HOF and Custom Display Guide

For Masterswitch Studios Display Systems. Written by **Jem** and **DJ98** for Masterswitch Studios.

All software and brand names are property of their respective owners. This guide does not provide downloads or info on how fully to use 'Helen', 'MIE' or 'Photoshop', you can find tutorials on YouTube, and information on where to purchase them from on the respective companies' websites.

Introduction

As part of our continued commitment to enhance and backport improvements to our products' features, this guide is also being constantly updated to consider the improvements we have done. New features include, but are not limited to:

- Additional formatting for Displays
  - Route Number Justification
  - Additional Stylising for displays, differing on display type
- Improvements to Bitmap Support
  - Simplified bitmap process (also eliminates offset bugs)

Supported Buses:

Standalone DLC

- Masterbus Gen 3 DLC (v1.2a+ only)

Buses bundled with Map DLCs

- Yorkshire Counties Masterdeck
- Yorkshire Counties Veiling 3 (B8RLE)

HOF Destination Format

Recommended utilities

I would recommend the use of [HOF Suite by Rumpelhans](#) to create and edit HOF files, as it provides a useful GUI for users to do all the things below.

Please note: The screenshots were taken with an older version of HOF Suite, and thus may look visually different to the versions you may have.

Destination format

When you create a destination in the **Destinations** tab you will be greeted with fields, as shown here:
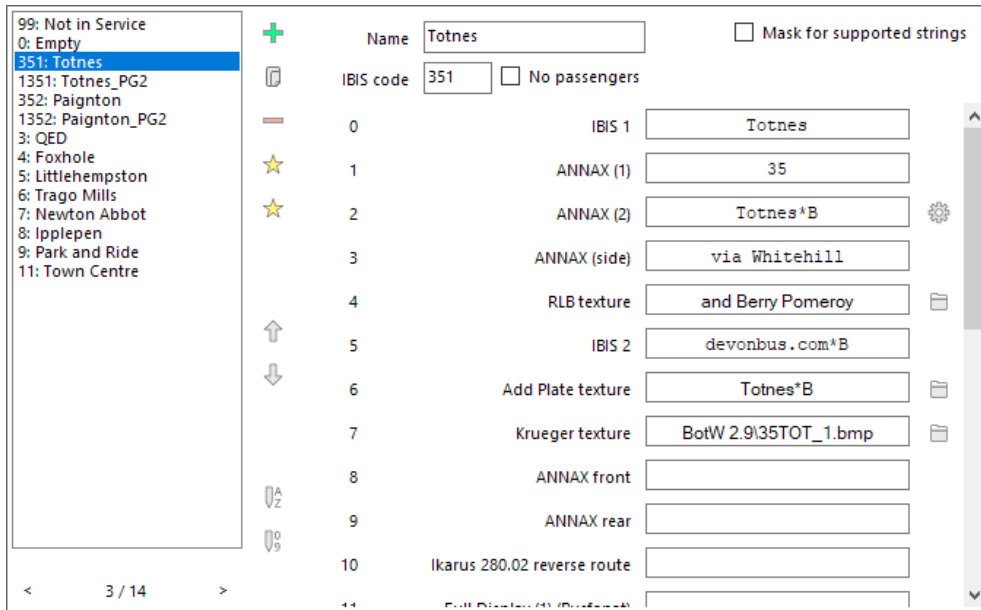

Figure 1: Typical destination format.

The ones used by the displays on the Gen 3 pack are, as below:

Field	Description	Functionality	Flags (H)	Flags (M)
0	IBIS 1	Unique name of the destination. Used in route select mode		
1	ANNAX (1)	Route number on display.		
2	ANNAX (2)	First line of primary front (and rear) display	*B, *L, *M5, *R	*B, *L, *R, *S
3	ANNAX (Side)	Second line of primary front (and rear) display	*B	*B
4	RLB Texture	First line of secondary front display	*B	*B
5	IBIS 2	Second line of secondary front display	*B	*B
6	Add Plate Texture	Text on side display	*B, *R	*B, *R
7	Krueger Texture	Hanover bitmap path		
8	ANNAX Front	Mobitec bitmap path		

Note: Field 0 MUST be unique per destination.

Ensure that when typing in these fields, *Mask for Supported Strings* is unticked, as above. This allows for all the fields to be unrestricted when typing.

Formatting

A small number of flags can be used to format the displays to your liking. Below is a short explanation on what they do:

Flags that only work with Hanover are in Blue. Flags that only work with Mobitec are in Red.

Flag	Description	Example
*B	Makes the selected line appear in **Bold** type	
*L	On the front display, this makes the route number appear on the left, above the driver	
*R	On the side display, this makes the number appear on the right of the display	
	On the Front Display, this makes the *rear* display number appear on the right of the display. **This does not affect the front display.**	
*S	For Mobitec, this makes the top line small, whilst the bottom line is bigger.	
*M5	This utilises the alternate font set for Hanover Displays (commonly known as "Mode 5" or "Asymmetric SuperX") on the displays. Bold formatting will not work when this is enabled.	

Adding additional pages

To add additional pages, simply duplicate the destination that you wish to have multiple pages, modify the new destination as you wish, then add a number, padded with zeroes, on the start of the Ziel code to make it a 4-digit ziel code.

Figure 2: Page 1 of a multi-page destination.

Figure 3: Page 2 of a multi-page destination.

In this example, for destination code 351, the second page would be numbered 1351, the third page will be 2351 and so on, until the 10th page, which in this example would be numbered 9351.

When adding new pages, make sure to place the additional pages after the destination, as this ensures that the scrolling through functionality on the DG3 works as intended. See the example on the right to get an understanding.

The numbers you will need to add to the IBIS code to increase the number of pages is as below:

Number	Page
+0	Page 1
+1000	Page 2
+2000	Page 3
+3000	Page 4
+4000	Page 5
+5000	Page 6
+6000	Page 7
+7000	Page 8
+8000	Page 9
+9000	Page 10

Figure 4: Ideal layout of multi-page displays within a HOF file

In theory, the scripts can support an unlimited number of pages, but to maintain HOF compatibility with other display systems such as Krueger, which has redirection capabilities to specifically formatted destinations, there is a hard limit of 9 additional pages per destination on both systems.

Route Select Mode

Introduction

The Hanover DG3 controller can be set to operate in **route select** mode, where the user must input a route number, then can scroll through all the destinations associated with the route number inputted. This is enabled on a per-HOF basis, so different "databases" can have different settings, mimicking real-life behaviour.

This section explains how to enable, and set up, in the HOF to ensure that this functionality works.

Enabling in the HOF

To enable this functionality for a particular HOF, simply type `RouteSelect` into the *Side Plate Folder* entry on the *Settings* tab for the HOF.
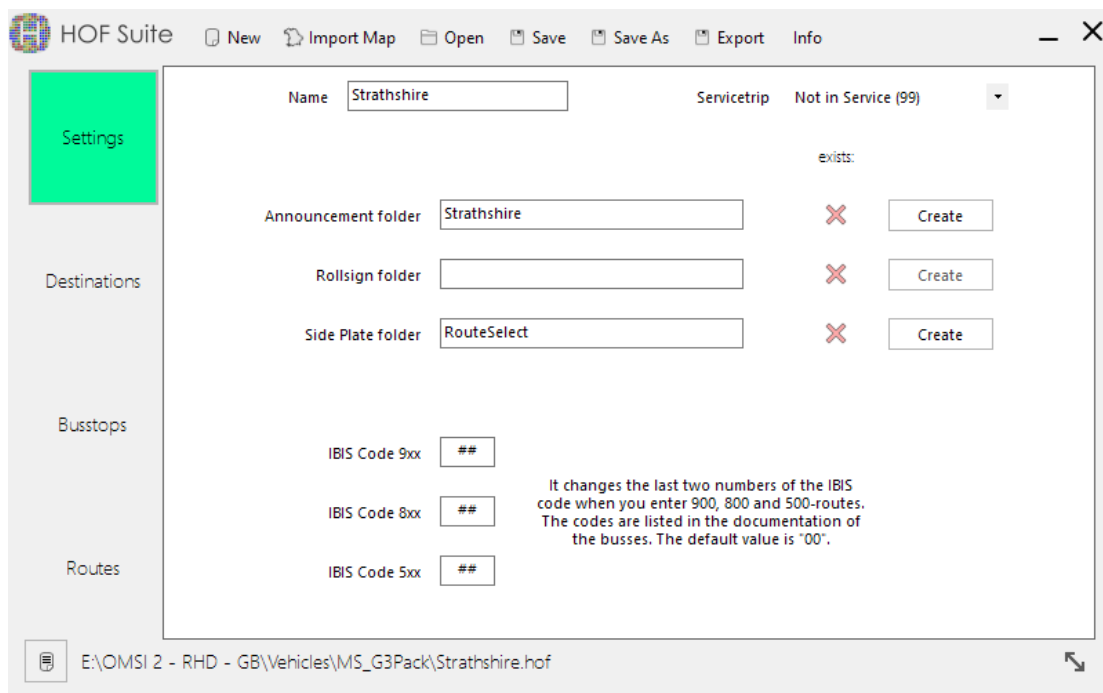

Figure 5: Settings page of HOF Suite.

This tells the controllers to operate in route select mode when the bus is loading in.

Setting up routes

To allow the route select functionality to work, the controllers read the route information from the HOF, then search for its destination.

Line 0

Line 0 is typically used for ancillary messages, such as "Not in Service" displays, and its good practise to put all these messages under line 0.

To add route data, click on the *Routes* tab in HOF Suite, and press the plus (+) icon to add the route:
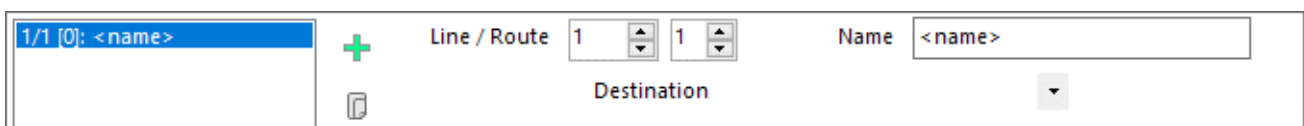

Figure 6: Adding a new route.

Then, change the *Line* box to 0 and select the first destination you wish to add from the *Destination* dropdown:
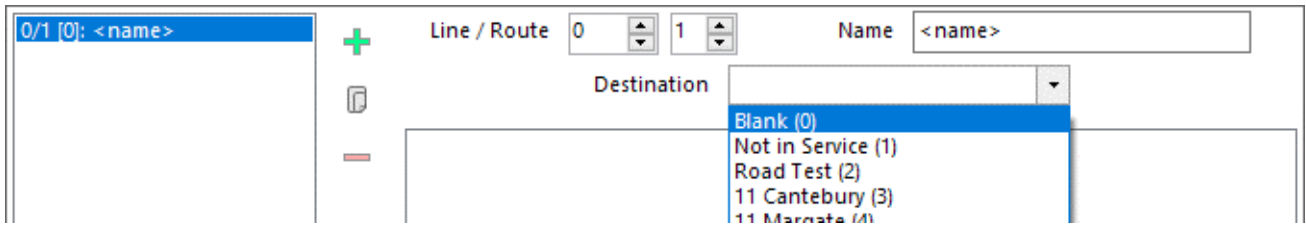

Figure 7: Setting the destination for this route.

To add another route possibility, press the plus (+) button again. HOF Suite will automatically increment the *Route* box, so you don't need to change it yourself:
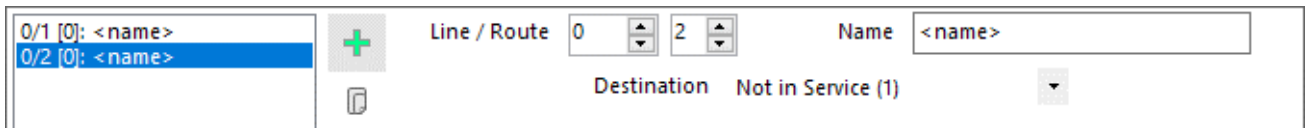

Figure 8: Adding the next destination for Line 0

You do not need to worry about adding bus stops to these route lists or to the HOF, the destination controllers and information systems do not parse this information.

Other Lines

To add other routes, you will need to change the line number to the route number you wish to add, then reset the *Route* to **1**:
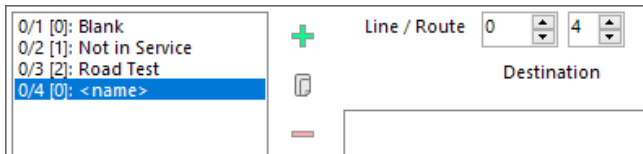

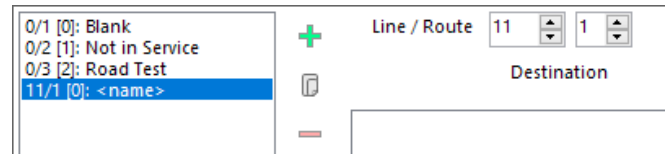*Figure 10: Adding a new route*

Figure 9: Changing route details

Then, follow the same process above in adding routes for this line.

In the case where a route has letters (usually a derivative from the main "line"), you will need to put them under the same "line", then setup the destinations as normal.

In the example to the right (from Strathshire), routes **49** and **X49** are under the same line (49) and the X49 routes are at the end (as 49/6 and 49/7).

In this case, it is important to have the route number written in the destinations themselves, under IBIS 1, as the controller shows this when selecting the destinations once the route has been entered in.
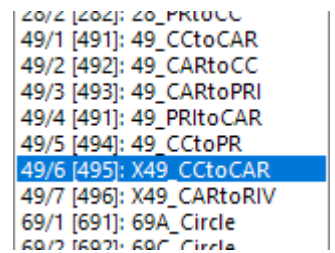

Figure 11: Strathshire Route 49 and X49

Importing map to generate routes.

HOF Suite can import a map's timetable data to auto-populate the route section. Simply click *Import Map* and select the map you wish to use. Then follow the wizard to select the routes you wish to add, and it will add the routes in for you.
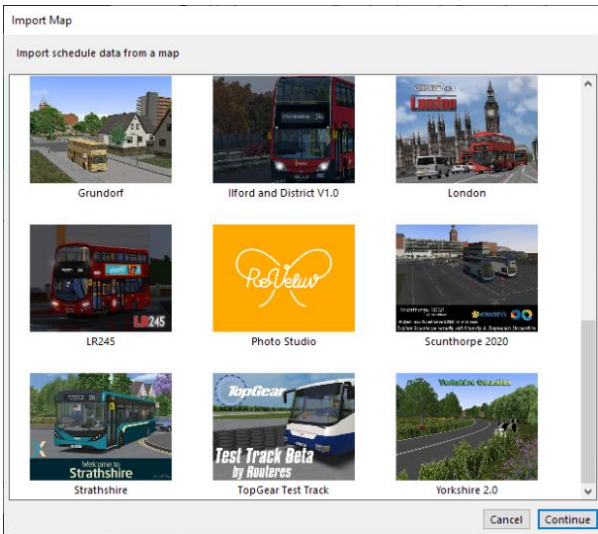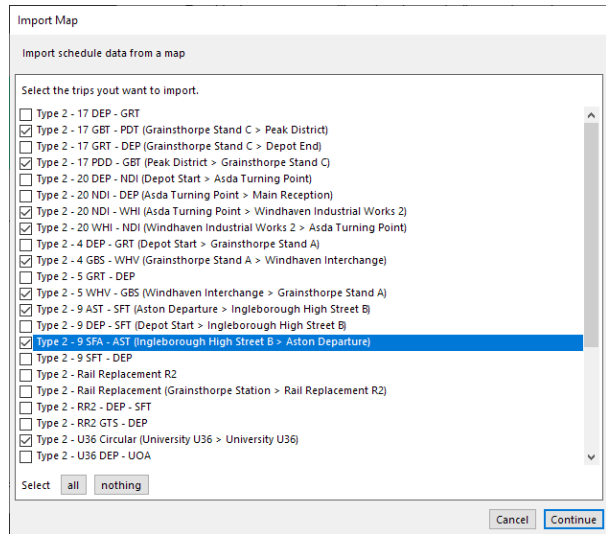

Figure 12: Map Selection in HOF Suite

Figure 13: Selection of routes you wish to include from the map (This example is from Yorkshire 2.0)
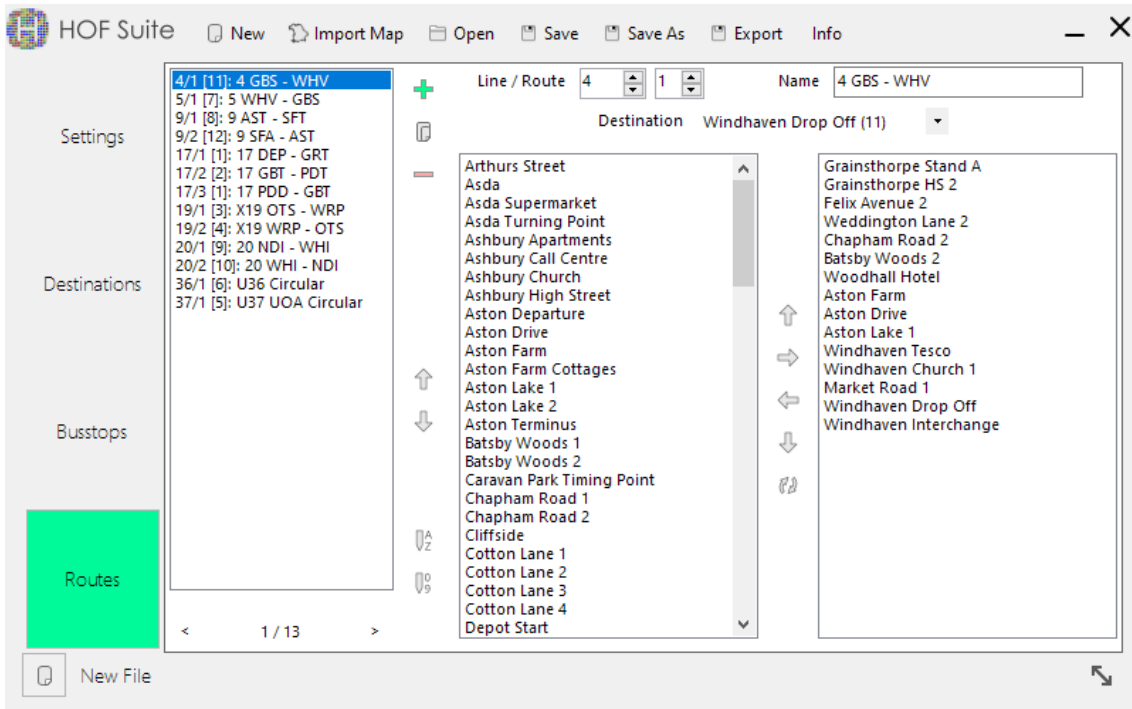

Figure 14: Routes auto-populated from map data

Please note: You will still need to set up Line 0, by following the above sections, to add the ancillary displays.

Custom Bitmaps

Mobitec

Figure 15: Mobitec Displays in MIE

In the Mobitec 'MIE' software, you will need to create five blinds with the correct sizes:

- 19x140 for the front
- 16x112 for the second front display
- 7x84 for the side
- 16x28 for the small rear
- 16x140 for the full length rear.

You also must make sure that the blinds are static only, as scrolling will not work.

Once you have got the software set up and your blinds made, you can export them to a PDF, by going to *File* and then clicking on *Print Signs.* It doesn't matter which option you choose after this. It will then open a PDF which contains images of your displays.

Figure 16: Displays "Printed" from MIE

Once you have this PDF, you need to extract the images. The easiest way I've found is to use a website called 'PDFCandy' and it's PDF extractor function, which can be found here. Just follow the steps, and you will be able to download a zip file, which contains PNG files for each display.
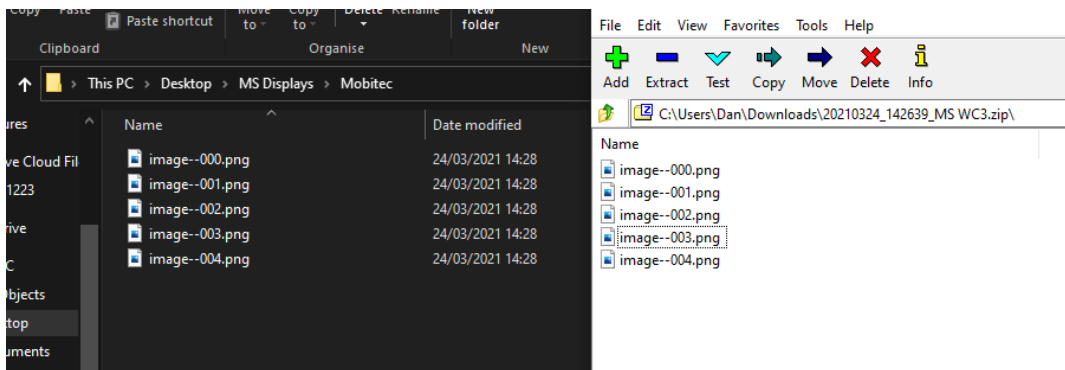

Figure 17: Images extracted from the PDF using "PDFCandy"

Next, you need to go to your Omsi 2 directory, and go to `Vehicles/MS_SharedDisplays/Mobitec/` and open the file *_Template.png* in Photoshop. Once open, drag and drop the PNG images onto the document, and move them into place.

Figure 18: Extracted images in the template

With the images aligned, you can then delete the blue layer, and then right click any of the layers, and select *Merge Visible*.

This will put all the blind images onto one layer, which we can now adjust to work within OMSI.
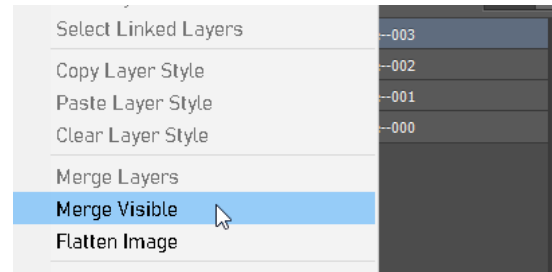

Figure 19: Merging layers in Photoshop

Next, we need to get rid of the grey background on our displays and make the rest solid white. Using the magic wand tool ( ), and with *Anti-alias* and *Contiguous* unchecked at the top of the screen, click on any of the grey areas, which will select all pixels that are that colour, and then press the *delete* key on your keyboard to remove them, leaving you with just the orange areas.

Figure 20: Outcome of removing the backgrounds

Now, we need to make these areas white. The quick way to do this is to hit *Ctrl+U* on your keyboard, bringing up the *Hue/Saturation* menu. Then, just move the *lightness* slider all the way to the right, ensuring that the box for it reads *+100*. Then, press okay to apply the change.

You can now save the image, ensuring it is in the */Vehicles/MS_SharedDisplays/Mobitec/* folder, and that it is saved as a PNG image.

Once the files are saved, type the file name in the ANNAX Front section of the destination that you want to use it for.
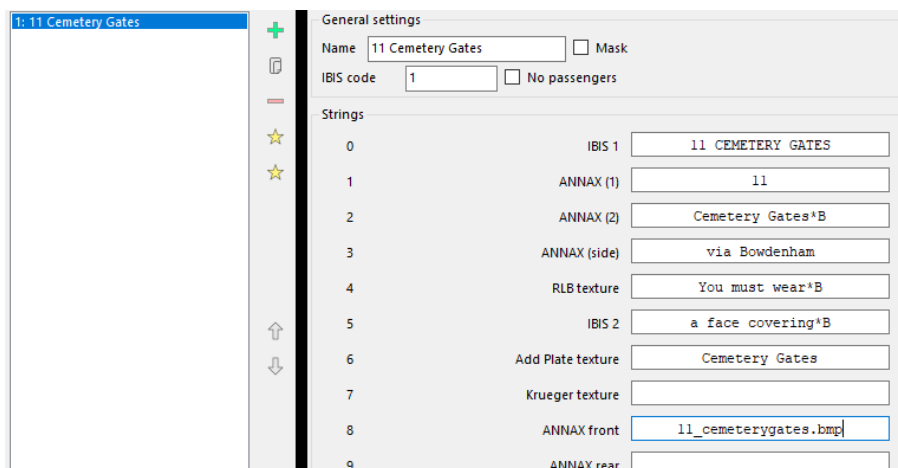

Figure 21: HOF Suite configuration

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Hanover

In the Hanover 'Helen' software, you will need to create five blinds:

- 144x19 for the front
- 112x17 for the second front display*
- 96x8 for the side
- 32x17 for the small rear
- 128x17 for the full-length rear.

  This display size is not selectable, so I recommend using the 112x16 option for this one

You also must make sure that the blinds are static only, as scrolling will not work. They also cannot be SuperX.
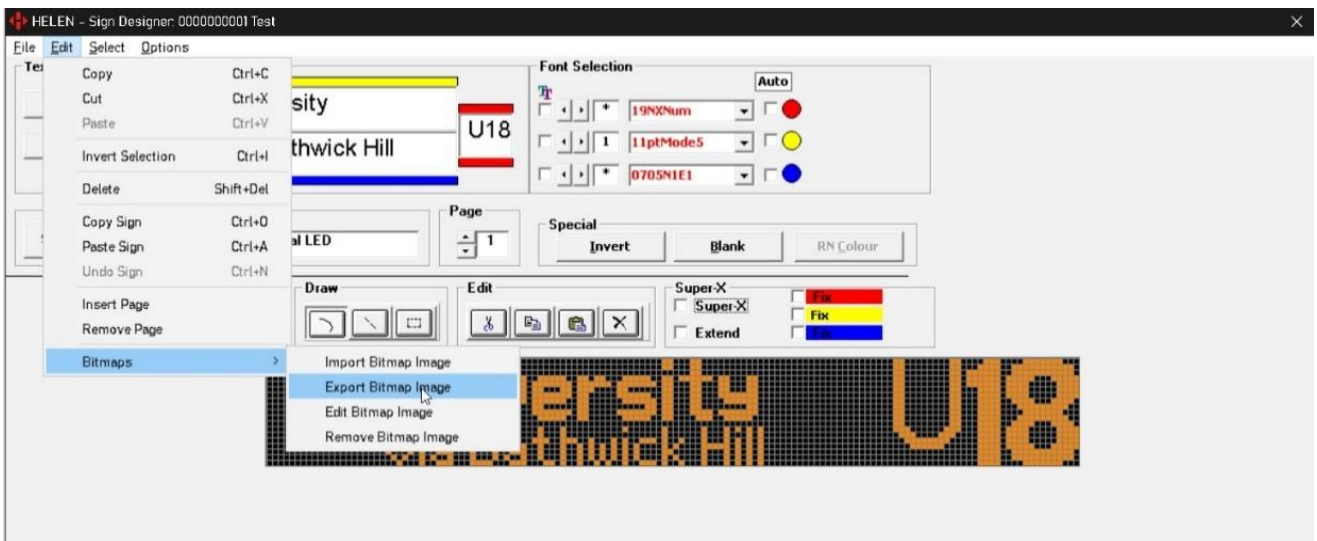

Figure 22: Exporting displays in HELEN

Once you have created your blinds, export each one to a bitmap image, by going to *Edit*, then *Bitmaps*, then *Export Bitmap Image*. Save them to a folder that you can access.

Now, open each image individually in Photoshop, then copy and paste them onto the template image. This can be found in your Omsi 2 directory, then by going to *Vehicles/MS_SharedDisplays/Hanover/*, and opening the *_TEMPLATE.png* image in Photoshop. Then, position them into the gaps.

Figure 23: Displays placed in template (second front display omitted)

Now, follow the same process as the Mobitec section from this point on, to remove the black background on the layer, and remove the blue guide layer. You do not need to worry about making the text white this time, as it is already white.

Once you have it ready, save it into the */Vehicles/MS_SharedDisplays/Hanover/* folder as a PNG, and then add the name of the bitmap file into the 'Krueger texture' field in HOF Suite, right above the one for Mobitec. Now you will be able to use both Hanover and Mobitec bitmaps in game, without having multiple HOF files.

Appendix

Krueger++ Compatiability

The HOF format is compatible with the Krueger++ display system in terms of IBIS code numbering and route formatting, but **not the display rendering**. To use an MS HOF with a bus equipped with K++, you must:

- Have duplicates of the destinations, where the IBIS code must be the same, but with 20000 added to it.
  - For example, with an IBIS code of **56**, the K++ compatible duplicate must be **20056**.
- The duplicate K++ destination **MUST** be formatted correctly for K++ Operation. In this case, you must follow the descriptions of each field.

More information of display redirection, and formatting, can be found on the [K++ Styling Guide](#) on the OMSI Webdisk forum.