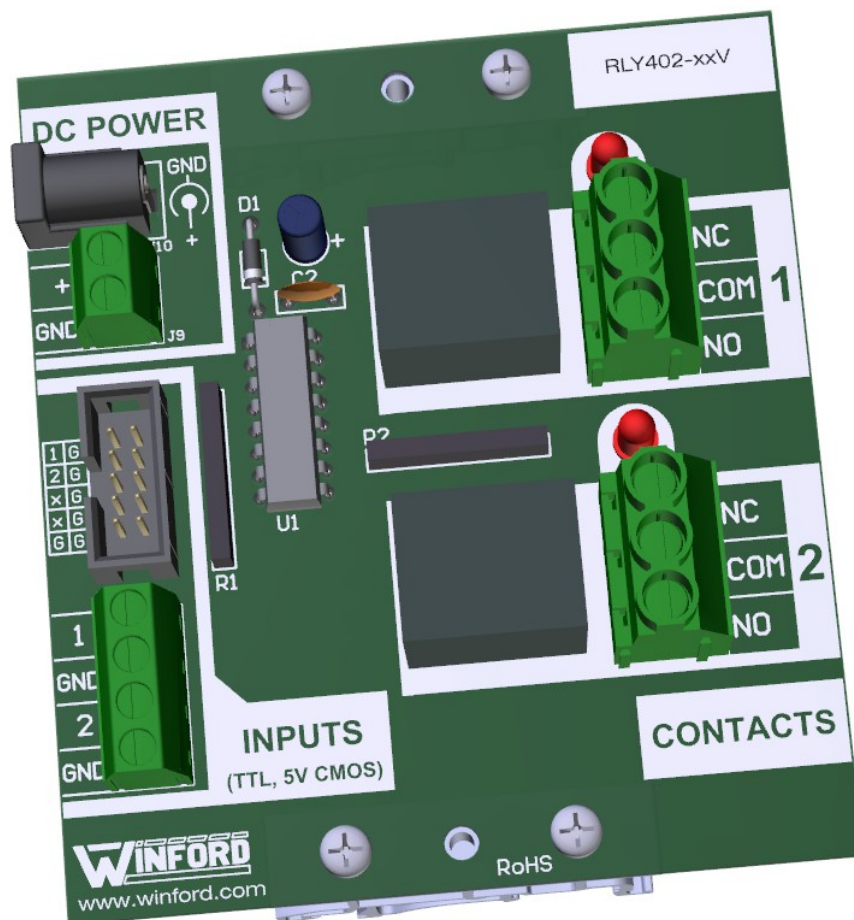


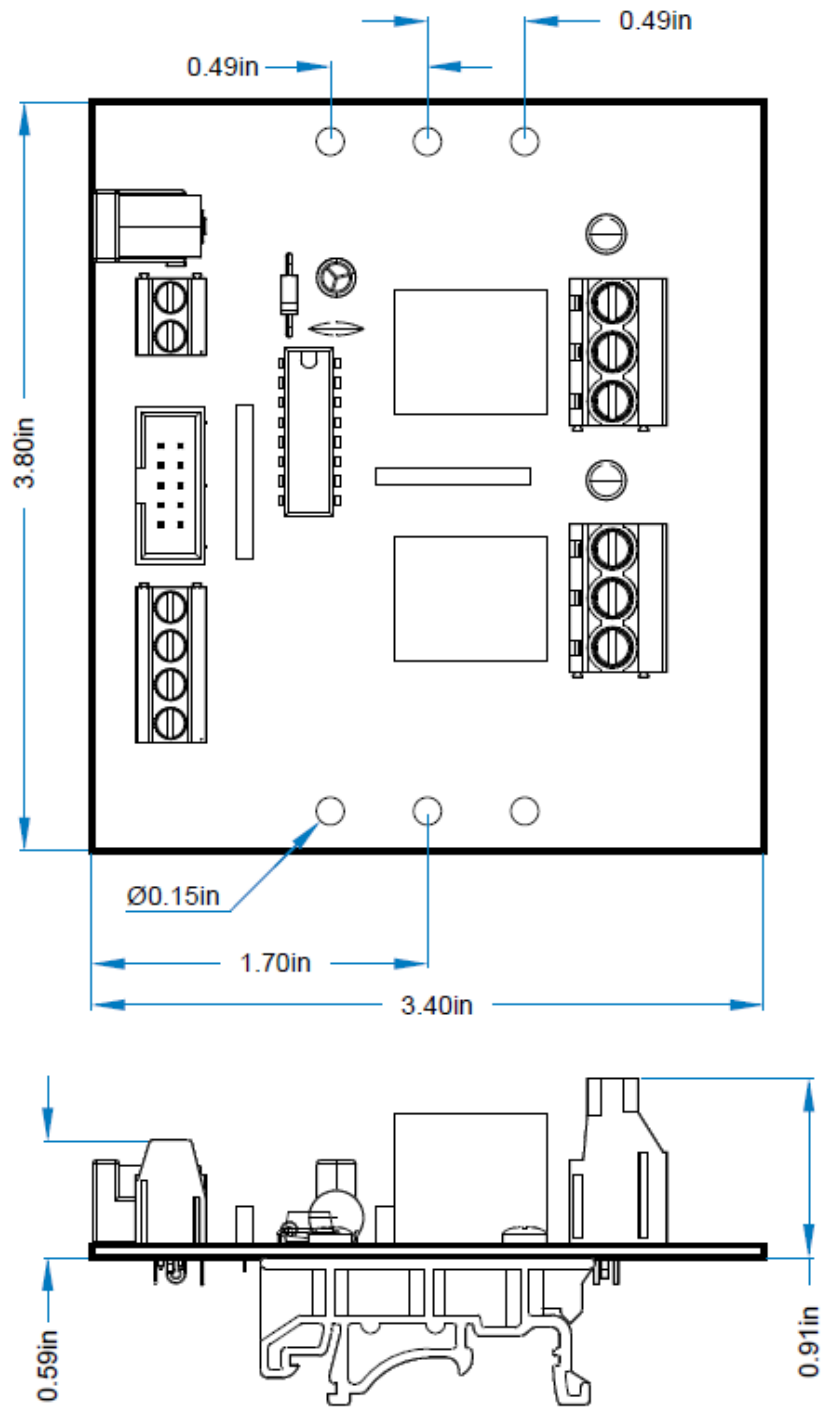
**RLY402 Datasheet****Overview**

The RLY402 provides two SPDT high-current relays with convenient screw terminal connections for the inputs and contacts. The board includes active driver circuitry allowing relatively low-current input signals (such as 5V TTL) to be used. LEDs provide visual indication on the status of each relay.

Due to the relay design and contact material, this board is well-suited for controlling AC motors. The optimal target application for this module is AC motors in the range of  $\frac{1}{2}$  HP to  $\frac{3}{4}$  HP (although it is rated for motor loads up to 1 HP). In addition to their given continuous-carrying current rating, the relays are able to handle high inrush currents such as those associated with motors during startup. Furthermore, the contact material (silver tin oxide) makes these relays a good choice for controlling either AC or DC loads.

**DIN Mounting Option Shown**

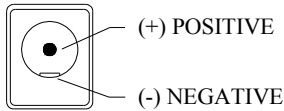
## Dimensions (typical shown)



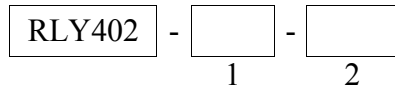
DIN Mounting Option Shown

## DC Power Jack

The DC power jack accepts connectors with a 2.1mm inside diameter and 5.5mm outside diameter. The jack requires a center-positive supply.



## Part Number Ordering Information

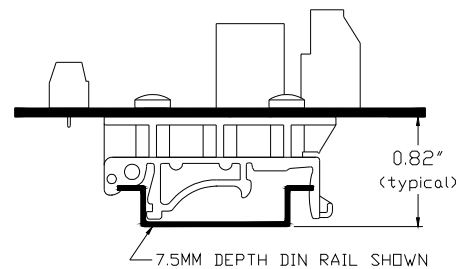


### 1. Relay Coil Voltage (DC)

- 5V
- 12V
- 24V

### 2. Mounting Option

- **FT** Rubber Feet on bottom side of PCB
- **DIN** DIN Rail Mounting Clips



**DIN Clip Mounting Option**

## RLY402 Stocked Part Numbers

The following part numbers represent standard options and are stocked:

- RLY402-5V-FT
- RLY402-12V-FT
- RLY402-24V-FT
- RLY402-5V-DIN
- RLY402-12V-DIN
- RLY402-24V-DIN

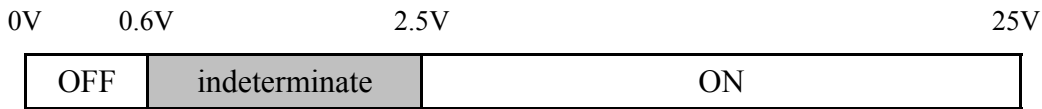
## Electrical Characteristics

Specifications at 25°C

<i>Specification</i>	<i>RLY402-5V</i>	<i>RLY402-12V</i>	<i>RLY402-24V</i>	<i>Unit</i>
DC Power Supply Input Range	4.8 - 5.5	11.5 – 13.5	23 - 26	V
Nominal supply current per activated relay (coil current + LED current) (Power supply: RLY402-5V=5.0V, RLY402-12V=12.0V, RLY402-24V=24.0V)	73	32	18	mA
Maximum leakage current (power supply current with no relays activated)	0.1			mA
Minimum turn-off threshold for input control signals (see diagram)	0.6			V

<i>Specification</i>	<i>RLY402-5V</i>	<i>RLY402-12V</i>	<i>RLY402-24V</i>	<i>Unit</i>
Maximum turn-on threshold for input control signals (see diagram)	2.5			V
Maximum allowable input control signal voltage	25			V
Input control signal current requirement, typical (per channel)				mA
Input signal @ 2.7V	0.35			
Input signal @ 5.0V	0.6			
Input signal @ 12V	1.9			
Input signal @ 24V	4.2			
Relay contact max switching ratings, general-purpose / resistive load	16A @ 125 VAC 16A @ 277 VAC 10A @ 250 VDC			
Relay contact max switching ratings, Inductive load, Normally Open contact	1 HP (16 FLA) @ 125 VAC 1 HP (8 FLA) @ 250 VAC			
Relay contact max switching ratings, Inductive load, Normally Closed contact	1/2 HP (9.8 FLA) @ 125 VAC 1/2 HP (4.9 FLA) @ 250 VAC			
Relay contact TV inrush current ratings (tungsten load test)	TV-8 at 125 VAC			
Relay contact max switching power	3840			VA
Relay contact max switching voltage	250			V
Relay contact material	AgSnO <sub>2</sub>			

### Input Control Signal Thresholds Diagram



### Operating Conditions

Ambient Temperature Range, full load	-25°C to 45°C
Relative Humidity Range - not freezing or condensing	5% to 85% RH

### Screw Terminal Wire Sizes

- Input control signals and Power: 16-30 AWG
- Relay contacts: 10-24 AWG

### Component Part Numbers

- Relays may be either of the following (where vv=voltage):
  - Picker Components PC520-1C-vvST-X
  - American Zettler AZ9321-1CE-vvDEF
- Relay driver: Toshiba TBD62064APG

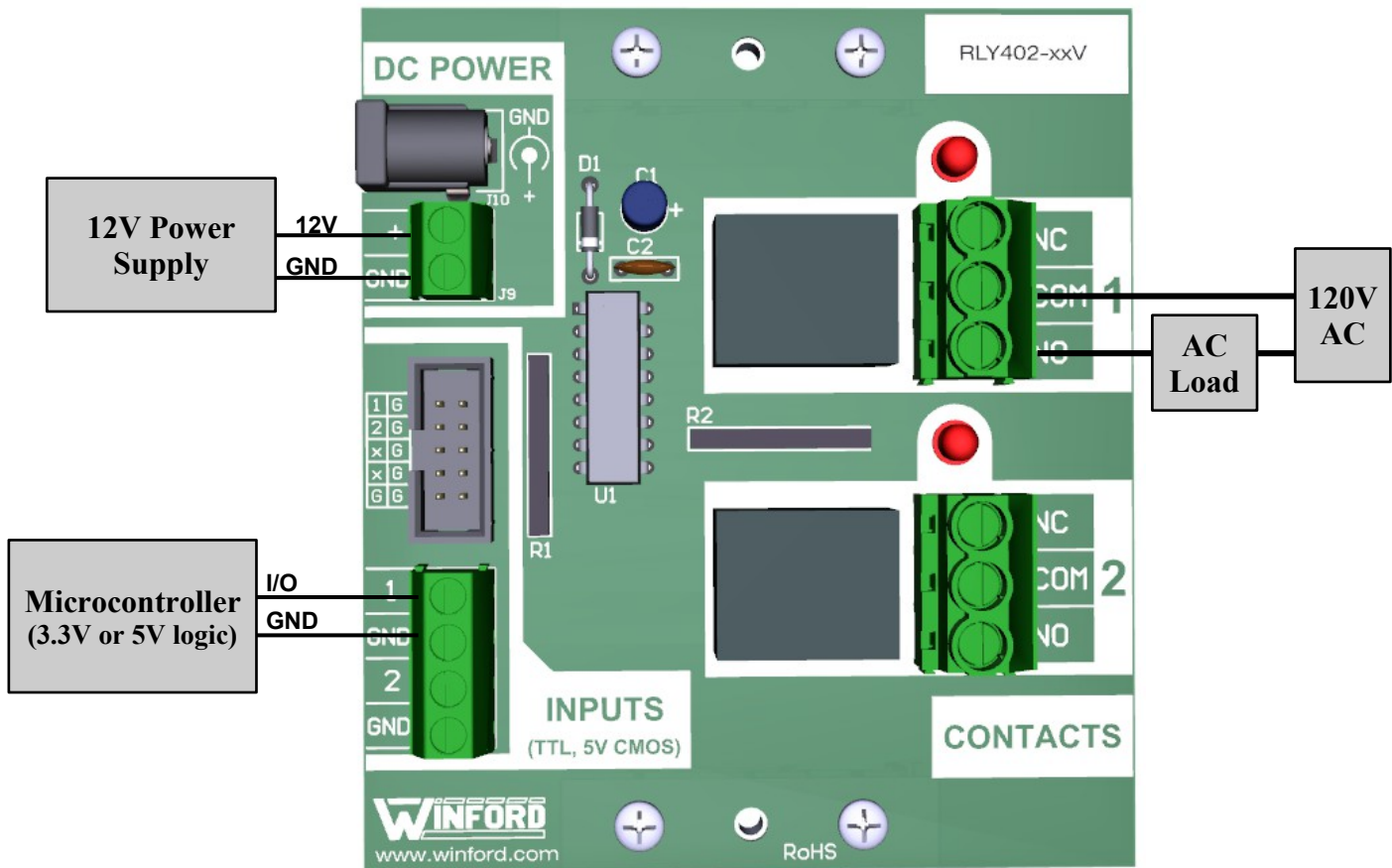
## Note About Inductive Loads

It is of primary importance to ensure that the relay used in a given application is rated for the given load type (e.g., resistive, inductive) as well as the load current. This device (RLY402) is rated for resistive loads and AC motor loads (up to 1 HP), and has a TV-8 high inrush current rating, as indicated in the electrical characteristics section of this document.

If the relay board is used to switch an inductive load, such as a solenoid coil or motor or a larger relay, it may be helpful to reference Winford Application Note “Relays and Motor Loads.”

## Application

A typical application is shown in the figure below for a system in which a 12V rail is available to provide power for the RLY402. In this case, the 12V variant of the RLY402 is used. A microcontroller provides the control signal used to activate / de-activate the relay.



When the microcontroller sends out a logic high on its I/O pin, the normally-open relay contacts close and apply 120V AC to the AC load. The AC load may be a motor, heater, compressor, etc. A microcontroller I/O pin will typically provide either a 5V or 3.3V logic-level control signal, but the RLY402 allows the control signal to go significantly higher than that. (See electrical characteristics for more information.)

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