



# Flashing Electronic Shelf Labels

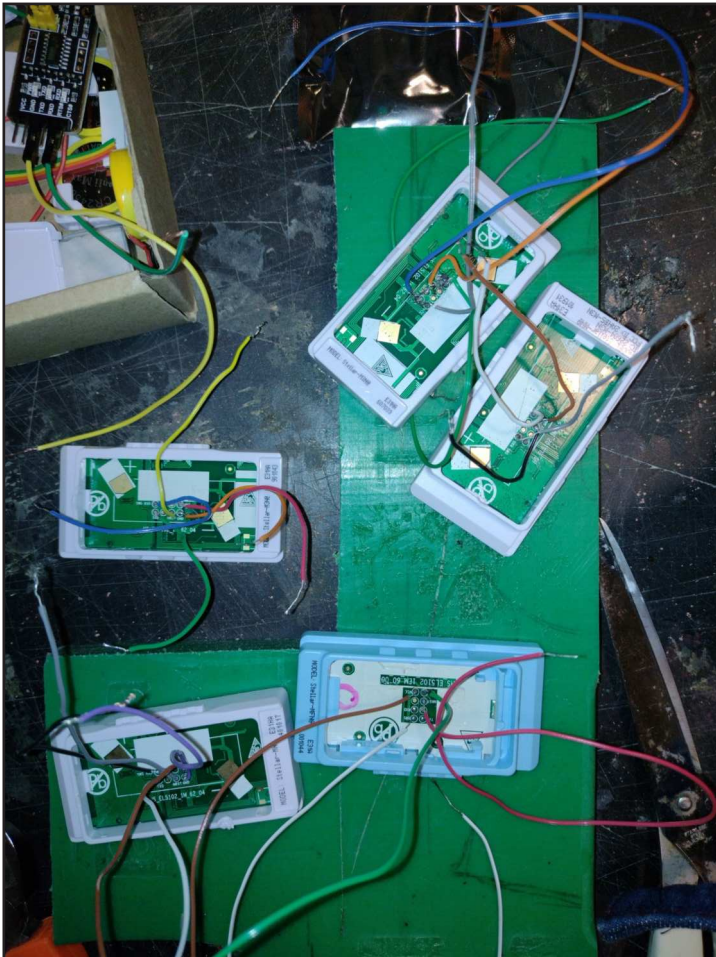
Two major Dutch supermarkets, both using

**Hanshow**

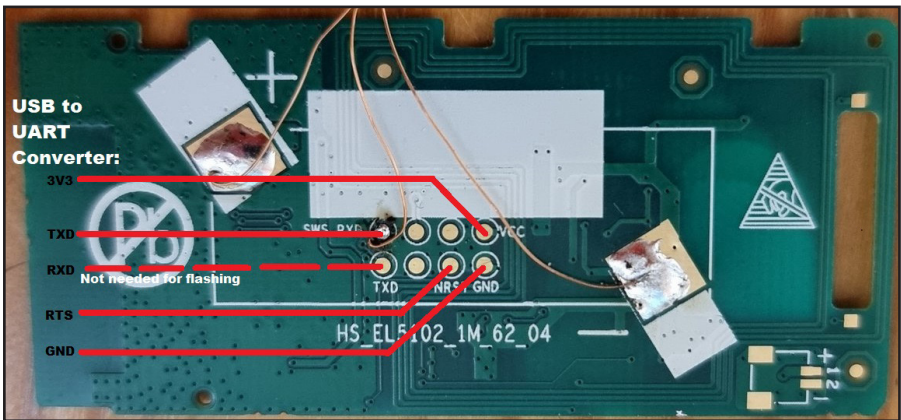
price tags.

Jumbo, using the Nebular model.  
No replacable batteries, I need a dremel to get in.

Albert Heijn uses the Stellar model.  
Batteries can be taken out, exposing the pads where we can solder to.



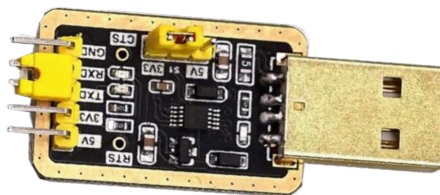
Soldering tiny cables.  
It goes all smooth when prepared,  
everything coated in tin,  
some flux  
and a soldering stand  
helping us along the way.



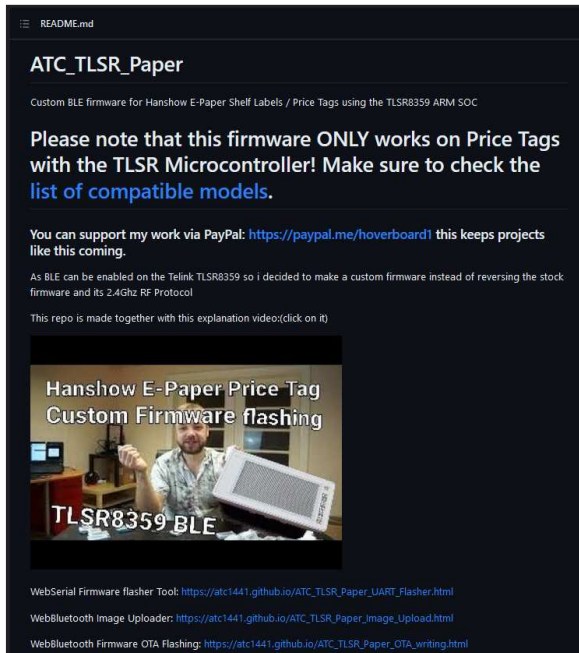
I need to talk with the microchip inside,  
rewrite his beliefs.

It's submissive position towards the supermarket  
will come to an end.

A USB to UART converter will help us with that.



Github brought us ATC\_TLSR\_Paper,  
a firmware,  
to flash.



The screenshot shows the GitHub repository page for ATC\_TLSR\_Paper. The title is "ATC\_TLSR\_Paper" and the description is "Custom BLE firmware for Hanshow E-Paper Shelf Labels / Price Tags using the TLSR8359 ARM SOC". A prominent warning states: "Please note that this firmware ONLY works on Price Tags with the TLSR Microcontroller! Make sure to check the list of compatible models." Below this, there is a link to a PayPal page for supporting the project. A note explains that the firmware was created because BLE cannot be enabled on the Telink TLSR8359. A video thumbnail is included with the title "Hanshow E-Paper Price Tag Custom Firmware flashing" and "TLSR8359 BLE". At the bottom, there are links to the WebSerial firmware flasher tool, the WebBluetooth image uploader, and the WebBluetooth firmware OTA flashing tool.

Open the flash tool in Microsoft Edge  
(my apologies, Firefox is adjusted to strong privacy settings)

**TLSR8359 USB-COM Flash Writer v0.2 (TX-SWS only!)**

[Firmware GitHub Repo](#)  
[Flashing Pinout](#)

1. USB-COM:  Baud:  Atime:

2. Select Firmware:  Geen bestand geselecteerd.

3.  Open COM & Select file

Connect to the serial USB converter,  
first, unlock the flash, write the .bin after that.

Naam	Gewijzigd op	Type	Grootte
WORKING CN	16/06/2023 16:54	Bestandsmap	
200x200.bin	19/06/2023 21:36	BIN File	93 kB
Chinese Original.bin	7/07/2022 14:55	BIN File	93 kB
fix your resolution ATC_Paper.bin	9/03/2023 20:46	BIN File	89 kB
ORIGINAL.bin	15/06/2023 14:38	BIN File	89 kB

The .bin needs to be compiled on your computer.  
Run makeit.exe in E:\stellar-L3N-etag-main\Firmware.

With these various models and screen sizes it became a mess.  
It was smooth to upload a firmware, uploading images was a nightmare.

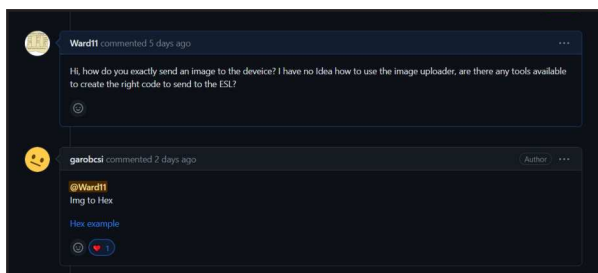
#### About the display:

The e-ink panel used in this ESL is 250 by 122 pixels, black and white (no gray levels...yet).

Larry Bank added his [OneBitDisplay](https://github.com/bitbank2/OneBitDisplay) (<https://github.com/bitbank2/OneBitDisplay>) and [TIFF\\_G4](https://github.com/bitbank2/TIFF_G4) ([https://github.com/bitbank2/TIFF\\_G4](https://github.com/bitbank2/TIFF_G4)) libraries to make it easy to generate text and graphics. For anyone wanting to write directly to the display buffer, the memory is laid out like a typical 1-bpp bitmap except that it is rotated 90 degrees clockwise. In other words, the display is really 122 wide by 250 tall, but laying on its side. Each byte contains 8 pixels with the most significant bit on the left. Black is 0 and white is 1. Each row of 122 pixels uses 16 bytes. Here is an example function to set a pixel given the x,y of the orientation (portrait) that the display is used:

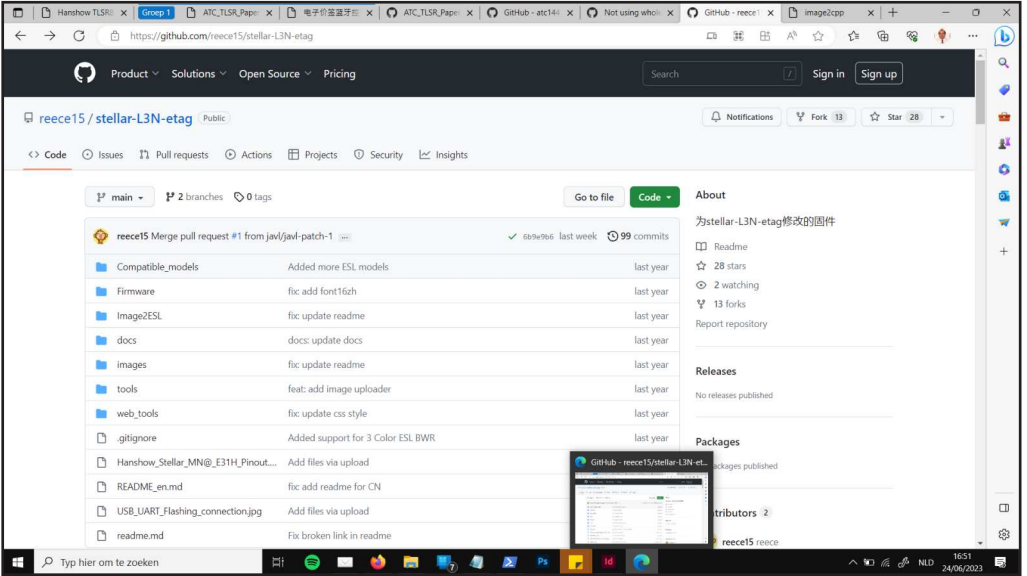
```
void SetPixel(int x, int y, uint8_t *pDisplayBuffer)
{
    uint8_t *d = &pDisplayBuffer[(y >> 3) + (249-x)*16];
    *d &= ~(0x80 >> (y & 7)); // set pixel to black
}
```

The following hardware is currently supported, most displays are detected automatically if that fails you can select the correct one in the OTA flashing tool. The graphical layout is not edited for each screen size and will not fit nicely on all especially the 1.54" Version.



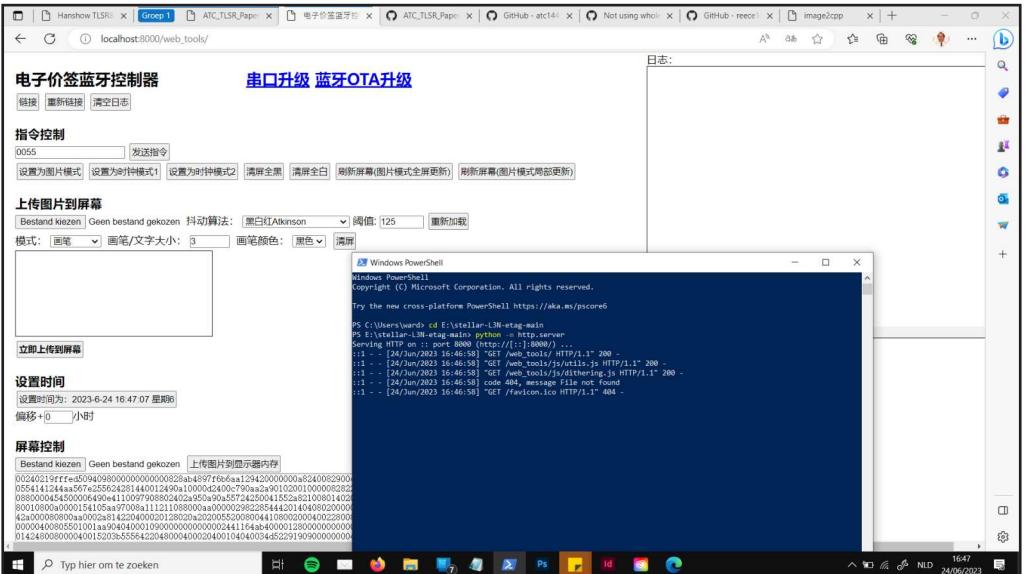
No convenient drag & drop.

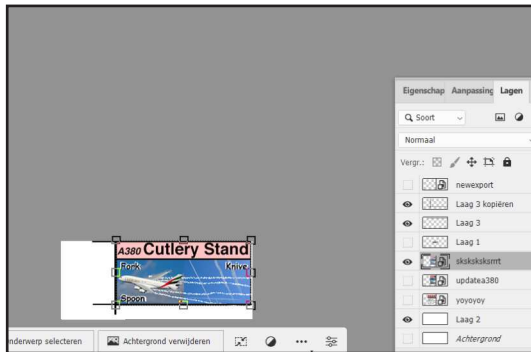
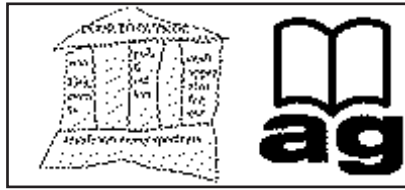
# Blessed with recee15/stellar-L3N-etag, easy uploading was made possible.



Let's say it works on 70% of our available Stellar models.  
It comes with a slightly adjusted firmware.

Before I forget, you flash with USB, all communication  
takes place over Bluetooth after that.





Arrangement in a 122 x 300 pixels file, export, test, untill it displaying what we desire.



Never steal from people, steal from places.



Eindhoven, June 2023  
Angeli

