



# Surround Simulator Installation Manual



Sports Coach Systems Limited, Curtis Road,  
Dorking, Surrey. RH4 1XD. England.  
Telephone +44 (0) 1306 741888 Facsimile +44 (0) 1306 877888  
Web ▀ [www.sports-coach.com](http://www.sports-coach.com) Email — [sales@sports-coach.com](mailto:sales@sports-coach.com)

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## Written in Plain English.

**Congratulations** on your purchase of your Sports Coach System. Our Simulators are the most versatile and most user-friendly system available today and with regular upgrades and new programmes. To keep you in touch with additional features, software upgrades, new software, new hardware, manuals visit the website regularly at [www.sports-coach.com](http://www.sports-coach.com).

Having used specially developed golf software for the past 23 years, we understood the need to develop a system around easy to use programs, so that everybody can maximise their potential and make full use of the capabilities of the simulator.

Regarding the installation of your system, patience is important, simulator cages normally take 5 hours to install. If you have purchased a System, the software will be pre installed and tested. The computer cabinet normally takes 30 minutes and another hour to plug the various computer cables together. If you are installing projector brackets it will take you 30 minutes, or four hours if you are fitting to a ceiling.

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# 1. Unpacking the Simulator

Carefully unpack the package(s), and check the packing list against the contents of the package. Taking time to understand what each and every component happens to be. The packing list should show the list of the components that you have ordered. Any queries please contact your supplier.

# 2. Projector Considerations

If you purchase a 3D surround simulator, you need to know the size of the projected images depending on the size of the room. The distance from the screen to the projector will generally be 1.5 times the width of the screen when the projector is set to 4:3 ratio. For example, if the screen is 3.4m wide, then the distance will need to be a minimum of 5.1m away. Although projectors can be fitted to the frame, the best way to fit surround projectors is to fit each one independently from the frame and to install them to the wall or ceiling. This prevents movement of the image when a shot is played.

# 3. Standard Surround Frame Components

**This section explains a standard installation with three projectors fitted to the framework, where each screen will be 3.40m wide and 2.85m high.**

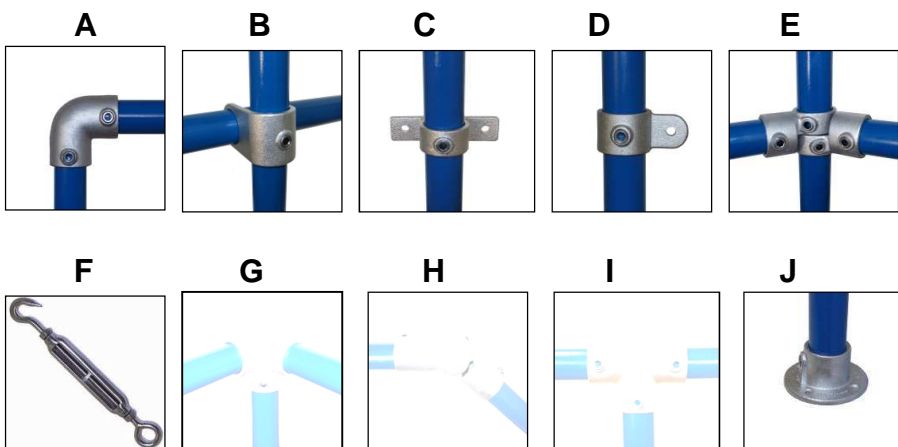


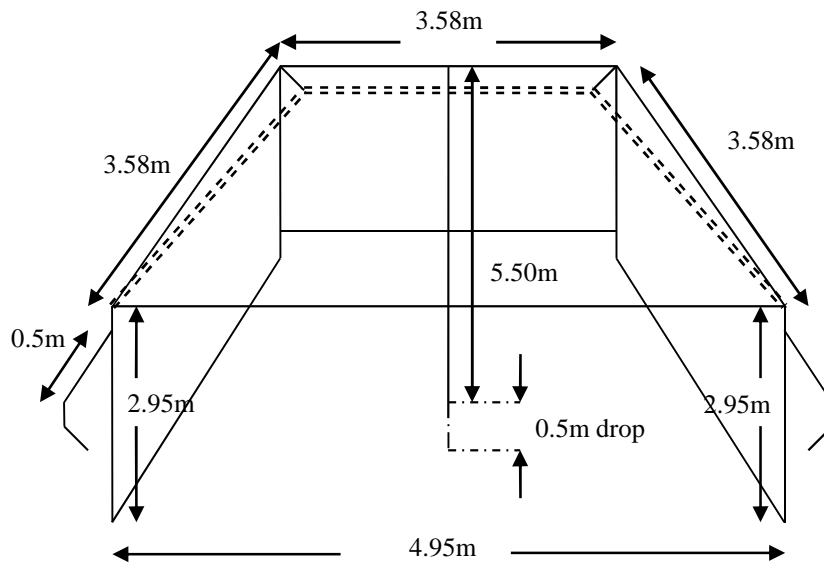
First Determine that you have all the correct components for the frame.

- |           |   |
|-----------|---|
| 4 x 2.95m | Bars for the uprights   |
| 6 x 3.58m | Bars for the bottom and top bars  |
| 1 x 4.95m | Bar for the front top cross bar to join the sides   |
| 1 x 5.50m | centre bar to join the back bar to the front cross bar to mount lights and the camera. The centre projector is also hung from this bar. Reduce this bar to 3.55m if the projector is mounted to the ceiling |
| 3 x 0.5m  | Down tube bar for each projector  |
| 2 x 0.2m  | Bars to hold the projector trays  |

## Clamps and Other Materials

- 3 x 90 degree 2 way elbow clamp (A)
- 2 x 2 way U clamp (B)
- 3 x Projector tray clamp (C)
- 4 x Steel cable holding clamp (D)
- 16 x 2 way swivel clamp (E) – (diagram shows two clamps)
- 3 x optional foot clamp (J)
- 4 x Turn-buckle to hold screen cable taught and attach the roof (F) with 10m x 6mm screen cable
- 3 x Projector trays





### Standard Simulator Cage

Galvanised Bar 25mm Nominal Bore x 33.7 Outside Diameter

### Cutting List Requirements

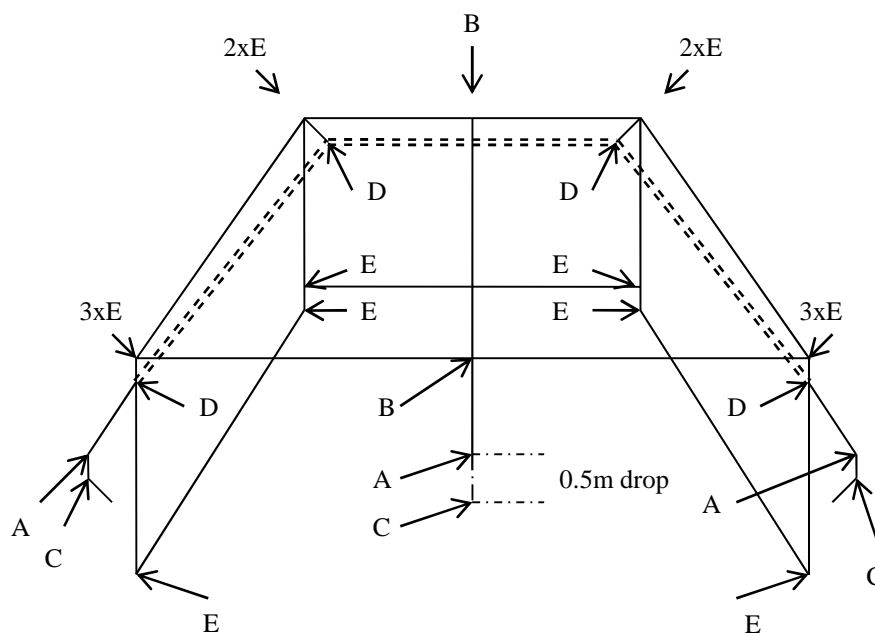
1 of Bar	@ 5.50 metre
1 of Bar	@ 4.95 metre
6 of Bars	@ 3.58 metre
4 of Bars	@ 2.95 metre
3 of Bars	@ 0.5 metre
2 of Bars	@ 0.2 metre

### Tube Clamp Requirements

3 of (A)	2 Way 90° Elbow Clamp
2 of (B)	2 Way 'U' Clamp
3 of (C)	Tray Clamp
4 of (D)	Steel Cable Holding Clamp
16 of (E)	2 Way Swivel Clamp
3 of (J)	Optional Foot Clamp

### Steel Cable

1 of	10.00m x 6mm Steel Cable
4 of	8mm Turnbuckle Fittings



The diagrams above show the standard construction assuming all three projectors will be fitted to the frame, and the size of the screen is 3 x 3.4m wide x 2.85m high.

Four bars at 2.95m are required for the uprights, 2 x 3.58m bars for the back bottom and top bar, 4 x 3.58m bars for the side bottom and top bars, 1 x 4.90m for the front cross bar to join the side walls, 1 x 5.5m centre bar to join the back top bar and front cross bar. This bar will also be used to mount the light sets, top camera and projector. If the projector is fitted to a wall or ceiling, the centre bar can be reduced in length to 3.65m to match the side bars. Finally, there are 3 x 0.5m down bars and 2 x 0.2m bars to fit the projector trays to the frame.

The framework package will also contain 3 projector trays, 10m steel cable to hang the screen and turnbuckles for the screen and roof fitting as well as the steel clamp fittings detailed on page 2. Their positions are shown on the diagram above. In summary, you will need 3 off 90 degree 2 way elbow clamps (A), and three for down tubes to the projector tray. The two U clamps (B) will join the centre bar to the back and the front of the frame. 3 projector tray clamps (C) secure the trays to the down tubes on the frame. The steel cable holding clamps (D) are fitted to each top corner of the frame at the height of the screen. The turn buckles are attached to them and the screen cable is fed through the turn buckle eyelets.

The 16 swivel clamps (E) are used as follows:- 4 for the back left and right bottom corners, 4 for the back left and right top corners, 4 for the front left top corner and front right top corner to the front cross bar. 2 more are used to hang the left and right projector trays and 2 for the front bottom uprights and bottom side.

## 4. Standard Simulator Frame Construction

To Construct the Frame you will need the following Tools:- 2 step Ladders at least 2.5 metres high and 2 Allen Keys size 6 millimetres to fit the clamps. It is best to use two fit people to construct the frame. The area that you are going to build upon should be carpeted, clear of debris and dust and have any electrical work, painting or other work already completed. To Fit the Clamps you use the Allen Key to tighten them.

Lay the 3.58m back bottom bar in position on the floor, then lay and join the side wall 3.58m bars on each side using 2 swivel clamps (E) on each side. Open the bars evenly outward to create a 5m gap at the front of the frame. Now fit two swivel clamps (E) to each front side, with them facing upwards. Insert and secure each of the 4 upright 2.95m bars. Add a steel cable fitting clamp (D) to each of the uprights approximately 2.85m from the floor.

Secure 2 swivel clamps (E) to the top of the left upright and the top of the right upright, slide a 2 way U clamp (B) onto the top back 3.58m bar, then join the bar to the back left and right uprights. Next, add 3 swivel clamps (E) to the front left upright, and repeat with the top right upright – Note only two swivel clamps are needed if your projectors are not going to be mounted on the frame.

## 5. Roof and Canopy Installation

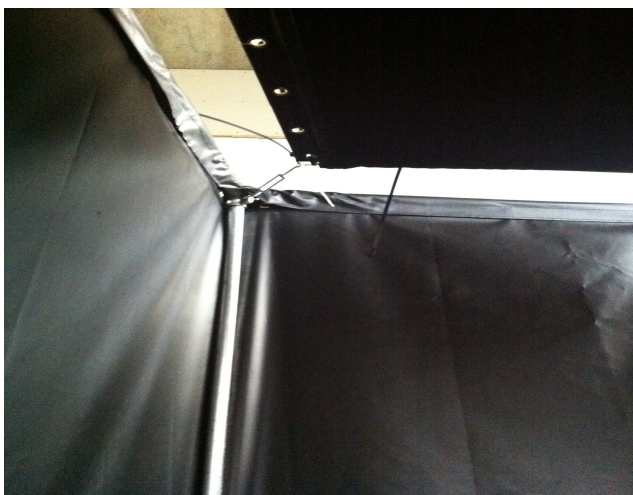


Insert the top left 3.58m bar into the highest of the three clamps joining the left front upright to the left back upright. Repeat with the top right bar. Add a U clamp (B) to the 4.95m front crossbar, then secure it to the second highest of the three swivel clamps (E) on the left and right upright.

Slide the central top 5.50m bar through U clamps (B) at the front and back of the frame so that the central bar is suspended underneath the front and back cross bars. Make sure the bar is central as it will support the lights, camera and projector. Secure the bar in place. Again, if the projector is not to be mounted on the frame, this bar can be reduced to 3.65m instead of 5.50m.

The bottom back bar should now be raised 20-30cm from the floor.

Hang the steel cable onto the frame and torque using the turn buckles (F). Start with the back corners. The best way to do this is to ensure that the back two turn buckles are fully undone to create the best space between the screen and the back wall. If you need to tighten the back turnbuckles, make sure that the turns are even on each side, and ensure that the distance between the back turnbuckles is no less than the screen width (3.40m).



For the roof, use the same steel cable line that the screen will hang from and attach the roof to it using the cable ties. The simplest way to do this is to hang the roof over the central cross bar and attach it with cable ties first, then pull the back left corner and attach it to the left turnbuckle. Do the same with the turnbuckle on the front left of the cage. With one side of the roof partially secured, it is a good time to fit the light unit, top camera and cabling now as you still have access to the central cross bar. See section 7 for fitting details. After fitting the lights and camera, fit the right side of the cage roof in the same way as the left. Finish by attaching the remaining cable ties to the steel cable and join the roof to the screen using Velcro. Finally, finish with the front PVC cover which fits to the crossbar and front uprights.

## 6. Projection Screen Installation

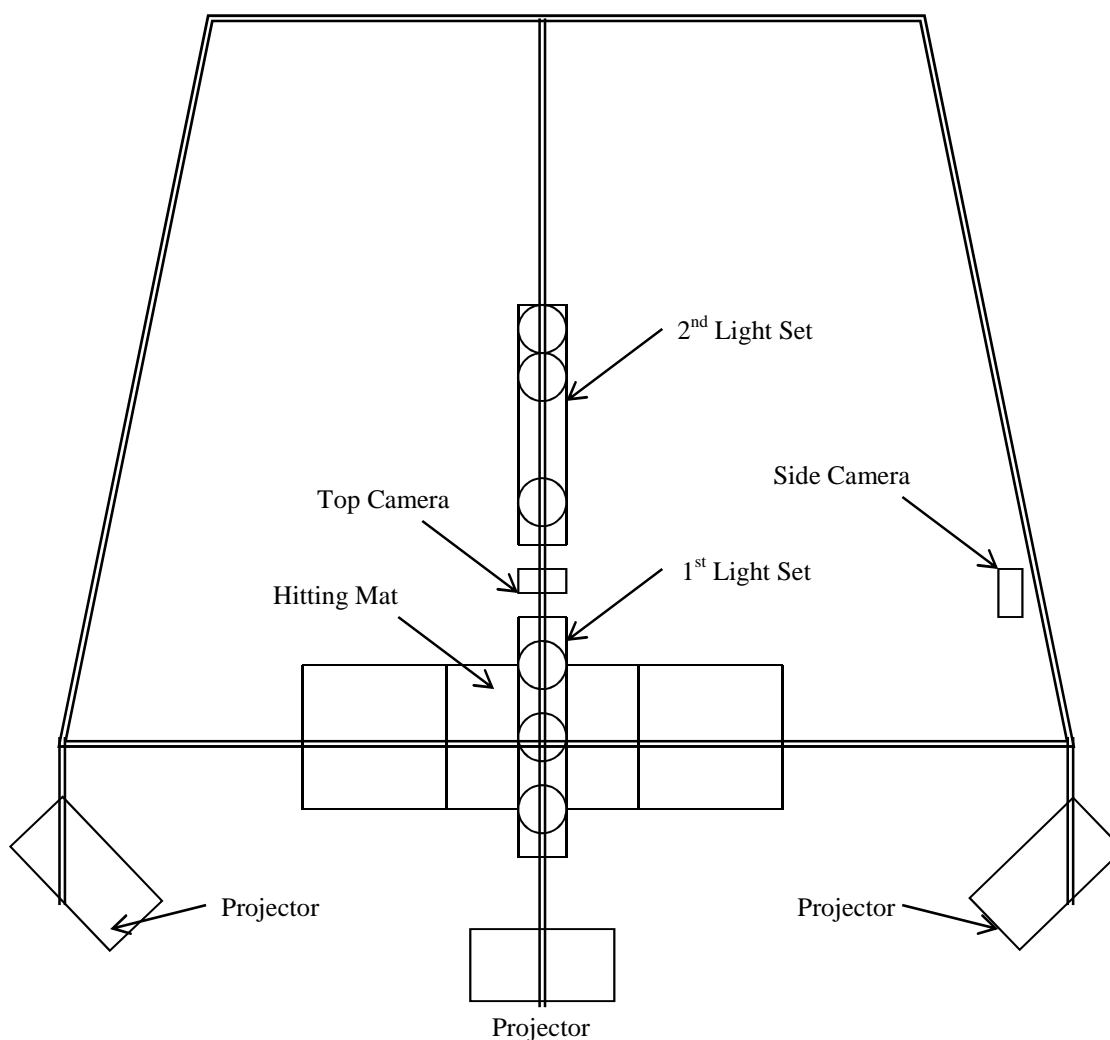
Move a Ladder inside the Back of the Cage. Undo the Screen and the Cable Ties from their packaging and lay the Screen onto the Floor in the centre of the surround frame. The screen is divided in three, with each section determined by a stitched line with eyelets on the back of the screen.

To fit the screen, start from the back corners on each side. Hang each corner to the screen cable and attach cable ties down each upright ensuring the vertical stitched lines are straight and in each corner. For best results, attach cable ties loosely at first and tighten them once you are happy with the back screen position.

Now attach each side part of the screen, moving towards the front from the back. If the screen is positioned with the corners in the correct place, it will be much easier to configure the projected images across the three screens.

## 7. Lights and Camera Installation

**Version 1:** Position the hitting mat so that the centre of the mat is directly underneath the front crossbar (see the diagram below that shows a view from above the frame). The second light in the first light set should then be positioned so that it is directly above the centre of the mat.



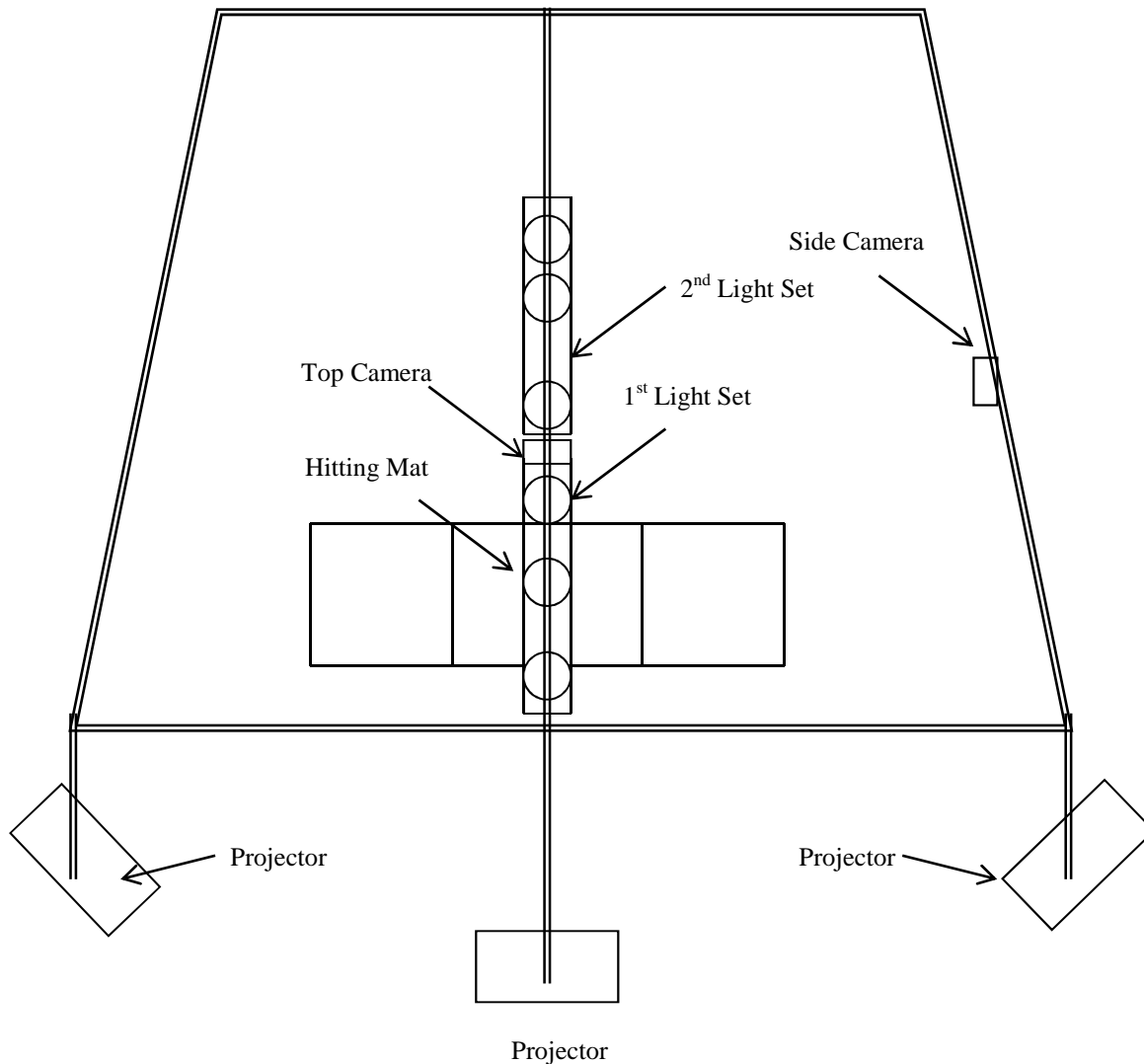
**Version 2:** Take the first light box and measure the distance from the first clamp bolt to the second clamp bolt. On the top bar, mark 5cm along the bar from the front where it joins the cross bar. This is where the first light clamp will go. Mark the second clamp position from this point. This is the distance measured between the clamp bolts. Fit the light box.

Mark the bar 27cm from the second clamp position. This is where the camera clamp will go. Now fit the camera.

Take the second light box and measure the distance between the first clamp bolt and the second clamp bolt. Hold the second set of lights in place so that the distance between the centre of the last light on the first set and the centre of the first light on the second set is between 50cm and 55cm, mark the first clamp position on the bar. Mark the second clamp position from this point using the measurement taken in and fit the lights.

Now start the camera calibration. You can move the camera and lights as necessary – it is more likely that the second set of lights will need to move a little. Most importantly, you are now establishing the hitting point and the aim of the lights. With the calibration done, you can place the hitting mat where the hitting position is indicated in the calibration. The second light in the first set should be directly above this. If not, you will need to move the first set of lights. You might have to move the camera slightly too.

Finally, adjust the second set of lights so that all lights aim downwards into the circles on the calibration.



The hitting position in the centre of the mat will determine where the lights and camera position will be. Refer to the High Speed Camera Manual for light distances and top camera fitting instructions. The distance range from the side of the bay to the target line for a side camera is between 180cm minimum and 240cm maximum. So that you can position the camera, use markers to visualise the camera range on the target line. To do this, half both



the minimum and maximum camera range measurements and put markers on the target line - i.e one marker 90cm in front of the hitting area and another 120cm in front of the hitting area. The side camera will be positioned in this range. Once the top camera is calibrated (see the High Speed Camera Manual), calibrate the side camera - adjusting its position left or right until the ball positioned in the hitting area from the top camera is also visible by the side camera. Refer to the High Speed Camera Manual for more details. The image on the left shows the top camera, lighting and projectors in position. Notice the lighting unit is mounted in such a way that the second light is at the point of the top cross bar as illustrated in the diagram above.

## 8. Setting Up the Computer System

It is best to unpack and build the Computer Cabinet first, using the instructions in its box. Then unpack the Computer, Matrox Expansion Card if supplied, keyboard and mouse. The Keyboard and Mouse plug into the sockets on the Computer. If they have USB style connections, insert them into the PCI card at the base of the computer. Insert the dongle in the PCI card. Connect the USB cable in the Matrox box into the Expansion Module and then into the USB port of your computer. Attach the two Matrox monitor cables to the graphics connector on the computer and then into the Expansion Module. Plug in the computer power cord.

## 9. Hanging the Projectors

Unpack the items carefully and lay them out. After the computer system has been successfully setup. It is best to wire the Projector up on floor level first, so as to determine what size image you require, the position of the projectors and where it is best to hang the Projector accordingly.

When you have decided upon the best place to hang the Projector, decide where you wish the Bracket to be located off the Frame

As stated at the start of this manual, you need to know the size of the projected images depending on the size of the room to identify the distance from the screen to the projector. It will generally be 1.5 times the width of the screen when the projector is set to 4:3 ratio. For example, if the screen is 4m wide, then the projector should be positioned at least 6m away from the screen.

Although projectors can be fitted to the frame, the best way to fit surround projectors is to fit each one independently from the frame and to install them to the wall or ceiling. This prevents movement of the image when a shot is played.

## 10. Setting Up the Projector System

The Computer Graphics Card will be one of the following types:-

- Nvidia GTS 250, 1GB, DDR3 with either two DVI port or one DVI port and one VGA port.
- ATI Radeon HD6870, 1GB, DDR5 with two DVI ports, one fire-wire port and two mini DP ports.
- NVIDIA GTX 590, 5GB DDR5 with three DVI ports.

Nvidia graphics cards require a 'Matrox Triple Head To Go' graphics expansion module to support three screens. ATI graphics cards can be configured directly from the card to support three screens, GTX 590 cards are required for full HD configurations.

## Matrox TripleHead Connection

To configure the surround system, the dongle supplied must support the Platinum version of the software. You do not need to install the Matrox driver software.

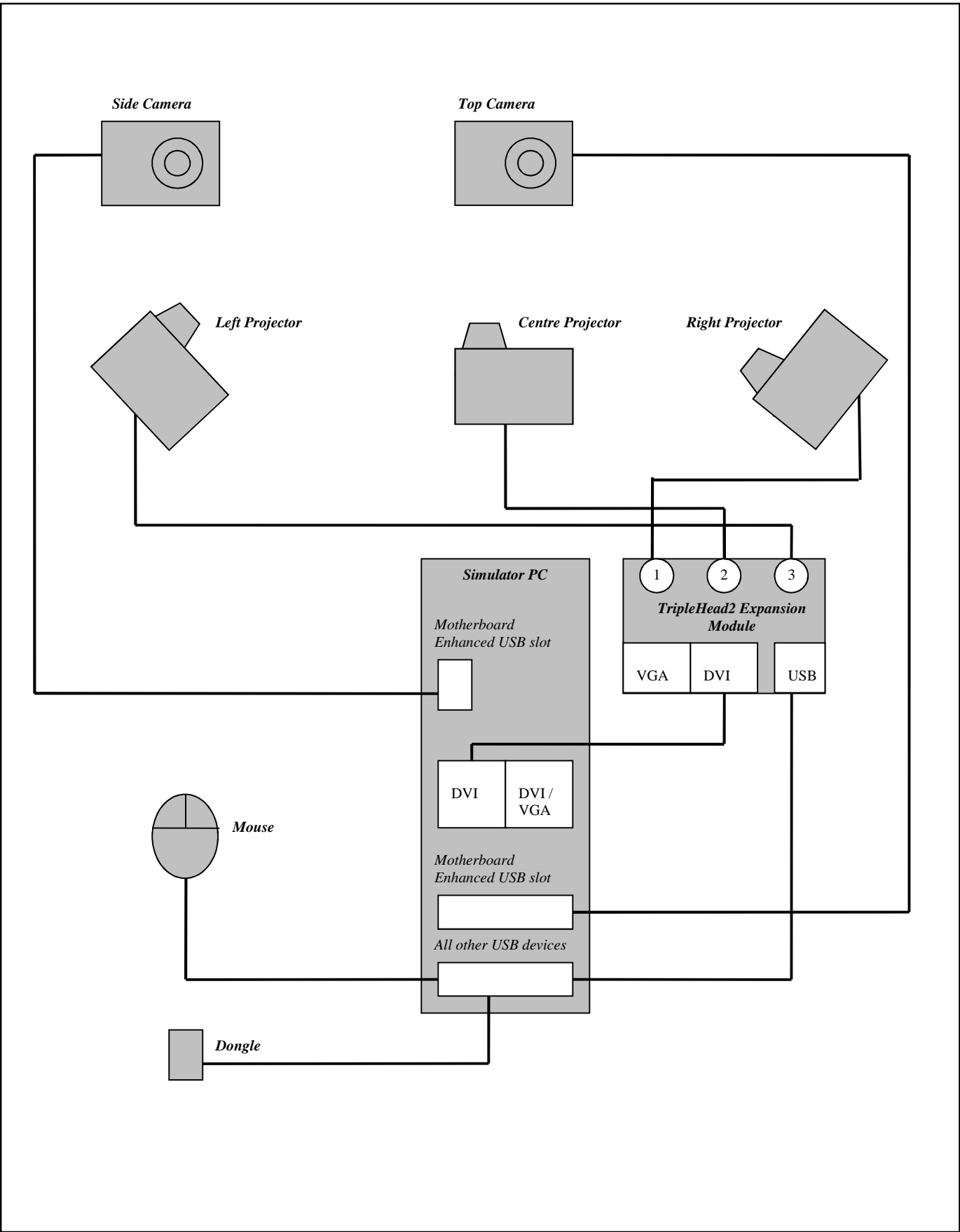
1. Switch off the computer.
2. Referring to the diagram, attach each projector cable to the expansion module as shown on the next page.
3. Insert the opposite end of each lead into the port marked 'Computer 1' on each projector.
4. Switch on the projectors.
5. Switch on the computer.
6. Go to Windows display settings.
7. Set the display to 3072 x 768
8. Click on Start, All Programs, GPS Golf Sim and select Resolutions.
9. Copy the Surround icons to your desktop.

The GPS Surround software will operate by clicking on the relevant resolution icon.

When the computer powers up, the expansion module should recognise three screens automatically.

Now make sure that the graphics settings are correct. Open the Nvidia control panel; ensure the system is set to 1 display (Matrox analogue display). Open the Windows display settings in the Control panel. Check that the Matrox is set to 'Use device as primary monitor' and 'Extend Windows desktop onto this monitor' is set.

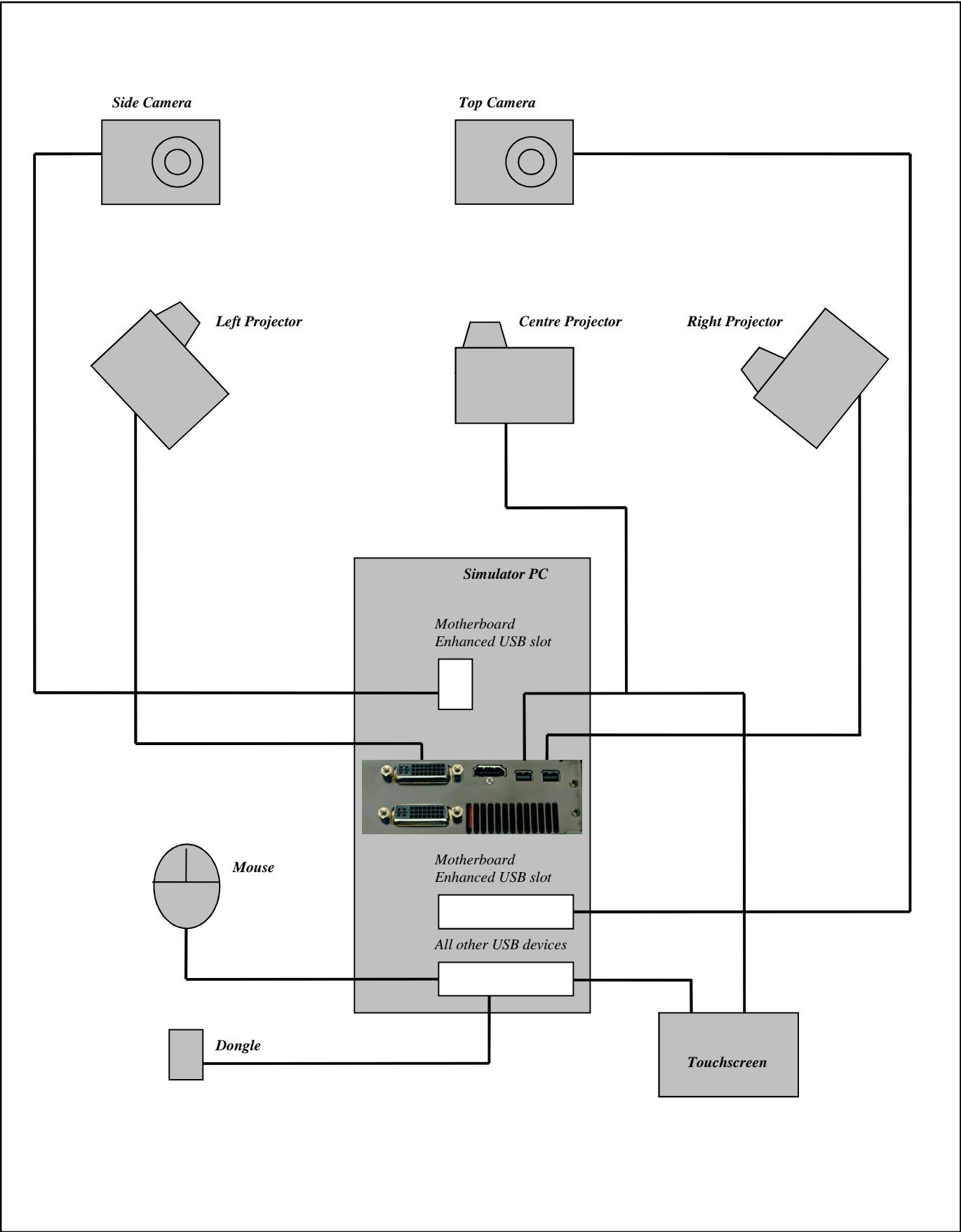
With some configurations, the graphics expansion module requires the additional VGA cable to be attached. If the screens do not appear correct using one cable, try adding the VGA cable supplied.



## **ATI Graphics Card Connection**

To configure the surround system, the dongle supplied must support the Platinum version of the software. You will need to install the ATI Catalyst driver software for Windows 7 before setting up projectors if the machine was not configured by Sports Coach.

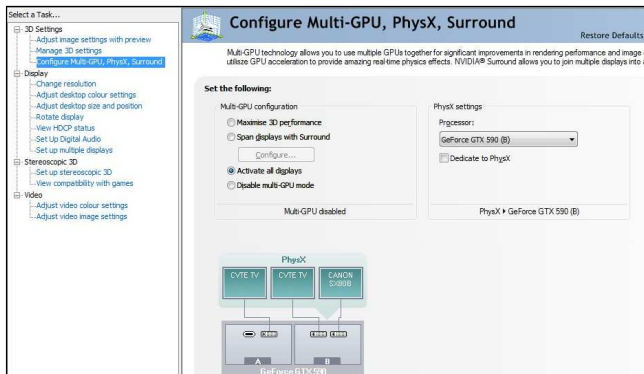
- 1 Switch off the computer.
- 2 Referring to the diagram, attach each projector cable to the graphics card as shown.
- 3 Insert the opposite end of each lead into the port marked 'Computer 1' on each projector.
- 4 If using a touch screen, connect the centre projector and touchscreen using a VGA splitter. Do not attach the touch screen using a DVI cable as this triggers auto power save on the monitor.
- 5 Switch on the projectors.
- 6 Switch on the computer.
- 7 Go to the computer display settings.
- 8 Set the display to 1024 x 768.
- 9 Click on Start, All Programs, GPS Golf Sim and select Resolutions.
- 10 Copy the Surround icons to your desktop.
- 11 The GPS Surround software will operate by clicking on the relevant resolution icon.



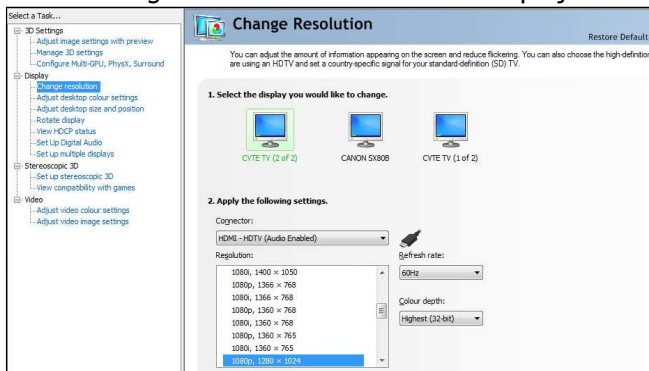
## NVIDIA Ge Force GTX590 Graphics Card Connection

To configure the surround system, the dongle supplied must support the Platinum version of the software. You will need to install the latest NVIDIA GeForce GTX590 graphics driver software for Windows 7 before setting up projectors if the machine was not configured by Sports Coach.

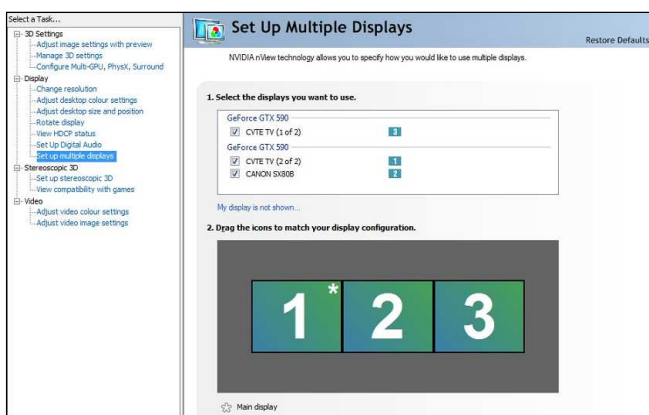
- 1 Switch off the computer.
- 2 Referring to the diagram, attach each projector cable to the graphics card as shown.
- 3 Insert the opposite end of each lead into the port marked 'Computer 1' on each projector.
- 4 If using a touch screen, connect the centre projector and touchscreen using a VGA splitter. Do not attach the touch screen using a DVI cable as this triggers auto power save on the monitor.
- 5 Switch on the projectors.
- 6 Switch on the computer.
- 7 Go to Control Panel and open the Nvidia Control Panel.
- 8 Choose 'Configure Multi GPU, PhysX, Surround' option and activate all displays.

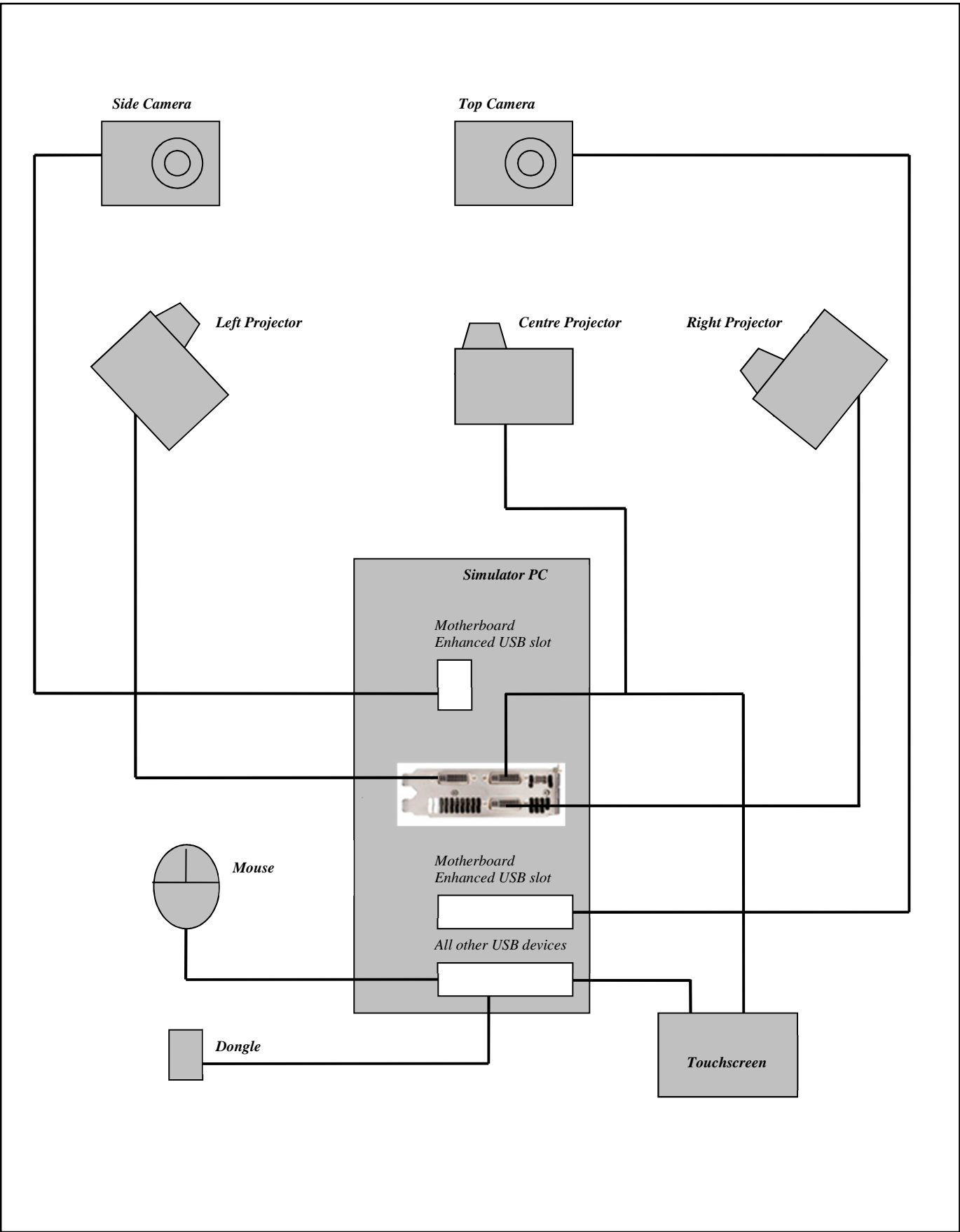


- 9 Select 'Change Resolution' and set all three projectors to 1024 x 768.



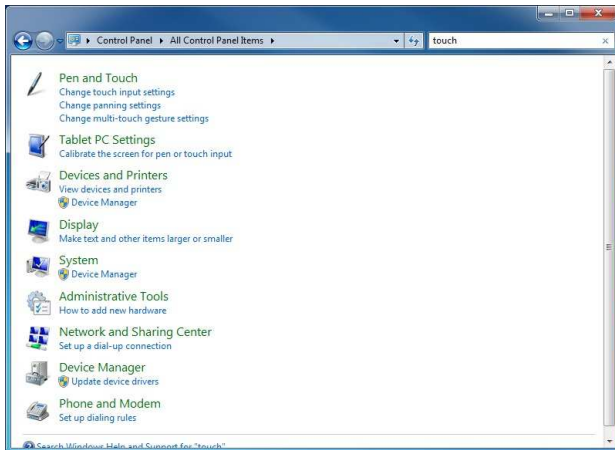
- 10 Select the arrange display option and drag and drop the screens in order so that when the mouse is scrolled between screens, it starts on the left and finishes on the right.



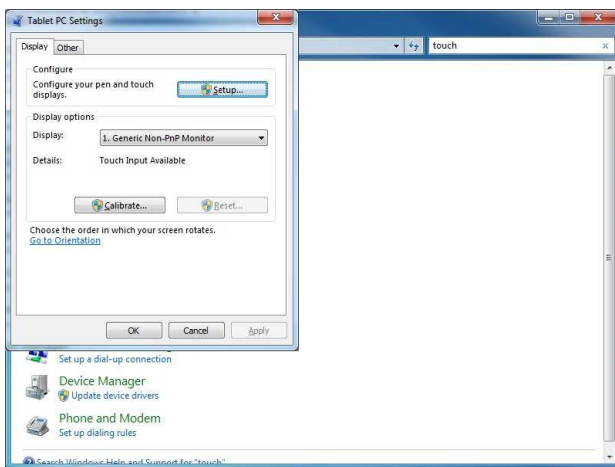


# 11. Setting Up a Touchscreen

Once the touchscreen is connected and displaying the centre screen AND the screens are projected in the correct order, the touchscreen can be configured.



Open the control panel.  
In the search pane, enter 'touch'.  
Click on Tablet PC Settings



Click 'Setup...'

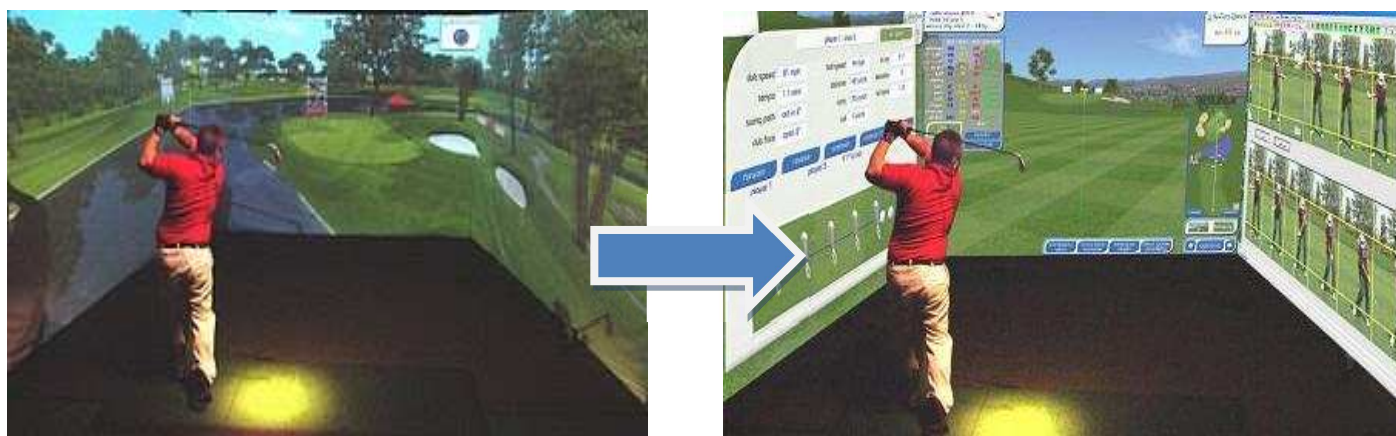
A message will be displayed stating 'Touch the screen to identify it is the touchscreen'.

Press the Enter key to switch screens until the instructions shown appear on the touch screen monitor.

Touch the touch screen when the message is shown on the correct screen. The settings will now be saved and the touch screen set up screen will automatically close.

## 12. Academy

Using the GPS Golf Simulator and any two teaching programs such as digital video, body motion, and weight transference software packages, the professional can bring all the industry teaching tools to the forefront in one complete surround visualisation lesson.



The GPS Surround Simulator can be loaded to take up two screens leaving the third free for additional analysis software. To configure, Click Start, All Programs, GPS Golf Sim, Resolutions. Right click the chosen Academy resolution, then copy and paste the icon onto your desktop.

When the Academy version loads, you can switch the display screens using Ctrl ] or Ctrl [. Additional software can then be loaded to the remaining screen.

## 13. Warranty

The Systems are covered by a 12 month back to base warranty, against faulty workmanship. Any transportation charges are the sole responsibility of the customer. If any other form of damage occurs like, water damage, transportation damage, wear and tear etc. It is not the responsibility of Sports Coach Systems Limited, to cover any eventuality, so we ask that you take out an Insurance Policy to cover any eventuality. All repairs must be paid for before despatch of goods. Sports Coach Systems reserves the right to change specifications without notice or obligation. All names all trademarks are the property of there respective owners.