



eCore

IoT Modular Controllers for Industrial Monitoring & Automation



Main features

- ✓ Embedded ESP32 module with FreeRTOS operative system integrated
- ✓ Power and accuracy to read and collect real-time data
 - ESP32 Dual-core 32-bit 240 MHz
 - 8 MB PSRAM Memory
 - 16 MB SPI Flash Memory
- ✓ RS-232/485, Ethernet and Wi-Fi 802.11 b/g/n 2.4 GHz communications
- ✓ GPRS, Digital & Analogue I/O, Energy metering and many more expansion modules
- ✓ BT/BLE Dual mode (optional)

Highlights



R&D costs down



Fast time-to-market



Maximum modularity



Brand customization



Verification and certification

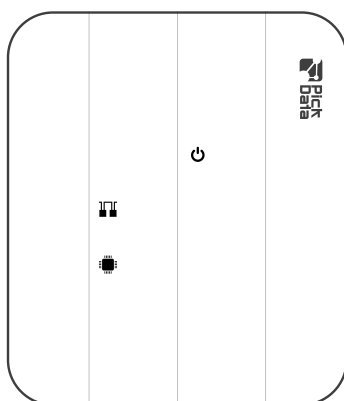


Extreme performance

Description

eCore is an OEM industrial controller which is equipped with an ESP32 control unit with a FreeRTOS operative system integrated. The device includes RS-232/485 serial communications, an Ethernet 10/100 port and Wi-Fi communications.

eCore has been designed to offer its maximum performance on industrial applications that require real-time monitoring and data sending to a cloud platform or a local server. In addition, eCore can be expanded with GSM/GPRS communications, Digital & Analogue I/O, Energy metering, PT-100 and many more modules.



LEDs

LED	Name	Description
	Power	Powered: Green
	RS-232/485	Data transmission: Red Data reception: Green
	CPU	Activity: Blinking blue

Main strengths

Monitoring, control and automation for professional use

eCore is a controllers product range based on ESP32 technology designed for professional use. It includes Wi-Fi, Ethernet and RS-232/485 communications, plus Modbus RTU/TCP and MQTT protocols libraries. Make the leap to the real-time developing your C++ applications inside a FreeRTOS operative system.



Modules for any kind of applications

eCore is an industrial device based on **eMOD technology**, the modular solution to create customized devices combining expansion modules. We offer modules of digital inputs, analog inputs, relays, PT-100 temperature inputs, three phase energy meter, GPRS, NB-IoT, LTE CAT-M1 and LoRaWAN. Create the perfect device for your Edge computing and Industry 4.0 applications and projects.



Industrial hardware ready for everything

Our mission is to provide the best hardware for industrial real-time applications and the greatest open software tools to allow you to easily develop your own application. You will be able to focus on your business software needs and forget about hardware. We have verified and certified it for you.

Integrated protocols

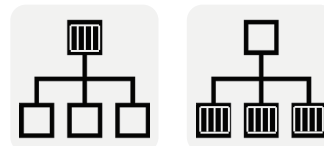
MODBUS TCP

MODBUS RTU

MQTT

¿Master or slave? ¡You choose!

eCore can work as Master of Modbus RTU/TCP devices, or even other **eCore's**, it can work as isolated Edge computing element with direct communication with a Cloud, or just become a Modbus slave created for specific needs of a project. Maximum modularity, from the hardware to the software.



The importance of real-time monitoring

Monitoring and control of industrial processes requires a continuous real-time measurement to be able to collect and fix any kind of systems without human interaction. **eCore**, thanks to its ESP32 CPU and its dedicated microcontrollers of each expansion module, is ready for this, and much more!



Industrial does not mean expensive

eCore offers high performance at a very competitive price. A industrial controllers product range designed for the most cost effective applications. The classic project with specific hardware needs and tightly adjusted costs? **eCore** is the solution.

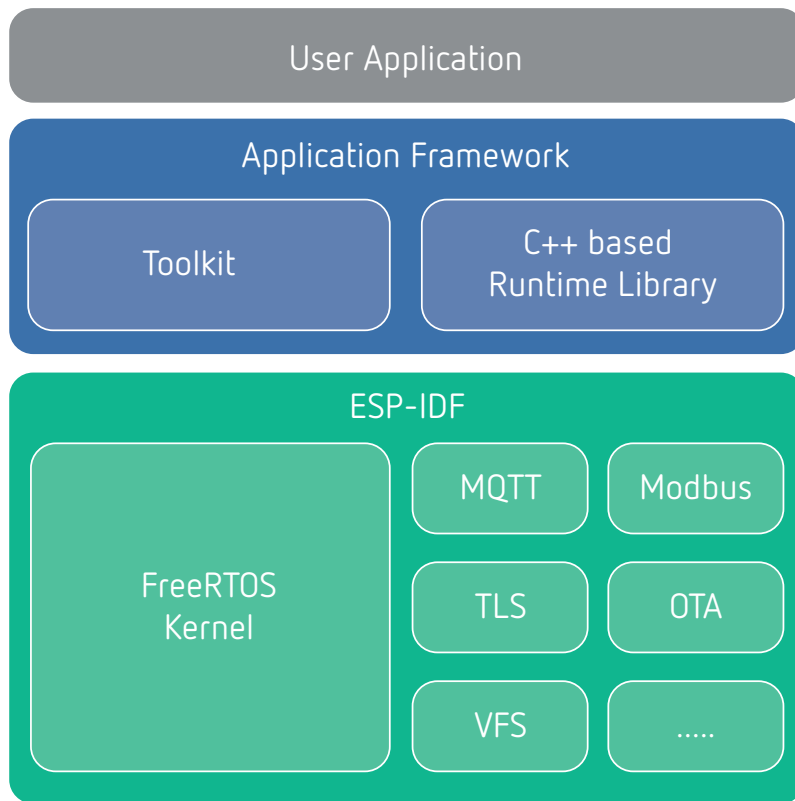


We care about branding

Rather than simply adding your logo into a product, you have the opportunity to increase your brand value, create trust and improve recognition. Being chosen your **eCore**, your expansion modules and being created your own software application, just one more detail, add your logo.



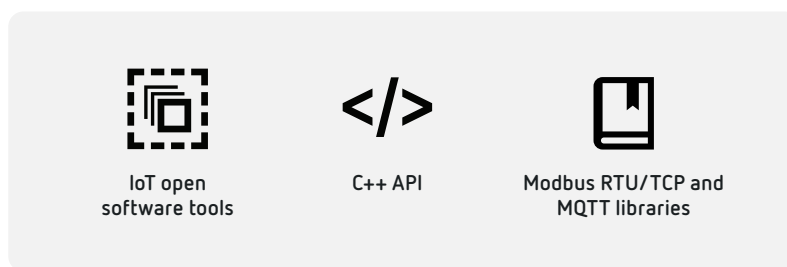
Software platform



Description

eCore is equipped with a software platform designed for easily developing industrial and edge computing applications. With **eCore** you can smoothly develop your application with our C++ API which will allow you to create the most accurate applications for real-time monitoring, control and automation. In addition, protocols such as Modbus RTU, Modbus TCP and MQTT are fully integrated in **eCore**, in order to facilitate the communication between the field and the cloud platform.

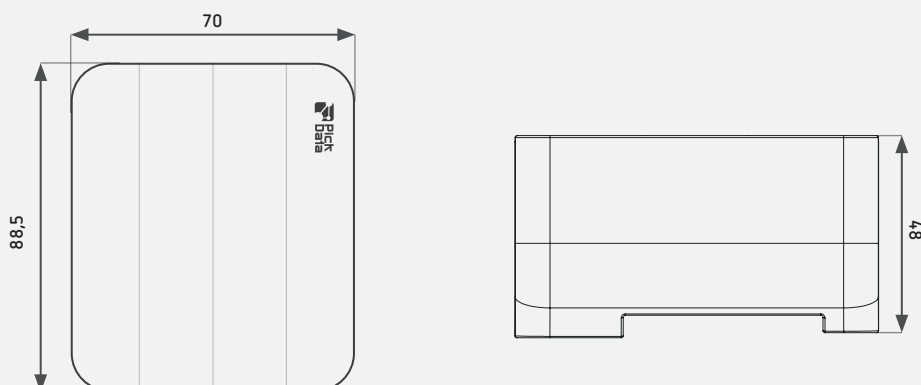
Main features



Technical features

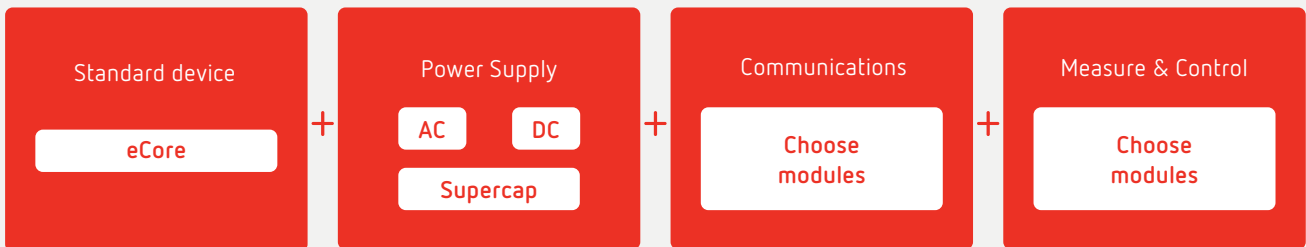
Category	Parameters	Value
Power circuit	Power supply	85 ... 264 Va.c. / 120 ... 300 Vd.c.
	Frequency	47 ... 63 Hz
	Consumption (a.c. / d.c.)	8.8 ... 10.5 VA / 6.4 ... 6.5 W
Control unit	CPU	ESP32 Dual-core 32-bit 240 MHz
	PSRAM memory	8 MB
	SPI Flash memory	16 MB
	Clock	RTC with supercap to backup clock time
Environmental conditions	Operating temperature	-20 ... +50 °C
	Relative humidity	5 ... 95 %
	Maximum working altitude	2000 m
Mechanical characteristics	Enclosure material	UL94 polycarbonate - Self-extinguishing V0
	Protection grade	IP20 (assembled)
	Dimensions (Width x Alto x Largo)	70 x 88.5 x 48 mm (4 DIN rail modules)
	Weight	120 g
	Mounting	DIN rail 46277 (EN 50022)
	Connectors	Pluggable terminals, max. wire section 1.5 mm ²
Electrical and safety features	Electric shock protection	Double-insulated class II
	Insulation	3 kVac
	Installation category	CAT III 300 V
Wireless interface	Wi-Fi	802.11 b/g/n (2.4 GHz)
	BT (optional)	BT/BLE dual mode
Serial interface	Type	RS-232 (full-duplex) / RS-485 (half-duplex). Galvanic isolation
	Baud rate	9600 ... 115200 bps
Network interface	Type	Ethernet
	Working speed	10/100 Mbps
Standards	Standards	UNE EN 61010-1, UNE-EN 61000-6-2, UNE-EN 61000-6-4

Dimensions



Create your own eCore

eCore is a DIN rail modular solution designed to create customized IoT devices in accordance with the specific needs of a project. The following list shows the expansion modules which can be added to your **eCore**. All the modules are compatible and can be combined; you just need to choose the ones that meets your project requirements.



Functional modules

GPRS

Main features

- ✓ Quad band GSM/GPRS
- ✓ 850 / 900 / 1800 / 1900 MHz
- ✓ Connector for SMA para external antenna
- ✓ Low cost CPU for edge computing applications (optional)

Technical features

Category	Parameters	Value
Mechanical characteristics	Dimensions (width x high x length)	17.5 x 88.5 x 48 mm (1 DIN rail module)
Radio interface	Type	Quad-band GSM/GPRS
	Frequency bands	850 / 900 / 1800 / 1900 MHz
	Antenna	External
	Connector	SMA

Supercapacitor

Main features

- ✓ Ideal to avoid a power supply failure of your monitoring
- ✓ Alarms sending in case of failure of the electrical supply
- ✓ Average battery life of 2 minutes
- ✓ Perfect to monitor critical applications

Technical features

Category	Parameters	Value
Mechanical characteristics	Dimensions (width x high x length)	35 x 88.5 x 48 mm (2 DIN rail modules)
Supercapacitor	Average lifetime	2 minutes

5 Digital inputs and 2 Power relays

Main features

- ✓ Configurable as dry contact (w/o internal tension) or wet contact (with internal tension)
- ✓ Inputs activation via external 0-24 VDC signal or internal ± 12 VDC power supply (for PNP or NPN sensors)
- ✓ Working modes: input, pulse counter and pulse width time counter. Pulse capturing up to 1 ms
- ✓ Maximum activation current of the relays of 6A

Technical features

Category	Parameters	Value
Mechanical characteristics	Dimensions (Width x High x Length)	17.5 x 88.5 x 48 mm (1 DIN rail module)
Digital inputs	Type, number and voltage	5 digital inputs 0-24 Vdc
	Minimum voltage and current	0 Vdc / 160 μ A
	Maximum voltage and current	30 Vdc / 12 mA
	Input sensitivity	0-7 Vdc: 0; 8-30 Vdc: 1
	Minimum pulse duration	1 ms
	Counters	Counters of 32 bits / Max. frequency 250 Hz
Relay outputs	Type	NO
	Max. operating parameters	6A, 250VAC, $\cos=1$, 70°C

10 Digital inputs

Main features

- ✓ Configurable as dry contact (w/o internal tension) or wet contact (with internal tension)
- ✓ Inputs activation via external 0-24 VDC signal or internal ± 12 VDC power supply (for PNP or NPN sensors)
- ✓ Working modes: input, pulse counter and pulse width time counter.
- ✓ Pulse capturing up to 250 Hz

Technical features

Category	Parameters	Value
Mechanical characteristics	Dimensions (Width x High x Length)	17.5 x 88.5 x 48 mm (1 DIN rail module)
Digital inputs	Type, number and voltage	10 digital inputs 0-24 Vdc
	Minimum voltage and current	0 Vdc / 160 μ A
	Maximum voltage and current	30 Vdc / 12 mA
	Input sensitivity	0-7 Vdc: 0; 8-30 Vdc: 1
	Minimum pulse duration	1 ms
	Counters	10 counters of 32 bits / Freq. max 250 Hz

7 Analog inputs and 2 Power relays

Main features

- ✓ Analog inputs with 4096 points of resolution
- ✓ Configurable as 0...10 V / 0...20 mA or 4...20 mA
- ✓ Maximum activation current of the relays of 6A
- ✓ Combine actuation with monitoring in the same module

Technical features

Category	Parameters	Value
Mechanical characteristics	Dimensions (Width x High x Length)	17.5 x 88.5 x 48 mm (1 DIN rail module)
Analog inputs	Number, type and range	7 analog inputs 0...10 V / 0...20 mA or 4...20 mA
	Transducer resolution	12 bits (4096 points)
Relay outputs	Type	NO
	Max. operating parameters	6 A, 250 Vac, cos=1, 70°C

12 Analog inputs

Main features

- ✓ Analog inputs with 4096 points of resolution
- ✓ Configurable as 0...10 V / 0...20 mA or 4...20 mA
- ✓ Ideal for applications of humidity, level and pressure monitoring
- ✓ Maximum accuracy with resolution of 4096 points

Technical features

Category	Parameters	Value
Mechanical characteristics	Dimensions (Width x High x Length)	17.5 x 88.5 x 48 mm (1 DIN rail module)
Analog inputs	Number, type and range	12 analog inputs 0...10 V / 0...20 mA or 4...20 mA
	Transducer resolution	12 bits (4096 points)

Three-phase energy meter

Main features

- ✓ Active and reactive energy, power, voltage, current, frequency and cos phi
- ✓ 4 quadrant measure including single and three phase parameters
- ✓ Precision of class 1 active and class 2 reactive
- ✓ Indirect measurement through current transformers. Split and closed core.

Technical features

Category	Parameters	Value
Mechanical characteristics	Dimensions (Width x High x Length)	35 x 88.5 x 48 mm (2 DIN rail module)
Measurement circuit	Current inputs	Indirect
	Metering capacity	1 Three-phase / 3 Single-phase circuits
	Current transformer	In / 1 A
	Voltage and current wire section	2.5 mm ²
Precision class	Precision	Class 1 active and class 2 reactive

Double three-phase energy meter

Main features

- ✓ Active and reactive energy, power, voltage, current, frequency and cos phi
- ✓ 4 quadrant measure including single and three phase parameters
- ✓ Precision of class 1 active and class 2 reactive measuring two three-phase or six single-phase circuits
- ✓ Indirect measurement through current transformers. Split and closed core

Technical features

Category	Parameters	Value
Mechanical characteristics	Dimensions (Width x High x Length)	35 x 88.5 x 48 mm (2 DIN rail module)
Signal relays	Current inputs	Indirect
	Metering capacity	2 Three-phase / 6 Single-phase circuits
	Current transformer	In / 1 A
	Voltage and current wire section	2.5 mm ²
Precision class	Precision	Class 1 active and class 2 reactive

8 Signal relays NO/NC

Main features

- ✓ Signal relays configurable as NO or NC
- ✓ Activation/deactivation time configurable
- ✓ Activation current up to 2 A
- ✓ Relays real time status on leds

Technical features

Category	Parameters	Value
Mechanical characteristics	Dimensions (Width x High x Length)	17.5 x 88.5 x 48 mm (1 DIN rail module)
Signal relays	Number	8 signal relays
	Type	NO or NC configured on demand
	Max. operating voltage	50 Vac/Vdc
	Max. activation current	2 A, 60 W, cos=1
	Min. signal duration	10 ms

12/24 Vdc Power supply

Main features

- ✓ Ideal for machinery applications
- ✓ Reset button configurable by software
- ✓ 12 & 24 Vdc power supply
- ✓ It replaces the 230 VAC power supply (default)

Technical features

Category	Parameters	Value
Power circuit	Power	9...36 Vdc
	Consumption	0.5...20 W
Mechanical characteristics	Dimensions (Width x High x Length)	17.5 x 88.5 x 48 mm (1 DIN rail module)
User interface	Button	Reset button

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