



# Portal Console Setup & Operation Guide

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## Introduction

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The system is designed as a flexible portal between the real organ and a wide variety of MIDI based products bringing them together and controlled by customisable touchscreens. The Portal system allows you to build your own organ console with off the shelf products.

The Portal is simple and intuitive to use, mimicking the real wood and ivory version as best we can. A lot of this manual is dedicated to setting up and customising this Portal and so it can be a bit daunting at first glance. We did think it was better to have all this material on hand rather than have to call us to make changes, which of course as a Solid State client you are always welcome to do.

In normal operation you can switch the Portal on and off from the main switch just as you would a console and it will start straight up into a touchscreen console and be ready to play.

We supply the Portal system as a complete kit with all the cabling and screens, set up to your specification. We can also quote for custom systems to work with your own equipment.

## Features Available

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The standard Portal processor supports a single touchscreen with upgraded systems that support up to 3 touchscreens, all the screens need to have the same resolution.

Other than the touchscreen, all the inputs to the system are MIDI. We can support up to 16 MIDI keyboards and over 2,000 controls from pistons.

## Planning the setup

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If you purchased the screens and keyboards from Solid State the system will be set up for you. If you have your own equipment to integrate or wish to adjust the standard setting there are a few things to work out before working on the software.

1. How many screens do you wish to use. A standard Portal is able to use two but more could be added with an upgrade.
2. How are the keyboards to be set up and what model are you using. The Portal works with any MIDI keyboard but is most compatible with the Classic MIDIWorks CMK3A which has built in pistons which can be used by the Portal.
3. The Pedalboard will also need MIDI data out and if you wish to use toestuds they will need to be wired into the MIDI.
4. Expression shoes. We offer a wiring connection from the Walker expression shoe but any analogue or MIDI compatible shoe will work.

## Touchscreen operation

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If you are not familiar with a touchscreen here are a few useful tips.

The stops will reverse on and off with a light touch. It is only possible to move one stop at a time.

Most of the touchscreen functions are used to make changes to the system and are referred to in the manual.

**Click** – Tap the screen in the correct place.

**Right Click** – Hold a finger on the button until a new menu appears.

**Treble Tap** - Tap the screen three times in quick succession in the same place and keep the finger on the screen on the third tap.

## Managing the Portal Processor

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The portal is set up to operate without any intervention when it is in its normal mode. If you need to work on the system it is necessary to overcome this layer of convenience.

For maintenance it is necessary to startup up the player with the USB keyboard and mouse attached. Use the Windows key on the USB keyboard (see picture below) to access the processor setup. If you ever get in a mess with this power off the computer and then start it up again to restore the player to its normal mode.



To access the control panel and other system management functions tap or right click on the Windows logo in the bottom left of the screen.

To access the Portal setup pages tap or click on the Solid State logo on the lower right of the Portal screen. If you have covered it up by mistake the bottom left corner also works even though there is no logo.

## Connecting Everything Up

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The Portal processor is the central spot where all the equipment connects. The picture shows a basic processor that supports one touchscreen.

There is much more to come on the power switching as we develop this.

The Portal processor needs AC power which is not switched by the console switch. The processor can be started and stopped by the button on the front or with the optional remote start controller.

Cables to connect to processor:

- Power cable
- USB cable from touchscreen
- Video cable to touchscreen
- USB cable from each keyboard
- USB cable from pedal board
- Optional diagnostic keyboard
- Optional Diagnostic mouse
- Ethernet cable to MultiSystem network
- Remote start cable

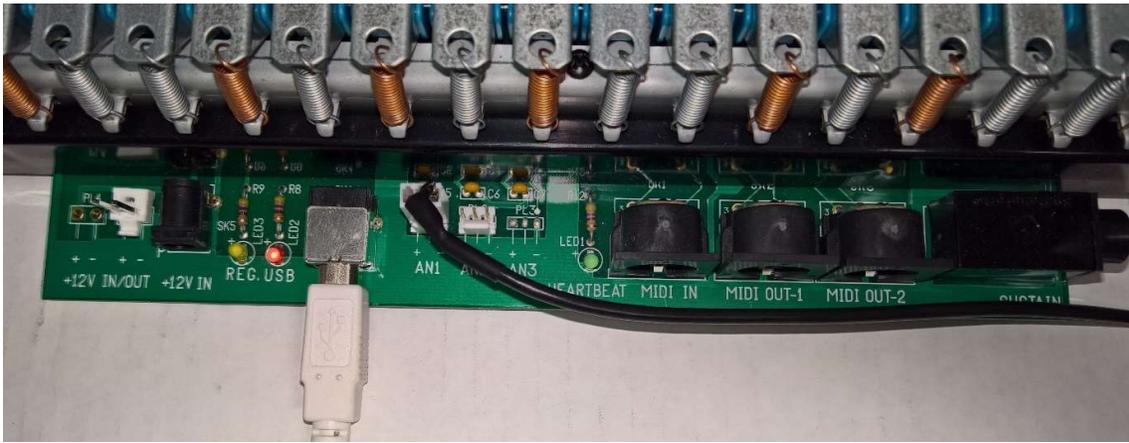
Cables to connect to the screen:

- Power
- Video cable from processor
- USB cable to processor



Power can be remotely switched on and off using the power board.

Connecting the USB cable to the keyboard. Also shown with the Solid State expression cable plugged into Analog 1 input. In this configuration the keyboard is USB powered. If you use the Walker shoe an additional power supply is needed.

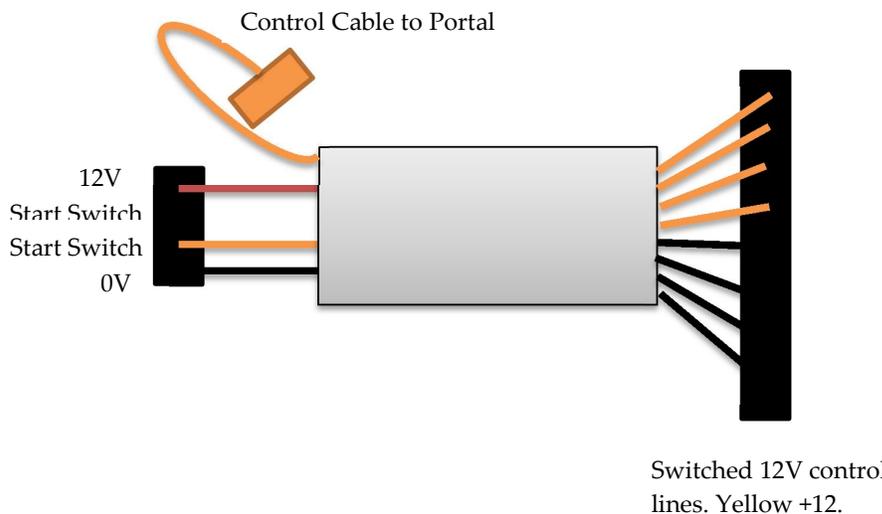


## Connecting up the network

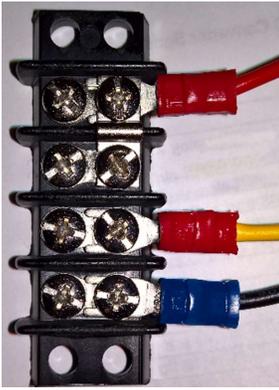
The Portal processor becomes another connection on the MultiSystem network that controls the organ. Wiring the MultiSystem is covered in the MultiSystem II installation manual which should be available on site, or if not download it from our website or ask us for a copy.

The MultiSystem link protection board provides a convenient way to connect to the rest of the system as it allows you to run a cat 5 cable through the wall and then connect it up without having to attach plugs. If you can just run a regular cat 5 cable with a plug on each end such as available at Home Depot and similar stores and you don't need to remote start the organ from the Portal then a simple Cat 5 patch cable from the network connector on the Portal processor to the MultiSystem network switch will be perfect.

## Connecting the optional Remote Start



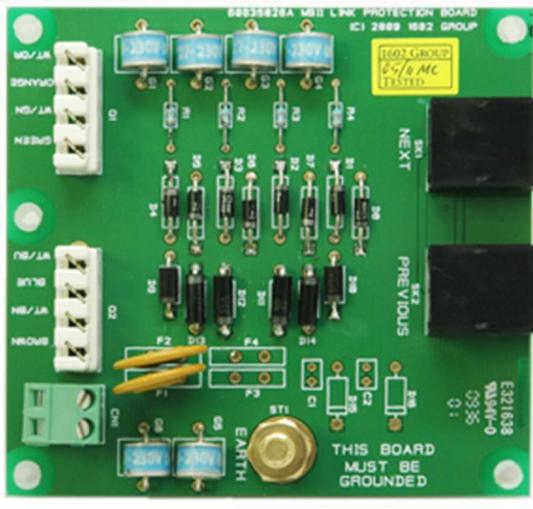
The optional remote start unit has an external 12V power supply that needs to be connected to an AC supply that is already powered when you need to turn on the organ. It does not need to be permanent so if you need to unplug the console to move it then no problem disconnecting it.



The four pin connector block feeds power from the permanent 12V supply to the remote start controller.

1. The top pin is 12V and needs to connect to the permanent supply.
2. The next pin is linked and feed 12V to the console start switch. Which needs to be a latching switch.
3. The return from the console switch
4. 0V or negative to the power supply.

If a DC control voltage is used to start the organ remotely it can also be accessed by the Portal. Use the link protection board but remember that a diode is needed to prevent the positive signal feeding back to each power source. This will include adding a diode to the existing organ console.



The link protection board provides a junction between the Cat5 cable from the Portal Processor and a long cable installed in the wall to the organ. A punch tool to attach the wires should be available in the organ as it is required to service the organ.

In addition the link protection board enable access to the remote start circuit on the 2 pin green connector. If this circuit is used in the organ it will be wired up in the main console.

To enable the remote start please follow this process:

1. Find the link protection board in the other consoles and if there is not a diode connected to the positive pin on the small green connector fit one with the white line into the terminal and the other end to the wire that was removed.
2. Check the organ still starts.
3. Take a wire from one of the yellow connections on the remote start controller and feed it through a diode in the same way and into the positive pin on the link protection board.
4. Connect a black circuit on the remote start controller to the negative pin on the link protection board.

## Setting up the Screen

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### Screen Choices

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The portal system will run up to 2 screens with a variety of resolutions. Normally we support 1920 x 1080. UHD 4K screens can be supported if ordered specially.

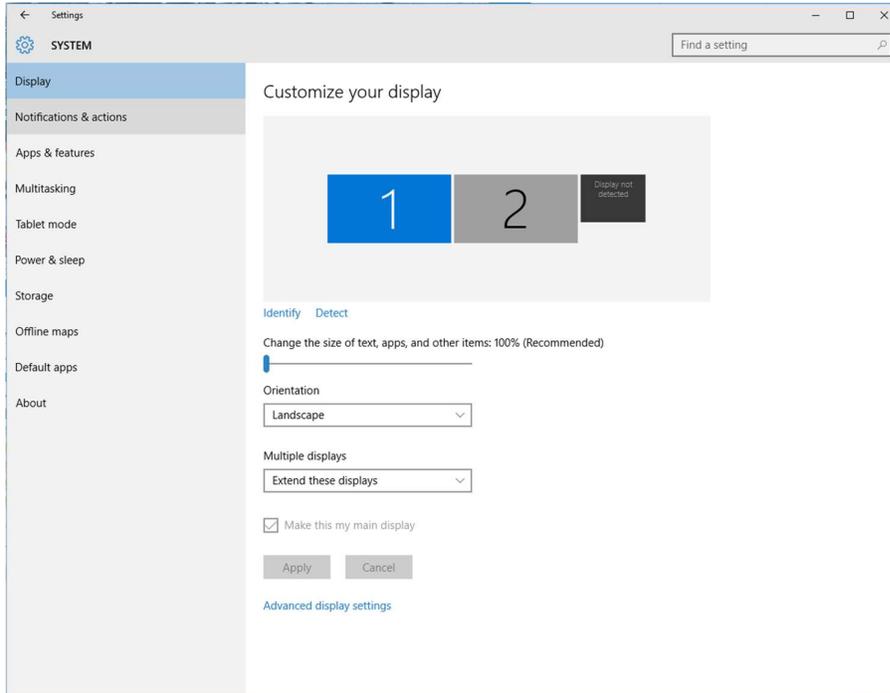
### Portrait or Landscape.

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The portal can be setup to run screens in portrait or landscape mode to suite the console layout. It is best to set this feature first as all of the positioning of the stops is dependent on the shape of the screen. You will need the USB keyboard for this operation, it can be plugged into any available USB connector on the Portal.

If you need to calibrate a touchscreen or assign the touch USB to it then access the tablet mode from the control panel.

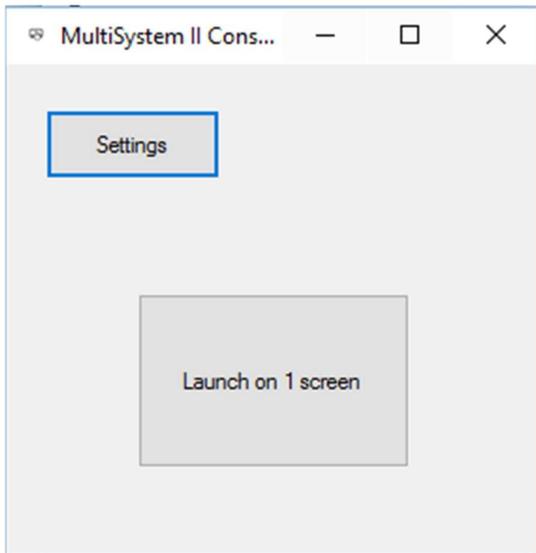
1. Plug in the USB keyboard and press the Windows key next to the Control key and the Z.
2. Right click on the Windows icon at the bottom left of the screen. If you don't have a mouse touch the location on the screen and release when the menu appears.
3. Choose Settings from the list.
4. When the Settings screen opens choose Display.



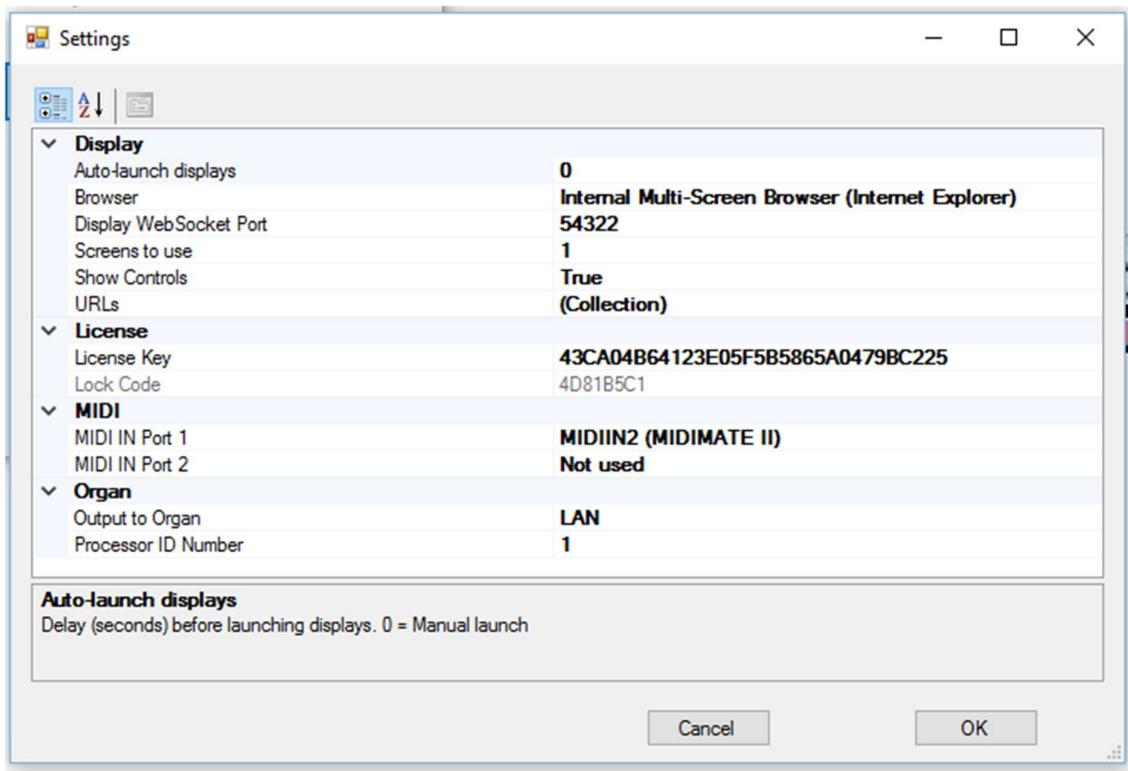
## Setting up the Portal Software

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When you first start up the Portal a small box will appear.



The length of time this screen appears before the program starts automatically is set in the Portal Management software together with a few other important settings. Choose settings to set up or Launch to start the program.

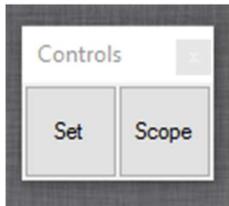


It is important to only change the settings you know about. Many of these settings are critical and if they are wrong will prevent the system from running correctly.

However, the MIDI in setup is available to choose how the Portal system receives the keyboard data.

**Screens to Use:** Allows the system to know how many screens to run

**Show Controls** reveals a small box on the screen with Set and Scope pistons to allow you to set up the console.



### Setting up with two or more screens

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The Portal processor can support up to three screens but we have to build it with the correct video boards to do this. If you want to add another screen please let us know and we can arrange an upgrade for you.

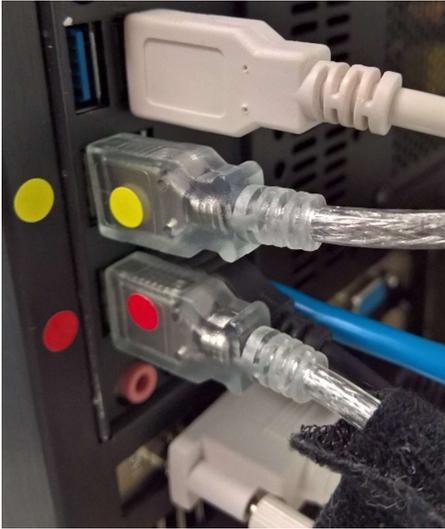
Each screen has its own setup for the stops, the Portal has the ability to show all of the stops for the console on every screen so the process of set up is to eliminate the ones you don't want from each screen. This can be very helpful with couplers where the same "division" can be partly listed on several screens.

It is also necessary to teach the Portal which screen is which and which touch input is plugged into which USB port. If the system was configured by us we will have done this for you. We will have labelled the plugs and sockets with coloured dots and it is important to match up the correct dots on installation.

### Some important things to remember with multiple screens

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1. All of the stops can be on either screen or both.
2. The screens must be of the same resolution
3. The screens must be plugged into the same USB and Video connections on the Portal processor as they were setup with. If not the touch may work on the wrong screen.



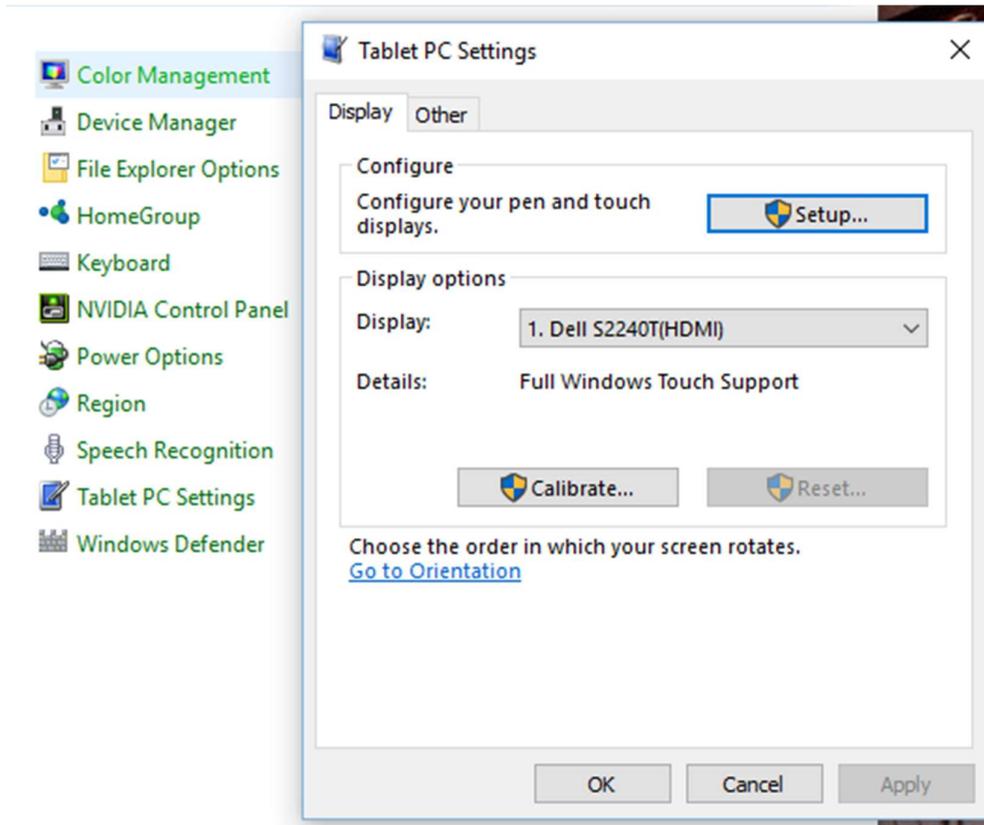
Cables that are not marked can go in any slot available.

### Setting up a touchscreen

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If you need to calibrate a touchscreen or assign the touch USB to it then access the tablet mode from the control panel.

5. Plug in the USB keyboard and press the Windows key next to the Control key and the Z.
6. Right click on the Windows icon at the bottom left of the screen. If you don't have a mouse touch the location on the screen and release when the menu appears.
7. Choose Control Panel from the list.
8. When the control panel group opens choose Tablet PC Settings or if it is not there choose adjust screen resolution from the Appearance and Personalization screen.



The Configure option provides control over double tap speed and other refinements. The Calibrate option assigns the correct screen to the USB port for touch and offers a screen calibration.

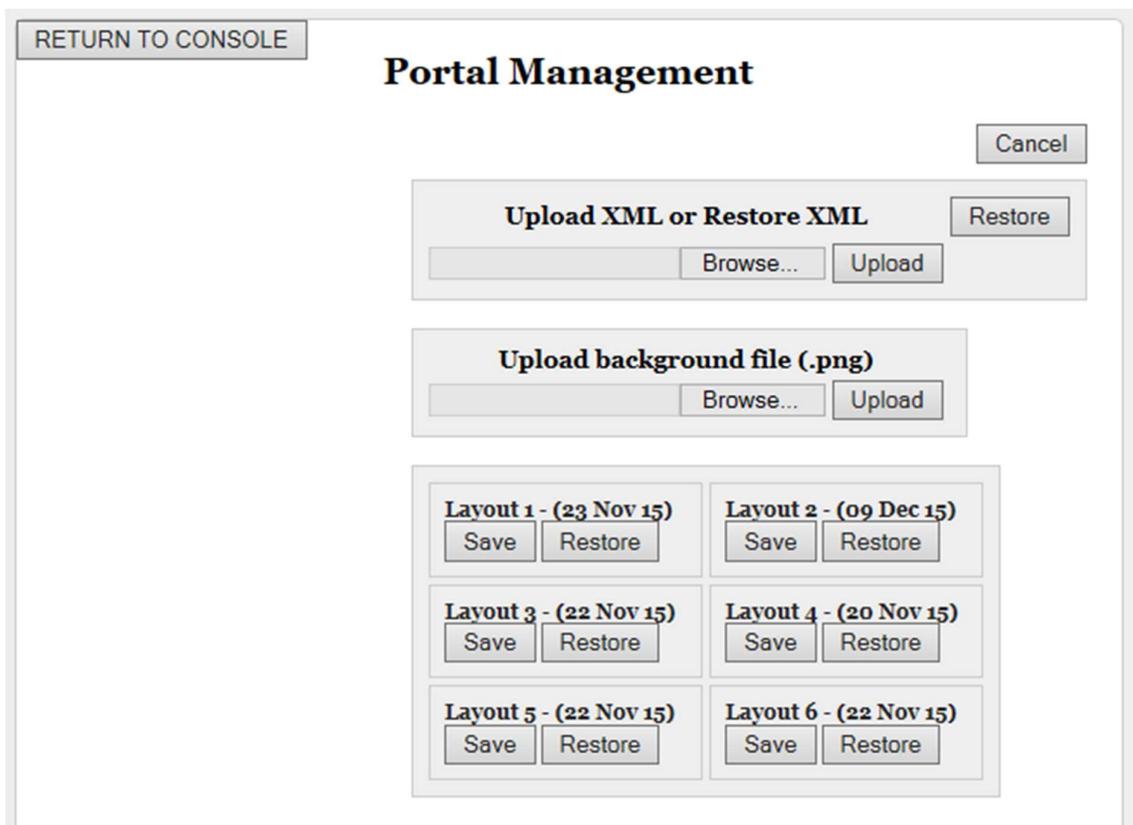
## Importing and setting up the Stop File

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To access the setup mode press the Solid State logo on the bottom right of the screen. This will show the management window.



Choose Setup to work on the file management.



### Upload XML or Restore XML

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If the MultiSystem has a major update you may receive a new XML file from Solid State which contains all new Stop information.

This new file can be uploaded to the Portal, unfortunately all previous settings will be overwritten so please be sure to make a backup before installing.

### Restore

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If the Restore button appears it means a previously uploaded XML file is available and can be used to restore settings. All previous settings will be overwritten. The Restore will take place instantly without any further prompts.

## Uploading a background

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We provide standard background files that fit the screens provided. If you switch from landscape to portrait for example you will need to change the background. The defaults are found in Pictures\Portal Backgrounds  
If you wish to create your own the file must be the exact size in pixels and be a PNG file. Otherwise anything including family and cats will work.

## Saving the setups

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You can save up to 6 Portal layouts, every setting within the layout will be saved or restored. To save the current layout, click one of the 6 "Save" buttons. Save will take place instantly without any further prompts.  
If a position has a previously saved layout you will see the date it was saved and a Restore button.  
To restore a layout, click one of the "Restore" buttons. Restore will take place instantly without any further prompts.

## Arranging the Stops

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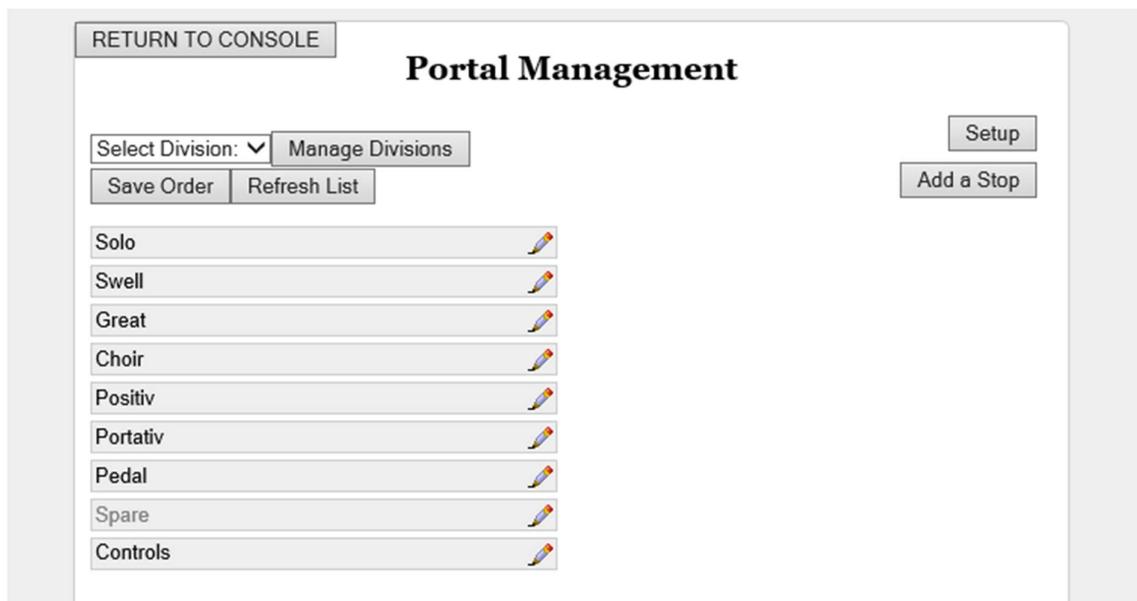
The stops are arranged on the screen in divisions. The divisions relate to the organ layout in the same way as a real console. When the stop names are imported into the Portal they will be grouped into divisions. The names of the stops and divisions may be changed in the setup screens.

- The stops may be arranged in any way on the screen either by dragging a division or typing in the coordinates.
- The stops may be arranged horizontally or vertically on the screen
- Stops and divisions may be renamed
- New divisions may be created.

## Setting Up the Divisions

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There are two setup screens, one to manage the divisions and one to manage the stops within a division. Choose “Manage Divisions” to list all the divisions, at this point the choice of division name in the pull down list is not important.



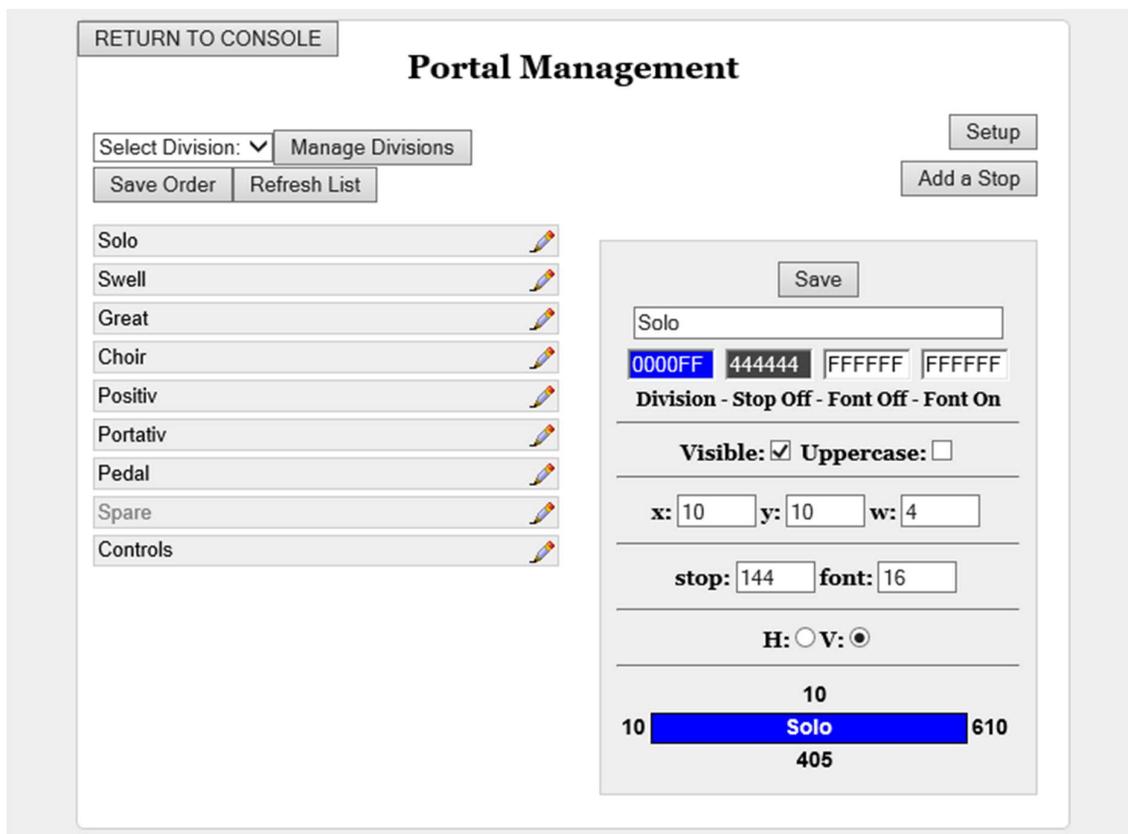
The list will show the divisions in the order they were imported. The list can be re-ordered but will have no affect elsewhere. To change the order select a division name and drag it to insert it into a different position. When you are happy choose “Save Order”.

Select a division to manage by tapping the pencil to edit.  
In this example we selected the Solo division.

In this window we can change:

- The name (type over the existing one and press Save)
- Position on the screen (see below)
- Colours (see below)

- Size of the engraving
- All capital letters without retyping
- If the division is to be visible on the screen (greyed out on the list if not visible)
- If the jambs have a vertical label to the left(V) or a horizontal bar above (H)



### [Change the position of Divisions on the screen](#)

Each division is placed inside a rectangle on the screen and the dimensions and position can be defined either by typing in numbers on this screen or dragging them on the screen or a bit of both. Always press Save when you are done.

To get the positions about right is a quick and simple process. From the main screen choose a division you wish to move and treble tap on the coloured name bar. On the third tap hold your finger and drag the division to its new spot and let go. Try not to drag it off the edge of the screen as it will jump back and try not to park it over the top of the Solid State log as this is also the setup button. If you do and for some reason can't move it back there is a secret button on the bottom left of the screen to get to the setup menu.

The screen is defined by the number of pixels horizontally and vertically. If you use the screen supplied by Solid State it is currently 1920 x 1080 if you mount the screen in landscape format. A pixel is related to the size of a screen as well as the pixel density. Changing the size of the screen on the portal but keeping the pixel count the same will change the size of the stops. The image on the screen will simply scale to fit. If you increase the resolution of the screen but keep it the same size the stops will get smaller.

The three boxes that control the size of a division are x y and w.

x: = the number of pixels to position the division from the left of the screen

y: = the number of pixels to position the division from the top of the screen

w: = the number of Stops wide to display

If x or y values are chosen that will position the division off screen, the values will default to "10" next time the Console screen is displayed.

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### Change the size of the Stops in a Division

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The horizontal size of the stops are defined in pixels and typed into the box marked Stop. The vertical is defined by the size of the engraved font, also in pixels.

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### Boundary box info

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This displays the current screen space occupied by this division. This info is only updated when the Console screen is displayed.

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### Delete a Division

---

Because it is possible to move stops to other divisions, if a Division has no Stops, a "Delete" button will be available. Delete will take place instantly without any further prompts. This is helpful when you accidentally spell the name of a division wrong and it gets created.

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### Change the colours for a Division

---

When in the division edit screen tap or click on one of the four colour bars underneath the Division name. This will open the colour editor for easy colour selection. Four colours can be changed as described below:

**Division:**

Colour used for the Division Title Bar background and the Stop ON background.

**Stop Off:**

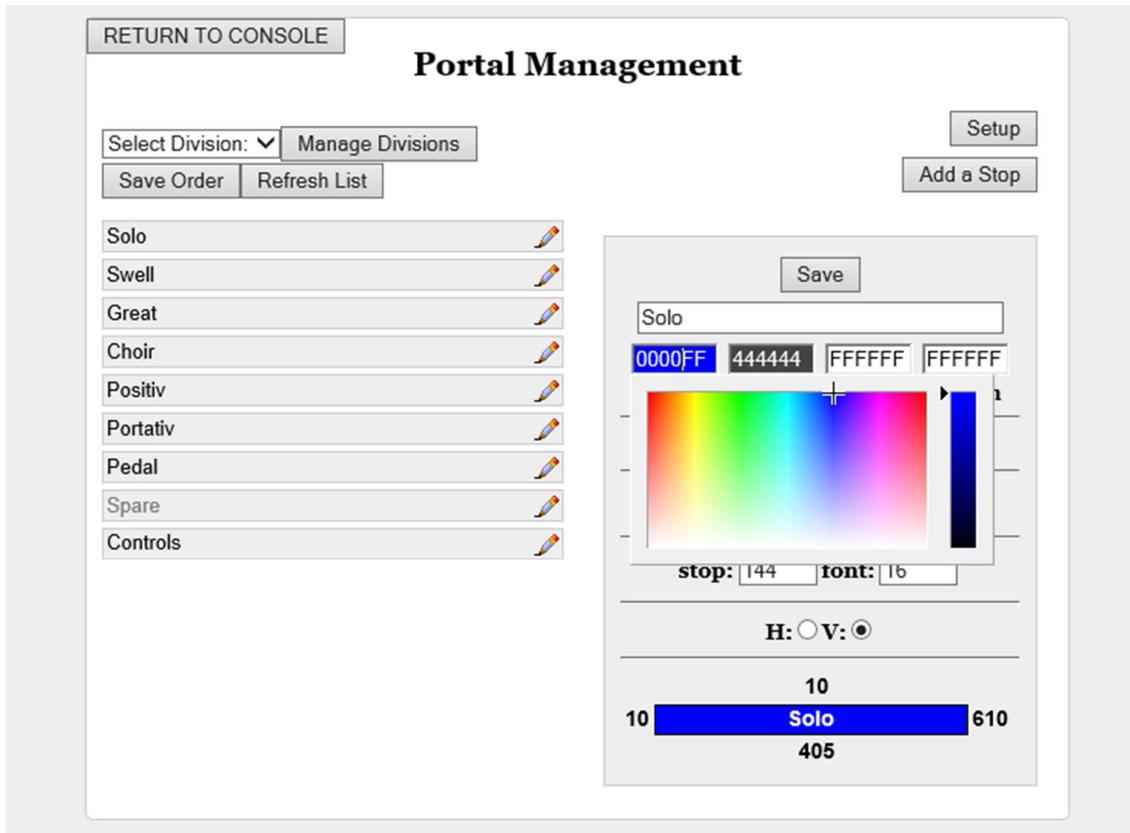
Colour used for the Stop OFF background.

**Font Off:**

Colour used for the Stop Name when the Stop is OFF.

**Font On:**

Colour used for the Division Title Bar Name and the Stop Name when the Stop is ON.



Click on the colour bar to select a new colour then click “Save”.

When selecting a colour the 6 digit hex value of that colour is shown, when selecting light colours the hex text is turned black, when selecting darker colours the hex text is turned white.



It is best to select a darker colour where the hex text has turned white.

You can optionally type in a 6 digit hex value of a known colour. Want to know the code? Ask Google or Siri. “What is the hex code for Blue?”

The screenshot shows the 'Portal Management' interface. At the top left is a 'RETURN TO CONSOLE' button. The title 'Portal Management' is centered. Below the title, there is a 'Select Division:' dropdown menu, a 'Manage Divisions' button, a 'Save Order' button, and a 'Refresh List' button. On the right side, there are 'Setup' and 'Add a Stop' buttons. The main area contains a list of divisions: Solo, Swell, Great, Choir, Positiv, Portativ, Pedal, Spare, and Controls. Each division has a pencil icon to its right. To the right of the list is a form for adding a stop, with fields for 'Division Name:', 'Stop Name:', and 'Stop Number:', and a 'Save' button at the bottom.

### Add a Stop

---

The stops must exist in the MultiSystem layout to work. If you ask us for a small change the instrument it is better to manually add the stops here than import a new file and set it all up again.

Click the "Add a Stop" button.

Enter the Division Name, Stop Name and Stop Number then click "Save".

The Stop Number information will only come from Solid State, this number is how the MultiSystem runs the organ and so entering this number wrongly may mess up the instrument.

### Choosing which stops to display

---

In this management screen we manage the stops that are displayed on the screen, the order they are placed in the division and whether they are visible. Sometimes divisions have direct lines and controllers that are not wanted on the console.

RETURN TO CONSOLE

## Portal Management

Choir Manage Divisions Setup

Save Order Refresh List Add a Stop

Viola Pomposa 8	
Viola Celeste 8	
Gemshorn 8	
Gemshorn Celeste 8	
Cor de Nuit 8	
Principal 4	
Koppelflote 4	
Nazard 2 2/3	
Blockflote 2	
Tierce 1 3/5	
Sifflote 1	
Mixture III	

Save Delete

Choir

Viola Pomposa 8

**Visible:**

---

**Stop number: 93**

Select a Division from the pull-down to list all Stops in that Division. You can re-order the Stop list by dragging the stops then clicking "Save Order". Clicking "Refresh List" will refresh the list to the last saved order. When a Stop has been hidden it will appear greyed out in the list.

### Move a Stop to another Division

---

Although the functionality of the stop will stay the same it is sometimes useful to group the stops differently on the console.

To move a stop click the edit pencil next a stop to show the settings for that Stop. Change the name of the division shown. If the division exists the stop will now be listed there. If this is a new division it will be created.

### Rename a stop

---

Rename the Stop.  
Overwrite the Stop name then click "Save".

### Hide a stop

---

Hide the Stop.  
Un-check the "Visible" box then click "Save".

### Delete a Stop.

---

From the stop edit screen click “Delete”, there is no confirmation and cannot be undone.  
In normal circumstances it is better to hide an unwanted Stop.  
In some special circumstances where there are 2 entries with the same “Stop number”, one of the entries will need to be deleted.  
The “Stop number” is shown for reference only.

## Controls Division

---

Allows editing of the On Screen Memory Level Control Panel  
Click the edit icon next to Controls.

Here you can choose to:

### [Hide the Controls.](#)

Un-check the “Visible” box then click “Save”.

### [Move the Controls.](#)

Edit the position then click “Save.

x: = the number of pixels to position the Controls from the left of the screen.

y: = the number of pixels to position the Controls from the top of the screen.

h: = Control Panel height in pixels. (The length of the control panel is calculated from the height)

If x or y values are chosen that will position the Controls off screen, the values will default to “10” next time the Console screen is displayed.

### [Resize the Controls.](#)

Edit the size then click “Save.

font: = the pixel height of the display text.

### [Find Center.](#)

This button uses the Controls saved settings to calculate the required x value needed to centre the Control Panel.

### [Boundary box info.](#)

This displays the current screen space occupied by the Controls.

This info is only updated when the Console screen is displayed.

## Keyboards

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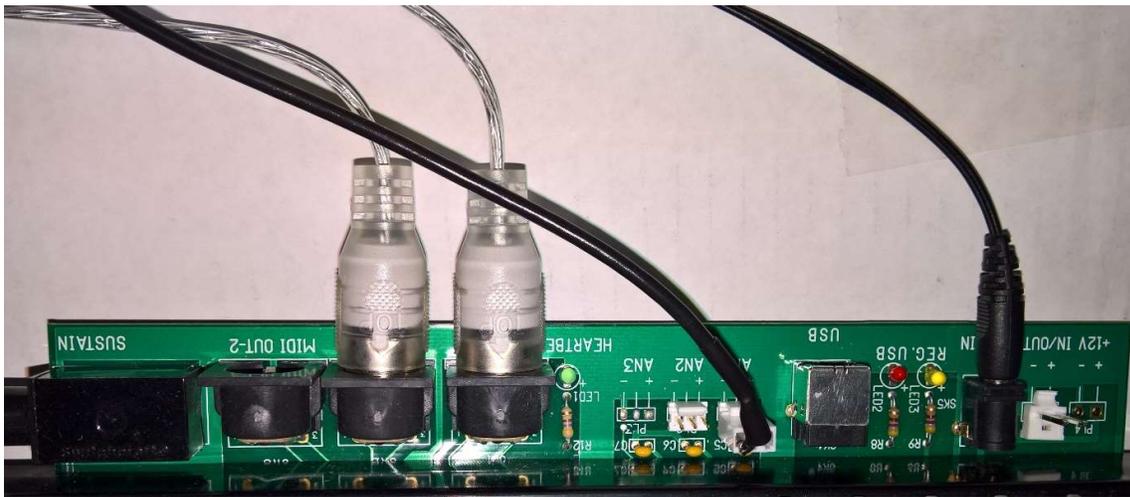
If Solid State supplied the keyboards all of this setup is done for you. If you need to make changes then please save them as a new setup so you can always go back to this one.

The Portal processor reads the keys using MIDI and any MIDI keyboard will work fine. However, you may wish to use pistons in which case the choice narrows. For the complete Portal we supply MIDI keyboards from Classic Organ Works.

### Setting up the Classic Keyboards

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To Setup the keyboard use the Classic CMK-2 software. It is important to only connect the keyboard to the Portal using a MIDI cable.

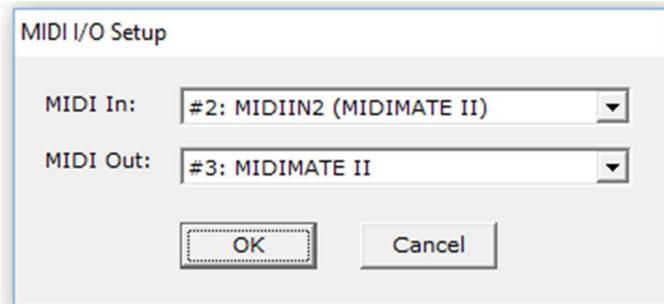


This software is already preinstalled on the Portal. Press the Windows button on the keyboard and choose the program from the menu.



Steps to Setup a keyboard:

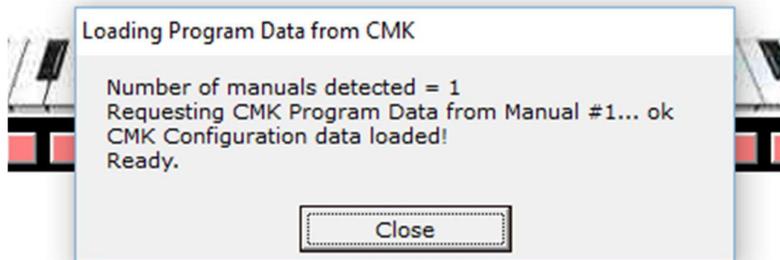
1. Remove any USB cable from the rear of the keyboard
2. Plug in the MIDI Mate cable marked 1 to the MIDI IN of the keyboard
3. Plug the MIDI Mate cable marked 2 into the MIDI OUT of the keyboard.
4. Open the software and set up the MIDI as shown. Note that the MIDI In is set to MIDIIN2 and the OUT is not.



5. At the splash screen choose Load current settings



6. And wait for this message. If you don't get this far there is a wiring fault or you left the USB cable plugged in or the power supply is not connected.



7. It is possible to gang all the keyboards together with a chain of MIDI cables or do them one at a time.
8. After any changes are made they must be saved back to the keyboard before they will work. There is a save icon or choose "write Program data to CMK" from the file menu.

### Keyboard Key channel assignments

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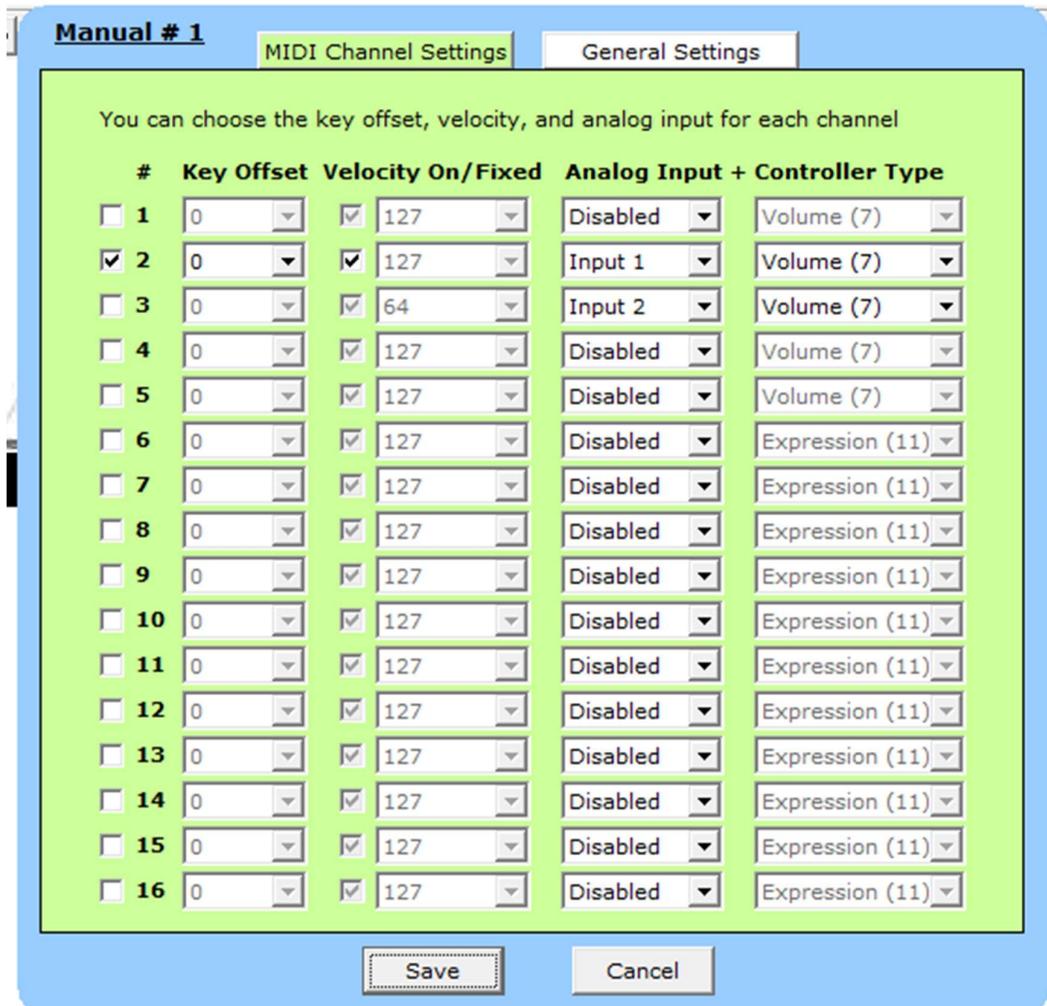
Each keyboard must be assigned an individual channel to identify it to the MultiSystem control for the organ. The MultiSystem uses standard channel numbering for the first four channels as follows:

1. Great
2. Swell

3. Choir
4. Pedal

Other keyboards are then assigned channels 4 upwards in a logical manner. We have this information if required for this instrument.

Setting the channels in the software.



Click on the keyboard keys to open up this screen. The left column is used to choose the MIDI channel the keyboard transmits on, you can choose as many as you like. Make sure the velocity is set to fixed and 127 as it is an organ.

The Analog input and controller type columns are used to program the expression shoes. In the example above we have two expression shoes connected. Input 1 is programmed to transmit on channel 2. Input 2 is programmed to transmit on channel 3. The check box is not marked for channel 3 as this only refers to the keys.

Press save and make sure to upload the changes to the keyboard.

## Pistons

---

To set up pistons with the Classic keyboard use the same procedure as setting the keys but click on a piston on the picture to set it.

In this example we are setting the bottom manual so the first piston is SET and the last one General Cancel.

Choose the Ahlborn SET option from the top menu and channel 16. Save

**Piston #1 on Manual #1**  
What do you want this thumb piston to do? Ahlborn SET  
Usually the SET piston

You have chosen an Ahlborn SET function...  
On which MIDI Channel? 16

Save Cancel

Choose the Ahlborn General Cancel option from the top menu and channel 16. Save

**Piston #20 on Manual #1**  
What do you want this thumb piston to do? Ahlborn Cancel  
Usually the General Cancel

What type of Ahlborn Cancel? General Cancel  
On which MIDI Channel? 16

Save Cancel

The remaining pistons are set as program changes to line up with the system layout for the MultiSystem. A detailed list of the numbers are available for your organ from Solid State. This is the standard structure.

General Pistons: Numbered from Program change 1 on MIDI channel 8

Divisional Pistons: Numbered from Program Change 1 on the MIDI channel that is the same as the associated keyboard.

**Piston #2 on Manual #1**  
What do you want this thumb piston to do? Program Change

Which Program Change number? 1  
On which MIDI Channel? 8

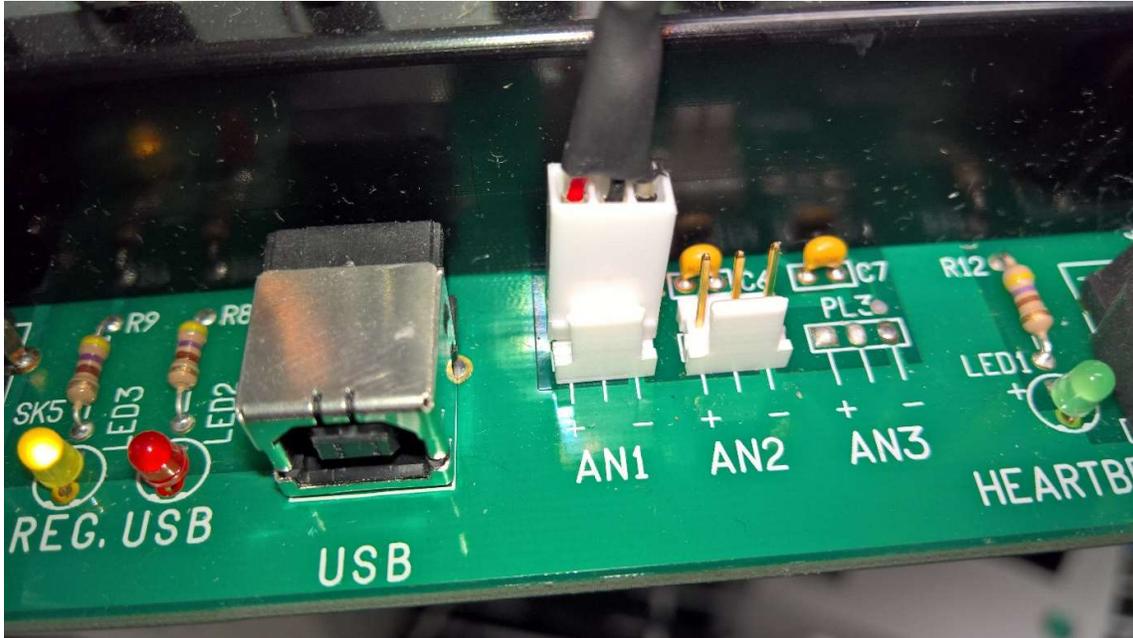
Save Cancel

## Expression Shoes

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Expression shoes are fed through the keyboard controllers to the Portal processor. The data from the shoe must be an analogue voltage fed from the wiper of a 10K potentiometer. The Solid State analogue encoder will connect directly but you will need a special cable. Using the Solid State standard cable the mini jack will need to be removed and wired as follows:

- Red to pin 1 (Positive)
- Black to pin 2 (data in)
- Shield to pin 3 (Ground)

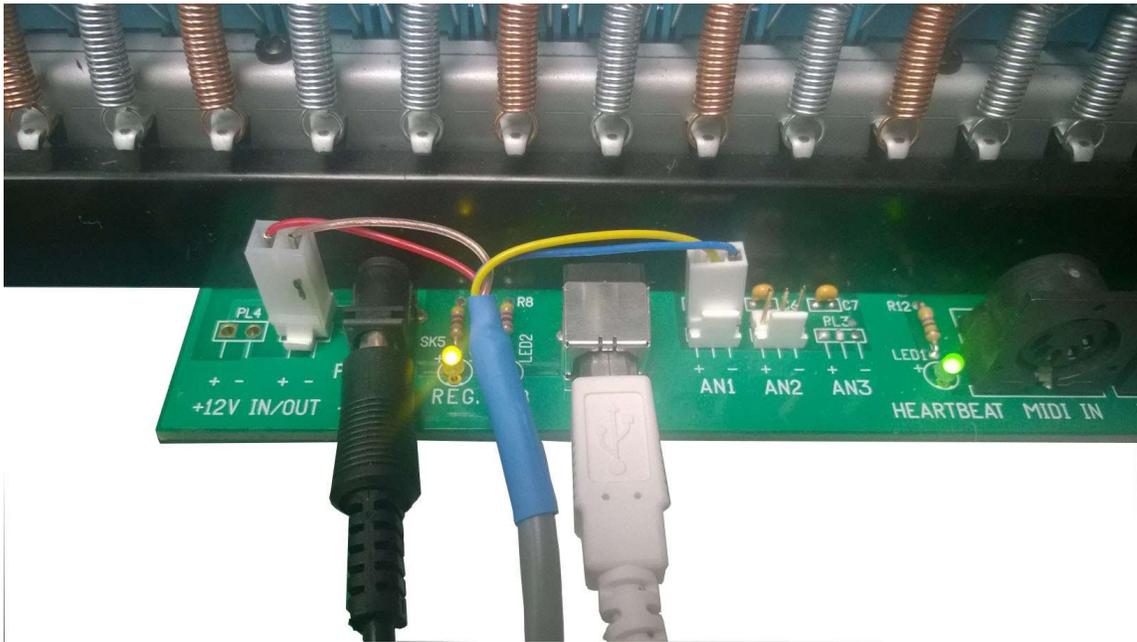


## Using Walker Expression shoes

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The Walker shoe is a little different as it requires 12V power. To connect the 12V power an additional connector must be added to the Classic keyboard, shown on the left in the picture below.

To power the Walker shoe the keyboard must also have the optional 12V external power supply connected as shown below.



The second picture shows the cable connected to the Walker shoe. Note that the blue and pink wires are connected in one pin as they are both Ground and it is not actually necessary to connect both the ground connections on the keyboard but it helps to keep the connectors in place.

