LASERMAZE PINPOINT INSTRUCTIONS Aug 2013

Note: Please first read the New Features section at the end of these instructions Especially the section regarding Green and Blue Lasers. Thank you.

Overview

LaserMaze PinPoint is the successor to the original **LaserMaze** system. An amended wiring configuration makes connection even simpler than before and also provides the installer with visual indication of the status of all system components while in the maze proper. The system consists of a **Power Supply**, up to 32 pairs of **Laser** and **Receiver** (Sensor) modules, one **Laser Control Box**, one **Receiver Control Box** (two of each Control Box for systems with more than 16 channels), an **Interface** to connect the Control Boxes to the PC.

The component parts of the system

All the **Laser** modules connect to the **Laser Control Box**, all the **Receiver** modules connect to the **Receiver Control Box -** Any switch modules, including **Start**, **Stop**, and **Skill** switch modules, connect to the **Receiver Control Box.** Any **Auxiliaries** connect to the **Laser Control Box**.

- **These instructions *are not applicable* to the original serially connected LaserMaze – recent firmware changes mean that hardware supplied since April 2013 must utilise PinPoint V1.32 and upwards.**

- **If in doubt at any time *always* refer to the PinPoint help file!**

- **See the New Features section at the end of these instructions that deals with illuminated switches, ghost auxiliary supply feeds and smoke machine control and, more importantly Green and Blue Lasers**

List of components

You will normally find an itemised packing list in the carton when you receive your **LaserMaze**.

Each system consists of a number of each of the following components, equal to number of channels in your system:

- Laser Modules
- Receiver Modules
- RJ11 cable and connectors plus crimp tool and cable tester

Plus one of each of the following:

- Interface
- Laser Control Box (Systems > 16 channels have two sets of Control Boxes)
- Receiver Control Box (Systems > 16 channels have two)
- Power Supply
- Power cord/lead
- Cat5 (RJ45) lead to connect Interface to Laser Group Box
- Cat5 (RJ45) lead to connect Interface to Receiver Group Box
- Cat5 (RJ45) lead to inter-connect Group Boxes
- 9 pin 'D' to connect Interface to PC
- One each **Start** and **Stop (Midway)** switch modules

You may have opted to have one or more of the following included in your order:

- PC and Monitor
- Second Monitor for remote score display (You *must* have a dual monitor video card fitted – failure to correctly install this may result in operational problems)

Installing the System

The Play Area

The flexibility of **LaserMaze PinPoint** allows you to build a maze in any shape or size that you wish. It can be rectangular, 'L' or 'T' shaped, or whatever shape you wish.

As a rough guide you can install a 16 channel **LaserMaze** comfortably in an area 6m (20') long by 3m (10') wide. These dimensions are flexible in the extreme – we suggest you observe the following points:

- You can make the maze less than 3m wide, however a width of 3m or more allows you to set beam patterns that require the player to traverse in the left/right plan instead of just moving forward through the maze
- Do not make the maze so wide that the beams may be degraded excessively by smoke. We suggest 6m as a maximum

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Theming the Maze

LaserMaze is a game of concentration and so it is perhaps not necessary to go to great lengths to decorate the maze. It is usually sufficient to have some good quality graphics painted on the walls using fluorescent paints, which will glow under UV light.

As to theme, this might depend on how and where the **LM** is being used. Is it part of a lasertag arena, or a stand-alone game?

Decoration as a vault, with a display of treasure trove at the end of the maze, is one option.

If you are using the **Midway** function, then the midway button (end of the maze) might be a disabling button in a runaway nuclear reactor, for instance, or this might be a microswitch under a 'golden chalice'

Escaping a modern-day POW camp or jail, gaining access to a lasertag arena, or to a lasertag arena recharge station, are other possibilities

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Lighting the Maze

You need low lighting levels in order to be able to see the laser beams. Ideally, the only lighting in the play area should be UV strip lighting.

- Use 1.2m (4') UV strip lights. These are by far the lower cost method and replacement tubes are readily available. Purchasing from a disco supplier is often the cheapest option.
- Depending on the ceiling height, you will need around one fitting per 5-6 sq m (55 – 65 sq ft)

Seeing the Beams

Laser beams can only be seen if they are passing through fog/smoke/haze. For a regular size maze only one machine will be required. This can be controlled from the **Smoke/Haze Tab** of **Pinpoint.exe**, via an **Auxiliary Output** on the **Laser Control Box**.

- Cheap smoke machines are not cost effective in the long run. Whether you opt for smoke or haze, pick a make that is known to be reliable and designed for continuous use, not just for the occasional kids' party. The Martin Pro Magnum is an example, but there are many others.
- It is essential that the play area is not over-smoked. Too much smoke will prevent the beams reaching the **Receiver Modules** and you may experience spurious broken beam events

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Positioning the Laser and Receiver Modules

It is a good idea to draw up an initial plan of where the beams will be.

- Remember that not all beams will be on in any game. The number of beams that will light will depend on the **Skill Level** that you set
- You can configure the system to *always* use certain beams
- Consider whether you will use the **Midway** option that requires the player to return through the maze, optionally with a different beam pattern, in order to complete the game

Laser and Receiver Modules

The **Laser** and **Receiver** modules are supplied with heavy-duty ball joints which allow the modules to be aligned and then fixed in place. The back plate of the mounting should be screwed/bolted to a rigid surface. Generally speaking, the modules should be spaced more or less equally along the maze, however if you have an irregular shaped maze you will have to decide on spacings that will give you the best coverage.

Receiver Module   **Laser Module**

- All the **Laser** modules must run along one side of the maze. All the **Receiver** modules must run along the other side of the maze
- **Note:** It is better to site the **Laser** modules along the side of the maze that is nearest to where you will place the **Interface**. This will ensure the shortest data cable run to the **Laser** modules, as they use more current than the **Receiver** modules.
- You may find simulating your intended layout with string or coloured yarn a worthwhile investment in time. If you need help with your layout then we are happy to provide you with our ideas for your site.
- **Important Note :** Looking at the picture above, you will see that there is a yellow label inside each laser module. If these have not been factory-attached, you will find them in your shipment and should affix them accordingly.

Height of the Laser and Receiver Modules

Some points to bear in mind when deciding the height of the modules from the floor:

- Beams can run diagonally in the vertical plane, ie can be higher at one side of the maze than the other
- Have one or more beams low enough that players cannot simply slide/wriggle through the maze on their stomachs
- Use height combinations and diagonals so that players have to negotiate the maze from left to right in order to proceed

Note: Coloured lasers – be sure and read the 'New Features' section at the end of these instructions

Positioning the Control Boxes

**Receiver Control Box**   **Laser Control Box**

Site the control boxes halfway along the maze. Ideally they should be slightly higher than the **Laser** and **Receiver** modules so that you can see the LED indicators easily. Make sure that you fix the **Laser Control Box** on the same side of the maze as the **Lasers** – ditto for the **Receiver Control Box**. The control boxes are identified at the top left of their PCBs.

Remember the note above – site the **Laser** modules (and **Laser Group Box**) on the same side of the play area that you intend to site the **Interface**

Note: It is wise to afford some protection to the wiring going to the fronts of the group boxes, in order that the RJ11 connectors will never be accidentally pulled out.

Making Data Cables

You will have been supplied with ample quantities of 4 way flat data cable, connectors, a crimp tool and a cable tester. Cut the cable into lengths that will allow you to route a cable between each Laser Modules and the Laser Group Box, ditto for the Sensor (Receiver) Modules to the Receiver Group Box. When measuring, allow a little extra to take up any movement in the module ball-joint mounting.
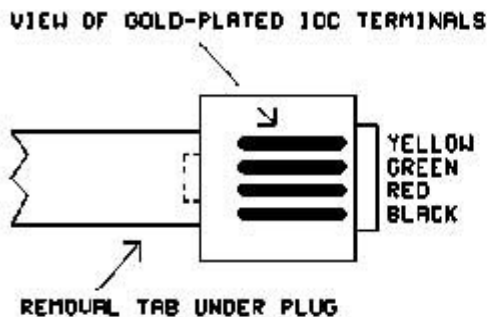
To make a cable, use the stripper section of the crimp tool to remove the outer sheath of the cable. The stripper section has a backstop so you strip the correct amount.

Push the four conductors into a connector and then crimp. *Always* locate the cable in the connector in the same colour order.

Note: For the switches you will only need the red and yellow conductors.

Always ensure that:

- The ends of the conductors are squarely cut
- The inserted conductors meet the end of the inside of the connector
- That you always make the leads in **exactly** the same way – when you are holding a data cable, lead connector upwards and looking at the gold-plated terminals, the black conductor should always be on the right.
- Always make up all your leads and test them before connecting them and switching on the system.

Data Cable Tester

When you have made a cable, test it using supplied cable tester. The way to do this is as follows:

- Ensure that the tester has the supplied AA batteries fitted
- Plug both ends into the cable tester
- Press and hold the 'TEST' button
- All being well, the green OK LED will flash four times, then stay on and after a short delay will start flashing again slowly, just to remind you that the test was successful
- Open circuit or reversed conductors will be indicated by the 'BAD' or 'REV' LEDs and the test will conclude with the red LED 'BAD' lit
- Treat the cable tester with care – the RJ11 connectors should be removed by depressing the tab on the connector – see the topic below **Removing a Cat5 or RJ11 Lead**

Hot Tip: For cables for the switches, why not make up one cable equal to the total length required for the **Start** and **Stop** switches, test the cable and then cut at the required point in order to obtain the required lengths.

Note: Coloured lasers – be sure and read the 'New Features' section at the end of these instructions

Connection Diagram

On the following page is a diagram of the module positioning and wiring. None of this is 'written in stone'. Modules do not have to be wired in any particular order, although it is best to do so for the sake of clarity. The **Association** process will take care of everything.
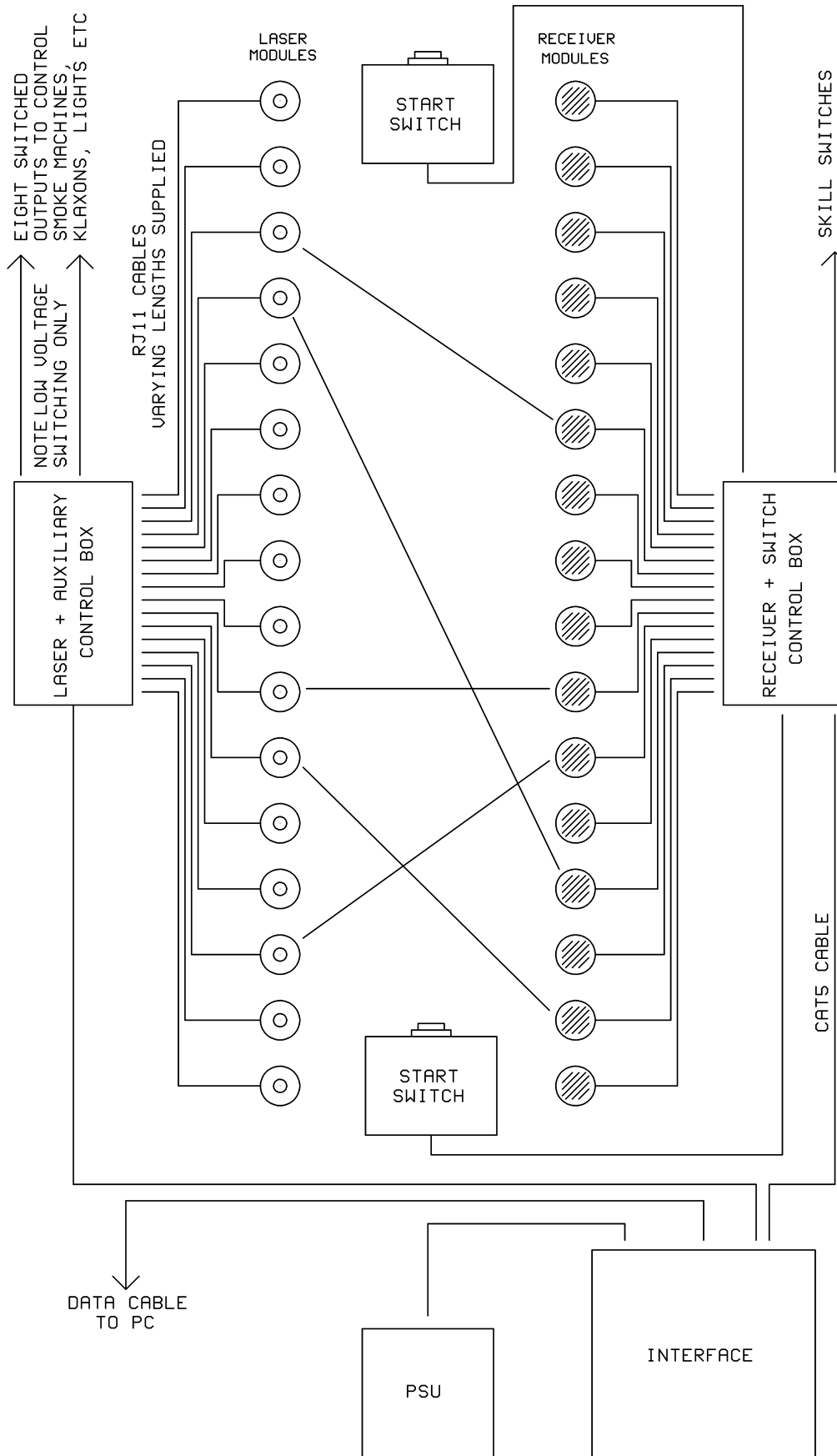
Note: Site **Laser** modules so that the cable run to the Interface is shortest (perhaps unlike this diagram!)
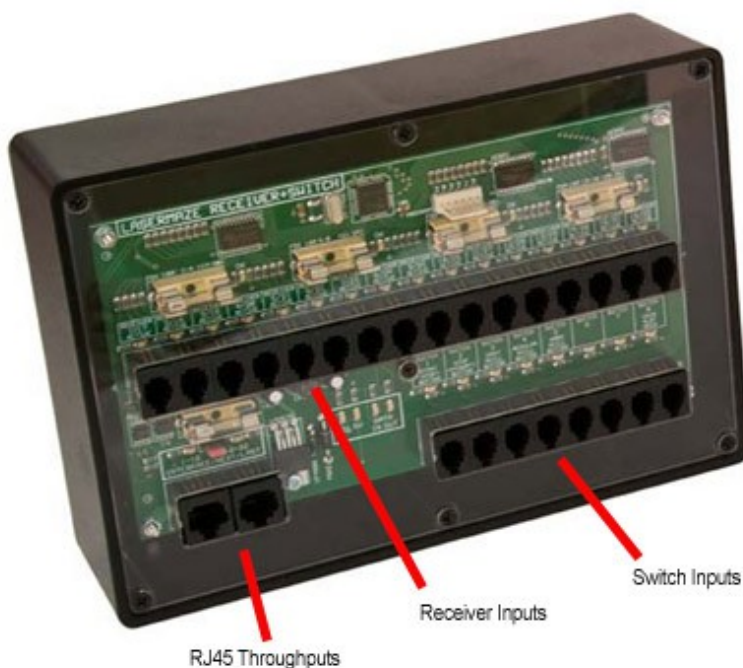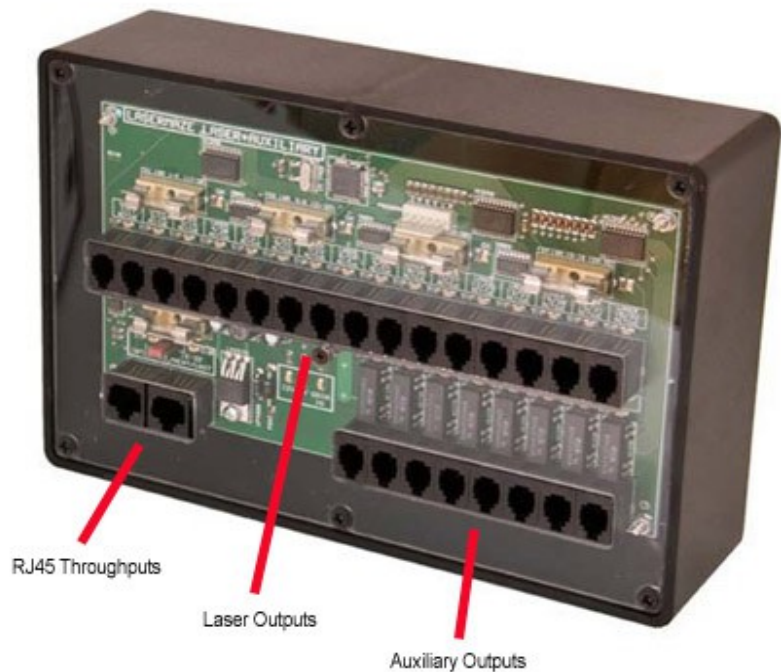
Connecting the Lasers and Receivers

Important Notes

- A third Cat5 cable must always link the Laser and Receiver Control Boxes. This item is missing from the above diagram. If your system has more than 16 channels (ie it will have *two each* of Laser and Receiver Control Boxes) then there will be five, not three cat5 cables.
- Additionally, keep the Cat5 cable lengths to a minimum, in order to avoid losses.
- As of 2011 we supply an RJ11 lead-making kit with each systems so that you can tailor the module leads to your own requirements.
- The relationship between cable length and channel number is for guidance only. **Laser** and **Receiver Modules** can be wired in any order to their respective group boxes, however for neatness and simplicity it makes sense to wire both laser and receiver modules in strict order – 1, 2, 3 etc. However you *must not* wire **Laser Modules** to **Receiver Control Boxes** and vice-versa.

Connect each **Laser** module to the **Laser Control Box** ensuring that the twist supplied with each module is used to secure the cable to the ball joint spigot. This ensures that the cable is not pulled sideways, with a possible bad connection resulting at the module's RJ11 socket.

Repeat the above procedure for the **Receiver Control Box**.

RJ45 Throughputs

Laser Outputs

Auxiliary Outputs

At this point, all the **Laser** and **Receiver Modules** should be connected to their respective control boxes.

If there is some surplus **RJ11** cable – this can be neatly looped up and cable tied just below the Control Boxes. When the installation is completed, you may wish to hide this spare cable with a simple cover.

RJ45 Throughputs

Receiver Inputs

Switch Inputs

Installing the Switch Modules

LaserMaze is supplied with two heavy-duty **Start/Stop/Midway Switch Modules**. You will need to decide where you want to place the switches. The usual method is to place the one switch module near the entrance and the second module at the far end of the maze.

That way, if you wish to use the popular midway function, the **Start Switch** will also act as the **Stop Switch** when the player has navigated back through the maze. The module placed at the end of the maze will then be the **Midway Switch**. If you wish to use the game in one direction only then the module at the far end of the maze will be the **Stop Switch**. If you wish to have a separate **Stop Switch**, then you need to obtain a third module. This would be situated somewhere near the 'in' end of the maze.

Steps to install the **Switch Modules**.

- Remove the four cover screws and remove the cover of the first unit
- Screw the back of the module to the wall of the maze, placing it at a good height to suit the age of the players. There are six raised screw towers on the inside face. We suggest that you drill through the top and bottom pair of towers with a 4mm or 5mm drill as clearance for the screws.
- Make a suitable length cable with an RJ11 plug on one end only – see the **Hot** Tip at the foot of this page. **Note:** For the switches you will only need the red and yellow conductors. Strip the conductors and fold back the wires onto the insulation – this makes for better grip in the switch terminals.
- Plug the RJ11 plug on the end of the cable into the appropriate socket on the **Receiver Group Box** – (Start/Stop/Midway etc).
- Tack the data cable neatly, working back to the bottom of the switch module. **Note:** The switch module cable gland could be sited at the top or the bottom (or the side) of the module, as you wish.
- For a neat and tidy finish, feed any unused data cable back through the gland and then place the front of the module in place and insert and tighten the four cover screws.
- Tighten the gland.
- Next, repeat this exercise for the **Switch Module** at the end of the maze, plugging the data cable into position **#2** (Stop [Midway] button)
- If you intend to use the **Midway** function, then, when you initialise the control program **PinPoint**, you should click the **Game Play Tab** and then check the U**se Midway Button** and **Stop As Midway** check boxes.
- **Note (1):** There is no provision for separate **Start**, **Midway** and **Stop** switches. If you intend to use the **Midway** function then the **Stop** switch will act as the **Midway** switch and the **Stop** switch will double as both **Start** and **Stop** switches.
- **Note (2):** The same module housings may be used for skill switches. One housing can accommodate all three switches. Three data cables are then run side by side, back to the **Receiver Group Box**. (See the **New Features** section at the end of these instructions to see how to connect all three skill switches with a single data cable….
- **Note(3): Switch** inputs should *only be connected* to actual isolated switch or relay contacts. *Do not* connect to any other circuitry.

Connecting Auxiliaries

The **Auxiliary Outputs** are a set of clean switch contacts. Each pair of contacts makes (connects together) when the associated event takes place.

Switching is limited to low voltages (less than 30 volts) and medium current (less than 1A AC/DC). If you wish to switch higher voltages and current then you must use slave conventional or solid-state relays.

Note: The Laser Control Box is now wired to provide switched low voltage feeds for switching Solid State Relays - see the New Features section at the end of these instructions.

Unlike the **Switch** inputs, which have dedicated channels **Start/Stop** etc, auxiliaries can be assigned on the **Hardware Tab** of **Pinpoint.exe**, therefore be sure that the channel you used is selected appropriately.

Auxiliary Outputs are provided for:

- Game start
- Beam is broken
- Midway button has been pressed (If Midway option is implemented)
- Player has won (beaten time and used less than allotted # tries)
- Player has run out of time
- Player has broken the allotted # of beams
- Security circuitry has been triggered
- Smoke/Haze machine control

Security Switch Utilility

PinPoint.exe allows you to monitor the play area in between games, using an passive infra-red detector. The utility activates 60 seconds after the end of a game.
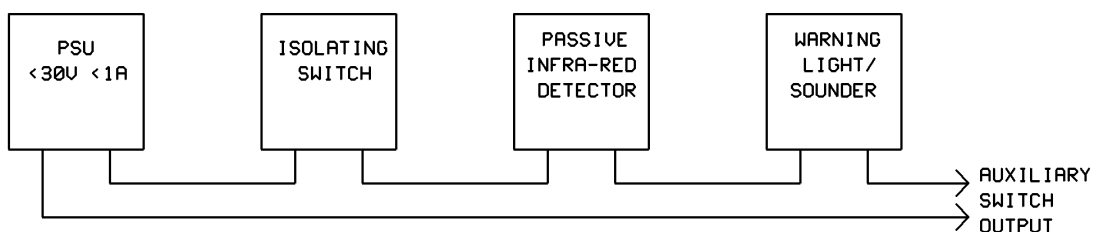
Security Switch Utility Wiring Diagram

RJ11 Leads

Additional RJ11 Leads

As described on page 6 of these instructions, we supply ample cable and connectors, plus a crimp tool and a cable tester in order for you to make additional cables. To make a lead, use the stripper section of the tool to remove the correct amount of outer insulation, insert the conductors into a connector, *(always with the colours aligned the same way – see page 6)* and then gently crimp the connector. A complete cable should be plugged into the cable tester. The test takes just a couple of seconds.

Removing a Cat5 or RJ11 Lead

To remove a connector push the tag on the side of the plug towards the plug and lift the whole cable gently in the same direction. It will then come free of the socket.

Connecting the Interface

Plug one 5m **Cat5** (RJ45) cables into the **Laser Control Unit** one 5m **Cat5** (RJ45) cables into the **Receiver Control Unit** and run them back towards the **PC**. Position the **Interface** near the PC and plug the **Cat5** cables into the sockets on the **Interface**.

Connect the **'D' lead** from the **Interface** to the serial port on the **PC**.

Connect the **power Supply** 2.1mm DC lead to the DC input socket on the **Interface**.

Do not power the system up until all leads are connected.

Note: If you find some need to swap the RJ45 cabling at any time, always power the Interface down first.

Setting the System up

Setting up the PC

If you have supplied the **PC**, check if it has a serial port because one type of com port or another **is** required. This may already be on the motherboard. If not, either obtain a serial card and fit it, then install the driver for the card. Alternatively, use a **USB Serial** Adaptor. (Incidental note**:** If you go to purchase a serial card and are informed by a young shop assistant that 'serial cards are obsolete', put them right by suggesting that they Google 'serial cards'! Serial cards are still, and will remain, the communication device of choice for many specialist products As time passes, less and less PCs are produced with conventional serial ports so the USB adaptor may become the best option.

You need to download the **Full Installation Package** of **PinPoint.exe** from
http://www.laserventure.com/downloads-page.htm

Put the installer on the desktop and run it, performing the 'No Questions Asked' installation.

- **See Important note below!** Equipment newer than April 2013? User V1.32 and higher
- Only **PinPoint** should be operated on the PC. **Do not** run other programs – this may interfere with the operation of the system
- The exclusion of other programs applies to Internet and network connections – these should be disabled while **PinPoint.exe** is running
- If you wish to have a separate score monitor for use by the players, then you must have a dual monitor video card installed on the **PC** and must have set the video up for 'Dual View'. If you do not do this then any screen messages will straddle the monitors

Check that the number of **Lasers+Sensors** shown on the left are correct for your system. If not, click the **Hardware** tab, adjust the number of lasers and click **Apply**.

No Serial Conventional Port?!

It is usually possible to operate the system using a **USB > Serial Adaptor**. This may require you to install the driver (disc supplied with module) and to select the correct com port number in the **Comms Box** on the **Hardware Tab** in **PinPoint**.

Running PinPoint.Exe (See Important note below!)

Many changes and additions have been made to **PinPoint** over the last two years and in order to avoid a complete rewrite, the following section remains, for the time being, unchanged. You will need to refer to the comprehensive **PinPoint** help file in order to aquaint yourself with the latest new features. For a synopsis, please see the latter part of the **New Features** section at the end of these instructions.

Very Important Note: PinPoint versions prior to V1.32 are only compatible with hardware supplied before April 2013. Recently supplied equipment should be operated using **PinPoint** V1.32 and higher, obtainable from our downloads page at >

http://www.laserventure.com/downloads-page.htm
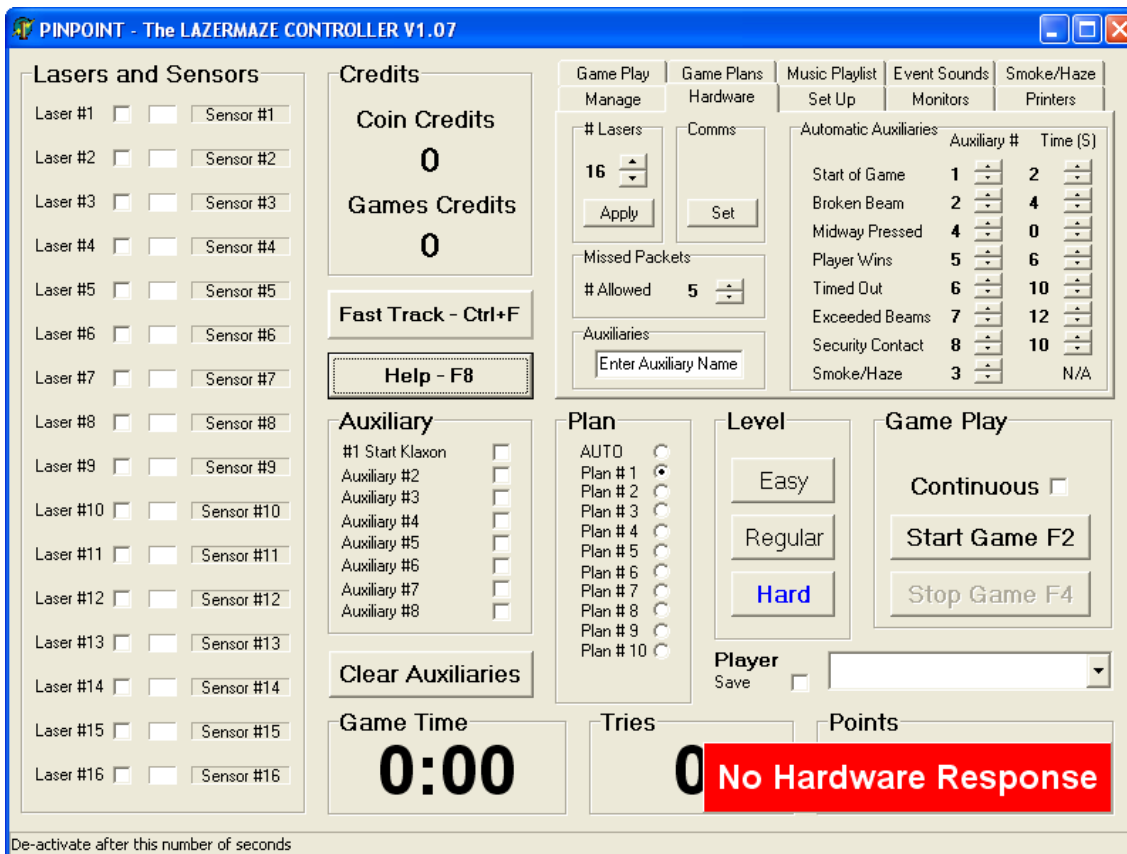
Turning the System on

Check that you have completed all wiring.

Start the PC and run Pinpoint.exe. After a few seconds you will see a warning message that there is 'No response on lasers 1, 2…..'. This is to be expected as you have not yet aligned the lasers.

Check and if necessary set the **Comms Port** number on the **Hardware Tab**.
Power up the **Interface**. You should see the following LEDs lit on the two control boxes:

Laser Control Box

'12V' LED
'5V' LED
'Data In' LED – this should be flashing very fast

Receiver Control Box

'12V' LED
'5V' LED
'Data In' LED – this should be flashing very fast
'Data Out' LED – this should be flashing very fast

Aligning the modules

Start by lining up the **Receiver Modules** with the **Laser Module** you have decided to pair with. This can be done by eye and is not too critical.

In **PinPoint.exe**, click the **Set Up Tab**. Click the **Align** button. Then click the **All On** button.

Check that all the **Laser Active** LEDs on the **Laser Control Box** are lit.
Place a piece of paper in front of each **Laser Module** to check that the laser is on.

- ***Warning – When PinPoint is in* Align *mode the lasers will not switch off if the beam is broken - DO NOT look into laser beams***

One by one, line up the **Laser Modules** with the **Receiver Modules** so that the beam is as central as possible on the red face of the receiver.

As the beams are lined up the appropriate **Receiver Active** LED on the **Receiver Control Box** should light.

Additionally, in **PinPoint.exe** the appropriate box in the **Lasers And Sensors** box should turn red.

When all the beams are aligned, carefully secure the modules by tightening the wing-nuts.

- Do not over-tighten the wing-nuts. Very little pressure is need to fix the ball-joint in place

Associating the modules

This should be carried out with lighting conditions as they will be when the game is in normal use.

Still on the **PinPoint.exe Set Up Tab**, click the **All Off** button to turn the lasers off.

Then click the **Match Arrays** button. This is necessary to establish a starting point for the association process.

In the **Association Box**, check **Enable** and then click the **Run Button**. The **Association** process will take typically thirty seconds, during which time no-one should walk through the maze or switch any lighting on

Sound System

PinPoint outputs its sound effects via the sound card output. If you have no sound level then please check the PC **Volume Control**.

Two speakers, one at each end of the maze, are usually sufficient. There is no point in running a stereo system, as the **Event Sounds** are on single channel **WAV** files. Since most amplifiers supplied are twin-channel, either use just one channel, switch the amplifier to mono operation, or link the input signals.

The background sound, if you have selected one, must be **MP3** format, and must be long enough to last the duration of the game as the track will not repeat.

An amplifier power rating of 50 watts per channel should be more than adequate.

Event Sounds

Different **WAV** file sounds can be played to accompany various events:

- Easy Game button press
- Regular Game button press
- Hard Game button press
- Coin Insertion
- Start Switch press
- Beam Broken
- Midway Switch press
- Stop Switch press
- Game Terminated

You may supply your own **WAV** files – these should be placed in the folder c:\pinpoint\sounds.

You can select and assign event sounds from the **Event Sounds Tab**.

Background Music

In addition to the game event sounds, you can also play a background music MP3 file. You may have this music pause or continue to play through game event sounds. Tracks are selected on the **Music Playlist Tab**.
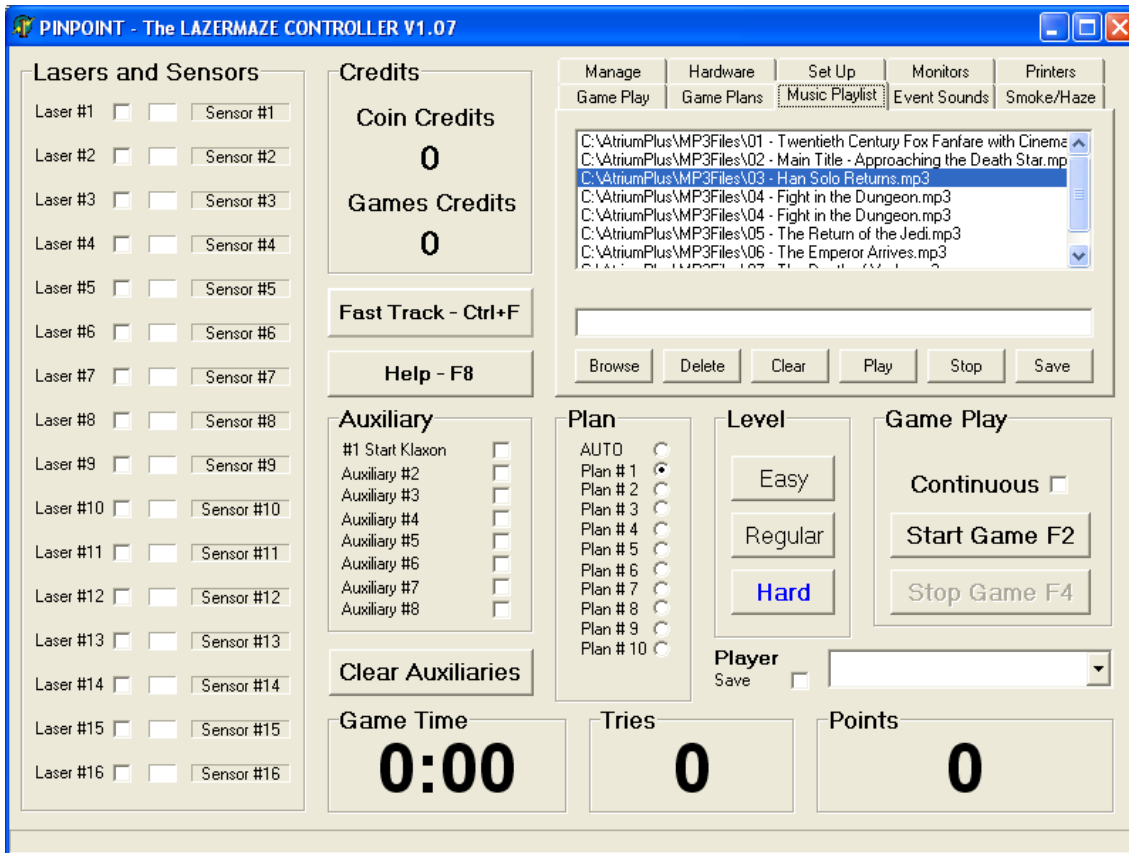
You may also opt to manually select the **Background Track** or have **PinPoint.exe** randomly select a track at game start.

FastTrack Mode
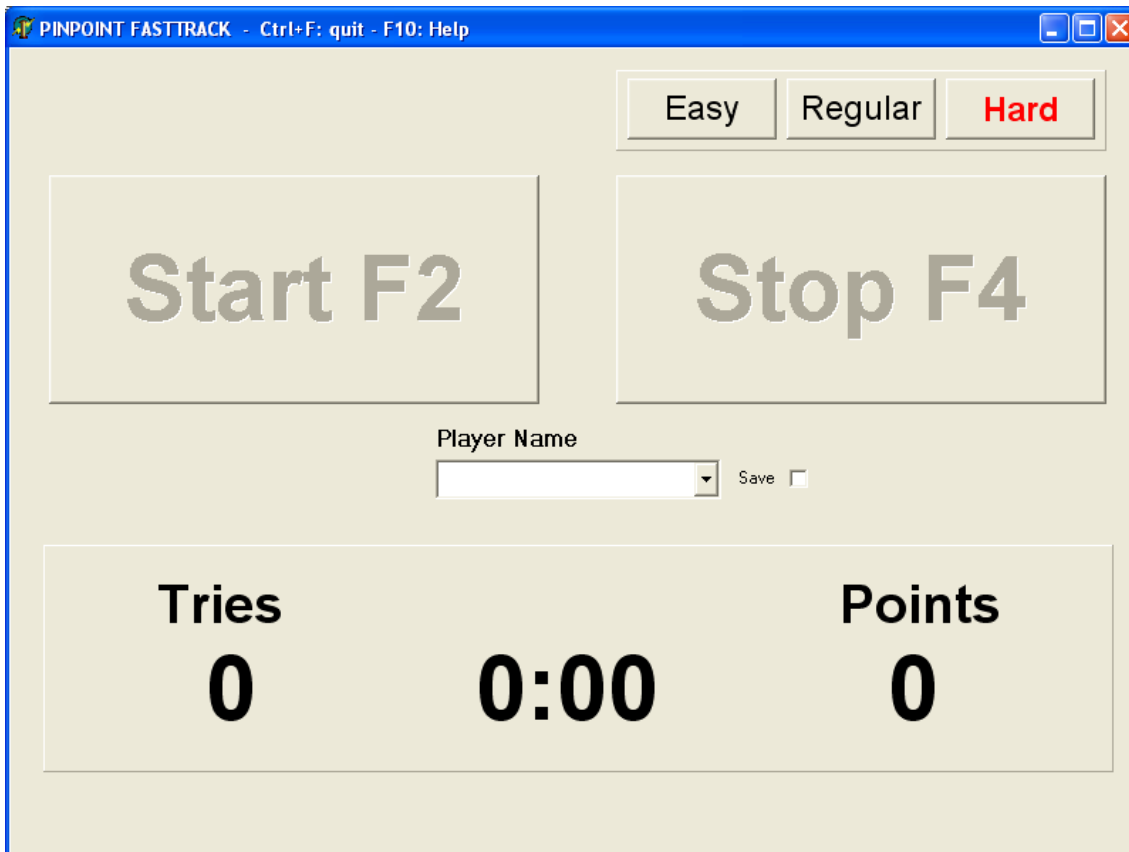
The FastTrack window

Once you have the system up and running you may well prefer to switch to **FastTrack** or 'simple' mode. This is a much simplified way of operating the system, and all the set up and control components are hidden except those required for game play.

You enter **FastTrack Mode** by clicking the **FastTrack** button on the main screen or by pressing **Ctrl+F**.

Ctrl+F will also exit from **FastTrack Mode**.

Results Panel

The **Results Panel** appears automatically at the end of a game.

To close the **Results Panel** simply click it, or click the visible part of the **Start Button** or check **Auto Close Score Display** on the **Miscellaneous Tab**.

The PinPoint Main Screen

Note: This section of the Instructions is due for rewriting. For a best understanding of how the system operates and what you can do with it, please refer to the hints in the status bar, also read the extensive help file. If you do not understand, please ask!

Whether or not you wish to operate **LaserMaze** in **FastTrack** mode. please first take a little time to look at the main screen and understand the operation of the program.
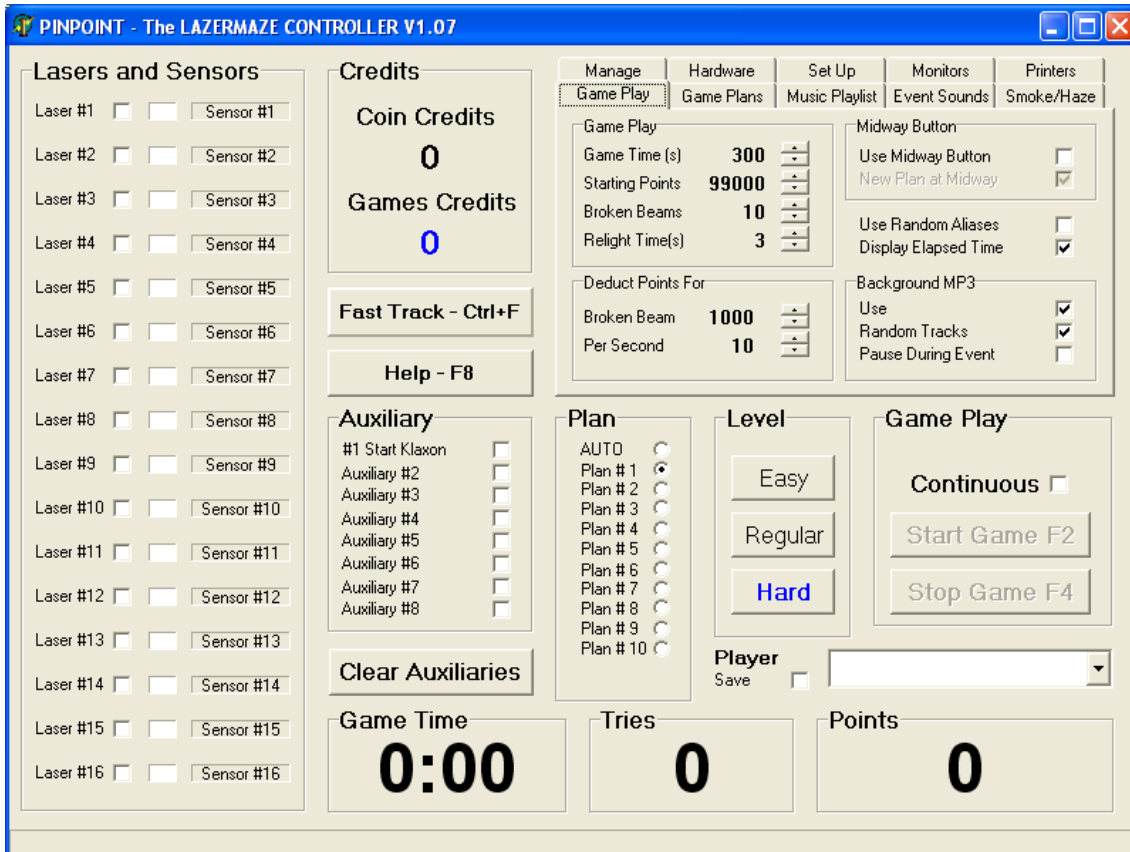
The PinPoint Main Screen

Laser+Sensor Box

This box, at the left of the main screen, shows the status of the **Laser and Sensor Modules**. The colours of the status panels to the right of the laser check boxes indicate the sensor status:

Grey = Laser checked 'ON' but beam broken - Relighting period
Black = Switched on but no response from sensor
White = Switched off or in Aligning mode
Red   = Sensor responding OK **(See New Features at end regarding coloured lasers)**

Manually Switching Lasers

If you click any laser check box or the label to its left (Laser # 1 etc) you will switch that laser on. If you are playing a game at the time, then the additional laser(s) will be included in the game.

If **Relight Time** is set to a non-zero value then the laser will relight after the beam is broken. If **Relight Time** is set to zero then the laser will not relight.

Disabling Sensors

If you click any sensor ID label (Sensor #1 etc) then that sensor will be disabled. The laser associated with it will operate just as before, but a broken beam will not give rise to a **Broken Beam** event.

To re-enable the sensor, click the label once more.

Other Main Screen Items

Credits shows current coin and game credit status if you have a coin mechanism connected.

FastTrack – invokes a simple screen to start and stop the game. **Ctrl+F** will also enter (and exit) **FastTrack Mode**.

Auxiliary – provision is made for up to 8 auxiliary channels. These can be manually switched, or automatically switched on various events in the game. Automatic switching is set up on the **Hardware** tab.

Plan – There are up to 10 choices of fixed plan for each of the three skill levels, plus an automatic option. In the automatic mode a new set of lasers are automatically assigned for each new game. The fixed plans are editable via the **Game Plans** tab.

Skill – Three levels of skill are provided. Essentially the harder the game, the more lasers are switched on. The skill level can also be set by **External Switch Modules** linked in to the data cable line to the **Laser and Sensor Modules**.

Game Play – Start and Stop buttons are provided in the main screen as well as the **Start and Stop Modules**. Either external or screen button will start/stop a game. The duration of the game is set on the **Game** tab. To have a game run with no time limit, click the **Untimed** check box.

Player Name Entry

Players' names can be entered in a number of ways:

- Manually enter the player name in the edit box on either the **Main Screen** or the **FastTrack Screen**.
- Select an alias from the drop down list
- Enter a new alias and check the **Save** box to save the new alias to the list of aliases
- Have the system supply a random alias – check **Use Random Aliases** on the **Game Play** tab
- Do nothing – the system will enter a default 'Player #1', 'Player #2' etc

The aliases are stored in 'aliases.txt' in the c:\pinpoint' folder. The file can be edited using Notepad. Do not use Word or any other formatting program.

Help File

Help is available either by clicking the **Help** button on the main screen, or by pressing F8.

The topic 'A Quick How To List' will guide you through the operation of the system.

By far and away, reference to the Help File will enable you to set up and customise your **LaserMaze** just as you wish it to operate.

Hints

All controls in the program will display a description of what the control does, provided that **Show Hints** is checked on the **Manage Tab**.

Task Graphics

If you are using PinPoint in the play area, you can use the Hot Key F5 to display a sequence of 'tasks', basically themes for the player to be given as the point of the mission through the maze. With these images being displayed sequentially you can skip to the next image using F6.

Tab Index

Game Play Tab
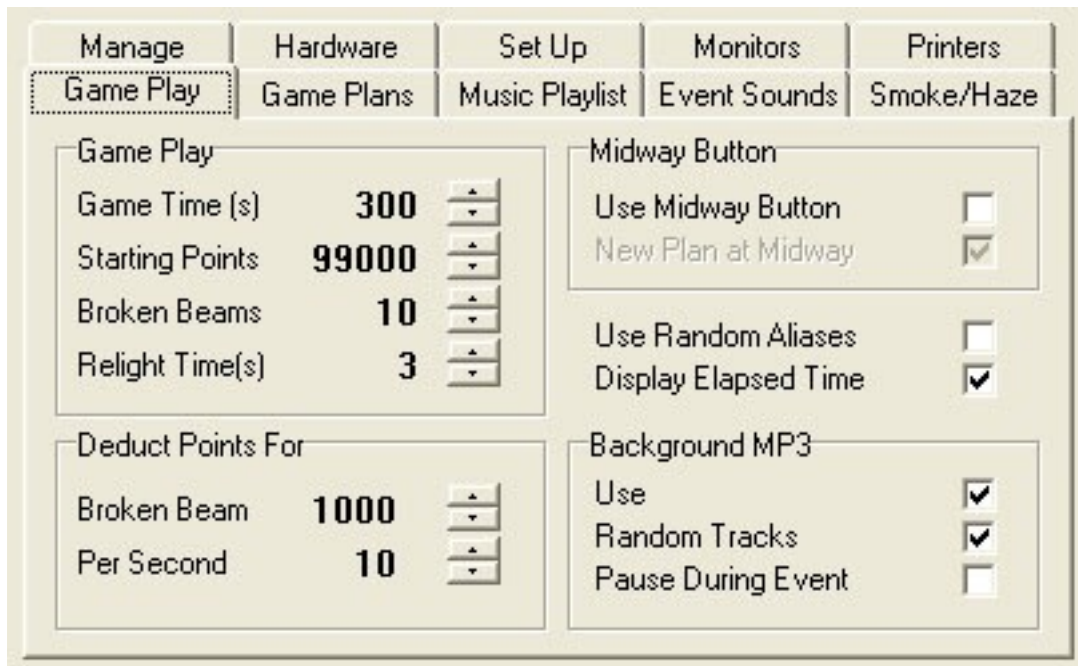
The **Game Tab** lets you set the parameters for the game.

Game Play

A maximum **Game Time** of 5 minutes is allowed. Players are allocated a number of **Starting Points**. Their score is decremented by time and broken beams and you can change the points deducted for each of these items. You can also set the maximum number of beams that can be broken before the player is forced to quit the game. **Relight Time**, mentioned above, is set on this tab. If you have the coin slot option then the number of coins required for a game is set on this tab also.

Relighting - When the system is operating normally (ie not in **Align Mode**) any break in a beam will cause the laser to switch off immediately. After a preset period (The **Relight** period) the laser will switch on again. If the beam is still broken the system will keep trying until the laser is switched off. The **Relight Period** is set on the **Game** tab.

- If the **Relight Period** is set to zero then the laser will not relight when the beam is broken.
- *Warning – When PinPoint is in* **Align** *mode the lasers will not switch off if the beam is broken - DO NOT look into laser beams*

Use Midway Function – This allows **LaserMaze** to operate in a bi-directional mode. Check this box if you are allowing the player to return through the maze. The **Start** button/switch

doubles as the **Stop** button and the **Stop** Button becomes the **Midway** button. If in doubt please look at the **Help File**.

Stop Switch as Midway – This allows you to use just two switches (as supplied) in the system. In this case the Start Switch doubles as both Start and Stop switch and the Stop Switch is used for the Midway Switch. More info in the **Help File**.

New Plan At Midway – Check this box to change the beam pattern on the return trip through the maze, if **Use Midway Button** is checked.

Use Random Aliases – If checked then **PinPoint.exe** will insert a random alias from the file aliases.txt. This allows you to fully automate a game, without the system inserting 'Player # 1', 'Player # 2' etc.

Display Elapsed Time – Normally the system will display the remaining time in a game. If this box is checked then the elapsed time will be shown instead.

Background MP3 – Check this box to have the selected background **MP3** track play during the game. This sound is interrupted by game event sounds.

Hardware Tab

The **Hardware** tab allows you to set up the number of **Lasers**, the names of any **Auxiliaries** and also to assign the events at which **Auxiliaries** operate and the duration for which they operate. On this tab you can also set the comms port used by the system.

Lasers - use the Up-Down buttons to select the # lasers and then click the **Apply** button.

Comms Port - To set the **Comms Port** click **Set** and then select one of the available comms ports (may only be one). If there are multiple comms ports available, ensure that the **Interface** is connected to the port that you have selected.

Missed Packets - This utility allows the system to deal with potential problems caused by Windows handling delays, and sets the number of packets from the **Receiver Control Box** that are allowed to be missed before the system shuts off the lasers. This is only effective when no data at all is returned – in other cases, regular broken beam event will occur. The default setting is 3.

Auxiliary Name - To change the name of any **Auxiliary** select it in the box under the **Help** button (on the main body of the screen) and then type in a new name and press **Enter.**

Automatic Auxiliaries - To assign an **Auxiliary** to a game event, set the **Auxiliary number** and the **Time** (in seconds) that you want the **Auxiliary** energised for. To have no **Auxiliary** for any particular event, set the value to zero.

Event Sounds Tab

PinPoint comes with a pre-defined set of sounds, plus a library of other sounds. These are stored in **c:\PinPoint\sounds**.

To assign a different sound to any event, select one of the events listed and then enter the filename or browse for it. Make as many changes as you like and then **Save All**. To reload the factory default settings click the **Defaults** button.

- Game Event sounds are WAV files
- The Background sound is MP3 and must be long enough to last the game

Playlist Tab
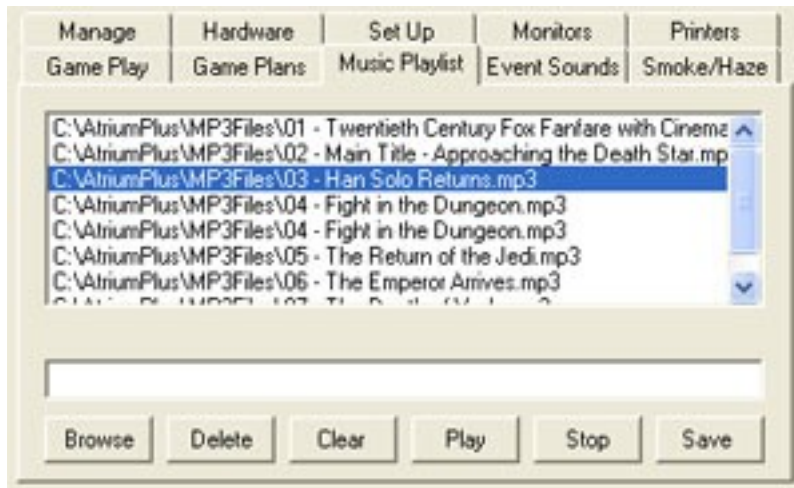
This tab is used to set up a Playlist so that different tracks can be played in the background during a game. The Playlist may contain up to 20 tracks.

The playlist is stored (and must remain) in the c:\pinpoint folder as '**playlist.txt**'. MP3 files must be located in the folder c:\pinpoint\sounds

Browse Files - Select MP3 files for addition to a playlist
Delete Entry - Delete the currently selected entry in the list box
Clear All - Clear all entries in the list box
Save Playlist - Save the playlist

Use the **Play** and **Stop** buttons to play any selected track.

## To play background sounds during a game

If **Background MP3** is checked on the **Game Play Tab** then the background track selected on the **Event Sounds Tab** will be played throughout the game, but will be interrupted by game event sounds. Note that this track does not auto repeat so you should ensure that the track is long enough for the game duration.

If **Random Tracks** is checked on the **Game Play Tab** then a random background track will be selected from the playlist for each game.

If **Pause During Event** is checked on the **Game Play Tab** then the background track will be paused whenever a game event sound is played.

Gameplans Tab

This tab allows you to edit or create and save your own game plans. When you click on this tab the currently selected plan will appear in the box at the left of the screen.
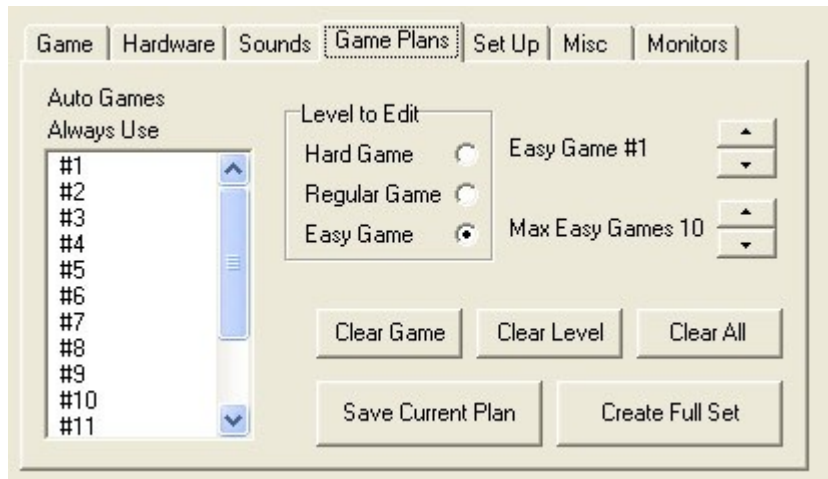
To edit a game, use the **Level To Edit box to** select the skill level you want to edit (Hard/Regular/Easy), the plan number, and then click the checkboxes in the **Lasers And Sensors** box to create the desired pattern of lasers. Click **Save Current Game Plan** to save the new pattern.

Maximum Games Per Skill Level - You can limit the number of games per skill level if you wish. To do this, click the appropriate **Level To Edit** radio button and then set the maximum number of games per skill level. The maximum number of game plans (beam combinations) per level is 10.

- Only set **Max Games** to the number of games you wish to create. If you wished, then you could have a value of games (or even one!) at any level.

Always Use – You may wish that every **Auto** game **always** uses one or more lasers. To ensure that certain lasers are always used select the laser(s) by clicking in the list box at the left of the tab. Selected lasers will then be marked – '**Always use #2**' for instance. To unselect any '**Always Use…**' laser, simply click that entry once again.

- When new to **LaserMaze** it is generally best to avoid the use of **Always Use** lasers as these selections could interfere with the way you would like the game to play.

Creating GamePlans – The important thing to be first aware of is that you have the option to automatically **Create a Full Set** of game plans for all three levels. Clicking this button and accepting the dialogue option will overwrite all existing gameplans.

Manually creating gameplans are simplicity itself. In the **Level To Edit** box, select the **Skill Level** you wish to edit. Then, using the top right-hand up/down buttons, select the gameplan you wish to edit. Then go to the far left side of the screen and, in the **Lasers and Sensors** column, choose the lasers you want on during that game by checking the appropriate boxes. When you are happy with your choice, Then click **Save Current Plan.** You can then proceed to program other games at any **Skill Level**.

Manage Tab

Password

The other tabs are enabled/disabled using a password .

If there is already a password then you must (1) unlock the system (see below) and then (2) type the current password in the top edit box (Password). Do not click [Enter].

- Enter the new password, up to 5 characters in the New Password edit box and click [Enter]. If you do not wish to have password control, enter nothing and just click [Enter].
- To unlock controls enter the password in the top edit box and click [Enter].
- To lock an unlocked system enter the password in the top edit box and click [Enter].

Note: Passwords can be a combination of letters and digits and are are case sensitive.

Score Form Printing

Check **Auto Close Score Display** to have the results panel on the main PC monitor close automatically 10 seconds after it is displayed. The panel can be closed earlier by clicking it or clicking the **Delete** key.

- Check **Auto Print Score Form** to automatically print a score form at game end.
- Click **Score Form** to print the results of the last game.
- Click **Sample Form** to print a sample.

Note: The score form utility is intended to print results only onto pre-printed score forms. This allows you to personalise score forms for your site.

Management

This section allows you to keep track of the games played since **Reset Records** was last clicked. A note is kept of the reset date.

Zero Played - Reset the number of games played to 0. This value is independent of **Reset Records**.

Clear Previous - Clears the system of the names of the last 5 highest scoring players and the scores.

Game Fee - You can set the number of games per coin or the number of coins per game. If set to zero then no coin insertion is required (Free Play). A Game Fee greater than zero requires the addition of a coin slot mechanism connected to **Switch Input #8** on the **Receiver Control Box**.

Hints – If this box is checked, then hints will be displayed in the status bar at the bottom of the screen as the cursor moves over different items.

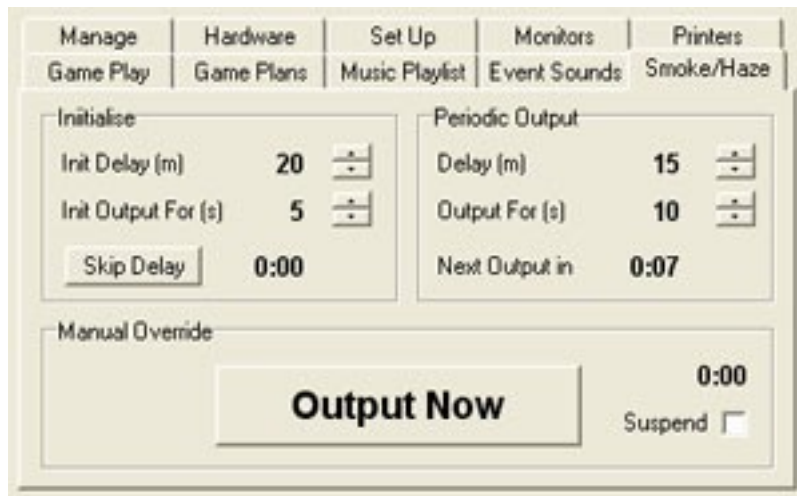## Tab Access

During gameplay all the controls on the tabs, and the tabs themselves, are disabled.

Smoke/Haze Tab

Laser beams will not be seen unless there are particles in the air to reflect light from the beam. A low level of fog or haze is required in order for the laser beams to be seen. Always use a good quality machine.

If there is too much fog then insufficient of the beam will reach the sensor and you will experience false broken beam events during games.

You may control a Fog/Haze machine from one auxiliary output. The Auxiliary channel to be used for controlling the Fog/Haze machine can be selected on the **Hardware Tab**.

Initialise Box

Initialise - Parameters for initialising fog levels in the play area.

Init Delay (m) - The time period in minutes after **PinPoint.exe** first runs until the initialisation outputting. The delay is to allow time for the fog machine to warm up, if required. The time period is variable, 0 - 20 minutes in 5 minute increments. Set to zero for no initialisation output.

Init Output for (s) - Duration of fog/haze outputting in 5 second increments, max 120 seconds. Set this period to obtain sufficient fog/haze for game play to start. Set to zero for no initialisation output.

Skip Delay - If the fog/haze machine is ready for use you can proceed direct to the initial outputting.

- The time remaining until the first output is shown to the right of the **Skip Delay** button.

Periodic Output Box - Parameters for maintaining fog levels in the play area

Delay (m) - The time period in minutes between each outputting of fog/haze. Variable in increments of 5 minutes, max 20 minutes

**Output for (s)** - Duration of fog/haze outputting in 5 second increments, max 120 seconds.

Next Output in - Time remaining until next fog/haze output.

Manual Override

Output Now - Press and release to manually output fog for the preset period. You can press again at any time to extend the output for a further period. The **Output Now** button will be recaptioned and an icon will flash on and off showing that the smoke machine is active.

Suspend - Check to suspend any outtputing of fog. If The system is outputting when Suspend is checked then outputting will be cancelled. When **Suspend** is unchecked the controller will continue from the point of suspension.

Manage	Hardware	Set Up	Monitors	Printers
Game Play	Game Plans	Music Playlist	Event Sounds	Smoke/Haze

Initialise
Init Delay (m)   20
Init Output For (s)   5
Skip Delay   0:00

Periodic Output
Delay (m)   15
Output For (s)   10
Next Output in   0:00

Manual Override
Outputting....   0:04   Suspend ☐

- Fog will not be output while a game is playing
- Once the initial outputting of fog/haze has started you can override with the Manual Override button and the machine will then only output for a further period equal to the **Periodic Output**
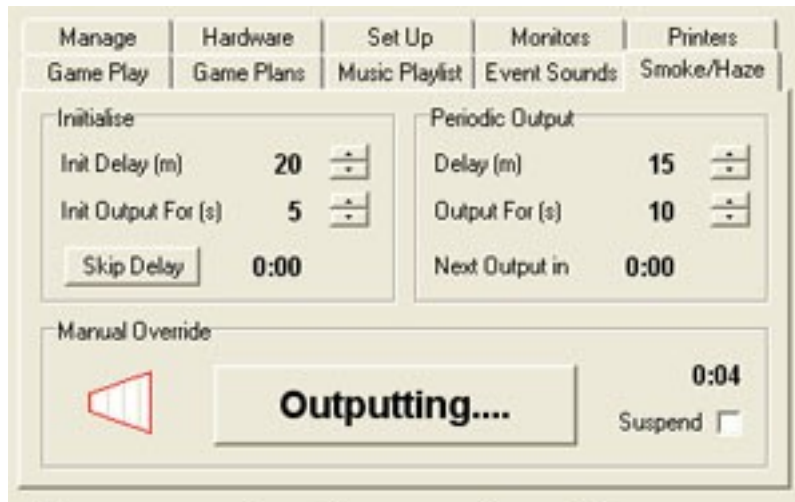
Monitor Tab

If you have a multi-monitor video card, and set it to **Dual View**, then you can show game process and results on a second monitor, independently of the main control window. Sizing of the display is automatic, but should you want to resize it for any reason than you can do so using the controls on this tab.

Fault-finding

No flashing Data LEDs on the Control Boxes

- Is the **Interface** powered up (LED on)?
- Is the 'D' lead connected to the correct comm. Port?
- Is the Com Port setting correct on the **Hardware Tab**

No response from a particular Laser+Sensor Module pair

- Is the **Laser Active** LED lit on the **Laser Control Box**? If yes, is the **Laser** lit? If not, then check the cables to it. Also check that it *is* switched on at **PinPoint.exe**. If the laser beam is impinging on the **Sensor module** correctly, is the **Receiver Active** LED on the **Sensor Control Box** lit? If the laser beam is in place but the **Receiver Active** LED does not light, then the sensitivity of the **Receiver Module** may need adjusting (see below).

False 'broken beam' events

- Are the CAT5 connectors in and out of the modules in place securely? Are the cables coming away from the modules without any sideways bias on them?
- Are the indicator LEDs on the modules flashing consistently?
- Is the laser lined up onto the sensor properly?
- Have you connected the return Cat5 cable to the second socket on the Interface?
- Is there too much smoke?
- Is there a lot of ambient lighting, or fluorescent lighting?
- Is the **Settle** time set too low on the **Set UP** tab? Try increasing it, a small amount at a time.
- Are you running other program(s) besides **PinPoint** on the PC? Do not do so. **PinPoint** requires full time uninterrupted access to Windows Handling.

Adjusting Sensor Sensitivity

Adjustment is by a small control on the back of the **Sensor Module**. The default setting is midway – arrow upwards). Adjustment may need to be clockwise (increase sensitivity) or anti-clockwise (decrease sensitivity). Make a only a small adjustment (equivalent to 1 hour on a clock) at a time, checking the PC for the response. Repeat until the sensor is performing properly.

New Features

Also please see section at the very end of this document which deal with green and blue lasers, also the compatibility of the system with older product.

Lasermaze and the Control Program **PinPoint** continually evolves over time and the hardware is now currently on **Revision APD-PL**. Please carefully read the following information – for a start, here is a brief summary of the changes in Revisions 2 and 3:

- Revision 2 added some Group Box changes to allow connections to be made for (a) connecting illuminated switches and (b) providing a low voltage ghost supply for energising external coil or solid-state relays. Care must be taken to observe the plug wiring depicted on page 6 in order to avoid shorts on the supply.
- **Revision APD-PL** provides an additional 8 switch inputs and auxiliary outputs, assuming that the system in questions has more than 16 channels and that therefore two pairs of Group Control Boxes will be required. No actual changes to the Group Box hardware took place with Revision 3, merely the firmware was changed. There will be changes to the silk screen notation made for future production batches. However, the **next production** of group boxes will add extra test socketing and also a power booster socket. This will be advised later by an addendum to these instruction.

With **Revision 2** of the system hardware, new features were added. The following new options add flexibility to the system. Please read all this section carefully, especially reference to systems that have more than 16 lasers (ie they have two sets of **Control Boxes**).

Single cable Skill Switch Block Connection

A single 4 core RJ11 lead may now be used to connect a three switch **Skill Switch Block** directly to the **Receiver Control Box** without having to use three separate cables. The switch connections to be made at the end of the cable are:
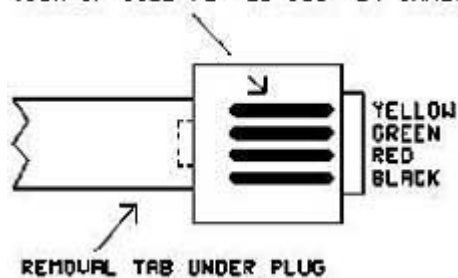

Yellow = All switch common terminals
Green = Regular switch N/O contact
Red = Easy switch N/O contact
Black = Hard switch N/O contact

Notes regarding single cable Skill Switch Block Connection

- These connections are to be made **only** at the **Receiver Control Box**.
- If you wish to make up and use this three-way cable, it should be plugged into **Ancillary Switch Input #3** on the **Receiver Control Box.**
- There can be no provision for a 12V supply for illuminated switches with this method of connection, as all four conductors in the four-core data cable are used. If you wish to use illuminated switches for the three skill switches, then they must be wired individually, as described in the first section, above.

Auxiliary Ghost Supply (Operating Solid-State Relays)

Each Auxiliary output on the **Laser Control Box** now has a ghost 12V supply. This enables you to use solid-state relays to switch higher voltages and currents. A typical solid-state relay will switch mains level voltages and requires only a low voltage and low current input. The diagram below shows how the wires at the end of the RJ11 cable are connected to the relay and how the load should be connected to the power supply and relay.
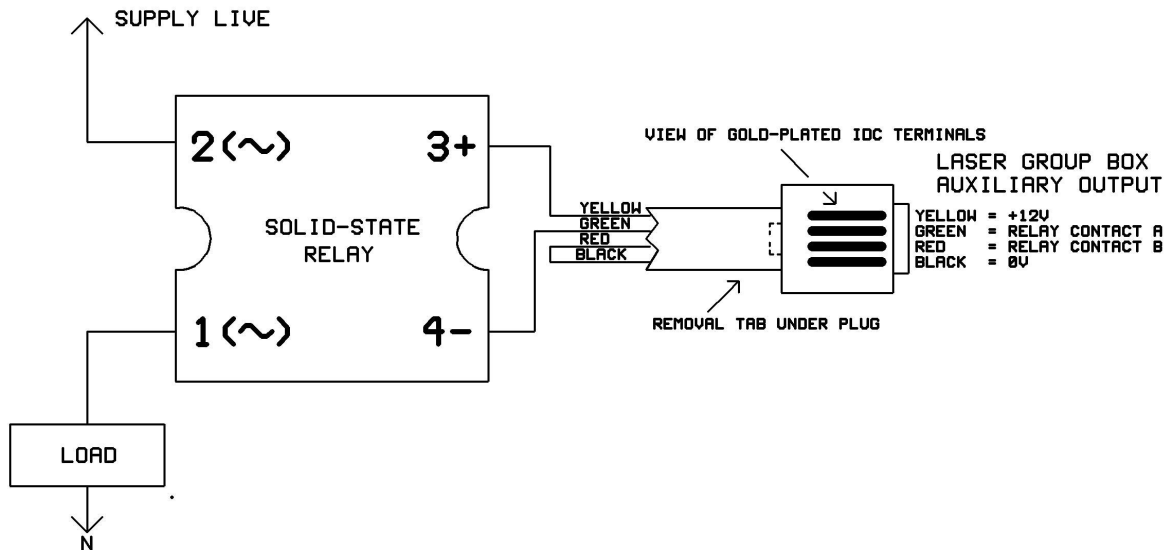
- These connections are to be made **only** at the **Laser Control Box**.
- Do not exceed more than 100mA draw from an auxiliary output 12V line, whether or not you are using solid state relays. Excessive loading and/or shorts on the 12V line will cause fuse failure and the system will stop working.
- Mains-powered device should be placed at least 1 metre, (preferably further) from the **Laser Control Box**.
- Under no circumstances should mains voltage be taken to any place on the control box.
- Auxiliary Outputs 7 and 8 are reserved for use for the **Security Loop** and **Smoke machine** control. Do not connect these to solid state relays.
- Solid State relays are available to purchase from most electrical wholesalers and also **LaserVenture**.
- Care must be taken to observe the plug wiring depicted above (and on page 6) in order to avoid shorting the low voltage.

VERY IMPORTANT! Do not download PinPoint132APD for use on existing systems – the system will stop working. Also, do not attempt to use new equipment on earlier version of PinPoint. V1.32 and higher *must* be used with hardware supplied after April 2013.

At some time soon, PinPointPL is going to be released for the first time, providing:
- **Larger operating window**
- **Option for customised 'wallpaper' graphics**
- **Multiplayer gameplay**
- **Many other useful utilities**

All Systems - Important Note regarding using the Midway Function

From PinPoint V132APD onwards there is no longer any option for Midway operation with three switches. If you check the **Use Midway Function (two way)**, box on the **Game Play A** Tab, this means that the player can (and must to avoid disqualification!) make a return journey through the maze. Thus the **Start** switch doubles as the **Stop** switch and the **Stop**

Controlling a Smoke Machine using Auxiliary Output # 8

Most smoke machines have remote controls fitted with timers. If you wish, you may disable that timer and then connect the manual button on the smoke machine to output #8 on the **Laser Control Box**.

This will allow you to use all the functions of the **Smoke** tab in **PinPoint**, enabling you to – re-heat the machine and smoke the play area inn readiness for gameplay.

Use the second and third conductors of the RJ11 cable (Green and Red)

- This connection is to be made **only** at the **Laser Control Box**.

Systems with Different Colour Lasers

From May 2013, **LaserMaze** can be supplied with any mix of red, blue or green lasers.

Existing systems can be upgraded to include a few green or blue lasers, but whether installing for the first time, you must take heed of these simple points:

- **Sensor** (Receiver) filter material. Traditionally, the sensors have been fitted with frosted red filters. When we supply laser/sensor module pairs in different colours, both the green and blue sensor modules will have an identical pale green filter. Lasers and sensors will be clearly colour coded and must not be mixed up
- The power consumption of green (and especially blue) laser modules is significantly higher). Therefore the number of green lasers connected to any group box should be a maximum of eight. If you have a system with **APD/PL** group boxes, purchased since May 2013 and are planning to upgrade to green (and/or blue) lasers, then you should approach **LaserVenture** with a view to swapping your group boxes. This is a service that we will happily provide free of charge.
- **Fitting coloured lasers** – Two important considerations apply >
- **1)** - Try your best to place all red, green or blue laser modules just where you would like them to be sited. You will have to make a firm decision as to where sensors will be placed - ie position and direction of beam pattern. In other words, a red laser should line up with a red-filtered sensor and a green or blue laser should line up with a green-filtered sensor. If you do not take care with this the system simply will not work!
- **2)** – If at some time you wish to establish a separate beam combination – ie the beams at different angles and heights, then perform this two in two steps. First, switch **Align** on and click **ALL ON** on the **Set Up** tab, then line up the laser beams roughly in the direction. Next, swap the sensor filters where necessary so that they are the correct colour for the colour of each laser beam.
- **Colour Editor** - If you have added green or blue lasers then you can decide how they display in the **Lasers And Sensors Box** by assigning the laser colours in the new **Colour Editor** – please see the following page.
- **Our final piece of advice? If in doubt, ask – we are here to help! Have fun…**

Important note:

- On the next page you will find a brief synopsis of the additions and changes made to **PinPoint.Exe** over the last two years:

PinPoint.Exe – additional information at August 2013

- Some tabs renamed – please inspect the tab index.

- **Game Play Tab** expanded to two tabs – **Game Play A** and **Game Play B**

- Blink Mode added to **Game Play A** tab.

- On Hardware Tab, Game Start and Midway Auxiliaries can, once energised, be held on until game end.

- **System Dynamics** (**Set Up System** tab) should now be set to the new lowest setting of 20 milliseconds.

- **Diagnostics** window added to the **Set Up System** tab. This shows data leaving and returning to the program

- In addition to the red '**No Hardware** Response' banner, which appears if the group boxes are not connected and/or powered up, a yellow error panel will appear if the wrong number of receiver group boxes are found. **Note:** systems up to 16 channels have one pair of receiver and laser group boxes, systems of 17-32 channels require two pairs of group boxes.

- **Multi/Colors/Door** tab – the introduction of this was to allow the inclusion of two requested features and one new utility, 1) Multi-player games, 2) Assigning laser colours and 3) Timed door opening >>>

- **Multi-Player** games. As this new feature was designed to a valued customer's request, it can only be used with systems of more than 16 lasers, ie systems with two pairs of group boxes. The reason for this is that games for two or three players, require one start and stop/midway switch per player and this can only be implemented by using the additional switch inputs available on the second receiver group box.

- The **Colour Editor** was added after we introduced green and blue lasers. Previously, an activated laser showed red in the **Lasers And Sensors** box at the left of the screen. Now you can determine the colour displayed for each channel

- The **Door** section of the **Multi/Colors/Door** tab allows you to assign auxiliary output #7 for the purposes of opening a door. When the output is triggered it remains energised for 6 seconds, time for the player(s) to enter before the door closes again.

- The **Hardware** tab has a simulator section which should be ignored by the operator

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Program demos/upgrades and PDFs:

www.laserventure.com/downloads-page.htm

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