

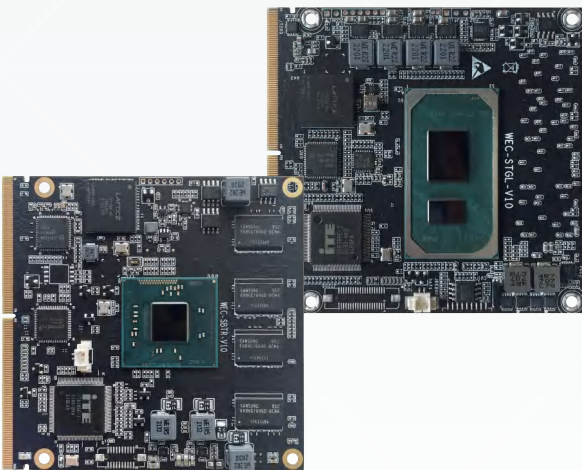


研智科技  
YANZHI TECHNOLOGY

SPIRIT Series Core Board Product Catalog

# “精灵”系列核心板

## 产品型录



匠研智造 精益求精

# COMPANY PROFILE

## 企业简介

研智科技2011年成立于杭州市滨江区，是国家高新技术企业、杭州市瞪羚企业。

研智科技专注于工业计算机领域新技术、新产品的开发，建设有强大的软、硬件技术开发团队，基于ARM、x86、FPGA、DSP、AI芯片等多个平台开发出成熟的硬件解决方案，为工业控制、物联网和人工智能等多个领域提供技术支撑。公司的主导产品的包括4大系列：

- (1) 嵌入式工业主板/核心板；
- (2) 工业计算机/平板电脑；
- (3) 物联网网关；
- (4) 人工智能AI-BOX。

公司产品广泛应用于工业自动化与控制、人工智能、物联网、工业物联网、智能制造、视觉AI、机器视觉、智慧城市、智慧工厂、智慧农业、智慧交通、智慧医疗、智慧文旅、智慧安防等领域。

# CONTENTS

YANZHI TECHNOLOGY

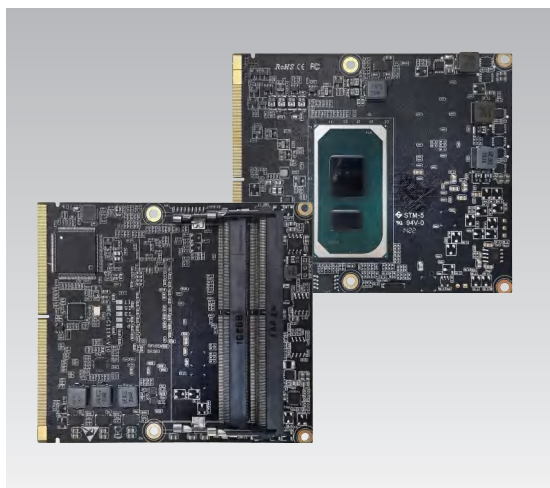
## 目录

|             |    |
|-------------|----|
| WEC-CTGL    | 01 |
| WEC-CEHL    | 03 |
| WEB-C111X   | 05 |
| WEC-STGL    | 07 |
| WEC-SBTR    | 09 |
| WEC-SD9     | 11 |
| WEC-S3568   | 13 |
| WEC-SE2000Q | 15 |
| WEC-SMX6UL  | 17 |
| WEC-SMX8MP  | 19 |
| WEB-S242X   | 21 |



## “精灵”系列工业核心板

研智科技自主开发的“精灵”系列工业核心板：涵盖x86、ARM架构多个处理器平台，x86系列处理器包括intel第11代的Tiger Lake (i3、i5、i7、6305E)，第12代的Elkhart Lake (J6412、J6413、J6426) 以及Bay Trail (J1900) 等；ARM系列处理器包括D9、RK3568、i.MX 6UL、i.MX 8M Plus。集成FPGA芯片，可提供30+路高速IO。全系列产品均采用标准的MXM接口，并按照统一的规则对管脚信号进行定义，具有强大的兼容性，适配更便捷、应用更灵活。



# WEC-CTGL

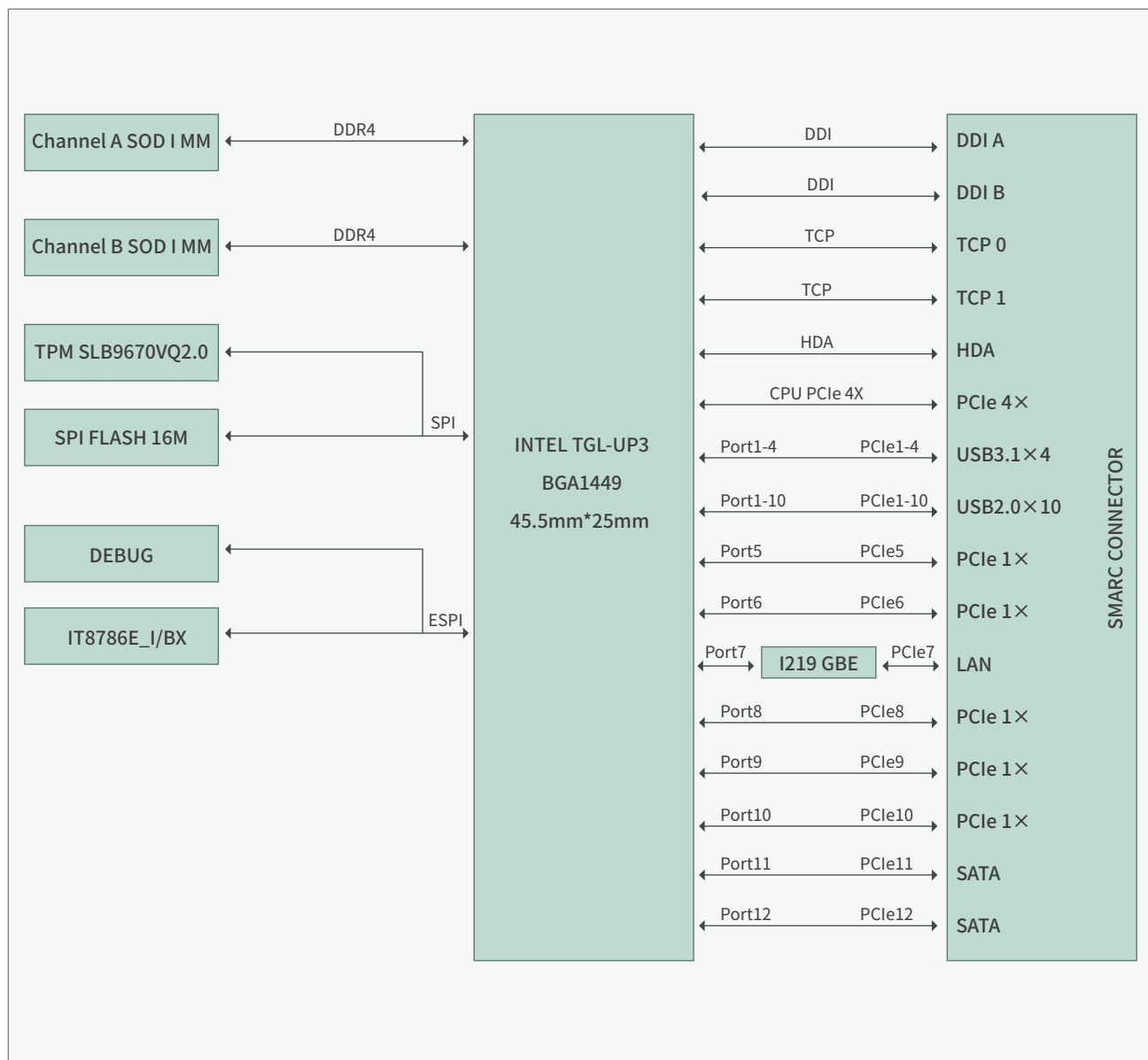
## FEATURES:

- 11th Generation Intel® Core™ Processors, Tiger Lake
- Intel® HD Graphics, Intel® Iris® Xe Graphics
- Display: HDMI+eDP
- 1× Intel® I219 GbE
- COM Port: Support Up to 6 ports
- 4× USB3.0 Ports, 10× USB2.0 Ports
- 1× PCIe×4 (Gen4), 5× PCIe×1 (Gen3)

## SPECIFICATIONS

| Product Model    | Product Model         | WEC-C6305E  | WEC-C1115           | WEC-C1115E          | WEC-C1125           | WEC-C1135                | WEC-C1165                |
|------------------|-----------------------|---|---------------------|---------------------|---------------------|--------------------------|--------------------------|
| Processor System | CPU                   | 6305E   | I3-1115G4           | I3-1115G4E          | I3-1125G4           | I5-1135G7                | I7-1165G7                |
|                  | Frequency             | 1.80GHz   | Up to 4.10GHz       | Up to 3.9GHz        | Up to 3.70 GHz      | Up to 4.20GHz            | Up to 4.7GHz             |
|                  | Core/Thread           | 2/2   | 2/4                 | 2/4                 | 4/8                 | 4/8                      | 4/8                      |
|                  | LLC                   | 4 MB  | 6 MB                | 6 MB                | 8 MB                | 8 MB                     | 12 MB                    |
|                  | CPU TDP               | 15W   | 28W                 | 28W                 | 28W                 | 28W                      | 28W                      |
|                  | BIOS                  | AMI UEFI BIOS   |                     |                     |                     |                          |                          |
| Memory           | Technology            | DDR4-3200 MHz   |                     |                     |                     |                          |                          |
|                  | ECC Support           | N/A   |                     |                     |                     |                          |                          |
|                  | Max. Capacity         | 64GB  |                     |                     |                     |                          |                          |
|                  | Channel / Socket      | 2 * SO-DIMM Slot  |                     |                     |                     |                          |                          |
| Graphics         | Controller            | Intel® UHD Graphics   | Intel® UHD Graphics | Intel® UHD Graphics | Intel® UHD Graphics | Intel® Iris® Xe Graphics | Intel® Iris® Xe Graphics |
|                  | Max. Frequency        | 1.25GHz   | 1.25GHz             | 1.25GHz             | 1.25GHz             | 1.3Ghz                   | up to 96 EUs, 1.3Ghz     |
| Display          | eDP                   | 4096×2304@60Hz  |                     |                     |                     |                          |                          |
|                  | DP                    | 7680×4320@60Hz  |                     |                     |                     |                          |                          |
|                  | HDMI                  | 4096×2304@60Hz  |                     |                     |                     |                          |                          |
|                  | MIPI-DSI              | 4096×2304@60Hz  |                     |                     |                     |                          |                          |
|                  | 3D/HW Acceleration    | Hardware encode/transcode of HD content (including HEVC)<br>DirectX 12 support<br>OpenGL 4.5, 4.4/4.3 and ES 2.0 support<br>OpenCL 2.1, 2.0/1.2 support |                     |                     |                     |                          |                          |
|                  | Multiple Display      | Four displays with each display combinations  |                     |                     |                     |                          |                          |
| Serial Bus       | SMBus                 | Yes   |                     |                     |                     |                          |                          |
| Expansion        | PCI Express x1 (Gen3) | Up to 5 PCIe×1  |                     |                     |                     |                          |                          |
|                  | PCI Express x4 (Gen4) | 1 PCIe×4  |                     |                     |                     |                          |                          |
|                  | Audio Interface       | 1 Intel HD Audio Interface  |                     |                     |                     |                          |                          |
| Ethernet         | Controller            | Intel I219, Up to 1 port  |                     |                     |                     |                          |                          |
|                  | Speed                 | 10/100/1000 Mbps  |                     |                     |                     |                          |                          |
| I/O              | USB3.0                | 4 Ports   |                     |                     |                     |                          |                          |
|                  | USB2.0                | 10 Ports  |                     |                     |                     |                          |                          |
|                  | SATA3.0               | 2 Ports (6Gbps)   |                     |                     |                     |                          |                          |
|                  | GPIO                  | 10 GPIOs  |                     |                     |                     |                          |                          |
|                  | Watchdog              | BIOS Support  |                     |                     |                     |                          |                          |
|                  | COM Port              | 6 Ports (4 Ports 2-wire / 2 Ports 8-wire)   |                     |                     |                     |                          |                          |
|                  | Smart Fan             | System FAN (Option support)   |                     |                     |                     |                          |                          |
| Power            | Type                  | DC IN   |                     |                     |                     |                          |                          |
|                  | Supply Voltage        | Vin: 9~12V, RTC Battery: 2.0V ~ 3.3V  |                     |                     |                     |                          |                          |
|                  | Operating Temperature | Standard: 0 ~ 60 °C   |                     |                     |                     |                          |                          |
|                  | Storage Temperature   | Standard: -20 ~ 75 °C   |                     |                     |                     |                          |                          |
| Environment      | Humidity              | Operating: 40 °C @ 95% relative humidity, non-condensing<br>Storage: 60 °C @ 95%relative humidity, non-condensing                                       |                     |                     |                     |                          |                          |
|                  | Vibration Resistance  | 3.5 Grms  |                     |                     |                     |                          |                          |
| Mechanical       | Dimensions            | 82 mm×95 mm   |                     |                     |                     |                          |                          |

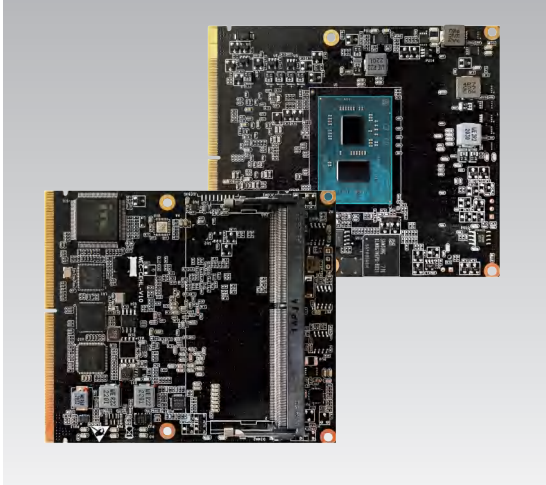
## BLOCK DIAGRAM



## ORDERING INFORMATION

| P/N           | CPU        | Freq.          | Cores | CPU TDP | Super I/O    | LAN    | Operating Temperature |
|---------------|------------|----------------|-------|---------|--------------|--------|-----------------------|
| WEC-C6305E    | 6305E      | 1.80GHz        | 2/2   | 15W     | IT8786E-I/HX | 1*I219 | 0 ~ 60 °C             |
| WEC-C1115     | I3-1115G4  | up to 4.10GHz  | 2/4   | 28W     | IT8786E-I/HX | 1*I219 | 0 ~ 60 °C             |
| WEC-C1115E    | I3-1115G4E | up to 3.9GHz   | 2/4   | 28W     | IT8786E-I/HX | 1*I219 | 0 ~ 60 °C             |
| WEC-C1125     | I3-1125G4  | up to 3.70 GHz | 4/8   | 28W     | IT8786E-I/HX | 1*I219 | 0 ~ 60 °C             |
| WEC-C1135     | I5-1135G7  | up to 4.20GHz  | 4/8   | 28W     | IT8786E-I/HX | 1*I219 | 0 ~ 60 °C             |
| WEC-C1165-V10 | I7-1165G7  | up to 4.7GHz   | 4/8   | 28W     | IT8786E-I/HX | 1*I219 | 0 ~ 60 °C             |





# WEC-CEHL

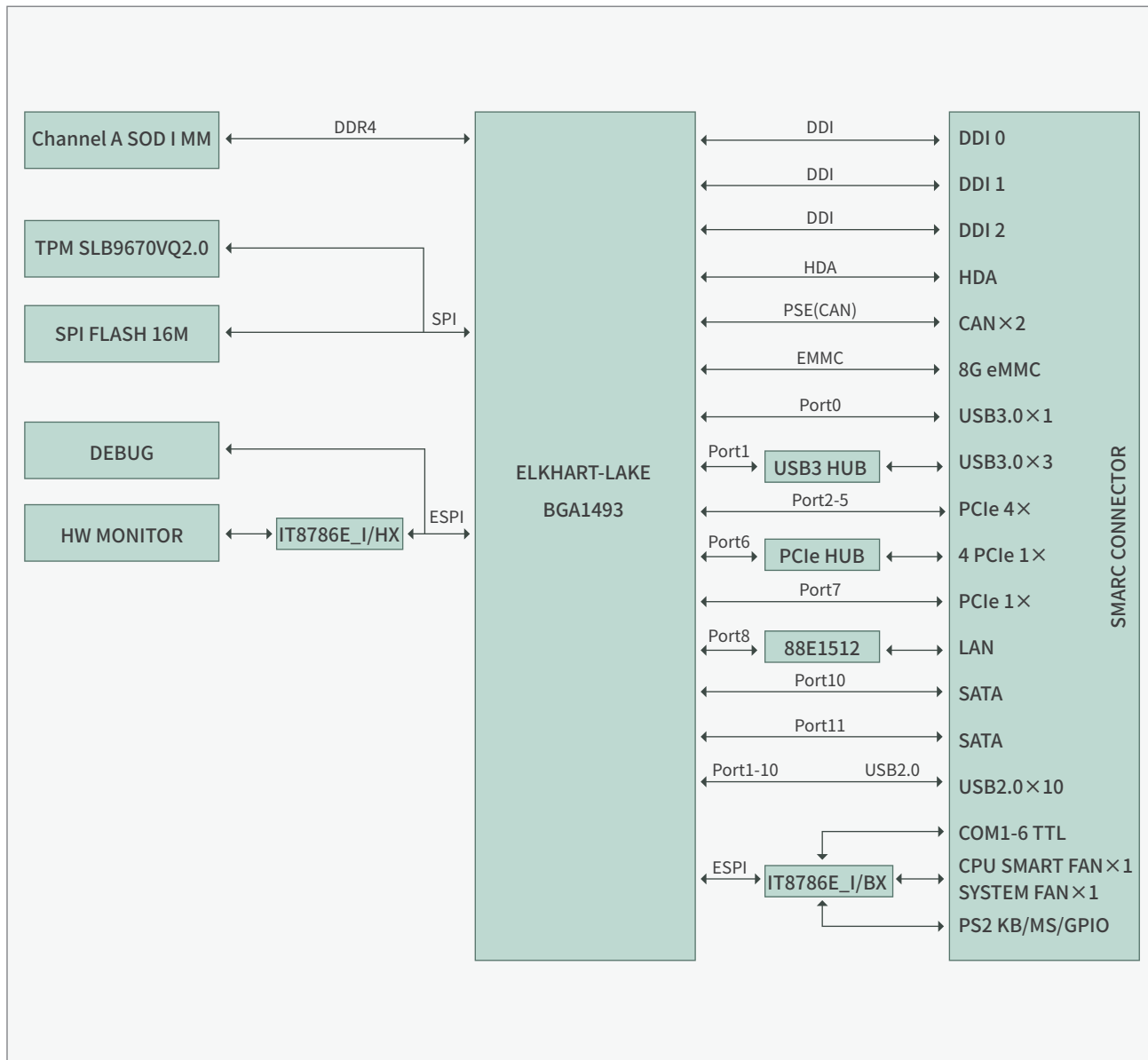
## FEATURES:

- 12th Generation Intel® Core™ Processors, Elkhart Lake
- Intel® HD Graphics, Intel® Iris® Xe Graphics
- Display: HDMI+eDP
- 1×intel I211 GbE
- COM Port: Support Up to 6 ports (4 Ports 2-wire / 2 Ports 8-wire)
- 4×USB3.0 Ports, 10×USB2.0 Ports
- 5 x PCIe×1

## SPECIFICATIONS

| Product Model    | Product Model         | WEC-CJ6412  | WEC-CJ6413                      | WEC-CJ6426                      |
|------------------|-----------------------|---|---------------------------------|---------------------------------|
| Processor System | CPU                   | Intel® Celeron® Processor J6412   | Intel® Celeron® Processor J6413 | Intel® Pentium® Processor J6426 |
|                  | Frequency             | Up to 2.6GHz  | Up to 3.00 GHz                  | Up to 3.00 GHz                  |
|                  | Core/Thread           | 4/4   | 4/4                             | 4/4                             |
|                  | LLC                   | 1.5MB   | 1.5MB                           | 1.5MB                           |
|                  | CPU TDP               | 10W   | 10W                             | 10W                             |
|                  | BIOS                  | AMI UEFI BIOS   |                                 |                                 |
| Memory           | Technology            | DDR4-3200 MHz   |                                 |                                 |
|                  | ECC Support           | N/A   |                                 |                                 |
|                  | Max. Capacity         | 32GB  |                                 |                                 |
|                  | eMMC                  | 8GB   |                                 |                                 |
|                  | Channel / Socket      | 1 * SO-DIMM Slot  |                                 |                                 |
| Graphics         | Controller            | Intel® UHD Graphics for 10th Gen Intel® Processors                          |                                 |                                 |
|                  | Max. Frequency        | 800MHz  | 800MHz                          | 850MHz                          |
| Display          | eDP                   | 4096×2160@ 60Hz   |                                 |                                 |
|                  | DP                    | 4096×2160@ 60Hz   |                                 |                                 |
|                  | HDMI                  | 4096×2160@ 60Hz   |                                 |                                 |
|                  | MIPI-DSI              | 4096×2160@ 60Hz   |                                 |                                 |
|                  | 3D/HW Acceleration    | Hardware encode/transcode of HD content<br>OpenGL support<br>OpenCL support |                                 |                                 |
|                  | Multiple Display      | Three displays with each display combinations                               |                                 |                                 |
| Serial Bus       | SMBus                 | 1 port  |                                 |                                 |
| Expansion        | PCI Express x1 (Gen3) | Up to 5 PCIe×1  |                                 |                                 |
|                  | Audio Interface       | 1 Intel HD Audio Interface  |                                 |                                 |
| Ethernet         | Controller            | intel I211 GbE  |                                 |                                 |
|                  | Speed                 | 10/100/1000 Mbps  |                                 |                                 |
| I/O              | USB3.0                | 4 Ports   |                                 |                                 |
|                  | USB2.0                | 10 Ports  |                                 |                                 |
|                  | CAN                   | 2 Ports   |                                 |                                 |
|                  | SATA3.0               | 2 Ports (6Gbps)   |                                 |                                 |
|                  | GPIO                  | 10 GPIOs  |                                 |                                 |
|                  | Watchdog              | BIOS Support  |                                 |                                 |
|                  | COM Port              | 6 Ports (4 Ports 2-wire / 2 Ports 8-wire)                                   |                                 |                                 |
|                  | Smart Fan             | System FAN (Option support)   |                                 |                                 |
|                  | SPI Bus               | Yes   |                                 |                                 |
| Power            | Type                  | DC IN   |                                 |                                 |
|                  | Supply Voltage        | Vin: 9~12V, RTC Battery: 2.0V ~ 3.3V  |                                 |                                 |
| Environment      | Operating Temperature | Standard: 0 ~ 60 °C   |                                 |                                 |
|                  | Storage Temperature   | Standard: -20 ~ 75 °C   |                                 |                                 |
|                  | Humidity              | Operating: 40 °C @ 95% relative humidity, non-condensing                    |                                 |                                 |
|                  |                       | Storage: 60 °C @ 95%relative humidity, non-condensing                       |                                 |                                 |
| Mechanical       | Vibration Resistance  | 3.5 Grms  |                                 |                                 |
|                  | Dimensions            | 82 mm×95 mm   |                                 |                                 |

## BLOCK DIAGRAM



## ORDERING INFORMATION

| P/N        | CPU                             | Freq.         | Cores | CPU TDP | eMMC | Super I/O    | LAN     | Operating Temperature |
|------------|---------------------------------|---------------|-------|---------|------|--------------|---------|-----------------------|
| WEC-CJ6412 | Intel® Celeron® Processor J6412 | up to 2.6GHz  | 4/4   | 10W     | 8GB  | T8786E-I/HX  | 1* I211 | 0 ~ 60 °C             |
| WEC-CJ6413 | Intel® Celeron® Processor J6413 | up to 3.00GHz | 4/4   | 10W     | 8GB  | IT8786E-I/HX | 1* I211 | 0 ~ 60 °C             |
| WEC-CJ6426 | Intel® Pentium® Processor J6426 | up to 3.00GHz | 4/4   | 10W     | 8GB  | IT8786E-I/HX | 1* I211 | 0 ~ 60 °C             |







# WEB-C111X

## FEATURES:

- Supports WEC-CTGL and WEC-CEHL Series Module
- Dual display outputs HDMI 2.0 and 24-bit LVDS
- 3×GbE with RJ45 connector
- 2×PCIe, 4×USB 3.0, 4×USB 2.0, 1×SATA II
- 2×RS232/RS422/RS485, 4×RS232
- Supports 2×CAN bus
- Supports input power DC +9~28V

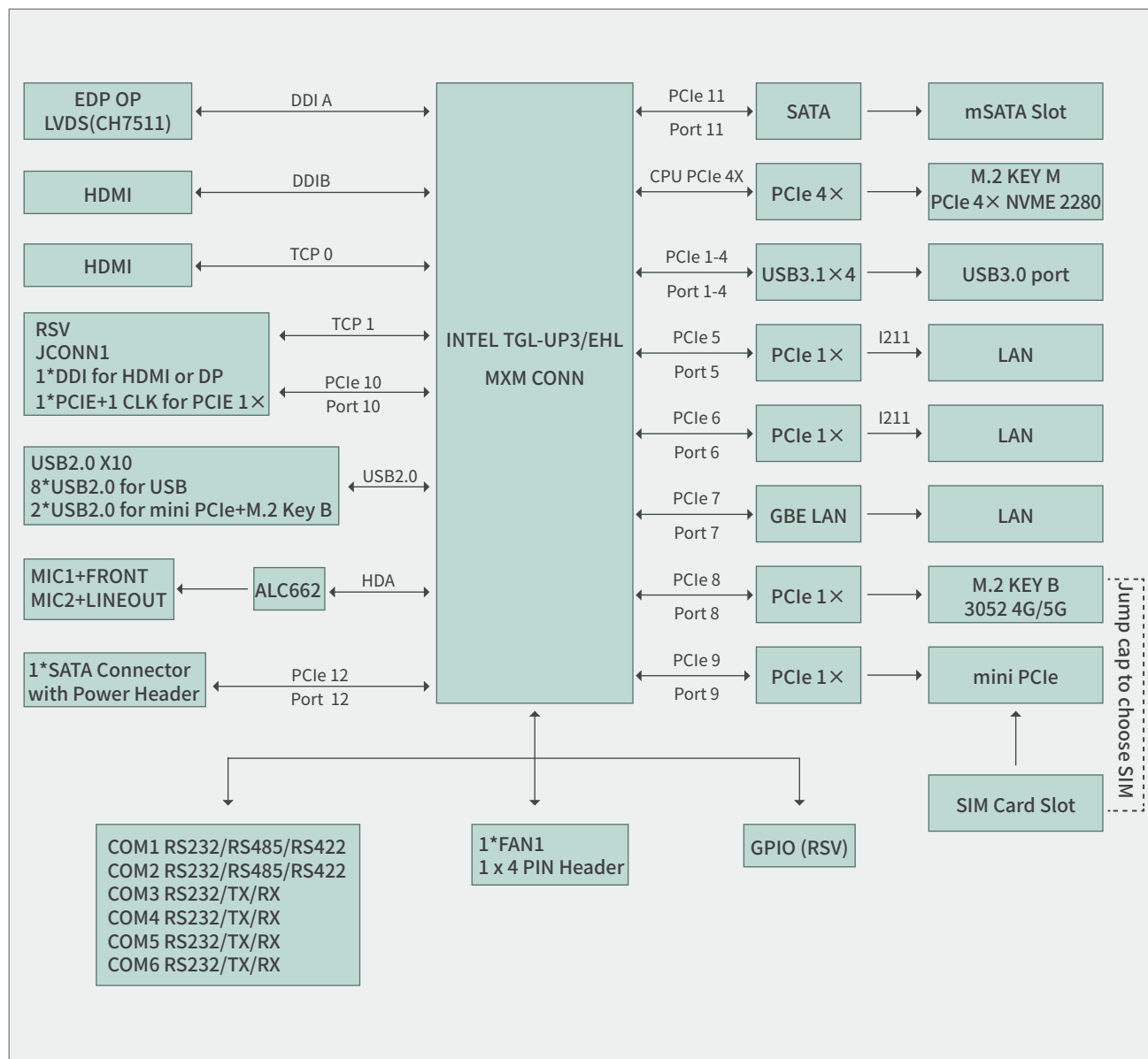
## SPECIFICATIONS

WEB-C111X is the Referenced Carrier Board designed for the core-board of WEC-CTGL and WEC-CEHL. It provides a thorough environment for module board evaluation with its complete function support. It's more easier for the end user to design portable devices by referring WEB-C111X design.

## SPECIFICATIONS

|                          |                                      |  |
|--------------------------|--------------------------------------|--|
| Product Model            | WEB-C111X                            |  |
| Graphics                 | HDMI                                 | 2×HDMI 2.0 Type A                                |
|                          | LVDS                                 | 2×Single 24-bit LVDS                             |
| Ethernet                 | LAN                                  | 3×GbE with RJ45 connector                        |
| Storage                  | 1 x mSATA Slot                       |  |
|                          | 1 x SATA Connector With Power Header |  |
| I/O                      | USB                                  | 4×USB 3.0 Type A, 4×USB 2.0 ports                |
|                          | COM                                  | 2×RS232/RS485/RS422 (COM1 & COM2, DB9 connector) |
|                          |                                      | 4×RS232 (COM3/4/5/6, DB9 connector)              |
|                          | Audio                                | 1×Line-Out+MIC 2in1 3.5mm Jack                   |
|                          | CAN                                  | 2×CAN  |
|                          | HDD/Power LED                        | 2  |
| Expansion                | Power Key                            | 1  |
|                          | PCIe Slot                            | 1×mPCIe for 4G, 1×mSATA                          |
|                          | M.2                                  | M.2 Key B, 1×M.2 for 5G, 1×M.2 for NVME          |
| Power Input              | Power                                | +9~28V DC-Jack (5.08-2P)                         |
| Environment              | Operating Temperature                | 0 ~ 60 °C  |
|                          | Operating Humidity                   | 0%~95% relative humidity, non-condensing         |
| Physical Characteristics | Dimensions                           | 147.3mm ×189.4mm                                 |

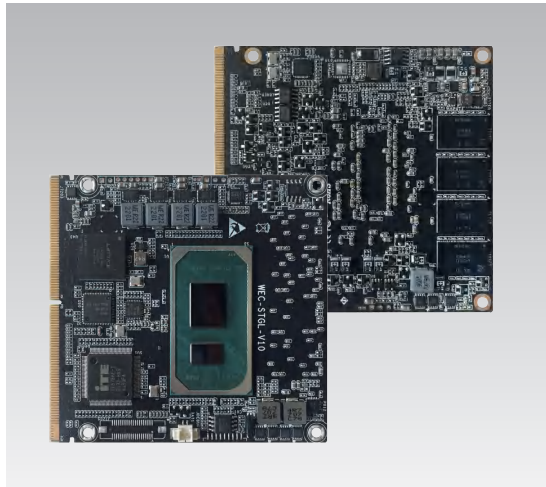
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## ORDERING INFORMATION

| Model     | Description                               |
|-----------|---|
| WEB-C111X | Board for WEC-CTGL/WEC-CEHL Module series |





# WEC-STGL

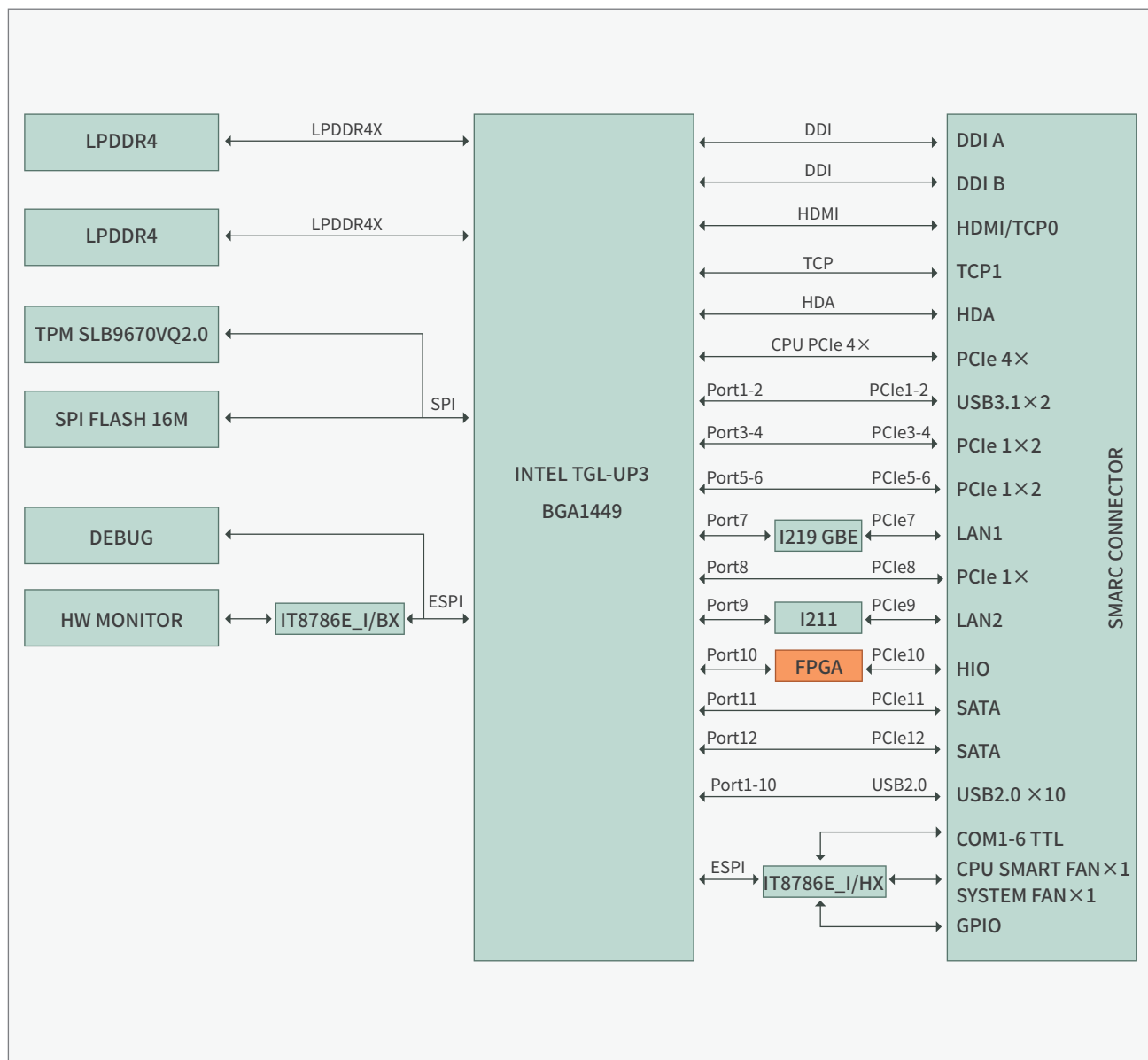
## FEATURES:

- 11th Generation Intel® Core™ Processors, Tiger Lake
- Intel® HD Graphics, Intel® Iris® Xe Graphics
- 33 high-speed IO provided by FPGA
- Display: HDMI+eDP
- 1× Intel® I219 GbE, 1× Intel® I211 GbE
- COM Port: Support Up to 6 ports
- 2× USB3.0 Ports, 4× USB2.0 Ports
- 4× PCIe×1

## SPECIFICATIONS

| Product Model    | Product Model         | WEC-S6305E  | WEC-S1115           | WEC-S1115E          | WEC-S1125           | WEC-S1135                | WEC-S1165                |  |
|------------------|-----------------------|---|---------------------|---------------------|---------------------|--------------------------|--------------------------|--|
| Processor System | CPU                   | 6305E   | I3-1115G4           | I3-1115G4E          | I3-1125G4           | I5-1135G7                | I7-1165G7                |  |
|                  | Frequency             | 1.80GHz   | Up to 4.10GHz       | Up to 3.9GHz        | Up to 3.70GHz       | Up to 4.20GHz            | Up to 4.7GHz             |  |
|                  | Core/Thread           | 2/2   | 2/4                 | 2/4                 | 4/8                 | 4/8                      | 4/8                      |  |
|                  | LLC                   | 4 MB  | 6 MB                | 6 MB                | 8 MB                | 8 MB                     | 12 MB                    |  |
|                  | CPU TDP               | 15W   | 28W                 | 28W                 | 28W                 | 28W                      | 28W                      |  |
|                  | BIOS                  | AMI UEFI BIOS   |                     |                     |                     |                          |                          |  |
| Memory           | Technology            | LPDDR4X 4266MT/s  |                     |                     |                     |                          |                          |  |
|                  | ECC Support           | N/A   |                     |                     |                     |                          |                          |  |
|                  | Max. Capacity         | 32GB  |                     |                     |                     |                          |                          |  |
|                  | Channel / Socket      | Dual Channel / On Board Memory  |                     |                     |                     |                          |                          |  |
| Graphics         | Controller            | Intel® UHD Graphics   | Intel® UHD Graphics | Intel® UHD Graphics | Intel® UHD Graphics | Intel® Iris® Xe Graphics | Intel® Iris® Xe Graphics |  |
|                  | Max. Frequency        | 1.25GHz   | 1.25GHz             | 1.25GHz             | 1.25GHz             | 1.3Ghz                   | up to 96 EUs, 1.3Ghz     |  |
| Display          | eDP                   | 4096×2304@60Hz  |                     |                     |                     |                          |                          |  |
|                  | HDMI                  | 4096×2304@60Hz  |                     |                     |                     |                          |                          |  |
|                  | MIPI-DSI              | 4096×2304@60Hz  |                     |                     |                     |                          |                          |  |
|                  | 3D/HW Acceleration    | Hardware encode/transcode of HD content (including HEVC)<br>DirectX 12 support<br>OpenGL 4.5, 4.4/4.3 and ES 2.0 support<br>OpenCL 2.1, 2.0/1.2 support |                     |                     |                     |                          |                          |  |
|                  | Multiple Display      | Three displays with each display combinations   |                     |                     |                     |                          |                          |  |
| Serial Bus       | SMBus                 | Yes   |                     |                     |                     |                          |                          |  |
|                  | I2C Bus               | Yes   |                     |                     |                     |                          |                          |  |
|                  | CAN Bus               | Yes   |                     |                     |                     |                          |                          |  |
| Expansion        | PCI Express x1 (Gen3) | Up to 4 PCIe×1  |                     |                     |                     |                          |                          |  |
|                  | High-speed IO         | Up to 33 HIO (High-speed IO), Provided by FPGA (LFD2NX-40-8BG256I)  |                     |                     |                     |                          |                          |  |
|                  | Audio Interface       | 1 Intel HD Audio Interface  |                     |                     |                     |                          |                          |  |
| Ethernet         | Controller            | Intel I219/I211   |                     |                     |                     |                          |                          |  |
|                  | Speed                 | 10/100/1000 Mbps  |                     |                     |                     |                          |                          |  |
|                  | Connector             | Up to 2 Ports   |                     |                     |                     |                          |                          |  |
| I/O              | USB3.0                | 2 Ports   |                     |                     |                     |                          |                          |  |
|                  | USB2.0                | 4 Ports   |                     |                     |                     |                          |                          |  |
|                  | SATA3.0               | 1 Port (6Gbps)  |                     |                     |                     |                          |                          |  |
|                  | GPIO                  | 16 GPIOs  |                     |                     |                     |                          |                          |  |
|                  | Watchdog              | BIOS Support  |                     |                     |                     |                          |                          |  |
|                  | COM Port              | 6 Ports (4 Ports 2-wire / 2 Ports 2-wire)   |                     |                     |                     |                          |                          |  |
|                  | Smart Fan             | System FAN (Option support)   |                     |                     |                     |                          |                          |  |
|                  | SPI Bus               | Yes   |                     |                     |                     |                          |                          |  |
| Power            | Type                  | DC IN   |                     |                     |                     |                          |                          |  |
|                  | Supply Voltage        | Vin: 9~12V, RTC Battery: 2.0V ~ 3.3V  |                     |                     |                     |                          |                          |  |
| Environment      | Operating Temperature | Standard: 0 ~ 60 °C   |                     |                     |                     |                          |                          |  |
|                  | Storage Temperature   | Standard: -20 ~ 75 °C   |                     |                     |                     |                          |                          |  |
|                  | Humidity              | Operating: 40 °C @ 95% relative humidity, non-condensing<br>Storage: 60 °C @ 95%relative humidity, non-condensing                                       |                     |                     |                     |                          |                          |  |
|                  | Vibration Resistance  | 3.5 Grms  |                     |                     |                     |                          |                          |  |
| Mechanical       | Dimensions            | 82 mm×85 mm   |                     |                     |                     |                          |                          |  |

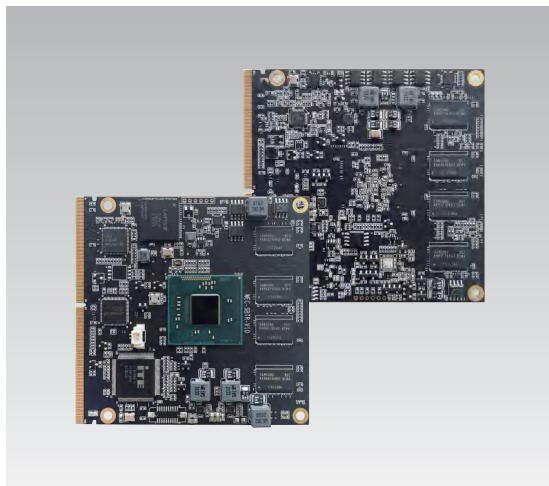
## BLOCK DIAGRAM



## ORDERING INFORMATION

| P/N        | CPU        | Freq.         | Cores | CPU TDP | Memory | Super I/O    | LAN           | Operating Temperature |
|------------|------------|---------------|-------|---------|--------|--------------|---------------|-----------------------|
| WEC-S6305E | 6305E      | 1.80GHz       | 2/2   | 15W     | 16GB   | IT8786E-I/HX | 1*I219+1*I211 | 0 ~ 60 °C             |
| WEC-S1115  | I3-1115G4  | up to 4.10GHz | 2/4   | 28W     | 16GB   | IT8786E-I/HX | 1*I219+1*I211 | 0 ~ 60 °C             |
| WEC-S1115E | I3-1115G4E | up to 3.9GHz  | 2/4   | 28W     | 16GB   | IT8786E-I/HX | 1*I219+1*I211 | 0 ~ 60 °C             |
| WEC-S1125  | I3-1125G4  | up to 3.70GHz | 4/8   | 28W     | 16GB   | IT8786E-I/HX | 1*I219+1*I211 | 0 ~ 60 °C             |
| WEC-S1135  | I5-1135G7  | up to 4.20GHz | 4/8   | 28W     | 16GB   | IT8786E-I/HX | 1*I219+1*I211 | 0 ~ 60 °C             |
| WEC-S1165  | I7-1165G7  | up to 4.7GHz  | 4/8   | 28W     | 16GB   | IT8786E-I/HX | 1*I219+1*I211 | 0 ~ 60 °C             |





# WEC-SBTR

## FEATURES:

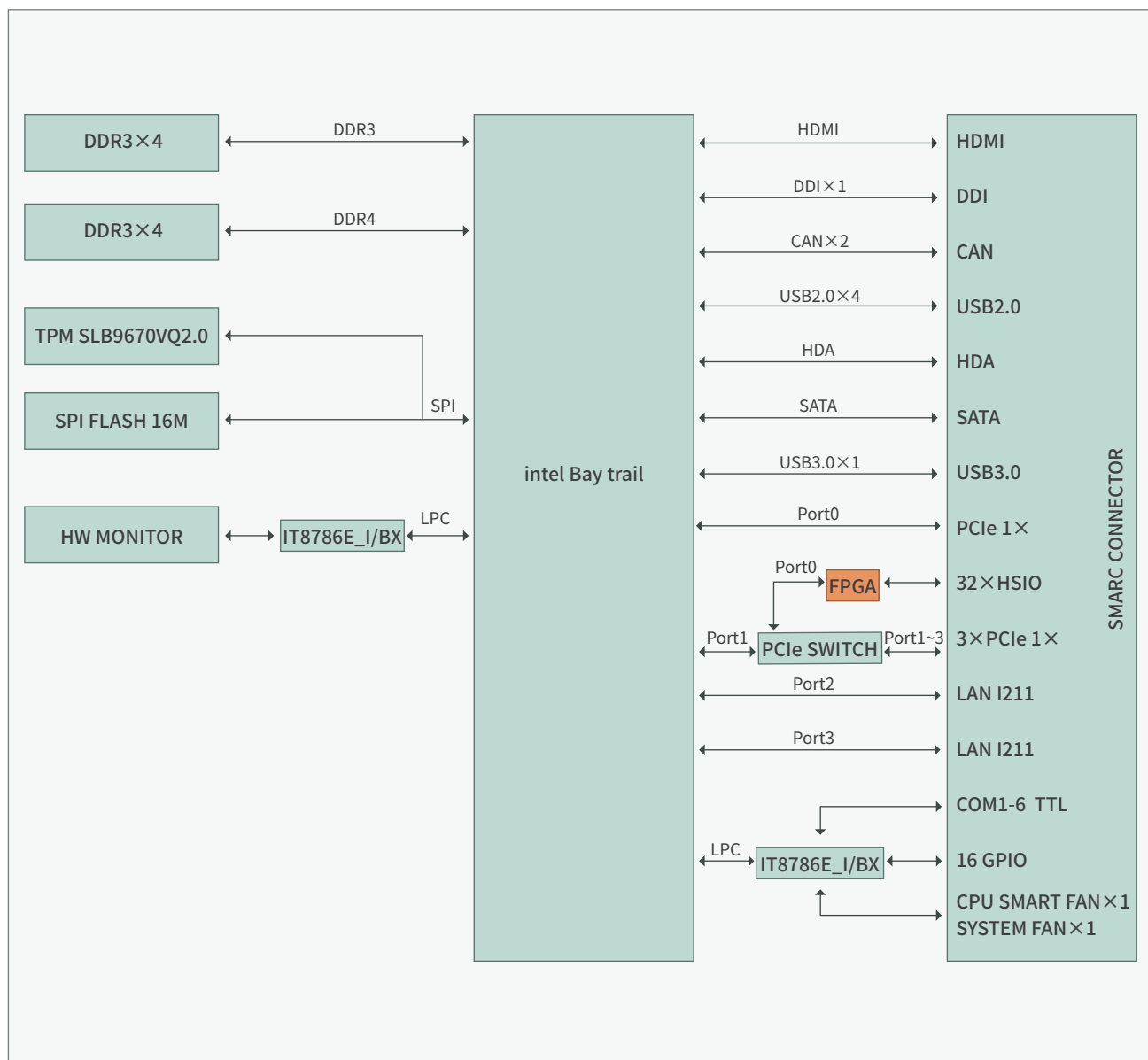
- Intel Celeron Processors: Bay Trail
- Intel HD Graphics for Intel Atom® Processor Z3700 Series
- 33 high-speed IO provided by FPGA
- Display: HDMI+eDP
- 2×Intel I211 GbE
- COM Port: Support up to 6 ports (4 Ports 2-wire / 2 Ports 2-wire)
- 1×USB3.0 ports, 4×USB2.0 ports
- 4×PCIe×1

## SPECIFICATIONS

| Product Model    | Product Model           | WEC-SJ1800   | WEC-SJ1900                      | WEC-SE3845                      |
|------------------|-------------------------|--|---------------------------------|---------------------------------|
| Processor System | CPU                     | Intel® Celeron® Processor J1800                                    | Intel® Celeron® Processor J1900 | Intel® Pentium® Processor E3845 |
|                  | Frequency               | Up to 2.58GHz  | Up to 2.42GHz                   | Up to 1.91GHz                   |
|                  | Core/Thread             | 2/2  | 4/4                             | 4/4                             |
|                  | LLC                     | 1MB  | 2MB                             | 2MB                             |
|                  | CPU TDP                 | 10W  | 10W                             | 10W                             |
|                  | BIOS                    | AMI UEFI BIOS  |                                 |                                 |
| Memory           | Technology              | DDR3L 1333 MHz   |                                 |                                 |
|                  | ECC Support             | N/A  |                                 |                                 |
|                  | Max. Capacity           | 8GB  |                                 |                                 |
|                  | Channel / Socket        | Dual Channel / On Board Memory                                     |                                 |                                 |
| Graphics         | Controller              | Intel® HD Graphics for Intel Atom® Processor Z3700 Series          |                                 |                                 |
|                  | Max. Frequency          | 792 MHz  | 854 MHz                         | 792 MHz                         |
| Display          | DP                      | 1 Port (up to 1920 x 1200@ 60Hz)                                   |                                 |                                 |
|                  | HDMI                    | 1 Port (up to 1920 x 1200@ 60Hz)                                   |                                 |                                 |
|                  | Multiple Display        | TWO displays with each display combinations                        |                                 |                                 |
| Serial Bus       | SMBus                   | 1 port   |                                 |                                 |
|                  | CAN Bus                 | 2 ports  |                                 |                                 |
| Expansion        | PCI Express x1 (Gen3)   | Up to 4 PCIe×1   |                                 |                                 |
|                  | High-speed IO           | Up to 33 HIO (High-speed IO), Provided by FPGA (LFD2NX-40-8BG256I) |                                 |                                 |
|                  | Audio Interface         | 11 Intel HD Audio Interface  |                                 |                                 |
| Ethernet         | Controller              | I211/I211  |                                 |                                 |
|                  | Speed                   | 10/100/1000 Mbps   |                                 |                                 |
| I/O              | USB3.0                  | 1 Ports  |                                 |                                 |
|                  | USB2.0                  | 4 Ports  |                                 |                                 |
|                  | SATA                    | 1 Port   |                                 |                                 |
|                  | GPIO                    | 16 GPIOs   |                                 |                                 |
|                  | Trusted Platform Module | TPM2.0   |                                 |                                 |
|                  | Watchdog                | BIOS Support   |                                 |                                 |
|                  | COM Port                | 6 Ports (4 Ports 2-wire / 2 Ports 2-wire)                          |                                 |                                 |
|                  | Smart Fan               | System FAN (Option support)  |                                 |                                 |
|                  | SPI Bus                 | Yes  |                                 |                                 |
| Power            | Type                    | DC IN  |                                 |                                 |
|                  | Supply Voltage          | Vin: 9~12V, RTC Battery: 2.0V ~ 3.3V                               |                                 |                                 |
| Environment      | Operating Temperature   | Standard: 0 ~ 60 °C  |                                 |                                 |
|                  | Storage Temperature     | Standard: -20 ~ 75 °C  |                                 |                                 |
|                  | Humidity                | Operating: 40 °C @ 95% relative humidity, non-condensing           |                                 |                                 |
|                  | Vibration Resistance    | Storage: 60 °C @ 95%relative humidity, non-condensing<br>3.5 Grms  |                                 |                                 |
| Mechanical       | Dimensions              | 82 mm×85 mm  |                                 |                                 |



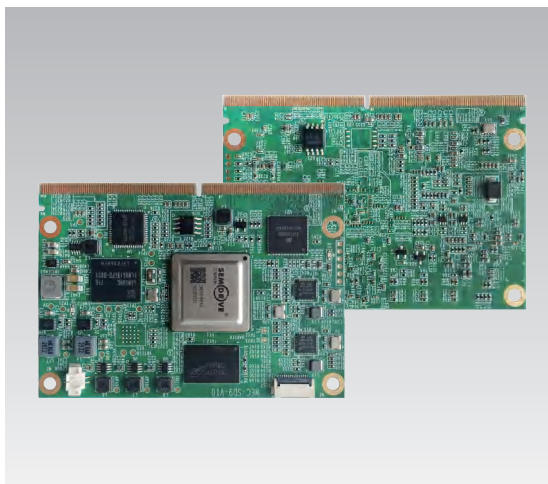
## BLOCK DIAGRAM



## ORDERING INFORMATION

| P/N        | CPU                             | Freq.         | Cores | CPU TDP | Memory  | Super I/O    | LAN    | Operating Temperature |
|------------|---------------------------------|---------------|-------|---------|---------|--------------|--------|-----------------------|
| WEC-SJ1800 | Intel® Celeron® Processor J1800 | up to 2.58GHz | 2/2   | 10W     | 2GB/4GB | IT8786E-I/BX | 2*I211 | 0 ~ 60 °C             |
| WEC-SJ1900 | Intel® Celeron® Processor J1900 | up to 2.42GHz | 4/4   | 10W     | 2GB/4GB | IT8786E-I/BX | 2*I211 | 0 ~ 60 °C             |
| WEC-SE3845 | Intel Atom® Processor E3845     | 1.91GHz       | 4/4   | 10W     | 2GB/4GB | IT8786E-I/BX | 2*I211 | 0 ~ 60 °C             |





# WEC-SD9

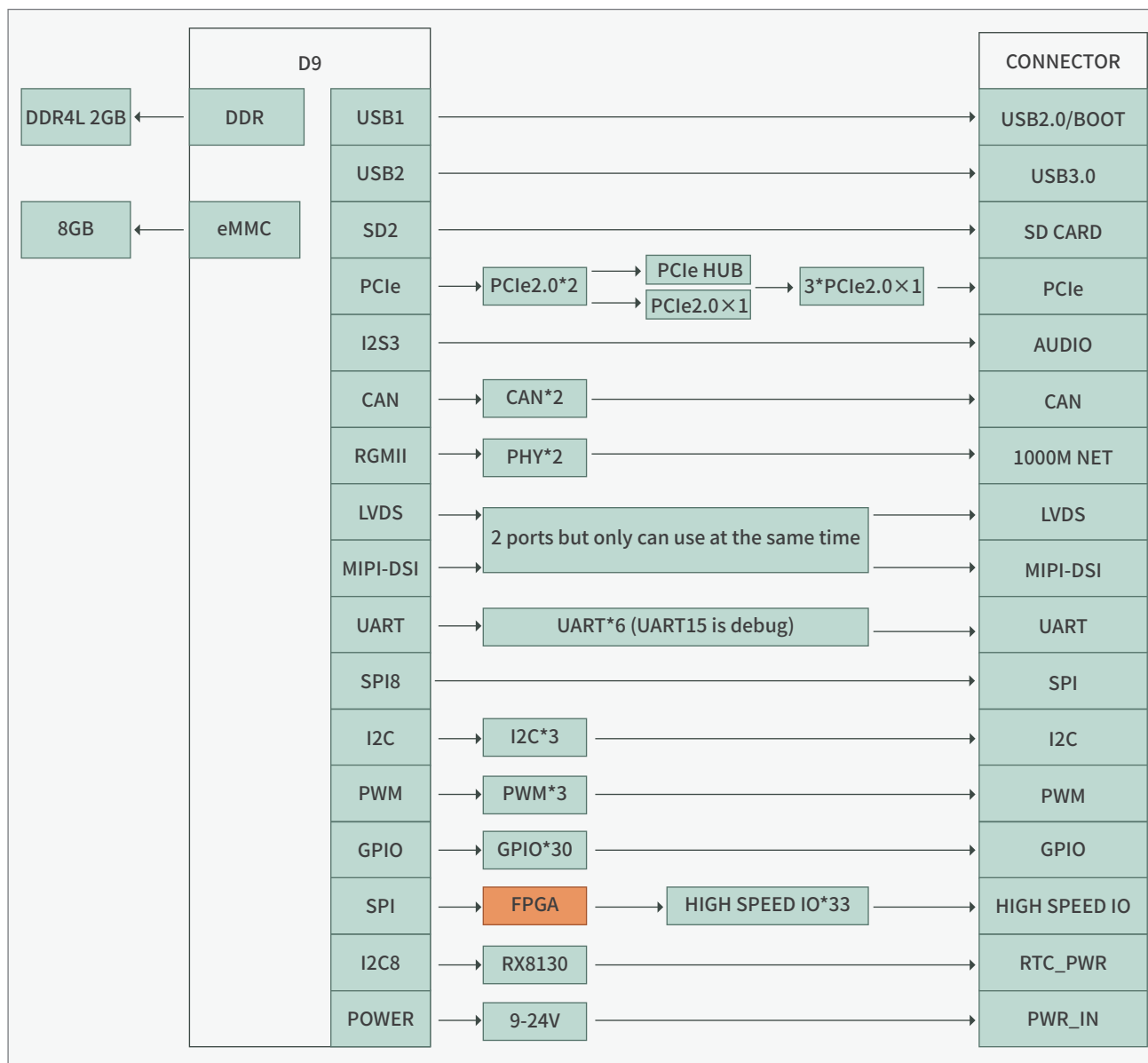
## FEATURES:

- SemiDrive D9, 4×Cortex-A55+2×Cortex-R5
- Support LPDDR4, Up to 8GB
- Integrated dual GbE on board design
- Display: LCD (LVDS or MIPI)
- COM Port: Normal Support 6 ports, Option support: UART15 is debug
- High-speed IO: 33 ports , provided by FPGA
- PCIe : Support 4 ports of PCIe2.0×1

## SPECIFICATIONS

| Product Model    | Product Model         | WEC-SD9   |
|------------------|-----------------------|---|
| Processor System | CPU                   | D9  |
|                  | Frequency             | 1.50GHz   |
|                  | Core                  | 4×Cortex-A55 + 2×Cortex-R5  |
|                  | LLC                   | L3 Cache 1 MB   |
|                  | CPU TDP               | 8W  |
|                  | OS                    | Android, Linux, FreeRTOS...   |
| Memory           | Technology            | Support LPDDR4 2400MT/s   |
|                  | Capacity              | Up to 8GB   |
| Graphics         | Controller            | IMG PowerVR 9XM GPU   |
| Display          | LCD (LVDS/eDP)        | LVDS: Dual-channel 18/24-bit, up to 2K (Cann't use with MIPI-DSI the same time) |
|                  | MIPI_DSI              | MIPI-DSI:2K   |
|                  | MIPI-CSI              | MIPI-CSI : support Four-channel   |
| Storage          | eMMC                  | 8GB/16GB  |
| Ethernet         | Controller            | YT8511  |
|                  | Speed                 | 10/100/1000 Mbps  |
|                  | Number                | 2 Ports   |
| I/O              | USB3.0                | 1 Port  |
|                  | USB3.0                | 1 Port (boot)   |
|                  | PCIe                  | 4 Ports of PCIe 2.0×1   |
|                  | COM                   | 6 Ports   |
|                  | SPI Bus               | 1 Port  |
|                  | PWM                   | 3 Ports   |
|                  | I2C                   | 3 Ports   |
|                  | I2S                   | 1 Port  |
|                  | SD                    | 1 Port  |
|                  | CAN                   | 2 Ports   |
|                  | GPIO                  | 27 Ports  |
|                  | High-speed IO         | 33 Ports, provided by FPGA  |
| Power            | Supply Voltage        | V <sub>in</sub> : 9V-24V  |
|                  | Operating Temperature | Standard: -20 ~ 70 °C   |
| Environment      | Storage Temperature   | Standard: -40 ~ 85 °C   |
|                  | Humidity              | Operating: 40 °C @ 95% relative humidity, non-condensing                        |
|                  |                       | Storage: 60 °C @ 95%relative humidity, non-condensing                           |
| Mechanical       | Dimensions            | 82 mm×58 mm   |

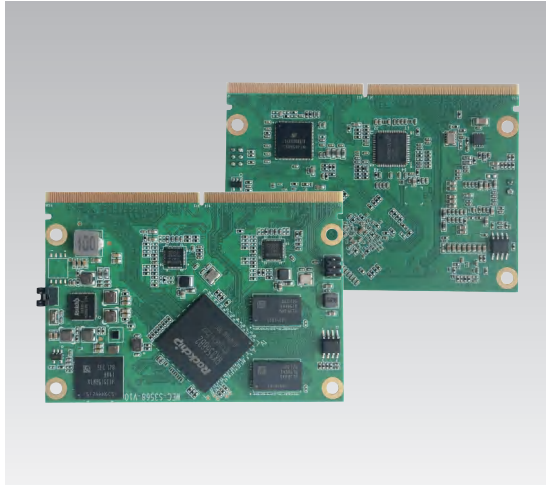
## BLOCK DIAGRAM



## ORDERING INFORMATION

| P/N             | CPU | Memory | Storage | Display   | Ethernet | COM Port                      | Operating Temperature |
|-----------------|-----|--------|---------|-----------|----------|-------------------------------|-----------------------|
| 核心板 WEC-SD9-V10 | D9  | 2G     | 8G      | LVDS/MIPI | Dual GbE | 6 ports LVTTTL (UART15 DEBUG) | -20 ~ 60 °C           |





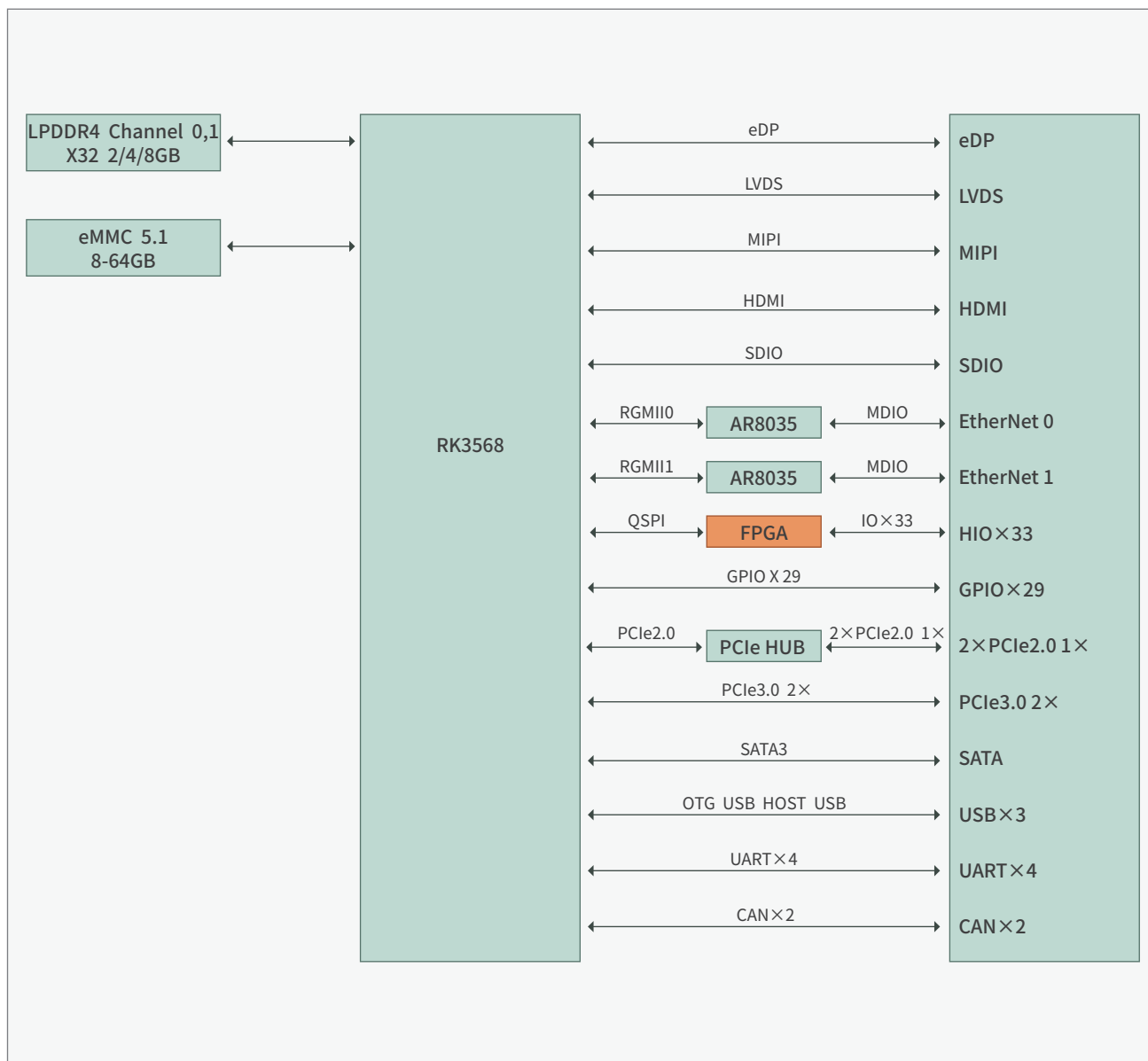
# WEC-S3568

- RK3568, Quad-core ARM Cortex-A55
- SoC's integrated NPU provides up to 1 TOPS of computing power
- Dual channel LPDDR4 2/4/8 GB memory
- Onboard eMMC up to 64GB
- Integrated dual GbE
- Fourfold Display (HDMI, LVDS, MIPI & eDP)
- 33 high-speed IO provided by FPGA
- Two PCIe2.0 controller with ×1 and one PCIe3.0 controller with ×2

## SPECIFICATIONS

| Product Model    | Product Model            | WEC-S3568   |
|------------------|--------------------------|---|
| Processor System | CPU                      | RK3568  |
|                  | Frequency                | 2.0GHz  |
|                  | Core                     | 4× Cortex-A55   |
|                  | CPU TDP                  | 5 W   |
| Memory           | Technology               | LPDDR4 3200MT/s, Support ECC  |
|                  | Max. Capacity            | 8GB   |
|                  | Channel / Socket         | Dual Channel / On Board Memory  |
| Storage          | Onboard Storage          | Up to 64GB eMMC   |
|                  | Controller               | Mali-G52 1-Core-2EE   |
| Graphics         | Max. Frequency           | Support 1600Mpix/s  |
|                  | 3D/HW Acceleration       | OpenGL ES 1.1/2.0/3.2, OpenCL 2.0 and Vulkan 1.1. Special 2D  |
|                  | Neural Process Unit      | processing performance<br>convolution operation   |
| Display          | LVDS                     | Support up to 1600x1200@60Hz  |
|                  | eDP                      | Support up to 2560x1600@60Hz  |
|                  | HDMI                     | Up to 1080p@120Hz and 4096x2304@60Hz  |
|                  | MIPI_DSI                 | Up to 1920x1080@60Hz display  |
| Expansion        | PCI Express x1 (Gen2)    | Up to 4 PCIe×1  |
|                  | Audio Interface          | I2S×1   |
| Serial Bus       | I2C Bus                  | Yes   |
|                  | CAN Bus                  | Yes (optional)  |
| Ethernet         | Controller               | AR8035  |
|                  | Speed                    | 10/100/1000 Mbps  |
|                  | Connector (RJ45)         | Up to 2 Ports   |
|                  | I/O                      | SATA3.0   |
| USB3.0           |                          | 1 Port (5Gbps)  |
| USB2.0           |                          | 2 Ports (480Mbps, include 1 client port)  |
| COM              |                          | 4 Ports (4 Ports 2-wire)  |
| GPIO             |                          | 29 GPIOs  |
| High Speed IO    |                          | 33 ports , provided by FPGA   |
| SPI Bus          |                          | 1   |
| SDIO             |                          | 1   |
| Watchdog         |                          | ADM706, 1.6s  |
| Smart Fan        |                          | N/A   |
| Wifi / BT Module |                          | N/A   |
| Power            | CSI                      | 2 Ports (1 Port 2-lane / 1 Port 4-lane)   |
|                  | Type                     | AT/ATX : Vin  |
|                  | Supply Voltage           | Vin: 9~24V, RTC Battery: 2.0V ~ 3.3V  |
|                  | Power Consumption (Max.) | 8 W   |
| Environment      | Power Consumption (Idle) | 5 W   |
|                  | Operating Temperature    | Standard: 0 ~ 60 °C<br>Extended: -40 ~ 85 °C  |
|                  | Storage Temperature      | -40 ~ 85 °C   |
|                  | Humidity                 | Operating: 40 °C @ 95% relative humidity, non-condensing<br>Storage: 60 °C @ 95%relative humidity, non-condensing |
| Mechanical       | Vibration Resistance     | 3.5 Grms  |
|                  | Dimensions               | 82 mm×58 mm   |

## BLOCK DIAGRAM

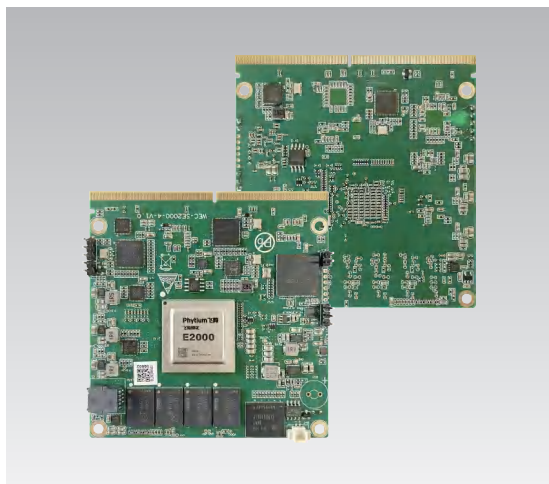


## ORDERING INFORMATION

| P/N           | CPU    | Freq.  | Cores | CPU TDP | Memory | eMMC | Wi-Fi/BT | Thermal Solution | Operating Temperature |
|---------------|--------|--------|-------|---------|--------|------|----------|------------------|-----------------------|
| WEC-S3568-V10 | RK3568 | 2.0GHz | 4/4   | 5 W     | 2GB    | 8GB  | -        | Passive          | 0 ~ 60 °C             |







# WEC-SE2000Q

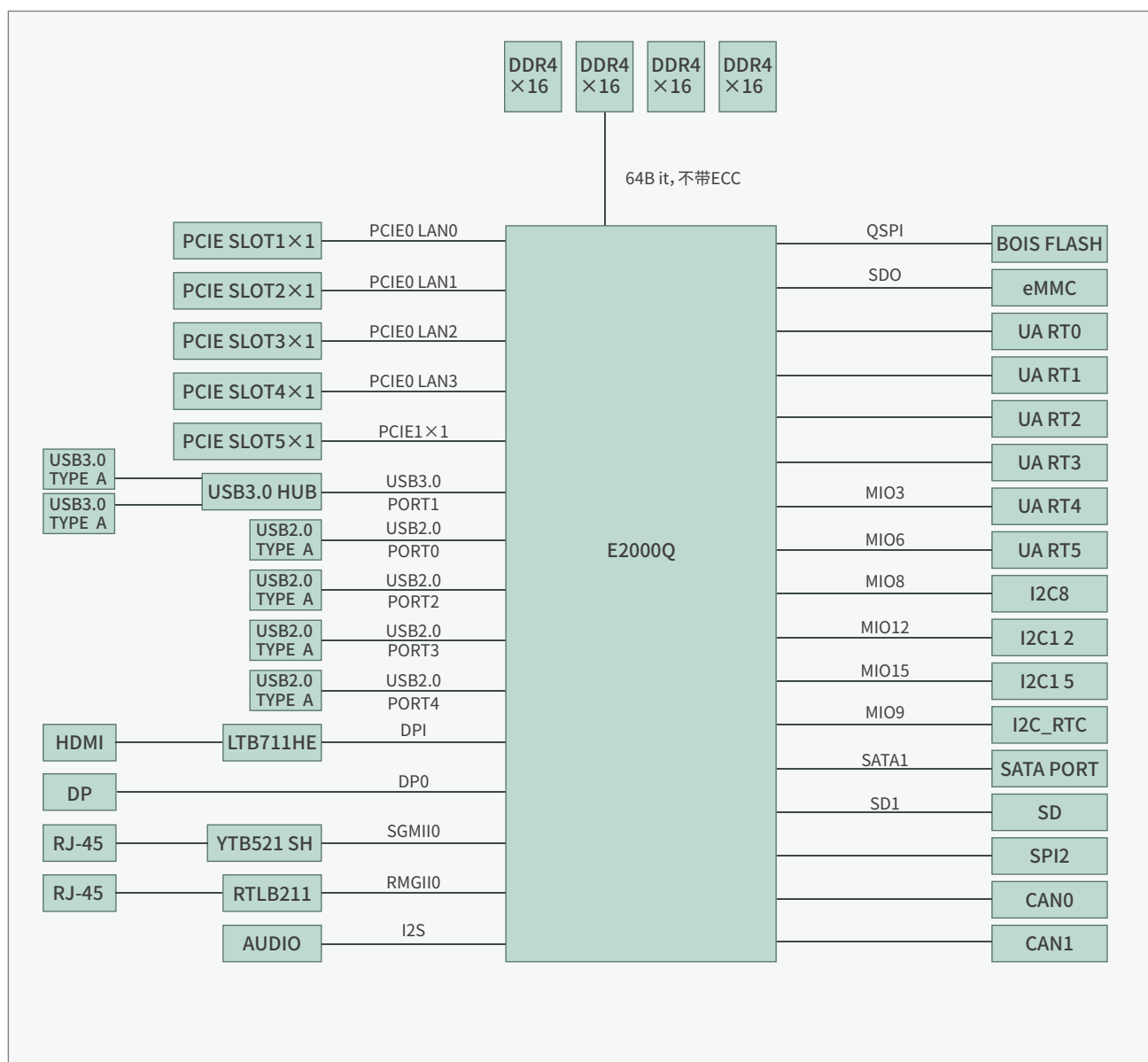
## FEATURES:

- E2000Q processor, 2×FTC664 + 2×FTC310
- Support DDR4 4GB
- Integrated dual GbE on board design
- Display: DP and HDMI
- COM Port: Normal Support 6 ports ,Option support: UART1 is debug
- 33 ports of High speed IO, provided by FPGA
- PCIe : Support 4 ports of PCIe3.0×1.

## SPECIFICATIONS

| Product Model    | Product Model         | WEC-SE2000Q  |
|------------------|-----------------------|--|
| Processor System | CPU                   | E2000Q   |
|                  | Core                  | FTC664*2 + FTC310*2                                      |
|                  | Frequency             | 2.0GHz, 1.50GHz  |
|                  | LLC                   | L2 Cache 2 MB + 256KB                                    |
|                  | CPU TDP               | 6W   |
|                  | OS                    | Kylin, UOS, SylixOS, Free OS, 开源OS                       |
| Memory           | Technology            | Support DDR4 2400MHz                                     |
|                  | Capacity              | 4GB  |
| Graphics         | Controller            | /  |
| Display          | LCD (LVDS/eDP)        | NC   |
|                  | DP0                   | DP   |
|                  | DP1                   | Support Four-channel                                     |
| Storage          | eMMC                  | 8GB  |
| Ethernet         | Controller            | YT8521SH/RTL8211   |
|                  | Speed                 | 10/100/1000 Mbps   |
|                  | Number                | 2 Ports  |
| I/O              | USB3.0                | 2 Ports  |
|                  | USB2.0                | 4 Ports  |
|                  | PCIe                  | 4 Ports PCIe3.0 (4x1, 1x4, 2x1+1x2)                      |
|                  | COM                   | 6 ports 3.3V-TTL (UART1 debug)                           |
|                  | SPI                   | 1 Port   |
|                  | PWM                   | /  |
|                  | I2C                   | 3 Ports  |
|                  | I2S                   | 1 Port   |
|                  | SD                    | 1 Port   |
|                  | CAN                   | 2 Ports  |
|                  | IO                    | 24 Ports   |
|                  | High-speed IO         | 33 Ports, provided by FPGA                               |
| Power            | Supply Voltage        | Vin: 9~24V   |
|                  | Operating Temperature | Standard: 0 ~ 60 °C                                      |
| Environment      | Storage Temperature   | Standard: -40 ~ 85 °C                                    |
|                  | Humidity              | Operating: 40 °C @ 95% relative humidity, non-condensing |
|                  |                       | Storage: 60 °C @ 95%relative humidity, non-condensing    |
| Mechanical       | Dimensions            | 82 mm x 85 mm  |

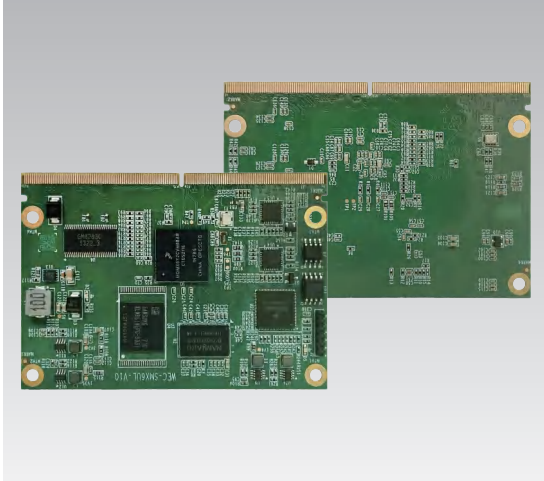
## BLOCK DIAGRAM



## ORDERING INFORMATION

| Model Name  | CPU                  | Memory | Storage | Display | Ethernet | COM Port                          | Operating Temperature |
|-------------|----------------------|--------|---------|---------|----------|-----------------------------------|-----------------------|
| WEC-SE2000Q | E2000Q<br>(商业级or工业级) | 4GB    | 8G      | DP/HDMI | Dual GbE | 6 prots 3.3v-TTL<br>(UART1 DEBUG) | 0 ~ 60 °C (-40~85°C)  |





# WEC-SMX6UL

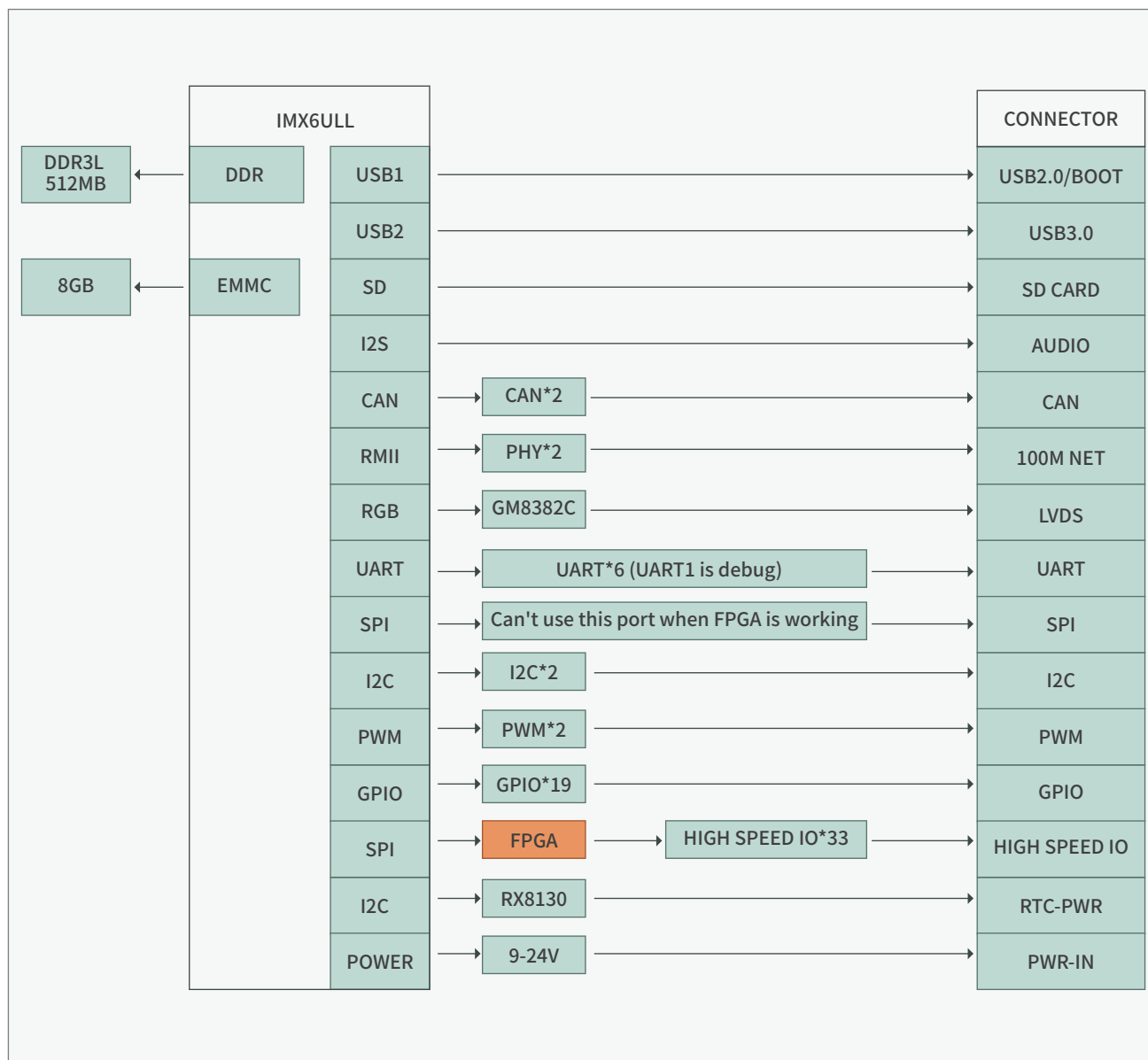
## FEATURES:

- NXP i.MX 6ULL processor, Cortex-A7, 800MHz
- Support DDR3L 512MB
- Integrated dual 100Mbps ethernet on board design
- Display: LVDS
- COM Port: Normal Support 6 ports, Option support: UART1 is debug
- 33 ports of High speed IO, provided by FPGA

## SPECIFICATIONS

| Product Model    | Product Model         | WEC-SMX6UL  |
|------------------|-----------------------|---|
| Processor System | CPU                   | i.MX 6ULL, MCIMX6Y2CVM08AB  |
|                  | Frequency             | 800MHz  |
|                  | Core                  | Cortex-A7   |
|                  | LLC                   | L2 Cache 128 KB   |
|                  | CPU TDP               | 4W  |
|                  | OS                    | Linux   |
| Memory           | Technology            | Support DDR3L   |
|                  | Capacity              | 512MB   |
| Display          | LVDS                  | LVDS: Single-channel 18/24-bit, up to 1366×768  |
| Storage          | eMMC                  | 8GB   |
| Ethernet         | Controller            | RTL8201F  |
|                  | Speed                 | 10/100 Mbps   |
|                  | Number                | 2 Ports   |
| I/O              | USB2.0                | 2 Ports   |
|                  | COM                   | 6 Ports   |
|                  | SPI                   | 1 Port  |
|                  | PWM                   | 2 Ports   |
|                  | I2C                   | 2 Ports   |
|                  | I2S                   | 1 Port  |
|                  | SDIO                  | 1 Port  |
|                  | CAN                   | 2 Ports   |
|                  | GPIO                  | 20 Ports  |
|                  | High-speed IO         | 33 Ports, provided by FPGA  |
| Power            | Supply Voltage        | Vin: 9~24V  |
| Environment      | Operating Temperature | Standard: -20 ~ 70 °C   |
|                  | Storage Temperature   | Standard: -40 ~ 85 °C   |
|                  | Humidity              | Operating: 40 °C @ 95% relative humidity, non-condensing<br>Storage: 60 °C @ 95%relative humidity, non-condensing |
| Mechanical       | Dimensions            | 82 mm×58 mm   |

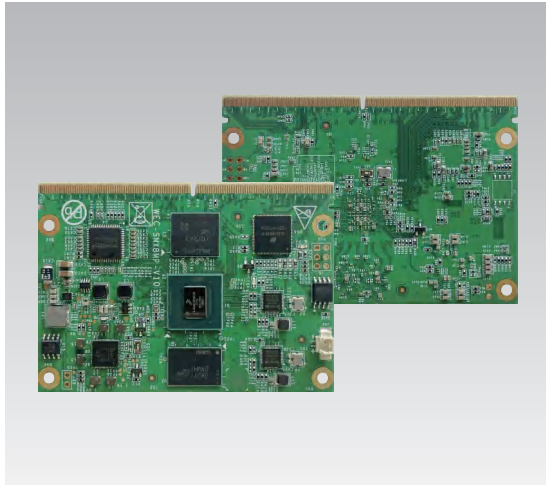
## BLOCK DIAGRAM



## ORDERING INFORMATION

| Model Name     | CPU       | Memory | Storage | Display | Ethernet     | COM Port                        | Operating Temperature |
|----------------|-----------|--------|---------|---------|--------------|---------------------------------|-----------------------|
| WEC-SMX6UL-V10 | i.MX 6ULL | 512MB  | 8GB     | LVDS    | Dual 100Mbps | 6 ports LVTTTL (UART1 is debug) | -20 ~ 70 °C           |





# WEC-SMX8MP

## FEATURES:

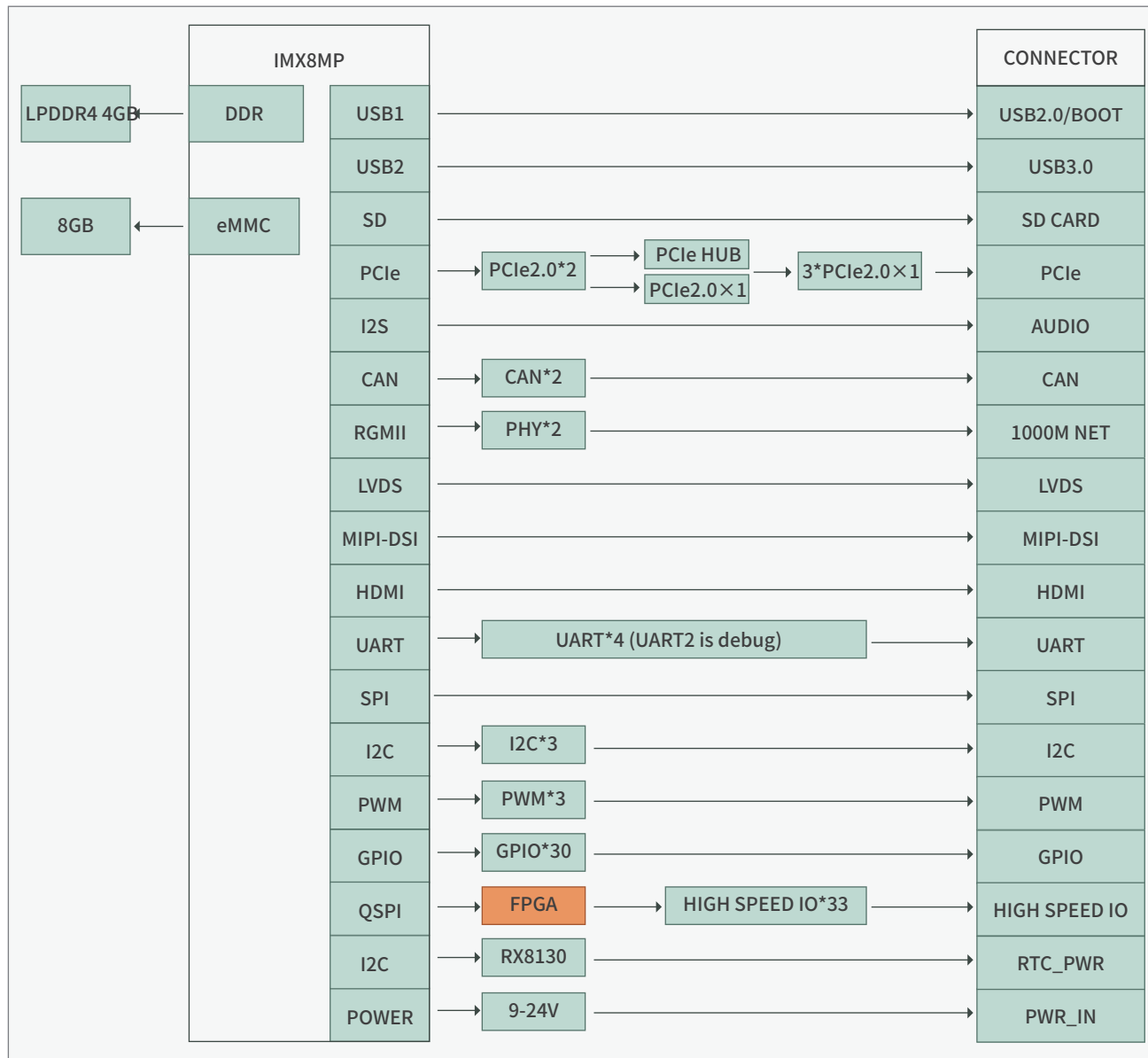
- NXP i.MX 8M Plus , 4×Cortex-A53+1×Cortex-M7
- SoC's integrated NPU provides up to 2.3TOPS of computing power
- Support LPDDR4 4GB
- Integrated dual GbE on board design
- Display: LCD (LVDS or MIPI)/HDMI/DSI
- COM Port: Normal Support 4 ports ,Option support: UART2 is debug
- 33 ports of High speed IO, provided by FPGA
- PCIe : Support 4 ports of PCIe2.0×1

## SPECIFICATIONS

| Product Model    | Product Model         | WEC-SMX8MP  |
|------------------|-----------------------|---|
| Processor System | CPU                   | NXP i.MX 8M Plus  |
|                  | Frequency             | 1.60 GHz  |
|                  | Core                  | 4×Cortex-A53 + Cortex-M7  |
|                  | LLC                   | L3 Cache 1 MB   |
|                  | CPU TDP               | 8W  |
|                  | OS                    | Android、Linux、FreeRTOS  |
| Memory           | Technology            | Support LPDDR4L 3200MT/s  |
|                  | Capacity              | 4GB   |
| Graphics         | Controller            | Super tile status buffer  |
| Display          | LCD (LVDS/eDP)        | LVDS: 4-lane or 8-lane  |
|                  | MIPI_DSI              | One 4-lane  |
|                  | MIPI-CSI              | Support Four-channel  |
|                  | HDMI                  | HDMI 2.0a Tx supporting one display   |
| Storage          | eMMC                  | 8GB   |
| Ethernet         | Controller            | YT8511  |
|                  | Speed                 | 10/100/1000 Mbps  |
|                  | Number                | 2 Ports   |
| I/O              | USB3.0                | 1 Port  |
|                  | USB3.0                | 1 Port (boot)   |
|                  | PCIe 2.0              | 4 Ports   |
|                  | COM                   | 4 Ports   |
|                  | SPI                   | 1 Port  |
|                  | PWM                   | 3 Ports   |
|                  | I2C                   | 3 Ports   |
|                  | I2S                   | 1 Port  |
|                  | SDIO                  | 1 Port  |
|                  | CAN                   | 2 Ports   |
|                  | GPIO                  | 30 Ports  |
|                  | High-speed IO         | 33 Ports, provided by FPGA  |
| Power            | Supply Voltage        | Vin: 9~24V  |
| Environment      | Operating Temperature | Standard: -20 ~ 60 °C   |
|                  | Storage Temperature   | Standard: -40 ~ 85 °C   |
|                  | Humidity              | Operating: 40 °C @ 95% relative humidity, non-condensing<br>Storage: 60 °C @ 95%relative humidity, non-condensing |
| Mechanical       | Dimensions            | 82 mm×58 mm   |



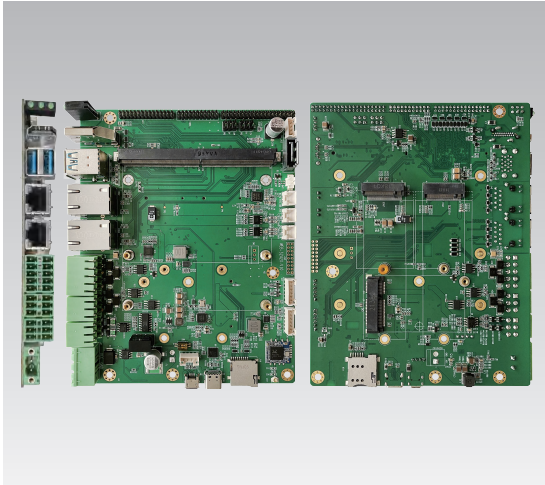
## BLOCK DIAGRAM



## ORDERING INFORMATION

| P/N        | CPU          | Memory | Storage | Display        | Ethernet | COM Port                     | Operating Temperature |
|------------|--------------|--------|---------|----------------|----------|------------------------------|-----------------------|
| WEC-SMX8MP | i.MX 8M Plus | 4GB    | 8GB     | LVDS/MIPI/HDMI | Dual GbE | 4 ports LVTTTL (UART2 debug) | -20 ~ 60 °C           |





# WEB-S242X

## FEATURES:

- Designed to support WEC-SXXX series Core-boards with MXM connector
- Display outputs HDMI 2.0、eDP and 24-bit LVDS
- Supports 2×GbE, 2×USB 3.0, 1×USB OTG 2.0, 2×CAN bus, 2×RS232, 2×RS485, 2×DI/DO
- Supports 4×PCIe 2.0, 1×SATA II, 1×I2S
- The supported input power supply is +9~28V

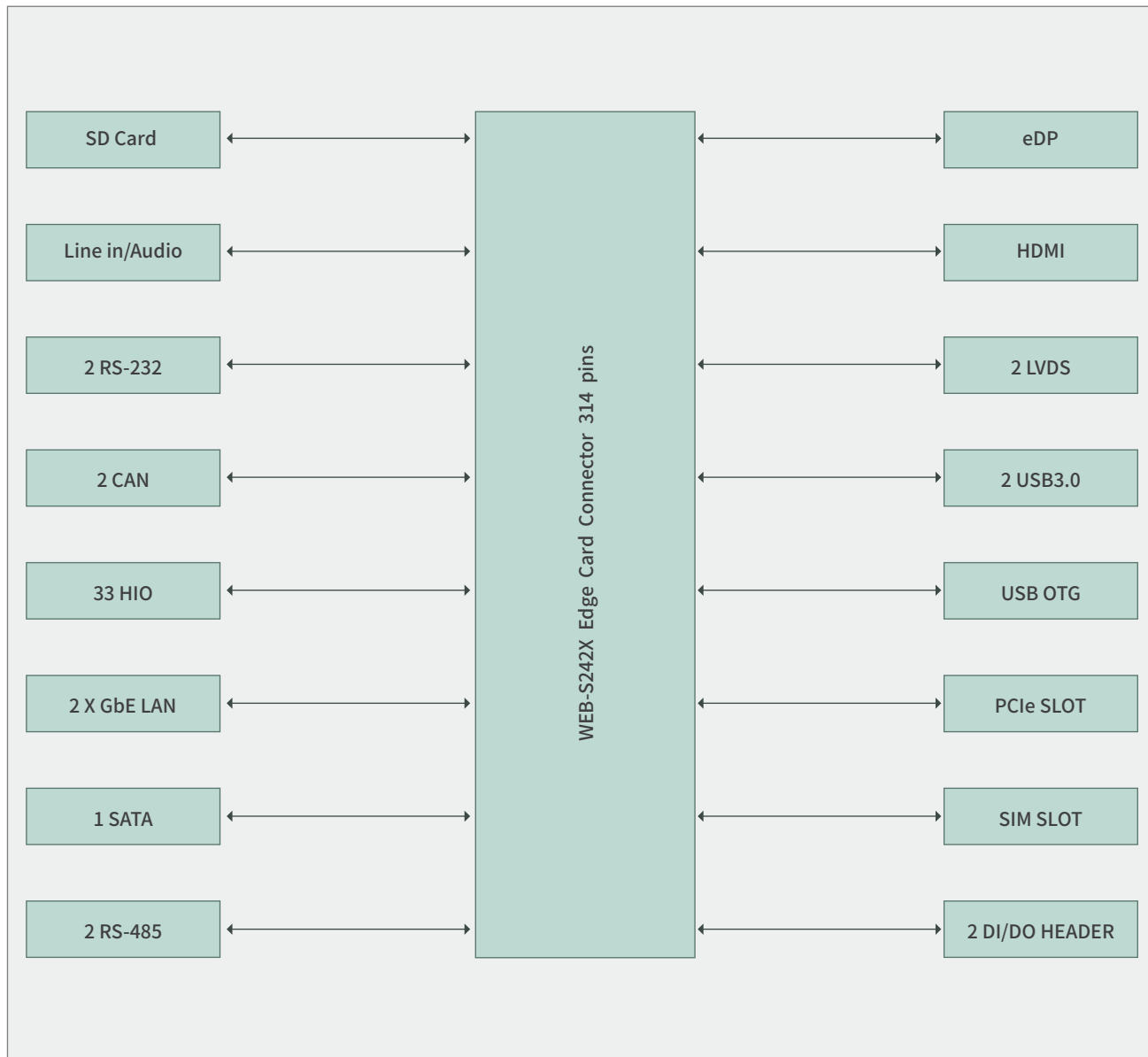
## SPECIFICATIONS

WEB-S242X is the Referenced Carrier Board designed for YANZHITech's WEC-SXXX series Core-boards, including WEC-SD9 / WEC-S3568 / WEC-SE2000Q / WEC-SM6UL / WEC-SMX8MP and more. It provides a thorough environment for module board evaluation with its complete function support. It's more easier for the end user to design portable devices by referring WEB-S242X

## SPECIFICATIONS

|                          |                                    |  |
|--------------------------|------------------------------------|--|
| Product Model            | WEB-S242X                          |  |
| Graphics                 | HDMI                               | 1×HDMI 2.0 Type A                          |
|                          | eDP                                | 1×Single eDP 4Line                         |
|                          | LVDS                               | 2×Single LVDS 4 Line                       |
| Ethernet                 | LAN                                | 2×GbE with RJ45 connector                  |
| Storage                  | SD                                 | 1×SD card slot                             |
|                          | SATA                               | 1×SATA Connector                           |
| I/O                      | USB                                | 2×USB3.0 Type A, 1×USB OTG micro USB       |
|                          | COM                                | 2×RS485 pin header                         |
|                          |                                    | 2×2-wire RS232 pin header                  |
|                          | Audio                              | 2×port LR-line-out, 1×mic                  |
|                          | CAN                                | 2×CAN bus                                  |
|                          | DI/DO                              | 2×DO, 2×DI                                 |
| High speed IO            | 33×High speed IO, provided by FPGA |  |
| Expansion                | PCIe                               | 4×PCIe 2.0, or 1×PCIe 3.0 & 2×PCIe 2.0     |
| Power Input              | Power                              | +9~28V DC pin header                       |
| Environment              | Environment                        | -40~80°C                                   |
|                          | Operating Humidity                 | 0%~90% relative humidity<br>non-condensing |
| Physical Characteristics | Dimensions                         | 159.5mm×128mm                              |

## BLOCK DIAGRAM



## ORDERING INFORMATION

| Model         | Description                          |
|---------------|--------------------------------------|
| WEB-S242X-V10 | Board for WEC-SXXX series core-board |





研智科技公众号



研智科技网站

**杭州研智科技有限公司**

网址:[www.rt-ics.com](http://www.rt-ics.com)

邮箱:[sales@rt-ics.com](mailto:sales@rt-ics.com)

电话:0571-8505 6629

地址:杭州/上海/深圳/南京/苏州/合肥/西安/成都