

FastTrack Instructions for Installing LaserMaze

These simplified instructions have been produced to help you install your system and to briefly describe all the new features in **PinPoint**. For more information please download **LaserMaze_PinPoint_Instructions.pdf** from our downloads page at <http://www.laserverture.com/downloads-page.htm> or refer to the comprehensive **PinPoint** help file (**F8** in the program)

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Introduction

Following the increasing success of **LaserMaze** over the last few years and the increase in functions available, we felt that the original detailed instructions 'LaserMaze_PinPoint_Instructions.pdf' had become a little wieldy.

Here then is our 'Simple Instructions if Installing LaserMaze'

The original fully detailed instructions on how to build your **LaserMaze** can be downloaded from our website at <http://www.laserverventure.com/downloads-page.htm>

Note: If you have a system with *more than* 16 lasers and thus have two sets of group boxes, switch connections may vary depending on how you want the system to work. In that case, please refer to the full instructions, or better still, contact us for guidance.

Check your shipment

In the carton containing your system, you will find

- Laser Modules (equal to number of channels in your system)
- Receiver Modules (equal to number of channels in your system)
- RJ11 cable (see packing list)
- An ample number of RJ11 connectors – 80 for a 16 channel system
- Crimp tool
- Cable tester
- One Interface unit
- Laser Control Box (Systems > 16 channels have two sets of Control Boxes)
- Receiver Control Box (Systems > 16 channels have two)
- Power Supply
- Power supply 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 (Essential)
- 9 pin 'D' to connect Interface to PC
- One each Start and Stop (Midway) switch modules

Any missing items or shortages must be reported to us within 7 days of receipt of the system

Planning The Installation

Before you commence installation, you need to have a firm plan:

- Where the modules will be mounted
- Where the control equipment (PC and Interface) will be situated. There must be a suitable mains voltage supply (110v – 240v 50/60Hz) available to the power supply.
- You must allow for the lengths of the supplied Cat5 (RJ45) cables. All three must be used in order to ensure reliable operation. You should not increase the length of any cable drastically as this may cause losses
- All three Cat5 cables **must** be used. In other words, the interface must be connected to each group box and the group boxes **must** be interlinked. It makes no difference in which order cables are connected to the RJ45 sockets on the group boxes.
- Your PC will require a conventional serial port. This can be already installed in the PC, or by way of a PCI card . An alternative is a USB serial port adaptor which is available from us on request. This will come complete with a driver disc, but the adaptor may well self-install.

Mounting The Laser and Receiver modules

Assuming that your play area is not irregular, a popular course of action is to divide the length of the maze into equal amounts and then to space the laser and receiver modules equally along the path of the maze. As to the height, this could be a random value between, say, 30cm, 45cm and 60cm. You may prefer to have beams at different heights and angles, with the lowest points a little less than 30cm and the highest somewhat higher. The choice is yours.

As a aid, we recommend that customers start by fabricating a simple model, using cardboard and string, so that they can decide the angles and heights of the starts and ends of the beams. (ie lasers and receivers).

The Laser modules should be mounted down one side of the maze as they will connect to the Laser Group Box, which would normally be positioned roughly half-way along the play area. The same applies to the receiver modules and Receiver Group Box.

If you have solid walls, you may prefer to fix battens to the walls and use ply panels onto which to mount the modules. With this method, you can use the following simple procedure:

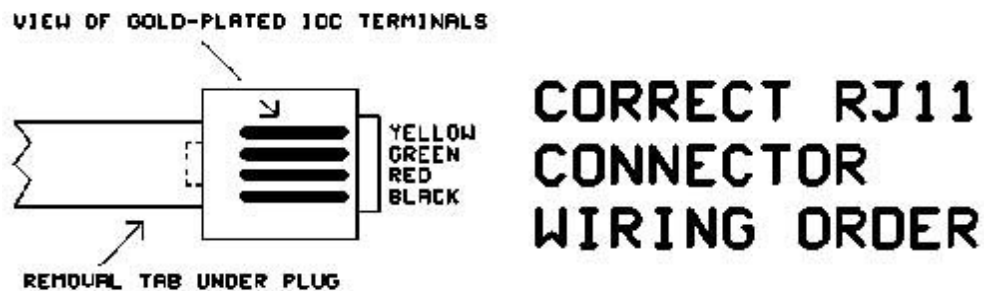
- Obtain several sheets of 12mm or 18mm plywood panelling 2440mm x 1220mm (8 ft x 4 ft) sufficient to cover the walls of the maze on both side.
- Fix battening (typically 35mm square) to the plywood panels. The spacing for the battening should be at around 40cm. If either of the walls onto which the panel/battening is to be mounted are hollow, then you should mark the positions of the supporting framework, so that your structure can be securely fixed in place.
- Mark the required positions of the modules, both longitudinally and vertically, on the plywood panels
- Decide the position of each Group Box. This should be near the top of the panelling. The Group Boxes could be at the start of the maze if you preferred as this will make it easier to run the Cat5 cables to them.
- Drill holes for cable access, drilling through the battens as required. You will require one hole below each module and holes (or a slot) under each Group Box.
- At this point you may wish to paint the new panelwork eggshell black, and decorate with fluorescent paint.
- Fix the group boxes in place – the laser group box on the side where the laser modules are to be and the receiver group box on the side where the receiver modules will be.
- Fix the laser and receiver modules in place.
- Commence wiring the modules. (See the section below – **Making Up Data Cables**). From the laser group box, output #1 should connect to the nearest (first) laser module, and so on until the last (#16) laser output is connected to the last laser module. This process should then be repeated with the receiver group box and receiver modules.

- Always leave (overall) about 30cm of spare cable which can be pushed back through the cable holes. In the event of a damaged cable/plug, this makes the fitting of a replacement plug easier.

Tip - When measuring cable, always allow a little extra to take up any movement in the module ball-joint mounting.

Making Up Data Cables

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.

- 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.

Warning – If you undercrimp when making cables then the proud terminals on the plugs may deform and damage the contacts in the sockets in the group boxes and modules. This could also result in damage to the **Cable Tester**.

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

Start/Stop Switches

The Start and Stop switches (supplied) can be fitted to the panelwork described above. However they should be situated on the receiver module (and receiver group box) side of the maze, so that connection can easily be made, with the cabling concealed if you wish.

Before you position the switches you need to consider the types of games that you will be playing. Will you be using the **Midway** function?

To explain, one exciting new feature in **LaserMaze** is that you can configure the game to be bi-directional. In this case, the **Start** switch will be at the start of the maze, then you would fit the second supplied switch at the end of the maze. Players will negotiate the maze, press the **Midway** button, make their way back through the maze, optionally through a new beam pattern, possibly at a higher skill level, and then press the **Start** button to finish the game.

You can switch the midway function on an off at will. If it is set to off, then the switch at the end of the maze will become the **Stop** switch.

For the sake of clarity, the **Start(Stop)** switch plugs into **Ancillary Switch Input #1** and the **Stop(Midway)** switch plugs into **Ancillary Switch Input #2**

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: - see note on page 7 regarding start/stop switch inputs only for use on systems larger than 16 lasers.

Other Possible Connections

When the modules are connected (or preferably before) you should decide whether you want to connect any other items to the group control boxes. Here is a list of what could be connected:

Receiver Group Box

- Skill Switches. Buttons to select easy, regular or hard games can be connected to switch inputs 3, 4 and 5. Use the red and yellow conductors only, as per the instructions on page 4.
- Coin Slot Mechanism – If you wish to use one of these, then the NO (normally open) terminals of the mechanism microswitch should be connected to this input, just as if it was a start, stop or skill switch, using the red and yellow conductors (see page 4)

Note: If you inspect the receiver group box you may notice differing start and stop inputs listed for switch positions #6 and #7. This is solely for use with multiplayer systems, possible only when a system has more than 16 lasers and thus two pairs of group control boxes (see page 1)

Laser Group Box – you may wish to connect auxiliary devices to the laser group box. These outputs are energised under certain conditions and are listed below. These outputs are only for handling low voltage and current. If you want to switch significant levels of voltage and current then you will need to incorporate solid state relays – for how to do this please read page 35 of the full operating instructions

Auxiliary Outputs are provided for:

- Game start – This output is energised at game start. You may choose to have this output stay on until end of the game by checking the appropriate box on the **PinPoint** hardware tab
- Beam is broken
- Midway button has been pressed (If Midway option is implemented) - You may choose to have this output stay on until end of the game by checking the appropriate box on the **PinPoint** hardware tab
- 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 (Main instructions page 11)
- Smoke/Haze machine control (Main instructions page 33)

The time for which any auxiliary output is energised can be set on the **PinPoint** hardware tab.

When wiring is completed

When wiring is completed then, if you have mounted the modules and group boxes on panelling, and added wiring for any other effects etc, now is the time to fit the panels into place. You might wish to do this with just a few screws to start with in case there is any need to access behind the panel (additional effects to be wired, for instance)

Connecting the Interface

The Interface should be placed near the PC, so that the D9 data cable will reach the connector on its front. Connect one Cat5 (RJ45) cables from the Interface to a group box (laser or receiver group box), one Cat5 from the Interface to the other group box and then connect the third Cat5 cable between the two group boxes. In other words, the group boxes and Interface will now effectively be daisy-chained. **There MUST be a continuous link from Interface > Laser group box > Receiver group box > Interface for reliable operation**

Warning: be careful not to place undue stress on either end of any Cat5 cable, or to bend the cable at the point at which it is inserted into the socket.

Plug the 15v DC adaptor/psu 2.1mm lead into the front of the Interface and plug in and power up the adaptor/psu.

Check that the red power LED on the Interface and, at both the Laser and Receiver Group Boxes, the LEDs marked 15v and 5v are lit.

Initialising PinPoint

If you have not already run the **PinPoint** installation program, now is the time to do so. **Note:** All setting up and **Association** should be carried out with low level lighting and any fluorescent fittings turned off. Otherwise, light may interfere with the receivers. Take these steps when the program runs

- The program may well show an error message that the com port is missing. Select the **Hardware Tab** and set the comms port. When this dialogue is closed and the com port set, check that the yellow **Data Out** LED and the green **Data In** LED on the Interface are flashing.
- Still on the **Hardware Tab**, ensure that the correct number of lasers is set for your system. When these first two steps are accomplished, **exit PinPoint** and then start it again. This is necessary to complete initialise the system when values have been changed.
- Remaining on the **Hardware Tab**, check that in the **Laser Period** box the check box **Send Modulation** is checked and that the time setting is 1 Millisecond. To explain, this feature has been recently added to act as a development aid as we are continually testing new and different types of laser.
- At the group boxes, check that the **DATA IN** leds are flashing and at the Receiver group box especially, that the **DATA OUT** LED is flashing.
- Select the **Set Up Tab**. In the **System Dynamics** box, adjust the **Timer** setting to the minimum value of 20 milliseconds. This will result in the data LEDs on the Interface and group boxes flashing so fast that you can hardly see the flashing. By all means, if you wish, set **System Dynamics** to a higher value so that you can see the flashing. When the system is fully set up we recommend that you then reset the **System Dynamics** value to 20 milliseconds as this optimises performance.
- Remaining on the **Set Up Tab**, in the **Association** box, click the **Match Arrays** button and answer **OK** to the dialogue. This will associate laser #1 with receiver #1 and so on, so that setting might be a little less confusing. But of course, as you will almost certainly have different beams lined up with different receivers, this will soon change!
- Still remaining on the **Set Up Tab**, click **Align**. Then click **All On**. In the Lasers and Sensors window to the left of the PinPoint screen, all the channels should show checks to indicate that they are switched on. At the Laser Group Box, all the output LEDs should light and by inspection of the lasers you should see that all lasers are lit.
- One by one, line up the laser beams with your chosen receiver. As you do this, then status indicator for each channel should show red in the Lasers and Sensors window.
- When this process is completed and you can switch lasers on and off at will and see the channels indicated in the Lasers and Sensors window. You are now ready to **Associate** the lasers with the receivers. In the **Association** box, click the **Associate**. One by one, in sequence, a laser will light and become associated with its companion receiver.

When **Association** has finished successfully you are ready to play your first game.

Playing A Game

Select a skill level using one of the three buttons in the **Level** box.
Select a plan (Beam Pattern) in the **Plan** box
Click **Start** (or press **F2**) to start a game

The **Stop** button (or F4) will stop a game. The game will also stop if a player completes the maze with time to spare and without breaking too many beams

When a game finishes a score screen will be displayed. You can close the screen by:

- Pressing **F2** to start another game
- Clicking the window
- Clicking the **Delete** button on the keyboard

If you have **Auto Close Display** checked on the **Manage Tab**, the window will close automatically after 10 seconds.

If you have a dual monitor video card installed and a second monitor connected, **PinPoint** will send score to that display.

The Tab Index

At the top right of the main screen is a multi-tabbed set-up section. These are described briefly here:

Note: The Tab Index is disabled when a game is playing.

Game Play A Tab

Game Parameters – Here you can set:

- How long a game lasts
- How many points a player starts the game with. Points are lost with each passing second or broken beam
- How many beams a player is allowed to break before the game ends
- How many points are deducted for a broken beam
- How many points are deducted for each elapsed second

Game Play – These check boxes set:

- Whether you are using the **Midway** Function. With this, the game is bi-directional, with the **Start** button doubling as the **Stop** button and the second button acting as the **Midway** button.
- Whether, if you are using the **Midway** function, a new beam pattern is set on the return trip through the maze.
- Whether, if you are using the **Midway** function, a higher skill level is imposed for the return trip through the maze.
- Whether random aliases from c:\pinpoint\aliases.txt are used instead of real player names.
- Whether elapsed time or remaining time is indicated throughout the game.

Game Play B Tab

Blink Mode – this feature is still under development. When completed, lasers will be able to be set to flash on and off at the rate set by the two up/down controls

Display Game Results – This box allows you to set whether the last 10 players results are displayed or the highest-scoring 10 players results are displayed. The check box for background allows you to change the background colour on the remote score monitor.

Relight Time – This control allows you to set the time that a laser switches off for when a beam is broken. This give the player time to re-orientate his/herself and thus avoid a repeated broken beam event when the laser relights.

Two Clicks of Start Button Required to Start a Game - This is a yet another feature that was requested by a customer. If invoked, then the first click of the start button will cause the screen start button to flash red and then return to green after 2 seconds, waiting for the second press.

Skill Levels Tab

This tab allows you to set how many lasers will be used at each skill level – easy, regular, hard. The number of possible combinations are indicated when you change these settings. Note that for systems over 20 lasers, **PinPoint** may not be able to show the full number of combinations possible.

If you wish to keep changes you have made, please click the **Save** button. Alternatively, you can load **Default** settings.

Sounds Tab

Game Event WAV files – this box allows you to browse and select WAV files that will be played during the different game events, such as ‘start of game, ‘broken beam’ etc.

Background MP3 – this box controls the usage of tracks selected on the Playlist Tab, whether the background track is used, whether the whole playlist is played in order, or random tracks from that list, and whether the background track should pause when an event sound is being played.

Playlist Tab

This tab allows you to create a list of tracks to be played in the background, while a game is playing

Smoke Tab

This tab allows you to control a smoke machine via auxiliary output #8 on the Laser Group Control box. Remember that the auxiliary outputs are merely low current/voltage switch relay contacts. You will need to refer to your smoke machine manual to set this utility up. If in doubt, simply use the smoke machine's remote control/timer.

Game Plans Tab

Here you can generate and edit gameplans (Beam patterns for the three skill levels

- **Auto Games - Always Use** – allows you to specify that certain laser(s) are always used when games plans are being automatically selected
- **Game To Edit** – select the game plan you wish to edit. You must already have selected the skill level in the adjacent box.
- **Clear This Skill Level** – Clears all game plans at the currently selected level
- **Save Current Plan** – save the plan (beam pattern) you have been editing
- **Clear This Game** – clears the current plan (beam pattern)
- **Clear All** – clears all plans/pattern at all three skill levels
- **Auto Create A Full Set** – generates a full set of 3 x 10 game plans (beam patterns) using the settings on the **Skill Levels Tab**.

Hardware Tab

- **# Lasers** – sets the number of lasers in the system. Always ‘Apply’, then restart **PinPoint** after such an operation.
- **Comms** – allows you to set the comm. Port
- **Laser Period – Send Modulation** must always be checked – unless you are using a system built pre- November 2013. Use the 1 millisecond setting unless advised differently. If you do not, the receivers may not work properly.
- **Automatic Auxiliaries** – allows you to test these outputs and set the ‘ON’ time for their use. Checking ‘Game End’ for auxiliary #1 and/or #3 (start and midway) will cause the auxiliary to stay on until the end of the game. If you have been testing the auxiliary outputs the ‘Clear All’ button will collectively switch all the auxiliaries off.

Set Up System Tab

- If the **Align** button is clicked it will show **Align is On**. Any laser or lasers switched on will remain on even if the beam is broken. This allows you to line up the beams with the receivers (sensors). The **All On** and **All Off** buttons allow you to switch all lasers at once.
- **System Dynamics** - this parameter controls the rate at which **PinPoint** sends data to the Group Boxes. It should always be left on the minimum setting.
- **Run Test** – performs an automatic test of lasers and receivers. There is usually no need to perform this test as **PinPoint** will perform the test in any case when it starts (all assuming that the hardware is powered up).
- **Show Diagnostics Window** – You may be asked to open this if you experience any problems during setting the system up. The window will default to showing data returning from the Receiver Group Box. This can be a useful aid to resolving connection problems.
- **Association** – this is described above in **Initialising PinPoint**
- **Auxiliary B Sequencing** – this utility is used solely for testing systems where there are more than one pair of group boxes. Do not check this box.
- **Show Switches in Game Play Box** – this is a simple utility used for hardware test purposes and would usually be left unchecked. If checked, the any switch input activation will be indicated.

Manage Tab

- **Password** - Set a [password](#) to control access to game records
- **Score Form Printing** - Score Forms are printed Landscape style on A5 media. Click **Score Form** to print the results of the last game. Click **Sample** to print a sample form that can be used as a template for pre-printed forms. **Auto Score Form** - Check this box to have a score form printed automatically at the end of each game.
- **Auto Close Display** – (Score Form Printing box) - If checked then the score display panel will close automatically 10 seconds after being displayed. You can close the panel at any time by clicking on it, or by pressing F2 to start another game
- **Game Fee** - This allows you to set the number of coins required to start a game, if you have the [coin slot](#) option.
- **Printer** - This box is used to read the page parameters for any connected printer - these values are being used for development purposes. If you experience problems with incorrectly formatted printing of scoreforms, then please read these values and [report](#) them to us.
- **Management** - Track games played since last reset - [password controlled](#) - **Game Numbering** - You can reset the game number to Game #1 with this switch. - **Clear Previous** - Clear the top 5 scores and names - **Zero Played** - Zero the count of games played - **Reset Records** - Reset Management Records to current date and time, zero games
- **Debounce** - This allows you to set a debounce time to ensure clean operation of the [Coin Slot Mechanism](#)
- **Hints** - Check this box to have useful hints appear at the bottom left of the program window.

Language Tab

This tab deals with:

- **Remote Score Monitor** – If you have fitted a dual monitor card to your PC and wish to display scores on a second monitor, then **PinPoint** will detect and display if a second monitor has been added.
- **Simulator** – exists for development purposes only. Do not use these controls.
- **Language** – We are in the process of adding limited language support to **PinPoint**. Information on this will be made available at the appropriate time.

Multi/Colors/Door

- **Multi-Player Games** – this function will only apply if you have a system of greater than 16 lasers and thus have two pairs of group Control Boxes. In that case it is possible to add additional switches to allow more than one player to play. In our opinion that makes operation extremely complicated and is to be avoided
- **Edit Laser Colours** – In the event that you have other colours than red in your system, you can edit channels to display the laser colour in the **Lasers And Sensors** box at the left of **PinPoint**. **Note:** Different colour lasers must always be lined up with receivers that have the correct colour filter hoods fitted. Otherwise, the receivers may appear not to work.
- **Door** – This is a special feature added for one of our customers. If checked, Auxiliary Output #7 will be energised for 6 seconds at game start.

And finally...

We hope these instructions have been useful.

For more information please download **LaserMaze_PinPoint_Instructions.pdf** from our downloads page at

<http://www.laserverventure.com/downloads-page.htm>

or refer to the comprehensive **PinPoint** help file (**F8** in the program).

Alternatively, you can always contact us for support at sales@laserverventure.com

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LaserMaze is a **LaserVenture.com** leisure product. **LaserVenture** have been producing laser-based entertainment equipment now for 21 years