InHand Networks

**Embrace Edge AI,
Empower Industrial Digitalization**
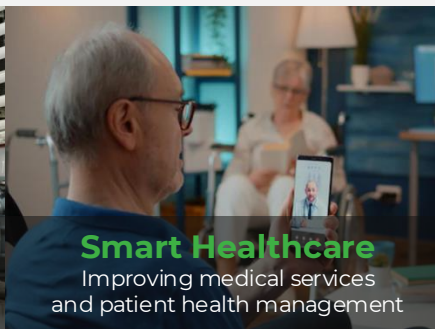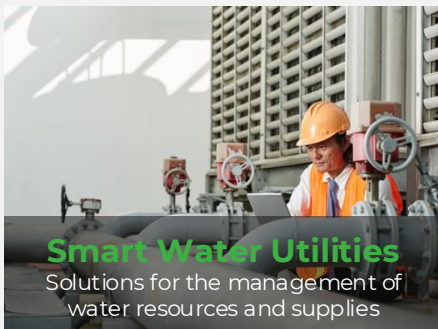
EC954 Series High-Performance AI Edge Computer
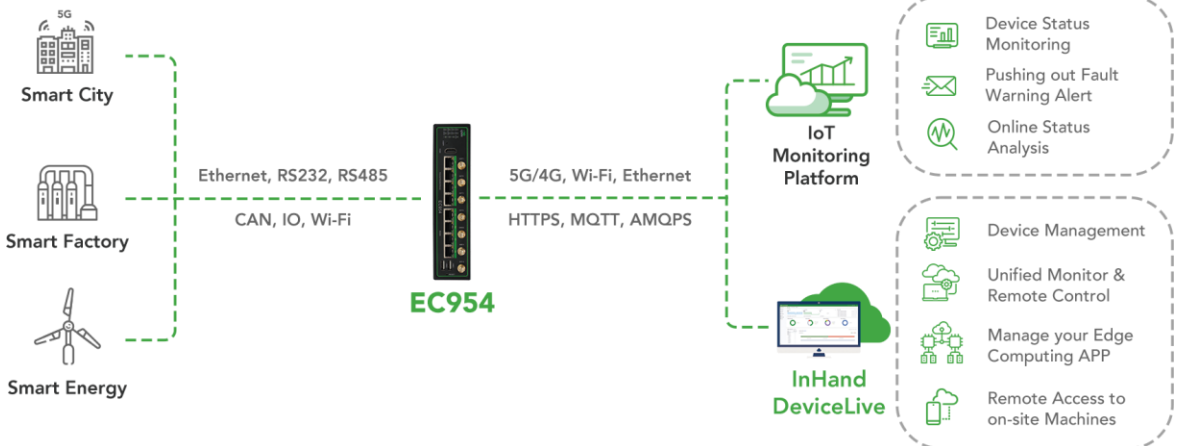
· Scalable AI computing power · High security · Rich interfaces · Cloud-managed

The EC954 is a high-performance multi-interface edge computer with AI extensions that can scale up to 26 TOPS AI computing power and supports the TensorRT/cuDNN/ VisionWorks/OpenCV AI framework. Powered by the ARM Cortex-A55@2.0GHz quad-core processor, it provides a powerful computing platform. The product uses the Linux distribution system to provide users with flexible and diverse secondary development environment. Security features such as Secure Boot and TPM2.0 are supported to ensure software and data security. Built-in DeviceSupervisor™ Agent (DSA) service, easy to achieve data collection, processing and cloud, support DeviceLive cloud management.

Smart Energy
Focusing on energy efficiency and sustainable development

Smart City
Improving urban management and public services

Smart Manufacturing
Real-time monitoring and controlling

Smart Water Utilities
Solutions for the management of water resources and supplies

Smart Healthcare
Improving medical services and patient health management

Public Utilities
Improving the efficiency and convenience of public services

Solution

Smart City

Smart Factory

Smart Energy

Ethernet, RS232, RS485
CAN, IO, Wi-Fi

EC954

5G/4G, Wi-Fi, Ethernet
HTTPS, MQTT, AMQPS

IoT Monitoring Platform
- Device Status Monitoring
- Pushing out Fault Warning Alert
- Online Status Analysis

InHand DeviceLive
- Device Management
- Unified Monitor & Remote Control
- Manage your Edge Computing APP
- Remote Access to on-site Machines

Features and Advantages

Performance and Platform

- CPU： ARM Quad Cortex-A55@2.0GHz
- GPU： Mail-G522EE
- NPU： RKNN, integrated 1.0 TOPS computing power, expansion up to 26TOPS
- TensorRT/ cuDNN/ VisionWorks/ OpenCV AI framework supported
- *IEOS

Rich Interfaces

- 4x 10/100/1000Mbps Ethernet interface
- 2x CAN FD
- 2x USB2.0
- 1x mSATA
- 1x MicroSD
- 4x RS-232 / RS-485 / RS-422 + 4x RS-485
- I/O, GPS, WIFI/Bluetooth

Stable Communication

- 5G/4G/Wi-Fi/GbE, etc
- Wired, cellular, Wi-Fi mutual backup, dual SIM failover
- Independent hardware and software watchdog
- Multilevel link detection, communication self-healing
- Fanless

High-level security

- Linux system security patches and vulnerability remediation services
- Firewall, VPN
- Secure Boot
- TPM 2.0
- TrustZone

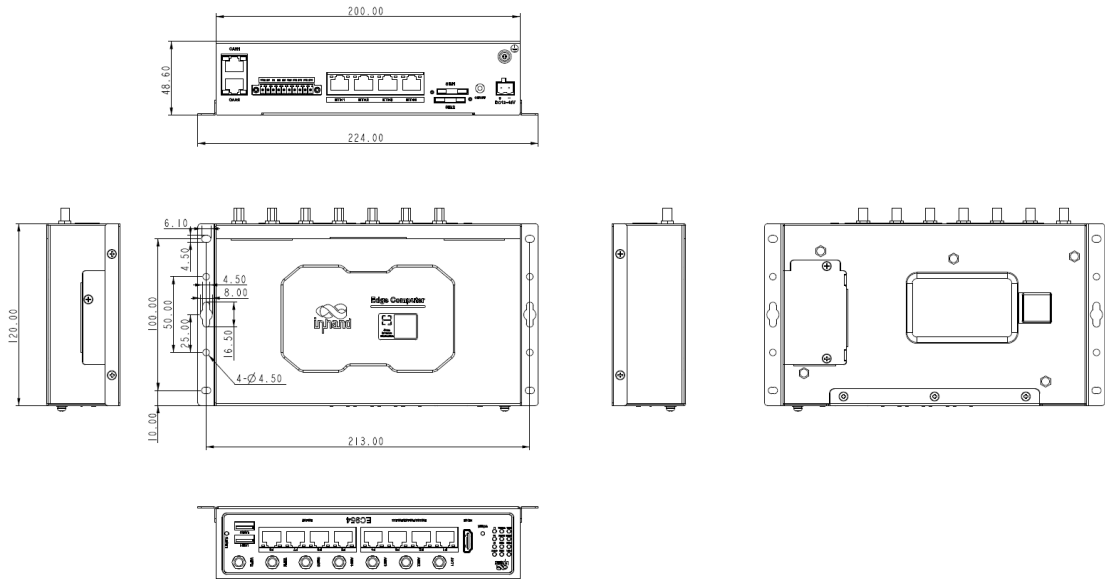## DeviceSupervisor™ Agent Service

- "Zero code/Low code" easy to achieve data acquisition on the cloud
- Integrate 80+ mainstream data acquisition protocols
- Support data preprocessing
- Integrated data publishing services, public cloud, private cloud, local SCADA and other seamless access

InHand DeviceLive Cloud Manager

- Remote device access
- Remote device batch management
- Remote batch management of edge AI applications
- Remote container management

Dimensions (mm)

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Product Specifications

Hardware Specifications	
Item	EC954
Hardware Platform	
CPU	Quad-core Cortex-A55@2.0GHz
GPU	Mali G52 2EE
NPU	1.0 TOPS, empowered by Hailo-8 M.2 AI module up to 26 TOPS
RAM	4GB
FLASH	16GB eMMC
Interfaces	
EtherNet Port	4x 10/100/1000Mbps Ethernet port
Serial Port	4x RS-232/485/422+4x RS485, RJ45
I/O	4x DI, 4x DO
CAN	2x CAN 2.0A/B
Wi-Fi	STA, 802.11ac/a/b/g/n, 2.4G/5G dual band
Bluetooth	BLE 5.0
GPS	Supports GPS, Beidou, and GLONASS positioning
USB	USB 2.0, 2x TypeA, 1x TypeC
HDMI	1x HDMI2.0
Expansion Interface	1x mSATA, B key 3042 (Hailo AI)
Reset Button	Pinhole reset button
SIM Card	2x Standard SIM
TF Card	Supports Micro SD

Trusted Platform Module	
TPM	TPM 2.0

Mechanical Features			
Installation	DIN-rail, wall mounting	Protection Rating	IP30
Housing	Metal	Dimensions	200 x 120 x 48.6 mm

Power Supply	
Power Input	DC 12-48V, polarity reversal protection
Power Interface	Industrial terminal block
Power Consumption	4W (Typical. OS idle mode)
	8W (Max. Full loading)

Ambient Temperature and Humidity			
Working Temperature	-20~ 70℃	Storage Temperature	-40 ~ 85℃
Ambient Humidity	5 ~ 95% (non-condensing)		

Indicator	
LED	4G/5G, Signal Strength (L1, L2, L3), SIM 1, SIM 2, User 1, User 2, PWR, STATUS, WARN, ERR

EMC Index	
Electrostatic Discharge	EN61000-4-2, level 3
Radiation RFI Immunity	EN61000-4-3, level 3
Electrical Fast Transients	EN61000-4-4, level 3
Surge	EN61000-4-5, level 3
Conducted RFI	EN61000-4-6 ,level 3
Ring Wave Immunity	EN61000-4-12,level 3

Physical Features			
Shock	IEC60068-2-27	Vibration	IEC60068-2-6
Free Fall	IEC60068-2-32		

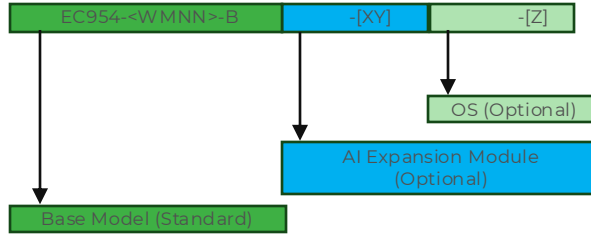| **Certification**	
CE, FCC, PTCRB, Verizon Wireless, AT&T	

Software Specifications	
Item	EC954
Operation System	
Operation System	Yocto/Linux(Debian 11,Kernel 5.10)
File System	Debian Core root filesystem
Package Manager	Debian Package Manager
Network Interconnection	
Network Type	LTE Cat4, LTE Cat6, 5G SA/NSA(Different models for different networks)
Network Access	APN, VPDN
Access Authentication	CHAP/PAP
LAN Protocol	ARP, Ethernet
WAN Protocol	Static IP, DHCP
Security	
Secure Boot	Supported
Reliability	
Backup	Dual SIM
Link Detection	Multi-Level link detection, auto-redials once disconnected
Embedded Watchdog	Device self-diagnosing, auto-recovers from operation faults
Data Acquisition Protocol (*DSA)	
Industrial Protocol	Modbus RTU Master/Slave, Modbus TCP Master/Slave, EtherNet/IP, ISO on TCP, OPC UA Client/Server, Mitsubishi MC 3C/3E/3C OverTCP, Mitsubishi CPU Port, FINSUDP, HostLink, PPI
Electricity Protocol	DLT645-2007, IEC101/104, DNP3.0
Other Protocol	BACnet, CNC
Maintenance and Management	
Upgrade Method	Supports patent upgrade mechanism, local or remote firmware upgrade
Configuration Mode	WEB
Log	Support local system logs, remote logs, and important log power-off preservation
Remote Management	InHand DeviceLive, HTTP, HTTPS, SSH,etc.
DeviceLive Cloud	Supports cloud-based parameter configuration, container management, application and firmware management

*DSA: The DeviceSupervisor Agent (DSA), developed by InHand Networks, is a cutting-edge intelligence software designed to operate on Edge Computer products. It enables clients to quickly implement data collection, processing, protocol conversion, and cloud connectivity through a "zero code/low code" approach. If you need the DSA application on the Edge Computer product, please contact us to obtain the DSA software package.

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▌Ordering Guide

Description of selection

P/N template:

| EC954-<WMNN>-B | -[XY] | -[Z] |

- **Base Model (Standard)** — EC954-<WMNN>-B
- **AI Expansion Module (Optional)** — -[XY]
- **OS (Optional)** — -[Z]

Base Model

Base Model	Cellular Type & Frequency Band: <WMNN>	Memory	Storage	Ethernet Port	Serial Port	Wi-Fi&BT/ GPS/ CAN/ TPM	I/O
EC954-LQA8-B	China LTE CAT4 LTE-FDD: B1/B3/B5/B8 LTE-TDD: B34/B38/B39/B40/B41 WCDMA: B1/B8 TD-SCDMA: B34/B39 CDMA: BC0 GSM: 900/1800MHz	4 GB	16 GB	4x 1000Mbps	4x RS232/RS485/RS422 configurable+4x RS485	YES	YES
EC954-NRQ1-B	China 5G NR 5G NR NSA: n78/n79 5G NR SA: n1/3/5/8/28/41/77/78/79 LTE-FDD: B1/B3/B5/B8 LTE-TDD: B34/B38/B39/B40/B41 WCDMA: B1/B8	4 GB	16 GB	4x 1000Mbps	4x RS232/RS485/RS422 configurable+4x RS485	YES	YES
EC954-FQ58-B	EMEA LTE CAT4 LTE-FDD:Band1/3/7/8/20/28A LTE-TDD:Band38/40/41 WCDMA:Band1/8 GSM:Band3/8	4 GB	16 GB	4x 1000Mbps	4x RS232/RS485/RS422 configurable+4x RS485	YES	YES
EC954-FQ38-B	North America LTE CAT4 LTE-FDD: Band2/4/5/12/13/14/66/71 WCDMA: Band 2/4/5	4 GB	16 GB	4x 1000Mbps	4x RS232/RS485/RS422 configurable+4x RS485	YES	YES
EC954-EN00-B	Global No Cellular	4 GB	16 GB	4x 1000Mbps	4x RS232/RS485/RS422 configurable+4x RS485	YES	YES

Hailo AI Module (Optional)

[XY]	
P/N Code	Feature
—	None
H8	Hailo-8, M.2 Key B+M 2280

OS (Optional)

[Z]	
P/N Code	Feature
—	*IEOS
D	*Debian Linux OS

- **IEOS (InHand Edge Operating System)** is InHand Networks' operating system based on distribution Linux for IoT ARM platform edge computers , helping customers achieve safe and stable industrial edge intelligent applications. IEOS contains InHand applications such as web configuration, dialing, routing, firewall, VPN, cloud management etc.

- **Debian Linux OS:** Debian OS without InHand application.

About Us

InHand Networks is a leading IoT solutions provider founded in 2001, dedicated to driving digital transformation across industries and empowering customers to unlock their full potential and achieve accelerated growth.

We specialize in delivering industrial-grade connectivity solutions for diverse sectors, such as enterprise networks, industrial and building IoT, digital energy, smart commerce, and mobility. Our comprehensive product portfolio and services cater to various applications worldwide, including smart manufacturing, smart grid, intelligent transportation, smart retail, etc. With a global footprint spanning over 60 countries, we serve customers in China, the United States, France, Germany, the United Kingdom, Italy, and beyond.

InHand Networks

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