ENAiKOON IIoT M2-M1

A Versatile, "Made in Germany" IIoT Device

Wi-Fi / BLE / LoRa, LoRaWAN / Mobile / Ethernet

M2-M1 Overview

The ENAiKOON IIoT M2-M1 device is a robust, IP67-rated, multi-purpose IIoT device designed and manufactured in Germany.

With its two ESP32 processors, it offers powerful computing performance for a wide range of applications.

Key Features:

Versatile Connectivity:

- Wireless:
  Wi-Fi, LoRa/LoRaWAN, BLE,
  Cellular (GPRS, NB-IoT, LTE Cat-M)
- Wired:
  Ethernet, CAN bus, RS232, RS485, 1Wire, S0

Sensor & Device Compatibility:

Connects to a wide range of sensors, actuators, and intelligent third-party devices

Location Tracking:

Integrated GNSS receiver (GPS, Galileo, BeiDou) for precise location tracking

AGPS support

Sensors:

- Temperature sensor
- Humidity sensor; requires appropriate housing
- Reed relay
- 3-axis G-sensor for motion detection and wake-up

Signalling & Alerting:

- Buzzer <80 dBm
- 6 LEDs

Data Handling:

- Direct cloud communication with
  - ginstr web
  - ENAiKOON inViu pro
- Gateway communication with LoRa / BLE sensors for extended reach
- Large internal memory for data storage

Power Efficiency:

- Deep sleep mode with ultra-low power consumption
  - <160 µA internal battery,
  - <5 mA @12V external battery
- Supports rechargeable Li-Ion batteries, rechargeable LiPo batteries and primary Li-SOCI2 batteries

Environmental Robustness:

IP67 waterproof and dustproof

Security:

- Encrypted data transmission with SSL/HTTPS for enhanced security
- compliant with European data protection regulations

Customization:

- Configurable inputs and outputs for diverse applications
- Programmable with any Arduino IDE
  e. g. PlatformIO
- Customizable firmware for specific requirements

Applications:

The ENAiKOON IIoT M2-M1 device is ideal for a wide range of IIoT applications, including:

- Industrial IoT
- Asset Management
- Tracking and Tracing
- Smart Cities
- Smart Agriculture and Forestry

Benefits:

- "Made in Germany" quality, reliability and support
- Strong performance and versatility
- Enhanced security and data privacy
- Ease of integration and customization
- Ideal for both indoor and outdoor deployments

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M2-M1 Device specification

18 terminals for wires:

VCC	RS485-B
GND	5V
S0 (counter)	1Wire
CAN-H	DigIn/DigOut 4
CAN-L	DigIn/DigOut 3
RS232-R	DigIn/DigOut 2
RS232-T	DigIn/DigOut 1
DOUT5	Dry contact input 3.3V
RS485-A	Dry contact input 3.3V

DigIn/DigOut 1-4 configuration options:
- DigIn
- DigOut
- interrupt in
- PWM
- AnIn

2 Processors:
- ESP32-WROOM (Arduino compatible)
- ESP32-Pico

Memory:
- RAM: 520 KB + 520 KB
- Flash: 16 MB + 4 MB
  - 6 MB for the firmware of ESP32-WROOM processor
  - 10 MB for data (approx. 10.000 sensor readings)
  - 4 MB for firmware of ESP32-Pico processor

Radio modules:
- Wi-Fi 2.4 GHz: built into the ESP32-WROOM processor
- BLE: built into the ESP32-WROOM processor
- LoRa: SX1276 Ra-01H with 868 MHz / 915 MHz
  LoRaWAN Support: v1.0.2 and v1.0.3
- GSM / GNSS:
  SIMCOM SIM7000G, Nano-SIM
  GPRS, NB-IoT, LTE Cat-M

Antenna connectors:
- Internal antennas for all radio modules.
- IPEX / SMA connectors for ext. antennas:
  - Cellular
  - LoRa
  - Active GNSS

If mounted in a housing, the device comes with SMA connectors

Ethernet connector with PoE support

Connectors on board:
- Backup battery
- RTC battery
- SuperCap
- 5V Vin (max. 5.5V)

GNSS (location):
- GPS
- Galileo
- BeiDou

Real-time clock:
- PCF8563
- Long term stable
- Separate coin cell backup battery

Sensors:
- Temperature
- Humidity
- Reed relay
- 3-axis G-sensor

Temperature sensor:
- SHT41
- Temperature range: -40 °C ~ +80 °C
- Accuracy: up to 0.1 °C

Humidity sensor:
- SHT41
- Relative humidity accuracy: up to +- 1.0 %RH
- Operating range: 0 ~ 100 %RH

Buzzer with <80 dB

6 LEDs:
- Programmable
- LEDs can be enabled / disabled

Ultra-low power mode:
- Max. 160 µA @ 3.6V
- All relevant components can be switched on/off thru software individually

Power consumption measurement:
- allows prediction of remaining battery lifetime

Motion sensor:
- KXTJ3-1057

Watchdog:
- automatic device restart in case of software problems

Power supply:
- 6 ~ 36 VDC

Battery:
- Li-Ion battery
  - 650 mA/h
  - Rechargeable above 0 °C
- Support for
  - rechargeable Li-Ion batteries
  - rechargeable LiPo batteries
  - Primary Li-SOCI2 batteries

Connection cable:
- 7 wires, open cable end
- 1 meter

Programming cable connectors:
For the installation of firmware and configuration file
- on ESP32-WROOM processor
- on ESP32-Pico processor

Files can also be uploaded to the board over-the-air (OTA)

Operating temperature:
- -40 °C ~ +80 °C

Housing:
- IP67, semi-transparent
- 130 x 80 x 35 mm
- Wall mountable

Programmable with any Arduino IDE
- like PlatformIO

Firmware update:
- over the air (Wi-Fi, Mobile, Ethernet)
- thru programming cable

Server integration:
- ginstr web
- ENAiKOON inViu pro integration

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