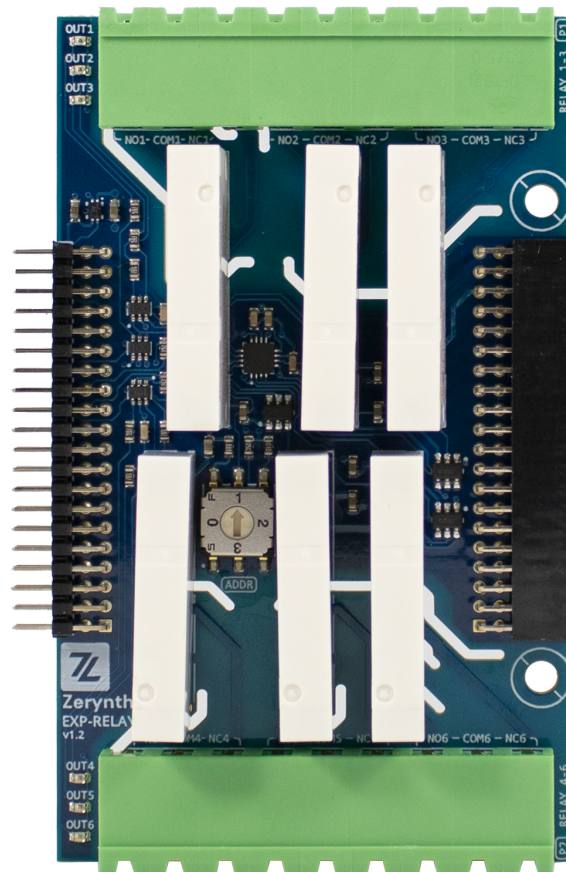


EXP-Relay User Manual



For more details, visit: www.zerynth.com

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overview

The **EXP-RELAY expansion board** features 6 General Purpose Relays rated at 6A 250VAC. The board enables developers to control motors, fuel pumps, industrial applications.

Zerynth expansion boards work seamlessly with all of the Zerynth Development boards. Combined, they can act as a Development Board for prototyping a Product, and a core for industrial applications.

The zBUS allows connection in a cascade of different add-on modules to create specific industrial applications that fit into a DIN-RAIL case.

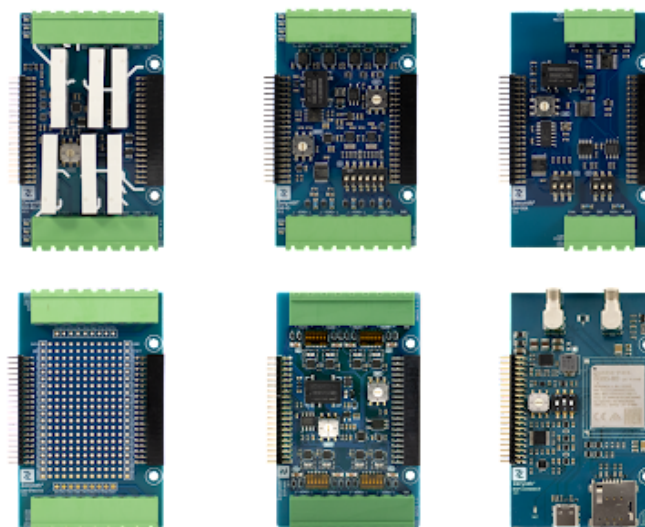
Modular Expansion System

Zerynth Development boards offer a game-changing way of connecting and adding functionalities to your application in a simple and easy way.

The development board offers a modular expansion system that adds expansion boards through the connectors on the board (zBUS).

Expansion boards vary in features and functionality. Currently, Zerynth offers :

- **EXP-AIN:** Expansion board with 8 Industrial analog input channels
- **EXP-CONNECT:** GSM-NB-IoT and GPS enabled expansion module.
- **EXP-IO:** Industrial input/output board with 4 solid-state relays, 2 analog channels (4-20mA/0-10V/NTC/current clamp) channels, 2 opto-isolated digital inputs
- **EXP-RELAY:** Expansion board with 6 Electromechanical power relays.
- **EXP-SER:** Serial Communication board with : CAN, RS232 and RS485 interfaces.
- **EXP-PROTO:** Prototyping board for connecting and testing different types of sensors and devices.



Screw Description

P1 - Upper screw terminal		
Screw Number	Symbol	Description
1,2,3	NO1, COM1, NC1	Normally open terminal,COM and NC terminal of relay #1
4,5,6	NO2, COM2, NC2	Normally open terminal,COM and NC terminal of relay #2
7,8,9	NO3, COM3, NC3	Normally open terminal,COM and NC terminal of relay #3

P2 - Lower Screw terminal		
Screw Number	Symbol	Description
10,11,12	NO4, COM4, NC4	Normally open terminal,COM and NC terminal of relay #4
13,14,15	NO5, COM5, NC5	Normally open terminal,COM and NC terminal of relay #5
16,17,18	NO6, COM6, NC6	Normally open terminal,COM and NC terminal of relay #6

Technical Specifications

Environmental Conditions	
Temperature	-40 to +85 °C
Humidity	Max 80% not condensing
Storage Temperature	-40 to +85 °C
Degree Protection	< IP40

Relay Ratings

Contact rating	6A 250VAC / 30 VDC
Max switching Voltage	400 VAC / 125 VDC
Max switching Current	6A
Max switching Power	1500 VA / 180 W
Coil Power	5 VDC to 24 VDC: Approx 170 mW 48 VDC, 60 VDC: Approx. 210 mW

DIP Switches

Rotary Switch SW1 : Chooses the address of port expander on-board. Enable multiple boards to be connected simultaneously.

Position	Address
0	0x10
1	0x11
2	0x12
3	0x13

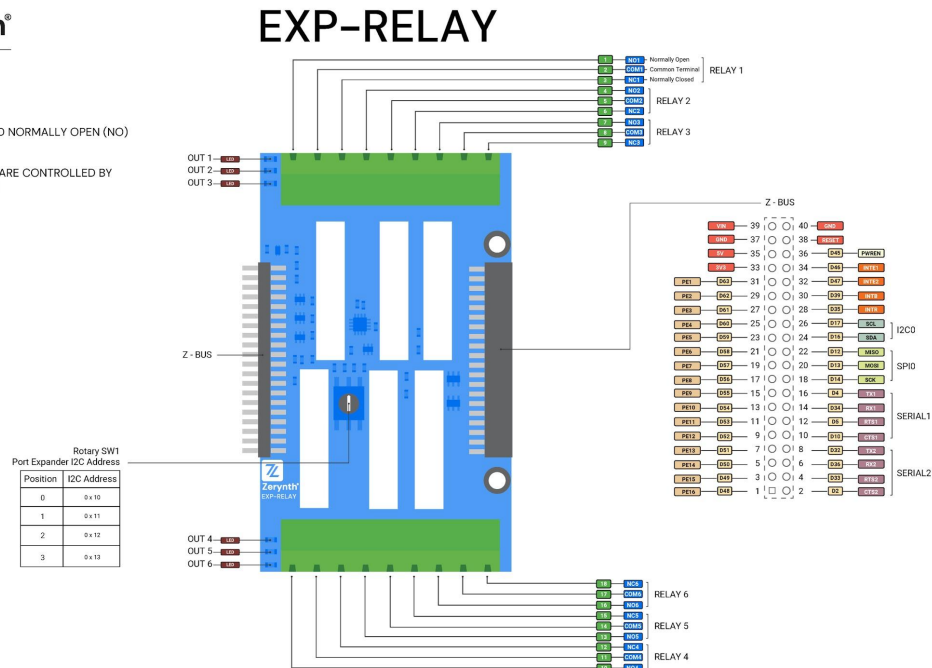
Power Supply: The board is powered by the 5V internal signal from the ZM1 Development board.

Pin Map

Zerynth
PINOUT DIAGRAM

NOTE:
OUTx LED FOLLOWS RELATED NORMALLY OPEN (NO)
RELAY STATUS

PINS FOR RELAY SWITCHING ARE CONTROLLED BY
ON-BOARD PORT EXPANDER



LED: The EXP-RELAY has 6 LEDs. Each relay has a dedicated LED that signals its state.

Note: ADS7128 is driven with I2C at the selectable address 0x10, 0x11, 0x12, 0x13

- AIN0 / GPIO0 controls OUT4
- AIN1 / GPIO1 controls OUT1
- AIN2 / GPIO2 controls OUT6
- AIN3 / GPIO3 controls OUT5
- AIN6 / GPIO6 controls OUT3
- AIN7 / GPIO7 controls OUT2

The interrupt pin is not connected as they are all output pins.

NOTE: The pins are out of order to facilitate routing and isolation on the PCB

zBUS Pin Description

PIN-Name	Description
EVIN	External power supply voltage (9-36V)
RESET	Reset pin, Active low.
PWREN	enable/disable the power in the zBUS
5V	Regulated 5V power supply
INTE1	Configurable interrupt for DB-ZM1 on-board port expander.
3V3	Regulated 3.3V power supply.
INTE2	Configurable interrupt for DB-ZM1 on-board port expander.
PE1-16	Digital I/O pins connected to ZM1 on-board Port Expander
INTB	Not Connected for DB-ZM1
INTR	Native Interrupt: user configurable
SCL	I2C Serial Clock
SDA	I2C Serial Data
MISO	SPI Master Input Slave Output
MOSI	SPI Master Output Slave Input
SCK	SPI Serial Clock
TX1	UART/USART 1 Transmit Data
RX1	UART/USART 1 Receive Data
RTS1	UART/USART 1 Request To Send
CTS1	UART/USART 1 Clear To Send
TX2	UART/USART 2 Transmit Data
RX2	UART/USART 2 Receive Data
RTS2	UART/USART 2 Request To Send
CTS2	UART/USART 2 Clear To Send

Software

Zerynth SDK provides software libraries for each board, alongside API documentation and examples. Please check the Hardware section for more information.

<https://docs.zerynth.com/latest/hardware/>

Zerynth SDK

Zerynth SDK is the official development framework for Zerynth hardware. It includes a compiler, device drivers and libraries drivers. In addition to simple tutorials, example codes, and application examples.

Zerynth SDK and all the required libraries can be installed on Windows, Linux and Mac using the Zerynth Installer (<https://www.zerynth.com/zsdk>).

Declaration of Conformity

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 EXP-RELAY board can switch loads up to 250VAC 6A through its relay contacts (C, NO, NC). Those lines must be protected with 6 amps fuses or similar devices to limit the current.
- 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).
- All expansion boards that require CE marking have been tested and meet 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/20246/>
- 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 expansion 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.



EN - 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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EXP-RE-01-N000