HamClock may be built for Raspberry Pi, macOS, Ubuntu, FreeBSD, Windows WSL or most any other UNIX-like system supporting the [X11 Windows system](https://en.wikipedia.org/wiki/X_Window_System).

**To install HamClock on a Raspberry Pi follow these steps:**

1. These instructions assume your RPi is up and running Bullseye. If not, first see the FAQ 4, then come back here.
2. Open a terminal on the target system GUI desktop by clicking on the red Raspberry → Accessories → Terminal. This will give you a command line prompt for the next step.
3. Download and run the installer script by entering the following commands (use copy/paste to avoid typos):
4. cd
5. curl -O http://www.clearskyinstitute.com/ham/HamClock/install-hc-rpi
6. chmod u+x install-hc-rpi
7. ./install-hc-rpi
8. Answer each question by typing y or n followed by Enter.
9. If you chose not to install a desktop icon, you can run HamClock from the terminal at any time by typing this command:
10. hamclock &
11. If no errors then that's it! Be sure to read the User Guide to get the most from HamClock. If something did go wrong, try working through the manual steps in the next section.

**To install HamClock on other UNIX-like systems follow these steps:  
*(works for RPi too if you prefer the scenic route)***

1. Open a terminal directly on the target system GUI desktop to get a command line prompt.
2. Run these commands (use copy/paste to avoid typos):
3. cd
4. rm -fr ESPHamClock
5. curl -O https://www.clearskyinstitute.com/ham/HamClock/ESPHamClock.zip
6. unzip ESPHamClock.zip
7. cd ESPHamClock
8. make -j 4 hamclock-800x480
9. sudo make install
   * If you get errors:
     + on Raspberry Pi or other Debian try loading these packages:
     + sudo apt-get update
     + sudo apt-get -y install curl make g++ libx11-dev xserver-xorg linux-libc-dev lightdm lxsession openssl

* + - on Ubuntu try loading these packages:
    - sudo apt install curl make g++ xorg-dev libx11-dev

* + - on macOS try installing [XQuartz](https://www.xquartz.org/releases/index.html" \t "_blank) and [Xcode](https://developer.apple.com/xcode). Then run
  + xcode-select --install

* + - on FreeBSD try loading these packages:
    - sudo pkg install gcc libX11 gmake curl

then use gmake instead of make.

* + - on RedHat or Fedora try loading these packages:
    - sudo yum install gcc-c++ libX11-devel

1. Now run HamClock by typing:
2. hamclock &
3. Be sure to read the User Guide to get the most from HamClock!
4. To exit hamclock, click and hold the padlock icon for three seconds, then choose Exit.
5. The example make command above will build HamClock with 800x480 pixels. You can also make these sizes:
   * hamclock-1600x960
   * hamclock-2400xx1440
   * hamclock-3200x1920

If you do, redo *both* make commands again, for example:

cd ~/ESPHamClock

make -j 4 hamclock-1600x960

sudo make install

1. If you would like to operate HamClock from any browser on your LAN, see FAQ 14.
2. If you would like HamClock to fill the screen, set that option on Page 5 of Setup. With this option HamClock will still be the same screen size you built, but it will fill any surrounding gap with black so there is nothing else showing. If you really want HamClock to use all available screen space, see the FAQ 12 about xrandr.
3. If your system is [XDG](https://www.freedesktop.org/wiki/Specifications) compliant and you would like a Desktop icon with which to start HamClock, try these commands:
4. cd ~/ESPHamClock
5. mkdir -p ~/.hamclock
6. cp hamclock.png ~/.hamclock
7. cp -p hamclock.desktop ~/Desktop
8. Similarly, if you would like HamClock to start automatically when you boot your system, try these commands:
9. cd ~/ESPHamClock
10. mkdir -p ~/.config/autostart
11. cp hamclock.desktop ~/.config/autostart
12. On macOS, you can turn the bare executable into a clickable App on your Desktop as follows:
13. cd ~/ESPHamClock
14. HCDIR=~/Desktop/HamClock.app
15. mkdir -p $HCDIR
16. echo '#!/bin/bash' > $HCDIR/HamClock
17. echo '/usr/local/bin/hamclock &' >> $HCDIR/HamClock
18. chmod u+x $HCDIR/HamClock

To give it a proper icon:

* + open hamclock.png with Preview
  + click on the image
  + type ⌘-A to select the image
  + type ⌘-C to copy the image to the clipboard
  + right-click the new HamClock.app Desktop item and select Get Info
  + click the existing default icon in the upper left corner
  + type ⌘-V to paste a new icon
  + close Get Info
  + close Preview

To put it in the Dock:

* + edit the script and temporarily remove the trailing & (dock icons bounce until the parent process exits)
  + double-click to launch HamClock.app
  + while it's bouncing in the dock, right-click and select Options → Keep in Dock
  + exit HamClock
  + remember to put back the &

For a little more decorum, create a bona fide app using [Platypus](https://github.com/sveinbjornt/Platypus). I tried it briefly on Big Sur and found it easy to use and worked well. Use the same 2-line script as above but without the & so Platypus can properly inform the OS when you exit HamClock.