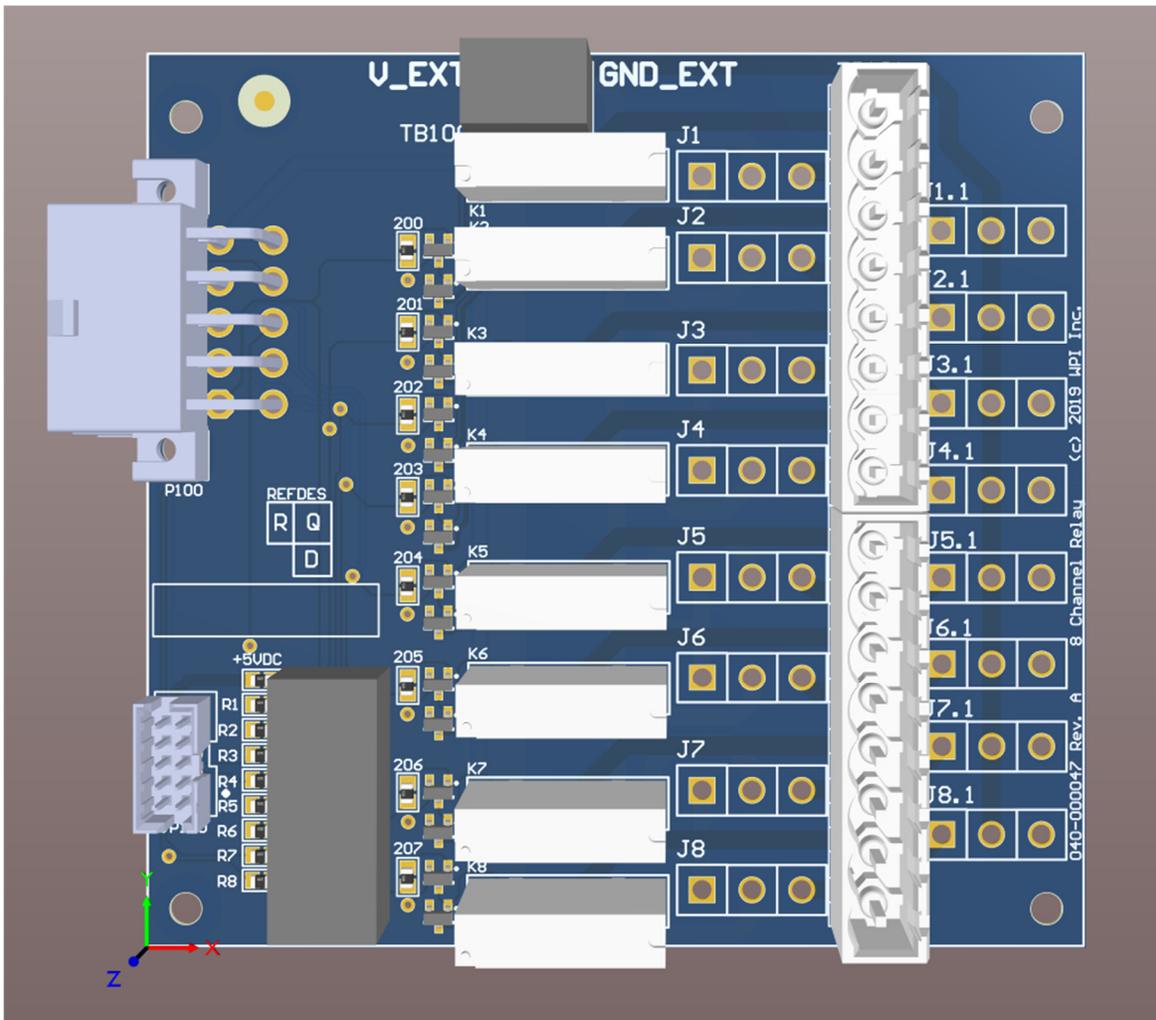


# 8 Channel Relay Board Manual



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# 1 Products and System Requirements

This document is intended as a guide to installing and operating the 8 Channel Relay Board. Contained within are instructions on system integration, wiring, setup, and standard operating methods.

## 1.1 Overview

The 8 Channel Relay Board offers 8 relays that can be individually configured as either a contact closure (Form A) or as a voltage source if power is connected to an auxiliary connector.

Two input signal connectors are provided to allow seamless cabling to a 501A Signal Generator using either the rear panel 10 position Molex Minifit output connector or the Output Aux Header.

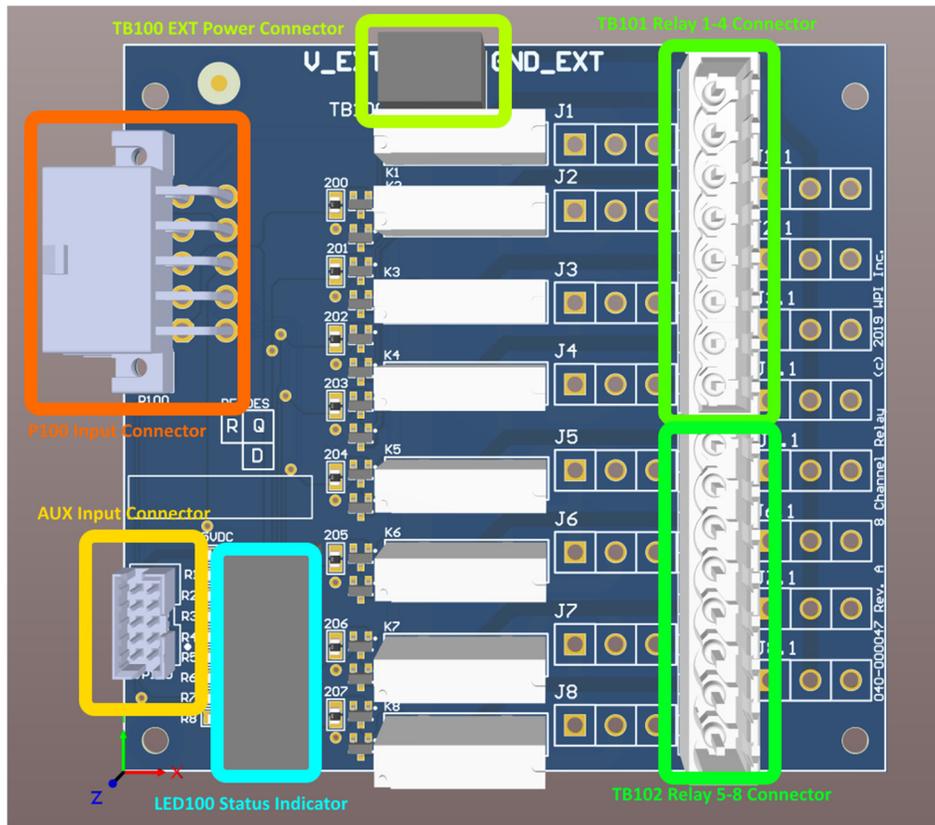
An LED array is provided to power on indication and channel operating state.

## 1.2 Datasheet

### 1.2.1 Features

- 8 relay channels
- 5A rated load (resistive load) at 250VAC  
5A rated load (resistive load) at 30VDC  
2A rated load (inductive load) at 250VAC  
2A rated load (inductive load) at 30VDC
- Individual channel selection of operating mode  
Jumper selectable  
Contact closure or voltage source
- 1-to-1 cable from 501A Signal Generator output connector
- 1-to-1 cable from 501A Signal Generator Aux output connector
- LED indicators to provide operating state

### 1.2.2 Connector Identification



### 1.2.3 Connector Pinouts

Pin	P100 – Signal	Input Connector Description	I/O
1	GPO1	Relay 1 Control	I
2	GPO3	Relay 3 Control	I
3	GPO5	Relay 5 Control	I
4	GPO7	Relay 7 Control	I
5	+5VDC	Power	Power
6	GPO2	Relay 2 Control	I
7	GPO4	Relay 4 Control	I
8	GPO6	Relay 6 Control	I
9	GPO8	Relay 8 Control	I
10	GND	GND	GND

**P100 and JP100 must not be used simultaneously.**

Pin	JP100 – Signal	AUX Input Connector Description	I/O
1	GPO2	Relay 2 Control	I
2	GPO1	Relay 1 Control	I
3	GPO4	Relay 4 Control	I
4	GPO3	Relay 3 Control	I
5	GPO6	Relay 6 Control	I
6	GPO5	Relay 5 Control	I
7	GPO8	Relay 8 Control	I
8	GPO7	Relay 7 Control	I
9	GND	GND	GND
10	+5VDC	Power	Power

**P100 and JP100 must not be used simultaneously.**

Pin	TB101 – Signal	Power and Phases Description	I/O
1	Relay 1 NO1	Relay 1 terminal 1	O
2	Relay 1 JS	Relay 1 terminal 2	O
3	Relay 2 NO1	Relay 2 terminal 1	O
4	Relay 2 JS	Relay 2 terminal 2	O
5	Relay 3 NO1	Relay 3 terminal 1	O
6	Relay 3 JS	Relay 3 terminal 2	O
7	Relay 4 NO1	Relay 4 terminal 1	O
8	Relay 4 JS	Relay 4 terminal 2	O

**ALL JS terminals are determined by the Jumper Selections defined below.**

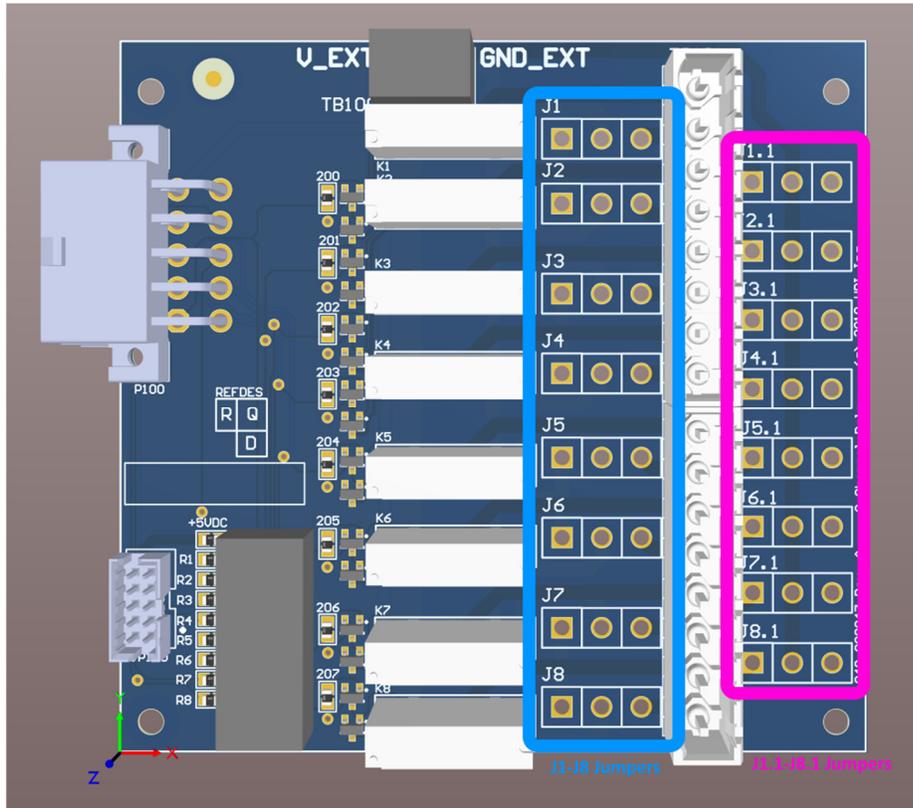
Pin	TB102 – Signal	Auxiliary Connector Description	I/O
1	Relay 5 NO1	Relay 5 terminal 1	O
2	Relay 5 JS	Relay 5 terminal 2	O
3	Relay 6 NO1	Relay 6 terminal 1	O
4	Relay 6 JS	Relay 6 terminal 2	O
5	Relay 7 NO1	Relay 7 terminal 1	O
6	Relay 7 JS	Relay 7 terminal 2	O
7	Relay 8 NO1	Relay 8 terminal 1	O
8	Relay 8 JS	Relay 8 terminal 2	O

**ALL JS terminals are determined by the Jumper Selections defined below.**

Pin	TB100 – Signal	EXT Power Connector Description	I/O
1	V_EXT	V_EXT	POWER
2	GND_EXT	GND_EXT	POWER

V\_EXT and GND\_EXT are used to provide a voltage that can be switched by an appropriately configured relay. They do not need to be connected for contact closure operation.

### 1.2.4 Jumper Identification



### 1.2.5 Jumper Pinouts

J1 – Relay 1 Mode Jumper 1			
Pin	Signal	Description	I/O
1	V_EXT	V_EXT	POWER
2	Relay 1 NO2	Relay 1 NO terminal 2	-
3	Relay 1 JS	Relay 1 Terminal Block Contact	O

J2 – Relay 2 Mode Jumper 2			
Pin	Signal	Description	I/O
1			
2	Relay 2 NO2	Relay 2 NO terminal 2	-
3	Relay 2 JS	Relay 2 Terminal Block Contact	O

J3 –		Relay 3 Mode Jumper 3	
Pin	Signal	Description	I/O
1	V_EXT	V_EXT	POWER
2	Relay 3 NO2	Relay 3 NO terminal 2	-
3	Relay 3 JS	Relay 3 Terminal Block Contact	O

J4 –		Relay 4 Mode Jumper 4	
Pin	Signal	Description	I/O
1	V_EXT	V_EXT	POWER
2	Relay 4 NO2	Relay 4 NO terminal 2	-
3	Relay 4 JS	Relay 4 Terminal Block Contact	O

J5 –		Relay 4 Mode Jumper 5	
Pin	Signal	Description	I/O
1	V_EXT	V_EXT	POWER
2	Relay 5 NO2	Relay 5 NO terminal 2	-
3	Relay 5 JS	Relay 5 Terminal Block Contact	O

J6 –		Relay 4 Mode Jumper 6	
Pin	Signal	Description	I/O
1	V_EXT	V_EXT	POWER
2	Relay 6 NO2	Relay 6 NO terminal 2	-
3	Relay 6 JS	Relay 6 Terminal Block Contact	O

J7 –		Relay 4 Mode Jumper 7	
Pin	Signal	Description	I/O
1	V_EXT	V_EXT	POWER
2	Relay 7 NO2	Relay 7 NO terminal 2	-
3	Relay 7 JS	Relay 7 Terminal Block Contact	O

J8 – Relay 4 Mode Jumper 8			
Pin	Signal	Description	I/O
1	V_EXT	V_EXT	POWER
2	Relay 8 NO2	Relay 8 NO terminal 2	-
3	Relay 8 JS	Relay 8 Terminal Block Contact	O

For J1-J8 Jumpers, connecting positions 1 to 2 will provide V\_EXT to that channel's relay. When the relay is "on" V\_EXT will become available at the relay's NO1 terminal on the terminal block.

Connecting positions 2 to 3 will provide a contact closure at the terminal block.

J1.1 – Relay 1 Mode Jumper 1.1			
Pin	Signal	Description	I/O
1	Relay 1 JS	Relay 1 Terminal Block Contact	O
2	GND_EXT	GND_EXT	POWER
3	Open	Open	-

J2.1 – Relay 2 Mode Jumper 2.1			
Pin	Signal	Description	I/O
1	Relay 2 JS	Relay 2 Terminal Block Contact	O
2	GND_EXT	GND_EXT	POWER
3	Open	Open	-

J3.1 – Relay 3 Mode Jumper 3.1			
Pin	Signal	Description	I/O
1	Relay 3 JS	Relay 3 Terminal Block Contact	O
2	GND_EXT	GND_EXT	POWER
3	Open	Open	-

J4.1 – Relay 4 Mode Jumper 4.1			
Pin	Signal	Description	I/O
1	Relay 4 JS	Relay 4 Terminal Block Contact	O
2	GND_EXT	GND_EXT	POWER
3	Open	Open	-

J5.1 – Relay 4 Mode Jumper 5.1			
Pin	Signal	Description	I/O
1	Relay 5 JS	Relay 5 Terminal Block Contact	O
2	GND_EXT	GND_EXT	POWER
3	Open	Open	-

J6.1 – Relay 4 Mode Jumper 6.1			
Pin	Signal	Description	I/O
1	Relay 6 JS	Relay 6 Terminal Block Contact	O
2	GND_EXT	GND_EXT	POWER
3	Open	Open	-

J7.1 – Relay 4 Mode Jumper 7.1			
Pin	Signal	Description	I/O
1	Relay 7 JS	Relay 7 Terminal Block Contact	O
2	GND_EXT	GND_EXT	POWER
3	Open	Open	-

J8.1 – Relay 4 Mode Jumper 8.1			
Pin	Signal	Description	I/O
1	Relay 8 JS	Relay 8 Terminal Block Contact	O
2	GND_EXT	GND_EXT	POWER
3	Open	Open	-

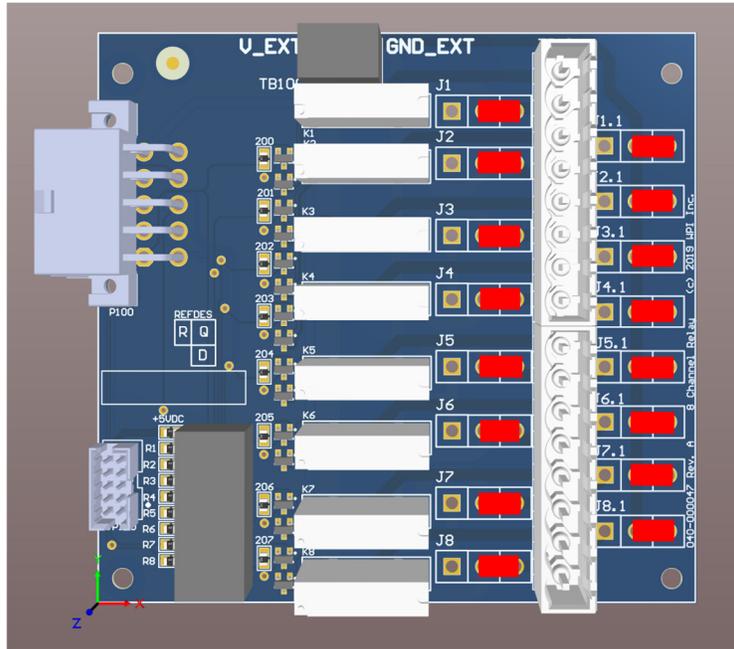
For J1.1-J8.1 Jumpers, connecting positions 1 to 2 will provide GND\_EXT to that channels JS terminal block.

Connecting positions 2 to 3 will provide a contact closure at the terminal block.

**JX and JX.1, where X is the individual relay channel MUST BE SET IDENTICALLY.**

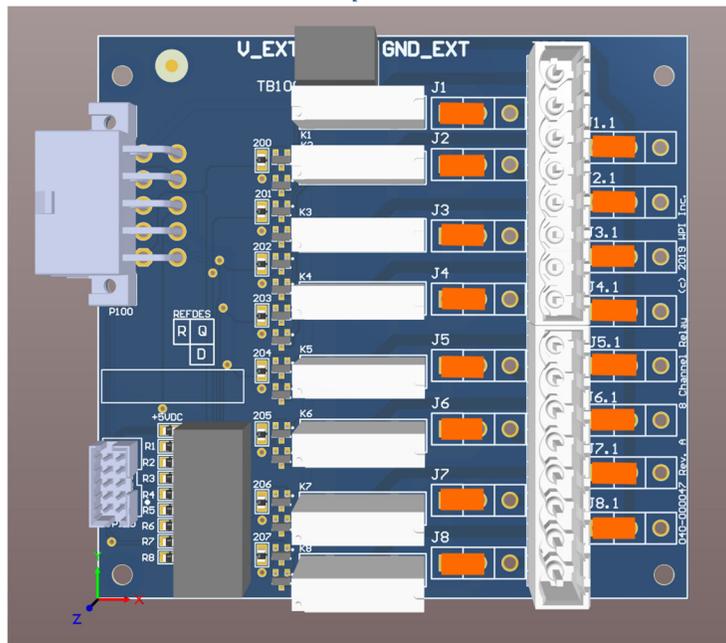
1.2.6 Example Jumper Settings

1.2.6.1 Jumpers All Set To Contact Closure



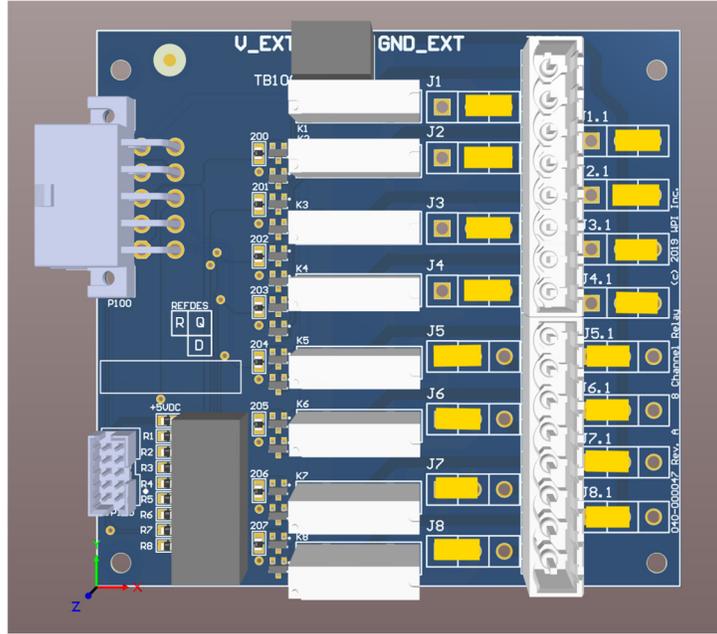
Red Markers indicate where jumpers should be installed for contact closure operation.

1.2.6.2 Jumpers All Set To V\_EXT and GND\_EXT Operation



Orange Markers indicate where jumpers should be installed for V\_EXT and GND\_EXT operation.

1.2.6.3 Channels 1-4 set to Contact Closure and Channels 5-8 set to V\_EXT and GND\_EXT operation



Yellow Markers indicate where jumpers should be installed for mixed mode operation.

1.2.7 LED Indicators

SW300 – Name	DIP Switch Description
LED1	+5VDC
LED2	Relay 1 “on”
LED3	Relay 2 “on”
LED4	Relay 3 “on”
LED5	Relay 4 “on”
LED6	Relay 5 “on”
LED7	Relay 6 “on”
LED8	Relay 7 “on”
LED9	Relay 8 “on”
LED10	-