

WX Maps Construction Guide

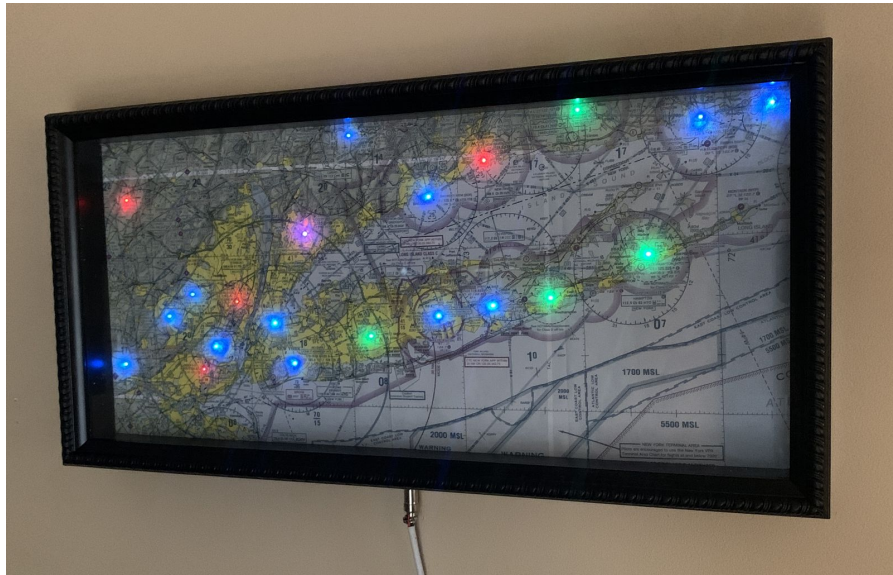


Table Of Contents

Introduction	3
Tools Needed	3
The Frame	3
The Map	3
The Backing	4

Introduction

Welcome to your WX Maps construction guide! The intent of this guide is to provide you a few resources in the construction of your WX Map. The overall process to construct your map consists of 3 parts. The frame, the map, and the backing. The following sections will provide some resources and tips to help make assembly easy.

Please feel free to reach out to me via our website <https://wxmaps.shop> or via email rick@wxmaps.shop

Tools Needed

Glue
Utility Knife
Scissors
Hot Glue
Pin/awl/drill bit/sharp pointy thing

The Frame

The frame is where you make your WX Map pop! There really aren't many requirements here, however you do want to consider a few things.

Firstly the LEDs will stick out a bit from your backing. You'll want to make sure you have enough room to hang the map on your wall without crushing the LEDs.

You may also want to mount all the electronics on the frame itself. You'll need to make sure you have enough depth to mount the Raspberry Pi and WX Maps Controller while still allowing the frame to be mounted on the wall.

I typically take a trip to [Michaels Stores](#) to find something I like. They have tons of different styles and colors for you to pick from.

The Map

There are a few different options for your actual map. The simplest way is to just use a local sectional, TAC, or enroute chart. This method is quick and easy, however you have to deal with

fronts/backs, adjoining maps, and can't play with the scale at all. However, if the area you want to display is all on one side of a sectional this is the easiest way to get started.

If you need more flexibility the FAA makes available their charts in TIFF format for you to download at the following locations:

[VFR Raster Charts](#)

[IFR Enroute Aeronautical Charts and Planning](#)

Using photo editing software you can modify, stitch together multiple maps, and even change the scale of a map so you can do things like display the entire east coast in an appropriately sized frame.

Once you've finished editing the image you can use a service such as [PosterBurner](#) to create your own custom poster.

Airports

Now that you have your map area figured out you'll need to figure out which airports on the map provide weather data to be displayed.

Currently all weather data comes from [aviationweather.gov](#) so this is the best place to check.

Doing so is a little tedious, but simple. In the near future we will develop a tool to make this easier.

For now visit <https://www.aviationweather.gov/metar/data>. In the "IDs" box at the top enter in the airport IDs on your WX Map sectional. You can do all at once or one at a time.

You will then see a screen like this:

The screenshot shows the 'METAR Data' website interface. At the top, there are navigation links: 'METAR Home', 'Plot', 'Data', 'Board', and 'Info'. Below these is a search bar with 'IDs: KISP KHWV KMTP' entered. To the right of the search bar are options for 'Format: Raw (selected) Decoded', a dropdown menu set to 'most recent only', and a checkbox for 'Include TAF'. There are also 'Print' and 'Update' buttons. The main content area displays the data at '1406 UTC 25 Jun 2020' and lists three airports with their respective METAR data: KISP, KHWV, and KMTP. Below the list, it states 'No METAR found for 4N1'.

Station	Time	Alt	Wind	Vis	Clouds	Temp	Dew	SLP	Remarks
KISP	251356Z	3000	07KT	10SM	FEW110	BRN250	27/11	A2998	RMK AO2 SLP149 T02670106
KHWV	251356Z	AUTO	3200	6KT	10SM	CLR	27/11	A2998	RMK AO2 SLP151 T02720111
KMTP	251354Z	AUTO	VRB04	KT	25/16	A2998	RMK AO1	SLP153	T02500161

No METAR found for 4N1

Pay close attention to the results! In the above example ISP and HWV have the required data, however even though MTP returns METAR data note it does not have sky conditions so it will not display the flight category - our main mode of displaying data. You may wish to omit that

from your map. If no weather data is returned by the airport you will see a message that says so.

The Backing

Once you have your map sorted you'll need a place to mount it. This is the backing. You can have this professionally done but I've always done it on my own using [white foam board](#) from Michaels.

Using a utility knife cut the foam board to the size of your frame. Ensure it fits snugly in the frame.

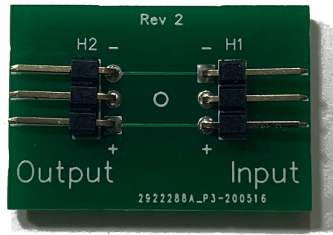
Once complete you can move on to gluing the map to the board. If you're using a sectional cut it out to a slightly larger size than your board. I've found it's helpful to draw some pencil lines around the area you want to be displayed on the sectional. This helps in aligning it in the next step.

Next spread your glue onto the backing. I've had good luck with [Aleene's® Original Tacky Glue®](#). You want a nice thin even coating. Now place your map on the glue and align it so it's centered. Once the alignment is ok I place the backing map side down with some weights on top overnight.

Once the glue has dried we can now get set up for our WX Map LEDs. For each airport that you want to display you're going to have to create a hole for the light to shine through. From the front of the map use a pin to make a small hole in the center of each airport you will be displaying. The larger the hole the more light will come through. I recommend a size of about ½ the airport's colored circle.

Once all your holes have been created I highly recommend labeling the airports on the backside of the board. This will help configuration and troubleshooting down the road.

Lastly - you can install your WX Map LEDs! Take some time to figure out the best layout for your particular map. The WX Map LEDs are chained serially so order is important. Each output from one LED attaches to the input of the next one until there are none left. Make sure that your wires are long enough to make any gaps and make sure the orientation of the lights doesn't result in any tight bends.



Once you have your layout complete I highly recommend labeling the order of the lights to help configuration and troubleshooting.

To install the lights to your backing simply place a ring of hot glue around the airport hole. You can use the small circle on the back of the LED to help align your light above the airport hole. Place the WX Map LED light side down into the ring of glue and press down firmly for about 60 seconds or until the glue cools. Continue for all lights.

Once completed you can then wire the WX Map LEDs together. One light's output goes to the next lights input. Make sure your connections are correct and your wires do not twist as any miswiring of the lights can cause damage to one or more of your lights.

Congratulations! Your map is complete!