

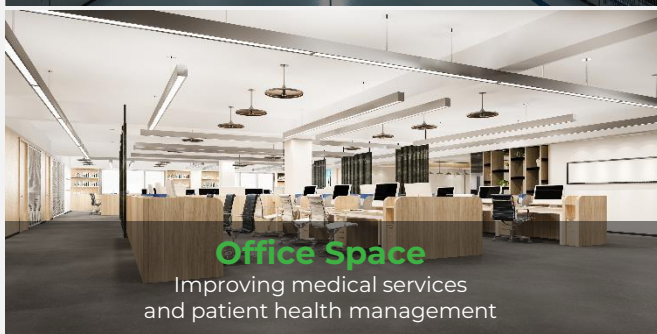
Breaking protocol barriers and  
empowering digital energy

# EC322 Series Basic Edge Computer

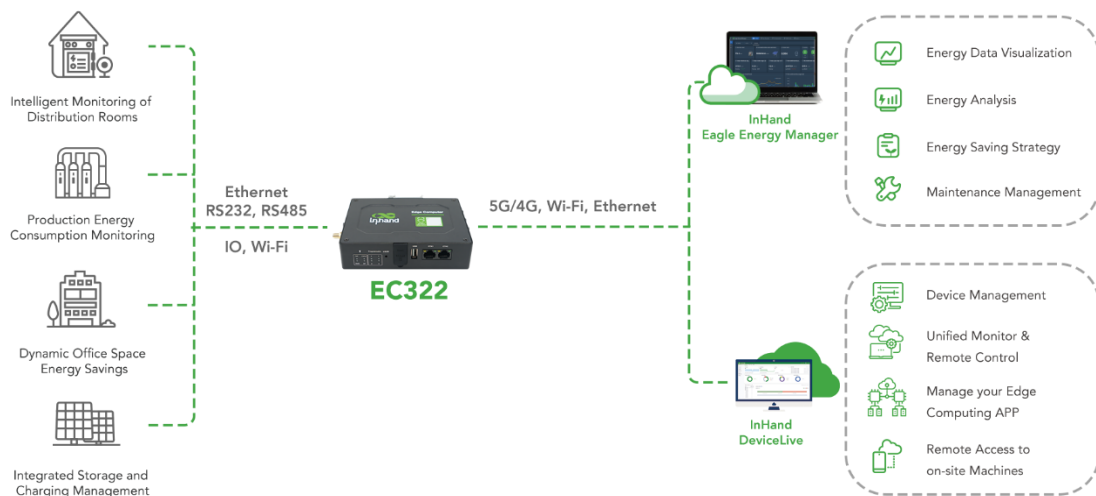
- Security
- Reliability
- Eagle Energy Manager



The EC322 series energy gateway is designed for low-voltage distribution and energy fields. It has a rich interface, which can be extended to a variety of features such as CAN, analog input, RS-232/485, etc. Built-in Linux system provides long-term support to meet the needs of industrial automation. Supports security features such as Secure Boot and TPM to ensure software and data security. Built-in InHand DeviceSupervisor™ Agent service enable easy data acquisition, processing and cloud, and support Eagle Energy Manager and DeviceLive cloud management.



## Solution



## Feature and Advantage

### Performance and Platform

- CPU: TI AM6231, single-core, Cortex-A53@1.4GHz
- 1G SDRAM + 8G eMMC
- Linux distribution (based on Debian 11)
- Support customers to develop and install edge applications
- Docker

### Rich interfaces

- 2x 10/100Mbps ethernet interface
- 1x RS-232/RS-485+1x RS-485
- 1x USB2.0
- 1x MicroSD
- Supports expansion CAN/IO/4-20mA/RS-232/RS-485
- GPS, WIFI and Bluetooth optional

### Stable communication

- 4G/Wi-Fi/FE, etc
- Wired, cellular, Wi-Fi mutual backup, dual SIM failover
- Independent hardware and software watchdog
- Multilevel link detection, communication self-healing
- fanless
- Supercapacitor design, support power off protection



### High-level security

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

### Device Supervisor™ Agent Service

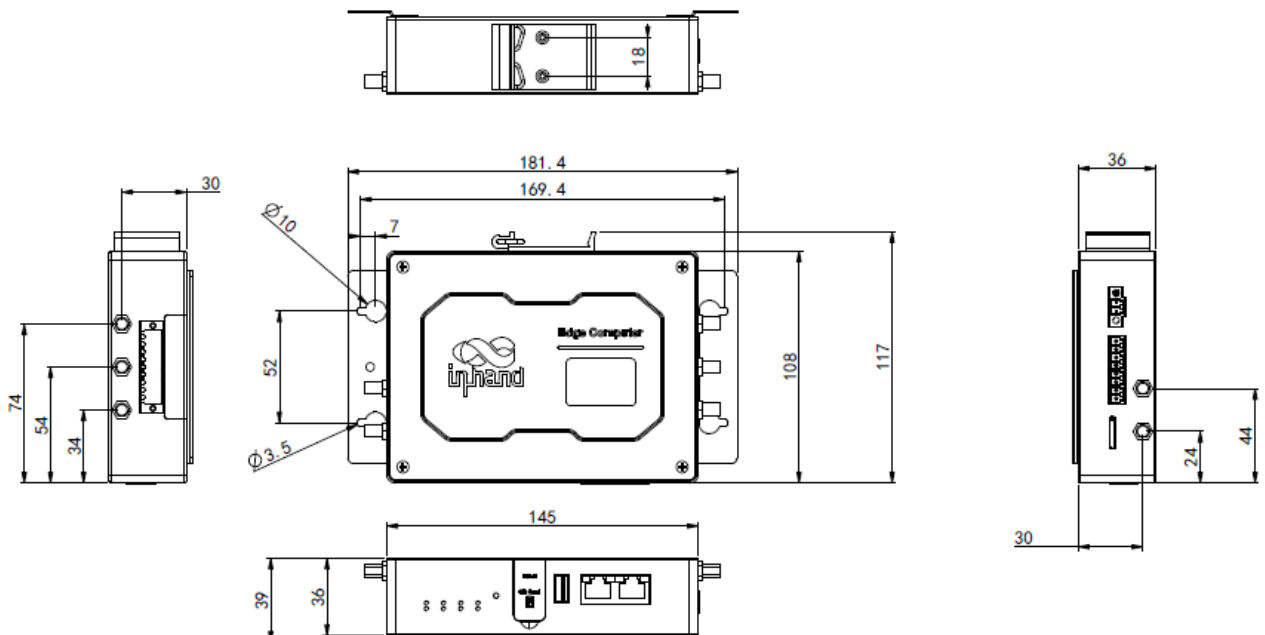
- "Zero code/Low code" easy to achieve data acquisition on the cloud
- Integrate 80+ mainstream data acquisition protocols
- Support data preprocessing
- Integrated data publishing services, public cloud, private cloud, local SCADA and other seamless access

### InHand Eagle Energy Manager

- Energy data visualization
- Energy efficiency analysis
- Energy-saving strategy
- Operations management



## Dimensions (mm)



# Product Specifications

## Hardware Specifications

Item	EC322		
Hardware Platform			
CPU	ARM Cortex-A53@1.4GHz		
RAM	1GB DDR4		
FLASH	8GB eMMC		
Interfaces			
Ethernet Port	2x 10/100Mbps Ethernet port		
Serial Port	1x RS-232/485+1x RS-485, isolation		
USB	USB 2.0, 1xType A		
SIM Card	Nano SIM x2		
Antenna Connector	LTE: SMA x1, Wi-Fi: SMA x1, GPS: SMA x1, LoRa: SMA x1 Note: North America models: 2 x SMA 4G antenna connectors.		
Wi-Fi(Optional)	STA, 802.11ac/a/b/g/n, 2.4G/5G		
Bluetooth (Optional)	BLE 4.2		
GPS(Optional)	Satellite location GPS, SMA x1		
Button	Pinhole reset button x1; Programmable button x1		
TF card	MicroSD support, up to 32GB expansion		
Interface extension (Optional, See order list)	Up to 2x RS-232/RS-485/4-20mA/CAN FD, isolation  Up to 4x DI+4 x DO, isolation		
Security			
TPM(Optional)	Integrated TPM chip, TPM2.0		
Others			
RTC	Support (button battery backup)		
Hardware watchdog	Support		
Power			
Power input	9-48V DC		
Power consumption	6W(MAX)		
Power failure protection	Hold for 20 seconds after power failure (safe shutdown)		
Power failure alarm	Power failure alarms when power failure happens		
Mechanical characteristics			
Installation	Panel,Rail	Weight	339g
Dimensions	145x106x36mm	Protection Rating	IP30
Housing	Metal + Plastic	Cooling	Fanless
Ambient Temperature And Humidity			
Storage Temperature	-40 ~ 85℃	Ambient humidity	5~ 95% (non-condensing)
Operation temperature	-20~ 70℃		
Indicator			
LED	PWR, STATUS, WARN, NET, USER * 4		

## Software Specifications

Item	EC322
Operating System	
OS	Debian 11, Kernel 5.10.168
Internet	
Access authentication	APN, VPDN
Internet access	CHAP,PAP
Network Type	5G SA/NSA(Only China),LTE CAT 6(Only North America ) , LTE CAT 1
LAN protocol	ARP, Ethernet
WAN protocol	Static IP, DHCP
Network Protocol	
IP Application	ICMP, DNS, TCP/UDP, TCP Server, DHCP
IP Routing	Static routing
Security	
Multilevel user	Multi-level management rights
Data security	Firewall
	Secure Boot, TrustZone
Reliability	
Link Detection	Sends heartbeat packets to detect, auto redials when disconnected
Dual SIM Failover	Supports dual SIM failover
Embedded Watchdog	Device runs self-detection, auto recovers from malfunctions
Open Platform	
Development environment	Multi-programming language development platform
Cloud platform	AWS, Azure, Ali and other cloud platforms
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
Network Management	
Configuration	Web,SSH
Upgrade	Web,FOTA,DFOTA
Log	Support local system logs, remote logs, and important log power-off preservation
Configuration backup	Import and export configuration files
Remote management	InHand DeviceLive or HTTP, HTTPS, SSH, etc
DeviceLive Cloud	Supports cloud-based parameter configuration, container management, application and firmware management
Energy Management	
Eagle Energy Manager	Providing energy data visualization, energy efficiency analysis, energy-saving strategy setting, and operations management services

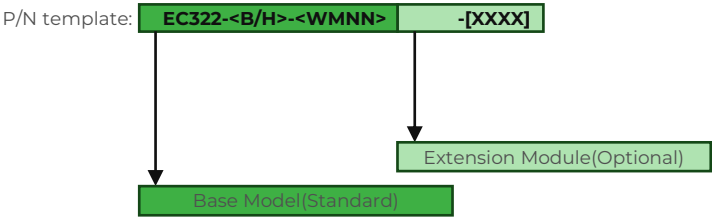
\*DSA: The DeviceSupervisor Agent (DSA), developed by InHand Networks, is a cutting-edge intelligence software designed to operate on Edge Computer products. It enables clients to quickly implement data collection, processing, protocol conversion, and cloud connectivity through a "zero code/low code"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

# Product Specifications

Hardware Specifications			
Item	EC322		
EMC			
Static	EN61000-4-2,level 3		
Radiation Electric Field	EN61000-4-3,level 3		
Pulsed Electric Field	EN61000-4-4,level 3		
Surge	EN61000-4-5,level 3		
Conducted Disturbance Immunity	EN61000-4-6,level 3		
Shock Wave Resistance	EN61000-4-12,level 3		
Power Frequency Magnetic Field Resistance	EN61000-4-8, horizontal / vertical 400A/m (>level 2)		
Physical Specs			
Shockproof	IEC60068-2-27	Vibration Resistance	IEC60068-2-6
Free Fall	IEC60068-2-32		
Certification			
CE, FCC, IC, PTCRB, Verizon, AT&T			

# Ordering Guide

## Description of selection



## Base Model

Base Model	<B/H>: GPS&Wi-Fi &BT&TPM	<WMNN>: Cellular Type & Module	Memory	FLASH	Ethernet Port	Serial Port
EC322-B-LQA3	NO	China CAT1 FDD:B1/B3/B5/B8 TDD:B34/B38/B39/B40/B41	1GB	8GB	2*10/100M	1*RS232/485 +1*RS485
EC322-H-LQA3	YES	China CAT1 FDD:B1/B3/B5/B8 TDD:B34/B38/B39/B40/B41	1GB	8GB	2*10/100M	1*RS232/485 +1*RS485
EC322-B-FQ53	NO	EMEA CAT1 FDD:B1/B3/B7/B8/B20/B28 TDD:B38/B40/B41 GSM:B2/B3/B5/B8	1GB	8GB	2*10/100M	1*RS232/485 +1*RS485
EC322-H-FQ53	YES	EMEA CAT1 FDD:B1/B3/B7/B8/B20/B28 TDD:B38/B40/B41 GSM:B2/B3/B5/B8	1GB	8GB	2*10/100M	1*RS232/485 +1*RS485
EC322-B-FQ33	NO	North America CAT1 FDD:B2/B4/B5/B12/B13/B25/B26 WCDMA:B2/B4/B5	1GB	8GB	2*10/100M	1*RS232/485 +1*RS485
EC322-H-FQ33	YES	North America CAT1 FDD:B2/B4/B5/B12/B13/B25/B26 WCDMA:B2/B4/B5	1GB	8GB	2*10/100M	1*RS232/485 +1*RS485
EC322-B-FQ39	NO	North America CAT6 FDD:B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B29/B30/B66/B71 TDD:B41/B48	1GB	8GB	2*10/100M	1*RS232/485 +1*RS485
EC322-H-FQ39	YES	North America CAT6 FDD:B2/B4/B5/B7/B12/B13/B14/B17/B25/B26/B29/B30/B66/B71 TDD:B41/B48	1GB	8GB	2*10/100M	1*RS232/485 +1*RS485
EC322-B-FQ73	NO	Australia & Latin America CAT1 FDD: B1/B2/B3/B4/B5/B7/B8/B28/B66 TDD: B38/B40/B41 GSM: B2/B3/B5/B8	1GB	8GB	2*10/100M	1*RS232/485 +1*RS485
EC322-H-FQ73	YES	Australia & Latin America CAT1 FDD: B1/B2/B3/B4/B5/B7/B8/B28/B66 TDD: B38/B40/B41 GSM: B2/B3/B5/B8	1GB	8GB	2*10/100M	1*RS232/485 +1*RS485

Extension Module(Optional)

[xxxx]	
P/N Code	Feature
NAAD	2x 4-20mA analog input+4x DI+4x DO
N44C	2x RS-485+1x CAN FD
N4CC	1x RS-485+2x CAN FD
N44D	2x RS-485+4x DI+4x DO
—	NONE

- The Optional Module interface definition is given in the user manual.

Example

Model:EC322-B-LQA3-N44D.

“EC322-B-LQA3” means Base Model.

“-N44D” means a optional module includes 2xRS-485, 4x DI and 4x DO.

For more information, please visit <https://www.inhand.com>

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.



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