

ZM1-DB

IoT Development Board

The ZM1-DB is a powerful, efficient, and secure development board that facilitates the development of **Industrial IoT solutions**.

Technical Features

- **Mounts ZM1 IoT Module:**
 - **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).
 - **Zerynth Cloud** is seamless integrated with all Zerynth hardware.
- Ethernet and SD card support.
- Flexible and modular development because of the zBUS.
- USB-C connection.
- 9-24V industrial grade power supply.
- DIN rail mountable.
- Powered by **Zerynth OS**: easy to use, multithreaded Python development environment.

Key Functionalities



SEAMLES CLOUD INTEGRATION
Visualize your data in minutes.



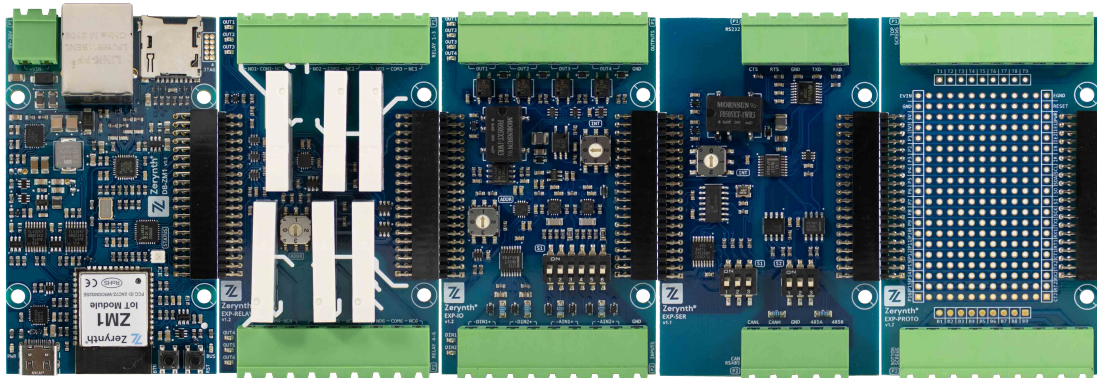
HARDENED SECURITY
Industry-Leading security and data protection.



SCALABILITY AND FLEXIBILITY
Integration with expansion modules and easy transition to production.

Modular Platform

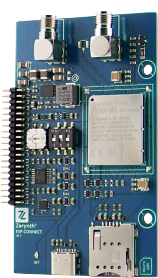
zBUS – a standard that is used to interface boards and sensors in an efficient way. The development boards can be paired with several expansion boards using DIN rail enclosures having a width of 3, 6, 9 or 12 DIN modules.



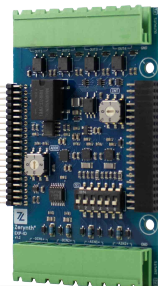
Zerynth Expansion Boards

Connect expansion boards with the ZM1-DB and add additional functionalities of your IoT application, including:

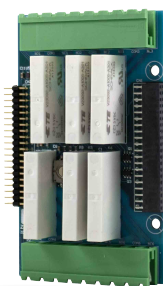
- Cellular connectivity & GPS localization.
- Relays.
- Additional analog and digital IO channels.
- Industrial analog sensor channels.
- CAN and 232/485 serial interfaces.
- Prototyping Board for connecting sensors and modules.



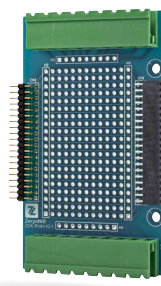
EXP-CONNECT



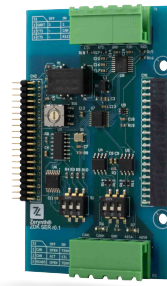
EXP-IO



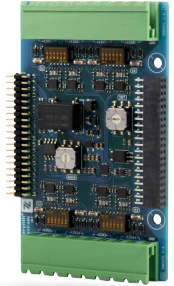
EXP-RELAY



EXP-PROTO

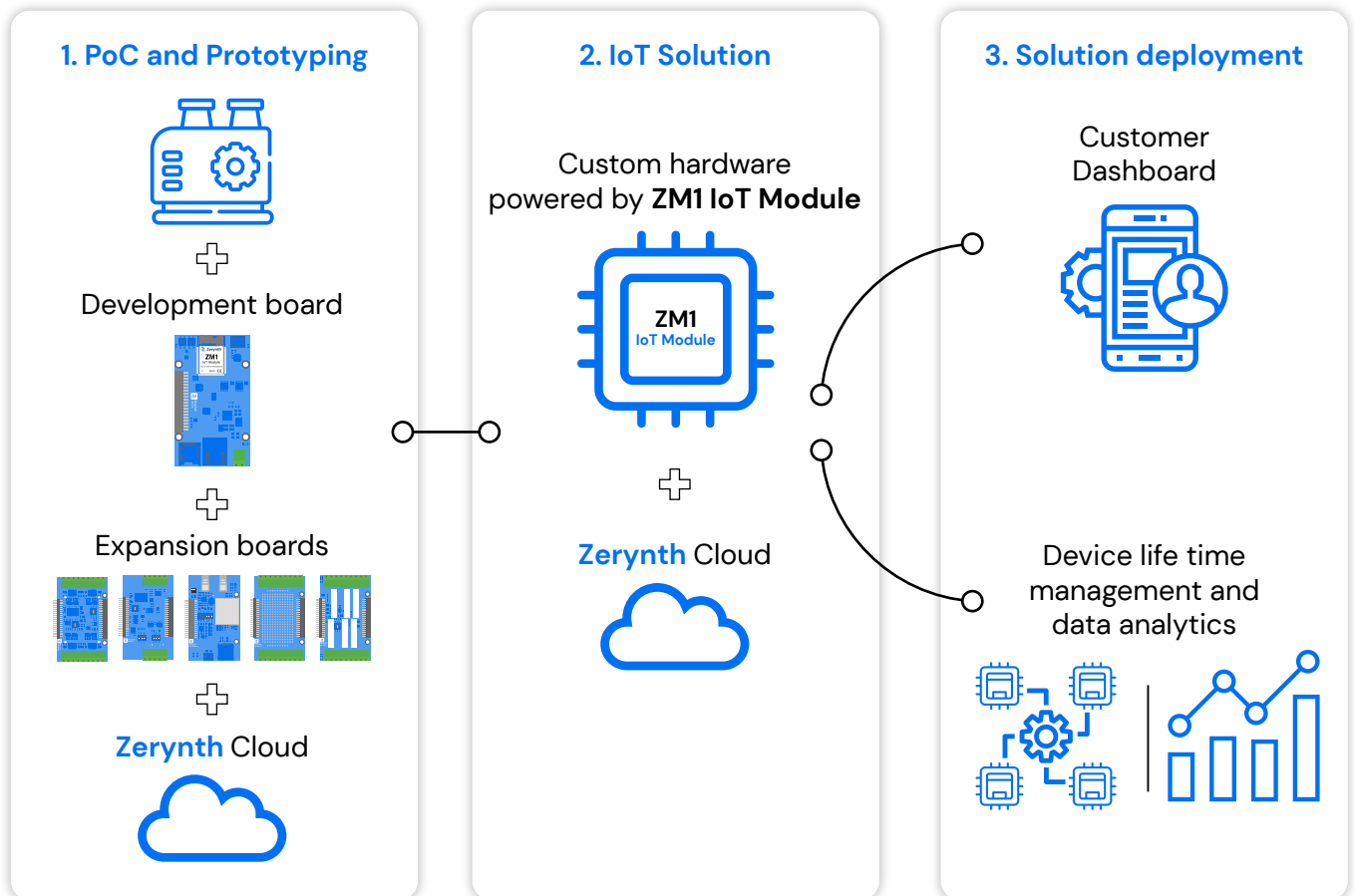


EXP-SER



EXP-AIN

IoT Solution Journey



Software Development Kit

Features:

- **Secure and Multithreaded** preemptive priority-aware Real-Time OS.
- **Supports Python** high-level features, plus it's optimized for embedded use 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 receive real-time alerts.
- **Connectors** for third-party integrations.

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





Case Studies



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 is connected directly to the Ergsense Cloud by **Zerynth Cloud**.
- Ergsense has successfully completed the creation of an IoT solution that allows you to remotely view data at any time using specially designed dashboards. Using proprietary data packaging, Ergsense can send reliable and useful data from relatively small sensors to customers via Wi-Fi, cellular or LoRA.



JUUL developed a controlling system to test products and detect defects using Zerynth's firmware / hardware

<1

Month
implementation

10

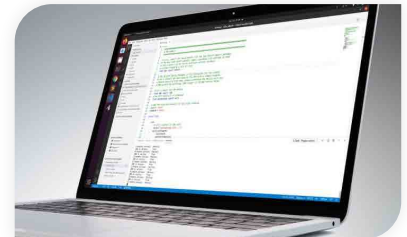
Sensor used at
the same time to
acquire data

12 ms

Sensor data
acquisition over time

Results

- JUUL's main challenge was to create a control system for testing current and new products for defects or malfunctions with deterministic RTOS, and the ability to develop time-critical tasks, in C code, as needed while still having the option to write less critical portions in Python.
- Zerynth OS was especially customized for Juul Labs to acquire data in a fast and easy way. Even with 10 sensors working simultaneously, the data acquisition time takes no more than 12 milliseconds.
- Juul Labs successfully created a modular tool, to test equipment data logs, that has been accurate in terms of handling large data streams. Timed processes, from their custom tools, have also been very accurate in handling large streams of data.



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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