.0GHz (Burst 2.5GHz), 2MB L2Cache, 10W TDP |
| Max Cores | 4 |
| Memory | Single- / Dual- / Quad- Channel Soldered Down LPDDR4-2400 memory, up to 8GB |
| Graphics | Up to 3 independent displays Integrated Intel® HD Graphics 500 / 505 HD Graphics controller, with up to 18 Execution Units 4K HW decoding and encoding of HEVC(H.265), H.264, VP8, SVC, MVC |
| Video Interfaces | eDP interface or Dual Channel 18/24bit LVDS interface through eDP-to-LVDS bridge HDMI or DP++ interface DP++ interface 2 x CSI interfaces |
| Video Resolution | HDMI, eDP up to 3840 x 2160 (4K) DP++ Up to 4096 x 2160 LVDS Up to 1920 x 1200 |
| Mass Storage | 1 x external S-ATA Gen3 Channel SD interface Optional eMMC 5.0 drive soldered on-board |
| Networking | Up to 2 x Gigabit Ethernet interfaces Intel® I210 or I211 Controller (MAC + PHY) |
| USB | 6 x USB 2.0 Host Ports 2 x USB 3.0 Host Ports |
| PCI-e | 4 x PCI-e Root Ports |
| Audio | HD Audio interface I2S Audio interface |
| Serial Ports | 2x 2-wire HS-UARTs 2x 4-wire UARTs |
| Other Interfaces | Up to 14x GPIOs I2C Bus SM Bus 2x SPI interfaces LPC Bus FAN management Optional TPM 1.2 / 2.0 Power Management Signals |
| Power Supply | +5V _{DC} and +3.3V _{RTC} |
| Operating System | Microsoft® Windows 10 Enterprise (64 bit) Microsoft® Windows 10 IoT Core Linux Yocto Android |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 50 x 82 mm |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

| | |
|------------------------|---|
| Processor | NXP i.MX 8M Plus family SoCs: Dual or Quad Arm Cortex®-A35 Cores + general purpose Cortex® M7 800MHz processor <ul style="list-style-type: none"> NXP i.MX 8M Plus Quad, 4x Arm Cortex®-A35 Cores up to 1.8GHz NXP i.MX 8M Plus Dual, 2x Arm Cortex®-A35 Cores up to 1.8GHz NXP i.MX 8M Plus Quad Lite, 4x Arm Cortex®-A35 Cores up to 1.8GHz, no VPU / NPU |
| Max Cores | 4+1 |
| Memory | Soldered down LPDDR4-4000 memory, 32-bit interface, up to 8GB |
| NPU | 2.3 TOPS Neural Network performance (not for Quad Lite) |
| Graphics | Integrated Graphics Processing Unit GC7000UL, supports 3 independent displays Embedded VPU, supports HW decoding of HEVC/H.265, AVC/H.264, MPEG-4, MPEG-2, MVC, VC-1, RV, VP6, VP7, VP8, VP9, JPEG, HW encoding of HEVC/H.265, AVC/H.264 Supports OpenVG 1.1, OpenGL ES 3.1, OpenCL 1.2 Full Profile and Vulkan |
| Video Interfaces | Up to 3 video display interfaces HDMI 2.0a interface, supporting HDCP 2.2 and HDCP 1.4/1.3 2xLVDS Single Channel / 1xLVDS Dual Channel or eDP + 1xLVDS Single Channel (factory alternatives) |
| Video Resolution | HDMI, LVDS, eDP Up to 1920 x 1080p @60 |
| Mass Storage | Soldered onboard eMMC 5.1 Drive, up to 64GB SD 4-bit interface |
| Networking | 2 x Gigabit Ethernet interfaces Optional WiFi + BT LE module onboard |
| USB | Up to 2 x USB 2.0 Host Ports 2 x USB 3.0 Host Ports 1 x USB 2.0 OTG port |
| PCI-e | 1x PCI-e x1 Gen3 port |
| Audio | Up to 2x I2S Audio interfaces |
| Serial Ports | Up to 2x 2-wires UART 2x 4-wires UART |
| CAN Bus | 2x CAN interfaces |
| Other Interfaces | 1x 4-lanes CSI camera interface 1x 2-lanes CSI camera interface 2x PWM Up to 14x GPIOs I2C bus SM bus SPI interface QuadSPI interface Watchdog Boot select signals Power Management Signals |
| Power Supply | +5V _{DC} and +3.3V _{RTC} |
| Operating System | Linux Android |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 50 x 82 mm (1.97" x 3.23") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

Safety-certifiable and efficient performance
in SMARC Standard module

SM-D16

Available in Industrial
Temperature RangeStandard solution for next generation
multimedia applications

SM-C12

Available in Industrial
Temperature Range

| | |
|------------------------|--|
| Processor | NXP i.MX 8X family SoCs: Dual or Quad Arm Cortex®-A35 Cores + 1x Cortex® M4F core for real-time processing <ul style="list-style-type: none"> NXP i.MX8 QuadXplus, 4x Arm Cortex®-A35 Cores + 1x Cortex® M4F core for real-time processing NXP i.MX8 DualXplus, 2x Arm Cortex®-A35 Cores + 1x Cortex® M4F core for real-time processing NXP i.MX8 DualX, 2x Arm Cortex®-A35 Cores |
| Max Cores | 4+1 |
| Memory | Soldered down LPDDR4 memory @ 1200MHz, 32-bit interface, up to 4GB |
| Graphics | Embedded GC7000Lite GPU Supports OpenGL 3.0, 2.1, OpenGL ES 3.1, OpenCL 1.2 Full Profile and 1.1, OpenVG 1.1, and Vulkan Embedded VPU, supports HW decoding of HEVC/H.265, AVC/H.264, MPEG-2, VC-1, RV10, VP8, H.263 and MPEG4.2t, HW encoding of AVC/H.264 2 independent displays supported |
| Video Interfaces | Factory alternatives: <ul style="list-style-type: none"> 2x LVDS / Mipi-DSI Single Channel or 1xLVDS / Mipi-DSI Dual Channel 18-/24-bit interface LVDS / Mipi-DSI Single Channel 18-/24-bit interface + HDMI interface eDP 4-lane interface + LVDS / Mipi-DSI single Channel 18-/24-bit interface eDP 4-lane interface + HDMI interface |
| Video Resolution | MIPI-DSI, LVDS, eDP, HDMI Up to 1920 x 1080 @ 60Hz |
| Mass Storage | Optional Soldered onboard eMMC 5.1 Drive, up to 64GB SD 4-bit interface QSPI NOR Flash soldered on-board |
| Networking | Up to 2 x Gigabit Ethernet interfaces On-board WiFi 802.11 a/b/g/n + BT LE 5.0 module, optional |
| USB | Up to 3 x USB 2.0 Host Ports 2 x USB 3.0 Host Ports |
| PCI-e | 1x PCI-e 3.0 x1 port |
| Audio | Up to 2x I2S Audio interfaces |
| Serial Ports | 2x 2-wires UART 2x 4-wires UART |
| CAN Bus | 2x CAN interfaces |
| Other Interfaces | 1x 4-lanes CSI camera interface 2x PWM Up to 14x GPIOs I2C bus SM bus SPI interface QuadSPI interface Watchdog Boot select signals Power Management Signals |
| Power Supply | +5V _{DC} and +3.3V _{RTC} |
| Operating System | Linux Android |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 50 x 82 mm (1.97" x 3.23") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

| | |
|------------------------|---|
| Processor | NXP i.MX 8M Family based on Arm Cortex®-A53 cores + general purpose Cortex®-M4 processor: <ul style="list-style-type: none"> i.MX 8M Quad - 4x Cortex®-A53 cores up to 1.5GHz i.MX 8M Dual - 2x Cortex®-A53 cores up to 1.5GHz i.MX 8M QuadLite - 4x Cortex®-A53 cores up to 1.5GHz, no VPU |
| Memory | Soldered Down LPDDR4-3200 memory, 32-bit interface, up to 4GB |
| Graphics | Integrated Graphics Processing Unit, supports 2 independent displays Embedded VPU, supports HW decoding of HEVC (H.265), H.264, H.263, MPEG-4, MPEG-2, AVC, VC-1, RV, DivX, VP6, VP8, VP9, JPEG Supports OpenGL ES 3.1, Open CL 1.2, OpenGL 2.X, Vulkan, DirectX, Open VG 1.1 |
| Video Interfaces | HDMI 2.0a interface, supporting HDCP 2.2 and HDCP 1.4 18- / 24-bit Dual Channel LVDS interface (factory option) |
| Video Resolution | HDMI: Up to 4096 x 2160 @ 60 (4K) LVDS: Up to 1920 x 1080 @ 60Hz |
| Mass Storage | Optional SD 4-bit interface QSPI Flash soldered-on-board eMMC 5.0 drive soldered on-board |
| Networking | 1 x Gigabit Ethernet interface Optional WiFi + BT LE module onboard |
| USB | 2 USB 3.0 Host ports 2 USB 2.0 Host ports 1 USB 2.0 OTG port |
| PCI-e | 2x PCI-e x1 ports |
| Audio | I2S Audio Interface |
| Serial Ports | Up to 2x UART Tx/Rx/RTS/CTS 2x UART Tx/Rx 1x CAN Bus (TTL level) |
| Other Interfaces | 1x 4-lanes + 1x 2-lanes CSI camera interfaces I2C Bus SM Bus 2x SPI interfaces QuadSPI interface 14 x GPIOs Boot select signals Power Management Signals |
| Power Supply | +5V _{DC} +3.3V _{RTC} |
| Operating System | Linux Yocto Android |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 50 x 82 mm (1.97" x 3.23") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

Flexible Arm + FPGA Heterogeneous
Processing in a Standard Form Factor

SM-B71

 Available in Industrial
Temperature RangeCross Platform Philosophy Development Kit for
SMARC Rel. 2.0 compliant module

SMARC DEV KIT

Cross-compatible
platform with x86
and Arm solutionsSCHEMATICS
PUBLICLY AVAILABLE

FEATURES OF CSM-B79

| | |
|------------------------|---|
| Processor | Xilinx® Zynq® Ultrascale+™ ZU2CG, ZU3CG, ZU4CG or ZU5CG MPSoCs: Dual-core Arm® Cortex®-A53 MPCore Application Processing Unit + Dual-core Arm® Cortex®-R5 Real-Time Processing Unit |
| Memory | Xilinx® Zynq® Ultrascale+™ ZU2EG, ZU3EG, ZU4EG, ZU5EG, ZU4EV or ZU5EV MPSoCs: Quad-core Arm® Cortex®-A53 MPCore Application Processing Unit + Dual-core Arm® Cortex®-R5 Real-Time Processing Unit |
| Graphics | Soldered Down DDR4-2400 memory Up to 8GB for Processing System Unit + up to 2GB for Programmable Logic |
| Video Interfaces | Only on EG and EV MPSoCs: Integrated Arm Mali-400 MP2 Graphics Processing Unit Multicore 2D/3D acceleration at 667MHz OpenGL ES 1.1 / 2.0, OpenVG 1.0 / 1.1 On EV MPSoCs only, H.264/H.265 integrated video codec |
| Video Resolution | 18- / 24-bit Dual Channel LVDS interface DP interface 2 x CSI interfaces |
| Mass Storage | DP: Up to 4096 x 2160 LVDS: Dependent on the IP implemented in the programmable logic |
| Networking | 1 x external S-ATA Gen3 Channel SD interface QSPI Flash soldered-on-board Optional eMMC 4.51 drive soldered on-board |
| USB | Up to 2 x Gigabit Ethernet interfaces |
| PCI-e | 1x USB 2.0 OTG 2x USB 2.0 Host 2x USB 3.0 Host |
| Audio | PCI-e x4 interface |
| Serial Ports | Dependent on the IP implemented in the programmable logic |
| Other Interfaces | 2 x UART Tx/Rx/RTS/CTS 2 x UART Tx/Rx 2 x CAN Bus |
| Power Supply | 2x I2C Bus 2 x SPI interfaces 12 x GPIOs Boot select signals Power Management Signals |
| Operating System | +3++5.25V _{Dc} +3.3V _{RTC} |
| Operating Temperature* | Linux Android |
| Dimensions | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| | 50 x 82 mm (1.97" x 3.23") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

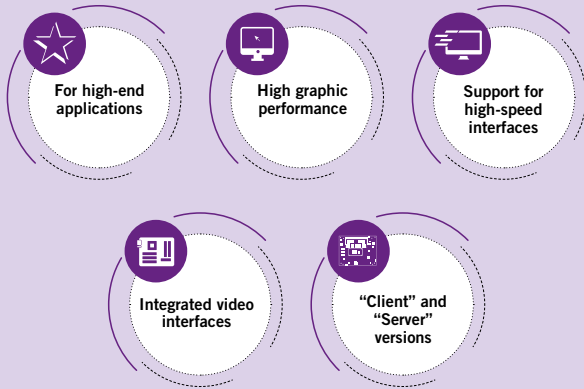
| | |
|------------------------|---|
| Video Interfaces | LVDS connector, interface shared with 2 x eDP/DSI connectors Backlight control + LCD selectable voltages dedicated connector DP++ dedicated connector HDMI connector (interface shared with USB 3.1 Type-C alternate mode port) 2x CSI Camera input interfaces |
| Mass Storage | SATA M 7p connector with dedicated power connector, interface shared with M.2 Socket 2 2242 / 2260 Key B SSD slot microSD Card Slot |
| Networking | 2 x RJ-45 Gigabit Ethernet connectors M.2 Socket1 2230 Key E Slot for WIFI Modules (interface shared with PCI-e x 4 slot) M.2 Socket2 2260 Key E Slot for WWAN Modem Modules (interface shared with PCI-e x 4 slot), connected to on-board microSIM slot |
| USB Ports | 1 x USB 3.0 type A Socket 1 x USB 2.0 type A Socket 1 x USB OTG micro-AB Socket 1 x USB 3.1 Type-C Socket, with Alternate Mode and Power Delivery functionality |
| PCI-e | PCI-e x4 slot, interface shared with 2 x PCI-e x1 Slot and M.2 Slots |
| Audio | Mic In Jack, Line Out Jack Onboard I2S Audio Codec (TI TLV320AIC3204) + HD Audio Codec (Cirrus Logic CS4207) |
| Serial Ports | 2 x CAN ports 2 x RS-232/RS-422/RS-485 configurable serial ports on internal pin header 2 x Serial ports (Tx/Rx signals only, TTL level) on feature pin header |
| Other Interfaces | eSPI pin header + Flash Socket SPI pin header + Flash Socket I2C EEPROM Socket 4 x 7-segment LCD displays for POST codes Feature pin header with 8x GPIOs, I2C, SM Bus, Watchdog and Power Management Signals 4x GPIOs dedicated connector FAN connector RTC Coin cell battery holder Optional Debug USB port on mini-B Socket Boot selection switches JTAG connector |
| Power Supply | 9-21V through dedicated Mini-Fit Jr 2x2 power connector or USB Type-C connector 6-17V through 2/3/4 Cell Smart Battery Connector |
| Operating Temperature* | -40°C ÷ +85°C |
| Dimensions | 243.84 x 243.84mm (microATX) |

*All carrier board components must remain within the operating temperature at any and all times, including start-up; carrier operating temperature is independent of the module installed. Please refer to the specific module for more details. Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider specific cooling solutions for the final system.



COM+HPC®

COM-HPC® STANDARD ADVANTAGES



COMPUTER-ON-MODULE APPROACH

- | Design investment limited to the carrier board |
- | Consolidated standards |
- | Scalable and future-proof solutions |
- | Long-term availability | Arm and x86 compatibility |
- | Multi-vendor solutions | Highly configurable |
- | Innovative and updatable solutions |
- | Reduced time-to-market |

COM-HPC® SUPPORTED FEATURES

| COM-HPC® Client | COM-HPC® Server |
|--------------------------------|------------------------------|
| 49x PCIe | 65x PCIe |
| 2x MIPI-CSI | |
| 2x 25GbE KR | |
| 3x DDI | 8x 25GbE KR |
| 2x BaseT (up to 10 Gb) | |
| 2x SoundWire, I ² S | BaseT (up to 10 Gb) |
| 4x USB4 | 2x USB4 |
| | 2x USB3.2 |
| 4x USB2.0 | 4x USB2.0 |
| 2x SATA | 2x SATA |
| eSPI, 2x SPI, SMB | eSPI, 2x SPI, SMB |
| 2x I ² C, 2x UART | 2x I ² C, 2x UART |
| 12x GPIO | 12x GPIO |



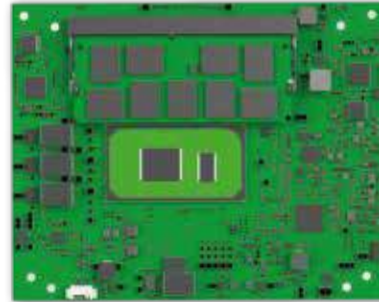
COM HPC®



COM-HPC® Client module Size A, with the 11th Gen Intel® Core™ processors and Intel® Celeron® processors (formerly Tiger Lake-U)

11th Generation Intel® Core™ and Celeron® Processors in brand-new COM-HPC® format

CHPC-C77-CSA



Available in Industrial Temperature Range

| | |
|------------------------|--|
| Processor | 11 th Generation Intel® Core™ and Celeron® Processors, also available in industrial temperature range <ul style="list-style-type: none"> Intel® Core™ i7-1185G7E, Quad Core @ 2.8GHz (4.4GHz in Turbo Boost) with HT, 12MB Cache, 28/15/12W cTDP Intel® Core™ i5-1145G7E, Quad Core @ 2.6GHz (4.1GHz in Turbo Boost) with HT, 8MB Cache, 28/15/12W cTDP Intel® Core™ i3-1115G4E, Dual Core @ 3.0GHz (3.9GHz in Turbo Boost) with HT, 6MB Cache, 28/15/12W cTDP Intel® Celeron® 6305E, Dual Core @1.8GHz, 4MB Cache, 15W TDP Intel® Core™ i7-1185G9E, Quad Core @ 2.8GHz (4.4GHz in Turbo Boost) with HT, 12MB Cache, with IB ECC and Functional Safety Essential Design package, 28/15/12W cTDP - Industrial (w/ Turbo OFF) Intel® Core™ i5-1145G9E, Quad Core @ 2.6GHz (4.1GHz in Turbo Boost) with HT, 8MB Cache, with IB ECC and Functional Safety Essential Design package, 28/15/12W cTDP - Industrial (w/ Turbo OFF) Intel® Core™ i3-1115G4E, Dual Core @ 3.0GHz (3.9GHz in Turbo Boost) with HT, 6MB Cache, with IB ECC and Functional Safety Essential Design package, 28/15/12W cTDP - Industrial (w/ Turbo OFF) |
| Max Cores | 4 |
| Memory | 2x DDR4-3200 SODIMM Slots with IB ECC (In-Band Error Correction Code), up to 64GB supported |
| Graphics | Integrated Iris X ^e Graphics Core Gen12 architecture, with up to 96 Execution Units MPEG2, WMV9, AVC/H.264, JPEG/MJPEG, HEVC/H.265, VP9, AV1 HW decoding, up to 8k @60. AVC/H.264, HEVC/H.265, JPEG, VP9 HW encoding Support up to 4 independent displays. |
| Video Interfaces | 1x eDP 1.4b or MIPI-DSI 1.3 Up to 3x DP++ interface, supporting Display Port 1.4a and HDMI 2.0b Up to 4x Display Port over Type-C (Alternate mode) |
| Video Resolution | DP, eDP: Up to 5120x3200 @60Hz 24bpp / 7680x4320@60Hz 30bpp with DSC MIPI-DSI: Up to 3200x2000 @60Hz 24 bpp, 5120x3200 @60Hz 24bpp with DSC HDMI 1.4: Up to 4Kx2K 24-30Hz 24bpp HDMI 2.0b: Up to 4Kx2K 48-60Hz 24bpp / 4Kx2K 48-60Hz 12bpc (need dedicated redriver on carrier board) |
| Mass Storage | 2 x S-ATA Gen3 Channels PCI-e x4 port can be used to connect, on the carrier board, M.2 NVMe drives |
| Networking | Up to 2x NBase-T Ethernet interfaces, supporting 2.5Gb Ethernet connection, managed by as many Intel® I225 2.5GbE Controllers M.2 1216 SD Module supporting WiFi 802.11abgn+ac R2 MIMO 2x2 + MU-MIMO and Bluetooth 5.0 |
| USB | Up to 4 x USB 4.0 / USB 3.2 Host ports 4 x USB 2.0 Host port |
| PCI-e | 1x PCI-e x4 Gen 4 port Up to 8x PCI-e Gen 3 lanes, groupable to support up to 4 root ports (5 root ports without the second 2.5GbE controller) |
| Audio | SoundWire and I ² S Audio Interface |
| Serial Ports | 2 x UARTs |
| Other Interfaces | 2x 4-lane CSI-2 interfaces, optional SPI, SM Bus, 2x I ² C, Watchdog timer, Carrier board FAN Control Management signals, ACPI signals, Safety Status signals Deep Sleep / Battery support Optional TPM 2.0 module on-board 12x GPIOs |
| Power Supply | +8V _{DC} .. +20V _{DC} Main power supply +5V stand-by Windows 10 IoT Enterprise LTSC Linux Kernel LTS |
| Operating System | Yocto VxWorks 7.0 Android |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 120 x 95 mm (COM-HPC® Size A Form factor, Client pinout) |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



COM EXPRESS™ STANDARD ADVANTAGES

- For high-end designs and markets
- High graphics computing
- Extremely feature-rich
- For high performance project requirements
- Basic: 125x95 mm Compact: 95x95 mm

COMPUTER-ON-MODULE APPROACH

- Design investment limited to the carrier board
- Consolidated Standard form factor
- Scalable and future-proof
- Long-term availability
- Arm and x86 cross-compatibility
- Multi-vendor solution
- Highly configurable
- Innovative and upgradable
- Accelerated time-to-market

COM EXPRESS™ INTERFACES

| Interface | Type 6 Min / Max | Type 7 Min / Max | Interface | Type 6 Min / Max | Type 7 Min / Max |
|----------------------------|------------------|------------------|----------------------------------|------------------|------------------|
| PCI Express Lanes 0 - 5 | 1 / 6 | 6 / 6 | LPC Bus or eSPI | 1* | 1* |
| PCI Express Lanes 6 - 15 | 0 / 2 | 0 / 10 | SPI (Devices) | 1 / 2 | 1 / 2 |
| PCI Express Lanes 16 - 31 | 0 / 16 | 0 / 16 | Rapid Shutdown | 0 / 1 | 0 / 1 |
| PCI Express Graphics (PEG) | 0 / 1 | NA | SDIO (muxed on GPIO) | 0 / 1 | 0 / 1 |
| 10G LAN Ports 0 - 3 | N.A. | 0 / 4 | General Purpose I/O SMBus | 8 / 8 | 8 / 8 |
| NC-SI | N.A. | 0 / 1 | I2C | 1* | 1* |
| 1Gb LAN Port 0 | 1* | 1* | Watchdog Timer | 0 / 1 | 0 / 1 |
| DDIs 1 - 3 | 0 / 3 | N.A. | Speaker Out | 1* | 1* |
| LVDS Channel A | 0 / 1 | N.A. | Carrier Board BIOS Flash Support | 0 / 1 | 0 / 1 |
| LVDS Channel B | 0 / 1 | N.A. | Reset Functions | 1* | 1* |
| eDP on LVDS 1st channel | 0 / 1 | N.A. | Trusted Platform Module | 0 / 1 | 0 / 1 |
| VGA Port | 0 / 1 | N.A. | Thermal Protection | 0 / 1 | 0 / 1 |
| Serial Ports | 0 / 2 | 0 / 2 | Battery Low Alarm | 0 / 1 | 0 / 1 |
| CAN interface on SER1 | 0 / 1 | 0 / 1 | Suspend/Wake Signals | 0 / 3 | 0 / 3 |
| SATA Ports | 1 / 4 | 0 / 2 | Power Button Support | 1* | 1* |
| HDA Digital Interface | 0 / 1 | N.A. | Power Good | 1* | 1* |
| USB 2.0 Ports | 4 / 8 | 4 / 4 | Sleep Input | 0 / 1 | 0 / 1 |
| USB0 Client | 0 / 1 | 0 / 1 | Lid Input | 0 / 1 | 0 / 1 |
| USB7 Client | 0 / 1 | N.A. | Carrier Board Fan Control | 0 / 1 | 0 / 1 |
| USB 3.0 Ports | 0 / 4 | 0 / 4 | | | |

*Mandatory interface



COM Express™ Rel.3.0 Basic Type 7 module with the AMD EPYC™ Embedded 3000 Series of SoCs



Scalable offerings with outstanding performance and more connectivity

COMe-C42-BT7



Available in Industrial Temperature Range

| | |
|-------------------------------------|---|
| Processor | AMD EPYC™ Embedded 3000 family of SoCs: <ul style="list-style-type: none"> AMD EPYC™ Embedded 3251, Eight Core Dual Thread @ 2.5GHz (3.1 Boost), 16MB L3 shared Cache, TDP 55W AMD EPYC™ Embedded 3201, Eight Core Single Thread @ 1.5GHz (3.1 Boost), 16MB L3 shared Cache, TDP 30W AMD EPYC™ Embedded 3151, Quad Core Dual Thread @ 2.7GHz (2.9 Boost), 16MB L3 shared Cache, TDP 45W AMD EPYC™ Embedded 3101, Quad Core Single Thread @ 2.1GHz (2.9 Boost), 8MB L3 shared Cache, TDP 35W AMD EPYC™ Embedded 3255, Eight Core Dual Thread @ 2.5GHz (3.1 Boost), 16MB L3 shared Cache, TDP 55W, industrial grade |
| Memory | Four DDR4 SO-DIMM Slots supporting DDR4-2666 Memory (both ECC and not-ECC supported), up to 128GB |
| Mass Storage | 2x S-ATA Gen3 Channels |
| Networking | <ul style="list-style-type: none"> 1x Gigabit Ethernet LAN port with NC-SI (Network Controller Sideband Interface) functionality, managed by an Intel® I210 Gigabit Ethernet Controller 4x 10Gigabit Ethernet interfaces (10GBASE-KR), directly managed by the EPYC™ SoCs |
| USB | 4 x USB 3.1 Host ports (SS + USB 2.0 interfaces) |
| PCI-e | 24x PCI-e Gen3 lanes |
| Serial Ports | 2x legacy UARTs, 16C550 compatible |
| Other Interfaces | SPI, SM Bus, LPC bus |
| Security | Optional TPM 2.0 module on-board AMD Secure Processor for Crypto Co-processing Hardware Validated Boot capabilities Secure Memory Encryption Secure Encrypted Virtualization |
| Embedded Controller Functionalities | Multi-Stage Watchdog Timer 2x I2C Advanced FAN management 4x GPI, 4 x GPO Power State Management Hardware and temperature monitoring POST Code redirection User Data Storage Board statistics: up-time, boot counter, reset cause log |
| BIOS | Dedicated embedded BIOS based on AMI Aptio V |
| Power Supply | +12V _{DC} ± 10% and +5V _{SB} (optional) |
| Operating System | Microsoft® Windows 10 Microsoft® Windows Server 2016 Linux OS 64-bit |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40° ÷ +85°C (Industrial Range, when available) |
| Dimensions | 125mm x 95mm |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



Cross Platform Development Kit compatible with both **x86 and Arm COM Express™ Type 7** modules

Platform independent kit for fast Time-to-market

COM EXP T7 DEV KIT



CROSS PLATFORM Philosophy
Cross-compatible platform with x86 and Arm solutions

SCHEMATICS PUBLICLY AVAILABLE



COM Express™ 3.0 Compact with the 8th Gen Intel® Core™ and Celeron™ 4000 series processors (formerly Whiskey Lake)

Low power multi-core Intel® architecture for mobile applications

COMe-C55-CT6



intel IoT Solutions Alliance



FEATURES OF CCOMe-C79

| | |
|------------------------|--|
| Mass Storage | 2x S-ATA 7p M connectors µSD Card slot (interface multiplexed with GPIO header) |
| Networking | 1x GbEthernet RJ-45 connector 4x 10Gbase-KR interfaces on OCP Type-C connector 4x MDIO I2C interfaces on internal pin header 4x SDP interfaces on SMA RF connectors |
| USB | 4x USB 3.1 Host ports on Dual Type-A sockets |
| PCI-e | 2x PCI-e x4 Slots 1x PCI-e x8 Slot 1x PCI-e x16 Slot |
| Serial Ports | 2 x RS-232 ports on dedicated pin header (from module) |
| Other Interfaces | BMC connector with SM Bus, I2C, LPC, 1x USB 2.0, 1x PCI-e x1, NCSI signals 4 x GPI + 4 x GPO pin header (interface multiplexed with µSD slot) SPI Flash Socket Button / LEDs front panel header 4-pin tachometric FAN connector I2C + SM Bus on feature Pin header I2C Flash Socket SM Bus Smart Battery Connector 4 x 7-segment LCD displays for POST codes LPC/eSPI internal header Buzzer |
| Power Supply | ATX 24 poles connector for carrier board working only Auxiliary 12V connector for carrier board working only 12 VDC power in connector for COM Express module's working Cabled Coin-cell connector for RTC |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) |
| Dimensions | 305x244mm (ATX form factor, 12" x 9.6") |

*All carrier board components must remain within the operating temperature at any and all times, including start-up; carrier operating temperature is independent of the module installed. Please refer to the specific module for more details. Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider specific cooling solutions for the final system.

| | |
|------------------------|---|
| Processor | Intel® Core™ i7-8665UE , Quad Core @ 1.7GHz (Turbo Boost 4.4GHz) with HT, 8MB Cache, 15W TDP (12.5W..25W cTDP) Intel® Core™ i5-8365UE , Quad Core @ 1.6GHz (Turbo Boost 4.1GHz) with HT, 6MB Cache, 15W TDP (12.5W..25W cTDP) Intel® Core™ i3-8145UE , Dual Core @ 2.2GHz (Turbo Boost 3.9GHz) with HT, 4MB Cache, 15W TDP (12.5W..25W cTDP) Intel® Celeron® 4305UE , Dual Core @ 2.0GHz, 2MB Cache, 15W TDP |
| Max Cores | 4 |
| Max Thread | 8 |
| Memory | Two DDR4 SO-DIMM Slots supporting DDR4-2400 Memory, up to 64GB |
| Graphics | Intel® UHD Graphics 620 (Core™ processors), 610 (Celeron™ processor) Up to 3 independent display supported DirectX 12, OpenGL 4.5, and OpenCL 2.1 support HW accelerated video decode MPEG2, VC1/WMV9, AVC/H.264, VP8, JPEG/MJPEG, HEVC/H.265 (8 and 10 bits), VP9 HW accelerated video encode MPEG2, AVC/H.264, VP8, JPEG, HEVC/H.265, VP9 |
| Video Interfaces | Up to 2 x Digital Display Interfaces (DDIs), supporting DP 1.2, eDP 1.4, HDMI 1.4 and DVI eDP or Single/Dual-Channel 18-/24-bit LVDS interface Optional VGA interface (excludes DDI port #2) |
| Video Resolution | eDP, DP: up to 4096 x 2304 @60Hz HDMI: up to 4096 x 2160 @30Hz LVDS: up to 1920 x 1200 @ 60Hz VGA: up to 2048 x 1536 @ 50Hz (reduced blanking) |
| Mass Storage | Up to 3 x S-ATA Gen3 Channels Optional eMMC 5.1 drive on-board microSD Card slot on-board |
| Networking | Gigabit Ethernet interface Intel® I219-LM GbE Controller |
| USB | 4 x USB 3.1 Host ports 8 x USB 2.0 Host ports |
| PCI-e | Up to 8 x PCI-e x 1 lanes Optional PCI-express Graphics (PEG) x2 or x4 Possible configurations (factory alternative): • 8 ports PCI-e x1 • 6 ports PCI-e x 1 + PEG x2 • 5 ports PCI-e x 1 + PEG x4 • 4 ports PCI-e x 1 + PEG x4 + 3rd SATA |
| Audio | HD Audio Interface |
| Serial Ports | 2x UARTs |
| Other Interfaces | SPI, I2C, SM Bus, LPC bus, FAN management Optional TPM 2.0 module on-board LID#/SLEEP#/PWRBTN#, Watchdog 4x GPI, 4 x GPO |
| Power Supply | +12V _{dc} ± 10% and +5V _{sb} (optional) |
| Operating System | Microsoft Windows 10 Enterprise / IoT Linux Yocto |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) |
| Dimensions | 95 x 95 mm (Com Express™ Compact Form factor, Type 6 pinout) |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



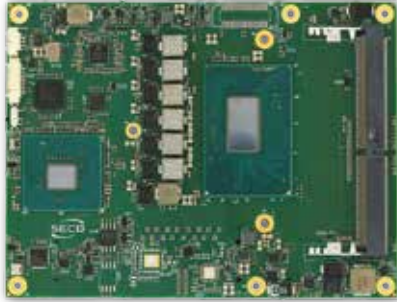
COM Express™ with Intel® 8th gen Core™/Xeon® and 9th gen Core™/Xeon®/Pentium®/Celeron® (formerly Coffee Lake & Coffee Lake Refresh) CPUs



Compact COM Express™ Rel.3.0 Type 6 module with the AMD Ryzen™ Embedded R1000 family of SoCs

Exceptional platform performance with up to six cores for more processing power

COMe-C08-BT6



Low-end AMD Ryzen™ on COM Express™ Type 6 Compact

COMe-C89-CT6



| | |
|------------------------|---|
| Processor | Intel® 8th generation Core™ / Xeon® (formerly Coffee Lake) CPUs: <ul style="list-style-type: none"> Intel® Core™ i7-8850H, Six Core @ 2.6GHz (4.3GHz Max 1 Core Turbo), 9MB Cache, 45W TDP (35W cTDP), with HyperThreading Intel® Core™ i5-8400H, Quad Core @ 2.5GHz (4.2GHz Max 1 Core Turbo), 8MB Cache, 45W TDP (35W cTDP), with HyperThreading Intel® Core™ i3-8100H, Quad Core @ 3.0GHz, 6MB Cache, 45W TDP (35W cTDP) Intel® Xeon® E-2176M, Six Core @ 2.7GHz (4.4GHz Max 1 Core Turbo), 12MB Cache, 45W TDP (35W cTDP), with HyperThreading Intel® 9th generation Core™ / Xeon® / Celeron® (formerly Coffee Lake Refresh) CPUs: <ul style="list-style-type: none"> Intel® Xeon® E-2276ME Six Core @2.8GHz (4.5GHz Max 1 Core Turbo), 12MB Cache, 45W TDP (35W cTDP), with Hyperthreading Intel® Xeon® E-2276ML Six Core @2.0GHz (4.2GHz Max 1 Core Turbo), 12MB Cache, 25W TDP, with Hyperthreading Intel® Xeon® E-2254ME Quad Core @2.6GHz (3.8GHz Max 1 Core Turbo), 8MB Cache, 45W TDP (35W cTDP), with Hyperthreading Intel® Xeon® E-2254ML Quad Core @1.7GHz (3.5GHz Max 1 Core Turbo), 8MB Cache, 25W TDP, with Hyperthreading Intel® Core™ i7-9850HE, Six Core @2.7GHz (4.4GHz Max 1 Core Turbo), 9MB Cache, 45W TDP (35W cTDP), with Hyperthreading Intel® Core™ i7-9850HL, Six Core @1.9GHz (4.1GHz Max 1 Core Turbo), 9MB Cache, 25W TDP, with Hyperthreading Intel® Core™ i3-9100H, Quad Core @1.6GHz (2.9GHz Max 1 Core Turbo), 6MB Cache, 25W TDP Intel® Celeron® G4930E, Dual Core @2.4GHz, 2MB Cache, 35W TDP Intel® Celeron® G4932E, Dual Core @1.9GHz, 2MB Cache, 25W TDP |
| Max Cores | 6 |
| Max Thread | 12 |
| Chipset | Intel® QM370, HM370 or CM246 PCH |
| Memory | Two DDR4 SO-DIMM Slots supporting DDR4-2666 Memory, up to 64GB ECC DDR4 memory modules supported only with Xeon®, Core™ i3 and Celeron® CPUs combined with CM246 PCH |
| Graphics | Intel® UHD Graphics 630/P630 architecture, up to 48 Execution Units Up to 3 independent displays supported DirectX 12, OpenGL 4.5, and OpenCL 2.1 support HW accelerated video decode MPEG2, VC1/MMV9, AVC/H.264, VP8, JPEG/ MJPEG, HEVC/H.265 (8-/10-bit), VP9 HW accelerated video encode MPEG2, AVC/H.264, VP8, JPEG, HEVC/H.265, VP9 |
| Video Interfaces | Up to 3 x Digital Display Interfaces (DDIs), supporting DP 1.2, DVI, HDMI 1.4 eDP 1.4 or Single/Dual-Channel 18-/24-bit LVDS interface or LVDS + VGA interface |
| Video Resolution | eDP, DP up to 4096x2304 @ 60Hz, 24bpp HDMI up to 4096x2160 @ 24Hz, 24bpp (HDMI 1.4) LVDS, VGA up to 1920x1200 @ 60Hz |
| Mass Storage | 4 x S-ATA Gen3 Channels SD interface (shared with GPI/Os) |
| Networking | Gigabit Ethernet interface Intel® I219-LM GbE Controller |
| USB | 4 x USB 3.0 Host ports 8 x USB 2.0 Host ports |
| PCI-e | 8 x PCI-e x1 Gen3 lanes PCI-express Graphics (PEG) Gen3 x16 |
| Audio | HD Audio interface |
| Serial Ports | 2 x UARTs |
| Other Interfaces | SPI, I2C, SM Bus, Thermal Management, FAN management LPC bus Optional TPM 2.0 on-board LID#/SLEEP#/PWRBTN#, Watchdog 4 x GPI, 4 x GPO (pins shared with SD interface) |
| Power Supply | +12V _{DC} ± 10% and +5V _{SB} (optional) |
| Operating System | Microsoft® Windows 10 Linux |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) |
| Dimensions | 125 x 95 mm (COM Express™ Basic Form factor, Type 6 pinout) |

| | |
|------------------------|--|
| Processor | AMD Ryzen™ Embedded R1606G with GPU AMD Radeon™ Vega 3, Dual Core Dual Thread @ 2.6GHz (3.5 Boost), TDP 12-25W AMD Ryzen™ Embedded R1505G with GPU AMD Radeon™ Vega 3, Dual Core Dual Thread @ 2.4GHz (3.3 Boost), TDP 12-25W |
| Max Cores | 2 |
| Memory | Two DDR4 SO-DIMM Slots supporting DDR4-2400 Memory, up to 32GB |
| Graphics | AMD Radeon™ Vega 3 GPU with 3 Compute Units DirectX® 12 supported H.265 (10-bit) decode and 8-bit video encode VP9 decode 3 independent displays supported |
| Video Interfaces | Up to 3 x Digital Display Interfaces (DDIs), supporting DP 1.3, DVI and HDMI 1.4/2.0 eDP or Single/Dual-Channel 18-/24-bit LVDS interface (factory alternatives to third DDI port) |
| Video Resolution | DDIs, eDP up to 4K LVDS up to 1920 x 1200 @ 60Hz |
| Mass Storage | 2 x S-ATA Gen3 Channels |
| Networking | Gigabit Ethernet interface Intel® I21x family GbE Controller |
| USB | Up to 4 x USB 3.0 Host ports 8 x USB 2.0 Host ports |
| PCI-e | Up to 2 x PCI-e x1 Gen3 lanes + 3 x PCI-e x1 Gen2 lanes PCI-express Graphics (PEG) x4 |
| Audio | HD Audio interface |
| Serial Ports | 2 x UARTs |
| Other Interfaces | SPI, I2C, SM Bus, LPC bus, FAN management Optional TPM 2.0 module on-board 4 x GPI, 4 x GPO |
| Power Supply | +12V _{DC} ± 10% and +5V _{SB} (optional) |
| Operating System | Windows 10 64-bit Linux Ubuntu |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) |
| Dimensions | 95 x 95 mm (Com Express Compact Form factor, Type 6 pinout) |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



Next Generation x86 “Zen” Core and elite GPU performance

COMe-B75-CT6



Available in Industrial Temperature Range

| | |
|------------------------|--|
| Processor | AMD Ryzen™ Embedded V1807B with AMD Radeon™ Vega 11 Graphics, Quad Core Dual Thread @ 3.35GHz (3.8 Boost), TDP 35-54W AMD Ryzen™ Embedded V1756B with AMD Radeon™ Vega 8 Graphics, Quad Core Dual Thread @ 3.25GHz (3.6 Boost), TDP 35-54W AMD Ryzen™ Embedded V1605B with AMD Radeon™ Vega 8 Graphics, Quad Core Dual Thread @ 2.0GHz (3.6 Boost), TDP 12-25W AMD Ryzen™ Embedded V1202B with AMD Radeon™ Vega 3 Graphics, Dual Core Dual Thread @ 2.3 GHz (3.2 Boost), TDP 12-25W AMD Ryzen™ Embedded V1404I with AMD Radeon™ Vega 3 Graphics, Quad Core / Single Thread, TDP 15W ,Industrial Temperature range |
| Max Cores | 4 |
| Memory | Up to two DDR4 SO-DIMM Slots supporting DDR4-3200 ECC and non- ECC Memory modules (DDR4-2400 with V1605B, V1202B and V1404I) Up to 16GB @ 3200Mhz, up to 32GB @ 2400MHz supported |
| Graphics | AMD Radeon™ Vega GPU with up to 11 Compute Units DirectX® 12 supported H.265 (10-bit) decode and 8-bit video encode VP9 decode 4 independent displays supported |
| Video Interfaces | 3 x Digital Display Interfaces (DDIs), supporting DP 1.3, DVI and HDMI 1.4/2.0 eDP or Single/Dual-Channel 18-/24- bit LVDS interface |
| Video Resolution | DDIs, eDP up to 4K LVDS up to 1920 x 1200 |
| Mass Storage | 2 x S-ATA Gen3 Channels |
| Networking | Gigabit Ethernet interface Intel® I21x family GbE Controller |
| USB | 4 x USB 3.0 Host ports 8 x USB 2.0 Host ports |
| PCI-e | Up to 4x PCI-e x1 Gen3 lanes + 2 x PCI-e x1 Gen2 ports PCI-express Graphics (PEG) x 8 Gen3 |
| Audio | HD Audio interface |
| Serial Ports | 2 x UARTs |
| Other Interfaces | SPI, I2C bus, SM Bus, LPC bus, FAN management LID#/SLEEP#/PWRBTN#, Watchdog 4x GPI, 4 x GPO Optional TPM 1.2 module on-board |
| Power Supply | +12V _{DC} ± 10% and +5V _{SB} (optional) |
| Operating System | Microsoft® Windows 10 Linux Ubuntu |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 95 x 95 mm (COM Express™ Compact Form factor, Type 6 pinout) |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

Rugged solution for industrial environment

COMe-C24-CT6



Available in Industrial Temperature Range

| | |
|------------------------|---|
| Processor | Intel® Atom™ x5-E3930 Dual Core @1.3 GHz (Burst 1.8GHz), 2MB L2 Cache, 6.5W TDP Intel® Atom™ x5-E3940 Quad Core @1.6 GHz (Burst 1.8GHz), 2MB L2 Cache, 9.5W TDP Intel® Atom™ x7-E3950 Quad Core @1.6 GHz (Burst 2.0GHz), 2MB L2 Cache, 12W TDP Intel® Pentium® N4200 Quad Core @1.1GHz (Burst 2.5GHz), 2MB L2 Cache, 6W TDP Intel® Celeron® N3350 Dual Core @1.1GHz (Burst 2.4GHz), 2MB L2 Cache, 6W TDP Intel® Celeron® J3455 , Quad Core @1.5GHz (Burst 2.3GHz), 2MB L2Cache, 10W TDP Intel® Celeron® J3355 , Dual Core @2.0GHz (Burst 2.5GHz), 2MB L2Cache, 10W TDP |
| Max Cores | 4 |
| Max Thread | 4 |
| Memory | Two DDR3L SO-DIMM Slots supporting DDR3L-1866 non-ECC Memory, up to 8GB |
| Graphics | Integrated Intel® HD Graphics 500 series controller with up to 18 Execution Units Three Independent displays supported HW decoding of HEVC(H.265), H.264, MVC, VP8, VP9, MPEG2, VC-1, WMV9, JPEG/MJPEG formats HW encoding of HEVC(H.265), H.264, MVC, VP8, VP9 and JPEG/MPEG formats |
| Video Interfaces | Up to 2 x Digital Display Interfaces (DDIs), supporting DP 1.2, DVI and HDMI 1.4b eDP 1.3 or Single/Dual-Channel 18-/24- bit LVDS interface optional VGA interface through a DP-to-VGA bridge |
| Video Resolution | DP: Up to 4096 x 2160 @60Hz eDP: Up to 3840 x 2160 @60Hz HDMI: Up to 3840 x 2160 @30Hz LVDS, VGA: Up to 1920 x 1200 @ 60Hz |
| Mass Storage | Optional eMMC 5.0 drive soldered on-board 2 x external S-ATA Gen3 Channels microSD Card Slot on-board |
| Networking | Optional Gigabit Ethernet interface Intel® I210 or I211 GbE Controller (MAC + PHY) |
| USB | Up to 4 x USB 3.0 Host ports 8 x USB 2.0 Host port |
| PCI-e | Up to 5 x PCI-e x 1 Gen2 lanes |
| Audio | HD Audio Interface |
| Serial Ports | 2x UARTs |
| Other Interfaces | SPI, I2C, SM Bus, Thermal Management, FAN management LPC bus Optional TPM 2.0 on-board LID#/SLEEP#/PWRBTN#, Watchdog 4x GPI, 4 x GPO |
| Power Supply | +12V _{DC} ± 10% and +5V _{SB} (optional) |
| Operating System | Microsoft® Windows 10 Enterprise (64-bit) Microsoft® Windows 10 IoT core Wind River Linux (64 bit) Yocto (64 bit) Android (planning) |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 95 x 95 mm (Com Express™ Compact Form factor, Type 6 pinout) |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



COM Express Type 6

COM Express™ Basic with Intel® 6th and 7th generation Core™ / Xeon® (formerly Skylake and Kaby Lake) CPUs

When high graphics and Hyper-threading matter

COMe-B09-BT6



COM Express Type 6

COM Express™ Compact Type 6 with the AMD Embedded 3rd gen R-Series SoC, G-Series SoC-I or G-Series SoC-J



When scalable graphics performance makes the difference

COMe-A98-CT6



Available in Industrial Temperature Range

| | |
|------------------------|---|
| Processor | Intel® Core™ i3-6102E , Dual Core @ 1.9GHz, 3MB Cache, 25W TDP Intel® Core™ i3-6100E , Dual Core @ 2.7GHz, 3MB Cache, 35W TDP Intel® Core™ i5-6442EQ , Quad Core @ 1.9GHz (2.7GHz in Turbo Boost), 6MB Cache, 25W TDP Intel® Core™ i5-6440EQ , Quad Core @ 2.7GHz (3.4GHz in Turbo Boost), 6MB Cache, 45W TDP Intel® Core™ i7-6822EQ , Quad Core @ 2GHz (2.8GHz in Turbo Boost), 8MB Cache, 25W TDP Intel® Core™ i7-6820EQ , Quad Core @ 2.8GHz (3.5GHz in Turbo Boost), 8MB Cache, 45W TDP Intel® Xeon® E3-1505M V5 , Quad Core @ 2.8GHz (3.7GHz in Turbo Boost), 8MB Cache, 45W TDP Intel® Xeon® E3-1515M V5 , Quad Core @ 2.8 GHz, 8MB Cache, 45W TDP (ECC supported), GT4E LINE (D0) with OPC (A0) |
| Max Cores | 4 |
| Max Thread | 8 (HT not available with 6th Generation Core™ i5 and 7th Generation Core™ i3/i5 Processors) |
| Chipset | SkyLake Platform: Intel® QM170, HM170 or CM236 PCH KabyLake Platform: Intel® QM175 or CM238 PCH |
| Memory | Up to two DDR4 SO-DIMM Slots supporting DDR4-2133 (DDR4-2400 for 7th Generation processors) Memory ECC DDR4 memory modules supported only with Xeon® and Core™ i3 processors combined with CM236 / CM238 PCH Intel® HD Graphics 530 (6th Generation Core™ processors), P530 (6th Generation Xeon® processors) Intel® HD Graphics 630 (7th Generation Core™ processors), P630 (7th Generation Xeon® processors) |
| Graphics | Up to 3 independent displays supported DirectX® 12.1, OpenGL 4.4, and OpenCL 2.0 support HW accelerated video decode MPEG2, VC1 / WMV9, AVC / H.264, VP8, JPEG / MJPEG, HEVC / H.265, VP9 HW accelerated video encode MPEG2, AVC / H.264, VP8, JPEG / MJPEG, HEVC / H.265, VP9 |
| Video Interfaces | Up to 3 x Digital Display Interfaces (DDIs), supporting DP 1.2, DVI and HDMI 1.4 eDP or Single / Dual-Channel 18- / 24-bit LVDS interface or LVDS + VGA interface PCI-express Graphics (PEG) Gen3 x16 |
| Video Resolution | eDP, DP: up to 4096x2304 @60Hz, 24bpp HDMI: up to 4096x2160 @60Hz, 24bpp LVDS, VGA: up to 1920 x 1200 @60Hz |
| Mass Storage | 4 x SATA Gen3 Channels |
| Networking | Gigabit Ethernet interface Intel® I219-LM GbE Controller |
| USB | 4 x USB 3.0 Host ports 8 x USB 2.0 Host ports |
| PCI-e | 8 x PCI-e x1 Gen3 lanes |
| Audio | HD Audio Interface |
| Serial Ports | 2 x UARTs |
| Other Interfaces | 2 x SPI, I2C, SM Bus, LPC Bus, 2 x Express Card, FAN management Optional TPM 1.2 LID# / SLEEP# / PWRBTN#, Watchdog 4x GPI, 4 x GPO |
| Power Supply | +12V _{DC} ± 10% and +5V _{SB} (optional) |
| Operating System | Microsoft® Windows 7 (only for Skylake) Microsoft® Windows 10 Linux |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C / +70°C (Extended Temperature Range) |
| Dimensions | 125 x 95 mm (Com Express™ Basic Form factor, Type 6 pinout) |

| | |
|------------------------|--|
| Processor | AMD RX-421BD , Quad Core @ 2.1 GHz (3.4 GHz Max), cTDP 12-35W AMD RX-418GD , Quad Core @ 1.8 GHz (3.2 GHz Max), cTDP 12-35W AMD RX-216GD , Dual Core @ 1.6GHz (3.0 GHz Max), cTDP 12-15W AMD RX-416GD , Quad Core @ 1.6 GHz (2.4GHz Max), TDP 15W, Industrial Temperature range AMD GX-217GI , Dual Core @ 1.7GHz (2.0GHz Max), TDP 15W |
| Max Cores | 4 |
| Memory | R-Series: Two SO-DIMM slots supporting DDR4 ECC / non-ECC modules up to 2133MHz G-Series SoC-I: Two SO-DIMM slots supporting DDR4 ECC / non-ECC modules up to 1600MHz G-Series SoC-J: One SO-DIMM slot supporting DDR4 non-ECC modules up to 2133MHz |
| Graphics | AMD Radeon 3rd -Generation Graphics Core Next (GCN) AMD RX-421BD - Radeon™ R7 AMD RX-418GD, RX-416GD - Radeon™ R6 AMD-RX-216GD - Radeon™ R5 AMD GX-217GI - Radeon™ R6E AMD GX-224JI - Radeon™ R4E AMD GX-215JI - Radeon™ R2E Up to 3 independent displays supported (up to 2 with G-Series SoC-I and SoC-J) DirectX® 12 supported UVD 6 (4K H.265 and H.264 decode) and VCE 3.1 (4K H.264 encode) supported |
| Video Interfaces | Up to 3 x Digital Display Interfaces (DDIs), supporting eDP1.4, DP 1.2, DVI and HDMI 1.4b/2.0 (up to 2x DDIs with G-Series SoC-I and SoC-J) Optional VGA interface (excludes one DDI Port) Optional eDP or Single / Dual-Channel 18- / 24- bit LVDS interface (excludes one DDI Port) |
| Video Resolution | DDIs: up to 4K LVDS, VGA: up to 1920 x 1200 @ 60Hz |
| Mass Storage | 2 x S-ATA Gen3 Channels SD interface shared with GPIOs |
| Networking | Gigabit Ethernet interface Intel® I219-LM GbE Controller |
| USB | 4 x USB 3.0 Host ports 8 x USB 2.0 Host port |
| PCI-e | 3 x PCI-e x 1 lanes PCI-express Graphics (PEG) x8 (R-Series SoCs) or x4 (G-Series SoC-I and SoC-J) |
| Audio | HD Audio Interface |
| Serial Ports | 2 x HS UARTs |
| Other Interfaces | SPI, I2C, SM Bus, LPC bus, FAN management LID#/SLEEP#/PWRBTN#, Watchdog 4x GPI, 4 x GPO (multiplexed with SD interface) Optional TPM 1.2 or 2.0 module onboard |
| Power Supply | +12V _{DC} ± 10% and +5V _{SB} (optional) |
| Operating System | Microsoft® Windows 7 Microsoft® Windows 10 Microsoft® Windows 10 IoT Linux |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 95 x 95 mm (Com Express™ Compact Form factor, Type 6 pinout) |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



COM Express™ Compact with
Intel® Atom™ E3800 and
Celeron® families (formerly Bay Trail)

Versatile and rugged

COMe-A41-CT6



Available in Industrial
Temperature Range

| | |
|------------------------|--|
| Processor | Intel® Atom™ E3845, Quad Core @1.91GHz, 2MB Cache, 10W TDP Intel® Atom™ E3827, Dual Core @1.75GHz, 1MB Cache, 8W TDP Intel® Atom™ E3826, Dual Core @1.46GHz, 1MB Cache, 7W TDP Intel® Atom™ E3825, Dual Core @1.33GHz, 1MB Cache, 6W TDP Intel® Atom™ E3815, Single Core @1.46GHz, 512KB Cache, 5W TDP Intel® Celeron® J1900, Quad Core @2.0GHz, 2MB Cache, 10W TDP Intel® Celeron® N2930, Quad Core @1.83GHz, 2MB Cache, 7.5W TDP |
| Max Cores | 4 |
| Memory | DDR3L non-ECC SO-DIMM slots, 4GB modules supported per each slot E3845, E3827, J1900, N2930: up to 8GB Dual-Channel DDR3L 1333MHz E3826: up to 8GB Dual-Channel DDR3L 1066MHz N2807: up to 4GB Single-Channel DDR3L 1333MHz E3825, E3815: up to 4GB Single-Channel DDR3L 1066MHz |
| Graphics | Integrated Intel® HD Graphics 4000 series controller Dual independent display support HW decoding of H.264, MPEG2, MVC, VC1, VP8, MJPEG formats HW encoding of H.264, MPEG2 and MVC formats |
| Video Interfaces | 1 x Digital Display Interface (DDI) able to drive HDMI / DVI / DP++ interface Additional DDI, can be switched to manage embedded Display Port or 18 / 24 bit single / dual channel LVDS interface CRT interface |
| Video Resolution | CRT Interface: Up to 2560x1600@60Hz HDMI: Up to 1920x1080p@60Hz Display Port, eDP: Up to 2560x1600@60Hz Optional LVDS interface: Up to 1920x1200@60Hz |
| Mass Storage | Optional eMMC drive soldered on-board 2 x external SATA channels SD Card interface (multiplexed with GPIO signals) |
| Networking | Optional Gigabit Ethernet interface (uses one PCI-e lane) |
| USB | 7 x USB 2.0 Host ports 4 x USB 3.0 Host ports |
| Audio | HD Audio interface |
| PCI-e | Up to 4 x PCI-e x1 Gen2 lanes |
| Serial Ports | 2 x Serial ports (TX / RX only, TTL interface) |
| Other Interfaces | 2 x Express Card interfaces I2C Bus LPC Bus SM Bus 4 x GPI, 4 x GPO Thermal / FAN management Watch Dog timer Power Management Signals |
| Power Supply | +12V _{DC} ± 10% and + 5V _{SB} (optional) |
| Operating System | Microsoft® Windows 7 (32/64 bit) Microsoft® Windows 8 (32/64 bit) Microsoft® Windows 8.1 (32/64 bit) Microsoft® Windows 10 (32/64 bit) Microsoft® Windows 10 IoT Microsoft® Windows Embedded Standard 7 (32/64 bit) Linux (32/64 bit) Yocto |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 95 x 95 mm (Com Express™ Compact Form factor, Type 6 pinout, 3.74" x 3.74") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

COM Express™ Basic with Intel® Haswell
family CPUs



High performance for any design in a scalable form factor

COMe-953-BT6



| | |
|------------------------|---|
| Processor | Intel® Core™ i3-4100E, Dual Core with HT @ 2.4GHz, 3MB Cache, 37W TDP Intel® Core™ i3-4102E, Dual Core with HT @ 1.6GHz, 3MB Cache, 25W TDP Intel® Core™ i5-4400E Dual Core with HT @ 2.7GHz, 3MB Cache, 37W TDP Intel® Core™ i5-4402E Dual Core with HT @ 1.6GHz, 3MB Cache, 25W TDP Intel® Core™ i7-4700EQ Quad Core with HT @ 2.4GHz, 6MB Cache, 47W TDP Intel® Celeron® 2002E Dual Core @1.5GHz, 2MB Cache, 25W TDP Intel® Celeron® 2000E Dual Core @2.2GHz, 2MB Cache, 37W TDP |
| Max Cores | 4 |
| Chipset | Intel® QM87 Chipset |
| Memory | Up to 16GB 1.35V DDR3L-1600 on two SO-DIMM slots, supporting Dual-Channel M953 modules support non-ECC SO-DIMMs only, MB28 modules support ECC modules only |
| Graphics | Integrated Intel® HD Graphics Up to 3 independent displays supported DirectX® 11, OpenGL4.0 supported |
| Video Interfaces | 3 x HDMI / DVI / Multimode Display Port interfaces embedded Display Port or 18 / 24 bit single / dual channel LVDS interface CRT interface PCI Express Graphics (PEG) x 16 interface |
| Video Resolution | CRT Interface: up to 1920 x 1200 @ 60Hz HDMI: up to 4096x2304 @ 24Hz / 2560x1600 @ 60Hz DVI: up to 1920x1200 @ 60Hz Display Port: up to 3840 x 2160 @ 60Hz LVDS, eDP: up to 1920 x 1200 @ 60Hz |
| Mass Storage | 4 x external SATA channels |
| Networking | Gigabit Ethernet interface Supports remote management (Intel® AMT Technology) |
| USB | 8 x USB 2.0 Host ports 4 x USB 3.0 Host ports |
| PCI-e | 7 x PCI-e x1 lanes (configurable as 1 PCI-e x4 + 3 PCI-e x1) |
| Audio | HD Audio interface |
| Serial Ports | 2 x serial ports (Tx/Rx only, TTL interface) (MB28 module only) |
| Other Interfaces | 2 x Express Card interfaces I2C Bus LPC Bus SM Bus 4 x GPI, 4 x GPO Thermal / FAN management Watch Dog timer Optional TPM on-board (M953 modules only) Power Management Signals |
| Power Supply | +12V _{DC} ± 10% and + 5V _{SB} (optional) |
| Operating System | Microsoft® Windows 7 (32/64 bit) Microsoft® Windows 8 (32/64 bit) Microsoft® Windows 8.1 (32/64 bit) Microsoft® Windows 10 (32/64 bit) Microsoft® Windows 10 IoT Microsoft® Windows Embedded Standard 7 (32/64 bit) Linux |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) |
| Dimensions | 125 x 95 mm (4.92" x 3.74") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



Most compact, I/O-rich COM Express™ Type 6 carrier board

CCOMe-C30



Cross-compatible platform with x86 and Arm solutions

Platform independent kit for fast Time-to-market

COM EXP T6 DEV KIT



Cross-compatible platform with x86 and Arm solutions

SCHEMATICS PUBLICLY AVAILABLE



FEATURES OF CCOMe-C96

| | |
|--|--|
| | <ul style="list-style-type: none"> 1 x DP++ connector 2 x miniDP++ connectors LVDS 24-bit Single/Dual Channel Backlight control + LCD selectable voltages dedicated connector LVDS External EDID flash socket eDP 4-lanes 40 poles VESA connector |
| | <ul style="list-style-type: none"> S-ATA 7p M connector + 4 pins power connector M.2 Socket 2 2242 / 2260 Key B slot for SSD M.2 Socket 3 2280 Key M slot for PCI-e x4 SSDs µSD Card slot (interface multiplexed with GPIO header) |
| | <ul style="list-style-type: none"> Dual RJ-45 connector (1 port managed by COM Express Gigabit Ethernet interface, 1 port managed by Carrier board's Intel® I21x GbEthernet controller) M.2 Socket 2 2242 / 3042 Key B slot for WWAN modules (modem) M.2 Socket 1 2230 Key E slot for WiFi / BT modules |
| | <ul style="list-style-type: none"> 3 x USB 3.0 Host ports on Type-A sockets 2 x USB 2.0 Host ports on Type-A sockets 1 x USB 2.0 Host port on internal pin header |
| | <ul style="list-style-type: none"> On-board HD Audio Codec (Realtek ALC262) Mic In + Line Out internal pin header |
| | <ul style="list-style-type: none"> 2 x RS-232 / RS-422 / RS-485 ports on internal pin header (from carrier board's SuperI/O) 2 x RS-232 ports on feature pin header (from module) |
| | <ul style="list-style-type: none"> microSIM slot for M.2 modem 4 x GPI + 4 x GPO pin header (interface multiplexed with µSD slot) Button / LEDs front panel header 3-pin tachometric FAN connector I2C + SM Bus on feature Pin header LPC internal header |
| | <ul style="list-style-type: none"> 19VDC fixed (only CPU modules with max 35W TDP supported) Mega-Fit® 2x1 Power Connector Cabled Coin-cell connector for RTC |
| | <ul style="list-style-type: none"> 0°C ÷ +60°C (Commercial version) |
| | <ul style="list-style-type: none"> 146x102mm (3.5" form factor, 5.75" x 4.02") |

*All carrier board components must remain within the operating temperature at any and all times, including start-up; carrier operating temperature is independent of the module installed. Please refer to the specific module for more details. Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider specific cooling solutions for the final system.

| | |
|--|--|
| | <ul style="list-style-type: none"> 3 x DP++ connector VGA connector LVDS 24-bit Single/Dual Channel eDP 4-lanes 40 poles VESA connector Backlight control + LCD selectable voltages dedicated connector LVDS External EDID flash socket |
| | <ul style="list-style-type: none"> 4x S-ATA 7p M connectors µSD Card slot (interface multiplexed with GPIO header) |
| | <ul style="list-style-type: none"> 1x GbEthernet RJ-45 connector |
| | <ul style="list-style-type: none"> 4x USB 3.1 Host ports on Type-A sockets 4 x USB 2.0 Host ports on Quad Type-A sockets |
| | <ul style="list-style-type: none"> 2x PCI-e x4 Slots 1x PCI-e x16 Slot |
| | <ul style="list-style-type: none"> On-board HD Audio Codec (Realtek ALC888S) 5.1 Audio Jack with S/PDIF Optical interface Mic In + Line Out internal pin header |
| | <ul style="list-style-type: none"> 2 x RS-232 / RS-422 / RS-485 ports on internal pin header (from carrier board's LPC Dual UART controller) 2 x RS-232 ports on dedicated pin header (from module) |
| | <ul style="list-style-type: none"> 4 x GPI + 4 x GPO pin header (interface multiplexed with µSD slot) SPI Flash Socket Button / LEDs front panel header 4-pin tachometric FAN connector I2C + SM Bus on feature Pin header I2C Flash Socket SM Bus Smart Battery Connector 4 x 7-segment LCD displays for POST codes LPC/eSPI internal header |
| | <ul style="list-style-type: none"> ATX 24 poles connector for carrier board working only Auxiliary 12V connector for carrier board working only 12 VDC power in connector for COM Express module's working Cabled Coin-cell connector for RTC |
| | <ul style="list-style-type: none"> 0°C ÷ +60°C (Commercial version) |
| | <ul style="list-style-type: none"> 305x244mm (ATXform factor, 12" x 9.6") |

*All carrier board components must remain within the operating temperature at any and all times, including start-up; carrier operating temperature is independent of the module installed. Please refer to the specific module for more details. Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider specific cooling solutions for the final system.



ETX



ETX® Module with the Intel® Atom™ E3800 and Celeron® families (formerly Bay Trail) SoC

Update your legacy design

ETX-A61



intel IoT Solutions Alliance

ETX[®] 3.0
Long Term Support

ETX[®] STANDARD ADVANTAGES



For legacy designs



X86 based CoM



Extend the life of existing ETX-based projects



Proven and established standard



ISA bus support

COMPUTER-ON-MODULE APPROACH

- | Design investment limited to the carrier board |
- | Consolidated Standard form factor |
 - | Scalable and future-proof |
 - | Long-term availability |
- | Arm and x86 cross-compatibility |
 - | Multi-vendor solution |
 - | Highly configurable |
- | Innovative and upgradable |
- | Accelerated time-to-market |

| | |
|------------------------|--|
| Processor | Intel® Atom™ E3845 , Quad Core @1.91GHz, 2MB Cache, 10W TDP Intel® Atom™ E3827 , Dual Core @1.75GHz, 1MB Cache, 8W TDP Intel® Atom™ E3826 , Dual Core @1.46GHz, 1MB Cache, 7W TDP Intel® Atom™ E3825 , Dual Core @1.33GHz, 1MB Cache, 6W TDP Intel® Atom™ E3815 , Single Core @1.46GHz, 512KB Cache, 5W TDP Intel® Celeron® J1900 , Quad Core @2.0GHz, 2MB Cache, 10W TDP Intel® Celeron® N2930 , Quad Core @1.83GHz, 2MB Cache, 7.5W TDP Intel® Celeron® N2807 , Dual Core @1.58GHz, 1MB Cache, 4.3W TDP |
| Max Cores | 4 |
| Max Thread | 4 |
| Memory | DDR3L memory soldered on-board E3845, E3827, J1900, N2930: up to 8GB Dual-Channel DDR3L 1333MHz E3826: up to 8GB Dual-Channel DDR3L 1066MHz N2807: up to 4GB Single-Channel DDR3L 1333MHz E3825, E3815: up to 4GB Single-Channel DDR3L 1066MHz |
| Graphics | Integrated Intel® HD Graphics 4000 series controller Dual independent display support HW decoding of H.264, MPEG2, MVC, VC1, VP8, MJPEG formats HW encoding of H.264, MPEG2 and MVC formats |
| Video Interfaces | VGA standard analog video interface 18 / 24 bit single / dual channel LVDS interface (VESA and JEIDA color mapping compatible) |
| Video Resolution | CRT Interface: Up to 2560 x 1600 @ 60Hz LVDS interface: Up to 1920 x 1200 @ 60Hz |
| Mass Storage | Optional eMMC drive soldered on-board 2 x external SATA or 2 x PATA or 1 x PATA + 1 x SATA channels (factory options) µSD Card Slot |
| Networking | Gigabit Ethernet controller, makes available a 10 / 100Mbps Ethernet interface |
| USB | 4 x USB 2.0 Host ports |
| Audio | HD Audio codec, Realtek ALC262 |
| Serial Ports | 2 x Serial ports (TX / RX / RTS / CTS signals, TTL interface) |
| Other Interfaces | PCI Bus rel. 2.3 compliant ISA Bus LPT interface shared with Floppy Drive interface PS / 2 mouse and keyboard interface I2C Bus SM Bus Watch Dog timer Power Management Signals |
| Power Supply | +5V _{DC} ± 5% and + 5V _{SB} (optional) |
| Operating System | Microsoft® Windows 7 (32 / 64 bit) Microsoft® Windows 8.1 (32 / 64 bit) Microsoft® Windows 10 (32 / 64 bit) Microsoft® Windows 10 IoT Microsoft® Windows Embedded Standard 7 (32 / 64 bit) Microsoft® Windows Embedded Standard 8 (32 / 64 bit) Microsoft® Windows Embedded Compact 7 Linux (32 / 64 bit) Yocto |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) |
| Dimensions | 114 x 95 mm (4.49" x 3.74") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



3.5" SBC with AMD Ryzen™
Embedded R1000 / V1000 family of SoCs

Full connectivity on powerful
AMD Ryzen™ platform

SBC-C90



AMD

Available in Industrial
Temperature Range

SBC

SINGLE BOARD COMPUTER ADVANTAGES



Ready for
systems
integration



Reduced
time-to-market



Best price point
for low volume
projects



Very low
engineering
design
investment



Off-the-shelf
solutions

| | |
|------------------------|---|
| Processor | <p>AMD Ryzen™ Embedded V1000 family SoCs:</p> <ul style="list-style-type: none"> AMD Ryzen™ Embedded V1807B with AMD Radeon™ Vega 11 Graphics, Quad Core Dual Thread @ 3.35GHz (3.8 Boost), TDP 35-54W AMD Ryzen™ Embedded V1756B with AMD Radeon™ Vega 8 Graphics, Quad Core Dual Thread @ 3.25GHz (3.6 Boost), TDP 35-54W AMD Ryzen™ Embedded V1605B with GPU AMD Radeon™ Vega 8, Quad Core Dual Thread @ 2.0GHz (3.6 Boost), TDP 12-25W AMD Ryzen™ Embedded V1202B with GPU AMD Radeon™ Vega 3, Dual Core Dual Thread @ 2.3GHz (3.2 Boost), TDP 12-25W <p>AMD Ryzen™ Embedded R1000 family SoCs:</p> <ul style="list-style-type: none"> AMD Ryzen™ Embedded R1606G with GPU AMD Radeon™ Vega 3, Dual Core Dual Thread @ 2.6GHz (3.5 Boost), TDP 12-25W AMD Ryzen™ Embedded R1505G with GPU AMD Radeon™ Vega 3, Dual Core Dual Thread @ 3.25GHz (3.6 Boost), TDP 12-25W |
| Max Cores | 4 |
| Memory | 2x DDR4 ECC and non-ECC SODIMM Slots Support DDR4-2400 memories (DDR4-3200 with V1807B and V1756B), up to 32GB total |
| Graphics | GPU AMD Radeon™ VEGA with up to 11 Compute Units DirectX® 12 supported H.265 (10-bit) decode and 8-bit video encode VP9 decode 4 independent displays supported (3 with R1000 SoCs) |
| Video Interfaces | 4x DP++ connectors (only 3 working with R1000 SoCs) |
| Video Resolution | DP++: Up to 4096 x 2160 |
| Mass Storage | M.2 NVMe slot (Socket 2 Key M Type 2280 or 2260), PCI-e x4 interface microSD Card slot (combo with miniSIM slot) 2x SATA 7p M connectors w/ 1x power connector |
| Networking | Up to 2 x Gigabit Ethernet ports M.2 WWAN slot (Socket 2 Key B Type 2242/3042) for Modems M.2 Connectivity Slot (Socket 1 Key E Type 2230) |
| USB | 2 x USB 3.0 Host ports on USB 3.0 Type-A sockets 2 x USB 2.0 Host ports on internal pin header 1 x USB 3.0 (V1000 SoCs) / USB 2.0 (R1000 SoCs) Host port on WWAN M.2 slot 1 x USB 2.0 Host port on M.2 Connectivity Slot |
| Audio | HD Audio codec Line Out + Microphone + S/PDIF Out interfaces on internal pin header |
| PCI-e | 1 x PCI-e x4 port on M.2 NVMe Slot 1 x PCI-e x1 port on M.2 WWAN Slot 1 x PCI-e x1 port on M.2 Connectivity Slot |
| Serial Ports | 2 x RS-232/RS-422/RS-485 UARTS, on internal Pin Header |
| Other Interfaces | miniSIM slot for M.2 modems (combo with microSD slot) 8 x GPIOs connector FAN connector Switch / LED Front Header connector 2x I2C on internal pin header Antitamper connector Optional TPM 1.2 or 2.0 onboard |
| Power Supply | +12V _{DC} ÷ +24 V _{DC} RTC battery |
| Operating System | Microsoft® Windows 10 (64-bit) Linux Ubuntu |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version, only for future SoCs in extended temperature range and with TDP ≤25W) |
| Dimensions | 146 x 102 mm (3.5" form factor) |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



SBC

SBC with **NXP i.MX 8**
Applications Processors in **3.5"** form factor

Industrial Arm solution for IoT edge computing applications

SBC-C43



Available in Industrial Temperature Range

| | |
|------------------------|---|
| Processor | NXP i.MX 8 Family: i.MX 8QuadMax : 2x Arm Cortex®-A72 + 4x Arm® Cortex®-A53 + 2x Cortex®-M4F i.MX 8QuadPlus : 1x Arm Cortex®-A72 + 4x Arm® Cortex®-A53 + 2x Cortex®-M4F i.MX 8Quad : 4x Arm® Cortex®-A53 + 2x Cortex®-M4F |
| Max Cores | 8 |
| Memory | Soldered down LPDDR4 memory, 64-bit interface, 1600MHz. Base configuration 2GB, up-scalable to 4GB, 6GB, 8GB 2x Graphics accelerators Vivante GC7000 / XVSX or GC7000Lite /XVSX (QuadPlus and Quad) |
| Graphics | 1x embedded VPU, supporting H.265 (4K30) and H.264 (1080p60) decoding and H.264 (1080p30) encoding Supports 4 independent video outputs (total combined resolution 4K) |
| Video Interfaces | OUTPUTS: HDMI 2.0a Tx interface Optional eDP 1.4 interface Single/Dual-Channel 18-/24-bit LVDS interface INPUTS: HDMI 2.0a Rx interface 2x 4-lanes MIPI-CSI Camera interfaces |
| Video Resolution | HDMI: Up to UltraHD (4K) LVDS, eDP: up to 1080p |
| Mass Storage | eMMC 5.1 Drive soldered on-board, up to 32GB 1x S-ATA interface available on M.2 Socket 2 Key B Slot (interface shared with PCI-e x1) microSD Card Slot 4MB QuadSPI Flash NAND (boot device only) |
| Networking | 2x Gigabit Ethernet interfaces Combo WiFi 802.11 a/b/g/n/ac + BT LE 4.2 module with ceramic SMT antennas on-board M.2 Socket 2 Key B Slot for M.2 Modems M.2 Socket1 Key E Slot for WiFi + BT external modules |
| USB | 1 x USB 3.0 Host port on Type-A socket 1x USB 2.0 OTG port on micro-AB socket 1x USB 2.0 Host port on external Type-A socket 1x USB 2.0 Host port on internal connector 2 x USB 2.0 ports available on M.2 Key B and Key E slots |
| PCI-e | 2x PCI-e x1 ports, available on M.2 Socket 1 Key E and on M.2 Socket 2 Key B (pin shared with SATA interface) Slots |
| Audio | I2S Audio Codec Mic In and Line Out interfaces, available on a single combo TRRS connector |
| Serial Ports | 1x UART (RS-232 level) 1x UART RS-485/RS-422 configurable 1x UART TTL level 3x CAN interfaces |
| Other Interfaces | 4x Analog Inputs 6x GPIOs SPI interface I2C interface Embedded additional RTC circuitry for lowest power consumption SIM dedicated slot + programmable electronic SIM on-board |
| Power Supply | +12V _{DC} ± 10% |
| Operating System | Wind River Linux Yocto Android |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 146 x 102 mm (5,75" x 4,02") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

SBC

SBC with **NXP i.MX 8M**
Applications Processors in **3.5"** form factor

A new generation of cost effective solutions for multimedia and industrial IoT applications

SBC-C20



Available in Industrial Temperature Range

| | |
|------------------------|---|
| Processor | NXP i.MX 8M Family, based on Arm® Cortex®-A53 MPCore + Cortex-M4 core platform: i.MX 8M Quad - Quad core up to 1.5GHz i.MX 8M QuadLite - Quad core up to 1.5 GHz per core i.MX 8M Dual - Dual core up to 1.5 GHz per core |
| Memory | Soldered down DDR3L memory, up to 2GB |
| Graphics | Vivante GC7000Lite GPU, supporting OpenGL ES 1.1 / 2.0 / 3.0 / 3.1, Open CL 1.2 and Vulkan Dedicated VPU (not for QuadLite), supporting 4Kp60 HEVC/H.265 main and main 10 decoder, 4Kp60 VP9 decoder, 4Kp30 AVC/H.264 decoder, 1080p60 MPEG-2, MPEG-4p2, VC-1, VP8, RV9, AVS, MJPEG, H.263 decoder Dual Display support |
| Video Interfaces | embedded Display Port 1.4 connector (switched with HDMI) Optional LVDS interface Optional HDMI 1.4 / 2.0a interface (switched with eDP) 4-lane MIPI-CSI Camera interface |
| Video Resolution | HDMI, eDP: up to 4096x2160 LVDS: up to 1920x1080 |
| Mass Storage | Optional eMMC drive on-board, up to 16GB microSD Card slot |
| Networking | Optional WiFi ac/a/b/g/n + BT 5 module with onboard U.FL antenna connectors Gigabit Ethernet port M.2 Socket 2 2260 / 3042 Key B slot for WWAN modules (modem) |
| USB | USB Device on USB 2.0 micro-AB connector (interface shared with USB 3.0 port) USB 3.0 Type-A connector (interface shared with USB 2.0 micro-AB) USB 2.0 Dual Type-A connector Optional USB 2.0 internal T/S connector (excludes one USB 2.0 Type-A interface) |
| Audio | I2S Audio Codec Speaker + Microphone + Earphone interfaces on internal pin headers Line Out + Mic In combo TRRS audio jack Optional 10W for channel amplified Speaker connector |
| Serial Ports | RS-232 Serial port connector Debug UART on internal pin header CAN Port |
| Other Interfaces | microSIM slot for M.2 modems SPI interface I2C Touch Screen dedicated connector I2C connector 8 x GPIOs connector SPI Connector |
| Power Supply | +12V _{DC} Coin cell battery for RTC |
| Operating System | Linux Android |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version, only boards without optional WiFi module) |
| Dimensions | 101.6 x 147 mm (4" x 5.78") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



SBC

Pico-ITX SBC with the Intel® Atom™ X Series, Intel® Celeron® J / N Series and Intel® Pentium® N Series (formerly Apollo Lake) Processors

x86 solution designed for IoT edge computing in harsh environments

SBC-C41-pITX



Available in Industrial Temperature Range

| | |
|------------------------|---|
| Processor | Intel® Atom™ x5-E3930 Dual Core @1.3 GHz (Burst 1.8GHz), 2MB L2 Cache, 6.5W TDP Intel® Atom™ x5-E3940 Quad Core @1.6 GHz (Burst 1.8GHz), 2MB L2 Cache, 9.5W TDP Intel® Atom™ x7-E3950 Quad Core @1.6 GHz (Burst 2.0GHz), 2MB L2 Cache, 12W TDP Intel® Pentium® N4200 Quad Core @1.1GHz (Burst 2.5GHz), 2MB L2 Cache, 6W TDP Intel® Celeron® N3350 Dual Core @1.1GHz (Burst 2.4GHz), 2MB L2 Cache, 6W TDP Intel® Celeron® J3455 , Quad Core @1.5GHz (Burst 2.3GHz), 2MB L2Cache, 10W TDP Intel® Celeron® J3355 , Dual Core @2.0GHz (Burst 2.5GHz), 2MB L2Cache, 10W TDP |
| Max Cores | 4 |
| Max Thread | 4 |
| Memory | 32-bit Single-/Dual-/Quad-Channel LPDDR4 soldered on-board, up to 2400 MT/s Max memory size 8GB |
| Graphics | Integrated Intel® HD Graphics 500 series controller with up to 18 Execution Units HW decoding of HEVC(H.265), H.264, VP8, VP9, MPEG2, VC-1, WMV9, JPEG/MJPEG formats HW encoding of HEVC(H.265), H.264, MVC, VP8, VP9 and JPEG/MPEG formats Three independent display support |
| Video Interfaces | HDMI connector Optional DP++ connector (combo with HDMI) LVDS connector |
| Video Resolution | HDMI: up to 3840x2160 @ 30Hz DP++: up to 4096x2160 @ 60Hz LVDS: up to 1920x1200 @ 60Hz |
| Mass Storage | Optional eMMC 5.0 drive on-board SATA Gen3 7p M connector SSD M.2 Socket 2 Key B lot, size 2242 / 3042 (excludes WWAN modules) microSD Card slot (combo with miniSIM slot) |
| Networking | Dual Gigabit Ethernet connector WWAN (modem) M.2 Socket 2 Key B 2242 / 3042 slot (excludes SSD interface) Connectivity M.2 Socket 1 Key E 2230 Slot for WiFi+BTLE modules |
| USB | USB 3.0 Dual Type-A connector Internal USB 2.0 Dual pin header |
| Audio | HD Audio Codec Line Out + Microphone + S/PDIF Out interfaces on internal pin header |
| Serial Ports | 2 x RS-232/RS-422/RS-485 Serial ports on internal pin header |
| Other Interfaces | miniSIM slot for M.2 modems (combo with microSD slot) 8 x GPIOs connector FAN connector Switch / LED Front Header connector I2C + INT# + RST# signals for I2C Touch Screen controller on LVDS connector Optional TPM 2.0 on-board |
| Power Supply | +12V _{DC} Cabled coin cell battery for RTC |
| Operating System | Windows 10 Enterprise (64-bit) Windows 10 IoT Core (32- / 64-bit) WindRiver Linux 64-bit Yocto (64-bit) Android (planning) |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 100 x 72 mm (3,93" x 2,83") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

SBC

3.5" SBC with NXP i.MX 8X family of SOCs

Ideal for certified performance requirements and safety efficient

SBC-C57



Available in Industrial Temperature Range

| | |
|------------------------|--|
| Processor | NXP i.MX 8X family SoCs: Dual or Quad Arm Cortex®-A35 Cores + 1x Cortex® M4F core for real-time processing • NXP i.MX8 QuadXplus, 4x Arm Cortex®-A35 Cores + 1x Cortex® M4F core for real-time processing • NXP i.MX8 DualXplus, 2x Arm Cortex®-A35 Cores + 1x Cortex® M4F core for real-time processing |
| Max Cores | 4+1 |
| Memory | Soldered down LPDDR4 memory @ 1200MHz, 32-bit interface, up to 4GB |
| Graphics | Embedded GC7000Lite GPU Supports OpenGL 3.0, 2.1, OpenGL ES 3.1, OpenCL 1.2 Full Profile and 1.1, OpenVG 1.1, and Vulkan Embedded VPU, supports HW decoding of HEVC/H.265, AVC/H.264, MPEG-2, VC-1, RV10, VP8, H.263 and MPEG4.2t, HW encoding of AVC/H.264 2 independent displays supported |
| Video Interfaces | Factory options: • eDP 4-lane interface + LVDS single Channel 18-/24-bit interface • LVDS Dual Channel / 2 x LVDS Single Channel interface |
| Video Resolution | Up to 1080p60 |
| Mass Storage | Soldered onboard eMMC 5.1 Drive, up to 64GB QSPI NOR Flash soldered on-board |
| Networking | Up to 2 x Gigabit Ethernet ports On-board WiFi 802.11 a/b/g/n + BT 5.0 module, optional |
| USB | 1x USB 3.0 Host ports on USB 3.0 Type-A socket 1x USB OTG Port on micro-AB connector (interface shared with USB 2.0 interface of USB 3.0 Type-A socket) 2x USB 2.0 Host ports on Dual Type-A socket 1x USB 2.0 Host port on miniPCI-e Slot |
| Audio | I2S Audio codec Mic In + Hp-Out on TRRS combo connector Line Out + 2x Mic-In interfaces on internal connector |
| PCI-e | Optional mini PCI-e Slot |
| Serial Ports | 1x UART on expansion connector, optionally with RS-232 interface 1x UART on expansion connector, optionally with RS-485 interface 1x CAN port, available at TTL Level on expansion connector or with CAN transceiver on dedicated connector 2x Debug UARTs on dedicated connectors |
| Other Interfaces | Available on expansion connector: • 16x GPIOs • I2C interface • 2x analog inputs • 1x PWM Power and reset button input on dedicated connector |
| Power Supply | Factory option, +12VDC or +24 VDC input voltage DC power jack or 2-poles PCB terminal block for voltage supply RTC battery |
| Operating System | Linux |
| Operating Temperature* | -40°C ÷ +85°C (Industrial version) |
| Dimensions | 146 x 102 mm (3.5" form factor) |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



SBC

3.5" SBC with Rockchip RK3399 SoC

The Right Balance of Graphic/Computing Performance and Cost

SBC-C31



Available in Industrial Temperature Range

| | |
|------------------------|--|
| Processor | Rockchip RK3399 processor, 2x Cortex®-A72 MP cores + 4x Cortex®-A53 MPCores, up to 1.8GHz, 64-bit architecture |
| Max Cores | 2+4 |
| Memory | Soldered-down LPDDR4 memory, up to 4GB total, 64-bit interface |
| Graphics | 4-Core Mali-T860MP4 GPU OpenGL ES 1.1/2.0/3.0/3.1, OpenVG 1.1, OpenCL, DX11 support Embedded VPU, able to offer: <ul style="list-style-type: none"> H.265 10-bit, H.264 10-bit, VP9 8-bit 4Kx2K@60fps HW Decoding MPEG-4/MPEG-2/VP8 1080p@60fps HW Decoding H.264, VP8 1080p@30fps HW encoding Supports 2 independent video outputs |
| Video Interfaces | LVDS Single / Dual Channel interface eDP 1.3 interface HDMI 4K interface DP 1.2 interface on USB Type-C connector (alternate mode) |
| Video Resolution | HDMI, DP: Up to 4K x 2K @60Hz eDP: Up to 34096 x 2160 (4K) LVDS: Up to 1920 x 1200 |
| Mass Storage | SPI Flash (alternative to CAN Controller #1) eMMC 5.1 Drive soldered on-board microSD slot I2C Flash |
| Networking | Up to 2 x Gigabit Ethernet ports Soldered on-board M.2 1216 WLAN 802.11 a/b/g/n/ac + BT 5.0 module Optional on-board LTE Modem |
| USB | 1 x USB 3.0 Type-C port (Alternate mode with DP) 1x USB 3.0 Host port on Type-A socket 2 x USB 2.0 Host ports on Dual Type-A socket Up to 2 x USB 2.0 Host ports on internal pin header |
| Audio | I2S Audio codec Line Out + Microphone + S/PDIF Out interfaces on internal pin header |
| Serial Ports | 1x Debug UARTs 2x multistandard RS-232/RS-422/RS-485 serial ports on internal pin header Up to 2x CAN ports (factory options). |
| Other Interfaces | 2x MIPI-CSI camera connector, 4-lanes CSI input miniSIM slot or eSIM for on-board optional modem General Purpose I2C Connector Dedicated connector for I2C Touch Screen Controller Support Optional Accelerometer + Magnetometer, Gyroscope and Luminance sensors on-board Optional Ultra-low Power RTC |
| Power Supply | +12V _{DC} ÷ +24 V _{DC} RTC battery |
| Operating System | Linux Yocto Android |
| Operating Temperature* | 0°C ÷ +60°C (Commercial Temperature range) -20°C ÷ +85°C (Extended Temperature range) |
| Dimensions | 146 x 102 mm (3.5" form factor) |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

SBC

SBC with the Intel® 8th generation Core™/Xeon® (formerly Coffee Lake H) and 9th generation Core™ / Xeon® / Pentium® / Celeron® (formerly Coffee Lake Refresh) CPUs

High-performing, flexible solution for intelligence at the edge

SBC-C66



Available in Industrial Temperature Range

| | |
|------------------------|---|
| Processor | Intel® 8th generation Core™/Xeon® (formerly Coffee Lake H) CPUs: <ul style="list-style-type: none"> Intel® Core™ i7-9850H, Six Core @ 2.6GHz (4.3GHz Max 1 Core Turbo), 9MB Cache, 45W TDP (35W cTDP), with HyperThreading Intel® Core™ i5-9400H, Quad Core @ 2.5GHz (4.2GHz Max 1 Core Turbo), 8MB Cache, 45W TDP (35W cTDP), with HyperThreading Intel® Core™ i3-8100H, Quad Core @ 3.0GHz, 6MB Cache, 45W TDP (35W cTDP) Intel® Xeon® E-2176M, Six Core @ 2.7GHz (4.4GHz Max 1 Core Turbo), 12MB Cache, 45W TDP (35W cTDP), with HyperThreading Intel® 9th generation Core™ / Xeon® / Pentium® / Celeron® (formerly Coffee Lake Refresh) CPUs: <ul style="list-style-type: none"> Intel® Xeon® E-2276ME Six Core @2.8GHz (4.5GHz Max 1 Core Turbo), 12MB Cache, 45W TDP (35W cTDP), with Hyperthreading Intel® Xeon® E-2276ML Six Core @2.0GHz (4.2GHz Max 1 Core Turbo), 12MB Cache, 25W TDP, with Hyperthreading Intel® Xeon® E-2254ME Quad Core @2.6GHz (3.8GHz Max 1 Core Turbo), 8MB Cache, 45W TDP (35W cTDP), with Hyperthreading Intel® Xeon® E-2254ML Quad Core @1.7GHz (3.5GHz Max 1 Core Turbo), 8MB Cache, 25W TDP, with Hyperthreading Intel® Core™ i7-9850HE, Six Core @2.7GHz (4.4GHz Max 1 Core Turbo), 9MB Cache, 45W TDP (35W cTDP), with Hyperthreading Intel® Core™ i7-9850HL, Six Core @1.9GHz (4.1GHz Max 1 Core Turbo), 9MB Cache, 25W TDP, with Hyperthreading Intel® Core™ i3-9100HL, Quad Core @1.6GHz (2.9GHz Max 1 Core Turbo), 6MB Cache, 25W TDP Intel® Pentium® G5600E, Dual Core @2.6GHz (3.1GHz Max 1 Core Turbo), 4MB Cache, 35W TDP Intel® Celeron® G4930E, Dual Core @2.4GHz, 2MB Cache, 35W TDP Intel® Celeron® G4932E, Dual Core @1.9GHz, 2MB Cache, 25W TDP |
| Max Cores | 6 |
| Max Thread | 12 |
| Chipset | Intel® QM370, HM370 or CM246 Platform Controller Hub (PCH) |
| Memory | 2x DDR4-2666 or 4x DDR4-2444 ECC SODIMM Slots, up to 128GB total (only with 4 SODIMM modules). ECC DDR4 memory modules supported only with Xeon® Core™ i3, Pentium® and Celeron® CPUs combined with CM246 PCH. Intel® UHD Graphics 630/P630 architecture, up to 48 Execution Units Up to 3 independent displays supported |
| Graphics | DirectX 12, OpenGL 4.5, and OpenCL 2.1 support HW accelerated video decode MPEG2, VC1/WMV9, AVC/H.264, VP8, JPEG/ MJPEG, HEVC/H.265 (8-/10-bit), VP9 HW accelerated video encode MPEG2, AVC/H.264, VP8, JPEGHEVC/H.265, VP9 |
| Video Interfaces | 2x DP++ connector eDP 40-poles connector (interface switched with LVDS) |
| Video Resolution | LVDS Single/Dual Channel connector (interface switched with eDP) DP++, eDP up to 4096x2304 @ 60Hz, 24bpp LVDS up to 1920x1200 @ 60Hz |
| Mass Storage | Up to 2x S-ATA M 7p standard connectors M.2 Socket 3 Key M 2280 Slot for NVMe SSD modules with PCI-e x4 or SATA interface M.2 Socket 2 Key B Slot for SATA SSD modules (interface shared with PCI-e x2) microSD card slot |
| Networking | Up to 2x Gigabit Ethernet interface (Intel® I219-LM GbE PHY + optional Intel® I210/211 GbE controller) M.2 Socket1 Key E 2242 Slot for optional WLAN modules M.2 WWAN Slot (PCI-e x2 interface shared with SATA SSD module) 2x USB 3.1 ports on standard Type-A sockets, placed on the front side of the board. 4x USB 3.1 (Superspeed + USB 2.0) ports on a PCIe/104 Connector for Expansion 1x USB 3.1 (Superspeed + USB 2.0) port on M.2 SSD/WWAN Key B Slot 2x USB 2.0 ports on standard Type-A sockets, placed on the front side of the board. 2x USB 2.0 ports on internal pin header 1x USB2.0 port on M.2 Socket 1 Key E for WiFi modules |
| Audio | HD Audio codec on-board Mic In, Line out audio jacks Front Panel Audio Header |
| PCI-e | PCI-e x4 interface on M.2 Socket 3 Key M slot for NVMe modules PCI-e x2 port on M.2 SSD/WWAN Key B Slot PCI-e x1 port on M.2 Socket 1 Key E for WiFi modules 4x PCI-e x1 ports on PCIe/104 Connector for Expansion PCI-e x8 port (PCI-e x16 mechanical slot) 2x PCI-e x4 ports on PCI-e/104 Connector for Expansion |
| Serial Ports | 2x multistandard RS-232/RS-422/RS-485 serial ports on internal pin header |
| Other Interfaces | LPC pin Header Front Panel Header 3-pin or 4-pin tachometric FAN Connector Optional TPM 2.0 device on-board |
| Power Supply | 2-pin Mega-Fit connector V _{IN} Range: +12V/+24V |
| Operating System | Windows 10 64-bit Linux OS 64-bit |
| Operating Temperature* | 0°C ÷ +70°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 170x170 mm |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



SBC

Smart Edge Compute Unit based on NXP i.MX 6SoloX Processor

SBC

SBC with NXP i.MX 6SoloX Processor



Industrial IoT multiprotocol gateway

SBC-C23



EDGEHOG ALL-IN-ONE IIoT PLATFORM

Available in Industrial Temperature Range

All-in-one IoT hybrid computing solution

SBC-B08



Available in Industrial Temperature Range

| | |
|------------------------|---|
| Processor | NXP i.MX 6SoloX, Single core Cortex®-A9 @ 1GHz + Cortex®-M4 core @ 227MHz |
| Memory | 32-bit DDR3L memory soldered onboard, up to 1GB |
| Graphics | Integrated Graphics Vivante GC400T, 2D and 3D HW accelerator OpenGL ES 2.0, OpenGL ES 1.1, OpenVG 1.1 supported |
| Video Output | Optional Single Channel 18- / 24- bit LVDS connector w/ Touch Screen (I2C signals) Max resolution 1366x768 @60 Hz, 24bpp |
| Mass Storage | 8GB eMMC drive on-board µSD Card slot 1MB SPI Flash |
| Networking | Up to 2x FastEthernet RJ-45 ports Optional Single Band or Dual Band WiFi (802.11 b/g/n) + BT LE combo module with on-board PCB antennas or u/FL connectors, factory alternatives Optional LTE-Cat4 Modem with integrated GNSS, with up to 3 external antennas |
| USB | 1 x USB 2.0 Type-A socket 1 x USB 2.0 OTG on micro-AB connector |
| Audio | On-board buzzer |
| Serial Ports | All available on expansion connector: - 1 x RS-232 port - 1x RS-485 port - 2 x CAN port |
| Other Interfaces | M.2 Socket 1 Key E 2230 (USB + PCI-e x1 interfaces) Slot M.2 Socket 2 Key B 2242 (USB interface) Slot microSIM slot or electronic SIM soldered on-board for the optional Modem and/or the M.2 Key B Slot 3x Multicolor signalling LEDs Reset Button Expansion PCB terminal block with: - 4x analog inputs - I2C - 2x PWM |
| Power Supply | +12V _{DC} DC power jack and 2-poles PCB terminal block for voltage supply Optional Li-Ion Rechargeable battery |
| Operating System | Wind River Linux |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Optional accessories | M.2 2230 Z-Wave module with on-board antenna M.2 2242 SmartMesh® wireless sensor module with on-board antenna |
| Dimensions | 153 x 89,5 mm (6" x 3,5") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

| | |
|------------------------|--|
| Processor | NXP i.MX 6SoloX, Single core Cortex®-A9 @ 1GHz + Cortex®-M4 core @ 227MHz |
| Max Cores | 1 + 1 |
| Memory | Soldered on-board DDR3L memory, 32-bit interface, up to 1GB |
| Graphics | Integrated Graphics Vivante GC400T, 2D and 3D HW accelerator OpenGL ES 2.0, OpenGL ES 1.1, OpenVG 1.1 supported |
| Video Interfaces | Single Channel 18-/24- bit LVDS connector + Touch Screen (I2C signals) 24-bit Parallel RGB Connector |
| Video Resolution | LVDS: up to 1366x768 @60Hz, 24bpp RGB: up to 1920x1080p @60Hz, 24bpp |
| Mass Storage | 16MB NOR Quad-SPI Flash soldered onboard µSD Card slot Optional eMMC drive soldered on-board, up to 8GB |
| Networking | Up to 2x Fast Ethernet RJ-45 connectors Optional WiFi (802.11 b/g/n) + BT LE combo module + antenna onboard |
| USB | 1 x USB 2.0 OTG port 3 x USB 2.0 Host port on standard Type-A socket 1 x USB 2.0 Host port on internal pin header |
| Audio | I2S Audio interface on programmable pin header SPDIF interface (In and Out) on programmable pin header |
| Serial Ports | 1 x CAN Port reconfigurable as GPIO 2x RS-232 (Tx/RX signals only) + 1x RS-485 serial ports on expansion pin header |
| Other Interfaces | 2 x I2C dedicated connectors (one reserved for Touch Screen) 6 analog inputs for A/D Conversion Programmable (*) expansion pin header connector, able to offer: • CSI interface input (PAL and NTSC formats supported) • Up to 20 GPIO • SPI interface • SPDIF Audio interface • I2S Audio interface • CAN interface (TTL level) • 5 x PWM • 3 x I2C • 3 x serial ports (2x RS-232 +1xRS-485 interface) |
| Integrated Sensors | Optional 9-Axis Motion Sensors (Accelerometer, Magnetometer and Digital Gyroscope) |
| Power Supply | +12V _{DC} nominal voltage +3V _{DC} cabled Coin Cell Battery |
| Operating System | Linux Yocto |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 89.5 x 87 mm (3.52" x 3.43") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



SBC

SBC with NXP i.MX 6 Processor

Flexible, Open-source, Industrial SBC

SBC-A62-J



Available in Industrial Temperature Range

| | |
|-------------------------|--|
| Processor | NXP i.MX 6 Family, based on Arm Cortex-A9 processors: SBC-A62-J-SOLO : Single Core (i.MX6S) @1GHz SBC-A62-J-LITE : Dual Core Lite (i.MX6DL) @1GHz SBC-A62-J-PLUS : Dual Core Plus (i.MX6DP) @1GHz SBC-A62-J-QUAD : Quad Core (i.MX6Q) @1GHz |
| Max Cores | 4 |
| Memory | Soldered on-board DDR3L memory***: SBC-A62-J-SOLO: 512MB 32-bit interface SBC-A62-J-LITE: 1GB 64-bit interface SBC-A62-J-PLUS: 2GB 64-bit interface SBC-A62-J-QUAD: 1GB 64-bit interface |
| Graphics | Integrated Graphics, with up to 3 separate HW accelerators for 2D, OpenGL® ES2.0 3D OpenVG™ accelerator (only SBC-A62-J-PLUS and SBC-A62-J-QUAD) HW encoding of MPEG-4, H.263 V2, H.264, MJPEG HW decoding of MPEG-2, VC1, MPEG-4 / XviD, H.263, H.264, DivX SBC-A62-J-SOLO and SBC-A62-J-LITE support up to 2 independent displays SBC-A62-J-PLUS and SBC-A62-J-QUAD support up to 3 independent displays |
| Video Interfaces | 1 x Dual Channel or 2 x Single Channel 18 / 24 bit LVDS interface HDMI interface 1.4 |
| Video Resolution | HDMI: up to 1920 x 1080p LVDS: up to 1920 x 1200 |
| Mass Storage | 4GB eMMC drive soldered on-board*** microSD Card slot SBC-A62-J-PLUS and SBC-A62-J-QUAD: SATA connector |
| Networking | Gigabit Ethernet connector Internal USB connector for Wi-Fi Module |
| USB | 2 x USB 2.0 Type-A ports and 1 x USB 2.0 internal connector USB micro-B Client port |
| Audio | SBC-A62-J-LITE, SBC-A62-J-PLUS and SBC-A62-J-QUAD: AC'97 Audio Codec Realtek ALC655 with Mic-In, Line-Out audio Jacks |
| Serial Ports | Debug UART interface, TTL voltage level. SBC-A62-J-LITE, SBC-A62-J-PLUS and SBC-A62-J-QUAD: dedicated CAN Bus connector (Transceiver CAN 3.3V) Other serial interfaces on the expansion connector: SBC-A62-J-SOLO: 1 x Serial (TTL level) - 2 x Serial (RS-232) - 2 x CAN (TTL level); SBC-A62-J-LITE: 1 x Serial (TTL level) - 2 x Serial (RS-232) - 1 x CAN (TTL level); SBC-A62-J-PLUS and SBC-A62-J-QUAD: 1 x Serial (RS-485) - 2 x Serial (RS-232) - 1 x CAN (TTL level) |
| Other Interfaces | Dedicated connector (I2C, GPIO signals) for external Touch Screen controller; MIPI-CSI Camera connector; Configurable* expansion connector with: Up to 28 GPIO - SPI interface - SPDIF Audio interface - CAN interface (TTL level) - SDIO interface - 3 x PWM - I2C - UARTs |
| Power Supply | +12V _{DC} ; Additional embedded Low Power RTC; SBC-A62-J-SOLO and SBC-A62-J-LITE: internal i.MX6 Real Time Clock (external battery required for time/date retention, not included) SBC-A62-J-PLUS and SBC-A62-J-QUAD: low power Real Time Clock with onboard battery |
| Operating System | Free Android and Linux community BSP available at UD00.org SECO Android (under development) and Linux BSP / WEC7 on request. Please contact us Yocto Guideline valid for SECO BSP Linux |
| Operating Temperature** | 0°C ÷ +60 °C (Commercial temp.) For Industrial temp. (-40°C ÷ +85°C) please contact us |
| Dimensions | 110 x 86.5 mm (4.5" x 3.7") |

* Please note that some of these interfaces are factory options, other configurations are made via SW.
** Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.
*** For additional configurability please contact us.

SBC

Pico-ITX SBC with Intel® Atom™ E3800 family (formerly Bay Trail) SoCs and ECC DDR3L memory



Limitless Embedded applications

SBC-A44-pITX



Available in Industrial Temperature Range

| | |
|------------------------|---|
| Processor | Intel® Atom™ E3845 , Quad Core @1.91GHz, 2MB Cache, 10W TDP Intel® Atom™ E3827 , Dual Core @1.75GHz, 1MB Cache, 8W TDP Intel® Atom™ E3826 , Dual Core @1.46GHz, 1MB Cache, 7W TDP Intel® Atom™ E3825 , Dual Core @1.33GHz, 1MB Cache, 6W TDP Intel® Atom™ E3815 , Single Core @1.46GHz, 512KB Cache, 5W TDP Intel® Atom™ E3805 , Dual Core @1.33GHz, 1MB Cache, 3W TDP |
| Max Cores | 4 |
| Max Thread | 4 |
| Memory | Up to 8GB on DDR3L-1333 ECC SO-DIMM Slot (DDR3L-1333 with E3845 and E3827, DDR3L-1067 the others) |
| Graphics | Integrated Intel® HD Graphics 4000 series controller (not for E3805) Dual independent display support HW decoding of H.264, MPEG2, MVC, VC1, VP8, MJPEG formats HW encoding of H.264, MPEG2 and MVC formats |
| Video Interfaces | HDMI connector Single / Dual Channel 18- / 24-bit LVDS connector |
| Video Resolution | HDMI, resolution up to 1080p @ 60Hz LVDS, resolution up to 1920 x 1200 |
| Mass Storage | Optional eMMC drive on-board 1 x standard SATA connector mini mSATA interface on miniCard slot (shared with miniPCI-e) microSD Card slot |
| Networking | Dual Gigabit Ethernet connector |
| USB | 2 x USB 3.0 Host ports on Dual Type-A socket 2 x USB 2.0 Host ports on internal pin header 1 x USB 2.0 Host port on miniPCI-e slot |
| PCI-e | Half miniPCI-e slot (shared with mSATA) |
| Audio | Optional HD Audio Codec Cirrus Logic CS4207 Mic In, Line out internal pin header connector |
| Other Interfaces | 8 x GPIO FAN connector Switch / LED Front Header I2C connector with INT and RST# signals |
| Serial Ports | 2 x optional RS-232 / RS-422 / RS-485 Serial ports on internal pin Header |
| Power Supply | 12V _{DC} ± 5% RTC Battery with lead cable and connector |
| Operating System | Microsoft® Windows 7 (32/64 bit) Microsoft® Windows 8.1 (32/64 bit) Microsoft® Windows 10 (32/64 bit) Microsoft® Windows 10 IoT Microsoft® Windows Embedded Standard 7 (32/64 bit) Microsoft® Windows Embedded Compact 7 Linux (32/64 bit) Yocto |
| Operating Temperature* | 0°C ÷ +60°C (Commercial temperature) -40° ÷ +85°C (Industrial temperature) |
| Dimensions | 72 x 100 mm (2.83" x 3.93") |

* Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



SBC

eNUC SBC with the Intel® Atom™ X Series, Intel® Celeron® J / N Series and Intel® Pentium® N Series (formerly Apollo Lake) Processors

Flexible and expandable full industrial x86 eNUC SBC

SBC-B68-eNUC



Available in Industrial Temperature Range

| | |
|------------------------|--|
| Processor | Intel® Atom™ x5-E3930 Dual Core @1.3 GHz (Burst 1.8GHz), 2MB L2 Cache, 6.5W TDP Intel® Atom™ x5-E3940 Quad Core @1.6 GHz (Burst 1.8GHz), 2MB L2 Cache, 9.5W TDP Intel® Atom™ x7-E3950 Quad Core @1.6 GHz (Burst 2.0GHz), 2MB L2 Cache, 12W TDP Intel® Pentium® N4200 Quad Core @1.1GHz (Burst 2.5GHz), 2MB L2 Cache, 6W TDP Intel® Celeron® N3350 Dual Core @1.1GHz (Burst 2.4GHz), 2MB L2 Cache, 6W TDP Intel® Celeron® J3455 , Quad Core @1.5GHz (Burst 2.3GHz), 2MB L2Cache, 10W TDP Intel® Celeron® J3355 , Dual Core @2.0GHz (Burst 2.5GHz), 2MB L2Cache, 10W TDP. |
| Max Cores | 4 |
| Max Thread | 4 |
| Memory | Quad Channel soldered down LPDDR4 memory, up to 8GB |
| Graphics | Integrated Intel® HD Graphics 500 series controller, with up to 18 Execution Units 4K HW decoding and encoding of HEVC(H.265), H.264, VP8, VP9, MVC Three independent display support |
| Video Interfaces | Two DP++ 1.2 interfaces on miniDP connectors (supports HDMI displays through external adapter) embedded Display Port (eDP) internal connector LVDS through optional external adapter |
| Video Resolution | DP: Up to 4096 x 2160 @60Hz eDP: Up to 3840 x 2160 @60Hz HDMI: Up to 3840 x 2160 @30Hz LVDS: Up to 1920 x 1200 @ 60Hz |
| Mass Storage | Optional eMMC drive onboard M.2 SATA SSD slot (Socket 2 Key B Type 3042/2260 **) microSD Card slot SATA 7p M connector |
| Networking | 2x Gbit LAN / Intel Gigabit Ethernet i21x family controller M.2 WWAN Slot for Modems (Socket 2 Key B Type 3042/2260 **) M.2 WLAN Connectivity Slot for WiFi/BT (Socket 1 Key E type 2230) |
| USB | 2 x USB 3.0 Host ports on USB 3.0 Type-A sockets 2 x USB 2.0 Host ports on USB 2.0 Type-A sockets 2 x USB 2.0 Host ports on internal pin header 1 x USB 3.0 Host port on SSD/WWAN M.2 slot 1 x USB 2.0 Host port on WLAN M.2 Slot |
| PCI-e | 1 x PCI-e x2 port on M.2 SSD/WWAN Slot 1 x PCI-e x1 port on WLAN M.2 Slot |
| Audio | HD Audio codec / Cirrus Logic CS4207 Mic In and Line Out Audio jacks Amplified Speaker output on internal pin header |
| Serial Ports | 2 x RS-232/RS-422/RS-485 UARTS software configurable, on internal Pin Header |
| Other Interfaces | 2 x I2C + 8 x GPIOs on Feature connector Button / LED front panel header CIR (Consumer InfraRed) sensor microSIM slot for M.2 WWAN Modem Optional TPM 2.0 on-board |
| Power Supply | +18V _{DC} ÷ +32 V _{DC} recommended +15V _{DC} ÷ +36 V _{DC} absolute RTC battery |
| Operating System | Microsoft® Windows 10 Enterprise (64 bit) Microsoft® Windows 10 IoT Core Yocto (64 bit) Linux |
| Operating Temperature* | 0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version) |
| Dimensions | 101.6 x 101.6 mm (4" x 4") |

* Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

** SATA SSD and WWAN functionalities share the same slot and are therefore mutually exclusive.

SBC

SBC with the N-series Intel® Pentium® / Celeron® and x5-Series Atom™ SoCs in the embedded NUC™ form factor

Multifunctional SBC on the eNUC form factor

SBC-A80-eNUC



| | |
|------------------------|--|
| Processor | Intel® Pentium® N3710 , Quad Core @ 1.6GHz (Turbo Boost 2.56GHz), 2MB Cache, 6W TDP Intel® Celeron® N3160 , Quad Core @ 1.6GHz (Turbo Boost 2.24GHz), 2MB Cache, 6W TDP Intel® Celeron® N3060 , Dual Core @ 1.6GHz (Turbo Boost 2.48GHz), 2MB Cache, 6W TDP Intel® Celeron® N3010 , Dual Core @ 1.04GHz (Turbo Boost 2.24GHz), 2MB Cache, 4W TDP Intel® Atom™ x5-E8000 , Quad Core @ 1.04GHz (Turbo Boost 2.00GHz), 2MB Cache, 5W TDP |
| Max Cores | 4 |
| Max Thread | 4 |
| Memory | 2 x DDR3L SO-DIMM Slots with Dual Channel Support, up to 8GB DDR3L-1600 |
| Graphics | Integrated Graphics Three independent display support HW decoding of HEVC(H.265), H.264, MPEG2, MVC, VC-1, VP8, WMV9, JPEG/MJPEG formats HW encoding of H.264, MVC and JPEG/MPEG formats |
| Video Interfaces | HDMI connector miniDP++ connector embedded Display Port (eDP) internal connector |
| Video Resolution | HDMI, DP: up to 3840x2160 24bpp @30Hz, 2560x1600 24bpp @60Hz eDP: up to 2560x1440 24bpp @60Hz |
| Mass Storage | Optional eMMC drive on-board M.2 SATA SSD slot (Socket 2 Key B Type 2242 or 2260) microSD Card slot SATA 7p M connector |
| Networking | 2 x Gigabit Ethernet ports |
| USB | 2 x USB 3.0 Host ports on Type-A sockets 2 x USB 2.0 Host ports on internal pin header 1 x USB 2.0 Host port on M.2 Connectivity Slot |
| PCI-e | 1 x PCI-e x1 port on M.2 Connectivity Slot |
| Audio | Audio available on HDMI and miniDP++ interfaces HD Audio codec Combo TRRS connector with LineOut and MicIn support |
| Serial Ports | 2 x RS-232 / RS-422 / RS-485 UARTS, on internal Pin Header |
| Other Interfaces | I2C Touch Panel connector Front Panel Pin Header CIR (Consumer InfraRed) sensor 8 x GPIOs |
| Power Supply | +18V _{DC} ÷ +32V _{DC} recommended +15V _{DC} ÷ +36V _{DC} absolute RTC Battery |
| Operating System | Microsoft® Windows 7 (32 / 64 bit) Microsoft® Windows 8.1 (32 / 64 bit) Microsoft® Windows 10 (32 / 64 bit) Microsoft® Windows 10 IoT Linux Yocto |
| Operating Temperature* | 0°C ÷ +60 °C |
| Dimensions | 101.6 x 101.6 mm (4" x 4") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



Embedded Panel with 10.1" LCD display
based on the Multicore NXP i.MX 6 SoC family

Flexible, Open-source,
Industrial system

SYS-A62-10



MODULAR HMI & BOXED SOLUTIONS

SECO OFF-THE-SHELF
SOLUTIONS FOR
EASIER SYSTEM INTEGRATION



Touch-display
solutions



Expertise in
assembly
services



Mechanical
design



Get inspired and ask for
your tailored solution

| | |
|------------------------|--|
| Processor | Multicore NXP i.MX 6 processor family SYS-A62-10/SOLO: i.MX6S Solo, 1 x Arm Cortex-A9 @1 GHz Core SYS-A62-10/LITE: i.MX6DL Dual Lite, 2 x Arm Cortex-A9 @1 GHz Cores SYS-A62-10/QUAD: i.MX6Q Quad, 4 x Arm Cortex-A9 @1 GHz Cores |
| Memory | On-board DDR3L soldered memory; SYS-A62-10/SOLO: 512MB 32-bit SYS-A62-10/LITE: 1GB 64-bit SYS-A62-10/QUAD: 1GB 64-bit |
| Embedded Graphics | 2D, OpenGL® ES2.0 3D HW accelerator OpenVG™ accelerator (SYS-A62-10/QUAD only) HW encoding of MPEG-4, H.263 V2, H.264, MJPEG HW decoding of MPEG-2, VC1, MPEG-4 / XviD, H.263, H.264, DivX |
| Video Section | 10,1" LVDS display, resolution 1280 x 800, 30K hours life P-Cap (Projected Capacitive touch screen), with 2mm glass cover Glass Hardness IK08, Surface Hardness 8H (450g) |
| Mass Storage | On-board 4GB eMMC drive microSD Card Slot SATA Connector (SYS-A62-10/QUAD only) |
| Networking | Gigabit Ethernet connector Optional WiFi pluggable module |
| USB | 2 x USB 2.0 Type-A ports and 1 x USB 2.0 internal connector USB micro-B Client port |
| Audio | SYS-A62-10/LITE and SYS-A62-10/QUAD: Realtek ALC655 AC'97 Audio Codec with Mic-In, Line-Out audio Jacks |
| Serial Ports | Dedicated Serial ports: SYS-A62-10/SOLO: 2 x RS-232 ports SYS-A62-10/LITE: 2 x RS-232 ports, 1 x CAN port SYS-A62-10/QUAD: 2 x RS-232 ports, 1 x RS-485 port, 1 x CAN port Other serial ports can be realised on expansion connector (see "Other interfaces") |
| Other Interfaces | MIPI-CSI Camera connector Programmable expansion connector with: SYS-A62-10/SOLO: up to 22 GPIOs, 2 x TTL CAN ports, 1 x UART TTL, 3 x PWM, 2 x I2C, SD, SPI or S/PDIF interfaces SYS-A62-10/LITE: up to 20 GPIOs, 1 x TTL CAN port, 1 x UART TTL, 3 x PWM, 2 x I2C, SD, SPI or S/PDIF interfaces SYS-A62-10/QUAD: up to 18 GPIOs, 1 x TTL CAN port, 3 x PWM, 2 x I2C, SD, SPI or S/PDIF interfaces |
| Power Supply | +12V _{DC} SYS-A62-10/SOLO and SYS-A62-10/LITE: internal i.MX6 RTC, require external battery for time/data retention SYS-A62-10/QUAD: low power RTC with on-board battery |
| Operating System | Linux Yocto Windows® Embedded Compact 7 |
| Operating Temperature* | 0°C ÷ 50°C |
| Dimensions | 269,60 x 189,20 x 17,17 mm |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



Embedded Panel with 7" LCD display based on the NXP i.MX 6SoloX Processor

Smart, compact, industrial 7" touch system built for IoT

SYS-B08-7



| | |
|------------------------|---|
| Processor | NXP i.MX 6SoloX Processor, Single core Cortex®-A9 @ 1GHz + Cortex®-M4 core @ 227MHz |
| Max Cores | 1 + 1 |
| Memory | Soldered on-board DDR3L memory, 32-bit interface SYS-B08-BASIC/D: 512MB SYS-B08-FULL/D: 1GB |
| Graphics | Integrated Graphics Vivante GC400T, 2D and 3D HW accelerator OpenGL ES 2.0, OpenGL ES 1.1, OpenVG 1.1 supported |
| Video Interfaces | Single Channel 18-/24-bit LVDS connector + Touch Screen (I2C signals) 24-bit Parallel RGB Connector |
| Video Resolution | LVDS: up to 1366x768 @60Hz, 24bpp RGB: up to 1920x1080p @60Hz, 24bpp |
| Mass Storage | 16MB NOR Quad-SPI Flash soldered onboard µSD Card slot SYS-B08-FULL/D: 8GB eMMC soldered onboard |
| Networking | SYS-B08-BASIC/D: 1x Fast Ethernet RJ-45 connector SYS-B08-FULL/D: 2x Fast Ethernet RJ-45 connector + WiFi (802.11 b/g/n) +BT LE combo module + antenna onboard |
| USB | 1 x USB 2.0 OTG port 3 x USB 2.0 Host port on standard Type-A socket 1 x USB 2.0 Host port on internal pin header |
| Audio | I2S Audio interface on programmable pin header S/PDIF interface (In and Out) on programmable pin header |
| Serial Ports | 1 x CAN Port reconfigurable as GPIO 2x RS-232 (Tx/RX signals only) + 1x RS-485 serial ports on expansion pin header |
| Other Interfaces | 2 x I2C dedicated connectors (one reserved for Touch Screen) 6 analog inputs for A/D Conversion Programmable (*) expansion pin header connector, able to offer: <ul style="list-style-type: none"> • CSI interface input (PAL and NTSC formats supported) • Up to 20 GPIO • SPI interface • SPDIF Audio interface • I2S Audio interface • CAN interface (TTL level) • 5 x PWM • 3 x I2C • 3 x serial ports (2x RS-232 +1xRS-485 interface) <p>Embedded Low Power RTC (* Please note that some of these interfaces are factory options, other configurations are made via SW using the pin multiplexing possibilities of the i.MX6SX processor.</p> |
| Integrated Sensors | Optional 9-Axis Motion Sensors (Accelerometer, Magnetometer and Digital Gyroscope) |
| Power Supply | +12V _{DC} nominal voltage +3V _{DC} cabled Coin Cell Battery |
| Operating System | Linux Yocto |
| Operating Temperature* | 0°C ÷ +60°C |
| Dimensions | 189,60 x 121,40 x 28,20 mm |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

Boxed Solution for Digital Signage applications based on the AMD Ryzen™ Embedded R1000 / V1000 family of SOCs



Multi-Display Digital Signage Solution

SYS-C90-DS



| | |
|-----------------------|---|
| Processor | AMD Ryzen™ Embedded V1000 family SoCs: AMD Ryzen™ Embedded V1605B with GPU AMD Radeon™ Vega 8, Quad Core Dual Thread @ 2.0GHz (3.6 Boost), TDP 12-25W AMD Ryzen™ Embedded V1202B with GPU AMD Radeon™ Vega 3, Dual Core Dual Thread @ 2.3GHz (3.2 Boost), TDP 12-25W AMD Ryzen™ Embedded R1000 family SoCs: AMD Ryzen™ Embedded R1606G with GPU AMD Radeon™ Vega 3, Dual Core Dual Thread @ 2.6GHz (3.5 Boost), TDP 12-25W AMD Ryzen™ Embedded R1505G with GPU AMD Radeon™ Vega 3, Dual Core Dual Thread @ 3.25GHz (3.6 Boost), TDP 12-25W |
| System Memory | Up to 2x DDR4 SODIMMs Available memory sizes: 4GB, 8GB, 16GB Single Channel 8GB, 16GB, 32GB Dual Channel |
| Graphics | GPU AMD Radeon™ VEGA with up to 11 Compute Units DirectX® 12 supported H.265 (10-bit) decode and 8-bit video encode VP9 decode 4 independent displays supported (3 with R1000 SoCs) |
| Video Interfaces | 4x DP++ connectors (only 3 working with R1000 SoCs) |
| Video Resolution | Up to 4096 x 2160 |
| Mass Storage | Optional M.2 NVMe module (available sizes: 250GB, 500GB, 1TB, 2TB) Optional SATA SSD (available sizes: 250GB, 500GB, 1TB, 2TB) |
| Networking | 2 x Gigabit Ethernet ports Internal M.2 WWAN slot (Socket 2 Key B Type 2242/3042) for Modems Internal M.2 Connectivity Slot (Socket 1 Key E Type 2230) for WiFi / BT modules |
| USB | 2 x USB 3.0 Type-A sockets on Rear Panel |
| Serial Ports | Optional, 2x RS-232/RS-422/RS-485 ports on DB-9 connectors |
| Other Interfaces | Externally accessible miniSIM Slot for the optional M.2 Modem Power Button with Power On Status LED on Front Panel Optional TPM 1.2 or 2.0 on-board |
| Power Supply | 2-poles Mega-Fit connector +12V _{DC} ÷ +24 V _{DC} |
| Operating System | Optional preinstalled OS: Microsoft® Windows 10 IoT Enterprise (64bit) Linux Ubuntu |
| Operating Temperature | 0°C ÷ +50°C |
| Dimensions | 179,4 (W) x 109 (D) x 57,8 (H) mm |
| Optional accessories | VESA standard 100x100 Wall mount plate, dimensions 151 (W) x 111 (D) x 5,08 (H) mm |



Boxed solutions

Boxed solution based on the Intel® Atom™ X Series, Intel® Celeron® J / N Series and Intel® Pentium® N Series (formerly Apollo Lake) SoCs

Fanless, compact and versatile embedded box PC

SYS-B68-IPC



| | | |
|--|-----------------------|--|
| | Processor | Intel® Atom™ x7-E3950 Quad Core @1.6 GHz (Burst 2.0GHz), 2MB L2 Cache, 12W TDP Intel® Atom™ x5-E3940 Quad Core @1.6 GHz (Burst 1.8GHz), 2MB L2 Cache, 9.5W TDP Intel® Atom™ x5-E3930 Dual Core @1.3 GHz (Burst 1.8GHz), 2MB L2 Cache, 6.5W TDP |
| | Memory | Quad Channel soldered down LPDDR4 memory, up to 8GB |
| | Graphics | Integrated Intel® HD Graphics 505 or 500 series controller, with up to 18 Execution Units 4K HW decoding and encoding of HEVC(H.265), H.264, VP8, SVC, MVC Dual independent display |
| | Video Interfaces | Two multimode Display Port on miniDP++ connectors |
| | Video Resolution | Up to 4096 x 2160 |
| | Mass Storage | Optional eMMC drive onboard Optional SATA M.2 SSD module up to 512GB |
| | Networking | 2 x Gigabit Ethernet ports M.2 Socket 2 Key B Slot for Modem modules (alternative to M.2 SSD), connected to internal microSIM Slot M.2 Socket 1 Key E Slot for WiFi/BT modules |
| | USB | 2 x USB 3.0 Type-A sockets on Front Panel 2 x USB 2.0 Type-A sockets on Rear Panel |
| | Serial Ports | 2x RS-232/RS-422/RS-485 ports, software configurable, DB9 male connectors |
| | Audio | Internal HD Audio codec Cirrus Logic CS4207 Mic In and Line Out Audio jacks |
| | Other Interfaces | Power Button Power On Status LED |
| | Power Supply | PCB terminal block, type Phoenix 1990973 +18V _{DC} ÷ +32 V _{DC} recommended +15V _{DC} ÷ +36 V _{DC} absolute |
| | Operating System | Preinstalled OS (factory options): • Microsoft Windows 10 IoT entry • Linux Ubuntu 64-bit Available on request: • Wind River Linux (64-bit) • Yocto (64-bit) • Android (planning) |
| | Operating Temperature | With internal SSD, 0°C ÷ +60°C (in presence of air flow)* Without internal SSD, -40°C ÷ +60°C (in presence of air flow)** |
| | Optional accessories | miniDP++ to HDMI adapter Customised bracket for wall mount |
| | Dimensions | 162.3 x 111.8 x 52.2mm |

* Environment temperature measured near the heatsink 's fins. Upon customer to verify that the temperature remains within the admissible range.

** Temperature range below 0°C tested on the SBC only.



Industrial IoT Gateway based on the NXP i.MX 6SoloX Processor

Enhance your edge capabilities with a Synthetic Brain

SYS-C23-IGW



EDGEHOG ALL-IN-ONE IIoT PLATFORM

SMART EDGE COMPUTING

EDGE COMPUTING SOLUTIONS FOR THE INDUSTRIAL IOT

Off-the-shelf solutions

Cloud agnostic

Industrial multi-protocol support

Ready for system integration

| | | |
|--|------------------------|--|
| | Processor | NXP i.MX 6SoloX, Single core Cortex®-A9 @ 1GHz + Cortex®-M4 core @ 227MHz |
| | Memory | 32-bit DDR3L memory soldered onboard, up to 1GB |
| | Mass Storage | 8GB eMMC drive on-board µSD Card Slot 1MB SPI Flash |
| | Networking | Up to 2 x FastEthernet RJ-45 ports Onboard 2.4GHz WiFi (802.11 b/g/n) + BT LE combo module with external antenna (optionally available in Dual Band -2.4Ghz and 5GHz- version with 2x external antennas and 802.11a support, factory alternatives) Optional LTE Cat4 Modem embedded on-board, with 2 external antennas microSIM or electronic SIM soldered on-board for the optional Modem |
| | USB | 1 x USB 2.0 Type-A socket 1 x USB 2.0 OTG on micro-AB connector |
| | Serial Ports | 1x RS-232 port 1x RS-485 port 2x CAN Port |
| | Other Interfaces | 4x analog inputs I2C Bus 2x PWM Power On/OFF Button Reset Button 3x Multicolor Signalling LEDs |
| | Power Supply | +12V _{DC} DC power jack and 2-poles PCB terminal block for voltage supply 2200mAh Li-Ion Rechargeable battery |
| | Operating System | Linux with Edgehog Services installed |
| | Operating Temperature* | 0°C ÷ +50°C |
| | Optional accessories | DIN rail bracket kit |
| | Dimensions | 205 x 95.50 x 40.25mm |

*Environment temperature measured near the heatsink's fins. Upon customer to verify that the temperature remains within the admissible range.



Boxed solution based on the Intel® Celeron® J / N Series and Intel® Pentium® N Series (formerly Apollo Lake) Processors

Smart Edge Compute Unit, a multi-connectivity and multi-protocol plug & play Industrial IoT gateway

SYS-B68-IGW



| | |
|------------------------|--|
| Processor | Intel® Pentium® N4200 Quad Core @1.1GHz (burst 2.5GHz), 2MB L2 Cache, 6W TDP Intel® Celeron® N3350 Dual Core @1.1GHz (burst 2.4GHz), 2MB L2 Cache, 6W TDP Intel® Celeron® J3455, Quad Core @1.5GHz (Burst 2.3GHz), 2MB L2Cache, 10W TDP Intel® Celeron® J3355, Dual Core @2.0GHz (Burst 2.5GHz), 2MB L2Cache, 10W TDP |
| Memory | Quad Channel soldered down LPDDR4 memory, up to 8GB |
| Graphics | Integrated Intel® HD Graphics 505 or 500 series controller, with up to 18 Execution Units 4K HW decoding and encoding of HEVC(H.265), H.264, VP8, SVC, MVC Dual independent display |
| Video Interfaces | Two multimode Display Port on miniDP++ connectors |
| Video Resolution | Up to 4096 x 2160 |
| Mass Storage | Optional eMMC drive onboard Optional SATA M.2 SSD module up to 512GB |
| Networking | 2 x Gigabit Ethernet ports M.2 Socket 2 Key B Slot for Modem modules (alternative to M.2 SSD), connected to internal microSIM Slot M.2 Socket 1 Key E Slot for WiFi/BT modules |
| USB | 2 x USB 3.0 Type-A sockets on Front Panel 2 x USB 2.0 Type-A sockets on Rear Panel |
| Audio | Internal HD Audio codec Cirrus Logic CS4207 Mic In and Line Out Audio jacks |
| Other Interfaces | Power Button Power On Status LED |
| Power Supply | DC Power jack, with cable restraint, type DC-062-4-2.5-S214 +18V _{DC} ÷ +32 V _{DC} recommended +15V _{DC} ÷ +36 V _{DC} absolute Min power required, 40W |
| Operating System | Preinstalled OS (factory options): • Microsoft Windows 10 IoT entry • Linux Ubuntu 64-bit Available on request: • Wind River Linux (64-bit) • Yocto (64-bit) • Android (planning) |
| Operating Temperature* | 0°C ÷ +60°C (in presence of air flow) |
| Optional accessories | miniDP++ to HDMI adapter Customised bracket for wall mount |
| Dimensions | 162.3 x 111.8 x 42.2mm |

*Environment temperature measured near the heatsink's fins. Upon customer to verify that the temperature remains within the ammissible range.

SBC with NXP i.MX 8M Mini Applications Processors



Heterogeneous Multi-core Processing Architecture for edge node computing and multimedia

SBC-C61



| | |
|------------------------|---|
| Processor | NXP i.MX 8M Mini Family based on Arm® Cortex®-A53 cores + general purpose Cortex®-M4 400MHz processor: <ul style="list-style-type: none"> • i.MX 8M Mini Quad – Full featured, 4x Cortex®-A53 cores up to 1.8GHz • i.MX 8M Mini Dual – Full featured, 2x Cortex®-A53 cores up to 1.8GHz • i.MX 8M Mini Solo – Full featured, 1x Cortex®-A53 cores up to 1.8GHz • i.MX 8M Mini Quad Lite –4x Cortex®-A53 cores up to 1.8GHz, no VPU • i.MX 8M Mini Dual Lite –2x Cortex®-A53 cores up to 1.8GHz, no VPU • i.MX 8M Mini Solo Lite –1x Cortex®-A53 cores up to 1.8GHz, no VPU |
| Max Cores | 4+1 |
| Memory | Soldered-down LPDDR4 memory, up to 4GB total, 32-bit interface |
| Graphics | GC320 2D accelerator + GCNanoUltra 3D accelerator Embedded VPU (not for Lite processors), able to offer: <ul style="list-style-type: none"> • VP9, HEVC/H.265, AVC/H.264, VP8 HW Decoding • AVC/H.264, VP8 HW encoding OpenGL ES 2.0, OpenVG 1.1 support |
| Video Interfaces | LVDS Single/Dual Channel connector or eDP connector (factory alternatives) MIPI-CSI Camera interface connector |
| Video Resolution | Up to 1920x1080p60, 24bpp |
| Mass Storage | Optional eMMC 5.1 drive on-board, up to 64GB MicroSD slot 2Kb I2C Flash QSPI Flash |
| Networking | 2x GbEthernet interfaces (1 optional) Optional WiFi 802.11 a/b/g/n/ac +BT LE 4.2 module Optional soldered on-board LTE Cat 4 Modem with microSIM slot or eSIM |
| USB | 2x USB 2.0 Host ports on Type-A socket 2x USB 2.0 Host ports on internal pin header 1x USB OTG port on micro-AB connector (interface shared with the optional on-board modem) |
| Audio | Digital Mic In connector (2x PDM inputs) Amplified mono Speaker Output |
| Serial Ports | Up to 2x RS-232 or RS-485 or CAN Serial ports (factory options, shared with GPIOs and SPI interfaces) 2x Debug UARTS |
| Other Interfaces | I/O Connectors with: <ul style="list-style-type: none"> • 2xPWM @3.3V • GP I2C interface @3.3V • 1x Open Drain output (max 12V) • 2x GPIOs @3.3V • 1xRS-232 or 1x RS-485 or 4x GPIOs / 1x UART or 1x CAN (factory options) • 1xRS-232 or 1x RS-485 or 4x GPIOs / 1x UART or 1x CAN + on-board ultra-low power RTC (factory options) Watchdog Dedicated connector for I2C Touch Screen Controller Support Optional Accelerometer + Magnetometer, on-board Onboard Buzzer Optional Ultra Low Power RTC |
| Power Supply | +12V _{DC} ÷ +24V _{DC} |
| Operating System | Wind River Linux Yocto Android |
| Operating Temperature* | -20°C ÷ +60°C (extended version) |
| Dimensions | 146x102 mm (3.5" form factor) |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



From sensors to Cloud in a single step

SENSE-D01



Available in Industrial Temperature Range

From sensors to AI in a single step

SENSE-D47



| | |
|-----------------------|--|
| Processor | ESP32-D0WDQ6 processor, Dual Core Xtensa® 32-bit LX6 Microprocessor |
| Memory | Internal 520KB SRAM + 16KB SRAM in RTC |
| Graphics | N.A. |
| Mass Storage | 4MB SPI Flash 8MB PSRAM Optional microSD slot (alternative to Expansion PCB-terminal block #2) |
| Networking | Embedded WiFi (802.11 b/g/n) + BT 4.2/BT LE module with PCB antenna |
| Serial Ports | Optional 4-wire TTL port on 5-pin dedicated PCB Terminal Block |
| CAN | Optional CAN Port on 3-pin dedicated PCB Terminal Block |
| Other Interfaces | Expansion 10-/11-pin PCB terminal block #1, able to manage: Up to 9 digital GPIOs (5 managed in UltraLow Power States too) Up to 5x analog Inputs Up to 2x DAC outputs SPI interface Expansion 8-pin PCB terminal block #2 (alternative to microSD Slot), able to manage: Up to 6x digital GPIOs, all managed in UltraLow Power States too Up to 6x analog Inputs Up to 6x Capacitive Sensing GPIOs SPI JTAG interface SD Host interface SD Slave interface 3x Pushbuttons Green LED for Power On Signaling Blue LED for Edgehog network connection signaling Yellow LED for WiFi/BT activity or other signaling |
| Power Supply | PCB Terminal Block +9V _{DC} .. +24V _{DC} |
| Operating Temperature | -40°±+85°C (Industrial Temperature range) |
| Dimensions | 4x8 cm |

| | |
|------------------------|---|
| Processor | ESP32-D0WD-V3 Dual Core Xtensa® 32-bit LX6 Microprocessor |
| Memory | Internal 520KB SRAM + 16KB SRAM in RTC |
| Graphics | N.A. |
| Mass Storage | 16MB SPI Flash 8MB PSRAM microSD slot |
| Networking | Embedded WiFi (802.11 b/g/n) + BT 4.2/BT LE module Optional Modem with GNSS functionality: • Quad Band GSM/GPRS Modem, SIMCON SIM868 • Global-Band LTE CAT-M modem, SIMCON SIM7080G |
| Serial Ports | RS-232 / TTL UART (jumper selectable) port on 6-pin dedicated connector |
| CAN | CAN Port on 3-pin dedicated connector |
| Other Interfaces | Accelerometer Optional Trusted Secure Element Expansion 8-pin connector, able to manage: • Up to 3x Digital GPIOs, 2 of them managed also in UltraLow Power States too • Up to 2x analog Inputs • I2C interface (fixed interface) • Additional 2-Wire UART • Second I2C interface • Up to 2x PWM 1x Pushbutton White LED for Power On Signaling Green LED for Modem Activity Signaling Blue LED for Edgehog network connection signaling Yellow LED for WiFi/BT activity or other signaling eSIM or microSIM slot (factory options) SMA connectors for WiFi/BT, Modem and GNSS (antennas not provided) |
| Power Supply | 2-pin micro-Fit Connector +9VDC .. +24VDC Optional 2000mAh rechargeable battery, LIR18650 |
| Operating Temperature* | 0°±+45°C |
| Dimensions | 110 x 91 x31 mm (LxWxD) |
| Mechanical | Wall mount and DIN rail mount |

*Measured inside the case, during any and all times (including start-up). Actual temperature will widely depend on application and/or environment.



Edge Server based on the AMD Embedded 3rd generation R-Series SOC (Merlin Falcon) or G-Series SOC-I (Brown Falcon) or G-Series SOC-J (Prairie Falcon)

The Next Generation Single-Board Computer

SYS-A90-IPC



| | |
|------------------------|--|
| Processor | <p>AMD Embedded™ 3rd generation R-Series SOC (Merlin Falcon): AMD RX-421BD, Quad Core @ 2.1 GHz (3.4 GHz Max), 2MB L2 Cache, TDP 35W AMD RX-418GD, Quad Core @ 1.8 GHz (3.2 GHz Max), 2MB L2 Cache, TDP 35W AMD RX-216GD, Dual Core @ 1.6GHz (3.0 GHz Max), 1MB L2 Cache, TDP 15W</p> <p>AMD Embedded™ 3rd generation G-Series SOC-I (Brown Falcon): AMD GX-217GI, Dual Core @ 1.7 GHz (2.0 GHz Max), 1MB L2 Cache, TDP 15W</p> <p>AMD Embedded™ 3rd generation G-Series SOC-J (Prairie Falcon): AMD GX-224IJ, Dual Core @ 2.4GHz (2.8 GHz Max), 1MB L2 Cache, TDP 15W</p> |
| System Memory | Up to 2x 8GB DDR4 SODIMM modules |
| Graphics | <p>AMD Radeon™ 3rd -Generation Graphics Core Next (GCN) RX-421BD -Radeon™ R7 RX-418GD -Radeon™ R6 RX-216GD -Radeon™ R5 GX-217GI -Radeon™ R6E GX-224IJ, Radeon™ R4E</p> <p>Three independent displays supported (two with GX-217GI and GX-224IJ) DirectX® 12 supported Unified Video Decode (UVD) 6 (4K H.265 and H.264 decode) Video Coding Engine (VCE) 3.1 (4K H.264 encode)</p> |
| Video Interfaces | Up to 3 DP++ interfaces, supporting eDP1.4, DP 1.2, DVI and HDMI 1.4b/2.0 |
| Video Resolution | Up to 4K |
| Mass Storage | <p>Up to 2x internal SATA drives 2x CFAST Slots 1x microSD card slot PCI-e x4 M.2 Key M NVMe SSD Slot</p> |
| Networking | 2x Gigabit LAN / Realtek RTL8111G Gigabit Ethernet controllers |
| PCI-e | 1 x PCI-e x4 port on M.2 Key M SSD Slot |
| USB | <p>2x USB 3.0 Type-A sockets 2x USB 2.0 Type-A sockets 2x USB 3.0 on internal pin header 2x USB 2.0 on internal pin header</p> |
| Audio | <p>5.1 non amplified audio Jacks S/PDIF Optical (Toslink) Amplified Audio connector (Stereo Out + Subwoofer), 3x30W</p> |
| Serial Ports | <p>4 x RS-232 Full Modem ports on external DB9 male connectors 2 x RS-232 Full modem ports on internal IDC pin headers</p> |
| Other Interfaces | <p>2x FAN connectors Optional TPM 1.2 TPM 2.0 embedded in SoC (Windows support only) 8 x GPI, 8 x GPO</p> |
| Power Supply | <p>+12Vdc ± 5%, mini-Fit 4x2 Power connectors 220mAh non-rechargeable Coin cell battery for RTC</p> |
| Operating System | <p>Microsoft® Windows 10 Microsoft® Windows 10 IoT Linux</p> |
| Operating Temperature* | 0°C ÷ +60 °C (Commercial temp.) |
| Dimensions | 300 x 230 x 90 mm (11.81" x 9.05" x 3.54") |

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.



Information subject to change.

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