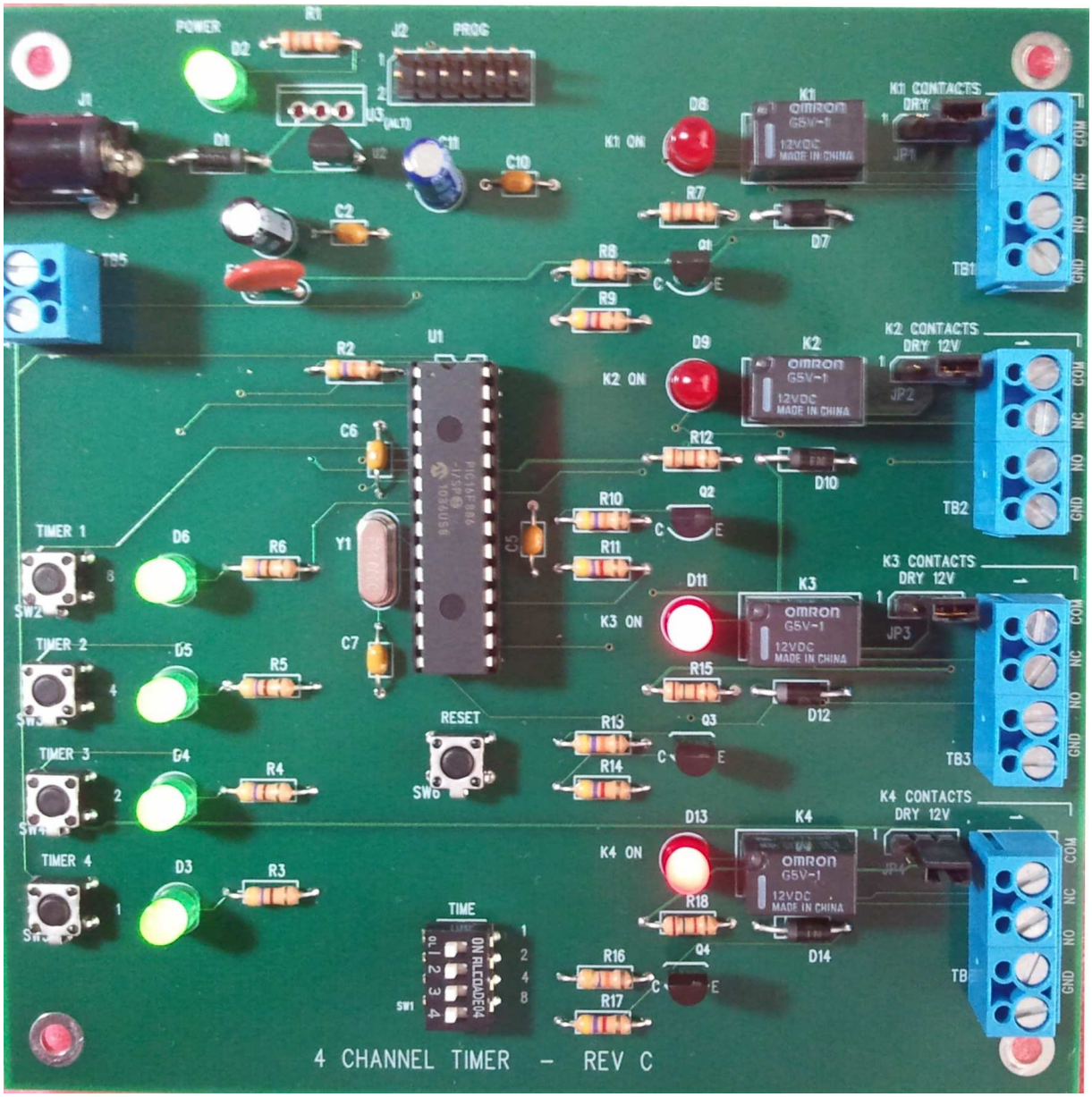

4 Channel Timer

Instruction Manual

Rev 1.0 July 18, 2011

Contents

Description

The 4 Channel Timer is a general-purpose “timed relay” board designed to be used for internal testing of various Uplink products, such as the 2500, 2500EZ, 2550, 2555 and derivatives thereof.

Features

- 4 independent programmable timers running in astable mode, 50% duty cycle
- Each timer is capable of time cycles from 30 seconds to 15 minutes
- Simple DIP switch / pushbutton programming & operation
- 4 “Form C” relay outputs – can be used to open or short input loops
- Optional 12V “wet” contact mini-jumper setting for triggering products with opto-coupler inputs
- Convenient ground terminal for each set of relay contacts
- 12V DC, 1A PTC-protected output for powering 12V DC units, such as 2500EZ
- LED indicators for power, timer state (running / paused /off) and relay state (on / off)
- Convenient reset switch for quick reset of timers and for ease of re-programming timers

Power Source

The 4 Channel Timer was designed to be powered by the 3A-161WU12 wall adapter power supply. This is a 12V regulated output switching supply that is rated at 1.25 Amps. They are available from:

http://www.web-tronics.com/ac1unposu3.html

The J1 input power jack of the 4 Channel Timer was designed to accept the power plug from this supply.

Programming

Before connecting the 4 Channel Timer to the Unit Under Test (UUT), it should be powered up and programmed for the proper time values. This will also allow the user to become familiar with the operation of the unit. Connect the power plug from a 3A-161WU12 supply to power the timer.

When a non-programmed 4 Channel Timer is powered up, the four green LEDs next to the TIMER 1 – TIMER 4 pushbuttons will flash at a slow rate, indicating that they have not been programmed. To program a timer, first set the DIP switch SW1 to the desired time value, up to 15 minutes. **See Figure 1.** Use the values printed next to each DIP switch position to determine the total time. Postion 1 has a time value of 1 minute. Position 2 is 2 minutes, position 3 is 4 minutes and position 4 is 8 minutes. Multiple switch positions may be used to create any value up to 15 minutes (all positions set to ON). For example, for 10 minutes, DIP switch positions 2 and 4 should be set to ON. If all positions are set to OFF, a value of 30 seconds is used.

Once a value has been set on the DIP switch, press a timer pushbutton to store the time to non-volatile memory and begin the timing sequence. The green LED next to the pushbutton will be steadily

illuminated, indicating the timer is active. The red LED next to the corresponding relay will also illuminate, indicating the relay is energized.

Repeat this process for each timer. Timers may all use the same time value or different values.

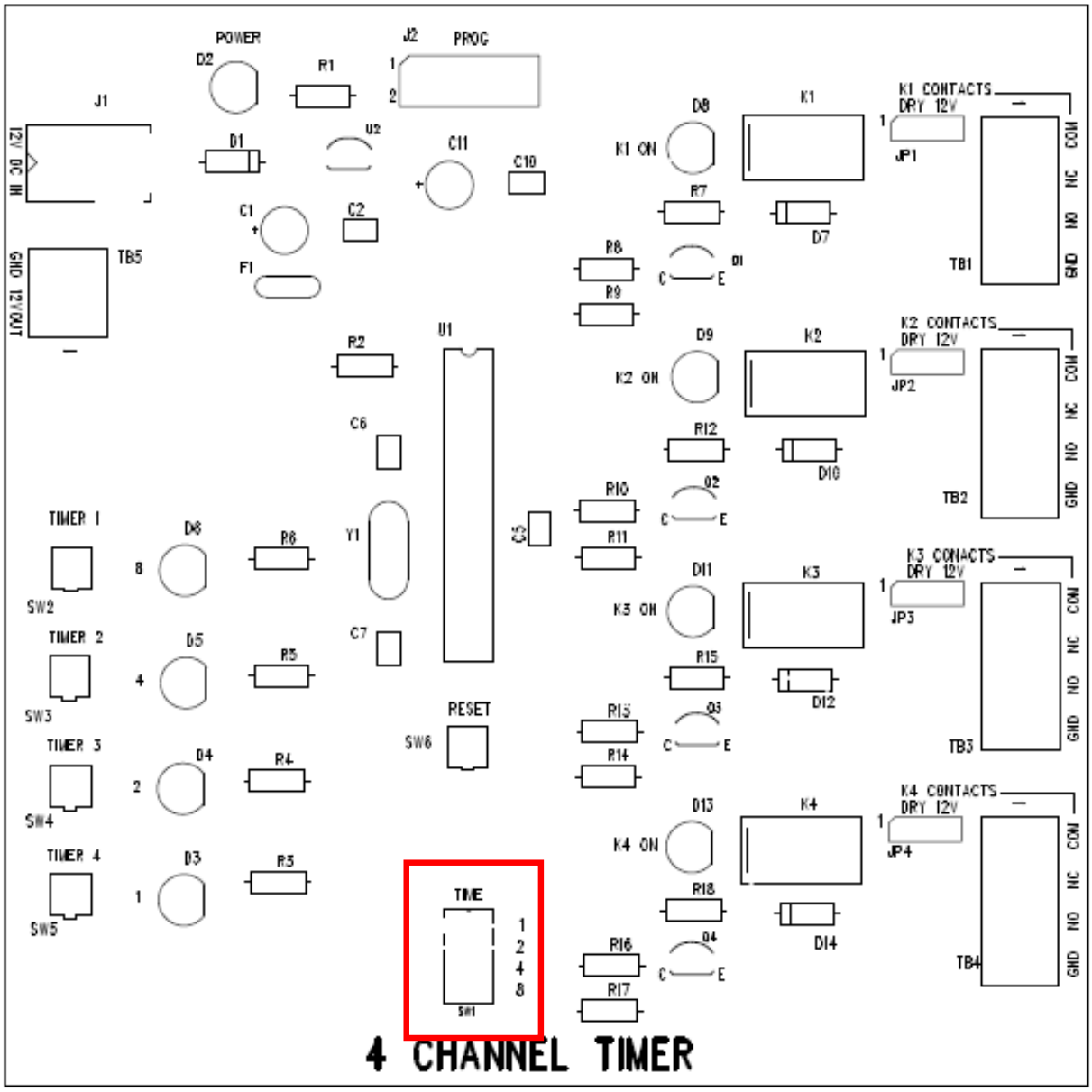

Figure 1 Component Layout of 4 Channel Timer with DIP Switch SW1 Highlighted in Red

Timer Operation

All timer functions are controlled by the TIMER 1 – TIMER 4 pushbuttons. To start a timer, press and release the timer's pushbutton. A steady green LED indicates the timer is running. While running, the

timer's relay will continuously cycle on and off at the timer's pre-programmed rate. To pause a running timer, press its pushbutton again. A rapidly flashing green LED indicates the timer is paused. The timer's output relay will remain in the last state it was in when the timer was paused. To reset a paused timer, press its pushbutton once more. The green LED will go off and the timer's relay will de-energize, if it was previously energized.

Reading a Timer

To determine the time value that is programmed into a timer, reset the 4 Channel Timer using the RESET switch, or manually stop all timers using their pushbuttons (TIMER 1 – TIMER 4 green LEDs should all be off). To read a timer's value, press and hold the timer's pushbutton for > 1 second. The timer's value will be displayed via the 4 green LEDS. Add the values of digits printed next to each LED (1, 2, 4 or 8). Example: a timer set for 8 minutes will illuminate LED D6, which has an 8 printed next to it. If no LEDs illuminate, the timer was programmed for 30 seconds (all DIP switch positions were OFF). All 4 LEDs illuminated indicate a value of 15 (1+2+4+8).

Modifying a Timer

To modify a timer that has already been programmed, press and hold the timer pushbutton, then momentarily press the RESET pushbutton. Release the timer pushbutton when its LED illuminates. The LED should flash at a slow rate to indicate the timer is no longer programmed. The next press of the pushbutton will store the current time value that is set on the DIP switch and start the timer.

Connecting a UUT

Before making any wiring connections to a UUT, be sure to remove power from the 4 Channel Timer by unplugging the power plug from J1.

If the UUT is powered by 12V DC and draws less than 550mA continuous current, it may be powered by connecting it to terminal block TB5. Connect the UUT ground to TB5 pin 2 (the GND terminal on the left). Connect the UUT DC input to TB5 pin 1 (12VOUT). Units that are safe to power in this manner include the 2500 and the 2500EZ. ***Do NOT power 2550 or 2555 units from TB5.***

Connecting to Opto-coupled Inputs

For units that require a 12V source to trigger their inputs, such as the 2500EZ, the timer relay contacts need to be "wetted" with 12V. Each relay has an associated mini-jumper that allows its contacts to be switched between DRY and 12V. JP1 affects K1, JP2 affects K2, JP3 affects K3 and JP4 affects K4. Move the mini-jumper shunt from "DRY" to "12V" for each relay that will be connected to an opto-coupler input.

Example: To trigger a 2500EZ IN1 with K1, set JP1 to "12V". This applies 12V DC to the K1 COM contact. While K1 is de-energized, 12V will also appear at the NC contact. When K1 is energized, 12V will switch from the NC contact to the NO contact.

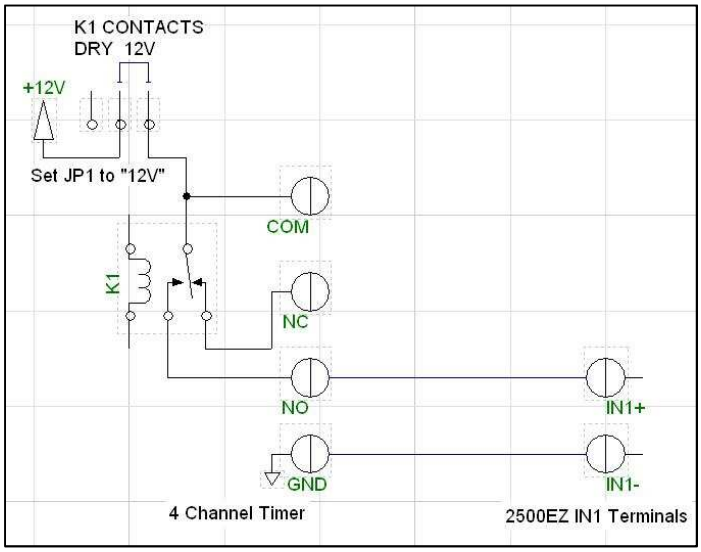

Figure 2 Wiring IN1 of a 2500EZ

To trigger IN1, connect a wire from IN1"-" to the GND terminal on terminal block TB1. Connect IN1"+" to the NO terminal of TB1. Use this same method to connect other opto-coupled inputs to the other relays, making sure to set the mini-jumpers to "12V". **See Figure 2.**

Connecting to Supervised Inputs

For units that require switch closures to trigger their inputs, such as the 2550 and 2555, **the relay contacts MUST BE SET TO "DRY" to avoid putting 12V into the input loops!** The wiring of the 4 Channel Timer's relay contacts depends on how the UUT's input loops are being tested. If the test requires the supervisory resistor to be shorted in order to trigger the input, the COM and NO relay contacts should be wired in parallel with the supervisory resistor, **as shown in Figure 3.**

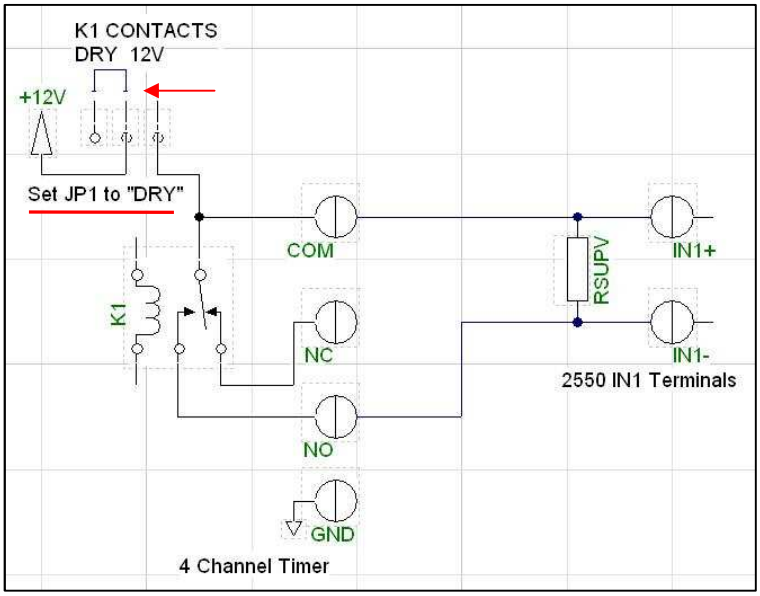

Figure 3 Wiring to short IN1 supervisory resistor when K1 is energized

If the input loop must be opened as part of the test, use the COM and NC relay contacts **as shown in Figure 4.** In this configuration, the relay COM and NC contacts are wired in series with the input loop. As a result, the loop will be opened when K1 is energized.

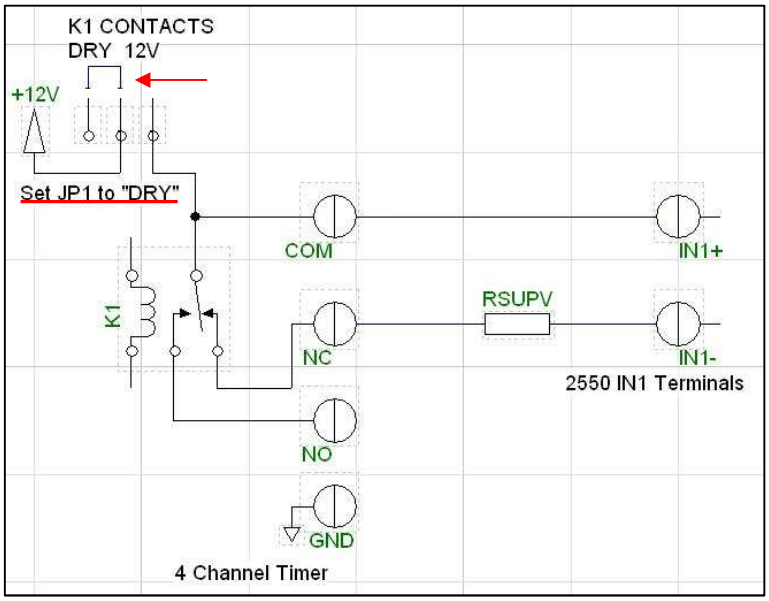

Figure 4 Wiring to open IN1 supervised loop when K1 is energized