Relay Board (ZA-RLY4X12V-P1-R1A)

User Manual

1.0, Oct 2011

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Chapter 1. Relay Board

1. Overview

The Relay Board provides optically isolated 4 relays that can be controlled by digital input signals. The board can be used for controlling high voltage and high current equipment.

It uses 12V relays to switch the control load, which supports switching up to 7A at 250VAC/30VDC load. Each relay can be controlled with a standard TTL signal input. The Relay Board offers a high degree of isolation with the use of high speed opto-isolators for isolation between low voltage `control` side and high voltage `switching` side.

Power-on delay circuit is provided to give sufficient time to MCU/Control logic to initialise the control input lines to known state, thereby avoiding momentary glitches on relay circuit on power-on.

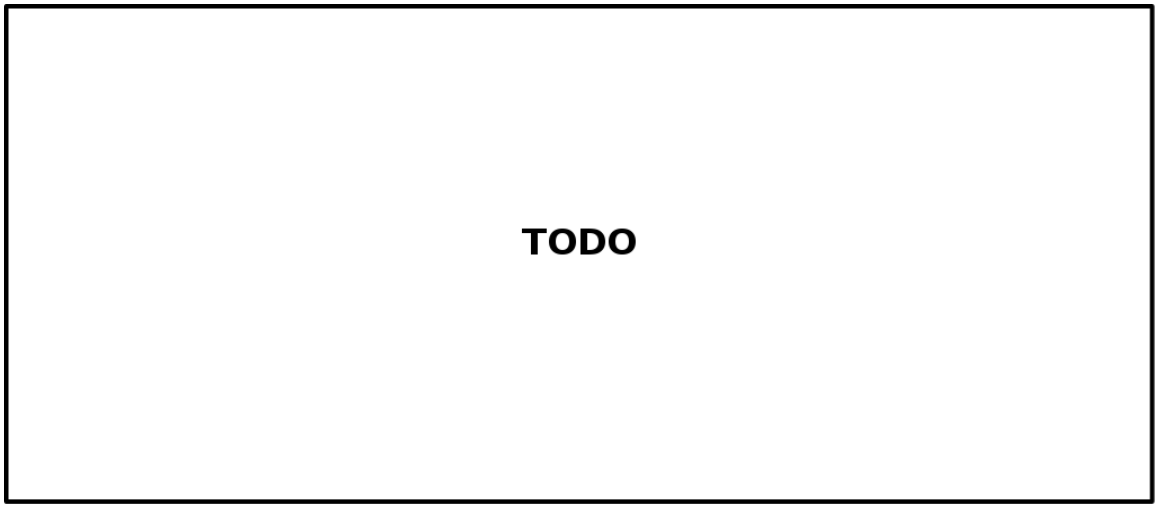
2. Features

- 4 Relays for high voltage/high current switching Applications
- Relays switch contacts rated 7A at 240VAC/30VDC
- Standard 12V relay coil voltage
- Power Jack and Screw Terminal for external 12V power supply
- LED Indication for each Relay
- Heavy duty screw terminal blocks for relay switch contacts
- High Speed Opto-isolated inputs
- Time delay circuit to avoid power-on glitches on relay circuit.
- TTL compatible inputs
- Standard 0.1" FRC header for connection to control logic/MCU
- Ready to go with Zilogic mother boards.
- Ideal for use in Industrial and Commercial Systems

3. Locating Components

The location of the components on the board is indicated in the following diagram.

Figure 1.1. Front View



4. Power Supply

The Relay Board is powered through an external 12V regulated power supply. The external power supply, should be a 12V/500mA regulated power supply. There external supply can be connected through the power jack, or a screw terminal connector. The polarity for the power jack is shown in the power supply connection diagram.

Figure 1.2. Power Supply Polarity

5. Control Inputs

The relays are controlled through four CMOS/TTL inputs `Input 1` to `Input 4`. When the control input is high, the relay is energized. When the control input is low, the relay is de-energized.

The Relay Board can be interfaced through the FRC header. The connector details are given below.

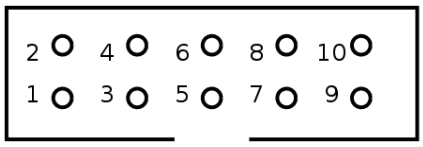


Table 1.1. `INPUTS` FRC Header

Pin #	Signal	Pin #	Signal
1	VCC	2	`Input 1`
3	`Input 2`	4	`Input 3`
5	`Input 4`	6	`Reserved`
7	`Reserved`	8	`Reserved`
9	`Reserved`	10	`Reserved`
11	`Reserved`	12	`Reserved`
13	`Reserved`	10	`GND`

6. Specifications

Relay Data		
Max. response time	10ms	
Max. release time	5ms	
Mechanical life	100,00,000	
Electrical life	1,00,000	
Contact Ratings	7A	240V AC, 30V DC
	10A	120V AC, 24V DC
	15A	120V AC
Max. switching voltage	250V AC, 30V DC	
Max. switching current	15A	
Digital Inputs		

Input Low Voltage	0.0 - 0.8V
Input High Voltage	2.0 - 5.0V

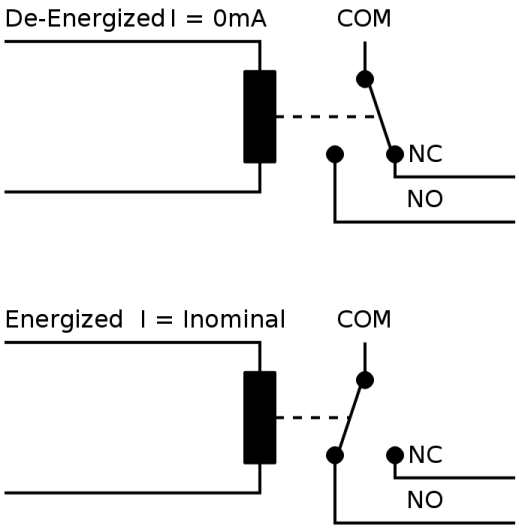
Chapter 2. Relay Board Usage

1. Basic Relay Operation

The relay is just a switch, that can be controlled by an electrical signal. The relay does not provide any power, it can open or close an electrical circuit, just like any other switch.

The relay has three terminals Normally Open (NO), Common (COM) and Normally Closed (NC). When the relay is energized the NO terminal is connected to COM. When the relay is de-energized the NC terminal is connected to COM.

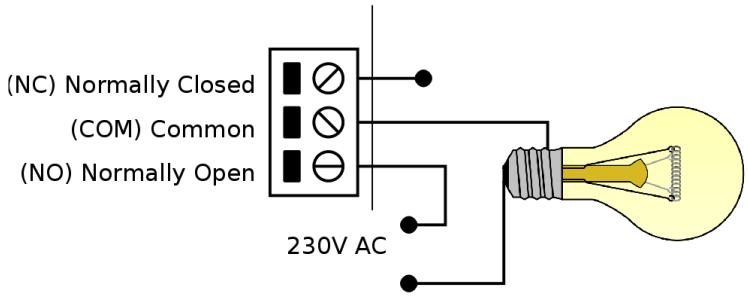
Figure 2.1. Relay Operation



2. Typical Relay Connection

The following connection diagram shows one way of connecting a light bulb to the relay board. The bulb will turn on when the relay is energized. The 230V AC phase is connected to NO. The 230V AC neutral is connect to one terminal of the bulb. The other terminal is connected to COM. When the relay is energized by making the digital input signal high, the NO is connected to the COM and the bulb will glow.

Figure 2.2. Typical Relay Connection Diagram



Appendix A. Legal Information

1. Copying

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