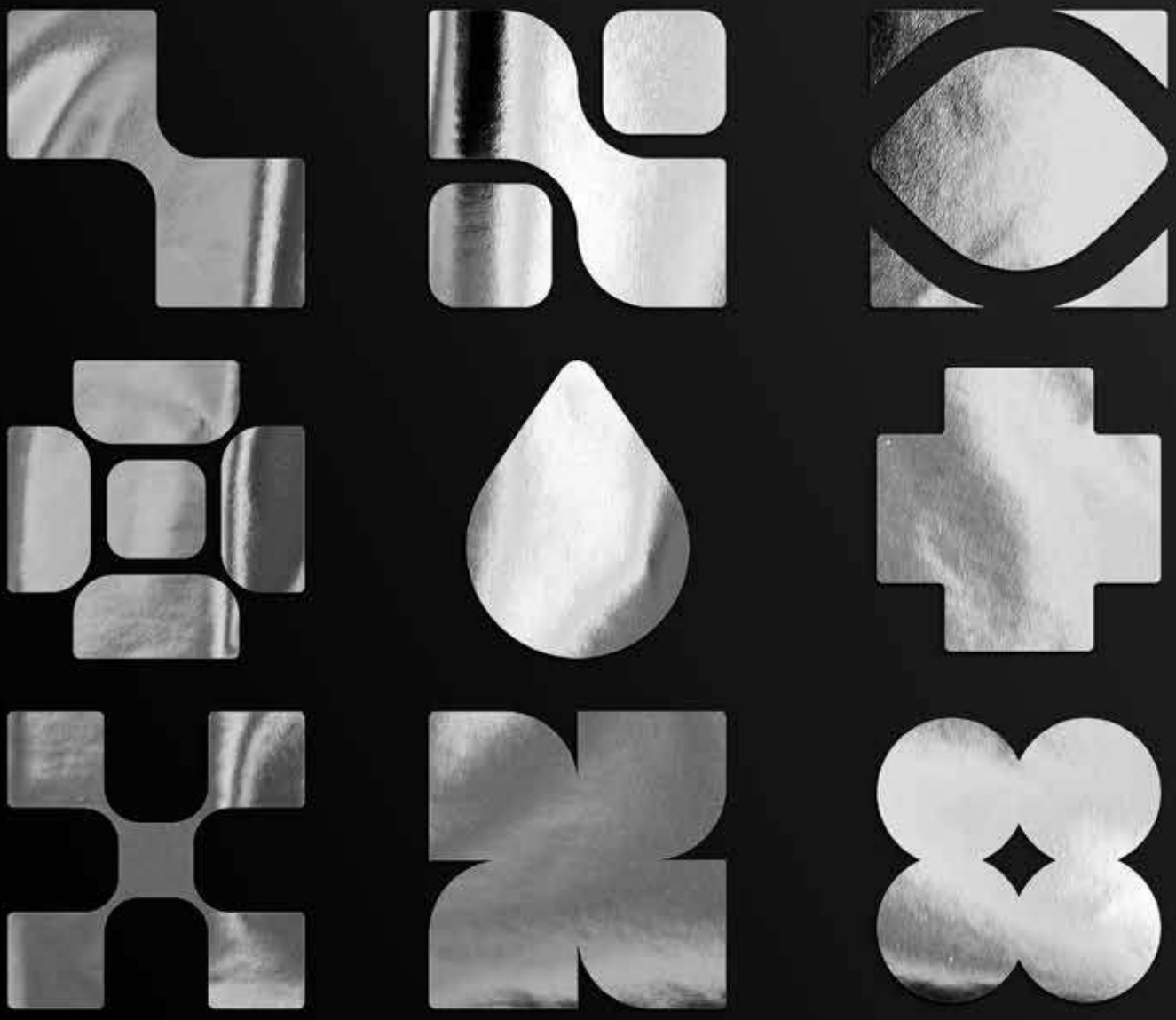
Product guide
2024



SECO

Product guide **2024**

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SECO in a snapshot

A worldwide spread center of excellence,
with top-tier capabilities

900
People
all **over the world**

10
R&D center
worldwide

~300
People working in R&D
of which **~180 in AI** and
software development

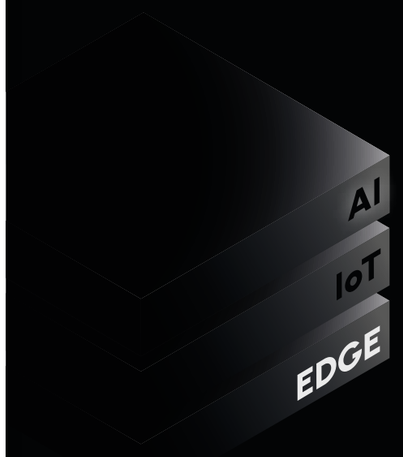
5
Production
plants

Energy & Utilities · Transportation · Digital Signage · Industrial Automation · Coffee & Vending · Smart Buildings & Smart Cities · Medical · Smart Devices · Security & Surveillance

Who we are

We are a tech company building solutions and
technologies to enable a new generation of digital devices

From **Edge Computing**, to **IoT**, to **AI**, our comprehensive and modular offering suits the needs of customers who are looking for **a partner to maximize the potential of their products** and fully leverage **new technological opportunities** getting the most out of their **data**.

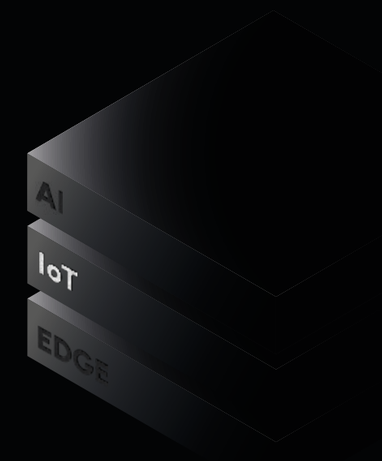


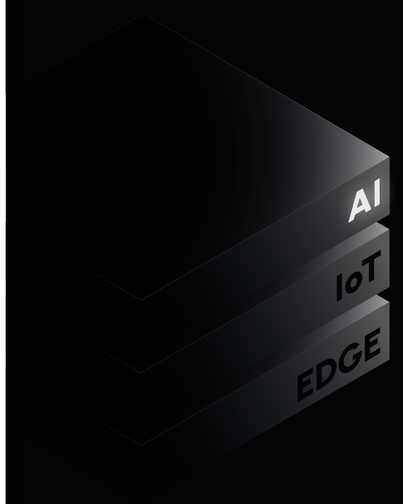
Edge Computing

We build a wide range of edge computing products for the most innovative projects: from modules to complete solutions, with unmatched integration capabilities.

IoT

We provide standard, ready-to-use platforms and infrastructures to enable fleet and device management, field data analysis and optimization, which can be integrated with any hardware.





AI

We reshape industries with impactful AI solutions and services that harness the full potential of data collected at the edge.

Edge

Edge computing systems and HMIs

Custom Solutions

Highly **customizable** solutions integrating HMI, module, **connectivity technologies** according to the most demanding **customers' needs**

HMIs

User-ready, rugged and high-resolution, high brightness **HMIs** with touch displays and **integrated boards**.

Modules & SBCs

Ready-to-use, standalone solutions enabling a **rapid** and **scalable prototyping** (peripheral data storage, processing power, input/output interfaces) **without** the **need** for **additional** modules.

Fanless Embedded Computers

From SECO's experience in integrating modules and boards into **complex systems**, a line of **boxed applications** developed for Industrial **IoT** to match the customers' **flexibility** and **security** needs.

Payment System & IoT Telemetry

Highly integrated and rugged **cashless modules** for quick, safe and convenient **payments**, with **telemetry** functionalities **included**.

IoT

Clea Software Suite

Clea

Clea is SECO's comprehensive software suite for building **IoT solutions** that harness field data.

Clea is natively compatible with SECO hardware

Clea is a **modular software stack** designed for developing robust IoT infrastructures. **Open source** and **production-ready**, it fulfills the requirements of even the most demanding IoT installations.

Clea provides a highly **scalable** and **cost-effective** solution for harnessing field data, managing devices, and for facilitating development of value-added services, advanced **AI applications**, and more.

Astarte

Device-Cloud Data Hub

IoT communication and **data orchestration** module, facilitating data management. It **collects** and **orchestrates** data and **makes it available** via the cloud.

Edgehog

Device Manager on Steroids

Device and **fleet management** solution handling software and configuration updates, boosted by **advanced features** such as application and container **management** at the **edge**.

Portal

Extensible IoT Front-End

Ready-made user interface designed for IoT applications, with an **extensible framework** for value-added app integration and service **monetization**.

AI

Evolving businesses thanks to our AI services

We develop artificial intelligence solutions that harness the full potential of data collected at the edge.

Our dedicated **AI team** has strong expertise in AI development and **data science applications tailored** to our reference verticals.

We also guide our customer in implementing new **AI-enabled business models** and **processes**, enabling them to ride the wave of technological innovation. Our experience in meeting both **technological** and **business needs** is our guarantee of a targeted and practical **approach**.

Studio X

Unlock new possibilities with StudioX and elevate your business with AI-powered solutions.

- Enhance **customer experience** and satisfaction
- Elevate **product quality**
- Optimize **operational productivity**
- Access **AI-generated knowledge** in real-time
- **Ingest** structured or unstructured **data** directly **from machinery**
- Add **innovative features** to your **products**

Our Partners

We work together to build sustainable solutions and develop innovative business models

We are committed to offering our customers innovative solutions by leveraging pioneering technologies. This is why we invest in strategic partnerships with the most renowned high-tech companies and take part in international standards and consortia. Our tight relationship with leading technology providers means we are part of most of their early access programs, allowing our customers to access cutting-edge technologies while minimizing both time-to-market and execution risks associated with their investments.

Technological Partners

intel partner Gold · NXP Gold Partner · AMD · Rockchip · Qualcomm · MEDIATEK · AXELERA ARTIFICIAL INTELLIGENCE · Google Cloud · Microsoft Azure Certified

Standards & Consortia

Q SEVEN · SMARC · COM Express · COM-HPC · ETX® 3.0 Long Term Support · embedded NUC™ · SGET STANDARDIZATION GROUP FOR EMBEDDED TECHNOLOGIES · PICMG · arm Leading Edge Partner · HDMI HIGH-DEFINITION MULTIMEDIA INTERFACE · VESA MEMBER · DVB

Solution Partners

libelium · EXEIN · PIZZAROTTI FONDATA NEL 1910 · DIGITAL Industrial Cyber-Physical Systems · cubit innovation labs

Qseven® Standard Advantages

Cost effective solution for high volume projects

Low power consumption

Compact form factor

Low profile design

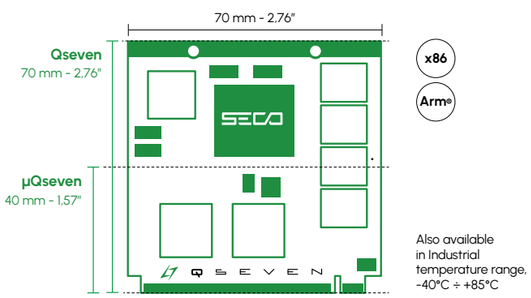
Excellent for Iot projects

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



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

STANDARDIZATION GROUP FOR EMBEDDED TECHNOLOGIES

Display Port | PCI Express | USB | S-ATA | CAN | HDMI | SDIO | SuperSpeed USB | Audio | GBE

Qseven®

Qseven® Rel. 2.1 module with Intel® Atom® X6000E, Pentium® and Celeron® N and J Series SoCs (Codename: Elkhart Lake) with Time Coordinated Computing

High computing and graphics performance in Qseven® form factor

SOM-Q7-EHL

Available in Industrial Temperature Range

Processor	Celeron® J6413 Quad Core @ 1.8GHz (3GHz Turbo) 10W TDP Celeron® N6211 Dual Core @1.2GHz (3GHz Turbo) 6.5W TDP Pentium® J6426 Quad Core @1.8GHz (3GHz Turbo) 10W TDP Pentium® N6415 Quad Core @1.2GHz (3GHz Turbo) 6.5W TDP Atom® x6211E Dual Core @1.2GHz (3GHz Turbo) 6W TDP, IBECC - Industrial Atom® x6413E Quad Core @1.5GHz (3GHz Turbo) 9W TDP, IBECC - Industrial Atom® x6425E Quad Core @1.8GHz (3GHz Turbo) 12W TDP, IBECC - Industrial Atom® x6212RE Dual Core @1.2GHz (no Turbo) 6W TDP, IBECC and TCC* – Industrial Atom® x6414RE Quad Core @1.5GHz (no Turbo) 9W TDP, IBECC and TCC* – Industrial Atom® x6425RE Quad Core @1.9GHz (no Turbo) 12W TDP, IBECC and TCC* – Industrial (*) TCC: Time Coordinated Computing
Memory	Soldered down LPDDR4-3200 memory Up to 16GB with IBECC supported only with Atom® Industrial SoCs Speed: 4267MT/s single rank (1GB / 2GB / 4GB / 8GB), 3733MT/s dual rank (16GB)
Graphics	Up to 3 independent displays Integrated Intel® 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	1x eDP 1.3 or Single/Dual-Channel 18-/24-bit LVDS interface 1x DP++ 1.4 or HDMI® 1.4 interface
Video Resolution	Up to 4096x2160 @60Hz
Mass Storage	2x S-ATA Gen3 Channels SDIO interface Optional eMMC 5.1 drive soldered on-board
Networking	1x Gigabit Ethernet PHY with precision clock synchronization and synchronous Ethernet clock output for IEEE 1588
USB	6x USB 2.0 Host ports 2x SuperSpeed USB 10Gbps Host ports (*) (*) Second SuperSpeed USB 10Gbps Host port can be utilized only via Qseven® Rel. 2.1 compliant carrier boards
PCI-e	4x PCI-e x1 Gen3 lanes
Audio	HD Audio interface
Serial Ports	2x UARTs
Other Interfaces	SPI, I2C, I2S, CAN, SM Bus, Thermal Management, FAN management Optional LPC bus Optional TPM 2.0 on-board Watchdog
Power Supply	$+5V_{DC}$ and $+5V_{SB}$ (optional)
Operating System	Microsoft® Windows 10 IoT Enterprise 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® Rel. 2.1 compliant module with NXP i.MX 8X Applications Processors

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

SOM-Q7-MX8X

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	+5VDC 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® Rel. 2.1 compliant module with NXP i.MX 8 Applications Processors

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

SOM-Q7-MX8

Available in Industrial Temperature Range

Processor	NXP i.MX 8 Family: **i.MX 8QuadMax** - 2x Cortex®-A72 cores @1.6GHz + 4x Cortex®-A53 cores @1.2GHz + 2x Cortex®-M4F cores @264MHz **i.MX 8QuadPlus** - 1x Cortex®-A72 cores @1.6GHz + 4x Cortex®-A53 cores @1.2GHz + 2x Cortex®-M4F cores @264MHz
Memory	Soldered Down LPDDR4-3200 memory, 64-bit interface , up to 8GB
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 compliant module with NXP i.MX 8M Applications Processors

Qseven® solution for next generation embedded systems

SOM-Q7-MX8M

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 Host or Client Port 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® Rel. 2.1 compliant module with Intel® Atom® X Series, Intel® Celeron® J / N Series and Intel® Pentium® N Series (Codename: Apollo Lake) Processors

High graphics performance and extreme temperature for low power designs

SOM-Q7-APL

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® standard module with NXP i.MX 6 Processor

Optimal balance of performance and power

SOM-Q7-MX6

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 OpenVGTM (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.

Qseven® Rel. 2.0 module with Intel® Atom® E3800 and Celeron® (Codename: Bay Trail) Processors

Mobile-oriented with eMMC and Camera Interface

SOM-Q7-BT-2

Available in Industrial Temperature Range

CPU
Intel® Atom® E3800 and Celeron® families

GRAPHICS
Integrated Intel® HD Graphics 4000 Series controller

CONNECTIVITY
6x USB 2.0; 1x USB 3.0; 3x PCI-e x1

MEMORY
up to 8GB Dual-Channel DDR3L 1333MHz

Qseven®

Qseven® Rel. 2.0 Compliant Module with Intel® Atom® E3800 and Celeron® families (Codename: Bay Trail) Processors

x86 performance on a low-power module

SOM-Q7-BT

Available in Industrial Temperature Range

CPU
Intel® Atom® E3800 and Celeron® families of System-on-Chip

GRAPHICS
Integrated Intel® HD Graphics controller

CONNECTIVITY
6x USB 2.0; 1x USB 3.0; 3x PCI-e x1

MEMORY
up to 8GB Dual-Channel DDR3L 1333MHz

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

With NXP's first MPU for more speed and improved power efficiency

SOM-uQ7-MX8M-Mini-Nano

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® Rel. 2.0 module with Intel® Atom® E3800 and Celeron® (Codename: Bay Trail) Processors

Smallest x86 standard module at proprietary costs

SOM-uQ7-BT

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.

µQseven® standard module with NXP i.MX 6 Processors

Small, flexibile OTS module at proprietary costs

SOM-uQ7-MX6-2

Available in Industrial Temperature Range

CPU
Single and Dual Core Lite (Arm® Cortex®A9 Cores)

GRAPHICS
2D/3D dedicated graphics processors

CONNECTIVITY
FastEthernet; GPI/Os

MEMORY
up to 1GB DDR3L on-board

µQseven®

µQseven® standard module with NXP i.MX 6 Processor

Optimal balance of performance and size

SOM-uQ7-MX6

Available in Industrial Temperature Range

CPU
Single-, Dual- and Quad- Core (Arm® Cortex® -A9 Cores)

GRAPHICS
2D/3D dedicated graphics processors

CONNECTIVITY
4x USB 2.0; 2x Serial ports; CAN Bus

MEMORY
up to 2GB DDR3L on-board

Carrier Board for Qseven® Rel. 2.0 / 2.1 Compliant Modules in the 3.5" Form Factor

Wide range of interfaces for broad development possibilities

Carrier-Q7-D59

Available in Industrial Temperature Range

CPU
3.5" Form Factor Carrier Board for Qseven Module

GRAPHICS
Multiport Video Interfaces

CONNECTIVITY
Connectivity oriented

MEMORY
Embedded Industrial Interfaces

Cross Platform Starter Kit compatible with both x86 and Arm Rel. 2.0 / 2.1 Qseven® modules

Quickly "start" prototyping for short time-to-market

DEV-KIT-Q7-2.1

Cross-compatible platform with x86 and Arm® solutions

SCHEMATICS PUBLICLY AVAILABLE

Available in Industrial Temperature Range

FEATURES OF CQ7-D59

Video Interfaces	LVDS Single/Dual Channel 18-24-bit + HDMI® Connector **or** 2 x eDP connectors + Multimode Display Port
Mass Storage	1x SATA connector with HDD power connector 1x M.2 Socket 2 2242 Key B SSD slot microSD Slot on combo microSD + SIM connector
Networking	2 x Gigabit Ethernet connectors 1 x M.2 Socket 2 2242/3042 Key B Slot for WWAN cellular modem modules, connected to on-board miniSIM slot
USB	2x Superspeed USB 5Gbp Host port on dual Type-A socket 1x USB 2.0 Host ports on double Type-A sockets 1x USB 2.0 Host on internal M.2 socket 1 x USB 2.0 OTG port on micro-AB socket (USB port shared with USB 2.0 lanes of 1 x USB 3.0)
Audio	Audio interface on internal pin header
Serial Ports	4-wires RS-232 / RS-422 / RS-485 configurable serial port on DB9 male connector 2x 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 16x GPIO signals on pin header via a GPIO expander controlled via SM Bus or I2C Front panel header 1x 28 pin connector for additional features (I2C, ACPI signals, SMBus, watchdog, thermal management) +12V tachometric FAN connector Optional debug USB port on miniB socket Optional MFG connector for JTAG programming of Qseven® module
Power Supply	$24V_{DC}$ ±5% through Micro-fit 2x2 power connector Coin cell battery holder for powering 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. The customer must design a product-specific cooling solution for their final system.

Carrier Board for Qseven® and µQseven® Rev 2.1 Modules in embedded NUC™ Form factor

Flexible Qseven compliant Carrier board in embedded NUC™ Form factor

Carrier-Q7-D03

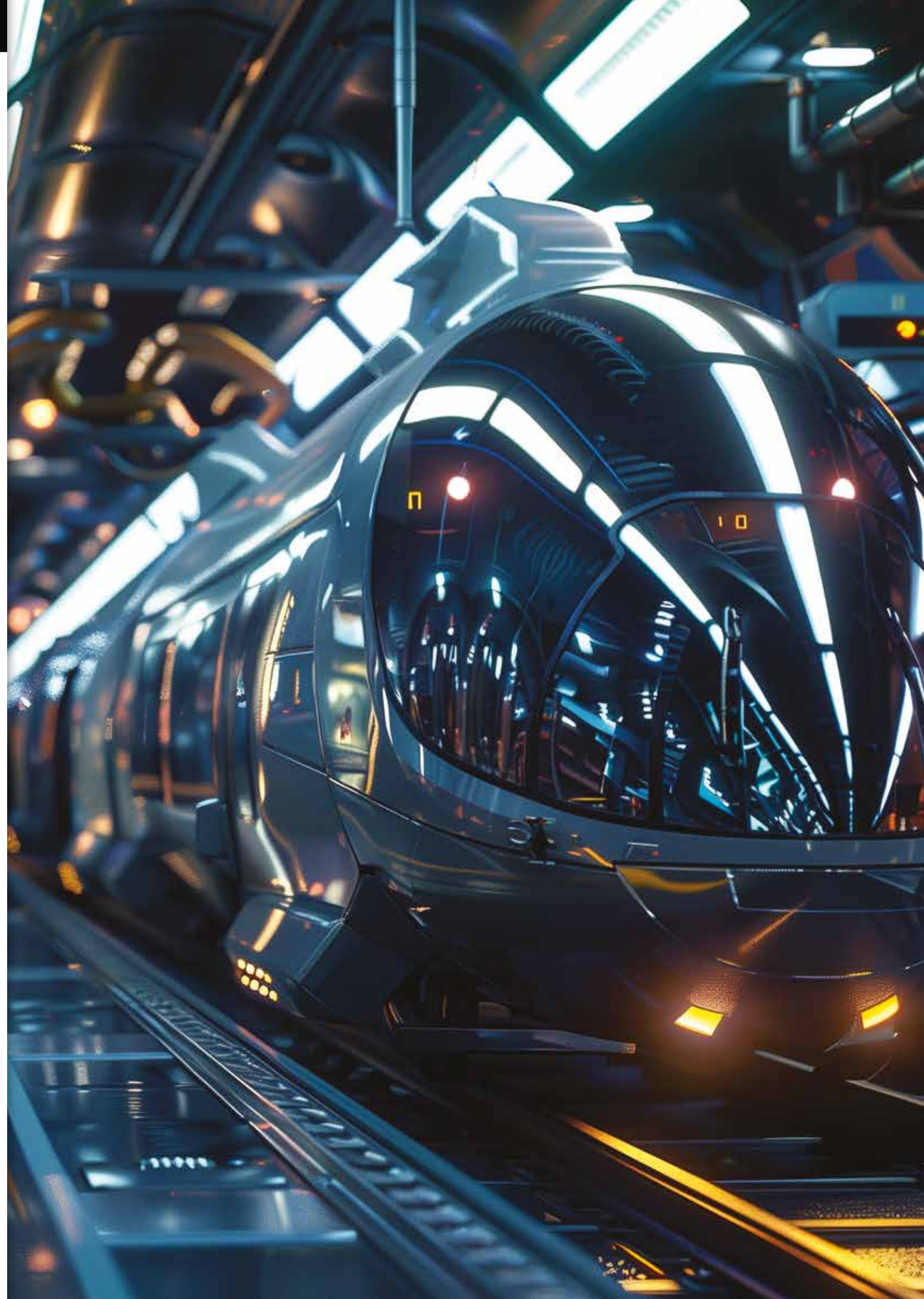
CPU
embedded NUC TM Form factor for Qseven® and µQseven® Rev 2.1 Modules

GRAPHICS
Supports dual-channel 24-bit LVDS and HDMI® outputs, enabling high-quality visual displays.

CONNECTIVITY
Multiple USB ports, PCIe expansion slots, and a microSD slot, supporting diverse peripheral connections.

MEMORY
Gigabit Ethernet connector and Mini-PCIe slot for WWAN, ensuring reliable network connectivity.

Please visit www.seco.com to find the latest version of these datasheets



SMARC module

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 Overview

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

System I/O interface	# of interfaces
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 and a co-founder of the Qseven® standard

SMARC® Rel. 2.1.1 module with NXP i.MX 95 Applications Processors

Optimized processing and advanced ML acceleration for next-generation computing

SOM-SMARC-MX95

Available in Industrial Temperature Range

Processor	**NXP i.MX95** Applications Processors · 6x Arm® Cortex™-A55 @2GHz · Arm® Cortex™-M33 @333Mhz · Arm® Cortex®-M7 @800Mhz
System Memory	Up to 16GB LPDDR5 6.4GT/s (32-bit)
NPU	2.0 TOP/s Neural Network performance, up to 1.0 GHz
Video Interfaces	2x LVDS single channel / 1xLVDS dual channel Optional HDMI® interface 1x 4-lanes CSI camera interface Optional 1x 2-lanes CSI camera interface (alternative to HDMI® interface)
Video Resolution	LVDS, HDMI®: up to 1080p @60Hz
Graphics	GPU Arm Mali-G310 V2 with 2D/3D acceleration
Mass Storage	Up to 128GB eMMC 5.1 drive soldered on-board (boot device) SD 4-bit interface (boot device)
Networking	Up to 2x Gigabit Ethernet interfaces Optional Wi-Fi (802.11a/b/g/n/ac/ax) + BT/BLE 5.3 module soldered on-board SERDES (XGMII) interface for additional third Ethernet interface, up to 10Gbps supported
USB	Up to 5x USB 2.0 host ports 1x USB SuperSpeed 5Gbps port Up to 1x USB 2.0 OTG port
PCI-e	Up to 2x PCI-e x1 Gen3 ports
Audio	1x I2S audio interface
Serial Ports	2x UART (4-wires) 2x UART (2-wires)
CAN Bus	2x CAN interfaces
Other Interfaces	2x general purpose PWM FAN Management Signals Up to 12x GPIOs 1x general purpose I2C bus 1x power management I2C bus 1x general purpose SPI interface 1x QuadSPI interface or additional general purpose SPI interface Watchdog Boot select signals Power management signals JTAG Header Optional TPM 2.0 soldered on-board
Power Supply	$+5V_{DC}$ ± 5% and +3.3V_RTC
Operating System	Linux Yocto
Operating Temperature*	0 ÷ +60°C (Commercial Range) -40 ÷ +85°C (Industrial Range)
Dimensions	82 x 50 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 module with NXP i.MX 9 Applications Processors

NXP i.MX 93 in SMARC® module for low power applications

SOM-SMARC-MX93

Available in Industrial Temperature Range

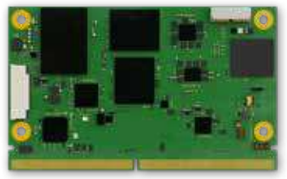
Processor	NXP i.MX 933/935 processors with 1-2x Arm® Cortex®-A55 @ 1.7 GHz Arm® Cortex-M33 @ 250Mhz Arm® Ethos™ U-65 microNPU
Memory	Soldered-down LPDDR4X/LPDDR4-3200 memory, up to 2GB total, 16-bit interface
Video Interfaces	LVDS Single Channel MIPI_DSI or eDP interface (factory alternatives)
Video Resolution	MIPI-DSI: up to 1080p60 LVDS: up to 720p60
Mass Storage	eMMC 5.1 Drive soldered on-board, up to 64GB (boot device) SD 4-bit interface (boot device)
Networking	2x Gigabit Ethernet interfaces, opt. Wi-Fi + BT5.0
USB	1x USB 2.0 OTG port up to 4x USB 2.0 using optional internal 2.0 HUB
Audio	1x I2S port
Serial Ports	2x UART (4-wires) 2x UART (2-wires)
CAN Bus	2x CAN interfaces
Other Interfaces	12 x GPIOs 1x MIPI-CSI 2 Lanes Camera interface 1x General Purpose I2C Bus 2 x PWM ports
Security	TPM
Embedded Controller Functionalities	Power management Watchdog Boot select signals GP I/O
Power Supply	$+5V_{DC}$ ± 5% and +3.3V_RTC
Operating System	Linux Yocto
Operating Temperature*	0 ÷ +60°C (Commercial Range) -40 ÷ +85°C (Industrial Range)
Dimensions	82 x 50 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® 2.1.1 module with Qualcomm® QCS5430 Processor

SMARC® CoM for high performance low power applications with QCS5430 processor

SOM-SMARC-QCS5430



Available in Industrial Temperature Range

CPU
Qualcomm® QCS6490 processor

GRAPHICS
FHD+ Qualcomm® Adreno™ 642L

CONNECTIVITY
2x Gigabit Ethernet

MEMORY
LPDDR5-6400 up to 12GB

SMARC® 2.1.1 module with Qualcomm® QCS5430 Processor

SMARC® Rel. 2.1.1 module with MediaTek Genio 510 Applications Processors

SMARC® Rel. 2.1.1 module with MediaTek Genio 510 Applications Processors

SOM-SMARC-Genio510

MEDIATEK

Available in Industrial Temperature Range

CPU
MediaTek Genio 510

GRAPHICS
Mali G57 MC2 GPU

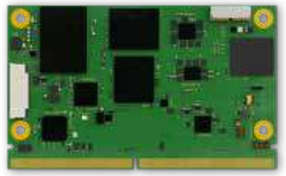
CONNECTIVITY
Up to 1x Gb Ethernet, 1x USB 3.1, 2x USB 2.0, 1x CAN, 4 x UART, opt Wi-Fi +BT 5.0, MIPI-CSI, 1x I2S

MEMORY
Soldered-down LPDDR4X-3733 memory, up to 8GB total

SMARC® 2.1.1 module powered by Qualcomm® QCS6490 Processor

SMARC® CoM for high performance low power applications with QCS6490 processor

SOM-SMARC-QCS6490



Available in Industrial Temperature Range

Processor	Qualcomm® QCS6490 processor, 1x Arm® Cortex®-A78 @2.7 GHz, 3x Arm® Cortex®-A78 @2.4 GHz, and 4x Arm® Cortex®-A55 @1.8 GHz
Memory	Soldered-down LPDDR5-6400 memory, up to 12GB total, 32-bit interface 2 channels
Video Interfaces	LVDS dual channel 18/24bit, eDP V1.4, MIPI DSI 4 lanes, Display Port through USB 3.1 Type C
Video Resolution	Primary display: FHD+ @120 fps Secondary display: up to 4k Ultra HD @60Hz
Graphics	Qualcomm® Adreno™ 643L
Mass Storage	eMMC 5.1 drive soldered on-board, up to 64GB (boot device) SD 4-bit interface (boot device) opt. UFS 2.x/3.1 flash
Networking	2x Gigabit Ethernet interfaces Opt. Wi-Fi + BT5.0
USB	1x USB 3.1, 1x USB 2.0 OTG, 1x USB 2.0 or 4x USB 2.0 (Hub option)
PCI-e	PCIe lanes Gen3: 2 ports x1 lanes, 1 port x2 lanes (QPS615)
Camera Interface	2x 4-Line MIPI CSI, with ISP support
Audio	2x I2S
Serial Ports	2x UART (RX/TX/RTS/CTS), 2x UART (RX/TX)
CAN Bus	1xCAN via SPI
Other Interfaces	I2C Ultra Low Power RTC 2xPWM
Security	Optional TPM 2.0 on-board
Embedded Controller Functionalities	FAN Watchdog Power Management I/O Signals
Power Supply	5V DC (+5V Standby opt)
Operating System	Microsoft Windows 11 IoT Enterprise Yocto (Linux 64 Bit) Android
Operating Temperature*	0 ÷ +60°C (Commercial Range) -30 ÷ +85°C (Industrial Range)
Dimensions	82 x 50 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 module with MediaTek Genio 700 Applications Processors

High-performance multimedia Arm® processing and AI acceleration

SOM-SMARC-Genio700

MEDIATEK

Available in Industrial Temperature Range

Processor	MediaTek Genio 700 Applications Processors 2x Arm® Cortex®-A78 @ 2.2 GHz, 6x Arm® Cortex®-A55 @ 2.0 GHz AI Accelerator: Cadence Tensilica VP6 with Mediatek APU3.0 System Companion Chip: MDSP RV55 DSP: Candence Tensilica HiFi5 Image Signal Processor (ISP)
Memory	Soldered-down LPDDR4X-3733/LPDDR4-3200 memory, up to 8GB total
Video Interfaces	LVDS dual channel or eDP (factory alternatives) HDMI® DP
Video Resolution	MIPI/eDP: up to 2560x1600p60 HDMI®/DP: up to 4K60
Mass Storage	eMMC 5.1 Drive soldered on-board, up to 64GB (boot device) SDIO Interface
Graphics	Mali-G57 MC3 GPU
Networking	1x Gigabit Ethernet (RGMII) 1x 100Mbit Ethernet (USB) Optional Wifi 802.11 a/b/g/n/ac 2x2 and BT 5.3 utilising onboard module with M2.1216 standard form factor
USB	1x USB3.1 1x USB2.0 Host/Slave 4x USB2.0 Host
Audio	2x I2S port
Serial Ports	2x UART (4-wires) 2x UART (2-wires)
CAN Bus	1x CAN interfaces (via SPI CAN Controller)
Other Interfaces	GPIOs MIPI-CSI camera interface General Purpose I2C Bus PWM ports
Security	TPM
Embedded Controller Functionalities	Power management Watchdog Boot select signals GP I/O
Power Supply	$+5V_{DC}$ ± 5% and +3.3V_RTC
Operating System	Linux Yocto Kirkstone Android T (13)
Operating Temperature*	0 ÷ +60°C (Commercial Range) -20 ÷ +85°C (Extended Commercial Range) -40 ÷ +85°C (Industrial Range)
Dimensions	82 x 50 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 compliant module with Intel® Atom® processors x7000E Series, Intel® Core™ i3 processor, Intel® Processors N Series (Codename: Alder Lake-N)

Power efficient deep learning inference and UHD media processing within a small footprint

SOM-SMARC-ADL-N

Processor	Intel® Atom® processors x7000E Series, Intel® Core™ i3 processor and Intel® Processors N Series (Codename: Alder Lake-N): • **Intel® Atom® x7213E**, 2 Cores @1.7 GHz (3.2 GHz Turbo), 10W TDP, with TSN and TCC* • **Intel® Atom® x7425E**, 4 Cores @1.5 GHz (3.4 GHz Turbo), 12W TDP, with TSN and TCC* • **Intel® Atom® x7211E**, 2 Cores @1.0 GHz (3.2 GHz Turbo), 6W TDP, with TSN and TCC* • **Intel® Core™ i3-N305**, 8 Cores @1.8 GHz (3.8 GHz Turbo), 15W TDP • **Intel® Processor N200**, 4 Cores @1.0 GHz (3.7 GHz Turbo), 6W TDP • **Intel® Processor N97**, 4 Cores @2.0 GHz (3.6 GHz Turbo), 12W TDP • **Intel® Processor N50**, 2 Cores @1 GHz (3.4 GHz Turbo), 6W TDP * Time Sensitive Network and Time Coordinate Computing
Memory	Up to 16GB LPDDR5-4800 soldered down memory with IBECC (in-band error correction code)
Graphics	Integrated Intel® UHD Graphics driven by Intel® Xe architecture: · Intel® Atom® x7213E processors with 16 Execution Units · Intel® Atom® x7425E processors with 24 Execution Units · Intel® Atom® x7211E processors with 16 Execution Units · Intel® Core™ i3-N305 processors with 32 Execution Units · Intel® Processor N200 with 32 Execution Units · Intel® Processor N97 with 24 Execution Units · Intel® Processor N50 with 16 Execution Units AVX256 & VNNI support for faster AI inference and media transcoding Support with up to 3 independent 4K60 SDR displays
Video Interfaces	eDP 1.3 or Dual Channel 18/24bit LVDS interface (factory alternatives) 2x DP++ multimode DP 1.4 / HDMI® 2.1 interface 2x MIPI CSI-2 inputs (1x 2-lanes and 1x 4-lanes)
Video Resolution	Up to 4096x2160 @60Hz
Mass Storage	1x external S-ATA Gen3.2 channel Optional eMMC 5.1 drive soldered on-board
Networking	2x NBase-T Ethernet ports (2.5GbE supported) with Time-Sensitive Networking functionality, implemented using as many Intel® i225 Gigabit Ethernet controllers, managed by two integrated PCH PCI-e ports Optional SERDES (SGMII) interface for additional third Gigabit Ethernet (factory option, alternative to fourth PCI-e lane)
USB	6x USB 2.0 host ports 2x USB 3.2 Gen2 ports
PCI-e	4x PCIe Gen3 lanes Possible channel aggregations: · 4 ports x1 lanes (4x1) · 1 port x2 lanes + 2 ports x1 lane (1x2 + 2x1) or SERDES in place of fourth PCIe lane
Audio	HD Audio and Soundwire/i2S Audio interfaces
Serial Ports	2x UARTs 2x HS-UARTs
Other Interfaces	Up to 14x GPIOs SM bus I2C bus 1x SPI interface for boot 1x General Purpose SPI or eSPI (factory alternatives) Power management signals, watchdog
Power Supply	$+5V_{DC}$ and $+3V_{DC}$ for RTC
Operating System	Microsoft® Windows 10 Linux Kernel LTS
Operating Temperature*	0°C to +60°C (Commercial 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 with Intel® Atom® x6000E Series and Intel® Pentium® and Celeron® N and J Series processors (Codename: Elkhart Lake) for FuSa applications.

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

SOM-SMARC-EHL

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) 6.5W TDP - Comm. Temp. Range Pentium® **J6426** Quad Core @2GHz (3.0GHZ Turbo) 10W TDP - Comm. Temp. Range Pentium® **N6415** Quad Core @1.2GHz (3.0GHZ Turbo) 6.5W TDP - Comm. Temp. Range Atom® **x6211E** Dual Core @1.3GHz (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 @2GHz (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 Atom® **x6414RE** Quad Core @1.5GHz (no Turbo) 9W TDP w/ IBECC, IHS and TCC - Ind. Temp. Range Atom® **x6425RE** Quad Core @1.9GHz (no Turbo) 12W 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 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® 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

SOM-SMARC-MX8M-Plus

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®-A53 Cores up to 1.8GHz · NXP i.MX 8M Plus Dual, 2x Arm® Cortex®-A53 Cores up to 1.8GHz · NXP i.MX 8M Plus Quad Lite, 4x Arm®Cortex®-A53 Cores up to 1.8GHz, no VPU / NPU
Max Cores	4+1
Memory	Soldered down LPDDR4-4000 memory, 32-bit interface, up to 6GB
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	Up to 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	Up to 1x PCI-e x1 Gen3 port
Audio	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 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.

Please visit www.seco.com to find the latest version of these datasheets

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

Safety-certifiable and efficient performance in SMARC® Standard module

SOM-SMARC-MX8X

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 module with NXP i.MX 8M Applications Processors

Standard solution for next generation multimedia applications

SOM-SMARC-MX8M

Available in Industrial Temperature Range

CPU
NXP i.MX 8M Applications Processors

GRAPHICS
Integrated Graphics Processing Unit, supports 2 independent displays

CONNECTIVITY
WiFi + BT LE; CSI camera; QuadSPI interface; 14 x GPI/Os

MEMORY
Up to 4GB soldered down LPDDR4-3200 memory, 32-bit interface

SMARC

SMARC® Rel. 2.1.1 module with Intel® Atom® X Series, Intel® Celeron® J / N Series and Intel® Pentium® N Series (Codename: Apollo Lake) Processors

High performance, low power and feature-rich

SOM-SMARC-APL

Available in Industrial Temperature Range

CPU
Intel® Atom® X Series, Intel® Celeron® J / N Series and Intel® Pentium® N Series (formerly Apollo Lake) Processors

GRAPHICS
Intel® HD Graphics 500 series controller with up to 18 Execution Units

CONNECTIVITY
2x GbE; 2x USB 3.0; 6x USB 2.0; 4x PCI-e

MEMORY
Dual Channel Soldered Down LPDDR4-2400 memory

SMARC 2.0 / 2.1.1 Development Kit

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

DEV-KIT-SMARC

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

SCHEMATICS PUBLICLY AVAILABLE

FEATURES OF CSM-B79

Video Interfaces	LVDS/MIPI-DSI connector, interface shared with 2x eDP 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	Up to 2xDual RJ-45 Gigabit Ethernet connectors M.2 Socket1 2230 Key E Slot for WiFi/BT Modules (interface shared with PCI-e x 4 slot) M.2 Socket2 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 M.2 Slots
Audio	TRSS Mic In + Line Out Audio Jack Onboard I2S Audio Codec (TI TLV320AIC3204) + HD Audio Codec (Cirrus Logic CS4207) I2S Audio header
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 2 x Serial ports, I2C, SM Bus, Watchdog and Power Management Signals GPIO / FuSa pin header FAN connector 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 RTC Coin cell battery holder
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.

Please visit www.seco.com to find the latest version of these datasheets

COM Express

Com Express® Standard Advantages

Extreme low power design

Low profile design

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

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

Interface	Type 6 (Min / Max)	Type 7 (Min / Max)
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
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

Interface	Type 6 (Min / Max)	Type 7 (Min / Max)
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®

COM Express® Rel.3.0 Basic Type 7 module, with the Intel® Xeon® D-1700 processors (Codename: Ice Lake- D)

COM Express® CoM with high performance Intel® SoCs for secure IoT applications

SOM-COMe-BT7-ICL-D

Available in Industrial Temperature Range

CPU
Intel® Xeon® D-1700 processors

NETWORKING
4x 10GBASE-KR interfaces + 1x 1GbE port with NC-SI

CONNECTIVITY
4x Superspeed USB 5Gbps; 16x PCI-e Gen4 lanes + 16x PCI-e Gen3 lanes

MEMORY
Up to four DDR4 SO-DIMM Slots supporting DDR4-2933 memory with ECC, up to 128GB

Com Express®

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

SOM-COMe-BT7-E3000

Available in Industrial Temperature Range

CPU
AMD EPYC™ Embedded 3000 family of SoCs

NETWORKING
4x 10GBASE-KR interfaces + 1x 1GbE port with NC-SI

CONNECTIVITY
4x USB 3.1; 24x PCI-e Gen3 lanes

MEMORY
Four DDR4 SO-DIMM Slots supporting DDR4-2666 Memory with ECC, up to 128GB

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

Platform independent kit for fast Time-to-market

DEV-KIT-COMe-T7

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 USB Overcurrent header JTAG connector FuSa header SPI Flash 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® 3.1 Type 6 Compact Module with Intel Atom® Processors x7000E Series (Codename: Amston Lake and Alder Lake N)

Intel® Next Gen Atom® CPU in high-performance COM Express® with rugged efficiency

SOM-COMe-CT6-ASL

Available in Industrial Temperature Range

Processor	Intel® Atom® Processors x7000RE (Codename: Amston Lake) Series: · Intel Atom® **x7835RE** Eight Core @ 1.3GHz (3.6GHz turbo) 12W TDP w/ TSN and TCC, industrial · Intel Atom® **x7433RE** Quad Core @ 1.5GHz (3.4GHz turbo) 9W TDP w/ TSN and TCC, industrial · Intel Atom® **x7213RE** Dual Core @ 2GHz (3.4GHz turbo) 9W TDP w/ TSN and TCC, industrial · Intel Atom® **x7211RE** Dual Core @ 1GHz (3.2GHz turbo) 6W TDP w/ TSN and TCC, industrial Intel Atom® Processors x7000E (Codename: Alder Lake N) Embedded E Series · Intel Atom® **x7425E** Quad Core @1.5GHz (3.4GHZ turbo) 12W TDP w/ TSN and TCC, commercial · Inte Atom® **x7213E** Dual Core @1.7GHz (3.2GHZ turbo) 10W TDP w/ TSN and TCC, commercial · Intel Atom® **x7211E** Dual Core @1GHz (3.2GHZ turbo) 6W TDP w/ TSN TCC, commercial Intel® Core™ i3 Processors and Intel® Processor N Series (Codename: Alder Lake N) PC Client Processors · Intel® Core™ **i3-N305** Eight Core @1GHz / 1.8GHz (3.8GHZ turbo) 9W/15W TDP w/o TSN and w/o TCC, commercial · Intel® Processor **N200** Quad Core @1GHz (3.7GHZ turbo) 6W TDP w/o TSN and w/o TCC - commercial · Intel® Processor **N97** Quad Core @2GHz (3.6GHZ turbo) 12W TDP w/o TSN and w/o TCC - commercial · Intel® Processor **N50** Dual Core @1GHz (3.4GHZ turbo) 6W TDP w/o TSN and w/o TCC - commercial (*) TCC: Time Coordinated Computing (**) TSN: Time Sensitive Networking
System Memory	One DDR5 SO-DIMM slot supporting DDR5-4800 IBECC modules, up to 16GB (*) IBECC: In-Band Error-Correcting Code memory
Graphics	Integrated Intel® Gen12 UHD graphics controller with up to 32 EU Support up to 3 independent displays
Video Interfaces	2x Digital Display Interfaces (DDIs), supporting DP, HDMI®, DP Alt-Mode over Type-C 1x DDI Interface supporting DP / HDMI® 1x eDP or Single/Dual-Channel 18-/24-bit LVDS interface (factory alternatives)
Video Resolution	HDMI®: up to 4Kx2K @60Hz according to HDMI 2.0b DP 1.4, eDP 1.4: 4096x2304@60 Hz LVDS up to 1920x1200 @ 60Hz
Mass Storage	Up to 2x S-ATA Gen3 channels Optional eMMC 5.1 drive soldered on-board
Networking	1x NBase-T Ethernet interface with MaxLinear GPY211/215 GbE controller, supporting 2.5GbE and TSN.
USB	Up to 2x USB 10Gbps Optional 3x USB 5Gbps 8x Hi-Speed USB ports
Audio	HD Audio interface SoundWire Interface
PCI-e	Up to 6x PCI-e Gen3 lanes
Serial Ports	2x UARTs
Other Interfaces	SPI, 2x I2C, SM Bus, Thermal Management, FAN management Optional eSPI or LPC bus (factory alternatives) Optional TPM 1.2/2.0 on-board LID#/SLEEP#/PWRBTN#, watchdog 4x GPI, 4x GPO Optional 2x CSI camera interfaces
Power Supply	+12V_{DC} ± 10%, +5V_{SB} (optional), +3VRTC (optional)
Operating System	Microsoft® Windows 10 IoT Enterprise 2019 LTSC Microsoft® Windows 10 IoT Enterprise 2021 LTSC Edgehog OS (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)

*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® 3.1 Type 6 Basic Module with Intel® Core™ Ultra Processors Family (Codename: Meteor Lake -H and -U)

Performance, adaptability, energy-efficiency with Intel® Core™ Ultra CPU

SOM-COMe-BT6-MTL

Processor	Intel® Core™ Ultra Processors Family (Codename: Meteor Lake-H) - 20/28/65W base power: · **Intel® Core™ Ultra 7 processor 165H** with vPRO, 6 P-Cores with HT @1.4 GHz (turbo 5.0 GHz) + 8 E-Cores @0.9 GHz (turbo 3.8 GHz), 24M cache · **Intel® Core™ Ultra 7 processor 155H**, 6 P-Cores with HT @1.4 GHz (turbo 4.8 GHz) + 8 E-Cores @0.9 GHz (turbo 3.8 GHz), 24M cache · **Intel® Core™ Ultra 5 processor 135H** with vPRO, 4 P-Cores with HT @1.7 GHz (turbo 4.6 GHz) + 8 E-Cores @1.2 GHz (turbo 3.6 GHz), 18M cache · **Intel® Core™ Ultra 5 processor 125H**, 4 P-Cores with HT @1.2 GHz (turbo 4.5 GHz) + 8 E-Cores @0.7 GHz (turbo 3.6 GHz), 18M cache Intel® Core™ Ultra Processors Family (Codename: Meteor Lake- U) - 12/15/28W Base Power: · **Intel® Core™ Ultra 7 processor 165U** with vPRO, 2 P-Cores with HT @1.7 GHz (turbo 4.9 GHz) + 8 E-Cores @1.2 GHz (turbo 3.8 GHz), 12M cache · **Intel® Core™ Ultra 7 processor 155U**, 2 P-Cores with HT @1.7 GHz (turbo 4.8 GHz) + 8 E-Cores @1.2 GHz (turbo 3.8 GHz), 12M cache · **Intel® Core™ Ultra 5 processor 135U** with vPRO, 2 P-Cores with HT @1.6 GHz (turbo 4.4 GHz) + 8 E-Cores @1.1 GHz (turbo 3.6 GHz), 12M cache · **Intel® Core™ Ultra 5 processor 125U**, 2 P-Cores with HT @1.3 GHz (turbo 4.3 GHz) + 8 E-Cores @0.8 GHz (turbo 3.6 GHz), 12M cache
System Memory	Two DDR5 SO-DIMM slot supporting DDR5-5600 IBECC modules, up to 64GB (*) IBECC: In-Band Error-Correcting Code Memory
Graphics	Integrated Intel® Xᵉ LPG graphics controller with up to 8 Xᵉ cores (128 EU) Support up to 4 independent displays
Video Interfaces	3x Digital Display Interfaces (DDIs), supporting DP, HDMI® 1x eDP or Single/Dual-Channel 18-/24-bit LVDS interface (factory alternatives) 2x MIPI CSI channels with single on-board connector (factory option)
Video Resolution	HDMI®: up to 8K60 according to HDMI® 2.1 DP 2.1: up to 8K60Hz / 5K120Hz eDP 1.4b: up to 4K120Hz HDR Max resolution 4x4K60Hz
Mass Storage	Up to 2x S-ATA Gen3.2 channels (factory alternative to on-board NVMe + 1 PEG x4) Optional NVMe SSD (PCIE-e x4 interface) soldered on-board, up to 512GB
Networking	1x NBase-T Ethernet interface with Intel® I226 GbE controller, supporting 2.5GbE and TSN
USB	Up to 4x USB 10Gbps interfaces Up to 8x Hi-Speed USB interfaces
Audio	HD Audio Soundwire Audio interfaces
PCI-e	1x PEG x8 Gen4 (with H series processors only) 1x PEG x4 Gen4 (factory alternative to 2x SATA) 8x PCI-e lanes Gen4 (allowed groupings x4, x2, x1)
Serial Ports	2x UARTs
Other Interfaces	SPI, I2C, SM Bus, thermal management, FAN management eSPI or LPC bus (factory alternatives) TPM 2.0 on-board (factory option) LID#/SLEEP#/PWRBTN#, watchdog 4 x GPI, 4 x GPO
Power Supply	Main: +8Vdc ÷ +20Vdc Auxiliary: +5V_SBY, +3V_RTC
Operating System	Microsoft® Windows 10 IoT Enterprise 2019 LTSC Microsoft® Windows 10 IoT Enterprise 2021 LTSC Yocto Kirkstone
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® 3.1 Type 6 Basic Module with 13th Gen Intel® Core™ processors (Raptor Lake-P)

Intensive video processing and AI-based analytics for edge devices in challenging environments

SOM-COMe-BT6-RPL-P

Available in Industrial Temperature Range

Processor	13th Gen Intel® Core™ processors (Raptor Lake U/P/H series) and Intel® Processor U300E			
		U series, up to 10C (2P+8E)	P series, up to 14C (6P+8E)	H series, up to 14C (6P+8E)
	P-Core base/turbo	1.7/4.9GHz	1.9/4.8GHz	2.5/5.0GHz
	E-Core base/turbo	1.2/3.7GHz	1.2/3.7GHz	1.8/4.0GHz
	Cache	Up to 12M	Up to 24M	Up to 24M
	TDP	15W	28W	45W
Memory	Two DDR5 SO-DIMM slots supporting DDR5-4800, IBECC modules memory, up to 64GB			
Graphics	Intel® UHD Graphics/Intel® Iris® Xe Graphics architecture, up to 96 EU Improved image (IPU6EP) and video processing (AVI/GNA 3.0) Support up to 4 independent displays @ 4K			
Video Interfaces	Up to 3x Digital Display Interfaces (DDIs), supporting DVI, DP 1.4, HDMI® 2.1 1x VGA (factory option) 1x eDP 1.3 or single/dual-channel 18-/24-bit LVDS interface (factory alternatives)			
Video Resolution	HDMI® and DP up to 8K @ 60Hz via TCSS with Hayden Bridge eDP 1.4b up to 5K @ 120Hz (HBR3 with VDSC1.1) LVDS up to 1920x1200 @ 60Hz			
Mass Storage	2x SATA Gen3 channels Up to 128 GB on-board NVMe SSD (factory alternative to one PCI-express Graphics (PEG) x4 Gen4)			
Networking	1x NBase-T Ethernet interface with Intel® I225 GbE controller, with TSN and 2.5GbE supported			
USB	Up to 2x USB 4 Gen2 host ports (depending on carrier board retimer implementation) 4x USB 3.2 Gen2 (10Gbps) host ports (depending on carrier board retimer implementation) 8x USB 2.0 host ports			
PCI-e	Up to 8x PCI-e x1 Gen3 lanes 1x PCI-express Graphics (PEG) x8 Gen4 Up to 2x PCI-express Graphics (PEG) x4 Gen4			
Audio	HD audio and Soundwire/i2S audio interfaces			
Serial Ports	2x UARTs			
Other Interfaces	SPI, I2C, SM Bus, Thermal Management, FAN management Optional eSPI or LPC bus (factory alternatives) Optional TPM 2.0 on-board LID#/SLEEP#/PWRBTN#, Watchdog 4 x GPI, 4 x GPO			
Power Supply	+12V_{DC} ± 10%, +5V_{SB} (optional), +3VRTC (optional)			
Operating System	Microsoft® Windows 10 Linux Ubuntu			
Operating Temperature*	0°C to +60°C (commercial version) -40°C to +85°C (industrial 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® 3.1 Type 6 Compact Module with Intel® Atom® x6000E Series, Intel® Pentium® and Celeron® N and J Series Processors (Codename: Elkhart Lake)

Cost-Effective, Low Power Computing with Real Time Options

SOM-COMe-CT6-EHL

Available in Industrial Temperature Range

Processor	Intel® Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors: **Intel® Celeron® J6413** Quad Core @ 1.8GHz (3GHz Turbo) 10W TDP, Com. **Intel® Pentium® J6426** Quad Core @2.0GHz (3GHz Turbo) 10W TDP, Com. **Intel® Celeron® N6211** Dual Core @1.2GHz (3GHz Turbo) 6.5W TDP, Com. **Intel® Pentium® N6415** Quad Core @1.2GHz (3GHz Turbo) 6.5W TDP, Com. **Intel® Atom® x6211E** Dual Core @1.2GHz (3GHz Turbo) 6W TDP, IBECC, Ind. **Intel® Atom® x6413E** Quad Core @1.5GHz (3GHz Turbo) 9W TDP, IBECC, Ind. **Intel® Atom® x6425E** Quad Core @2.0GHz (3GHz Turbo) 12W TDP, IBECC, Ind. **Intel® Atom® x6212RE** Dual Core @1.2GHz (no Turbo) 6W TDP, IBECC, TCC, Ind. **Intel® Atom® x6414RE** Quad Core @1.5GHz (no Turbo) 9W TDP, IBECC, TCC, Ind. **Intel® Atom® x6425RE** Quad Core @1.9GHz (no Turbo) 12W TDP, IBECC, TCC, Ind. (*)IBECC: In-Band Error-Correcting Code memory (**)TCC: Time Coordinated Computing
Memory	Two DDR4 SO-DIMM slots supporting DDR4-3200 IBECC modules memory, up to 32GB
Graphics	Integrated Intel® Gen11 UHD Graphics controller with up to 32 EU Support up to 3 independent displays
Video Interfaces	Up to 2x Digital Display Interfaces (DDIs), supporting DVI, DP 1.4, HDMI® 1.4 1x eDP 1.3 or Single/Dual-Channel 18-/24-bit LVDS interface (factory alternatives)
Video Resolution	DP 1.4 and HDMI® 1.4: up to 4096x2160@60 Hz eDP 1.3: up to 4096x2160@60 Hz LVDS: up to 1920x1200 @60Hz
Mass Storage	2x S-ATA Gen3 channels Optional eMMC 5.1 drive soldered on-board
Networking	1x NBase-T Ethernet interface with MaxLinear GPY211/215 GbE controller, with 2.5GbE supported
USB	Up to 4x USB 3.2 Gen 1 host ports Up to 8x USB 2.0 host ports
PCI-e	Up to 6x PCI-e Gen3 lanes Groupings: · #1 x4 + #2 x1 · #2 x2 + #2 x1 · #6 x1
Audio	HD audio interface
Serial Ports	Up to 2x UARTs 1x CAN (factory alternative to one UART)
Other Interfaces	SPI, I2C, SM bus, thermal management, FAN management Optional eSPI or LPC bus (factory alternatives) Optional TPM 1.2/2.0 on-board LID#/SLEEP#/PWRBTN#, watchdog 4x GPI, 4x GPO
Power Supply	8V_{DC} ± 20V_{DC} , +5V_{SB} (optional), +3VRTC (optional)"
Operating System	Microsoft® Windows 10 IoT Enterprise 2019 LTSC Microsoft® Windows 10 IoT Enterprise 2021 LTSC Yocto Kirkstone
Operating Temperature*	0°C to +60°C (commercial version) -40°C to +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® Rel. 3.0 Compact Type 6 Module with
11th Gen Intel® Core™ (Codename: Tiger Lake UP3) Processors

High-performance, responsive CPU and GPU compute in COM Express® Compact form factor

SOM-COMe-CT6-TGL-U

Available in Industrial Temperature Range

Processor	**Intel® Core™ i7-1185G7E**, Quad Core @2.8GHz (4.4GHz Turbo Boost), 12MB Cache, 28W TDP (12W cTDP), with Hyperthreading **Intel® Core™ i5-1145G7E**, Quad Core @2.6GHz (4.1GHz Turbo Boost), 8MB Cache, 28W TDP (12W cTDP), with Hyperthreading **Intel® Core™ i3-1115G4E**, Dual Core @3.0GHz (3.9GHz Turbo Boost), 6MB Cache, 28W TDP (12W cTDP), with Hyperthreading **Intel® Core™ i7-1185GRE**, Quad Core @2.8GHz (4.4GHz Turbo Boost), 12MB Cache, with IBECC, 28W TDP (12W cTDP), with Hyperthreading - Industrial **Intel® Core™ i5-1145GRE**, Quad Core @2.6GHz (4.1GHz Turbo Boost), 8MB Cache, with IBECC, 28W TDP (12W cTDP), with Hyperthreading - Industrial **Intel® Core™ i3-1115GRE**, Dual Core @3.0GHz (3.9GHz Turbo Boost), 6MB Cache, with IBECC, 28W TDP (12W cTDP), with Hyperthreading - Industrial
Chipset	Integrated Intel® PCH-LP
Memory	Two DDR4 SO-DIMM slots supporting DDR4-3200 memory, up to 64GB IBECC DDR4 memory modules supported only with Intel® Core™ Industrial SoCs
Graphics	Intel® Iris® Xe Graphics, up to 96 Execution Units Up to 4 independent displays supported Support DirectX 12, OpenGL 4.6, OpenCL 3.0 and Vulkan 1.2 HW accelerated video decode AVC/H.264, HEVC/H.265, VP81, VP9, AV1 HW accelerated video encode AVC/H.264, HEVC/H.265, VP81, VP9
Video Interfaces	Up to 3x Digital Display Interfaces (DDIs), supporting DP 1.2, eDP 1.4, HDMI® 1.4, DVI 1 x eDP 1.4 or Single/Dual-Channel 18-/24-bit LVDS interface 1 x VGA interface
Video Resolution	eDP, DP: up to 5120x3200 @60Hz 24bpp / 7680x4320 @60Hz 30bpp with DSC HDMI®: up to 4096x2160 @24Hz, 24bpp LVDS: up to 1920x1200 @60Hz VGA: up to 2048 x 1536 @50Hz
Mass Storage	2x SATA Gen3 channels 2x PCI-e x4 ports available for M.2 NVMe drives
Networking	Gigabit Ethernet interface Intel® I225 GbE controller
USB	4x SuperSpeed USB 5Gbps host ports 8x USB 2.0 Host ports
PCI-e	8x PCI-e x1 Gen3 lanes PCI-express Graphics (PEG) x4 Gen4
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, 4x GPO
Power Supply	$8V_{DC}$ ± $20V_{DC}$, $+5V_{SB}$ (optional), +3VRTC (optional)
Operating System	Microsoft® Windows 10 Microsoft® Windows 10 IoT Core Linux
Operating Temperature*	0°C ÷ +60°C (Commercial) -40°C ÷ +85°C (Industrial)
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® 3.0 Type 6 Compact Module with AMD Ryzen™
Embedded V2000 SoCs

High performance AMD Ryzen™ core for graphics and compute demanding edge applications

SOM-COMe-CT6-V2000

Processor	**AMD Ryzen™ Embedded V2748** with AMD Radeon™ Graphics with 7 CU, Eight Core Dual Thread @ 2.9GHz (4.15 Boost), TDP 35-54W **AMD Ryzen™ Embedded V2718** with AMD Radeon™ Graphics with 7 CU, Eight Core Dual Thread @ 1.7GHz (4.15 Boost), TDP 10-25W **AMD Ryzen™ Embedded V2546** with AMD Radeon™ Graphics with 6 CU, Six Core Dual Thread @ 3GHz (3.95 Boost), TDP 35-54W **AMD Ryzen™ Embedded V2516** with AMD Radeon™ Graphics with 6 CU, Six Core Dual Thread @ 2.1GHz (3.95 Boost), TDP 10-25W
Memory	Two DDR4 SO-DIMM Slots supporting DDR4-3200, ECC and non-ECC memory, up to 64GB
Graphics	AMD Radeon™ Graphics GPU with up to 7 Compute Units Up to 4 independent displays supported Support DirectX 12, OpenGL 4.6, OpenCL 2.1 and Vulkan HW accelerated video decode VP9 (8 and 10 bits), H.264/AVC (8bits), H.265/HEVC (8 and 10 bits), JPEG HW accelerated video encode H.264/AVC (8bits), H.265/HEVC (8 and 10 bits), JPEG
Video Interfaces	Up to 3 x Digital Display Interfaces (DDIs), supporting DVI, DP 1.4, HDMI® 2.1 1 x eDP 1.3 or single/dual-channel 18-/24-bit LVDS interface
Video Resolution	eDP, DP up to 4096x2160 @60Hz 10b with DSC 1.2 (HBR3) HDMI® up to 4096x2160 @ 60Hz LVDS up to 1920x1200 @ 60Hz
Mass Storage	2 x S-ATA Gen3 Channels
Networking	Gigabit Ethernet interface with Intel® i21x GbE controller Optional M.2 1216 Wi-Fi 802.11ac and BTLE 5.0 on-board
USB	1x SuperSpeed USB 10Gbps host port 3x SuperSpeed USB 5Gbps host ports 8x 2.0 host ports
PCI-e	8x PCI-e x1 Gen3 lanes PCI-express Graphics (PEG) x8 Gen3
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 general purpose input (GPI), 4x general purpose input (GPI)
Power Supply	$8V_{DC}$ ±$20V_{DC}$, $+5V_{SB}$ (optional), +3VRTC (optional)
Operating System	Microsoft® Windows 10 Linux
Operating Temperature*	0°C to +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 packaged system to keep the heatspreader temperature in the range indicated.

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

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

SOM-COMe-CT6-R1000

CPU	AMD Ryzen™ Embedded R1000 processors
GRAPHICS	AMD Radeon™ Vega GPU with 3 Compute Units
CONNECTIVITY	4x USB 3.0; 8x USB 2.0; Up to 5x PCI-e x1; PEG x4 Gen3
MEMORY	Two DDR4 SO-DIMM Slots supporting DDR4-2400 ECC Memory

COM Express® 3.0 Compact Type 6 module with the 8th Gen Intel® Core™ and Celeron™ U-series processors (Codename: Whiskey Lake)

Low power multi-core Intel® architecture for mobile applications

SOM-COMe-CT6-WHL-U

CPU	8th Gen Intel® Core™ and Celeron™ 4000 series processors (formerly Whiskey Lake) with 15W TDP
GRAPHICS	Intel® UHD Graphics 620 / 610
CONNECTIVITY	4 x USB 3.1; 8 x USB 2.0, up to 8 x PCI-e x 1
MEMORY	Two DDR4 SO-DIMM Slots supporting DDR4-2400 Memory, up to 64GB

COM Express® 3.0 Compact Type 6 Module with Intel® Atom® X, Celeron® J/N Series, Pentium® N Series (Codename: Apollo Lake) Processors

Rugged solution for industrial environment

SOM-COMe-CT6-APL

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 ports
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 Type 6 with Intel® 8th and 9th Gen Core™/ Xeon® / Celeron® (Codename: Coffee Lake and Coffee Lake Refresh)

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

SOM-COMe-BT6-CFL-H

CPU
8th Gen Core™/Xeon® (Coffee Lake) & 9th Gen Core™/Xeon® /Celeron® CPUs (Coffee Lake Refresh)

GRAPHICS
Intel® UHD Graphics 630/P630 architecture, up to 48 Execution Units

CONNECTIVITY
4x USB 3.0; 8x USB 2.0; 8x PCI-e x1 Gen3; PEG x16 Gen3

MEMORY
Two DDR4 SO-DIMM Slots supporting DDR4-2666 ECC Memory, up to 64GB

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

When high graphics and Hyper-threading matter

SOM-COMe-BT6-SKL/KL

CPU
Intel® 6th and 7h generation Core™ / Xeon® CPUs

GRAPHICS
Intel® HD Graphics 530 /P530/630/P630

CONNECTIVITY
4x USB 3.0; 8x USB 2.0; 8x PCI-e x1 Gen3; PEG x16 Gen3

MEMORY
2 x DDR4 So-DIMM slots

COM Express® Rel. 3.0 Compact Type 6 module with AMD Ryzen™ Embedded V1000 Processors

Next Generation x86 "Zen" Core and elite GPU performance

SOM-COMe-CT6-V1000

Available in Industrial Temperature Range

CPU
AMD Ryzen™ Embedded V1000 processors

GRAPHICS
AMD Radeon™ Vega GPU with up to 11 Compute Units DirectX® 12 supported

CONNECTIVITY
4x USB 3.0; 8x USB 2.0; 4x PCI-e x1 Gen 3, PEG x8 Gen3

MEMORY
Up to two DDR4 SO-DIMM Slots supporting DDR4-3200 ECC Memory

COM Express® Compact Type 6 with AMD 3rd gen. R-Series, G SoC-I or G SoC-J Series (Codename: Merlin Falcon, Brown Falcon, Prairie Falcon)

When scalable graphics performance makes the difference

SOM-COMe-CT6-MBPF

Available in Industrial Temperature Range

CPU
AMD Embedded 3rd generation R-Series SOC or G-Series SOC-I

GRAPHICS
AMD Radeon 3rd -Generation Graphics Core Next (GCN)

CONNECTIVITY
4x USB 3.0; 8x USB 2.0; 3x PCI-e x1 Gen3

MEMORY
Two SO-DIMM slots supporting DDR4 ECC and non-ECC modules

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

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

Carrier-COMe-T6-C30

Video Interfaces	1 x DP++ connector 2 x miniDP++ connectors LVDS 24-bit Single/Dual Channel 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 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	19÷24 V_{DC} (only CPU modules with max 45W TDP supported) Mega-Fit® 2x1 Power Connector Cabled Coin-cell connector for RTC
Operating Temperature*	0°C ÷ +50°C
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.

Carrier Board for COM-Express® Rel. 3.1 Type 6 Modules for Development

Connectivity and Flexibility to Accelerate Development

Carrier-COMe-T6-E10

Video Interfaces	3 x DP++ connectors or 1 x DP++ connector and 2 x USB4.0 Type-C with Alternate-Mode 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
PCI-e	2x PCI-e x4 Slots Gen4 1x PCI-e x16 Slot Gen4
USB	2 x USB 4.0 on Type-C sockets with Alternate-Mode (factory alternative to 2 x DP++ and 2 x USB 2.0) 4 x USB 3.2 Host ports on Type-A sockets 4 x USB 2.0 Host ports on Quad Type-A sockets
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.

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

Platform independent kit for fast Time-to-market

DEV-KIT-COMe-T6

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 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) HD Audio Jacks S/PDIF Out Optical connector 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 header Button / LEDs front panel header 4-pin tachometric FAN connector I2C + SM Bus on feature Pin header FuSa Header I2C Flash Socket JTAG connector LPC internal header USB overcurrent header 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.

COM-HPC®

COM-HPC® Standard Advantages

For high-end designs and markets

High graphics computing

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)

COM-HPC® Client	COM-HPC® Server
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**

COM-HPC® Size A Client Module with Intel® Core™ Ultra Processors Family
(codename: Meteor Lake -H and -U)

Next-gen Intel® Core™ Ultra power, superior graphics, robust connectivity, and durability for demanding applications

SOM-COM-HPC-A-MTL

Processor	Intel® Core™ Ultra Processors Family (codename: Meteor Lake-H) - 20/28/65W base power: • **Intel® Core™ Ultra 7 processor 165H** with vPRO, 6 P-Cores with HT @ 1.4GHz (turbo 5.0GHz) + 8 E-Cores @ 0.9GHz (turbo 3.8GHz), 24M Cache • **Intel® Core™ Ultra 7 processor 155H**, 6 P-Cores with HT @ 1.4GHz (turbo 4.8GHz) + 8 E-Cores @ 0.9GHz (turbo 3.8GHz), 24M Cache • **Intel® Core™ Ultra 5 processor 135H** with vPRO, 4 P-Cores with HT @ 1.7GHz (turbo 4.6GHz) + 8 E-Cores @ 1.2GHz (turbo 3.6GHz), 18M Cache • **Intel® Core™ Ultra 5 processor 125H**, 4 P-Cores with HT @ 1.2GHz (turbo 4.5GHz) + 8 E-Cores @ 0.7GHz (turbo 3.6GHz), 18M Cache Intel® Core™ Ultra Processors Family (codename: Meteor Lake-U) - 12/15/28W Base Power: • **Intel® Core™ Ultra 7 processor 165U** with vPRO, 2 P-Cores with HT @ 1.7GHz (turbo 4.9GHz) + 8 E-Cores @ 1.2GHz (turbo 3.8GHz), 12M Cache • **Intel® Core™ Ultra 7 processor 155U**, 2 P-Cores with HT @ 1.7GHz (turbo 4.8GHz) + 8 E-Cores @ 1.2GHz (turbo 3.8GHz), 12M Cache • **Intel® Core™ Ultra 5 processor 135U** with vPRO, 2 P-Cores with HT @ 1.6GHz (turbo 4.4GHz) + 8 E-Cores @ 1.1GHz (turbo 3.6GHz), 12M Cache • **Intel® Core™ Ultra 5 processor 125U**, 2 P-Cores with HT @ 1.3GHz (turbo 4.3GHz) + 8 E-Cores @ 0.8GHz (turbo 3.6GHz), 12M Cache
System Memory	Two DDR5 SO-DIMM slot supporting DDR5-5600 IBECC* modules, up to 64GB (*) IBECC: In-Band Error-Correcting Code Memory
Graphics	Integrated Intel® Xᵉ LPG graphics controller with up to 8 Xe cores (128 EU) Support up to 4 independent displays
Video Interfaces	2x Digital Display Interfaces (DDIs) supporting DP, HDMI®, DP Alt-Mode over Type-C 1x DDI Interface supporting DP / HDMI® / eDP 1x eDP interface
Video Resolution	HDMI®: up to 8K60 according to HDMI® 2.1 DP 2.1: up to 8K60Hz / 5K120Hz eDP 1.4b: up to 4K120Hz HDR Max resolution 4x4K60Hz
Mass Storage	2x external SATA Gen3 Channels PCI-e x4 ports can be used to connect, on the carrier board, M.2 NVMe drives
Networking	Up to 2x NBase-T ethernet interfaces with Intel® I226 GbE controller, supporting 2.5GbE and TSN.

USB	2x USB 10Gbps interfaces 2x USB 20Gbps/40Gbps interfaces 8x Hi-Speed USB ports
PCI-e	Up to 7x PCI-e x1 Gen4 lanes (4x groupable) Up to 3x PCI-e x4 Gen4 ports 1x PCI-e x8 Gen5 port (-H Series processors only) Max 9 root ports supported
Audio	HD Audio interface 2x SoundWire Interface
Serial Ports	2x 4-wires UARTs
Other Interfaces	Boot SPI + GP SPI, 2x I2C, SM Bus, thermal management, FAN management eSPI interface Optional TPM 1.2/2.0 on-board Power and system management signals Watchdog 12x GPIO 2x MIPI-CSI-2 4-lane camera interfaces
Power Supply	$+12V_{DC}$ ± 10%, $+5V_{SB}$ (optional), +3VRTC (optional)
Operating System	Microsoft® Windows 11 IoT Enterprise 2019 Edgehog OS (Linux Yocto)
Operating Temperature*	0°C ÷ +60°C (Commercial 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 HPC® Client module Size A, with 13th Gen Intel® Core™ processors
(Codename: Raptor Lake – H/P/U series)

13th Gen Core-i processing with AI accelerator for high performance industrial grade edge applications

SOM-COM-HPC-A-RPL

Available in Industrial Temperature Range

Processor	13th Gen Intel® Core™ processors, up to 14 cores & up to 20 threads, up to 24MB cache, 15/45W TDP
Memory	2x DDR5-4800 SODIMM Slots, up to 64GB
Graphics	Integrated Iris® Xᵉ Architecture, up to 96 Execution Units Up to two video decode boxes (VDBoxes) for enhanced video stream capabilities Support for up to 48 simultaneous 1080p streams ingestion Support for up to four independent displays at up to 4K60 HDR resolution or one display at 8K resolution
Video Interfaces	Up to 3x DDI ports supporting DP 1.4, HDMI 2.0b (HDMI 2.1 via LSPCON) Up to 2x DP++ interfaces over USB 4.0 (Factory alternatives to 2x DDI ports) 1x eDP 1.4b interface
Video Resolution	DP Up to 5120x3200 @60Hz 24bpp / 7680x4320@60Hz 30bpp with DSC eDP: Up to 5120x3200 @60Hz 24bpp / 5120x3200@120Hz 30bpp with DSC HDMI® 1.4: Up to 4Kx2K 24-30Hz 24bpp HDMI® 2.1: Up to 4Kx2K 48-60Hz 24bpp / 4Kx2K 48-60Hz 12bpc (need dedicated redriver on carrier board)
Mass Storage	2x external SATA Gen3 Channels PCI-e x4 ports can be used to connect, on the carrier board, M.2 NVMe drives
Networking	2x NBase-T Ethernet interfaces, supporting 2.5Gb Ethernet connection, managed by as many Intel® i225 2.5GbE Controllers Optional on-board M.2 1216 module, supporting WiFi 802.11ax (WiFi 6E) MIMO 2x2 + MU-MIMO and BT 5.2, external antennas* *Certification upon request
USB	Up to 4 x USB 4.0 / USB 3.2 Host ports 4 x USB 2.0 Host port
PCI-e	Up to 8x PCIe x1 Gen3 lanes 1x PCIe x8 Gen5 port 2x PCIe x4 Gen4 ports
Audio	SoundWire and I2S Audio Interface
Serial Ports	2 x UARTs
Other Interfaces	2x 4-lane CSI-2 interfaces 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
Other	AI engine: Intel® Gaussian & Neural Accelerator 3.0 (Intel® GNA) Can operate while the SOC is in lower power states
Power Supply	+8V_{DC} ÷ +20V_{DC} Main power supply +5V stand-by
Operating System	Windows 10 IoT Enterprise LTSC Windows Server 2022 Wind River VxWorks 7.0 Linux Kernel LTS (Ubuntu) Wind River Linux Yocto Android
Operating Temperature*	-40°C ÷ +85°C (Industrial)
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 HPC® Client module Size A, with 12th Gen Intel® Core™ processors
(Codename: Alder Lake - P series)

Immersive graphics, enhanced AI-performance and efficiency in a standard form factor

SOM-COM-HPC-A-ADL-P

Processor	12th Gen Intel® Core™ processors, up to 14 cores & up to 20 threads, up to 24MB cache, 15/45W TDP
System Memory	2x DDR5-4800 SODIMM Slots, up to 64GB
Graphics	Integrated Iris® Xᵉ Architecture, up to 96 Execution Units Up to two video decode boxes (VDBoxes) for enhanced video stream capabilities Support for up to 48 simultaneous 1080p streams ingestion Support for up to four independent displays at up to 4K60 HDR resolution or one display at 8K resolution
Video Interfaces	Up to 3x DDI ports supporting DP 1.4, HDMI® 2.0b (HDMI 2.1 via LSPCON) Up to 2x DP++ interfaces over USB 4.0 (Factory alternatives to 2x DDI ports) 1x eDP 1.4b interface
Video Resolution	DP: Up to 5120x3200 @60Hz 24bpp / 7680x4320@60Hz 30bpp with DSC eDP: Up to 5120x3200 @60Hz 24bpp / 5120x3200@120Hz 30bpp with DSC HDMI® 1.4: Up to 4Kx2K 24-30Hz 24bpp HDMI® 2.1: Up to 4Kx2K 48-60Hz 24bpp / 4Kx2K 48-60Hz 12bpc (need dedicated redriver on carrier board)
Mass Storage	2x external SATA Gen3 Channels PCI-e x4 ports can be used to connect, on the carrier board, M.2 NVMe drives
Networking	2x NBase-T Ethernet interfaces, supporting 2.5Gb Ethernet connection, managed by as many Intel® i225 2.5GbE Controllers Optional on-board M.2 1216 module, supporting WiFi 802.11ax (WiFi 6E) MIMO 2x2 + MU-MIMO and BT 5.2, external antennas* *Certification upon request
USB	Up to 4 x USB 4.0 / USB 3.2 Host ports 4 x USB 2.0 Host port
PCI-e	Up to 8x PCIe x1 Gen3 lanes 1x PCIe x8 Gen4 port 2x PCIe x4 Gen4 ports
Audio	SoundWire and I2S Audio Interface
Serial Ports	2 x UARTs
Other Interfaces	2x 4-lane CSI-2 interfaces 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
Other	AI engine: Intel® Gaussian & Neural Accelerator 3.0 (Intel® GNA) Can operate while the SOC is in lower power states
Power Supply	+8V_{DC} ÷ +20V_{DC} Main power supply +5V stand-by
Operating System	Windows 10 IoT Enterprise LTSC Windows Server 2022 Wind River VxWorks 7.0 Linux Kernel LTS (Ubuntu) Wind River Linux Yocto Android
Operating Temperature*	0°C ÷ +60°C (Commercial 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-HPC® Client module Size A with the 11th Gen Intel® Xeon® W-11000E Series, Core™ vPro® and Celeron®
(Codename: Tiger Lake-H) Processors for FuSa applications

Processing power, high performance graphics and top class connectivity in a COM-HPC® modular solution

SOM-COM-HPC-A-TGL-H

Available in Industrial Temperature Range

Processor	11th Generation Intel® Xeon®, Core™ and Celeron® Processors, also available in industrial temperature range. · Intel® Core™ vPRO® **i7-11850HE**, Eight Core @ 2.6GHz (up to 4.7GHz in Turbo Boost) with HT, 24MB Cache L3, 45/35W cTDP · Intel® Core™ vPRO® **i5-11500HE**, Six Core @ 2.6GHz (up to 4.5GHz in Turbo Boost) with HT, 12MB L3 Cache, 45/35W cTDP · Intel® Core™ **i3-11100HE**, Quad Core @ 2.4GHz (up to 4.4GHz in Turbo Boost) with HT, 8MB L3 Cache, 45/35W cTDP · Intel® Celeron® **6600HE**, Dual Core @2.6GHz, 8MB L3 Cache, 35W TDP · Intel® Xeon® vPRO® **W-11865MRE**, Eight Core @ 2.6GHz (up to 4.7GHz in Turbo Boost) with HT, 24MB L3 Cache, with ECC and TCC/TSN, 45/35W cTDP – Industrial (w/ Turbo OFF) · Intel® Xeon® vPRO® **W-11555MRE**, Six Core @ 2.6GHz (up to 4.5GHz in Turbo Boost) with HT, 12MB L3 Cache, with ECC and TCC/TSN, 45/35W cTDP – Industrial (w/ Turbo OFF) · Intel® Xeon® **W-11155MRE**, Quad Core @ 2.4GHz (up to 4.4GHz in Turbo Boost) with HT, 8MB L3 Cache, with ECC and TCC/TSN, 45/35W cTDP – Industrial (w/ Turbo OFF) · Intel® Xeon® vPRO® **W-11865MLE**, Eight Core @ 1.5GHz (up to 4.5GHz in Turbo Boost) with HT, 24MB L3 Cache, with ECC and TCC/TSN, 25W TDP · Intel® Xeon® vPRO® **W-11555MLE**, Six Core @ 1.9GHz (up to 4.4GHz in Turbo Boost) with HT, 24MB L3 Cache, with ECC and TCC/TSN, 25W TDP · Intel® Xeon® **W-11155MLE**, Quad Core @ 1.8GHz (up to 3.1GHz in Turbo Boost) with HT, 24MB L3 Cache, with ECC and TCC/TSN, 25W TDP B Cache, 28/15/12W cTDP - Industrial (w/ Turbo OFF)
Max Cores	8
Chipset	Intel® RM590E, HM570E or QM580E PCH
Memory	2x DDR4-3200 SODIMM Slots with ECC (In-Band Error Correction Code), up to 64GB supported
Graphics	Integrated Iris Xe Graphics Core Gen12 architecture, with up to 32 Execution Units and up to 2 VDbox MPEG2, WMV9, AVC/H.264, JPEG/MJPEG, HEVC/H.265, VP9, AV1 HW decoding, up to 8k60. AVC/H.264, HEVC/H.265, JPEG, VP9 HW encoding, up to 8k30 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 2x 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 24bpp, 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 with TSN
USB	2x USB4 ports 2x USB 3.2 Gen 2x2 ports 8 x USB 2.0 Host ports
PCI-e	1x PCI-e x4 Gen 4 port for NVME 16x PCI-e Gen4 lanes, can be used to support 1x PCI-e x16, 2x PCI-e x8 or (1x PCI-e x8 +2x PCI-e x4) root ports 20x PCI-e Gen 3 lanes, groupable to support up to 12 root ports, max allowed grouping PCI-e x4
Audio	SoundWire and I2S Audio Interface
Serial Ports	2x legacy UARTs, managed by the Embedded Controller
Other Interfaces	2x 4-lane CSI-2 interfaces, optional SPI, eSPI, 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 Project 3.0 WindRiver VxWorks 7.0 Android
Operating Temperature*	0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial Range)
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-HPC® Client module Size A with the 11th Gen Intel® Core™ and Celeron® (Codename: Tiger Lake-UP3) Processors

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

SOM-COM-HPC-A-TGL-UP3

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, 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, 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 BT 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.

Please visit www.seco.com to find the latest version of these datasheets

Cross Platform Development Kit compatible with both x86 and Arm® COM-HPC® Client modules

Development Kit for COM-HPC® Client Modules

DEV-KIT-COM-HPC-A

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

SCHEMATICS PUBLICLY AVAILABLE

FEATURES OF CCHPC-C78-C

Video Interfaces	1x 40-poles eDP/DSI connector 3x DP++ connectors 2x CSI Camera Input Connectors
Mass Storage	2x S-ATA 7p M connectors 2x M.2 Socket 3 Key M slots for M.2 NVMe Drives
Networking	2x NBase-T Ethernet RJ-45 connectors 2x 10Gbase-KR interfaces on OCP Type-C connector
USB	4x USB 4.0 / USB 3.2 Gen2x2 ports on Standard Type-C sockets with PD functionality 4x USB 2.0 Host ports on standard Quad Type-A Socket USB Overcurrent pin header
PCI-e	2x PCI-e x4 Slots 2x PCI-e x4 interfaces on M.2 Socket 3 Key M Slots 2x PCI-e x16 Slot
Audio	I2S Audio Codec Line In, Line Out, Mic in Triple Audio jack Mic In + Line Out internal pin header I2S/Soundwire shared interface + Soundwire only interface on internal pin header
Serial Ports	2 x RS-232/RS-422/RS-485 ports on dedicated pin header (from module) 2 x RS-232/RS-422/RS-485 ports on dedicated pin header (from eSPI Dual UART controller)
Other Interfaces	BMC connector with SM Bus, I2C, eSPI, 1x USB 2.0, 1x PCI-e x1, 1 x UART, 2x GPIO 12 GPIO pin header Boot SPI Internal Header Button / LEDs front panel header 4-pin tachometric FAN connector Feature Pin header with 2xI2C, SM Bus, GP SPI, Management signals I2C Flash Socket SM Bus Smart Battery Connector 2x 7-segment LCD displays for POST codes eSPI internal header Functional Safety (FuSa) internal pin header

Power Supply	ATX 24 poles connector for carrier board working only Auxiliary 12V PCI-e 6-pin power connector Dedicated EPS CPU Power in connector (voltage range 8..20V) for COM HPC Client module's working Cabled Coin-cell connector for RTC
Operating Temperature*	-40°C ÷ +85°C (Industrial Temperature range)
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.

Please visit www.seco.com to find the latest version of these datasheets

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

Update your legacy design

SOM-ETX-BT

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.

ETX® 3.0
Long Term Support

ETX® Standard Advantages

For legacy designs

X86 based com

Extend the life of existing etx-based projects

Proven and established standard

Isa bus support

Computer-On-Module Approach

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

myon

MicroModule SOM

Myon standard advantages

Compact form factor

Ideal for IOT and battery-operated handheld devices

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

Micro CPU module with Snapdragon™ 410E

Thanks to the compact form factor ideal for IoT and battery-powered handheld devices

SOM-Myon-I-410E

Qualcomm

Available in Industrial Temperature Range

Processor	Qualcomm® Snapdragon™ 410E QuadCore ARM Cortex A53, up to 1.2GHz (APQ8016E), ARM Cortex M3
Memory	1 GByte LPDDR3 -1066 (533MHz), 32Bit, 2 Gbyte on request (part of EMCP)
Graphics	Qualcomm® Adreno™ 306 400MHz GPU OpenGL ES 3.0, OpenCL, DirectX
Video Interfaces	LVDS or MIPI Display (4 channel)
Video Resolution	LVDS, MIPI: 1080p @30
Mass Storage	8 Gbyte eMMC, 16 Gbyte on request (part of EMCP)
Networking	Onboard WLAN 802.11 b/g/n 2.4 GHz, BT 4.1 (Onboard antennas or UFL connectors) Ethernet via USB possible
USB	USB 2.0 OTG
Audio	Audio Codec: Stereo Headphone output, Mono Speaker 8Ω, 3 Microphone inputs
Other Interfaces	SD/SDIO Card, MIPI Camera (2ch and 4Ch) 8 Ports configurable for different interfaces: GPIO, UART, SPI, I2C, I2S
Power Supply	LiPo 3 - 4.5V / typ. 3.3V / charger 5V
Operating System	Windows 10 IoT Core Linux Android
Operating Temperature*	-25 ÷ 85°C
Dimensions	48 x 32 x 4.2 mm

*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.

MYON

Micro CPU module with NXP i.MX 8M Mini & i.MX8M Nano Applications Processors

Ideal for IoT and battery-powered handheld devices thanks to particularly compact form factor

SOM-Myon-II-MX8M-Mini

Available in Industrial Temperature Range

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 1.5GHz, no VPU
Memory	Myon II: Soldered down LPDDR4-3200 memory, 32-bit interface, up to 8GB Myon II Nano: Soldered down LPDDR4-3200 memory up to 4 GB, 16-bit interface
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
Video Interfaces	MIPI display (4 channel) / Single- or Dual-LVDS
Video Resolution	LVDS, MIPI: Up to 1920 x 1080p @60
Mass Storage	onboard 8 Bit wide eMMC 2x SDIO interface (e.g. for external SD cards)
Networking	1x GB Ethernet RGMII and SIOP interface (for Myon II) External chipsets for wireless communication can be connected via SDIO, PCIe or USB interfaces (for Myon II)
USB	2x USB 2.0 OTG
PCI-e	PCIe (for Myon II)
Audio	Audio Codec: Stereo Headphone output, Speaker output, Stereo Line-In, Microphone inputs
Serial Ports	4x UART
Other Interfaces	SPDIF In/Out I2S Multichannel Serial-Audio-Interface 2x I2C SPI QSPI GPIOs PWM MIPI CSI (4 channel)
Power Supply	3.3 ÷ 5.0 V_{DC}
Operating System	Linux Yocto Debian Android Windows 10 IoT
Operating Temperature*	-40 ÷ 85°C (industrial) -25 ÷ 85°C (Extended Consumer) 0 ÷ 70°C (Consumer)
Dimensions	48.0 x 32.0 x 4.2 mm

*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.

MicroModule Carrier Board for Myon SOMs

Carrier Board for Myon I, Myon II and Myon II Nano SOMs

Carrier-Myon-ConXM

Processor	Defined by compatible Myon SOMs · Qualcomm® Snapdragon™ 410E Cortex A53, QuadCore up to 1.2GHz on Myon I SOM · NXP i.MX 8M Mini Arm® Cortex A53 up to 1.8 GHz, up to Quad Core, integrated Arm® Cortex M4 on Myon II SOM · NXP i.MX 8M Nano Arm® Cortex A53 up to 1.5 GHz, up to Quad Core, integrated Arm® Cortex M7 on Myon II Nano SOM
Video Interfaces	LVDS, HDMI®
Mass Storage	µSD Card Socket
Networking	10/100 Mbit Ethernet RJ45 Connector WLAN 802.11 b/g/n 2.4GHz, BT via Myon I
USB	USB2.0 Host, USB2.0 OTG
Audio	Footprint for one optional 16-pin analog expansion connector for stereo headset/line-out, speaker and analog line-in
Serial Ports	UART (low speed expansion connector)
Other Interfaces	1x 40-pin low speed expansion connector (compatible to DragonBoard 410c): SPI, I2S, 2x I2C,12x GPIO, DC power 1x 60-pin high speed expansion connector (compatible to DragonBoard 410c): 4L MIPI-DSI, USB, 2x I2C, 2L+4L MIPI-CSI
Power Supply	Industrial +12 up to +24V supply, +5V (USB) / Lithium-ion, lithium-ion-polymer battery-charger / Coin-Cell charger (Myon I PMIC)
Operating System	Microsoft Windows 10 IoT Core Linux Android
Operating Temperature*	-20 ÷ 85°C
Dimensions	100.0 mm x 90.0 mm x 18.0 mm

*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.

HMI for Myon MicroModule SOMs

HMI with Myon MicroModule SOM technology supporting Myon I, Myon II and Myon II Nano

DEV-KIT-Myon-i-PAN-M7

Processor	Depends on compatible Myon SOMs · Qualcomm® Snapdragon™ 410E Cortex A53, QuadCore up to 1.2GHz on Myon I SOM · NXP i.MX 8M Mini Arm® Cortex A53 up to 1.8 GHz, up to Quad Core, integrated Arm® Cortex M4 on Myon II SOM · NXP i.MX 8M Nano Arm® Cortex A53 up to 1.5 GHz, up to Quad Core, integrated ARM Cortex M7 on Myon II Nano SOM
Graphics	Depends on compatible Myon MicroModule SOMs
Video Interfaces	MIPI-CSI Camera connector
Video Resolution	7.0 inch LVDS Display, resolution 800 x 480, LED lifetime min. 30k hours, typ. 430 cd/qm brightness, P-Cap (Projected Capacitive touch screen)
Mass Storage	µSD Card Socket
Networking	10/100 Mbit Ethernet RJ45 Connector WLAN 802.11 b/g/n 2.4GHz, BT via Myon I
USB	USB 2.0 Host, µUSB 2.0 OTG / USB via i-MOD extension connector
Audio	Solderpads for Speaker, Headphone, Microphone
Serial Ports	UART via i-MOD extension connector
Other Interfaces	I2C, CAN, Keys via i-MOD extension connectors Realtime Clock with Backup Cap LED Powerfail Detection
Power Supply	Industrial +12 up to 24V supply / Power over Ethernet (POE) on request
Operating System	Microsoft Windows 10 IoT Linux Android
Operating Temperature*	-20 ÷ 70°C
Dimensions	176.0 x 108.5 x 28 mm (include housing)

*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.

Please visit www.seco.com to find the latest version of these datasheets

TRIZEPS

SODIMM SOM

Trizeps standard advantages

Powerful

Space and cost saving

SODIMM 200 standard

Reduced development time with cost-effective production | High computing power with relatively small dimensions
Long availability for at least 10 years | Pin compatibility for successor products | ARM-based processors from NXP
SODIMM 200 connectors | High pin compatibility with each other
Available with Linux, Android and Microsoft Windows 10 IoT Core & Enterprise

SODIMM-200 CPU-Module with NXP i.MX 8M Mini Applications Processors

High performance for high-level video, voice and audio processing combined with low power consumption

SOM-Trizeps-VIII-MX8M-Mini

Available in Industrial Temperature Range

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 Optional: Programmable FPGA with up to 4300 LUTs to convert parallel display/camera/data-streams to MIPI DSI/CSI
Memory	Soldered down LPDDR4-3200 memory up to 8GB, 32-bit interface
Graphics	i.MX 8M Mini Family of processors: Vivante GC320 2D accelerator + GCNanoUltra 3D accelerator OpenGL ES 2.0, OpenVG 1.1 support
Video Interfaces	MIPI display (4 channel) / Single- or Dual-LVDS, LCD 24 Bit RGB
Video Resolution	LVDS, MIPI: Up to 1920 x 1080p @60
Mass Storage	Onboard 4 Bit wide µSD Card Socket or onboard 8 Bit wide eMMC
Networking	1x GB Ethernet RGMII PHY and SIOP interface Optional: WiFi 802.11 a/b/g/n/ac 2x2 MU-MIMO / BT 4.2/5.0
USB	2x USB 2.0 OTG
PCI-e	PCIe
Audio	Audio Codec: Stereo Headphone output, Mono Speaker output, Stereo Line-In, Microphone input
Serial Ports	4x UART
Other Interfaces	4 Bit wide SDIO SPDIF In/Out I2S Multichannel Serial-Audio-Interface 2x I2C SPI QSPI GPIOs PWM MIPI CSI (4 channel)
Power Supply	3.3 V_{DC}
Operating System	Linux Yocto Linux Debian Android Windows 10 IoT
Operating Temperature*	0 ÷ 70°C (Consumer) -25 ÷ 85°C (Extended Consumer) -40 ÷ 85°C (industrial)
Dimensions	67.6 x 36.7 x 6.4 mm

*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.

TRIZEPS

SODIMM-200 CPU-Module with NXP i.MX 8M Applications Processors

Ideal for industrial/home automation, streaming audio or advanced imaging applications

SOM-Trizeps-VIII-MX8M

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 Optional: NXP™ Kinetis V Arm® Cortex-M0+ up to 75 MHz / 8x 16 Bit ADC, CAN, UART, SPI, GPIO Optional: Programmable FPGA, up to 4300 LUTs to convert parallel display/camera/data-streams to MIPI DSI/CSI
Memory	Soldered down LPDDR4-3200 memory, 32-bit interface, up to 8GB
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® v2.0a, MIPI display (4ch), Single-, Dual-LVDS or LCD 24 Bit RGB Camera Interfaces: 8bit parallel, MIPI (4ch and additional 2ch)
Video Resolution	HDMI®, MIPI: up to 4k resolution
Mass Storage	Onboard 4 Bit wide µSD Card Socket or onboard 8 Bit wide eMMC
Networking	Onboard 10/100MBit/1GBit RGMII PHY or SIOP interface Optional: WiFi 802.11 a/b/g/n/ac 2x2 MU-MIMO / BT 4.2/5.0
USB	2x USB 3.0 OTG
PCI-e	1x PCIe
Audio	Audio Codec: Stereo Headphone output, Mono Speaker output, Stereo Line-In, Microphone input
Serial Ports	4x UART
Other Interfaces	SPDIF In/Out I2S Multichannel Serial-Audio-Interface 2x I2C SPI QSPI GPIOs PWM
Power Supply	3.3 V_{DC}
Operating System	Linux Yocto Linux Debian Android Windows 10 IoT
Operating Temperature*	0 ÷ 70°C (Consumer) -25 ÷ 85°C (Extended Consumer) -40 ÷ 85°C (industrial)
Dimensions	67.6 x 36.7 x 6.4 mm

*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.

SODIMM-200 CPU-Module with NXP i.MX 8M Plus Applications Processors

Bringing artificial intelligence to Arm® embedded edge solutions

SOM-Trizeps-VIII-MX8M-Plus

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®-A53 Cores up to 1.8GHz · NXP i.MX 8M Plus Dual, 2x Arm® Cortex®-A53 Cores up to 1.8GH · NPU: 2.3 TOPS Neural Network performance (not for Quad Lite) Optional: NXP™ Kinetis V Arm® Cortex-M0+ up to 75 MHz / 8x 16 Bit ADC, UART, SPI, GPIO, I2C Optional: Programmable FPGA, up to 4300 LUTs
Memory	Soldered down LPDDR4-4000 memory, 32-bit interface, up to 8GB
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	HDMI®, MIPI display (4 channel) / Single- or Dual-LVDS, LCD 24 Bit RGB
Video Resolution	HDMI®, LVDS, eDP: Up to 1920 x 1080p @60 Video-Decoder: 1080p60, h.265/4, VP9, VP8 / Video Encoder: 1080p60, h.265/4
Mass Storage	Onboard 4 Bit wide µSD Card Socket or onboard 8 Bit wide eMMC
Networking	2x Gigabit Ethernet (1x RGMII PHY and 1x RGMII interface) Optional: WiFi 802.11 a/b/g/n/ac 2x2 MU-MIMO / BT 4.2/5.0
USB	2x USB 3.0 OTG
PCI-e	Up to 1x PCI-e x1 Gen3 port
Audio	Digital: 18x I2S TDM, DSD512, S/PDIF Tx + Rx, 8 channel PDM Microphone input Analog: Stereo Headphone output, Mono Speaker output, Stereo Line-In, Microphone input
Serial Ports	4x UART
Other Interfaces	3x 4 Bit wide SDIO 3.0 SPDIF In/Out I2S Multichannel Serial-Audio-Interface 2x I2C SPI QSPI GPIOs PWMs 2x CAN
Power Supply	3.3 V_{DC}
Operating System	Linux Yocto Linux Debian Android Windows 10 IoT
Operating Temperature*	0 ÷ 70°C (Consumer) -25 ÷ 85°C (Extended Consumer) -40 ÷ 85°C (industrial)
Dimensions	67.6 x 36.7 x 6.4 mm

*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.

SODIMM-200 CPU-Module with NXP i.MX6 Applications Processors

High-performance i.MX6 CPU module with compact dimensions

SOM-Trizeps-VII-MX6

Available in Industrial Temperature Range

Processor	NXP i.MX M6 Family based on Arm® Cortex®-A9 cores · i.MX 6Solo - 1x Cortex®-A9 core up to 1.0GHz · i.MX 6DualLite - 2x Cortex®-A9 cores up to 1.0GHz · i.MX 6Dual - 2x Cortex®-A9 cores up to 1.0GHz · i.MX 8Quad - 4x Cortex®-A9 cores up to 1.0GHz
Memory	Soldered down LPDDR3-1066 memory up to 2 GB, 64-bit interface
Graphics	Vivante GC3500 2D Hardware accelerator Vivante GC2000 3D Hardware accelerator, supports OpenGL® ES 2.0 3D Dedicated Vector Graphics accelerator, supports OpenVG™ (only i.MX 6Dual and i.MX 6Quad) Supports up to 3 independent displays with i.MX 6Dual and i.MX 6Quad Supports 2 independent displays with i.MX 6DualLite and i.MX 6Solo
Video Interfaces	HDMI® v1.4, 2x LVDS, LCD 24 Bit RGB, MIPI
Video Resolution	LVDS, up to 1920x1200 HDMI®, up to 1080p
Mass Storage	Onboard 4 Bit wide µSD Card Socket or onboard 8 Bit wide eMMC
Networking	1x 100 Mbit Ethernet RGMII PHY or 1000 Mbit Ethernet RGMII interface Optional: WiFi 802.11 a/b/g/n/e/i/h/d/k/r/w, BT 3.0+ EDR
USB	1x USB 2.0 OTG and 1x USB 2.0 Host
PCI-e	1 x PCI-e
Audio	AC'97 Audio Codec with 4/5 wires res. Touch and 4x 12 Bit ADC (2x comparator inputs for battery monitoring); Stereo: Line-in, Mic-in, Speaker-out, Headphone out
Serial Ports	3x UART
Other Interfaces	2x FlexCAN S-ATAII 2x 4 Bit wide SDIO RTC SPDIF Adress-Data-Bus 2x I2C 2x SPI GPIOs 2x PWM
Power Supply	3.3 V_{DC}
Operating System	Linux Android Windows Embedded Compact 7, 2013 Windows 10 IoT Core
Operating Temperature*	-40 ÷ 85°C (industrial) -20 ÷ 85°C (Extended Consumer) 0 ÷ 70°C (Consumer)
Dimensions	67.6 x 36.7 x 6.4 mm

*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 Board for Trizeps VII SOMs

Multifunctional Carrier Board which supports the complete functions of the Trizeps VII SOMs

Carrier-Trizeps-ConXT

Available in Industrial Temperature Range

Processor	Defined by compatible Trizeps SODIMM SOMs · NXP i.MX 6 Quad, Dual, DualLite, Solo, SoloX Arm® Cortex A9 up to 1.0 GHz on Trizeps VII SOM
Video Interfaces	RGB, LVDS, Dual LVDS
Mass Storage	SD Card Socket
Networking	2x 10/100 Mbit Ethernet RJ45 Connector Wireless functionalities depend on Trizeps SOM: · Trizeps VII: Onboard WiFi BT Modul, IEEE 802.11 a/b/g/n/e/i/h/d/k/r/w, +18 dBm, 72 Mbps (20 MHz) and up to 150 Mbps (40 MHz), BT 3.0+ DER
USB	USB2.0 Host, USB2.0 OTG
Audio	2.6W Audio Amplifier (pin header) Microphone (pin header)
Serial Ports	1x RS232, 1x RS232/422/485
Other Interfaces	2x CAN galvanic isolated, 12/24V IOs (4x inputs (3 with ADC), 4x outputs), analog PAL camera (Cinch), UPS (Uninterruptible Power Supply), RTC with battery, 2x LED, I2C, GPIOs
Power Supply	Industrial +12 up to +24V supply
Operating System	Windows Embedded Compact Linux Debian Windows 10 IoT
Operating Temperature*	-20 ÷ 85°C
Dimensions	174 mm x 104 mm x 20 mm

*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 Board for Trizeps SODIMM SOMs

Carrier Board for Trizeps VII / VIII / VIII Mini / VIII Nano / VIII Plus SOMs

Carrier-Trizeps-iP5-Base

Available in Industrial Temperature Range

Processor	Defined by compatible Trizeps SODIMM SOMs · NXP i.MX 6 Quad, Dual, DualLite, Solo, SoloX Arm® Cortex A9 up to 1.0 GHz on Trizeps VII SOM · NXP i.MX 8M Arm® Cortex A53 up to 1.5 GHz, up to Quad Core, integrated Arm® Cortex M4 on Trizeps VIII SOM · NXP i.MX 8M Mini Arm® Cortex A53 up to 1.8 GHz, up to Quad Core, integrated Arm® Cortex M4 on Trizeps VIII Mini SOM · NXP i.MX 8M Nano Arm® Cortex A53 up to 1.5 GHz, up to Quad Core, integrated Arm® Cortex M7 on Trizeps VIII Nano SOM · NXP i.MX 8M Plus Arm® Cortex A53 up to 1.8 GHz, up to Quad Core, integrated Arm® Cortex M7 on Trizeps VIII Plus SOM
Video Interfaces	RGB, LVDS, Dual LVDS, HDMI® (with Trizeps VII, Trizeps VIII, Trizeps VIII Plus)
Mass Storage	µSD Card Socket
Networking	10/100 Mbit Ethernet RJ45 Connector Wireless functionalities depend on Trizeps SOM: · Trizeps VII: Onboard WiFi BT Modul, IEEE 802.11 a/b/g/n/e/i/h/d/k/r/w, +18 dBm, 72 Mbps (20 MHz) and up to 150 Mbps (40 MHz), BT 3.0+ EDR · Trizeps VIII and Trizeps VIII Mini: Onboard WiFi-BT module, WiFi 2.4GHz/5Ghz, 802.11 a/b/g/n/ac 2x2 MU-MIMO / BT 5.0
USB	USB2.0 Host, USB2.0 OTG
Audio	SL2-40 pin header: stereo headphone (16R and 32R), speaker (Mono, 8R), LineIn, microphone
Serial Ports	RS232 and RS485 via D-SUB SL2-40 pin header: 2x UART
Other Interfaces	4 wire resistive touch interface, Realtime Clock with Backup Cap or battery, LED, 3-Axis 12-bit/8-bit digital accelerometer, temp. sensor, SATA II connector, I2C extension header, reset and user tactile switch, powerfail detection, CAN 1x 40-pin extension connector: GPIOs (1x with PWM), SPDIF (out and in), 2x CAN, SDIO, I2C, 3 x ADC
Power Supply	Industrial +12 up to +24V supply
Operating System	Linux Yocto Linux Debian Android Windows 10 IoT
Operating Temperature*	-20 ÷ 85°C
Dimensions	118.5 mm x 77.6 mm x 23.4 mm

*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 Board for Trizeps SODIMM SOMs

Carrier Board for Trizeps VII / VIII / VIII Mini / VIII Nano / VIII Plus SOMs

Carrier-Trizeps-pConXS

Available in Industrial Temperature Range

Processor	Defined by compatible Trizeps SODIMM SOMs · NXP i.MX 6 Quad, Dual, DualLite, Solo, SoloX Arm® Cortex A9 up to 1.0 GHz on Trizeps VII SOM · NXP i.MX 8M Arm® Cortex A53 up to 1.5 GHz, up to Quad Core, integrated Arm® Cortex M4 on Trizeps VIII SOM · NXP i.MX 8M Mini Arm® Cortex A53 up to 1.8 GHz, up to Quad Core, integrated Arm® Cortex M4 on Trizeps VIII Mini SOM · NXP i.MX 8M Nano Arm® Cortex A53 up to 1.5 GHz, up to Quad Core, integrated Arm® Cortex M7 on Trizeps VIII Nano SOM · NXP i.MX 8M Plus Arm® Cortex A53 up to 1.8 GHz, up to Quad Core, integrated Arm® Cortex M7 on Trizeps VIII Plus SOM
Mass Storage	SD Card Socket
Networking	10/100/1000 Mbit Ethernet RJ45 Connector Wireless functionalities depend on Trizeps SOM: · Trizeps VII: Onboard WiFi BT Modul, IEEE 802.11 a/b/g/n/e/i/h/d/k/r/w, +18 dBm, 72 Mbps (20 MHz) and up to 150 Mbps (40 MHz), BT 3.0+ EDR · Trizeps VIII and Trizeps VIII Mini: Onboard WiFi-BT module, WiFi 2.4GHz/5Ghz, 802.11 a/b/g/n/ac 2x2 MU-MIMO / BT 5.0
USB	USB2.0 Host, USB2.0 OTG, USB2.0 touch interface, USB2.0 Header
PCI-e	Mini PCIe Half-/Full Size card edge connector, combined with nano SIM card slot
Video Interfaces	RGB, LVDS, Dual LVDS, HDMI® (with Trizeps VII, Trizeps VIII, Trizeps VIII Plus)
Audio	3.5mm Stereo Jack, Digital Microphone Connector SL2-40 pin header: stereo headphone (16R and 32R), speaker (Mono, 8R), LineIn, microphone
Serial Ports	RS232 via D-SUB SL2-40 pin header: 2x UART
Other Interfaces	4 wire resistive touch interface, Realtime Clock with Backup Cap or battery, LED, 3-Axis 12-bit/8-bit digital accelerometer, temp. sensor, SATA II connector, I2C extension header, reset and user tactile switch, powerfail detection, analog BNC / Mini BNC parallel camera interface, MiPi camera connector 1x 40-pin extension connector: GPIOs (1x with PWM), SPDIF (out and in), 2x CAN, SDIO, I2C, 3 x ADC
Power Supply	Industrial +12 up to +24V supply
Operating System	Linux Yocto Linux Debian Android Windows 10 IoT
Operating Temperature*	-20 ÷ 85°C
Dimensions	118.5 mm x 84.0 mm x 43.0 mm

*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.

SODIMM 200 Carrier Board for Trizeps SOMs

SODIMM 200 Carrier Board supporting Trizeps VII and Trizeps VIII Nano/Mini/Plus SOMs

Carrier-Trizeps-pConXS-III

Available in Industrial Temperature Range

Processor	Depends on compatible Trizeps SODIMM 200 SOMs · NXP i.MX 6 Quad, Dual, DualLite, Solo, SoloX Arm®® Cortex A9 up to 1.0 GHz on Trizeps VII SOM · NXP i.MX 8M Arm® Cortex A53 up to 1.5 GHz, up to Quad Core, integrated Arm® Cortex M4 on Trizeps VIII SOM · NXP i.MX 8M Mini Arm® Cortex A53 up to 1.8 GHz, up to Quad Core, integrated Arm® Cortex M4 on Trizeps VIII Mini SOM · NXP i.MX 8M Nano Arm® Cortex A53 up to 1.5 GHz, up to Quad Core, integrated Arm® Cortex M7 on Trizeps VIII Nano SOM · NXP i.MX 8M Plus Arm® Cortex A53 up to 1.8 GHz, up to Quad Core, integrated Arm® Cortex M7 on Trizeps VIII Plus SOM
Mass Storage	SD card socket
Networking	Wireless functionalities depend on Trizeps SOM: · Trizeps VII: Onboard WiFi BT Modul, IEEE 802.11 a/b/g/n/e/i/h/d/k/r/w, +18 dBm, 72 Mbps (20 MHz) and up to 150 Mbps (40 MHz), BT 3.0+ EDR · Trizeps VIII and Trizeps VIII Mini/Plus: Onboard WiFi-BT module, WiFi 2.4GHz/5Ghz, 802.11 a/b/g/n/ac 2x2 MU-MIMO / BT 5.0
USB	1x USB 3.0 OTG and 1x USB 2.0 Host via USB A connectors, 3x USB 2.0 Host via internal connectors
PCI-e	Mini PCIe Half-/Full Size card edge connector, combined with nano SIM card slot
Video Interfaces	LVDS (KuK Modis Standard), Dual-LVDS, 18 Bit parallel RGB display port, HDMI® (with Trizeps VII, Trizeps VIII, Trizeps VIII Plus), capacitive touch, resistive touch
Audio	3.5 mm stereo audio head-phone jack SL2-40 pin header: stereo headphone (16R and 32R), speaker (Mono, 8R), LineIn, microphone
Serial Ports	RS232 D-Sub i-MOD FFC connectors: UART SL2-40 pin header: UART
Other Interfaces	Realtime Clock with Backup Cap or battery LED 3-Axis 12-bit/8-bit digital accelerometer digital temperature sensor reset and user tactile switch powerfail detection MIPI camera connector analog BNC / Mini BNC parallel camera interface (optional) 2x CAN via i-MOD FFC connector or SL2-40 pin header i-MOD FFC connectors: I2C, resistive Touch SL2-40 pin header: Power, GPIOs (1x with PWM), SPDIF (out and in), SDIO, I2C, 3x ADC
Power Supply	Industrial +12 up to +24V supply
Operating System	Linux Yocto Linux Debian Android Windows 10 IoT
Operating Temperature*	-20 ÷ 85°C
Dimensions	133.0 x 93.5 x 25.0 mm

*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.

HMI for Trizeps SODIMM SOMs

HMI with Trizeps SODIMM SOM technology which supporting Trizeps CPU modules

DEV-KIT-Trizeps-i-PAN-T7-II

Available in Industrial Temperature Range

Processor	Depends on compatible Trizeps SODIMM SOMs · NXP i.MX 6 Quad, Dual, DualLite, Solo, SoloX Arm®® Cortex A9 up to 1.0 GHz on Trizeps VII SOM · NXP i.MX 8M Arm® Cortex A53 up to 1.5 GHz, up to Quad Core, integrated Arm® Cortex M4 on Trizeps VIII SOM · NXP i.MX 8M Mini Arm® Cortex A53 up to 1.8 GHz, up to Quad Core, integrated Arm® Cortex M4 on Trizeps VIII Mini SOM · NXP i.MX 8M Nano Arm® Cortex A53 up to 1.5 GHz, up to Quad Core, integrated Arm® Cortex M7 on Trizeps VIII Nano SOM · NXP i.MX 8M Plus Arm® Cortex A53 up to 1.8 GHz, up to Quad Core, integrated Arm® Cortex M7 on Trizeps VIII Plus SOM
Graphics	Depends on compatible Trizeps SODIMM SOMs
Video Interfaces	MIPI-CSI Camera interface connector
Video Resolution	7.0 inch LVDS Display, IPS technology, resolution 1024 x 600, LED lifetime min. 30k hours, typ. 500 cd/qm brightness, P-Cap (Projected Capacitive touch screen), Glass thickness 1.8 mm
Mass Storage	µSD Card Socket
Networking	Gigabit Ethernet RJ45 connector Wireless functionalities depend on Trizeps SODIMM SOMs: · Trizeps VII: Onboard WiFi BT Modul, IEEE 802.11 a/b/g/n/e/i/h/d/k/r/w, +18 dBm, 72 Mbps (20 MHz) and up to 150 Mbps (40 MHz), BT 3.0+ EDR · Trizeps VIII and Trizeps VIII Mini/Plus: Onboard WiFi-BT module, WiFi 2.4GHz/5Ghz, 802.11 a/b/g/n/ac 2x2 MU-MIMO / BT 5.0
USB	USB 2.0 Host, µUSB 2.0 OTG / USB via i-MOD extension connector
Audio	3,5 mm Headset Jack for Microphone and Headphone Solderpads for Speaker (2.6 W Audio Amplifier), Headphone, Microphone
Serial Ports	UART via i-MOD extension connector
Other Interfaces	I2C, CAN, Keys via i-MOD extension connectors SPI via solderpads Realtime Clock with Backup Cap LED Powerfail Detection
Power Supply	Industrial +12 up to 24V supply / Power over Ethernet (POE) on request
Operating System	Microsoft Windows 10 IoT Linux Android
Operating Temperature*	-20 ÷ 70°C
Dimensions	178.0 x 108.7 x 27.6 mm (include housing)

*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.

HMI for Trizeps SODIMM SOMs

HMI with Trizeps SODIMM SOM technology which supporting Trizeps CPU modules

DEV-KIT-Trizeps-i-PAN-7

Available in Industrial Temperature Range

Processor	Depends on compatible Trizeps SODIMM SOMs, i.e. · NXP i.MX 6 Quad, Dual, DualLite, Solo, SoloX Arm® Cortex A9 up to 1.0 GHz on Trizeps VII SOM
Graphics	Depends on compatible Trizeps SODIMM SOMs
Video Resolution	7.0 inch 18bpp Display, resolution 800 x 480
Mass Storage	SD Card Socket
Networking	10/100 MBit Ethernet RJ45 connector Wireless functionalities depend on Trizeps SODIMM SOMs
USB	USB 2.0 Host, USB 2.0 OTG
Audio	3.5 mm Headset Jack for Microphone and Headphone Solderpads for Speaker (2.6 W Audio Amplifier), Headphone, Microphone
Serial Ports	3x UART via extension connector
Other Interfaces	Inputs/Outputs, I2C, CAN, SDIO, Stereo Headphone Output, Microphone Input, LED, Realtime Clock, Powerfail Detection, GPIO
Power Supply	Industrial +12 up to 24V supply
Operating System	Microsoft Windows Embedded Compact Linux Android
Operating Temperature*	'0 ÷ 70°C / -20 ÷ 85°C on request
Dimensions	169.4 x 108.4 x 18.2 mm (include housing)

*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.

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

Embedded NUC™

3.5"

Pico-ITX

other SBCs

3.5" SBC with Rockchip RK3568 SoC

Up to 4K Multimedia Arm® Computing with Wireless and Wired Connectivity

SBC-3.5-RK3568

Processor	Rockchip RK3568 processor · 4x Cortex®-A55 cores, up to 2.0GHz, 64-bit architecture, with Neural Processing Unit (NPU)
Memory	Soldered-down DDR4-3200 memory, up to 4GB
Graphics	Mali-G52 1-Core-2EE GPU · OpenGL ES 1.1/2.0/3.2 · Vulkan 1.0 and 1.1 · OpenCL 2.0 Full Profile Embedded Video CODEC · H.265/H.264/VP9 4K@60fps HW decoding · VP8/VC1/MPEG-4/MPEG-2/MPEG-1 1080p @60fps HW decoding · H.265/H.264 1080p@60fps HW encoding Supports 3 independent video outputs
Video Interfaces	HDMI® LVDS single / dual channel interface eDP 1.3 interface
Video Resolution	HDMI®: up to 4K x 2K @60Hz LVDS: up to 1920 x 1080 @60Hz eDP: up to 4096 x 2160 (4K)
Mass Storage	eMMC 5.1 drive soldered on-board, up to 64GB (first boot device) microSD slot (second boot device) I2C flash QSPI flash (factory option)
Networking	2x Gigabit Ethernet ports, implemented using TI DP83867 Ethernet PHY on RGMII interface coming from SoC Optional on-boad M.2 1216 module WLAN 802.11 a/b/g/n/ac + BT 5.0 M.2 Socket 2 Key B for LTE module + microSIM card slot on-board
USB	2x USB 3.0 Type-A 1x USB 2.0 Type-A 1x USB 2.0 OTG micro-AB muxed with one USB 3.0 (used for Deep Recovery) 1x USB 2.0 internal pin header 1x USB 2.0 internal pin header, dedicated to touch screen
Audio	TRRS combo audio jack (stereo mic in, stereo line out) Mono speaker out (amplified 1.3Watt @8Ohm) on internal header 1x PDM signal ports on internal header
Serial Ports	1x debug UART 1x JTAG port 2x 4 wire RS-232 / RS-422 / RS-485 (multistandard transceivers) on internal header 2x 2 wire TTL UART ports on internal header
Other Interfaces	2x 2-lanes MIPI-CSI camera connector or 1x 4-lanes M.2 Socket 2 Key M for AI accelerator modules Dedicated connector for I2C touch screen controller 8x GPIOs or 4x GPIOs + 4 A_{DC} (factory configuration alternatives) 2x CAN, 1x I2C, 1x SPI
Power Supply	+12V_{DC} .. +24V_{DC} range RTC battery
Operating System	Linux Yocto Android
Operating Temperature*	0°C to +60°C (Commercial 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 the 11th Gen Intel® Core™ and Intel® Celeron® (Codename: Tiger Lake UP3) Processors

11th Gen Intel® Core™ Edge Compute with power-efficient compute and graphics

SBC-3.5-TGL-UP3

Available in Industrial Temperature Range

Processor	**Intel® Core™ i7-1185G7E**, Quad Core @2.8GHz (4.4GHz Turbo) with HT, 12MB Cache, 28W TDP (12W cTDP) **Intel® Core™ i5-1145G7E**, Quad Core @2.6GHz (4.1GHz Turbo) with HT, 8MB Cache, 28W TDP (12W cTDP) **Intel® Core™ i3-1115G4E**, Dual Core @3.0GHz (3.9GHz Turbo) with HT, 6MB Cache, 28W TDP (12W cTDP) **Intel® Celeron® 6305E**, Dual Core @1.8GHz, 4MB Cache, 15W TDP **Intel® Core™ i7-1185GRE**, Quad Core @2.8GHz (4.4GHz Turbo) with HT, 12MB Cache, with IBECC, 28W TDP (12W cTDP) – Industrial **Intel® Core™ i5-1145GRE**, Quad Core @2.6GHz (4.1GHz Turbo) with HT, 8MB Cache, with IBECC, 28W TDP (12W cTDP) - Industrial **Intel® Core™ i3-1115GRE**, Dual Core @3.0GHz (3.9GHz Turbo) with HT, 6MB Cache, with IBECC, 28W TDP (12W cTDP) - Industrial
Memory	2x DDR4-3200 SODIMM slots Up to 64GB with IBECC supported only with Intel® Core™ Industrial SoCs
Graphics	Up to two video decode boxes (VDBoxes) for enhanced video stream capabilities Support for up to 48 simultaneous 1080p streams ingestion Support for up to four independent displays at up to 4K60 HDR resolution or one display at 8K resolution
Video Interfaces	2x Multimode DisplayPort 1.4, on Dual DP++ connector 2x Multimode Display Port 1.4 on USB Type-C connectors (alternate mode) 1x eDP 1.3 or Single/Dual-Channel 18-/24-bit LVDS interface
Video Resolution	DP, eDP: Up to 5120x3200 @60Hz 24bpp / 7680x4320 @60Hz 30bpp with DSC HDMI® 1.4: Up to 4Kx2K 24-30Hz 24bpp
Mass Storage	M.2 SATA SSD slot (socket 2 Key B type 2242/3042) ** M.2 NVMe slot (socket 3 Key M type 2280) PCIe Gen4 supported
Networking	2x NBase-T Ethernet interfaces, supporting 2.5Gb Ethernet connection, managed by as many Intel® i225 2.5GbE controllers M.2 WWAN slot (socket 2 Key B type 2242/3042) coupled to on-board Micro-SIM slot. ** M.2 WiFi/BT slot (socket 1 Key E type 2230)
USB	2x SuperSpeed USB 10Gbps ports on Dual type-A socket 2x SuperSpeed USB 20Gbps ports on USB type-C slots 2x USB 2.0 on pin header
Audio	HD audio codec / Cirrus Logic CS4207 Mic In, Line Out and S/PDIF Out, on pin header
Serial Ports	2x RS-232/RS-422/RS-485 UARTS software configurable, on pin header
Other Interfaces	2x Expansion M.2 slot (socket 3 Key M type 2280) with 4x PCIe Gen3 lanes 8x GPIOs, 2x I2C, SPI connectors FAN connector RST_BTN#, PWR_BTN# and activity LED signals on pin header Optional TPM 2.0 on-board
Power Supply	+12V_{DC} .. +24V_{DC} range Cabled coin cell battery for RTC
Operating System	Microsoft® Windows 10 IoT Enterprise LTSC 2021 Linux (Kernel ≥ 5.4 version)
Operating Temperature*	0°C ÷ +60°C (Commercial version) -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 depend on the application, enclosure, and/or environment. Each customer must 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.

Pico-ITX SBC with the Intel® Atom® X6000E Series, Intel® Pentium® and Celeron® N and J Series (Codename: Elkhart Lake) SoCs

Compact Size & High Performance SBC with a multicore SoC

SBC-pITX-EHL

Available in Industrial Temperature Range

Processor	Intel® Celeron® J6413 Quad Core @ 1.8GHz (3GHz Turbo) 10W TDP Intel® Celeron® N6211 Dual Core @1.2GHz (3GHz Turbo) 6.5W TDP Intel® Pentium® J6426 Quad Core @2.0GHz (3GHz Turbo) 10W TDP Intel® Pentium® N6415 Quad Core @1.2GHz (3GHz Turbo) 6.5W TDP Intel® Atom® x6211E Dual Core @1.3GHz (3GHz Turbo) 6W TDP w/ IBECC and IHS - Industrial Intel® Atom® x6413E Quad Core @1.5GHz (3GHz Turbo) 9W TDP w/ IBECC and IHS - Industrial Intel® Atom® x6425E Quad Core @2.0GHz (3GHz Turbo) 12W TDP w/ IBECC and IHS - Industrial Intel® Atom® x6212RE Dual Core @1.2GHz (no Turbo) 6W TDP w/ IBECC, IHS and TCC – Industrial Intel® Atom® x6414RE Quad Core @1.5GHz (no Turbo) 9W TDP w/ IBECC, IHS and TCC – Industrial Intel® Atom® x6425RE Quad Core @1.9GHz (no Turbo) 12W TDP w/ IBECC, IHS and TCC – Industrial (*) IHS: Integrated heat spreader; TCC: Time Coordinated Computing
Memory	Soldered down LPDDR4-3200 memory, up to 16GB with IBECC supported only with Atom® industrial SoCs Speed: 4267MT/s single rank (1GB / 2GB / 4GB / 8GB), 3733MT/s dual rank (16GB)
Graphics	Up to 3 independent displays Integrated Intel® 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	2x Multimode DisplayPort 1.4, on Dual DP++ Connector 1x eDP 1.3 or Single/Dual-Channel 18-/24-bit LVDS interface
Video Resolution	Up to 4096x2160 @60Hz
Mass Storage	M.2 SATA SSD slot (Socket 2 Key B Type 2242/3042).**
Networking	M.2 WWAN Slot for Modems (Socket 2 Key B Type 2242/3042) coupled to on-board Nano SIM slot. **
USB	Dual SuperSpeed USB 10Gbps Standard-A connector Dual USB 2.0 pin header
Audio	HD Audio codec / Cirrus Logic CS4207 Mic In, Line Out and S/PDIF Out, on pin header
Serial Ports	2x RS-232/RS-422/RS-485 UARTs (software configurable) on pin header
Other Interfaces	8x GPIOs, I2C, SPI connectors 2x CAN connector Fan connector RST_BTN#, PWR_BTN# and activity LED signals on pin header Optional TPM 2.0 on-board
Power Supply	+12V_{DC} Cabled coin cell battery for RTC
Operating System	Microsoft® Windows 10 IoT Enterprise Linux Yocto
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.
** SATA SSD and WWAN functionalities share the same slot and are therefore mutually exclusive.

3.5" SBC with Rockchip PX30 SoC

High-performance Android and Linux CPU designed for digital multimedia applications

SBC-3.5-PX30

Processor	Rockchip PX30 processor, 4x Cortex®-A35 cores
Max Cores	4
Memory	Soldered-down DDR3L memory, up to 4GB total, 32-bit interface
Graphics	Mali-G31 GPU with High performance dedicated 2D processor OpenGL ES 1.1 / 2.0 / 3.2, Vulkan 1.0, OpenCL 2.0, DX11 FL9_3 Embedded VPU, able to offer: · Multi-format 1080p 60fps video decoders (H.265, H.264, VC-1, MPEG-4, VP8) · H.264 1080p@30fps HW encoding Supports 2 independent video outputs
Video Interfaces	LVDS Single / Dual Channel interface HDMI® interface
Video Resolution	HDMI® Up to 1920x1080p LVDS Up to 1280x800
Mass Storage	eMMC 5.1 Drive soldered on-board, up to 64GB Optional microSD Slot
Networking	1x 10/100 Ethernet port Optional M.2 Socket 1 Key E Slot for WiFi/BT LE external modules Optional miniPCI-e slot (USB interface only) for external modem modules
USB	3x USB 2.0 Host ports on standard Type-A slots USB Recovery internal connector 2x USB 2.0 ports on internal pin headers
Audio	PMIC embedded Audio Codec Stereo audio out on internal header TRRS combo jack for Headphone and Mic In Line Out audio jack or I2S Audio Class-D amplifier with stereo out available on internal connector (factory alternatives) Buzzer on-board
Serial Ports	1x TTL or RS-232 port (factory alternative) 1x Debug UART 1x TTL or RS-232 port (factory alternatives to microSD slot) 1x RS-485 port on internal connector 1x CAN port
Other Interfaces	miniSIM Slot for USB Modem modules on miniPCI-e form factor Optional CSI Camera connector Ultra-low Power RTC Trusted Secure Element 4-Channel LED Driver connector Microcontroller Programmable Interfaces: 2x 4-Wire UARTs on internal connector 2x 2-Wire UARTs on internal connector 1x SPI connector 2x I2C on internal connector 8-channel timer connector 16x GPIs @3.3V (5V tolerant) 16x GPOs @3.3V
Power Supply	+12V_{DC} ÷ +24 V_{DC} RTC battery
Operating System	Linux Yocto Android
Operating Temperature*	0°C ÷ +60°C (Commercial Temperature range) -20°C÷ +85°C (Extended Temperature range)
Dimensions	146 x 102 mm (3.5" form factor)

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

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

Full connectivity on powerful AMD Ryzen™ platform

SBC-3.5-RV1000

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), 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 2x PCI-e x1 on Gigabit Ethernet Controllers
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
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.

3.5" SBC with NXP i.MX 8M Mini Processors

Heterogeneous multi-core processing architecture for edge node computing and multimedia

SBC-3.5-MX8M-Mini

Available in Industrial Temperature Range

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 shielded ultra-small dual Band WiFi 802.11 a/b/g/n/ac with Bluetooth 5.0 module onboard Optional soldered on-board LTE Cat 4 Modem with microSIM slot or Telenor eSIM with 5MB Bundle
USB	2x USB 2.0 Host ports on Type-A socket 2x USB 2.0 Host ports on internal pin header 1x USB Host or client 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, 250mA) · 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 Onboard Buzzer (Comm. temp. range only) Optional Ultra Low Power RTC
Power Supply	+12V_{DC} ÷ +24V_{DC}
Operating System	Yocto Android (planned)
Operating Temperature*	0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (industrial version, limited to -30°C ÷ +85°C with WiFi/BT module on-board)
Dimensions	146x102 mm (3.5" form factor)

*Measured at any point of SECO standard heatsink 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 Applications Processors

Ideal for certified performance requirements and safety efficient

SBC-3.5-MX8X

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, +12V_{DC} or +24 V_{DC} 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 NXP i.MX8 Applications Processors

Industrial Arm® solution for IoT edge computing applications

SBC-3.5-MX8

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	HDMI® output (Micro) (HDMI® 2.0a Tx interface) HDMI® input (HDMI® 2.0a Rx interface)
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.

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

x86 solution designed for IoT edge computing in harsh environments

SBC-pITX-APL

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 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/MJPEG formats
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 2260 / 3042 (excludes WWAN modules) microSD Card slot (combo with miniSIM slot)
Networking	Up 2x Gigabit Ethernet connectors WWAN (modem) M.2 Socket 2 Key B 2260 / 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 Rockchip RK3399 SoC

The Right Balance of Graphic/Computing Performance and Cost

SBC-3.5-RK3399

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 (HDMI® 4K interface) DP 1.2 interface on USB Type-C connector (alternate mode)
Video Resolution	HDMI®, DP: Up to 4K x 2K @60Hz (HDMI® DP: Up to 4K x 2K @60Hz) eDP: Up to 4096 x 2160 (4K) LVDS: Up to 1920 x 1080 @60Hz
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 (factory options) Up to 2x RS-485 (factory options) Up to 2x CAN ports (factory options).
Other Interfaces	Optional 2x MIPI-CSI Camera connectors, 4-lanes CSI input each one miniSIM slot or eSIM for on-board optional modem I/O Connector #1 with I2C interface + 1x Open-Drain + (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 SPI external interface (alternative to CAN Controller #1) Optional LED Driver Optional Trust Secure Element on-board
Power Supply	+12V_{DC} ÷ +24 V_{DC} RTC battery
Operating System	Linux Yocto Android (under development)
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.

3.5" SBC with NXP i.MX 8M Applications Processors

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

SBC-3.5-MX8M

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 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.

embedded NUC™ SBC with Intel® Atom® X Series, Celeron® J/N Series, Pentium® N Series (Codename: Apollo Lake) Processors

Flexible and expandable full industrial x86 eNUC SBC

SBC-eNUC-APL

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.

embedded NUC™ SBC with N-series Intel® Pentium® / Celeron® and x5-Series Atom® SOCs

Multifunctional SBC on the eNUC form factor

SBC-eNUC-BSW

CPU
N-series Intel® Pentium® and Celeron® SOCs

GRAPHICS
Integrated Graphics, three independent display support

CONNECTIVITY
2x GbE; CIR sensor; 8x GPI/Os

MEMORY
2 x DDR3L SO-DIMM Slots with Dual Channel Support, up to 8GB DDR3L-1600

SBC with NXP i.MX 6 Processor

Flexible, Open-source, Industrial SBC

SBC-MX6

Available in Industrial Temperature Range

CPU
Single-, Dual- and Quad- Core (Arm® Cortex® A9 Cores)

GRAPHICS
2D/3D dedicated graphics processors

CONNECTIVITY
Wi-Fi add-on module; up 28 GPI/Os; CAN Bus

MEMORY
Up to 2GB DDR3L on-board

Pico-ITX SBC with Intel® Atom® E3800 (Codename: Bay Trail) Processors SoCs and ECC DDR3L memory

Limitless Embedded applications

SBC-pITX-BT

Available in Industrial Temperature Range

CPU
Intel® Atom® E3800 family of System-on-Chip

GRAPHICS
Integrated Intel® HD Graphics controller

CONNECTIVITY
2x GbE; Half miniPCI-e slot; 8x GPI/Os

MEMORY
Up to 8GB DDR3L ECC SO-DIMM

Single Board Computer (SBC) based on NXP i.MX6ULL processor

Optimized SBC for small sized HMI solutions

SBC-NALLINO-MX6ULL

Available in Industrial Temperature Range

CPU
NXP i.MX 6ULL

CONNECTIVITY
1x 100MbE, 2x USB, RS232, RS485, CAN

MEMORY
Soldered on Board DDR3L memory

Modular Single Board Computer with i.MX 8M Mini/Nano

Modularly expandable ready to use Single Board Computer (SBC)

SBC-SBCSOM-MX8M-Mini-Nano

Available in Industrial Temperature Range

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 Full featured, 4x Cortex®-A53 cores up to 1.8GHz i.MX 8M Mini Dual Lite – Full featured, 2x Cortex®-A53 cores up to 1.8GHz i.MX 8M Mini Solo Lite – Full featured, 1x Cortex®-A53 cores up to 1.8GHz
Memory	up tp 8 GB 32 bit LPDDR4
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 HDMI®
Video Resolution	Up to 1920x1080p60, 24bpp
Mass Storage	Onboard 4 Bit wide µSD Card Socket or onboard 8 Bit wide eMMC, eMMC
Networking	1x GbEthernet interfaces WLAN 2.4GHz/5Ghz, 802.11 a/b/g/n/ac 2x2 MU-MIMO / BT 5.0 mPCIe socket for modems
USB	1x USB 2.0 Type-C 1x USB 2.0 Type-A
Audio	Audio Codec
Other Interfaces	System Connector 1: Power-Supply, 2x UART or SPI, I2C, USB, SDIO, MIPI-DSI (4ch), MIPI-CSI (4ch), PCie, GPIO (24) System Connector 2: Power-Supply, 2x UART, QSPI, I2C, USB, Speaker, Headphone, Line-In, Microphone, SPDIF, I2S, SIOP (Ethernet, fiber), GPIO (42) FFC Connectors: i-MOD UART (RS232/485), i-MOD USB/I2C, KUK-Modis (LVDS/MIPI), MIPI-CSI, Camera, Speaker
Power Supply	12 ÷ 24 V_{DC}
Operating System	Windows 10 IoT Linux Debian Linux Yocto Android
Operating Temperature*	-40°C ÷ 85°C (Industrial), -25°C ÷ 85°C (Extended Consumer), 0 ÷ 70°C (Consumer)
Dimensions	95.0 x 73.0 x 20.0 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.

Single Board Computer (SBC) based on NXP i.MX8M Mini processor

High performance with low power consumption for edge computing

SBC-TANARO-MX8M-Mini

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 Full featured, 4x Cortex®-A53 cores up to 1.8GHz i.MX 8M Mini Dual Lite – Full featured, 2x Cortex®-A53 cores up to 1.8GHz i.MX 8M Mini Solo Lite – Full featured, 1x Cortex®-A53 cores up to 1.8GHz
Memory	1 GB 32 bit LPDDR4
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 MIPI-CSI Camera interface connector
Video Resolution	Up to 1920x1080p60, 24bpp
Mass Storage	eMMC: 4 GB MLC SD slot: 4 bit MMC/SDIO/SD/SDHC
Networking	1x GbEthernet interfaces 1x 100MbEthernet shielded single band WiFi 802.11 b/g/n with BT 4.0 mPCIe (half size) socket for modems
USB	1x USB 2.0 OTG micro-AB up to 2x USB 2.0 Type-A
Audio	1x speaker (connector), 1 W RMS (8Ω) parallel to internal speaker Digital Mic In connector (2x PDM inputs)
Serial Ports	2x RS-232, RS-485
Power Supply	9 ÷ 32 V_{DC}
Operating System	Yocto
CAN Bus	1x CAN (ISO/DIS 11898)
Operating Temperature*	0°C ÷ +60°C
Dimensions	159.0 x 18.0 x 80.0 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.

Single Board Computer (SBC) based on NXP i.MX6 processor

Optimized SBC for small sized HMI solutions

SBC-SANTINOLT-MX6

Processor	NXP i.MX 6 Family, based on Arm® CORTEX-A9 processors: i.MX6S Solo - Single core up to 1 GHz i.MX6DL Dual Lite - Dual core up to 1 GHz per core
Memory	1 GB 32 bit DDR3L
Graphics	2D graphics accelerator OpenGL® ES 2.0 3D graphics accelerator with a shader
Video Interfaces	24-bit parallel RGB interface
Video Resolution	Up to 1024 x 600, 24bpp
Mass Storage	eMMC: 4 GB MLC micro SD slot: 4 bit MMC/SDIO/SD/SDHC
Networking	1x 100MbEthernet
USB	1x USB 2.0 OTG micro-AB 1x USB 2.0 Type-A
Audio	1x speaker (connector), 1 W RMS (8Ω) parallel to internal speaker
Serial Ports	RS-232, RS-485
Power Supply	9 ÷ 32 V_{DC}
Operating System	Yocto
CAN Bus	1x CAN (ISO/DIS 11898)
Operating Temperature*	0°C ÷ +60°C
Dimensions	113.0 x 18.0 x 47.0 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.

Single Board Computer (SBC) based on NXP i.MX6 processor

Optimized SBC for medium sized HMI solutions

SBC-SANTINO-MX6

Processor	NXP i.MX 6 Family, based on Arm® CORTEX-A9 processors: i.MX6S Solo - Single core up to 1 GHz i.MX6DL Dual Lite - Dual core up to 1 GHz per core
Memory	1 GB 32 bit LPDDR4
Graphics	2D graphics accelerator OpenGL® ES 2.0 3D graphics accelerator with a shader
Video Interfaces	18-bit parallel RGB interface
Video Resolution	Up to 1024 x 600, 18bpp
Mass Storage	eMMC: 4 GB MLC SD slot: 4 bit MMC/SDIO/SD/SDHC
Networking	1x 100MbEthernet
USB	1x USB 2.0 OTG micro-AB 1x USB 2.0 Type-A
Audio	1x speaker (connector), 1 W RMS (8Ω) parallel to internal speaker
Serial Ports	2x RS-232, RS-485
Power Supply	9 ÷ 32 V_{DC}
Operating System	Yocto
CAN Bus	1x CAN (ISO/DIS 11898)
Operating Temperature*	0°C ÷ +60°C
Dimensions	138.0 x 18.0 x 80.0 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.

Single Board Computer (SBC) based on NXP i.MX6 processor

Flexible, powerful all-rounder for any demanding applications

SBC-SANTARO-MX6

Processor	NXP i.MX 6 Family based on Arm® Cortex®-A9 cores : i.MX 6 Quad – Full featured, 4x Cortex®-A9 cores up to 1.0GHz i.MX 6 Dual – Full featured, 4x Cortex®-A9 cores up to 1.0GHz i.MX 6 Single – Full featured, 4x Cortex®-A9 cores up to 1.0GHz
Memory	1 GB 64 bit DDR3L
Graphics	Integrated Graphics, with up to 3 separate HW accelerators for 2D, OpenGL® ES2.0 3D OpenVG™ accelerator 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 Interfaces	LVDS Single/Dual Channel connector HDMI® interface
Video Resolution	Up to 1920x1080p60, 24bpp
Mass Storage	eMMC: 4 GB MLC SD slot: 4 bit MMC/SDIO/SD/SDHC
Networking	1x 100MbEthernet
USB	1x USB 2.0 OTG micro-AB 1x USB 2.0 Type-A
Audio	1x speaker (connector), 1 W RMS (8Ω) parallel to internal speaker
Serial Ports	2x RS-232, RS-485
Other Interfaces	2x Digital Input, 2x Digital Output
Power Supply	9 ÷ 32 V_{DC}
Operating System	Yocto
CAN Bus	1x CAN (ISO/DIS 11898)
Operating Temperature*	0°C ÷ +60°C
Dimensions	159.0 x 18.0 x 80.0 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.

Single Board Computer (SBC) based on NXP i.MX6 processor

Our IOT solution: PCIe interface for wireless connectivity and two Ethernet ports

SBC-SANTOKA-MX6

Processor	NXP i.MX 6 Family based on Arm® Cortex®-A9 cores : i.MX 6 Quad Plus – Full featured, 4x Cortex®-A9 cores up to 1.0GHz i.MX 6 Quad – Full featured, 4x Cortex®-A9 cores up to 1.0GHz i.MX 6 Dual – Full featured, 4x Cortex®-A9 cores up to 1.0GHz i.MX 6 Single – Full featured, 4x Cortex®-A9 cores up to 1.0GHz
Memory	1 GB 64 bit DDR3L
Graphics	Integrated Graphics, with up to 3 separate HW accelerators for 2D, OpenGL® ES2.0 3D OpenVG™ accelerator 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 Interfaces	LVDS Single/Dual Channel connector HDMI® interface
Video Resolution	Up to 1920x1080p60, 24bpp
Mass Storage	eMMC: 4 GB MLC SD slot: 4 bit MMC/SDIO/SD/SDHC
Networking	2x 100MbEthernet mPCIe (half size) socket for modems or Wifi/BT
USB	1x USB 2.0 OTG micro-AB up to 2x USB 2.0 Type-A
Audio	1x speaker (connector), 1 W RMS (8Ω) parallel to internal speaker
Serial Ports	2x RS-232, RS-485
Power Supply	9 ÷ 32 V_{DC}
Operating System	Yocto
CAN Bus	1x CAN (ISO/DIS 11898)
Operating Temperature*	0°C ÷ +60°C
Dimensions	159.0 x 18.0 x 80.0 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.

Single Board Computer (SBC) based on NXP i.MX6 processor

Vending / IOT platform with 3G / 4G modem and MDB interfaces

SBC-SANTVEND-MX6

Processor	NXP i.MX 6 Dual up to 1 GHz; based on Arm® Cortex®-A9 cores
Memory	2 GB 32 bit DDR3L
Graphics	Integrated Graphics, with up to 3 separate HW accelerators for 2D, OpenGL® ES2.0 3D OpenVG™ accelerator 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 Interfaces	LVDS Single/Dual Channel connector HDMI® interface
Video Resolution	Up to 1920x1080p60, 24bpp
Mass Storage	eMMC: 4 GB MLC micro SD slot: 4 bit MMC/SDIO/SD/SDHC
Networking	1x 100MbEthernet 2G/3G/4G GPS Modem BT BLE
USB	1x USB 2.0 Type-A
Audio	1x speaker (connector), 1 W RMS (8Ω)
Serial Ports	1x RS-232
Power Supply	10 ÷ 42 V_{DC}
Operating System	Yocto
CAN Bus	1x CAN (ISO/DIS 11898)
Operating Temperature*	0°C ÷ +60°C
Dimensions	160.0 x 18.0 x 95.0 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.

IoT Sensor to Cloud with ESP32-D0WDQ6 Processor

From sensors to Cloud in a single step

SENSE-ESP32

Available in Industrial Temperature Range

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

UDOO BOARDS

The Speed Force turned Mini PC

UDOO BOLT GEAR

A true mobile supercomputer with reality-bending graphics and an ultrafast processor that gives you power to watch 4K 60fps videos on multiple screens at once, run deep neural networks, play the latest AAA games, build robots, explore lifelike VR and AR worlds

HIGHLIGHTS

Processors	AMD Ryzen™ Embedded V1202B	AMD Ryzen™ Embedded V1605B
CPU Cores	Dual Core/Quad Thread @ 2.3GHz (3.2GHZ Boost)	Quad Core/Eight Thread @ 2.0GHz (3.6GHZ Boost)
Graphics	AMD Radeon™ Vega 3 Graphics (3 GPU CU)	AMD Radeon™ Vega 8 Graphics (8 GPU CU)
Multimedia	DirectX® 12, OpenCL™, OpenGL®, The Vulkan® API H.265 Decode & Encode (8-bit), VP9 Decode	

Raising the Maker World to the Next Level

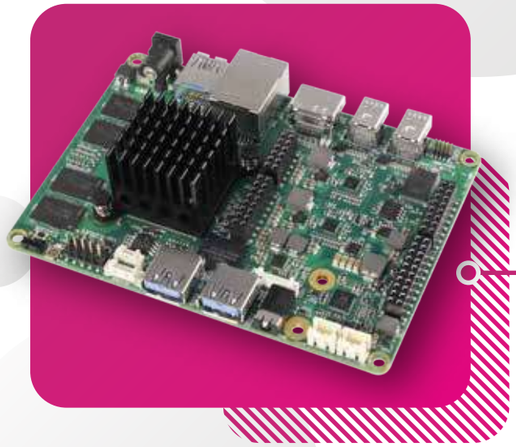
UDOO BOLT

The UDOO BOLT is a quantum leap compared to current maker boards: a portable, breakthrough supercomputer that goes up to 3.6 GHz thanks to the AMD Ryzen™ Embedded V1000 SoC, a top-notch, multicore CPU with a mobile GPU on par with GTX 950M and an integrated Arduino™-compatible platform, all wrapped into one.

HIGHLIGHTS

Processors	AMD Ryzen™ Embedded V1202B	AMD Ryzen™ Embedded V1605B
CPU Cores	Dual Core/Quad Thread @ 2.3GHz (3.2GHZ Boost)	Quad Core/Eight Thread @ 2.0GHz (3.6GHZ Boost)
Graphics	AMD Radeon™ Vega 3 Graphics (3 GPU CU)	AMD Radeon™ Vega 8 Graphics (8 GPU CU)
Multimedia	DirectX® 12, OpenCL™, OpenGL®, The Vulkan® API H.265 Decode & Encode (8-bit), VP9 Decode	

Please visit www.seco.com to find the latest version of these datasheets



The Most Powerful Maker Board Ever

UDOO X86 II

UDOO X86 II is the New PC: the most powerful x86 maker board ever and an Arduino™ Leonardo-compatible platform, all embedded on the same board. On UDOO X86 II you can run all the software available for the PC world, from gaming to video streaming, from graphical editors to professional development platforms, plus all the software or the Arduino™ Leonardo world, including all the sketches, libraries and the official Arduino™ Leonardo IDE

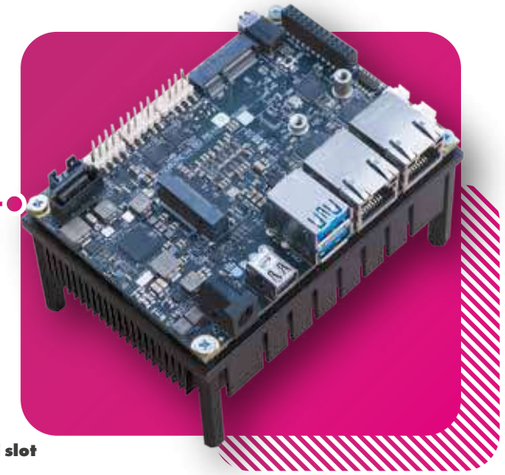
HIGHLIGHTS

Processors	2.24 GHz Intel® Celeron® N3160	2.56 GHz Intel® Pentium® N3710
CPU Cores	4	
Memory	4 GB DDR3L Dual Channel 1600 mHz	8 GB DDR3L Dual Channel 1600 mHz
Mass storage	SATA 3 connector - M.2 Key B 2260 SATA 3 SSD Slot (also X2 PCIex modules) - Micro SD card slot eMMC 32 GB	

The Computer Vision and AI Mini PC

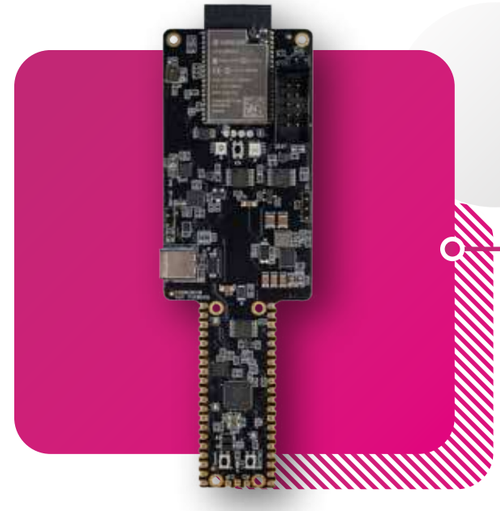
UDOO VISION

UDOO Vision is the Computer Vision and Artificial Intelligence mini PC based on Intel® Atom™ X Series and Arduino-Leonardo microcontroller.



HIGHLIGHTS

Processors	Intel®Atom™ x5-E3940	Intel®Atom™ x7-E3950
CPU Cores	Quad Core @1.6GHz, 2MB L2 Cache, 9,5W TDP	Quad Core @1.6GHz, 2MB L2 Cache, 12W TDP
Memory	4GB - 32-bit Quad-Channel, LPDDR4	8GB - 32-bit Quad-Channel, LPDDR4
Mass storage	M.2 Key B Slot for optional SSD, SATA Gen3, Micro SD card slot	



The World's Most Flexible AI Platform

UDOO KEY

UDOO KEY is a fully programmable board combining Raspberry Pi RP2040 and ESP32 into a single powerful solution. It allows you to use either RP2040, ESP32 or both to build any AI projects on your terms.

HIGHLIGHTS

Microcontrollers	ESP32-WROVER-E	RP2040
Memory	8 MB PSRAM	264 KB SRAM
Flash Storage	16 MB Internal flash,	64 M-bit External QSPI Flash
Connectivity	Wi-Fi/BT/BLE	

UDOO BOARDS

FANLESS EMBEDDED COMPUTERS

SECO off-the-shelf solutions for easier system integration

Touch-display solutions

Expertise in assembly services

Mechanical design

Modular fanless embedded PC with 13th Gen Intel® Core™ processors

Industrial PC with PCI express supporting GPUs and AI accelerators for AI applications

Palladio 500 RPL

Processor	13th Gen Intel® Core™ Processors (codename: Raptor Lake-P): • **Intel® Core™ i3-13100E**, 3.3~4.4 GHz, 4 processor cores, 8 threads - 60 W TDP • **Intel® Core™ i3-13100TE**, 2.1~4.1 GHz, 4 processor cores, 8 Threads - 35 W TDP • **Intel® Core™ i5-13500E**, 2.4~4.6 GHz, 14 processor cores, 20 Threads - 65 W TDP • **Intel® Core™ i5-13500TE**, 1.3~4.5 GHz, 14 processor cores, 20 Threads - 35 W TDP • **Intel® Core™ i7-13700E**, 1.9~5.1 GHz, 16 processor cores, 24 Threads - 65 W TDP • **Intel® Core™ i7-13700TE**, 1.1~4.8 GHz, 16 processor cores, 24 Threads - 35 W TDP • **Intel® Core™ i9-13900E**, 1.8~5.2 GHz, 24 processor cores, 32 Threads - 65 W TDP • **Intel® Core™ i9-13900TE**, 1.0~5.0 GHz, 24 processor cores, 32 Threads - 35 W TDP
Memory	Up to 32 GB SO-DIMM DDR4 2666 (optional)
Graphics	Up to Intel® UHD graphics 770 (processor dependent)
Video Interfaces	2x DisplayPort
Video Resolution	Up to 4K @60 Hz
Mass Storage	1x M.2 2280 (SATA) 1x M.2 2280 (PCIe Gen 4 x4; SATA) 2x SATA 2.5" drives (optional hot-swap) 1x M.2 2280 (PCIe Gen 4 x4)
Networking	Intel® embedded M.2 2230 802.11ac Wi-Fi BT 5.1 card with cables Dual-band wireless 6.3" terminal PIFA antenna (optional) 2x 2.5 GbE LAN (2x PoE optional)
USB	6x USB 3.2 Gen 2 ports
PCI-e	1x mPCIe (PCIe x1; USB 2.0) 1x M.2 2230 E-key (PCIe x1; USB 2.0) 1x M.2 2280 M-key (PCIe Gen 4 x4) 1x M.2 2280 M-key (PCIe Gen 4 x4; SATA) 1x M.2 3042/3052/2280 B-key (PCIe x2; USB 2.0; USB 3.0; SATA) 1x PCIe Gen 4 x16 or 2x PCIe Gen 4 x8 (factory option)
Audio	1x 3.5mm audio
Serial Ports	2x COM RS-232/422/485 ports
Other Interfaces	5-Pin terminal block power Input (12~48 VDC) 2x ModBay expansion 7-9.5mm (optional) 1x GPIO terminal block (DIO, CAN, Ext. Switch) 2x 3FF Micro-SIM 1x power button 1x external fan connector 2x 2.5" hot-swap drives (optional)
Optional accessories	4x RJ45 GbE LAN add-on kit 4x USB 3.0 add-on kit 2x RS-232 COM add-on kit
Power Supply	12~48 VDC 20~48 VDC (when configured with PCIe expansion 70W or above)
Operating System	Compatible with Linux, Windows
Security	PTT in BIOS TPM (optional) Watchdog timer
Operating Temperature*	-40 to 70°C (w/ 35W CPU) -40 to 50°C (w/ 65W CPU)
Dimensions	240 x 143 x 267 mm

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

FANLESS EMBEDDED COMPUTERS

Modular fanless embedded PC with 13th Gen Intel® Core™ processors

Next-Gen industrial PC, enabling powerful AI applications

Palladio 400 RPL

Processor	13th Gen Intel® Core™ Processors (codename: Raptor Lake-P): • **Intel® Core™ i3-13100E**, 3.3~4.4 GHz, 4 processor cores, 8 threads - 60 W TDP • **Intel® Core™ i3-13100TE**, 2.1~4.1 GHz, 4 processor cores, 8 Threads - 35 W TDP • **Intel® Core™ i5-13500E**, 2.4~4.6 GHz, 14 processor cores, 20 Threads - 65 W TDP • **Intel® Core™ i5-13500TE**, 1.3~4.5 GHz, 14 processor cores, 20 Threads - 35 W TDP • **Intel® Core™ i7-13700E**, 1.9~5.1 GHz, 16 processor cores, 24 Threads - 65 W TDP • **Intel® Core™ i7-13700TE**, 1.1~4.8 GHz, 16 processor cores, 24 Threads - 35 W TDP • **Intel® Core™ i9-13900E**, 1.8~5.2 GHz, 24 processor cores, 32 Threads - 65 W TDP • **Intel® Core™ i9-13900TE**, 1.0~5.0 GHz, 24 processor cores, 32 Threads - 35 W TDP
Memory	Up to 32 GB SO-DIMM DDR4 2666 (Optional)
Graphics	Up to Intel® UHD graphics 770 (processor dependent)
Video Interfaces	2x DisplayPort
Video Resolution	Up to 4K @60 Hz
Mass Storage	1x M.2 2280 (SATA) 1x M.2 2280 (PCIe Gen 4 x4; SATA) 2x SATA 2.5" drives (optional hot-swap) 1x M.2 2280 (PCIe Gen 4 x4)
Networking	Intel® embedded M.2 2230 802.11ac Wi-Fi BT 5.1 card with cables Dual-band wireless 6.3" terminal PIFA antenna (optional) 2x 2.5 GbE LAN (2x PoE optional)
USB	6x USB 3.2 Gen 2 ports
Audio	1x 3.5mm audio
Serial Ports	2x COM RS-232/422/485 ports
Other Interfaces	5-Pin terminal block power input (12~48 VDC) 2x ModBay expansion 7-9.5mm (optional) 1x GPIO terminal block (DIO, CAN, Ext. Switch) 2x 3FF Micro-SIM 1x power button 1x external fan connector 2x 2.5" hot-swap drives (optional)
Optional accessories	4x RJ45 GbE LAN add-on kit 4x USB 3.0 add-on kit 2x RS-232 COM add-on kit
Power Supply	12~48 VDC 20~48 VDC (when configured with PCIe expansion 70W or above)
Operating System	Compatible with Linux, Windows
Security	PTT in BIOS TPM (optional) Watchdog timer
Operating Temperature*	-40 to 70°C (w/ 35W CPU) -40 to 50°C (w/ 65W CPU)
Dimensions	240 x 82 x 267 mm

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

DIN Mount Industrial Gateway with the NXP i.MX 93 SoC

Fanless industrial PC with modular design and wireless connectivity for streamlined integration

Modular Link MX93

Processor	NXP i.MX93 · 2x Arm® Cortex®-A55 1.5GHz · Arm® Cortex®-M33 @ 250Mhz · Arm® Ethos™ U-65 microNPU
System Memory	Up to 2GB LPDDR4 3700MT/s
Video Interfaces	Optional HDMI® interface on MiniHDMI® connector
Video Resolution	Up to 1080p @60Hz
Mass Storage	Up to 32GB eMMC 5.1 drive soldered on-board
Networking	Up to 2x Gigabit Ethernet RJ45 connectors Optional WiFi (802.11 ac / a / b / g / n) + BT5.0 module soldered on-board, 2x external antennas* miniPCIe full-size card slot for optional LTE modem with nanoSIM slot, up to 2x external antennas** *Certified **Certification upon request
USB	Dual USB 2.0 Type-A connector (one with OTG capability)
Serial Ports	1x RS-232/RS-422/RS-485 UART software configurable, on RJ12 connector 1x Debug UART on USB Type-C
Other Interfaces	Optional terminal block connectors with the following I/O: · 2x digital outputs · 4x digital inputs 1x button software configurable 1x button hardware reset 3x LEDs: power presence, WWAN activity, 1x software configurable. Other: TPM 2.0, RTC, watchdog Expansion: custom connector for stacking Daughter systems exposing I2C, SPI, GPIO, CAN, USB, UART interfaces and power
Mounting Options	· DIN rail mount · Wall mount
Power Supply	+12÷36V_{DC}
Operating System	SECO Edgehog OS (Linux Yocto)
Operating Temperature*	-20°C ÷ +70°C
Dimensions	140 x 96 x 36 mm (5.5" x 3.8" x 1.4")

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

Fanless embedded computer with the 11th Gen Intel® Core™ and Intel® Celeron® SoCs (Codename: Tiger Lake UP3)

Vision gateway with 11th Gen Intel® Core™ performance

Titan 300 TGL-UP3 AI

Processor	**Intel® Core™ i7-1185G7E**, Quad Core @ 2.8GHz (4.4GHz Turbo) with HT, 12MB cache, 28W TDP (12W cTDP) **Intel® Core™ i5-1145G7E**, Quad Core @ 2.6GHz (4.1GHz Turbo) with HT, 8MB cache, 28W TDP (12W cTDP) **Intel® Core™ i3-1115G4E**, Dual Core @ 3.0GHz (3.9GHz Turbo) with HT, 6MB cache, 28W TDP (12W cTDP) **Intel® Celeron® 6305E**, Dual Core @1.8GHz, 4MB cache, 15W TDP **Intel® Core™ i7-1185GRE**, Quad Core @ 2.8GHz (4.4GHz Turbo) with HT, 12MB cache, with IBECC, 28W TDP (12W cTDP) – Industrial **Intel® Core™ i5-1145GRE**, Quad Core @ 2.6GHz (4.1GHz Turbo) with HT, 8MB cache, with IBECC, 28W TDP (12W cTDP) - Industrial **Intel® Core™ i3-1115GRE**, Dual Core @ 3.0GHz (3.9GHz Turbo) with HT, 6MB cache, with IBECC, 28W TDP (12W cTDP) - Industrial
Memory	2x DDR4-3200 SODIMM slots Up to 64GB (IBECC supported only with Core™ industrial SoCs)
AI Chip	100+ TOPS inference power Voyager SDK for effortless deployment of AI applications
Graphics	Up to two video decode boxes (VDBoxes) for enhanced video stream capabilities Support for up to four independent displays at up to 4K60 HDR resolution or one display at 8K resolution
Video Interfaces	2x Multimode DisplayPort 1.4, on dual DP++ connector 2x Multimode Display Port 1.4 on USB Type-C connectors (alternate mode)
Video Resolution	DP: up to 5120x3200 @60Hz 24bpp / 7680x4320@60Hz 30bpp with DSC HDMI® 1.4: up to 4Kx2K 24-30Hz 24bpp
Mass Storage	On-Board NMVe Drive, up to 2 modules with global capacity up to 1TB
Networking	2x 2.5 Gigabit Ethernet RJ45 connectors Optional on-board M.2 Wi-Fi (802.11 ac / a / b / g / n) + BT 5.0 module, with dipole antennas included* Optional on-board M.2 LTE modem with Mini-SIM slot, with dipole antennas included* *Certification upon request
USB	2x Superspeed USB 10Gbps ports on Dual Type-A sockets 2x Superspeed USB 20Gbps on USB Type-C slots
Serial Ports	2x RS-232/RS-422/RS-485 UARTS software configurable, on DB9 connector
Audio	Lineout + MicIn combo TRRS Audio Jack
Other Interfaces	Optional 2x 12 poles terminal block connectors with the following I/O: · 8x GPIOs · 1x I2C · 1x SPI · 1x 5V · 1x 3.3V · 1x 12V · 3x GND Power ON Button Optional TPM 1.2/2.0 module on-board
Power Supply	12V_{DC} to 24V_{DC} range, Mega-Fit 2p RA Connector Coin cell battery for RTC On-Board
Operating System	Microsoft® Windows 10 IoT Enterprise LTSC 2021 Linux (Kernel ≥ 5.4 version)
Operating Temperature	Commercial range: 0°C to +40°C, with 0.7m/s airflow** Extended range: -30°C to +40°C, with 0.7m/s airflow** **Up to 60°C with scaled down CPU TDP
Dimensions	199 x 174 x 73 mm (7.83" x 6.85 " x 2.87") DIN-rail or Wall Mount brackets (Factory Alternatives)

Fanless embedded computer with the 11th Gen Intel® Core™ and Intel® Celeron® SoCs (Codename: Tiger Lake UP3)

Vision gateway with 11th Gen Intel® Core™ performance

Titan 300 TGL-UP3

Processor	**Intel® Core™ i7-1185G7E**, Quad Core @ 2.8GHz (4.4GHz Turbo) with HT, 12MB cache, 28W TDP (12W cTDP) **Intel® Core™ i5-1145G7E**, Quad Core @ 2.6GHz (4.1GHz Turbo) with HT, 8MB cache, 28W TDP (12W cTDP) **Intel® Core™ i3-1115G4E**, Dual Core @ 3.0GHz (3.9GHz Turbo) with HT, 6MB cache, 28W TDP (12W cTDP) **Intel® Celeron® 6305E**, Dual Core @1.8GHz, 4MB cache, 15W TDP **Intel® Core™ i7-1185GRE**, Quad Core @ 2.8GHz (4.4GHz Turbo) with HT, 12MB cache, with IBECC, 28W TDP (12W cTDP) – Industrial **Intel® Core™ i5-1145GRE**, Quad Core @ 2.6GHz (4.1GHz Turbo) with HT, 8MB cache, with IBECC, 28W TDP (12W cTDP) - Industrial **Intel® Core™ i3-1115GRE**, Dual Core @ 3.0GHz (3.9GHz Turbo) with HT, 6MB cache, with IBECC, 28W TDP (12W cTDP) - Industrial
Memory	2x DDR4-3200 SODIMM slots Up to 64GB (IBECC supported only with Core™ industrial SoCs)
Graphics	Up to two video decode boxes (VDBoxes) for enhanced video stream capabilities Support for up to four independent displays at up to 4K60 HDR resolution or one display at 8K resolution
Video Interfaces	2x Multimode DisplayPort 1.4, on dual DP++ connector 2x Multimode Display Port 1.4 on USB Type-C connectors (alternate mode)
Video Resolution	DP: up to 5120x3200 @60Hz 24bpp / 7680x4320@60Hz 30bpp with DSC HDMI® 1.4: up to 4Kx2K 24-30Hz 24bpp
Mass Storage	On-Board NMVe Drive, up to 2 modules with global capacity up to 1TB
Networking	2x 2.5 Gigabit Ethernet RJ45 connectors Optional on-board M.2 Wi-Fi (802.11 ac / a / b / g / n) + BT 5.0 module, with dipole antennas included* Optional on-board M.2 LTE modem with Mini-SIM slot, with dipole antennas included* *Certification upon request
USB	2x Superspeed USB 10Gbps ports on Dual Type-A sockets 2x Superspeed USB 20Gbps on USB Type-C slots
Serial Ports	2x RS-232/RS-422/RS-485 UARTS software configurable, on DB9 connector
Audio	Lineout + MicIn combo TRRS Audio Jack
Other Interfaces	Optional 2x 12 poles terminal block connectors with the following I/O: 8x GPIOs 1x I2C 1x SPI 1x 5V 1x 3.3V 1x 12V 3x GND Power ON Button Optional TPM 1.2/2.0 module on-board
Power Supply	12V_{DC} to 24V_{DC} range, Mega-Fit 2p RA Connector Coin cell battery for RTC On-Board
Operating System	Microsoft® Windows 10 IoT Enterprise LTSC 2021 Linux (Kernel ≥ 5.4 version)
Operating Temperature	Commercial range: 0°C to +40°C, with 0.7m/s airflow** Extended range: -30°C to +40°C, with 0.7m/s airflow** **Up to 60°C with scaled down CPU TDP
Dimensions	199 x 174 x 73 mm (7.83" x 6.85 " x 2.87") DIN-rail or Wall Mount brackets (Factory Alternatives)

Fanless embedded computer with the Intel® Atom® X6000E Series, Intel® Pentium® and Celeron® N and J Series (Codename: Elkhart Lake) SoCs

Low power Atom®-based Box PC ready for industrial automation and edge computing

Titan 290 EHL

Processor	**Intel® Celeron® J6413** Quad Core @ 1.8GHz (3GHz Turbo) 10W TDP **Intel® Celeron® N6211** Dual Core @1.2GHz (3GHz Turbo) 6.5W TDP **Intel® Pentium® J6426** Quad Core @2.0GHz (3GHz Turbo) 10W TDP **Intel® Pentium® N6415** Quad Core @1.2GHz (3GHz Turbo) 6.5W TDP **Intel® Atom® x6211E** Dual Core @1.3GHz (3GHz Turbo) 6W TDP w/ IBECC and HIS - Industrial **Intel® Atom® x6413E** Quad Core @1.5GHz (3GHz Turbo) 9W TDP w/ IBECC and HIS - Industrial **Intel® Atom® x6425E** Quad Core @2.0GHz (3GHz Turbo) 12W TDP w/ IBECC and IHS - Industrial **Intel® Atom® x6212RE** Dual Core @1.2GHz (no Turbo) 6W TDP w/ IBECC, IHS and TCC – Industrial **Intel® Atom® x6414RE** Quad Core @1.5GHz (no Turbo) 9W TDP w/ IBECC, IHS and TCC – Industrial **Intel® Atom® x6425RE** Quad Core @1.9GHz (no Turbo) 12W TDP w/ IBECC, IHS and TCC – Industrial (*) HIS: Integrated Heatspreader; TCC: Time Coordinated Computing
Memory	Soldered down LPDDR4-3200 memory, up to 16GB with IBECC supported only with Atom® Industrial SoCs Speed: 4267MT/s single rank (1GB / 2GB / 4GB / 8GB), 3733MT/s dual rank (16GB)
Graphics	Integrated Intel® 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	2x Multimode DisplayPort 1.4, on Dual DP++ connector
Video Resolution	Up to 4096x2160 @60Hz
Mass Storage	Optional eMMC 5.1 drive soldered on-board Optional on-board M.2 SATA SSD **
Networking	2x Gigabit Ethernet RJ45 connectors Optional on-board M.2 Wi-Fi (802.11 ac / a / b / g / n) +BT 5.0 module, external antennas* Optional on-board M.2 LTE modem with nanoSIM slot, external antennas* ** *Certification upon request
USB	Dual USB 3.2 Gen1 Type-A connector
Serial Ports	2x RS-232/RS-422/RS-485 UARTS software configurable, on DB9 connector
Audio	Lineout + MicIn combo TRRS audio jack
Other Interfaces	Optional 2x 12 poles terminal block connectors with the following I/O: · 2x CAN · 8x GPIOs / QEP / PWM / SPI · 2x I2C · 1x SPI · 1x 5V · 1x 3.3V · 1x 12V · 3x GND Power ON button nanoSIM slot soldered on-board for the modem Optional TPM 1.2/2.0 module on-board Optional 4x SMA connectors for external Wi-Fi / WWAN antennas
Power Supply	+12V_{DC} Cabled coin cell battery for RTC
Operating System	Microsoft® Windows 10 Enterprise Microsoft® Windows 10 IoT Core Linux Yocto
Operating Temperature	0°C to +50°C
Dimensions	180 x 107 x 75 mm (7" x 4.2" x 3")

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

Gateway for Medical applications with Intel® Atom® x5-E3930 Processors

IoT Gateway Solution certified for medical environment

Titan 220 APL Med

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	Linux EDGEHOG (under development)
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

Fanless embedded computer based on Intel® Atom® X Series, Intel® Celeron® J / N Series and Intel® Pentium® N Series (Codename: Apollo Lake) Processors

Fanless Industrial Edge Computing

Titan 240 APL

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® Celeron® **N3350** Dual Core @1.1GHz (Burst 2.4GHz), 2MB L2 Cache, 6W TDP Intel® Pentium® **N4200** Quad Core @1.1GHz (Burst 2.5GHz), 2MB L2 Cache, 6W TDP
System Memory	32-bit Single-/Dual-/Quad-Channel LPDDR4 soldered onboard, up to 2400 MT/s Max memory size 8GB
Graphics	Integrated Intel® HD Graphics 500 series controller with up to 18 Execution Units Two 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/MJPEG formats
Video Interfaces	Combo HDMI® + DP++ connector
Video Resolution	Up to 4K
Mass Storage	Optional eMMC 5.0 drive on-board, up to 64GB Optional SATA SSD M.2 Socket 2 Key B, up to 512GB (excludes WWAN module) microSD Card slot (combo with miniSIM slot)
Networking	2x Gigabit Ethernet RJ45 connectors with Gigabit Ethernet i210 controllers M.2 Socket 1 Key E 2230 Slot for accessory WiFi + BTLE module M.2 Socket 2 Key B Slot for accessory WWAN module (excludes SATA SSD module)
USB	USB 3.0 Dual Type-A connector
Serial Ports	2 x RS-232/RS-422/RS-485 Serial ports on 2x DB9-M connectors
Other Interfaces	Power ON Button with integrated LED Optional TPM 2.0 on-board miniSIM slot for M.2 modem (combo with microSD slot) 2x SMA connectors for external WiFi / WWAN antennas
Other	Optional VESA 100 bracket accessory
Power Supply	+12V_{DC} 5.7mm DC Power Jack connector 220mAh non-rechargeable Coin cell battery for RTC
Operating System	Microsoft® Windows 10 IoT Core Linux
Operating Temperature*	0°C ÷ +50°C
Dimensions	181 x 109 x 79 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.

Fanless embedded computer with Intel® Atom® X Series (Codename: Apollo Lake) Processors

Fanless, compact and versatile embedded box PC

Titan 235 APL

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
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 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.

Fanless embedded computer with Intel® Celeron® J / N Series and Intel® Pentium® N Series (Codename: Apollo Lake) Processors

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

Titan 230 APL

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 Enterprise · Linux Ubuntu Available on request: · Yocto (64-bit)
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.

Boxed IP65 solution based on Intel® Atom® x5 (Codename: Apollo Lake) Applications Processor

High video quality in a boxed solution for Industrial Automation and Edge IoT

Titan 250 APL IP65

Available in Industrial Temperature Range

Processor	Intel® Atom® x5-E3930 Dual Core @1.3 GHz (Burst 1.8GHz), 2MB L2 Cache, 6.5W TDP
System Memory	Quad Channel soldered down LPDDR4 memory, 2GB
Graphics	Integrated Intel® HD Graphics 500 series controller. 12 Execution Units 4K HW decoding and encoding of HEVC(H.265), H.264, VP8, SVC, MVC
Video Interfaces	1x multimode Display Port on miniDP++ connector
Video Resolution	Up to 4096 x 2160
Mass Storage	eMMC 5.0 drive on-board, 64GB Optional SATA M.2 SSD module up to 512GB (alternative to M.2 Modem / optional 2x GbE)
Networking	2x Gigabit Ethernet RJ45 connectors 2x optional Gigabit Ethernet RJ45 connectors (alternative to M.2 Modem / SSD) M.2 Socket 2 Key B Slot for cellular modem modules (alternative to M.2 SSD / optional 2x GbE), M.2 Socket 1 Key E Slot for WiFi/BT modules, external antennas
USB	2x USB 2.0 Type-A sockets
Serial Ports	2x RS-232/RS-485 ports, software configurable
Other Interfaces	8x GPIOs TPM 2.0 chip for encryption MicroSIM slot soldered on-board for the cellular modem
Other	IP65 aluminium box enclosure DIN standard mounting plate
Power Supply	+18V_{DC} to +32 V_{DC} recommended +15V_{DC} to +36 V_{DC} absolute
Operating System	Preinstalled OS (factory options): · Microsoft Windows 10 IoT enterprise · Linux 64-bit
Operating Temperature	With internal SSD, 0°C to +60°C (in presence of air flow)* Without internal SSD, -40°C to +60°C (in presence of air flow)**
Dimensions	218 x 218,5 x 115.6 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 internal single board computer only.

Fanless embedded computer based on NXP i.MX 8 Applications Processors

NXP i.MX 8 processors in a boxed solution for Edge Computing applications

Titan 200 MX8

Processor	i.MX 8 QuadMax: Dual A72-core, Quad A53-core, Dual M4F-core i.MX 8 QuadPlus: Single A72-core, Quad A53-core, Dual M4F-core
System Memory	64-bit soldered down LPDDR4-1600 memory, up to 8GB
Graphics	2x Graphics accelerators Vivante GC7000 / XVSX for QuadMax and GC7000Lite / XVSX for QuadPlus 1x embedded VPU, supporting H.265 (4K30) and H.264 (1080p60) decoding and H.264 (1080p30) encoding
Video Interfaces	HDMI® output (Micro) (HDMI 2.0a Tx interface)
Video Resolution	Up to 4K
Mass Storage	Optional eMMC 5.1 drive on-board, up to 64GB M.2 Key B slot for optional SSD drive, up to 512GB microSD card slot (accessible from panel)
Networking	2x Gigabit Ethernet RJ45 connectors M.2 WLAN Connectivity Slot for optional accessory WiFi + BT external module, external antennas M.2 WWAN Connectivity Slot for optional accessory Modem modules (excludes SSD Drive), external antennas
USB	1 x USB 3.0 Host port on Type-A socket 1 x USB 2.0 Host port on Type-A socket 1 x USB 2.0 micro-AB connector (OTG)
Serial Ports	1 x RS-232 port on DB9-M connector 1 x multistandard RS-485 / RS-422 port on DB9-M connector
Audio	Line Out + Mic In combo TRRS audio jack
Other Interfaces	Optional 2x 12 poles terminal block connectors with the following I/O: · 2x CAN · 4x GPIOs · 4x Analog Inputs · 1x SPI · 1x I2C · 1x 5V · 1x 3.3V · 1x 12V · 3x GND Power ON Button with integrated LED microSIM slot soldered on-board for the Modem Coin cell battery holder for RTC Optional 4x SMA connectors for external WiFi / WWAN antennas
Other	Optional VESA 100 bracket accessory Optional DIN standard mounting plate accessory
Power Supply	+12V_{DC}, Mini-Fit Power connector
Operating System	Linux Android (planned)
Operating Temperature*	0°C ÷ +50°C
Dimensions	181 x 109 x 75 mm

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

Fanless embedded computer based on Rockchip RK3399 Applications Processor

The right match between performance and power in a box PC

Titan 225 RK3399

Processor	Rockchip RK3399 processor, 2x Cortex®-A72 MP cores + 4x Cortex®-A53 MPCores, up to 1.8GHz, 64-bit architecture
System Memory	64-bit soldered down LPDDR4 memory, up to 4GB
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
Video Interfaces	HDMI® connector (HDMI 1.4 / 2.0a) DP interface on USB Type-C connector (Alternate mode)
Video Resolution	Up to 4K
Mass Storage	Optional eMMC 5.1 drive on-board, up to 64GB
Networking	2x Gigabit Ethernet RJ45 connectors Optional on-board WiFi (802.11 ac / a / b / g / n) +BT 5.0 module, external antennas* Optional on-board LTE modem with miniSIM slot or eSIM, external antennas* *Certification upon request
USB	2 x USB 2.0 on Dual Type-A socket 1 x USB 3.0 Type-C connector (alternate mode with DP) 1 x USB 3.0 Type-A connector
Serial Ports	2 x RS-232 or RS-485 ports (factory options) on DB9-M connectors
Audio	Lineout + MicIn combo TRRS Audio Jack
Other Interfaces	Optional 2x 12 poles terminal block connectors with the following I/O: · 2x CAN · 3x GPIOs · 1x Open Drain Output · 1x PWM · 1x I2C · 1x 5V · 1x 3.3V · 1x 12V · 3x GND Power ON Button with integrated LED miniSIM slot soldered on-board for the Modem Optional 4x SMA connectors for external WiFi / WWAN antennas
Other	Optional VESA 100 bracket accessory Optional DIN standard mounting plate accessory
Power Supply	+12V_{DC} ÷ +24V_{DC}, DC Power Jack
Operating System	Linux Yocto Android (planned)
Operating Temperature*	0°C ÷ +50°C
Dimensions	181 x 109 x 75 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.

IP20 boxed PC based on Rockchip RK3399 Applications Processor

Enhanced graphics and computing performance for high-end industrial applications

Titan 220 RK3399

Processor	Rockchip RK3399 processor, 2x Cortex®-A72 MP cores + 4x Cortex®-A53 MP cores, up to 1.8GHz, 64-bit architecture
System Memory	64-bit soldered down LPDDR4 memory, 2GB
Graphics	4-Core Mali-T860MP4 GPU OpenGL ES 1.1/2.0/3.0/3.1, OpenVG 1.1, OpenCL, DX11 support Embedded VPU: · H.265 10-bit, H.264 10-bit, VP9 8-bit 4Kx2K@60fps hardware decoding · MPEG-4/MPEG-2/VP8 1080p@60fps hardware decoding · H.264, VP8 1080p@30fps hardware encoding · Supports 2 independent video outputs
Video Interfaces	HDMI® connector (HDMI 1.4 / 2.0a) DP interface on USB Type-C connector (Alternate mode)
Video Resolution	Up to 4K
Mass Storage	eMMC 5.1 drive on-board, 16GB
Networking	1x Gigabit Ethernet RJ45 connector on-board WiFi (802.11 ac / a / b / g / n) + BT 5.0 module, external antennas on-board LTE Cat4 modem with microSIM slot, external antennas
USB	3x USB 2.0 Type-A connectors 1x USB 3.0 Type-A connector 1x USB 3.0 Type-C connector (alternate mode with DP)
Serial Ports	2x RS-232 on DB9-M connectors
Other Interfaces	Secure Element microSIM slot soldered on-board for the cellular modem
Other	IP20 steel box enclosure Wall mounting brackets
Power Supply	12 V_{DC} to 24 V_{DC}, DC Power Jack
Operating System	Linux Android
Operating Temperature*	-20°C to +50°C
Dimensions	177 x 150 x 27 mm

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

Fanless embedded computer based on NXP i.MX 8M Applications Processors

Multicore processing and flexible connectivity for multimedia and industrial IoT applications

Titan 210 MX8M

Processor	i.MX 8M Quad, Quad A53-core up to 1.5GHz, with GPU and VPU i.MX 8M QuadLite, Quad A53-core up to 1.5GHz, with GPU only i.MX 8M Dual, Dual A53-core up to 1.5GHz, with GPU and VPU
System Memory	32-bit 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
Video Interfaces	Optional HDMI® 1.4 / 2.0a interface
Video Resolution	Up to 4K
Mass Storage	Optional eMMC 5.0 drive on-board, up to 16GB
Networking	1x Gigabit Ethernet RJ45 connector Optional on-board WiFi (802.11 ac / a / b / g / n) +BT 5.0 module, external antennas* M.2 Socket 2 Key B Slot for optional accessory M.2 Modem, external antennas* *Certification upon request
USB	2 x USB 2.0 on Dual Type-A socket 1 x USB 3.0 Type-A socket 1 x USB 2.0 micro-AB connector (interface shared with USB 3.0 port)
Serial Ports	1 x RS-232 Serial port on DB9-M connector
Audio	Line Out + Mic In combo TRRS audio jack Optional Speaker connector, 10W per channel amplified
Other Interfacesá	Optional 2x 12 poles terminal block connectors with the following I/O: · 1x CAN · 8x GPIOs · 1x SPI · 1x I2C · 1x 5V · 1x 3.3V · 1x 12V · 3x GND Power ON Button with integrated LED microSIM slot soldered on-board for the Modem Coin cell battery holder for RTC Optional 4x SMA connectors for external WiFi / WWAN antennas
Other	Optional VESA 100 bracket accessory Optional DIN standard mounting plate accessory
Power Supply	+12V_{DC}, Mini-Fit Power connector
Operating System	Linux Android (planned)
Operating Temperature*	0°C ÷ +50°C
Dimensions	181 x 109 x 75 mm

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

FANLESS EMBEDDED COMPUTERS

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/NB-IoT 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 +9V_{DC} .. +24V_{DC} 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.

Please visit www.seco.com to find the latest version of these datasheets

EMBEDDED COMPUTERS

SECO off-the-shelf solutions for easier system integration

Touch-display solutions

Expertise in assembly services

Mechanical design

Fanless embedded computer for Digital Signage applications with AMD Ryzen™ Embedded R1000 / V1000 family of SoCs

Multi-Display Digital Signage Solution

Krater RV1000

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	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
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

PAYMENT SYSTEMS

Fast and intuitive payment without pin with KarL4

One point of contact for all queries

Fast and flexible installation

Get started instantly thanks to plug & play

Complete integration into the device

LTE onboard

girocard · mastercard · VISA · AMERICAN EXPRESS · UnionPay 银联 · DISCOVER

Contactless payment terminal

Contactless payment made simple with KarL4

KarL4

Networking	4G Modem
Service Interface	Two switches for settings; red/green LED for status; buzzer
Customer Interface	NFC Antenna with 4 green LED's
Machine Interfaces	MDB/IPC Level 02/03 (optional USB)
Power Supply	8.0 ÷ 42.5 V_{DC} (typ. 130mA @ 13.8V)
Norms & Standards	EMVCo Level 1 EMVCo Level 2 (Master/Visa) EMVCo Level 3 (Master/Visa) Girocard ISO 18092 (NFC) PCI PTS
Accessories	Roof antenna for LTE/GSM; 1 dBi; 700-960 MHz/1575-2700 MHz; lenght 200 cm Patch antenna for LTE/GSM; 3 dBi; 700-960 MHz/1700-2700 MHz; length 200 cm
Operating Temperature*	-25°C ÷ +70°C; Humidity up to 100%
Dimensions	Controller: 85.0 x 90.0 x 18.0 mm NFC Antenna: 98.0 x 98.0 x 13.0 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.

MODULAR HMI SOLUTIONS

SECO off-the-shelf solutions for easier system integration

Touch-display solutions

Expertise in assembly services

Mechanical design

Entry level seven inch HMI based on NXP i.MX93

Flexibility and expandability in a unique modular HMI concept

Modular Vision 7 MX93

Processor	NXP i.MX93 Applications Processor 1-2x Arm® Cortex®-A55 @ 1.7 GHz Arm® Cortex-M33 @ 250Mhz Arm® Ethos™ U-65 microNPU
Memory	Soldered-down LPDDR4X/LPDDR4-3200 memory, up to 2GB total, 16-bit interface
Graphics	The i.MX 93 supports a high efficiency 2D graphics engine PXP for simple composition and acceleration for use by operating systems, such as Linux
Video Resolution	7.0" display, resolution 1024 x 600, LED lifetime 50K hours, 400cd/m² brightness P-Cap (Projected Capacitive touch screen), with 3.0mm chemically strengthened cover glass
Mass Storage	eMMC 5.1 Drive soldered on-board, up to 64GB (boot device) SD 4-bit interface (boot device)
Networking	1x Gigabit Ethernet interfaces, opt. Wi-Fi + BT5.0
USB	1x USB C Dual Role 1x USB 2.0 Type A
Serial Ports	2x RS-232, 1x RS-485
Other Interfaces	1x I²C, SPI, 2x Digital In, 2x Digital Out
Power Supply	9 V_{DC} ÷ 32 V_{DC}
Operating System	Edgehog OS (Yocto)
CAN Bus	1x CAN-FD
Operating Temperature*	0 ÷ 60 °C
Dimensions	146 x 102 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.

MODULAR HMI SOLUTIONS

High end 10.1 inch HMI based on NXP i.MX8M Plus

Flexibility and expandability in a unique modular HMI concept

Modular Vision 10.1 MX8M-Plus

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®-A53 Cores up to 1.8GHz · NXP i.MX 8M Plus Dual, 2x Arm® Cortex®-A53 Cores up to 1.8GHz · NXP i.MX 8M Plus Quad Lite, 4x Arm® Cortex®-A53 Cores up to 1.8GHz, no VPU / NPU NPU: 2.3 TOPS Neural Network performance (not for Quad Lite)
Memory	Soldered down LPDDR4-4000 memory, 32-bit interface, up to 6GB
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 Resolution	10.1" display, resolution 1280 x 800, LED lifetime 50K hours, 400cd/m² brightness P-Cap (Projected Capacitive touch screen), with 3.0mm chemically strengthened cover glass
Mass Storage	Soldered onboard eMMC 5.1 Drive, up to 64GB SD 4-bit interface
Networking	1x Gigabit Ethernet interfaces, opt. Wi-Fi + BT5.0
USB	1x USB C Dual Role 1x USB 2.0 Type A
Serial Ports	2x RS-232, 1x RS-485
Other Interfaces	1x I²C, SPI, 2x Digital In, 2x Digital Out
Power Supply	9 V_{DC} ÷ 32 V_{DC}
Operating System	Edgehog OS (Yocto)
CAN Bus	1x CAN-FD
Operating Temperature*	0 ÷ 60 °C
Dimensions	146 x 102 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.

High end 15.6 inch HMI based on Intel® Atom® (formely Elkhart Lake)

Flexibility and expandability in a unique modular HMI concept

Modular Vision 15.6 EHL

Processor	Intel® Atom® x6000E, Pentium® and Celeron® N and J Series "Elkhart Lake" CPUs: · Celeron® **J6413** Quad Core @ 1.8GHz (3.0GHZ Turbo) 10W TDP - Comm. Temp. Range · Celeron® **N6211** Dual Core @1.2GHz (3.0GHZ Turbo) 6.5W TDP - Comm. Temp. Range · Pentium® **J6426** Quad Core @2GHz (3.0GHZ Turbo) 10W TDP - Comm. Temp. Range · Pentium® **N6415** Quad Core @1.2GHz (3.0GHZ Turbo) 6.5W TDP - Comm. Temp. Range · Atom® **x6211E** Dual Core @1.3GHz (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 @2GHz (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 · Atom® **x6414RE** Quad Core @1.5GHz (no Turbo) 9W TDP w/ IBECC, IHS and TCC - Ind. Temp. Range · Atom® **x6425RE** Quad Core @1.9GHz (no Turbo) 12W TDP w/ IBECC, IHS and TCC, FuSa Certified - Ind. Temp. Range · 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 (*) IHS: Integrated Heatspreader; TCC: Time Coordinated Computing (**) FuSa Certified: Atom® SKUs compliant to IEC 61508 and ISO 13849 requirements for Functional Safety and Safety Integrity levels
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	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 Resolution	15.6" display, resolution 1920 x 1080, LED lifetime 50K hours, 400cd/m² brightness P-Cap (Projected Capacitive touch screen), with 3.0mm chemically strengthened cover glass
Mass Storage	SDIO interface eMMC 5.1 drive soldered on-board (Safety Related)
Networking	1x Gigabit Ethernet interfaces, opt. Wi-Fi + BT5.0
USB	1x USB C Dual Role 1x USB 2.0 Type A
Serial Ports	2x RS-232, 1x RS-485
Other Interfaces	1x I²C, SPI, 2x Digital In, 2x Digital Out
Power Supply	9 V_{DC} ÷ 32 V_{DC}
Operating System	Edgehog OS (Yocto)
CAN Bus	1x CAN-FD
Operating Temperature*	0 ÷ 60 °C

*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.

Panel PC with 7.0" LCD display based on the Intel® Atom® X Series and Intel® Celeron® J / N Series (formerly Apollo Lake) Processors

Flexibility Meets Style For Endless Visual Display Applications

Flexy Vision 7 APL

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 TD
Memory	Soldered-down LPDDR4 memory Dual/Quad Channel, up to 8GB total, 32-bit interface
Embedded 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/MJPEG formats
Video Section	7.0" LVDS display, resolution 800x480, LED lifetime 50K hours life min, 690cd/m² min. brightness P-Cap (Projected Capacitive touch screen), with 3.0mm glass cover Glass Hardness IK07, Surface Hardness 7H
Video Interfaces	HDMI® Connector DP++ Connector
Mass Storage	eMMC 5.0 drive soldered on-board, up to 64GB M.2 Key B slot for optional SSD drive, up to 512GB
Networking	2x Gigabit Ethernet port M.2 WWAN Connectivity Slot for accessory 4G modules (excludes SSD Drive) M.2 WLAN Connectivity Slot for accessory WiFi/BT module
USB	2x USB 3.0 Host ports on Type-A sockets 2 x USB 2.0 Host ports on Dual Type-A socket
Serial Ports	2x multistandard RS-232 /RS-422/RS-485 ports on DB-9 connectors
Other Interfaces	Power ON Button with integrated LED Optional TPM 2.0 onboard
Power Supply	Main Power: 12V_{DC} Power In connectors: DC Power Jack.
Operating System	Windows 10 IOT Linux
Operating Temperature*	0°C ÷ 50°C
Dimensions	202,1 x 133,9 x 58mm

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

Panel PC with 10.1" LCD display based on the Intel® Atom® X Series and Intel® Celeron J / N Series (formerly Apollo Lake) Processors

Flexibility Meets Style For Endless Visual Display Applications

Flexy Vision 10.1 APL

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 TD
Memory	Soldered-down LPDDR4 memory Dual/Quad Channel, up to 8GB total, 32-bit interface
Embedded 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/MJPEG formats
Video Section	10.1" LVDS display, resolution 1280x800, LED lifetime 50K hours life min, 340cd/m² min. brightness P-Cap (Projected Capacitive touch screen), with 3.0mm glass cover Glass Hardness IK07, Surface Hardness 7H
Video Interfaces	HDMI® Connector DP++ Connector
Mass Storage	eMMC 5.0 drive soldered on-board, up to 64GB M.2 Key B slot for optional SSD drive, up to 512GB
Networking	2x Gigabit Ethernet port M.2 WWAN Connectivity Slot for accessory 4G modules (excludes SSD Drive) M.2 WLAN Connectivity Slot for accessory WiFi/BT module
USB	2x USB 3.0 Host ports on Type-A sockets 2 x USB 2.0 Host ports on Dual Type-A socket
Serial Ports	2x multistandard RS-232 /RS-422/RS-485 ports on DB-9 connectors
Other Interfaces	Power ON Button with integrated LED Optional TPM 2.0 onboard
Power Supply	Main Power: 12V_{DC} Power In connectors: DC Power Jack
Operating System	Windows 10 IOT Linux
Operating Temperature*	0°C ÷ 50°C
Dimensions	269,5 x 188,1 x 58mm

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

Panel PC with 13.3" LCD display based on Rockchip RK3399 SoC

Flexibility Meets Style For Endless Visual Display Applications

Flexy Vision 13.3 RK3399

CPU	Rockchip RK3399 processor, 2x Cortex®-A72 MP cores + 4x Cortex®-A53 MPCores, up to 1.8GHz, 64-bit architecture
Memory	Soldered-down LPDDR4 memory, up to 4GB total, 64-bit interface
Embedded Graphics	4-Core Mali-T860MP4 GPU, supporting OpenGL ES 1.1/2.0/3.0/3.1, OpenVG 1.1, OpenCL 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 Dual Display support
Video Section	13.3" LVDS display, resolution 1920x1080, LED lifetime 50K hours life min, 260cd/m² min. brightness P-Cap (Projected Capacitive touch screen), with 3.0mm glass cover Glass Hardness IK07, Surface Hardness 7H
Video Interfaces	HDMI® 4K interface DP 1.2 interface on USB Type-C connector (alternate mode)
Mass Storage	eMMC drive soldered on-board, up to 64GB Optional SPI Flash
Networking	2x Gigabit Ethernet port Soldered on-board M.2 1216 WLAN 802.11 a/b/g/n/ac + BT 5.0 module* On-board LTE Modem* *Certification upon request
USB	1x 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
Audio	TRRS Audio Jack (Combo MicIn + Lineout)
Serial Ports	2x RS-232 or RS-485 (factory option) on DB-9 connectors
Other Interfaces	Power ON Button with integrated LED Optional Ultra Low Power SPI RTC Optional CAN ports (up to 2x) Optional, 4x GPIOs
Power Supply	Main Power: 12V_{DC} .. 24V_{DC} Power In connectors: DC Power Jack.
Operating System	Linux
Operating Temperature*	0°C ÷ 50°C
Dimensions	349,2 x 220.8 x 58 mm

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

Panel PC with 13.3" LCD display based on the Intel® Atom® X Series and Intel® Celeron® J / N Series (Codename: Apollo Lake) Processors

Flexibility Meets Style For Endless Visual Display Applications

Flexy Vision 13.3 APL

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 TD
Memory	Soldered-down LPDDR4 memory Dual/Quad Channel, up to 8GB total, 32-bit interface
Embedded 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/MJPEG formats
Video Section	13.3" LVDS display, resolution 1920x1080, LED lifetime 50K hours life typ-, 260cd/m² min. brightness P-Cap (Projected Capacitive touch screen), with 3.0mm glass cover Glass Hardness IK07, Surface Hardness 7H
Video Interfaces	HDMI® Connector DP++ Connector
Mass Storage	eMMC 5.0 drive soldered on-board, up to 64GB M.2 Key B slot for optional SSD drive, up to 512GB
Networking	2x Gigabit Ethernet port M.2 WWAN Connectivity Slot for accessory 4G modules (excludes SSD Drive) M.2 WLAN Connectivity Slot for accessory WiFi/BT module
USB	2x USB 3.0 Host ports on Type-A sockets 2 x USB 2.0 Host ports on Dual Type-A socket
Serial Ports	2x multistandard RS-232 /RS-422/RS-485 ports on DB-9 connectors
Other Interfaces	Power ON Button with integrated LED Optional TPM 2.0 onboard
Power Supply	Main Power: $12V_{DC}$ Power In connectors: DC Power Jack
Operating System	Windows 10 IOT Linux
Operating Temperature*	0°C ÷ 50°C
Dimensions	349,2 x 220,8 x 58mm

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

Panel PC with 15.6" LCD display based on Rockchip RK3399 SoC

Flexibility Meets Style For Endless Visual Display Applications

Flexy Vision 15.6 RK3399

CPU	Rockchip RK3399 processor, 2x Cortex®-A72 MP cores + 4x Cortex®-A53 MPCores, up to 1.8GHz, 64-bit architecture
Memory	Soldered-down LPDDR4 memory, up to 4GB total, 64-bit interface
Embedded Graphics	4-Core Mali-T860MP4 GPU, supporting OpenGL ES 1.1/2.0/3.0/3.1, OpenVG 1.1, OpenCL 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 Dual Display support
Video Section	15.6" LVDS display, resolution 1920x1080, LED lifetime 50K hours min., 300cd/m² min. brightness P-Cap (Projected Capacitive touch screen), with 3.0mm glass cover Glass Hardness IK07, Surface Hardness 7H
Video Interfaces	HDMI® 4K interface DP 1.2 interface on USB Type-C connector (alternate mode)
Mass Storage	eMMC drive soldered on-board, up to 64GB Optional SPI Flash
Networking	2x Gigabit Ethernet port Soldered on-board M.2 1216 WLAN 802.11 a/b/g/n/ac + BT 5.0 module* On-board LTE Modem* *Certification upon request
USB	1x 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
Audio	TRRS Audio Jack (Combo MicIn + Lineout)
Serial Ports	2x RS-232 or RS-485 (factory option) on DB-9 connectors
Other Interfaces	Power ON Button with integrated LED Optional Ultra Low Power SPI RTC Optional CAN ports (up to 2x) Optional, 4x GPIOs
Power Supply	Main Power: $12V_{DC}$ ÷ $24V_{DC}$ Power In connectors: DC Power Jack.
Operating System	Linux
Operating Temperature*	0°C ÷ 50°C
Dimensions	403,6 x 253 x 58 mm

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

Panel PC with 15.6" LCD display based on the Intel® Atom® X Series and Intel® Celeron® J / N Series (formerly Apollo Lake) Processors

Flexibility Meets Style For Endless Visual Display Applications

Flexy Vision 15.6 APL

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 TD
Memory	Soldered-down LPDDR4 memory Dual/Quad Channel, up to 8GB total, 32-bit interface
Embedded 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/MJPEG formats
Video Section	15.6" LVDS display, resolution 1920x1080, LED lifetime 50K hours min., 300cd/m² min. brightness P-Cap (Projected Capacitive touch screen), with 3.0mm glass cover Glass Hardness IK07, Surface Hardness 7H
Video Interfaces	HDMI® Connector DP++ Connector
Mass Storage	eMMC 5.0 drive soldered on-board, up to 64GB M.2 Key B slot for optional SSD drive, up to 512GB
Networking	2x Gigabit Ethernet port M.2 WWAN Connectivity Slot for accessory 4G modules (excludes SSD Drive) M.2 WLAN Connectivity Slot for accessory WiFi/BT module
USB	2x USB 3.0 Host ports on Type-A sockets 2 x USB 2.0 Host ports on Dual Type-A socket
Serial Ports	2x multistandard RS-232 /RS-422/RS-485 ports on DB-9 connectors
Other Interfaces	Power ON Button with integrated LED Optional TPM 2.0 onboard
Power Supply	Main Power: $12V_{DC}$ Power In connectors: DC Power Jack
Operating System	Windows 10 IOT Ubuntu Linux
Operating Temperature*	0°C ÷ 50°C
Dimensions	403,6 x 253 x 58mm

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

Panel PC with 21.5" LCD display based on Intel® Atom® X Series and Intel® Celeron® J / N Series (formerly Apollo Lake) Processors

Flexibility Meets Style For Endless Visual Display Applications

Flexy Vision 21.5 APL

Processor	**Intel® Celeron® J3455**, Quad Core @1.5GHz (Burst 2.3GHz), 2MB L2Cache, 10W TDP **Intel® Atom® x5-E3940**, Quad Core @1.6 GHz (Burst 1.8GHz), 2MB L2 Cache, 9.5W TDP **Intel® Celeron® N3350**, Dual Core @1.1GHz (Burst 2.4GHz), 2MB L2 Cache, 6W TDP
Memory	Dual/ Quad Channel soldered down LPDDR4 memory, up to 8GB
Embedded 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
Video Section	21.5" LVDS display, resolution 1920x1080, 30K hours life P-Cap (Projected Capacitive touch screen), with 1.8mm glass cover Glass Hardness IK07, Surface Hardness 7H
Video Interfaces	Two DP++ 1.2 interfaces on miniDP connectors
Mass Storage	M.2 2260 SATA SSD Module, up to 512GB
Networking	Dual Gigabit Ethernet RJ45 connector with Gigabit Ethernet i210 controllers M.2 WLAN Connectivity Slot for accessory WiFi/BT module
USB	2 x USB 3.0 Host ports on USB 3.0 Type-A sockets
Other Interfaces	Power ON Button with integrated LED TPM 2.0 on-board 2x SMA connectors for external WiFi antennas
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 ÷ 50°C
Dimensions	537 x 328,5 x 53,5 mm

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

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

Flexible, Open-source, Industrial system

Simple Vision 10 MX6

- **CPU**
  NXP i.MX 6 processor - Solo, Dual Lite and Quad- Core (Arm® Cortex® A9 Cores)
- **GRAPHICS**
  30K hours 10.1" LVDS display with projected capacitive touchscreen integrated
- **CONNECTIVITY**
  Wi-Fi add-on module; up 22 GPI/Os; CAN Bus
- **MEMORY**
  Up to 1GB DDR3L on-board

5.0 inch Flush Mount HMI based on NXP i.MX6 processor

Maximum design flexibility with the usual quality

Santino Vision 5 FM MX6

- **CPU**
  NXP i.MX 6 Family
- **GRAPHICS**
  GC320 2D accelerator + GC880 3D accelerator
- **CONNECTIVITY**
  1x 100MbE, up to 2x USB, 2x RS232, RS485, CAN
- **MEMORY**
  Soldered on Board DDR3L memory

5.0 inch Rear Mount HMI based on NXP i.MX6 processor

Ideal HMI solution for limited installation situations with consistent quality

Santino Vision 5 RM MX6

- **CPU**
  NXP i.MX 6 Family
- **GRAPHICS**
  GC320 2D accelerator + GC880 3D accelerator
- **CONNECTIVITY**
  1x 100MbE, up to 2x USB, 2x RS232, RS485, CAN
- **MEMORY**
  Soldered on Board DDR3L memory

7.0 inch Panel Mount HMI based on NXP i.MX6 processor

Fanless industrial PC impresses with simple installation and good performance

Santino Vision 7 PM MX6

- **CPU**
  NXP i.MX 6 Family
- **GRAPHICS**
  GC320 2D accelerator + GC880 3D accelerator
- **CONNECTIVITY**
  1x 100MbE, up to 2x USB, 2x RS232, RS485, CAN
- **MEMORY**
  Soldered on Board DDR3L memory

7.0 inch Rear Mount HMI based on NXP i.MX6 processor

Optimal price-performance ratio combined with sophisticated design & easy installation

Santino Vision 7 RM MX6

- **CPU**
  NXP i.MX 6 Family
- **GRAPHICS**
  GC320 2D accelerator + GC880 3D accelerator
- **CONNECTIVITY**
  1x 100MbE, up to 2x USB, 2x RS232, RS485, CAN
- **MEMORY**
  Soldered on Board DDR3L memory

10.1 inch Flush Mount HMI based on NXP i.MX6 processor

Flexible, powerful all-rounder for any demanding applications

Santaro Vision 7 RM MX6

- **CPU**
  NXP i.MX 6 Family
- **GRAPHICS**
  GC320 & GC355 2D accelerator + GC2000 3D accelerator
- **CONNECTIVITY**
  1x 100MbE, up to 2x USB, 2x RS232, RS485, CAN
- **MEMORY**
  Soldered on Board DDR3L memory

7.0 inch Outdoor Rear Mount HMI based on NXP i.MX6 processor

Ideal HMI solution for outdoor situations with high brightness & particularly robust design

Santaro Vision 10.1 FM MX6

- **CPU**
  NXP i.MX 6 Family
- **GRAPHICS**
  GC320 & GC355 2D accelerator + GC2000 3D accelerator
- **CONNECTIVITY**
  1x 100MbE, up to 2x USB, 2x RS232, RS485, CAN
- **MEMORY**
  Soldered on Board DDR3L memory

10.1 inch Panel Mount HMI based on NXP i.MX6 processor

Large high-resolution touch display

Santaro Vision 10.1 PM MX6

- **CPU**
  NXP i.MX 6 Family
- **GRAPHICS**
  GC320 & GC355 2D accelerator + GC2000 3D accelerator
- **CONNECTIVITY**
  1x 100MbE, up to 2x USB, 2x RS232, RS485, CAN
- **MEMORY**
  Soldered on Board DDR3L memory

7.0 inch Rear Mount HMI based on NXP i.MX8M Mini processor

High performance, low power consumption, integrated connectivity and multimedia interface

Tanaro Vision 7 RM MX8M-Mini

CPU
NXP i.MX 8M Mini Family

GRAPHICS
GC320 2D accelerator + GCNanoUltra 3D accelerator

CONNECTIVITY
Wifi/BT, 1x GbE, 1x 100MbE, up to 3x USB, 2x RS232, RS485, CAN

MEMORY
Soldered on Board LPDDR4 memory

10.1 inch Flush Mount HMI based on NXP i.MX6 processor

The SBC integrated in this HMI from the SANTOKA series makes your product ready for IoT

Santoka Vision 10.1 FM MX6

CPU
NXP i.MX 6 Family

GRAPHICS
GC320 & GC355 2D accelerator + GC2000 3D accelerator

CONNECTIVITY
2x 100MbE, up to 3x USB, 2x RS232, RS485, CAN

MEMORY
Soldered on Board DDR3L memory

7.0 inch Panel Mount HMI based on NXP i.MX8M Mini processor

High performance, low power consumption, integrated connectivity and multimedia interface

Tanaro Vision 7 PM MX8M-Mini

CPU
NXP i.MX 8M Mini Family

GRAPHICS
GC320 2D accelerator + GCNanoUltra 3D accelerator

CONNECTIVITY
Wifi/BT, 1x GbE, 1x 100MbE, up to 3x USB, 2x RS232, RS485, CAN

MEMORY
Soldered on Board LPDDR4 memory

10.1 inch Panel Mount HMI based on NXP i.MX6 processor

Fanless industrial PC impresses with simple installation, good performance and various interfaces

Santoka Vision 10.1 PM MX6

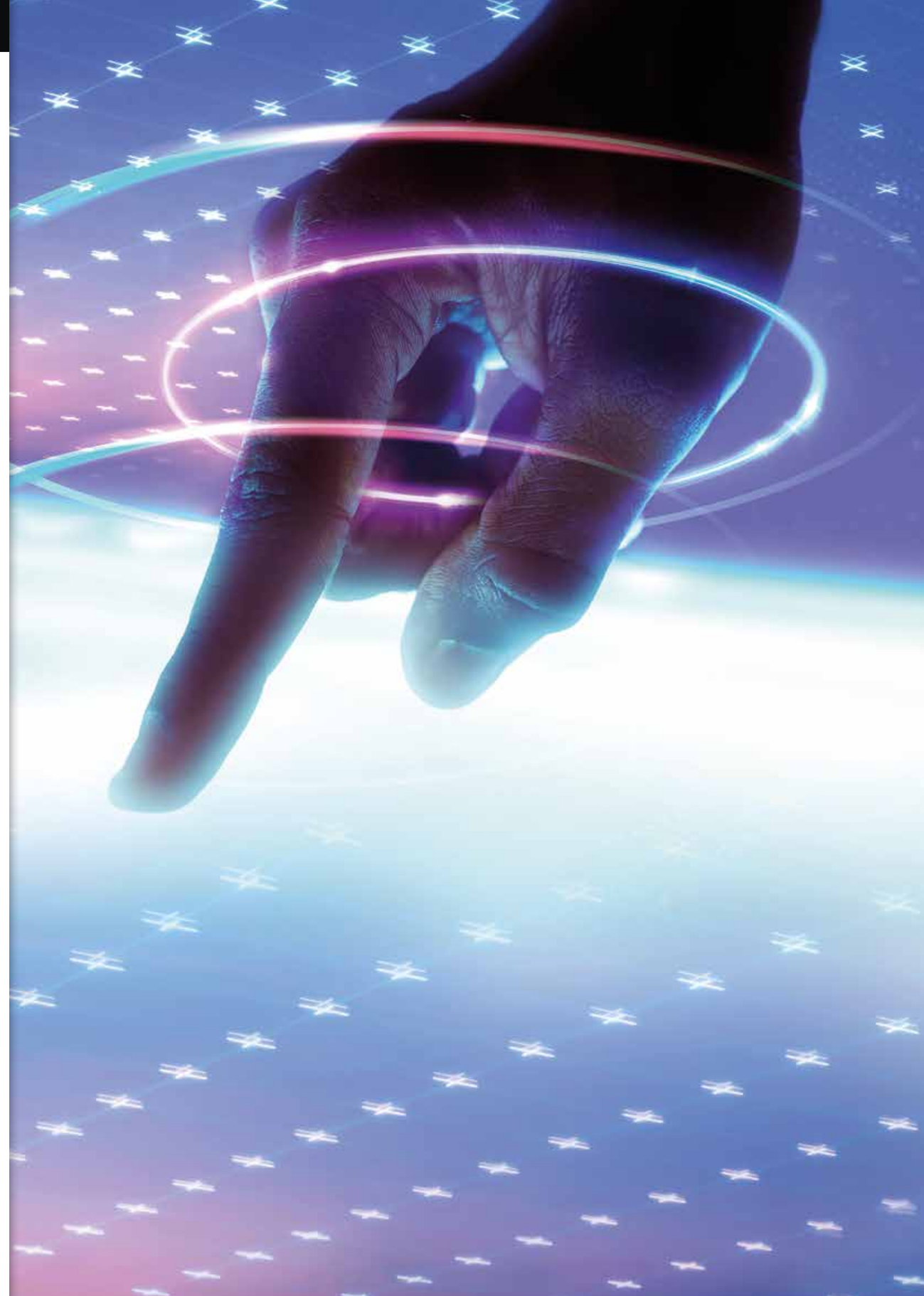
CPU
NXP i.MX 6 Family

GRAPHICS
GC320 & GC355 2D accelerator + GC2000 3D accelerator

CONNECTIVITY
2x 100MbE, up to 3x USB, 2x RS232, RS485, CAN

MEMORY
Soldered on Board DDR3L memory

Please visit www.seco.com to find the latest version of these datasheets



Information subject to change.
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