

Relay Driver Board Addendum

A.1 INTRODUCTION

This document describes and documents the 4803 Relay Driver Board. The 4803 Relay Driver Board can also be used with the 2303 Serial-to-Parallel Interface Board.

A.2 DESCRIPTION

The 4803 Relay Driver Board adds high-current, open-collector type relay drivers to the 4803 or 2303's 40 output signals. The relay driver signals are provided on a compact terminal strip where they are identified by bit and byte number for easy bit or byte programming. The Relay Driver board is designed to hold a 4803 board (P/N 114649) or a 2303 board (P/N 114733) with the digital connector mounted on the circuit side. The user connects the relays and relay power to a compact screw terminal block on the Relay Driver Board.

The 4803 Relay Driver Board contains a 5 volt switching power supply and converts some of the relay power into 5 volts to power the 4803 or 2303 board. Switches and jumpers on the 4803 Relay Driver Board allow the first two bytes to be used as signal inputs when all 40 relay driver outputs are not needed. The 4803 or 2303 byte directions (in or out) should be programmed to match the switch and jumper settings on the 4803 Relay Driver Board before energizing the relays.

A high true signal from the 4803 or 2303 turns on the relay driver which pulls the external relay coil to ground. When the Relay Driver terminals are used as inputs, the signals are routed directly to the 4803/2303 without any signal inversion.

P/N 120178 Rev 1 06/18/08

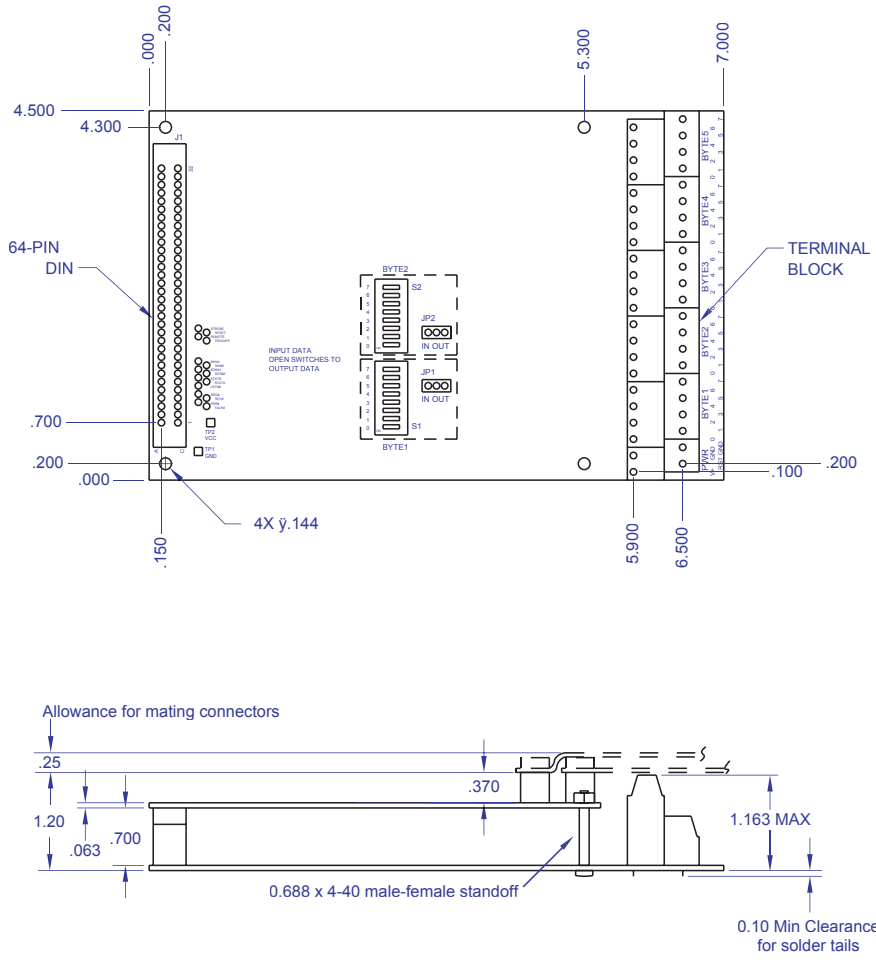


Figure A-1 4803 Relay Driver Mounting Dimensions

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A.3 SPECIFICATIONS

Relay Drivers

- Number - 24, 32 or 40 lines
- Type - Inverting open collector with anti-backlash diode
- Current - 300 mA max
- Vout low - 1.2 Vdc max at 300 mA with $V_{in} > 2.4$ Vdc
- Turn-on Delay - Relay Drivers held off until 4803 or 2303 Stable signal is asserted, approximately 350 ms from power turn-on.

Input Lines

- Number - 16, 8 or none
- Type - Non-inverting 4803/2303 input signal specifications

Ext Reset - 4804/2303 External Reset input

Size - 177.8 x 114.3 x 30.5 mm
(7.0 x 4.5 x 1.200 inches)

Weight - 0.4 lbs (0.185 kg)

Temperature - Operating -10 °C to +70 °C
Storage -40 °C to +85 °C

Humidity - 0-90% RH without condensation

Power - 7 to 32 Vdc at 4 VA (typical)

Connectors

4803/2303 - 96-pin, 3 row male DIN connector using rows A & C.

Relay Driver - Screw terminals for #22 AWG wire

Outputs & Power

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A.4 INSTALLATION

The 4803 Relay Driver Board may be mounted against any surface as long as the user provides 0.100 inches clearance under the PCB for solder tails. See Figure A-1 for mounting hole locations. The 4803 Relay Driver Board is designed for the mounting screws to come through the mounting surface to the PC board. Mount the two 4-40 x 0.688 standoffs on the holes adjacent to the terminal strips to support the front of the 4803 or 2303 board.

Place the 4803 board (P/N 114649) or 2303 board (P/N 114733) over the 4803 Relay Driver Board so the connectors line up and gently press down. Use the two included 4-40 lock nuts to fasten the 4803 or 2303 board to the Relay Driver Board.

A.5 SIGNAL CONNECTIONS

The relay driver terminals are labeled by Byte and by Bit. Bytes 1 and 2 can be connected directly to the 4803 or 2303's I/O signals by setting the rocker switches on and the jumper(s) to IN. Any input signals or output signals that need TTL levels must be connected to Bytes 1 and 2. Note that all of the signals in a byte must go in the same direction (all inputs or all outputs). The switches and jumpers must be set to ON and to IN to use a byte for input signals or for TTL outputs. Relay Driver connections can always be made to Bytes 3, 4 and 5. Bytes 1 and 2 can be used as relay driver outputs if the corresponding switches are set OFF and the jumper(s) set to OUT.

To design your connections, make a copy of the 4803/2303 Digital Pin Assignment Table in the 4803 Manual. Enter the relay and input signal names in the blank columns, across from the desired byte-bit number. The byte-bit number in the Pin Assignment Table matches the terminal identification on the Relay Driver Board. The external relay power supply is connected to the V+ and GND terminals. The logic ground for any input signals is connected to the second GND terminal. Use the completed Pin Assignment Table for wiring the Relay Driver Board Terminal Strip and as your programming guide.

A Figure A-2 shows a typical relay connection. The negative lead from the relay coils are connected to the terminal strip. All positive relay coil leads should be connected to the positive terminal of the relay power supply. All relay coils and inductive loads should have anti-backlash diodes installed across the coils. If the relays do not have internal diodes, install diode as close as possible to the coils. Connect the cathode (bar) end of the diode to the positive voltage.

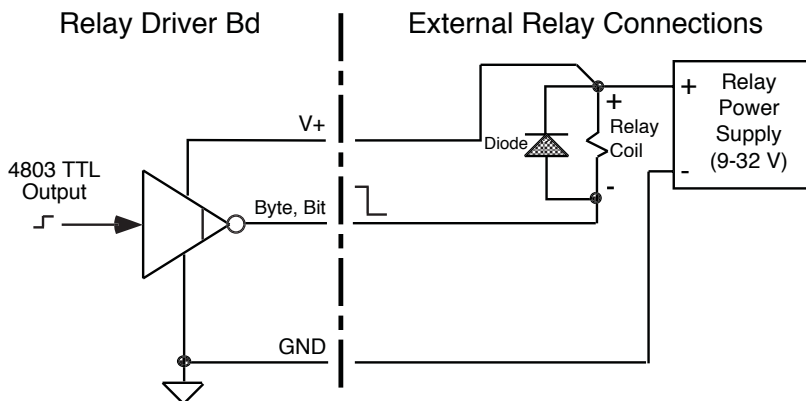


Figure A-2 Typical Relay Connections

The relay power supply is connected to the V+ and GND terminals on the upper terminal strip. Use two wires for the two GND terminals as these wires carry all of the relay coil currents.

The -RST terminal connects to the 4803/2303's -Ext Reset input. Leave the -RST terminal open for normal operation. If an external reset is desired, momentarily short the -RST terminal to GND to reset the 4803 or 2303 and the Relay Driver outputs to their power turn-on state.

A.6 SETUP

The 4803 or 2303 is factory set to power on with all signals as inputs. The signals float and are pulled up by the 4803's pullup resistors. The bytes that are driving relays need to be set as outputs with low output levels so that the relays are not energized at power turn-on time. Save the setup so it becomes the new power turn-on default state. The following commands set and save bytes 3, 4 and 5 as outputs with the bits set low:

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BO3 0 ; BO4 0 ; BO5 0      'sets bits low
*SAV 0                    'saves current setup
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A.7 TESTING

Use the ROUTe commands to test individual output bits. The Relay Driver outputs are open collector and will not appear to change unless they are connected to a relay or to a pullup resistor.

