simPlugins Panel Builder DCS

User Manual

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Introduction

Panel Builder is an add-on Avionics Package that allows the creation of custom Instrument Panels to interface with several Flight Simulator Programs.

Typically instrument panels are displayed on a separate monitor in full-screen mode. A mask can be used to cover unused portions of the monitor to more closely resemble a typical instrument panel.

Panel Builder can be run on the same computer as the flight simulator software. It is recommended thought to utilize one or more additional computers for this purpose for performance reasons.

Each instrument is ‘free floating’ in the screen. It can be resized, moved around the screen and combined into a predefined panel. For the latter purpose, a management tool called Panel Builder is provided. Panel Builder allows the building of instrument panels for different aircraft types and provides a mechanism for starting and stopping all instruments.

Some instruments contain configuration options that are accessible via a right click menu option. This is used for setting ranges and/or color bars on the instrument, calculations and performance related options. This allows using the same instrument for a slow piston powered airplane or a high performance turbine powered airplane.

The same instrument can be used multiple times in a panel. This allows for example to build panels for multi-engine aircraft or for defining a pilot and co-pilot instrument panel.
## Capabilities and Features

<table>
<thead>
<tr>
<th>Modular Design</th>
<th>Instruments (Panel Builder) and Interface software are separate modules. This enables adding new interfaces for other flight simulators without changing the instrument software. The interface software is always installed in the same computer as the flight simulator. The instruments (Panel Builder) can be installed on separate, networked computers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vector based Instruments</td>
<td>Allows the sizing of instrument to match a cut-out mask or to set them to the required size for easy reading. No images are used to draw instruments on the screen. Instruments are always crisp and easy to read in any size.</td>
</tr>
<tr>
<td>Network support</td>
<td>Panel Builder is typically installed on one or more additional, networked computers. This will lower the performance impact the external panel has on the flight simulation software. It also provides additional screen real estate for the panels.</td>
</tr>
<tr>
<td>‘Free-floating’ Instruments</td>
<td>All instruments provided can be moved anywhere on a monitor. This allows accurate placement of instruments on a predefined back-ground graphic or cut-out mask. They can be locked in place to avoid accidental moving.</td>
</tr>
<tr>
<td>‘Free-sizing’ Instruments</td>
<td>All instruments can be resized in fine increments. This is useful to fit instruments into a panel mask</td>
</tr>
<tr>
<td>Multiple-use Instruments</td>
<td>Each instrument can be used multiple times within the same panel. This allows the use of engine instruments for multi-engine aircraft and to design a pilot and co-pilot panel.</td>
</tr>
<tr>
<td>Commercial Applications</td>
<td>The Commercial Version licenses the user to deploy Panel Builder in a commercial environment and for resale as part of a complete flight simulator environment. Each deployment does require the purchase of a separate license.</td>
</tr>
</tbody>
</table>
## Technical Requirements

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Processor</th>
<th>Any Dual Core Processor or greater</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>4GB (32 Bit), 8GB (64 Bit)</td>
<td></td>
</tr>
<tr>
<td>Disk Space</td>
<td>1 GB (approx.)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Windows 7</th>
<th>32 or 64 Bit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Windows 8</td>
<td>32 or 64 Bit</td>
</tr>
<tr>
<td></td>
<td>Windows 8.1</td>
<td>32 or 64 Bit</td>
</tr>
<tr>
<td></td>
<td>Windows 10</td>
<td>32 or 64 Bit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flight Simulator</th>
<th>DCS World</th>
<th>Version 1.5 or greater</th>
</tr>
</thead>
</table>
Licensing

Panel Builder comes in three versions, Home Version, Academic and Commercial Version. The Home Version is intended for home use only, which means that you can use Panel Builder on your home network only. The Commercial Version is intended for commercial applications. The Commercial Version is typically used for integration into commercial Flight Simulators, Flight Training, to be shown at Exhibitions and Shows and other commercial applications. In general, any use that is outside of the home requires a Commercial License. The Academic Version is like the Commercial Version but is limited to educational Institutions like colleges.

All versions are distributed using the same Installation Package and each version is enabled by a different activation scheme.

All versions are delivered on an USB Memory stick and the memory stick has to stay plugged in on the computer where Panel Builder is installed on. Replacement USB sticks can be ordered.

The Home Version has also an alternate licensing scheme via an Activation Code. This licensing is used when you purchase a download version of Panel Builder. Licensing is activated by requesting an activation code via E-Mail. An installation code has to be sent and an activation code is returned. Panel Builder provides a facility to enter this activation code. See next chapter for more information.

If Panel Builder is started and neither a USB stick nor Activation code is present, the software reverts to Demo Mode. Demo Mode has the following restrictions:

- No new panel can be built
- Only 6 instruments can be added to the existing panel
- The runtime is limited to 10 Minutes.
- Demo Mode is clearly indicated on the Panel Builder Main Screen

To return to a licensed mode, either a valid USB Memory stick has to be plugged in, or an activation code has to be entered. Panel Builder needs to be restarted in both cases.
Licensing for HOME Download Version

When Panel Builder starts the first time after installation, the license is checked. The following message appears if no license is found:

Click on the [Yes] button. Then select Configuration and Enter Activation Code from the menu. The following information is displayed:

Activation requires a serial number that you should have received from your reseller. If you do not have received this serial number, contact your reseller. Click on [OK].
Licensing is a 2 step process. First you request an activation code, and then you enter the received code.

Requesting an activation code is done automatically if connected to the Internet or manually via E-Mail. The activation code is returned to you via E-Mail.

Each Activation Code is unique and is registered to the Serial Number, your E-Mail Address and the Computer you have Panel Builder Installed on. The Activation allows for unlimited re-installs on the same computer. If you have a new computer and install Panel Builder, use the same activation code you have received. There are limited numbers of reactivations for new computers. Once you reach the limit, you will receive an e-mail explaining what to do in this case.
**Step 1 - Requesting an Activation Code**

Enter your E-Mail Address and Serial Number then click on [Request Activation Code].

The following message appears. You have 2 options, either click on [Request Now]. This will send the request directly. Or if you are not connected to the Internet, make a note of your E-Mail Address, the Install Code and the Serial Number as displayed and send an e-mail to the e-mail address shown on the form.

Click on [Done] and [Done] again. You can use Panel Builder in Demo mode until you receive the activation code.

![License Request Window](image.png)
Step 2 - Entering the Activation Code

Once you receive your Activation Code via e-mail, start Panel Builder and click [Yes] on the License check screen. This time enter the received Activation Code under Step 2 and click the Activate Button. You will receive a message that the license has been generated.

If you made a mistake entering the code, the next time Panel Builder starts, you might get the following message:

Click in the [OK] Button and re-enter the code in the Configuration Menu under ‘Enter Activation Code’
Integration Scenarios

This section describes different scenarios Panel Builder can be used with. Each scenario requires different installation procedures and network configuration.

There are three distinct scenarios. The number of monitors attached on a computer does not affect any installation or configuration options if the multiple monitors are configured to expand the desktop area (virtual desktop across multiple monitors).

**Single Computer - Single or multiple Monitors**

Diagram

*Computer 1 - Flight Simulator & Instruments*

**Module Selection**

<table>
<thead>
<tr>
<th>Computer</th>
<th>Flight Simulator Installed</th>
<th>Panel Builder Modules Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer 1</td>
<td>DCS World</td>
<td>Panel Builder DCS Panel Builder DCS Interface</td>
</tr>
</tbody>
</table>
Two computers - Single or multiple monitors

Diagram

*Computer 1 - Flight Simulator*

*Computer 2 - Instruments*

**Module Selection**

<table>
<thead>
<tr>
<th>Computer</th>
<th>Flight Simulator Installed</th>
<th>Panel Builder Modules Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer 1</td>
<td>DCS World</td>
<td>Panel Builder DCS Interface</td>
</tr>
<tr>
<td>Computer 2</td>
<td>-</td>
<td>Panel Builder DCS</td>
</tr>
</tbody>
</table>
Installation Procedures

Panel Builder DCS is installed using a 2 step process. The installer software is installed first which allows the selection of the different modules to be installed on each computer (or on a single computer). The different modules are:

- Panel Builder DCS
- Panel Builder DCS Interface

Step 1

Run the Panel Builder DCS Installer on each computer and choose which modules should be installed on each computer. The selection of modules is dependent on the integration scenario applicable to your simulator system as described in the previous chapter.

If you downloaded the software, browse to your download folder and double-click on PanelBuilderDCS.exe

If you bought a USB key, browse in Windows Explorer to your USB Key and double-click on PanelBuilderDCS.exe

Step 2 (Optional)

Configure each module of Panel Builder for:

- Networking

This step is optional. All modules have been preconfigured (even the networking!) and no changes are necessary.

*Attention: if you have already another DSC World Add-on that uses an export.lua file, you need to make some changes in Step 2b - Edit export.lua file.*
Step 1 - Install Panel Builder Installer

Copy the installation package PanelBuilderDCS.exe to each computer that is part of your flight simulation system or insert the USB key and locate PanelBuilderDCS.exe. Start the installation program by double clicking. This will launch the installation.

This specifies where the programs will be installed to. Click [Next >].

Here you select which components are installed. Choose the modules as per your simulator environment. Click on [Next >]
Here you can specify the name of the start menu folder or choose not to create a start menu folder. Click [Next >]

Choose if you want a desktop shortcut created (recommended!), then click on [Next].
Review your chosen options, then click on [Install]. Wait for the installation of files finishes.

The installation has finished. Now the instruments will be added to the firewall to enable networking. *This is required, even for single computer installations!*

Click on the [Finish] button.
**Step 2a - Network Configuration**

All modules of Panel Builder communicate using a network protocol. The Interface software receives data from the flight simulator and sends the appropriate data to each instrument, either on the same computer or to additional computers. Even if both the flight simulator software and Panel Builder is installed on the computer, communication is still performed using the network protocol.

Each Flight Simulator Interface and Panel Builder has a configuration screen for setting networking parameters. Following the scenarios described in previous chapters, each scenario has a different network configuration.

Furthermore, network configuration requires also port numbers for each component of Panel Builder, including Instruments. Port Numbers use a default setting after installation of Panel Builder and will not need to be changed in most cases. There are circumstances were a port number is already in use by a different program than Panel Builder. In this case the port number will need to be changed to a different value.

*In summary, there is no network configuration necessary after the installation.*

All components of Panel Builder have been preset and those values should work for 99% of all installations. The following pages are for your information and in the rare case where you need to make changes to the network.

**What is a Multicast Group Address?**

A Multicast Group Address is a special IP Address that has been reserved for performing communications between groups of programs. It works like a subscription where all programs wanting to communicate with each user subscribe to the same Group Address.

In order to support more than one instrument computer and to allow multiple use of an instrument in the same panel, the multicast broadcasting scheme is used. A *Multicast Group Address* has to be set in the flight simulator interface programs and Panel Builder. The Multicast Group Address is an address that all parts of Panel Builder communicate through on your network.

The Multicast Group Address is the same for all Interfaces and Panel Builder. There is a fixed range of valid addresses. They are in the range between

\[
224.0.0.0 \text{ and } 239.255.255.255
\]

Panel Builder and all Interfaces have been preset to **224.11.5.62**. This does not need to be changed unless you have another program using this address, which is highly unlikely.
**Changing the Multicast Group Address** - Write down your value.

<table>
<thead>
<tr>
<th>Computer</th>
<th>Default</th>
<th>Your Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multicast Group Address</td>
<td>224.11.5.62</td>
<td></td>
</tr>
</tbody>
</table>

This address needs to match in each module of Panel Builder, the Interfaces and Panel Builder itself.

The address has to be in the range of 224.0.0.0 and 239.255.255.255. Choose any address within the valid range and make a note of it above.

Continue in the next chapters with Interface Configuration and Panel Builder Configuration.

**Changing Port Numbers** - Default values are shown. Typically use those values. If you need to change them, make a note in the last column.

<table>
<thead>
<tr>
<th>Module</th>
<th>Name</th>
<th>Default Port Number</th>
<th>Your Port Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel Builder DCS</td>
<td>Listen Port</td>
<td>48000</td>
<td></td>
</tr>
<tr>
<td>Panel Builder DCS Flight Instruments</td>
<td>Listen Port</td>
<td>41000</td>
<td></td>
</tr>
<tr>
<td>Panel Builder DCS Engine Instruments</td>
<td>Listen Port</td>
<td>41001</td>
<td></td>
</tr>
<tr>
<td>Panel Builder DCS Annunciators</td>
<td>Listen Port</td>
<td>41002</td>
<td></td>
</tr>
<tr>
<td>Panel Builder DCS Navigation Instruments</td>
<td>Listen Port</td>
<td>41003</td>
<td></td>
</tr>
<tr>
<td>Panel Builder DCS GPS</td>
<td>Listen Port</td>
<td>41004</td>
<td></td>
</tr>
<tr>
<td>Panel Builder DCS Radios</td>
<td>Listen Port</td>
<td>41005</td>
<td></td>
</tr>
</tbody>
</table>

Instrument Port Numbers are listed in the Instrument Reference Section of this manual.

Continue with the next chapter to configure all modules of Panel Builder and refer back to both tables above to help with the configuration.
Step 2b - Interface Configuration

The lua scripts for Panel Builder DCS Interface were installed in the previous step under

```
C:\Users\[YOUR USERNAME]\Saved Games\DCS\scripts
```

Note: If you use a non-English language version of Windows, you need to replace the “Saved Games” folder name in the above example with your language specific name, e.g. for German/Deutsch this is “Gespeicherte Spiele”. You also need to copy the whole DCS folder from the above example to the correct folder as per your language version.

There are 3 files:

1. Export.lua
2. PanelBuilder.lua
3. PanelBuilder.cfg

Set the Decimal Separator

If you use a non-English Version of Windows (i.e. a version that uses a comma as a decimal separator), you need to change the PanelBuilder.cfg file.

Open the file and change the character after `decimalSeparator` to a comma:

```
decimalSeparator=.,
```

Save the file. If you do not do this, you will get erratic Instrument Indications.

Edit the Export.lua file

This step is required only if you have a DCS add-on installed that has its own export.lua file.

In this case, Panel Builder DCS did not install its own export.lua file and you need to make the following change:
Use windows explorer and go to

   C:\Users\[YOUR USERNAME]\Saved Games\DCS\scripts

Use your favorite text editor (like notepad) and edit the file

   Export.lua

Add the following 2 lines at the end of the file:

   local PanelBuilder = require("lfs")
   dofile(PanelBuilder.writedir() .. "Scripts\PanelBuilder.lua")

Save the file. This ensures that the PanelBuilder.lua script is started when starting a mission.

*Note: If you remove Panel Builder DCS from your computer, you need to delete the 2 lines you added to your export.lua file.*
Configure the DCS Interface

This is only required if you want to change IP addresses or port numbers.

*There is no need to change any values; the defaults should work in 99% of all installations.*

Use windows explorer and go to

C:\Users\[YOUR USERNAME]\Saved Games\DCS\scripts

Use your favorite text editor (like notepad) and edit the file

PanelBuilder.cfg

To change the port Numbers:

- **multicastAddress**
  - the broadcast address for the network of your flight simulator system. 224.11.5.62 is the default. No need to change it unless you have another program using it.

- **portFlightData**
  - This is the port number for the Panel Builder DCS Flight Instruments

- **portEngineData**
  - This is the port number for the Panel Builder DCS Engine Instruments

- **portAnnunciators**
  - This is the port number for the Panel Builder DCS Annunicators and misc. Instruments
**portNavigationData**  
This is the port number for the Panel Builder DCS Navigation Instruments.

**portGPSData**  
This is the port number for the Panel Builder DCS GPS.

**portRadioData**  
This is the port number for the Panel Builder DCS Radios.

**portInstructorStation**  
This is the port number for the connected Instructor Station.

**portPanelBuilder**  
This is the port number for the Panel Builder DCS Program. It is used primarily for automatic panel switching.

**portReceive**  
This is the port number the DCS Interface listens on for Instrument knobs and dials.

*Note: If you change any port numbers for the instruments you also need to change them in any panel you build.*
Step 3c - Panel Builder Configuration

There is no need to change any values; the defaults should work in 99% of all installations.

Start Panel Builder and select the **Configuration** tab.

### Changing the Network Configuration

#### Multicast Group Address

The Multicast Group Address (default 224.11.5.62) can be left as is. It has to match all other Multicast Group Addresses configured.

#### IP Address

This is the IP Address the DCS Interface received data from the instruments on. It is set to the broadcast address. No need to change it.

#### Listen Port No

This is the port number Panel Builder will use when receiving data. The default is 48000.

#### Flight Sim Port No

This number has to match the Port Number as configured in the flight simulator interface application. The default is 45000. See also chapter **Interface Configuration**
Enable Panel Switching

This option will enable the panel switching function. When you change aircraft in DCS, the appropriate panel in Panel Builder will be started automatically.

By default, every add-on you install will have a panel installed that has the correct panel name to enable panel switching. The following panel names are required:

- SU-25 (built-in): DCS_DEFAULT
- DCS P51D (or built in TF-51): DCS_P51D
- Spitfire: DCS_SPITFIRE
- SA-392 Gazelle: DCS_GAZELLE
- UH-1H Huey: DCS_HUEY

Add any required instruments to the above panels to enable automatic panel switching. You can add additional panels with different names, but they will not be able to be automatically switched to.

Enable Monitor Checking

Panel Builder relies on Windows Monitor numbers to place the instruments on the correct monitor. This option will give you a warning if the monitor configuration has changed in Windows and allows you to make adjustments before starting a panel.

Help

The help section has shortcuts to the User Manual, License Information and the simPlugins website for your reference.

Startup Sequence

To start everything up, follow the procedure in the correct order:

1. Start the Panel on your instrument computer
2. Start DCS World and fly a mission
Operation

After installation, you should have an icon for ‘Panel Builder’ on your desktop where you installed the instruments on. Double click it. This will launch the Panel Builder Program that allows you to

- Start and Stop all Instruments for a panel
- Build new panels
- Set the IP Address and Port Number to connect to the flight simulator interface

Select the *Operation* tab.

By default, the last panel used will be loaded automatically. This display shows what instruments are part of the panel and their associated Port Numbers. Those port numbers match the Instrument Interface Configuration for the specific instrument.
Launching a Panel

Select a panel by clicking the Load Panel icon and selecting a panel from the list.

Click on the Start button. All shown instruments that have a checkmark next to them will be started and shown on computer screen and the Panel Builder program will be minimized.

Each Instrument’s position is saved with the panel configuration. You can re-locate an Instrument by simply dragging it to a new position on the screen. There is a facility to ‘lock’ the instruments to the position to avoid accidentally moving it. Right Click on the instrument and a menu will be shown. Click on ‘Lock’ to toggle the lock/not locked option.

Now you can start your flight simulator and your instruments should come alive!

Note: Once started, you cannot make any changes to the panel configuration. You need to stop it first.

Stopping a Panel

As mentioned previously, when a panel is started the Panel Builder program is minimized to the task bar. Click on the minimized icon and it will show again and the panel is stopped.

Display on Desktop

All instruments are separate programs that will show on your desktop. The Panel Builder program will hide the windows desktop, set the background image or the background color as configured for each panel. (See the Building Panels section) and suspend the screen saver if used.
Building Panels

Multiple panels can be configured for different aircraft types. Each panel configuration contains:

- Name of the panel (e.g. the aircraft type)
- A background Image or a Background Color
- Instruments included in panel
- Position and size of each instrument on the screen.
- Reset the position of an instrument to the top left corner of the 1st Monitor

Select the **Building** tab.
Modifying an existing panel

Choose a panel by clicking the Open Panel icon under the operation tab and select a panel from the list. Then click on the Building tab.

Adding an instrument

Click on Add Instrument. The window as shown above will appear.

All available instruments are shown on the right side. Scroll through the list until you locate the required instruments. You can also filter instruments by instrument type by selecting the appropriate section in the box labeled Instrument Type.
An image and description will be shown for each instrument.

The Port Number will be filled in automatically choosing the default port of the instrument.

Check each instrument to be added then click on [Add checked instruments].

To set the location of an Instrument, the panel needs to be ‘started’. Click on the Start Button. (See chapter Operation for more information).

All instruments initial position is in the top left corner. So it will happen that all newly added instruments sit on top of each other. Simply drag each instrument into its final position.

Stop the panel and at that stage the position of each instrument is saved.

To configure each instrument for the aircraft type the panel is intended for, see the chapter Instrument Reference.

Removing an instrument from the panel

The delete an instrument, select the instrument in the list and click on the Remove button.

Moving and Resizing an Instrument in a panel

Those operations require that a panel is ‘running’, i.e. the panel has been started and all instruments of the panel are displayed.

By default all instruments are placed at the top left corner of the monitor. To move it to its proper location, left click and drag the instrument around the monitor.

To resize and instrument left click (and release) on the instrument, then either use you mouse wheel or the [+ ] and [- ] buttons on the numeric keypad.

Note: To lock an instruments size and position, right click on the instrument and select ‘Lock’ from the menu. To un-lock, repeat the operation.

Note: To reset the position of an instrument to the top left corner of the 1st Monitor select the instrument in the instrument list of Panel Builder and choose the Building/Reset Position in the menu.
Modifying an instrument

Select an instrument in the list and click on the Edit Settings button in the Instrument menu section. You can also double-click it.

You can only modify the port number of the instrument..

Note: If you modify the port number, you also have to modify the port number in the appropriate Interface Configuration File.
Adding a new panel

To add a new panel, click on the **New Panel** button in the Panels menu section.

Panel Name: Enter the name of the panel e.g. the aircraft type.

Show Instrument Bezels & Knobs. This will either show/or hide the bezels, mounting screws and any knobs for the instruments.

This is useful for cockpit builders who use a mask in front of the monitor. A mask could be made from cardboard or other thin material, or if a monitor is integrated into a full instrument panel.

Enable Panel Night Mode

This will automatically switch all instruments in the panel to a ‘red glow’ color for night flying. The switching occurs when the time in the flight simulator switches to night time.
Panel Background Type:

Select between colored background and an image.

*Color Background:* Specify the color and an optional colored frame.

*Image Background:* Specify the image file and if you want to retain the original image size of a custom size.

Background Size and Position

Four options are available:

*Full Desktop*

This fills the desktop area with the selected color or image. If you have multiple monitors connected it will span all monitors.

*One Monitor only*

As above, but the background will be restricted to the monitor specified. This only applies only to multi-monitor setups.

*Custom Size and Position*

Here you can specify what size and what position the background should be. This is useful if you don’t want a background that fills a whole monitor.

*No Background*

Just as the name implies. The instruments will be placed on the desktop as is.
Modifying a panel

The panel configuration (not the instruments within a panel) can be modified using the Edit Panel button in the Panels menu section. To modify an instrument see chapter Modifying an instrument.

Follow the steps as described in the Adding a new panel section. Note that the Panel Name cannot be modified!

Deleting a panel

To delete a panel click on the Delete Panel button in the Panels menu section. Please note that the configuration for all Instruments in that panel will also be deleted.

Copying a panel

To copy panels click on the Copy Panel button in the Panels menu section. You will be prompted for a new Panel Name. After entering a new name, the current panel will be copied and the copied panel with the new name will be opened.
**Exporting a panel**

This function allows you to export a complete panel configuration and import it on another computer with Panel Builder installed. All instrument locations, sizes and configurations and the panel background will be exported. *This function requires the Commercial Version.*

Choose the **Building** tab, then **Export Panel**.

A dialog will show to select where the export file should be saved to. This can be a local drive, a networked computer drive or a thumb drive.

Click on [Save] to finalize the export function.
Importing a panel

This allows you to import a previously exported panel configuration. Please note that when importing a panel that the screen size of the exported panel is the same size or less then the screen size of the target computer. *This function requires the Commercial Version.*

Chose the Building tab, then Import Panel

A dialog will show to select where the export file should be imported from. Browse to the location where the export file was saved to and click on [Open].

If the same panel exists already, a warning will be displayed. Otherwise the panel will be imported.

*Note:* You can rename the Export File before importing it. The file name will become the panel name after importing.
**Tips and Tricks**

*How can I change the Banner Image on the bottom of the Panel Builder screen?*

There is a file called BannerImage.jpg in the Panel Builder program Files folder. Replace this file with your own version. For correct display, create an image file with the following dimensions: 484 pixels wide by 60 pixels high. *This requires the Panel Builder Commercial Version.*

*All instruments are cut-off at the bottom right (instruments are only partially visible)*

Make sure that the text size is set to 100% in Windows Control Panel/ Display.

*Instrument XXX doesn’t update*

This is very likely an issue with the port number configuration. Make sure that both port numbers are the same in Panel Builder and the Instrument Interface.

*Where can I set the instrument ranges and color arcs?*

Each instrument has a menu that can be accessed by right-clicking on an instrument and selecting the **Settings** options. Not all instruments have a setting option.

*I accidentally move Instruments when using the knobs.*

Each instrument can be locked into its position by right-clicking on the instrument and selecting **Lock**.

*I get erratic Instrument Displays*

You need to set the decimal separator in the config file. See Page 19 of this manual.
Instrument Reference

To display the settings window for each instrument, right click with your mouse on the instrument and then select Settings. Not all instruments have a settings window.

To change the size, use the scroll wheel on the mouse or the [+]/[-] keys on the numeric keypad.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Settings</th>
<th>Defaults</th>
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</thead>
<tbody>
<tr>
<td>Airspeed Indicator</td>
<td></td>
<td>Port Number: 41000</td>
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<tr>
<td>Instrument</td>
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<td>Defaults</td>
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<tr>
<td>Altimeter</td>
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<td><img src="image1.png" alt="Altimeter Diagram" /></td>
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<tr>
<td>Artificial Horizon</td>
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<td><img src="image2.png" alt="Artificial Horizon Diagram" /></td>
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<td></td>
</tr>
<tr>
<td>Instrument</td>
<td>Settings</td>
<td>Defaults</td>
</tr>
<tr>
<td>-------------------------</td>
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</tr>
<tr>
<td><strong>Heading Indicator</strong></td>
<td></td>
<td>Port Number: 41000</td>
</tr>
<tr>
<td></td>
<td><img src="image1" alt="Heading Indicator" /></td>
<td></td>
</tr>
<tr>
<td><strong>Vertical Speed Indicator</strong></td>
<td></td>
<td>Port Number: 41000</td>
</tr>
<tr>
<td></td>
<td><img src="image2" alt="Vertical Speed Indicator" /></td>
<td></td>
</tr>
</tbody>
</table>