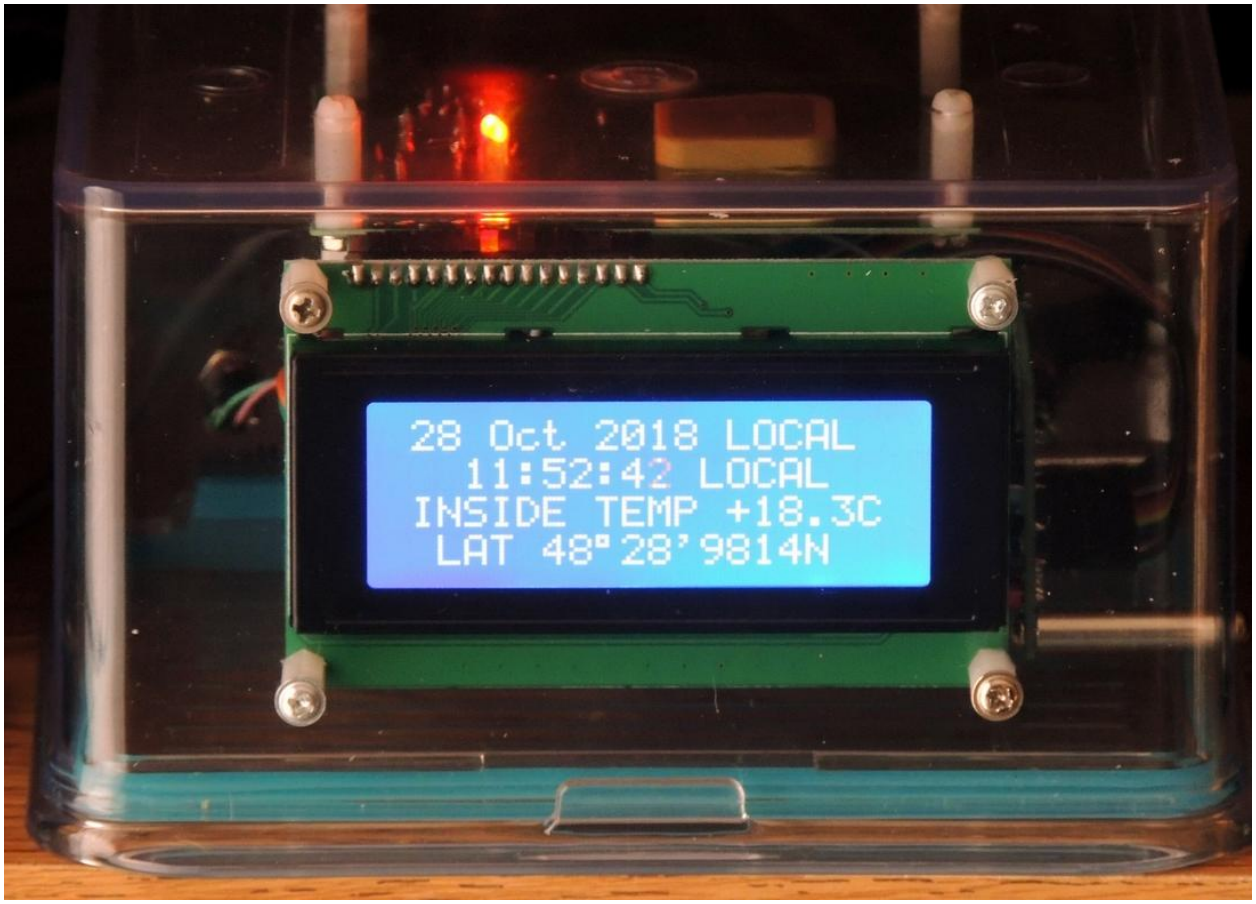
QRP Labs Clock



I have built 2 qrp-labs.com GPS controlled clocks over the last couple of years. The clocks both use the optional 4-line display. The one above is mounted in an upside down clear plastic refrigerator dish.

> *I used an air tight refrigerator storage dish (available locally) made by **Inter-Design Kitchen Binz** 6.75 in x 5.75 in x 3.75 in (17.2 cm x 14.6 cm x 9.5 cm) at a cost of approximately $12.75 US.*

The 2nd clock case was done on a 3-D printer and the files are located at:

https://www.thingiverse.com/thing:3998023

Aside from different cases, the clocks are programmed slightly differently as well. I now have changed BOTH clock to 4-line yellow-green displays. I personally find them easier to read in bright conditions.

The refrigerator case clock is used in my ham radio room. It is connected to indoor and outdoor temperature sensors. The 3-D clock has only a single indoor temperature sensor.

Both clocks give local time and UTC time as well as date, day of the week and latitude/longitude. Both clocks take advantage of the ability to scroll different data on the same line after a preset time interval.

The 3D clock displays additional GPS satellite information in place of the outside temperature.

As you can see, the display can be personalized with callsign and other personal messages including a calculated maidenhead grid square location.

On the following pages I have attempted to describe how I have programmed my shack clock. The programming is all done from the push buttons and it is tedious. I ***STRONGLY*** suggest you program a single line and save your effort. Get each line the way you want it before moving on to the next.

Coding Example for QRP-Labs Clock with QLG1 GPS and 4-line Display

Prepared By: Rick Williams, VE7TK

All clock settings (with *optional* temperature sensors installed) remain at defaults EXCEPT:

- Personal 4-line coding (see below)
- Temp1 and Temp2 calibrations (Mine were 099/144)
- GPS (Mode) 2 (Baud) 009,600 [IF GPS INSTALLED]
- Local Offset -420 at the time this document was prepared (Pacific Daylight Time)

In the following coding:

- I have used "**x**" to indicate a space. (The space character follows the **Z** in the push button sequence.)
- I have used the "■" to indicate the "Delimiter". (In the push button sequence, this character follows the "#".)
- I have put *PLAIN TEXT* to distinguish it from the control "Tags".
- I have put **CONTROL TAGS** in bold
- I ***strongly*** recommend that you save & test the coding after each line is programmed.

Hint: All coding is done using the QRP-Labs Clock push buttons. The coding of the clock is broken into 3 distinct sections in the firmware. I refer to these as the ALPHABETIC, special CLOCK CONTROLS and NUMBERS sections.

If, for example, you need to enter the # character you could push the LEFT button 26 times to get to the CLOCK CONTROL section and then button push to the # symbol. Use the RIGHT button to enter the selection.

Alternatively, when your in the ALPHABETIC section HOLD the LEFT button and it will scroll through and stop, AUTOMATICALLY, at the start of the next section.

This saves time AND wear and tear on your finger tips.

Line 1:

x**#DD**x**#DM**x*20*#**DY**x*UTC*■x**#ND**x**#NM**x*20*#**NY**x*LOCAL*

Eg: **22 Oct 2018 UTC** then it scrolls to

21 Oct 2018 LOCAL

Line #2

xxx**#HH:#MM:#SS**x*UTC*■xxx**#LH:#LM:#LS**x*LOCAL*

eg: **01:54:52 UTC** then it scrolls to

18:54:45 LOCAL

Line #3

xxx*OUTSIDE*x*TEMP*x**#T1***C*■xxx*INSIDE*x*TEMP*x**#T2***C*

eg: OUTSIDE TEMP 10.5C then it scrolls to
INSIDE TEMP 18.8C

Line #4

x*LONG*x**#LN**■xx*LAT*x**#LT**■xxxxx*ALT*x**#AT***M***■**xxx*VE7TK*xx**#M6**

eg: **LONG: 123 22 3505W** then it scrolls to
LAT: 48 28 9811N then it scrolls to
ALT 62.4M then it scrolls to
VE7TK CN88HL

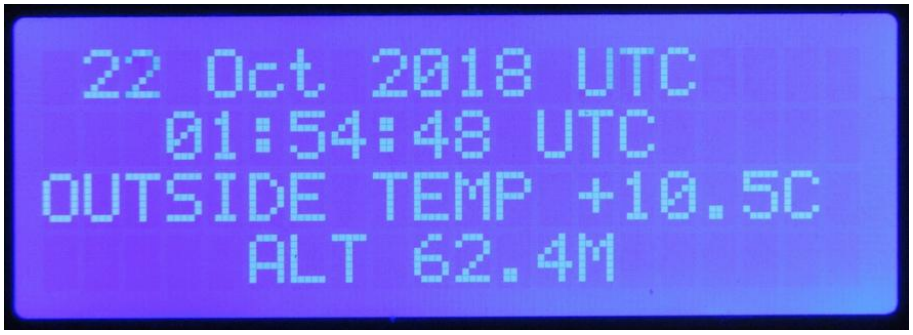
Here's a sequence of 4 screens. Lines 1, 2 and 3 cycle through pairs of data every 3 seconds. Line 4 cycles though 4 items where each item is displayed for 3 seconds. (3 seconds is the default setting for **Line x Pause.**)

Screen 1: UTC date/time and Outside temperature

Screen 2: Local date/time and inside temperature

Lines 1, 2 and 3 are synchronized and change every 3 seconds and then they repeat.

Line 4 displays 4 items – Longitude, Latitude, Altitude and Maidenhead indicator. Each of these 4 items is displayed for 3 seconds and then they repeat. The Altitude and Maidenhead screens are shown in Screen 3 and Screen 4 below.



Screen 3: Line 4 shows the Altitude (altitude accaccuracy is very poor)

Screen 4: Line 4 shows the Maidenhead

Good luck!

73, Rick
VE7TK