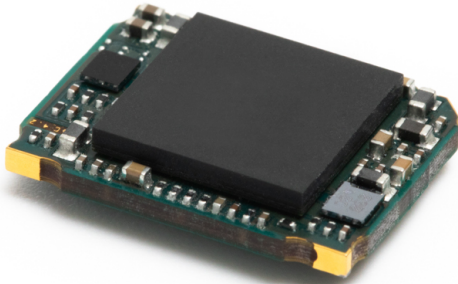# periCORE
Single Pair Ethernet communication module

The periCORE module serves as an Ethernet communication tool, specifically created for use with sensor and actuator devices. It enhances these devices by adding network functionalities in both hardware and software aspects, facilitating easy integration. This module transforms passive sensors and actuators into smart devices capable of processing data and responding to events. It comes with built-in, advanced network features like state-of-the-art security and efficient firmware management. Additionally, periCORE supports easy rebranding and customization of devices, allowing anyone to develop customized firmware using the available development kit.

Targeted Applications

- Industrial sensors
- Industrial control
- IoT / IIoT
- Remote sensor access
- Building automation

Key Features

- Fully qualified Industrial IoT module
- Firmware development framework
- Provided TCP/IPv6 stack
- Event-based minimal operating system
- arm Cortex®-R4 250MHz processor core
- 32-MBit flash memory
  for persistent storage
- Up to 3x 100BASE-T1 Single Pair Ethernet Phys (IEEE 802.3bw compatible)
- Integrated Ethernet switching core
- Compact form factor
- Operated with 24V
- Integrated 3V3 power supply
- patent-protected

Interfaces

- 2 x 100BASE-T1 Phy (IEEE 802.3bw)
- 1 x Combined 100BASE-T1/TX Phy
- 1 x RMII | SGMII
- 1 x MAC to arm processor core (Figure 1)
- 1 x UART
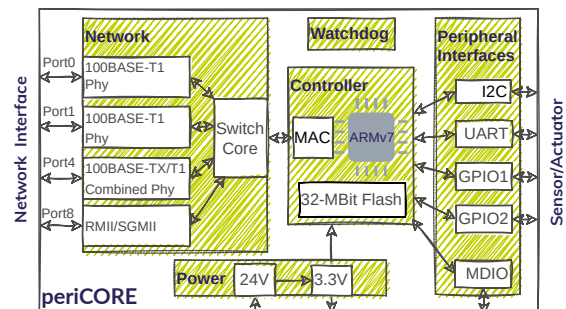- 1 x I2C (400 kHz ± 20 %)
- 2 x GPIO

Figure 1: periCOREs hardware blocks.

Operational Parameters

- Operating voltage: 24 VDC
- Power supply: 3.3 VDC (up to 100mA)
- Temperature range: -40°C to +85°C
- Power consumption: 0.6 W

Product Summary, rev: 5
2024-05-28

https://perinet.io
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Tel.: +49 30 863206 777

Perinet GmbH
Rudower Chaussee 29
12489 Berlin
Germany

Package

Dimensions: 16.7 x 13 x 3.9 mm (Figure 2)

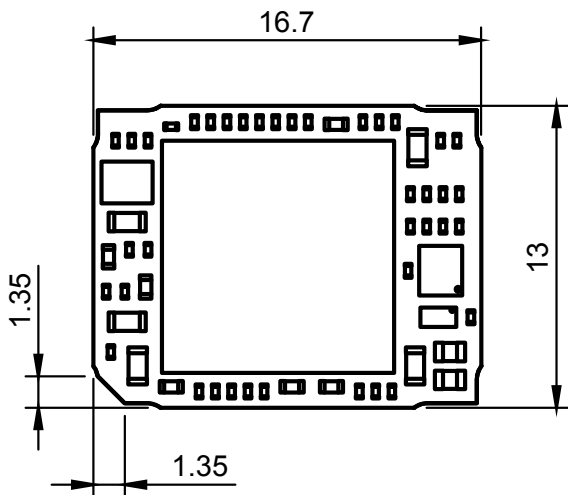**Mounting:** Solder pads, 73 LGA-Pads, Pattern 13 x 10, Pitch 1.27 mm

Figure 2: periCOREs dimensions in mm.

Compliance

- CRA ready
- RoHS 3 (EU 2015/863)
- WEEE (2012/19/EU)
- REACH

Security

- NIST compliant TLS implementation
- Role Based Access Control (RBAC)
- Certificate based client authentication
- AES encryption algorithm
- X.509 certificates and PKIX path validation
- Elliptic Curve Cryptography (ECC)

Software Library *libperiCORE*

- Rapid firmware development with *peri-CORE Development Kit* (see Figure 3)
- mDNS/LLMNR for name resolving
- DNS-SD for automated service discovery
- TCP/UDP endpoints
- TLS-based secure communication endpoints
- RESTful API
- Secure MQTT-client for publishing sensor values or subscribing to actuator commands
- HTTPs server including Web based UI
- Product lifecycle features
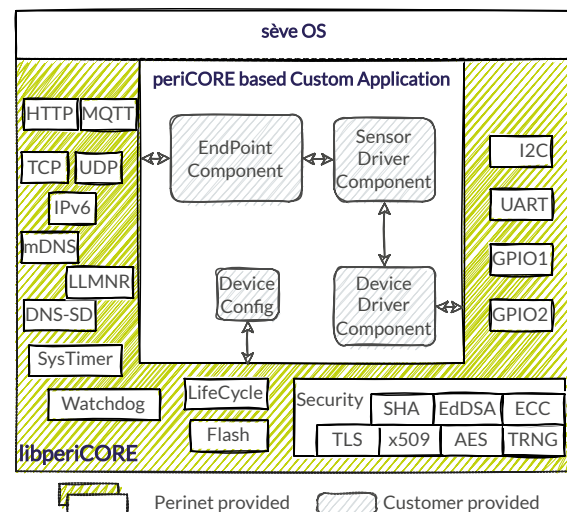- C++20 standard conform

Figure 3: The software architecture with Custom Application template, provided by Perinet.

Ordering Information

Ordering Code	Product Name	Description
PRN.000.001	periCORE	periCORE single pair ethernet communication module.
PRN.000.019	periCORE Development Board	Minimal firmware development setup.
PRN.000.020	periCORE Development Kit	Full featured firmware development setup.