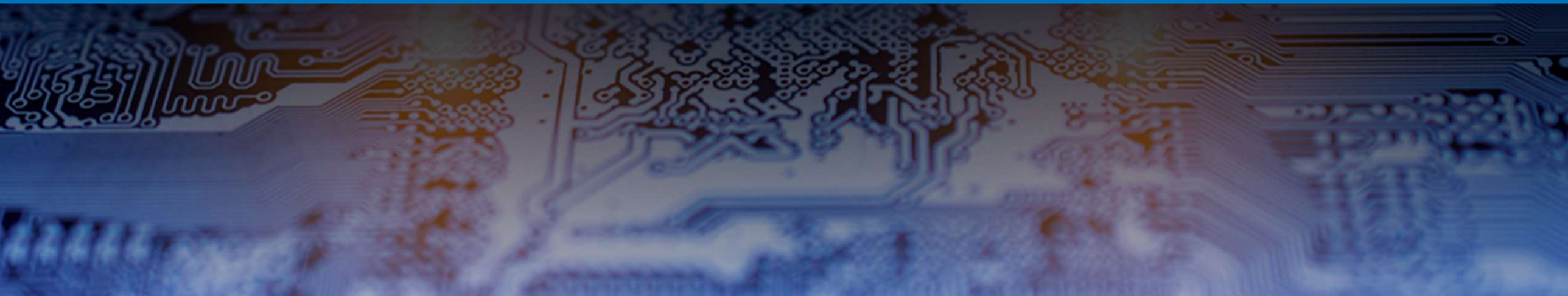
ENGICAM®

EMBEDDED SOLUTIONS

# ROADMAP & PRODUCT PRESENTATION – 2025



# AT A GLANCE

# WHO WE ARE

Engicam Srl is a rapidly growing technology company focusing on **embedded computing products and services**.

We design, develop, and manufacture high-performance System on Modules and Computer on Modules, Carrier boards and HMI.

Our products are based on the latest generation of processors from **NXP®**, **Intel®**, **STM®**, **Rockchip**, **Renesas,** and **Texas Instruments**.

Headquartered in Florence, Italy, the company is **wholly managed by the owners.**

# FOCUS ON

HIGH-PERFORMANCE EMBEDDED COMPUTING PRODUCTS

## LONGEVITY

All modules have a guaranteed long-term production availability, up to 15 years from CPU launch

## SMALLEST FORM FACTOR

For easy integration, modules are designed and developed to minimize the form factor.

## SCALABILITY

The majority of Engicam modules are available in SODIMM, MicroGEA or SMARC formats mutually compatible for complete scalability.

# SERVICES

# SERVICES

## WE CAN COMPLETELY TAKE OVER FOR YOU

To facilitate product customization, our Engineering Team offers support during each phase of the development process.

## CUSTOMIZATION

Thanks to many years of experience in standard products customization and tailored solutions we provide hardware, software, and mechanical design for quick product development.

# SUPPORT

Free of charge support directly by our development team for the main hardware and software issues.

## HARDWARE

- Clear and rich documentation
- Hardware manual for modules and starter kit, application note for hardware design
- Starter kit carrier board schematics
- Direct hardware support for modules and carrier board design
- Design review for customers' carrier boards schematics
- EMC pre-compliance for starter kit and open frame

## SOFTWARE

- Virtual machine with BSP ready to use for Linux based CPU modules
- Android BSP for selected modules
- Support for driver developments
- Support for standard package porting

# LINUX

To facilitate customer product development, we provide comprehensive hardware and software kits developed by our Engineering Team.

## LINUX SDK

- Single file installation
- Ready to use
- Exhaustive and faster evaluation
- Complete open source solution
- Full environment, OS configuration

# ANDROID

## ANDROID SDK

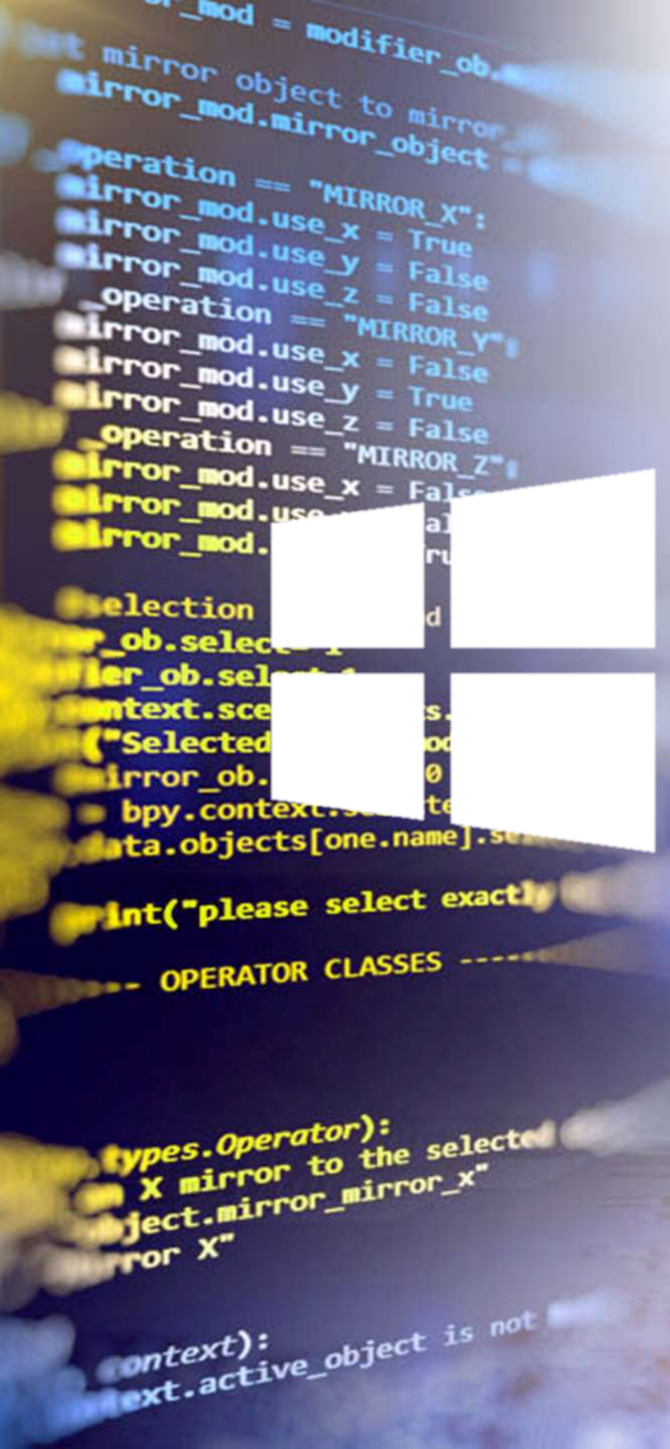
All standard Android tools are available for faster evaluation and development.

## ANDROID STUDIO

It provides the quickest tools for building apps on Android devices. ADB TOOL is available on USB OTG and LAN for debugging.

## ANDROID BSP

Devices are available for easy integration in the Android development environment from NXP™. C.TOUCH 7” and C.TOUCH 10.1”. Open Frames are available for quick evaluation or as ready-to-use solutions.



# BIOS

Available for x86-based modules:

- Preliminary discussion to ensure full customization of BIOS according to client specifications.
- Release of BIOS updates on request.
- Phoenix-based BIOS with a menu for independent customization
- Fully open-source BIOS (Slim Bootloader).

# CONSULTANCY

Engicam’s teams specializing in ARM software, X86 firmware, and hardware can provide direct consultancy services tailored to meet all customer business needs.

## HARDWARE DESIGN

- Customer carrier board design, schematics, and PCB.
- Customer carrier board prototype.
- Customer carrier board hardware debug.
- Customer product EMC pre-compliance test.

## SOFTWARE

- BSP porting on customer carrier
- Custom driver porting and development.
- Customer graphic interface software.
- QT-based applications.
- Multimedia applications based on GStreamer or MPlayer.
- Web applications based on PHP, LIGHTTPD or Apache.
- Network applications

# CONSULTANCY

We offer tailored and innovative mechanical design solutions and manufacturing services guiding projects from concept to production to meet industry standards.

## MECHANICAL DESIGN

- Custom HMI kit for multiple purpose and environment
- Plastic and metallic custom enclosures
- Thermal analisys and heatsink customization
- Product concept and rendering
- Fast prototypes

## MANUFACTURING SERVICES

- Custom carrier board production.
- Plastic or metal enclosures manufacturing by selected and certified suppliers.
- Assembly of finished electronic devices
- Direct packaging and shipping

# PCN/EOL NOTIFICATION

Recognizing the importance of long product life cycles for our customers, we maintain the production of older products even as newer and more cost-effective options are introduced..

## PRODUCT/PROCESS CHANGE NOTIFICATION (PCN)

We issue notifications regarding product and process changes that impact form, fit, or function, including Manufacturing Change Notifications, Document Change Notifications, and End of Life (EOL) Change Notifications.

## END OF LIFE NOTIFICATION (EOL)

In case of a component of a card or system is rendered obsolete by its manufacturer and no alternative component is available in the market, we promptly issue a notification regarding the affected products (End of Life).

# PRODUCT PRESENTATION

# CPU MODULES

## SCALABILITY

The majority of Engicam modules are available in **SODIMM**, **MicroGEA** or **SMARC** formats and are mutually compatible for a complete scalability

SODIMM


MicroSOM

SMARC


COM Express


Qseven

# SODIMM

## SCALABILITY, ROBUSTNESS, LONGEVITY

## ARM BASED SOMs

**NXP®**

MicroGea MX91, i.Core MX93, i.Core MX8M Plus Family, i.Core MX8M Mini, i.Core MX8X, i.Core 1.5 MX6, i.Core MX6, GEA-L MX6ULL, GEA MX6UL

**ST®**

GEA STM32MP13, i.Core STM32MP15, I.CORE STM32MP2, MicroGEA STM32MP2

**TI®**

i.Core AM62x

**RENESAS®**

i.Core RZ/G2E

**ROCKCHIP®**

PX30.Core

# GEA STM32MP13

PRODUCTION READY

## EDIMM 2.0

Based on ST® STM32MP135

Low power consumption

| | | | |
|---|---|---|---|
| CPU | ST® STM32MP135 | NETWORKING | • 2x 10/100 Ethernet interface |
| CORES | Arm Cortex-A7 up to 1 GHz | MASS STORAGE | • 4GB eMMC drive soldered on-board |
| MEMORY | Up to 1GB LPDDR3L | PERIPHERAL INTERFACES | UART, I²C, SPI, CAN, SDIO, GPIOs |
| GRAPHICS | Two layers (incl. 1 secured) with programmable color LUT | POWER SUPPLY | +5V DC |
| VIDEO INTERFACES | LCD-TFT controller, up to 24-bit<br>up to WXGA (1366 x 768) @60 fps | OPERATING SYSTEM | • Linux<br>• Yocto |
| USB | • 1x USB HOST 2.0<br>• 1x USB OTG 2.0 | OPERATING TEMPERATURE* | Industrial qualified |
| AUDIO | • SAI interface | DIMENSIONS | 25 x 67.6 mm |

Authorized Partner

# i.CORE AM62x

PRODUCTION READY

## SODIMM MODULES
ARM BASED SOMs

Based on TI®'s AM62 processor

Extensive set of peripheral

YOCTO Linux

| | | | |
|---|---|---|---|
| CPU | TI AM62x Sitara | USB | • 2x USB HOST 2.0 |
| CORES | Up to 4 Arm Cortex-A53 @ 1.4 GHz and Single-core Cortex-M4F MCU @ 400 MHz. | MASS STORAGE | Starting from 8GB eMMC drive soldered on-board |
| MEMORY | Up to 16GB DDR4 @1600MTs | PERIPHERAL INTERFACES | UART, I²C, SPI, JTAG, CAN, SDIO, GPIOs, 16 bit parallel LCD |
| GRAPHICS | 3D GPU, OpenGL ES 3.1, Vulkan 1.2 | POWER SUPPLY | +5V DC |
| VIDEO INTERFACES | • Dual channel LVDS up to 1920x1080 @60fps<br>• MIPI-CSI | OPERATING SYSTEM | Linux, Yocto, Android |
| NETWORKING | 2x Gb Ethernet interfaces (1x RGMII option available) | OPERATING TEMPERATURE* | Industrial qualified |
| AUDIO | I²S interface | DIMENSIONS | 32 x 67,6 mm |

Texas Instruments

# i.CORE MX93

PRODUCTION READY

## SODIMM MODULES
ARM BASED SOMs

Based on NXP® i.MX 93

EDIMM

Dual Gb Ethernet

NPU for AI

| | |
|---|---|
| CPU | NXP i.MX 93 |
| CORES | 2x Arm Cortex-A55 @ up to 1.7 GHz processor and 1x Arm Cortex-M33 @250Mhz. |
| MEMORY | Up to 2GB LPDDR4 @3700MTs |
| GRAPHICS | Hardware Compositor for blending/composition, resize, color space graphics conversion |
| VIDEO INTERFACES | • Single channel LVDS up to 1366x768 or 1280x800<br>• MIPI-DSI – 4 lanes up to 1920x1200<br>• MIPI-CSI |
| NETWORKING | 2x Gb Ethernet interfaces (1x RGMII option available) |

| | |
|---|---|
| USB | • USB OTG 2.0<br>• USB HOST 2.0 |
| MASS STORAGE | Starting from 4GB eMMC drive soldered on-board |
| PERIPHERAL INTERFACES | UART, I²C, SPI, JTAG, CAN,SDIO, GPIOs |
| POWER SUPPLY | +5V DC |
| OPERATING SYSTEM | Linux, Android |
| OPERATING TEMPERATURE* | Industrial qualified |
| DIMENSIONS | 32 x 67,6 mm |


NXP Gold Partner

# SODIMM MODULES
## ARM BASED SOMs

Standard EDIMM

GPU, NPU, VPU

Suitable for machine learning

# i.CORE MX95

| | |
|---|---|
| CPU | NXP® i.MX95 |
| CORES | • 6x Arm Cortex-A55, up to 1.8 GHz<br>• 1x Arm Cortex-M7, up to 800 MHz<br>• 1x Arm Cortex-M33, up to 333 MHz |
| MEMORY | Up to 16GB (@ 6400 MT/s) LPDDR5 |
| GRAPHICS | Arm Mali-G310 3D GPU supporting 50 GFLOPs FP32.<br>• OpenGL® ES 3.2<br>• Vulkan® 1.3<br>• OpenCL 3.0 |
| VIDEO INTERFACES | • LVDS<br>• MIPI-DSI<br>• MIPI-CSI |
| VIDEO PROCESSING | • 4Kp30 H.265/H.264 decode and encode<br>• 1x JPEG Encoder<br>• 1x JPEG Decoder |
| AUDIO | • I²S interface<br>• SAI Interface |
| NETWORKING | 2x 1Gb Ethernet interfaces<br>1x 10 Gb Ethernet interface (SGMII) |
| USB | • 1x USB 3.0 (Optional Type C)<br>• 4x USB 2.0 (HUB option) |
| MASS STORAGE | Starting from 4GB eMMC drive soldered on-board |
| PERIPHERAL INTERFACES | UART, LPSPI, I²C, CAN Bus, GPIOs |
| PCIE | 2x PCIe 3.0 |
| OPERATING SYSTEM | • Linux Yocto<br>• Android |
| POWER SUPPLY | +5V DC |
| DIMENSIONS | 67,6 X 32,1 mm |
| OPERATING TEMPERATURE* | Extended Industrial qualified |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COMING SOON

# SODIMM MODULES
## ARM BASED SOMS

Scalability - Robustness

# i.CORE STM32MP2

PRODUCTION READY

| | |
|---|---|
| CPU | ST® STM32MP25x |
| CORES | Single or dual core Arm Cortex-A35 @1.5 GHz and Arm Cortex M33@400MHz |
| MEMORY | Up to 4GB LPDDR4 @2400MTs |
| GRAPHICS | • 3D GPU: VeriSilicon® - Up to 900 MHz<br>• OpenGL® ES 3.2 B – Vulkan 1.2<br>• OpenCL™ 3.0, OpenVX™ 1.3<br>• Up to 150 Mtriangle/s, 900 Mpixel/s |
| VIDEO INTERFACES | • MIPI® DSI 4 data lanes up to 2.5 Gbit/s each<br>• Dual channel LVDS up to 11 Gbit/s per lane<br>• Up to QXGA (2048×1536) @60 fps with dual link<br>• MIPI-CSI |
| VIDEO PROCESSING | • 1080p60 HEVC (h.264, VP8) dec<br>• 1080p60 HEVC (h.264, VP8) enc |
| AUDIO | • I²S interface |
| NETWORKING | 3x 10/100 Ethernet interfaces |
| USB | • 1x USB HOST 2.0<br>• 1x USB HOST/DEVICE 2.0 (USB 3.0 on PCIe) |
| MASS STORAGE | Starting form 8GB eMMC drive soldered on-board |
| PERIPHERAL INTERFACES | UART, I²C, SPI, CAN Bus, PWM, SDIO i/f, JTAG i/f, PCIe, GPIOs |
| POWER SUPPLY | +5V DC |
| OPERATING SYSTEM | • Linux<br>• Yocto |
| OPERATING TEMPERATURE* | Up to -40°/+125° |
| DIMENSIONS | 67,6 x 32,1 mm |

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# i.CORE MX8M PLUS

PRODUCTION READY

## SODIMM MODULES
ARM BASED SOMs

Scalability - Robustness

NPU for AI

CAN BUS and HDMI


| | |
|---|---|
| CPU | NXP® i.MX 8M Plus |
| CORES | Quad Arm Cortex-A53 @ up to 1.8GHz processor with a (NPU) up to 2.3 TOPS and Cortex-M7 CPU @ 800 MHz. |
| MEMORY | Up to 4GB LPDDR4 |
| GRAPHICS | GC7000UL (2 shaders), OpenGL ES 2.0/3.0/3.1, Vulkan, OpenCL 1.2; GC520 (2D) |
| VIDEO INTERFACES | • LVDS 18/24bit up to Full HD<br>• MIPI-DSI – 4 lanes option<br>• HDMI up to Full HD<br>• 2x MIPI-CSI – 4 lanes |
| VIDEO PROCESSING | • 1080p60 HEVC (h.265, VP9, VP8) dec<br>• 1080p60 HEVC (h.265) enc |
| AUDIO | • I²S interface |
| NETWORKING | Gb Ethernet interfaces |

| | |
|---|---|
| PCIE | 1 x PCIe 3.0 |
| USB | • USB OTG 3.0<br>• USB HOST 3.0 |
| MASS STORAGE | • Starting from 4GB eMMC drive soldered on-board |
| PERIPHERAL INTERFACES | UART, I²C, SPI, JTAG, CAN,SDIO, GPIOs |
| POWER SUPPLY | +5V DC |
| OPERATING SYSTEM | • Linux<br>• Yocto<br>• Android |
| OPERATING TEMPERATURE* | Industrial qualified |
| DIMENSIONS | 32.1 x 67,6 mm |

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# PX30.CORE

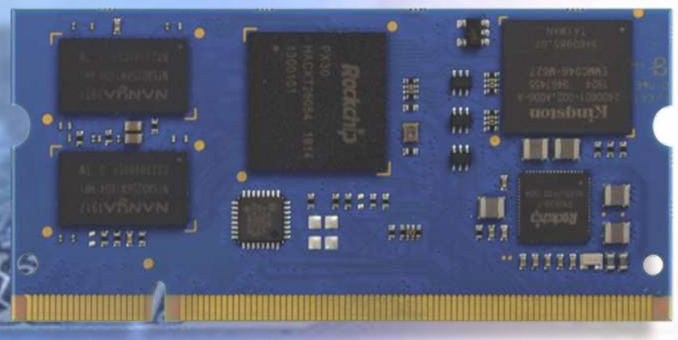
PRODUCTION READY

## SODIMM MODULES
ARM BASED SOMS

Low cost / Consumer

Q3/2028 Longevity

YOCTO AND BUILDROOT
ANDROID 10



| | |
|---|---|
| CPU | • RockChip® PX30 |
| CORES | Quad-Core Arm® Cortex®-A35@1.2GHz |
| MEMORY | Up to 2GB DDR4 |
| GRAPHICS | • Mali G31 OpenGL ES 1.1, 2.0 and 3.2 OpenCL 2.0 Vulkan® VX 1.0 |
| VIDEO INTERFACES | • Parallel RGB up 24 to bit i/f<br>• LVDS 18/24 bit i/f or alternative DSI 4 lanes<br>• MIPI-CSI 4 lanes with 8Mp ISP |
| VIDEO PROCESSING | • 1080p@60 HEVEC MAIN10 (h.265, VP8) dec<br>• 1080p@60 h.264 enc |
| AUDIO | • I²S interface |
| NETWORKING | • LAN 10/100 Ethernet interface |

| | |
|---|---|
| USB | • USB HOST 2.0<br>• USB OTG 2.0 |
| MASS STORAGE | Starting from 4GB eMMC drive soldered on-board |
| PERIPHERAL INTERFACES | UART, I²C, SPI, SDIO, Audio Codec on SOM |
| POWER SUPPLY | +5V DC |
| OPERATING SYSTEM | • Linux<br>• Yocto |
| OPERATING TEMPERATURE * | Consumer qualified |
| DIMENSIONS | 67,6 x 32,1 mm |

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# EDIMM 2.0

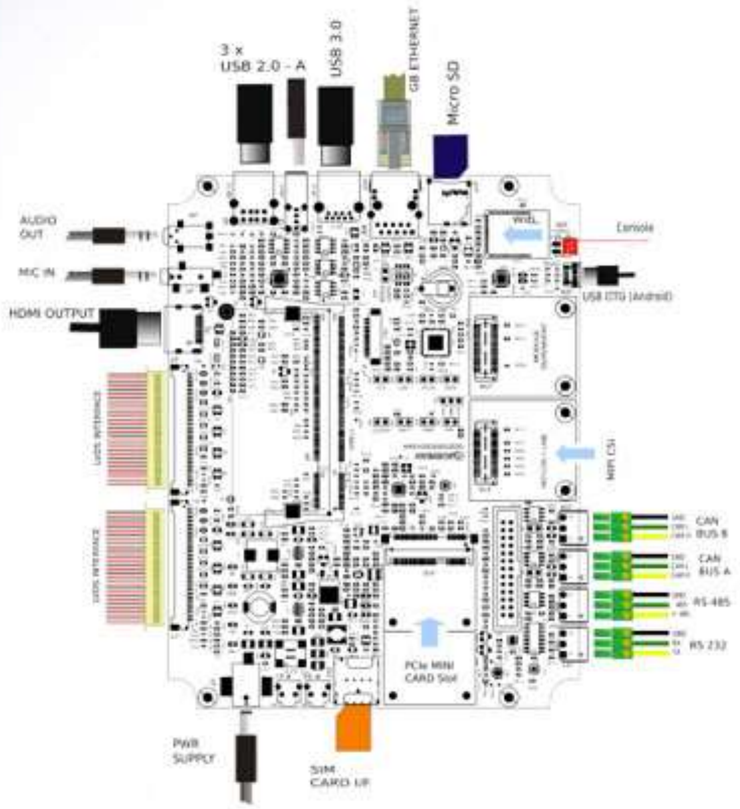
FOR EVALUATION

## EDIMM 2.0
STARTER KIT

### STARTER KIT SCHEMATIC
Available on request

### YOCTO LINUX
Available on all SOMs

### ANDROID
Available on request




# CARRIER BOARDS

## COMPLIANT WITH EDIMM 2.0

General purpose carrier board

Capacitive touch interface

# C.TOUCH 2.0 CARRIER BOARD

PRODUCTION READY

| | |
|---|---|
| Wide 15 to 30 Vdc single power supply | 1x Ethernet 10/100 |
| WiFi + BT | 1x microSD |
| 1x audio output | 1x USB Type A |
| 1x USB OTG device | 1x CAN bus |
| 1x RS485 | 1x RS232 |
| 1x RS232 for OS Console | 1x expansion connector (I2C, SDIO or SPI, up to 10 GPIO) 2 x USB (Option) |
| 1x General purpose LCD connector: 1x 18 or 24 bit single channel LVDS, 1x USB, 1 x I2C for CTP i/f, 1x PWM for backlight control, Power supply for LCD (+3V3, +5V, 12V) | 1x LCD connector to drive dual channel displays (Option) |
| | Industrial temperature range |

## CAN BE USED WITH:

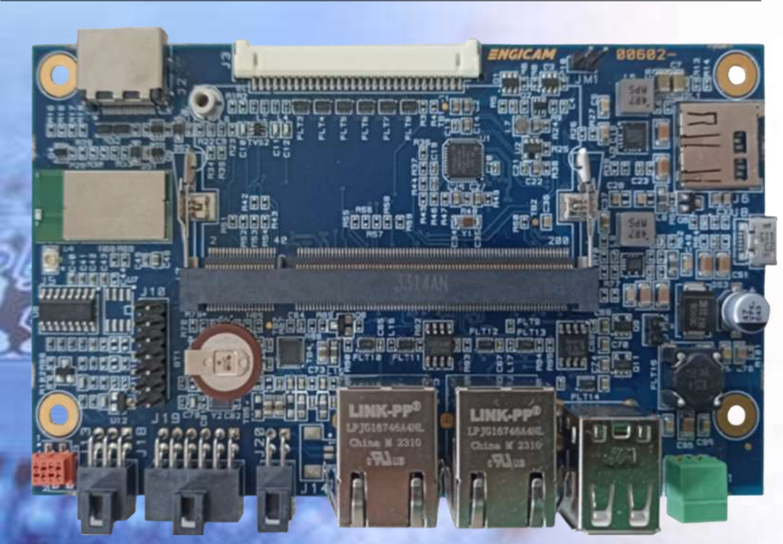
- i.Core MX8M Plus
- i.Core STM32MP15
- i.Core 1.5 Mx6
- i.Core MX8M Mini
- i.Core MX8X
- C.Touch IoT 10.1”
- PX30.Core
- i.Core RZ/G2E

# CARRIER BOARDS

## COMPLIANT WITH EDIMM 2.0

General purpose carrier board

Capacitive touch interface



# C.TOUCH 3.1 CARRIER BOARD

PRODUCTION READY

| | |
|---|---|
| EDIMM 2.0 CPU modules compliant | Industrial temperature range |
| Wide 7 to 30 Vdc single power supply | 2x Ethernet 10/100/1000 |
| WiFi + BT | 1x microSD |
| 1x audio output | 2x USB Type A |
| 1x USB OTG device (Micro USB type) | 2x CAN bus |
| 1x RS485 | 1x RS232 |
| 1x RS232 for OS Console | 1x expansion connector (I2C, GPIOs, USB, SPI, Power supply +3,3V and 5V) |
| 1x HDMI Standard Interface ( not supported on all SOMs) | General purpose LCD connector: 1x 18 or 24 bit single channel LVDS, Capacitive touch panel via USB or I2C, 1x PWM for backlight control, Power supply for LCD (+3V3, +5V, 12V) |
| 1x LCD connector to drive dual LVDS channel displays (optional) | |

## CAN BE USED WITH:

- i.Core MX8M Mini
- i.Core MX93
- i.Core MX91
- i.Core AM62X
- i.Core MX8X
- i.Core MX8M Plus Family
- HMI C.Touch GEN 3
- HMI K,Touch 10.1

NEW!

PRODUCTION READY

# HMI

## COMPLIANT WITH EDIMM 2.0

Capacitive touch 10.1 display+frame

Front mount

# K.TOUCH 10.1”

| | |
|---|---|
| DIMM 2.0 CPU modules compliant | Industrial temperature range |
| Wide 7 to 30 Vdc single power supply | up to 2x Ethernet 10/100/1000 |
| WiFi + BT | 1x microSD |
| 1x audio output | 2x USB Type A |
| 1x USB OTG device (Micro USB type) | 1x CAN bus |
| 1x RS485 | 1x RS232 ( or alternative second CAN bus) |
| 1x RS232 for OS Console | 1x expansion connector (I2C, GPIOs, USB, SPI, Power supply +3,3V and 5V) |
| 1x HDMI Standard Interface ( not supported on all SOMs) | General purpose LCD connector: 1x 18 or 24 bit single channel LVDS, Capacitive touch panel via USB or I2C, 1x PWM for backlight control, Power supply for LCD (+3V3, +5V, 12V) |
| 1x LCD connector to drive dual LVDS channel displays | |

## CAN BE USED WITH:

- i.Core MX8M Plus Family
- i.Core MX8M Mini*
- i.Core MX93
- i.Core AM62X
- i.Core RZ/G2E
- i.Core STM32MP15
- i.Core STM32MP25x

* CAN Bus not supported

# MICRO MODULES

Smallest size

Down to 25X25mm

Linux based

## NXP® i.MX8 ULP


## ST® M32MP13


## NXP® i.MX6ULL


## NXP® MX91


## ST® M32MP15


NXP Gold Partner

ST Authorized Partner

# MICROGEA MODULES

## ARM BASED SOMS

Based on NXP® i.MX91

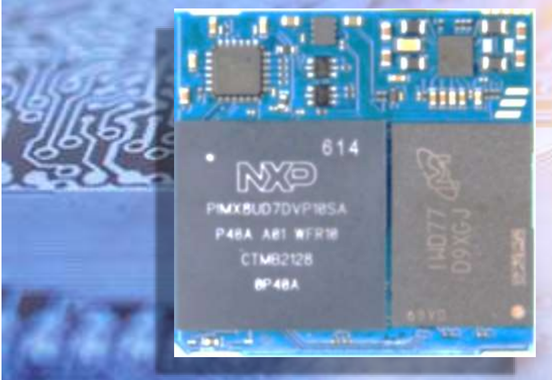
Powerful low power Single Core

# MICROGEA MX91

SAMPLE AVAILABLE

| | |
|---|---|
| CPU | NXP® i.MX8ULP |
| CORES | One Arm Cortex-A55 |
| MEMORY | Starting from 1 GB LPDDR4x |
| GRAPHICS | |
| VIDEO INTERFACES | • 1x Parallel up-to 24-bit RGB (DBI/DPI) |
| USB | • 2x USB HOST 2.0 |
| AUDIO | • SAI interface |
| NETWORKING | 1x 10/100 Ethernet interfaces<br>Additional 1x RGMII |

| | |
|---|---|
| MASS STORAGE | • 4GB eMMC drive soldered on-board |
| PERIPHERAL INTERFACES | UART, SM Bus, I²C, LPC/eSPI, SPI, GPIOs |
| POWER SUPPLY | +3,3V DC |
| OPERATING SYSTEM | • Linux<br>• Yocto |
| OPERATING TEMPERATURE* | Industrial qualified |
| DIMENSIONS | 25 x 25 mm |



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# MICROGEA MODULES
ARM BASED SOMS

Based on NXP® i.MX8ULP

Powerful low power Dual Core MicroSom with GPU

# MICROGEA MX8ULP

PRODUCTION READY

| | |
|---|---|
| CPU | NXP® i.MX8ULP |
| CORES | Up to two Arm Cortex-A35 @ 1.0 GHz Arm Cortex-M33 @ 216 MHz |
| MEMORY | Starting from 1 GB LPDDR4x |
| GRAPHICS | • 3D GPU includes OpenGL® ES 3.1, Vulkan®, OpenVG™ 1.1, OpenCL™ 2.x and OpenVG™1.1<br>• 3D graphics accelerator, and 2D graphics accelerator |
| VIDEO INTERFACES | • 1x MIPI DSI (4-lane) with PHY<br>• 1x Parallel up-to 24-bit RGB (DBI/DPI) |
| USB | 2x USB HOST 2.0 |
| AUDIO | SAI interface |
| NETWORKING | 1x 10/100 Ethernet interfaces |

| | |
|---|---|
| MASS STORAGE | 4GB eMMC drive soldered on-board |
| PERIPHERAL INTERFACES | UART, SM Bus, I²C, LPC/eSPI, SPI, GPIOs |
| POWER SUPPLY | +3,3V DC |
| OPERATING SYSTEM | • Linux<br>• Yocto |
| OPERATING TEMPERATURE* | Industrial qualified |
| DIMENSIONS | 25 x 26 mm |


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# MICROGEA STM32MP13

PRODUCTION READY

## MICROGEA MODULES
ARM BASED SOMS

- Based on ST® STM32MP135
- Low power operation
- Real-time capabilities

| | | |
|---|---|---|
| CPU | ST® STM32MP135 |
| CORES | Arm Cortex-A7 up to 1 GHz |
| MEMORY | Up to 1GB LPDDR3L |
| GRAPHICS | Two layers (incl. 1 secured) with programmable color LUT |
| VIDEO INTERFACES | LCD-TFT controller, up to 24-bit up to WXGA (1366 × 768) @60 fps |
| USB | • 1x USB HOST 2.0<br>• 1x USB OTG 2.0 |
| AUDIO | • SAI interface |
| NETWORKING | 1x 10/100 Ethernet interfaces<br>1x RMII (option) |

| | | |
|---|---|---|
| MASS STORAGE | • 4GB eMMC drive soldered on-board |
| PERIPHERAL INTERFACES | UART, I²C, SPI, CAN, SDIO, GPIOs |
| POWER SUPPLY | +3,3V DC |
| OPERATING SYSTEM | • Linux<br>• Yocto |
| OPERATING TEMPERATURE* | Industrial qualified |
| DIMENSIONS | 25 x 25 mm |

Authorized Partner

# MICROGEA STM32MP2

UNDER DEVELOPMENT

## MICROGEA MODULES

ARM BASED SOMS

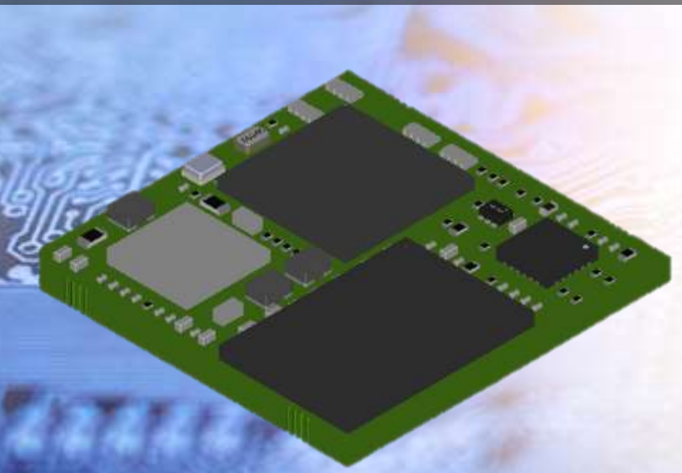
Based on ST® STM32MP2

Low power operation

Real-time capabilities

GPU

| | |
|---|---|
| CPU | ST® STM32MP2x |
| CORES | Single or dual core Arm Cortex-A35 @1.5 GHz and Arm Cortex M33@400MHz |
| MEMORY | Up to 2GB LPDDR4 @2400MTs |
| GRAPHICS | • 3D GPU: VeriSilicon® - Up to 900 MHz<br>• OpenGL® ES 3.2.8 – Vulkan 1.2<br>• OpenCL™ 3.0, OpenVX™ 1.3<br>• Up to 150 Mtriangle/s, 900 Mpixel/s |
| VIDEO INTERFACES | • MIPI®DSI 4 data or single channel LVDS up to 1.1 Gbit/s<br>• RGB parallel interface |
| VIDEO PROCESSING | • 1080p60 HEVC (h.264, VP8) dec<br>• 1080p60 HEVC (h.264, VP8) enc |
| AUDIO | • I²S interface |
| NETWORKING | 1x 10/100 Ethernet interfaces with PHY<br>1x RGMII interface |
| USB | • 1x USB HOST 2.0<br>• 1x USB HOST/DEVICE 2.0 |
| MASS STORAGE | Starting form 8GB eMMC drive soldered on-board |
| PERIPHERAL INTERFACES | UART, I²C, SPI, CAN Bus, PWM, SDIO i/f, JTAG i/f, GPIOs |
| POWER SUPPLY | +5V DC |
| OPERATING SYSTEM | • Linux Yocto |
| OPERATING TEMPERATURE* | Up to -40°/+125° |
| DIMENSIONS | 25 x 25 mm |



Authorized Partner

# MICROGEA MODULES
## ARM BASED SOMS

SMALLEST 25x25mm

Scalability – Robustness

Longevity Q4 2031


Industrial · Digital Signage Infotainment · e-paper display · Transportation · Automotive · Robotics · Biomedical/ Medical devices

# MICROGEA MX6ULL

PRODUCTION READY

| | |
|---|---|
| CPU | NXP® i.MX 6ULL |
| CORES | Single-Core Cortex-A7 @ up to 900MHz |
| MEMORY | Up to 1GB DDR3L @800MTs |
| GRAPHICS | EPD, PXP to support 2D image processing including color-space conversion, scaling, alpha-blending, and rotation |
| VIDEO INTERFACES | • 1x Parallel LCD<br>• 1x EPD |
| VIDEO PROCESSING | • Up to WXGA (1366x768) for LCD<br>• Up to 2048x1536 for EPD |
| AUDIO | I²S interface |
| NETWORKING | 1x 10/100 Ethernet interfaces<br>1x RMII interface |
| USB | • 1x USB HOST 2.0<br>• 1x USB OTG |
| MASS STORAGE | Nand Flash |
| PERIPHERAL INTERFACES | I²C, SPI, PWM, UART,CAN Bus, SDIO, ADC |
| POWER SUPPLY | + 3,3V DC |
| OPERATING SYSTEM | Linux |
| OPERATING TEMPERATURE* | Extended or Industrial qualified |
| DIMENSIONS | 25 x 25 mm |

NXP Gold Partner

# MICROGEA STM32MP15

PRODUCTION READY

## MICROGEA MODULES

ARM BASED SOMS

SMALLEST 25x25mm

Scalability – Robustness

YOCTO Linux available


Industrial · Transportation · Automotive · Robotics · Biomedical/ Medical devices

| | |
|---|---|
| CPU | ST® STM32MP157(A/D)AC |
| CORES | Dual-Core Cortex-A7@650/800MHz and Cortex M4@200MHz |
| MEMORY | Up to 1GB DDR3L1066 |
| GRAPHICS | 3D GPU: Vivante® - OpenGL® ES 2.0 Graphics Up to 26 Mtriangle/s, 133 Mpixel/s |
| VIDEO INTERFACES | Up to 24 bit Parallel |
| USB | • 2x USB HOST 2.0<br>• 1x USB OTG 2.0 |
| AUDIO | • I²S interface |
| NETWORKING | 1x 10/100 Ethernet interfaces |

| | |
|---|---|
| MASS STORAGE | • 512MB Nand Flash |
| PERIPHERAL INTERFACES | I²C, SPI, PWM, UART, CAN Bus, SDIO, JTAG, ADC |
| POWER SUPPLY | +3,3V DC |
| OPERATING SYSTEM | • Linux<br>• Yocto |
| OPERATING TEMPERATURE* | Industrial qualified |
| DIMENSIONS | 25 x 25 mm |

SMARC

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FOR EVALUATION

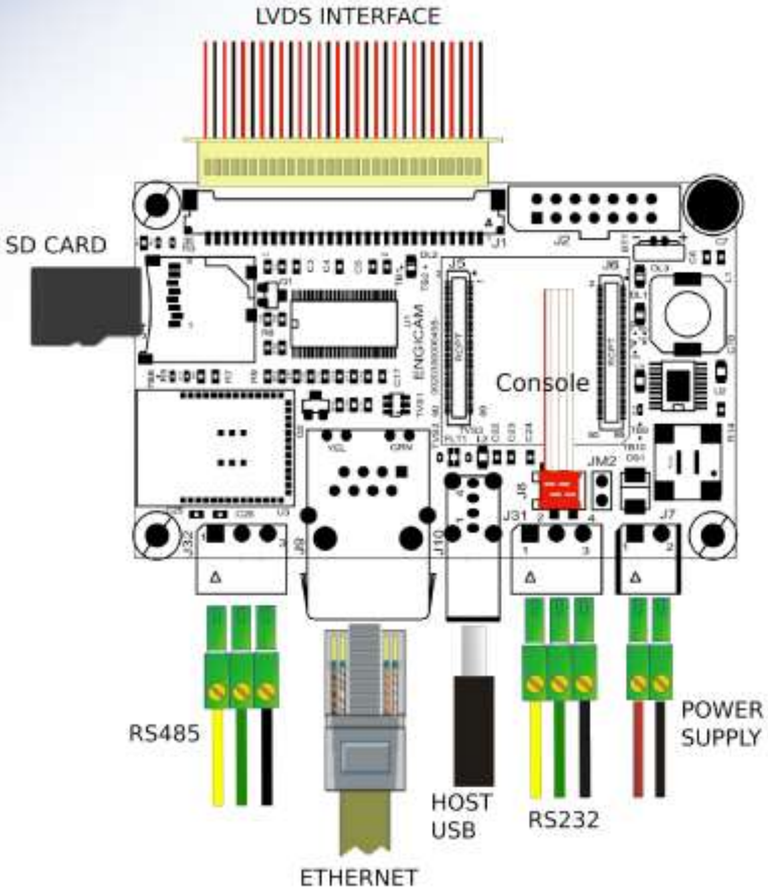
# MICROGEA
## STARTER KIT

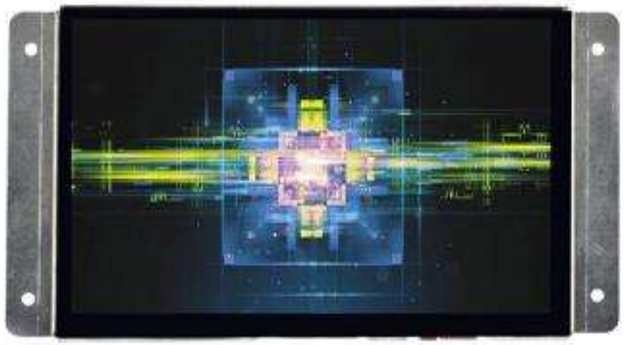
### STARTER KIT SCHEMATIC

Available on request

### YOCTO LINUX

Available on all SOMs



# CARRIER BOARDS

## BASED ON MICROGEA MODULES

General-purpose

Miniature carrier board

# MICRODEV 3.0

PRODUCTION READY

| | |
|---|---|
| MicroGEA Module compliant | Industrial temperature range |
| Wide 7 to 40 Vdc single power supply | 1 x 10/100 Ethernet interface |
| 1 x microSD | 1 x USB Type A |
| 1 x RS485 | 1 x RS232 |
| 1 x RS232 for OS Console | Tiny Size: 80 x 50 mm |
| WiFi + BT LWB5+ | Global LTE with sim connector |
| Plastic box enclosure (optional) | |

## CERTIFICATIONS

CE - RED COMPLIANT FC (In progress)

# MICRO 5”

PRODUCTION READY

## HMI

REAR MOUNT

MicroSOM standard

Capacitive touch screen 5”

| | |
|---|---|
| MicroSOM modules compliant | TFT 5" Industrial |
| Capacitive multi-touch display 800x480, 5:3 | Wide 10 to 30 Vdc single power supply |
| Brightness 400 cd/mq | 1x Ethernet 10/100 interface |
| WiFi + BT | 1x microSD |
| 1x audio output | 1x USB Type A |
| 1x USB OTG device (Micro USB type) | 1x CAN bus |
| 1x RS485 | 1x RS232 |
| 1x RS232 for OS Console | 1x strip connector (UART, GPIOs, USB OTG, SPI, Power supply +3,3V and 5V) |
| General purpose LCD connector: 1x 24 bit single channel LVDS, Capacitive touch panel via I2C, 1x PWM for backlight control, Power supply for LCD (+3V3, +5V, 12V) | |

**Operating Systems**

**Development Systems**

yocto PROJECT

# SMARC MODULES

## BASED ON SMARC FORM FACTOR

## SMARC STANDARD SOMS

**INTEL®**

SmarCore APL
SmarCore ADL-N
SmarCore EHL

**NXP®**

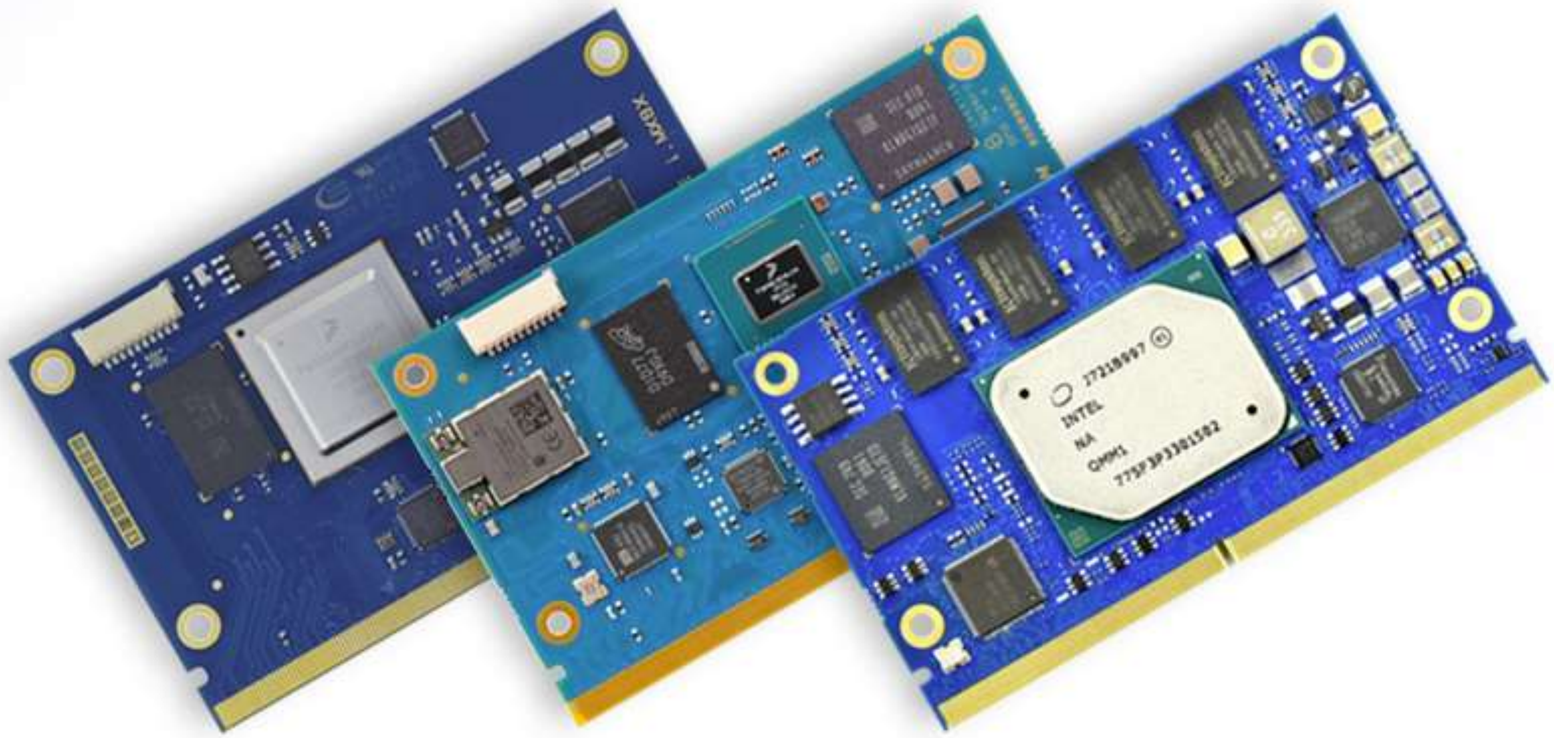
SmarCore MX8MPlus
SmarCore MX8X

**ST®**

SmarCore STM32MP2

**HAILO®**

SmarCore HAILO-15




NXP Gold Partner

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# SMARC MODULES
## X86 BASED SOMS

Scalability - Robustness

Longevity 15 years

# SMARCORE APL

PRODUCTION READY


| | |
|---|---|
| CPU | • Intel Atom x7-E3950 (4 x 1.6 / 2.0 GHz, 2MB L2 cache, 12W)<br>• Intel Atom x5-E3940 (4 x 1.6 / 1.8 GHz, L2 cache 2MB, 9W)<br>• Intel Atom x5-E3930 (2 x 1.3 / 1.8 GHz, L2 cache 1MB, 6.5W)<br>• Intel Celeron N3350 (2 x 1.1 / 2.4 GHz, L2 cache 1MB, 6W)<br>• Intel Pentium N4200 (4 x 1.1 / 2.5 GHz, L2 cache 2MB, 6W) |
| CORES | Up to 4 up to 2.5GHz, L2 cache 2MB |
| MEMORY | On board, Up to 8GB LPDDR4 |
| GRAPHICS | Intel 9° generation (Gen9) LP graphics and media encode/decode engine |
| VIDEO INTERFACES | • LVDS Dual channel up to 1920x1080 @60Hz via eDP bridge<br>• HDMI up to 3840x2160 @30Hz or 1920x1080 @60Hz<br>• DP up to 3840x2160 @30Hz or 1920x1080 @60Hz<br>• eDP 4K available without LVDS<br>• MIPI-CSI 1x4 lane and 1x2 lane |
| VIDEO PROCESSING | • HW accelerated encode HEVC (L5), H.264 (L5.2), MVC (L5.1) VP8, JPEG/MJPEG<br>• HW accelerated decode HEVC ( L5.1), H.264 (L5.2). MVC(L5.2) VP8, VP9, MPEG2, VC-1,WMV9, JPEG/MJPEG |
| AUDIO | • HDA interface<br>• I²S interface |
| NETWORKING | • 1x Intel ®I210 (industrial) |

| | |
|---|---|
| USB | • 2 x USB 3.0<br>• 4 x USB 2.0 |
| MASS STORAGE | • SATA Gen3<br>• 16 Gb eMMC 5,0 expandible |
| PERIPHERAL INTERFACES | • 2 x I²C<br>• 1 x RS232 x Debug/Console)<br>• 2 x RS232 (1 x RS485 available on rev.A)<br>• Panel Header (PWR, RST, Led CTRL) |
| PCIE | • Up to 4x PCIe Gen2 |
| OPERATING SYSTEM | • Linux Yocto<br>• Windows 10<br>• Windows IoT enterprise – Windows IoT core |
| POWER SUPPLY | +12 to 24 V DC |
| DIMENSIONS | Standard SMARC™ 2.0 short size module |
| OPERATING TEMPERATURE | Industrial and consumer qualified |

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# SMARC MODULES
## X86 BASED SOMS

Scalability - Robustness

Longevity 15 years

PRODUCTION READY

# SMARCORE EHL

| | |
|---|---|
| CPU | • Intel Atom X6211E Dual Core @ 1.2 GHz (burst 3.0 GHz) 1.5MB L2 cache, 6W<br>• Intel Atom X6413E Quad Core @ 1.5 GHz (burst 3.0 GHz) 1.5MB L2 cache, 9W<br>• Intel Atom X6425E Quad Core @ 1.8 GHz (burst 3.0 GHz) 1.5MB L2 cache, 12W)<br>• Intel Atom X6212RE Dual Core @ 1.2 GHz, 1.5MB L2 cache, 6W<br>• Intel Atom X6414RE Quad Core @ 1.5 GHz, 1.5MB L2 cache, 9W<br>• Intel Atom X6425RE Quad Core @ 1.9 GHz, 1.5MB L2 cache, 12W<br>• Intel Atom X6427FE Quad Core @ 1.9 GHz, 1.5MB L2 cache, 12W<br>• Intel Atom X6200FE Dual Core @ 1.0 GHz, 1.5MB L2 cache, 4.5W |
| CORES | Up to 4 up to 1.9GHz, L2 cache 1.5MB |
| MEMORY | Starting from 2GB LPDDR4 |
| GRAPHICS | • Intel® 11th generation (Gen 11) LP graphics controller.<br>• DirectX 12.1 compliant, OpenGL ES 3.1/3.0/2.0/1.1, OpenGL 4.5 supported, OpenCL™ 1.2, Vulkan 1.0 APIs, Dedicated FIVR for Graphics, Intel® Virtualization Technology for Directed I/O (VT-d) |
| VIDEO INTERFACES | • HDMI up to 4096x2160@60Hz<br>• eDP to LVDS Dual channel up to 1920x1080 @ 60Hz via eDP bridge<br>• DP up to 4096x2160@60Hz<br>• eDP up to 4096x2160@60Hz |
| VIDEO PROCESSING | • HEVC/H.265, H.264, VP9, VP8, WMV9/VC1, MPEG-2, VC-1. JPEG/MJPEG dec<br>• HEVC/H.265, H.264, VP9, JPEG/MJPEG enc |
| AUDIO | • I2S interface<br>• HDA |

| | |
|---|---|
| NETWORKING | • 2x GB Ethernet interface |
| USB | • 2x USB HOST 3.0<br>• 3x USB HOST 2.0<br>• 1x USB OTG 2.0 |
| MASS STORAGE | • Starting from 16GB eMMC drive soldered on-board<br>• SATA Gen3.2 |
| PERIPHERAL INTERFACES | UART, I2C, SPI, CAN, SDIO, GPIOs, JTAG (optional) |
| PCIE | 1x PCIe 3.0 |
| OPERATING SYSTEM | • Ubuntu<br>• Windows 10 |
| POWER SUPPLY | +5 V DC |
| DIMENSIONS | Standard SMARCTM 2.0 short size module |
| OPERATING TEMPERATURE* | Industrial (-40°C to 110°C Tj) |

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# SMARC MODULES

## X86 BASED SOMS

Scalability - Robustness

# SMARCORE ADL-N

SAMPLE AVAILABLE

| | |
|---|---|
| CPU | Intel® Alder Lake N |
| CORES | Intel® Core™ i3 N–Series<br>Intel Atom® x7000E Series<br>Intel® Processor N Series |
| MEMORY | Up to 8GB LPDDR5 |
| GRAPHICS | UHD Intel, OpenGL 4.6, OpenCL 3.0 , Direct X 12.1, IPU 6 |
| VIDEO INTERFACES | • LVDS 18/24bit up to Full HD<br>• Display Port<br>• HDMI 2x (1X via DP) up to Full HD<br>• 2x MIPI-CSI – 2-4 lanes |
| VIDEO PROCESSING | • 2160p60 HEVC (h.265, VP9, AV1) dec<br>• 2160p60 HEVC (h.265) enc |
| AUDIO | • I²S interface<br>• HDA |
| NETWORKING | 2x GB Ethernet interface |

| | |
|---|---|
| USB | • 6x USB 2.0<br>• 2x USB 3.0 |
| MASS STORAGE | Starting from 8GB eMMC drive soldered on-board |
| PERIPHERAL INTERFACES | UART, I²C, SPI, GPIOs |
| PCIE | 4x PCIe 3.0 |
| OPERATING SYSTEM | • Linux<br>• Windows 10/ Windows IoT |
| POWER SUPPLY | +5V DC |
| DIMENSIONS | Standard SMARC short size module |
| OPERATING TEMPERATURE* | Industrial qualified |

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# SMARC MODULES
## X86 BASED SOMS

Scalability - Robustness

NPU for AI

CAN BUS and HDMI

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# SMARCORE MX8M PLUS

PRODUCTION READY

| | |
|---|---|
| **CPU** | NXP® i.MX 8M Plus |
| **CORES** | Quad Arm® Cortex®-A53 @ up to 1.8GHz processor with a (NPU) up to 2.3 TOPS and Cortex®-M7 CPU @ 800 MHz |
| **MEMORY** | Up to 4GB LPDDR4 |
| **GRAPHICS** | GC7000UL (2 shaders), OpenGL ES 2.0/3.0/3.1, Vulkan, OpenCL 1.2; GC520 (2D) |
| **VIDEO INTERFACES** | • LVDS 18/24bit up to Full HD<br>• MIPI-DSI – 4 lanes option<br>• HDMI up to Full HD<br>• 2x MIPI-CSI – 4 lanes |
| **VIDEO PROCESSING UNIT CAPABILITIES** | • 1080p60 HEVC (h.265, VP9, VP8) dec<br>• 1080p60 HEVC (h.265) enc |
| **MASS STORAGE** | Starting from 8GB eMMC drive soldered on-board |

| | |
|---|---|
| **NETWORKING** | 2 x Gb Ethernet interface |
| **PCIE** | 1 x PCIe 3.0 |
| **USB** | 1 x USB OTG 3.0, 1 x USB HOST 3.0 |
| **AUDIO** | I2S interface |
| **PHERIPHERAL INTERFACES** | UART, I2C, JTAG, CAN, SDIO, SPI, GPIOs |
| **POWERSUPPLY** | + 5V DC |
| **OPERATING SYSTEM** | Linux - Yocto - Android |
| **OPERATING TEMPERATURE*** | Industrial qualified |
| **DIMENSIONS** | Standard SMARC short size module |

SMARC

NXP Gold Partner

SAMPLE AVAILABLE

# SMARC MODULES

## ARM BASED SOMS

Scalability - Robustness

# SMARCORE STM32MP2

| | |
|---|---|
| CPU | ST® STM32MP25x |
| CORES | Single or dual core Arm Cortex-a35 @1.5 ghz and Arm Cortex m33@400mhz |
| MEMORY | Up to 4GB LPDDR4 @2400MTs |
| GRAPHICS | • 3D GPU: VeriSilicon® - Up to 900 MHz<br>• OpenGL® ES 3.2.8 – Vulkan 1.2<br>• OpenCL™ 3.0, OpenVX™ 1.3<br>• Up to 138 Mtriangle/s, 900 Mpixel/s |
| VIDEO INTERFACES | • MIPI®DSI 4 data lanes up to 2.5 Gbit/s each (NON-COMPLIANT STANDARD)<br>• Dual channel LVDS up to 1.1 Gbit/s per lane<br>• MIPI-CSI |
| VIDEO PROCESSING | • 1080p60 HEVC (h.264, VP8) dec<br>• 1080p60 HEVC (h.264, VP8) enc |
| AUDIO | I²S interfaces |
| NETWORKING | 2x Gb Ethernet interfaces |

| | |
|---|---|
| USB | • Up to 4x USB HOST 2.0<br>• 1x USB 3.0 |
| MASS STORAGE | Starting form 8GB eMMC drive soldered on-board |
| PERIPHERAL INTERFACES | Serial, I²C, SPI, CAN Bus, PWM, SDIO i/f, JTAG i/f, PCIe, GPIOs |
| POWER SUPPLY | +5V DC |
| OPERATING SYSTEM | • Linux<br>• Yocto |
| OPERATING TEMPERATURE* | Up to -40°/+85° |
| DIMENSIONS | Standard SMARC short size module |

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NEW!

PRODUCTION READY

# SMARC MODULES

Suitable for machine learning

Standard SMARC 2.1.1

# SMARCORE HAILO-15


| | |
|---|---|
| CPU | HAILO-15 |
| CORES | • Quad-core ARM Cortex A53@1.3 GHz (Application subsystem)<br>• 2x Cortex M4 @ 200MHz (MCU subsystem) |
| MEMORY | Up to 4GB LPDDR4 @ 4266 MT/s |
| USB | • Up to 4x USB 2.0<br>• Up to 4x USB 3.0 |
| VIDEO INTERFACES | • DSI to LVDS 18/24bit up to Full HD<br>• DSI-TX: 1 x 4 lanes, 2.5 Gbps each<br>• 2x MIPI-CSI – 2-4 lanes |
| VIDEO PROCESSING | • HEVC & AVC h.265/h264 4K30 enc |
| AUDIO | • I²S interface |
| NETWORKING | • 1x Gb Ethernet interface<br>• WiFi (optional) |

| | |
|---|---|
| MASS STORAGE | Starting from 8GB eMMC drive soldered on-board |
| PERIPHERAL INTERFACES | • UART, I²C, SPI, GPIOs |
| PCIE | • 2x PCIe 3.0 |
| OPERATING SYSTEM | Linux |
| POWER SUPPLY | • 3.75 to 5.5V DC |
| DIMENSIONS | Standard SMARC short size module |
| OPERATING TEMPERATURE* | Industrial qualified |

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SMARC

EMPOWERED BY HAILO

NEW!

SAMPLE AVAILABLE

# SMARC MODULES

Suitable for machine learning

Standard SMARC 2.1.1

# SMARCORE MX95

| | |
|---|---|
| CPU | NXP® i.MX95 |
| CORES | • 6x Arm Cortex-A55, up to 1.8 GHz<br>• 1x Arm Cortex-M7, up to 800 MHz<br>• 1x Arm Cortex-M33, up to 333 MHz |
| MEMORY | Up to 16GB (@ 6400 MT/s) LPDDR5 |
| GRAPHICS | Arm Mali-G310 3D GPU supporting 50 GFLOPs FP32.<br>• OpenGL® ES 3.2<br>• Vulkan® 1.3<br>• OpenCL 3.0 |
| VIDEO INTERFACES | • LVDS<br>• MIPI-DSI<br>• MIPI-CSI |
| VIDEO PROCESSING | • 4Kp30 H.265/H.264 decode and encode<br>• 1x JPEG Encoder<br>• 1x JPEG Decoder |
| AUDIO | • I²S interface<br>• SAI Interface |
| NETWORKING | 2x 1Gb Ethernet interfaces<br>1x 10 Gb Ethernet interface (SGMII) |

| | |
|---|---|
| USB | • 1x USB 3.0 (Optional Type C)<br>• 4x USB 2.0 (HUB option) |
| MASS STORAGE | Starting from 4GB eMMC drive soldered on-board |
| PERIPHERAL INTERFACES | UART, LPSPI, I²C, CAN Bus, GPIOs |
| PCIE | 2x PCIe 3.0 |
| OPERATING SYSTEM | • Linux Yocto<br>• Android |
| POWER SUPPLY | +5V DC |
| DIMENSIONS | Standard SMARC short size module |
| OPERATING TEMPERATURE* | Extended Industrial qualified |

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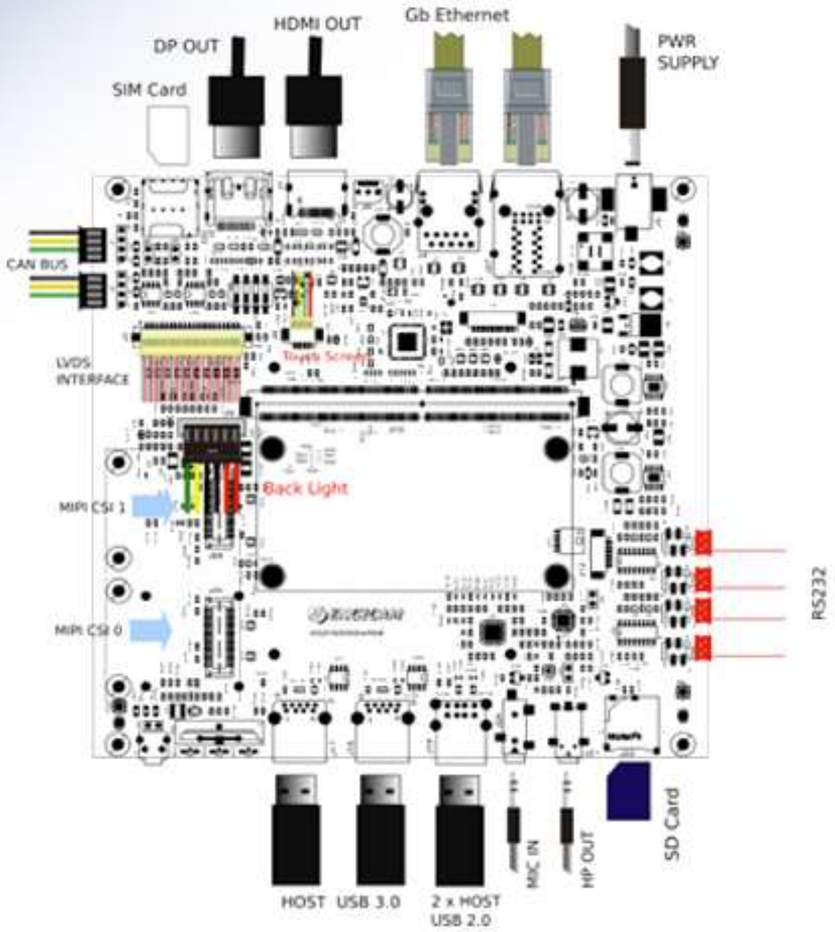
FOR EVALUATION

# SMARC
## STARTER KIT

### STARTER KIT SCHEMATIC
Available on request

### YOCTO LINUX
Available on all SOMs

### WINDOWS
For Intel® platform




# X.TOUCH 2.0 CARRIER BOARD

PRODUCTION READY

## CARRIER BOARDS

COMPLIANT WITH
STANDARD SMARCORE SOM

Increased external peripherals

For both ARM and x86 modules

| | |
|---|---|
| VIDEO INTERFACE | • LVDS interface up to FULL HD<br>• 1x USB Touch screen interface<br>• 1 x HDMI up to 4K |
| NETWORKING | 2x Gb Ethernet Interfaces |
| AUDIO | HP Output Jack |
| USB | • 1 x USB 3.0<br>• 2 x USB 2.0 |
| PERIPHERAL INTERFACES | • UART RS232, RS485<br>• I2C,<br>• CAN,<br>• SDIO,<br>• GPIOs,<br>• JTAG i/f<br>• WiFi on SSD M.2 KEY E<br>• WWAN on SSD M.2 KEY B |
| POWER SUPPLY | + 15 - 32 VDC |
| OPERATING SYSTEM | Windows, Linux -Yocto |
| OPERATING TEMPERATURE * | Industrial qualified |

## SUPPORTED SOMs

- SmarCore EHL
- SmarCore MX8M Plus
- SmarCore MX8X

SMARC

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NEW!

PRODUCTION READY

# K.TOUCH 10.1” x86

## HMI

COMPLIANT WITH EDIMM 2.0

Capacitive touch 10.1 display+frame

Front mount

| | |
|---|---|
| SMARC x86 modules compliant | TFT 10.1 " Industrial |
| Capacitive multi-touch display 1280x800 resolution | Wide 15 to 30 Vdc single power supply |
| Brightness 600 cd/mq | up to 2x Gb Ethernet |
| WiFi + BT | 24 bit single channel LVDS |
| UART RS232, RS485 | Capacitive touch panel via USB or I2C |
| CAN Bus | 1 x PWM for backlight control |
| I2C | GPIOs |
| 1 x HDMI standard connector | SDIO |
| JTAG i/f | WiFi on SSD M.2 KEY E |
| WWAN on SSD M.2 KEY B | |

## CAN BE USED WITH:

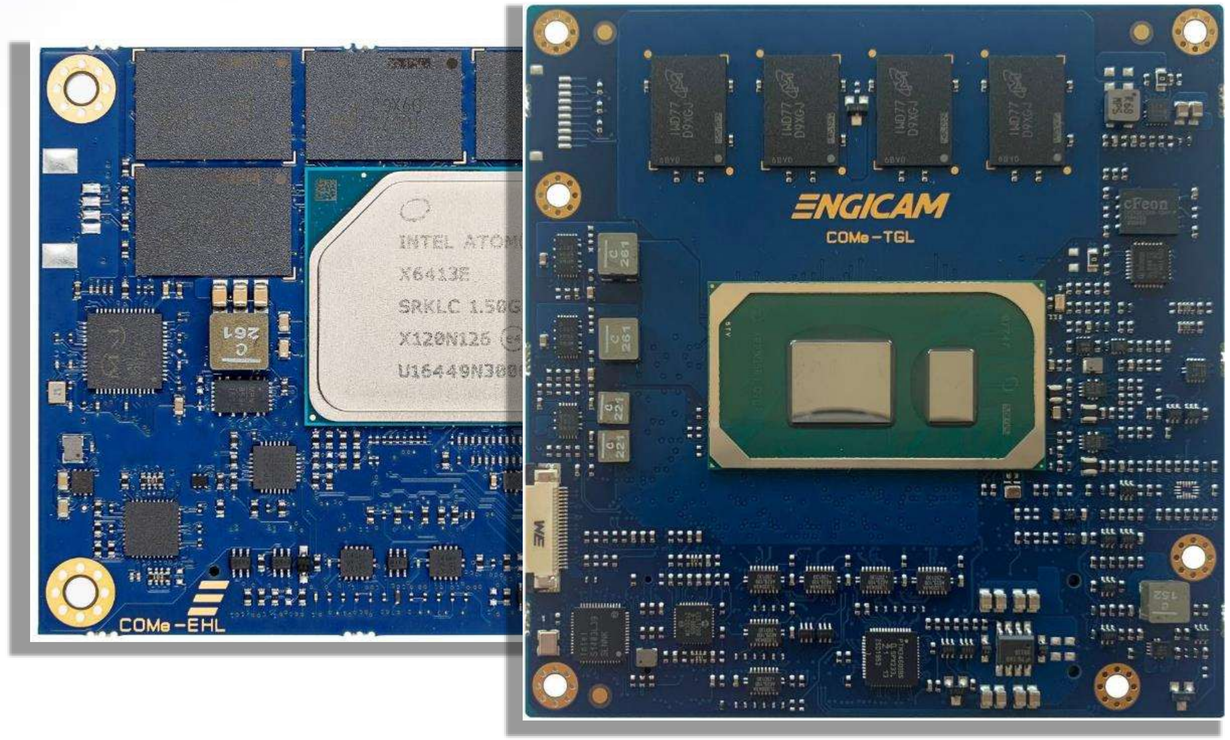
- SmarCore ADL-N
- SmarCore APL-x86
- SmarCore EHL

# COM EXPRESS MODULES

## BASED on COM Express FORM FACTOR

## COM Express STANDARD SOMS

- INTEL X86 ELKHART Lake
- INTEL X86 TIGER Lake
- INTEL X86 Alder Lake
- INTEL X86 Raptor Lake



# COMe 6C-TGL

PRODUCTION READY

## COMe MODULES

Standard COM Express compact type 6

Powerful Graphics platform

Based on Intel® TIGER LAKE


Industrial · Digital Signage Infotainment · Transportation · Automotive · Avionics · Surveillance · Robotics · Biomedical/ Medical devices · Home Automation

| | |
|---|---|
| CPU | • Intel Core i7-1185G7E Processor Quad Core up to 2.8 GHz, up to 28W<br>• Intel Core i5-1145G7E Processor Quad Core up to 2.6 GHz, up to 28W<br>• Intel Core 13-1115G4E Processor Dual Core up to 3.0 GHz, up to 28W<br>• Intel Celeron® Processor 6305E Dual Core up to 1.8 GHz, up to 15W<br>• Intel Core i7-1185GRE Processor Quad Core up to 2.8 GHz, up to 28W<br>• Intel Core i5-1145GRE Processor Quad Core up to 2.6 GHz, up to 28W<br>• Intel Core 13-1115GRE Processor Dual Core up to 3.0 GHz, up to 28W |
| CORES | Up to 4 |
| MEMORY | From 4GB to 32 GB LPDDR4 – 4266MT/s |
| GRAPHICS | • Integrated Iris Xe Graphics Core Gen12 architecture, with up to 96 Execution Units<br>• MPEG2, WMV9, AVC/H.264, JPEG/MJPEG |
| VIDEO INTERFACES | • 3x HDMI/DP<br>• eDP/LVDS |
| VIDEO PROCESSING | • HEVC/H.265, VP9, AV1 HW decoding, up to 8k @60.<br>• AVC/H.264, HEVC/H.265, JPEG, VP9 HW encoding |
| AUDIO | HDA Interface |
| NETWORKING | Ethernet interface up to 2.5 Gb |

| | |
|---|---|
| MASS STORAGE | • 2x SATA |
| USB | • 4 x USB HOST 3.1<br>• 8 x USB HOST 2.0 |
| PCIE | 8x PCIe 3.0 |
| PERIPHERAL INTERFACES | SM Bus, I²C, LPC/eSPI, SPI for bios, GPIOs, UART (option), CSI connector (option) |
| POWER SUPPLY | +12V DC (optional 5VSBY) |
| OPERATING SYSTEM | • Ubuntu<br>• Windows 10 |
| OPERATING TEMPERATURE* | Industrial (-40°C to 110°C Tj*) |
| DIMENSIONS | 95 x 95 mm |

COM Express®

intel partner Gold

# COMe 10M-EHL

PRODUCTION READY

## COMe MODULES

Standard COM Express mini type 10

Based on Intel® ELKHART LAKE

IoT and real-time performance

| | |
|---|---|
| CPU | • Intel Atom X6211E Dual Core @ 1.2 GHz (burst 3.0 GHz) 1.5MB L2 cache, 6W<br>• Intel Atom X6413E Quad Core @ 1.5 GHz (burst 3.0 GHz) 1.5MB L2 cache, 9W<br>• Intel Atom X6425E Quad Core @ 1.8 GHz (burst 3.0 GHz) 1.5MB L2 cache, 12W)<br>• Intel Atom X6212RE Dual Core @ 1.2 GHz, 1.5MB L2 cache, 6W<br>• Intel Atom X6414RE Quad Core @ 1.5 GHz, 1.5MB L2 cache, 9W<br>• Intel Atom X6425RE Quad Core @ 1.9 GHz, 1.5MB L2 cache, 12W |
| CORES | Up to 4 |
| MEMORY | Up to 16GB LPDDR4 |
| GRAPHICS | • Intel 11th generation (Gen 11) LP graphics controller.<br>• DirectX 12.1 compliant, OpenGL ES 3.1/3.0/2.0/1.1, OpenGL 4.5 supported, OpenCL™ 1.2, Vulkan 1.0 APIs, Dedicated FIVR for Graphics, Intel Virtualization Technology for Directed I/O (VT-d) |
| VIDEO INTERFACES | • HDMI/DP<br>• eDP/LVDS |
| VIDEO PROCESSING | • HEVC/H.265, H.264, VP9, VP8, WMV9/VC1, MPEG-2, VC-1. JPEG/MJPEG dec<br>• HEVC/H.265, H.264, VP9, JPEG/MJPEG enc |
| AUDIO | HDA Interface |

| | |
|---|---|
| NETWORKING | Ethernet interface up to 2.5 Gb |
| MASS STORAGE | • 2x SATA<br>• Starting from 4GB eMMC drive soldered on-board |
| USB | • 2 x USB HOST 3.1<br>• 8 x USB HOST 2.0 |
| PCIE | 6 x PCIe 3.0 |
| PERIPHERAL INTERFACES | SDIO, SM Bus, I²C, LPC/eSPI, SPI, UART/CAN(optional), GPIOs |
| POWER SUPPLY | +5 to 20 V DC |
| OPERATING SYSTEM | • Ubuntu<br>• Windows 10 |
| OPERATING TEMPERATURE* | Industrial (-40°C to 110°C Tj) |
| DIMENSIONS | 55 x 84 mm |

Industrial · Digital Signage Infotainment · Transportation · Automotive · Avionics · Surveillance · Robotics · Biomedical/ Medical devices · Home Automation

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# COMe MODULES

Based on Intel® ALDER Lake

Standard COM Express type 6 compact

# COMe 6C-ADLP

UNDER DEVELOPMENT


| | |
|---|---|
| CPU | • Intel Core i7-12800HE Core @2.4 GHz (burst 4.6 GHz) 24MB L3 cache, 45W<br>• Intel Core i5-12600HE Core @ 2.5 GHz (burst 4.5 GHz) 18MB L3 cache, 45W<br>• Intel Core i3-12300HE Core @ 1.9 GHz (burst 4.3 GHz) 12MB L3 cache, 45W<br>• Intel Core i7-1270PE Core @ 1.2 GHz (burst 4.5 GHz) 18MB L3 cache, 28W<br>• Intel Core i5-1250PE Core @ 1.2 GHz (burst 4.4 GHz) 12MB L3 cache, 28W<br>• Intel Core i3-1220PE Core @ 1.1 GHz (burst 4.2 GHz) 12MB L3 cache, 28W<br>• Intel Core i7-1265UE Core @ 1.2 GHz (burst 4.7 GHz) 12MB L3 cache, 15 W<br>• Intel Core i5-1245UE Core @ 1.1 GHz (burst 4.4 GHz) 12MB L3 cache, 15 W<br>• Intel Core i3-1215UE Core @ 0.9 GHz (burst 4.4 GHz) 10MB L3 cache, 15 W<br>• Intel Celeron 7305E Core @ 1 GHz 8MB L3 cache, 15 W |
| CORES | Up to 6 P-Cores<br>Up to 8 E-Cores |
| MEMORY | Up to 64 GB LPDDR5 5200 MT/s |
| GRAPHICS | • Intel® Iris Xe Graphics architecture<br>• Intel® Deep Learning Boost (VNNI)<br>• DirectX 12.1, OpenGL 3.0, IPU 6.0 |
| VIDEO INTERFACES | • HDMI/DP<br>• eDP/LVDS |
| VIDEO PROCESSING | • HEVC/H.265, AVC/H.264, VP9, JPEG/MJPEG dec<br>• HEVC/H.265, AVC/H.264, VP9, JPEG enc |
| NETWORKING | Ethernet interface up to 2.5 Gb |

| | |
|---|---|
| MASS STORAGE | • 2x SATA<br>• Starting from 64GB NVMe PCIe |
| USB | • 4 x USB HOST 3.1<br>• 8 x USB HOST 2.0 |
| PCIE | • 8x PCIe 3.0<br>• 8x PCIe 4.0 + 4x PCIe 4.0 PEG (optional) |
| PERIPHERAL INTERFACES | SM Bus, I2C, LPC/eSPI (option), UART, GPIOs, CSI connector, JTAG EC connector |
| AUDIO | HDA Interface |
| OPERATING SYSTEM | • Ubuntu<br>• Windows 10 |
| POWER SUPPLY | +8.5 to 20 V DC |
| DIMENSIONS | 95 x 95 mm |
| OPERATING TEMPERATURE* | Industrial (-40°C to 110°C Tj) |

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# COMe MODULES

Based on Intel® RAPTOR Lake

Standard COM Express type 6 compact

First release: Q2 2025

# COMe 6C-RPL


| | |
|---|---|
| CPU | • Intel Core i7-1365URE Core @ 1.7 GHz (burst 4.9 GHz) 12MB L3 cache, 15W<br>• Intel Core i5-1345URE Core @ 1.4 GHz (burst 4.6 GHz) 12MB L3 cache, 15W<br>• Intel Core i3-1315URE Core @ 1.2 GHz (burst 4.5 GHz) 10MB L3 cache, 15W<br>• Intel Core i7-1370PRE Core @ 1.9 GHz (burst 4.8 GHz) 24MB L3 cache, 28W<br>• Intel Core i5-1350PRE Core @ 1.8 GHz (burst 4.6 GHz) 12MB L3 cache, 28W<br>• Intel Core i3-1320PRE Core @ 1.7 GHz (burst 4.5 GHz) 12MB L3 cache, 28W<br>• Intel Core i7-13800HRE Core @ 2.5 GHz (burst 5 GHz) 24MB L3 cache, 45W<br>• Intel Core i5-13600HRE Core @ 2.7 GHz (burst 4.8 GHz) 18MB L3 cache, 45W<br>• Intel Core i3-13300HRE Core @ 2.1 GHz (burst 4.6 GHz) 12MB L3 cache, 45W |
| CORES | Up to 6 P-Cores<br>Up to 8 E-Cores |
| MEMORY | Up to 64 GB LPDDR5 6400 MT/s |
| GRAPHICS | • Intel® Iris Xe Graphics architecture<br>• Intel® Deep Learning Boost (VNNI)<br>• DirectX 12.1, OpenGL 3.0, IPU 6.0 |
| VIDEO INTERFACES | • HDMI/DP<br>• eDP/LVDS |
| VIDEO PROCESSING | • HEVC/H.265, AVC/H.264, VP9, JPEG/MJPEG dec<br>• HEVC/H.265, AVC/H.264, VP9, JPEG enc |
| NETWORKING | Ethernet interface up to 2.5 Gb |

| | |
|---|---|
| MASS STORAGE | • 2x SATA<br>• Starting from 64GB NVMe PCIe |
| USB | • 4 x USB HOST 3.1<br>• 8 x USB HOST 2.0 |
| PCIE | • Up to 8x PCIe 3.0<br>• Up to 8x PCIe 5.0 + 4x PCIe 4.0 PEG (optional) |
| PERIPHERAL INTERFACES | SM Bus, I2C, eSPI/LPC (option), UART, GPIOs, CSI connector, JTAG EC connector |
| AUDIO | HDA Interface |
| OPERATING SYSTEM | • Ubuntu<br>• Windows 10 |
| POWER SUPPLY | +8.5 to 20 V DC |
| DIMENSIONS | 95 x 95 mm |
| OPERATING TEMPERATURE* | Industrial (-40°C to 110°C Tj) |

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COM Express®

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# CARRIER BOARDS

COMPLIANT WITH
STANDARD
COM EXPRESS COMPACT TYPE 6

# COMe CARRIER BOARD

PRODUCTION READY

| | |
|---|---|
| CPU | • Tiger Lake series<br>• Alder Lake Series<br>• Elkart Lake Series |
| VIDEO INTERFACES | • HDMI<br>• Display Port (Type 6C Only)<br>• LVDS (Carrier bottom side) |
| MEMORY | 1 x SODIMM up to 4 GB LPDDR4X |
| OPERATING SYSTEM | Linux, Windows |
| MASS STORAGE | • 2x SATA slot<br>• SSD M.2 Key M slot |
| NETWORKING | • 2 x Ethernet interface up to 2.5Gb<br>• WLAN/BT M.2 key E<br>• WWAN M.2 Key B with microSIM slot |
| MINI SLOT | • 1 x M.2 Key E<br>• 1 x M.2 Key M |
| USB | • 2 x USB HOST 3.0<br>• 2 x USB HOST 2.0 |
| AUDIO | MIC & HP |
| PERIPHERAL INTERFACES | • I2C (1xSM BUS)<br>• 1 x Port, RS485 programmable via Bios<br>• 11 x GPIOs<br>• 2x CAN Bus |
| OPERATING TEMPERATURE* | Industrial (-40°C to 85 °C) |
| DIMENSIONS | 190 x 141.5 mm |

## SUPPORTED SOMs

- COM Express Tiger Lake Type 6C
- COM Express Alder Lake Type 6C
- COM Express Elkart Lake Type 10M, via adapter


Industrial | Digital Signage Infotainment | Home Automation | Surveillance | Robotics | Biomedical/ Medical devices

SMARC

# SINGLE BOARD COMPUTERS

# T.BOARD EHL

PRODUCTION READY

## SBC PRODUCTS

3.5" Single board computer

High-performance

Based on Intel ATOM 6000x series

| | |
|---|---|
| CPU | • Intel Atom X6211E Dual Core @ 1.2 GHz (burst 3.0 GHz) 1.5MB L2 cache, 6W<br>• Intel Atom X6413E Quad Core @ 1.5 GHz (burst 3.0 GHz) 1.5MB L2 cache, 9W<br>• Intel Atom X6425E Quad Core @ 1.8 GHz (burst 3.0 GHz) 1.5MB L2 cache, 12W)<br>• Intel Atom X6212RE Dual Core @ 1.2 GHz, 1.5MB L2 cache, 6W<br>• Intel Atom X6414RE Quad Core @ 1.5 GHz, 1.5MB L2 cache, 9W<br>• Intel Atom X6425RE Quad Core @ 1.9 GHz, 1.5MB L2 cache, 12W<br>• Intel Atom X6427FE Quad Core @ 1.9 GHz, 1.5MB L2 cache, 12W<br>• Intel Atom X6200FE Dual Core @ 1.0 GHz, 1.5MB L2 cache, 4.5W |
| CORES | Up to 4 |
| MEMORY | 1 x SODIMM up to 16GB DDR4 |
| GRAPHICS | • Intel® 11th generation (Gen 11) LP graphics controller.<br>• DirectX 12.1 compliant, OpenGL ES 3.1/3.0/2.0/1.1, OpenGL 4.5 supported, OpenCL™ 1.2, Vulkan 1.0 APIs, Dedicated FIVR for Graphics, Intel® Virtualization Technology for Directed I/O (VT-d) |
| VIDEO INTERFACES | • HDMI up to 4K @ 60Hz<br>• Optional eDP up to 4K @ 60Hz<br>• LVDS Dual Channel up to Full HD @ 60Hz via ePD bridge |
| VIDEO PROCESSING | • HEVC/H.265, H.264, VP9, VP8, WMV9/VC1, MPEG-2, VC-1. JPEG/MJPEG dec<br>• HEVC/H.265, H.264, VP9, JPEG/MJPEG enc |
| AUDIO | Build in HD with CS4207-CNZ Logic (MIC, HP & Line) |

| | |
|---|---|
| NETWORKING | • 2 x Gb Ethernet interface<br>• WLAN/BT M.2 key E<br>• WWAN M.2 Key B with SIM slot |
| USB | • 2 x USB HOST 3.0<br>• 2 x USB HOST 2.0<br>• 1 x internal USB HOST 2.0 |
| MASS STORAGE | • 2x SATA slot<br>• eMMC drive soldered on-board (optional)<br>• 2x SSD M.2 Key M slot |
| PERIPHERAL INTERFACES | • 2 x I2C(1xSM BUS) – 1 x JTAG (optional) – 2 x CAN<br>• 3 x RS232(1 x Debug/Console, 1x CAN optional)<br>• 1 x Port RS232, RS485 or RS422 programmable via Bios<br>• 12 x GPIOs(I/O, QEP, PWM, TPGPIO)<br>• 1 x Connector for USB Touch screen controller |
| MINI SLOT | • 1 x M.2 Key E(PCI-E Gen3x1, USB2.0, UART)<br>• 1 x M.2 Key B(PCI-E Gen3x2, USB2.0, I2S, SIM)<br>• 1 x M.2 Key B (PCI-E Gen3x2) |
| OPERATING SYSTEM | • Linux<br>• Windows |
| OPERATING TEMPERATURE | Industrial (-40°C to 85°C ) |
| DIMENSIONS | 147 x 102 mm (3.5" form factor) |

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# T.BOARD APL

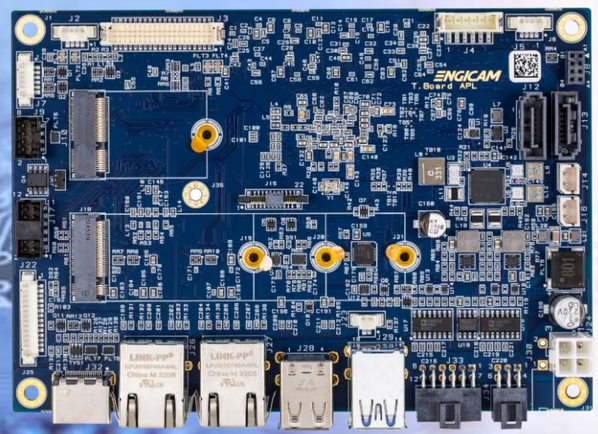
PRODUCTION READY

## SBC PRODUCTS

3.5" Single board computer

Based on Intel Atom processor series X

Memory down



| | |
|---|---|
| CPU | • Intel Atom x7-E3950 (4 x 1.6 / 2.0 GHz, 2MB L2 cache, 12W)<br>• Intel Atom x5-E3940 (4 x 1.6 / 1.8 GHz, L2 cache 2MB, 9W)<br>• Intel Atom x5-E3930 (2 x 1.3 / 1.8 GHz, L2 cache 1MB, 6.5W)<br>• Intel Celeron® N3350 (2 x 1.1 / 2.4 GHz, L2 cache 1MB, 6W)<br>• Intel Pentium® N4200 (4 x 1.1 / 2.5 GHz, L2 cache 2MB, 6W) |
| CORES | Up to 4 |
| MEMORY | Up to 8GB LPDDR4 |
| GRAPHICS | • Graphics : Intel 9th generation (Gen 9) LP graphics.<br>• HW accelerated encode HEVC (L5), H.264 (L5.2), MVC (L5.1) VP8, JPEG/MJPEG. |
| VIDEO INTERFACES | • HDMI<br>• LVDS |
| VIDEO PROCESSING | • Graphics : Intel 9th generation (Gen 9) LP graphics.<br>• HW accelerated encode HEVC (L5), H.264 (L5.2), MVC (L5.1) VP8, JPEG/MJPEG. |
| AUDIO | Build in HD with CS4207-CNZ Logic (MIC, HP & Line) |
| NETWORKING | • 2x Gb Ethernet interface<br>• WLAN/BT M.2 key E |

| | |
|---|---|
| USB | • 2x USB HOST 3.1<br>• 2x USB HOST 2.0<br>• USB internal MilliGrid connector |
| MASS STORAGE | • 2x SATA<br>• eMMC drive soldered on-board<br>• SSD M.2 Key B slot |
| PERIPHERAL INTERFACES | • 2x I2C<br>• 1x RS232 x Debug/Console)<br>• 2x RS232 or 1x RS485+RS232<br>• Panel Header (PWR, RST, Led CTRL) |
| MINI SLOT | • 1x M.2 Key E<br>• 1x M.2 Key B |
| OPERATING SYSTEM | • Linux<br>• Windows |
| POWER SUPPLY | +12 to 24 V DC |
| DIMENSIONS | 147 x 102 mm (3.5" form factor) |
| OPERATING TEMPERATURE | Industrial (-40°C to 85°C ) |

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# T.BOARD TGL

PRODUCTION READY

## SBC PRODUCTS

Based on Intel ® Tiger LAKE series

3.5“ Single board computer

Digital Signage Infotainment | Transportation | Automotive | Robotics | Biomedical/ Medical devices

| | |
|---|---|
| CPU | • Intel Core i7-1185G7E Processor Quad Core up to 2.8 GHz, up to 28W<br>• Intel Core i5-1145G7E Processor Quad Core up to 2.6 GHz, up to 28W<br>• Intel Core i3-1115G4E Processor Dual Core up to 3.0 GHz, up to 28W<br>• Intel Celeron® Processor 6305E Dual Core up to 1.8 GHz, up to 15W<br>• Intel Core i7-1185GRE Processor Quad Core up to 2.8 GHz, up to 28W<br>• Intel Core i5-1145GRE Processor Quad Core up to 2.6 GHz, up to 28W<br>• Intel Core i3-1115GRE Processor Dual Core up to 3.0 GHz, up to 28W |
| CORES | Up to 4 |
| MEMORY | 1 x SODIMM up to 32GB DDR4 |
| GRAPHICS | • Integrated Iris Xe Graphics Core Gen12 architecture, with up to 96 execution Units<br>• DirectX 12.1, OpenGL 4.6, OpenCL 2.0 |
| VIDEO INTERFACES | • HDMI up to 4K @ 60Hz<br>• Optional eDP up to 4K @ 60Hz<br>• LVDS Single Channel up to Full HD @ 60Hz via ePD bridge |
| VIDEO PROCESSING | • HEVC/H.265, VP9, AV1 HW decoding, up to 8k @60.<br>• AVC/H.264, HEVC/H.265, JPEG, VP9 HW encoding<br>• MPEG2, WMV9, AVC/H.264, JPEG/MJPEG |
| NETWORKING | 2 x Gb Ethernet interfaces<br>WLAN/BT M.2 key E<br>• WWAN M.2 Key B with SIM slot |

| | |
|---|---|
| AUDIO | Build-in HD with CS4207-CNZ Logic (MIC, HP & Line) |
| USB | • 4 x USB HOST 3.2<br>• 1 x internal USB HOST 2.0 |
| MASS STORAGE | • 2x SATA slot<br>• 1x SSD M.2 Key M slot<br>• 1x SSD M.2 Key B slot |
| PERIPHERAL INTERFACES | • 1 x I2C (1xSM BUS) – 1 x JTAG<br>• 2 x RS232(1 x Debug/Console)<br>• 1 x Port RS232 or RS485 programmable via Bios<br>• 12 x GPIOs |
| MINI SLOT | • 1 x M.2 Key E<br>• 1 x M.2 Key M<br>• 1 x M.2 Key B |
| OPERATING SYSTEM | • Linux<br>• Windows |
| OPERATING TEMPERATURE* | Industrial (-40°C to 110°C Tj*) |
| DIMENSIONS | 147 x 102 mm |

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NEW!

# V.BOARD RK3568

PRODUCTION READY

## SBC PRODUCTS

Based on Rockchip RK3568 series

3.5“ Single board computer

| | |
|---|---|
| CPU | • RockChip RK3568 CPU, Quad Core ARM Cortex-A55 @ 1.8GHz<br>• RockChip RK3568J CPU, Quad Core ARM Cortex-A55 @ 1.8GHz |
| CORES | 4 |
| MEMORY | Up to 8GB LPDDR4 / 3200 MTs |
| GRAPHICS | • 2D graphics, 3D graphics and General Purpose computing on GPU<br>• The GPU supports these compute API standards:<br>• OpenCL 2.0 Full Profile<br>• OpenGL ES 1.1, 2.0, and 3.2<br>• Vulkan 1.0 and 1.1. |
| VIDEO INTERFACES | • HDMI up to 4K @ 60Hz<br>• Optional eDP up to 4K @ 60Hz<br>• LVDS Dual Channel up to Full HD @ 60Hz via ePD bridge |
| VIDEO PROCESSING | • HEVC/H.265, VP9, AV1 HW decoding, up to 8k @60.<br>• AVC/H.264, HEVC/H.265 encoding |
| AUDIO | Build in I2S (on PMIC RK-809) |
| NETWORKING | • 2 x Gb Ethernet interface |

| | |
|---|---|
| POWER SUPPLY | • +17 to +26 VDC (on Jack connector)<br>• +36V to +57V input Voltage (on POE) |
| USB | • 2 x USB HOST 3.0 |
| MASS STORAGE | • eMMC soldered on board170408 |
| PERIPHERAL INTERFACES | • 1x uSD card on SDIO Bus<br>• 2x RS232 (1 x Linux Console)<br>• 1x Digital GPIO INPUT (up to 32V)<br>• 1x Driver Relay 12V |
| OPERATING SYSTEM | • Linux Yocto<br>• Android |
| DIMENSIONS | 113 x 100 mm |
| OPERATING TEMPERATURE* | Consumer Industrial (up to 125°C Tj*) |

Digital Signage Infotainment | Transportation | Automotive | Robotics | Biomedical/ Medical devices

Rockchip


# BOX PC

NEW!

PRODUCTION READY

# T.BOX TGL

## BOX PC

Based on Intel ® Tiger LAKE series

High Performance 3.5” Boxed PC

| | |
|---|---|
| CPU | • Intel Core i7-1185G7E Processor Quad Core up to 2.8 GHz, up to 28W<br>• Intel Core i5-1145G7E Processor Quad Core up to 2.6 GHz, up to 28W<br>• Intel Core i3-1115G4E Processor Dual Core up to 3.0 GHz, up to 28W<br>• Intel Celeron® Processor 6305E Dual Core up to 1.8 GHz, up to 15W<br>• Intel Core i7-1185GRE Processor Quad Core up to 2.8 GHz, up to 28W<br>• Intel Core i5-1145GRE Processor Quad Core up to 2.6 GHz, up to 28W<br>• Intel Core i3-1115GRE Processor Dual Core up to 3.0 GHz, up to 28W |
| CORES | Up to 4 |
| MEMORY | 1 x SODIMM up to 32GB DDR4 |
| GRAPHICS | • Integrated Iris Xe Graphics Core Gen12 architecture, with up to 96 Execution Units<br>• MPEG2, WMV9, AVC/H.264, JPEG/MJPEG |
| VIDEO INTERFACES | HDMI up to 4K @ 60Hz |
| VIDEO PROCESSING | • HEVC/H.265, VP9, AV1 HW decoding, up to 8k @60.<br>• AVC/H.264, HEVC/H.265, JPEG, VP9 HW encoding |
| AUDIO | Build in HD with CS4207-CNZ Logic (MIC, HP & Line) |
| NETWORKING | • 2 x Gb Ethernet interface<br>• WLAN/BT M.2 key E<br>• WWAN M.2 Key B with SIM slot |

| | |
|---|---|
| USB | • 4 x USB Host 3.2<br>• 1 x internal USB Host 2.0 |
| MASS STORAGE | • 2x SATA slot<br>• 2x SSD M.2 Key M slot<br>• SSD M.2 Key B slot |
| PERIPHERAL INTERFACES | • 3 x RS232(1 x Debug/Console)<br>• 1 x Port RS232 or RS485 programmable via Bios<br>• 1 x GPIOs |
| MINI SLOT | • 1 x M.2 Key E<br>• 1 x M.2 Key M<br>• 1 x M.2 Key B |
| OPERATING SYSTEM | • Linux<br>• Windows |
| OPERATING TEMPERATURE* | Industrial (-40°C to 110°C Tj*) |
| DIMENSIONS | 146 x 102 mm |

Digital Signage Infotainment | Transportation | Automotive | Robotics | Biomedical/ Medical devices


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NEW!

PRODUCTION READY

# T.BOX EHL

## BOX PC

Based on Intel ® Elkhart LAKE series

High Performance 3.5” Boxed PC

| | |
|---|---|
| CPU | • Intel Atom® X6211E Dual Core 1.30 GHz , 6W<br>• Intel Atom® X6413E Quad Core 1.50 GHz, 9W<br>• Intel Atom® X6425E Quad Core 2.00 GHz, 12W<br>• Intel Atom® X6425RE Quad Core 1.90 GHz, 12W |
| CORES | Up to 4 |
| MEMORY | 1 x SODIMM up to 16 GB DDR4 |
| GRAPHICS | • Intel UHD Graphics<br>• MPEG2, WMV9, H.264, JPEG/MJPEG |
| VIDEO INTERFACES | HDMI up to 4K @ 60Hz |
| VIDEO PROCESSING | • HEVC/H.265, VP9, H.264, WMV9/VC1 HW decoding, up to 4k @60.<br>• H.264, HEVC/H.265, JPEG/MJPEG, VP9 HW encoding |
| AUDIO | Build in HD with CS4207-CNZ Logic (MIC, HP & Line) |
| NETWORKING | • 2 x Gb Ethernet interface<br>• WLAN/BT M.2 key E<br>• WWAN M.2 Key B with SIM slot |

| | |
|---|---|
| USB | • 2 x USB Host 3.1<br>• 2 x USB Host 2.0<br>• 1 x internal USB Host 2.0 |
| MASS STORAGE | • 2x SATA slot<br>• 2x SSD M.2 Key M slot<br>• SSD M.2 Key B slot |
| PERIPHERAL INTERFACES | • 3 x RS232(1 x Debug/Console)<br>• 1 x Port RS232/RS422/RS485 programmable via Bios<br>• 12 x GPIOs<br>• 2 x CAN |
| MINI SLOT | • 1 x M.2 Key E<br>• 1 x M.2 Key M<br>• 1 x M.2 Key B |
| OPERATING SYSTEM | • Linux<br>• Windows |
| OPERATING TEMPERATURE* | Industrial (-40°C up to 110°C Tj*) |
| DIMENSIONS | 146 x 102 mm |

Digital Signage Infotainment | Transportation | Automotive | Robotics | Biomedical/ Medical devices


intel partner Gold

NEW!

# V.BOX RK3568

PRODUCTION READY

## BOX PC

Based on RockChip RK3568

High Performance Box PC

| | |
|---|---|
| CPU | RockChip RK3568/RK3568J CPU, Quad Core ARM Cortex-A55 @ 1.8GHz |
| CORES | 4 |
| MEMORY | Up to 8GB LPDDR4 / 3200 MTs |
| GRAPHICS | 2D graphics, 3D graphics and General Purpose computing on GPU<br>The GPU supports these compute API standards:<br>• OpenCL 2.0 Full Profile<br>• OpenGL ES 1.1, 2.0, and 3.2<br>• Vulkan 1.0 and 1.1. |
| Video INTERFACES | • HDMI up to 4K @ 60Hz<br>• Optional eDP up to 4K @ 60Hz<br>• LVDS Dual Channel up to Full HD @ 60Hz via eDP bridge |
| Video PROCESSING | • HEVC/H.265, VP9, AV1 HW decoding, up to 8k @60.<br>• AVC/H.264, HEVC/H.265 |
| AUDIO | Build in I2S (on PMIC RK-809) |
| NETWORKING | • 2 x Gb Ethernet interfaces |

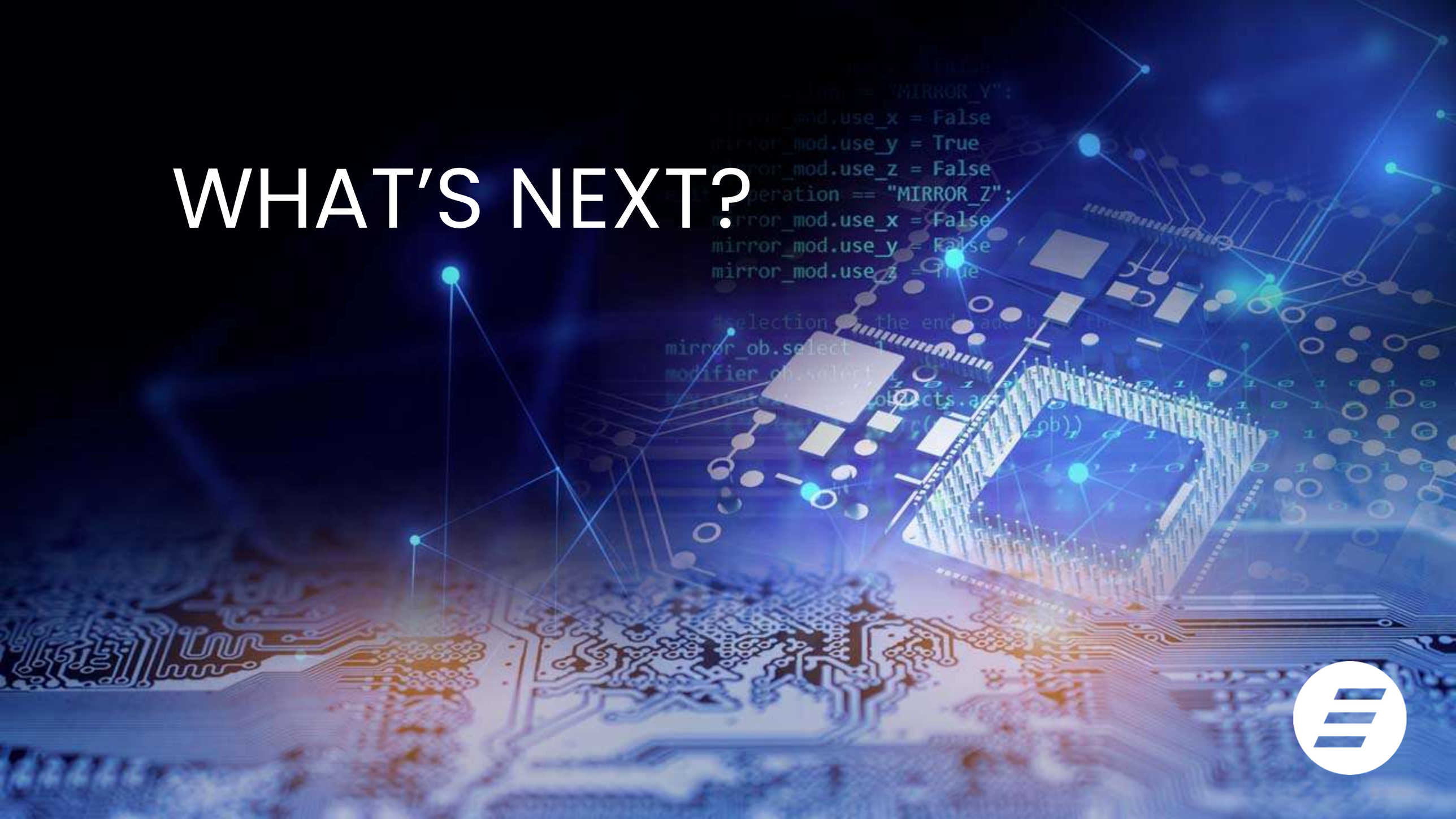
| | |
|---|---|
| POWER SUPPLY | • +17 to +26 VDC (on Jack connector)<br>• +36V to +57V input Voltage (on POE) |
| USB | • 2 x USB HOST 3.0 |
| MASS STORAGE | • eMMC soldered on board170408 |
| PERIPHERAL INTERFACES | • 1x uSD card on SDIO Bus<br>• 2x RS232 (1 x Linux Console)<br>• 1x Digital GP INPUT (up to 32V)<br>• 1x Driver Relay 12V |
| OPERATING SYSTEM | • Linux Yocto<br>• Android |
| DIMENSIONS | 113 x 100 mm |
| OPERATING TEMPERATURE* | Consumer<br>Industrial (up to 125°C Tj*) |



Digital Signage Infotainment | Transportation | Automotive | Robotics | Biomedical/ Medical devices

Rockchip

# WHAT’S NEXT?

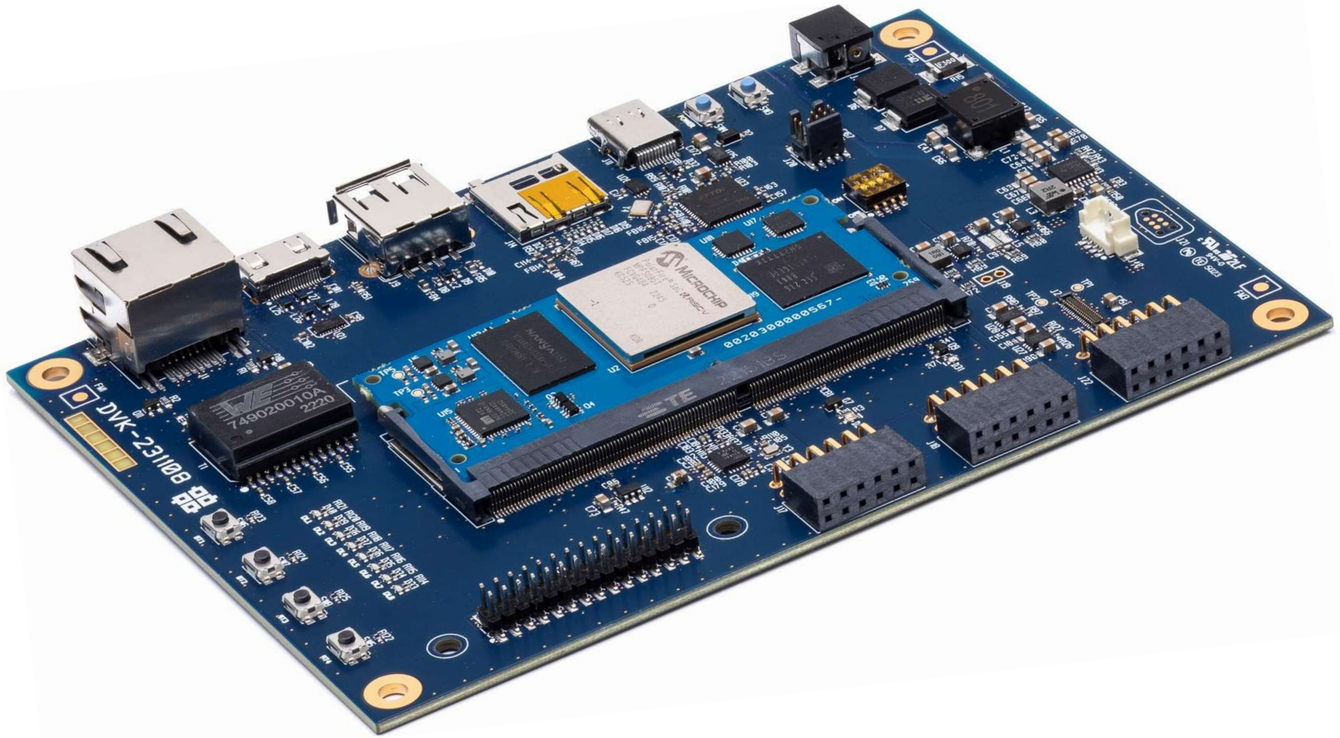


# PRODUCT DEVELOPMENT ROADMAP

PRELIMINARY, SUBJECT TO CHANGE

| ENGICAM | | 2024 | 2025 | | |
|---|---|---|---|---|---|
| PLATFORM | PRODUCT NAME | Q4 | Q1 | Q2 | Q3 |
| HAILO-15 | SmarCore HAILO-15 | | | | |
| ST STM32MP2xx | i.Core STM32MP2 | | | | |
| ST STM32MP2xx | SmarCore STM32MP2 | | | | |
| NXP i.MX91 | MicroGea MX91 | | | | |
| NXP i.MX95 | SmarCore MX95 | | | | |
| Intel Alder/Amston Lake | SmarCore ADLN/ASL | | | | |
| Intel Elkhart Lake | Q7 EHL | | | | |
| ST STM32MP2xx | MicroGea STM32MP2 | | | | |
| Intel Raptor Lake | COMe 6C-RPLP | | | | |
| Intel Alder Lake | COMe 6C-ADLP | | | | |
| Rockchip RK3568 | i.Core RK3568 | | | | |
| Intel Alder/Amston Lake | Q7 ADLN/ASL | | | | |
| NXP i.MX95 | i.Core MX95 | | | | |

# FPGA SOLUTIONS

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an Engicam/KED Company

# FPGA SOLUTION

BY ENKTRON

enktron
an Engicam/KED Company

**ENKTRON** IS THE RESULT OF A PARTNERSHIP BETWEEN ENGICAM SRL AND KED SRL

**KED** is an Italian company that covers the whole production process: consultancy and electronic design, prototyping, development of software, hardware study and implementation, product certification, test and inspection.

The assistance includes hardware design of FPGA-based electronic boards, development of custom VHDL firmware and multiprocessor architectures for real-time image processing and many other applications for different industrial sectors.

# FPGA SOLUTIONS

High flexibility

Scalability

Performance

enktron
an Engicam/KED Company

ENKTRON creates integrated FPGA modules, evaluation boards and optimized IP Cores for different applications, such as embedded processing (SoC systems using ARM® or soft processors), signal and image processing, deep Learning algorithms.

FPGA and On Chip Systems, developed using the latest technologies of the leading FPGA manufacturers such as Xilinx Zynq SoC and
Zynq Ultrascale MPSoC, synonyms of high performance and flexibility.

# FPGA SOLUTION

BY ENKTRON

Low device static power

Low inrush current

Low-power transceivers


# KYNESIS–POLARFIRE RISC-V

COMING SOON

Built on the new Microchip®'s PolarFire® SoC-series device,  it is based on a RISC-V architecture with fast LPDDR4 ECC SDRAM, eMMC flash, SPI flash, a Gigabit Ethernet PHY, USB 2.0 PHY, in a powerful and compact Sodimm4 form factor board.

## FEATURES

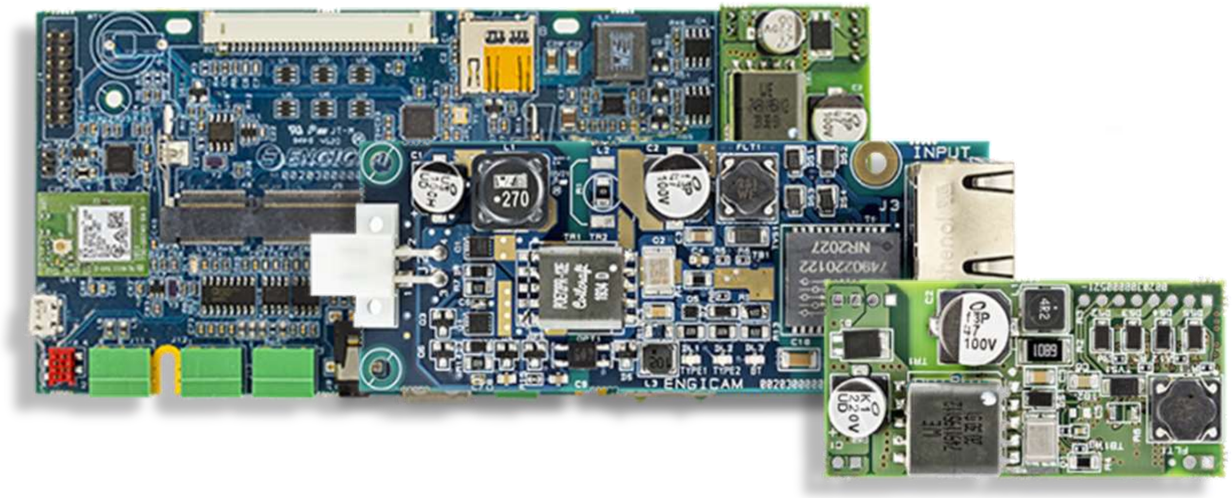
- Microsemi PolarFire SoC FPGA (MPFS025T, MPFS095T, MPFS160T, MPFS250T) from 23KLE to 254KLE
- Up to 784 DSP Block on FPGA Fabric
- 4x SERDES 12.5Gbit/s
- Quad 64-bit RV64GC cores, 667 MHz
- 64-bit RV64IMAC monitor core, 667 MHz
- Up to 2Gbyte LPDDR4
- Onboard Gigabit Ethernet PHY
- USB 2.0 OTG
- 128 Mbit to 1GBit NOR Flash
- 8 – 64 GByte eMMC memory

# POE PRODUCTS

- Productivity enhancements
- No AC power required
- Multiple applications

# POE (POWER OVER ETHERNET)

New cost effective, easy to use solutions for installation of remote or outside equipment without having to connect to AC power. Perfect for applications such as VoIP phones,
webcams, wireless access points, security cameras, door entry systems, security equipment.



# POE PRODUCTS

Minimum PCB footprint

No external components required

Cost effective

PRODUCTION READY

# POE.PSU

This compact PoE Module for Powered Device provides up to 36W of power in a well regulated, low noise and low ripple output with built-in rush current, overload, output short-circuit protection and thermal protection.

| | |
|---|---|
| **MAIN FEATURES** | • Fully IEEE 802.3bt (POE+)<br>• Compliant Power Sourcing Equipments (PSE)<br>• High efficiency (up to 90% isolated DC/DC converter) |
| **OPERATING LIMITS** | • +36V to +57V input voltage<br>• 12V@3A DC output voltage model<br>• 1500V DC isolation (Input to Output)<br>• Operating temperature: -40°C to +85°C |
| **ADDITIONAL FEATURES** | • Power received on all 4 pairs – Type 4, up to Class 6<br>• 3 dedicated pins to indicate the PSE allocated power type<br>• Overload, output short-circuit and thermal protection<br>• EMI suppression system |
| **FORM FACTOR** | • DIL – 58mm(L) x 28mm(W) x 18mm(H)<br>• Compact package minimum PCB footprint<br>• Horizontal & vertical mounting options |

PRODUCTION READY

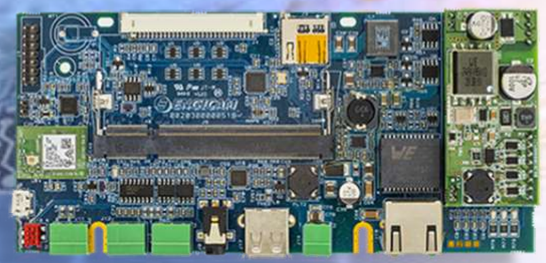
# POE PRODUCTS

EDIMM 2.0 COMPLIANT

Ready to use with PoE.PSU

Capacitive touch interface

Double Power Input



# PoE C.TOUCH CARRIER BOARD

| | |
|---|---|
| CPU modules compliant | Industrial temperature range |
| Wide 15 to 30 Vdc and/or PoE++ power supply | 1x Ethernet 10/100 |
| WiFi + BT | 1x microSD |
| 1x audio output | 1x USB Type A |
| 1x USB OTG device | 1x CAN bus |
| 1x RS485 | 1x RS232 |
| 1x RS232 for OS Console | 1x expansion connector (I2C, SDIO or SPI, up to 10 GPIO) 2 x USB (Option) |
| 1x General purpose LCD connector: 1x 18 or 24 bit single channel LVDS, 1x USB, 1 x I2C for CTP i/f, 1x PWM for backlight control, Power supply for LCD (+3V3, +5V, 12V) | 1x LCD connector to drive dual channel displays (Option) |

ENGICAM®
EMBEDDED SOLUTIONS

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