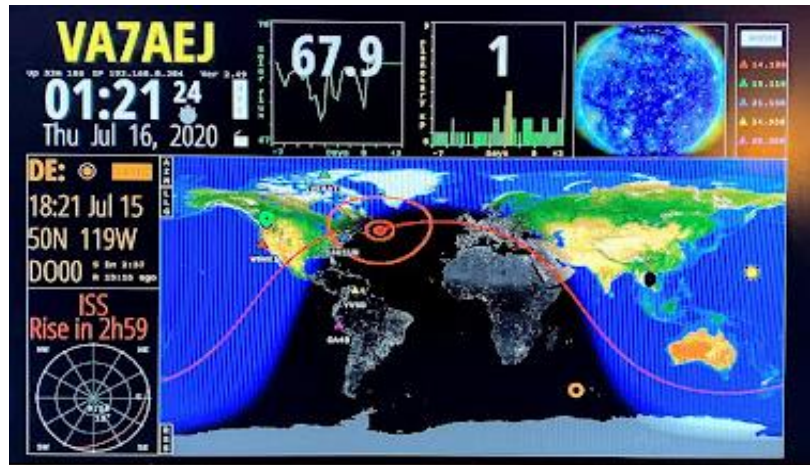
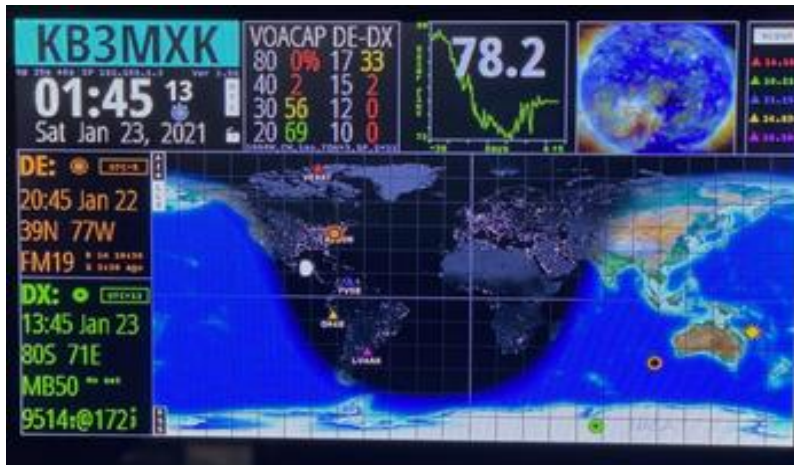
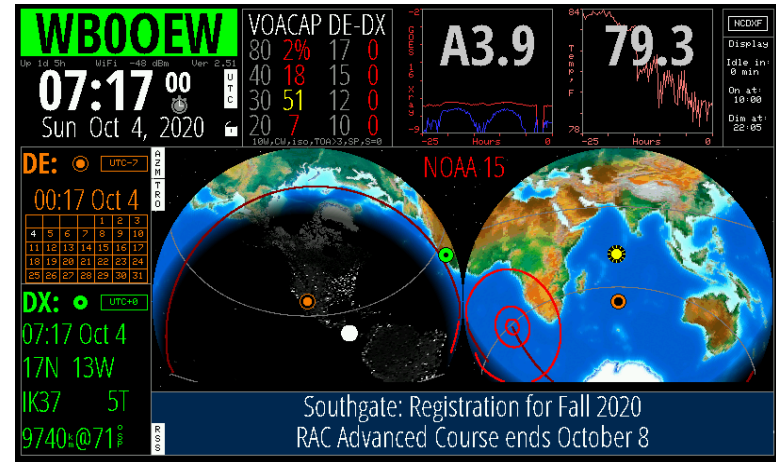


HAM CLOCK



What is a Ham Clock? Why do I need one?

Real time information source for HF activity:

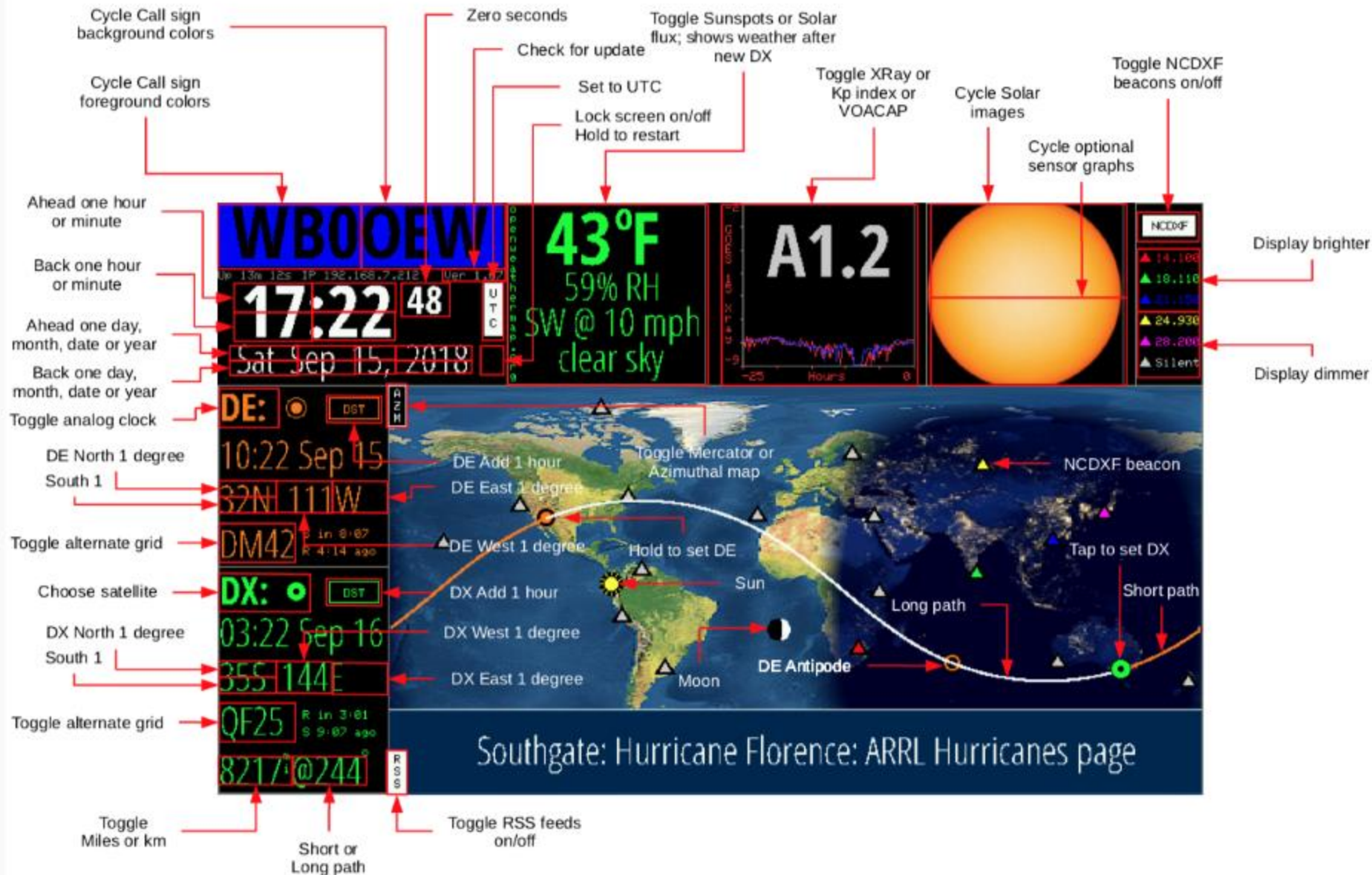
- Standalone (frees up your shack PC(s) for other apps)
- Customizable (big or small screen footprint)
- Inexpensive hardware (more or less)
- Do it yourself build
- User selects information and display format
- Requires Internet connection
- Even serves as a clock!

Original Design: Elwood, WB0OEW

- Accurate Time
- Geography
- Time Zone
- Solar Activity
- Sunrise and Sunset Times
- Maidenhead Locators
- Beam Heading
- NCDXF Beacons
- News Headlines
- 7" TFT Colour Display
- Downloadable software:
<https://www.clearskyinstitute.com/ham/HamClock/>
- Now on V2.74 – with User Guide:
<https://www.clearskyinstitute.com/ham/HamClock/HamClockKey.pdf>

HamClock Touch Controls and Map Symbol Key

V 2.07



QST Article – Elwood Downey, WB0OEW – Oct. 2017

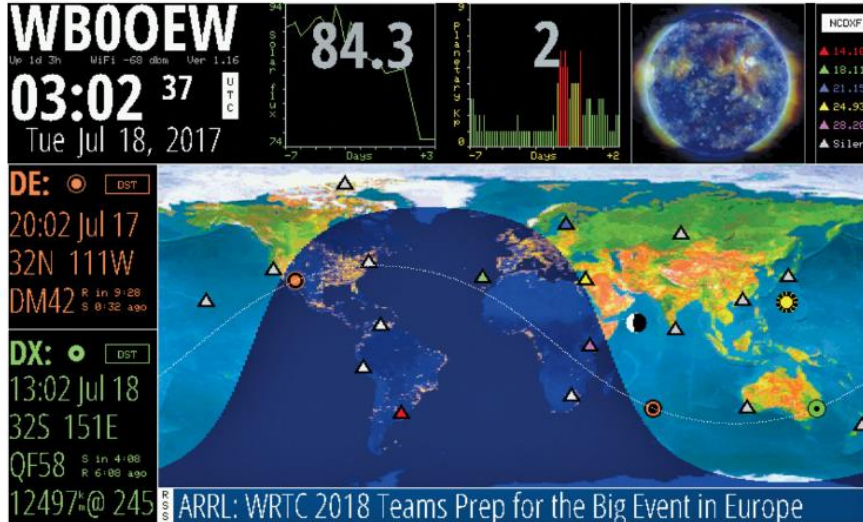


Figure 1 — The screen display of the HamClock.

Table 1
List of HamClock Parts (www.adafruit.com)

Description	Product Number	Approximate Price
Adafruit HUZZAH ESP8266 Wi-Fi system-on-chip	2821	\$16
RA8875 display controller	1590	\$5
7" TFT display with resistive touch	2354	\$48
FPC extension cable and board	2098	\$5
Pimoroni Raspberry Pi 7" TFT stand, optional	2033	\$15
Photo cell, optional	161	\$1
BME280 weather sensor, optional	2652	\$20

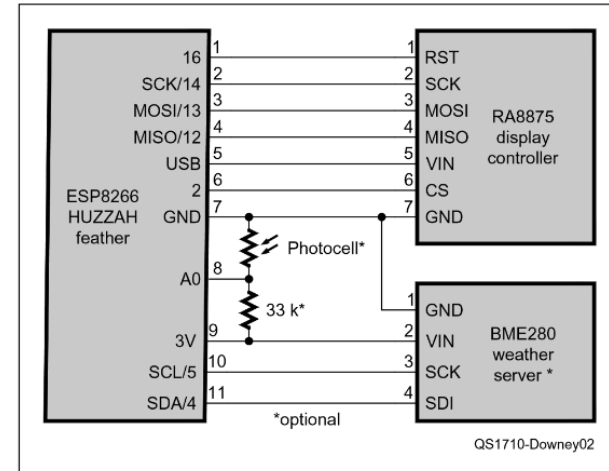


Figure 2 — Wiring diagram of the main HamClock components.

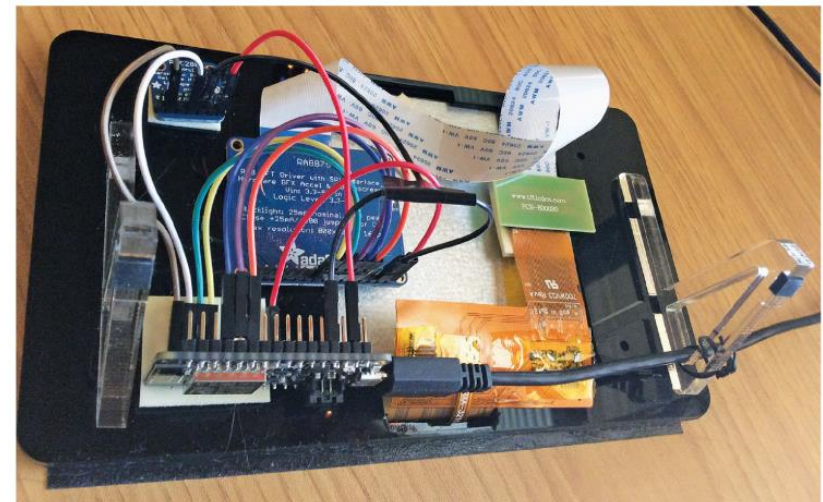
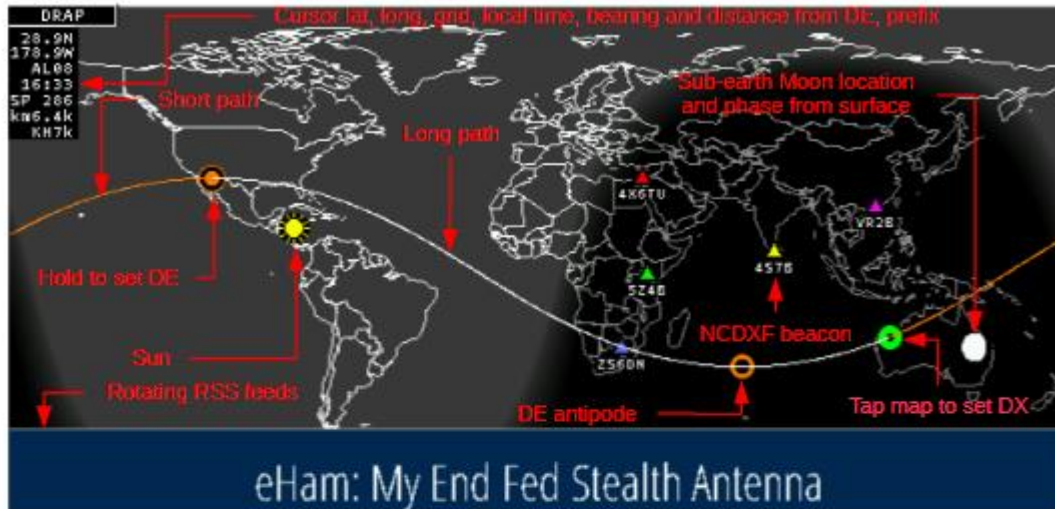


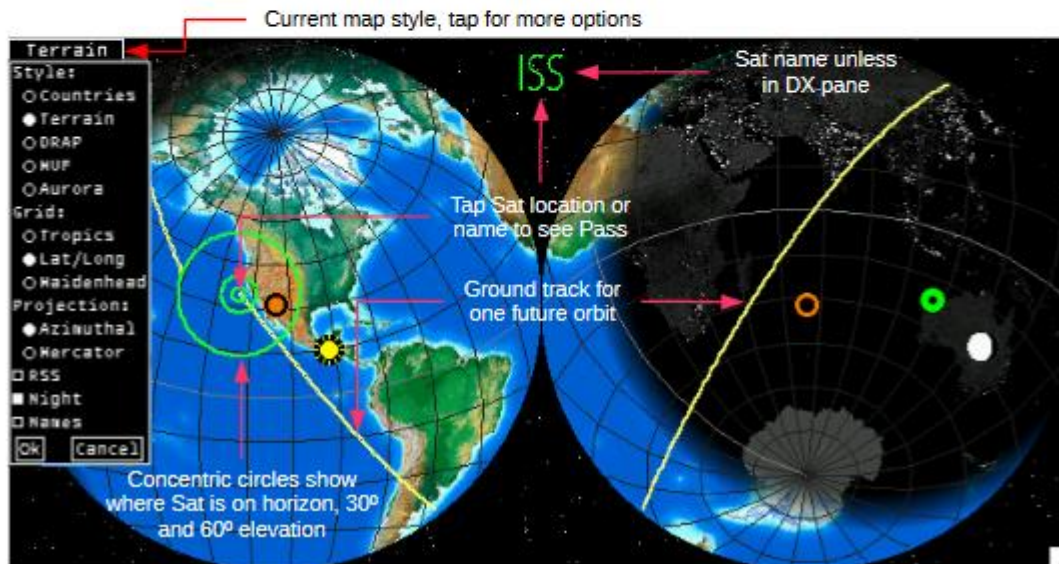
Figure 3 — The rear of the HamClock shows how the main components are adhered to the back of the bezel and shows the wiring using female-female jumper wires.

Display Items (From User Guide V2.74)

Choice of Map Projections



Mercator projection centered at 0° longitude

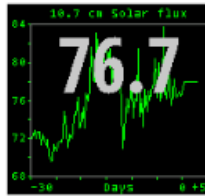


Azimuthal projection centered on DE

Display Items Cont'd (From User Guide V2.74)

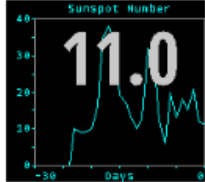
10.7 cm Solar flux

- current value
- 30 days history
- 3 days forecast



Sunspot number

- current value
- 30 days history
- Series 2.0
- data from sidc.be



24 Hour VOACAP DE-DX path reliability map

- band and MHz row labels

- Tap band for map
- Tap time line to toggle DE or UTC labels; Now is always on left.
- Tap power to change



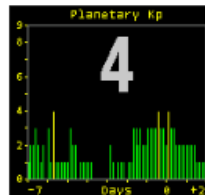
Current weather

- Left pane is always transient DX
- Any pane can be persistent DX or DE
- Data is from openweathermap.org



Geomagnetic index

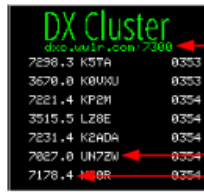
- planetary K
- 7 days history
- 2 days forecast



Moon with DE stats

- Az, El
- Next Rise or Set
- Speed: + away

Tap in lower half to display EME planning tool (see page 6)

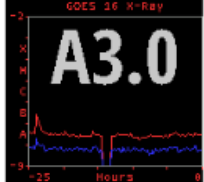


Scrolling DX Spider spots

- Telnet host:port. Green: OK; Yellow: Connecting; Red: Error
- Tap a line to set DX
- UTC HHMM
- DX call
- kHz

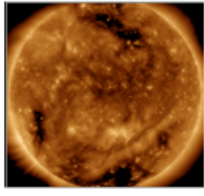
GOES 16 X-Ray flare class

- current level, log(Wm²)
- 24 hour history



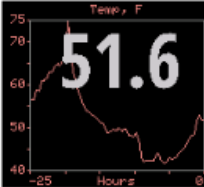
Solar Dynamic Observatory

- Composite 171+193+211 Å
- Magnetogram
- 6173 Å visible sunspots
- 193 Å coronal holes



Optional Env Sensor

- Temperature
- Humidity
- Dew point
- Station pressure
- 24 hour history
- tap for next



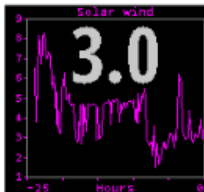
NOAA Space Weather

- now and 3 days forecasts
- scale 0..5
- Radio blackouts
- Solar Radiation Storms
- Geomagnetic Storms



Solar Wind flux

- 10¹² protons m² s⁻¹
- > 5 good chance for aurora
- 24 hour history
- see Notes on page 9



- Space Wx Panes
- Local Wx
- DX Cluster
- Add'l panes for Satellites, EME, etc.

Notes:

- There is an app called “Ham Clock” for PC (Windows 10) but it is not the same as the original. It requires running an Android emulator and only supports a small portion of the features of the “real” Ham Clock.

References

- Downey, Elwood, WB0OEW, HamClock, QST Magazine: Oct 2017. pp 42-44
- Downey, Elwood, Website:
<https://www.clearskyinstitute.com/ham/HamClock/>
- Jason, KM4ACK, Ham Clock on a Raspberry Pi 3, YouTube Video:
<https://youtu.be/IujG5ylvMWQ>