1. Product Name

Ceiling-Mounted Interactive Wall Projection

2. Product Code

22590

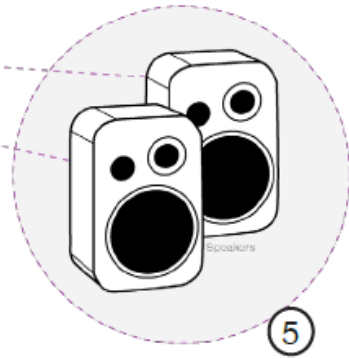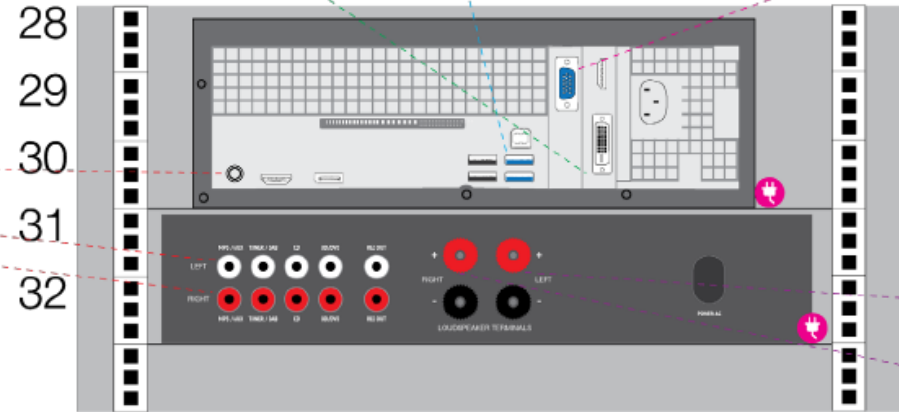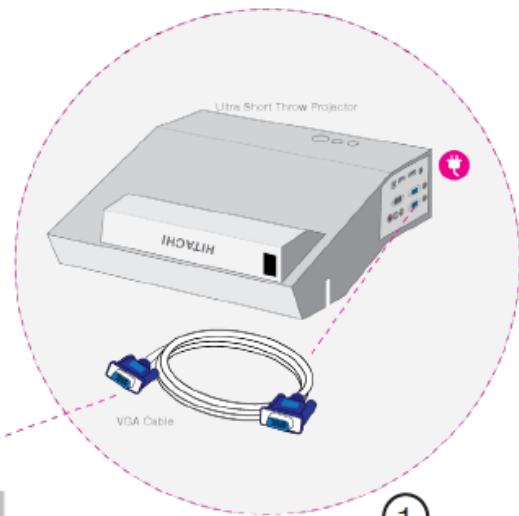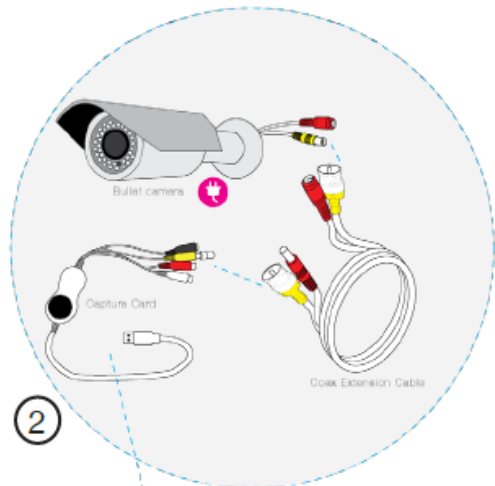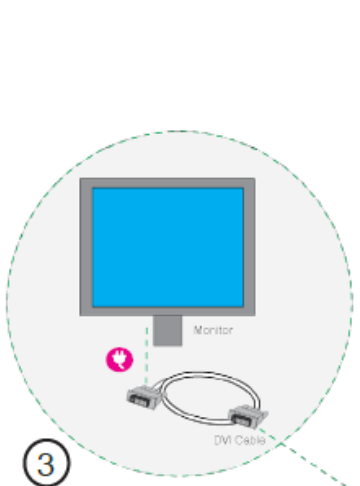# 3. Colour

Not applicable

4. Brief Description

Imagine looking into a mirror and seeing yourself playing drums, splatting critters or tapping stars to change their colour and to make sounds.

5. Contents

| Quantity	Component	Notes
1	3.5mm to 3.5mm Stereo Jack Plug Cable 1.2M	PC Audio into Amp
1	Projector & Wall Mount	Ultra Short Throw Projector with wall bracket
1	Loudspeaker Cable	10M
1	Projector Fixing Kit	Alternative fixing method for Projector if wall bracket is not suitable
1	12V 1A, 2.1mm Power Supply	Camera Power Supply
2	1.5m IEC Cable	
1	DVI -D Single Link Cable (Male to Male) 2m	From Graphics Card to Monitor
1	10m SVGA Male to Male Cable	From Graphics Card to Projector
1	10m IEC Cable	Projector Power
1	10m BNC Cable	Camera Video and Power
1	BNC Socket to RCA Plug	Connects Camera BNC Cable to Capture Card
1	USB Video Capture Card	Video Signal into PC
1	IR Day Night Camera	Camera used for motion tracking in this system
1	19" Monitor (VESA 100x100)	DVI Cable from PC into Monitor
1	Dell USB Mouse	Wired Mouse
1	Dell USB Keyboard (qwerty)	Wired Keyboard
1	JBL Control 1 Speaker (White)	Speakers that could be ceiling-mounted of necessary)
1	Software License	
1	Mini Amplifier	Audio from PC
1	VGA/DVI HDMI Low Profile Brackets	
1	Geforce Nvidia GT 740 2GB PCI-E with Low Profile Bracket	Graphics Card - will be installed into PC
1	Dell Optiplex 3040 PC	

6. Snoezelen® Stimulations

- Sight
- Sound

7. Best Use

Use in a darkened environment.

8. Compatible ROMPA® Products

ROMPA® offers a wide range of multi-sensory products – please visit www.rompa.com for more information.

9. Starting Up

- There are no short cuts when installing this product. Please read all these instructions carefully.

10. Detailed Description

Imagine looking into a mirror and seeing yourself playing drums, splatting critters or tapping stars to change their colour and to make sounds. A movement of the hand or a flick of a finger can trigger any number of audio-visual events around you. Truly immersive, responsive and rewarding. For individuals and groups. Fully customisable. ROMPA® can install this for you – please contact us for information.

11. Safety

- **Always supervise the use of this product**

- Use in a suitably clear space that is free of obstacles to allow users the opportunity to move freely.

12. Technical Specification

Size: The projection is an aspect ratio of 4:3
                The optimum projection size is between 1.5m to 2m wide
                The optimum distance from the front of the projector to the wall is between
                        35cm and 45cm
Weight: ceiling mounted components weight approximately 8kg

Ultra Short Throw Projector

HITACHI

VGA Cable

①

Bullet camera

Capture Card

Coax Extension Cable

②

Monitor

DVI Cable

③

3.5mm jack to phono cable

④

28
29
30
31
32

MR1 AUX   TUNER / SAT   CD   DVD/VTR   RU OUT
LEFT
RIGHT
MR1 AUX   TUNER / SAT   CD   DVD/VTR   RU OUT

RIGHT   LEFT
LOUDSPEAKER TERMINALS   POWER AC

Speakers

⑤

13. Installation

1. Check you have all components before you begin – see your packing list.
2. Assess cable routes and location for PC and monitor.
3. Decide upon the location of the projector and the control area.
4. Identify any wall imperfections e.g. indentations, skew that may distort the projection image. Even the slightest of curvature will alter the rectangular shape of the image. Please be aware of this when choosing a suitable location for the Interactive Wall Projection.
5. Decide whether projector should be wall or ceiling mounted.
    - Wall mounted - use UST mounting bracket supplied with projector. Follow installation instructions in mounting bracket manual for installation and adjustment.

    - Ceiling mounted - use SG ceiling kit where you will have a steel wire for 600 x 600 suspender ceiling or Z braces for plasterboard and concrete ceilings. To install the baseplate:
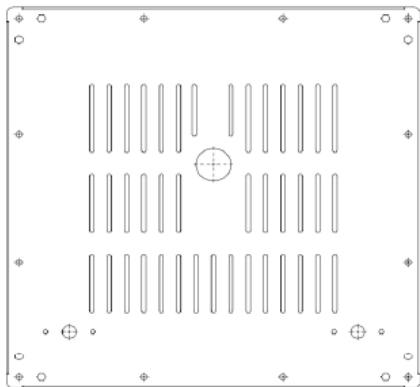
Projector Fixing Plate

1 x Ceiling Fixing Plate 600x600mm to mount projector, camera and the Front Surface Mirror. Designed to fit into a 600x600 ceiling grid tile opening.
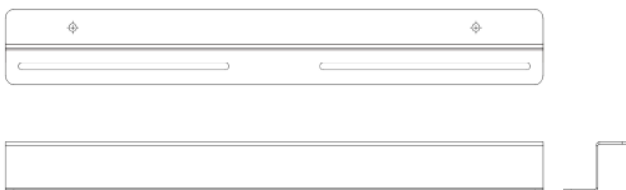

Z-Bracer Supports

2 x Z-Bracer plate ceiling supports for installation to concrete and plaster ceilings
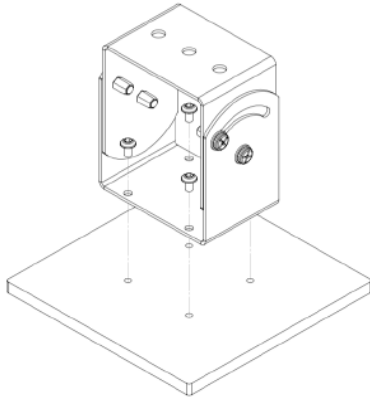
Mirror Bracket Assembly

1 x Mirror Fixing Bracket - *sits in front of projector lens at 45 degree angle to direct the image to the floor*
3 x M5 Bolts, M5 Nuts and M5 Flat Washers
4 x No.8 x 5/16" Flange Pan Pozi No.2 Self Tapping Screws
1 x 200x200x3mm Front Surface Mirror*
1 x 200x200x9mm Mirror Board and Safety Bracket

The Front Surface Mirror must be handled with care.
Finger marks will damage the mirror coating and reduce the clarity of the projected image.
Keep this covered until it has been mounted.

4a
4b
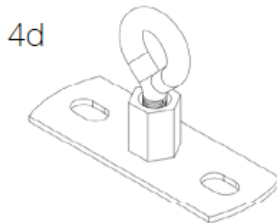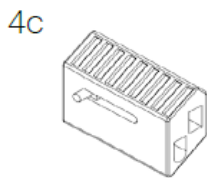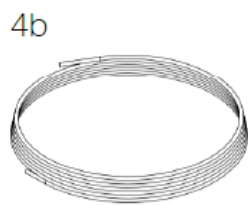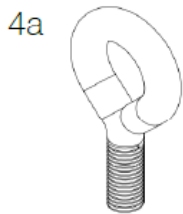
Above Ceiling Plate Support Kit

4a = 8 x M6 Eye Bolts
4b = 2 x 2M Steel Wire
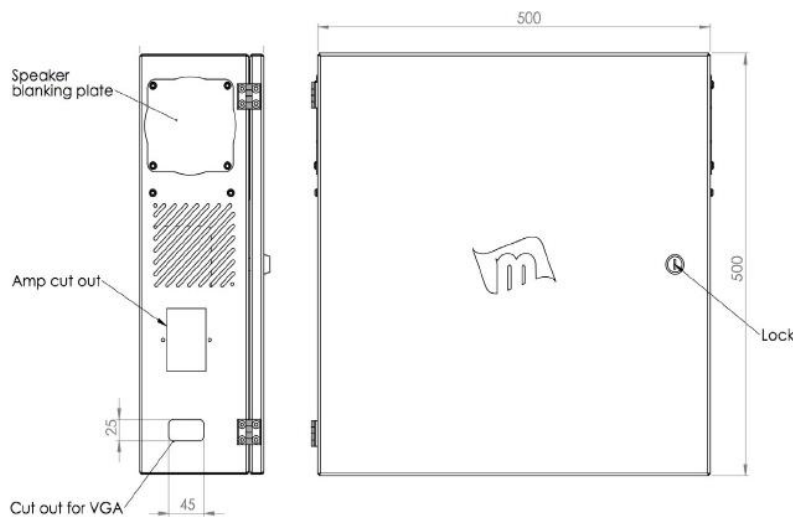4c = 4 x Zipclips
4d = 4 x Eye Bolt Nut Fixings

4c
4d
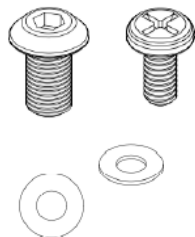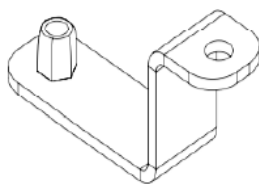
Projector Angle Bracket Fixings

4 x Angle Bracket Fixings
4 x M5 Hex Bolts (fix Bracket to Plate)
4 x M4 Cross Head Bolts (fix Bracket to Projector)
4 x M5 Flat Washers
4 x M4 Flat Washers
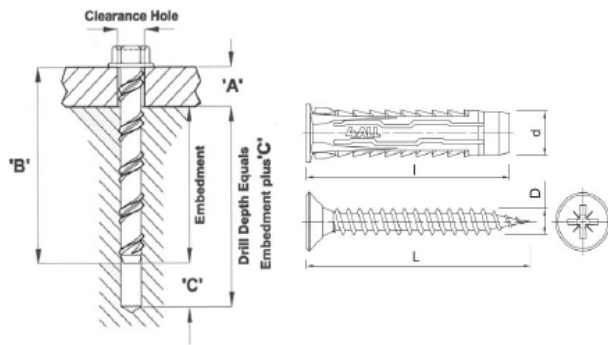
Z-Bracer Wood & Masonry Fixings

4 x RAWL Plugs

4 x No 10 1 1/2" Screws

4 x Masonry Screw Bolts

Magic Carpet PC Wall Rack

1 x Wall Rack

1 x 4 Way Power Extension

6 x RAWL Plugs
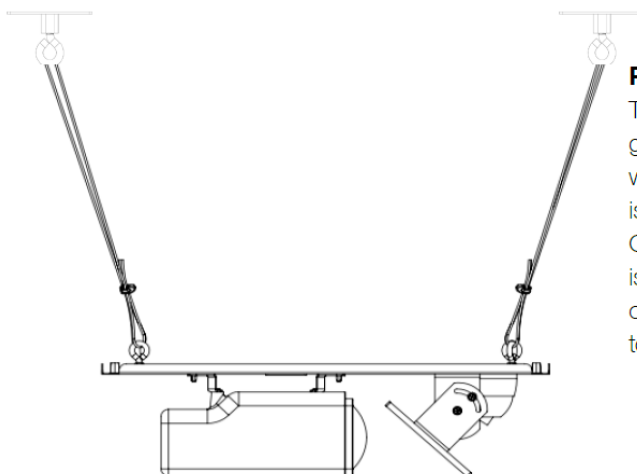
6 x No 10 1 1/2" Screws

Plate Installation for Suspended Ceilings

The fully populated plate fits into a 600x600mm ceiling grid tile opening. M8 Eye Bolts are screwed into the welded M8 nut on the top side of the plate. Steel Wire is threaded through the Eye Bolt and fixed using Zip Clips (each rated to support 80KG's). The Steel Wire is used to support the weight of the plate above the ceiling. The wire can be run over RSJ Beams or fixed to concrete or timber using the Eye Bolt Nut Fixings.

Always ensure that the plate is securely supported above a suspended ceiling. Failure to comply with this requirement could prove fatal, should a user grab hold of the projector and the ceiling fall in.
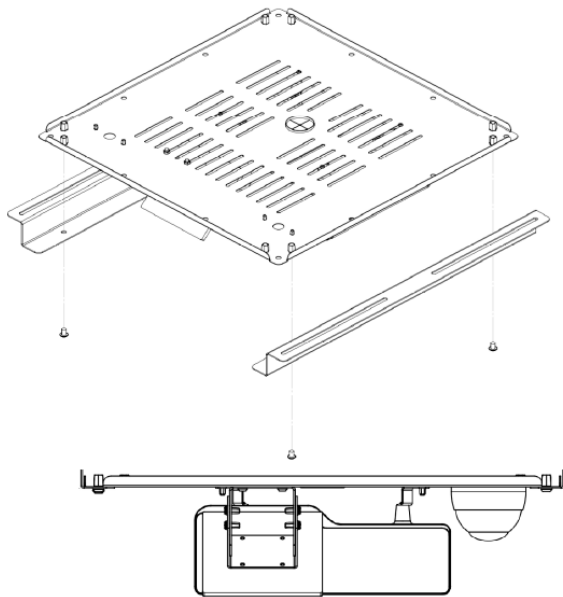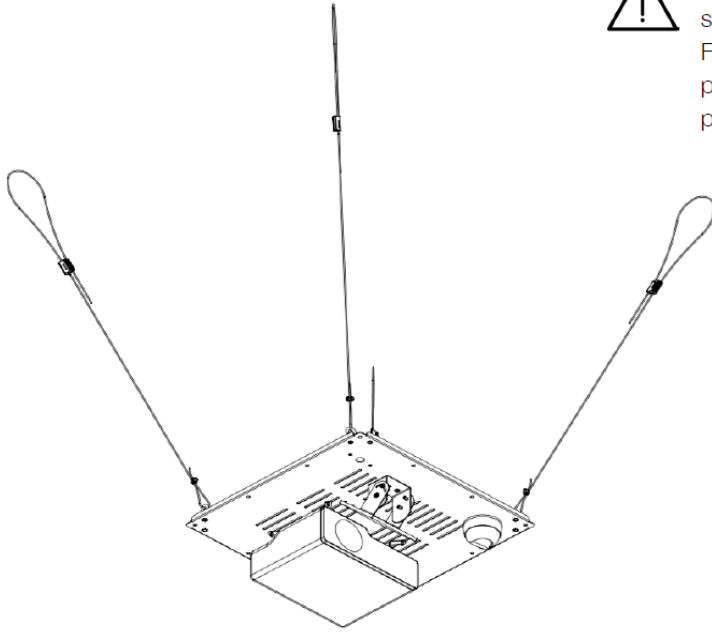

Plate installation for Plaster / Concrete Ceilings

Prior to populating the plate with the projector, mirror and camera, you will need to fix the plate to the Z-Bracers using the M6 Bolts and Washers. At this point you only need to nip the bolts up as you will be removing the plate once you have fixed the Z-Bracers to the ceiling.

In the drawing on the right you can see 2 x 250mm slots on each side of the Z-Bracer. This allows you to locate suitable fixings into timber / concrete. You need to ensure a minimum of 4 secure fixing points are established.
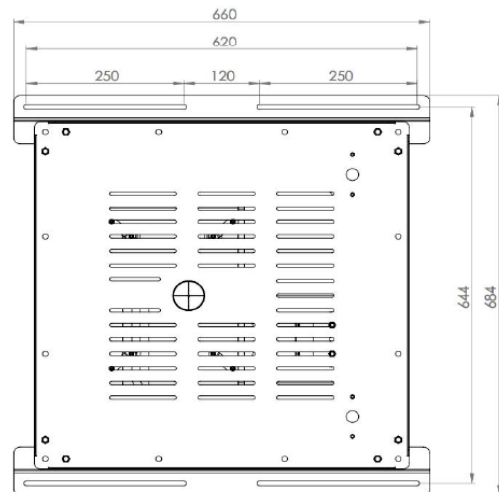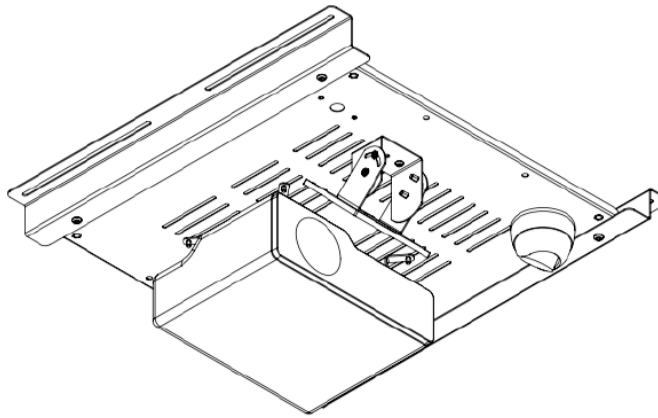
Once the Z-Bracers are fixed to the ceiling, you can remove the plate by undoing the bolts and sliding the plate out. The populated plate can be slid back into place when completed. Remember to tighten up the M5 Bolts when the plate is in place.


Always ensure that the Z-Bracers are fixed into timber when installing on to a plasterboard ceiling.

Populating the Projector Mounting Plate

**Mirror**

Camera
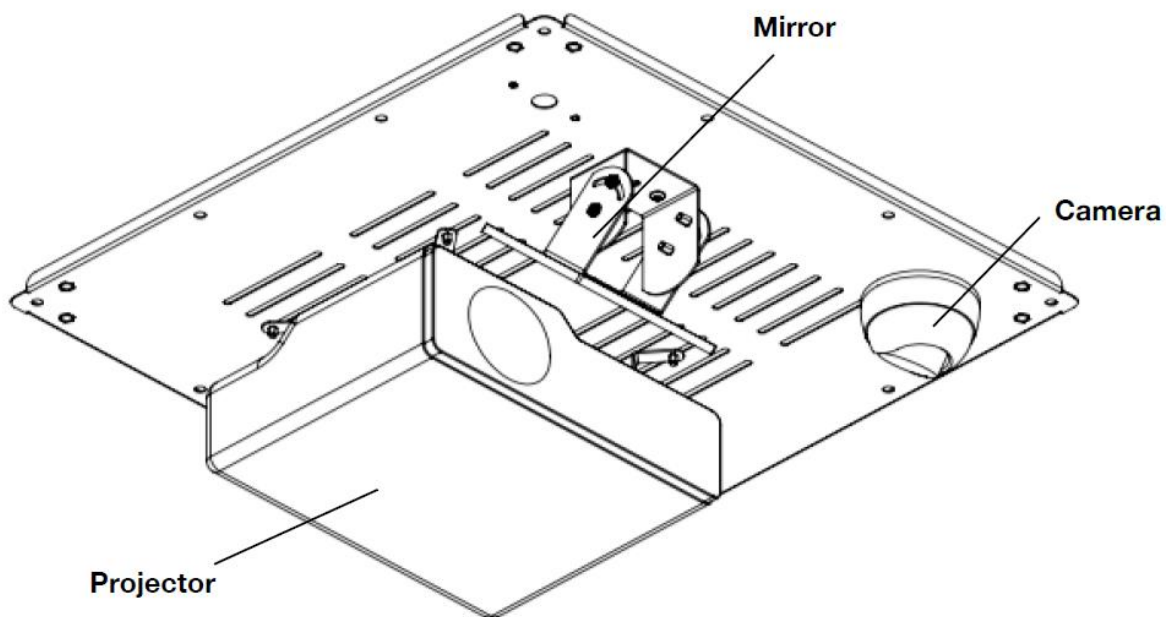
Projector

Mounting the Projector

Fix the brackets to the underside of the projector using the M4 Bolts and nip them up finger tight allowing them to rotate slightly. The long side of the Projector Angle Bracket Fixings sit flush to the underside of the projector mounting plate, as shown in the image above. Fix brackets using M5 bolts and washers from the topside of the plate.
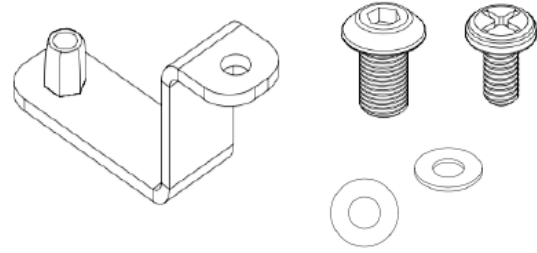
Projector alignment

The projector needs to be straight, otherwise you will have problems when you try to line up the mirror later on. Make sure your spacing matches the image above with the projector sitting within the middle and rear set of slots. This leaves the front row of slots available for the mirror.
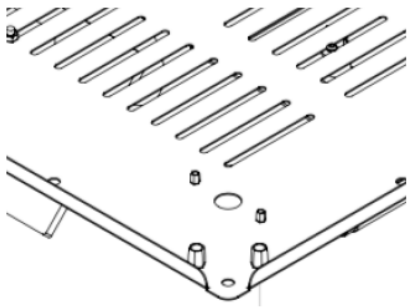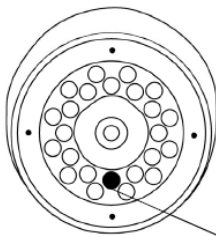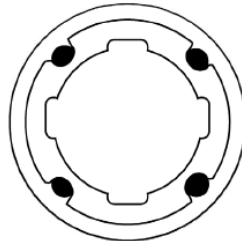
Mounting the Camera

The camera can be mounted on either side of the plate. Detail on the left shows a 20mm hole with and 2 x 5mm holes. The camera cable threads though the 20mm hole and the Mounting Ring fixes to the plate using 2 x M4 15mm Bolts.

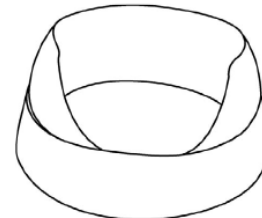The Camera separates into 3 parts as shown below.
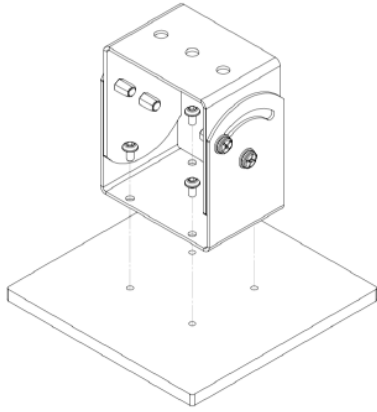
Eye Ball Camera

Mounting Ring

Outer Casing

Camera Orientation
Make sure you orientate the camera correctly. The black Photo Resistor should be positioned at the point furthest from the projector.

Mirror Bracket Assembly

The Mirror Bracket fixes to the Mirror Board with 4 x No.8 x 5/16" Screws and then to the plate using 3 x M5 Bolts, Nuts and Washers. The centreline of the mirror needs to be on the centreline of the projector lens. It is important that you keep the bracket straight to prevent the image from warping or skewing.

Mirror Safety Frame

The Mirror is attached to the wooden board using 8 adhesive pads and fixed with the mirror frame as shown below:
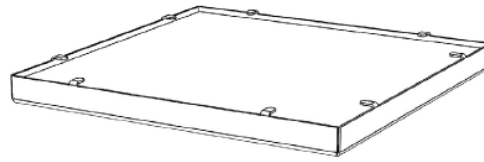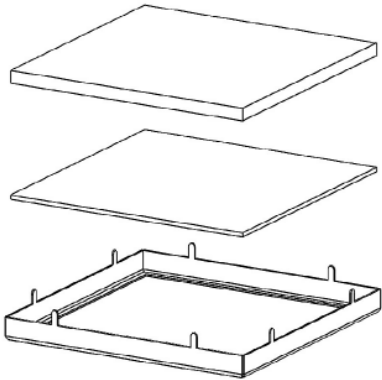
⚠ Do not remove the protective film on the mirror until you have securely fixed it to the plate

6.   Determine whether amplifier should be mounted onto a rack, wall or free standing.

Projector Installation
1.   To determine optimum projection size; turn projector on whilst it is on the floor to confirm distance from wall.
2.   Depending on your projection mounting solution, install the projector:

For Wall Mounted Installation:
Please follow the instructions in the wall mount manufacturers' manual.

For Steel Wire Installation:
Please refer the instructions above for guidance on suspended ceiling install.

For Z Brace Installation:
Please refer the instructions above for guidance on Plaster/Concrete ceiling install.

3.   Once installed, turn projector on to see where the image is and adjust accordingly. At this point it does not need to be connected to the PC.

4.   Taking into account the projected image area, judge where the camera should be above the image. Make sure that the camera doesn't overlap the edge of the
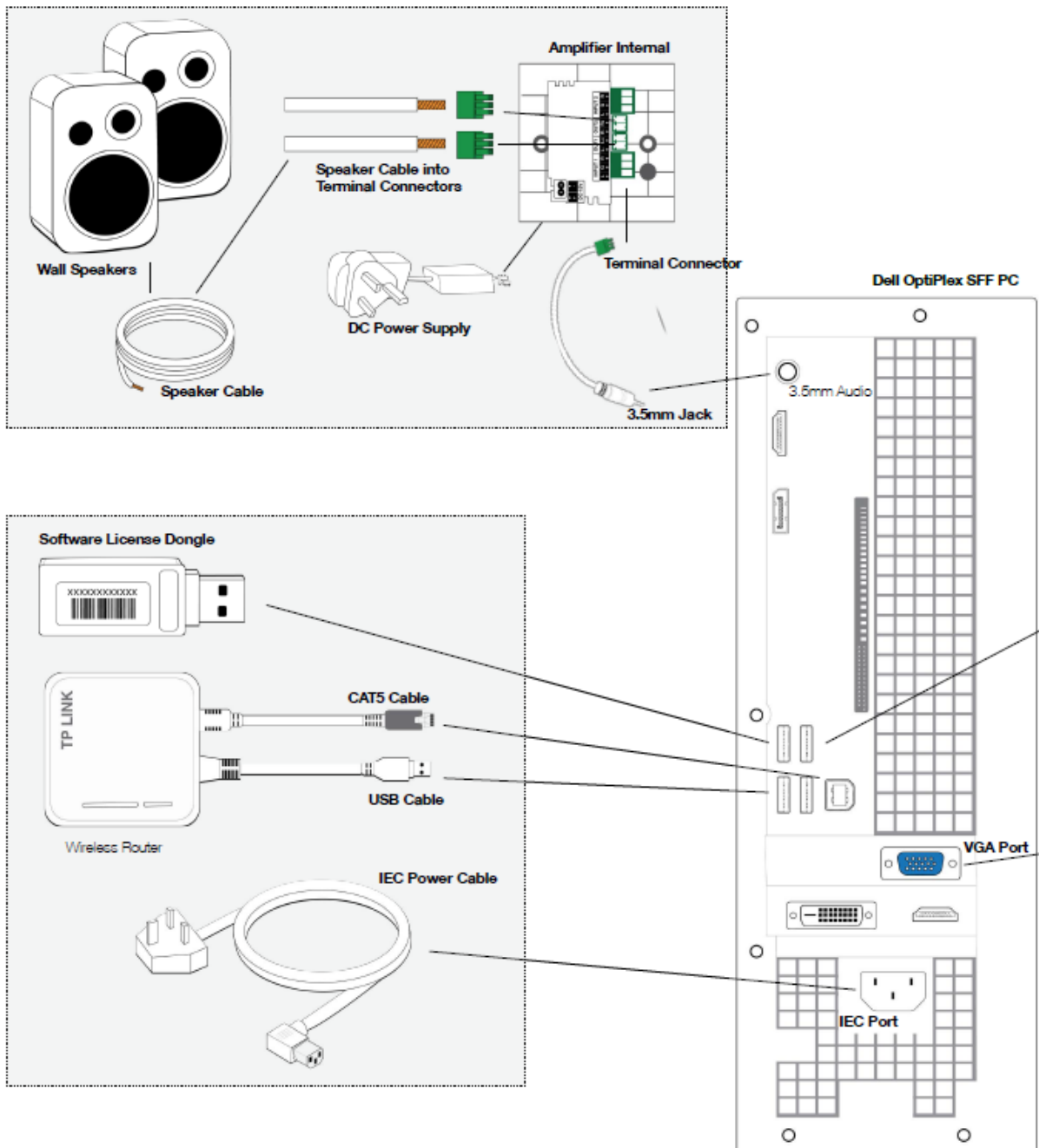
projection image.

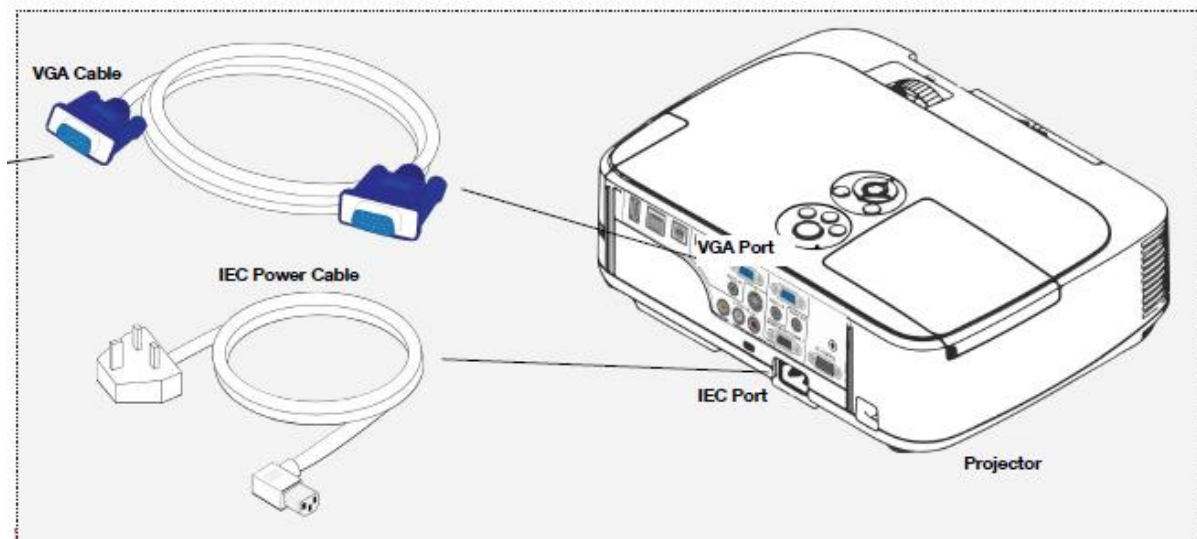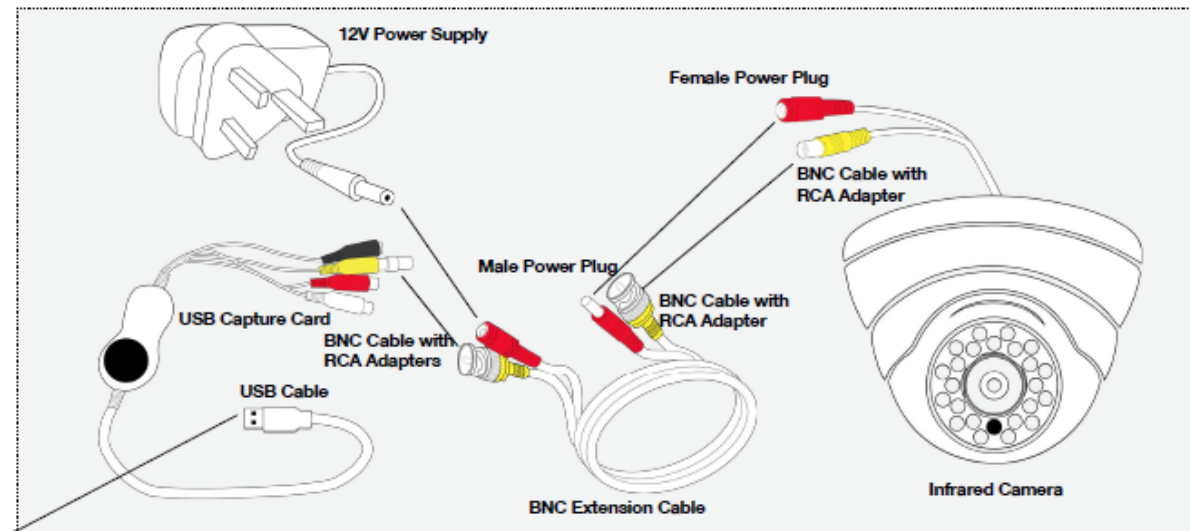5.   Install the camera on the wall.

Set up PC
i.   Insert USB capture card into USB port
ii.   Connect IEC cable to power socket
        iii.   Connect the keyboard
        iv.   Connect the monitor using the VGA cables

Cables
Please ensure all cabling is neat and tidy, using surface mounted conduit.

The above figure shows a 12V Power Supply, Female Power Plug, BNC Cable with RCA Adapter, USB Capture Card, BNC Cable with RCA Adapters, USB Cable, Male Power Plug, BNC Cable with RCA Adapter, BNC Extension Cable, and Infrared Camera.

The above figure shows a VGA Cable, IEC Power Cable, VGA Port, IEC Port, and Projector.

6. Cabling the amplifier
   i. 3.5mm jack to bare wire audio cable from PC (jack end) to amplifier. Bare wires connect to amplifier terminal block
   ii. Connect power supply to amplifier

7. Cabling the Camera
   i. Connect camera to BNC power cable - power to red, video to yellow.
   ii. Connect 12v PSU to other red BNC power cable
   iii. Connect USB capture card to other yellow video cable

8. Cabling the projector
   i. Run the VGA cable from the PC to the projector
   ii. Run IEC power to the projector
Please note: the VGA cable must be used for the Projector.

9. Cable the monitor
   i. Run the DVI-D cable from the monitor to the PC graphics card.

Please note: In all MM installations the VGA output goes to the projector, the DVI-D output goes to the monitor. Never use HDMI.

Powering up the system
10. Connect the following power cables to a 6-way extension cable
   i. Projector IEC
   ii. Camera 12V
   iii. Monitor IEC
   iv. Amp
   v. PC IEC

11. Connect extension cable to a power outlet in the room

Test and configuration of the system
12. Turn on PC, Camera, Monitor, Amplifier and Projector

13. Run Magic Mirror software

14. Check orientation of camera, you will see the cameras image in the software. When in front of the mirror, your left hand should move on the left side of the screen so you are fully mirrored.

15. Check that the Magic Mirror is working when in the run time – To start run time, press the play button on the software's control panel and gesture into the projection to/make contact with an interactive object. If correctly configured, you will see an interaction and hear a sound.

Using the Ceiling-Mounted Interactive Wall Projection

There are a few things you need to familiarize yourself with before you attempt to turn the system on for the first time:

1. PC and Monitor - this will usually be housed in a dedicated server rack or on a shelf close to the projector
2. Projector - mounted on or above the ceiling and controlled by an IR remote control unit
3. Amplifier - powers the speakers

To begin with turn on the main power switch and make sure all equipment is in standby mode. You can tell that the equipment is in standby mode by checking the status of the standby LED's.

Next switch the PC on using the button on the front of the PC. The Monitor will turn on automatically and you will see the Magic Mirror software begin to load.

Note: if the Monitor doesn't come on, turn on using the Monitor's power button.

Note: if the Magic Mirror software does not load automatically, locate the icon on the

Desktop and double click to run.

Locate the Projector Remote and turn the projector on. When the projector warms up and shows the image it should display the Magic Mirror's output screen with the first app in the list visible. If you don't see this, but instead see the extended PC Desktop (as standard, this is a Sensory Guru logo), then this is most likely because the software is not running. Locate the icon on the Desktop and double click to run. If you see nothing at all, check the projector input is set to Computer 1. This is the button directly below the ON button of the Projector remote.

The system is ready to use. Simply press Play on the Control Panel to activate.

Once the system is powered on you can begin to use the apps
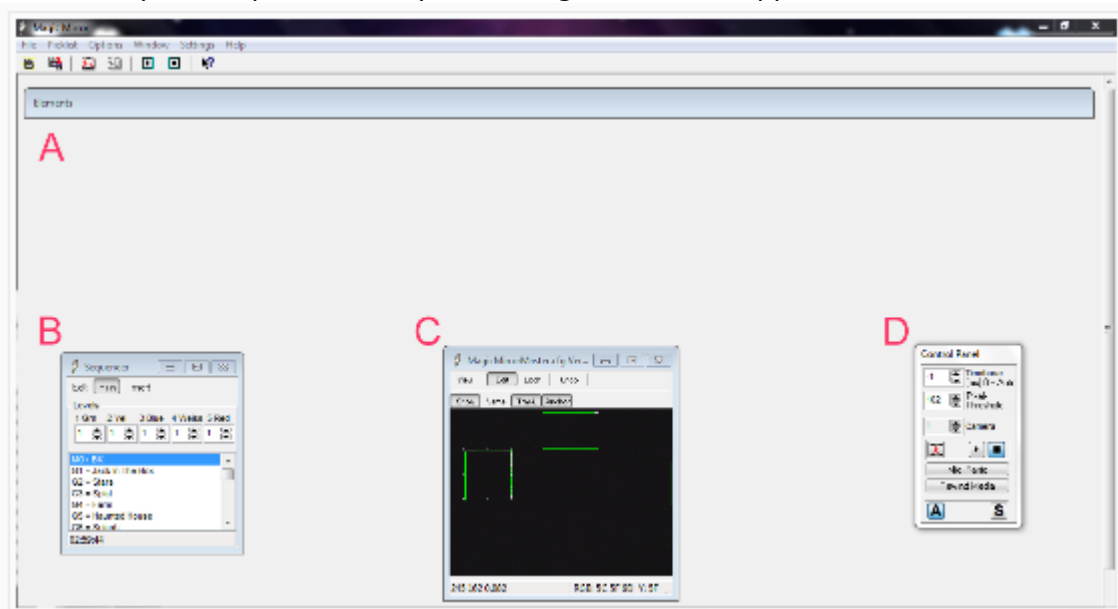
Start by selecting the app you wish to use from the Scheduler (B). To do so simply click on an app name (such as Jack In The Box) with a single-click using the left mouse button. The app is now selected and should appear on your Projection wall.

The next step is to activate the Magic Mirror. This is done by pressing the Play button on the Control Panel (D).

The system is now active and ready for use.

You may now switch between apps by simply clicking on the app name once (as above). The scene will change and be instantly ready for use. Elements may be freely moved around the screen by clicking anywhere on an their green boundary line (between the anchor points [the little white squares])

Tip! Be careful when moving elements, especially if there is a background image underneath. If you don't quite place the mouse on the boundary line, it may click through to the element below, moving that one instead!

When you are finished using the system, close down the software by clicking the red box with the white cross at the top-right part of the screen (the same way most Windows applications are closed). If you have made any changes, a message will appear asking you if you would like to save them. Click "No" if you do not intend to keep changes or wish the system to be reset back to the default for the next use.

To Create Your Own Apps
Much like other computer programs, this system consists of a file (or a document) that can be worked on and saved. The Apps in the Sequencer are simply layers within this document. These layers are known as Levels in this system.
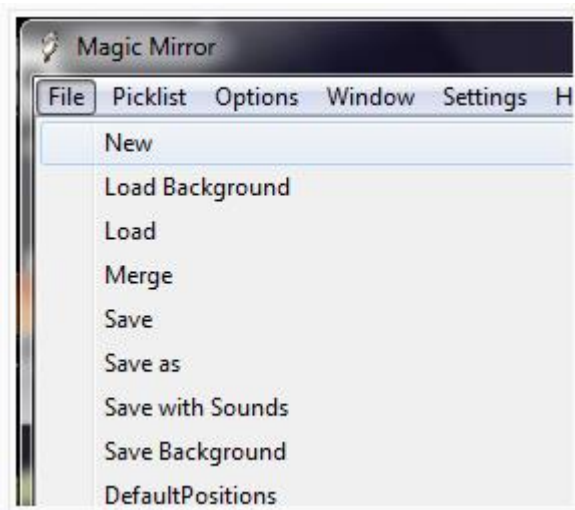For example, 'Jack In The Box' is on Level 1 whilst 'Stars' is on Level 2.
When you click on 'Stars' whilst 'Jack In The Box' is open, you are simply switching between these levels.
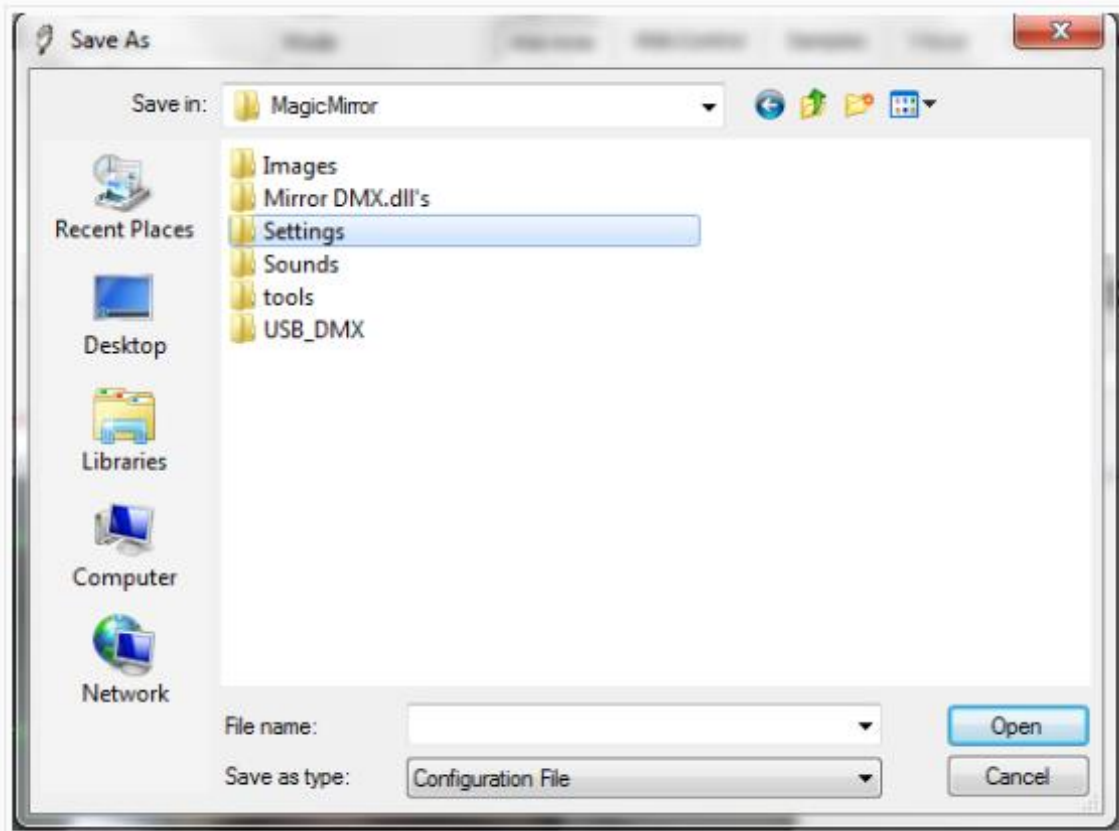
Start a new file.
Open the Magic Mirror.
Click 'File' from the very top tool bar and select 'New'.

You will now have a fresh file to work with.

Save this new file. Click File>Save As. When the Save As browsing window appears, navigate to the Magic Mirror folder (C:\Program Files\Magic Mirror\) and look for the folder named "Settings". Give your file a unique memorable name and click Save

Note: the software, once opened, will load the default file (MagicMirrorMaster.Cfg). To load your own file, click File>Load - or Crtl+O and navigate to the Settings folder. Open the Settings folder, locate your file and click Open.
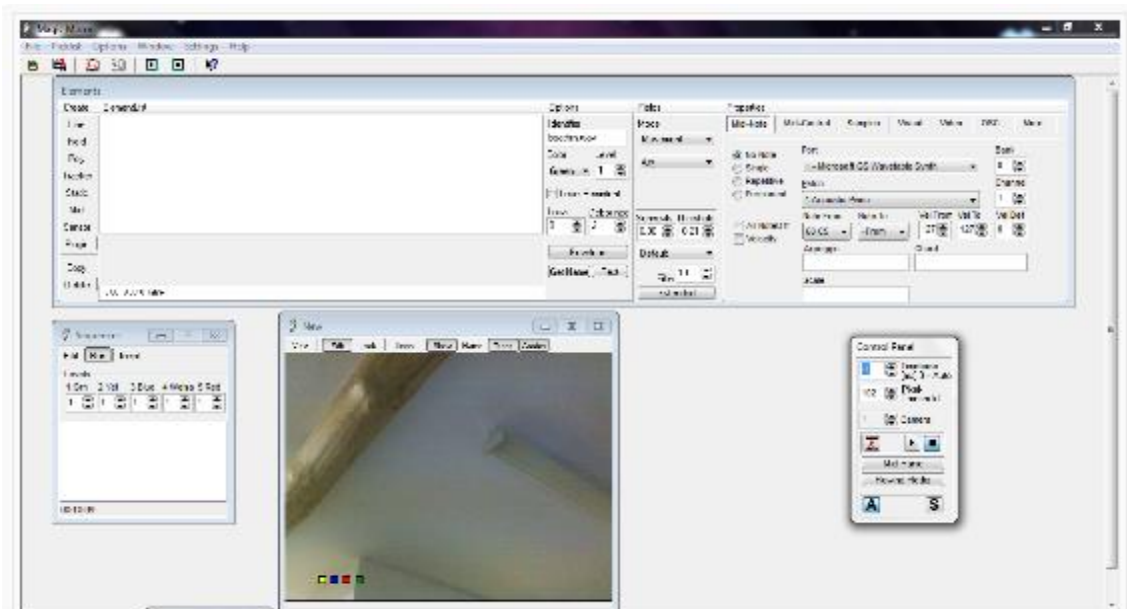

From the Elements panel under the Create column, click "Field". You will notice a small Field Element appear on the Working Monitor and a green square followed by a number (the Level) and the work Dyn (which is short for Dynamic Field Element).
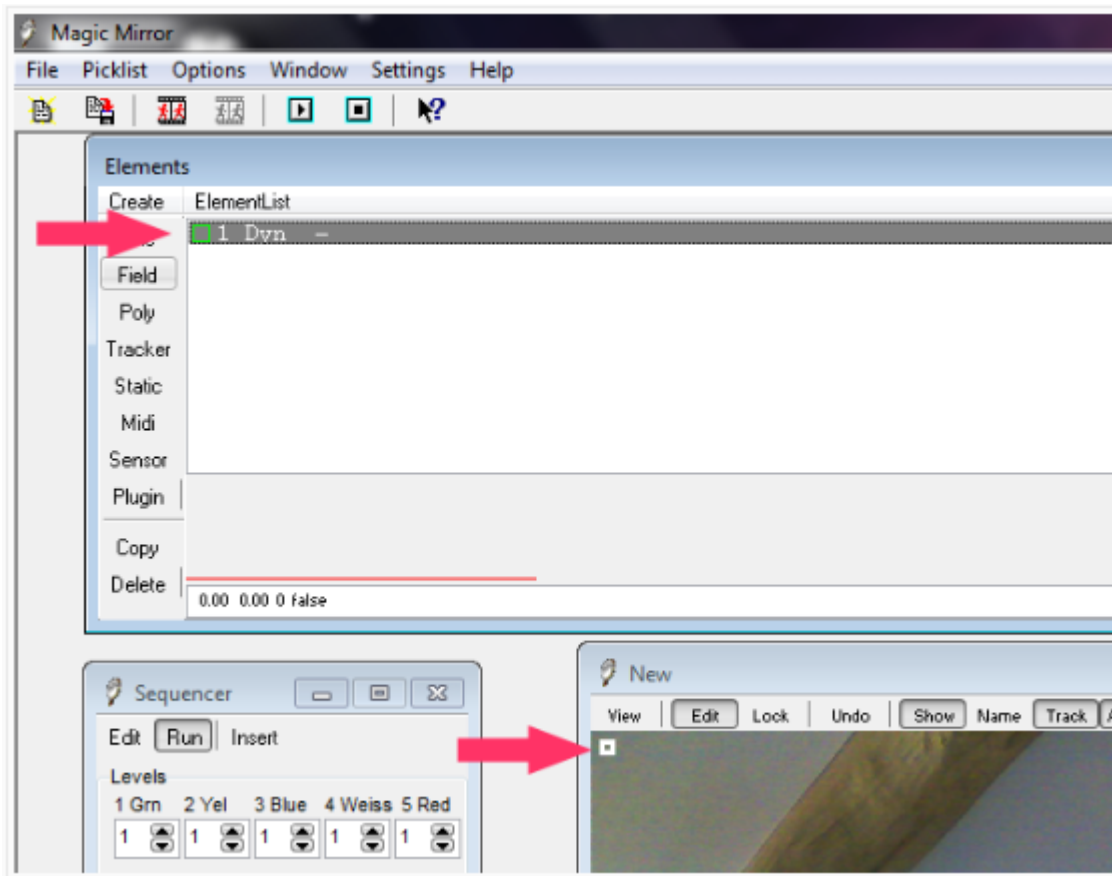
To make the new element easier to work with, click the bottom-right anchor point and drag to make it larger.
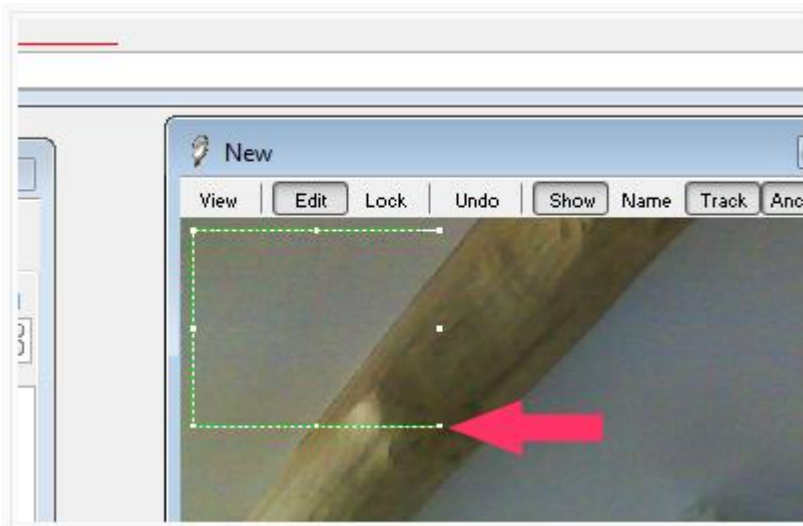

Now move the element. It is a good idea to do this now, as any further elements created will appear in this area so will be overlapped and tricky to get to. Click on a boundary line anywhere between the anchor points and drag to move (like drag and dropping items on your desktop!).
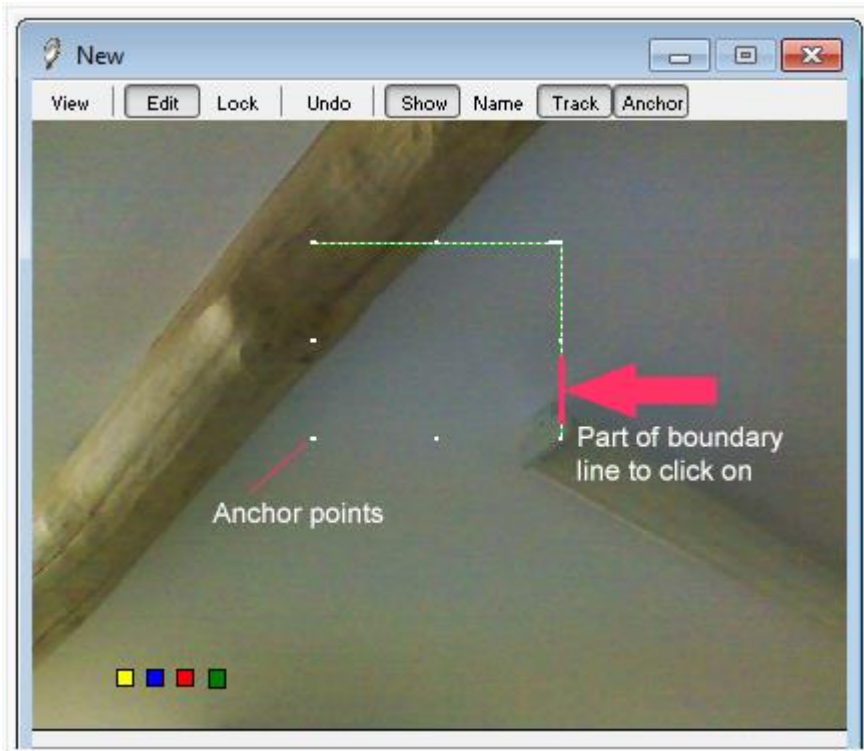
Move up to the Elements panel and click on the More tab (under the Properties column).
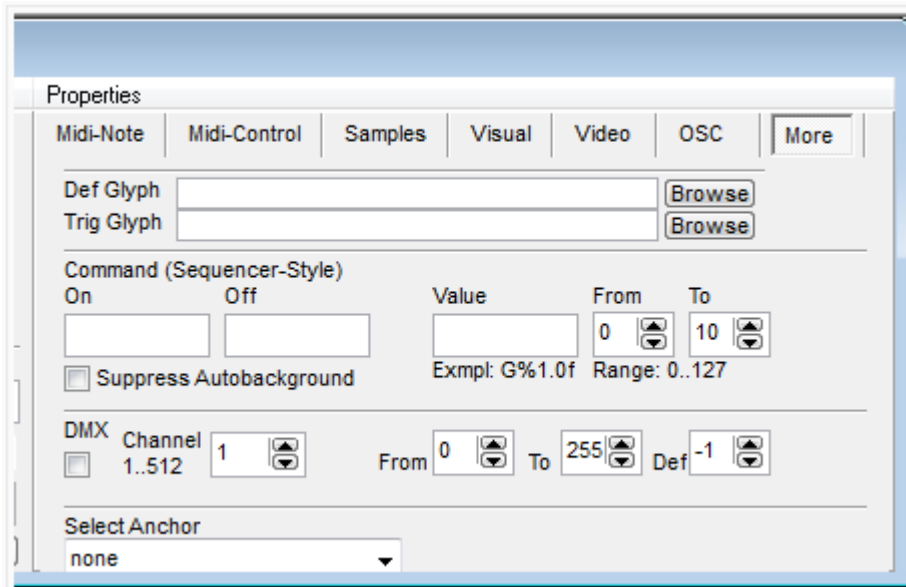

Click the "Def Glyph" Brose button and locate the image you wish to use. In this case, the image "PinkFlower.png". Do the same for "Trig Glyph" but this time, select the image "RedFlower.png". The two options will now show the image files that have been loaded, like this:
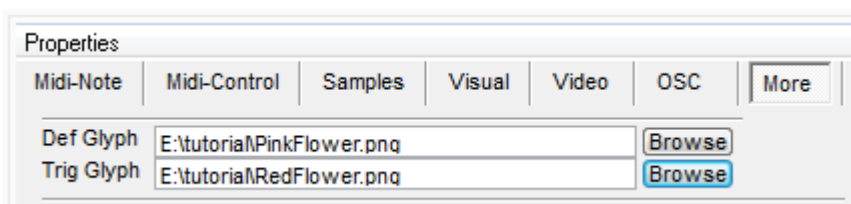
If you don't see any images where you would expect to find them, click on the drop list for "Files of type:" at the bottom of the Browse window and select "all files":
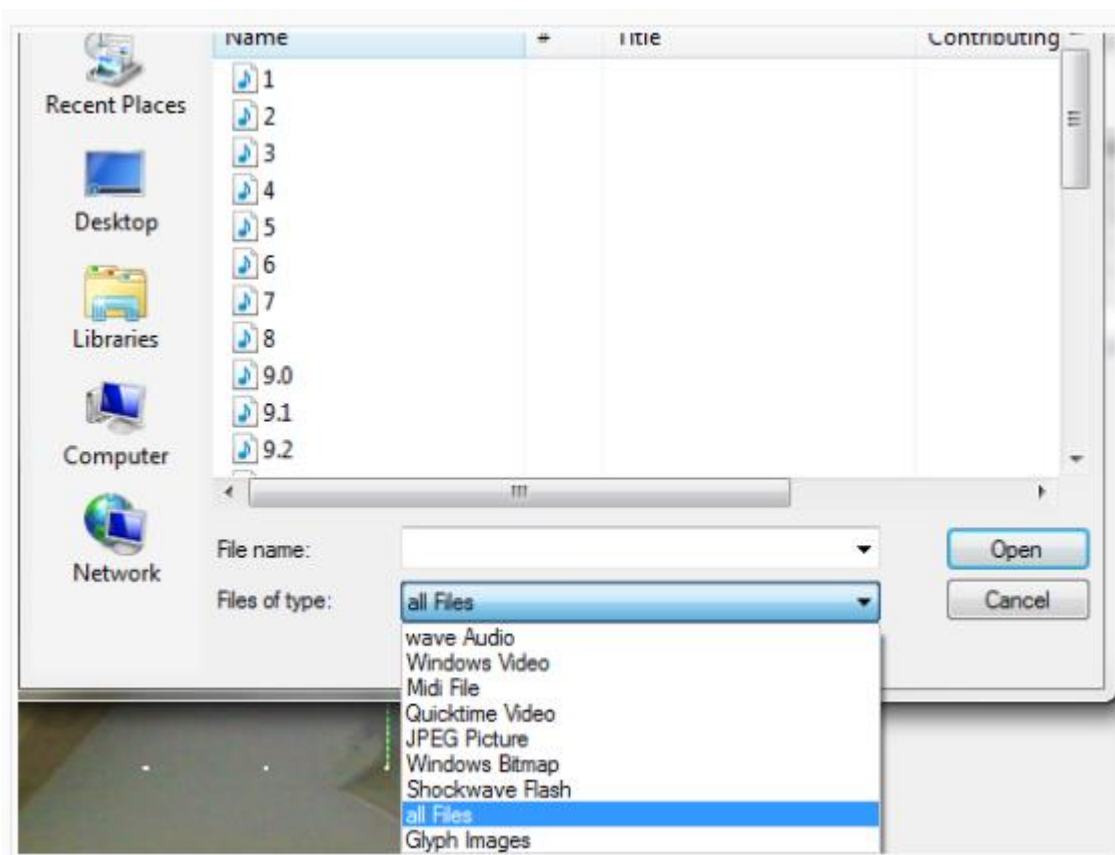
If you wish, you may test your progress by moving down to the Control Panel and pressing the Play button. Move over your element to see it triggered and the second image displayed:
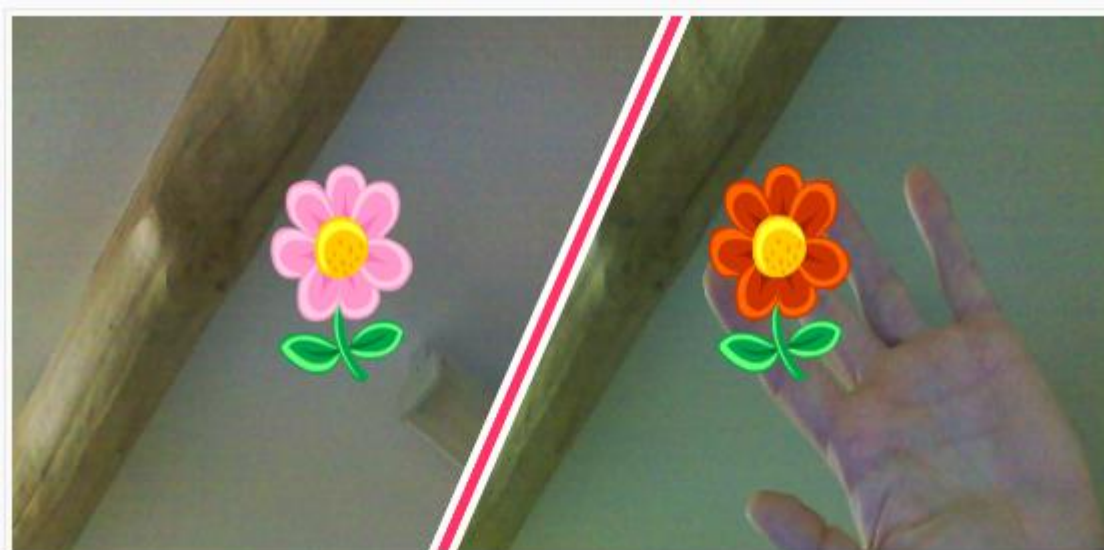
The next step would be to add some sound. Move back up to the Elements panel and click the Samples tab under the Properties column.
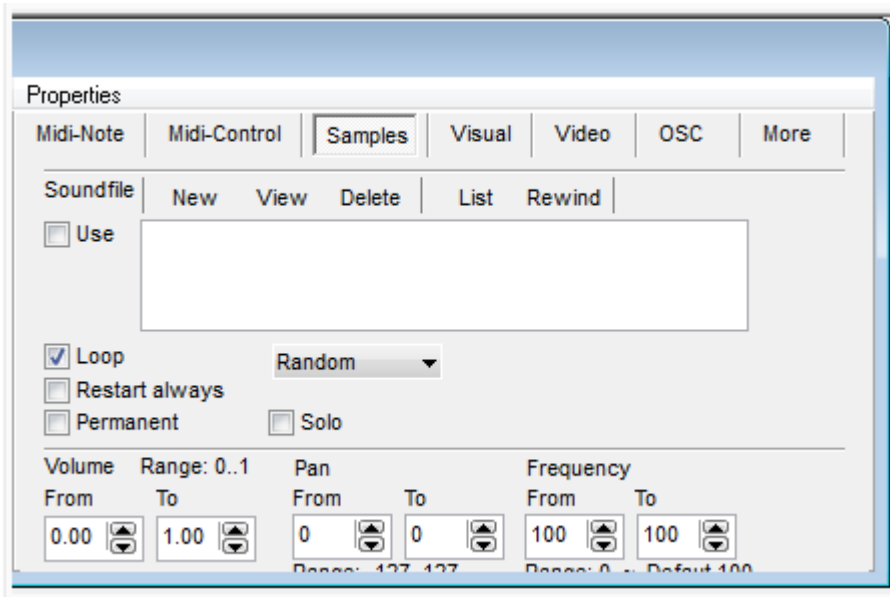
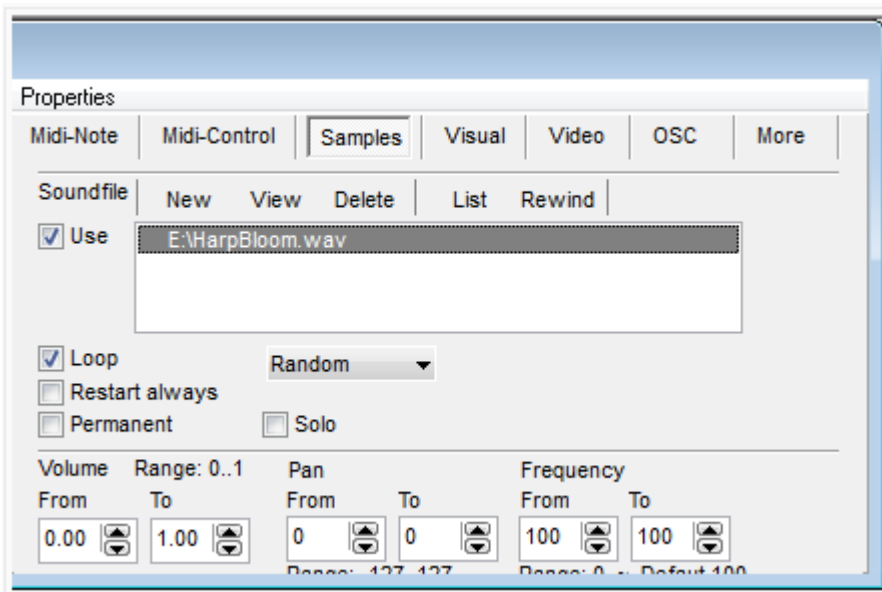Click "New" and locate the file "HarpBloom.wav". Once loaded, the Samples tab will now show the file, like this:

Again, if you do not see the sound file you are looking for, click on the drop list for "Files of type:" at the bottom of the Browse window and select "all files" (as above).

Test your progress once again to hear the sound now accompanies the image change when triggered.

Cast your mind back to the start of this tutorial, in the Elements List that contains information about the element. The number 1 is significant because it is the Level at which the element resides.

In order to make this work an app in its own right, let's give the app a name!

This is done with a small and simple piece of code typed into the Sequencer:
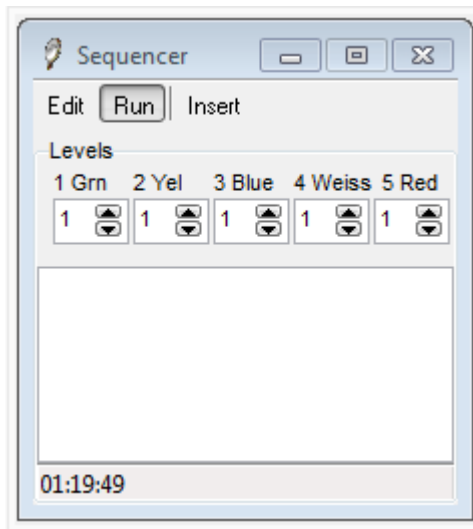
Notice that "Run" is highlighted. Also note the large white box below.

Click "Edit" and you will see that the large white box becomes editable:
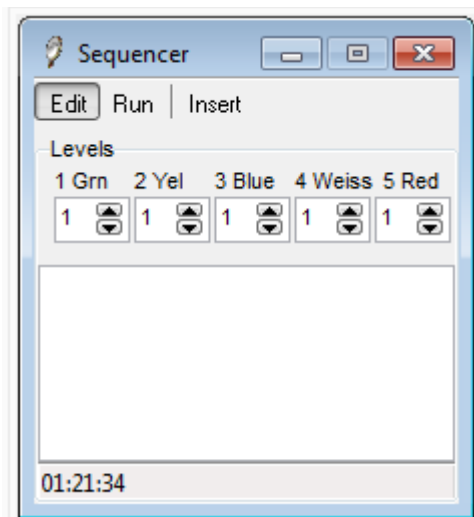

In the large white box, we are going to type some words that will signify our element's Level as an "app".

Before we do so however, we will need to type a piece of code that will initiate the process. This is because we are working on a new file for the first time. Once this is entered, it need not be done for this app again, the following code is a two part command to tell the software to produce a secondary monitor ie; the Projected image (the "MO" part) and take a snap shot of the background for optimum use (the "BK" part)

The one-off code to type here is: "MO+ BK"
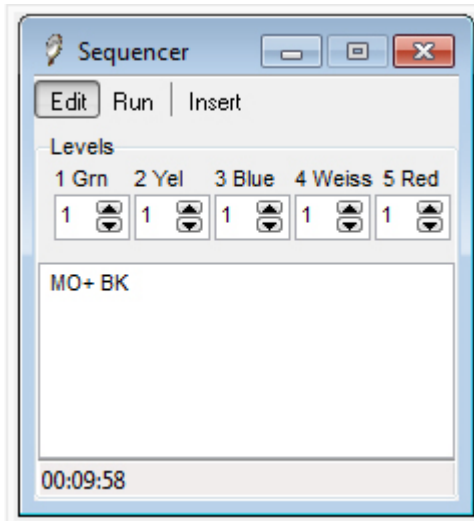
While we still have the Sequencer in edit mode, we may as well type the next part of code. The following code is required for each app you wish to create:

G1 = Name of app

where "G1" refers to the element. In this case G stands for "green" (the default colour given to an element when created. This need not be changed for these purposes)and the number 1 stands for "Level 1". And "Name of app" is your chosen name for the app you wish to create.

We need to type this new code on a new line. So, make sure the Sequencer is in edit mode, click immediately after MO+ BK and press return to enter a new line.

Type "G1 = Flower". Keep the Sequencer in edit mode for now
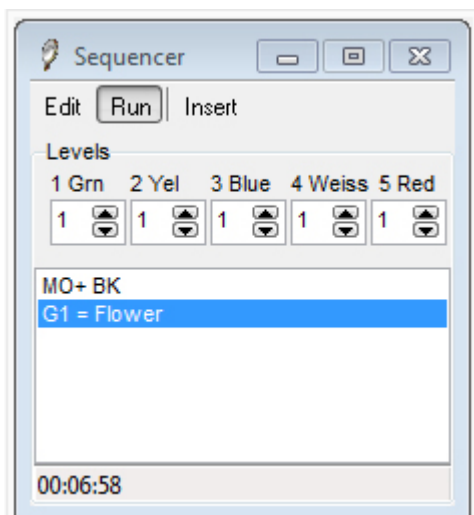
Let's type the code for the next app. Even though we have not yet created any content for it, it is a good idea to get this part done now as when the new app is selected, the next Level will automatically be selected for us to work on!

Again, go to the end of the previous line (in this case to the end of "G1 = Flower") and press return.

Type in the following:

"G2 = Dog"

This creates a new Level for our new app!
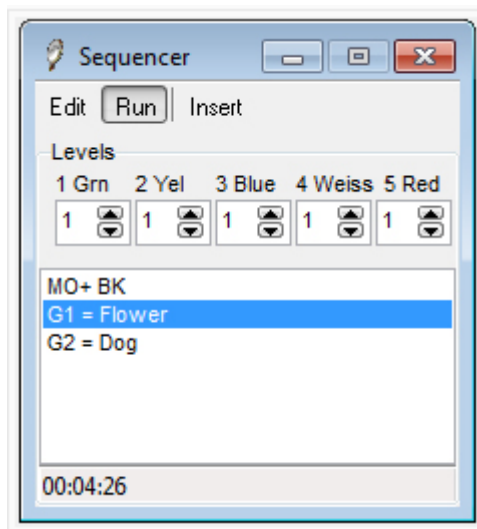
Now click Run.

Test your progress by now clicking on the next app. To do so, simply move the mouse cursor over the line that says "G2 = Dog" in the Sequencer and sing-click it.

You should notice that the flower of the first app disappears. This is because we are switching to Level 2 (the next app). Let's put some content on it!

With the Dog app selected, create a new Field Element (as above). As before, move to the More tab in the Elements panel. For Default Glyph load the file "Dog1.png". For the Triggered Glyph, load "Dog2.png". Under the Samples tab, load the file "DogBark.wav".

You now have two apps!

Note: If you would like to add to either of your apps, simply select the app you wish to add to (by clicking on its name in the Sequencer) and create new elements as desired. Any new elements created will be created on the same Level hence they will all be a part of that app.

If you want to create a new app, first enter the new app's code as we did for app 2, click Run and with the newly created app selected, go about creating new Elements.

You will need to save any changes you make, if you wish to keep them, each time you close the software.

14.   Care and Maintenance

1.   Clear the projector filters every 3 to 6 months depending on use.
2.   Change the projector lamp as required using a new lamp of the same specification.

15.   Troubleshooting

In the unlikely event of product failure, please check the following:

*Problem: **Incorrect camera settings***

• Amcap is a program used to configure a camera connected via composite connection. For example; the cameras used by the Magic Mirror system. Amcap can be opened by double clicking the Desktop shortcut icon if one has been created. If there is no shortcut icon, you can find Amcap here: C:\Program Files\Magic Mirror\tools\

Once open you will be presented with the main interface. Note, that if the camera is plugged in and set up correctly, you will see the camera image. If not, then there will be either a complete black or white image instead.

 Locate the "Options" menu at the top
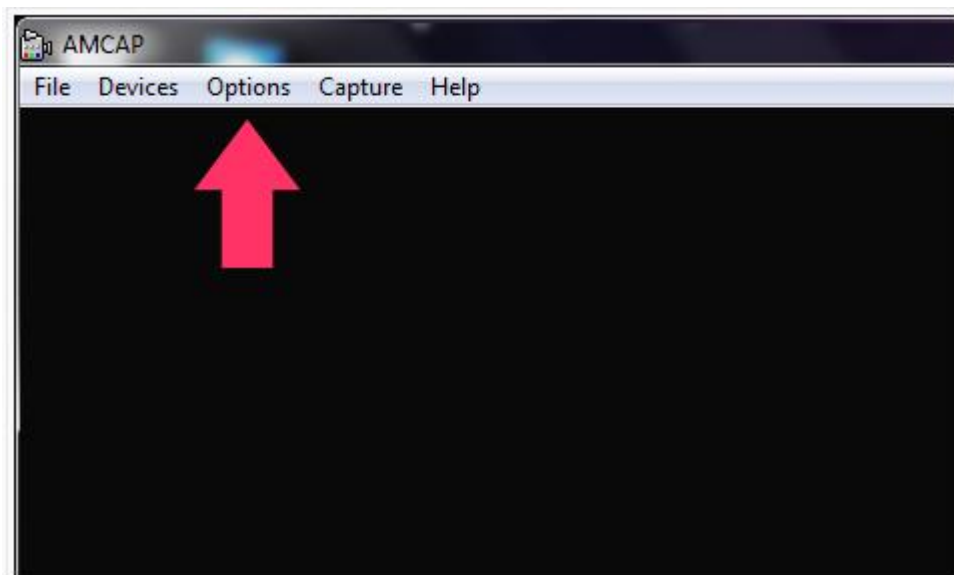
The Options menu contains some further options: "Video Capture Filter", Video Capture Pin" and depending on what version of the software you are running, you may have "Video Crossbar":
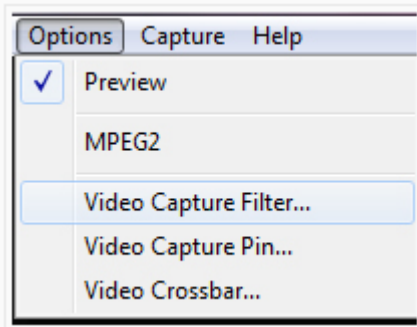
From the Options menu, select "Video Capture Filter". Look at the Video Decoder tab and make sure the Video Standard option is set to "PAL_B". Click "Apply" and then "Ok" to exit.
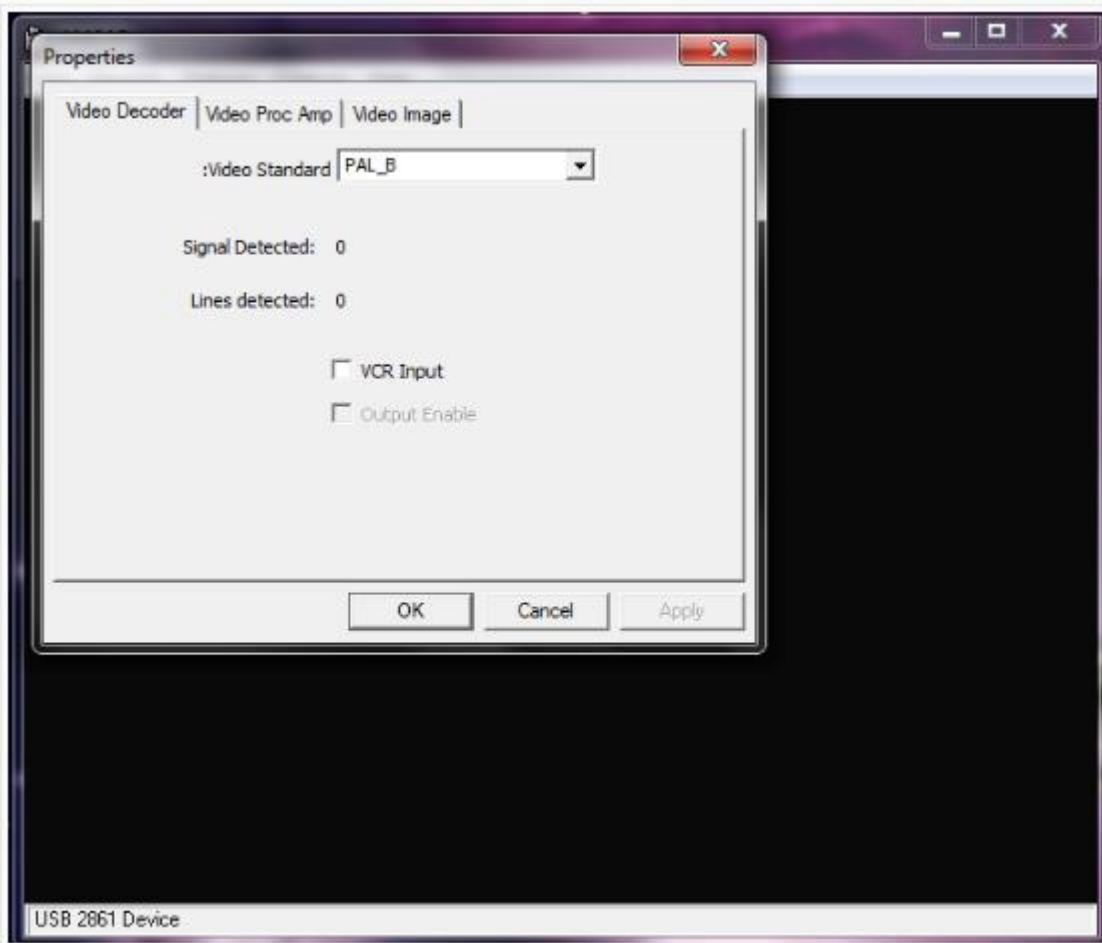
Next, select "Video Capture Pin". Video Standard should automatically be set to "PAL_B" having just set that in the capture filter panel. Set the Frame Rate to "25.000" and Make sure the Output Size is set to "704 x 576". Click "Apply" and then "OK" to exit.
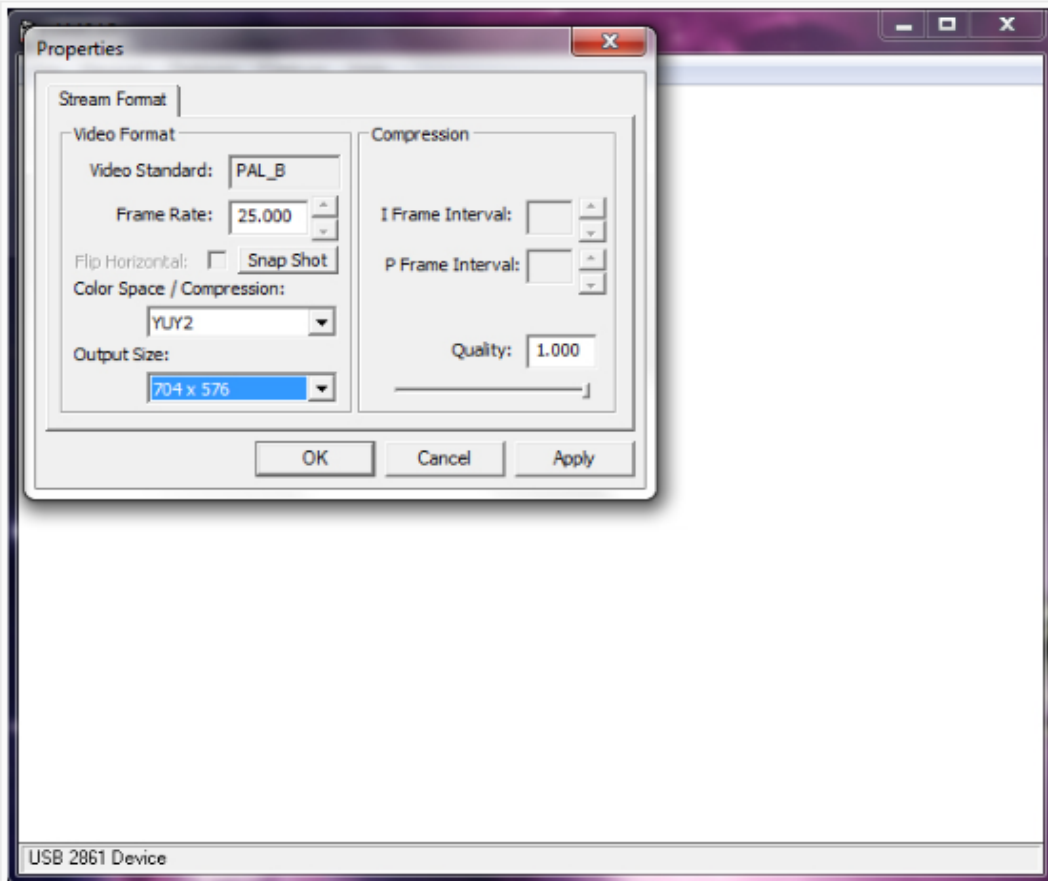
Finally, (if your version shows it) select "Video Crossbar". In the first section, Input, select "1: Video Composite In". Click "Apply" and then "OK" to exit.
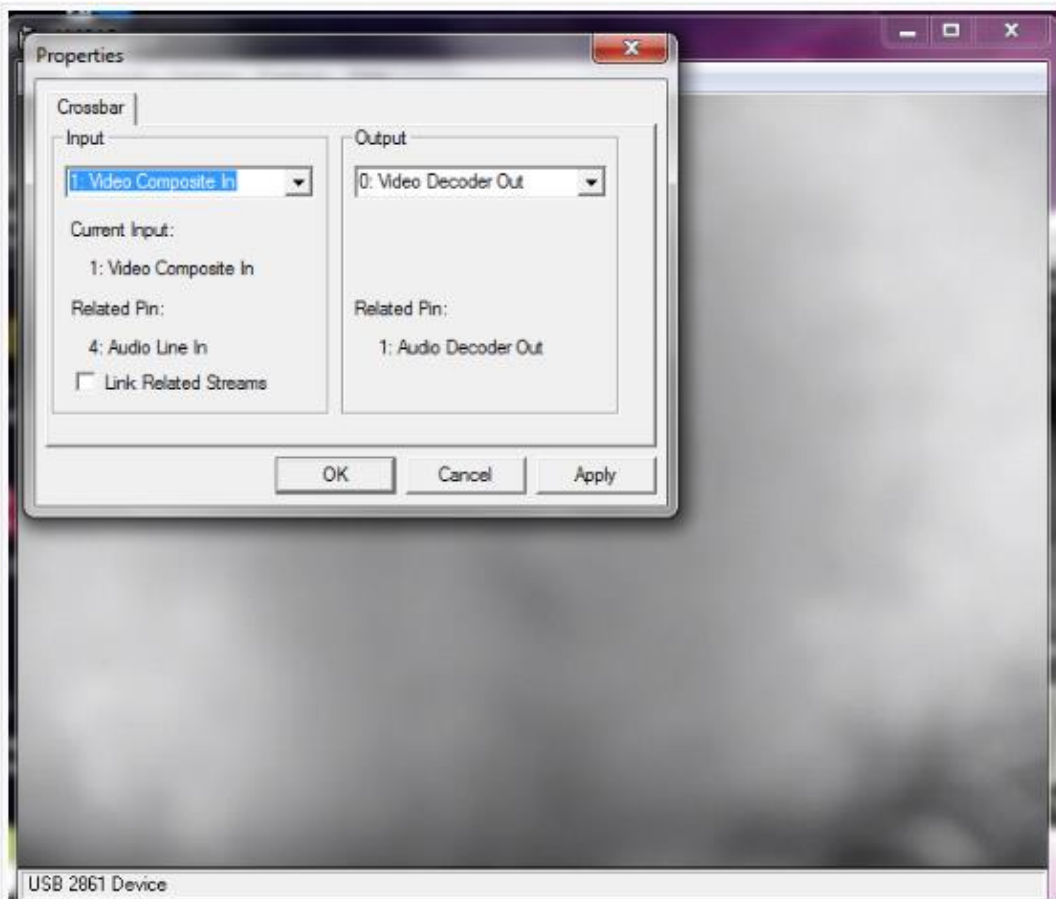
If your camera is correctly connected and powered, with these settings, you should now see an image in Amcap.

Close Amcap.

Note: Make sure Amcap is correctly configured and <u>CLOSED</u> before starting the Magic Mirror software. There will be a conflict and subsequent error message if trying to run the Magic Mirror and Amcap together.

*Problem: **System not responding to interaction or intermittent interaction***

Make sure you have pressed Play on the Control Panel to ensure the Magic Mirror is active. If you are finding your Interactive Field Element to be unresponsive or too sensitive, try adjusting the settings to suit. This may occur in very low/very high ambient light situations or where the environment allows for direct sunlight or concentrated light in certain areas around the room. For example; one of your elements is sitting right over a bright window.

Sensitivity, Threshold and Filter settings (Elements panel > Fields column)

Sensitivty and threshold work together to set a Field Element's overall sensitivity;

Sensitivity relates to movement. The higher the sensitivity value the more easily the element will detect movement. For example; the sensitivity is set high, the element detects even the slightest of movement from a wiggling finger.

Threshold relates to a value at which the element will trigger. Even though the element is set to a high sensitivity level and is detecting the movement from the wiggling finger, the element has not yet triggered. It will not trigger until the finger movement becomes more prominent and breaks through the threshold value. In this case, it is necassary to either reduce the threshold level, or increase physical movement to trigger the element.

The Filter option determines how quickly the Field Element resets after being triggered. For example; if increased in value, the triggered event will linger for longer.

If the value is very low or set to zero, the element will reset itself almost instantly after being triggered. If the Filter is set in this way, you may experience a 'bouncing' trigger event. This is where the element is triggered, resets very fast and triggers instantly producing a bouncing effect. To reduce this effect you may set the Debounce value a little higher (the

Debounce setting is to the left under the Options column). A value of around 2 will redcuce this unwanted effect sufficiently for most situations. Unless of course, that's the effect you are looking for!

The camera supplied with this system is powered by a 12V Power Supply. If you are experiencing problems with connectivity or the system appears to be unresponsive to user interaction, check that the LED array on the camera is glowing red as shown below. If not, then it is likely that the Camera is either unplugged or turned off. Rule this out first before following the next series of steps!

When you are sure that the Power Supply is turned on and all connections are good we need to determine whether the issue is with the Power Supply or the Camera, locate an alternative 12V PSU 1A 2.1mm DC Plug and connect to the system - please contact us.

*Problem: **No sound***

Before proceeding with troubleshooting sound, make sure the PC has not been muted. Also make sure you have pressed Play on the Control Panel to ensure the Magic Mirror is active. Navigate to the bottom right of the Desktop screen and locate the speaker icon (within the toolbar). Click it to reveal the volume slider. Adjust as required.

If you have a fixed installation, your system will be connected to either an amplifier or an existing sound system. Locate the amplifier. If it is a Nuvo amplifier (small white unit), make sure it is on by slowly turning the volume knob to the right (turned fully left will turn the amp off).

If you have a black Cambridge Audio amplifier, make sure the volume knob is turn up sufficiently (but not too high!). Make sure the source selector is set to the correct source.

This is usually 'CD' or 'MP3' depending on your setup. If either of the do not work, try slowly selecting each source until the sound comes on. If your system is connected to your own sound setup, check that you have it set correctly

*Problem: **I can't see a computer image displayed through the Projector?***

This is a very common issue people experience when operating projectors, which can usually be rectified very quickly. Most projectors have multiple input sources to make it possible to connect more than one PC or video device. If you have turned on both the PC & Projector, and the Projector displays an image like the one below (image varies depending on the make and model, but all have a version of this) it is likely that a different image source has been selected.
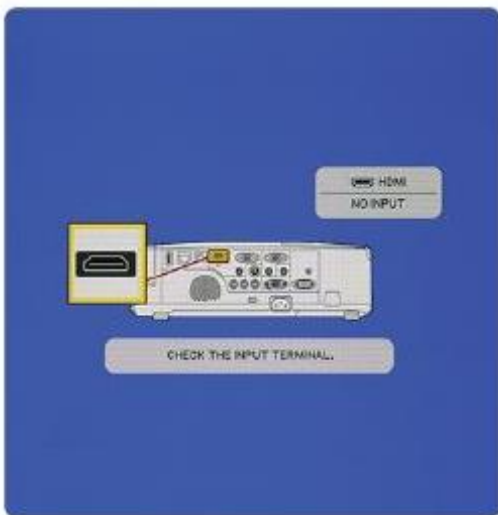
Solving this issue is usually as simple as selecting the correct source from the remote control. All Magic Mirror systems will be set to display on Computer 1 or Computer 2.

Very occasionally the issue may have a different cause. If someone has accessed the rear of the PC or needed to access the ceiling near the Projector, it is possible that the VGA Cable has been disconnected from the PC or the Projector. Please see articles relating to Magic Carpet component list for more info.

Further copies of these instructions can be downloaded at www.rompa.com

We hope you find our instructions invaluable. If you have any suggestions for improving them further your comments will be greatly received – please contact us at
producthelp@rompa.com