Industrial IOT datasheet

Overview

The Industrial IoT Kit provides a complete hardware platform for developing industrial IoT applications. The kit features an industrial IoT Core, industrial sensors and switches and Enclosures.

4ZeroBox is a modular hardware electronic unit that simplifies the development of Industrial IoT applications allowing rapid integration with sensors, actuators, and Cloud services.

The package includes

- 4ZeroBox: Industrial IoT device for Acquisition, Monitoring and Control of Industrial Machines.
- Industrial Temperature Sensor
- Industrial Current Sensor
- Reed Sensor
- RS485 converter
- DIN power supply

Components Guide

4ZeroBox

4ZeroBox mounts a powerful ESP32 Microcontroller by Espressif Systems (240MHz, 16Mb Flash, 512KB SRAM) and provides many onboard features like: a DIN-rail mountable case with industrial grade sensor channels, support for Wi-fi, Bluetooth, Ethernet, LoRa, CAN, RS485, RS232, SD Card, JTAG, I2C, SPI; the crypto element ATECC608A from Microchip has been integrated to handle secure connections in an easy manner, exchanging certificates and keys, encrypting messages over TLS protocol and using secure authentication procedures.

4ZeroBox lets the user choose the best installation strategy, adapting it to the specific industrial environment. While allowing to acquire data from the PLC via digital ports - filtering the data onboard to avoid bandwidth overload and waste of cloud resources - it also enables the installation and management of external sensors, for a full Industrial IoT experience.
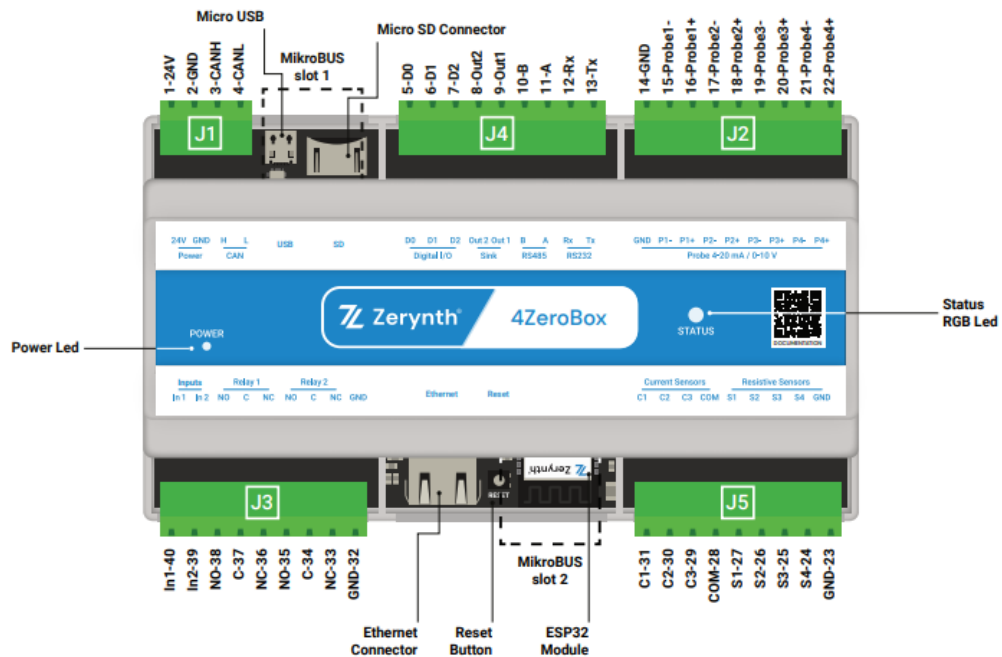
Industrial Temperature Sensor

The Carel passive NTC temperature probe has a length of 15mm and a diameter of 6mm. Once the probe is connected to the controller, it provides a resistance value that is converted to temperature by a controller. These probes are used mainly in HVAC/R applications and can accommodate all your needs in different installations.

Current Sensor

Opening-type current sensors for electronic measurement of alternating current.
Galvanic insulation between primary and secondary circuits.
8 mm maximum conductor diameter for TT 50-SD model and 16 mm for TT100-SD model.
1 metre length pre-stripped cable.
Applications: measurement of active power and calculation of energy consumption.

Attribute	Value
Current Ratio	50:1
Bore Size	8mm
Input Current	50A
Output Current	16.66 mA
Overall Height	43mm
Overall Width	36.5mm
Overall Depth	31.5mm
Minimum Temperature	-25°C
Maximum Temperature	+70°C
Mounting Type	Cable Tie
Series	TT

RS485 Converter

FTDI Chip USB-RS485 Convertor Cables.

USB to UART convertor cables have RS485 level UART signals plus offer you a quick and simple path connecting to an RS485 interface to USB. The USB connection has a built-in, small circuit board, featuring the FT323RQ UART interface IC handling all the USB signalling and protocols. Also included within are 2 LED's providing a visual of the traffic flow received and transmitted. One end of the cable is supplied bare showing the tinned wire connections ready to be customised as required. Cables are available in various lengths, USB compliant, USB powered and have UART data transfer rate of 3 Mbaud.

Features and Benefits.

• USB to UART Cable.
• RS485 level UART signals
• USB Connection with built-in circuit board.
• FT323RQ UART interface IC handling.

• 2 LED displaying traffic flow.
• Cable at one end bare tinned wire.
• USB powered.
• USB compliant.
• UART Data transfer rate 3 Mbaud.
• Low USB bandwidth consumption.
• Operating temperature -40°C to +85°C.
• RoHS Compliant.
• CE Certified
• FCC Certified.

Typical Applications.

• USB to serial RS485 level converter.
• Upgrading legacy peripherals to USB.
• Interface microcontroller UART or I/O to USB.
• Interface FPGA or PLD to USB.
• USB Instrumentation PC interface.
• USB Industrial control.
• USB password protected file transfers.

Getting Started

- Download the Zerynth SDK from our website: https://www.zerynth.com/zsdk/
- Install the Zerynth SDK and open the VSCode application;
- Register a Zerynth account and log-in;
- Connect the Development Board to the PC using the USB Type-C Cable;
- Clone the "Hello Zerynth" example;
- Uplink the project;
- For more details about the installation and demos, please visit:
  https://docs.zerynth.com

Warnings and Safety Use

Important: Keep these information for future reference. for full set up and installation instructions please
visit docs.zerynth.com/

Warnings

- All external power supplies used with Zerynth boards must comply with the relevant regulations and standards applicable in the country of use and must provide a voltage between 9 and 36 VDC.
- The relays on-board can switch loads up to 250VAC 10A through its screw contacts (C, NO, NC). Those lines must be protected with 10 amps fuses or similar devices to limit the current.
- Hereby, Zerynth srl declares that the radio equipment mounted on 4ZeroBox is in compliance with Directive 2014/53/EU (RED). The full text of the EU declaration of conformity is available at the following internet address: https://www.zerynth.com/download/20248/
- The manufacturer cannot guarantee compliance with the RED directive if the end user uses custom circuits other than those supplied by Zerynth (used in conformity tests).
- The 4ZeroBox that requires CE marking has been tested and meets the essential requirements set by the Directives: 2014/30/EU (EMC), 2014/35/EU (LVD), 2011/65/EU (RoHS). The declaration of conformity (DoC) can be downloaded from the website https://www.zerynth.com/download/20248/
- All Zerynth boards have undergone compliance testing for conducted and radiated emissions meeting the requirements of the following standards: FCC Part 15 B and IC ICES-003.
- Any device or component connected to one of the screw connectors must comply with the electrical characteristics defined in the specifications described in the complete manual to ensure that the performance and safety requirements are met.
- Each cable used to connect other devices or components to the Zerynth boards must be less than 300 cm long and must offer adequate insulation and operation so that the appropriate performance and safety requirements are met.

Instructions for safe use

- Do not expose this product to water or moisture and do not place it on a conductive surface while it is operating.
- Do not expose this product to excessive heat sources which could cause it to operate outside the permitted temperature range defined in the specifications (-40, +85 °C).
- Be careful when handling the product to avoid mechanical or electrical damage to the printed circuit board and connectors.
- If a board looks damaged, do not use it.
- Do not touch the printed circuit board when it is powered and never operate on live electrical parts.
- The printed circuit board must not come into contact with conductive objects when it is powered.

- Discharge static electricity from your body and touch only the edges of the board to minimize the risk of damage from electrostatic discharge.

Waste Electrical and Electronic Equipment (WEEE) Symbol

The use of the WEEE symbol indicates that this product/board may not be treated as household waste. By ensuring this product/board is disposed of correctly, you will help protect the environment. For more detailed information about recycling of this product/board, please contact your local authority, your household waste disposal service provider or the shop where you purchased it.

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