

PRODUCT GUIDE 2021





PRODUCT GUIDE

INDEX

Qseven®

Q7-C58 p. 10
Q7-B03 p. 11
Q7-C26 p. 11
Q7-C25 p. 12
Q7-A36 p. 12
Q7-974 p. 13
Q7-928 p. 13

µQseven®

µQ7-C72 p. 14
µQ7-A76-J p. 14
µQ7-962 p. 15
µQ7-A75-J p. 15

Carrier Board

CQ7-A42 p. 16

Development Kit

Q7 DEV KIT 2.0 p. 16
Q7 STARTER KIT 2.0 p. 17

SMARC

SM-C93 p. 18
SM-B69 p. 19
SM-D18 p. 19
SM-D16 p. 20
SM-C12 p. 20
SM-B71 p. 21

Development Kit

SMARC DEV KIT p. 21

COM-HPC®

CHPC-C77-CSA p. 22

COM Express™

Type 7

COMe-C42-BT7 p. 23

Development Kit

COM EXP T7 DEV KIT p. 24

Type 6

COMe-C55-CT6 p. 24
COMe-C08-BT6 p. 25
COMe-C89-CT6 p. 25
COMe-B75-CT6 p. 26
COMe-C24-CT6 p. 26
COMe-B09-BT6 p. 27
COMe-A98-CT6 p. 27
COMe-A41-CT6 p. 28
COMe-953-BT6 p. 28

Carrier Board

CCOMe-C30 p. 29

Development Kit

COM EXP T6 DEV KIT p. 29

ETX®

ETX-A61 p. 30

Single Board Computer

SBC-C90 p. 31
SBC-C43 p. 32
SBC-C20 p. 32
SBC-C41-pITX p. 33
SBC-C57 p. 33
SBC-C31 p. 34
SBC-C66 p. 34
SBC-C23 p. 35
SBC-B08 p. 35
SBC-A62-J p. 36
SBC-A44-pITX p. 36
SBC-B68-eNUC p. 37
SBC-A80-eNUC p. 37

Modular HMI & Boxed Solutions

SYS-A62-10 p. 38
SYS-B08-7 p. 39
SYS-C90-DS p. 39
SYS-B68-IPC p. 40

Smart Edge Computing

SYS-D14-MED p. 41
SYS-C23-IGW p. 42
SYS-B68-IGW p. 42
SBC-C61 p. 43
Easy Edge p. 43
SENSE-D01 p. 44
SYS-A90-IPC p. 44

SECO is a center of excellence in the field of technological innovation and integration

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



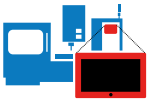
Extensive experience in Micro Computer design, both Hardware and Software-wise

MANUFACTURING



Lean Manufacturing employed to reduce waste and accelerate the time to market

SYSTEMS



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



Analysis & Design



FPGA design



BIOS Engineering & Development



Hardware Engineering & Development



Software development



Mechanical Engineering & Development



Signal Integrity



Drivers Engineering & Development



BSP



Firmware Development



Validation & Verification



Thermal Analysis

PRODUCT LINES

STANDARD PRODUCTS

MODULAR SOLUTIONS



Qseven®



SMARC



COM HPC®



COM Express™



ETX®/XTX

SINGLE BOARD COMPUTERS



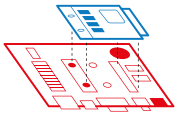
Embedded NUC™



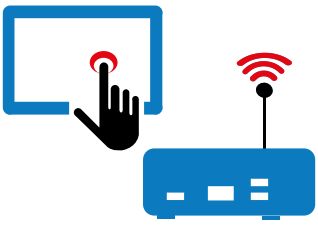
Pico-ITX

SEMI-CUSTOM SOLUTIONS

CUSTOM CARRIER BOARDS + MODULAR SOLUTIONS

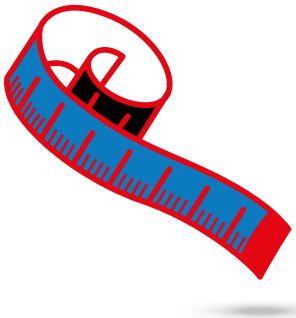


MODULAR HMI & BOXED SOLUTIONS



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 takes care of the entire production cycle, 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

EN ISO 13485:2016

Certified UNI EN ISO - 9001:2015

Certified UNI EN ISO - 14001:2015

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.

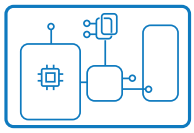
- Automation
- Automotive
- Avionics
- Biomedical/Medical devices
- Digital signage - Infotainment
- Edge Computing
- E - health Telecare
- Energy
- Fitness Equipment
- Gaming
- HMI
- Home Automation
- Home Entertainment
- Industrial Automation and Control
- Info Kiosks
- Internet of Things
- In-Vehicle 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

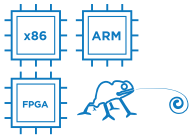
SERVICES

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



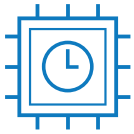
Secure your design and production



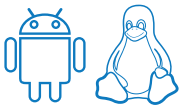
Let us design your product

YOUR TECHNOLOGY PARTNER **FOR SOFTWARE CUSTOMIZATION**

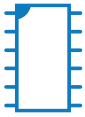
Customized BIOS | Firmware & driver development | BSP development | Long-term support |



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 |



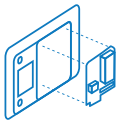
Software preloaded



Boxed solutions



Touch displays



Displays assembly

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

EVERYTHING YOU NEED TO POWER YOUR PRODUCT WITH DEVICE MANAGER, DATA ANALYSIS AND DATA ORCHESTRATION



Prototyping Tools



Device Management



Connectivity



Data Orchestration



AI Apps

From Edge to AI in just a few weeks

Clea is a combination between the Easy Edge microcontroller and the AI Suite solution.
Clea merges the hardware with the AI Suite services creating a subscription service for industrial enterprises of any size. Upon subscribing to Clea, SECO retrofits the customer's machines with Easy Edge Microcontroller.
Clea enhances products with Artificial intelligence, minimizing downtime and boosting productivity.

Easy Edge

Easy Edge is a Low Power, Feature-rich high Performance Microcontroller with Embedded Connectivity. Easy Edge is a mobile connected





AI Suite

AI Suite is a subscription service for industrial enterprises of any size. Once the customer subscribes and Easy Edge is installed, SECO activates AI Suite-powered services on the device.

SECO Mind

Features

High ROI
Clea creates value by reducing downtime and boosting machine performance. It increases productivity and releases value-added services to customers.

Simple Integration
The integration of Clea within your machine stack couldn't be easier, and SECO takes care of the implementation.

Clear TCO
No uncertainties with Clea.
The operation cost plus the purchase price of the asset is Clearly defined from the start.

Short Time to Market
Due to Clea's easy integration and SECO's expertise in product customization, launch any AI-powered product in a matter of weeks, not years.

Services

Fleet Manager and device manager
With this feature the IT manager can control the whole device fleet while the SECO Team manages the devices' hardware.

Secure FOTA (Firmware Over The Air)
This main feature allows to remotely update the devices' firmware and install new features.

Device Status
Check the status of all the connected devices (online/offline, size of Free Storage Memory, ID info, Connectivity info).

Geolocalization
This tool allows to detect the device's geographic location in a map with great accuracy. The datas can be sent via Cell-ID + Wi-Fi or through modem GPS.

Mobile, Wi-Fi and Bluetooth Connectivity Manager
A BLE Mobile App that allows clients to manage WiFi and SIM/eSIM Connectivity.

Logs Reading
A useful Feature to debug and retrieve low-level analysis.

Data Analytics
A feature that analyzes the data coming from the connected devices and machines.

Custom AI Algorithms on the Edge and Cloud
Data Analytics allows to develop AI Algorithms that potentially are a great added value for clients in terms of ROI.

Telemetry
Clients have all the data coming from their fleet always under control. Clients can also sort data in groups, dates, download and visualize them easily.

Data Flow
This tool allows to manage the data flow to move from the hardware to the cloud.

Data Orchestration
Simple and flexible data management allowing clients to program the data orchestration if needed.

Data Visualization Front-end and Apps
Starting from the clients' needs SECO can develop Mobile Apps and Front-end Services specifically tailored for their own use. An easy and quick solution to create powerful visualization services.

Use Cases



Healthcare
Clea connects medical devices to the cloud, giving new value to each client's data.



Fleet Management
Clea optimizes logistics, calculating the best path for your fleet and predicting issues on your way to maximum efficiency.



Smart Vending Machine
Clea equips any vending machine with retrofitting sensors, transforming raw data into actionable insights, providing new value-added services for customers.

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



GOLD PARTNER NXP

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 • 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: • 2x LVDS Single Channel / 1x LVDS Dual Channel 18-/24-bit interface • LVDS Single Channel 18-/24-bit interface + HMDI interface • eDP 4-lane interface + LVDS single Channel 18-/24-bit interface • eDP 4-lane interface + HMDI 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.

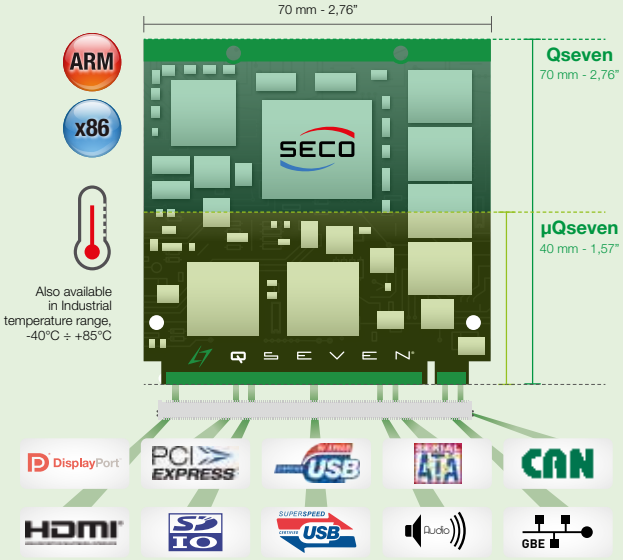
QSEVEN® STANDARD ADVANTAGES

- Cost effective solution for high volume projects
- Low power consumption
- Compact form factor
- Low profile design
- Excellent for IoT projects
- High speed MXM edge connector

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



SGeT STANDARDIZATION GROUP FOR EMBEDDED TECHNOLOGIES

SECO is one of the founding members of SGET and a co-founder of the Qseven® standard

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

High graphics performance and extreme temperature for low power designs

Q7-B03



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	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.

Qseven

Qseven® **Rel. 2.1** with **NXP i.MX 8** Applications Processors

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

Q7-C26



Available in Industrial Temperature Range

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 GPI/Os 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® **Rel. 2.1**
with **NXP i.MX 8M** Applications Processors

Qseven® solution for next generation embedded systems

Q7-C25



GOLD PARTNER NXP

early access

Available in Industrial Temperature Range

Processor	NXP i.MX 8M Family based on Arm Cortex®-A53 cores + general purpose Cortex®-M4 processor: • **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 GPI/Os 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.

Qseven

Qseven® with the **Intel® Atom™ E3800** and **Celeron®** families (formerly **Bay Trail**) SoC, with eMMC and Camera Interface

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® 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	+5V$_{DC}$ ± 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)
Graphics	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
Video Interfaces	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 Resolution	LVDS, up to 1920x1200 HDMI, up to 1080p
Mass Storage	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)
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	AC'97 Audio interface I2S
Serial Ports	2 x Serial ports (TTL interface) CAN port interface
Other Interfaces	I2C Bus LPC Bus SM Bus Power Management Signals
Power Supply	+5V$_{DC}$ ± 5%
Operating System	Linux Yocto Microsoft® Windows Embedded Compact 7
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.

µQseven® standard module with
NXP i.MX 8M Mini & NXP i.MX 8M Nano Processors

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

µQ7-C72



GOLD PARTNER NXP

early access

Processor	NXP i.MX 8M Mini Family based on Arm® Cortex®-A53 cores + general purpose Cortex®-M4 400MHz processor: • **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: • **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: • 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: • 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")

*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 the **Intel® Atom™ E3800** and **Celeron®** families (formerly **Bay Trail**)

Smallest x86 standard module at proprietary costs

µQ7-A76-J



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.

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, flexibile 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

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

Feature rich for fast Time-to-market

CQ7-A42

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

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-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 PLATFORM Philosophy

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

SMARC® Rel 2.1.1 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	**Intel® Atom™ x6000E CPUs certified for FuSa, compliant to IEC 61508 and ISO 13849 requirements for Functional Safety and Safety Integrity Levels:** • 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 **Other Intel Atom™ x6000E, Pentium® and Celeron® N and J Series CPUs:** • 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 (*) IHS: Integrated Heatspreader; TCC: Time Coordinated Computing
Max Cores	4
Memory	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)
Graphics	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) DirectX 12.1, OpenGL ES 3.1, OpenGL 4.5, OpenCL™ 1.2, Vulkan 1.0
Video Interfaces	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
Video Resolution	Up to 4096x2160 @60Hz
Mass Storage	1 x external S-ATA Gen3 Channel SDIO interface Optional eMMC 5.1 drive soldered on-board (Safety Related)
Networking	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)
USB	6 x USB 2.0 Host Ports 2 x USB 3.1 Gen2 Ports
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	Up to 14x GPIOs SM Bus Power Management Signals I2C Bus 1x SPI interface for boot 1x General Purpose SPI or eSPI (Factory Alternatives)
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 STANDARD ADVANTAGES

- Extreme low power design
- Low profile design
- Dedicated battery management signals
- Up to four display interfaces
- Dual Ethernet
- SMARC Compact 82×50 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
I²C 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

SGeT STANDARDIZATION GROUP FOR EMBEDDED TECHNOLOGIES

SECO is one of the founding members of SGET

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

High performance, low power and feature-rich

SM-B69



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 Grahpics 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 1x 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.

SMARC® Rel. 2.1.1 compliant module with **NXP i.MX 8M** Plus Applications Processors

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

SM-D18



Available in Industrial Temperature Range

Processor	NXP i.MX 8M Plus family SoCs: Dual or Quad Arm Cortex®-A53 Cores + general purpose Cortex® M7 800MHz processor • 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.

SMARC® Rel. 2.1.1 compliant module with **NXP i.MX 8X** Applications Processors

Safety-certifiable and efficient performance in SMARC Standard module

SM-D16



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 • 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: • 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 + HMDI interface • eDP 4-lane interface + LVDS / Mipi-DSI single Channel 18-/24-bit interface • eDP 4-lane interface + HMDI 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.

SMARC® Rel. 2.1.1 with **NXP i.MX 8M** Applications Processors

Standard solution for next generation multimedia applications

SM-C12



Available in Industrial Temperature Range

Processor	NXP i.MX 8M Family based on Arm Cortex®-A53 cores + general purpose Cortex®-M4 processor: • **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-onboard 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 GPI/Os 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.

SMARC® Rel. 2.0 with the **Xilinx® Zynq® Ultrascale+™** MPSoC

SMARC® 2.0 / 2.1.1 **Development Kit**

Flexibile Arm + FPGA Heterogeneous Processing in a Standard Form Factor

SM-B71



Available in Industrial Temperature Range

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 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
Memory	Soldered Down DDR4-2400 memory Up to 8GB for Processing System Unit + up to 2GB for Programmable Logic
Graphics	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 Interfaces	18- / 24-bit Dual Channel LVDS interface DP interface 2 x CSI interfaces
Video Resolution	DP: Up to 4096 x 2160 LVDS: Dependent on the IP implemented in the programmable logic
Mass Storage	1 x external S-ATA Gen3 Channel SD interface QSPI Flash soldered-onboard Optional eMMC 4.51 drive soldered on-board
Networking	Up to 2 x Gigabit Ethernet interfaces
USB	1x USB 2.0 OTG 2x USB 2.0 Host 2x USB 3.0 Host
PCI-e	PCI-e x4 interface
Audio	Dependent on the IP implemented in the programmable logic
Serial Ports	2 x UART Tx/Rx/RTS/CTS 2 x UART Tx/Rx 2 x CAN Bus
Other Interfaces	2x I2C Bus 2 x SPI interfaces 12 x GPI/Os Boot select signals Power Management Signals
Power Supply	+3÷+5.25V_{DC} +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.

Cross Platform Philosophy Development Kit for SMARC Rel. 2.0 / 2.1.1 compliant modules

SMARC DEV KIT



Cross-compatible platform with x86 and Arm solutions

SCHEMATICS PUBLICLY AVAILABLE



FEATURES OF CSM-B79

Video Interfaces	LVDS connector, interface shared with 2 x eDP/DSI connectors Backlight control + LCD selectable voltages dedicated connector 2xDP++ connectors HDMI connector (can be used in alternative to 1xDP++) 2x CSI Camera input interfaces
Mass Storage	SATA M 7p connector with dedicated power connector, interface shared with M.2 Socket 2 2230 / 2242 / 2260 Key B SSD slot microSD Card Slot
Networking	Dual RJ-45 Gigabit Ethernet connector M.2 Socket1 2230 Key E Slot for WiFi Modules (interface shared with PCI-e x 4 slot) M.2 Socket2 2242 / 2260 / 3042 Key B 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
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 micro-B connector Boot selection switches JTAG connector Selector for SMARC 2.0 / 2.1 pinout compatibility
Power Supply	9-24V through dedicated Mini-Fit Jr 2x2 power 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

- For high-end applications
- High graphic performance
- Support for high-speed interfaces
- Integrated video interfaces
- "Client" and "Server" versions

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	8x 25GbE KR
3x DDI	
2x BaseT (up to 10 Gb)	
2x SoundWire, I²S	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 I²C, 2x UART	2x I2C, 2x UART
12x GPIO	12x GPIO

PICMG®

COM-HPC® **Client module Size A,** with the **11th Gen Intel® Core™** processors and **Intel® Celeron®** processors (formerly **Tiger Lake-UP3)**

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

CHPC-C77-CSA



Available in Industrial Temperature Range

Processor	11th Generation Intel® Core™ and Celeron® Processors, also available in industrial temperature range • 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™ **i7-1185GRE**, Quad Core @ 2.8GHz (4.4GHz in Turbo Boost) with HT, 12MB Cache, with IBECC and Functional Safety Essential Design package, 28/15/12W cTDP – Industrial (w/ Turbo OFF) • Intel® Core™ **i5-1145GRE**, Quad Core @ 2.6GHz (4.1GHz in Turbo Boost) with HT, 8MB Cache, with IBECC and Functional Safety Essential Design package, 28/15/12W cTDP - Industrial (w/ Turbo OFF) • Intel® Core™ **i3-1115GRE**, Dual Core @ 3.0GHz (3.9GHz in Turbo Boost) with HT, 6MB Cache, 28/15/12W cTDP - Industrial (w/ Turbo OFF)
Max Cores	4
Memory	2x DDR4-3200 SODIMM Slots with IBECC (In-Band Error Correction Code), up to 64GB supported
Graphics	Integrated Iris Xᵉ 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 I2S Audio Interface
Serial Ports	2 x UARTs
Other Interfaces	2x 4-lane CSI-2 interfaces, optional SPI, SM Bus, 2x I2C, 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
Operating System	Windows 10 IoT Enterprise LTSC Linux Kernel LTS 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™ 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



AMD

Available in Industrial Temperature Range

Processor	AMD EPYC™ Embedded 3000 family of SoCs: • 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	• 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.

COM Express

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
PCI Express Lanes 0 - 5	1 / 6	6 / 6
PCI Express Lanes 6 - 15	0 / 2	0 / 10
PCI Express Lanes 16 - 31	0 / 16	0 / 16
PCI Express Graphics (PEG)	0 / 1	NA
10G LAN Ports 0 - 3	N.A.	0 / 4
NC-SI	N.A.	0 / 1
1Gb LAN Port 0	1*	1*
DDIs 1 - 3	0 / 3	N.A.
LVDS Channel A	0 / 1	N.A.
LVDS Channel B	0 / 1	N.A.
eDP on LVDS 1st channel	0 / 1	N.A.
VGA Port	0 / 1	N.A.
Serial Ports	0 / 2	0 / 2
CAN interface on SER1	0 / 1	0 / 1
SATA Ports	1 / 4	0 / 2
HDA Digital Interface	0 / 1	N.A.
USB 2.0 Ports	4 / 8	4 / 4
USB0 Client	0 / 1	0 / 1
USB7 Client	0 / 1	N.A.
USB 3.0 Ports	0 / 4	0 / 4

Interface	Type 6 Min / Max	Type 7 Min / Max
LPC Bus or eSPI	1*	1*
SPI (Devices)	1 / 2	1 / 2
Rapid Shutdown	0 / 1	0 / 1
SDIO (muxed on GPIO)	0 / 1	0 / 1
General Purpose I/O	8 / 8	8 / 8
SMBus	1*	1*
I2C	1*	1*
Watchdog Timer	0 / 1	0 / 1
Speaker Out	1*	1*
Carrier Board BIOS Flash Support	0 / 1	0 / 1
Reset Functions	1*	1*
Trusted Platform Module	0 / 1	0 / 1
Thermal Protection	0 / 1	0 / 1
Battery Low AlArm	0 / 1	0 / 1
Suspend/Wake Signals	0 / 3	0 / 3
Power Button Support	1*	1*
Power Good	1*	1*
Sleep Input	0 / 1	0 / 1
Lid Input	0 / 1	0 / 1
Carrier Board Fan Control	0 / 1	0 / 1

*Mandatory interface

PICMG®

Development Kit

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



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.

COM Express Type 6

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



early access

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®/Celeron® (formerly **Coffee Lake** & **Coffee Lake Refresh**) CPUs

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

COMe-C08-BT6



early access

Processor	Intel® 8th generation Core™ / Xeon® (formerly Coffee Lake H) CPUs: • 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: • 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® 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/WMV9, 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 x 1 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)

*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

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

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

COMe-C89-CT6



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 1.4/2.0l 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 + 3x 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.

COM Express™ **Compact 3.0** with the **AMD Ryzen™ Embedded V1000** processors

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.

COM Express Type 6

COM Express™ 3.0 Compact with the **Intel® Atom™ X Series, Intel® Celeron® J / N Series and Intel® Pentium® N Series** (formerly **Apollo Lake**) Processors

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 onboard
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™ 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



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) Intel® Core **i3-7102E**, Dual core @ 2.10 GHz (3M Cache, 2.10 GHz) FCBGA1440 CPU + GPU - 25W TDP (ECC supported) Intel® Core™ **i3-7100E**, Dual Core @ 2.9GHz, 3MB Cache, 35W TDP Intel® Core **i5-7442EQ**, Quad core @ 2.90 GHz (6M Cache, up to 2.90 GHz) FCBGA1440 CPU + GPU - 25W TDP (ECC no supported) Intel® Core **i5-7440EQ**, Quad Core @ 2,90GHZ (up to 3.60 GHz), 6MB Cache, 45W TDP Intel® Core™ **i7-7820EQ**, Quad Core @ 3.0GHz (3.7GHz in Turbo Boost), 8MB Cache, 45W TDP Intel® Xeon® **E3-1505L V6**, Quad core @ 2.20 GHz (8M Cache, 2.20 GHz) FCBGA1440 CPU + GPU - 25W TDP (ECC supported) Intel® Xeon® **E3-1505M V6**, Quad Core @ 3.0GHz (4.0GHz in Turbo Boost), 8MB Cache, 45W TDP
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
Graphics	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) 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)

*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™ 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	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
	AMD **GX-224IJ**, Dual Core @ 2.4GHz (2.8GHz Max), cTDP 10-15W AMD **GX-215IJ**, Dual Core @1.5GHz (2.0GHz Max), cTDP 6-10W
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-224IJ - Radeon™ R4E AMD GX-215IJ - 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 (4KH.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 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 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.

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 Type 6

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.

Carrier Board

Carrier Board for COM Express™ **Type 6** Modules on **3.5" form factor**

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

CCOMe-C30



CROSS PLATFORM Philosophy

Cross-compatible platform with x86 and Arm solutions

Video Interfaces	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
Mass Storage	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)
Networking	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
USB	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
Audio	On-board HD Audio Codec (Realtek ALC262) Mic In + Line Out internal pin header
Serial Ports	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)
Other Interfaces	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
Power Supply	19VDC fixed (only CPU modules with max 35W TDP supported) Mega-Fit® 2x1 Power Connector Cabled Coin-cell connector for RTC
Operating Temperature*	0°C ÷ +60°C (Commercial version)
Dimensions	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.

Development Kit

Cross Platform Development Kit compatible with both **x86 and Arm COM Express™ Type 6 modules**

Platform independent kit for fast Time-to-market

COM EXP T6 DEV KIT



CROSS PLATFORM Philosophy

Cross-compatible platform with x86 and Arm solutions

SCHEMATICS PUBLICLY AVAILABLE



FEATURES OF CCOMe-C96

Video Interfaces	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
Mass Storage	4x S-ATA 7p M connectors µSD Card slot (interface multiplexed with GPIO header)
Networking	1x GbEthernet RJ-45 connector
USB	4x USB 3.1 Host ports on Type-A sockets 4 x USB 2.0 Host ports on Quad Type-A sockets
PCI-e	2x PCI-e x4 Slots 1x PCI-e x16 Slot
Audio	On-board HD Audio Codec (Realtek ALC888S) 5.1 Audio Jack with S/PDIF Optical interface Mic In + Line Out internal pin header
Serial Ports	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)
Other Interfaces	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
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 (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

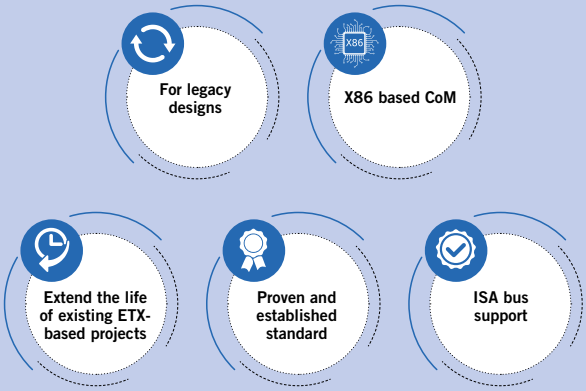
Update your legacy design

ETX-A61



ETX® 3.0
Long Term Support

ETX® 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

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



Available in Industrial Temperature Range

Processor	AMD Ryzen™ Embedded V1000 family SoCs: • 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 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
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 GPI/Os 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

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

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
Max Cores	8
Memory	Soldered down LPDDR4 memory, 64-bit interface, 1600MHz. Base configuration 2GB, up-scalable to 4GB, 6GB, 8GB
Graphics	2x Graphics accelerators Vivante GC7000 / XVSX or GC7000Lit /XVSX QuadMax and QuadPlus 1x embedded VPU, supporting H.265 (4K30) and H.264 (1080p60) decoding and H.264 (1080p30) encoding Supports 3 independent video outputs (total combined resolution 4K)
Video Interfaces	OUTPUTS: HDMI 2.0a Tx interface Optional eDP 1.4 interface Optional 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 64GB 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 HP + MIC interfaces, available on a single combo TRRS connector
Serial Ports	1x UART TTL 1x RS-232 / UART TTL configurable 1x RS-485 / RS-422 / UART TTL configurable 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
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 GPI/Os 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.

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 GPI/Os 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.

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.

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: • 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
Networking	Up to 2 x Gigabit Ethernet ports Optional 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	Optional I2S Audio Codec w/ TRSS Jack (MicIn / Lineout)
Serial Ports	1x Debug UARTs Up to 2x RS-232 Ports (factory options) Up to 2x RS-485 (factory options) 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 I/O Connector #1 with I2C interface + (RS-232 or RS-485 - factory alternatives) I/O Connector #2 with 3xGPIOs + 1x PWM + (RS-232 or RS-485 or TTL UART - factory alternatives) Dedicated connector for I2C Touch Screen Controller Support Optional Ultra-low Power RTC (Alternative to CAN Controller #2) Optional LED Driver
Power Supply	$+12V_{DC} \div +24\ V_{DC}$ 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 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: • 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® / Pentium® / Celeron® (formerly Coffee Lake Refresh) CPUs: • 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
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/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) LVDS Single/Dual Channel connector (interface switched with eDP)
Video Resolution	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-ex4 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)
USB	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.

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

Industrial IoT multiprotocol gateway

SBC-C23



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.

SBC

SBC with **NXP i.MX 6SoloX** Processor

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
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 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: • 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) 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.
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 with **NXP i.MX 6** Processor

Flexible, Open-source, Industrial SBC

SBC-A62-J



GOLD PARTNER NXP

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 UDOO.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.

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 GPI/O 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.

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 GPI/Os 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 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



Microsoft Azure Certified

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 GPI/Os
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

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

Flexible, Open-source, Industrial system

SYS-A62-10



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: • 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) 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.
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 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 109.3 x 52.4 mm

* Environment temperature measured near the heatsink 's fins. Upon costumer to verify that the temperature remains within the admissible range.
** Temperature range below 0°C tested on the SBC only.

Boxed Gateway for Medical applications
based on the **Intel® Atom™ x5-E3930**

IoT Gateway Solution certified for medical environment

SYS-D14-MED



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	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 500 series controller, with 12 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	eMMC drive onboard, up to 64 GB Optional SATA M.2 SSD module up to 512GB
Networking	2x Gigabit Ethernet ports 1x 4kV insulated Gigabit Ethernet port M.2 Socket 2 Key B Slot for Modem modules (not provided by SECO. To be used as 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
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
Operating System	Edgehog Linux
Operating Temperature	0°C ÷ +40°C (in presence of air flow)
Optional accessories	miniDP++ to HDMI adapter Customised bracket for VESA Panel mount
Dimensions	162.3 x 109.3 x 42.4 mm
Compliance with medical standards	IEC 60601-1 IEC 60601-1-2 IEC 60601-1-6 IEC 62366

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

Enhance your edge capabilities with a Synthetic Brain

SYS-C23-IGW



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 109.3 x 42.4 mm

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

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

SBC-C61



GOLD PARTNER NXP

early access

Processor	NXP i.MX 8M Mini Family based on Arm® Cortex®-A53 cores + general purpose Cortex®-M4 400MHz processor: • **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: • 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: • 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	Yocto Android (planned)
Operating Temperature*	-20°C ÷ +60°C (extended version)
Dimensions	146x102 mm (3.5" form factor)

*Measured at any point of SECO standard heastpreader 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



ESPRESSIF

Available in Industrial Temperature Range

Processor	ESP32-DOWDQ6 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

IoT Sensor to Cloud

From sensors to AI in a single step

Easy Edge



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, SIMCOM SIM868 • Global-Band LTE CAT-M modem, SIMCOM 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 GNNS (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



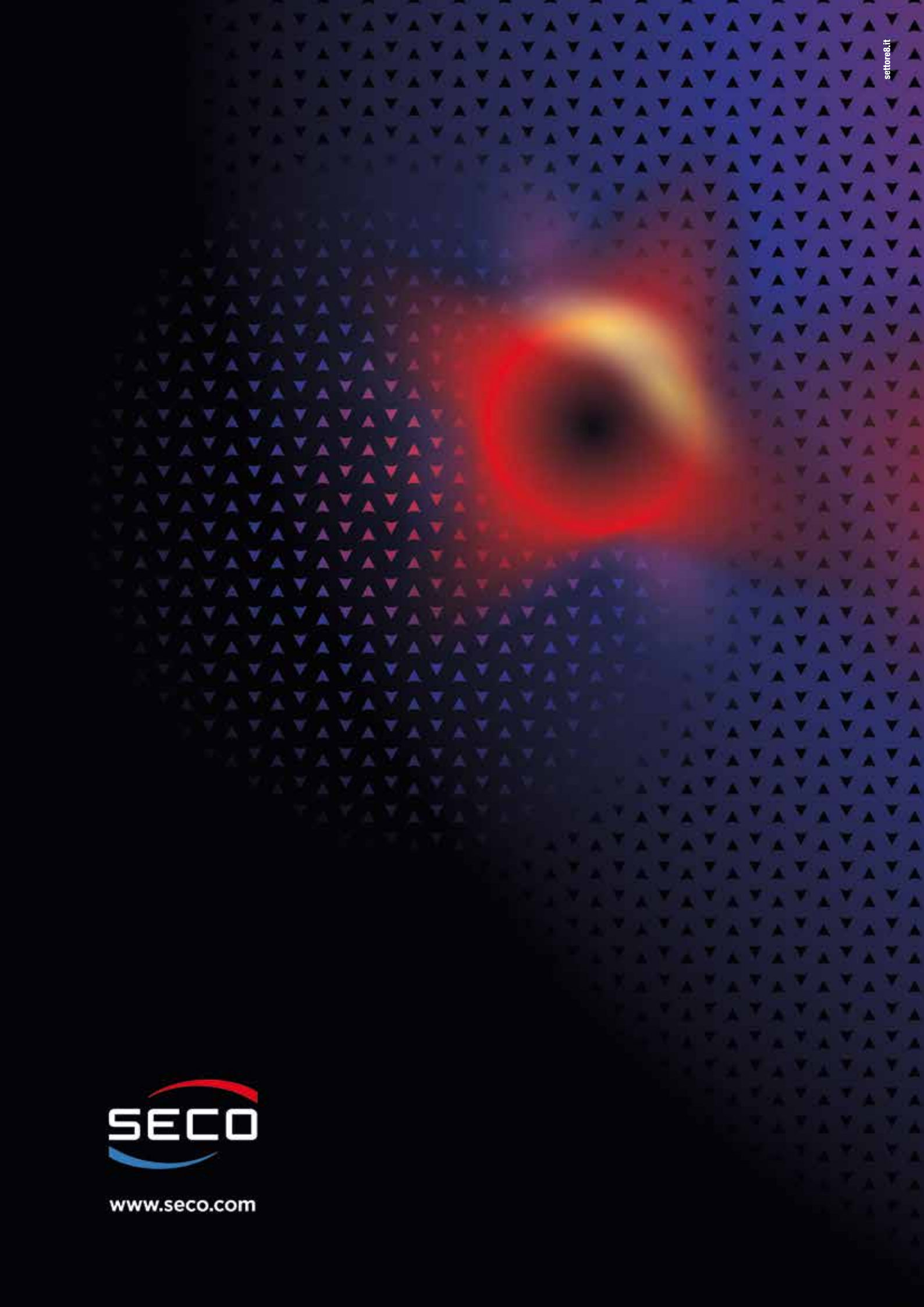
Processor	AMD Embedded™ 3rd generation R-Series SOC (Merlin Falcon): AMD **RX-421BD**, Quad Core @ 2.1 GHz (3.4 GHz Max), 2MB L2 Cache, TDP 35W AMD **RX-418GD**, Quad Core @ 1.8 GHz (3.2 GHz Max), 2MB L2 Cache, TDP 35W AMD **RX-216GD**, Dual Core @ 1.6GHz (3.0 GHz Max), 1MB L2 Cache, TDP 15W AMD Embedded™ 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 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
System Memory	Up to 2x 8GB DDR4 SODIMM modules
Graphics	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 Three independent displays supported (two with GX-217GJ 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)
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	Up to 2x internal SATA drives 2x CFAST Slots 1x microSD card slot PCI-e x4 M.2 Key M NVMe SSD Slot
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	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
Audio	5.1 non amplified audio Jacks S/PDIF Optical (Toslink) Amplified Audio connector (Stereo Out + Subwoofer), 3x30W
Serial Ports	4 x RS-232 Full Modem ports on external DB9 male connectors 2 x RS-232 Full modem ports on internal IDC pin headers
Other Interfaces	2x FAN connectors Optional TPM 1.2 TPM 2.0 embedded in SoC (Windows support only) 8 x GPI, 8 x GPO
Power Supply	+12VDC ± 5%, mini-Fit 4x2 Power connectors 220mAh non-rechargeable Coin cell battery for RTC
Operating System	Microsoft® Windows 10 Microsoft® Windows 10 IoT Linux
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.



047.21

Information subject to change.
Please visit www.seco.com to find the latest version of the SECO PRODUCT LINE datasheets.


settore8.it
SECO
www.seco.com