Zerynth®

ZM1 Module

Zerynth IoT system-on-module designed for scalable, secure and connected IoT products.
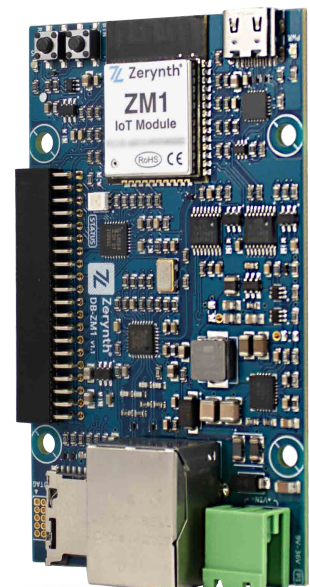
Technical Features

- **Dual-Core** 32-bit Module based on Xtensa® LX6 microprocessors, up to 600 MIPS.
- **2.4 GHz Wi-Fi-and-Bluetooth** combo chip.
- Adjustable Clock Frequency from 80 MHz to 240 MHz and Embedded 16 MB of SPI Flash.
- **SD** interface, **Ethernet,** High speed **SPI, UART, I2S e I2C and GPIO** capabilities.
- **Microchip ATECC608A** crypto chip to ensure high-standard security.
- **Secure boot and Flash encryption** capabilities.
- **RoHS, CE/RED, and FCC certified** (EU and US).
- Powered by Zerynth OS – efficient and easy to use, **Python enabled OS for IoT applications**.
- Zerynth Cloud is seamlessly integrated with all Zerynth hardware

From Prototyping to Mass Production

The **ZM1-DB** is a flexible and modular development board that includes the ZM1 IoT module integrated with Zerynth's Cloud software. It has the following features:
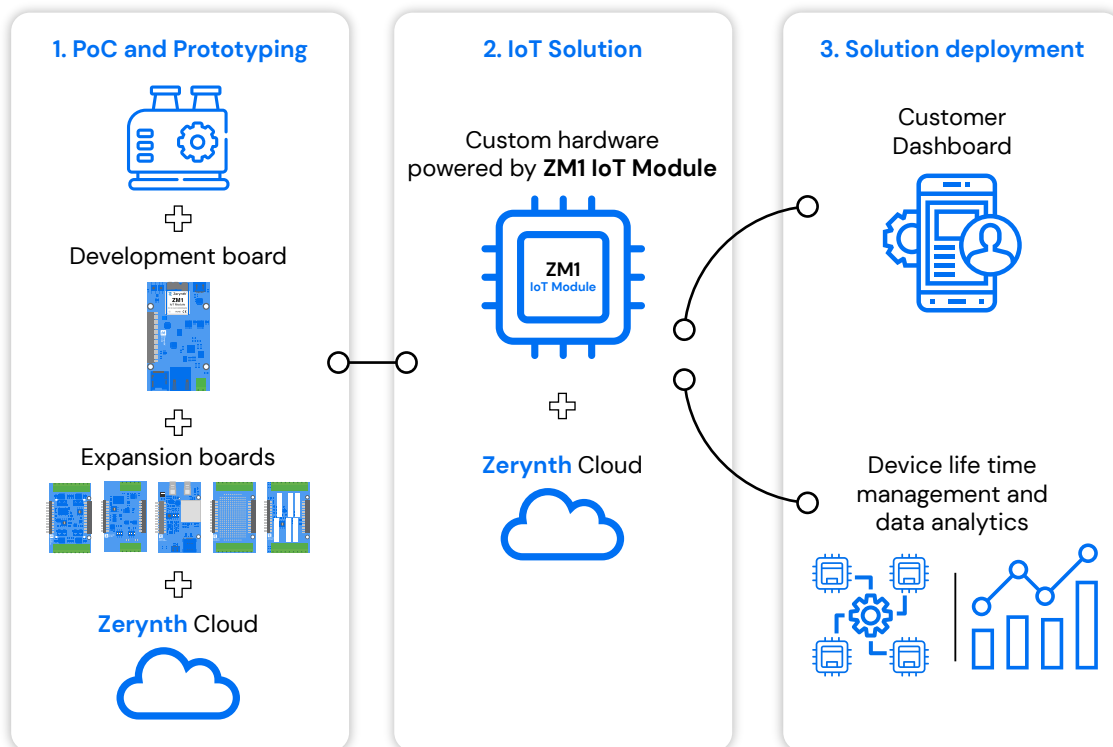
- It allows the creation of proof-of-concept and the prototyping of new products.
- It allows an agile connection with Zerynth expansion boards, which add new features based on actual needs.

Delivering IoT applications for all business needs.

IoT Products Journey

From prototyping to mass production in a flexible, scalable and efficient way.

1. PoC and Prototyping

Development board

Expansion boards

Zerynth Cloud

2. IoT Solution

Custom hardware powered by **ZM1 IoT Module**

ZM1
IoT Module

Zerynth Cloud

3. Solution deployment

Customer Dashboard

Device life time management and data analytics

ZM1 is programmable via Zerynth SDK

Zerynth SDK Features:

- **Secure and Multithreaded** preemptive priority-aware Real-Time OS.
- **Supports Python** high-level features, plus optimized for embedded usage together with low-level **C integration** for bare metal performance.
- **Optimized connectivity stack** for multiple protocols.
- **Optimized support** for industrial communication protocols, sensor channels, and relays.
- **Optimized Support** for **Machine Learning, A.I applications, and Blockchain transactions.**

Zerynth Cloud

The platform, designed for IoT applications, is seamlessly integrated into all Zerynth hardware. It is composed of:

• **Device Manager** to securely provision, monitor, and remotely manage IoT devices at scale; available with WiFi/LAN or cellular connectivity.
• **Data Storage** service for data storage, export, and integration.
• **Dashboards** for clear and dynamic reports to track all KPIs from a single interface and get real–time alerts.
• **Connectors** for third–party integrations.

Zerynth Cloud is also available as an On–premise SaaS.

ZM1 Applications

ZM1 simplifies the development of IoT applications such as:

Real–time remote monitoring and optimization
Real–time monitoring of product key parameters and system functionality.

Smart IoT enabled devices and products
Develop connected, smart security devices, mobility and Industrial IoT products.

Environmental parameters monitoring
Monitor environmental parameters easily through our low–code OS.

Data visualization and analytics
Seamless visualization through the Zerynth Dashboard.

Asset monitoring
Monitor asset parameters and make informed decisions based on asset data.

Case Studies

Seares has successfully transformed their product line to IoT by providing customers with a smart solution capable of real-time recording and monitoring of their marine system.

| <6 | Months implementation | –10% | Development time | +12% | Revenue increase |

Results

• The Zerynth team helped Seares release **Seadamp Plus**, an IoT-enabled anchoring mechatronic damping system for floating docks/breakwaters. It is built using the **Zerynth ZM1 Module** and **Zerynth Cloud**.

• The system produces energy from wave induced motion and **provides real-time information via GSM**.

• **The Seadamp Plus provides Real-time Monitoring for key parameters** such as the voltage on the batteries, frequency of the motors, the total amount of energy recovered, or the rotation.

Ergsense released DTECTS, an IoT-enabled solution designed for real-time monitoring of power consumption, in a cost-effective way.

| >35% | Energy waste identification | 40% | Machine Downtime Reduction | 10.000 times | Optimized Data Space |

Results

• **DTECTS** is a conventional three channel power meter adaptable to many different load configurations, **it reduces the data footprint dramatically and performs real-time monitoring of power consumption.**

• Ergsense developed DTECTS using the **Zerynth ZM1 Module** and it is connected directly to the Ergsense Cloud by **Zerynth Cloud**.

About us

Zerynth helps companies easily get their industrial processes digitized and bring innovative connected products to the world. The Zerynth IoT Platform is a full set of hardware-software tools designed by IoT experts to enable digital transformation in a fast, flexible, and secure way.

Founded in 2015, Zerynth has grown steadily. Today Zerynth has 35+ team members with deep IoT expertise and industry knowledge with over 100 customers across many industries. Headquartered in Italy, Zerynth provides support globally thanks to an extensive network of partners in Europe and pan-global locations.

Request your demo today!

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