

4x2 LED Display Module

Technical Manual Rev 1r0



The e-gizmo 4x2 LED Display module is a 3-in-1 LED display, counter and timer and a stand alone module were it easy to use for numerical display. With switch buttons, Serial functions connections, UART with 3.3Vdc supply. This module have 4 different functions modes for counter. A friendly user built in IC ATMEGA48 MCU programmed control.

The Counter mode sets the numerical value using the program also the timer mode and display. The purpose of the 2 LED Display shows the function of timer and counter when applying it to the MCU.

FEATURES:

- 3-in-1 LED Display, Counter and Timer
- With 4 functional Modes Counter
- Countdown timer mode with pre-settable time lapse
- Can also be a display when in Timer mode.
- Can be interface with Gizduino boards.
- With 2-switch (UP and DOWN).
- With Direct Serial TTL connections

SPECIFICATION:

IC: ATMEGA48 - 15AZ

Supply input: +5V DC

Display: 4X2 LED Display

GENERAL SPECIFICATION:

For COUNTER MODE(only);

- Mode1:
 - 1st LED Display: Count Down
 - 2nd LED Display: Count Down
- Mode2:
 - 1st LED Display: Count Up
 - 2nd LED Display: Count Down
- Mode3:
 - 1st LED Display: Count Up
 - 2nd LED Display: Count Up
- Mode1:
 - 1st LED Display:
 - Switch UP: increment
 - Switch DOWN: decrement
 - 2nd LED Display:
 - Switch counter display

For TIMER MODE and DISPLAY:

- Mode2 & Mode 3:
 - 1st LED Display:
 - Timer Display
 - 2nd LED Display:
 - Settings Display

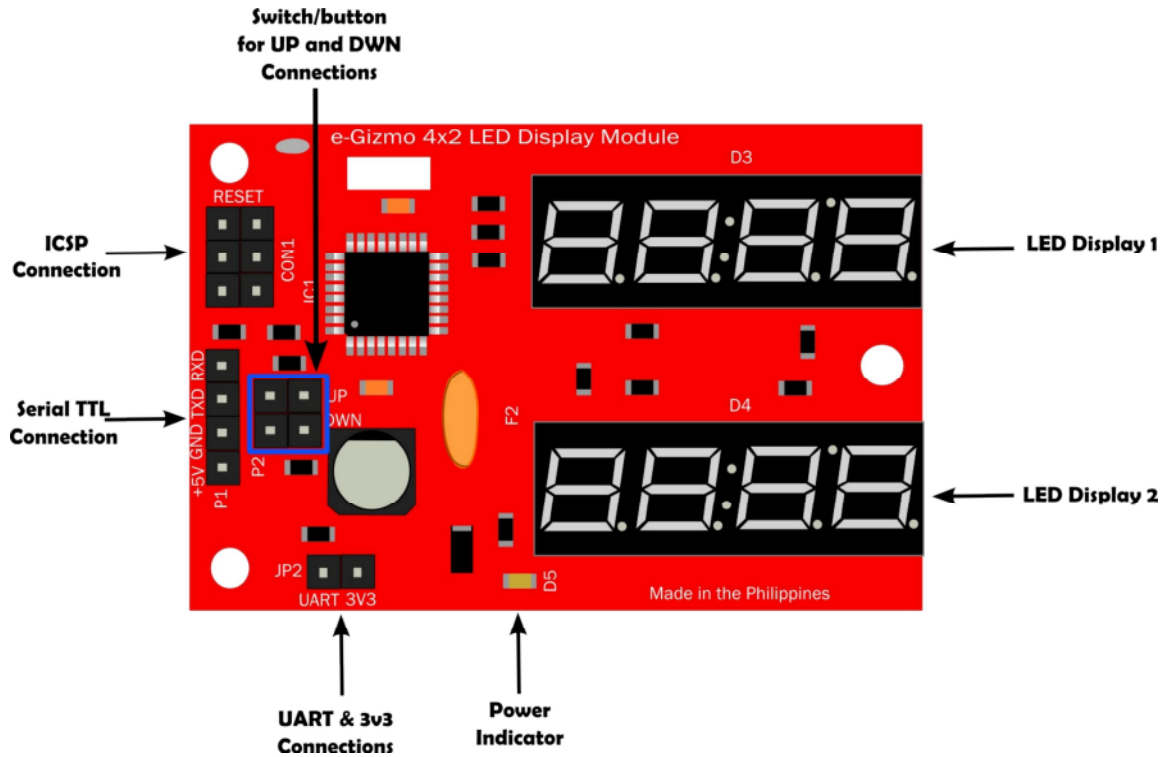


Figure 1. Front of 4x2 LED Display Module

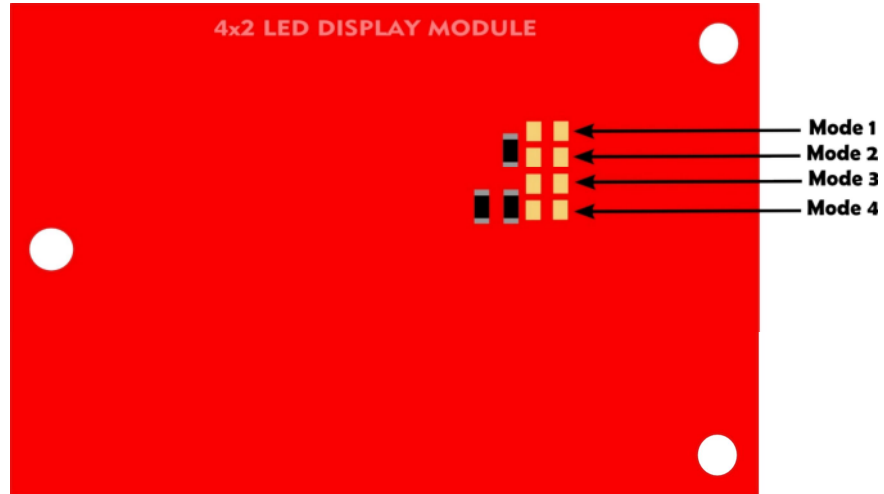


Figure 2. Back of 4x2 LED Display Module

All command sentence must be wrapped within [STX][ETX] marker

Using the commands:

Line 1 use capital letter and Line 2 in small letter command to display.

Display Commands

Type first the capital letter "D" it means display digit to line 1 or on the LED Display 1. follows the four digit numbers.

Dnnnn where n = 0 to 9, "-"

Same in line 2, but type small letter "d"

dnnnn where n = 0 to 9, "-"

ex. d5678 (fig. 3)

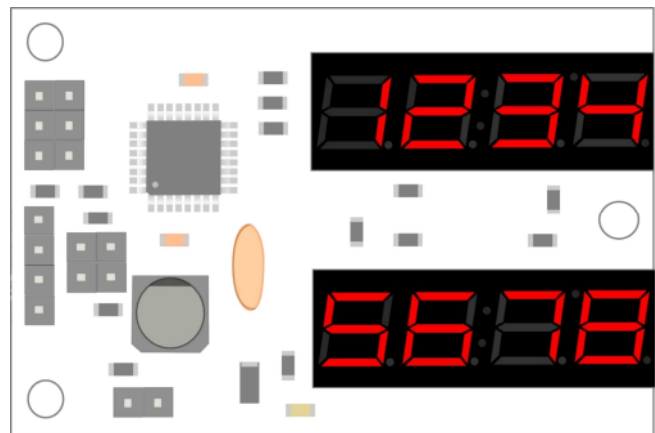


Figure 3. Sample Display

Decimal point position

Type "P" it means decimal point display on line 1
Where n =0 to 3. n>3 will turn off decimal point.

Pn where n =0 to 3. n>3

ex. P3 (fig 4)

For Line 2:

Type "p" to turn on nth digit decimal point display on line 2.

pn where n = 0 to 3. n>3 will turn OFF decimal point

ex. p3

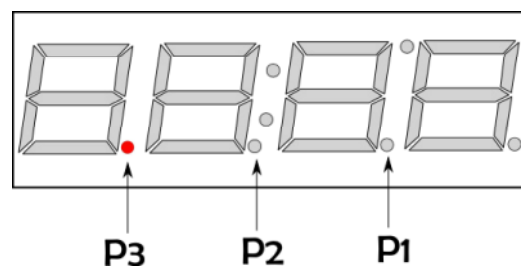


Figure 4. Point positions

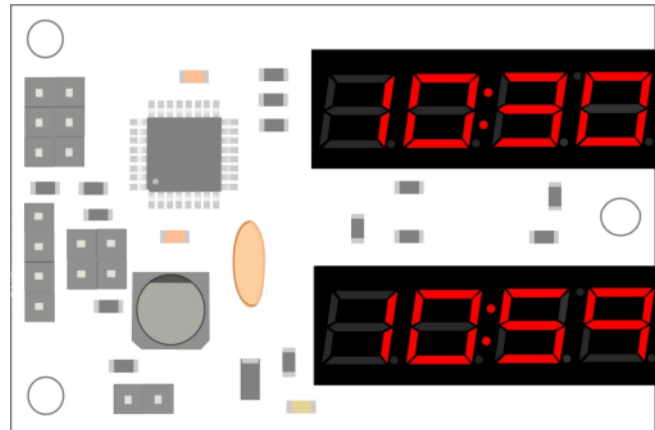
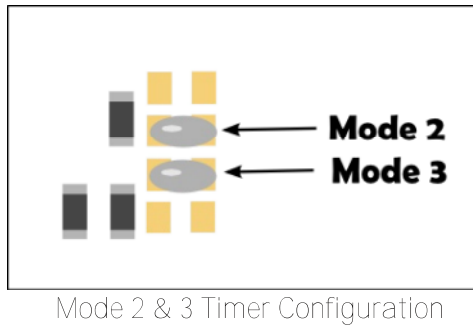


Figure 5. Sample Timer Configuration

Timer Configuration

There are only two types for timer settings Minutes and Seconds. Of course you need to be in Timer mode to this. Line 2 is the default setting for minute and seconds. Line 1 is the timer count down.

For minute setting.

Type "M" to set start up countdown time (minutes).

So, the maximum time is 59 mins.

Mnn where = nn = 00 to 59

e.g M10 line 2

Counter configuration

Type "C" to set countdown1 starting count

Cnnnn where nnnn = 0000 to 9999

e.g. C0100 Line 1

Type "c" to set countdown2 starting

cnnnn where nnnnn = 0000 to 9999

e.g c0200 line 2

then in seconds.

Type "S" to set start up countdown time (seconds)

Snn where nn = 00 to 59

e.g S30 Line 2

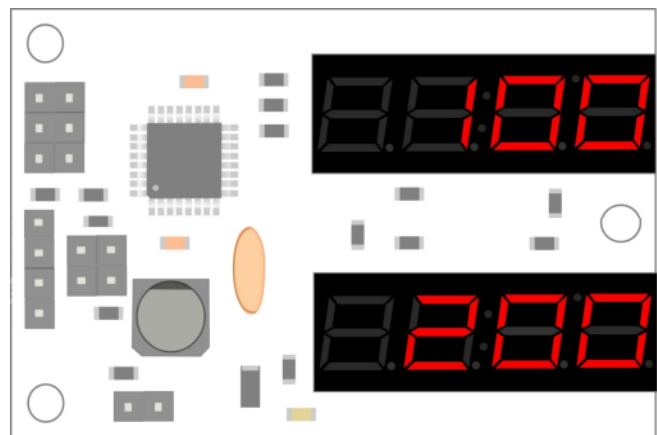


Figure 6. Counter Configuration

Modes Description only for COUNTER display

In Figure 7. at the back of circuit board. There are 4 different modes for using the counting display. Lets start in Mode 1, see fig. 7. just short the pin mode 1 by placing a little bit of lead to make it shorted. This mode function is for both LED display "Counting Down" when pressing the button/ switch.

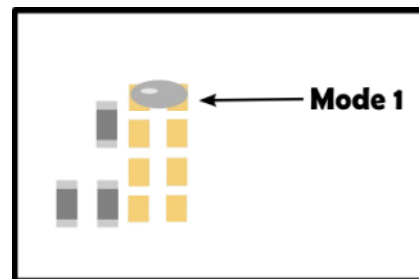


Figure 7. Mode 1 Illustration

For Mode 2, before you short the mode 2. Remove first the the mode 1 on its place. Then start place again a little lead on it to make it short like you do in Mode 1. So, you can see that Mode 2 is the only one you use. The function for Mode 2 is for "Counting UP" and "Counting DOWN". When you place two switch on the UP and DWN connections. Try pressing the Button Up the LED Display 1 is counting UP while if you press the button DWN button the display shows in LED Display 2 for counting Down.

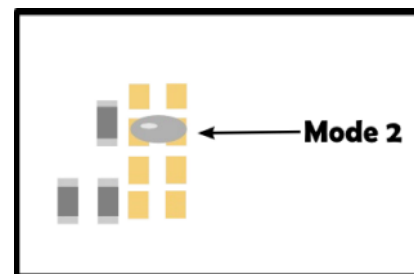


Figure 8. Mode 2 Illustration

For Mode 3 is shorted, The funtion of this is when you press the Button UP the LED Display 1 shows you Counting UP the same aslo function in Button DWN when you press it , the LED display 2 shows counting UP.

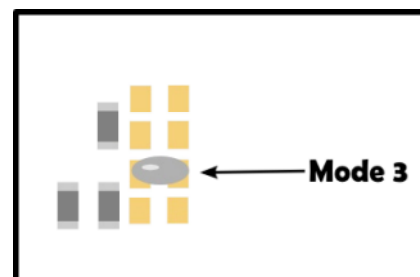


Figure 9. Mode 3 Illustration

Last, but not the least, Mode 4, if shorted. Pressing the button UP (SW1) the Display on (line1) shows the counting is UP/increasing while if you press the Button DWN, the Couting is DOWN/ decreasing. But on the LED display 2 (LINE2) shows you the Counter of buttons you pressed.

Note: Only one mode to be shorted if you want to use either Mode1, Mode2, Mode3, or Mode 4. So choose one.

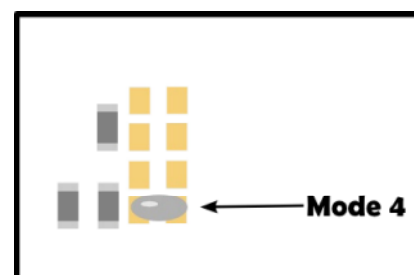


Figure 10. Mode 4 Illustration

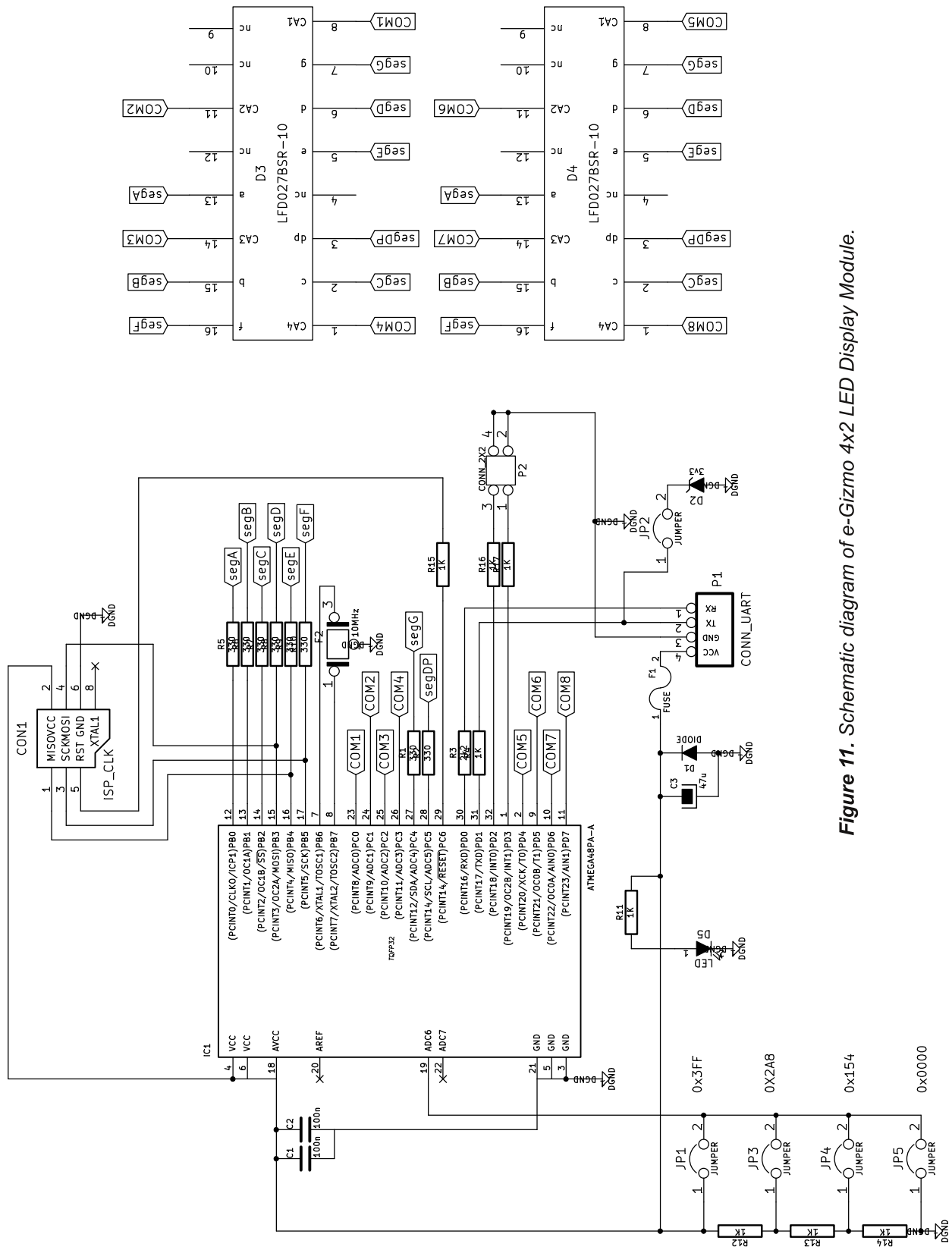


Figure 11. Schematic diagram of e-Gizmo 4x2 LED Display Module.

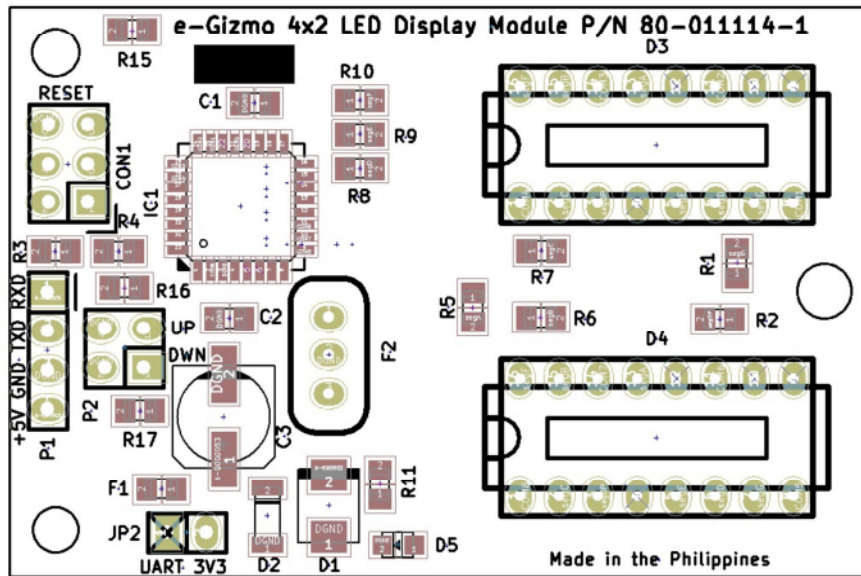


Figure 12. Parts Placement

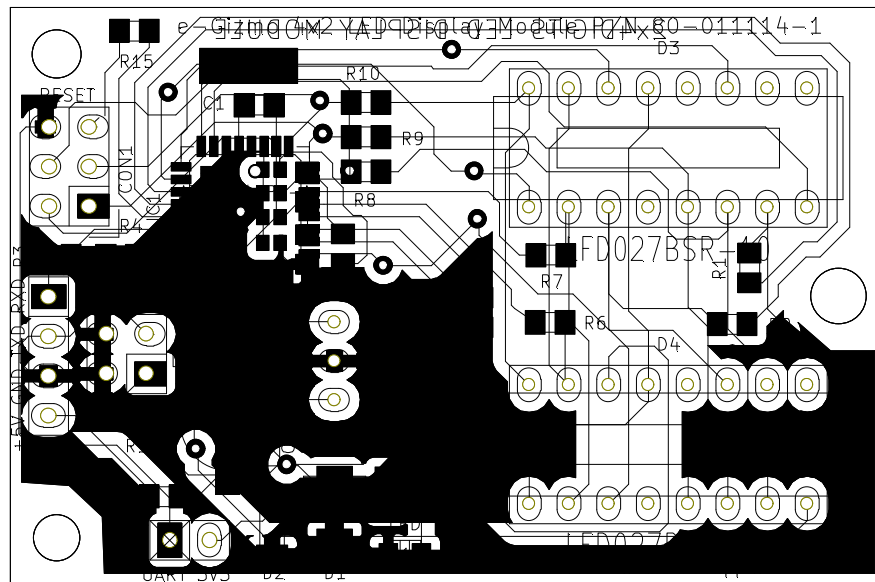


Figure 13. PCB Layout

Pin Connections:

- | | | | |
|--------------------------------------|-------------------|---|--------|
| | Gizduino | - | Module |
| — | +5V Input voltage | - | +5V |
| — | GND Ground | - | GND |
| — | pin3 Serial 1 | - | RXD |

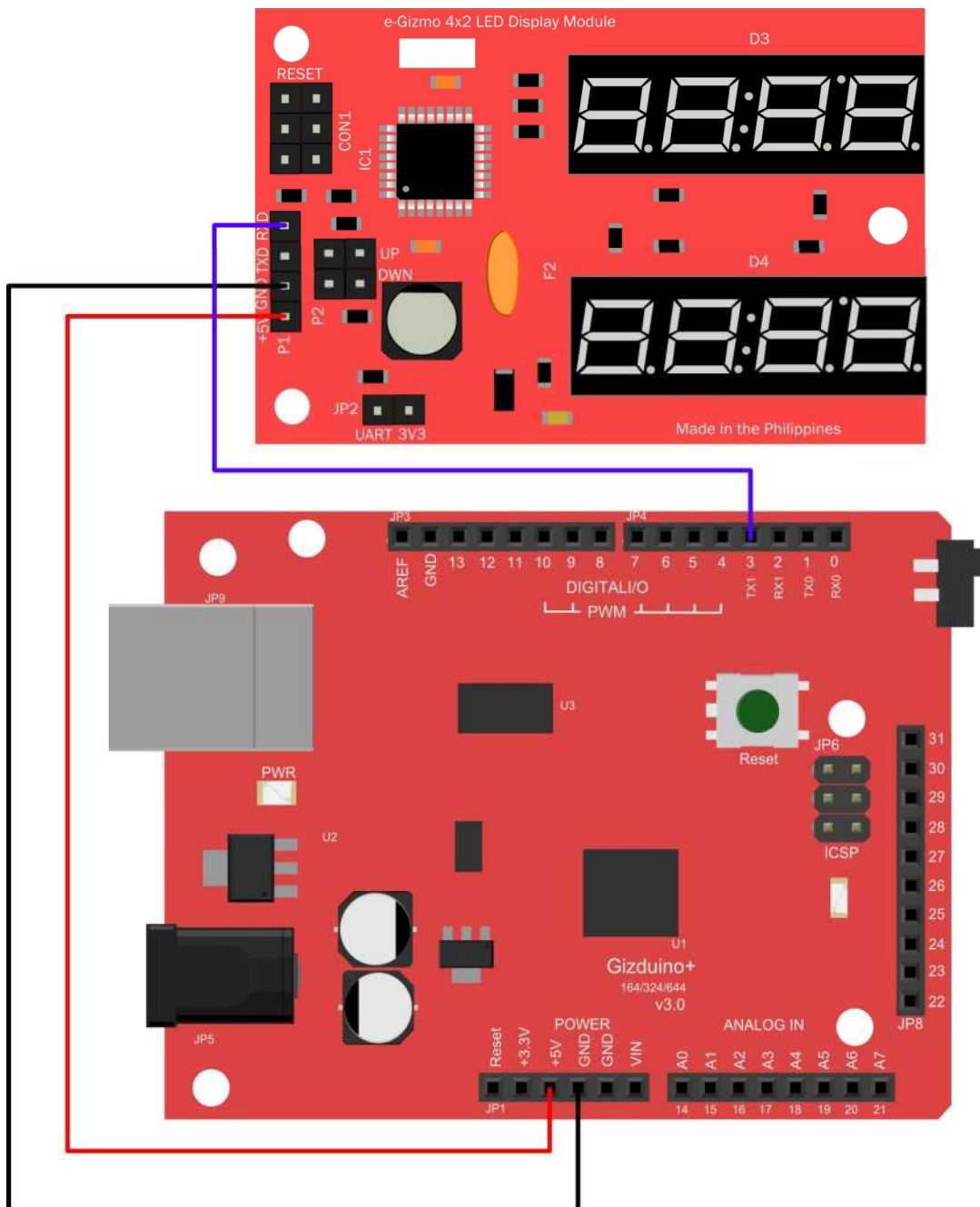


Figure 14. Sample Application of e-Gizmo 4x2 LED Display Module with Gizduino + 644