ASRock Industrial

Robust Edge AIoT Platform Catalog

Cocreate an Intelligent World

ASRock Industrial

Preliminary

iEPF-10000S Series

Expandable Edge AIoT Platform

KEY FEATURES

- ASRock Industrial ATX Industrial Motherboard IMB-1714 or IMB-X1714 inside
- Intel® 14th/13th Core™ Processor, up to 125W
- 4 x 288-pin Long-DIMM DDR5, up to 192GB (48GB per DIMM)
- PNY GEFORCE RTX® 4090 24GB option. NVIDIA Ada Lovelace Streaming Multiprocessors, 4th Generation Tensor Cores, and 3rd Generation RT Cores
- ASRock Intel Arc A770 Challenger SE 16GB OC option. Intel® Xe HPG Microarchitecture and Intel® Xe Super Sampling (XeSS) support
- ATX Power Supply 850W or 1000W option, Complies with ATX12V V3.0

SPECIFICATIONS

Mechanical

Dimensions (D x W x H)	597mm (D) x 206mm (W) x 455.1mm (H)

Processor System

CPU	Intel® 14th/13th Core™ Processor, up to 125W (Default Intel® Core™ i9-13900 Processor)
Chipset	Intel® Q670 (IMB-1714) or Intel® W680 (IMB-X1714) Default is IMB-1714
Socket	LGA1700
BIOS	AMI SPI 256 Mbit

Memory

Technology	Dual Channel DDR5 4400/5600 MHz* *Actual memory frequency depends on the CPU types and DRAM modules, for more information refer to https://www.asrockind.com/en-gb/index.php?route=newsblog/faq&faq_id=90 technical FAQ *For DDR5 5600 support refer to memory support list ECC feature only supported by IMB-X1714
Capacity	192GB (48GB per DIMM)
Socket	4 x 288-pin Long-DIMM

CPU Graphics

Controller	Intel® UHD Graphics
HDMI	HDMI 2.0b Max resolution up to 4096x2160@60Hz
DisplayPort	DisplayPort 1.4a, DP++ Max resolution up to 4096x2160@60Hz
VGA	Max resolution up to 1920 x 1200@60Hz
MultiDisplay	Triple Display

Audio

Interface	Realtek ALC897, High Definition Audio. Line-in, Line-out, Mic-in (Rear Side)

MB Expansion Slot

PCIe	2 x PCIe Gen5 Slots (PCIE1/PCIE4:single at x16(PCIE1); dual at x8 (PCIE1) / x8 (PCIE4)) 2 x PCIe x4 (Gen4), 3 x PCIe x1 (Gen3)
M.2	1 x M.2 (Key E, 2230) with PCIe x1, USB 2.0 and CNVi for Wireless 1 x M.2 (Key B, 3042/3052) with PCIe x1, USB3.2 Gen1, USB 2.0 and SIM for 4G/5G
SIM Socket	1 x SIM socket connected to M.2 Key B

Ethernet

Controller/ Speed	LAN1: Intel® I226V with 10/100/1000/2500 Mbps, supports PoE (IEEE 802.3at). LAN2: Intel® I226LM with 10/100/1000/2500 Mbps, supports vPro LAN3: Intel® I226V with 10/100/1000/2500 Mbps
Connector	3 x RJ-45

MB Rear I/O

HDMI	1 x HDMI 2.0b
DisplayPort	1 x DP 1.4a++
VGA	1
Ethernet	3 x 2.5 Gigabit LAN
USB	5 x USB 3.2 Gen2 1 x USB 3.2 Gen2x2 (Type-C, 5V/3A)
Audio	3 (Mic-in, Line-in, Line-out)
COM	COM1, COM2 (RS-232/422/485)

MB Internal Connector

USB	2 x USB 3.2 Gen1 (Chassis front side), 2 x USB 2.0 Type-A internal vertical connector), 2 x USB 2.0 (1 x 2.54 pitch header)
COM	COM3, COM4, COM5, COM6 (RS-232)
Parallel	1
GPIO	8 x GPI, 8 x GPO (shared with LPT header)
PS2	1 x PS2 header
Thunderbolt header	1

Storage

M.2	1 x M.2 2280 (Key M) PCIe Gen4 x4 SSD (Default 2TB) 1 x M.2 2280 (Key M) PCIe Gen3 x4 SSD (IMB-X1714 only)
SATAIII	2.5"/3.5" HDD bays x 5
RAID	Intel® VMD RAID 0/1/5/10 ***supported by identical interface (PCIe or SATA) PCIe interface: M.2 Key B + M.2 Key M x1 or x2(IMB-X1714 only) SATA interface: SATA port

Security

TPM	TPM 2.0 onboard IC

Power Requirements

Power Supply Unit	Rated Output Power 850W(Default), Input Voltage 100-240V, Input Current 11-5.5A, Input Frequency 50-60Hz Rated Output Power 1000W, Input Voltage 100-240V, Input Current 12-6A, Input Frequency 50-60Hz
Power On	AT/ATX Support - AT : Directly PWR on as power input ready - ATX : Press button to PWR on after power input ready

Discrete Graphic Card Option

PNY GEFORCE RTX® 4090 24GB	NVIDIA® CUDA Cores 16384 Clock Speed 2235 MHz Boost Speed 2520 MHz Memory Speed 21 Gbps Memory Size 24GB GDDR6X Memory Interface 384-bit Memory Bandwidth 1008 Gbps Outputs DisplayPort 1.4 (x3), HDMI 2.1 Multi-Screen 4 Resolution 7680 x 4320 @120Hz (Digital) Bus Type PCI-Express 4.0 x16
ASRock Intel Arc A770 Challenger SE 16GB OC (A770 CL SE 16GO) (One pcs or two pcs option)	Engine Clock 2150 MHz Memory 16GB GDDR6 Memory Clock 16 Gbps Memory Interface 256-bit Outputs 3x DisplayPort 2.0 up to UHBR 10*, 1 x HDMI™ 2.0b *Designed for DP 2.0, certification pending VESA CTS Release Multi-Screen 4 Resolution 7680 x 4320(Digital) Bus Type PCI-Express 4.0 x16

Preliminary

iEPF-9030S-EW4

Expandable Edge AIoT Platform

KEY FEATURES

- Intel® 14th Gen Core™ Processors with R680E Chipset
- 2 x 262-pin DDR5 SO-DIMM up to 96GB (48GB per DIMM)
- 1 x PCIe x16 (PCIe Gen5) or 2 x PCIe x8 (PCIe Gen5), 2 x PCIe x 4 (PCIe Gen4)
- 2 x M.2 Key M, 2 x M.2 Key B, 1 x M.2 Key E
- 6 x USB 3.2 Gen2x1, 6 x COM, 4 x SATA3, 8 x DI, 8 x DO
- 5 x Intel 2.5G LAN (2 support PoE, LAN1 supports vPro)
- 1 x Displayport, 1 x HDMI 2.0b, 1 x VGA
- Powerful Edge AI acceleration enabled by the most flexible mechanical, thermal, and power design, with support for 275mm x 138 mm x 60 mm (L x H x D) max. and up to 600W graphic card

SPECIFICATIONS

Processor System

CPU	Intel® 14th Gen Core™ Processors
Chipset	Intel® R680E
Socket	LGA 1700

Memory

Technology	Dual Channel DDR5 5600MHz (ECC memory supported by R680E + Selected CPU)
Capacity	96 GB (48GB per DIMM)
Socket	2 x 262-pin SO-DIMM

Graphics

Controller	Intel® UHD Graphics
DisplayPort	DisplayPort 1.4a , DP++ Max resolution up to 4096x2160@60Hz
HDMI	HDMI 2.0b Max resolution up to 4096x2160@60Hz
VGA	Max resolution up to 1920x1200@60Hz

Audio

Interface	Realtek ALC897, High Definition Audio.

Expansion Slot

PCIe	1 x PCIe Gen5 x16 (single x16 or dual x8), PCIe x16 slot with default power cable can support up to 180W graphic card 275mm(L) x 113mm(H) x 60mm(D), if remove the card holder, it can be limited on 275mm x 138mm x 60mm) Graphic card can be up to 600W with optional VGA module 1 x PCIe Gen5 x8 (shared with dual x8) 2 x PCIe Gen4 x4
RF& Antenna	8 x SMA connector hole reserved
M.2	1 x M.2 (Key E, 2230) with CNVI/PCIe Gen3 x1 and USB2.0 for Wi-Fi/BT module 1 x M.2 (Key B1, 2280/3042/3052) with PCIe Gen3 x1 / USB3.2 Gen1x1 and USB2.0 for 4G / 5G 1 x M.2 (Key B2, 3042/3052) with PCIe Gen3 x1 / USB3.2 Gen1x1 and USB2.0 for 4G / 5G
SIM Socket	2 x Nano SIM Card slots (2 connected to M.2 Key B)

Ethernet

Controller/ Speed	3 x Intel® i226IT (LAN1 vPro Support) 2 x Intel® i226IT (PoE Support, each port supports IEEE 802.3AT PoE, PoE output max. 30W/single port or 30W/two ports shared)
Connector	5 x RJ45

Storage

M.2	1 x M.2 (Key M1, 2242/2260/2280) with Gen4 x4 for NVMe SSD 1 x M.2 (Key M2, 2242/2280/22110/25110) with Gen3 x4 for NVMe SSD
SATA	4 x SATA3 (6Gb/s), support RAID 0/1/5/10 4 x 2.5" HDD/SSD Tray (Default 1 piece)
CFast (Option)	1 x Type II socket (Shared with SATA3)

Front I/O

DisplayPort	1
HDMI	1
VGA	1
Ethernet	5 x Intel 2.5G LAN
USB	6 x USB 3.2 Gen2x1, 1 x USB2.0 internal connector w/ lock function
Audio	1 x Mic-in, 1 x Line-out
COM	4 x RS232/422/485 (COM1, COM2- optional Card w/ Isolation Protection, COM5- Isolation Protection, COM6) 2 x RS232 (COM3, COM4)
DIO	8DIs/8DOs

Watchdog Timer

Output	From Super I/O to drag RESETCON#
Interval	256 Segments, 0, 1, 2, ...255sec

Power Requirements

Input PWR	9V~36V VDC with Ignition control and remote power on/off switch. 80V Surge Protection, OVP, UVP, OCP and reverse protection Ignition Power Input w/ 13-mode condition

Environment

Operating Temperature	35W CPU: -40°C~75°C (-40°F~167°F) 46W~65W CPU: -40°C~55°C (-40°F~131°F) (with FAN inside, without Add-on Card) (w/ air flow 0.5~0.8 m/s)
Storage Temperature	-40°C~85°C (-40°F~185°F)
Humidity	~95% @ 40°C (non-condensing)
Shock	Operating: 50 G, half sine 11ms duration with SSD
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes with SSD
ESD	Contact +/-4kV, Air +/-8kV
EMC	EN61000-6-4/-2, CE & FCC Class A
Safety	LVD

Mechanical

Construction	Aluminum heatsink + Metal chassis
Mounting	Desk Mount
Dimensions	201.7mm (W) x 290.8mm (D) x 209.8mm (H) (7.94" x 11.45" x 8.26")
Net Weight	10kg

Others

OS Support	Windows 10 & Linux
TPM	TPM 2.0
Real-Time Enablement	TSN, TCC support under YOCTO

ASRock Industrial

Preliminary

iEP-9030E

Compact Edge AIoT Platform

KEY FEATURES

- Intel® 14th Gen Core™ Processors with R680E Chipset
- 2 x 262-pin DDR5 SO-DIMM up to 96GB (48GB per DIMM)
- 2 x M.2 Key M, 2 x M.2 Key B, 1 x M.2 Key E
- 6 x USB 3.2 Gen2x1, 6 x COM, 4 x SATA3, 8 x DI, 8 x DO
- 5 x Intel 2.5G LAN (2 support PoE, LAN1 supports vPro)
- 1 x Displayport, 1 x HDMI 2.0b, 1 x VGA

SPECIFICATIONS

Processor System

CPU	Intel® 14th Gen Core™ Processors
Chipset	Intel® R680E
Socket	LGA 1700

Memory

Technology	Dual Channel DDR5 5600MHz (ECC memory supported by R680E + Selected CPU)
Capacity	96 GB (48 GB per DIMM)
Socket	2 x 262-pin SO-DIMM

Graphics

Controller	Intel® UHD Graphics
DisplayPort	DisplayPort 1.4a , DP++ Max resolution up to 4096x2160@60Hz
HDMI	HDMI 2.0b Max resolution up to 4096x2160@60Hz
VGA	Max resolution up to 1920x1200@60Hz

Audio

Interface	Realtek ALC897, High Definition Audio.

Expansion Slot

RF& Antenna	8 x SMA connector hole reserved
M.2	1 x M.2 (Key E, 2230) with CNVI/PCIe Gen3 x1 and USB2.0 for Wi-Fi/BT module 1 x M.2 (Key B1, 2280/3042/3052) with PCIe Gen3 x1 / USB3.2 Gen1x1 and USB2.0 for 4G / 5G 1 x M.2 (Key B2, 3042/3052) with PCIe Gen3 x1 / USB3.2 Gen1x1 and USB2.0 for 4G / 5G
SIM Socket	2 x Nano SIM Card slots (2 connected to M.2 Key B)

Ethernet

Controller/ Speed	3 x Intel® i226IT (LAN1 vPro Support) 2 x Intel® i226IT (PoE Support, each port supports IEEE 802.3AT PoE, PoE output max.30W/single port or 30W/two ports shared)
Connector	5 x RJ45

Storage

M.2	1 x M.2 (Key M1, 2242/2260/2280) with Gen4 x4 for NVMe SSD 1 x M.2 (Key M2, 2242/2280/22110/25110) with Gen3 x4 for NVMe SSD
SATA	4 x SATA3 (6Gb/s), support RAID 0/1/5/10 4 x 2.5" HDD/SSD Tray (Default 1 piece)
CFast (Option)	1 x Type II socket (Shared with SATA3)

Front I/O

DisplayPort	1
HDMI	1
VGA	1
Ethernet	5 x Intel 2.5G LAN
USB	6 x USB 3.2 Gen2x1, 1 x USB2.0 internal connector w/ lock function
Audio	1 x Mic-in, 1 x Line-out
COM	4 x RS232/422/485 (COM1, COM2- optional Card w/ Isolation Protection , COM5- Isolation Protection, COM6) 2 x RS232 (COM3, COM4)
DIO	8DIs/8DOs

Watchdog Timer

Output	From Super I/O to drag RESETCON#
Interval	256 Segments, 0, 1, 2, ...255sec

Power Requirements

Input PWR	9V~36V VDC with Ignition control and remote power on/off switch. 80V Surge Protection, OVP, UVP, OCP and reverse protection Ignition Power Input w/ 13-mode condition

Environment

Operating Temperature	35W CPU: -40°C~70°C (-40°F~158°F) 46W~65W CPU: -40°C~50°C (-40°F~122°F) (w/ air flow 0.5~0.8 m/s)
Storage Temperature	-40°C~85°C (-40°F~185°F)
Humidity	~95% @ 40°C (non-condensing)
Shock	Operating: 50G, half sine 11ms duration with SSD
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes with SSD
ESD	Contact +/-4kV, Air +/-8kV
EMC	EN61000-6-4/-2, CE & FCC Class A
Safety	LVD

Mechanical

Construction	Aluminum heatsink + Metal chassis
Mounting	Desk Mount
Dimensions	201.7mm (W) x 244.8mm (D) x 109.5mm (H) (7.94" x 9.64" x 4.31")
Net Weight	6.5kg

Others

OS Support	Windows 10 & Linux
TPM	TPM 2.0
Real-Time Enablement	TSN, TCC support under YOCTO

iEPF-9020S-EY4

Expandable Edge AIoT Platform

KEY FEATURES

- Intel® 13th Gen Core™ Processors with R680E Chipset
- 4 x 260-pin DDR4 SO-DIMM up to 128GB (32GB per DIMM)
- 1 x PCIe x16 (PCIe Gen4) or 2 x PCIe x8 (PCIe Gen4), 2 x PCIe x 4 (PCIe Gen4)
- 1 x M.2 Key M, 1 x M.2 Key B, 1 x M.2 Key E, 2 x Mini PCIe
- 6 x USB 3.2 Gen2x1, 6 x COM, 4 x SATA3, 8 x DI, 8 x DO
- 5 x Intel 2.5G LAN (2 support PoE, LAN1 supports vPro)
- 1 x Displayport, 1 x HDMI 2.0b, 1 x VGA
- Powerful Edge AI acceleration enabled by the most flexible mechanical, thermal, and power design, with support for 275mm x 138mm x 60mm (L x H x D) max. and up to 300W graphic card

SPECIFICATIONS

Processor System

CPU	Intel® 13th Gen Core™ Processors
Chipset	Intel® R680E
Socket	LGA 1700

Memory

Technology	Dual Channel DDR4 2933MHz (ECC memory supported by R680E + Selected CPU)
Capacity	128 GB (32 GB per DIMM)
Socket	4 x 260-pin SO-DIMM

Graphics

Controller	Intel® UHD Graphics
DisplayPort	DisplayPort 1.4a , DP++ Max resolution up to 4096x2160@60Hz
HDMI	HDMI 2.0b Max resolution up to 4096x2160@60Hz
VGA	Max resolution up to 1920x1200@60Hz

Expansion Slot

PCIe	1 x PCIe Gen4 x16 (single x16 or dual x8), PCIe x16 slot with default power cable can support up to 180W graphic card 275mm(L) x 113mm(H) x 60mm(D), if remove the card holder, it can be limited on 275mm x 138mm x 60mm Graphic card can be up to 300W with optional VGA module 1 x PCIe Gen4 x8 (shared with dual x8) 2 x PCIe Gen4 x4
Mini-PCIe	2 x Full size with PCIe Gen3 x1 and USB 2.0
RF& Antenna	8 x SMA connector hole reserved
M.2	1 x M.2 (Key E, 2242/2260/2280) with CNVI/PCIe Gen3 x1 and USB2.0 for Wi-Fi/BT module 1 x M.2 (Key B, 2280/3042/3052) with PCIe Gen3 x1 / USB3.2 Gen1x1 for 4G / 5G
SIM Socket	2 x Nano SIM Card slots (1 connected to Mini PCIe, 1 connected to M.2 Key B)

Audio

Interface	Realtek ALC897, High Definition Audio.

Ethernet

Controller/ Speed	5 x Intel 2.5G LAN (2 support PoE, each port supports IEEE 802.3AF PoE, PoE output max.15.4W/port), (LAN1 supports vPro)
Connector	5 x RJ45

Storage

M.2	1 x M.2 (Key M, 2242/2260/2280) with Gen4/Gen3 x4 for NVMe SSD
SATA	4 x SATA3 (6Gb/s), support RAID 0/1/5/10 4 x 2.5" HDD/SSD Tray (Default 1 piece)
CFast (Option)	1 x Type II socket (Shared with SATA3)

Front I/O

DisplayPort	1
HDMI	1
VGA	1
Ethernet	5 x 2.5G LAN
USB	6 x USB 3.2 Gen2x1, 1 x USB2.0 internal connector w/ lock function
Audio	1 x Mic-in, 1 x Line-out
COM	4 x RS232/422/485 (COM1, COM2- optional Card w/ Isolation Protection , COM5- Isolation Protection, COM6) 2 x RS232 (COM3, COM4)
DIO	8DIs/8DOs

Watchdog Timer

Output	From Super I/O to drag RESETCON#
Interval	256 Segments, 0, 1, 2, ...255sec

Power Requirements

Input PWR	9V~36V VDC with Ignition control and remote power on/off switch. 80V Surge Protection, OVP, UVP, OCP and reverse protection Ignition Power Input w/ 13-mode condition

Environment

Operating Temperature	35W CPU: -40°C~75°C (-40°F~167°F) 46W~65W CPU: -40°C~55°C (-40°F~131°F) (with FAN inside, without Add-on Card) (w/ air flow 0.5~0.8 m/s)
Storage Temperature	-40°C~85°C (-40°F~185°F)
Humidity	~95% @ 40°C (non-condensing)
Shock	Operating: 50 G, half sine 11ms duration with SSD
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes with SSD
ESD	Contact +/-4kV, Air +/-8kV
EMC	EN61000-6-4/-2, CE & FCC Class A
Safety	LVD

Mechanical

Construction	Aluminum heatsink + Metal chassis
Mounting	Desk Mount
Dimensions	201.7mm (W) x 290.8mm (D) x 209.8mm (H) (7.94" x 11.45" x 8.26")
Net Weight	10kg

Others

OS Support	Windows 10 & Linux
TPM	TPM 2.0
Real-Time Enablement	TSN, TCC support under YOCTO

ASRock Industrial

iEP-9020E

Compact Edge AIoT Platform

KEY FEATURES

- Intel® 13th Gen Core™ Processors with R680E Chipset
- 4 x 260-pin DDR4 SO-DIMM up to 128GB (32GB per DIMM)
- 1 x M.2 Key M, 1 x M.2 Key B, 1 x M.2 Key E, 2 x Mini PCIe
- 6 x USB 3.2 Gen2x1, 6 x COM, 4 x SATA3, 8 x DI, 8 x DO
- 5 x Intel 2.5G LAN (2 support PoE, LAN1 supports vPro)
- 1 x Displayport, 1 x HDMI 2.0b, 1 x VGA

SPECIFICATIONS

Processor System

CPU	Intel® 13th Gen Core™ Processors
Chipset	Intel® R680E
Socket	LGA 1700

Memory

Technology	Dual Channel DDR4 2933MHz (ECC memory supported by R680E + Selected CPU)
Capacity	128 GB (32 GB per DIMM)
Socket	4 x 260-pin SO-DIMM

Graphics

Controller	Intel® UHD Graphics
DisplayPort	DisplayPort 1.4a , DP++ Max resolution up to 4096x2160@60Hz
HDMI	HDMI 2.0b Max resolution up to 4096x2160@60Hz
VGA	Max resolution up to 1920x1200@60Hz

Expansion Slot

Mini-PCIe	2 x Full size with PCIe Gen3 x1 and USB 2.0
RF& Antenna	8 x SMA connector hole reserved
M.2	1 x M.2 (Key E, 2230) with CNVI/PCIe Gen3 x1 and USB2.0 for Wi-Fi/BT module 1 x M.2 (Key B, 2280/3042/3052) with PCIe Gen3 x1 / USB3.2 Gen1x1 for 4G / 5G
SIM Socket	2 x Nano SIM Card slots (1 connected to Mini PCIe, 1 connected to M.2 Key B)

Audio

Interface	Realtek ALC897, High Definition Audio.

Ethernet

Controller/ Speed	5 x Intel 2.5G LAN(2 support PoE, each port supports IEEE 802.3AF PoE, PoE output max.15.4W/port), (LAN1 supports vPro)
Connector	5 x RJ45

Storage

M.2	1 x M.2 (Key M, 2280) with Gen4/Gen3 x4 for NVMe SSD
SATA	4 x SATA3 (6Gb/s), support RAID 0/1/5/10 4 x 2.5" HDD/SSD Tray (Default 1 piece)
CFast (Option)	1 x Type II socket (Shared with SATA3)

Front I/O

DisplayPort	1
HDMI	1
VGA	1
Ethernet	5 x 2.5G LAN
USB	6 x USB 3.2 Gen2x1, 1 x USB2.0 internal connector w/ lock function
Audio	1 x Mic-in, 1 x Line-out
COM	4 x RS232/422/485 (COM1, COM2- optional Card w/ Isolation Protection , COM5- Isolation Protection, COM6) 2 x RS232 (COM3, COM4)
DIO	8DIs/8DOs

Watchdog Timer

Output	From Super I/O to drag RESETCON#
Interval	256 Segments, 0, 1, 2, ...255sec

Power Requirements

Input PWR	9V~36V VDC with Ignition control and remote power on/off switch. 80V Surge Protection, OVP, UVP, OCP and reverse protection Ignition Power Input w/ 13-mode condition

Environment

Operating Temperature	35W CPU: -40°C~70°C (-40°F~158°F) 46W~65W CPU: -40°C~50°C (-40°F~122°F) (w/ air flow 0.5~0.8 m/s)
Storage Temperature	-40°C~85°C (-40°F~185°F)
Humidity	~95% @ 40°C (non-condensing)
Shock	Operating: 50G, half sine 11ms duration with SSD
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes with SSD
ESD	Contact +/-4kV, Air +/-8kV
EMC	EN61000-6-4/-2, CE & FCC Class A
Safety	LVD

Mechanical

Construction	Aluminum heatsink + Metal chassis
Mounting	Desk Mount
Dimensions	201.7mm (W) x 244.8mm (D) x 109.5mm (H) (7.94" x 9.64" x 4.31")
Net Weight	6.5kg

Others

OS Support	Windows 10 & Linux
TPM	TPM 2.0
Real-Time Enablement	TSN, TCC support under YOCTO

iEPF-9010S-EY4, iEPF-9012S-EY4

Expandable Edge AIoT Platform

iEPF-9010S-EY4

iEPF -9012S-EY4

KEY FEATURES

iEPF-9010S-EY4:

- Intel® 12th Gen Core™ Processors with R680E Chipset
- 4 x 260-pin DDR4 SO-DIMM up to 128GB (32GB per DIMM)
- 1 x PCIe x16 (PCIe Gen4) or 2 x PCIe x8 (PCIe Gen4), 2 x PCIe x 4 (PCIe Gen4)
- 1 x M.2 Key M, 1 x M.2 Key B, 1 x M.2 Key E, 2 x Mini PCIe
- 6 x USB 3.2 Gen2x1
- 5 x Intel 2.5G LAN (2 support PoE, LAN1 supports vPro)

iEPF-9012S-EY4:

- Intel® 12th Gen Core™ Processors with H610 Chipset
- 2 x 260-pin DDR4 SO-DIMM up to 64GB (32GB per DIMM)
- 1 x PCIe x16 (PCIe Gen4)
- 1 x M.2 Key B, 1 x M.2 Key E, 2 x Mini PCIe
- 4 x USB 3.2 Gen2x1, 2 x USB 2.0
- 4 x Intel 2.5G LAN (2 support PoE)

iEPF-9010S-EY4, iEPF-9012S-EY4:

- 8 x DI, 8 x DO
- 1 x Displayport, 1 x HDMI 2.0b, 1 x VGA
- Powerful Edge AI acceleration enabled by the most flexible mechanical, thermal, and power design, with support for 275mm x 138mm x 60mm (L x H x D) max. and up to 300W graphic card

SPECIFICATIONS

Processor System	iEPF-9010S-EY4	iEPF-9012S-EY4
CPU	Intel® 12th Gen Core™, Pentium or Celeron Processors	
Chipset	Intel® R680E	Intel® H610
Socket	LGA 1700	

Memory		
Technology	Dual Channel DDR4 2933MHz	
ECC Memory Supported	Yes	No
Capacity	128 GB (32 GB per DIMM)	64 GB (32 GB per DIMM)
Socket	4 x 260-pin SO-DIMM	2 x 260-pin SO-DIMM

Graphics	
Controller	Intel® UHD Graphics
DisplayPort	DisplayPort 1.4a , DP++ Max resolution up to 4096x2160@60Hz
HDMI	HDMI 2.0b Max resolution up to 4096x2160@60Hz
VGA	Max resolution up to 1920x1200@60Hz

Audio	
Interface	Realtek ALC897, High Definition Audio.

Ethernet		
Controller/ Speed (iEPF-9010S-EY4)	5 x Intel 2.5G LAN (2 support PoE, each port supports IEEE 802.3AF PoE, PoE output max.15.4W/port), (LAN1 supports vPro)	
Controller/ Speed (iEPF-9012S-EY4)	4 x Intel 2.5G LAN (2 support PoE, PoE output max.15.4W/port, each port supports IEEE 802.3AF PoE)	
Connector	5 x RJ45	4 x RJ45

Expansion Slot	
PCIe (iEPF-9010S-EY4)	1 x PCIe Gen4 x16 (single x16 or dual x8), 1 x PCIe Gen4 x8 (shared with dual x8) 2 x PCIe Gen4 x4
PCIe (iEPF-9012S-EY4)	1 x PCIe Gen4 x16
PCIe	- The PCIe x16 slot locates at the third one from the right hand side - PCIe x16 slot with default power cable can support up to 180W graphic card 275mm(L) x 113mm(H) x 60mm(D), if remove the card holder, it can be limited on 275mm x 138mm x 60mm) Graphic card can be up to 300W with optional VGA module
Mini-PCIe(iEPF-9010S-EY4)	2 x Full size with PCIe Gen3 x1 and USB 2.0
Mini-PCIe(iEPF-9012S-EY4)	1 x Full size with PCIe Gen3 x1 and USB 2.0 1 x Full size with PCIe Gen3 x1
RF& Antenna	8 x SMA connector hole reserved
M.2 (iEPF-9010S-EY4)	1 x M.2 (Key E, 2230) with CNVI/PCIe Gen3 x1 and USB2.0 for Wi-Fi/BT module 1 x M.2 (Key B, 2280/3042/3052) with PCIe Gen3 x1 / USB3.2 Gen1x1 for 4G / 5G
M.2 (iEPF-9012S-EY4)	1 x M.2 (Key E, 2230) with CNVI/PCIe Gen3 x1 and USB2.0 for Wi-Fi/BT module 1 x M.2 (Key B, 2280/3042/3052) with PCIe Gen3 x1 / USB2.0 for 4G / 5G
SIM Socket	2 x Nano SIM Card slots (1 connected to Mini PCIe, 1 connected to M.2 Key B)

Storage		
M.2(iEPF-9010S-EY4 only)	1 x M.2 (Key M, 2242/2260/2280) with Gen4/Gen3 x4 for NVMe SSD	
SATA	4 x SATA3 (6Gb/s), support RAID 0/1/5/10	4 x SATA3 (6Gb/s)
HDD/SSD Tray	4 x 2.5" HDD/SSD Tray (Default 1 piece)	
CFast (Option)	1 x Type II socket (Shared with SATA3)	

Front I/O		
DisplayPort	1	
HDMI	1	
VGA	1	
Ethernet	5 x 2.5G LAN	4 x 2.5G LAN
USB (iEPF-9010S-EY4)	6 x USB 3.2 Gen2x1 (1 x USB2.0 internal connector w/ lock function)	
USB (iEPF-9012S-EY4)	4 x USB 3.2 Gen2x1, 2 x USB 2.0 (1 x USB2.0 internal connector w/ lock function)	
Audio	1 x Mic-in, 1 x Line-out	
COM	4 x RS232/422/485 (COM1, COM2- optional Card w/ Isolation Protection , COM5- Isolation Protection, COM6) 2 x RS232 (COM3, COM4)	
DIO	8DIs/8DOs	

Watchdog Timer	
Output	From Super I/O to drag RESETCON#
Interval	256 Segments, 0, 1, 2, ...255sec

Power Requirements	
Input PWR	9V~36V VDC with Ignition control and remote power on/off switch. 80V Surge Protection, OVP, UVP, OCP and reverse protection Ignition Power Input w/ 13-mode condition

Environment	
Operating Temperature	35W CPU: -40°C~75°C (-40°F~167°F) 46W~65W CPU: -40°C~55°C (-40°F~131°F) (with FAN inside, without Add-on Card) (w/ air flow 0.5~0.8 m/s)
Storage Temperature	-40°C~85°C (-40°F~185°F)
Humidity	~95% @ 40°C (non-condensing)
Shock	Operating: 50 G, half sine 11ms duration with SSD
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes with SSD
ESD	Contact +/-4kV, Air +/-8kV
EMC	EN61000-6-4/-2, CE & FCC Class A
Safety	LVD

Mechanical	
Construction	Aluminum heatsink + Metal chassis
Mounting	Desk Mount
Dimensions	201.7mm (W) x 290.8mm (D) x 209.8mm (H) (7.94" x 11.45" x 8.26")
Net Weight	10kg

Others		
OS Support	Windows 10 & Linux	
SW Support	ACRN (https://projectacrn.org/)	No
TPM	TPM 2.0	
Real-Time Enablement (iEPF-9010S-EY4 only)	TSN, TCC support under YOCTO	

ASRock Industrial

iEP-9010E, iEP-9012E

Compact Edge AIoT Platform

iEP-9010E

iEP -9012E

KEY FEATURES

iEP-9010E :

- Intel® 12th Gen Core™ Processors with R680E Chipset
- 4 x 260-pin DDR4 SO-DIMM up to 128GB (32GB per DIMM)
- 1 x M.2 Key M, 1 x M.2 Key B, 1 x M.2 Key E, 2 x Mini PCIe
- 6 x USB 3.2 Gen2x1, 6 x COM, 4 x SATA3, 8 x DI, 8 x DO
- 5 x Intel 2.5G LAN (2 support PoE, LAN1 supports vPro)
- 1 x Displayport, 1 x HDMI 2.0b, 1 x VGA

iEP-9012E :

- Intel® 12th Gen Core™ Processors with H610 Chipset
- 2 x 260-pin DDR4 SO-DIMM up to 64GB (32GB per DIMM)
- 1 x M.2 Key B, 1 x M.2 Key E, 2 x Mini PCIe
- 4 x USB 3.2 Gen2x1, 2 x USB 2.0, 6 x COM, 4 x SATA3, 8 x DI, 8 x DO
- 4 x Intel 2.5G LAN (2 support PoE)
- 1 x Displayport, 1 x HDMI 2.0b, 1 x VGA

SPECIFICATIONS

Processor System

	iEP-9010E	iEP-9012E
CPU	Intel® 12th Gen Core™, Pentium or Celeron Processors	
Chipset	Intel® R680E	Intel® H610
Socket	LGA 1700	

Memory

Technology	Dual Channel DDR4 2933MHz	
ECC Memory Supported	Yes	No
Capacity	128 GB (32 GB per DIMM)	64 GB (32 GB per DIMM)
Socket	4 x 260-pin SO-DIMM	2 x 260-pin SO-DIMM

Graphics

Controller	Intel® UHD Graphics
DisplayPort	DisplayPort 1.4a , DP++ Max resolution up to 4096x2160@60Hz
HDMI	HDMI 2.0b Max resolution up to 4096x2160@60Hz
VGA	Max resolution up to 1920x1200@60Hz

Audio

Interface	Realtek ALC897, High Definition Audio.

Ethernet

Controller/ Speed (iEP-9010E)	5 x Intel 2.5G LAN(2 support PoE, each port supports IEEE 802.3AF PoE, PoE output max.15.4W/port), (LAN1 supports vPRO)	
Controller/ Speed (iEP-9012E)	4 x Intel 2.5G LAN (2 support PoE, each port supports IEEE 802.3AF PoE, PoE output max.15.4W/port)	
Connector	5 x RJ45	4 x RJ45

Expansion Slot

Mini-PCIe (iEP-9010E)	2 x Full size with PCIe Gen3 x1 and USB 2.0
Mini-PCIe (iEP-9012E)	1 x Full size with PCIe Gen3 x1 and USB 2.0 1 x Full size with PCIe Gen3 x1
RF& Antenna	8 x SMA connector hole reserved
M.2 (iEP-9010E)	1 x M.2 (Key E, 2230) with CNVI/PCIe Gen3 x1 and USB2.0 for Wi-Fi/BT module 1 x M.2 (Key B, 2280/3042/3052) with PCIe Gen3 x1 / USB3.2 Gen1x1 for 4G / 5G
M.2 (iEP-9012E)	1 x M.2 (Key E, 2230) with CNVI/PCIe Gen3 x1 and USB2.0 for Wi-Fi/BT module 1 x M.2 (Key B, 2280/3042/3052) with PCIe Gen3 x1 / USB2.0 for 4G / 5G
SIM Socket	2 x Nano SIM Card slots (1 connected to Mini PCIe, 1 connected to M.2 Key B)

Storage

M.2 (iEP-9010E only)	1 x M.2 (Key M, 2280) with Gen4/Gen3 x4 for NVMe SSD	
SATA	4 x SATA3 (6Gb/s), support RAID 0/1/5/10	4 x SATA3 (6Gb/s)
HDD/SSD Tray	4 x 2.5" HDD/SSD Tray (Default 1 piece)	
CFast (Option)	1 x Type II socket (Shared with SATA3)	

Front I/O

DisplayPort	1	
HDMI	1	
VGA	1	
Ethernet	5 x 2.5G LAN	4 x 2.5G LAN
USB	6 x USB 3.2 Gen2x1 (1 x USB2.0 internal connector w/ lock function)	4 x USB 3.2 Gen2x1, 2 x USB 2.0 (1 x USB2.0 internal connector w/ lock function)
Audio	1 x Mic-in, 1 x Line-out	
COM	4 x RS232/422/485 (COM1, COM2- optional Card w/ Isolation Protection , COM5- Isolation Protection, COM6) 2 x RS232 (COM3, COM4)	
DIO	8DIs/8DOs	

Watchdog Timer

Output	From Super I/O to drag RESETCON#
Interval	256 Segments, 0, 1, 2, ...255sec

Power Requirements

Input PWR	9V~36V VDC with Ignition control and remote power on/off switch. 80V Surge Protection, OVP, UVP, OCP and reverse protection Ignition Power Input w/ 13-mode condition

Environment

Operating Temperature	35W CPU: -40°C~70°C (-40°F~158°F) 46W~65W CPU: -40°C~50°C (-40°F~122°F) (w/ air flow 0.5~0.8 m/s)
Storage Temperature	-40°C~85°C (-40°F~185°F)
Humidity	~95% @ 40°C (non-condensing)
Shock	Operating: 50G, half sine 11ms duration with SSD
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes with SSD
ESD	Contact +/-4kV, Air +/-8kV
EMC	EN61000-6-4/-2, CE & FCC Class A
Safety	LVD

Mechanical

Construction	Aluminum heatsink + Metal chassis
Mounting	Desk Mount
Dimensions	201.7mm (W) x 244.8mm (D) x 109.5mm (H) (7.94" x 9.64" x 4.31")
Net Weight	6.5kg

Others

OS Support	Windows 10 & Linux	
SW Support	ACRN (https://projectacrn.org/)	No
TPM	TPM 2.0	
Real-Time Enablement (iEP-9010E only)	TSN, TCC support under YOCTO	

Preliminary

iEP-7030E Series

Industrial IoT Controller

Basic SKU

PoE SKU
5LAN-WiFi SKU
5LAN-5G SKU

5G-WIFI SKU

8DIO SKU

KEY FEATURES

- Intel® Core™ Ultra Processor (Meteor Lake-H Platform)
- Scalable power and performance in BGA for edge controller
- High Performance New Intel® Xe LPG Graphics Architectures
- New integrated NPU for Dedicated AI Acceleration
- Fan-less and Rugged Design
- Operating Temperature: -25°C to 50°C
- Wide Range Power Inputs: 9/19-36 VDC
- 3 x Intel i226-IT LAN
- 2 x Intel i210-AT LAN (Support IEEE 802.3AF PoE)
- Support Intel® IN-Band ECC

SPECIFICATIONS

System Core

Processor	Intel® Core™ Ultra 7/5 processor (Meteor Lake-H) - [iEP-7030E Series] Intel® Core™ Ultra 7 155H, 16C, 1.40GHz, 28W - [iEP-7031E Series] Intel® Core™ Ultra 5 125H, 14C, 1.20GHz, 28W
Video	1 x DisplayPort 1.4a , DP++ 1 x VGA
Memory	2 x DDR5 5600MHz SO-DIMM, up to 96GB (Support In-Band ECC)

I/O Interface

Ethernet	3 x Intel I226-IT (RJ45 connector) 2 x Intel I210-AT for PoE SKU/5LAN SKU (RJ45 connector)
PoE (Option)	2 x Intel® I210-AT (RJ45 connector), PoE output max.15.4W/ port, each port supports IEEE 802.3AF PoE. (For PoE SKU)
Serial Port	4 x RS232/422/485
USB	3 x USB 3.2 Gen2x1 1 x USB 2.0
Proprietary IO	8DIs/8DOs with sink/source isolation 3KV, support for 8DIO SKU only (2x10-pin connector)
Audio	1 x Line Out, 1 x Mic In

Expansion

SIM	1 x Nano SIM Card slot
RF& Antenna (Option)	7 x SMA connector hole reserved, support for Basic/5G SKU 5 x SMA connector hole reserved, support for PoE/5LAN/8DIO SKU
M.2 Socket	1 x M.2 3042/3052/2280 Key B (PCIe Gen3/USB 3.2 mode) - Support 4G LTE/5G module 1 x M.2 2230/2260 Key E (CNVi / PCIe Gen3 / USB 2.0 mode) - Support Wifi/BT module

Manageability / Security

Manageability	WDT, Intel® In-Band Manageability
Security	TPM2.0

Power Requirements

DC Input	For Basic/5LAN/5G/8DIO SKU : - 2 x 3-pin phoenix type for 9 to 36V DC input For PoE SKU : - 2 x 3-pin phoenix type for 19 to 36V DC input OVP, UVP, OCP, plus 80V surge protection
AC to DC Adapter (Option)	Adapter 120W for Basic/5LAN/5G/8DIO SKU AC input 100-240Vac, 1.8A 50-60Hz, DC output 19V, 6.32A, Adapter 330W for PoE SKU only - AC input 100-240Vac, 4.2A 50-60Hz, DC output 24V, 13.75A

Storage Device

SD Slot	1 x Micro SD card slot (Support SD specification v3.0 UHS-I: SDR25/SDR50)
M.2 Socket	1 x M.2 2280 Key M (PCIe Gen4)

Mechanical

Dimensions	For Basic/8DIO SKU : 55(W) x 170(H) x 134(D) mm For PoE/5LAN/5G SKU : 68(W) x 170(H) x 134(D) mm
Indicator	1 x Storage LED 1 x UD LED (User Define) 2 x Diagnostic LED 2 x DC-IN LED
Function	1 x Power Button with LED
Net Weight	TBD
Mounting	For Basic/8DIO SKU : Wall mount, VESA mount, DIN-Rail For PoE/5LAN/5G SKU : Wall mount, Din Rail

Environmental

Operating Temperature	-25°C~50°C (-13°F~122°F) (w/ airflow 0.5~0.8m/s)
Storage Temperature	-40°C~85°C (-40°F~185°F)
Humidity	~95% @ 40°C (non-condensing)
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes with SSD
ESD	Contact +/-8 KV, Air +/-15 KV
Shock	Operating: 100G (half sine 11ms duration with SSD)
EMC	CE, FCC Class A (EN61000-6-4/-2)
Safety	LVD

Add-on Feature / OS Support

OS Support	Windows 11 & Linux

Order Information	SKU	Processor	WIFI*	4G LTE/5G*	LAN	PoE	DIO
iEP-7030E-020	Basic SKU	155H	Support	Not Support	3	Not Support	Not Support
iEP-7031E-020		125H					
iEP-7030E-021	PoE SKU	155H	Support	Not Support	5	Support	Not Support
iEP-7031E-021		125H					
iEP-7030E-022	5LAN-WIFI SKU	155H	Support	Not Support	5	Not Support	Not Support
iEP-7031E-022		125H					
iEP-7030E-023	5LAN-5G SKU	155H	Not Support	Support	5	Not Support	Not Support
iEP-7031E-023		125H					
iEP-7030E-024	5G-WIFI SKU	155H	Support	Support	3	Not Support	Not Support
iEP-7031E-024		125H					
iEP-7030E-025	8DIO SKU	155H	Support	Not Support	3	Not Support	Support
iEP-7031E-025		125H					

*The WI-FI, 4G LTE and 5G module kits are purchased separately

ASRock Industrial

iEP-7020E Series
Industrial IoT Controller

Basic SKU

PoE SKU
5LAN-WiFi SKU
5LAN-5G SKU

5G SKU

KEY FEATURES

- Intel® 13th Gen Core™ Embedded & Industrial Processors
- Scalable power and performance in BGA for edge controller
- High performance Intel® Iris Xe Graphics Architecture
- Fan-less and Rugged Design
- -40°C to 70°C Wide Operating Temp. for Basic/5LAN/5G SKU(15W)
- -40°C to 50°C Wide Operating Temp. for PoE SKU
- 9-36VDC Wide Range Power Inputs for Basic/5LAN/5G SKU
- 19-36VDC Wide Range Power Inputs for PoE SKU
- Intel® TCC and TSN Support for Real-Time Computing
- 3 x Intel i226-IT LAN (One support vPro)
- 2 x Intel i210-AT LAN (Support IEEE 802.3AF PoE)
- Support Intel® IN-Band ECC

SPECIFICATIONS

System Core

Processor	Intel® 13th Gen Core™ i7/i5 Industrial Processor - [iEP-7020E Series] Intel® Core™ i7-1365URE, 10C, 1.70GHz, 15W - [iEP-7021E Series] Intel® Core™ i5-1345URE, 10C, 1.40GHJz, 15W - [iEP-7022E Series] Intel® Core™ i7-1370PRE, 14C, 1.90GHz, 28W - [iEP-7023E Series] Intel® Core™ i5-1350PRE, 12C, 1.80GHz, 28W
Video	2 x DP++ 1.4a 2 x DisplayPort 1.4a , DP++
Memory	2 x DDR4 3200MHz SO-DIMM, up to 64GB (Support In-Band ECC)

I/O Interface

Ethernet	3 x Intel® I226-IT, LAN1 support vPro (RJ45 connector) 2 x Intel® I210-AT for PoE SKU/5LAN SKU (RJ45 connector)
PoE (Option)	2 x Intel® I210-AT (RJ45 connector), PoE output max.15.4W/ port, each port supports IEEE 802.3AF PoE. (For PoE SKU)
Serial Port	4 x RS232/422/485
USB	3 x USB 3.2 Gen2x1 1 x USB 2.0
Proprietary IO	1 x 4DIs/4DOs, Power on and Reset (15-pin D-sub connector)
Audio	1 x Line Out, 1 x Mic In

Expansion

SIM	1 x Nano SIM Card slot
RF& Antenna (Option)	7 x SMA connector hole reserved, support for Basic/5G SKU 5 x SMA connector hole reserved, support for PoE/5LAN SKU
M.2 Socket	1 x M.2 3042/3052/2280 Key B (PCIe Gen3x1/USB3.2 mode) - Support 4G LTE/5G module - Support SATA3 SSD storage for Basic SKU 1 x M.2 2230 Key E (CNVi/PCIe Gen3x1/USB2.0 mode) - Support Wifi/BT module

Manageability / Security

Manageability	WDT, Intel® In-Band Manageability
Security	TPM2.0

Power Requirements

DC Input	For Basic/5LAN/5G SKU : - 1 x 3-pin phoenix type for 9 to 36V DC input For PoE SKU : - 1 x 3-pin phoenix type for 19 to 36V DC input OVP, UVP, OCP, plus 80V surge protection
AC to DC Adapter (Option)	Adapter 120W for Basic/5LAN/5G SKU - AC input 100-240Vac, 1.8A 50-60Hz, DC output 19V, 6.32A, Adapter 330W for PoE SKU only - AC input 100-240Vac, 4.2A 50-60Hz, DC output 24V, 13.75A

Storage Device

SD Slot	1 x Micro SD card slot (Support SD specification v3.0 UHS-I: SDR25/SDR50)
SATA	1 x 2.5" 9.5mm SATA3 SSD for Basic SKU series only
M.2 Socket	1 x M.2 2280 Key M (PCIe Gen4 x4)

Mechanical

Dimensions	For Basic SKU : 55(W) x 170(H) x 134(D) mm For PoE/5LAN/5G SKU : 68(W) x 170(H) x 134(D) mm
Indicator	1 x Storage LED 1 x UD LED (User Define)
Function	2 x Diagnostic LED 1 x Power Button with LED
Net Weight	Basic SKU : 1.57 kg PoE SKU : 2.37kg 5LAN SKU : 2.27kg 5G SKU : 2.15kg
Mounting	For Basic SKU : Wall mount, VESA mount, DIN-Rail For PoE/5LAN/5G SKU : Wall mount, Din Rail

Environmental

Operating Temperature	15W CPU: For Basic/5LAN-WIFI SKU : -40°C~70°C (-40°F~158°F) For 5G/5LAN-5G SKU with 4G LTE module : -40°C~60°C (-40°F~140°F) For 5G/5LAN-5G SKU with 5G module : -40°C~55°C (-40°F~131°F) For PoE SKU : -40°C~50°C (-40°F~122°F) 28W CPU: For all SKU : -40°C~50°C (-40°F~122°F) (w/ airflow 0.5~0.8m/s)
Storage Temperature	-40°C~85°C (-40°F ~185°F)
Humidity	~95% @ 40°C (non-condensing)
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes with SSD
ESD	Contact +/-8 KV, Air +/-15 KV
Shock	Operating: 100G (half sine 11ms duration with SSD)
EMC	CE, FCC Class A (EN61000-6-4/-2)
Safety	LVD

Add-on Feature / OS Support

Real-Time Enablement	TSN, TCC support under Linux
OS Support	Windows 10 & Ubuntu 22.04 LTS

Order Information	SKU	Processor	2.5 Storage	WIFI*	4G LTE/5G*	LAN	PoE
iEP-7020E-010	Basic SKU	i7-1365URE	Support	Support	Not Support	3	Not Support
iEP-7021E-010		i5-1345URE					
iEP-7022E-010		i7-1370PRE					
iEP-7023E-010		i5-1350PRE					
iEP-7020E-011	PoE SKU	i7-1365URE	Not Support	Support	Not Support	5	Support
iEP-7021E-011		i5-1345URE					
iEP-7022E-011		i7-1370PRE					
iEP-7023E-011		i5-1350PRE					
iEP-7020E-012	5LAN-WIFI SKU	i7-1365URE	Not Support	Support	Not Support	5	Not Support
iEP-7021E-012		i5-1345URE					
iEP-7022E-012		i7-1370PRE					
iEP-7023E-012		i5-1350PRE					
iEP-7020E-013	5LAN-5G SKU	i7-1365URE	Not Support	Not Support	Support	5	Not Support
iEP-7021E-013		i5-1345URE					
iEP-7022E-013		i7-1370PRE					
iEP-7023E-013		i5-1350PRE					
iEP-7020E-014	5G-WIFI SKU	i7-1365URE	Not Support	Support	Support	3	Not Support
iEP-7021E-014		i5-1345URE					
iEP-7022E-014		i7-1370PRE					
iEP-7023E-014		i5-1350PRE					

*The WI-FI, 4G LTE and 5G module kits are purchased separately

Preliminary

iEP-5020G Series

Industrial IoT Controller

Basic SKU | PoE SKU 5LAN SKU | 8DIO SKU

KEY FEATURES

- Latest and Powerful Intel® Atom® x7433RE Processor (Amston Lake)
- Fan-less and Rugged Design
- -40°C to 70°C Wide Operating Temp. for Basic/5LAN/8DIO SKU
- -40°C to 50°C Wide Operating Temp. for PoE SKU
- 6-36VDC Wide Range Power Inputs for Basic/5LAN/8DIO SKU
- 19-36VDC Wide Range Power Inputs for PoE SKU
- Most Flexible IOs and Expansion for Industrial Applications
- Intel® TCC and TSN Support for Real-Time Computing
- DIN Rail or Wall Mount Options
- 4 x Intel 1G LAN (2 Support IEEE 802.3AF PoE Ports)
- 1 x Intel 2.5G LAN
- Support Intel® IN-Band ECC

SPECIFICATIONS

System Core

Processor	Intel® Atom® x7000RE Processor (Amston Lake Platform) - Intel® Atom® x7433RE, 4C, 1.5GHz, 9W
Video	1 x DisplayPort 1.4a , DP++ 1 x Type-C
Memory	1 x DDR5 4800MHz SO-DIMM, up to 16GB (In-Band ECC)

I/O Interface

Ethernet	2 x Intel® I210-IT (RJ45 connector) 1 x Intel® I226-IT (RJ45 connector) 2 x Intel® I210-AT for PoE SKU/5LAN SKU (RJ45 connector)
Ethernet/PoE (Option)	2 x Intel® I210-AT (RJ45 connector), PoE output max.15.4W/ port, each port supports IEEE 802.3AF PoE. (For PoE SKU)
Serial Port	2 x RS-232/422/485 (9-pin D-sub connector)
USB	2 x USB 3.2 Gen2 1 x USB2.0 1 x Type-C USB3.2 Gen2
Digital I/O	8DIs/8DOs with sink/source isolation 36V for 8DIO SKU
Audio	1 x Mic in 1 x Line out

Expansion

SIM	1 x Nano SIM Card slot
RF& Antenna (Option)	M.2 Wi-Fi 6E module supports IEEE 802.11 a/b/g/n/ac/ax + BT 5.2 - 3 x 4G LTE antenna and 2 x Wi-Fi antenna - 4 x 5G antenna and 2 x Wi-Fi antenna
M.2 Socket	1 x M.2 3042/3052 Key B (PCIe Gen3x1 / USB3.2 Gen1x1 mode) - Support 4G LTE/5G module 1 x M.2 2230/2260 Key E (PCIe Gen3x1 / USB2.0 mode) - Support Wifi/BT module

Manageability / Security

Manageability	WDT, Intel® In-Band Manageability
Security	TPM2.0

Power Supply

DC Input	2 x 3-pin terminal block (Phoenix type) for 6 to 36V DC input (For Basic/5LAN/8DIO SKU) 2 x 3-pin terminal block (Phoenix type) for 19 to 36V DC input (For PoE SKU) - OVP, UVP, OCP, plus 80V surge protection
AC to DC Adapter (Option)	AC input 100-240Vac, 1.8A 50-60Hz, DC output 19V, 6.32A, 120W Adapter

Storage Device

SD Slot	1 x Micro SD card slot(SD Card specification version 3.01)
M.2 Socket	1 x M.2 2280 Key M (PCIe Gen3x2)

Mechanical

Dimensions	58mm (W) x 125mm (D) x 157mm (H)
Indicator	1 x NVMe Storage LED 1 x Wi-Fi / BT LED 2 x Diagnostic LED 2 x Power LED
Function	Power on Button with LED
Net Weight	TBD
Mounting (Option)	DIN-Rail or Wall mounting

Environmental

Operating Temperature	For Basic/5LAN/8DIO SKU: -40°C ~ 70°C (-40°F~158°F) (w/ airflow 0.5~0.8m/s) For PoE SKU : -40°C ~ 50°C (-40°F~122°F) (w/ airflow 0.5~0.8m/s)
Storage Temperature	-40°C ~ 85°C (-40°F~185°F)
Humidity	~95% @ 40°C (non-condensing)
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes with SSD
ESD	Contact +/-8 KV, Air +/-15 KV
Shock	Operating 100G, half sine 11 ms duration with SSD
EMC	CE (EN61000-6-4/-2) and FCC Class A
Safety	LVD

Add-on Feature / OS Support

Real-Time Enablement	TSN, TCC support under Ubuntu (only LAN1)
OS Support	Windows*, Linux

Order Information	SKU	Processor	Storage	WI-FI*	4G LTE/5G*	LAN	PoE	DI/DIO
iEP-5020G-020	Basic SKU	x7433RE	M.2 Key M	Support	Support	3	Not Support	Not Support
iEP-5020G-021	PoE SKU			Support	Not Support	5	Support	Not Support
iEP-5020G-022	5LAN-WIFI			Support	Not Support	5	Not Support	Not Support
iEP-5020G-023	5LAN-5G			Not Support	Support	5	Not Support	Not Support
iEP-5020G-024	8DIO SKU			Support	Not Support	3	Not Support	Support

*The WI-FI, 4G LTE and 5G module kits are purchased separately.

ASRock Industrial

iEP-5010G Series

Industrial IoT Controller

Basic SKU

PoE SKU
5LAN-WIFI SKU
5LAN-5G SKU

KEY FEATURES

- Latest and Powerful Intel® Atom® x6000RE Processor (Elkhart Lake)
- Fan-less and Rugged Design
- -40°C to 70°C Wide Operating Temp. for Basic SKU
- -40°C to 50°C Wide Operating Temp. for PoE SKU
- 6-36VDC Wide Range Power Inputs for Basic/5LAN/5G SKU
- 19-36VDC Wide Range Power Inputs for PoE SKU
- Most Flexible IOs and Expansion for Industrial Applications
- Intel® TCC and TSN Support for Real-Time Computing
- DIN Rail or Wall Mount Options
- 4 x Intel 1G LAN (2 Support IEEE 802.3AF PoE Ports)
- 1 x Intel 2.5G LAN
- Support Intel® IN-Band ECC

SPECIFICATIONS

System Core

Processor	Intel® Atom® x6000RE Processor (Elkhart Lake Platform) - iEP-5010G: Intel Atom® x6425RE, 4C, 1.9GHz, 12W - iEP-5011G: Intel Atom® x6214RE, 2C, 1.4GHz, 6W
Video	1 x HDMI 2.0b, 1 x VGA
Memory	2 x DDR4 3200MHz SO-DIMM, up to 32GB (In-Band ECC)

I/O Interface

Ethernet	2 x Intel® I210-IT (1GbE) 1 x Intel® I226-IT (2.5GbE, support TSN) 2 x Intel® I210-AT for PoE SKU/5LAN SKU
Ethernet/PoE (Option)	2 x Intel® I210-AT (RJ-45 connector), PoE output max.15.4W/ port, each port supports IEEE 802.3AF PoE. (For PoE SKU)
Serial Port	3 x RS-232/422/485 (9-pin D-sub connector)
USB	2 x USB 3.2 Gen1x1 2 x USB 2.0
Digital I/O	4DIs/4DOs (9-pin D-sub connector)
Audio	1 x Mic in 1 x Line out

Expansion

SIM	1 x Nano SIM Card slot
RF& Antenna (Option)	M.2 Wi-Fi 6E module supports IEEE 802.11 a/b/g/n/ac/ax + BT 5.2 - 3 x 4G LTE antenna and 2 x Wi-Fi antenna - 4 x 5G antenna and 2 x Wi-Fi antenna
M.2 Socket	1 x M.2 3042/3052 Key B (PCIe Gen3x1 / USB3.2 Gen1x1 mode) - Support 4G LTE/5G module 1 x M.2 2230 Key E (PCIe Gen3x1 / USB2.0 mode) - Support Wifi/BT module

Manageability / Security

Manageability	WDT, Intel® In-Band Manageability
Security	TPM2.0

Power Supply

DC Input	1 x 3-pin pluggable terminal block (Phoenix type) for 6 to 36V DC input (For Basic/5LAN SKU) 1 x 3-pin pluggable terminal block (Phoenix type) for 19 to 36V DC input (For PoE SKU) - OVP, UVP, OCP, plus 80V surge protection
AC to DC Adapter (Option)	AC input 100-240Vac, 1.5A 50-60Hz, DC output 19V, 3.42A, 65W Adapter (For Basic/5LAN SKU) AC input 100-240Vac, 1.8A 50-60Hz, DC output 19V, 6.32A, 120W Adapter (For PoE SKU)

Storage Device

SD Slot	1 x Micro SD card slot(SD Card specification version 3.01)
SATA(Option)	1 x 2.5" 9.5mm SATA3 SSD (For Basic SKU only)
M.2 Socket	1 x M.2 2280 Key M (PCIe Gen3 / SATA3 mode)

Mechanical

Dimensions	58mm (W) x 125mm (D) x 157mm (H)
Indicator	1 x SATA / NVMe Storage LED, 1 x Wi-Fi / BT LED
Function	Power on Button with LED, Clear CMOS Button
Net Weight	Basic SKU : 1.43kg PoE SKU : 1.75kg 5LAN SKU : 1.65kg
Mounting (Option)	DIN-Rail or Wall mounting

Environmental

Operating Temperature	For Basic/5LAN SKU: -40°C ~ 70°C (-40°F~158°F) (w/ airflow 0.5~0.8m/s) For PoE SKU : -40°C ~ 50°C (-40°F~122°F) (w/ airflow 0.5~0.8m/s)
Storage Temperature	-40°C ~ 85°C (-40°F~185°F)
Humidity	~95% @ 40°C (non-condensing)
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes with SSD
ESD	Contact +/-8 KV, Air +/-15 KV
Shock	Operating 100G, half sine 11 ms duration with SSD
EMC	CE and FCC Class A (EN61000-6-4/-2)
Safety	LVD

Add-on Feature / OS Support

Real-Time Enablement	TSN, TCC support under Ubuntu (only LAN1)
OS Support	Windows 10, Ubuntu 22.04 LTS

Order Information	SKU	Processor	2.5 Storage	WiFi*	4G LTE/5G*	LAN	PoE
iEP-5010G-010	Basic SKU	X6425RE	Support by additional kits	Support	Support	3	Not Support
iEP-5011G-010		X6214RE					
iEP-5010G-011	PoE SKU	X6425RE	Not Support	Support	Not Support	5	Support
iEP-5011G-011		X6214RE					
iEP-5010G-012	5LAN-WIFI	X6425RE	Not Support	Support	Not Support	5	Not Support
iEP-5011G-012		X6214RE					
iEP-5010G-013	5LAN-5G	X6425RE	Not Support	Not Support	Support	5	Not Support
iEP-5011G-013		X6214RE					

*The WI-FI, 4G LTE and 5G module kits are purchased separately

iEP-5000G Series

Industrial IoT Controller

Basic SKU

PoE SKU
5LAN-WIFI SKU
5LAN-5G SKU

KEY FEATURES

- Latest and Powerful Intel® Atom® x6000E Processor
- Fan-less and Rugged Design, Wide Temperature Operating (-40 °C to 70 °C)
- 6-36VDC Wide Range Power Inputs
- Most Flexible IOs and Expansion for Industrial Applications
- Intel® TCC and TSN Support for Real-Time Computing
- DIN Rail or Wall Mount Options
- 5 x Intel® 1G LAN (2 Support IEEE 802.3AF PoE Ports)
- Support Intel® IN-Band ECC

SPECIFICATIONS

System Core

Processor	Intel® Atom® x6000RE Processor - Intel Atom® x6425RE, 4C, 1.9GHz, 12W
Video	1 x HDMI 2.0b, 1 x VGA
Memory	2 x DDR4 3200MHz SO-DIMM, up to 32GB (In-Band ECC)

I/O Interface

Ethernet	3 x Maxlinear GPY215 2 x Intel® I210-AT for PoE SKU/5LAN SKU
PoE (Option)	2 x Intel® I210-AT (RJ-45 connector), PoE output max.15.4W/ port, each port supports IEEE 802.3AF PoE. (For PoE SKU)
Serial Port	3 x RS-232/422/485 (9-pin D-sub connector)
USB	2 x USB 3.2 Gen1x1 2 x USB 2.0
Digital I/O	4DIs/4DOs (9-pin D-sub connector)
Audio	1 x Mic in 1 x Line out

Expansion

SIM	1 x Nano SIM Card slot
RF& Antenna (Option)	M.2 Wi-Fi 6E module supports IEEE 802.11 a/b/g/n/ac/ax + BT 5.2 - 3 x 4G LTE antenna and 2 x Wi-Fi antenna - 4 x 5G antenna and 2 x Wi-Fi antenna
M.2 Socket	1 x M.2 3042/3052 Key B (PCIe Gen3x1 / USB3.2 Gen1x1 mode) - Support 4G LTE/5G module 1 x M.2 2230 Key E (PCIe Gen3x1 / USB2.0 mode) - Support Wifi/BT module

Manageability / Security

Manageability	WDT, Intel® In-Band Manageability
Security	TPM2.0

Power Supply

DC Input	1 x 3-pin pluggable terminal block (Phoenix type) for 6 to 36V DC input (iEP-5000G-010/012/013) 1 x 3-pin pluggable terminal block (Phoenix type) for 19 to 36V DC input (For iEP-5000G-011 only) - OVP, UVP, OCP, plus 80V surge protection
AC to DC Adapter (Option)	AC input 100-240Vac, 1.5A 50-60Hz, DC output 19V, 3.42A, 65W Adapter (For Basic/5LAN SKU) AC input 100-240Vac, 1.8A 50-60Hz, DC output 19V, 6.32A, 120W Adapter (For PoE SKU)

Storage Device

SD Slot	1 x Micro SD card slot (SD Card specification version 3.01)
SATA(Option)	1 x 2.5" 9.5mm SATA3 SSD for Basic SKU only
M.2 Socket	1 x M.2 2280 Key M (PCIe Gen3 / SATA3 mode)

Mechanical

Dimensions	58mm (W) x 125mm (D) x 157mm (H)
Indicator	1 x SATA / NVMe Storage LED, 1 x Wi-Fi / BT LED
Function	Power on Button with LED, Clear CMOS Button
Net Weight	Basic SKU : 1.43kg PoE SKU : 1.75kg 5LAN SKU : 1.65kg
Mounting (Option)	DIN-Rail or Wall mounting

Environmental

Operating Temperature	For Basic/5LAN SKU : -40°C ~ 70°C (-40°F~158°F) (w/ airflow 0.5~0.8m/s) For PoE SKU : -40°C ~ 50°C (-40°F~122°F) (w/ airflow 0.5~0.8m/s)
Storage Temperature	-40°C ~ 85°C (-40°F~185°F)
Humidity	~95% @ 40°C (non-condensing)
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes with SSD
ESD	Contact +/-8 KV, Air +/-15 KV
Shock	Operating 100 G, half sine 11 ms duration with SSD
EMC	CE and FCC Class A (EN61000-6-4/-2)
Safety	LVD

Add-on Feature / OS Support

Real-Time Enablement	TSN, TCC support under Linux
OS Support	Windows 10, Ubuntu 22.04 LTS

Order Information	SKU	Processor	2.5 Storage	WIFI*	4G LTE/5G*	LAN	PoE	DC-IN Type
iEP-5000G-000	Basic SKU	X6425RE	Support by additional kits	Support	Support	3	Not Support	DC Jack
iEP-5000G-010								Phoenix
iEP-5000G-011	PoE SKU		Not Support	Support	Not Support	5	Support	Phoenix
iEP-5000G-012	5LAN-WIFI		Not Support	Support	Not Support	5	Not Support	Phoenix
iEP-5000G-013	5LAN-5G		Not Support	Not Support	Support	5	Not Support	Phoenix

*The WI-FI, 4G LTE and 5G module kits are purchased separately

ASRock Industrial

Preliminary

iEP-6010E Series

Industrial IoT Controller

Basic SKU

POE SKU

5G SKU

KEY FEATURES

- NVIDIA Jetson Orin NX SOM support, up to 100 SPARSE (50 DENSE) INT8 TOPS
- NVIDIA Jetson Orin Nano SOM support, up to 40 SPARSE (20 DENSE) INT8 TOPS
- POE SKU integrates 2x POE ports. Each port supports IEEE 802.3AF
- Anti Shock and Vibration
- Wide Range Operating Temperature (-25 to 60°C)
- 12-36V Phoenix type DC IN support
- 2nd DC IN Interface (PD3.0 20V USB Type-C with Locking feature) for Mobile device application or Redundant power source
- Wall Mount or DIN-Rail for Vertical IPC Installation (All SKU) Wall Mount or VESA Mount for Horizontal IPC Installation (BASIC SKU only)
- Carrier board reserved 2pcs Dual Lane MIPI-CSI2 connectors (Option for DSC-NV002-WT R1.01), Carrier board reserved 2pcs Four Lane MIPI-CSI2 connectors (Option for DSC-NV002-WT R1.02)**

SPECIFICATIONS

Processor System

System on Module	- NVIDIA Jetson Orin NX SOM 16GB support (Basic SKU iEP-6010E-000, PoE SKU iEP-6010E-001, 5G SKU iEP-6010E-003) - NVIDIA Jetson Orin NX SOM 8GB support (Basic SKU iEP-6011E-000) - NVIDIA Jetson Orin Nano SOM 8GB support (Basic SKU iEP-6012E-000, PoE SKU iEP-6012E-001,5G SKU iEP-6012E-003) - NVIDIA Jetson Orin Nano SOM 4GB support (Basic sku iEP-6013E-000)
Video	1 x HDMI 2.0 (Orin NX)/ 1.4 (Orin Nano)
Memory	16GB 128-bit LPDDR5 (Jetson Orin NX 16GB) 8GB 128-bit LPDDR5 (Jetson Orin NX 8GB) 8GB 128-bit LPDDR5 (Jetson Orin Nano 8GB) 4GB 64-bit LPDDR5 (Jetson Orin Nano 4GB
TPM	TPM2.0

I/O Interface

Ethernet	2 x Gigabit LAN (Two Realtek LAN on DSC-NV002 R1.01, one Realtek LAN1 and one Intel LAN2 on DSC-NV002 R1.02)
PoE (Option)	2x Intel I210AT ports, each port supports IEEE 802.3AF PoE (Orin NX SOM 16GB PoE SKU iEP-6010E-001, Orin Nano SOM 8GB PoE SKU iEP-6012E-001)
Serial Port	1 x RS-232, 1 x RS-232/422/485 (Pin9 default is N/A, +5V or +12V/1A software programmable)
USB	2 x USB 3.2 Gen 2x1 (one with Locking) 2 x USB 2.0, 1 x Micro USB 2.0 (Device mode only, for OS Flash)
Proprietary IO (DPR connector is proprietary design of DIO, Power/GND, Remote Power Button signals and power/GND pins. ISC connector is proprietary design of I2C, SPI, CANBUS Interface and Power/GND Pins.)	DPR connector: 1 x DB15 for 4*DI, 4*DO, GND, Power Pin (Default is N/A, +5V/1A software programmable), PowerOn, LED+,LED-, GND, Reset ISC connector: 1 x DB15 for Power Pin(Default is N/A, +3V/1A software programmable), 5 x GND, 1 x I2C, 1 x SPI, 1 x CANBUS

Expansion

SIM	1 x Nano SIM Card slot
RF& Antenna (Option)	up to 4 x 5G/4G LTE antenna + 2 x Wi-Fi antenna for 5G SKU
M.2 Socket	1 x M.2 (Key B, 3042/3052/2280) -For PCIe Gen3 x1 / USB3.2 Gen2x1 5G module (Option) (5G SKU Only, Orin NX SOM 16GB 5G SKU iEP-6010E-003, Orin Nano SOM 8GB 5G SKU iEP-6012E-003) -For PCIe Gen3 x1 / USB3.2 Gen2x1 4G LTE module (Option) (5G SKU Only, Orin NX SOM 16GB 5G SKU iEP-6010E-003, Orin Nano SOM 8GB 5G SKU iEP-6012E-003) -For PCIe Gen3 x1 M.2 B Key 2280 SSD module (Option, Basic SKU Only) 1 x M.2 (Key E, 2230) for PCIe Gen3 x1 Wi-Fi and USB2.0 Bluetooth module (Option)

Power Requirements

DC Input	1st DC IN source: 12V~36V DC input, 80V Surge Protection. OVP, UVP, OCP, Reverse Protection, Phoenix type connector 2nd DC IN source: PD3.0 20V USB Type-C power adapter interface (Locking feature), It can be backup DC input when 1st DC IN is 21V~36V
AC to DC Adapter (Option)	For Basic SKU: 120W Adapter, AC input 100-240Vac, 1.8A 50~60Hz, DC output 19V, 6.32A For POE/5G SKU: 330W Adapter, AC input 100-240Vac, 4.2A 50~60Hz, DC output 24V, 13.75A

Storage Device

M.2 Socket	1 x M.2 (Key M, 2280) for wide temperature PCIe Gen3 x 4 NVMe SSD module (System Operating temperature -25° C~60° C) 1 x M.2 (Key M, 2280)for wide temperature PCIe Gen4 x 4 NVMe SSD module (System Operating temperature -25° C~55° C) PCIe Gen4 x 4 SSD only supported by Orin NX SOM
Micro SD Card slot	1 x Micro SD Card Slot (UHS-I/SDR-50)

Mechanical

Dimensions	Basic SKU : 55(W) x 170(H) x 134(D) mm POE/5G SKU : 68(W) x 170(H) x 134(D) mm
Indicator	1 x Storage LED 1 x DC-IN LED
Function	Power on button with LED, OS Flash Button, Reset Tact Switch Enable/Disable Auto power on Switch
Net Weight	Basic SKU: 1.3kg, 5G/POE SKU: 1.6kg
Mounting (Option)	- Horizontal Wall mounting or VESA mounting bracket (Basic SKU only) - Vertical Wall mounting or Din Rail mounting bracket (All SKU)

Environmental

Operating Temperature	-25~60° C (-13~140°F) for Basic sku, PoE sku, or 5G sku w/ 4G LTE Module when installed with WT SSD Gen3 x 4 -25~55° C (-13~131°F) for Basic sku, PoE sku, or 5G sku w/ 4G LTE Module when installed with WT SSD Gen4 x 4 -25~55° C (-13~131°F) for 5G sku w/ 5G Module when installed with WT SSD Gen4 x 4 or WT SSD Gen3 x 4 (w/ air flow 0.5~0.8m/s)
Storage Temperature	-40°C~85°C (-40°F~185°F)
Humidity	~90% @ 45°C (non-condensing)
EMC	CE, FCC Class A (EN61000-6-4/-2) *(e)
Safety	LVD*(e)
Shock	IEC 60068-2-27, Operating Shock 100G with 11 ms duration, half sine wave
Vibration	IEC 60068-2-64, Operating Random Vibration 5 Grms, 5-500 Hz, 3 axes, 30 min/axis

Add-on Feature / OS Support

2nd DC IN Interface	PD3.0 20V USB Type-C power adapter interface (Locking feature), It can be backup DC input when 1st DC IN is 21V~36V
Carrier board feature	Carrier board reserved 2pcs Dual Lane MIPI-CSI2 connectors (Option for DSC-NV002-WT R1.01), Carrier board reserved 2pcs Four Lane MIPI-CSI2 connectors (Option for DSC-NV002-WT R1.02)**
OS Support	NVIDIA JetPack 5.1.2

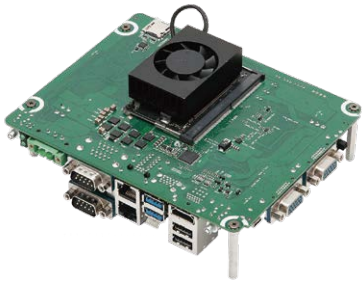
*(e) means estimation.

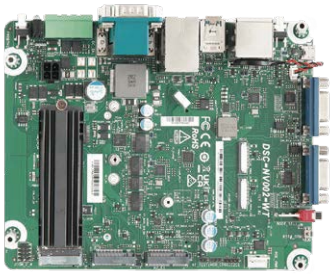
**MIPI-CSI2 camera need to be turned off before system going to sleep mode. It is current NVIDIA JetPack limitation.

Preliminary

iEP-6010E Series

Developer Kit





KEY FEATURES

- NVIDIA Jetson Orin NX SOM support, up to 100 SPARSE (50 DENSE) INT8 TOPS
- NVIDIA Jetson Orin Nano SOM support, up to 40 SPARSE (20 DENSE) INT8 TOPS
- POE SKU integrates 2x POE ports. Each port supports IEEE 802.3AF
- Wide Range Operating Temperature (-10 to 60°C)
- 12-36V Phoenix type DC IN support
- Carrier board reserved 2pcs Dual Lane MIPI-CSI2 connectors (Option for DSC-NV002-WT R1.01), Carrier board reserved 2pcs Four Lane MIPI-CSI2 connectors (Option for DSC-NV002-WT R1.02)**

SPECIFICATIONS

Processor System

System on Module	- NVIDIA Jetson Orin NX SOM 16GB support - NVIDIA Jetson Orin NX SOM 8GB support - NVIDIA Jetson Orin Nano SOM 8GB support - NVIDIA Jetson Orin Nano SOM 4GB support
Video	1 x HDMI 2.0 (Orin NX)/ 1.4 (Orin Nano)
Memory	16GB 128-bit LPDDR5 (Jetson Orin NX 16GB) 8GB 128-bit LPDDR5 (Jetson Orin NX 8GB) 8GB 128-bit LPDDR5 (Jetson Orin Nano 8GB) 4GB 64-bit LPDDR5 (Jetson Orin Nano 4GB)
TPM	TPM2.0

I/O Interface

Ethernet	2 x Gigabit LAN (Two Realtek LAN on DSC-NV002 R1.01, one Realtek LAN1 and one Intel LAN2 on DSC-NV002 R1.02)
PoE (Option)	2x Intel I210AT ports, each port supports IEEE 802.3AF PoE
Serial Port	1 x RS-232, 1 x RS-232/422/485 (Pin9 default is N/A, +5V or +12V/1A software programmable)
USB	2 x USB 3.2 Gen 2x1 (one with Locking) 2 x USB 2.0, 1 x Micro USB 2.0 (Device mode only, for OS Flash)
Proprietary IO (DPR connector is proprietary design of DIO, Power/GND, Remote Power Button signals and power/GND pins. ISC connector is proprietary design of I2C, SPI, CANBUS Interface and Power/GND Pins.)	DPR connector: 1 x DB15 for 4*DI, 4*DO, GND, Power Pin (Default is N/A, +5V/1A software programmable), PowerOn, LED+,LED-, GND, Reset ISC connector: 1 x DB15 for Power Pin(Default is N/A, +3V/1A software programmable), 5 x GND, 1 x I2C, 1 x SPI, 1 x CANBUS

Expansion

SIM	1 x Nano SIM Card slot
RF& Antenna (Option)	up to 4 x 5G/4G LTE antenna + 2 x Wi-Fi antenna
M.2 Socket	1 x M.2 (Key B, 3042/3052/2280) -For PCIe Gen3 x1 / USB3.2 Gen2x1 5G module (Option) -For PCIe Gen3 x1 / USB3.2 Gen2x1 4G LTE module (Option) -For PCIe Gen3 x1 M.2 B Key 2280 SSD module (Option) 1 x M.2 (Key E, 2230) for PCIe Gen3 x1 Wi-Fi and USB2.0 Bluetooth module (Option)

Power Requirements

DC Input	1st DC IN source: 12V~36V DC input, 80V Surge Protection. OVP, UVP, OCP, Reverse Protection, Phoenix type connector
AC to DC Adapter (Option)	120W Adapter, AC input 100-240Vac, 1.8A 50~60Hz, DC output 19V, 6.32A

Storage Device

M.2 Socket	1 x M.2 (Key M, 2280) for wide temperature PCIe Gen3 x 4 NVMe SSD module (System Operating temperature -10° C~60° C) 1 x M.2 (Key M, 2280)for wide temperature PCIe Gen4 x 4 NVMe SSD module (System Operating temperature -10° C~55° C) PCIe Gen4 x 4 SSD only supported by Orin NX SOM Default is PCIe Gen3 x4 256GB WT SSD
Micro SD Card slot	1 x Micro SD Card Slot (UHS-I/SDR-50)

Mechanical

Dimensions	140(W) x 70(H) x 175(D) mm
Indicator	1 x Storage LED 1 x DC-IN LED
Function	Power on button with LED, OS Flash Button, Reset Tact Switch Enable/Disable Auto power on Switch
Net Weight	1kg

Environmental

Operating Temperature	-10~60° C (14~140°F) for Basic sku, PoE sku, or 5G sku w/ 4G LTE Module when installed with WT SSD Gen3 x 4 -10~55° C (14~131°F) for Basic sku, PoE sku, or 5G sku w/ 4G LTE Module when installed with WT SSD Gen4 x 4 -10~55° C (14~131°F) for 5G sku w/ 5G Module when installed with WT SSD Gen4 x 4 or WT SSD Gen3 x 4 (w/ air flow 0.5~0.8m/s)
Storage Temperature	-40°C~85°C (-40°F~185°F)
Humidity	~90% @ 45°C (non-condensing)
EMC	CE, FCC Class A (EN61000-6-4/-2) *(e)

Add-on Feature / OS Support

Carrier board feature	Carrier board reserved 2pcs Dual Lane MIPI-CSI2 connectors (Option for DSC-NV002-WT R1.01), Carrier board reserved 2pcs Four Lane MIPI-CSI2 connectors (Option for DSC-NV002-WT R1.02)**
OS Support	NVIDIA JetPack 5.1.2

*(e) means estimation.

**MIPI-CSI2 camera need to be turned off before system going to sleep mode. It is current NVIDIA JetPack limitation.

Part Number	Product Name	Specification
90PCA1E0-04320010	ORIN NX 16GB DEV KIT/AI	ONX16G,256GB
90PCA1E0-14320010	ORIN NX 8GB DEV KIT/AI	ONX8G,256GB
90PCA1E0-24320010	ORIN NANO 8GB DEV KIT/AI	ONANO8G,256GB
90PCA1E0-34320010	ORIN NANO 4GB DEV KIT/AI	ONANO4G,256GB
Packing List		
Item	Description	Qty
1	NV Jetson Orin NX 16GB, Orin NX 8GB, Orin Nano 8GB, or Orin Nano 4GB SOM	1 pcs
2	DSC-NV002-WT R1.01 for orders before 2024/10/1 DSC-NV002-WT R1.02 for orders after 2024/10/1	1 pcs
3	SOM Cooler	1 pcs
4	Stand	4 pcs
5	Screw for Stand	4 pcs
6	DC in Phoenix Type Mating Connector	1 pcs
7	M.2 Screw	3 pcs
8	Screw for Locking SOM	2 pcs
9	M.2 Key M PCIe Gen3x4 SSD WT 256GB	1 pcs
10	120W Adapter	1 pcs
11	Optional Power Cord	1 pcs
12	Optional AX210 Wifi Module	1 pcs
13	Optional Wifi Cable	2 pcs
14	Optional Wifi Antenna	2 pcs
15	Optional 4G LTE M.2 Key B Module	1 pcs
16	Optional 4G LTE Cable	2 pcs
17	Optional 4G LTE Antenna	2 pcs
18	Optional 5G M.2 Key B Module	1 pcs
19	Optional 5G Cable	4 pcs
20	Optional 5G Antenna	4 pcs

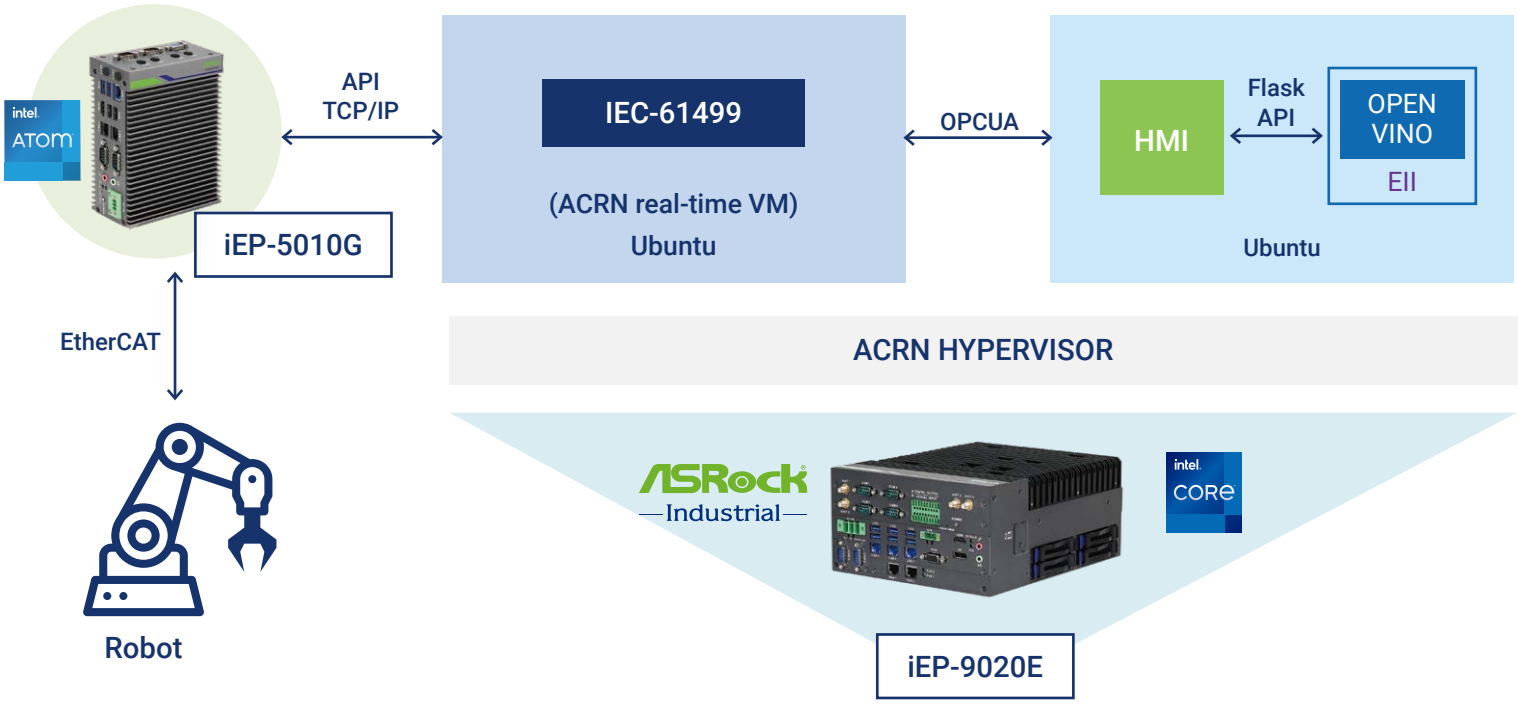
Real-time Robotic Control

iEP-5010G

iEP-9020E

Solution

ASRock Industrial's iEP-9020E and iEP-5010G power up real-time robotic control by integrating AI vision and control capabilities. This solution captures camera images and utilizes Intel® EII- OpenVINO™ for precision object detection through AI inference. With IEC-61499, Intel® Edge Controls for Industrial, the iEP-5010G facilitates real-time robotic control via EtherCAT. The arm's movement status can be instantly displayed for real-time monitoring on HMI, with connectivity to the control center, enabling remote management capabilities.



Results

- Integrated AI vision with motion control
- Real-time control with Intel ECI, TSN & TCC
- Accurate AI detection and positioning
- UAO IEC-61499 for open automation

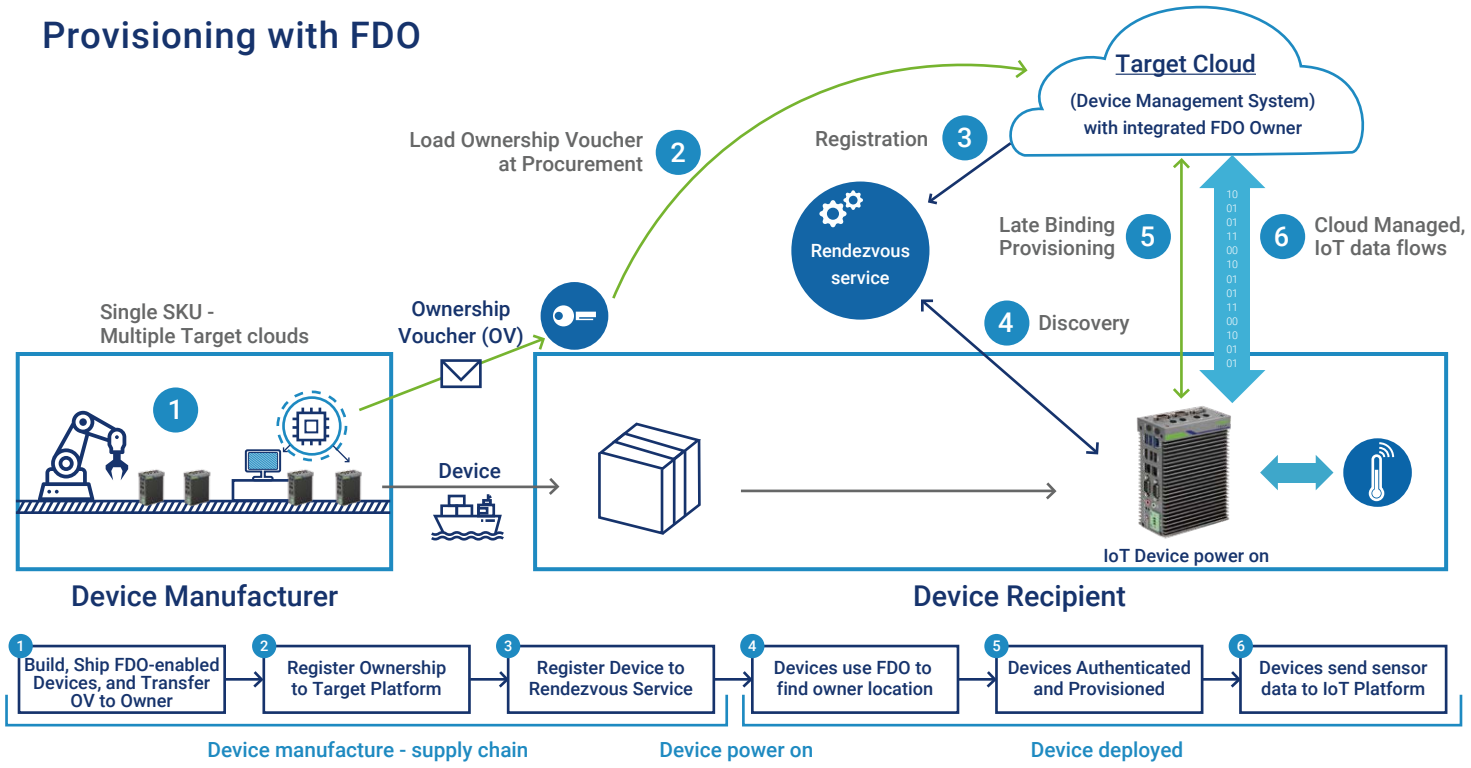
FDO-enabled Devices

iEP-5000G Industrial IoT Controller

Solution

ASRock Industrial and Intel® jointly develop FIDO Device Onboarding (FDO)-enabled devices - the iEP-5000G for automated system onboarding. It addresses the existing challenges of slow, expensive, and insecure manual onboarding processes in the IoT domain, empowering users to harness the full potential of improved IoT security and enhanced efficiency through seamless automated onboarding capabilities. In streamlined steps, the Ownership Voucher (OV) is registered for the target platform, and the device is sent to a retailer or customer. Once powered up and connected to the network, the device auto-provisions itself, enabling a zero-touch onboarding experience.

Provisioning with FDO



Results

Zero-touch onboarding past power-ON

Fast and secure with lower onboarding costs

Hardware flexibility – ASRock Industrial provides various FDO-enabled devices based on customer needs

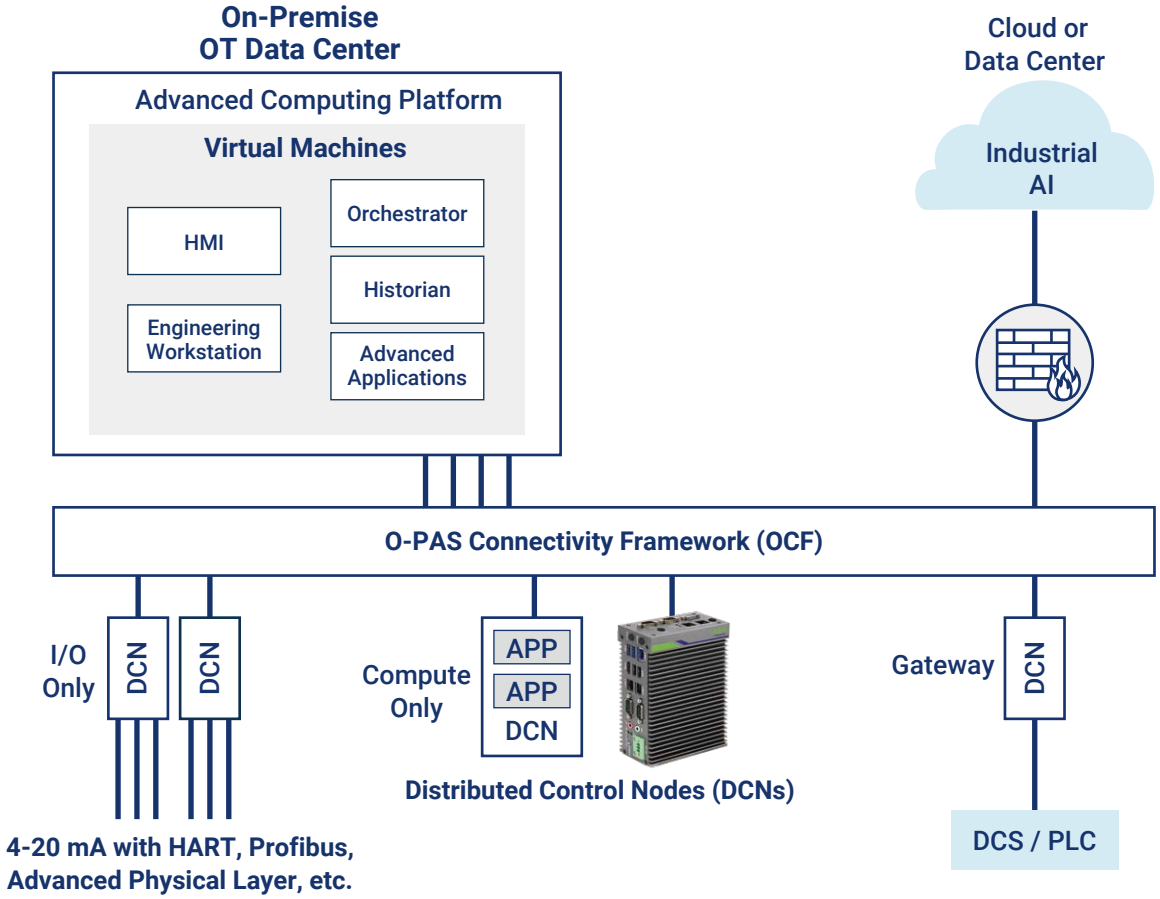
Late binding of the device to cloud greatly reduces number of SKUs vs. other zero-touch offerings

DCN in Open-Process-Automation-Based Control System

iEP-5000G Industrial IoT Controller

Solution

ASRock Industrial collaborates with our eco-system partners to unveil the first open-industrial control systems based on O-PAS™, aiming to accelerate the implementation of Industry 4.0 through open platforms. Our iEP-5000G Industrial IoT Controller is integrated into the open-industrial control systems as distributed control nodes (DCN) to enable advanced control strategies for open process automation.



Results

Increased the competitiveness of manufacturing companies

Open platform avoided vendor lock-in for higher flexibility

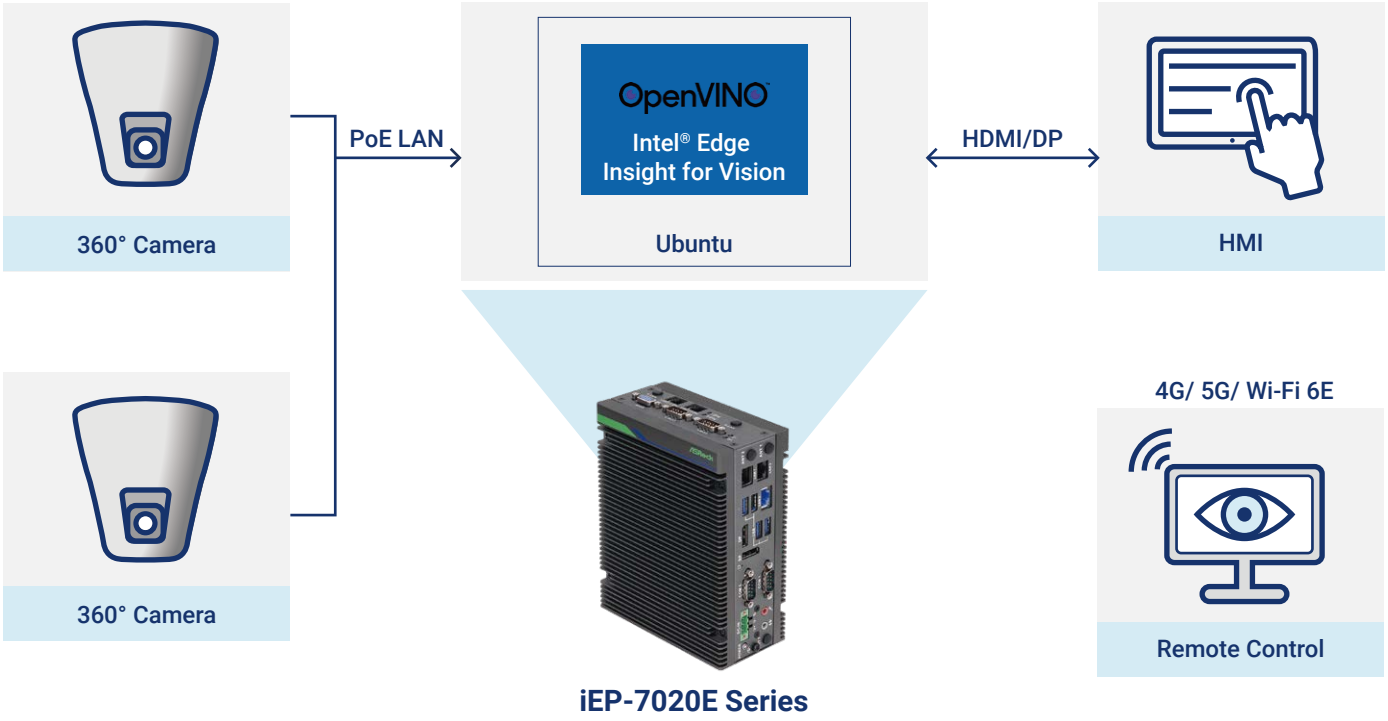
Accelerated Industry 4.0 through open platforms

Smart 360° Patrolling & Surveillance in Factory

iEP-7020E Series Industrial IoT Controller

Solution

The iEP-7020E Series offers versatile solutions for real-time monitoring and surveillance in factories. By connecting 360° Cameras through PoE ports, it captures comprehensive on-site images. Utilizing Intel® Edge Insight for Vision-OpenVINO™ technology, it enables AI inference and instant image analysis. This intelligent system facilitates continuous monitoring of factories and ensures employees safety on-site. Furthermore, it allows instant playback on the on-site HMI and uploads data to the central control room using 4G/5G/Wi-Fi 6E for remote control and management.



Results

Remote management with 360° video reduced patrolling cost and time drastically

Real-time AI data analysis increased operation efficiency

Reduced labor for patrolling and ensured employee safety

ASRock Industrial

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